"OPEN MEETINGS ACT"

City of Blair Regular Council Meeting
City Council Chambers
January 13, 2026 - 7:00 PM

A Copy of the "Open Meetings Act" Has Been Posted at Both Exits

AGENDA

NOTE: A current copy of the agenda can be obtained at the City Clerk's Office at 218 S. 16th Street, Blair, Nebraska or on the City website at www.blairnebraska.org. The City Council reserves the right to go into Executive Session at any time.

1. Meeting called to order by Mayor Rump.
2. Roll Call.
3. Pledge of Allegiance.
4. Approval of Consent Agenda - The following items are considered to be routine by the city council and will be enacted by one motion. There will be no separate discussion of these items unless a city council member or citizen so requests, in which event the item will be removed from consent status and considered in its normal sequence on the agenda.

4.a. Approval of Minutes of December 9, 2025 meeting.
4.b. Clerk report of Mayoral Action of December 9, 2025 meeting.
4.c. City Department reports for December.
4.d. Claims as recommended by the Finance Committee.
4.e. Mayoral appointment of Heath Warrick to the Board of Appeals to fill unexpired term until December 31, 2029.

5. Awards recognition to the Blair Police Department, Washington County Sheriff's Department, and Blair Volunteer Fire Department for their response to the fire at La Quinta Apartments.
6. Presentation from Officers of the Blair Volunteer Fire Department of the 2025 Annual Report.
7. Consider Resolution No. 2026-01 approving the Mayoral appointments of Lateral Police Officers for the Blair Police Department.

8. Sgt. Joshua Hatheway Promotion and Badge Pinning Ceremony
9. Consider Resolution No. 2026-02 removing Detective Job Description from City Approved Positions.
10. Consider Resolution 2026-03 amending the agreement for animal sheltering services between the City of Blair and the Friends of the Jeanette Hunt Animal Shelter increasing the annual fee to $101,760.00.
11. Resolution No. 2026-04 approving the plans and specifications for the Black Elk-Neihardt Park Pump Station Project, and authorizing staff to solicit bids.
12. Resolution No. 2026-05 approving a Wastewater Assistant Supervisor Position and Job Description,
13. Resolution No. 2026-06 approving the purchase of Waterworth Software for Utility Rate Forecasting.
14. City Administrator Report
15. Motion and second by Council members to adjourn the meeting.

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City of Blair Regular Council Meeting
December 9, 2025

The Mayor and City Council met in regular session in the City Council Chambers on December 9, 2025, at 7:00 PM. The following were present: Gary Banner, Brent Clark, Kirk Highfill, James Letcher, Kent Long, Kevin Willis, Frank Wolff. Absent: Rick Paulsen. Also present were City Administrator Green, Deputy City Administrator Barrow, City Attorney Talbot, Non-Lawyer Assistant Ferrari, Library Director Lukert, Community Development Director Beiermann, and Chief Kinsey.

The Mayor publicly stated to all in attendance that a current copy of the Nebraska Open Meetings Act was available for review and indicated the location of such copy posted in the room where the meeting was being held. Notice of the meeting was given in advance thereof by publication in the Enterprise or the Pilot -Tribune as shown by the affidavit of publication filed in the City Clerk's office. Notice of the meeting was simultaneously given to the Mayor and all members of the City Council, and a copy of their acknowledgement of receipt of notice and the agenda is filed in the City Clerk's office. Availability of the agenda was communicated in the advance notice and in the notice to the Mayor and Council of this meeting. All proceedings hereafter shown were taken while the convened meeting was open to the attendance of the public.

Agenda Item #1, #2 and #3 – Mayor Rump called the meeting to order at 7:00 p.m. followed by Roll Call and the Pledge of Allegiance.

Agenda Item #4 – Consent agenda approved the following: 4a) Approval of Minutes of the November 25, 2025 meeting, 4b) Clerk report of the Mayoral Action of the November 25, 2025, meeting, 4c) City Department reports for November 2025, 4d) Claims as approved by the Finance Committee and 4e) Resolution 2025-138 designating the Washington County Enterprise as the official newspaper for the City of Blair. 4f) Resolution 2025-139 approving the Nebraska Department of Transportation annual agreement for Highway Maintenance for 2026, 4g) Motion to cancel the regular City Council meeting on December 23, 2025, 4h) Resolution No. 2025-140 authorizing City Staff to prepare claims, issue warrants and pay expenditures between December 9, 2025, and January 13, 2026, previously approved through the budget or authorized by the City Council and report any expenditures at the January 13, 2026, meeting, Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #5 – Chief Kinsey presented Detective Joshua Hatheway and recommended him for the open sergeant position for the Blair Police Department. He indicated there were three internal candidates that were rigorously tested and they all did exceptionally well. Council member Kevin Willis introduced Resolution 2025-141 approving the Mayoral appointment of Joshua Hatheway as Sergeant for the Blair Police Department. Motion by Kevin Willis, second by Kirk Highfill to adopt Resolution 2025-141 as presented. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #6 - Council approved the following administrative officers to the Blair Volunteer Fire Department for one-year terms: President- Amy Clausen, Vice President- Ernie Brenneis, Secretary- Brenda Jenny, Treasurer- Steve Howard and Sergeant at Arms-Kent Nicholson. Motion by Kirk Highfill, second by James Letcher to approve the Administrative Officers for the Blair Volunteer Fire Department for a one (1) year term as voted on by the members of the Blair Volunteer Fire Department. Motion by Kirk Highfill, second by James Letcher to approve the Administrative Officers for the Blair Volunteer Fire Department for a one (1) year term as voted on by the members of the Blair Volunteer Fire Department. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #7. Mayor Rump made the following appointments to the Planning Commission, Recreation and Cemetery Board, Board of Adjustment, Housing Authority, Board of Appeals, License Board, and LB840 Review Committee: Dave Kaslon and Carl Rennerfeldt to the City of Blair Board of Adjustments with a term ending on December 31, 2028; Sarah Boeka and Corey Hafer to the City of Blair Park, Recreation and Cemetery Board with a term ending on December 31, 2028; Philip Green, Ethan Roe, and CJ Heaton to the Licensing Board; Brett Jacobitz and Craig Heuton to the Economic Development Advisory Committee with a term ending on December 31, 2028; Nate Huber to the Board of Appeals Committee with a term ending on December 31, 2030; Jim Pounds, Melanie Kaeding, and Rich Zelensky to the City of Blair Planning Commission with a term ending on December 31, 2028. Council Member Letcher introduced Resolution 2025-142 approving Mayoral appointments to the following City Committees and Boards: Planning Commission, Park, Recreation and Cemetery Board, Board of Adjustment, Housing Authority, Board of Appeals, License Board, and LB840 Review Committee. Motion by James Letcher, second by Brent Clark to adopt Resolution No. 2025-142 as presented. Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #8 - Mayor Rump opened a public hearing to consider a Rezone application submitted by Brad Andersen and Jane Jawarski-Andersen, 947 Skyline Drive, Blair, Nebraska, to rezone Tax Lot 142 in Section 14, Township 18 North, Range 11 East of the 6th P.M., City of Blair, Washington County, Nebraska, from RL - Residential Low- Density District to TA - Transitional Agricultural District, to "match neighboring zoning and enable outbuilding expansion" (947 Skyline Drive). Community Development Director Beiermann stated the current property is located on the edge of Blair and is within city limits. It is currently zoned Residential Low-density district (RL). The applicants are requesting a rezone to Transitional Agriculture (TA). The property is 10.67 acres, which meets the minimum lot size, and it also meets all setbacks for the TA district. Council member Gary Banner questioned if this request was due to the property owner wanting to expand outbuildings. Property owner, Brad Andersen, 947 Skyline Dr., confirmed he is looking to expand his current outbuilding by adding roughly 38 ft to one end. The Planning Commission recommended approval as presented. There were no comments from the floor or in writing. Mayor Rump closed the public hearing. Council member Kevin Willis introduced Ordinance 2598 approving a Rezone application submitted by Brad Andersen and Jane Jawarski-Andersen, 947 Skyline Drive, Blair, Nebraska, to rezone Tax Lot 142 in Section 14,

Township 18 North, Range 11 East of the 6th P.M., City of Blair, Washington County, Nebraska, from RL - Residential Low- Density District to TA - Transitional Agricultural District, to "match neighboring zoning and enable outbuilding expansion."

AN ORDINANCE REZONING TAX LOT 142 IN SECTION 14, TOWNSHIP 18 NORTH, RANGE 11 EAST OF THE 6TH P.M., CITY OF BLAIR, WASHINGTON COUNTY, NEBRASKA, FROM RL-RESIDENTIAL LOW-DENSITY DISTRICT TO TA-TRANSITIONAL AGRICULTURAL DISTRICT; REPEALING ALL ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT HEREWITH AND PROVIDING WHEN THIS ORDINANCE SHALL BE IN FULL FORCE AND EFFECT AND ORDERING THE ORDINANCE PUBLISHED IN PAMPHLET FORM.

Council member Kevin Willis moved that the statutory rule requiring reading on three different days be suspended. Council member Frank Wolff seconded the motion to suspend the rules and upon roll call vote the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The motion to suspend the rules was adopted by three-fourths of the Council and the statutory rule was declared suspended for consideration of said Ordinance.

Said Ordinance was then read by title and thereafter Council member Kevin Willis moved for final passage of the Ordinance, which motion was seconded by Council member Frank Wolff. The Mayor then stated the question was "Shall Ordinance No. 2598 be passed and adopted?" Upon roll call vote, the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The passage of said Ordinance having been concurred in by a majority of all members of the Council, the Council President declared the Ordinance adopted. A true, correct, and complete copy of said Ordinance can be found in the Ordinance Record Book.

Agenda Item #9 - Mayor Rump opened a public hearing to consider a Replat Application submitted by Ken Funk, 2212 Fieldcrest Drive, Blair, Nebraska and Lucus Jones, 2276 Fieldcrest Drive, Blair, Nebraska, for Lots 91, 92, and 93, Deerfield Replat 3, a replat of Lots 18, 87, 88, and 89, Deerfield Replat 2, a platted subdivision in the City of Blair, Washington County, Nebraska (2230 Fieldcrest Drive). Community Development Director Beiermann stated the proposed replat is in Deerfield subdivision and combines four existing lots into three lots. The new lot sizes would be as follows: Lot 91 – approximately 10,000 sq foot, Lot 92 - approximately 17,000 sq. foot, and Lot 93 – approximately 13,000 sq. feet. There will be no change in the zoning. Planning Commission recommended approval as presented. Council member Frank Wolff introduced Resolution 2025-143 approving a Replat Application for Lots 91, 92 and 93 in Deerfield Replat 3, City of Blair, Washington County submitted by Ken Funk and Lucas Jones. Motion by Frank Wolff, second by James Letcher to adopt Resolution 2025-143 as presented. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda #10 - Mayor Rump opened a public hearing to consider a Conditional Use Permit (CUP) Renewal Application submitted by M.I.I. Blair, LLC, Geoff McGregor, agent, 11750 Stonegate Circle, Omaha, Nebraska, for "Storage, Indoor and Outdoor," to an existing CUP for "Storage. Mini" on Tax Lot 257 in Section 7, Township 18 North, Range 12 East of the 6th P.M., Washington County, Nebraska, for the life of the improvements (240 E. Highway 30). Community Development Director Beiermann clarified this is not a renewal but was mistakenly published as such. He stated the property is currently zoned ACH, which outdoor storage is permitted with a CUP. The following stipulations were requested: 1) Only Recreational Vehicles (RV), trailers and boat/trailer combinations and cars allowed; 2) No broken-down or inoperable vehicles, boats or trailers; 3) No tarps allowed: Any covers must be commercially designed covers, 4) Planted trees, according to submitted plans by the applicant; 5) The applicant's Operation Manual to be followed. The Planning Commission recommended approval with stipulations. Geoff McGregor, 11750 Stonegate Circle, Omaha, NE, applicant stated the proposed plan includes paving an existing grass area to create 43 parking stalls for vehicle storage. All stored vehicles must be licensed, operable and have inflated tires. Applicant also plans to plant 19 trees to enhance landscaping. There were no comments from the floor or in writing. Mayor closed the public hearing. Motion by James Letcher, second by Gary Banner to approve a Conditional Use Permit for M.I.I. Blair, LLC, Geoff McGregor for rental and lease establishments for Outside Storage in compliance with the applicant's operation plan for the life of the improvements. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #11 - Mayor Rump opened a public hearing to consider a Rezone Application by the City of Blair to rezone Tax Lot A, created by an Administrative Lot-Line Adjustment of Tax Lots 264 & 265, in Section 7, Township 18 North, Range 12 East of the 6th P.M., Washington County, Nebraska, from A/MH – Agricultural/Heavy Industrial and Manufacturing District to A/CH – Agricultural Highway Commercial District. Community Development Director Beiermann stated the rezone was initiated by the City to match the future land use map. Tax lots did not change their outer boundaries but do so on the interior, which is allowed by the Blair Zoning Regulations. No new tax lots are being created. The Planning Commission recommended approval 4-1. Joe Peleska, 2023 Northridge Circle, Blair, NE, indicated he was the Planning Commission member who voted against the rezone. He did not approve because it appears to him to be similar to a spot zoning. There were no comments in writing. Mayor closed the public hearing. Council member Kirk Highfill introduced Ordinance 2599 approving a rezone Application by the City of Blair to rezone Tax Lot A, created by an Administrative Lot-Line Adjustment of Tax Lots 264 & 265, in Section 7, Township 18 North, Range 12 East of the 6th P.M., Washington County, Nebraska, from A/MH – Agricultural/Heavy Industrial and Manufacturing District to A/CH – Agricultural Highway Commercial District.

AN ORDINANCE REZONING TAX LOT A, CREATED BY AN ADMINISTRATIVE LOT LINE ADJUSTMENT OF TAX LOTS 264 AND 265, IN SECTION 7, TOWNSHIP 18 NORTH, RANGE 12 EAST OF THE6TH P.M., WASHINGTON COUNTY, NEBRASKA, FROM A/MH—AGRICULTURAL/HEAVY INDUSTRIAL AND MANUFACTURING DISTRICT TO A/CH—AGRICULTURAL HIGHWAY COMMERCIAL DISTRICT; REPEALING ALL ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT HEREWITH AND PROVIDING WHEN THIS ORDINANCE SHALL BE IN FULL

FORCE AND EFFECT AND ORDERING THE ORDINANCE PUBLISHED IN PAMPHLET FORM.

Council member Kirk Highfill moved that the statutory rule requiring reading on three different days be suspended. Council member James Letcher seconded the motion to suspend the rules and upon roll call vote the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The motion to suspend the rules was adopted by three-fourths of the Council and the statutory rule was declared suspended for consideration of said Ordinance.

Said Ordinance was then read by title and thereafter Council member Kirk Highfill moved for final passage of the Ordinance, which motion was seconded by Council member James Letcher. The Mayor then stated the question was "Shall Ordinance No. 2599 be passed and adopted?" Upon roll call vote, the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The passage of said Ordinance having been concurred in by a majority of all members of the Council, the Council President declared the Ordinance adopted. A true, correct, and complete copy of said Ordinance can be found in the Ordinance Record Book.

Agenda #12 - Mayor Rump opened a public hearing to consider a Conditional Use Permit Renewal Application submitted by M.I.I. Blair, LLC, Geoff McGregor, agent, 11750 Stonegate Circle, Omaha, Nebraska, for “Storage Units, Mini” and “Storage, Indoor and Outdoor” on Tax Lot A in Section 7, Township 18 North, Range 12 East of the 6th P.M., Washington County, Nebraska, for the life of the improvements (413 N. Industrial Road). Community Development Director Beiermann clarified the request is not a renewal, although it was mistakenly published as such. The property is currently zoned ACH, which storage units, mini and storage indoor and outdoor are permitted with a CUP. The entrance for storage units will be off North Industrial Road. The following stipulations were requested: 1) Only Recreational Vehicles (RV), trailers and boat/trailer combinations and cars allowed; 2) No broken-down or inoperable vehicles, boats, or trailers; 3) No tarps allowed: Any covers must be commercially designed covers, 4) The applicant’s Operation Manual to be followed. The Planning Commission recommended approval with stipulations. Geoff McGregor, 11750 Stonegate Circle, Omaha, NE, stated he is looking to expand and build a storage facility on the south side of highway by approximately 30,000 square feet. The buildings will have a similar look to those on the north side of the highway. The south-side facility will operate in a remote location, with the main leasing office remaining at the north location. There were no comments from the floor or in writing. Mayor Rump closed the public hearing. Motion by Gary Banner, second by Brent Clark, to approve a Conditional Use Permit for M.I.I. Blair, LLC, and Geoff McGregor for indoor and outdoor storage for the life of improvements. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #13 - Mayor Rump opened a public hearing to consider the "Workforce Housing Tax Increment Financing Incentive Plan." City Administrator Green explained that a

public hearing is required prior to any action on the approval or denial of a Workforce Housing Tax Increment Financing Incentive Plan. This plan would authorize the use of Tax Increment Financing Incentive (TIF) for development of workforce housing. Unlike traditional TIF, all project costs are eligible because of the intent to reduce ultimate cost of housing for the buyer. Prior to utilizing TIF for workforce housing, the city must meet the following requirements: (1) conduct a housing study within the last sixty (60) months; (2) prepare an incentive plan for construction of housing in the municipality targeted to house existing or new workers; (3) hold a public hearing on such incentive plan; and (4) after the public hearing, find that such incentive plan is necessary to prevent the spread of blight and substandard conditions within the municipality, will promote additional safe and suitable housing for individuals and families employed in the municipality, and will not result in the unjust enrichment of any individual or company. Workforce housing is defined as: (a) Housing that meets the needs of today's working families; (b) Housing that is attractive to new residents considering relocation to a rural community; (c) Owner-occupied housing units that cost not more than three hundred-forty thousand dollars ($340,000) to construct or rental housing units that cost not more than two hundred-fifty thousand dollars ($250,000) per unit to construct, as updated annually by the Department of Economic Development; (d) Owner-occupied and rental housing units for which the cost to substantially rehabilitate exceeds fifty percent of a unit's assessed value; and (e) Upper-story housing. This will be eligible for apartment buildings and also provides an opportunity to encourage rehabilitation of older structures. Green noted a unique benefit of Workforce Housing TIF is that the City Council has significant discretion and the ability to closely review the financial details of each request. Council member Kevin Willis asked for clarification that the Workforce Housing TIF will not have impact on standard TIF restrictions and Green confirmed it would not. Betsy Anderson, 1235 Pinewood Drive, Blair, NE, requested confirmation on the process. Green confirmed the city is not required to issue bonds as financing decisions are up to the developer. There were no comments from the floor or in writing. Mayor Rump closed the public hearing.

Agenda Item #14. Council member Kirk Highfill introduced Resolution 2025-144 approving the use of Workforce Housing Tax Increment Financing Incentive Plan. Judiciary Committee recommended approval. Motion by Kirk Highfill, second by Gary Banner to adopt Resolution No. 2025-144 as presented. Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item # 15. Mayor Rump opened a public hearing for the purpose of Acquisition of Private Property by Good Faith Negotiations or Eminent Domain for Public Purposes Associated with the City of Blair Water Tower Construction Project Involving a Portion of Parcel #890088714 Located at 9345 County Road P33, Washington County, NE. City Administrator Green reported the City Council has been talking for several years with the rural water district on plans to build an additional water tower. He explained that location and elevation are critical, as the new tower needs to be parallel with the existing water tower in order for them to work together. The City contracted with HDR, whose engineer evaluated and located seven potential sites. The location that is being presented is the number one option. Green stated that City Administration has reached out to multiple landowners to discuss possible placement, but none have been favorable to a water tower on their property. As a result, the city may have to consider the use of eminent domain although they are making every effort to avoid it. The following individuals spoke in opposition

to the proposed water tower, indicating significant impacts to property values, rural views, and quality of life. They also voiced concerns that alternative solutions were not explored, only one engineering firm was consulted, and that affected residents lacked a voice in the decision: Michael Heser, 9208 CR P33, Blair, NE; Debbie Frederick, 9348 CR P35, 9208 CR P33, Blair, NE; Steve Andersen, 9477 CR P35, 9208 CR P33, Blair, NE; Phil White, 9345 CR P33, 9208 CR P33, Blair, NE; Jim Breithaupt, 9392 CR P35, 9208 CR P33, Blair, NE; Dylan Hough, 8874 CR P33, 9208 CR P33, Blair, NE; Mike Ehle, 9050 CR P33, 9208 CR P33, Blair, NE; Dennis Bidne, 9080 CR P33, 9208 CR P33, Blair, NE; Tracy Hipnar, 9160 CR P33, 9208 CR P33, Blair, NE; David Schenck, 9253 CR P33, 9208 CR P33, Blair, NE; Megan Swope, 731 N. 12th St., 9208 CR P33, Blair, NE; Whitney Frederick, 622 N. 21st St., 9208 CR P33, Blair, NE. There were no comments from the floor or in writing. Mayor Rump closed the public hearing.

Agenda Item #16 – Motion by Brent Clark, second by James Letcher to postpone Resolution No. 2025-145 for acquisition of property by negotiation or eminent domain. Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #17 - City Administrator Green reported the City of Blair and the Washington Chamber of Commerce have been in discussions regarding a contract and are now presenting it to the City Council for consideration and approval. The purpose of this contract will help clarify the working relationship between the City and the Chamber particularly in regard to three major events held within the City including: 1) the Gateway celebration; 2) the fireworks display; and 3) Tannenbaum. Funding for this contract is in the FY26 budget and supported by the hotel occupation tax revenues, as it supports tourism. The proposed agreement is structured as a 5-year agreement but has a provision that can be canceled by either organization with 90 days' notice. Mike Rooks, Executive Director for Gateway Development, 11961 S 113th Ave, Papillion NE, stated that both the Washington County Chamber and Gateway Development are in favor of said agreement. He noted the Chamber recently hired a new Chamber Director as well as a full-time Events Coordinator. Rooks indicated the agreement specifies $30,000 but the Chamber is requesting an increase to $40,000. Betsy Andersen, 1235 Pinewood Drive, Blair, NE, raised a question as to how the chamber is funded. Council Member Brent Clark reported the Finance Committee reviewed the agreement and recommended changing the term from five years to one year and increasing the compensation from $30,000 to $40,000. Motion by Brent Clark, second by Frank Wolff to amend Resolution No. 2025-146 revising Definition #8 (Compensation) from $30,000 to $40,000 and by changing the term of the agreement from five years to one year. Council Members voted as follows: Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried. Motion by Brent Clark, second by James Letcher to adopt Resolution No. 2025-146 as amended. Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #18. Chief Kinsey requested approval to add a 2026 Ford SUV to the police fleet. This purchase is included in the FY26 budget and is being purchased off state bid. The Police

and Fire Committee recommended approval. Council member Kirk Highfill introduced Resolution 2025-147 approving budget authorized police vehicle: one (1) 2026 Ford SUV unmarked administrative vehicle, purchasing through the State Bid from Anderson Ford (Lincoln). Motion by Kirk Highfill, second by Kevin Willis to adopt Resolution 2025-147 as presented. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #19 - City Administrator Green indicated agenda items #19 and #20 both relate to the existing State Revolving Fund (SRF) loans and the state has indicated that additional funding is available to continue the two projects. Agenda #19 concerns the SRF loan for the Lime Solids, Outfall, and Intake structure. The project is currently funded at $16 million, but there have been design changes and staff requests that have added additional costs. In addition, adjustments are needed to the outfall structure to make it work better with the river currents and ensure solids are directed away from the boat ramp. The SRF amendment will increase funding to $26 million and ensure that low-interest funding will be available to complete the project. If all funds are not utilized, the repayment schedule will be adjusted to only reflect the funds needed to pay back with an interest rate of 1.25%. Council member James Letcher introduced Ordinance 2601 authorizing the issuance of Water System Revenue Bond, Series 2026A for the City of Blair not to exceed $26,000,000.

AN ORDINANCE AUTHORIZING THE ISSUANCE OF A WATER SYSTEM REVENUE BOND, SERIES 2026A, OF THE CITY OF BLAIR, NEBRASKA, IN THE PRINCIPAL AMOUNT OF NOT TO EXCEED TWENTY-SIX MILLION DOLLARS ($26,000,000), IN THE FORM OF A PROMISSORY NOTE ISSUED TO EVIDENCE INDEBTEDNESS TO THE NEBRASKA DEPARTMENT OF WATER, ENERGY, AND ENVIRONMENT; APPROVING THE FORM OF SAID BOND (ISSUED AS A SINGLE PROMISSORY NOTE) AND RELATED AMENDMENT TO LOAN AGREEMENT; PLEDGING AND HYPOTHECATING THE REVENUES AND EARNINGS OF THE WATERWORKS PLANT AND WATER SYSTEM OWNED OR TO BE OWNED BY THE CITY FOR THE PAYMENT OF SAID BOND; PROVIDING FOR THE ISSUANCE AND SALE OF SAID BOND; AUTHORIZING THE DELIVERY OF SAID BOND AND AMENDMENT TO LOAN AGREEMENT TO THE NEBRASKA DEPARTMENT OF WATER, ENERGY, AND ENVIRONMENT; PROVIDING FOR THE COLLECTION, SEGREGATION AND APPLICATION OF THE REVENUES OF SAID WATERWORKS PLANT AND SYSTEM; DETERMINING THAT INTEREST ON SAID BOND SHALL NOT BE EXCLUDABLE FROM GROSS INCOME FOR PURPOSES OF FEDERAL INCOME TAXATION; PROVIDING FOR THE DISPOSITION OF THE PROCEEDS OF SAID BOND AND ORDERING THE ORDINANCE PUBLISHED IN PAMPHLET FORM.

Council member James Letcher moved that the statutory rule requiring reading on three different days be suspended. Council member Brent Clark seconded the motion to suspend the rules and upon roll call vote the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The motion to suspend the rules was adopted by three-fourths of the Council and the statutory rule was declared suspended for consideration of said Ordinance.

Said Ordinance was then read by title and thereafter Council member James Letcher moved for final passage of the Ordinance, which motion was seconded by Council member Brent Clark. The Mayor then stated the question was "Shall Ordinance No. 2601 be passed and adopted?" Upon roll call vote, the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The passage of said Ordinance having been concurred in by a majority of all members of the Council, the Council President declared the Ordinance adopted. A true, correct, and complete copy of said Ordinance can be found in the Ordinance Record Book.

Agenda Item #20 - City Administrator Green explained that this item pertains to the Industrial Water Main project. The project is currently funded with $2.5 million in SRF financing and a $1.5 million Economic Development Administration (EDA) grant for this project. Due to the increased costs, the total project budget is now estimated at approximately $5.5 million. This SRF loan amendment would increase the SRF funding to $5 million. Pending legal decisions could also impact the total amount of money needed to borrow. Council Member Letcher introduced Ordinance 2602 authorizing the issuance of Water System Revenue Bond, Series 2026B for the City of Blair not to exceed $5,000,000.

AN ORDINANCE AUTHORIZING THE ISSUANCE OF A WATER SYSTEM REVENUE BOND, SERIES 2026B, OF THE CITY OF BLAIR, NEBRASKA, IN THE PRINCIPAL AMOUNT OF NOT TO EXCEED FIVE MILLION DOLLARS ($5,000,000), IN THE FORM OF A PROMISSORY NOTE ISSUED TO EVIDENCE INDEBTEDNESS TO THE NEBRASKA DEPARTMENT OF WATER, ENERGY, AND ENVIRONMENT; APPROVING THE FORM OF SAID BOND (ISSUED AS A SINGLE PROMISSORY NOTE) AND RELATED AMENDMENT TO LOAN AGREEMENT; PLEDGING AND HYPOTHECATING THE REVENUES AND EARNINGS OF THE WATERWORKS PLANT AND WATER SYSTEM OWNED OR TO BE OWNED BY THE CITY FOR THE PAYMENT OF SAID BOND; PROVIDING FOR THE ISSUANCE AND SALE OF SAID BOND; AUTHORIZING THE DELIVERY OF SAID BOND AND AMENDMENT TO LOAN AGREEMENT TO THE NEBRASKA DEPARTMENT OF WATER, ENERGY, AND ENVIRONMENT; PROVIDING FOR THE COLLECTION, SEGREGATION AND APPLICATION OF THE REVENUES OF SAID WATERWORKS PLANT AND SYSTEM; DETERMINING THAT INTEREST ON SAID BOND SHALL NOT BE EXCLUDABLE FROM GROSS INCOME FOR PURPOSES OF FEDERAL INCOME TAXATION; PROVIDING FOR THE DISPOSITION OF THE PROCEEDS OF SAID BOND AND ORDERING THE ORDINANCE PUBLISHED IN PAMPHLET FORM.

Council member James Letcher moved that the statutory rule requiring reading on three different days be suspended. Council member Brent Clark seconded the motion to suspend the rules and upon roll call vote the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The motion to suspend the rules was adopted by three-fourths of the Council and the statutory rule was declared suspended for consideration of said Ordinance.

Said Ordinance was then read by title and thereafter Council member James Letcher moved for final passage of the Ordinance, which motion was seconded by Council member Brent Clark. The Mayor then stated the question was "Shall Ordinance No. 2602 be passed and adopted?" Upon roll call vote, the following Council members voted: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. The passage of said Ordinance having been concurred in by a majority of all members of the Council, the Council President declared the Ordinance adopted. A true, correct, and complete copy of said Ordinance can be found in the Ordinance Record Book.

Agenda Item #21 - Mark Hodson, Operations Superintendent, reported the streets department has been looking into purchasing their own traffic counting cameras. In the past, the city has relied on outside companies to perform traffic studies at an average cost of approximately $5,000 per study. This purchase would allow city staff to deploy the system and get counts as often as they need to. The department is requesting the purchase of two MioVision Scout Traffic Counter Cameras. They are the same cameras used by the NDOT and many of the engineering firms use them to get traffic counts around the state. They can be set up in the office and deployed by one person without having to close traffic to install tubes or in-lane counters. The city can also use these cameras to capture bikes and pedestrian counts along the trails. This is valuable information to have when applying for grants asking to build more trails. These cameras report data back to the city's account in real time, so staff can pull the data via cell signal to the cloud without leaving the office. These are battery-powered, lasting up to 15 days with a full load of batteries, which can be charged in the office and rotated as needed. The attached quote includes two cameras, extra batteries, yearly cell service, and software packages to fully utilize the system's capabilities. The Technology Committee recommended approval. Council member Kirk Highfill introduced Resolution 2025-148 approving the purchase of two traffic camera systems. Motion by Brent Clark, second by Kevin Willis to adopt Resolution 2025-148 as presented. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #22 - Mark Hodson, Operations Superintendent, presented two quotes for the purchase of a new truck for the Utility Department, which will replace an older truck that will be traded in. Also included is a quote from Total Truck for the purchase and installation of a utility box for the new truck. The quotes for the truck with the utility box are as follows: 1) Sid Dillons - $65,231.87; 2) Woodhouse Ford - $64,917.87. The Water-Sewer Committee recommended approval of the lower bid from Woodhouse Ford. Motion by Kevin Willis, second by Frank Wolff, to receive and place on file the bids for the purchase of a new utility truck for the Utility Department. All Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council Members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried. Council member James Letcher introduced Resolution 2025-149 approving the purchase of a new utility truck for the Utility Department. Motion by James Letcher, second by Brent Clark to adopt Resolution 2025-149 as presented. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #23 - Non- Lawyer Assistant Ferrari presented a fee agreement from Adams and Sullivan indicating they have been working with the city on a litigation matter, and a new agreement is needed. The Judiciary Committee recommended approval. Council Member Letcher introduced 2025-150 approving City Administration to enter into a fee agreement with Adams and Sullivan for the purposes of continuing ongoing litigation. Motion by James Letcher, second by Gary Banner to adopt Resolution No. 2025-150 as presented. Council Members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried.

Agenda Item #24 - City Administrator Report – City Administrator Green reported that the city is now one month into the new BS&A system and the transition is going well. He noted that many changes have already occurred and there are additional process changes coming. He extended a thank you to all City staff for their continued support. He also reported four candidates are being interviewed for the position of Deputy City Administrator of Operations. Additionally, the Community Development department has moved to their new location at the Annex Building, located at 1516 Grant Street. Council Member Kevin Willis noted that a Blair Police officer will graduate from the academy on December 11th and encouraged all to attend the ceremony in Grand Island.

Agenda Item #25 - Motion by Gary Banner, second by Kevin Willis to go into Executive Session at 9:07 p.m. to discuss possible negotiations involving the City of Blair and to preserve the attorney-client privilege. No action to be taken. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council Member Voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared a motion carried. Mayor Rump then stated: As you may remember, the Executive Session was limited to the following subjects to discuss possible negotiations involving the City of Blair and to preserve the attorney-client privilege. Motion by Brent Clark, second by Kevin Willis to come out of Executive Session and reconvene as a City Council at 9:21 p.m. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council Members Voted: Yea: 7, Nay: 0, Absent: 1. Mayor Rump declared the motion carried. Mayor Rump then stated: As you may remember, the Executive Session was limited to the following subjects to discuss possible negotiations involving the City of Blair and to preserve the attorney-client privilege.

Agenda Item #26 - Motion by Gary Banner, second by James Letcher to adjourn the meeting 9:22 p.m. Council members voted as follows: Gary Banner: Yea, Brent Clark: Yea, Kirk Highfill: Yea, James Letcher: Yea, Kent Long: Yea, Rick Paulsen: Absent, Kevin Willis: Yea, Frank Wolff: Yea. All Council members voted: Yea: 7, Nay: 0, Absent:1. Mayor Rump declared the motion carried.

The following claims were approved: Abe's Trash Service Inc, Svc, 5915.93; Air Products & Chemicals, Inv, 4910.44; Aj's Service & Repair, Inv, 388.96; Amazon Sales Inc, Inv, 4625.17; American Underground Supply, Inv, 230.11; Arps Red-E-Mix Inc, Svc, 4125.88; Assethr, Pyrl, 253950.02; Automatic Systems Co, Svc, 135.00; Babkel Mechanical, Inv, 7079.91; Badger Body & Truck Equipment, Inv, 138.00; Blair Ace Hardware, Inv, 1217.19; Bl-State Motor Parts, Inv, 17.52; Blue Cross & Blue Shield Of Ne, Ins, 105946.72; Bound Tree Medical Llc, Inv, 2008.90;

Calvin Poulsen, Svc, 3542.50; Carquest Auto Parts, Inv, 838.04; Chris Olson, Svc, 1500.00; Cintas Corporation, Inv, 2131.34; Core & Main Lp, Inv, 13415.50; Cornerstone Staffing Inc, Svc, 3138.30; Country Tire Inc, Svc, 4729.09; Cummins Inc, Inv, 5048.11; Danko Emergency Equipment Co, Inv, 1177.80; Deborah Wood, Svc, 400.00; Dick's Electric Co, Svc, 40849.72; Eakes Office Plus, Inv, 2576.86; Ed M Feld Eq Co., Inv, 4154.53; Edward Jones, Pen, 45000.00; Electronic Engineering, Inv, 4749.73; Elite Vehicle Outfitters Llc, Inv, 13864.09; Ems Management & Consulting, Inv, 124.26; Eriksen Construction Co Inc, Inv, 539593.80; Faronics Technologies Usa Inc, Svc, 3180.96; First Wireless Inc, Inv, 3714.73; Firstnet At&T Mobility, Inv, 225.44; Government Finance Officers, Inv, 250.00; Grainger, Svc, 1417.17; Great Plains Uniforms Llc, Svc, 185.99; Hdr Engineering Inc, Svc, 691.40; Henton Trenching Inc, Svc, 91420.00; Hgm Associates Inc, Inv, 2450.00; Horizon Rehabilitation Centers, Svc, 444.00; Icma, Inv, 1095.12; Ingram Industries Inc, Inv, 70.53; Jackson Services, Svc, 496.71; Jennings Properties, Llc, Svc, 5900.00; Jeo Consulting Group Inc, Inv, 1006.75; Jeredith Brands Llc, Inv, 3019.00; Kb Industries Inc, Svc, 1046.13; Long's Ok Tire Stores, Svc, 1249.90; Matheson Tri-Gas Inc, Inv, 781.75; Metonic Real Estate Solutions, Inv, 384762.83; Micromarketing Llc, Inv, 14.39; Midland Scientific Inc, Inv, 17.83; Midwest Automatic Fire, Svc, 442.50; Midwest Laboratories Inc, Svc, 999.87; Mississippi Lime Co Llc, Inv, 23386.82; Nebraska Dept Of Agriculture, Svc, 1517.25; Nebraska Library Commission, Inv, 1406.23; Ne-Ia Industrial Fasteners, Svc, 113.92; Nsg Logistics Llc, Svc, 2165.63; One Call Concepts Inc, Inv, 171.13; One Source The Background, Inv, 143.00; Oppd, Svc, 97599.74; O'reilly Automotive Stores Inc, Inv, 476.99; Pioneer Cleaning Llc, Inv, 600.00; Point C, Flex, 75.00; Randy's Mobile Electronics, Inv, 7155.00; Relentless Llc, Inv, 749.00; Relx Inc, Inv, 310.00; S & S Pumping Service Llc, Svc, 6555.00; S.E. Smith & Sons, Svc, 2054.50; Sapp Bros Petroleum Inc, Inv, 3069.73; Scott Bifano, Svc, 2900.00; Scott, David, Reimb, 153.28; Streakwave Wireless Inc, Svc, 677.33; Symbolarts, Svc, 2020.46; Talbot Law Office Pc Llo, Svc, 810.00; The Blind Guy, Svc, 194.25; The Sign Depot, Inv, 1770.75; Thermal Heating Air & Plumbing, Svc, 2795.00; Thiele Geotech Inc, Svc, 5758.00; Todd Valley Farms, Inc, Svc, 357.50; Total Truck & Machine Llc, Inv, 60.67; Trekk Design Group, Svc, 12828.50; University Of Nebraska Omaha, Inv, 716.00; Us Postal Service, Svc, 1774.42; Us Postal Service, Svc, 8.14; Us Postal Service Fort Calhoun, Svc, 2000.00; Us Postal Service Fort Calhoun, Svc, 370.00; Usabluebook, Inv, 342.55; Utilities Service Group, Svc, 2050.00; Verizon 883740345-00001, Inv, 1169.56; Vessco Inc, Svc, 1693.56; Wakefield Towing And Recovery, Svc, 400.00; Washington County Enterprise, Inv, 1116.22; Washington County Register, Inv, 30.00; Western Oil Ii Llc, Svc, 4915.61; Young & White Law Offices, Svc, 649.35.

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Melinda K. Rump, Mayor

ATTEST:

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Brenda Wheeler, City Clerk

Seal

BVFD December Response Time Report – Explanation of Mutual Aids

Tones explanation *– Dispatch will tone (dispatch) a department out every 4 minutes until someone answers up at their station. After the 2nd tone if no one answers up by the time a 3rd tone is needed then dispatch mutual aids the next nearest department on the 3rd tone.*

Tuesday December 3rd at 03:36 AM – BVFD was dispatched for chest pain at Good Shepherd Nursing Home - 1 BVFD personnel responded - Kennard was mutual aided by dispatch due to BVFD not answering up by the 3rd tone. Kennard squad responded and transported the patient. The 1 BVFD personnel responded in their own vehicle and assisted

Monday December 8th at 00:32 AM – BVFD was dispatched for a possible structure fire at a residence in the county jurisdiction of BVFD's territory – 11 BVFD personnel responded & investigated - 3 BVFD apparatuses responded - Fort Calhoun Fire was dual responsed with us due to the nature of the call, Fort Calhoun responded with 2 apparatuses and assisted - no fire was founded and all units returned to service

Tuesday December 9th at 04:09 AM – BVFD was dispatched for respiratory distress at Good Shepherd – 2 BVFD personnel responded, treated, and transported the patient - 1 BVFD apparatus responded - Kennard Rescue was mutual aided due to BVFD not answering up after the second tone. BVFD handled the call and cancelled Kennard before going en route

Tuesday December 9th at 02:38 PM – BVFD was dispatched for an Automatic Fire Detection Signal at Cargill – This was upgraded to a working fire prior to going en route based off information from BVFD Cargill employees – 19 BVFD personnel responded, investigated, and extinguished fire - 2 BVFD apparatuses responded - Fort Calhoun, Kennard, and Bennington Fire Departments were mutual aided due to the nature of the call and being a confirmed working fire.

Friday December 12th at 01:50 AM – BVFD was dispatched for Difficulty Breathing at a residence within city limits – 2 BVFD personnel responded, treated, and transported the patient - 1 BVFD apparatus responded - Kennard Rescue was mutual aided due to Blair only having 1 qualified drive who was the EMT - intial report from Blair PD when squad arrived was patient was having a Heart Attack which meant potentially transporting to Omaha, Kennard was then mutual aided for a driver. After assessment patient was revealed to be having a panic attack, BVFD transported the patient to Blair utilizing the personnel on location

Friday December 12th at 04:59 AM – BVFD was dispatched for Abdominal Pain at Good Shepherd – 2 BVFD personnel responded, treated, and transported the patient - 1 BVFD apparatus responded - Kennard Rescue was mutual aided by dispatch due to no one from

Blair answering up in allotted time. Blair Rescue went 4 tones, Kennard Rescue went 2 tones, Kennard Rescue went en route, Blair Rescue went en route after 26 minutes and handled the call and cancelled Kennard Rescue before they arrived.

Saturday December 20th at 06:44 PM – BVFD was dispatched for an Automatic Fire Detection Signal at Crowell Home – 1 BVFD personnel responded & investigated - 1 BVFD apparatus responded - Kennard was mutual aided due to only one person responding, they never went en route BVFD handled

Friday December 26th at 11:26 AM – BVFD was dispatched for an injured party from a fall at Good Shepherd – 4 BVFD personnel responded and treated patient who refused transport - 1 BVFD apparatus responded - Kennard was mutual aided however cancelled before going en route

Sunday December 28th at 12:34 PM – BVFD was dispatched for a car accident for a vehicle rollover with a party pinned – 15 BVFD personnel responded, treated, and transported two patients - 2 BVFD apparatuses responded - Kennard Rescue was mutual aided by dispatch due to mechanism of call, vehicle accident rollover with a party still pinned inside, Kennard's squad responded and transported 2 patients while Blair transported 2 patients.

Total Calls for Service = 111

- 87 Medical (78.3 %)
- 24 Fire-Related (21.7 %)

Average of members per call = 6
Average Response Time = 11 minutes 51 seconds
Average Dispatch to On Scene Time = 15 minutes 21 seconds
70 **Hours,** 52 **Minutes** spent on calls

- Average of 38 minutes, 18 seconds per call

Call Distribution

- 85 City Calls (%)
  - 11 Fire-Related
  - 74 Medical
- 26 Rural Calls (%)
  - 12 Fire-related
  - 14 Medical

Top Response Locations

- Nursing Homes / Assisted Living Facilities – xx
  - Good Shepherd = 17
  - Crowell Home = 10
  - Carter House = 1
- Other Locations

- Angel Share Apartments = 6
- Cargill = 10

Top Types of Calls

1. Injured Party from a Fall – 19 calls
2. Automatic Fire Detection Signal – 15 calls
3. Medical Nature Unknown – 9 calls
4. Assist a Party Up – 7 calls
5. Difficulty Breathing – 5 calls
6. Assist/Authority Blair PD for Medical – 4 calls
   Chest Pain – 4 calls
   P.I. Accident / Possible P.I – 4 calls
   Mutual Aid to Herman for Medical – 4 calls
7. Seizure – 3 Calls

Busiest Days of the Week

1. Tuesday – 22 calls
2. Monday, Friday – 18 calls
3. Wednesday, Thursday – 17 calls
4. Sunday – 12 calls
5. Saturday – 7 calls

Top Time Frame

1. 07:01 – 15:59 = 58 calls during this time
2. 16:00 – 23:59 = 34 calls during this time
3. 00:01 – 07:00 = 19 calls during this time

Date	Type	Time of Call	Disp	2nd	3rd	4th	5th	Enrt
12/1/2025	PI	1325	1327					1332
12/2/2025	MED	0941	0942					0951
12/2/2025	MED	1842	1844					1851
12/3/2025	MED	0335	0336	0340	0344			NO RESPON
12/3/2025	FIRE	1049	1050					1055
12/3/2025	MED	2011	2012					2017
12/3/2025	AFDS	2231	2232					
12/3/2025	MED	2250	2252					2300
12/4/2025	MED	0530	0531	0536	0538			0543
12/4/2025	MED	0744	0746					0754
12/4/2025	MED	0933	0934					0939
12/4/2025	MED	1957	1858					1901
12/4/2025	MED	1912	1913					1919
12/4/2025	AFDS	1958	1959					
12/5/2025	MED	0852	0853					0855
12/5/2025	MED	1141	1144					
12/5/2025	MED	1206	1207					1217
12/5/2025	AFDS	1242	1243					
12/5/2025	MED	1701	1702					1706
12/5/2025	AFDS	1914	1915					1924
12/6/2025	MED	0322	0322	0327				0331
12/6/2025	MED	1125	1127					1133
12/7/2025	MED	0635	0636					0647
12/8/2025	FIRE	0030	0031	0040				0041
12/8/2025	MED	0330	0331					
12/8/2025	MED	1416	1416					1425
12/8/2025	MED	1810	1811					1818
12/9/2025	MED	0407	0409	0414				0420
12/9/2025	MED	0826	0826					0834
12/9/2025	AFDS	1223	1226					1232
12/9/2025	AFDS	1437	1438					1449
12/9/2025	PI	1723	1724					1730
12/9/2025	MED	2343	2343					2350
12/10/2025	AFDS	0647	0648					
12/10/2025	AFDS	1246	1248					
12/10/2025	MED	1252	1252					1254
12/10/2025	MED	1441	1442					1446
12/10/2025	MED	1827	1829	1833 FOR EMT				1838
12/11/2025	AFDS	0022	0023					0034
12/11/2025	MED	0848	0848					0854
12/11/2025	AFDS	1032	1034					1041
12/11/2024	FIRE	1546	1548					1555
12/11/2025	MED	1631	1631					1631

12/11/2025	MED	1845	1848					1850
12/12/2025	MED	0148	0150	0154	0207			0201
12/12/2025	MED	0456	0459	0504	0508	0513		0526
12/12/2025	MED	1125	1126					1131
12/12/2025	MED	1204	1205					1207
12/12/2025	MED	2214	2215					2222
12/13/2025	NO CALLS OF YOUR OWN							
12/14/2025	MED	0727	-728	0737	0742			0749
12/14/2025	MED	2106	2108					2116
12/15/2025	PI	0830	0833	0840 ENGINE COMPANY				0838
12/15/2025	FIRE	1258	1300					1314
12/15/2025	MED	1301	1301 CONTACTED DIRECTLY BY BLAIR POLICE					1301
12/15/2025	MED	1750	1752					1757
12/16/2025	MED	0809	0909	0914	0920			0924
12/16/2025	MED	1058	1059					1101
12/16/2025	MED	1606	1609					1614
12/16/2025	MED	1936	1938					1945
12/17/2025	MED	0314	0315					0325
12/17/2025	AFDS	0845	0849					
12/17/2025	MED	1947	1948					1955
12/18/2025	MED	0956	0957					1003
12/18/2025	MED	1351	1351					1356
12/19/2025	MED	0902	0904					0912
12/19/2025	AFDS	1028	1029					
12/19/2025	MED	1309	1310					1317
12/19/2025	FIRE	1727	1729					1736
12/19/2025	MED	1906	1907	1912				1914
12/20/2025	MED	0912	0913					0920
12/20/2025	MED	1544	1547					1554
12/20/2025	FIRE	1629	1629					1634
12/20/2025	AFDS	1843	1843	1848	1852	1857		1859
12/21/2025	MED	0453	0454	0459	0502	0506		0514
12/21/2025	MED	0734	0735	0741				0747
12/21/2025	AFDS	0949	0951					0958
12/21/2025	MED	1621	1625					1632
12/21/2025	MED	1659	1700					1702
12/22/2025	MED	0943	0944					0949
12/23/2025	MED	0504	0507	0512				0516
12/23/2025	MED	1450	1452					1456
12/23/2025	MED	2328	2329					2336
12/24/2025	AFDS	0214	0215					
12/25/2025	ALMMED	1232	1235					1241
12/25/2025	FIRE	1357	1358					1406
12/25/2025	MED	2337	2338					2347
12/26/2025	MED	1125	1126	1133				1141
12/27/2025	NO CALLS							
12/28/2025	MED	0655	0656					0702

12/28/2025	PI	1232	1234			1239
12/29/2025	MED	0039	0041	0045	0048	0055
12/29/2025	MED	1307	1309			1314
12/29/2025	MED	1658	1702			1707
12/30/2025	MED	0910	0910			0917
12/30/2025	MED	1017	1017			1020
12/20/2025	MED	1212	1213			1216
12/30/2025	MED	1436	1436			1441
12/30/2025	MED	1852	1853			1859
12/30/2025	MED	1916	1917			1918
12/31/2025	MED	1004	1005			1009
12/31/2025	MED	1156	1157			1203
12/31/2025	MED	2250	2251			

Arr	cancel	M/A Req	M/A Disp	Enrt	Arr	Cancelled	City/Rural
1335							C
0953							C
1853							C
NSE		0344 KVFD	0344	0355	0404		C
1057							C
2019							C
	2233						C
2309							R
0545							C
0804							R
0943							R
1904							C
1920							C
	2002						R
0856							C
	1151 BY BLPD						C
1219							C
	1248						R
1706							C
1927							C
0333							C
1134							C
0648							C
0048		0031 FCFD	0031	0042	0049		R
	0340						C
1427							C
1821		1831 BNFD	1831	1833	1843		C
0421		0414 KVFD	0414			0424	C
0837							C
1236							C
1454		1447 FCFD	1447	1505	1511		R
		1447 KVFD	1447	1519			
		1447 BNFD	1448	1450	1510		
1733							C
2355							C
	0705						R
	1251						R
1256							C
1447							C
1839							C
0037							C
0855							C
1044							C
1558							C
1631							C

1852							C
0203		0207 KVFD	0207	0220		0222	C
0528		0508 KVFD	0508	0522		0527	C
1133							C
1209							C
2228							R
0751							C
2117							C
0839							C
1315							C
1302							C
1758							C
0925							C
	1102 BY POLICE						C
1615							C
1947							C
0327							C
	0857						R
1957							C
1004							C
1359							C
0916							C
	1039						R
1322							R
1738							C
1916							C
0922							C
1555							C
1636							C
1859		1857 KVFD	1857			1912	C
0516							C
0750							C
1003							C
1634							C
1704							C
0952							C
0517							C
1458							C
2337							C
	0218						R
1243							C
1408							C
2349							C
1143		1138 KVFD				1142	C
							C/R
0704							C

1242	1234 KVFD 1234		1244	1253	R
0057					C
1315					C
1710					C
0921					C
1021					C
1219					C
1442					C
1901					C
1920					C
1011					C
1205					C
	2254 BY POLICE				C

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Revenues						
Department: 009						
01-009-4001	AD VALOREM TAXES	2,366,032.43	364,079.38	53,118.52	2,001,953.05	15.39
01-009-4002	INTEREST ON TAXES	10,000.00	2,665.94	1,551.69	7,334.06	26.66
01-009-4005	MOTOR VEHICLE TAXES	220,000.00	56,384.96	16,580.95	163,615.04	25.63
01-009-4007	CASH DEVICE TAX	0.00	427.53	427.53	(427.53)	100.00
01-009-4008	PRO RATE MOTOR VEHICLE TAX	4,750.00	457.55	0.00	4,292.45	9.63
01-009-4101	IN LIEU OF TAXES	90,000.00	0.00	0.00	90,000.00	0.00
01-009-4102	CARLINE TAX	500.00	0.00	0.00	500.00	0.00
01-009-4104	PROPERTY TAX CREDIT	150,000.00	0.00	0.00	150,000.00	0.00
01-009-4105	HOMESTEAD EXEMPTION	62,000.00	0.00	0.00	62,000.00	0.00
01-009-4106	FRANCHISE FEE	25,000.00	0.00	0.00	25,000.00	0.00
01-009-4206	POLICE GRANT	5,000.00	0.00	0.00	5,000.00	0.00
01-009-4208	POLICE GRANT CAMERAS	100.00	0.00	0.00	100.00	0.00
01-009-4252	LIBRARY STATE AID	3,000.00	516.89	516.89	2,483.11	17.23
01-009-4254	LIBRARY GRANT	100.00	0.00	0.00	100.00	0.00
01-009-4256	MISC STATE GRANTS	100.00	0.00	0.00	100.00	0.00
01-009-4301	ZONING FEES	6,930.00	1,476.00	676.00	5,454.00	21.30
01-009-4302	REGISTRATION FEE	48,510.00	4,830.00	2,905.00	43,680.00	9.96
01-009-4303	TOBACCO LICENSES REVENUE	240.00	255.00	255.00	(15.00)	106.25
01-009-4304	BUSINESS LICENSES/PERMITS	924.00	1,180.00	180.00	(256.00)	127.71
01-009-4305	LIQUOR LICENSES	11,000.00	4,915.00	0.00	6,085.00	44.68
01-009-4306	SOLID WASTE FEES	4,158.00	0.00	0.00	4,158.00	0.00
01-009-4307	BUILDING PERMITS	225,000.00	21,333.00	3,757.00	203,667.00	9.48
01-009-4308	ELECTRICAL PERMITS	2,887.50	717.00	245.00	2,170.50	24.83
01-009-4309	PLUMBING PERMITS	23,100.00	6,692.00	723.00	16,408.00	28.97
01-009-4310	MECHANICAL PERMITS	13,860.00	3,649.00	920.00	10,211.00	26.33
01-009-4311	DOG & CAT LICENSES	9,350.00	127.50	47.00	9,222.50	1.36
01-009-4312	DOG & CAT STATE LICENSE FEE	800.00	12.50	5.00	787.50	1.56
01-009-4314	REPLACEMENT DOG & CAT TAG	110.00	5.00	0.00	105.00	4.55
01-009-4320	POOL MEMBERSHIP	50,000.00	0.00	0.00	50,000.00	0.00
01-009-4321	CONCESSION STAND	7,500.00	0.00	0.00	7,500.00	0.00
01-009-4322	POOL N-TAXABLE	3,000.00	0.00	0.00	3,000.00	0.00
01-009-4332	SALE OF FIREWORKS	25,000.00	0.00	0.00	25,000.00	0.00
01-009-4333	SALE OF MAPS/BOOKS/ETC	50.00	0.00	0.00	50.00	0.00
01-009-4335	CEMETERY LOTS	20,000.00	1,100.00	0.00	18,900.00	5.50
01-009-4336	GRAVE OPENINGS	23,000.00	2,600.00	2,300.00	20,400.00	11.30
01-009-4339	LIBRARY TAX COLLECTIONS	3,750.00	970.20	497.95	2,779.80	25.87
01-009-4340	LIBRARY N-TAX COLLECTIONS	0.00	1,013.63	448.00	(1,013.63)	100.00
01-009-4341	POLICE LAB FUND	500.00	175.00	175.00	325.00	35.00
01-009-4342	UTV FEES	8,000.00	150.00	0.00	7,850.00	1.88
01-009-4344	LIBRARY USER FEES	8,000.00	2,900.00	950.00	5,100.00	36.25
01-009-4345	TOWING REVENUE	15,000.00	5,250.00	3,250.00	9,750.00	35.00
01-009-4346	FIREARM PERMITS	500.00	0.00	0.00	500.00	0.00
01-009-4347	RV PARK RECEIPTS	10,000.00	3,345.00	335.00	6,655.00	33.45
01-009-4348	VIOLATONS MOWING/JUNK	1,000.00	25.00	0.00	975.00	2.50
01-009-4502	NRD COST SHARE	5,000.00	0.00	0.00	5,000.00	0.00
01-009-4504	INTEREST	2,000.00	650.60	0.00	1,349.40	32.53
01-009-4508	MISC REIMBURSEMENT	5,000.00	64.00	0.00	4,936.00	1.28
01-009-4512	SALE OF LAND	1,000.00	1,200.00	0.00	(200.00)	120.00

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Revenues						
Department: 009						
01-009-4516	DEPOT / SHELTERS / COURT RENTALS	15,000.00	2,100.00	825.00	12,900.00	14.00
01-009-4517	REIMB SCHOOL SRO	45,000.00	15,008.50	3,902.21	29,991.50	33.35
01-009-4518	POLICE CONTRACT OVERTIME	3,000.00	0.00	0.00	3,000.00	0.00
01-009-4519	TOWER RENTAL	75,000.00	10,860.00	2,830.00	64,140.00	14.48
01-009-4520	MISC REVENUE	4,000.00	(1,420.35)	327.90	5,420.35	(35.51)
01-009-4523	INSURANCE PROCEEDS	100.00	597.60	500.00	(497.60)	597.60
01-009-4537	EQUIPMENT SALE/RENTAL	100.00	1,143.45	490.05	(1,043.45)	1,143.45
01-009-4541	III CORPS REIMBURSED EXPENSE	15,000.00	9,568.93	3,300.00	5,431.07	63.79
01-009-4564	DONATION,GRANTS,LIBRARY,PARK	1,000.00	0.00	0.00	1,000.00	0.00
01-009-4585	RURAL REIMBURSEMENT	15,000.00	2,467.34	0.00	12,532.66	16.45
01-009-4782	TRANS FROM KENO	150,000.00	0.00	0.00	150,000.00	0.00
01-009-4785	TRANS FROM HOTEL TAX	120,000.00	0.00	0.00	120,000.00	0.00
01-009-4791	TRANS FROM SALES TAX - PROP TAX RELI	3,000,000.00	0.00	0.00	3,000,000.00	0.00
01-009-4802	TRANS FROM SALE TAX-LIBR LEASE	137,380.00	0.00	0.00	137,380.00	0.00
Total Dept 009		7,052,331.93	529,493.15	102,039.69	6,522,838.78	7.51
Revenues		7,052,331.93	529,493.15	102,039.69	6,522,838.78	7.51
Account Category: Expenditures						
Department: 010 ADMINISTRATIVE						
01-010-5001	SALARIES	349,970.16	92,268.22	27,862.31	257,701.94	26.36
01-010-5002	FICA - CITY SHARE	26,772.72	6,590.99	2,145.65	20,181.73	24.62
01-010-5003	WORKMAN'S COMPENSATION	2,000.00	1,443.70	0.00	556.30	72.19
01-010-5004	H.A.L. INSURANCE	38,759.00	9,319.31	3,084.87	29,439.69	24.04
01-010-5005	RETIREMENT - CITY SHARE	18,500.00	3,844.74	1,114.08	14,655.26	20.78
01-010-5006	UNEMPLOYMENT COMP	100.00	0.00	0.00	100.00	0.00
01-010-5007	DISABILITY	1,000.00	188.14	66.44	811.86	18.81
01-010-5008	PENSION ADMINISTRATION	800.00	145.00	0.00	655.00	18.13
01-010-5030	CONTRACT LABOR	20,000.00	0.00	0.00	20,000.00	0.00
01-010-5205	FILING FEES	1,000.00	38.00	0.00	962.00	3.80
01-010-5209	BANK FEES	500.00	27.02	0.00	472.98	5.40
01-010-5210	LEGAL	30,000.00	2,488.51	511.88	27,511.49	8.30
01-010-5211	AUDITING	12,000.00	0.00	0.00	12,000.00	0.00
01-010-5212	ENGINEERING/CONSULTANT	10,000.00	3,161.14	654.84	6,838.86	31.61
01-010-5213	PROFESSIONAL SERVICES	1,000.00	0.00	0.00	1,000.00	0.00
01-010-5215	EMPLOYEE APPREC/SCHOOLING	4,500.00	468.50	304.00	4,031.50	10.41
01-010-5216	POSTAGE	1,500.00	323.81	3.54	1,176.19	21.59
01-010-5217	PRINTING & PUBLICATION	14,000.00	3,545.57	849.13	10,454.43	25.33
01-010-5221	ELECTION EXPENSE	25,000.00	0.00	0.00	25,000.00	0.00
01-010-5222	TRAVEL EXPENSE	14,000.00	1,563.16	548.45	12,436.84	11.17
01-010-5223	TRAINING EXP/CONF REGISTR	20,000.00	1,999.24	391.24	18,000.76	10.00
01-010-5224	DUES	15,000.00	3,136.13	1,521.63	11,863.87	20.91
01-010-5225	CUSTODIAL SERVICES	7,500.00	1,800.00	600.00	5,700.00	24.00
01-010-5227	SOFTWARE MAINTENANCE	75,000.00	26,272.54	7,556.75	48,727.46	35.03
01-010-5228	UTILITIES	10,000.00	1,951.58	661.52	8,048.42	19.52
01-010-5229	TELEPHONE	20,000.00	1,743.78	861.88	18,256.22	8.72
01-010-5230	VEHICLE INSURANCE	0.00	3,176.67	0.00	(3,176.67)	100.00
01-010-5231	LIABILITY INSURANCE	2,500.00	1,916.82	0.00	583.18	76.67
01-010-5232	BLDG & CONTENT INSURANCE	20,000.00	19,064.02	0.00	935.98	95.32

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 010 ADMINISTRATIVE						
01-010-5233	EMPLOYEE BONDS	1,000.00	0.00	0.00	1,000.00	0.00
01-010-5237	OFFICE EQUIPMENT MAINTENANCE	2,000.00	0.00	0.00	2,000.00	0.00
01-010-5240	BUILDING MAINTENANCE	15,000.00	3,341.52	247.75	11,658.48	22.28
01-010-5241	TREE/STUMP REMOVAL & PLANTING	100.00	0.00	0.00	100.00	0.00
01-010-5243	CHAMBER SERVICES; MARKING/EXHIBITS	45,000.00	40,900.00	40,900.00	4,100.00	90.89
01-010-5245	MEDICAL	600.00	596.00	325.00	4.00	99.33
01-010-5249	CAR EXPENSE	100.00	2.50	2.50	97.50	2.50
01-010-5250	BAD ACCOUNTS	100.00	0.00	0.00	100.00	0.00
01-010-5258	OTHER OPERATING EXPENSE	1,500.00	0.00	0.00	1,500.00	0.00
01-010-5260	FLOOD EXPENSE	100.00	0.00	0.00	100.00	0.00
01-010-5262	COUNTY TREASURER COMMISSIONS	23,000.00	3,667.45	546.70	19,332.55	15.95
01-010-5281	STORM DAMAGE	60,000.00	0.00	0.00	60,000.00	0.00
01-010-5298	TOBACCO LICENSES EXP	240.00	0.00	0.00	240.00	0.00
01-010-5359	OFFICE EQUIPMENT	1,500.00	2,755.74	2,440.98	(1,255.74)	183.72
01-010-5360	OFFICE SUPPLIES	10,000.00	2,599.21	1,538.42	7,400.79	25.99
01-010-5361	JANITORIAL SUPPLIES	3,500.00	1,151.04	272.45	2,348.96	32.89
01-010-5369	SAFETY EQUIPMENT/TRAINING	1,000.00	115.85	115.85	884.15	11.59
01-010-5372	BOOKS & MAPS	200.00	0.00	0.00	200.00	0.00
01-010-5383	OTHER EXPENSE MATL & SUPP	500.00	0.00	0.00	500.00	0.00
01-010-5390	FALL/SPRING CLEANUP	15,000.00	4,271.49	0.00	10,728.51	28.48
01-010-5395	NON-CAPITAL EQUIPMENT	1,000.00	0.00	0.00	1,000.00	0.00
01-010-5398	OFFICE EQUIPMENT RENTAL	2,500.00	204.68	204.68	2,295.32	8.19
01-010-5401	OFFICE EQUIPMENT - CAPITAL	64,600.00	2,708.05	2,708.05	61,891.95	4.19
01-010-5461	WEB DESIGN/LASER FICHE	23,700.00	0.00	0.00	23,700.00	0.00
01-010-5462	COUNCIL AGENDA PROG & TABLETS	7,000.00	0.00	0.00	7,000.00	0.00
01-010-5490	SPACE NEEDS & FACILITIES	30,000.00	72,632.00	0.00	(42,632.00)	242.11
01-010-5490-2025-0008	SPACE NEEDS & FACILITIES	0.00	18,311.71	2,023.15	(18,311.71)	100.00
01-010-5521	OTHER IMPROVEMENTS	5,000.00	0.00	0.00	5,000.00	0.00
01-010-5523	CAPITAL CONST PROJECT/RESERVE	750,000.00	0.00	0.00	750,000.00	0.00
Total Dept 010 - ADMINISTRATIVE		1,805,641.88	339,733.83	100,063.74	1,465,908.05	18.82
Department: 011 POLICE						
01-011-5001	SALARIES	2,171,820.00	563,878.24	166,119.02	1,607,941.76	25.96
01-011-5002	FICA - CITY SHARE	166,144.23	41,550.74	12,251.71	124,593.49	25.01
01-011-5003	WORKMAN'S COMPENSATION	85,000.00	63,459.29	0.00	21,540.71	74.66
01-011-5004	H.A.L. INSURANCE	467,562.00	74,765.01	24,492.22	392,796.99	15.99
01-011-5005	RETIREMENT - CITY SHARE	198,300.00	49,889.98	14,431.70	148,410.02	25.16
01-011-5006	UNEMPLOYMENT COMP	100.00	0.00	0.00	100.00	0.00
01-011-5007	DISABILITY	27,000.00	3,285.24	487.35	23,714.76	12.17
01-011-5008	PENSION ADMINISTRATION	2,000.00	393.50	0.00	1,606.50	19.68
01-011-5210	LEGAL	7,000.00	267.30	78.97	6,732.70	3.82
01-011-5211	AUDITING	8,000.00	0.00	0.00	8,000.00	0.00
01-011-5212	ENGINEERING/CONSULTANT	50,000.00	7,850.00	450.00	42,150.00	15.70
01-011-5213	PROFESSIONAL SERVICES	1,000.00	0.00	0.00	1,000.00	0.00
01-011-5215	EMPLOYEE APPREC/SCHOOLING	2,000.00	532.00	532.00	1,468.00	26.60
01-011-5216	POSTAGE	600.00	0.00	0.00	600.00	0.00
01-011-5217	PRINTING & PUBLICATION	3,000.00	798.93	248.93	2,201.07	26.63
01-011-5218	EVIDENCE PROCUREMENT	2,500.00	0.00	0.00	2,500.00	0.00
01-011-5219	DRUG TASK FORCE	20,500.00	20,383.00	0.00	117.00	99.43

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 011 POLICE						
01-011-5222	TRAVEL EXPENSE	10,000.00	4,490.62	2,895.11	5,509.38	44.91
01-011-5223	TRAINING EXP/CONF REGISTR	18,000.00	3,544.00	1,195.00	14,456.00	19.69
01-011-5224	DUES	1,500.00	411.80	353.63	1,088.20	27.45
01-011-5225	CUSTODIAL SERVICES	5,200.00	1,200.00	400.00	4,000.00	23.08
01-011-5226	POLICE TESTING	3,000.00	465.00	0.00	2,535.00	15.50
01-011-5227	SOFTWARE MAINTENANCE	41,000.00	28,404.25	7,303.04	12,595.75	69.28
01-011-5228	UTILITIES	11,000.00	2,553.97	1,205.87	8,446.03	23.22
01-011-5229	TELEPHONE	14,000.00	3,009.07	1,047.69	10,990.93	21.49
01-011-5230	VEHICLE INSURANCE	25,000.00	25,588.00	0.00	(588.00)	102.35
01-011-5231	LIABILITY INSURANCE	9,000.00	7,844.00	0.00	1,156.00	87.16
01-011-5232	BLDG & CONTENT INSURANCE	10,000.00	20,549.11	0.00	(10,549.11)	205.49
01-011-5235	POLICE LAB MAINTENANCE	400.00	0.00	0.00	400.00	0.00
01-011-5236	RADIO MAINTENANCE	15,000.00	0.00	0.00	15,000.00	0.00
01-011-5237	OFFICE EQUIPMENT MAINTENANCE	1,500.00	0.00	0.00	1,500.00	0.00
01-011-5239	MOTORIZED EQUIPMENT MAINT	30,000.00	18,911.80	1,470.41	11,088.20	63.04
01-011-5240	BUILDING MAINTENANCE	15,000.00	7,399.68	3,821.58	7,600.32	49.33
01-011-5245	MEDICAL	2,500.00	393.00	87.00	2,107.00	15.72
01-011-5249	CAR EXPENSE	500.00	0.00	0.00	500.00	0.00
01-011-5254	CRIME STOPPER PROGRAM	1,800.00	0.00	0.00	1,800.00	0.00
01-011-5255	TOWING EXP	18,000.00	4,650.00	1,950.00	13,350.00	25.83
01-011-5258	OTHER OPERATING EXPENSE	3,000.00	4,114.16	330.74	(1,114.16)	137.14
01-011-5281	STORM DAMAGE	20,000.00	0.00	0.00	20,000.00	0.00
01-011-5287	PROMOTIONAL ITEMS	3,000.00	1,342.21	(67.48)	1,657.79	44.74
01-011-5360	OFFICE SUPPLIES	2,700.00	491.21	297.25	2,208.79	18.19
01-011-5361	JANITORIAL SUPPLIES	1,500.00	158.14	147.15	1,341.86	10.54
01-011-5368	INVESTIGATIVE SUPPLIES	2,000.00	1,594.46	0.00	405.54	79.72
01-011-5369	SAFETY EQUIPMENT/TRAINING	15,000.00	7,975.50	147.00	7,024.50	53.17
01-011-5370	GAS/OIL/DIESEL	40,000.00	9,260.82	2,760.30	30,739.18	23.15
01-011-5371	UNIFORMS	10,000.00	3,107.95	284.44	6,892.05	31.08
01-011-5372	BOOKS & MAPS	100.00	0.00	0.00	100.00	0.00
01-011-5382	AMMUNITION/RANGE	25,000.00	4,514.18	3,749.20	20,485.82	18.06
01-011-5383	OTHER EXPENSE MATL & SUPP	400.00	0.00	0.00	400.00	0.00
01-011-5389	PURCHASE/GRANT	4,000.00	0.00	0.00	4,000.00	0.00
01-011-5395	NON-CAPITAL EQUIPMENT	1,000.00	0.00	0.00	1,000.00	0.00
01-011-5398	OFFICE EQUIPMENT RENTAL	300.00	146.95	146.95	153.05	48.98
01-011-5401	OFFICE EQUIPMENT - CAPITAL	20,000.00	0.00	0.00	20,000.00	0.00
01-011-5402	MOTORIZED EQUIPMENT	200,000.00	99,132.30	4,820.20	100,867.70	49.57
01-011-5406	RADIO EQUIPMENT CAPITAL	80,000.00	54,600.53	54,545.62	25,399.47	68.25
01-011-5408	VIDEO/CAMERA EQUIPMENT	45,000.00	3,588.00	3,588.00	41,412.00	7.97
01-011-5410	AED	3,000.00	109,937.92	0.00	(106,937.92)	3,664.60
01-011-5421	TASER	6,000.00	0.00	0.00	6,000.00	0.00
01-011-5423	BODY CAMERA	4,000.00	0.00	0.00	4,000.00	0.00
01-011-5521	OTHER IMPROVEMENTS	20,000.00	0.00	0.00	20,000.00	0.00
Total Dept 011 - POLICE		3,950,926.23	1,256,431.86	311,570.60	2,694,494.37	31.80
Department: 013 FIRE						
01-013-5003	WORKMAN'S COMPENSATION	6,000.00	2,189.59	0.00	3,810.41	36.49
01-013-5004	H.A.L. INSURANCE	30,649.00	2,983.45	0.00	27,665.55	9.73
01-013-5210	LEGAL	1,000.00	59.40	17.55	940.60	5.94

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 013 FIRE						
01-013-5211	AUDITING	1,500.00	0.00	0.00	1,500.00	0.00
01-013-5212	ENGINEERING/CONSULTANT	5,000.00	0.00	0.00	5,000.00	0.00
01-013-5213	PROFESSIONAL SERVICES	5,000.00	0.00	0.00	5,000.00	0.00
01-013-5216	POSTAGE	100.00	10.40	0.00	89.60	10.40
01-013-5217	PRINTING & PUBLICATION	500.00	199.00	0.00	301.00	39.80
01-013-5222	TRAVEL EXPENSE	2,000.00	0.00	0.00	2,000.00	0.00
01-013-5223	TRAINING EXP/CONF REGISTR	2,000.00	150.00	150.00	1,850.00	7.50
01-013-5225	CUSTODIAL SERVICES	300.00	0.00	0.00	300.00	0.00
01-013-5228	UTILITIES	25,000.00	5,233.61	2,716.94	19,766.39	20.93
01-013-5229	TELEPHONE	3,000.00	323.60	161.80	2,676.40	10.79
01-013-5230	VEHICLE INSURANCE	50,000.00	65,097.00	0.00	(15,097.00)	130.19
01-013-5231	LIABILITY INSURANCE	2,000.00	1,083.42	0.00	916.58	54.17
01-013-5232	BLDG & CONTENT INSURANCE	16,000.00	27,017.72	0.00	(11,017.72)	168.86
01-013-5236	RADIO MAINTENANCE	500.00	2,374.87	0.00	(1,874.87)	474.97
01-013-5238	SHOP EQUIPMENT MAINTENANCE	500.00	0.00	0.00	500.00	0.00
01-013-5239	MOTORIZED EQUIPMENT MAINT	50,000.00	11,652.58	6,964.41	38,347.42	23.31
01-013-5240	BUILDING MAINTENANCE	10,000.00	12,892.99	9,429.35	(2,892.99)	128.93
01-013-5245	MEDICAL	1,000.00	1,738.00	19.00	(738.00)	173.80
01-013-5258	OTHER OPERATING EXPENSE	150.00	0.00	0.00	150.00	0.00
01-013-5281	STORM DAMAGE	10,000.00	0.00	0.00	10,000.00	0.00
01-013-5285	RURAL CHARGES	16,000.00	9,404.85	2,438.05	6,595.15	58.78
01-013-5294	FIRE SCHOOL	2,000.00	0.00	0.00	2,000.00	0.00
01-013-5306	RADIO EQUIPMENT	5,000.00	1,857.36	0.00	3,142.64	37.15
01-013-5359	OFFICE EQUIPMENT	500.00	0.00	0.00	500.00	0.00
01-013-5360	OFFICE SUPPLIES	500.00	126.68	0.00	373.32	25.34
01-013-5361	JANITORIAL SUPPLIES	0.00	328.14	328.14	(328.14)	100.00
01-013-5369	SAFETY EQUIPMENT/TRAINING	15,000.00	3,544.74	3,519.05	11,455.26	23.63
01-013-5370	GAS/OIL/DIESEL	7,000.00	1,658.30	549.17	5,341.70	23.69
01-013-5375	FIRE PREVENTION	1,000.00	0.00	0.00	1,000.00	0.00
01-013-5376	SIREN REPAIR	1,500.00	0.00	0.00	1,500.00	0.00
01-013-5395	NON-CAPITAL EQUIPMENT	15,000.00	0.00	0.00	15,000.00	0.00
01-013-5401	OFFICE EQUIPMENT - CAPITAL	3,000.00	0.00	0.00	3,000.00	0.00
01-013-5405	FIRE FIGHTING EQUIPMENT	40,000.00	2,209.15	560.00	37,790.85	5.52
01-013-5526	ELECTRONIC DOOR KEYS	5,000.00	0.00	0.00	5,000.00	0.00
01-013-5534	AIR PACK SYSTEM	6,000.00	0.00	0.00	6,000.00	0.00
Total Dept 013 - FIRE		339,699.00	152,134.85	26,853.46	187,564.15	44.79
Department: 014 PARK / CEMETERY / REC						
01-014-5001	SALARIES	328,200.00	88,409.41	25,142.96	239,790.59	26.94
01-014-5002	FICA - CITY SHARE	25,107.30	6,437.36	1,834.31	18,669.94	25.64
01-014-5003	WORKMAN'S COMPENSATION	12,100.00	8,160.96	0.00	3,939.04	67.45
01-014-5004	H.A.L. INSURANCE	100,300.00	24,237.04	7,969.43	76,062.96	24.16
01-014-5005	RETIREMENT - CITY SHARE	24,775.00	5,181.01	1,550.70	19,593.99	20.91
01-014-5006	UNEMPLOYMENT COMP	500.00	0.00	0.00	500.00	0.00
01-014-5007	DISABILITY	1,500.00	266.91	88.97	1,233.09	17.79
01-014-5008	PENSION ADMINISTRATION	300.00	78.00	0.00	222.00	26.00
01-014-5210	LEGAL	3,000.00	118.80	35.10	2,881.20	3.96
01-014-5211	AUDITING	2,500.00	0.00	0.00	2,500.00	0.00
01-014-5212	ENGINEERING/CONSULTANT	5,200.00	405.00	135.00	4,795.00	7.79

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 014 PARK / CEMETERY / REC						
01-014-5213	PROFESSIONAL SERVICES	31,000.00	0.00	0.00	31,000.00	0.00
01-014-5215	EMPLOYEE APPREC/SCHOOLING	1,000.00	114.00	114.00	886.00	11.40
01-014-5216	POSTAGE	100.00	0.00	0.00	100.00	0.00
01-014-5217	PRINTING & PUBLICATION	1,000.00	115.11	0.00	884.89	11.51
01-014-5222	TRAVEL EXPENSE	1,000.00	0.00	0.00	1,000.00	0.00
01-014-5223	TRAINING EXP/CONF REGISTR	1,500.00	425.00	0.00	1,075.00	28.33
01-014-5224	DUES	500.00	68.63	68.63	431.37	13.73
01-014-5227	SOFTWARE MAINTENANCE	7,700.00	6,025.22	2,616.58	1,674.78	78.25
01-014-5228	UTILITIES	40,000.00	9,914.98	4,118.99	30,085.02	24.79
01-014-5229	TELEPHONE	3,500.00	1,945.79	927.53	1,554.21	55.59
01-014-5230	VEHICLE INSURANCE	5,000.00	5,809.32	0.00	(809.32)	116.19
01-014-5231	LIABILITY INSURANCE	1,500.00	1,666.80	0.00	(166.80)	111.12
01-014-5232	BLDG & CONTENT INSURANCE	32,000.00	50,305.33	1,256.59	(18,305.33)	157.20
01-014-5236	RADIO MAINTENANCE	100.00	0.00	0.00	100.00	0.00
01-014-5239	MOTORIZED EQUIPMENT MAINT	12,000.00	2,213.63	169.11	9,786.37	18.45
01-014-5240	BUILDING MAINTENANCE	45,000.00	21,765.24	3,359.70	23,234.76	48.37
01-014-5241	TREE/STUMP REMOVAL & PLANTING	20,000.00	15.90	0.00	19,984.10	0.08
01-014-5244	RECREATION ASSISTANCE	60,000.00	0.00	0.00	60,000.00	0.00
01-014-5245	MEDICAL	4,000.00	0.00	0.00	4,000.00	0.00
01-014-5253	REPURCHASE CEMETERY LOTS	2,000.00	0.00	0.00	2,000.00	0.00
01-014-5258	OTHER OPERATING EXPENSE	20,000.00	0.00	0.00	20,000.00	0.00
01-014-5259	BLACK ELK MAINTENANCE	2,000.00	0.00	0.00	2,000.00	0.00
01-014-5263	OPTIMIST BOAT RAMP	3,000.00	0.00	0.00	3,000.00	0.00
01-014-5266	CONTRACT MOWING	80,000.00	12,391.25	0.00	67,608.75	15.49
01-014-5276	DEPOT / SHELTERS / COURT REFUNDS	1,000.00	0.00	0.00	1,000.00	0.00
01-014-5281	STORM DAMAGE	50,000.00	0.00	0.00	50,000.00	0.00
01-014-5359	OFFICE EQUIPMENT	500.00	0.00	0.00	500.00	0.00
01-014-5360	OFFICE SUPPLIES	1,000.00	366.94	0.00	633.06	36.69
01-014-5361	JANITORIAL SUPPLIES	3,000.00	648.20	0.00	2,351.80	21.61
01-014-5363	CHEMICALS	8,000.00	64.97	0.00	7,935.03	0.81
01-014-5364	SEED, SOD, ETC	3,000.00	0.00	0.00	3,000.00	0.00
01-014-5365	GENERAL SUPPLIES	11,000.00	158.39	81.91	10,841.61	1.44
01-014-5369	SAFETY EQUIPMENT/TRAINING	1,850.00	374.01	137.58	1,475.99	20.22
01-014-5370	GAS/OIL/DIESEL	8,500.00	2,072.35	623.22	6,427.65	24.38
01-014-5371	UNIFORMS	3,000.00	780.18	286.57	2,219.82	26.01
01-014-5372	BOOKS & MAPS	100.00	0.00	0.00	100.00	0.00
01-014-5373	SMALL TOOLS	4,500.00	2,522.12	2,040.26	1,977.88	56.05
01-014-5374	SAND/GRAVEL/ROCK	4,000.00	0.00	0.00	4,000.00	0.00
01-014-5383	OTHER EXPENSE MATL & SUPP	1,000.00	0.00	0.00	1,000.00	0.00
01-014-5392	MOTORIZED EQUIP/GRAVE OPENING	10,000.00	3,000.00	1,500.00	7,000.00	30.00
01-014-5401	OFFICE EQUIPMENT - CAPITAL	27,500.00	743.30	743.30	26,756.70	2.70
01-014-5402	MOTORIZED EQUIPMENT	14,000.00	5,189.30	5,189.30	8,810.70	37.07
01-014-5403	MOTORIZED EQUIPMENT (LARGE)	130,000.00	84,444.00	84,444.00	45,556.00	64.96
01-014-5419	OTHER IMPROVEMENTS/PARK SIGNS	64,000.00	238.21	238.21	63,761.79	0.37
01-014-5504	PAVING STREET & HIGHWAY	20,000.00	0.00	0.00	20,000.00	0.00
01-014-5506	BUILDING/RESTROOM	5,000.00	0.00	0.00	5,000.00	0.00
01-014-5519	PLAYGROUND EQUIPMENT	7,500.00	7,250.00	0.00	250.00	96.67
Total Dept 014 - PARK / CEMETERY / REC		1,255,832.30	353,922.66	144,671.95	901,909.64	28.18

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 015 LIBRARY						
01-015-5001	SALARIES	481,435.00	113,724.75	32,393.36	367,710.25	23.62
01-015-5002	FICA - CITY SHARE	36,829.78	8,542.84	2,432.35	28,286.94	23.20
01-015-5003	WORKMAN'S COMPENSATION	500.00	360.92	0.00	139.08	72.18
01-015-5004	H.A.L. INSURANCE	67,409.00	16,269.57	4,698.50	51,139.43	24.14
01-015-5005	RETIREMENT - CITY SHARE	22,696.00	3,527.86	1,011.62	19,168.14	15.54
01-015-5006	UNEMPLOYMENT COMP	500.00	0.00	0.00	500.00	0.00
01-015-5007	DISABILITY	1,300.00	186.66	62.22	1,113.34	14.36
01-015-5008	PENSION ADMINISTRATION	300.00	67.00	0.00	233.00	22.33
01-015-5210	LEGAL	1,500.00	59.40	17.55	1,440.60	3.96
01-015-5211	AUDITING	8,600.00	0.00	0.00	8,600.00	0.00
01-015-5212	ENGINEERING/CONSULTANT	5,000.00	1,350.00	450.00	3,650.00	27.00
01-015-5213	PROFESSIONAL SERVICES	1,000.00	0.00	0.00	1,000.00	0.00
01-015-5215	EMPLOYEE APPREC/SCHOOLING	3,000.00	228.00	228.00	2,772.00	7.60
01-015-5216	POSTAGE	3,000.00	213.77	0.00	2,786.23	7.13
01-015-5217	PRINTING & PUBLICATION	2,500.00	326.08	298.75	2,173.92	13.04
01-015-5222	TRAVEL EXPENSE	3,000.00	221.00	0.00	2,779.00	7.37
01-015-5223	TRAINING EXP/CONF REGISTR	3,000.00	408.00	318.00	2,592.00	13.60
01-015-5224	DUES	1,600.00	68.63	68.63	1,531.37	4.29
01-015-5225	CUSTODIAL SERVICES	37,000.00	9,057.00	3,019.00	27,943.00	24.48
01-015-5227	SOFTWARE MAINTENANCE	41,500.00	14,379.40	4,649.25	27,120.60	34.65
01-015-5228	UTILITIES	30,000.00	7,686.69	2,789.48	22,313.31	25.62
01-015-5229	TELEPHONE	8,500.00	0.00	0.00	8,500.00	0.00
01-015-5231	LIABILITY INSURANCE	1,500.00	1,500.12	0.00	(0.12)	100.01
01-015-5232	BLDG & CONTENT INSURANCE	22,000.00	19,503.68	0.00	2,496.32	88.65
01-015-5237	OFFICE EQUIPMENT MAINTENANCE	5,000.00	0.00	0.00	5,000.00	0.00
01-015-5240	BUILDING MAINTENANCE	30,000.00	5,170.27	1,833.14	24,829.73	17.23
01-015-5245	MEDICAL	800.00	177.00	177.00	623.00	22.13
01-015-5258	OTHER OPERATING EXPENSE	1,000.00	0.00	0.00	1,000.00	0.00
01-015-5264	LEASE PAYMENT	124,800.00	0.00	0.00	124,800.00	0.00
01-015-5281	STORM DAMAGE	20,000.00	0.00	0.00	20,000.00	0.00
01-015-5359	OFFICE EQUIPMENT	500.00	0.00	0.00	500.00	0.00
01-015-5360	OFFICE SUPPLIES	16,000.00	2,898.99	2,516.05	13,101.01	18.12
01-015-5361	JANITORIAL SUPPLIES	3,000.00	570.70	263.20	2,429.30	19.02
01-015-5363	CHEMICALS	0.00	1,184.54	0.00	(1,184.54)	100.00
01-015-5369	SAFETY EQUIPMENT/TRAINING	1,200.00	307.29	102.28	892.71	25.61
01-015-5371	UNIFORMS	800.00	0.00	0.00	800.00	0.00
01-015-5378	LIBRARY STATE AID EXP	3,000.00	0.00	0.00	3,000.00	0.00
01-015-5379	LIBRARY ACQUISITIONS	96,000.00	18,775.92	5,979.41	77,224.08	19.56
01-015-5393	SUMMER READING	10,000.00	2,523.24	1,491.42	7,476.76	25.23
01-015-5395	NON-CAPITAL EQUIPMENT	1,000.00	0.00	0.00	1,000.00	0.00
01-015-5401	OFFICE EQUIPMENT - CAPITAL	12,000.00	0.00	0.00	12,000.00	0.00
01-015-5559	BUILDING FURNISHINGS & TECH	15,000.00	1,442.50	0.00	13,557.50	9.62
01-015-8103	DEBT RESERVE LIBRARY	112,500.00	0.00	0.00	112,500.00	0.00
Total Dept 015 - LIBRARY		1,236,269.78	230,731.82	64,799.21	1,005,537.96	18.66
Department: 017 POOL						
01-017-5001	SALARIES	118,560.00	0.00	0.00	118,560.00	0.00
01-017-5002	FICA - CITY SHARE	9,069.84	0.00	0.00	9,069.84	0.00
01-017-5003	WORKMAN'S COMPENSATION	3,800.00	3,497.55	0.00	302.45	92.04

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 017 POOL						
01-017-5211	AUDITING	1,600.00	0.00	0.00	1,600.00	0.00
01-017-5212	ENGINEERING/CONSULTANT	5,000.00	0.00	0.00	5,000.00	0.00
01-017-5217	PRINTING & PUBLICATION	500.00	0.00	0.00	500.00	0.00
01-017-5228	UTILITIES	6,000.00	468.78	86.14	5,531.22	7.81
01-017-5229	TELEPHONE	3,000.00	460.20	230.10	2,539.80	15.34
01-017-5231	LIABILITY INSURANCE	600.00	416.70	0.00	183.30	69.45
01-017-5232	BLDG & CONTENT INSURANCE	2,500.00	2,404.57	0.00	95.43	96.18
01-017-5240	BUILDING MAINTENANCE	15,000.00	85.00	0.00	14,915.00	0.57
01-017-5245	MEDICAL	4,000.00	0.00	0.00	4,000.00	0.00
01-017-5258	OTHER OPERATING EXPENSE	600.00	0.00	0.00	600.00	0.00
01-017-5281	STORM DAMAGE	1,000.00	0.00	0.00	1,000.00	0.00
01-017-5358	CONCESSION SUPPLIES	7,500.00	0.00	0.00	7,500.00	0.00
01-017-5360	OFFICE SUPPLIES	400.00	0.00	0.00	400.00	0.00
01-017-5361	JANITORIAL SUPPLIES	500.00	0.00	0.00	500.00	0.00
01-017-5362	SHOP SUPPLIES	100.00	362.88	362.88	(262.88)	362.88
01-017-5363	CHEMICALS	8,500.00	0.00	0.00	8,500.00	0.00
01-017-5369	SAFETY EQUIPMENT/TRAINING	4,000.00	121.63	0.00	3,878.37	3.04
01-017-5395	NON-CAPITAL EQUIPMENT	500.00	0.00	0.00	500.00	0.00
01-017-5401	OFFICE EQUIPMENT - CAPITAL	2,000.00	0.00	0.00	2,000.00	0.00
01-017-5412	POOL IMPROVEMENT	20,000.00	0.00	0.00	20,000.00	0.00
01-017-5413	POOL PAINTING	50,000.00	0.00	0.00	50,000.00	0.00
01-017-5508	POOL IMPROVEMENT CAPITAL/MAJOR	10,000.00	3,082.48	0.00	6,917.52	30.82
Total Dept 017 - POOL		274,729.84	10,899.79	679.12	263,830.05	3.97
Department: 019 BUILDING - PLANNING/ZONING						
01-019-5001	SALARIES	406,200.00	95,205.49	27,039.53	310,994.51	23.44
01-019-5002	FICA - CITY SHARE	31,074.30	7,112.72	2,023.36	23,961.58	22.89
01-019-5003	WORKMAN'S COMPENSATION	7,000.00	4,376.98	0.00	2,623.02	62.53
01-019-5004	H.A.L. INSURANCE	84,532.00	18,402.56	5,921.06	66,129.44	21.77
01-019-5005	RETIREMENT - CITY SHARE	32,500.00	6,713.88	1,952.92	25,786.12	20.66
01-019-5006	UNEMPLOYMENT COMP	100.00	0.00	0.00	100.00	0.00
01-019-5007	DISABILITY	1,800.00	306.48	102.16	1,493.52	17.03
01-019-5008	PENSION ADMINISTRATION	500.00	78.00	0.00	422.00	15.60
01-019-5205	FILING FEES	1,000.00	200.00	80.00	800.00	20.00
01-019-5210	LEGAL	2,500.00	1,463.40	1,421.55	1,036.60	58.54
01-019-5211	AUDITING	1,000.00	0.00	0.00	1,000.00	0.00
01-019-5212	ENGINEERING/CONSULTANT	150,000.00	5,962.50	5,737.50	144,037.50	3.98
01-019-5213	PROFESSIONAL SERVICES	5,000.00	1,404.00	1,404.00	3,596.00	28.08
01-019-5215	EMPLOYEE APPREC/SCHOOLING	1,000.00	152.00	152.00	848.00	15.20
01-019-5216	POSTAGE	900.00	0.00	0.00	900.00	0.00
01-019-5217	PRINTING & PUBLICATION	2,500.00	220.23	57.80	2,279.77	8.81
01-019-5222	TRAVEL EXPENSE	6,000.00	600.38	408.29	5,399.62	10.01
01-019-5223	TRAINING EXP/CONF REGISTR	5,000.00	674.05	295.00	4,325.95	13.48
01-019-5224	DUES	1,200.00	126.79	68.63	1,073.21	10.57
01-019-5225	CUSTODIAL SERVICES	0.00	360.00	360.00	(360.00)	100.00
01-019-5227	SOFTWARE MAINTENANCE	35,000.00	15,944.22	12,509.82	19,055.78	45.55
01-019-5228	UTILITIES	0.00	446.27	170.43	(446.27)	100.00
01-019-5229	TELEPHONE	4,000.00	229.06	0.00	3,770.94	5.73
01-019-5230	VEHICLE INSURANCE	3,800.00	329.12	0.00	3,470.88	8.66

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 019 BUILDING - PLANNING/ZONING						
01-019-5231	LIABILITY INSURANCE	600.00	375.03	0.00	224.97	62.51
01-019-5232	BLDG & CONTENT INSURANCE	3,000.00	0.00	0.00	3,000.00	0.00
01-019-5239	MOTORIZED EQUIPMENT MAINT	2,800.00	0.00	0.00	2,800.00	0.00
01-019-5240	BUILDING MAINTENANCE	15,000.00	872.40	872.40	14,127.60	5.82
01-019-5245	MEDICAL	300.00	0.00	0.00	300.00	0.00
01-019-5249	CAR EXPENSE	1,200.00	0.00	0.00	1,200.00	0.00
01-019-5258	OTHER OPERATING EXPENSE	100.00	0.00	0.00	100.00	0.00
01-019-5261	VIOLATIONS (MOWING/SNOW)	10,000.00	350.00	0.00	9,650.00	3.50
01-019-5271	WASHINGTON CO INSPECTION FEES	500.00	0.00	0.00	500.00	0.00
01-019-5274	REFUNDS	1,000.00	0.00	0.00	1,000.00	0.00
01-019-5359	OFFICE EQUIPMENT	1,000.00	0.00	0.00	1,000.00	0.00
01-019-5360	OFFICE SUPPLIES	3,000.00	1,477.39	891.70	1,522.61	49.25
01-019-5361	JANITORIAL SUPPLIES	0.00	125.18	80.15	(125.18)	100.00
01-019-5363	CHEMICALS	500.00	0.00	0.00	500.00	0.00
01-019-5369	SAFETY EQUIPMENT/TRAINING	0.00	96.14	0.00	(96.14)	100.00
01-019-5370	GAS/OIL/DIESEL	2,500.00	350.56	122.74	2,149.44	14.02
01-019-5371	UNIFORMS	1,000.00	256.08	83.21	743.92	25.61
01-019-5372	BOOKS & MAPS	500.00	0.00	0.00	500.00	0.00
01-019-5373	SMALL TOOLS	500.00	0.00	0.00	500.00	0.00
01-019-5401	OFFICE EQUIPMENT - CAPITAL	2,000.00	0.00	0.00	2,000.00	0.00
01-019-5510	CONSTRUCTION CONTRACTS	25,000.00	0.00	0.00	25,000.00	0.00
Total Dept 019 - BUILDING - PLANNING/ZONING		853,106.30	164,210.91	61,754.25	688,895.39	19.25
Department: 020 ANIMAL CONTROL						
01-020-5001	SALARIES	33,000.00	9,737.20	0.00	23,262.80	29.51
01-020-5002	FICA - CITY SHARE	2,524.50	765.28	0.00	1,759.22	30.31
01-020-5003	WORKMAN'S COMPENSATION	400.00	276.45	0.00	123.55	69.11
01-020-5005	RETIREMENT - CITY SHARE	0.00	179.55	0.00	(179.55)	100.00
01-020-5006	UNEMPLOYMENT COMP	100.00	0.00	0.00	100.00	0.00
01-020-5210	LEGAL	1,000.00	59.40	17.55	940.60	5.94
01-020-5211	AUDITING	800.00	0.00	0.00	800.00	0.00
01-020-5212	ENGINEERING/CONSULTANT	101,760.00	40,880.00	20,440.00	60,880.00	40.17
01-020-5215	EMPLOYEE APPREC/SCHOOLING	100.00	0.00	0.00	100.00	0.00
01-020-5216	POSTAGE	200.00	0.00	0.00	200.00	0.00
01-020-5217	PRINTING & PUBLICATION	100.00	0.00	0.00	100.00	0.00
01-020-5222	TRAVEL EXPENSE	100.00	0.00	0.00	100.00	0.00
01-020-5223	TRAINING EXP/CONF REGISTR	300.00	0.00	0.00	300.00	0.00
01-020-5224	DUES	100.00	0.00	0.00	100.00	0.00
01-020-5227	SOFTWARE MAINTENANCE	2,000.00	1,022.56	182.56	977.44	51.13
01-020-5228	UTILITIES	100.00	0.00	0.00	100.00	0.00
01-020-5229	TELEPHONE	500.00	114.57	38.19	385.43	22.91
01-020-5230	VEHICLE INSURANCE	1,000.00	1,340.66	0.00	(340.66)	134.07
01-020-5231	LIABILITY INSURANCE	600.00	583.38	0.00	16.62	97.23
01-020-5232	BLDG & CONTENT INSURANCE	2,200.00	1,914.64	0.00	285.36	87.03
01-020-5236	RADIO MAINTENANCE	100.00	0.00	0.00	100.00	0.00
01-020-5239	MOTORIZED EQUIPMENT MAINT	1,000.00	0.00	0.00	1,000.00	0.00
01-020-5240	BUILDING MAINTENANCE	20,000.00	2,641.31	0.00	17,358.69	13.21
01-020-5245	MEDICAL	300.00	0.00	0.00	300.00	0.00
01-020-5266	CONTRACT MOWING	800.00	80.81	0.00	719.19	10.10

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 01 GENERAL						
Account Category: Expenditures						
Department: 020 ANIMAL CONTROL						
01-020-5281	STORM DAMAGE	10,000.00	0.00	0.00	10,000.00	0.00
01-020-5360	OFFICE SUPPLIES	100.00	0.00	0.00	100.00	0.00
01-020-5366	DOG LICENSE/FEED/VET EXP	100.00	1,481.08	1,481.08	(1,381.08)	1,481.08
01-020-5369	SAFETY EQUIPMENT/TRAINING	100.00	0.00	0.00	100.00	0.00
01-020-5370	GAS/OIL/DIESEL	1,000.00	249.96	90.37	750.04	25.00
01-020-5371	UNIFORMS	500.00	836.82	572.39	(336.82)	167.36
01-020-5373	SMALL TOOLS	100.00	0.00	0.00	100.00	0.00
01-020-5401	OFFICE EQUIPMENT - CAPITAL	250.00	0.00	0.00	250.00	0.00
Total Dept 020 - ANIMAL CONTROL		181,234.50	62,163.67	22,822.14	119,070.83	34.30
Department: 021 CONTINGENT RESERVE						
01-021-5299	CONTINGENT RESERVE	60,000.00	0.00	0.00	60,000.00	0.00
Total Dept 021 - CONTINGENT RESERVE		60,000.00	0.00	0.00	60,000.00	0.00
Department: 022 DEBT SERVICE						
01-022-9009	NECESSARY CASH RESERVE	334,393.76	0.00	0.00	334,393.76	0.00
Total Dept 022 - DEBT SERVICE		334,393.76	0.00	0.00	334,393.76	0.00
Expenditures		10,291,833.59	2,570,229.39	733,214.47	7,721,604.20	24.97
Fund 01 - GENERAL:						
TOTAL REVENUES		7,052,331.93	529,493.15	102,039.69	6,522,838.78	7.51
TOTAL EXPENDITURES		10,291,833.59	2,570,229.39	733,214.47	7,721,604.20	24.97
NET OF REVENUES & EXPENDITURES:		(3,239,501.66)	(2,040,736.24)	(631,174.78)	(1,198,765.42)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 02 DEBT SERVICE FUND						
Account Category: Revenues						
Department: 022 DEBT SERVICE						
02-022-4001	AD VALOREM TAXES	503,998.19	43,038.24	5,304.96	460,959.95	8.54
02-022-4002	INTEREST ON TAXES	1,500.00	289.46	154.99	1,210.54	19.30
02-022-4005	MOTOR VEHICLE TAXES	5,000.00	1,267.08	372.61	3,732.92	25.34
02-022-4008	PRO RATE MOTOR VEHICLE TAX	600.00	55.52	0.00	544.48	9.25
02-022-4101	IN LIEU OF TAXES	10,000.00	0.00	0.00	10,000.00	0.00
02-022-4102	CARLINE TAX	70.00	0.00	0.00	70.00	0.00
02-022-4104	PROPERTY TAX CREDIT	18,000.00	0.00	0.00	18,000.00	0.00
02-022-4105	HOMESTEAD EXEMPTION	7,000.00	0.00	0.00	7,000.00	0.00
02-022-4110	SPECIAL ASSESSMENTS PRIN	394,852.00	0.00	0.00	394,852.00	0.00
02-022-4113	SPECIAL ASSESSMENTS DELINQ INT	500.00	0.00	0.00	500.00	0.00
02-022-4114	SPECIAL ASSESSMENTS INT	225,500.00	0.00	0.00	225,500.00	0.00
02-022-4504	INTEREST	3,000.00	735.32	0.00	2,264.68	24.51
02-022-4508	MISC REIMBURSEMENT	100.00	0.00	0.00	100.00	0.00
02-022-4512	SALE OF LAND	100.00	0.00	0.00	100.00	0.00
02-022-4604	BOND PROCEEDS	12,230,000.00	0.00	0.00	12,230,000.00	0.00
02-022-4792	TRANS FROM SALE TAX PS SAFE BD	300,000.00	0.00	0.00	300,000.00	0.00
Total Dept 022 - DEBT SERVICE		13,700,220.19	45,385.62	5,832.56	13,654,834.57	0.33
Revenues		13,700,220.19	45,385.62	5,832.56	13,654,834.57	0.33
Account Category: Expenditures						
Department: 022 DEBT SERVICE						
02-022-5227	SOFTWARE MAINTENANCE	7,000.00	580.61	150.00	6,419.39	8.29
02-022-5258	OTHER OPERATING EXPENSE	100.00	0.00	0.00	100.00	0.00
02-022-5262	COUNTY TREASURER COMMISSIONS	3,000.00	433.28	54.60	2,566.72	14.44
02-022-5290	ISSUANCE FEE	100.00	0.00	0.00	100.00	0.00
02-022-6301	TRANS TO WATER	1,100,000.00	0.00	0.00	1,100,000.00	0.00
02-022-6302	TRANS TO SEWER	1,500,000.00	0.00	0.00	1,500,000.00	0.00
02-022-6303	TRANS TO STREET	9,630,000.00	0.00	0.00	9,630,000.00	0.00
02-022-7302	BOND PAYMENT PRINCIPAL	750,000.00	140,000.00	75,000.00	610,000.00	18.67
02-022-7303	BOND PAYMENT INTEREST	350,054.09	14,736.25	4,055.00	335,317.84	4.21
02-022-7304	BOND ISSUE FEE	20,000.00	0.00	0.00	20,000.00	0.00
02-022-9009	NECESSARY CASH RESERVE	1,932,422.88	0.00	0.00	1,932,422.88	0.00
Total Dept 022 - DEBT SERVICE		15,292,676.97	155,750.14	79,259.60	15,136,926.83	1.02
Expenditures		15,292,676.97	155,750.14	79,259.60	15,136,926.83	1.02
Fund 02 - DEBT SERVICE FUND:						
TOTAL REVENUES		13,700,220.19	45,385.62	5,832.56	13,654,834.57	0.33
TOTAL EXPENDITURES		15,292,676.97	155,750.14	79,259.60	15,136,926.83	1.02
NET OF REVENUES & EXPENDITURES:		(1,592,456.78)	(110,364.52)	(73,427.04)	(1,482,092.26)	

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 04 STREET FUND						
Account Category: Revenues						
Department: 024 STREET						
04-024-4001	AD VALOREM TAXES	257,297.40	37,501.60	6,445.90	219,795.80	14.58
04-024-4002	INTEREST ON TAXES	2,500.00	299.59	188.29	2,200.41	11.98
04-024-4005	MOTOR VEHICLE TAXES	23,000.00	5,701.85	1,676.73	17,298.15	24.79
04-024-4008	PRO RATE MOTOR VEHICLE TAX	500.00	45.70	0.00	454.30	9.14
04-024-4101	IN LIEU OF TAXES	9,000.00	0.00	0.00	9,000.00	0.00
04-024-4102	CARLINE TAX	100.00	0.00	0.00	100.00	0.00
04-024-4104	PROPERTY TAX CREDIT	20,000.00	0.00	0.00	20,000.00	0.00
04-024-4105	HOMESTEAD EXEMPTION	6,000.00	0.00	0.00	6,000.00	0.00
04-024-4219	FEDERAL TAP GRANT	1,347,556.00	0.00	0.00	1,347,556.00	0.00
04-024-4256	MISC STATE GRANTS	1,000.00	0.00	0.00	1,000.00	0.00
04-024-4257	HIGHWAY ALLOCATIONS	1,092,881.00	186,924.24	93,048.98	905,956.76	17.10
04-024-4258	INCENTIVE PAYMENT	6,000.00	0.00	0.00	6,000.00	0.00
04-024-4259	STATE MAINTENANCE AGREEMENT	39,100.00	43,401.40	43,401.40	(4,301.40)	111.00
04-024-4260	MOTOR VEHICLE FEE	78,000.00	19,029.33	0.00	58,970.67	24.40
04-024-4263	STATE HWY BUY BACK FUNDS	190,000.00	0.00	0.00	190,000.00	0.00
04-024-4504	INTEREST	5,000.00	1,677.31	0.00	3,322.69	33.55
04-024-4508	MISC REIMBURSEMENT	100.00	0.00	0.00	100.00	0.00
04-024-4520	MISC REVENUE	100.00	150.00	0.00	(50.00)	150.00
04-024-4523	INSURANCE PROCEEDS	100.00	0.00	0.00	100.00	0.00
04-024-4536	SALE OF ROCK/SAND/GRAVEL	100.00	0.00	0.00	100.00	0.00
04-024-4601	WARRANT INCOME	5,100,000.00	0.00	0.00	5,100,000.00	0.00
04-024-4604	BOND PROCEEDS	5,000,000.00	0.00	0.00	5,000,000.00	0.00
04-024-4785	TRANS FROM HOTEL TAX	40,000.00	0.00	0.00	40,000.00	0.00
04-024-4786	TRANS FROM DEBT SERVICE	9,000,000.00	0.00	0.00	9,000,000.00	0.00
Total Dept 024 - STREET		22,218,334.40	294,731.02	144,761.30	21,923,603.38	1.33
Revenues		22,218,334.40	294,731.02	144,761.30	21,923,603.38	1.33
Account Category: Expenditures						
Department: 024 STREET						
04-024-5001	SALARIES	654,000.00	178,035.93	51,185.46	475,964.07	27.22
04-024-5002	FICA - CITY SHARE	50,031.00	13,188.05	3,822.77	36,842.95	26.36
04-024-5003	WORKMAN'S COMPENSATION	13,500.00	13,785.04	0.00	(285.04)	102.11
04-024-5004	H.A.L. INSURANCE	150,000.00	31,665.01	10,342.35	118,334.99	21.11
04-024-5005	RETIREMENT - CITY SHARE	53,837.00	10,983.92	3,530.71	42,853.08	20.40
04-024-5006	UNEMPLOYMENT COMP	500.00	0.00	0.00	500.00	0.00
04-024-5007	DISABILITY	4,000.00	505.12	172.10	3,494.88	12.63
04-024-5008	PENSION ADMINISTRATION	600.00	133.00	0.00	467.00	22.17
04-024-5210	LEGAL	9,000.00	203.11	43.88	8,796.89	2.26
04-024-5211	AUDITING	12,500.00	0.00	0.00	12,500.00	0.00
04-024-5212	ENGINEERING/CONSULTANT	150,000.00	7,080.71	4,025.91	142,919.29	4.72
04-024-5212-2025-0007	ENGINEERING/CONSULTANT	0.00	1,268.00	0.00	(1,268.00)	100.00
04-024-5213	PROFESSIONAL SERVICES	2,500.00	5,801.00	1,337.50	(3,301.00)	232.04
04-024-5215	EMPLOYEE APPREC/SCHOOLING	2,500.00	152.00	152.00	2,348.00	6.08
04-024-5216	POSTAGE	200.00	51.30	16.90	148.70	25.65
04-024-5217	PRINTING & PUBLICATION	6,000.00	1,451.58	0.00	4,548.42	24.19
04-024-5222	TRAVEL EXPENSE	4,000.00	883.25	389.51	3,116.75	22.08
04-024-5223	TRAINING EXP/CONF REGISTR	4,000.00	749.90	585.00	3,250.10	18.75
04-024-5224	DUES	900.00	345.82	68.63	554.18	38.42

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 04 STREET FUND						
Account Category: Expenditures						
Department: 024 STREET						
04-024-5227	SOFTWARE MAINTENANCE	10,000.00	10,366.82	4,305.60	(366.82)	103.67
04-024-5228	UTILITIES	27,500.00	3,856.86	2,037.05	23,643.14	14.02
04-024-5229	TELEPHONE	4,100.00	356.88	168.43	3,743.12	8.70
04-024-5230	VEHICLE INSURANCE	24,000.00	29,743.00	0.00	(5,743.00)	123.93
04-024-5231	LIABILITY INSURANCE	4,500.00	4,875.39	0.00	(375.39)	108.34
04-024-5232	BLDG & CONTENT INSURANCE	32,000.00	41,298.02	0.00	(9,298.02)	129.06
04-024-5236	RADIO MAINTENANCE	750.00	1,155.00	0.00	(405.00)	154.00
04-024-5237	OFFICE EQUIPMENT MAINTENANCE	100.00	0.00	0.00	100.00	0.00
04-024-5238	SHOP EQUIPMENT MAINTENANCE	1,000.00	76.15	11.98	923.85	7.62
04-024-5239	MOTORIZED EQUIPMENT MAINT	80,000.00	11,873.06	2,759.71	68,126.94	14.84
04-024-5240	BUILDING MAINTENANCE	55,000.00	24,179.89	444.25	30,820.11	43.96
04-024-5241	TREE/STUMP REMOVAL & PLANTING	75,000.00	1,800.00	0.00	73,200.00	2.40
04-024-5245	MEDICAL	1,000.00	0.00	0.00	1,000.00	0.00
04-024-5249	CAR EXPENSE	2,000.00	0.00	0.00	2,000.00	0.00
04-024-5252	LIGHTING/ST, TRAFFIC, XMAS	240,000.00	87,654.04	16,133.98	152,345.96	36.52
04-024-5258	OTHER OPERATING EXPENSE	500.00	0.00	0.00	500.00	0.00
04-024-5262	COUNTY TREASURER COMMISSIONS	2,300.00	378.02	66.35	1,921.98	16.44
04-024-5266	CONTRACT MOWING	15,000.00	4,772.04	0.00	10,227.96	31.81
04-024-5280	VEHICLE REPAIR STORM	100.00	0.00	0.00	100.00	0.00
04-024-5281	STORM DAMAGE	50,000.00	91,420.00	0.00	(41,420.00)	182.84
04-024-5281-2024-0004	STORM DAMAGE	0.00	60,070.00	60,070.00	(60,070.00)	100.00
04-024-5282	ROOF TOP LIGHTS STORM	20,000.00	0.00	0.00	20,000.00	0.00
04-024-5359	OFFICE EQUIPMENT	500.00	1,693.00	1,693.00	(1,193.00)	338.60
04-024-5360	OFFICE SUPPLIES	1,000.00	137.84	38.50	862.16	13.78
04-024-5361	JANITORIAL SUPPLIES	800.00	78.32	27.42	721.68	9.79
04-024-5362	SHOP SUPPLIES	2,000.00	2,930.61	2,202.77	(930.61)	146.53
04-024-5363	CHEMICALS	25,000.00	80.84	0.00	24,919.16	0.32
04-024-5364	SEED, SOD, ETC	2,500.00	6,632.00	0.00	(4,132.00)	265.28
04-024-5369	SAFETY EQUIPMENT/TRAINING	8,000.00	452.70	125.83	7,547.30	5.66
04-024-5370	GAS/OIL/DIESEL	44,000.00	5,684.09	2,794.05	38,315.91	12.92
04-024-5371	UNIFORMS	10,000.00	2,355.16	903.77	7,644.84	23.55
04-024-5372	BOOKS & MAPS	200.00	464.25	0.00	(264.25)	232.13
04-024-5373	SMALL TOOLS	3,500.00	970.91	33.94	2,529.09	27.74
04-024-5374	SAND/GRAVEL/ROCK	70,000.00	30,250.81	17,643.60	39,749.19	43.22
04-024-5377	ASPHALT/PAINT/CONCRETE	70,000.00	14,304.84	0.00	55,695.16	20.44
04-024-5380	CULVERTS	150,000.00	154,200.00	0.00	(4,200.00)	102.80
04-024-5381	LUMBER	500.00	0.00	0.00	500.00	0.00
04-024-5383	OTHER EXPENSE MATL & SUPP	200.00	0.00	0.00	200.00	0.00
04-024-5384	SIGN/POSTS	20,000.00	2,076.04	0.00	17,923.96	10.38
04-024-5385	STREET TRAFFIC LIGHT REPAIR	50,000.00	2,474.16	0.00	47,525.84	4.95
04-024-5394	HOLIDAY LIGHTING	40,000.00	9,560.00	0.00	30,440.00	23.90
04-024-5397	SNOW REMOVAL EQUIPMENT	15,000.00	7,189.18	7,189.18	7,810.82	47.93
04-024-5399	MOTORIZED EQUIPMENT RENTAL	10,000.00	2,625.00	2,625.00	7,375.00	26.25
04-024-5401	OFFICE EQUIPMENT - CAPITAL	21,500.00	0.00	0.00	21,500.00	0.00
04-024-5402	MOTORIZED EQUIPMENT	10,000.00	19,631.45	0.00	(9,631.45)	196.31
04-024-5403	MOTORIZED EQUIPMENT (LARGE)	6,500.00	0.00	0.00	6,500.00	0.00
04-024-5422	NON MOTORIZED EQUIPMENT	50,000.00	0.00	0.00	50,000.00	0.00
04-024-5501	MOTORIZED EQUIPMENT IMPORVEMENTS	75,000.00	4,386.70	4,386.70	70,613.30	5.85

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 04 STREET FUND						
Account Category: Expenditures						
Department: 024 STREET						
04-024-5502	BUILDING IMPROVEMENT	100,000.00	0.00	0.00	100,000.00	0.00
04-024-5504	PAVING STREET & HIGHWAY	450,000.00	0.00	0.00	450,000.00	0.00
04-024-5510	CONSTRUCTION CONTRACTS	55,000.00	0.00	0.00	55,000.00	0.00
04-024-5511	DISTRICT CONSTRUCTION	11,200,000.00	0.00	0.00	11,200,000.00	0.00
04-024-5511-2025-0007	DISTRICT CONSTRUCTION	0.00	384,762.83	0.00	(384,762.83)	100.00
04-024-5512	CONSTRUCTION	2,000,000.00	5,339.25	0.00	1,994,660.75	0.27
04-024-5521	OTHER IMPROVEMENTS	2,000,000.00	0.00	0.00	2,000,000.00	0.00
04-024-5525	FEMA	100,000.00	0.00	0.00	100,000.00	0.00
04-024-5546	RAILROAD QUIET ZONE	5,000.00	0.00	0.00	5,000.00	0.00
04-024-5549	TRAILS - CALIFORNIA BEND	1,700,000.00	0.00	0.00	1,700,000.00	0.00
04-024-7300	WARRANT PRINCIPAL PAYMENT	5,000,000.00	0.00	0.00	5,000,000.00	0.00
04-024-7301	WARRANT INTEREST PAYMENT	100,000.00	0.00	0.00	100,000.00	0.00
04-024-7316	HWY ALLOC BOND PRINCIPAL	245,000.00	0.00	0.00	245,000.00	0.00
04-024-7317	HWY ALLOC BOND INTEREST	317,000.00	158,500.00	158,500.00	158,500.00	50.00
04-024-7350	LOAN PRINCIPAL SWEEPER	25,000.00	0.00	0.00	25,000.00	0.00
04-024-7351	LOAN INTEREST SWEEPER	3,000.00	0.00	0.00	3,000.00	0.00
04-024-9009	NECESSARY CASH RESERVE	1,081,013.62	0.00	0.00	1,081,013.62	0.00
Total Dept 024 - STREET		26,830,131.62	1,456,937.89	359,833.83	25,373,193.73	5.43
Expenditures		26,830,131.62	1,456,937.89	359,833.83	25,373,193.73	5.43
Fund 04 - STREET FUND:						
TOTAL REVENUES		22,218,334.40	294,731.02	144,761.30	21,923,603.38	1.33
TOTAL EXPENDITURES		26,830,131.62	1,456,937.89	359,833.83	25,373,193.73	5.43
NET OF REVENUES & EXPENDITURES:		(4,611,797.22)	(1,162,206.87)	(215,072.53)	(3,449,590.35)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 05 RESCUE FUND						
Account Category: Revenues						
Department: 025 RESCUE						
05-025-4334	RESCUE SQUAD RECEIPTS	206,000.00	5,578.44	601.80	200,421.56	2.71
05-025-4504	INTEREST	7,000.00	758.52	0.00	6,241.48	10.84
Total Dept 025 - RESCUE		213,000.00	6,336.96	601.80	206,663.04	2.98
Revenues		213,000.00	6,336.96	601.80	206,663.04	2.98
Account Category: Expenditures						
Department: 025 RESCUE						
05-025-5012	RECRUITMENT & RETENTION FUND	75,000.00	45,000.00	0.00	30,000.00	60.00
05-025-5209	BANK FEES	50.00	0.00	0.00	50.00	0.00
05-025-5216	POSTAGE	100.00	8.14	0.00	91.86	8.14
05-025-5222	TRAVEL EXPENSE	1,000.00	0.00	0.00	1,000.00	0.00
05-025-5223	TRAINING EXP/CONF REGISTR	5,000.00	17,073.48	0.00	(12,073.48)	341.47
05-025-5224	DUES	1,000.00	0.00	0.00	1,000.00	0.00
05-025-5229	TELEPHONE	100.00	0.00	0.00	100.00	0.00
05-025-5239	MOTORIZED EQUIPMENT MAINT	20,000.00	0.00	0.00	20,000.00	0.00
05-025-5245	MEDICAL	1,000.00	0.00	0.00	1,000.00	0.00
05-025-5251	LICENSE/SUPPORT	300.00	0.00	0.00	300.00	0.00
05-025-5258	OTHER OPERATING EXPENSE	5,000.00	0.00	0.00	5,000.00	0.00
05-025-5273	CONTRACT BILLING	50,000.00	1,246.57	222.31	48,753.43	2.49
05-025-5274	REFUNDS	2,000.00	0.00	0.00	2,000.00	0.00
05-025-5360	OFFICE SUPPLIES	500.00	0.00	0.00	500.00	0.00
05-025-5365	RESCUE SQUAD SUPPLIES	30,000.00	10,613.80	810.87	19,386.20	35.38
05-025-5395	NON-CAPITAL EQUIPMENT	0.00	914.40	914.40	(914.40)	100.00
05-025-8102	RESERVE FUTURE SQUAD EXP	450,000.00	0.00	0.00	450,000.00	0.00
05-025-9009	NECESSARY CASH RESERVE	26,796.27	0.00	0.00	26,796.27	0.00
Total Dept 025 - RESCUE		667,846.27	74,856.39	1,947.58	592,989.88	11.21
Expenditures		667,846.27	74,856.39	1,947.58	592,989.88	11.21
Fund 05 - RESCUE FUND:						
TOTAL REVENUES		213,000.00	6,336.96	601.80	206,663.04	2.98
TOTAL EXPENDITURES		667,846.27	74,856.39	1,947.58	592,989.88	11.21
NET OF REVENUES & EXPENDITURES:		(454,846.27)	(68,519.43)	(1,345.78)	(386,326.84)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 06 SALES TAX FUND						
Account Category: Revenues						
Department: 026 SALES TAX						
06-026-4003	SALES TAX FROM MOTOR VEHICLES	410,000.00	112,192.94	32,931.32	297,807.06	27.36
06-026-4107	LOCAL TAX (EX MOTOR VEH TAX)	3,600,000.00	997,421.48	296,196.95	2,602,578.52	27.71
06-026-4108	CONSUMER USE TAX	300,000.00	63,620.39	23,808.78	236,379.61	21.21
06-026-4504	INTEREST	3,000.00	587.26	0.00	2,412.74	19.58
Total Dept 026 - SALES TAX		4,313,000.00	1,173,822.07	352,937.05	3,139,177.93	27.22
Revenues		4,313,000.00	1,173,822.07	352,937.05	3,139,177.93	27.22
Account Category: Expenditures						
Department: 026 SALES TAX						
06-026-5204	STATE ADMINISTRATION FEE	120,000.00	34,416.33	10,588.11	85,583.67	28.68
06-026-5206	REFUND 775	120,000.00	26,023.87	0.00	93,976.13	21.69
06-026-6305	TRANS TO DEBT	300,000.00	0.00	0.00	300,000.00	0.00
06-026-6306	TRANS TO GENERAL - OTHER	3,000,000.00	0.00	0.00	3,000,000.00	0.00
06-026-6322	TRANS TO ECONOMIC DEV	350,000.00	0.00	0.00	350,000.00	0.00
06-026-6323	TRANS TO TIF4	50,000.00	0.00	0.00	50,000.00	0.00
06-026-6328	TRANS TO GENERAL - LIBRARY	137,380.00	0.00	0.00	137,380.00	0.00
06-026-9009	NECESSARY CASH RESERVE	1,179,076.95	0.00	0.00	1,179,076.95	0.00
Total Dept 026 - SALES TAX		5,256,456.95	60,440.20	10,588.11	5,196,016.75	1.15
Expenditures		5,256,456.95	60,440.20	10,588.11	5,196,016.75	1.15
Fund 06 - SALES TAX FUND:						
TOTAL REVENUES		4,313,000.00	1,173,822.07	352,937.05	3,139,177.93	27.22
TOTAL EXPENDITURES		5,256,456.95	60,440.20	10,588.11	5,196,016.75	1.15
NET OF REVENUES & EXPENDITURES:		(943,456.95)	1,113,381.87	342,348.94	(2,056,838.82)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 08 INSURANCE / SELF FUNDED FUND						
Account Category: Revenues						
Department: 028 INSURANCE / SELF FUNDED						
08-028-4504	INTEREST	500.00	150.88	0.00	349.12	30.18
08-028-4560	HRA CONTRIBUTION	150,000.00	666.66	0.00	149,333.34	0.44
08-028-4580	DENTAL & VISION INS DEPOSITS	45,000.00	4,883.74	0.00	40,116.26	10.85
08-028-4583	FLEX PLAN REVENUE	6,000.00	0.00	0.00	6,000.00	0.00
08-028-4584	COBRA D & V (BL HOUSING)	3,000.00	550.50	183.50	2,449.50	18.35
Total Dept 028 - INSURANCE / SELF FUNDED		204,500.00	6,251.78	183.50	198,248.22	3.06
Revenues		204,500.00	6,251.78	183.50	198,248.22	3.06
Account Category: Expenditures						
Department: 028 INSURANCE / SELF FUNDED						
08-028-5013	HRA	150,000.00	6,012.23	512.86	143,987.77	4.01
08-028-5014	ADMINISTRATION FEES	2,000.00	0.00	0.00	2,000.00	0.00
08-028-5015	FLEX PLAN EXP	10,000.00	2,099.18	0.00	7,900.82	20.99
08-028-5017	DENTAL INSURANCE	50,000.00	6,624.58	0.00	43,375.42	13.25
08-028-5018	V S P (VISION CARE)	13,000.00	2,225.00	375.00	10,775.00	17.12
08-028-5020	WELLNESS PROGRAM	35,000.00	0.00	0.00	35,000.00	0.00
08-028-9009	NECESSARY CASH RESERVE	253,503.04	0.00	0.00	253,503.04	0.00
Total Dept 028 - INSURANCE / SELF FUNDED		513,503.04	16,960.99	887.86	496,542.05	3.30
Expenditures		513,503.04	16,960.99	887.86	496,542.05	3.30
Fund 08 - INSURANCE / SELF FUNDED FUND:						
TOTAL REVENUES		204,500.00	6,251.78	183.50	198,248.22	3.06
TOTAL EXPENDITURES		513,503.04	16,960.99	887.86	496,542.05	3.30
NET OF REVENUES & EXPENDITURES:		(309,003.04)	(10,709.21)	(704.36)	(298,293.83)	

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 10 WASTEWATER FUND						
Account Category: Revenues						
Department: 100 WASTEWATER						
10-100-4010	USER FEES	1,386,000.00	207,239.92	15.41	1,178,760.08	14.95
10-100-4504	INTEREST	3,000.00	38.20	0.00	2,961.80	1.27
10-100-4539	REIMBURSED EXPENSE	500.00	0.00	0.00	500.00	0.00
10-100-4601	WARRANT INCOME	1,800,000.00	0.00	0.00	1,800,000.00	0.00
10-100-4604	BOND PROCEEDS	1,600,000.00	0.00	0.00	1,600,000.00	0.00
10-100-4786	TRANS FROM DEBT SERVICE	1,500,000.00	0.00	0.00	1,500,000.00	0.00
Total Dept 100 - WASTEWATER		6,289,500.00	207,278.12	15.41	6,082,221.88	3.30
Revenues		6,289,500.00	207,278.12	15.41	6,082,221.88	3.30
Account Category: Expenditures						
Department: 100 WASTEWATER						
10-100-5001	SALARIES	638,000.00	153,655.06	49,375.51	484,344.94	24.08
10-100-5002	FICA - CITY SHARE	48,807.00	11,190.14	3,619.86	37,616.86	22.93
10-100-5003	WORKMAN'S COMPENSATION	1,500.00	1,476.10	0.00	23.90	98.41
10-100-5004	H.A.L. INSURANCE	168,500.00	27,558.43	9,356.92	140,941.57	16.36
10-100-5005	RETIREMENT - CITY SHARE	51,000.00	9,827.77	3,105.13	41,172.23	19.27
10-100-5006	UNEMPLOYMENT COMP	500.00	0.00	0.00	500.00	0.00
10-100-5007	DISABILITY	2,500.00	408.72	147.45	2,091.28	16.35
10-100-5008	PENSION ADMINISTRATION	200.00	33.00	0.00	167.00	16.50
10-100-5209	BANK FEES	300.00	19.90	0.00	280.10	6.63
10-100-5210	LEGAL	4,000.00	148.50	43.87	3,851.50	3.71
10-100-5211	AUDITING	16,000.00	0.00	0.00	16,000.00	0.00
10-100-5212	ENGINEERING/CONSULTANT	60,000.00	74,471.35	26,361.75	(14,471.35)	124.12
10-100-5213	PROFESSIONAL SERVICES	10,000.00	30,958.30	767.00	(20,958.30)	309.58
10-100-5215	EMPLOYEE APPREC/SCHOOLING	1,000.00	388.00	388.00	612.00	38.80
10-100-5216	POSTAGE	4,000.00	2,375.27	750.00	1,624.73	59.38
10-100-5217	PRINTING & PUBLICATION	600.00	121.88	0.00	478.12	20.31
10-100-5222	TRAVEL EXPENSE	5,000.00	1,748.84	499.51	3,251.16	34.98
10-100-5223	TRAINING EXP/CONF REGISTR	9,000.00	689.10	333.00	8,310.90	7.66
10-100-5224	DUES	500.00	345.82	68.63	154.18	69.16
10-100-5227	SOFTWARE MAINTENANCE	20,000.00	8,422.83	5,750.08	11,577.17	42.11
10-100-5228	UTILITIES	75,000.00	17,558.67	6,968.59	57,441.33	23.41
10-100-5229	TELEPHONE	6,000.00	563.03	262.42	5,436.97	9.38
10-100-5230	VEHICLE INSURANCE	2,500.00	2,647.91	0.00	(147.91)	105.92
10-100-5231	LIABILITY INSURANCE	5,000.00	4,875.39	0.00	124.61	97.51
10-100-5232	BLDG & CONTENT INSURANCE	35,000.00	33,932.12	0.00	1,067.88	96.95
10-100-5236	RADIO MAINTENANCE	0.00	2,000.00	0.00	(2,000.00)	100.00
10-100-5237	OFFICE EQUIPMENT MAINTENANCE	500.00	0.00	0.00	500.00	0.00
10-100-5239	MOTORIZED EQUIPMENT MAINT	5,000.00	187.93	0.00	4,812.07	3.76
10-100-5240	BUILDING MAINTENANCE	20,000.00	17,890.97	1,655.81	2,109.03	89.45
10-100-5245	MEDICAL	600.00	75.00	0.00	525.00	12.50
10-100-5247	MAJOR MAINTENANCE	50,000.00	2,438.88	0.00	47,561.12	4.88
10-100-5248	MAINTENANCE AGREEMENTS	500.00	0.00	0.00	500.00	0.00
10-100-5249	CAR EXPENSE	500.00	0.00	0.00	500.00	0.00
10-100-5266	CONTRACT MOWING	2,500.00	170.38	0.00	2,329.62	6.82
10-100-5280	VEHICLE REPAIR STORM	1,000.00	0.00	0.00	1,000.00	0.00
10-100-5281	STORM DAMAGE	10,000.00	0.00	0.00	10,000.00	0.00
10-100-5359	OFFICE EQUIPMENT	7,000.00	1,693.00	1,693.00	5,307.00	24.19

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 10 WASTEWATER FUND						
Account Category: Expenditures						
Department: 100 WASTEWATER						
10-100-5360	OFFICE SUPPLIES	3,000.00	1,404.44	1,404.44	1,595.56	46.81
10-100-5361	JANITORIAL SUPPLIES	500.00	80.09	0.00	419.91	16.02
10-100-5362	SHOP SUPPLIES	1,000.00	267.25	267.25	732.75	26.73
10-100-5363	CHEMICALS	100,000.00	28,190.68	7,568.72	71,809.32	28.19
10-100-5369	SAFETY EQUIPMENT/TRAINING	4,000.00	257.03	107.31	3,742.97	6.43
10-100-5370	GAS/OIL/DIESEL	5,000.00	963.54	721.66	4,036.46	19.27
10-100-5371	UNIFORMS	2,500.00	450.52	160.90	2,049.48	18.02
10-100-5372	BOOKS & MAPS	100.00	0.00	0.00	100.00	0.00
10-100-5373	SMALL TOOLS	900.00	67.98	67.98	832.02	7.55
10-100-5374	SAND/GRAVEL/ROCK	500.00	0.00	0.00	500.00	0.00
10-100-5391	SYSTEM MAINTENANCE	90,000.00	58,572.41	5,971.41	31,427.59	65.08
10-100-5398	OFFICE EQUIPMENT RENTAL	1,200.00	204.68	204.68	995.32	17.06
10-100-5401	OFFICE EQUIPMENT - CAPITAL	2,000.00	843.29	843.29	1,156.71	42.16
10-100-5402	MOTORIZED EQUIPMENT	160,000.00	21,182.33	0.00	138,817.67	13.24
10-100-5410	AED	100.00	0.00	0.00	100.00	0.00
10-100-5501	MOTORIZED EQUIPMENT IMPORVEMENTS	50,000.00	0.00	0.00	50,000.00	0.00
10-100-5510	CONSTRUCTION CONTRACTS	1,500,000.00	0.00	0.00	1,500,000.00	0.00
10-100-5511	DISTRICT CONSTRUCTION	1,502,200.00	0.00	0.00	1,502,200.00	0.00
10-100-5527	NON-MOTORIZED EQUIPMENT	150,000.00	0.00	0.00	150,000.00	0.00
10-100-7300	WARRANT PRINCIPAL PAYMENT	1,500,000.00	0.00	0.00	1,500,000.00	0.00
10-100-7301	WARRANT INTEREST PAYMENT	150,000.00	0.00	0.00	150,000.00	0.00
10-100-7302	BOND PAYMENT PRINCIPAL	115,000.00	115,000.00	0.00	0.00	100.00
10-100-7303	BOND PAYMENT INTEREST	27,692.50	14,651.25	0.00	13,041.25	52.91
10-100-7320	2012 SE SRF #C317638 PRINCIPAL	47,215.91	23,484.66	0.00	23,731.25	49.74
10-100-7321	2012 SE SRF #C317638 INTEREST	7,725.91	3,986.25	0.00	3,739.66	51.60
10-100-7322	2012 SE SRF #C317638 ADMIN FEE	3,679.00	1,898.21	0.00	1,780.79	51.60
10-100-8108	BOND RESERVE 2015	149,758.00	0.00	0.00	149,758.00	0.00
10-100-9009	NECESSARY CASH RESERVE	231,212.16	0.00	0.00	231,212.16	0.00
Total Dept 100 - WASTEWATER		7,067,790.48	679,376.90	128,464.17	6,388,413.58	9.61
Expenditures		7,067,790.48	679,376.90	128,464.17	6,388,413.58	9.61
Fund 10 - WASTEWATER FUND:						
TOTAL REVENUES		6,289,500.00	207,278.12	15.41	6,082,221.88	3.30
TOTAL EXPENDITURES		7,067,790.48	679,376.90	128,464.17	6,388,413.58	9.61
NET OF REVENUES & EXPENDITURES:		(778,290.48)	(472,098.78)	(128,448.76)	(306,191.70)	

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 11 WATER FUND						
Account Category: Revenues						
Department: 110 WATER						
11-110-4010	USER FEES	13,500,000.00	2,003,259.37	(39.22)	11,496,740.63	14.84
11-110-4030	MERCHANDISE SALES	16,750.00	3,017.00	195.00	13,733.00	18.01
11-110-4040	FORFEITED DISCOUNTS	15,000.00	1,010.11	0.00	13,989.89	6.73
11-110-4045	OTHER OPERATING	2,000.00	411.00	111.00	1,589.00	20.55
11-110-4226	FEMA - FEDERAL	880,000.00	0.00	0.00	880,000.00	0.00
11-110-4504	INTEREST	6,000.00	574.27	0.00	5,425.73	9.57
11-110-4508	MISC REIMBURSEMENT	0.00	70,000.00	70,000.00	(70,000.00)	100.00
11-110-4520	MISC REVENUE	2,000.00	0.00	0.00	2,000.00	0.00
11-110-4533	REIMBURSEMENT NRD	10,000.00	0.00	0.00	10,000.00	0.00
11-110-4546	NSF CHECK CHARGE	500.00	100.00	20.00	400.00	20.00
11-110-4547	DEPT OF NATURAL RESOURCES	1,445.00	0.00	0.00	1,445.00	0.00
11-110-4604	BOND PROCEEDS	9,100,000.00	0.00	0.00	9,100,000.00	0.00
11-110-4606	SRF STATE LOAN PROCEEDS	1,400,000.00	0.00	0.00	1,400,000.00	0.00
11-110-4607	SRF FEDERAL LOAN PROCEEDS	500,000.00	3,325,418.00	0.00	(2,825,418.00)	665.08
11-110-4608	2022 SRF FEDERAL LOAN PROCEEDS	400,000.00	0.00	0.00	400,000.00	0.00
11-110-4786	TRANS FROM DEBT SERVICE	1,100,000.00	0.00	0.00	1,100,000.00	0.00
Total Dept 110 - WATER		26,933,695.00	5,403,789.75	70,286.78	21,529,905.25	20.06
Revenues		26,933,695.00	5,403,789.75	70,286.78	21,529,905.25	20.06
Account Category: Expenditures						
Department: 110 WATER						
11-110-5001	SALARIES	1,992,000.00	451,861.45	130,087.16	1,540,138.55	22.68
11-110-5002	FICA - CITY SHARE	152,388.00	33,769.51	9,824.86	118,618.49	22.16
11-110-5003	WORKMAN'S COMPENSATION	30,000.00	28,597.42	0.00	1,402.58	95.32
11-110-5004	H.A.L. INSURANCE	396,000.00	78,169.65	26,363.16	317,830.35	19.74
11-110-5005	RETIREMENT - CITY SHARE	159,000.00	26,513.32	7,922.82	132,486.68	16.68
11-110-5006	UNEMPLOYMENT COMP	100.00	0.00	0.00	100.00	0.00
11-110-5007	DISABILITY	8,000.00	1,314.53	481.58	6,685.47	16.43
11-110-5008	PENSION ADMINISTRATION	1,000.00	221.25	0.00	778.75	22.13
11-110-5209	BANK FEES	20,000.00	1,920.89	90.00	18,079.11	9.60
11-110-5210	LEGAL	200,000.00	4,743.88	2,072.95	195,256.12	2.37
11-110-5211	AUDITING	18,000.00	0.00	0.00	18,000.00	0.00
11-110-5212	ENGINEERING/CONSULTANT	75,000.00	12,661.68	4,414.68	62,338.32	16.88
11-110-5213	PROFESSIONAL SERVICES	325,000.00	23,465.39	2,601.20	301,534.61	7.22
11-110-5213-2025-0001	PROFESSIONAL SERVICES	0.00	1,616.12	1,616.12	(1,616.12)	100.00
11-110-5213-2025-0002	PROFESSIONAL SERVICES	0.00	691.40	0.00	(691.40)	100.00
11-110-5215	EMPLOYEE APPREC/SCHOOLING	1,000.00	1,758.50	1,644.00	(758.50)	175.85
11-110-5216	POSTAGE	18,000.00	6,201.92	1,357.21	11,798.08	34.46
11-110-5217	PRINTING & PUBLICATION	8,000.00	1,713.36	0.00	6,286.64	21.42
11-110-5222	TRAVEL EXPENSE	7,500.00	4,003.65	2,256.14	3,496.35	53.38
11-110-5223	TRAINING EXP/CONF REGISTR	12,000.00	3,536.85	1,744.90	8,463.15	29.47
11-110-5224	DUES	8,000.00	564.82	68.59	7,435.18	7.06
11-110-5227	SOFTWARE MAINTENANCE	45,000.00	23,682.34	9,300.37	21,317.66	52.63
11-110-5228	UTILITIES	900,000.00	240,152.47	86,720.41	659,847.53	26.68
11-110-5229	TELEPHONE	34,000.00	825.47	333.58	33,174.53	2.43
11-110-5230	VEHICLE INSURANCE	6,500.00	10,448.60	0.00	(3,948.60)	160.75
11-110-5231	LIABILITY INSURANCE	22,000.00	24,376.95	0.00	(2,376.95)	110.80
11-110-5232	BLDG & CONTENT INSURANCE	230,000.00	289,603.07	0.00	(59,603.07)	125.91

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 11 WATER FUND						
Account Category: Expenditures						
Department: 110 WATER						
11-110-5236	RADIO MAINTENANCE	300.00	4,000.00	0.00	(3,700.00)	1,333.33
11-110-5237	OFFICE EQUIPMENT MAINTENANCE	1,300.00	21.39	0.00	1,278.61	1.65
11-110-5239	MOTORIZED EQUIPMENT MAINT	20,000.00	11,116.55	2,457.60	8,883.45	55.58
11-110-5240	BUILDING MAINTENANCE	285,000.00	101,720.92	19,116.52	183,279.08	35.69
11-110-5245	MEDICAL	1,800.00	986.15	296.00	813.85	54.79
11-110-5246	MAINT-PLANT ELECTRONIC MAINT	75,000.00	14,617.84	9,014.11	60,382.16	19.49
11-110-5247	MAJOR MAINTENANCE	505,000.00	226,734.62	55,228.96	278,265.38	44.90
11-110-5247-2026-0003	MAJOR MAINTENANCE	0.00	870.67	193.34	(870.67)	100.00
11-110-5249	CAR EXPENSE	8,000.00	58.31	0.00	7,941.69	0.73
11-110-5258	OTHER OPERATING EXPENSE	2,000.00	1,051.98	0.00	948.02	52.60
11-110-5266	CONTRACT MOWING	9,000.00	1,364.00	0.00	7,636.00	15.16
11-110-5281	STORM DAMAGE	1,000.00	0.00	0.00	1,000.00	0.00
11-110-5359	OFFICE EQUIPMENT	500.00	3,386.00	3,386.00	(2,886.00)	677.20
11-110-5360	OFFICE SUPPLIES	7,500.00	2,654.37	2,568.99	4,845.63	35.39
11-110-5361	JANITORIAL SUPPLIES	3,000.00	148.32	97.42	2,851.68	4.94
11-110-5362	SHOP SUPPLIES	25,000.00	8,017.88	5,561.14	16,982.12	32.07
11-110-5363	CHEMICALS	2,250,000.00	586,516.28	252,964.93	1,663,483.72	26.07
11-110-5369	SAFETY EQUIPMENT/TRAINING	10,000.00	503.61	124.99	9,496.39	5.04
11-110-5370	GAS/OIL/DIESEL	85,000.00	2,672.62	767.10	82,327.38	3.14
11-110-5371	UNIFORMS	3,000.00	2,592.83	991.84	407.17	86.43
11-110-5372	BOOKS & MAPS	500.00	0.00	0.00	500.00	0.00
11-110-5373	SMALL TOOLS	10,000.00	2,036.24	428.65	7,963.76	20.36
11-110-5391	SYSTEM MAINTENANCE	280,000.00	16,524.74	10,351.32	263,475.26	5.90
11-110-5396	OTHER RENTAL EQUIPMENT	8,000.00	0.00	0.00	8,000.00	0.00
11-110-5398	OFFICE EQUIPMENT RENTAL	5,000.00	204.74	204.74	4,795.26	4.09
11-110-5401	OFFICE EQUIPMENT - CAPITAL	23,000.00	0.00	0.00	23,000.00	0.00
11-110-5402	MOTORIZED EQUIPMENT	50,000.00	30,529.51	5,847.18	19,470.49	61.06
11-110-5409	METERS	80,000.00	50,179.05	21,202.25	29,820.95	62.72
11-110-5410	SPECIALIZED EQUIPMENT	350,000.00	0.00	0.00	350,000.00	0.00
11-110-5415	EQUIPMENT - CAPITAL	250,000.00	0.00	0.00	250,000.00	0.00
11-110-5417	SPECIALIZED EQUIPMENT	200,000.00	0.00	0.00	200,000.00	0.00
11-110-5422	NON MOTORIZED EQUIPMENT	24,000.00	0.00	0.00	24,000.00	0.00
11-110-5501	MOTORIZED EQUIPMENT IMPORVEMENTS	250,000.00	0.00	0.00	250,000.00	0.00
11-110-5503	WATER LINES	0.00	(3,315.54)	0.00	3,315.54	100.00
11-110-5509	PLANT SECURITY CAMERA	30,000.00	0.00	0.00	30,000.00	0.00
11-110-5511	DISTRICT CONSTRUCTION	1,100,000.00	0.00	0.00	1,100,000.00	0.00
11-110-5512	CONSTRUCTION	9,100,000.00	1,044,067.73	0.00	8,055,932.27	11.47
11-110-5512-2023-0007	CONSTRUCTION	0.00	434,841.40	77,668.45	(434,841.40)	100.00
11-110-5513	LIME SOLIDS PROJECT	800,000.00	379.17	0.00	799,620.83	0.05
11-110-5513-2022-0006	LIME SOLIDS PROJECT	0.00	36,738.46	0.00	(36,738.46)	100.00
11-110-5515	MAIN MAINTENANCE	1,000,000.00	0.00	0.00	1,000,000.00	0.00
11-110-5530	EQUIPMENT REPAIR/REPLACEMENT	500,000.00	0.00	0.00	500,000.00	0.00
11-110-5558	WTP EXPANSION	500,000.00	1,652.50	0.00	498,347.50	0.33
11-110-5558-2022-0001	WTP EXPANSION	0.00	1,132,294.66	591,900.86	(1,132,294.66)	100.00
11-110-7302	BOND PAYMENT PRINCIPAL	1,125,000.00	1,036,662.50	1,036,662.50	88,337.50	92.15
11-110-7303	BOND PAYMENT INTEREST	473,901.25	183,661.25	183,661.25	290,240.00	38.76
11-110-7304	BOND ISSUE FEE	20,000.00	0.00	0.00	20,000.00	0.00
11-110-7323	2010 WA SRF #D311530 PRINCIPAL	87,483.50	43,497.08	0.00	43,986.42	49.72

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 11 WATER FUND						
Account Category: Expenditures						
Department: 110 WATER						
11-110-7324	2010 WA SRF #D311530 INTEREST	42,652.92	21,571.13	0.00	21,081.79	50.57
11-110-7325	2010 WA SRF #D311530 ADMIN FEE	18,956.86	9,587.17	0.00	9,369.69	50.57
11-110-7326	2021 WA SRF #D311647 PRINCIPAL	437,926.18	218,963.09	0.00	218,963.09	50.00
11-110-7330	2023 BANS INTEREST	610,000.00	305,000.00	0.00	305,000.00	50.00
11-110-7332	2023A SRF #D311682 PRINCIPAL	547,785.22	0.00	0.00	547,785.22	0.00
11-110-7333	2023A SRF #D311682 INTEREST	177,062.58	93,044.81	0.00	84,017.77	52.55
11-110-7334	2023A SRF #D311682 ADMIN FEE	177,062.58	93,044.81	0.00	84,017.77	52.55
11-110-7335	2023B SRF #D311704 PRINCIPAL	17,728.48	0.00	0.00	17,728.48	0.00
11-110-7336	2023B SRF #D311704 INTEREST	5,730.44	3,254.99	0.00	2,475.45	56.80
11-110-7338	2018 WA SRF #D311619 PRINCIPAL	39,661.54	19,732.11	0.00	19,929.43	49.75
11-110-7339	2018 WA SRF #D311619 INTEREST	24,562.90	12,380.11	0.00	12,182.79	50.40
11-110-7340	2018 WA SRF #D311619 ADMIN FEE	6,140.73	3,095.03	0.00	3,045.70	50.40
11-110-8109	BOND RESERVE 2012	850,000.00	0.00	0.00	850,000.00	0.00
11-110-8110	BOND RESERVE (2010)	648,672.50	0.00	0.00	648,672.50	0.00
11-110-8111	BOND RESERVE (2016)	437,262.88	0.00	0.00	437,262.88	0.00
11-110-8112	BOND RESERVE 2017	200,000.00	0.00	0.00	200,000.00	0.00
11-110-9009	NECESSARY CASH RESERVE	2,255,674.86	0.00	0.00	2,255,674.86	0.00
Total Dept 110 - WATER		30,724,653.42	7,031,075.57	2,569,595.87	23,693,577.85	22.88
Expenditures		30,724,653.42	7,031,075.57	2,569,595.87	23,693,577.85	22.88
Fund 11 - WATER FUND:						
TOTAL REVENUES		26,933,695.00	5,403,789.75	70,286.78	21,529,905.25	20.06
TOTAL EXPENDITURES		30,724,653.42	7,031,075.57	2,569,595.87	23,693,577.85	22.88
NET OF REVENUES & EXPENDITURES:		(3,790,958.42)	(1,627,285.82)	(2,499,309.09)	(2,163,672.60)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 14 HOTEL / MOTEL OCC TAX FUND						
Account Category: Revenues						
Department: 140 HOTEL / MOTEL OCC TAX						
14-140-4111	OCCUPATION TAX	140,000.00	39,730.74	22,512.49	100,269.26	28.38
14-140-4504	INTEREST	500.00	125.63	0.00	374.37	25.13
Total Dept 140 - HOTEL / MOTEL OCC TAX		140,500.00	39,856.37	22,512.49	100,643.63	28.37
Revenues		140,500.00	39,856.37	22,512.49	100,643.63	28.37
Account Category: Expenditures						
Department: 140 HOTEL / MOTEL OCC TAX						
14-140-6303	TRANS TO STREET	40,000.00	0.00	0.00	40,000.00	0.00
14-140-6320	TRANS TO GENERAL	120,000.00	0.00	0.00	120,000.00	0.00
14-140-6701	TOURISM & COMMUNITY BETTERMENT	25,000.00	25,619.80	422.14	(619.80)	102.48
14-140-9009	NECESSARY CASH RESERVE	77,770.98	0.00	0.00	77,770.98	0.00
Total Dept 140 - HOTEL / MOTEL OCC TAX		262,770.98	25,619.80	422.14	237,151.18	9.75
Expenditures		262,770.98	25,619.80	422.14	237,151.18	9.75
Fund 14 - HOTEL / MOTEL OCC TAX FUND:						
TOTAL REVENUES		140,500.00	39,856.37	22,512.49	100,643.63	28.37
TOTAL EXPENDITURES		262,770.98	25,619.80	422.14	237,151.18	9.75
NET OF REVENUES & EXPENDITURES:		(122,270.98)	14,236.57	22,090.35	(136,507.55)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 16 DONATED FUNDS FUND						
Account Category: Revenues						
Department: 160 DONATED FUNDS						
16-160-4504	INTEREST	600.00	62.30	0.00	537.70	10.38
16-160-4680	UNCOMMITTED CASH REVENUE	100.00	0.00	0.00	100.00	0.00
16-160-4681	ANIMAL SHELTER	100.00	0.00	0.00	100.00	0.00
16-160-4682	POLICE REVENUE	1,000.00	0.00	0.00	1,000.00	0.00
16-160-4684	LIBRARY REVENUE	1,000.00	216.75	50.85	783.25	21.68
16-160-4686	PARK REVENUE	100.00	10,975.29	0.00	(10,875.29)	10,975.29
16-160-4687	EMPLOYEE APPRECIATION REVENUE	6,500.00	3,300.00	1,050.00	3,200.00	50.77
16-160-4689	VETERANS TRIBUTE PLAZA REVENUE	1,000.00	0.00	0.00	1,000.00	0.00
16-160-4692	SKATEBOARD PARK REVENUE	100.00	0.00	0.00	100.00	0.00
16-160-4697	FIREWORKS REVENUE	1,000.00	0.00	0.00	1,000.00	0.00
16-160-4698	GENERATIONS PARK REV	0.00	4,749.55	1,749.55	(4,749.55)	100.00
16-160-4699	FIRE DEPARTMENT REVENUE	100.00	0.00	0.00	100.00	0.00
Total Dept 160 - DONATED FUNDS		11,600.00	19,303.89	2,850.40	(7,703.89)	166.41
Revenues		11,600.00	19,303.89	2,850.40	(7,703.89)	166.41
Account Category: Expenditures						
Department: 160 DONATED FUNDS						
16-160-5201	UNCOMMITTED CASH EXP	6,767.72	0.00	0.00	6,767.72	0.00
16-160-5215	ANIMAL CONTROL	7,927.55	0.00	0.00	7,927.55	0.00
16-160-5220	POLICE EXP	44,912.25	0.00	0.00	44,912.25	0.00
16-160-5242	LIBRARY EXP	60,672.48	0.00	0.00	60,672.48	0.00
16-160-5256	PARK EXP	27,834.38	39,669.84	27,974.55	(11,835.46)	142.52
16-160-5267	EMPLOYEE APPREC/SCHOOLING	9,450.60	6,484.56	6,484.56	2,966.04	68.62
16-160-5278	VETERANS TRIBUTE PLAZA EXP	2,015.63	0.00	0.00	2,015.63	0.00
16-160-5279	SKATEBOARD PARK EXP	3,636.51	0.00	0.00	3,636.51	0.00
16-160-5284	K-9 EXP	13,440.05	0.00	0.00	13,440.05	0.00
16-160-5296	FIREWORKS EXP	6,790.16	0.00	0.00	6,790.16	0.00
16-160-5305	FIRE DEPARTMENT EXP	10,950.00	0.00	0.00	10,950.00	0.00
Total Dept 160 - DONATED FUNDS		194,397.33	46,154.40	34,459.11	148,242.93	23.74
Expenditures		194,397.33	46,154.40	34,459.11	148,242.93	23.74
Fund 16 - DONATED FUNDS FUND:						
TOTAL REVENUES		11,600.00	19,303.89	2,850.40	(7,703.89)	166.41
TOTAL EXPENDITURES		194,397.33	46,154.40	34,459.11	148,242.93	23.74
NET OF REVENUES & EXPENDITURES:		(182,797.33)	(26,850.51)	(31,608.71)	(155,946.82)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 20 ECONOMIC DEVELOPMENT FUND						
Account Category: Revenues						
Department: 200 ECONOMIC DEVELOPMENT						
20-200-4504	INTEREST	1,000.00	1,256.13	0.00	(256.13)	125.61
20-200-4609	LOAN REPAYMENT	7,142.00	0.00	0.00	7,142.00	0.00
20-200-4788	TRANS FROM SALES TAX	350,000.00	0.00	0.00	350,000.00	0.00
Total Dept 200 - ECONOMIC DEVELOPMENT		358,142.00	1,256.13	0.00	356,885.87	0.35
Revenues		358,142.00	1,256.13	0.00	356,885.87	0.35
Account Category: Expenditures						
Department: 200 ECONOMIC DEVELOPMENT						
20-200-5222	TRAVEL EXPENSE	5,000.00	0.00	0.00	5,000.00	0.00
20-200-5258	OTHER OPERATING EXPENSE	3,000.00	0.00	0.00	3,000.00	0.00
20-200-6616	GATEWAY CONTRACT	120,000.00	0.00	0.00	120,000.00	0.00
20-200-6617	840 PROJECTS	460,000.00	0.00	0.00	460,000.00	0.00
20-200-6620	RESERVED FOR APPROVED PROJECTS	2,670,000.00	10,000.00	0.00	2,660,000.00	0.37
20-200-9009	NECESSARY CASH RESERVE	102,063.42	0.00	0.00	102,063.42	0.00
Total Dept 200 - ECONOMIC DEVELOPMENT		3,360,063.42	10,000.00	0.00	3,350,063.42	0.30
Expenditures		3,360,063.42	10,000.00	0.00	3,350,063.42	0.30
Fund 20 - ECONOMIC DEVELOPMENT FUND:						
TOTAL REVENUES		358,142.00	1,256.13	0.00	356,885.87	0.35
TOTAL EXPENDITURES		3,360,063.42	10,000.00	0.00	3,350,063.42	0.30
NET OF REVENUES & EXPENDITURES:		(3,001,921.42)	(8,743.87)	0.00	(2,993,177.55)	

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 22 KENO FUND						
Account Category: Revenues						
Department: 220 KENO						
22-220-4011	KENO RECEIPTS	120,000.00	27,952.39	10,881.40	92,047.61	23.29
22-220-4504	INTEREST	100.00	24.12	0.00	75.88	24.12
Total Dept 220 - KENO		120,100.00	27,976.51	10,881.40	92,123.49	23.29
Revenues		120,100.00	27,976.51	10,881.40	92,123.49	23.29
Account Category: Expenditures						
Department: 220 KENO						
22-220-6320	TRANS TO GENERAL	150,000.00	0.00	0.00	150,000.00	0.00
22-220-6701	TOURISM & COMMUNITY BETTERMENT	100,000.00	2,500.00	0.00	97,500.00	2.50
22-220-6702	PAYMENT OF STATE TAX	25,000.00	7,810.00	0.00	17,190.00	31.24
22-220-6703	STATE LICENSE FEE	150.00	0.00	0.00	150.00	0.00
22-220-9009	NECESSARY CASH RESERVE	144,418.91	0.00	0.00	144,418.91	0.00
Total Dept 220 - KENO		419,568.91	10,310.00	0.00	409,258.91	2.46
Expenditures		419,568.91	10,310.00	0.00	409,258.91	2.46
Fund 22 - KENO FUND:						
TOTAL REVENUES		120,100.00	27,976.51	10,881.40	92,123.49	23.29
TOTAL EXPENDITURES		419,568.91	10,310.00	0.00	409,258.91	2.46
NET OF REVENUES & EXPENDITURES:		(299,468.91)	17,666.51	10,881.40	(317,135.42)	

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 24 TIF 3 WOODHOUSE FUND						
Account Category: Revenues						
Department: 240 TIF 3 WOODHOUSE						
24-240-4104	PROPERTY TAX CREDIT	3,000.00	0.00	0.00	3,000.00	0.00
24-240-4115	RECEIPTS COUNTY TREASURER	30,000.00	0.00	0.00	30,000.00	0.00
Total Dept 240 - TIF 3 WOODHOUSE		33,000.00	0.00	0.00	33,000.00	0.00
Revenues		33,000.00	0.00	0.00	33,000.00	0.00
Account Category: Expenditures						
Department: 240 TIF 3 WOODHOUSE						
24-240-5262	COUNTY TREASURER COMMISSIONS	510.00	0.00	0.00	510.00	0.00
24-240-7302	BOND PAYMENT PRINCIPAL	36,880.00	143,801.43	143,801.43	(106,921.43)	389.92
24-240-7303	BOND PAYMENT INTEREST	3,608.00	4,198.57	4,198.57	(590.57)	116.37
24-240-9009	NECESSARY CASH RESERVE	9,373.76	0.00	0.00	9,373.76	0.00
Total Dept 240 - TIF 3 WOODHOUSE		50,371.76	148,000.00	148,000.00	(97,628.24)	293.82
Expenditures		50,371.76	148,000.00	148,000.00	(97,628.24)	293.82
Fund 24 - TIF 3 WOODHOUSE FUND:						
TOTAL REVENUES		33,000.00	0.00	0.00	33,000.00	0.00
TOTAL EXPENDITURES		50,371.76	148,000.00	148,000.00	(97,628.24)	293.82
NET OF REVENUES & EXPENDITURES:		(17,371.76)	(148,000.00)	(148,000.00)	130,628.24	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 25 TIF 4 TRANS HILLS FUND						
Account Category: Revenues						
Department: 250 TIF 4 TRANS HILLS						
25-250-4104	PROPERTY TAX CREDIT	8,000.00	0.00	0.00	8,000.00	0.00
25-250-4105	HOMESTEAD EXEMPTION	6,000.00	0.00	0.00	6,000.00	0.00
25-250-4115	RECEIPTS COUNTY TREASURER	90,000.00	29,848.97	0.00	60,151.03	33.17
25-250-4788	TRANS FROM SALES TAX	50,000.00	0.00	0.00	50,000.00	0.00
Total Dept 250 - TIF 4 TRANS HILLS		154,000.00	29,848.97	0.00	124,151.03	19.38
Revenues		154,000.00	29,848.97	0.00	124,151.03	19.38
Account Category: Expenditures						
Department: 250 TIF 4 TRANS HILLS						
25-250-5262	COUNTY TREASURER COMMISSIONS	400.00	298.49	0.00	101.51	74.62
25-250-7302	BOND PAYMENT PRINCIPAL	121,273.34	59,873.14	59,873.14	61,400.20	49.37
25-250-7303	BOND PAYMENT INTEREST	64,989.96	33,258.51	33,258.51	31,731.45	51.17
25-250-9009	NECESSARY CASH RESERVE	59,974.68	0.00	0.00	59,974.68	0.00
Total Dept 250 - TIF 4 TRANS HILLS		246,637.98	93,430.14	93,131.65	153,207.84	37.88
Expenditures		246,637.98	93,430.14	93,131.65	153,207.84	37.88
Fund 25 - TIF 4 TRANS HILLS FUND:						
TOTAL REVENUES		154,000.00	29,848.97	0.00	124,151.03	19.38
TOTAL EXPENDITURES		246,637.98	93,430.14	93,131.65	153,207.84	37.88
NET OF REVENUES & EXPENDITURES:		(92,637.98)	(63,581.17)	(93,131.65)	(29,056.81)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 26 TIF 5 HOLIDAY INN FUND						
Account Category: Revenues						
Department: 260 TIF 5 HOLIDAY INN						
26-260-4104	PROPERTY TAX CREDIT	2,000.00	0.00	0.00	2,000.00	0.00
26-260-4115	RECEIPTS COUNTY TREASURER	40,000.00	23,595.45	0.00	16,404.55	58.99
Total Dept 260 - TIF 5 HOLIDAY INN		42,000.00	23,595.45	0.00	18,404.55	56.18
Revenues		42,000.00	23,595.45	0.00	18,404.55	56.18
Account Category: Expenditures						
Department: 260 TIF 5 HOLIDAY INN						
26-260-5262	COUNTY TREASURER COMMISSIONS	420.00	235.95	0.00	184.05	56.18
26-260-7302	BOND PAYMENT PRINCIPAL	15,000.00	1,011.72	1,011.72	13,988.28	6.74
26-260-7303	BOND PAYMENT INTEREST	40,000.00	23,988.28	23,988.28	16,011.72	59.97
26-260-9009	NECESSARY CASH RESERVE	10,844.19	0.00	0.00	10,844.19	0.00
Total Dept 260 - TIF 5 HOLIDAY INN		66,264.19	25,235.95	25,000.00	41,028.24	38.08
Expenditures		66,264.19	25,235.95	25,000.00	41,028.24	38.08
Fund 26 - TIF 5 HOLIDAY INN FUND:						
TOTAL REVENUES		42,000.00	23,595.45	0.00	18,404.55	56.18
TOTAL EXPENDITURES		66,264.19	25,235.95	25,000.00	41,028.24	38.08
NET OF REVENUES & EXPENDITURES:		(24,264.19)	(1,640.50)	(25,000.00)	(22,623.69)	

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 28 TIF 6 KJK INVEST WEHRLI FUND						
Account Category: Revenues						
Department: 280 TIF 6 KJK INVEST WEHRLI						
28-280-4104	PROPERTY TAX CREDIT	1,000.00	0.00	0.00	1,000.00	0.00
28-280-4115	RECEIPTS COUNTY TREASURER	8,000.00	4,254.16	0.00	3,745.84	53.18
Total Dept 280 - TIF 6 KJK INVEST WEHRLI		9,000.00	4,254.16	0.00	4,745.84	47.27
Revenues		9,000.00	4,254.16	0.00	4,745.84	47.27
Account Category: Expenditures						
Department: 280 TIF 6 KJK INVEST WEHRLI						
28-280-5262	COUNTY TREASURER COMMISSIONS	50.00	42.54	0.00	7.46	85.08
28-280-7302	BOND PAYMENT PRINCIPAL	10,000.00	0.00	0.00	10,000.00	0.00
28-280-7303	BOND PAYMENT INTEREST	1,000.00	0.00	0.00	1,000.00	0.00
28-280-9009	NECESSARY CASH REVERVE	7,270.12	0.00	0.00	7,270.12	0.00
Total Dept 280 - TIF 6 KJK INVEST WEHRLI		18,320.12	42.54	0.00	18,277.58	0.23
Expenditures		18,320.12	42.54	0.00	18,277.58	0.23
Fund 28 - TIF 6 KJK INVEST WEHRLI FUND:						
TOTAL REVENUES		9,000.00	4,254.16	0.00	4,745.84	47.27
TOTAL EXPENDITURES		18,320.12	42.54	0.00	18,277.58	0.23
NET OF REVENUES & EXPENDITURES:		(9,320.12)	4,211.62	0.00	(13,531.74)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 29 TIF 7 KS COMMERCIAL LLC FUND						
Account Category: Revenues						
Department: 290 TIF 7 KS COMMERCIAL LLC						
29-290-4104	PROPERTY TAX CREDIT	2,500.00	0.00	0.00	2,500.00	0.00
29-290-4105	HOMESTEAD EXEMPTION	100.00	0.00	0.00	100.00	0.00
29-290-4115	RECEIPTS COUNTY TREASURER	14,000.00	14,017.76	0.00	(17.76)	100.13
Total Dept 290 - TIF 7 KS COMMERCIAL LLC		16,600.00	14,017.76	0.00	2,582.24	84.44
Revenues		16,600.00	14,017.76	0.00	2,582.24	84.44
Account Category: Expenditures						
Department: 290 TIF 7 KS COMMERCIAL LLC						
29-290-5262	COUNTY TREASURER COMMISSIONS	200.00	140.18	0.00	59.82	70.09
29-290-7302	BOND PAYMENT PRINCIPAL	25,000.00	0.00	0.00	25,000.00	0.00
29-290-7303	BOND PAYMENT INTEREST	8,000.00	0.00	0.00	8,000.00	0.00
29-290-9009	NECESSARY CASH REVERVE	6,070.03	0.00	0.00	6,070.03	0.00
Total Dept 290 - TIF 7 KS COMMERCIAL LLC		39,270.03	140.18	0.00	39,129.85	0.36
Expenditures		39,270.03	140.18	0.00	39,129.85	0.36
Fund 29 - TIF 7 KS COMMERCIAL LLC FUND:						
TOTAL REVENUES		16,600.00	14,017.76	0.00	2,582.24	84.44
TOTAL EXPENDITURES		39,270.03	140.18	0.00	39,129.85	0.36
NET OF REVENUES & EXPENDITURES:		(22,670.03)	13,877.58	0.00	(36,547.61)	

REVENUE AND EXPENDITURE REPORT FOR CITY OF BLAIR

Balance As Of 12/31/2025

*NOTE: Available Balance / Pct Budget does not reflect amounts encumbered.

GL Number	Description	25-26 Amended Budget	YTD Balance 12/31/2025 Normal (Abnormal)	Activity For 12/31/2025 Increase (Decrease)	Available Balance 12/31/2025 Normal (Abnormal)	% Bdgt Used
Fund: 32 TIF 8 JENNING PROPERTY FUND						
Account Category: Revenues						
Department: 320 TIF 8 JENNING PROPERTY						
32-320-4115	RECEIPTS COUNTY TREASURER	100.00	0.00	0.00	100.00	0.00
Total Dept 320 - TIF 8 JENNING PROPERTY		100.00	0.00	0.00	100.00	0.00
Revenues		100.00	0.00	0.00	100.00	0.00
Account Category: Expenditures						
Department: 320 TIF 8 JENNING PROPERTY						
32-320-7302	BOND PAYMENT PRINCIPAL	0.00	2,775.00	0.00	(2,775.00)	100.00
32-320-7303	BOND PAYMENT INTEREST	0.00	3,125.00	0.00	(3,125.00)	100.00
32-320-9009	NECESSARY CASH RESERVE	3,100.00	0.00	0.00	3,100.00	0.00
Total Dept 320 - TIF 8 JENNING PROPERTY		3,100.00	5,900.00	0.00	(2,800.00)	190.32
Expenditures		3,100.00	5,900.00	0.00	(2,800.00)	190.32
Fund 32 - TIF 8 JENNING PROPERTY FUND:						
TOTAL REVENUES		100.00	0.00	0.00	100.00	0.00
TOTAL EXPENDITURES		3,100.00	5,900.00	0.00	(2,800.00)	190.32
NET OF REVENUES & EXPENDITURES:		(3,000.00)	(5,900.00)	0.00	2,900.00	
Report Totals:						
TOTAL REVENUES - ALL FUNDS		81,809,623.52	7,827,197.71	712,902.38	73,982,425.81	9.57
TOTAL EXPENDITURES - ALL FUNDS		101,305,657.06	12,410,460.48	4,184,804.39	88,895,196.58	12.25
NET OF REVENUES & EXPENDITURES:		(19,496,033.54)	(4,583,262.77)	(3,471,902.01)	(14,912,770.77)	

CASH SUMMARY REPORT FOR CITY OF BLAIR
From 12/01/2025 to 12/31/2025
BANKS: BK#1, BK#2, BK#4, BK#5, BK#8, BK#11

Bank	Description	Beginning Balance 12/01/2025	Received	Disbursed	Ending Balance 12/31/2025
BK#1 WCB-CHECKING					
01	GENERAL	408,693.84	116,814.16	727,926.29	(202,418.29)
02	DEBT SERVICE FUND	1,854,148.72	5,777.96	79,205.00	1,780,721.68
04	STREET FUND	3,657,840.73	101,293.55	360,533.10	3,398,601.18
06	SALES TAX FUND	1,898,361.42	342,348.94	0.00	2,240,710.36
08	INSURANCE / SELF FUNDED FUND	387,368.76	367.00	887.86	386,847.90
10	WASTEWATER FUND	(42,475.32)	80,321.57	127,798.20	(89,951.95)
11	WATER FUND	(1,778,147.39)	1,052,681.32	2,586,362.28	(3,311,828.35)
14	HOTEL / MOTEL OCC TAX FUND	311,709.79	22,512.49	422.14	333,800.14
16	DONATED FUNDS FUND	166,572.35	2,850.40	34,459.11	134,963.64
20	ECONOMIC DEVELOPMENT FUND	3,224,484.65	0.00	0.00	3,224,484.65
24	TIF 3 WOODHOUSE FUND	143,754.09	0.00	148,000.00	(4,245.91)
25	TIF 4 TRANS HILLS FUND	151,763.70	0.00	93,131.65	58,632.05
26	TIF 5 HOLIDAY INN FUND	29,927.10	0.00	25,000.00	4,927.10
28	TIF 6 KJK INVEST WEHRLI FUND	13,531.74	0.00	0.00	13,531.74
29	TIF 7 KS COMMERCIAL LLC FUND	36,547.61	0.00	0.00	36,547.61
32	TIF 8 JENNING PROPERTY FUND	3,094.56	0.00	0.00	3,094.56
33	TIF 9 LION TRAIL TOWNHOMES FUND	(3,630.00)	0.00	0.00	(3,630.00)
WCB-CHECKING		10,463,546.35	1,724,967.39	4,183,725.63	8,004,788.11
BK#11 WCB - FSA					
08	INSURANCE / SELF FUNDED FUND	5,700.67	0.00	0.00	5,700.67
BK#2 WCB ACH BANK					
01	GENERAL	20,529.14	0.00	0.00	20,529.14
BK#4 WCB-MM					
11	WATER FUND	250,043.48	0.00	0.00	250,043.48
BK#5 WCB-KENO					
22	KENO FUND	285,675.66	10,881.40	0.00	296,557.06
BK#8 RVI					
05	RESCUE FUND	413,341.00	601.80	1,947.58	411,995.22
	REPORT TOTALS:	**11,438,836.30**	**1,736,450.59**	**4,185,673.21**	**8,989,613.68**

CLAIMS REPORT

12/01/2025 - 12/31/2025

VENDOR	REFERENCE	AMOUNT	CHECK #	CHECK DATE
ABE'S TRASH SERVICE INC		530.00	56513	12/19/2025
ABE'S TRASH SERVICE INC		2,642.06	56593	12/31/2025
ACCESS TECHNOLITIES INC		9,258.95	56594	12/31/2025
ACCO		3,053.57	56514	12/19/2025
ACCO		3,676.70	56595	12/31/2025
AFLAC		1,090.92	56596	12/31/2025
AIR PRODUCTS & CHEMICALS		9,769.10	56515	12/19/2025
AIR PRODUCTS & CHEMICALS		14,952.61	56597	12/31/2025
AMAZON SALES INC		5,006.09	56598	12/31/2025
AMERICAN PUBLIC WORKS ASSOC		252.00	56516	12/19/2025
AMERICAN UNDERGROUND SUPPLY		6,616.28	56600	12/31/2025
AMERISOURCE HR CONSULTING GRP		2,250.00	10(E)	12/19/2025
ASSETHR		251,452.21	EFT	12/11/2025
ASSETHR		242,255.41	EFT	12/24/2025
AUTOMATIC SYSTEMS CO		8,447.97	56517	12/19/2025
AUTOMATIC SYSTEMS CO		4,387.76	56601	12/31/2025
BAIRD HOLM LLP		2,808.00	56518	12/19/2025
BENCHMARK GOVERNMENT SOLUTIONS, LLC		357.00	56519	12/19/2025
BENCHMARK GOVERNMENT SOLUTIONS, LLC		468.70	56602	12/31/2025
BIEKER, KIMBERLY		360.00	56604	12/31/2025
BI-STATE MOTOR PARTS		1,164.05	56603	12/31/2025
BLACK HILLS ENERGY		2,136.43	11(E)	12/19/2025
BLACK HILLS ENERGY		496.00	17(E)	12/31/2025
BLAIR ACE HARDWARE		912.56	56605	12/31/2025
BLAIR MARINA		5,408.56	56412	12/08/2025
BLUE CROSS & BLUE SHIELD OF NE		107,717.18	56607	12/31/2025
BOBCAT OF OMAHA		84,444.00	56521	12/19/2025
BOBCAT OF OMAHA		1,656.74	56608	12/31/2025
BOMGAARS SUPPLY INC		2,341.94	56522	12/19/2025
BOMGAARS SUPPLY INC		21.39	56609	12/31/2025
BS&A SOFTWARE LLC		90.00	56525	12/19/2025
BS&A SOFTWARE LLC		27,645.00	56610	12/31/2025
CALVIN POULSEN		3,055.00	56611	12/31/2025
CARGORAXX LLC		4,820.20	56612	12/31/2025
CARQUEST AUTO PARTS		117.61	56613	12/31/2025
CDW GOVERNMENT INC		1,486.60	56526	12/19/2025
CDW GOVERNMENT INC		2,939.44	56614	12/31/2025
CEDE & CO		1,457,878.75	12(E)	12/19/2025
CENTAL STATES INDUSTRIAL SUPPLY INC		1,830.14	56615	12/31/2025
CENTER POINT LARGE PRINT		1,754.64	56527	12/19/2025
CHRIS OLSON		2,100.00	56616	12/31/2025

CLAIMS REPORT

12/01/2025 - 12/31/2025

VENDOR	REFERENCE	AMOUNT	CHECK #	CHECK DATE
CINTAS CORPORATION		3,304.09	56617	12/31/2025
CITY OF BLAIR		218.26	13(E)	12/19/2025
CORE & MAIN LP		16,503.25	56619	12/31/2025
CORNERSTONE STAFFING INC		2,465.10	56528	12/19/2025
CORNERSTONE STAFFING INC		4,128.30	56620	12/31/2025
COUNTRY INN & SUITES BY RADISSON		791.44	56529	12/19/2025
COUNTRY TIRE INC		1,416.86	56621	12/31/2025
CUMMINS INC		2,665.80	56622	12/31/2025
DANE CHAPMAN		600.00	56623	12/31/2025
DANKO EMERGENCY EQUIPMENT CO		2,753.96	56624	12/31/2025
DATASHIELD		87.53	56530	12/19/2025
DEBORAH WOOD		400.00	56625	12/31/2025
DEMCO INC		883.07	56531	12/19/2025
DICK'S ELECTRIC CO		14,661.22	56626	12/31/2025
DOODAD INC		735.00	56628	12/31/2025
EAKES OFFICE PLUS		139.68	56532	12/19/2025
EAKES OFFICE PLUS		6,380.08	56629	12/31/2025
EBSCO SUBSCRIPTION SERVICE		999.00	56533	12/19/2025
ED M FELD EQ CO.		1,158.00	56631	12/31/2025
EJS SUPPLY		3,691.18	56632	12/31/2025
ELECTRONIC CONTRACTING CO		585.00	56633	12/31/2025
EMS MANAGEMENT & CONSULTING		222.31	2265	12/31/2025
ERIKSEN CONSTRUCTION CO INC		5,336.53	56534	12/19/2025
ERIKSEN CONSTRUCTION CO INC		591,100.86	56634	12/31/2025
ETHAN ROE		351.60	56635	12/31/2025
FAIRFIELD BY MARRIOTT FIS GRAND ISLAND		660.00	56535	12/19/2025
FAIRWAY OIL CO		238.50	56636	12/31/2025
FASTENAL COMPANY		26.17	56536	12/19/2025
FASTENAL COMPANY		26.17	56637	12/31/2025
FBI-LEEDA		795.00	56638	12/31/2025
FIRST NATIONAL BANK		30.24	18(E)	12/31/2025
FIRST NATIONAL BANK		756.56	19(E)	12/31/2025
FIRST NATIONAL BANK		1,022.79	20(E)	12/31/2025
FIRST NATIONAL BANK		2,798.38	21(E)	12/31/2025
FIRST NATIONAL BANK		1,687.81	22(E)	12/31/2025
FIRST NATIONAL BANK		100.00	23(E)	12/31/2025
FIRST NATIONAL BANK		1,597.60	24(E)	12/31/2025
FREMONT ELECTRIC INC		4,527.53	56639	12/31/2025
FRIENDS OF THE JEANETTE HUNT		20,440.00	56640	12/31/2025
GIS WORKSHOP LLC		1,500.00	56641	12/31/2025
GOVERNMENTALJOBS.COM, INC		11,633.40	56537	12/19/2025

CLAIMS REPORT

12/01/2025 - 12/31/2025

VENDOR	REFERENCE	AMOUNT	CHECK #	CHECK DATE
GRAINGER		1,284.99	56538	12/19/2025
GRAINGER		1,737.68	56642	12/31/2025
GREAT PLAINS COMMUNICATIONS		3,280.14	56643	12/31/2025
GREAT PLAINS UNIFORMS LLC		555.43	56539	12/19/2025
GREAT PLAINS UNIFORMS LLC		71.91	56644	12/31/2025
GUNDERSON, BRETT		353.93	56540	12/19/2025
HACH CO		14,115.09	56645	12/31/2025
HAWKINS INC		11,770.00	56541	12/19/2025
HDR ENGINEERING INC		13,108.23	56542	12/19/2025
HDR ENGINEERING INC		1,616.12	56646	12/31/2025
HEARTLAND NATURAL GAS LLC		3,128.03	56543	12/19/2025
HEARTLAND TIRES & TREADS-OMAHA		4,386.70	56647	12/31/2025
HENTON TRENCHING INC		23,975.20	56544	12/19/2025
HENTON TRENCHING INC		6,360.04	56648	12/31/2025
HOME DEPOT CREDIT SERVICES		532.86	56649	12/31/2025
HORIZON REHABILITATION CENTERS		740.00	56650	12/31/2025
HSA BANK		85.00	25(E)	12/31/2025
HSBC BUSINESS SOLUTIONS		1,153.40	56651	12/31/2025
INGRAM INDUSTRIES INC		1,170.13	56545	12/19/2025
INGRAM INDUSTRIES INC		868.75	56652	12/31/2025
J.P. COOKE CO.		76.69	56546	12/19/2025
J.P. COOKE CO.		171.15	56653	12/31/2025
JACKSON SERVICES		714.80	56654	12/31/2025
JACKSON, TRACY L		353.90	56547	12/19/2025
JAMES NIELSEN DBA		30.00	56656	12/31/2025
JEFF BEIERMANN		101.69	56657	12/31/2025
JENSEN WELL COMPANY INC		1,139.19	56548	12/19/2025
JEO CONSULTING GROUP INC		10,229.50	56549	12/19/2025
JEO CONSULTING GROUP INC		3,020.25	56658	12/31/2025
JEREDITH BRANDS LLC		3,019.00	56659	12/31/2025
JOHN CRANE INC		628.15	56550	12/19/2025
JOHN DAY CO		2,137.66	56551	12/19/2025
KELLY RYAN EQUIPMENT CO		1,753.07	56660	12/31/2025
LANGER ELECTRIC COMPANY INC		5,550.00	56661	12/31/2025
LDI (LANG DIELSEL INC)		2,183.29	56552	12/19/2025
LDI (LANG DIELSEL INC)		72.19	56662	12/31/2025
LEAGUE ASSOCIATION OF RISK		1,256.59	56663	12/31/2025
LEAGUE OF NE MUNICIPALITIES		117.00	56553	12/19/2025
LEAGUE OF NE MUNICIPALITIES		100.00	56664	12/31/2025
LEE THALMAN		250.00	56554	12/19/2025
LIBRARY IDEAS		292.80	56555	12/19/2025

CLAIMS REPORT

12/01/2025 - 12/31/2025

VENDOR	REFERENCE	AMOUNT	CHECK #	CHECK DATE
MALLOY ELECTRIC		1,047.57	56665	12/31/2025
MATHENY MOTOR TRUCK CO		6,385.41	56666	12/31/2025
MATHESON TRI-GAS INC		810.87	2266	12/31/2025
MATHESON TRI-GAS INC		1,120.90	56667	12/31/2025
MC WELLS CONTRACTING LLC		31,732.02	56556	12/19/2025
MES SERVICE COMPANY LCC		2,870.18	56668	12/31/2025
METROPOLITAN CHIEF'S ASSOC		85.00	56669	12/31/2025
MICROMARKETING LLC		80.38	56670	12/31/2025
MID-AMERICA ARTS ALLIANCE		900.00	56557	12/19/2025
MIDLAND SCIENTIFIC INC		384.78	56671	12/31/2025
MIDWEST LABORATORIES INC		617.36	56672	12/31/2025
MIDWEST MARITIME SERVICES		60,070.00	56673	12/31/2025
MISSISSIPPI LIME CO LLC		38,800.71	56558	12/19/2025
MISSISSIPPI LIME CO LLC		47,300.97	56674	12/31/2025
MOTOROLA		16,246.77	56559	12/19/2025
MOTOROLA		41,886.85	56675	12/31/2025
NALCO COMPANY		9,018.92	56560	12/19/2025
NALCO COMPANY		74,527.96	56676	12/31/2025
NATIONAL LEAGUE OF CITIES		1,353.00	56677	12/31/2025
NATIONAL SAFETY COUNCIL		549.00	56678	12/31/2025
NDWEE		1,265.00	56561	12/19/2025
NDWEE		115.00	56679	12/31/2025
NEBRASKA BANK		25,000.00	56408	12/01/2025
NEBRASKA DEPT OF AGRICULTURE		1,481.08	56681	12/31/2025
NEBRASKA DEPT OF REVENUE		14,468.82	26(E)	12/31/2025
NEBRASKA LAW ENFORCEMENT		400.00	56682	12/31/2025
NEBRASKA PUBLIC HEALTH		1,090.00	56563	12/19/2025
NEBRASKA RURAL WATER ASSOC		445.00	56683	12/31/2025
NEELKANTH HOSPITALITY		220.00	56684	12/31/2025
NE-IA INDUSTRIAL FASTENERS		1,529.53	56562	12/19/2025
NE-IA INDUSTRIAL FASTENERS		624.87	56680	12/31/2025
NINJAONE LLC		300.00	56685	12/31/2025
NSG LOGISTICS LLC		4,426.13	56564	12/19/2025
NSG LOGISTICS LLC		9,923.27	56686	12/31/2025
NWEA		235.00	56565	12/19/2025
ODEYS INC		4,749.55	56566	12/19/2025
OLSSON ASSOCIATES		24,491.75	56567	12/19/2025
OLSSON ASSOCIATES		1,302.00	56688	12/31/2025
ONE CALL CONCEPTS INC		101.20	56689	12/31/2025
ONE SOURCE		164.00	56690	12/31/2025
ONSITE SERVICES SOLUTIONS LLC		1,330.00	56568	12/19/2025

CLAIMS REPORT

12/01/2025 - 12/31/2025

VENDOR	REFERENCE	AMOUNT	CHECK #	CHECK DATE
ONSITE SERVICES SOLUTIONS LLC		8,300.00	56691	12/31/2025
OPPD		114,615.22	56692	12/31/2025
O'REILLY AUTOMOTIVE STORES INC		182.47	56687	12/31/2025
ORVILLE C& MARY KAY EICH		23,225.00	56569	12/19/2025
PCAN ATTN:CHIEF RICK HICKSTEIN		200.00	56693	12/31/2025
PIONEER CLEANING LLC		600.00	56694	12/31/2025
PITNEY BOWES GLOBAL FINANCIAL		614.10	27(E)	12/31/2025
POINT C		75.00	56695	12/31/2025
POINT C		1,653.86	14(E)	12/19/2025
POUNDS PRINTING INC		805.00	56570	12/19/2025
POUNDS PRINTING INC		238.00	56696	12/31/2025
PRINCIPAL FINANCIAL GROUP		39,596.05	15(E)	12/19/2025
PRINCIPAL FINANCIAL GROUP		23,878.33	28(E)	12/31/2025
PROJECT ADVOCATES		6,580.00	56697	12/31/2025
RELX INC		310.00	56698	12/31/2025
REMARKABLE OSLO - CC		29.00	29(E)	12/31/2025
ROBERT HALF		1,169.28	56699	12/31/2025
S & S PUMPING SERVICE LLC		6,690.00	56700	12/31/2025
S.E. SMITH & SONS		76.06	56701	12/31/2025
SAFETY-KLEEN SYSTEMS INC		200.28	56571	12/19/2025
SAMS CLUB MC/SYNCB		191.54	16(E)	12/19/2025
SAPP BROS PETROLEUM INC		924.77	56572	12/19/2025
SAPP BROS PETROLEUM INC		2,786.20	56702	12/31/2025
SCHOLASTIC BOOK FAIRS INC		475.35	56573	12/19/2025
SENSUS USA INC		4,699.00	56574	12/19/2025
SPARQ DATA SOLUTIONS		4,250.00	56575	12/19/2025
SPARTAN STORES LLC		22.76	56576	12/19/2025
SPARTAN STORES LLC		702.05	56703	12/31/2025
STALP GRAVEL INC		3,294.20	56704	12/31/2025
STREAKWAVE WIRELESS INC		193.34	56577	12/19/2025
SUNSET LAW ENFORCEMENT		3,749.20	56705	12/31/2025
TALBOT LAW OFFICE PC LLO		877.50	56706	12/31/2025
TEMPLAR, LANDON		153.00	56578	12/19/2025
THE GUARDIAN LIFE INS CO		6,357.57	56579	12/19/2025
THE SIGN DEPOT		335.34	56580	12/19/2025
THE SIGN DEPOT		369.23	56707	12/31/2025
THERMAL HEATING AIR & PLUMBING		255.00	56581	12/19/2025
THERMAL HEATING AIR & PLUMBING		356.00	56708	12/31/2025
THIELE GEOTECH INC		1,777.00	56709	12/31/2025
THOMPSON SOLUTIONS GROUP		2,344.25	56582	12/19/2025
TITAN MACHINERY		201.46	56710	12/31/2025

CLAIMS REPORT

12/01/2025 - 12/31/2025

VENDOR	REFERENCE	AMOUNT	CHECK #	CHECK DATE
TOTAL TRUCK & MACHINE LLC		8,156.91	56583	12/19/2025
TRANSCEND X, LLC		300.00	56584	12/19/2025
TREKK DESIGN GROUP		5,874.00	56585	12/19/2025
TY'S OUTDOOR POWER & SERVICE		5,189.30	56711	12/31/2025
UNIVAR SOLUTIONS USA		24,596.95	56586	12/19/2025
US POSTAL SERVICE FORT CALHOUN		2,000.00	56592	12/29/2025
USABLUEBOOK		206.21	56587	12/19/2025
UTILITIES SECTION		75.00	56588	12/19/2025
VERIZON 883740345-00001		751.48	56712	12/31/2025
VESSCO INC		35,262.43	56713	12/31/2025
WAKEFIELD TOWING AND RECOVERY		1,950.00	56714	12/31/2025
WASHINGTON COUNTY BANK		93,131.65	9(E)	12/01/2025
WASHINGTON COUNTY CHAMBER		2,700.00	56410	12/02/2025
WASHINGTON COUNTY CHAMBER		200.00	56411	12/04/2025
WASHINGTON COUNTY CHAMBER		40,000.00	56715	12/31/2025
WASHINGTON COUNTY ENTERPRISE		157.91	56589	12/19/2025
WASHINGTON COUNTY ENTERPRISE		1,058.70	56716	12/31/2025
WASHINGTON COUNTY REGISTER		80.00	56717	12/31/2025
WASTE MANAGEMENT OF NE		81.44	56590	12/19/2025
WASTE MANAGEMENT OF NE		65.14	56718	12/31/2025
WESTERN OIL II LLC		4,574.53	56719	12/31/2025
WINTER EQUIPMENT CO INC		2,298.00	56720	12/31/2025
WOODS & AITKEN LLP		902.95	56591	12/19/2025
WP LLC		148,000.00	56409	12/01/2025
YOUNG & WHITE LAW OFFICES		959.40	56721	12/31/2025
ZOLL MEDICAL CORP		914.40	2267	12/31/2025
Total Expenses		**4,184,850.04**		

Blair Volunteer Fire & Rescue

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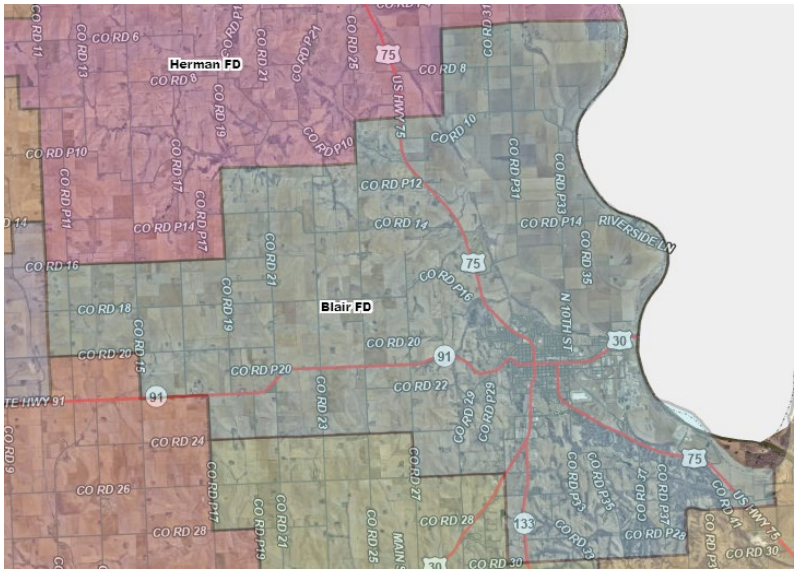
Blair Volunteer Fire & Rescue End of Year Report

Blair, Nebraska – The Blair Volunteer Fire & Rescue Department is honored to serve as a steadfast cornerstone of public safety for the City of Blair and the surrounding communities. With a dedicated team of highly trained volunteers, our department provides 24/7 fire suppression, emergency medical services, rescue operations, and public outreach across a service area of roughly 100 square miles.

Each year, we proudly protect a growing population of approximately 10,000 residents. Our members respond to a diverse range of incidents, including structure fires, wildland and grass fires, emergency medical calls, motor vehicle accidents, technical rescues, and hazardous materials situations. No matter the time of day or circumstance, our volunteers stand ready to answer the call.

Beyond emergency response, we are committed to being an active, trusted, and visible presence within our community. This includes public education programming, youth engagement and mentorship, station tours, safety demonstrations, and participation in Blair's longstanding events and traditions. We believe community connection is a vital part of public safety, and we work hard to build relationships that strengthen resilience and preparedness across all ages.

As you review this End-of-Year Report, we hope it provides a clear and transparent look at our call volume, operations, initiatives, accomplishments, and areas of growth. A map of our service district is included below for reference.



Blair Volunteer Fire & Rescue

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Department Composition



The Blair Volunteer Fire & Rescue Department is proud to be staffed entirely by volunteers—46 dedicated individuals who commit their time, skills, and energy to serving our community. Our personnel are organized into several categories based on certification, level of involvement, and training status.

Active-Duty Volunteers – 33 Members

These members respond to emergencies, participate in training, and support daily operations.

- 9 Emergency Medical Technicians (EMTs)
- 6 EMT–IVs
- 1 Advanced EMT
- 1 Registered Nurse
- 16 Firefighters

Lifetime Volunteers – 8 Members

These long-serving members continue to support the department through their experience, mentorship, and operational assistance.

- 3 Firefighter/EMTs
- 5 Firefighters

Medical Leave – 2 Members

Cadet Program – 8 Participants

Our Cadet Program serves as a key pathway for the next generation of responders.

- 3 Senior Cadets (active responders)
- 5 Cadets (in training, non-responders)

Blair Volunteer Fire & Rescue

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We are also proud to report strong progress in training, 9 volunteers are currently enrolled in EMT certification courses, strengthening our medical response capabilities for the coming year. Additionally, the second half of the year brought renewed momentum with 10 new probationary members who are actively training and preparing to take on full operational roles.

1,420 Total Calls for Service - 1,090 Medical & 330 Fire Related							
BVFD Members	Rescue	Fire	Total	BVFD Members	Rescue	Fire	Total
DAVE ATEN - 41	284	117	401	DALE OLSON - 47	0	0	0
RANDY BACKMAN - 54	3	0	3	DEREK PAPER - 23	290	123	413
BRICE BECKMAN - 44	0	0	0	MATT PERSONS - 66	75	20	95
JOHN BELSKY - 11	42	49	91	JIM POUNDS - 72	11	0	11
ANTHONY BORDERS - 43	268	77	345	SKYLER PUFFER - 15	135	60	195
ERNIE BRENNEIS - 04	0	0	0	CARL RENNERFELDT - 20	104	41	145
MIKE BUTTERY - 32	42	28	70	JACOB ROGGE - 45	46	41	87
AMIE CLAUSEN - 70	121	23	144	STEVE ROUNDS - 26	1	0	1
CLINT CLAUSEN - 63	0	0	0	TRE MURRAY - 05	65	34	99
JAKE DUNN - 49	525	179	704	LOGAN THALLAS - 21	160	65	225
TY HERNES - 02	339	84	423	JERRY WEST - 34	52	58	110
CHRIS HONKE - 38	3	1	4	SHANE SAVOLD - 08	78	31	109
BOB HORST - 50	267	14	281	BLAKE GUTSCHOW - 30	108	44	152
STEVE HOWARD - 25	245	50	295	LANDON HOLTZ - SC2	305	107	329
BRENDA JENNY - 64	29	27	56	EMMETT MCINTOSH - SC3	250	98	293
LOREN JONES - 39	278	104	382	CHASITY HAHN - SC1	254	105	249
LUKE JONES - 40	130	92	222	KYLE HERBER	0	0	0
JOE LEONARD - 55	209	146	355	BRIAN KELLER	77	22	16
JOE MAGUIRE - 01	124	66	190	JORDAN CLAUSEN - 62	24	5	29
DAVID MCINTOSH - 35	350	127	477	ISAAC OPETAIA - 59	6	4	10
HOWARD MCMANIGAL - 22	63	14	77	BRYAN THOMAS - 19	16	2	18
HENRY NEEF - 18	0	0	0	KALEB NICHOLSON - 37	13	5	18
KENT NICHOLSON - 57	0	0	0	JUSTIN SMITH - 48	39	17	56
CHRIS OLSON - 07	7	9	16	GABE STOCK - 67	49	15	64

Blair Volunteer Fire & Rescue

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Apparatus & Equipment



Ambulances 811 & 810 Responding to a call



North Station located at 19th and Nebraska Streets

To ensure a high level of service and reliable emergency response, the Blair Volunteer Fire & Rescue Department maintains a diverse and capable fleet of apparatus. Our equipment is strategically selected to meet the wide-ranging needs of the community and allows us to respond effectively to incidents of all types.

The department's current fleet includes:
2 ALS-Capable Ambulances, 2 Brush Trucks, 2 Engines, 2 Tankers, 1 Aerial Ladder Truck, 1 Utility/Rescue Truck, 2 Fire Command Cars, 1 UTV, and **1 Rescue Boat.**

While no new apparatus were placed into service during the 2025 calendar year, significant progress was made toward future fleet replacement and modernization. We are currently in the process of building a replacement ALS-capable ambulance, a 2027 Road Rescue unit, which is projected to arrive in spring 2027. This ambulance will replace our current Road Rescue Ambulance 810 and will further strengthen our emergency medical service capabilities.

Additionally, the department is actively working on the build of a replacement City engine, which will be a 2027 Pierce Engine equipped with a 1,000-gallon water tank and a 2,000-gallon-per-minute pump. This apparatus will enhance fire suppression capabilities within the city and surrounding response areas.

This fleet enables BVFD to respond efficiently to medical emergencies, structure fires, wildland and grass fires, vehicle accidents, technical rescues, and water-related incidents.

Long-term apparatus planning and replacement remain a critical focus to ensure continued reliability and operational readiness.

In addition to apparatus readiness, ongoing equipment upgrades play a vital role in responder safety and operational effectiveness. Thanks to the generous support of our community, the department was able to procure and deploy several key tools and technologies during the year, including:

- **AccuVein devices**, enhancing IV access during EMS calls
- **Upgraded ZOLL AED/monitor units**, critical for advanced patient care during medical emergencies
- **PS Trax**, improving inventory control, asset management, and fleet maintenance tracking
- **Portable suction units**, a crucial tool for emergency medical response
- **New Edraulic extrication tools**, increasing power, reliability, and safety during vehicle rescue operations
- **MSA Altair 4-Gas monitors** and **MSA single-gas monitors**, replacing aging detection equipment and improving response to hazardous atmospheres such as gas leaks, carbon monoxide incidents, and anhydrous-related calls
- **New AEDs installed in all fire apparatus**, expanding life-saving capabilities across the fleet
- **Hypersight thermal imaging cameras** on brush trucks, allowing operators to safely navigate and operate in smoky or low-visibility conditions

These additions significantly enhance both responder safety and scene effectiveness. They reflect the continued trust, investment, and support of the Blair community in its emergency services. The Blair Volunteer Fire & Rescue Department remains committed to maintaining modern, reliable equipment so our volunteers can serve safely, efficiently, and effectively—today and into the future.

Blair Volunteer Fire & Rescue

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Call Volume







Over the past five years, the Blair Volunteer Fire & Rescue Department has experienced a steady and significant rise in calls for service. This trend reflects both the growth of our community and the increasing reliance on our department's emergency medical and fire protection capabilities.

2025 – 1,420 calls
2024 – 1,315 calls
2023 – 1,119 calls
2022 – 1,142 calls
2021 – 1,050 calls
2020 – 882 calls

Calendar year 2025 was another record-setting year for BVFD. We closed the year with 1,420 total calls for service, surpassing last year's high-water mark by 105 calls. These calls included 1,090 medical-related incidents and 330 fire-related incidents,

demonstrating the broad range of emergencies our volunteers are prepared to handle at any moment.

In total, these incidents accounted for over 968 hours of on-scene response time alone. When paired with the countless hours spent training, maintaining equipment, conducting inspections, participating in community events, and completing administrative duties, it becomes clear just how busy our volunteers have been this year.

It is important to remember that every single member of BVFD is a volunteer. These men and women routinely step away from work, family, sleep, holidays, and daily life to serve their community—often at a moment's notice. Their commitment is remarkable, and the call volume numbers reflect not only the needs of the community but the dedication of the people who answer those needs.

Blair Volunteer Fire & Rescue

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Community Engagement







One of the most cherished traditions within BVFD is our long-standing Fire Prevention Program. For more than four decades, Steve Howard has been a cornerstone of this initiative. Now in his 44th year of involvement—and leading the program since 1990—Steve has taught several generations of Blair residents about fire prevention and safety. Many children proudly share that Steve taught their parents, grandparents, and possibly even great-grandparents.

This year, our Fire Prevention team reached over 700 children across the Blair area, providing engaging, age-appropriate education about avoiding hazards, creating fire escape plans, and understanding emergency response. We are deeply grateful for the dedication of Steve and the entire Fire Prevention team; their work shapes safer futures for every family in our community.

Blair Volunteer Fire & Rescue

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As we reflect on an exceptionally active year, we recognize that none of this would be possible without the extraordinary volunteers who make up the Blair Volunteer Fire & Rescue Department. Below you will find a detailed breakdown of calls for service responded to by each member from January 1, 2025 through December 31, 2025.

With an average call length of 40 minutes and 54 seconds, plus the cleanup, reporting, and equipment reset that follow every incident, these response numbers represent a staggering amount of time given selflessly to the community. This report stands as a testament to their dedication, resilience, and unwavering commitment to the people of Blair.

We are profoundly grateful for everything our volunteers do—often without recognition, but always with heart.

Blair Volunteer Fire & Rescue

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Mutual Aid & Regional Cooperation



Several area departments at a training burn in May 2025

We are extremely thankful for the continued partnership and support of our neighboring fire departments. In the world of emergency services, mutual aid is not just a resource—it is a lifeline. When large-scale emergencies, overlapping incidents, or complex situations arise, the ability to rely on well-trained and responsive neighboring departments is critical to keeping our communities safe.

Whether it's a structure fire requiring additional manpower, a medical event demanding multiple EMS units, or a weather-related disaster affecting a wide area, our mutual aid system ensures that no call goes unanswered. This network of shared readiness enhances response times, improves operational effectiveness, and strengthens the level of protection provided to residents across our region.

We extend our sincere appreciation to **Kennard Volunteer Fire & Rescue, Fort Calhoun Volunteer Fire & Rescue, Arlington Volunteer Fire & Rescue, and Herman Volunteer Fire & Rescue** for their continued collaboration, professionalism, and teamwork. These departments—and others throughout the region—have stood beside us during some of our busiest and most challenging moments. We are also deeply grateful for our outstanding law enforcement partners, the **Blair Police Department** and the **Washington County Sheriff's**

Department, whose cooperation and dedication play a vital role in ensuring effective, coordinated emergency responses throughout our community.

In return, the Blair Volunteer Fire & Rescue Department is proud to provide mutual aid whenever called upon. Together, we form a unified emergency response network far stronger than any single department could be on its own. This spirit of cooperation remains one of the greatest strengths of emergency services in our region and an essential component of the safety and resilience of our community.

Blair Volunteer Fire & Rescue

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Volunteer Recruitment & Closing



Like many fire departments across the country, the Blair Volunteer Fire & Rescue Department relies entirely on dedicated volunteers to fulfill our mission of protecting lives and property. We encourage anyone living within our fire district who has a passion for service and a willingness to learn to consider joining our team. Recruitment and retention remain top priorities, and we are grateful for the ongoing support and collaboration of the Blair City Council & Rural Board in helping us strengthen and sustain our volunteer force.

The application process is designed to ensure new members are prepared for the responsibilities of serving our community and typically takes about one month from start to finish. The process includes:

1. Completing an application (available at North Station Monday–Friday or at either station on Thursdays after 6 PM)
2. Medical physical

3. Background check
4. Physical agility test
5. Final approval by City Council
6. This process typically takes about one month from start to finish

As we close the book on 2025 and look forward to 2026, the Blair Volunteer Fire & Rescue Department remains steadfast in our commitment to improving services, engaging with our community, and supporting one another through the challenges and triumphs ahead.

We are deeply grateful for the trust, support, and encouragement of the residents of Blair. It is your confidence in our department that allows our volunteers to serve with pride, professionalism, and heart. Thank you for standing with us—together, we continue to make Blair a safer, stronger community.

RESOLUTION NO. 2026

COUNCIL MEMBER - INTRODUCED THE FOLLOWING RESOLUTION:

WHEREAS, the City of Blair has a lawfully created Police Department;

WHEREAS, pursuant to Nebraska Civil Service Act and the Blair Civil Service Commission Rules and Regulations, a person may be appointed to the Blair Police Department by the Mayor, with the approval of the Blair City Council after a recommendation by the Civil Service Commission;

WHEREAS, the Civil Service met on January 9, 2026 for the purpose of determining an eligibility list for the Blair Police Department appointment of officers for the three (3) openings for police officers within the Blair Police Department; and

WHEREAS, the Civil Service recommends the following three (3) individuals to be appointed as members of the Blair Police Department for three (3) openings for police officers within the Blair Police Department, namely: Christopher Perkins, Christopher Desangles, and Randal Kruse;

WHEREAS, the Mayor, with City Council approval, may appoint said individual(s) to the Blair Police Department conditionally upon the Civil Service Rules and Regulations requirements for further testing prior to the final appointment by the Mayor;

NOW, THEREFORE, BE IT RESOLVED that Christopher Perkins, Christopher Desangles, and Randal Kruse are hereby appointed to the Blair Police Department conditional upon further testing as required by the Blair Civil Service Commission Rules and Regulations and the above resolution is hereby adopted and approved by the municipality and the Mayor and City Clerk of the City of Blair are hereby authorized and directed to execute the same on behalf of the municipality.

COUNCIL MEMBER - MOVED THAT THE RESOLUTION BE ADOPTED AS READ, WHICH SAID MOTION WAS SECONDED BY COUNCIL MEMBER -. UPON ROLL CALL, COUNCIL MEMBERS - VOTING "AYE" AND COUNCIL MEMBERS NONE VOTING 'NAY", THE MAYOR DECLARED THE FOREGOING RESOLUTION PASSED AND APPROVED THIS 13TH DAY OF JANUARY 2026.

CITY OF BLAIR, NEBRASKA

BY: _____
MELINDA K. RUMP, MAYOR

ATTEST:

_____
BRENDA WHEELER, CITY CLERK

(SEAL)

STATE OF NEBRASKA)
) ss:
WASHINGTON COUNTY)

BRENDA WHEELER, hereby certifies that she is the duly appointed, qualified and acting City Clerk of the City of Blair, Nebraska, and that the above and foregoing Resolution was passed and adopted at a regular meeting of the Mayor and City Council of said City, held on the 13th day of January 2026.

_____
BRENDA WHEELER, CITY CLERK

RESOLUTION NO. 2026

COUNCIL MEMBER - INTRODUCED THE FOLLOWING RESOLUTION:

WHEREAS, the City of Blair wishes to remove the job description for the position of Detective as a hired job and promotion;

WHEREAS, the removal of this position is in line with the current Civil Service Rules and Regulations and is to be effective immediately.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Municipality of the City of Blair that the job description for the position of Detective is attached hereto and marked **"Exhibit A"** and the same is hereby approved to removed by the municipality and the Mayor and City Clerk of the City of Blair are hereby authorized and directed to execute the same on behalf of the municipality.

COUNCIL MEMBER - MOVED THAT THE RESOLUTION BE ADOPTED AS READ, WHICH SAID MOTION WAS SECONDED BY COUNCIL MEMBER -. UPON ROLL CALL, COUNCIL MEMBERS - VOTING "AYE" AND COUNCIL MEMBERS NONE VOTING 'NAY," THE MAYOR DECLARED THE FOREGOING RESOLUTION PASSED AND APPROVED THIS 13th DAY OF JANUARY 2026.

CITY OF BLAIR, NEBRASKA

BY: _____
MELINDA K. RUMP, MAYOR

ATTEST:

_____
BRENDA WHEELER, CITY CLERK

(SEAL)

STATE OF NEBRASKA)
) ss:
WASHINGTON COUNTY)

BRENDA WHEELER hereby certifies that she is the duly appointed, qualified and acting City Clerk of the City of Blair, Nebraska, and that the above and foregoing Resolution was passed and adopted at a regular meeting of the Mayor and City Council of said City, held on the 13th day of January 2026.

_____
BRENDA WHEELER, CITY CLERK

City of Blair

Position Title:	Detective	Job Code:	P4
Department:	Police Department	EEOC Class:	
Reports To:	Captain	FLSA Status:	
Date Written:	03/30/98	Date Revised:	June 5, 2024

General Summary:

Performs criminal investigations including, interviewing, interrogating, evidence procurement, intelligence gathering, and reports.

Essential Job Functions:

1. Types reports and transcribes interviews. (5%)

2. Conducts crime scene investigations. (5%)

3. Maintains all evidence in evidence room, sending evidence to the lab for analysis when needed. (10%)

4. Performs follow-ups on reports made by other officers. (35%)

5. Interviews crime victims and suspects. (35%)

6. Performs duties related to standard police procedures including the development of informants, intelligence gathering, dissemination of information, management of investigative budgets, surveillance, business loss prevention, court testimony, etc. (10 %)

7. Performs other related duties as assigned by command. *

8. Assists the County Coroner with duties.*

9. Testifies under oath, in court as needed.*

*These tasks do not meet the Americans With Disabilities Act definition of essential job functions and usually equal 5% or less of time spent. However, these tasks still constitute important performance aspects of the job.

Knowledge, Skills, and Abilities:

1. Knowledge of local, state, and federal laws.

2. Knowledge of local ordinances.

3. Knowledge of investigation techniques and principles.

4. Knowledge of interview and interrogation techniques and principles.

5. Skill in the operation of office equipment including personal computer, software, printer, copy machine, facsimile machine, and telecommunication system.

6. Skill in oral and written communication.

7. Ability to perform drug and alcohol testing.

8. Ability to respond quickly to changing circumstances.

9. Ability to adapt emotionally to stressful situations such as death notifications and traffic accidents.

Education and Experience:

High school diploma or equivalent. Three years law enforcement experience. Nebraska Law Enforcement Certification or equivalent. Must meet the requirements of the Civil Service Commission.

Physical Requirements:

PHYSICAL REQUIREMENTS	0-24%	25-49%	50-74%	75-100%

Seeing: Must be able to read reports and use computer.				X
Hearing: Must be able to hear well enough to communicate with co-workers.				X
Standing/Walking: Must be able to pursue suspects and assist other officers as needed.				X
Climbing/Stoop/Kneeling: Must be able to crawl around houses & cars to locate drugs			X	
Lifting/Pulling/Pushing: Must be able to lift, pull, and push well enough to handle incidents on the job.		X		
Fingering/Grasping/Feeling: Must be able to write, type, and use phone system.				X

Working Conditions:

This factor measures the surroundings or physical conditions under which a job must be done and the extent to which those conditions make the job disagreeable. Consider the presence and relative amount of exposure to dust, dirt, heat, fumes, contaminants, cold, noise, vibration, wetness, etc.

> Good working conditions; may be slightly dirty or involve occasional exposure to some of the elements listed above.

Note: The statements herein are intended to describe the general nature and level of work being performed by employees, and are not to be construed as an exhaustive list of responsibilities, duties and skills required of personnel so classified. Furthermore, they do not establish a contract for employment and are subject to change at the discretion of the employer.

RESOLUTION 2026

COUNCIL MEMBER _____ INTRODUCED THE FOLLOWING RESOLUTION:

BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF BLAIR, NEBRASKA AS FOLLOWS:

WHEREAS the City of Blair, Nebraska, has been presented with an Agreement between the City of Blair, Nebraska, and the Friends of the Jeanette Hunt Animal Shelter for animal sheltering services at the animal shelter located at 145 South 4th Street, Blair, Washington County, Nebraska.

WHEREAS, the terms and conditions thereof are acceptable to the municipality.

BE IT FURTHER RESOLVED THAT THE MAYOR AND CITY CLERK OF THE CITY OF BLAIR, NEBRASKA, are hereby authorized to execute and deliver, on behalf of the City of Blair, Nebraska, any documents that may be necessary for approval of said agreement.

COUNCIL MEMBER _____ MOVED THAT THE RESOLUTION BE ADOPTED AS READ, WHICH SAID MOTION WAS SECONDED BY COUNCIL MEMBER _____. UPON ROLL CALL, COUNCIL MEMBERS _____ VOTING "AYE", AND COUNCIL MEMBERS _____ VOTING "NAY", THE MAYOR DECLARED THE FOREGOING RESOLUTION PASSED AD ADOPTED THIS 13TH DAY OF JANUARY 2026.

CITY OF BLAIR, NEBRASKA

BY_____
MELINDA K. RUMP, MAYOR

ATTEST:

_____
BRENDA WHEELER, CITY CLERK

(SEAL)

STATE OF NEBRASKA)
) :ss:
WASHINGTON COUNTY)

BRENDA WHEELER, hereby certifies that she is the duly appointed, qualified and acting City Clerk of the City of Blair, Nebraska, and that the above and foregoing Resolution was passed and adopted at a regular meeting of the Mayor and City Council of said City held on the 13th day of January 2026.

_____
BRENDA WHEELER, CITY CLERK

AGREEMENT FOR ANIMAL SHELTERING SERVICES

This Agreement made and entered into as of the dates indicated below, by and between the City of Blair, Nebraska, a Municipal Corporation of the State of Nebraska hereinafter referred to as "City" and the Friends of the Jeanette Hunt Animal Shelter, a Nebraska Non-Profit Corporation with its principal place of business at 145 South 4th Street, Blair, Nebraska, 68008, hereinafter referred to as "Friends"

WHEREAS, in furtherance of the health, welfare and safety of the residents of Blair, City recognizes the need for quality care and sheltering of animals; and,

WHEREAS, the statutes of Nebraska and the ordinances of Blair provide laws governing the care and shelter of animals; and,

WHEREAS, City owns an animal shelter, and the Friends will operate the shelter, maintain a staff and provide the City with certain enumerated services to enforce and carry out the aforementioned laws and ordinances for the care and shelter of animals within the city limits of Blair, as defined by its zoning jurisdiction.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties agree as follows:

1. Duties of the Friends

   A. Furnish to the City an annual financial report of its activities to the City Administrator of Blair no later than April 1 of each year and to furnish a quarterly report with shelter statistics including adoption and euthanasia totals.
   B. To operate the facility and services as an animal shelter, to provide a shelter director and staff and to undertake the provisions of the Blair Municipal Code, and Chapter 28, Article 10, Nebraska Statutes pertaining to care and shelter of animals.
   C. To furnish the following services: Sheltering, Euthanasia, Lost and Found and Adoption. At the time of execution of this Agreement, the Friends anticipates the future construction, use and operation of a crematorium at the shelter, and the Friends acknowledge that such construction would first need to be approved by the City Council, and further acknowledge that the use and operation of such crematorium would have to comply with all state and local laws.
   D. To receive all animals brought in by City Animal Control Officers or other Blair Police Department employees and to care for and shelter for at least eight (8) days, after which they become the responsibility of the Friends, and to arrange for euthanasia of said animals if it becomes necessary. Sufficient shelter space shall be dedicated to animals brought in by City Animal Control Officers or other Blair Police Department employees. No alterations or euthanasia of dogs or cats shall occur prior to the expiration

of such eight (8) day period (or the period as specified in the Blair Municipal Code as may be amended in the future, plus three (3) days for notification as required by said Code). The Friends hereby agrees to accept and care for dogs brought to the shelter by City Animal Control Officers or other Blair Police Department employees pursuant to Section 6-127 of the Code [addressing the impoundment of dogs during enforcement proceedings], and the City hereby agrees to direct any restitution amounts received through court enforcement in accordance with such section to the Friends.

E. To operate said shelter during such dates and times as may be determined by the Friends and to post said times of operation at the shelter. The Friends will provide City with drop-off access where animals can be delivered 24 hours per day, 7 days each week and will further provide appropriate cages for such animals The City agrees to inform the City Animal Control Officers and the Blair Police Department employees of the prescribed drop-off procedures required by Paragraph H of this Section 1. A copy of such procedures shall be posted in the drop-off access area of the shelter. The City agrees to pay the cost to install a lock on the door separating the City drop-off location from the remainder of the building in which the shelter is operated.

F. The Friends personnel will be on-call for emergency purposes after normal operating hours. The Friends agree to provide the City and the Blair Police Department with current contact information for such personnel and said contact information shall be posted at the shelter including in the City drop off access area.

G. The Friends shall provide the City with a monthly report of all animals adopted from the shelter that will be housed within the City of Blair along with information stating whether each such adopted animal received all required vaccinations and was spayed or neutered, if of appropriate age, as required by the Nebraska Statues, prior to adoption or whether such adopted animal was not yet the appropriate age to be spayed or neutered. The City shall then have the responsibility to determine whether such adopted animals housed within the City of Blair have been duly licensed according to city ordinance.

H. The Friends shall maintain written policies and procedures with respect to its performance of this Agreement, a current copy of which is incorporated herein by this reference and made a part hereof. Any future amendments of these written policies and procedures shall be provided by the Friends to the City Clerk within 30 days of adoption of such amendments.

I. The Friends shall maintain a published list of charges for all its services and products, a copy of which, including any amendments thereto, shall be furnished to the City Clerk and remain on file with the City Clerk.

J. The Friends shall maintain written records of all citizen complaints relating to the care and housing of City of Blair animals under their control or their operations.

2. DUTIES OF CITY

A. To provide all licensure services during the term of this Agreement, in accord with the Blair Municipal Code.
B. To review and evaluate the Friends relating to performance of this Agreement.
C. To inform the Friends of any complaints received by City elected or administrative officials that require investigation or follow up by the Friends
D. To provide, upon execution of this Agreement, an initial inventory of supplies and equipment available at the shelter that might be of use by the Friends in its performance of this Agreement. City agrees to allow the use of any such equipment or supplies as may be helpful for the implementation of this Agreement and to make needed building repairs within a reasonable time.

3. TITLE TO IMPROVEMENTS

Title to the animal shelter and any improvements as may be added thereto shall at all times remain with City.

4. CONTRACTS WITH OTHER ENTITIES

The Friends may render similar services to other organizations and governmental subdivisions, and the inhabitants thereof, upon such terms and conditions as may be agreed upon by the parties thereto however, such agreements with other subdivisions shall not be allowed to inhibit Friends of the Jeanette Hunt Animal Shelter providing services hereunder to City.

5. FEES

A. In consideration of the of the sheltering services to be provided by the Friends as provided in this Agreement, City shall pay to the Friends , during the first year of this Agreement hereto the sum of $101,760.00. Said payment to be paid by City to the Friends in quarterly installments in the amount of $25,440.00 each, with the first such installment to be paid upon the execution of this agreement and each successive installment to be paid on the first day of the month which begins each quarter thereafter. To ensure the Friends receive the full allocation for Fiscal Year 2026, a separate payment will be issued during the first quarter. This payment will supplement the regular disbursement schedule and guarantee that the total amount due for FY26 is fully satisfied.
B. After the first year of this Agreement, the City hereby agrees to review with the Friends during the month of June each year the annual compensation to be paid to the Friends, and if any increase in compensation is desired by the Friends in order to continue to successfully carry out its functions under this Agreement, then the Friends hereby agree to make such request to the City Council for review.
C. All adoption and impound fees collected by the Friends shall be the sole property of the Friends, and the Friends shall be responsible for

establishing such fees. Further, all donations specifically made payable to the Friends and all donations with any notation or reference to indicate that the "shelter" is the intended recipient, whether such donations are delivered directly to the shelter or to the City offices, shall be the sole property of the Friends.

D. City shall not be obligated to pay any additional fees or costs to the Friends or any third party, that are not set forth in this Agreement or subsequently approved by the City Council.

E. The Friends are not prohibited from transferring any animal to a veterinarian for medical care and shall be responsible for any such medical care, including spaying and neutering of such animal. Any fees for medical care for or for euthanizing the animal incurred by the Friends shall be the obligation of the Friends or of the owner or controller of the animal.

6. TERM OF AGREEMENT, RENEWAL AND TERMINATION

A. This Agreement shall take effect upon the date set forth below and shall remain in full force and effect unless terminated in accordance with the following provisions of this Agreement

B. This Agreement shall be terminated upon the terminating party giving the non-terminating party six (6) months' prior written notice, or if the Friends cease to maintain its existence in accord with the laws of the State of Nebraska for a period of more than sixty (60) days, or if it abandons animal shelter operations; or, if it fails to maintain and operate the shelter in accord with the terms and conditions of this Agreement, Blair Municipal Code or other applicable laws Any such termination shall not affect the rights, duties, and liabilities of the parties which accrued or vested prior to termination

C. Written notice of termination of this Agreement for any such causes shall be accomplished in two stages, namely a notice that, unless the breach described in the notice is corrected, as noted within, not more than 30 days or such longer period as the notice may prescribe, the party giving the notice will declare the Agreement terminated; or, if after the lapse of such period the party giving the notice determines the breach has not been corrected, said party shall provide a written final notice of termination. All notices provided under this Agreement shall be in writing and delivered or mailed to the authorized representatives listed in Section 19 at the principal office of such other party.

7. BREACH OF CONTRACT

Upon termination of this Agreement, all improvements comprising the shelter shall become City property. The Friends will cooperate with City to provide for possession of the shelter as soon as practicable upon such termination or expiration of this Agreement.

8. SHELTER PERSONNEL

The Friends shall have the ultimate responsibility for the recruitment, hiring, performance appraisal and removal of any employees of the Friends. The Friends shall be responsible for all employee compensation and benefits and shall further be responsible for filing all required payroll reports and paying all payroll taxes.

9. INDEPENDENCE

The Friends, its officers, employees, agents, and volunteers shall act in an independent capacity during the term of this Agreement and not as officers, employees, agents or volunteers of City

10. INDEMNIFICATION

The Friends will indemnify and hold harmless City from all demands, claims, causes of action or judgments, and from all expenses that may be incurred in investigating or resisting the same, arising from, or growing out of, any act or neglect of the Friends, its contractors, agents, employees or volunteers in connection with the operation of the shelter or in the performance of related duties, including injury or death to any animal housed at the shelter. The Friends will fully inform all persons using or present on the shelter premises of the non-liability of City for any act or neglect of the Friends by posting an adequate notice to that effect in, about or on said shelter premises.

City will indemnify and hold harmless the Friends from all demands, claims, and causes of action or judgments and from all expenses that may be incurred arising from the City performing its duties herein.

11. INSURANCE

A. As required by a certain Animal Shelter Lease Agreement between the parties hereto of equal date of this Agreement ("Lease Agreement"), the Friends agrees to procure and maintain continuously during the term of Agreement, at its sole cost and expense, a policy or policies of comprehensive general liability insurance with not less than one million dollars ($1,000,000.00) of coverage per claimant, per occurrence, for bodily injury and property damage, with an aggregate amount of not less than two million dollars ($2,000,000.00) and Workers Comp coverage for employees as may be required by the Nebraska Statutes.

B. City will be named as an additional insured on all liability insurance policies. The Friends will provide City with annual certificates from

its insurers confirming the existence of the insurance coverage required herein; and, will immediately notify City of any cancellation or lapse in coverage.

12. ENTIRE AGREEMENT

This Agreement, lease, and attachments constitute the entire Agreement between City and the Friends notwithstanding any other oral agreements or understandings to the contrary and may be amended only in writing, approved by the parties and executed as required by law.

13. ASSIGNMENT

Neither the Friends nor City will assign its rights under this Agreement without the express prior written consent of the other party.

15. STRICT COMPLIANCE

All provisions of this Agreement and each and every document that shall become attached will be strictly complied with as written, and no substitutions or changes may be made except upon written direction and consent of an authorized representative.

16. CAPTIONS

Captions used in this Agreement are for convenience and are not used in the construction of this Agreement.

17. APPLICABLE LAW

Parties to this Agreement will conform to all existing and applicable city ordinances, resolutions, state laws, federal laws, and all existing and applicable rules and regulations. Nebraska law will govern the terms and the performance under this Agreement.

18. MERGER

This Agreement will not be merged into any other oral or written agreement, lease or deed of any type; provided, however, that in the event there is any inconsistency between this Agreement and the Lease Agreement, then this Agreement shall supersede the Lease Agreement

19. AUTHORIZED REPRESENTATIVES

In further consideration of the mutual covenants herein contained, the parties hereto expressly agree for the purposes of notice, including legal service of process during the term of this Agreement and for the period of any applicable statutes of limitations thereafter, that such notice shall be provided as follows:

(a) in the case of Friends:

Friends of the Jeanette Hunt Animal Shelter
PO Box 233
Blair, NE 68008

(b) in the case of City:

City of Blair
c/o City Administrator
218 South 16th Street
Blair, NE 68008

EXECUTED by the CITY OF BLAIR, NEBRASKA this_____day of January 2026.

ATTEST BY

_____ _____
City Clerk Mayor

_____
Jenny Erickson, President & Director
Friends of the Jeanette Hunt Animal Shelter

MEMORANDUM

TO: Blair Mayor and City Council

From: CJ Heaton, Deputy City Administrator of Public Works

Date: 1/13/26

Re: Black Elk Pump Station Improvements – Authorization to Solicit Bids

One of the projects tied to the water system expansion is the improvements to the current Black Elk Pump Station at Black Elk Park. This building sits at the entrance to the park and keeps the west reservoir full. This project will install a third pump at the station, update the electrical components, and add a backup generator.

These improvements, along with the Hwy 75 Pump Station and the eventual elevated tower project, will allow us to reroute the distribution/pressure zones in town and better utilize the west reservoir.

Recommendation: Authorizing staff to solicit bids. Final approval will come to the council after bids are received. Likely the first meeting in February.

Fiscal Impact: The engineer's opinion and estimate is $1,200,000. Staff is working on finalizing SRF funding for this project.

RESOLUTION NO. 2026

COUNCILMEMBER - INTRODUCED THE FOLLOWING RESOLUTION:

WHEREAS, the Mayor and City Council have been presented with the plans and specifications for improvements to the Black Elk Pump Station at Black Elk Park, shown in attached **Exhibit "A"**; and

WHEREAS, the plans and specifications thereof are acceptable to the municipality.

NOW THEREFORE BE IT RESOLVED that the Mayor and City Council of the City of Blair, Nebraska, hereby find and determine that the plans and specifications are approved as presented for the Black Elk Pump Station located at Black Elk Park.

COUNCIL MEMBER - MOVED THAT THE RESOLUTION BE ADOPTED AS READ, WHICH SAID MOTION WAS SECONDED BY COUNCIL MEMBER -. UPON ROLL CALL, COUNCIL MEMBERS - VOTING "AYE" AND COUNCIL MEMBERS NONE VOTING 'NAY," THE MAYOR DECLARED THE FOREGOING RESOLUTION PASSED AND APPROVED THIS 13th DAY OF JANUARY 2026.

CITY OF BLAIR, NEBRASKA

BY_____
MELINDA K. RUMP, MAYOR

ATTEST:

_____
BRENDA WHEELER, CITY CLERK

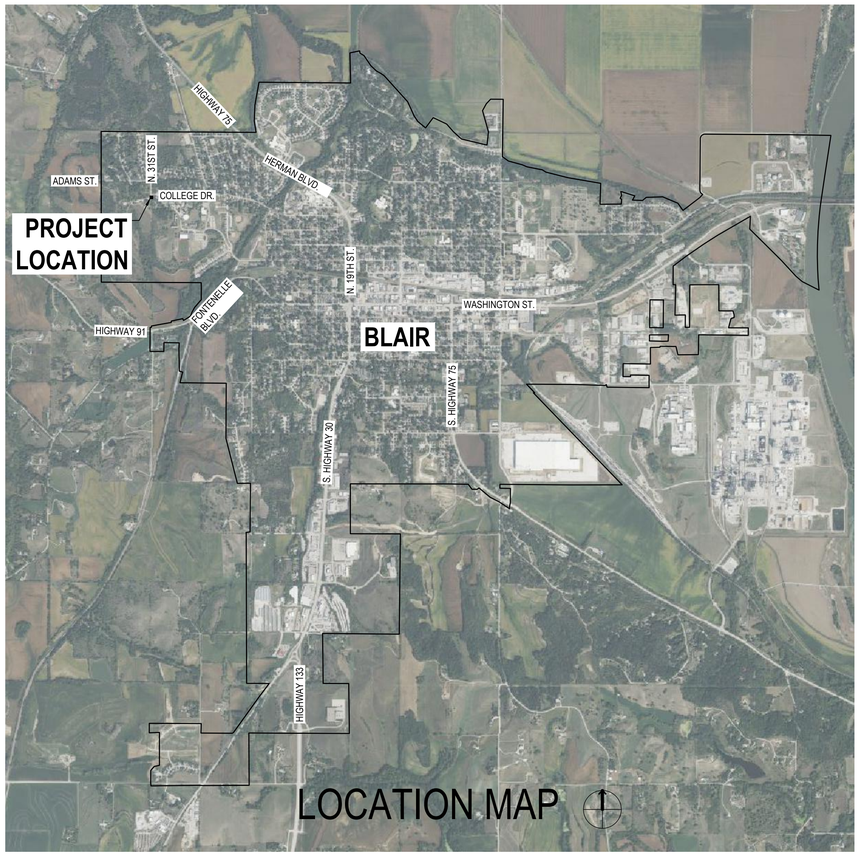
(SEAL)

STATE OF NEBRASKA)
) :ss:
WASHINGTON COUNTY)

BRENDAWHEELER hereby certifies that she is the duly appointed, qualified and acting City Clerk of the City of Blair, Nebraska, and that the above and foregoing Resolution was passed and adopted at a regular meeting of the Mayor and City Council of said City held on the 13TH day of January 2026.

_____
BRENDAWHEELER, CITY CLERK

HDR ENGINEERING, INC. | CA0443AE
1917 S. 67TH STREET
OMAHA, NE 68106
(402) 399-1000



Contract Drawings For

BLACK ELK PUMP STATION MODIFICATIONS

3100 College Drive, Blair, NE 68008
Civil/Structural/Process/Mechanical/Electrical

Project No.
10417756

Blair, Nebraska
January 14, 2026

ISSUED FOR BID

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *STEVEN M. HANNA, E-18875,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

I, STEVEN HANNA, AM THE COORDINATING PROFESSIONAL ON THE BLACK ELK PUMP STATION MODIFICATIONS PROJECT.

Index of Drawings

Sheet Number	Sheet Title
	GENERAL
00G000	COVER SHEET
00G001	ABBREVIATIONS
00G002	GENERAL LEGEND AND NOTES
00G003	MECHANICAL LEGEND
00G004	ELECTRICAL LEGEND
00G005	ELECTRICAL LEGEND
00X100	ELECTRICAL DEMOLITION SITE PLAN
00C100	CIVIL SITE PLAN
00C101	ENLARGED SITE PLAN
00C501	CIVIL DETAILS
00S001	STRUCTURAL GENERAL NOTES
00S501	STRUCTURAL DETAILS
00S502	STRUCTURAL DETAILS
00E100	ELECTRICAL SITE PLAN
00E501	ELECTRICAL DETAILS
	PUMP STATION DEMOLITION
01X101	PUMP STATION POWER AND LIGHTING DEMOLITION PLAN
01X601	DEMOLITION ONE-LINE DIAGRAMS
01X651	DEMOLITION ELECTRICAL SCHEDULES
	PROCESS
01D101	PROCESS PLAN VIEWS
01D301	PROCESS SECTIONS AND DETAILS
	MECHANICAL
01M101	HVAC PLANS
01M601	HVAC SCHEDULES
	ELECTRICAL
01E101	PUMP STATION POWER AND LIGHTING PLAN
01E601	ONE-LINE DIAGRAMS
01E631	CONTROL AND GROUNDING DIAGRAMS
01E651	ELECTRICAL SCHEDULES

A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
A	AMPERE
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABT	ABOUT
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACP	ACOUSTIC CEILING PANEL, ASPHALTIC CONCRETE PAVEMENT
ACST	ACOUSTIC
AD	ADDENDUM, AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGR	AGGREGATE
AI	AREA INLET, ANALOG INPUT
AIC	AMPS INTERRUPTING CAPACITY
ALIG	ALIGNMENT
ALT	ALTERNATE, ALTITUDE
ALUM	ALUMINUM
AM	ACOUSTICAL MATERIAL
AMB	AMBIENT
ANC	ANCHOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APRX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
AT	ACOUSTICAL TILE, AMP TRIP
ATC	ACOUSTICAL TILE CEILING
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
AWT	ACOUSTICAL WALL TILE
B TO B	BACK TO BACK
BAL	BALANCE
BBD	BULLETIN BOARD
BC	BASE CABINET, BOTTOM CHORD, BOLT CENTER, BOLT CIRCLE
BD	BOARD
BE	BOTH ENDS, BELL END
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE, BOARD FEET
BITUM	BITUMINOUS
BKG	BACKING
BL	BASE LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCHMARK, BEAM
BOC	BACK OF CURB
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOL	BOTTOM OF LOUVER, BOLLARD
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF REGISTER
BOT	BOTTOM
BOU	BOTTOM OF UNIT
BP	BASE PLATE
BRG	BEARING
BRGP	BEARING PLATE
BRKT	BRACKET
BS	BOTH SIDES
BTU	BRITISH THERMAL UNIT
BTW	BETWEEN
BTWLD	BUTT WELD
BU	BELL UP, BUILT-UP
BUR	BUILT-UP ROOFING
BW	BOTH WAYS
BYP	BYPASS
C TO C	CENTER TO CENTER
C&G	CURB AND GUTTER
C	CHANNEL SHAPE, CENTIGRADE, CONDUIT
CAB	CABINET
CAP	CAPACITY
CAT	CATALOG, CATEGORY
CAV	CAVITY
CB	CATCH BASIN
CCB	CONCRETE BLOCK
CCW	COUNTER CLOCKWISE
CDF	CONTROLLED-DENSITY FILL
CE	CONCRETE EDGE
CER	CERAMIC
CF	CUBIC FEET (FOOT)
CFL	COUNTER FLASHING
CHBD	CHALKBOARD
CHD	CHORD
CHFR	CHAMFER
CHH	COMMUNICATION HANDHOLE
CI	CURB INLET
CIP	CAST-IN-PLACE
CIPB	CONCRETE INTERLOCKING PAVER BALLAST
CIRC	CIRCULATION, CIRCULAR
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE, CLASS, CLOSE
CLG	CEILING

CLKG	CAULKING
CLR	CLEAR
CMH	COMMUNICATION MANHOLE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT, CONCRETE OPENING
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMM	COMMUNICATION
COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE
CON	CONCENTRIC
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COOR	COORDINATE
CORR	CORROSIVE, CORRUGATED
CP	CHECKER PLATE, CONTROL POINT
CPLG	COUPLING
CRL	CORROSION-RESISTANT LINING
CSC	COMPRESSION SLEEVE COUPLING
CSK	COUNTERSINK
CSS	CLINIC SERVICE SINK
CT	CERAMIC TILE
CTJ	CONTRACTION JOINT
CTR	CENTER
CTRL	CONTROL
CVT	CULVERT
CU	COPPER, CUBIC
CW	CLOCKWISE
CY	CUBIC YARD
d	PENNY (NAIL MEASURE)
D	DEEP, DIFFUSER, DRAIN
DB	DUCT BANK, DECIBEL, DRY BULB
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEG C	DEGREE CENTIGRADE
DEG F	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON, DIGITAL INPUT
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIFF	DIFFERENTIAL, DIFFERENCE
DIM	DIMENSION
DISCH	DISCHARGE
DIST	DISTANCE, DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DMPF	DAMP PROOFING
DN	DOWN
DO	DISSOLVED OXYGEN, DIGITAL OUTPUT, DITTO
DP	DEPTH
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DS	DOWN SPOUT
DT	DOUBLE TEE, DRIP TRAP ASSEMBLY
DUP	DUPLICATE
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	EAST
EA	EACH, EXHAUST AIR
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EDB	ELECTRICAL DUCT BANK
EE	EACH END
EF	EACH FACE
EFF	EFFLUENT, EFFICIENCY
EHH	ELECTRICAL HANDHOLE
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELBOW, ELEVATION
ELEC	ELECTRICAL
EMBD	EMBEDDED
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENCL	ENCLOSURE
ENGR	ENGINEER
ENTR	ENTRANCE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE, EQUAL SPACE, EMERGENCY SHOWER
ESEW	EMERGENCY SHOWER AND EYE WASH
EST	ESTIMATE
EW	EACH WAY, EMERGENCY, EYE/FACE WASH
EWC	ELECTRIC WATER COOLER
EWEF	EACH WAY, EACH FACE
EWTB	EACH WAY, TOP AND BOTTOM
EXC	EXCAVATION
EXH	EXHAUST
EXP	EXPANSION, EXPOSED
EXST	EXISTING
EXT	EXTERIOR, EXTERNAL, EXTENSION

F TO F	FACE TO FACE
F&B	FACE AND BYPASS
FAB	FABRICATE
FB	FLOOR BEAM
FBD	FIBERBOARD
FBG	FIBERGLASS
FBM	BOARD FOOT MEASURE
FBO	FURNISHED BY OWNER
FC	FLUSHING CONNECTION
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTION
FDR	FEEDER
FDTN	FOUNDATION
FE	FLANGED END
FEC	FIRE EXTINGUISHER CABINET
FES	FLARED END SECTION
FEXT	FIRE EXTINGUISHER
FF	FAR FACE, FACTORY FINISH, FLAT FACE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISH
FJT	FLUSH JOINT
FL	FLOW, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLOR	FLUORESCENT
FLR	FLOOR
FLS	FLASHING, FLUSH
FN	FENCE
FO	FINISHED OPENING, FIBER OPTIC
FOB	FLAT ON BOTTOM
FOC	FACE OF CONCRETE, FACE OF CURB
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FPT	FEMALE PIPE THREAD
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FRTM	FIRE RETARDANT TREATED MATERIAL
FS	FLOOR SINK, FAR SIDE
FT	FEET, FOOT
FTG	FOOTING, FITTING
FUR	FURRED, FURRING
FURN	FURNITURE, FURNISH
FUT	FUTURE
FV	FACE VELOCITY
FW	FIELD WELD, FIRE WALL
FWD	FORWARD
FWE	FURNISHED WITH EQUIPMENT
FXTR	FIXTURE
G	GRILLE, GROUND
GA	GAGE (METAL THICKNESS)
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR, GRADE BREAK
GC	GROOVED COUPLING
GD	GUARD
GEN	GENERAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFMU	GROUND FACE MASONRY UNIT
GG	GUTTER GRADE
GJ	GROOVED JOINT
GL	GLASS
GLB	GLASS BLOCK, GLULAM BEAM
GND	GROUND
GP	GUY POLE
GR	GRADE
GRTG	GRATING
GSB	GYPSUM SHEATHING BOARD
GT	GREASE TRAP
GVL	GRAVEL
GW	GUY WIRE
GWB	GYPSUM WALLBOARD
GYP	GYPSUM HARDBOARD
H	HIGH
HB	HOSE BIBB
HBD	HARDBOARD
HC	HANDICAPPED, HOLLOW CORE, HORIZONTAL, CURVE, HORIZONTAL CENTERLINE
HD	HEAD, HOT DIP
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGR	HANGER
HH	HANDHOLE
HID	HIGH-INTENSITY DISCHARGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HPC	HORIZONTAL POINT OF CURVATURE
HPS	HIGH-PRESSURE SODIUM
HPT	HORIZONTAL POINT OF TANGENCY
HR	HOSE REEL, HOUR
HS	HEADED STUD, HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SHAPE
HT	HEIGHT
HTG	HEATING
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC
HZ	HERTZ, CYCLES PER SECOND

ID	INSIDE DIAMETER, INTERIOR DIMENSION
IE	INVERT ELEVATION, FOR EXAMPLE
IF	INSIDE FACE
IH	INTAKE HOOD
IMP	IMPACT
IN	INCH
INC	INCLUDE, INCANDESCENT
INF	INFLUENT
INSTR	INSTRUMENTATION
INSUL	INSULATION
INT	INTERIOR, INTERSECTION
INTR	INTERMEDIATE, INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
IPT	INTERNAL PIPE THREAD
IR	INSIDE RADIUS, IRON ROD
IRR	IRRIGATION
ISO	ISOMETRIC
JB	JUNCTION BOX
JCT	JUNCTION
JF	JOINT FILLER
JST	JOIST
JT	JOINT
K	KIP
KB	KNEE BRACE
KCMIL	THOUSAND CIRCULAR MILS
KD	KNOCK DOWN
KO	KNOCK OUT
KSI	KIPS PER SQUARE INCH
KW	KILOWATT
L	ANGLE, LENGTH, LAVATORY, LINTEL
LAD	LADDER
LAM	LAMINATE
LATL	LATERAL
LB	LAG BOLT, POUND
LCTB	LIQUID CHALK AND TACK BOARD
LDG	LANDING
LDR	LEADER
LE	LIFTING EYE
LF	LINEAR FOOT
LG	LONG
LH	LEFT HAND
LIN	LINEAR
LIQ	LIQUID
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMLU	LIQUID MARKER LECTURE UNIT
LNG	LONGITUDINAL
LOC	LOCATION
LP	LOW POINT
LPS	LOW-PRESSURE SODIUM
LR	LONG RADIUS
LT	LEFT
LTD	LIMITED
LTG	LIGHTING
LTL	LINTEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
LVL	LAMINATED VENEER LUMBER
LVR	LOUVER
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LWL	LOW WATER LEVEL
MA	MIXED AIR
MACH	MACHINED
MAINT	MAINTENANCE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MECHANICAL CONTRACTOR, MECHANICAL COUPLING, MOMENT CONNECTION
MCB	METAL CORNER BEAD
MCJ	MASONRY CONTROL JOINT
MDMJ	MODIFIED DOUBLE MECHANICAL JOINT
MECH	MECHANICAL
MED	MEDIUM
MFR	MANUFACTURER
MH	MANHOLE, METAL HALIDE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
ML	MASONRY LINTEL
MLO	MAIN LUGS ONLY
MMB	MEMBRANE
MO	MASONRY OPENING
MOD	MODULAR, MODIFY
MON	MONUMENT
MPE	MULTI-PURPOSE EPOXY
MPT	MALE PIPE THREAD
MRGWB	MOISTURE-RESISTANT GYPSUM WALLBOARD
MS	MOP SINK
MSL	MEAN SEA LEVEL
MT	MOUNT
MU	MASONRY UNIT
MULL	MULLION
MV	MEDIUM VOLTAGE
MW	MONITORING WELL

N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NAT	NATURAL, NATIONAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NF	NEAR FACE, NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O TO O	OUT TO OUT
OA	OUTSIDE AIR, OVERALL
OC	ON CENTER
OCPD	OVER CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
OF	OUTSIDE FACE, OFFICE FURNISHING
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OG	ORIGINAL GROUND
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL
ORD	OVERFLOW ROOF DRAIN
ORIG	ORIGINAL
OVFL	OVERFLOW
OVHG	OVERHANG
OZ	OUNCE
P	PAINT
PA	PUBLIC ADDRESS
PAR	PARALLEL, PARAPET
PB	PANIC BAR, PULL BOX
PBD	PARTICLE BOARD
PC	POINT OF CURVE, PIECE, PRECAST
PCC	POINT OF COMPOUND CURVATURE
PCF	POUNDS PER CUBIC FOOT
PCT	PERCENT
PE	PLAIN END
PED	PEDESTAL
PEN	PENETRATION
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PF	POWER FACTOR
PFMU	PREFACED MASONRY UNIT
PH	PHASE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PLATE, PROPERTY LINE, PRECAST LINTEL
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PNEU	PNEUMATIC
POL	POLISH
POS	POSITIVE, POSITION
PP	POLYPROPYLENE, POWER POLE
PRC	POINT OF REVERSE CURVATURE
PREF	PREFINISHED
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE
PRES	PRESSURE
PRI	PRIMARY
PROP	PROPERTY, PROPOSED
PROT	PROTECTION
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PST	PRESTRESSED
PT	POINT, POINT OF TANGENCY
PTN	PARTITION
PVC	POLYVINYL CHLORIDE, POINT OF VERTICAL CURVE
PVC-RGS	PVC COATED RGS
PVMT	PAVEMENT
PWD	PLYWOOD
PWJ	PLYWOOD WEB JOIST
PZ	PIEZOMETER
Q	RATE OF FLOW
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
QUAL	QUALITY

R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
R	RADIUS, REGISTER, RISER
RA	RETURN AIR
RB	RESILIENT BASE, ROCK BERM
RCPT	RECEPTACLE
RD	ROOF DRAIN
REC	RECESS
RECD	RECEIVED
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING, RETURN
REV	REVISION, REVERSE
RF	RESILIENT FLOORING
RFG	ROOFING
RFL	REFLECTED, REFLECTOR
RGH	ROUGH
RGS	RIGID GALVANIZED STEEL
RH	RELIEF HOOD, RIGHT HAND, RELATIVE HUMIDITY
RL	REQUIRED LAP
RLFA	RELIEF AIR
RND	ROUND
RNG	RUNNING
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RVT	RESILIENT VINYL TILE
RY	READY
S	SOUTH, SINK
SA	SUPPLY AIR
SAMU	SOUND-ABSORBING MASONRY UNIT
SAN	SANITARY
SB	SPLASH BLOCK
SC	SOLID CORE
SCH	SCHEDULE
SCHEM	SCHEMATIC
SCN	SCREEN
SE	STEEL/ALUMINUM EDGE
SEC	SECONDARY, SECONDS
SECT	SECTION
SEP	SEPARATE
SF	SQUARE FOOT, SILT FENCE
SG	SHEET GLASS, SEALANT GROOVE
SH	SHOWER
SHT	SHEET
SHTG	SHEATHING
SIL	SILENCE
SIM	SIMILAR
SJ	SLAB JOINT
SL	SLOPE, STEEL LINTEL
SLTD	SLOTTED
SLV	SLEEVE
SMLS	SEAMLESS
SOG	SLAB ON GRADE
SP	SOUNDPROOF, STANDPIPE
SPA	SPACING
SPEC	SPECIFICATION
SPLY	SUPPLY
SPST	SINGLE POLE SINGLE THROW
SPT	SET POINT
SQ	SQUARE
SR	SHORT RADIUS
SS	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL, STRAIGHT
SUB	SUBSTITUTE
SUC	SUCTION
SUSP	SUSPENDED
SY	SQUARE YARD
SYM	SYMBOL
SYMM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T	TILE, TREAD
TA	TOILET ACCESSORY, TEMPERED AIR
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEF	TROWELED EPOXY FLOORING
TEMP	TEMPORARY, TEMPERATURE
THD	THREAD
THK	THICK
THRESH	THRESHOLD
TKBD	TACK BOARD

TOB	TOP OF BOLT, TOP OF BANK, TOP OF BEAM, TOP OF BERM
TOC	TOP OF CURB, TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOG	TOP OF GRATING
TOL	TOLERANCE, TOP OF LEDGER
TOM	TOP OF MASONRY
TOP	TOP OF PLATE
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB, TOP OF STEEL, TOE OF SLOPE
TOW	TOP OF WALL
TP	TOILET PARTITION, TELEPHONE POLE, TOE PLATE, TRAP PRIMER
TPD	TOILET PAPER DISPENSER
TPG	TOPPING, THROUGH PLATE GIRDER
TR	TRANSOM
TRANS	TRANSITION
TRD	TRENCH DRAIN
TYP	TYPICAL
U	URINAL
UG	UNDERGROUND
ULT	ULTIMATE
UNFN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VENT, VELOCITY, VOLT
VA	VOLT AMPERE
VAC	VACUUM
VAR	VARNISH, VARIABLE, VOLT AMPERES REACTIVE
VB	VAPOR BARRIER, VINYL BASE, VALVE BOX
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE, VERTICAL CENTERLINE
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VERTS	VERTICAL REINFORCING
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VIN	VINYL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VS	VERSUS, VAPOR SEAL
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
W	WATT, WEST, WIDE, WINDOW, WIRE, WIDE FLANGE BEAM
WB	WOOD BASE
WC	WATER CLOSET, WATER COLUMN
WD	WOOD, WIDTH
WF	WIDE FLANGE, WASH FOUNTAIN
WG	WIRE GLASS, WATER GAGE
WH	WALL HYDRANT, WEEP HOLE
WI	WROUGHT IRON
WL	WATER LEVEL
WLD	WELDED
WM	WIRE MESH
WP	WEATHERPROOF
WS	WATERSTOP, WATER SURFACE
WSCT	WAINSCOT
WT	WEIGHT, WATER TIGHT
WTHP	WATERPROOF, WORKING POINT
WWF	WELDED WIRE FABRIC
XP	EXPLOSION-PROOF
XS	EXTRA STRONG
XSECT	CROSS SECTION
XXS	DOUBLE EXTRA STRONG
YH	YARD HYDRANT
YS	YIELD STRENGTH
ZRU	ZINC-RICH URETHANE

GENERAL NOTES:

1. THESE ABBREVIATIONS APPLY TO THE ENTIRE SET OF CONTRACT DRAWINGS.
2. LISTING OF ABBREVIATIONS DOES NOT IMPLY THAT ALL ABBREVIATIONS ARE USED IN THE CONTRACT DRAWINGS.
3. ABBREVIATIONS SHOWN ON THIS SHEET INCLUDE VARIATIONS OF A WORD. FOR EXAMPLE, "MOD" MAY MEAN MODIFY OR MODIFICATION; "INC" MAY MEAN INCLUDED OR INCLUDING AND "REINF" MAY MEAN EITHER REINFORCE OR REINFORCING.
4. SEE INSTRUMENTATION LEGEND SHEET FOR PROJECT-SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

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10/17/2023 8:27:10 AM

HDR

ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *STEVEN M. HANNA, E-18875,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

CITY OF BLAIR, NEBRASKA • 1869

BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ABBREVIATIONS

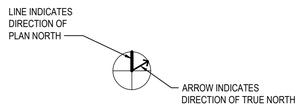
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FILENAME	10417756-00G001.dwg
SCALE	NO SCALE
SHEET	00G001

MATERIALS IN PLAN/SECTION

- ACOUSTICAL CEILING TILE (SECTION)
- ASPHALT (PLAN OR SMALL-SCALE SECTION)
- ASPHALT (LARGE-SCALE SECTION)
- BATT INSULATION (SECTION)
- BRICK MASONRY (PLAN AND/OR SECTION)
- CHECKERED PLATE (PLAN)
- CONCRETE (PLAN AND/OR SECTION)
- CONCRETE MASONRY (PLAN AND/OR SECTION)
- DEMOLITION (PLAN AND/OR SECTION)
- EARTH (SECTION)
- FILTER POINT MAT (PLAN)
- FINISHED WOOD (SECTION)
- GLULAM LUMBER (SECTION)
- GRANULAR FILL (SECTION) ON THE PLANS
- GRATING (SECTION)
- GRATING (PLAN)
- GROUT (SECTION)
- GYPSUM BOARD (SECTION)
- METAL (SECTION)
- ORIENTED STRAND BOARD (SECTION)
- PARTICLE BOARD (SECTION)
- PLYWOOD (LARGE-SCALE SECTION)
- PLYWOOD (SMALL-SCALE SECTION)
- PRECAST CONCRETE (PLAN AND/OR SECTION)
- RIGID INSULATION (SECTION)
- RIPRAP (PLAN AND/OR SECTION)
- SAND (SECTION)
- SOD (SECTION)
- WEEP JOINT MORTAR PROTECTION SYSTEM (SECTION)
- WOOD - CONTINUOUS (SECTION)
- WOOD BLOCKING (SECTION)

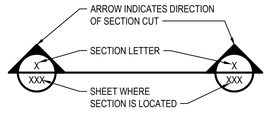
GENERAL SYMBOLOGY



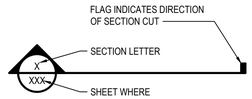
NORTH ARROW

PLAN
1" = 5'

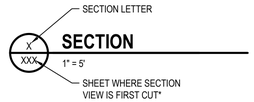
PLAN TITLE



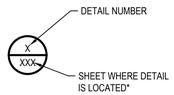
FULL BUILDING SECTION CUT MARKER



SECTION CUT MARKER



SECTION TITLE



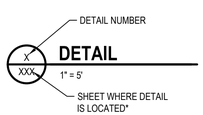
DETAIL MARKER

FOR REFERENCING DETAILS INCLUDED IN DRAWING SET.

XXXXXX

DETAIL MARKER

FOR REFERENCING DETAILS BOUND IN SPECIFICATIONS OR SEPARATE VOLUME.

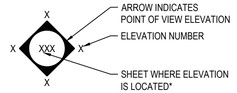


DETAIL TITLE

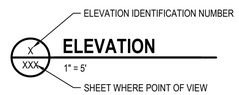
* EXCEPTIONS WHERE THE SHEET NUMBER IS REPLACED BY A DASH (-).
1) FOR COMMON DETAILS, SECTIONS, ELEVATIONS OR DETAILS THAT ARE CUT OR CALLED OUT ON MULTIPLE SHEETS.
2) SECTIONS, ELEVATIONS OR DETAILS THAT ARE LOCATED ON THE SAME SHEET THEY ARE CUT OR CALLED OUT ON.



SINGLE ELEVATION OR PHOTO MARKER



MULTIPLE ELEVATION OR PHOTO MARKER



ELEVATION TITLE



ARCHITECTURAL

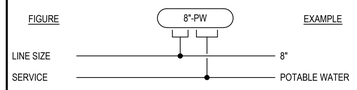
ROOM/SPACE NAME / XX-XX	ROOM OR SPACE NUMBER
XXX	DOOR NUMBER
DOOR MARK: XXX / XXXX; STAIR: XXX / XXXX	DOOR FIRE TAG
A	NEW COLUMN GRID BUBBLE
1	EXISTING COLUMN GRID BUBBLE
X	WALL TYPE
X	WINDOW TYPE
X	CURTAIN WALL
X	LOUVER TYPE
X	ACCESSORY, FURNITURE, AND MISCELLANEOUS EQUIPMENT IDENTIFIER
#	SHEET KEYNOTE
##	REVISION DELTA

GENERAL LINE SYMBOLOGY

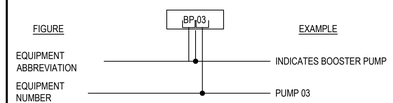
- 4-HOUR FIRE RATED WALL
- 3-HOUR FIRE RATED WALL
- 2-HOUR FIRE RATED WALL
- 1-HOUR FIRE RATED WALL
- COLUMN GRID LINE/CENTERLINE

IDENTIFICATION SYMBOLOGY

PIPING



EQUIPMENT IDENTIFICATION



SHEET NAMING CONVENTION

AREA DESIGNATION

01 PUMP STATION

DISCIPLINE DESIGNATOR & DISCIPLINE ORDER

G	GENERAL
X	DEMOLITION
C	CIVIL
S	STRUCTURAL
D	PROCESS
M	MECHANICAL
E	ELECTRICAL

DRAWING TYPE DESIGNATOR

0	GENERAL (SYMBOLS, LEGENDS)
1	PLANS
2	ELEVATIONS/PROFILES
3	SECTIONS
4	LARGE SCALE VIEWS
5	DETAILS
6	SCHEDULES AND DIAGRAMS
7	OTHER VIEWS

EXAMPLE

CIVIL GRADING PLAN, SHEET 01

0	1					AREA 01
AREA DESIGNATION						
		C				CIVIL DISCIPLINE
DISCIPLINE DESIGNATOR						
			1			PLAN SHEET TYPE
SHEET TYPE DESIGNATOR						
				0	1	SHEET NUMBER 01
SHEET NUMBER						
0	1	C	1	0	1	SAMPLE SHEET NUMBER

ADDITIONAL ABBREVIATIONS

PIPING SYSTEMS

PW	POTABLE WATER
NG	NATURAL GAS

GENERAL NOTES

1. UTILITY FACILITIES SHOWN ARE FROM LOCATES OR RECORDS PROVIDED BY OTHERS, AND SHALL BE CONSIDERED APPROXIMATE. OTHER UTILITIES MAY EXIST (EITHER IN SERVICE OR ABANDONED) AND THEIR LOCATION MAY NOT BE PRESENTLY KNOWN OR IDENTIFIED ON THE PLANS. THE ENGINEER MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM AT 1-800-331-5666 TO IDENTIFY THE LOCATION OF ALL UNDERGROUND UTILITY FACILITIES WITHIN THE CONSTRUCTION AREA.

   THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL PUBLIC AND PRIVATE UTILITY FACILITIES LOCATED WITHIN THE CONSTRUCTION AREA TO AVOID DAMAGE. DAMAGE TO UTILITIES DUE TO THE CONTRACTOR'S ACTIONS SHALL BE REPAIRED OR REPLACED WITHOUT COST TO THE OWNER OR ENGINEER.

   WHERE EXISTING UTILITY FACILITIES ARE SHOWN IN THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANY PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITIES AND CONDUCTING WORK NEAR UTILITY FACILITIES.

   THE CONTRACTOR SHALL COOPERATE WITH UTILITY COMPANIES IN THEIR ADJUSTMENT OPERATIONS SO THAT THESE OPERATIONS MAY PROGRESS, THE DUPLICATION OF ADJUSTMENT WORK MAY BE REDUCED, AND THAT SERVICES RENDERED BY THOSE PARTIES WILL NOT BE INTERRUPTED.

   THE CONTRACTOR SHALL REVIEW ALL UTILITIES SHOWN IN THE PLANS AND COORDINATE WITH ALL UTILITY COMPANIES NECESSARY TO SCHEDULE WORK FOR ALL KNOWN AND POTENTIAL CONFLICTS. THE CONTRACTOR SHALL BE AWARE THAT UTILITY SERVICES ARE NOT ROUTINELY LOCATED OR SHOWN ON THE PLANS, HOWEVER MAY BE A CONFLICT WITH THE WORK PERFORMED. DELAYS, INCONVENIENCE, OR DAMAGE CLAIMED BY THE CONTRACTOR DUE TO ANY INTERFERENCE OF UTILITIES SHOWN IN THE PLANS OR SERVICES SHALL NOT BE CONSIDERED A CIRCUMSTANCE FOR ADDITIONAL TIME OR COMPENSATION.
2. REMOVALS OF ABANDONED UTILITIES THAT ARE SHOWN ON THE PLANS AND ENCOUNTERED DURING TRENCH EXCAVATION SHALL BE INCIDENTAL TO THE UNDERGROUND UTILITY BEING INSTALLED AND WILL NOT BE PAID FOR SEPARATELY UNLESS INDICATED OTHERWISE ON THE PLANS.
3. THE CONTRACTOR SHALL KEEP SANITARY SEWER AND STORM SEWER LINES AND STRUCTURES CLEAN AND FREE OF DEBRIS THAT IS A RESULT OF CONSTRUCTION OPERATIONS. ANY CLEANING AND REMOVAL OF DEBRIS THAT ENTERS AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE COMPLETED AT THE EXPENSE OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL MAKE ACCESS AVAILABLE TO ADJACENT PROPERTIES IN CASE OF EMERGENCIES. THE CONTRACTOR SHALL NOTIFY THE CITY (402-426-6695), 24 HOURS PRIOR TO CLOSING AND/OR OPENING ANY ROADS TO TRAFFIC. THE CONTRACTOR SHALL ADEQUATELY BARRICADE CLOSED ROADS DURING CONSTRUCTION TO INSURE PUBLIC SAFETY AND PROTECT NEW PAVEMENT FROM DAMAGE. ALL TRAFFIC CONTROL SHALL BE IN COMPLIANCE WITH "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" U.S. DEPARTMENT OF TRANSPORTATION, LATEST EDITION.
5. THE CONTRACTOR SHALL CONFINE ALL OPERATIONS, INCLUDING EQUIPMENT AND MATERIAL STORAGE, WITHIN THE CONSTRUCTION R.O.W. AND OR EASEMENTS OF THE PROJECT. IF THE CONTRACTOR IS GRANTED PERMISSION TO STORE MATERIALS OR EQUIPMENT ON ADJACENT PRIVATE PROPERTY THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH WRITTEN PROOF OF PERMISSION FROM THE LANDOWNER.
6. THE CONTRACTOR SHALL MAINTAIN THE PROJECT LIMITS. BY COMMENCING THE WORK IN A GIVEN AREA, THE CONTRACTOR ASSUMES THE RESPONSIBILITY OF ONGOING REQUIRED MAINTENANCE SUCH AS MOWING AND WEED CONTROL WITHIN THE PROJECT LIMITS.
7. THE CONTRACTOR SHALL CONTROL CONSTRUCTION DEBRIS, HAZARDOUS WASTE SPILLS, AND CONCRETE TRUCK WASHOUT AREA(S). THE CONTRACTOR SHALL CLEAN-UP AND DISPOSE OF ALL WASTE PROPERLY OFF-SITE AT AN APPROVED DISPOSAL FACILITY. NO CONSTRUCTION MATERIAL WASTES OR UNUSED MATERIALS SHALL BE BURIED, DUMPED, BURNED, OR DISCHARGED WITHIN THE PROJECT LIMITS.
8. ALL CONCRETE TRUCKS SHALL RETURN TO THE PLANT TO WASHOUT UNLESS THE CONTRACTOR DESIGNATES A LOCATION ON-SITE FOR THE TRUCKS TO WASH. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND CLEAN-UP OF THE WASHOUT LOCATION.
9. THE CONTRACTOR SHALL TAKE STEPS TO CONTROL SOIL EROSION AND FUGITIVE DUST DURING CONSTRUCTION. IF NECESSARY, HAY BALES, CHECK DAMS, SEDIMENT TRAPS OR ADDITIONAL SILT FENCE (NOT INDICATED ON THE PLANS) SHALL BE USED TO RETAIN SILT AND PREVENT SILT FROM ENTERING THE STORM DRAINAGE SYSTEM.
10. THE CONTRACTOR SHALL CONSTRUCT THE NECESSARY EROSION CONTROL INCLUDED IN THE PLANS PRIOR TO ANY GRADING ON THE PROJECT IN ORDER TO PREVENT SILT TRANSPORT AND SOIL TRACKING OUTSIDE OF THE PROJECT LIMITS.
11. CITY OF OMAHA 2024 EDITION OF "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" AND CITY OF OMAHA PUBLIC WORKS DEPARTMENT STANDARD PLATES ARE INCLUDED BY REFERENCE AND HEREAFTER REFERRED TO AS THE "STANDARD SPECIFICATIONS".
12. ALL EXISTING VALVES SHALL BE OPERATED BY CITY OF BLAIR PERSONNEL.
13. THE CONTRACTOR SHALL COORDINATE WITH CITY TO ISOLATE THE PUMP STATION FROM THE DISTRIBUTION SYSTEM DURING SHUTDOWN.

CONSTRUCTION NOTES

PUMP STATION SHUTDOWN SEQUENCE:

1. PUMP STATION WILL BE SHUTDOWN FOR A DURATION NO GREATER THAN 30 DAYS TO COMPLETE THE WORK.
2. SHUTDOWN SHALL NOT OCCUR BETWEEN JUNE 1 AND AUGUST 31.
3. COORDINATE WITH THE CITY ON ISOLATING THE PUMP STATION FROM THE DISTRIBUTION SYSTEM. ONLY CITY PERSONNEL SHALL OPERATE DISTRIBUTION SYSTEM VALVES.
4. COORDINATE WITH OPPD ON ISOLATING THE PUMP STATION ELECTRICALLY. MAINTAIN PARK LIGHTING THROUGHOUT DURATION OF SHUTDOWN.
5. DURING SHUTDOWN PERIOD (PHASE 2), INSTALL TYPE III BARRICADES AS SHOWN ON SHEET 01C100.
6. INSTALL A PERIMETER CONSTRUCTION FENCE AROUND THE LIMITS OF CONSTRUCTION NOTED ON SHEET 01C100.

UTILITY CONTACTS

CITY OF BLAIR:
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BUSINESS: 402-426-6695
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BLACK HILLS ENERGY:
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FASTWYRE:
MARTY LOPER
BUSINESS: 816-225-9425
ADDRESS: P.O. Box 400, Blair, NE 68008

GENERAL LEGEND NOTES:

1. THIS IS A STANDARD SHEET SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.

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ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *STEVEN M. HANNA, E-18875,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE BLAIR, NEBRASKA 68008

GENERAL LEGEND AND NOTES

0 1" 2"

FILENAME 10417756-00G002.dwg
SCALE NO SCALE

SHEET 00G002

PIPING SYSTEMS

- COLD WATER, POTABLE (CW)
- HOT WATER, POTABLE (HW)
- HOT WATER RECIRCULATING, POTABLE (HWC)
- NPW — NON POTABLE COLD WATER
- 140 - HOT WATER - TEMPERATURE, POTABLE
- TW — TEPID WATER, POTABLE
- TWR — TEPID WATER RETURN, POTABLE
- SAN — SANITARY SEWER BELOW GRADE
- SAN - SANITARY SEWER ABOVE GRADE
- V - SANITARY VENT
- AW — ACID WASTE
- AV — ACID VENT
- CWV — COMBINATION WASTE AND VENT
- PD — PRESSURE DRAINAGE
- SD — STORM DRAIN ABOVE GRADE
- SD — STORM DRAIN BELOW GRADE
- OD — STORM DRAIN OVERFLOW
- NG — NATURAL GAS
- LP — LIQUEFIED PROPANE
- CA — COMPRESSED AIR
- HWS — HEATING HOT WATER SUPPLY
- HWR — HEATING HOT WATER RETURN
- GHWS — GLYCOL HEATING HOT WATER SUPPLY
- GHWR — GLYCOL HEATING HOT WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- GCWS — GLYCOL CHILLED WATER SUPPLY
- GCWR — GLYCOL CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- CD — CONDENSATE DRAIN
- CPD — CONDENSATE PUMP DISCHARGE
- STM -15 — STEAM SUPPLY - PSI
- BBD — BOILER BLOW DOWN
- BF — BOILER FEED
- SV — STEAM VENT
- MU — MAKE-UP WATER

PIPING SYMBOLOGY

- PIPE ANCHOR
- PIPE GUIDE
- EXPANSION JOINT
- PT — PRESSURE/ TEMPERATURE PORT
- THERMOMETER
- THERMOWELL
- PRESSURE GAUGE
- T — TEMPERATURE GAUGE
- FLEXIBLE PIPING CONNECTION
- WYE STRAINER
- MANUAL AIR VENT
- A — AUTOMATIC AIR VENT
- M — METER (WATER, GAS, OTHER)
- FCO — FLOOR CLEANOUT
- CO — CLEANOUT
- WCO — WALL CLEANOUT
- GCO — DOUBLE GRADE CLEANOUT
- WATER HAMMER ARRESTOR
- EARTHQUAKE VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER, FLAT ON BOTTOM
- ECCENTRIC REDUCER, FLAT ON TOP
- ELBOW, 90° TURN DOWN
- ELBOW, 90° TURN UP
- TEE, OUTLET UP
- TEE, OUTLET DOWN
- TEE, OUTLET UP W/ 90° TURN
- TEE, OUTLET DOWN W/ 90° TURN
- PIPE BREAK
- PIPE CAP
- BLIND FLANGE
- UNION
- FLOW ARROW
- SHUTOFF VALVE (NORMALLY OPEN)
- SHUTOFF VALVE (NORMALLY CLOSED)
- DRAIN VALVE
- CHECK VALVE
- VB — VACUUM BREAKER
- AUTOMATIC FLOW CONTROL VALVE
- CALIBRATED MANUAL BALANCING VALVE
- OR — PRESSURE-RELIEF VALVE
- PRESSURE-REDUCING VALVE (PRV)
- AUTOMATIC CONTROL VALVE, 2-WAY
- AUTOMATIC CONTROL VALVE, 3-WAY
- BFP — BACKFLOW PREVENTER
- XX-1 — PLUMBING FIXTURE

HVAC SYMBOLOGY

- 24x18 — SUPPLY AIR OR OUTSIDE AIR DUCT UP (SECTION CUT, FIRST DIMENSION DUCT WIDTH)
- SUPPLY AIR OR OUTSIDE AIR DUCT DOWN (NO SECTION CUT)
- RETURN AIR DUCT UP (SECTION CUT)
- RETURN AIR DUCT DOWN (NO SECTION CUT)
- EXHAUST AIR DUCT UP (NO SECTION CUT)
- EXHAUST AIR DUCT DOWN (NO SECTION CUT)
- ROUND ELBOW UP
- ROUND ELBOW DOWN
- TRANSITION - RECTANGULAR TO ROUND DUCT
- STANDARD BRANCH
- ELBOW - W/ TURNING VANE (RECTANGULAR)
- ELBOW - (RECTANGULAR), SMOOTH RADIUS
- 18x24 — RECTANGULAR DUCT OR OPENING SIZE FIRST NUMBER INDICATES SIZE OF SIDE SHOWN
- 18Ø — ROUND DUCT SIZE
- R OR D — RECTANGULAR DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
- R OR D — ROUND DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
- 18x24 — HIDDEN DUCT
- T 9'-10" B 9'-0" / 18x10 — DUCT/PIPE ELEVATION TAG ABOVE FINISH FLOOR
- VOLUME DAMPER
- M — MOTOR OPERATED DAMPER
- FIRE DAMPER
- S — SMOKE DAMPER
- S — SMOKE AND FIRE DAMPER
- FLEXIBLE CONNECTION
- FLEXIBLE DUCT - TWO LINE
- FLEXIBLE DUCT - ONE LINE
- ACOUSTICAL LINING - DUCT DIMENSIONS FOR NET FREE AREA
- UC — UNDERCUT DOOR
- NEW TO EXISTING CONNECTION
- REMOVE EXISTING UP TO THIS POINT
- HVAC EMERGENCY SHUTDOWN SWITCH

- TAG-SIZE / CFM — SUPPLY AIR REGISTER
- TAG-SIZE / CFM — EXHAUST AIR OR RETURN AIR GRILLE
- TAG / CFM — EXHAUST AIR OR RETURN AIR GRILLE
- TAG / CFM — SUPPLY AIR ASSEMBLY SQUARE DIFFUSER
- TAG / CFM — SUPPLY AIR ASSEMBLY ROUND DIFFUSER

TEMPERATURE CONTROL DIAGRAM SYMBOLOGY

MISCELLANEOUS DEVICE IDENTIFIER

CO	SPACE CARBON MONOXIDE SENSOR
CO2	SPACE CARBON DIOXIDE SENSOR
H	SPACE HUMIDITY SENSOR
NO2	SPACE NITROGEN DIOXIDE SENSOR
S	SPACE TEMPERATURE SENSOR
T	THERMOSTAT

CONTROL DEVICE IDENTIFIER

AFS	AIRFLOW MEASURING STATION
AM	AIRFLOW MEASURING SENSOR
CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
F	FLOW SWITCH
FRZ	FREEZE STAT
H	HUMIDITY SENSOR
HS	HIGH STATIC SWITCH
LS	LOW STATIC SWITCH
NO2	NITROGEN DIOXIDE SENSOR
P	PRESSURE SENSOR
S	SPACE TEMPERATURE SENSOR
SD	SMOKE DETECTOR
T	TEMPERATURE SENSOR
TS	TEMPERATURE SWITCH
ΔP	DIFFERENTIAL PRESSURE SENSOR

CONTROL INPUT/OUTPUT IDENTIFIER

AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT

COIL IDENTIFIERS

CC	CHILLED WATER COOLING COIL
DG	DIRECT FIRED GAS BURNER
DX	DIRECT EXPANSION COOLING COIL
EH	ELECTRIC HEATING COIL
ER	DIRECT EVAPORATIVE COIL
FC	FACE AND BYPASS COOLING COIL
FH	FACE AND BYPASS HEATING COIL
HC	HEATING HOT WATER HEATING COIL
IG	INDIRECT FIRED GAS BURNER
ST	STEAM HEATING COIL

CONTROL ABBREVIATIONS

BTU	BTU METER
COMM	COMMUNICATION
CT	CURRENT TRANSMITTER
EC	ELECTRONICALLY COMMUTATED
EF	EXHAUST FAN
FM	FLOW METER
M	MOTOR ACTUATOR
MA	MIXED AIR
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTDOOR AIR
RA	RETURN AIR
RL	RELIEF FAN
RF	RETURN FAN
SA	SUPPLY AIR
SF	SUPPLY FAN
TCC	TEMPERATURE CONTROL CONTRACTOR
VFC	VARIABLE FREQUENCY CONTROLLER

- S — DUCT MOUNTED SMOKE DETECTOR
- T — TEMPERATURE AVERAGING SENSOR
- M — MOTOR OPERATED DAMPER
- M — MOTOR OPERATED SINGLE BLADE DAMPER
- BACKDRAFT DAMPER
- HUMIDIFIER
- AFS — AIRFLOW MEASURING STATION
- INTAKE/ EXHAUST LOUVER
- FILTER
- FRZ — FREEZE STAT
- XX — SEE CONTROL ABBREVIATIONS (TYP)
- M — FAN
- EC — FAN WITH EC MOTOR
- PUMP
- EC — PUMP WITH EC MOTOR

ABBREVIATIONS

AD	ACCESS DOOR
AFR	ABOVE FINISHED ROOF
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
ARF	ABOVE RAISED FLOOR
AV	AIR VALVE
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BOE	BOTTOM OF EQUIPMENT
BTUH	BRITISH THERMAL UNITS PER HOUR
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
COP	COEFFICIENT OF PERFORMANCE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CRAC	COMPUTER ROOM AIR CONDITIONER
CU	CONDENSING UNIT
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DH	DEHUMIDIFIER
DX	DIRECT EXPANSION
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
ERU	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
ESS	EMERGENCY SHUTOFF SWITCH
EWT	ENTERING WATER TEMPERATURE
F	FUTURE
FA	FREE AREA
FCP	FAN CONTROL PANEL
FCU	FAN COIL UNIT
FDBK	FEEDBACK
FLA	FULL LOAD AMPS
FLT	FILTER
FPB	FAN POWERED BOX
FPM	FEET PER MINUTE
GC	GENERAL CONTRACTOR
GE	GRAVITY EXHAUST
GI	GRAVITY INTAKE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
I/O	INPUT/OUTPUT
I/P	CURRENT TO PNEUMATIC
IAQ	INDOOR AIR QUALITY
IPLV	INTEGRATED PART LOAD VALUE
LAT	LEAVING AIR TEMPERATURE
LVR	LOUVER
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MBH	THOUSAND BTUH
MCC	MOTOR CONTROL CENTER
NC	NOISE CRITERIA
NO	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
OS&Y	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP
PPH	POUNDS PER HOUR
RH	RELATIVE HUMIDITY
RTU	ROOFTOP UNIT
S	SIGNAL PORT
SCFM	STANDARD CUBIC FEET PER MINUTE
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SP	STATIC PRESSURE
TC	TECHNOLOGY CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TD	TEMPERATURE DIFFERENTIAL
TES	THERMAL ENERGY STORAGE
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
V&C	VALVE AND CAP
VAV	VARIABLE AIR VOLUME
VRF	VARIABLE REFRIGERANT FLOW
VTR	VENT THROUGH ROOF
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP

GENERAL NOTES

GENERAL MECHANICAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL COMPLETELY REMOVE ALL PIPING, DUCTWORK, COILS, EQUIPMENT, TERMINAL UNITS, ASSOCIATED CONTROLS, WIRING, AND OTHER ITEMS SHOWN BOLD AND/OR BOLD DASHED LINES UNLESS SPECIFICALLY NOTED OTHERWISE. THE ITEMS INDICATED ON THE DRAWINGS TO BE REMOVED ARE ONLY TO INDICATE IN GENERAL THE AMOUNT OF DEMOLITION WORK INVOLVED. A SITE INVESTIGATION BY THE CONTRACTOR MUST BE PERFORMED TO AID IN DETERMINING THE COMPLETE EXTENT OF WORK INVOLVED.
2. PIPING AND DUCTWORK EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. REMOVE MATERIALS ABOVE ACCESSIBLE CEILINGS. REMAINING PIPING SHALL BE DRAINED AND CAPPED WITHOUT CREATING DEAD LEGS IN THE SYSTEM. REMAINING DUCTWORK SHALL BE CAPPED.
3. LOCATE, IDENTIFY, AND PROTECT MECHANICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, NOTIFY OWNER AND INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.
4. EXISTING EQUIPMENT BEING REMOVED AND CONSIDERED SALVAGEABLE BY THE OWNER SHALL BE TURNED OVER TO THE OWNER.
5. CONTRACTORS SHALL COORDINATE AND SCHEDULE ALL NECESSARY UTILITY SHUT-OFFS WITH OWNER PRIOR TO PROCEEDING WITH SUCH WORK.
6. COORDINATE SAW-CUTTING OF THE FLOOR OR WALL WITH OTHER TRADES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALLS, FLOORS, CEILINGS, OR OTHER BUILDING ELEMENTS THAT ARE DISTURBED AS PART OF THE DEMOLITION OR INSTALLATION OF MECHANICAL WORK. SUCH WORK SHALL MATCH THE EXISTING CONSTRUCTION, FINISH, AND RATING. FIRE SEAL WALL OPENINGS AS REQUIRED.
8. REPLACE/REPAIR DAMAGED PIPING AND/OR DUCTWORK INSULATION TO MATCH EXISTING.
9. CONTRACTOR SHALL PROVIDE WORK IN PHASES AS REQUIRED BY THE CONTRACT DOCUMENTS WHILE MINIMIZING POTENTIAL WORK DELAYS AND UTILITY SHUT-DOWNS. COORDINATE ALL WORK WITH PROJECT PHASING PLAN AND WORK SHOWN ON DEMOLITION AND NEW PLANS. ALL EXISTING AREAS OF THE BUILDING NOT A PART OF A CURRENT PHASE OF WORK SHALL REMAIN OPERATIONAL WHILE WORK IN EACH INDIVIDUAL PHASE IS COMPLETED.

GENERAL MECHANICAL NOTES

1. THESE NOTES ARE NOT ALL INCLUSIVE. REFER TO DRAWINGS AND SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
2. THIS IS A STANDARD MECHANICAL (HVAC AND PLUMBING) SYMBOLOGY AND ABBREVIATIONS SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
3. VALVE SYMBOLS SHOWN HERE ARE APPLICABLE ONLY TO MECHANICAL SHEETS.
4. PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR COMPLETE AND OPERABLE SYSTEMS AS INDICATED ON THE DRAWINGS AS SPECIFIED, OR AS REQUIRED BY CODE.
5. MECHANICAL INSTALLATION SHALL COMPLY WITH THE ADA/ABA ACCESSIBILITY GUIDELINES.
6. DETAILS APPLY TO THE ENTIRE PROJECT AND ARE ONLY REFERENCED TO PROVIDE CLARITY IF THERE ARE MULTIPLE DETAILS THAT COULD APPLY TO A PARTICULAR PROJECT CONDITION.
7. COORDINATE LOCATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING WITH OTHER TRADES BEFORE PROCEEDING WITH WORK. DO NOT INSTALL MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING ABOVE ELECTRICAL EQUIPMENT WHERE PROHIBITED BY ELECTRICAL CODES (SWITCHBOARDS, PANELS, ETC.).
8. LIGHT LINE WEIGHT INDICATES EXISTING PIPING, DUCTWORK, AND/OR EQUIPMENT TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED AS WORK OF THIS CONTRACT.
9. COORDINATE INSTALLATION OF OUTSIDE AIR INTAKE WITH INSTALLATION OF PLUMBING VENTS, FLUES AND EXHAUST/RELIEF OUTLETS TO MAINTAIN 10' SEPARATION.
10. ALL WORK IN FINISHED SPACES SHALL BE LOCATED ABOVE CEILINGS, IN CHASES OR OTHER CONCEALED ACCESSIBLE LOCATIONS UNLESS NOTED OTHERWISE. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE AN ACCESS PANEL OR DOOR FOR ALL NON-ACCESSIBLE INSTALLATIONS. COORDINATE LOCATION OF ACCESS PANELS OR DOORS WITH THE ARCHITECT/ENGINEER AND OTHER TRADES.
11. ALL MATERIALS LOCATED IN PLENUM SHALL BE RATED FOR PLENUM INSTALLATION.
12. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH ALL TRADES. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS OR AS SHOWN ON THE MECHANICAL OR STRUCTURAL DRAWINGS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED.
13. ALL MISCELLANEOUS METALS AND MATERIALS REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE PROVIDED BY THE INSTALLING CONTRACTOR.
14. PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS OF DISSIMILAR METALS (SUCH AS COPPER TO GALVANIZED STEEL).
15. PROVIDE ISOLATION VALVES AT EACH PIECE OF EQUIPMENT. ALSO PROVIDE ISOLATION VALVES ON EACH BRANCH AND/OR RISER SERVING MULTIPLE PIECES OF EQUIPMENT OR FIXTURES AND ELSEWHERE AS INDICATED. INSTALL VALVES AS CLOSE TO MAIN AS POSSIBLE.

GENERAL HVAC NOTES

1. DUCTWORK DIMENSIONS: FIRST NUMBER INDICATES SIDE OF DUCTWORK SHOWN. ALL DIMENSIONS ARE IN INCHES AND ARE INSIDE CLEAR DIMENSIONS.
2. VOLUME DAMPERS ABOVE PLASTER OR GYPBOARD CEILINGS SHALL HAVE EXTENSION RODS AND CHROME-PLATED ESCUTCHEON PLATES.
3. COORDINATE ALL GRILLE, REGISTER AND DIFFUSER LOCATIONS WITH REFLECTED CEILING PLAN, LIGHTING, AND ALL OTHER CEILING MOUNTED DEVICES.
4. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK AND PIPING SYSTEMS CONNECTED TO FANS, PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION.
5. PROVIDE ACCESSIBLE VOLUME DAMPERS OR OTHER MEANS OF AIRFLOW ADJUSTMENT AT ALL DUCT RUN-OUTS TO DIFFUSERS AND GRILLES.
6. PROVIDE DUCT ACCESS DOORS AT OUTSIDE AIR INTAKE PLENUMS.
7. ALL DUCT RUN-OUTS TO DIFFUSERS AND GRILLES SHALL BE THE SAME AS THE DIFFUSER OR GRILLE NECK SIZE UNLESS NOTED OTHERWISE.
8. ALL PIPING RUNOUTS SHALL BE 3/4" UNLESS NOTED OTHERWISE.

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ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *PETER JAMES KONECK-WILWERDING, E-16136,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE BLAIR, NEBRASKA 68008

MECHANICAL LEGEND

0 1" 2"

FILENAME 10417756-00G003.dwg
SCALE NO SCALE

SHEET 00G003

ONE LINE, POWER AND LIGHTING SYMBOLOGY

X 20A 3P OR X 100AF 80AT 3P LSIGA

LOW VOLTAGE CIRCUIT BREAKER (CB). RATING AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE, OTHER THAN MCCB, IS REQUIRED, X INDICATES TYPE.

TYPES:
- MCCB - MOLDED CASE
- ICCB - INSULATED CASE
- LVP - LOW VOLTAGE POWER
- MCP - MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

TRIP UNIT:
- L - LONG TIME PICKUP
- S - SHORT TIME PICKUP
- I - INSTANTANEOUS PICKUP
- G - GROUND FAULT PICKUP
- A - ARC FLASH MAINTENANCE

GFP — GROUND FAULT PROTECTION

52 — MEDIUM VOLTAGE CIRCUIT BREAKER

FUSE, RATING, AND NUMBER OF FUSES AS NOTED

FUSED CUTOUT, CURRENT RATING, FUSE RATING, AND QUANTITY AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE RATING, AND QUANTITY AS NOTED (3 POLE UON)

NON-FUSED SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED (3 POLE UON)

DISCONNECT OR DRAWOUT CONNECTION

A C B & A C B — MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER

D C & D C — MOTOR/LOAD CONTROLLER AND SEPARATELY MOUNTED MOTOR/LOAD CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:

A - MAGNETIC STARTER NEMA SIZE

B - STARTER TYPE
- NONE - FULL VOLTAGE NON-REVERSING (FVNR)
- FVR - FULL VOLTAGE REVERSING
- 2S - TWO SPEED
- RVAT - REDUCED VOLTAGE AUTO TRANSFORMER

C - CONTROL DIAGRAM OR CONTROLS SCHEDULE NUMBER (IF REQUIRED)

D - CONTROLLER TYPE
- VFD - VARIABLE FREQUENCY DRIVE
- SS - SOLID STATE
- CONT - CONTACTOR

SEPARATELY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE - LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

SEPARATELY MOUNTED MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE-LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION.

X — NON-FUSED SAFETY SWITCH, 30A, 3P, X INDICATES AMP RATING GREATER THAN 30A

X Y — SAFETY SWITCH, 3P, X INDICATES AMP RATING GREATER THAN 30A, Y INDICATES FUSE SIZE

CB — SEPARATELY MOUNTED CIRCUIT BREAKER; SEE ELECTRICAL ONE - LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

7 1/2 OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

G — GENERATOR

ATS — TRANSFER SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

ATS - AUTOMATIC
MTS - MANUAL

TRANSFORMER
- 3-PHASE, 3-WIRE DELTA CONNECTION
- 3-PHASE, 4-WIRE GROUNDED WYE CONNECTION

LP100 208/120V 3Ø, 4W — SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED

100 KVA — NON-MOTOR LOAD WITH DESIGN KVA, KW, OR AMP

VOLTAGE TRANSFORMER (VT, PT, OR CPT)

CURRENT TRANSFORMER (CT)

WH — UTILITY WATT-HOUR METER PER UTILITY REQUIREMENTS

DMP — DIGITAL METERING PACKAGE

GROUND

LIGHTNING ARRESTER

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

SS — SELECTOR SWITCH

PB — PUSHBUTTON

IC — INSTRUMENTATION/CONTROL DEVICE

M — MOTOR OPERATED DAMPER

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

J or J — JUNCTION OR PULL BOX

PANELBOARD (250V TO 600V)

PANELBOARD (LESS THAN 250V)

X — ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, TRANSFORMER OR OTHER EQUIPMENT AS INDICATED. ESTIMATED SIZE AS INDICATED. WHEN USED X INDICATES EQUIPMENT TYPE.

EQUIPMENT TYPES:
- ATS - AUTOMATIC TRANSFER SWITCH
- CP - CONTROL PANEL
- MTS - MANUAL TRANSFER SWITCH
- MCC - MOTOR CONTROL CENTER
- UPS - UNINTERRUPTIBLE POWER SUPPLY
- VFD - VARIABLE FREQUENCY DRIVE
- SB - SWITCHBOARD
- SG - SWITCHGEAR
- T - TRANSFORMER

Z X Y — CEILING/PENDANT/BOLLARD MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — CEILING/PENDANT/BOLLARD MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

Z X Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

Z X Y — WALL MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

Z X Y — POLE/STANCHION MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED

Z Z X Y — CEILING/PENDANT MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED

Z X Y — CEILING/PENDANT MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, ALL OR PARTIAL EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

Z X Y — WALL MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED, ALL OR PARTIAL EMERGENCY (INTERNAL OR EXTERNAL POWER SOURCE AS INDICATED)

X Y — EMERGENCY LIGHT, NUMBER OF ATTACHED HEADS SHOWN

X Y — EMERGENCY LIGHT, REMOTE MOUNTED HEAD

X Y X Y — DOUBLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

X Y X Y — SINGLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

LIGHTING FIXTURE SUBSCRIPTS:
- X - INDICATES LUMINAIRE TYPE PER LUMINAIRE SCHEDULE
- Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD
- Z - INDICATES CONTROLLING SWITCH (IF REQUIRED)
- NL - NIGHT LIGHT UNSWITCHED

$ Y X — WALL SWITCH

SUBSCRIPTS:

X - INDICATES TYPE
- NONE - SINGLE POLE
- 2 - DOUBLE POLE
- 3 - THREE-WAY
- 4 - FOUR-WAY
- K - KEY SWITCH
- P - PILOT LIGHT
- L - LIGHTED HANDLE
- DM - DIMMING
- MC - SPDT MOMENTARY CONTACT CENTER OFF
- T - TIMER

Y - INDICATES CONTROLLING SWITCH (IF REQUIRED)

PC — PHOTOCELL

TC — TIME CLOCK

$ OSX or OSX — LIGHTING CONTROL OCCUPANCY SENSOR, WALL MOUNTED, X INDICATES SPECIFIC TYPE AS SPECIFIED

OSX — LIGHTING CONTROL OCCUPANCY SENSOR, CEILING MOUNTED, X INDICATES SPECIFIC TYPE AS SPECIFIED

PLUG-IN RECEPTACLE STRIP, QUANTITY AND SPACING OF RECEPTACLES AS NOTED OR SPECIFIED

X Y — SPECIAL-PURPOSE RECEPTACLE AS DEFINED ON PLANS

X X Y Y or X Y — TWO RECEPTACLES IN 2-GANG BOX UNDER COMMON COVER PLATE

X Y — DUPLEX RECEPTACLE

X Y — SIMPLEX RECEPTACLE

X Y — RECESSED FLOOR MOUNTED BOX, QUANTITY AND TYPE OF RECEPTACLES AS INDICATED

SUBSCRIPTS:

X - INDICATES TYPE
- GFCI - GROUND FAULT CIRCUIT INTERRUPTER
- IG - ISOLATED GROUND
- TR - TAMPER RESISTANT
- PLH - PLUG LOAD HALF CONTROLLED
- PLD - PLUG LOAD DUAL CONTROLLED
- USB - USB CHARGING STATION
- SPD - SURGE PROTECTIVE DEVICE
- AC - ABOVE COUNTER

Y - INDICATES CONTROLLING SWITCH (IF REQUIRED)

CONDUIT TURNING UP

CONDUIT TURNING DOWN

(#X) — HOMERUN TO PANEL
SINGLE PHASE: 2#12, 1#12G IN 3/4"C
THREE PHASE: 3#12, 1#12G IN 3/4"C
UNLESS OTHERWISE NOTED, CONDUCTOR SIZE IS FOR ENTIRE CIRCUIT

CONDUIT CONNECTION TO EQUIPMENT

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON-ARCHITECTURALLY FINISHED AREAS; CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON-ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

(#X) — CIRCUIT HASH MARKS (WHEN INDICATED); LONG, SHORT, SINGLE DOT, AND DOUBLE DOT REPRESENT PHASE, NEUTRAL, EQUIPMENT GROUND, AND ISOLATED EQUIPMENT GROUND, RESPECTIVELY. #12 IN 3/4" CONDUIT UNLESS OTHERWISE INDICATED.

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

CORD AND PLUG CONNECTION

XXX OR XXX — CONDUIT TAG OR CIRCUIT NUMBER - WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE SHEETS

GROUND CABLE

GROUND ROD

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLOGY SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. SEE P&ID LEGEND SHEET FOR PROJECT-SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

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PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
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MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ELECTRICAL LEGEND

0 1" 2"

FILENAME 10417756-00G004.dwg
SCALE NO SCALE

SHEET **00G004**

COMMUNICATION SYMBOLOGY

- WALL MOUNTED TELEPHONE OUTLET
- WALL MOUNTED DATA OUTLET
- WALL MOUNTED COMBINATION TELEPHONE AND DATA OUTLET
- RECESSED FLOOR MOUNTED TELEPHONE OUTLET
- RECESSED FLOOR MOUNTED DATA OUTLET
- RECESSED FLOOR MOUNTED COMBINATION TELEPHONE AND DATA OUTLET

AUDIO/VISUAL SYMBOLOGY

- TV — TELEVISION OUTLET
- S — CEILING MOUNT SPEAKER
- S X — WALL MOUNT SPEAKER

  SPEAKER SUBSCRIPTS:
  X - INDICATES HEIGHT
- H — HORN TYPE TRANSDUCER
- VC — VOLUME CONTROL
- PAHE — HEAD END EQUIPMENT
- M — FLOOR MOUNTED MICROPHONE JACK
- M — WALL MOUNTED MICROPHONE JACK

SECURITY SYMBOLOGY

- DOOR POSITION SWITCH
- COMBINATION ELECTRIC DOOR STRIKE AND POSITION SWITCH
- R P — PROXIMITY CARD READER
- R K — PROXIMITY CARD READER WITH KEYPAD
- M — DUAL TECHNOLOGY MOTION DETECTOR
- REQUEST TO EXIT MOTION DETECTOR
- REQUEST TO EXIT PUSH BUTTON
- G — GLASS BREAK DETECTOR
- PTZ — CCTV CAMERA
  PAN/TILT/ZOOM WHEN INDICATED
- SEC — SECURITY EQUIPMENT CABINET
- R — REMOTE KEYPAD/CONTROL STATION

MASS NOTIFICATION SYMBOLOGY

- EXTERIOR LOCATION HIGH POWER SPEAKER ARRAY (HSPA)
- LOC — LOCAL OPERATING CONSOLE
- TXT — TEXT MESSAGE DISPLAY UNIT
- MNCP — MASS NOTIFICATION SYSTEM CONTROL PANEL
- M — COMBINATION SPEAKER/STROBE NOTIFICATION APPLIANCE
- M — SPEAKER NOTIFICATION APPLIANCE
- M — STROBE NOTIFICATION APPLIANCE
- MS — CEILING MOUNTED SPEAKER
- MS — WALL MOUNTED SPEAKER
- MFCP — COMBINATION MASS NOTIFICATION/FIRE ALARM CONTROL PANEL
- MF — COMBINATION MASS NOTIFICATION/FIRE ALARM SPEAKER NOTIFICATION APPLIANCE
- MF — COMBINATION MASS NOTIFICATION/FIRE ALARM STROBE NOTIFICATION APPLIANCE
- MF — COMBINATION MASS NOTIFICATION/FIRE ALARM STROBE NOTIFICATION APPLIANCE

  LENS:
  FIRE ALARM - CLEAR
  MASS NOTIFICATION - AMBER

EMERGENCY ALARM SYMBOLOGY

- E — ALARM BELL
- E — ALARM HORN
- E — ALARM FLASHING LIGHT
- E — ALARM BELL AND FLASHING LIGHT COMBINATION UNIT
- E — ALARM HORN AND FLASHING LIGHT COMBINATION UNIT
- E — PUSHBUTTON OR PULLSTATION

SITE SYMBOLOGY

- EXTERIOR PAD MOUNTED TRANSFORMER
- POLE-MOUNTED TRANSFORMER
- X / Y — ELECTRICAL HANDHOLE OR MANHOLE
  X - INDICATES SEQUENCE NUMBER
  Y - MHX OR HHX
- X / Y — POLE/STANCHION MOUNTED FLOOD LUMINAIRE, LAMP TYPE AS SPECIFIED
- X / Y — POLE/STANCHION MOUNTED LUMINAIRE, LAMP TYPE AS SPECIFIED
- HIGH MAST LIGHTING, NUMBER OF LUMINAIRES AS SPECIFIED

  LIGHTING FIXTURE SUBSCRIPTS:
  X - INICATES LUMINAIRE/POLE TYPE PER LUMINAIRE SCHEDULE
  Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD
- POWER POLE
- CONDUIT STUBBED OUT AND CAPPED
- UGE — UGE — UNDERGROUND (UNO) ELECTRICAL AND COMMUNICATIONS SYSTEMS PATHWAY
- OHE — OHE — OVERHEAD ELECTRICAL AND COMMUNICATION SYSTEMS PATHWAY

CONTROL SYMBOLOGY

- ELECTRICAL CONNECTION
- OR OR — NO ELECTRICAL CONNECTION
- SV OR — SOLENOID VALVE
- X / Y — CONTROL/RELAY COIL; X INDICATES TYPE,
  Y INDICATES LOOP NO. WHEN USED

  TYPES:
  CR - CONTROL RELAY
  DP - DEFINITE PURPOSE RELAY
  LC - LIGHTING CONTACTOR
  M - MOTOR STARTER
  PC - PHOTOCELL
  TC - TIME CLOCK
  TR - TIMING RELAY
- NORMALLY OPEN CONTACT (N.O.)
- NORMALLY CLOSED CONTACT (N.C.)
- NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED
- NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED
- NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS DE-ENERGIZED
- NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS DE-ENERGIZED
- NORMALLY OPEN TEMPERATURE SWITCH;
  CLOSE ON RISING TEMPERATURE
- NORMALLY CLOSED TEMPERATURE SWITCH;
  OPEN ON RISING TEMPERATURE
- NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW
- NORMALLY CLOSED FLOW SWITCH;
  OPEN ON INCREASING FLOW
- NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL
- NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL
- NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE
- NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE
- NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT
- NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT
- MICROPROCESSOR (PLC, RTU, ETC.) OUTPUT
- MICROPROCESSOR (PLC, RTU, ETC.) INPUT
- FIELD WIRING EXTERNAL TO CONTROL PANEL
- X
- OFF / HAND / AUTO / XOO / OOX — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS; UNLESS OTHERWISE NOTED, 2-POSITION SIMILAR
- NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED
- NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

CONTROL SYMBOLOGY

- X — INDICATING LIGHT, X INDICATES LENS COLOR
- X — PUSH TO TEST INDICATING LIGHT, X INDICATES LENS COLOR

  LENS COLORS:
  R - RED
  G - GREEN
  B - BLUE
  Y - YELLOW
  W - WHITE
  A - AMBER
- THERMAL OVERLOAD ELEMENT
- OL (X) — THERMAL OVERLOAD RELAY CONTACT. WHEN SHOWN X INDICATES QUANTITY.
- CPT — CONTROL POWER TRANSFORMER (CPT)
- RTM — RUN TIME METER

FIRE ALARM SYMBOLOGY

- FACP — FIRE ALARM CONTROL PANEL
- FAA — FIRE ALARM ANNUNCIATOR
- F — FIRE ALARM MANUAL PULL STATION
- FS OR — FLOW SWITCH
- TS OR — TAMPER SWITCH
- PS OR — PRESSURE SWITCH
- X OR X — SPOT AND DUCT SMOKE DETECTOR, X INDICATES TYPE

  SUBSCRIPT:
  I - IONIZATION
  P - PHOTOELECTRIC
  D - FIRE OR SMOKE DAMPER
- X — HEAT DETECTOR

  SUBSCRIPT:
  R/C - RATE COMPENSATION
  R/F - COMBINATION RATE OF RISE AND FIXED TEMP
  R - RATE OF RISE FIXED
  F - FIXED TEMP
- X — FLAME DETECTOR

  SUBSCRIPT:
  IR - INFRARED
  UV - ULTRAVIOLET
- DOOR HOLDER
- F — BELL
- F — HORN/SPEAKER
- F — FLASHING LIGHT
- F — BELL/SPEAKER AND FLASHING LIGHT COMBINATION UNIT
- F — HORN/SPEAKER AND FLASHING LIGHT COMBINATION UNIT

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ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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CITY OF BLAIR, NEBRASKA • 1869

BLACK ELK PUMP STATION MODIFICATIONS

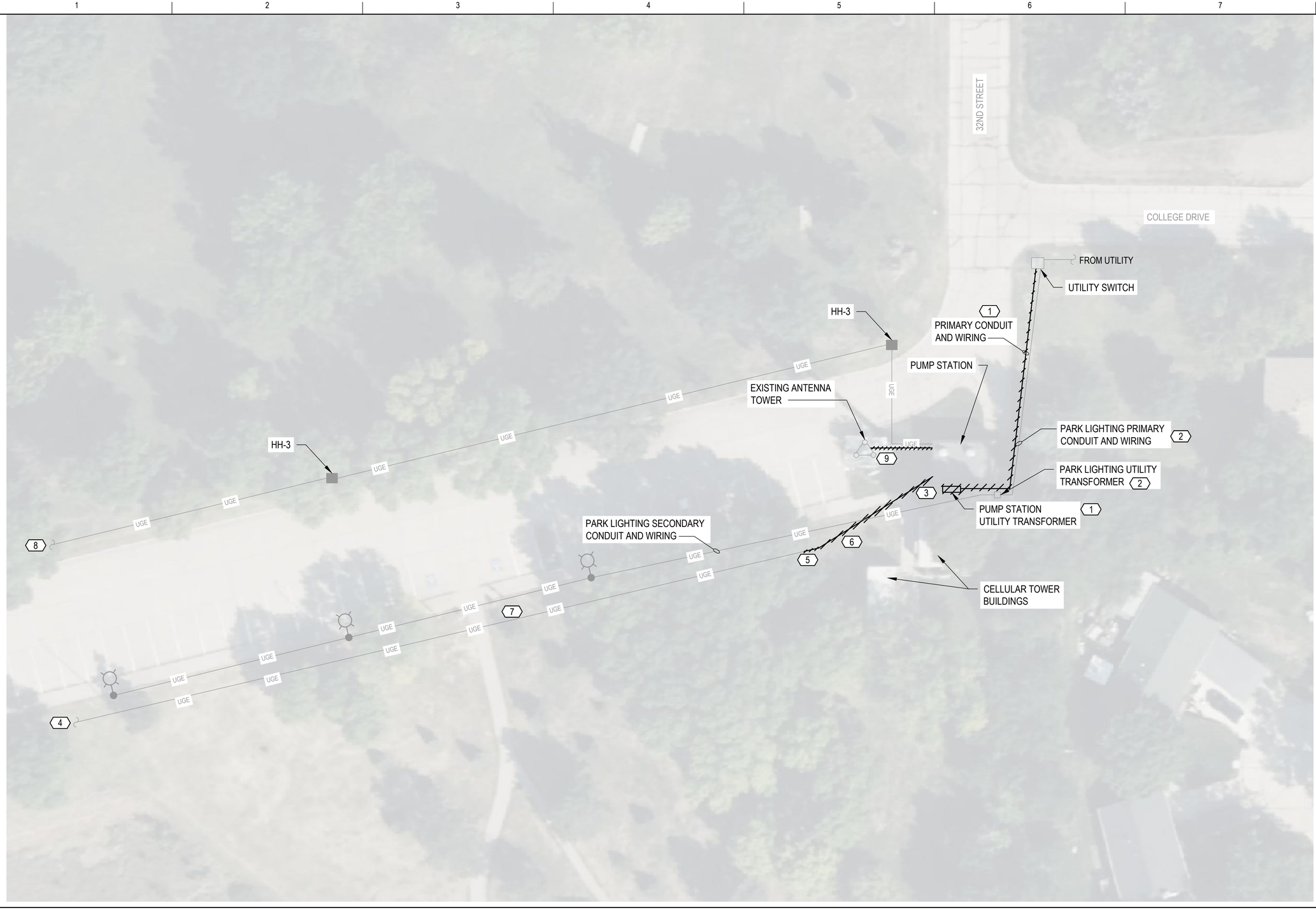
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ELECTRICAL LEGEND

0 1" 2"

FILENAME 10417756-00G005.dwg
SCALE NO SCALE

SHEET 00G005



GENERAL NOTES

1. THESE DRAWINGS SHOW SOME SPECIFIC DETAIL AS TO THE GENERAL EXTENT OF THE DEMOLITION, THEY DO NOT SHOW EVERY DETAIL OF THE REQUIRED DEMOLITION WORK. EXISTING DRAWINGS WERE PREPARED USING AVAILABLE DRAWINGS AND MAY NOT ACCURATELY REPRESENT AS-BUILT CONDITIONS.
2. WHERE THE DRAWINGS INDICATE THAT EQUIPMENT OR A DEVICE IS TO BE REMOVED THE ASSOCIATED CONDUITS, WIRING, CABLING, BOXES, FITTINGS, SUPPORTS, AND HARDWARE SHALL ALSO BE REMOVED UNLESS OTHERWISE INDICATED.
3. NOTIFY THE OWNER AND THE ENGINEER AND REQUEST CLARIFICATION IF FIELD CONDITIONS APPEAR TO BE DIFFERENT FROM THAT SHOWN ON THE DRAWINGS. FIELD VERIFY WHICH EXISTING ELECTRICAL LOADS HAVE BEEN ABANDONED. IF ELECTRICAL LOADS ARE DETERMINED TO HAVE BEEN ABANDONED THE CONTRACTOR SHALL NOT RECONNECT THOSE LOADS TO NEW PANELS.
4. PROTECT EQUIPMENT, RACEWAY, WIRING, SUPPORTS AND HARDWARE TO REMAIN IN PLACE OR BE REMOVED AND REINSTALLED THROUGHOUT THE CONSTRUCTION PROCESS.
5. FIELD VERIFY WIRING TO BE DEMOLISHED PRIOR TO DEMOLITION. NOTIFY THE OWNER AND ENGINEER IF THERE ARE DISCREPANCIES BETWEEN WHAT IS SHOWN ON THE DRAWINGS AND ACTUAL FIELD CONDITIONS THAT COULD POTENTIALLY DISRUPT PLANT OPERATIONS IF THE CIRCUIT WERE TO BE DEMOLISHED AS INDICTED.

KEYNOTES: (#)

1. OPPD TO REMOVE EXISTING TRANSFORMER AND PRIMARY WIRING. CONTRACTOR TO ABANDON EXISTING CONDUIT IN PLACE AND FILL WITH GROUT. SEE PUMP STATION PLAN DRAWING 01X101 AND DEMOLITION ONE LINE DIAGRAM ON DRAWING 01X601 FOR ADDITIONAL INFORMATION.
2. EXISTING PARK LIGHTING UTILITY TRANSFORMER, CONDUIT, AND WIRING TO REMAIN.
3. REMOVAL OF EXISTING UNDERGROUND CONDUIT WILL REQUIRE THE REMOVAL AND REPLACEMENT OF EXISTING SIDEWALK. SEE DRAWING 00E100 FOR CONCRETE REMOVAL AND REPLACEMENT NOTES.
4. POWER AND CONTROL CONDUIT AND WIRING TO RESERVOIR. FOR ESTIMATING PURPOSES THE APPROXIMATE DISTANCE TO RESERVOIR IS 750 FEET.
5. FIELD LOCATE AN AREA BEYOND THE EXTENTS OF THE NEW GENERATOR AS INDICATED ON DRAWING 00E101. INTERCEPT EXISTING POWER AND CONTROL WIRING CONDUITS. PROTECT POWER WIRING TO RESERVOIR IN ORDER TO ALLOW FOR SPLICING IN NEW HANDHOLE. REMOVE CONTROL WIRING. SEE DRAWING 00E100 FOR ADDITIONAL REQUIREMENTS.
6. EXISTING SECTION OF CONDUIT BETWEEN POINT OF INTERCEPT AND PUMP STATION BUILDING TO BE REMOVED.
7. EXISTING SECTION OF CONDUIT BETWEEN RESERVOIR AND THIS LOCATION TO REUSED.
8. POWER AND CONTROL CONDUIT AND WIRING TO HH1.
9. DEMO EXISTING WATER TREATMENT PLANT ANTENNA AND ASSOCIATED COAXIAL CABLE. ANTENNA SHALL BE SALVAGED TO OWNER. EXISTING HIGHWAY 91 PRV ANTENNA AND ASSOCIATED COAXIAL CABLE TO REMAIN. ALL WORK SHALL BE COORDINATED WITH ANTENNA TOWER OWNER.

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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

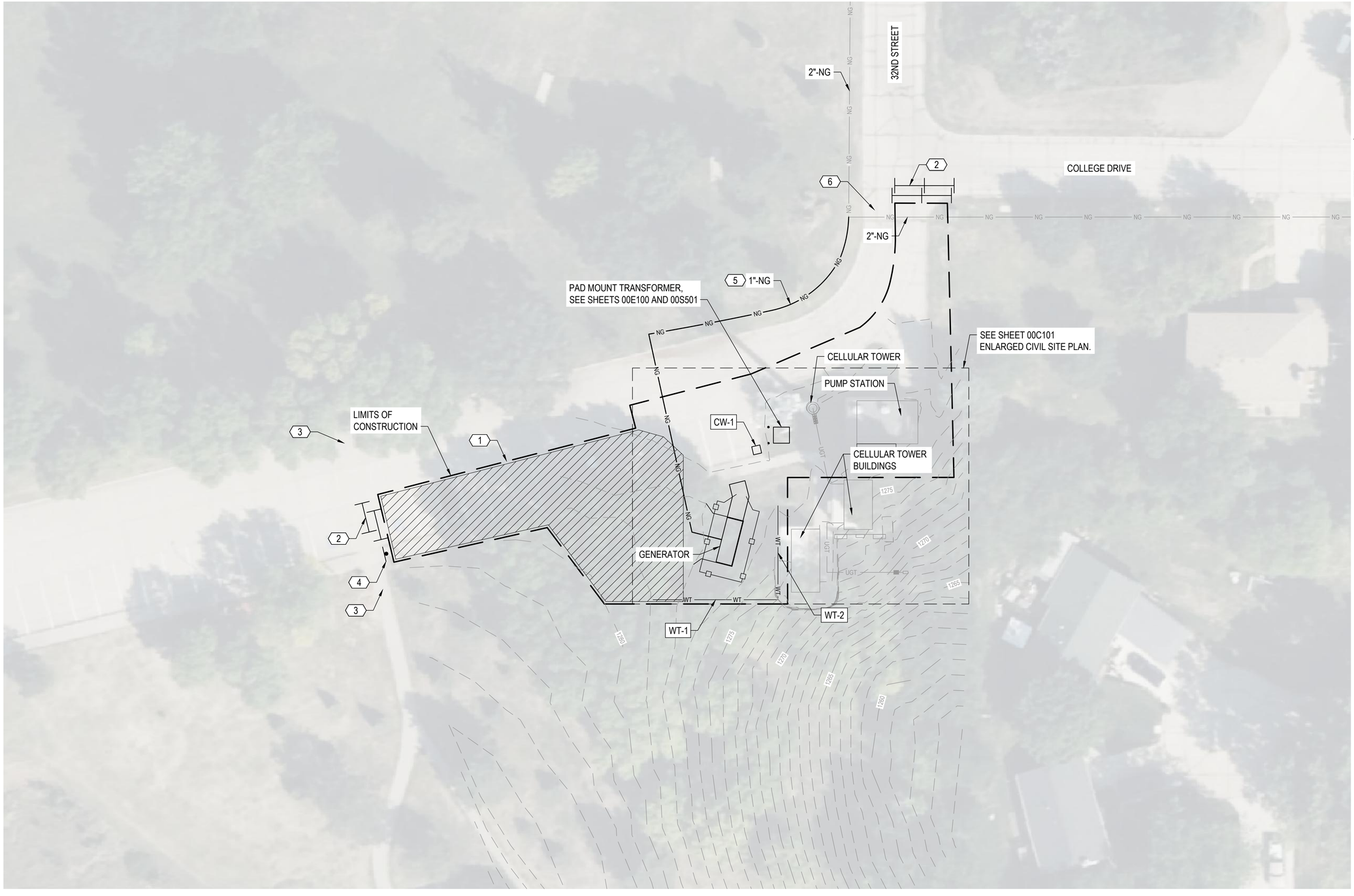
ELECTRICAL DEMOLITION SITE PLAN

0 1" 2"

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SCALE 1" = 20'

SHEET 00X100

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LEGEND

CONSTRUCTION LIMITS

MATERIALS AND EQUIPMENT STAGING

GENERAL NOTES:

1. DO NOT DISTURB EXISTING CELLULAR TOWER OR ASSOCIATED INFRASTRUCTURE. SEE SHEET 00C101 FOR EASEMENTS.
2. CONTRACTOR TO INSTALL CONSTRUCTION SAFETY FENCE AROUND PERIMETER OF LIMITS OF CONSTRUCTION.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO CELLULAR FACILITIES AT ALL TIMES AND SHALL NOT BLOCK ACCESS TO THE FACILITIES.
4. CONTRACTOR SHALL REPAIR ALL PAVING AND SIDEWALK DAMAGED DURING CONSTRUCTION.
5. ADDITIONAL STAGING AREA AVAILABLE AT THE FORMER DANA COLLEGE. CONTRACTOR TO COORDINATE WITH CITY IF ADDITIONAL STAGING SPACE IS NEEDED.

KEY NOTES: (#)

1. INSTALL CONSTRUCTION FENCING AROUND LIMITS OF CONSTRUCTION TO PREVENT ENTRY BY THE PUBLIC.
2. TYPE III BARRICADES.
3. MAINTAIN TRAIL ACCESS OPEN.
4. SIDEWALK CLOSED SIGN, R9-9.
5. 1"-NG TO BE INSTALLED BY BLACK HILLS ENERGY. CONTRACTOR TO COORDINATE WITH BLACK HILLS ENERGY FOR END CONNECTION.
6. MAINTAIN AT LEAST ONE LANE OF THE PARK DRIVE OPEN TO THE PUBLIC DURING CONSTRUCTION. IF TEMPORARY CLOSURE IS NECESSARY, COORDINATE WITH CITY AT LEAST 24-HOURS IN ADVANCE OF CLOSURE.

SWPP BMP NOTES:

1. INSTALL ALL BMPS PRIOR TO THE START OF CONSTRUCTION.
2. ADJUST AND/OR REPLACE BMPS AS NEEDED TO PREVENT SEDIMENT RUNOFF FROM THE SITE.
3. BMPS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS/ STANDARD PLATES.
4. SEED ALL DISTURBED AREAS WITH TYPE B SEEDING.

BMP TABLE

NAME	NORTHING	EASTING	NOTE
CW-1	72208.2300	91868.0200	
WT-1	72147.6700	91851.3700	
WT-2	72166.6700	91876.6200	

C:\PWWORKING\CENTRAL\D1047976\41047756-00C100.DWG
10/17/2023 8:27:10 AM

ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *SCOTT K. SCHMOKER, E-8251,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

BLACK ELK PUMP STATION MODIFICATIONS

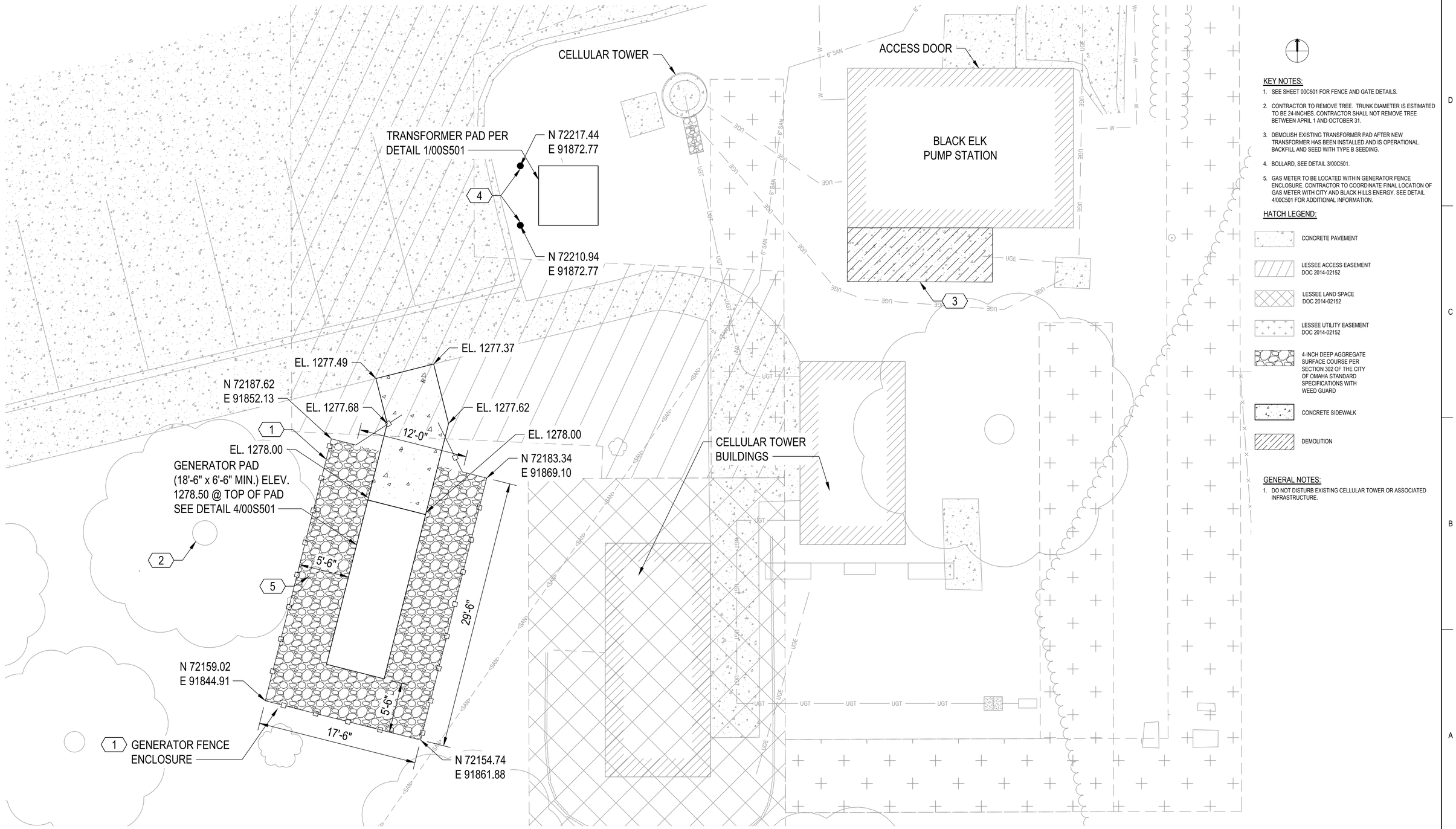
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

CIVIL SITE PLAN

0 1" 2"

FILENAME 10417756-00C100.dwg
SCALE 1" = 20'

SHEET 00C100



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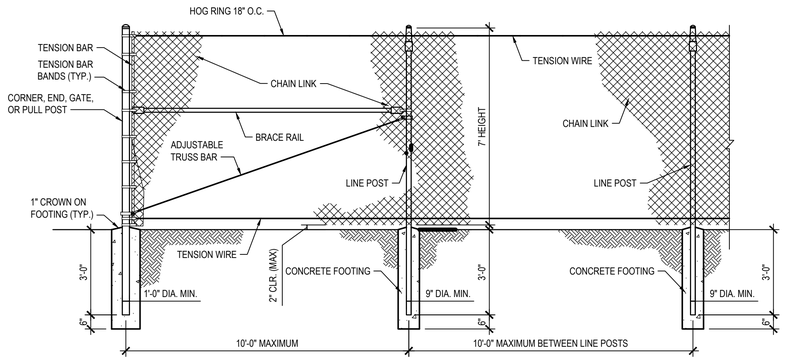
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ENLARGED SITE PLAN

0 1" 2"

FILENAME 10417756-00C101.dwg
SCALE 1" = 5'

SHEET 00C101

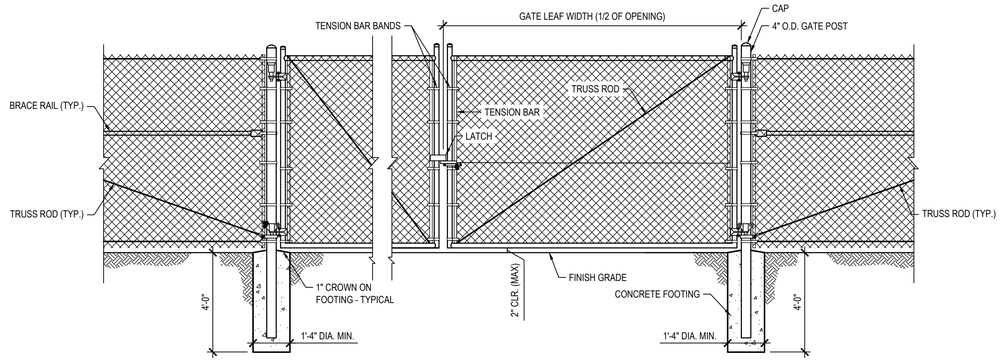


NOTES:

1. INSTALL BRACING AT ALL CORNER, END, GATE OR PULL POSTS.
2. INSTALL PULL POST AT HORIZONTAL BENDS, SHARP BREAKS IN VERTICAL GRADES, OR AS DIRECTED BY THE ENGINEER.
3. PROVIDE EQUAL BRACING ON BOTH SIDES OF CORNER, GATE, OR PULL INSTALLATIONS.
4. INSTALL VERTICAL HDPE PRIVACY SLATS ON CHAIN LINK FENCE, COORDINATE WITH CITY FOR PREFERRED COLOR.

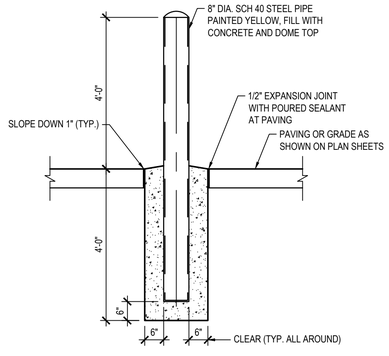
1 - SECURITY FENCE DETAIL

NO SCALE



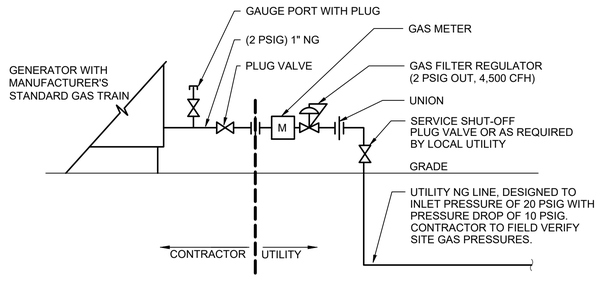
2 - DOUBLE SWING SECURITY GATE

NO SCALE



3 - BOLLARD DETAIL

NO SCALE



4 - GAS SERVICE ENTRANCE DETAIL

NO SCALE

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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

CIVIL DETAILS

0 1" 2"

FILENAME 10417756-00C501.dwg
SCALE NO SCALE

SHEET 00C501

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GENERAL

G1. SCOPE
THE NOTES ON THIS SHEET AND THE STANDARD STRUCTURAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT, EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY ON STRUCTURAL SHEETS. IF THERE ARE QUESTIONS, THEY SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER AND ANSWERED IN WRITING PRIOR TO CONSTRUCTION.

G2. APPLICABLE SPECIFICATIONS AND CODES
A. INTERNATIONAL BUILDING CODE, IBC 2018, WITH APPLICABLE EDITIONS OF THE CODE REFERENCED STANDARDS.
B. ASCE 7-16
C. AISC 360-16, 15TH EDITION
D. ACI 318-14
E. LOCAL JURISDICTION AMENDMENTS

G3. DESIGN CRITERIA
APPLIES TO ALL STRUCTURES, UNO
A. DEAD LOAD:
1. ACTUAL TRIBUTARY STRUCTURE WEIGHT

B. LIVE LOAD:

1.	WALKWAYS, STAIRS, GRATING:	100 PSF
2.	SLAB ON GRADE:	250 PSF
3.	ROOF:	20 PSF (NOT REDUCIBLE)

C. WIND:

1.	BASIC WIND SPEED:	120 MPH
2.	EXPOSURE:	C
3.	IMPORTANCE FACTOR:	1.0
4.	EXISTING PUMP STATION:	ENCLOSED
	EXTERIOR STRUCTURES:	OPEN

D. SEISMIC:
1. ABOVE GRADE, NON WATER BEARING STRUCTURES:

a.	IMPORTANCE FACTOR:	1.25
b.	SPECTRAL RESPONSE ACCELERATION, SS =	0.074
c.	SPECTRAL RESPONSE ACCELERATION, S1 =	0.044
d.	SITE CLASS:	D
e.	SEISMIC DESIGN CATEGORY:	B
f.	SPECTRAL RESPONSE COEFFICIENT, SDS =	0.079
g.	SPECTRAL RESPONSE COEFFICIENT, SD1 =	0.07
h.	BASIC SEISMIC FORCE RESISTING SYSTEM:	ORDINARY REINFORCED MASONRY SHEAR WALL

E. SNOW LOAD:

1.	GROUND SNOW LOAD	=	30 PSF
2.	FLAT ROOF SNOW LOAD	=	23 PSF
3.	EXPOSURE FACTOR	=	1.0
4.	IMPORTANCE FACTOR	=	1.1
5.	THERMAL FACTOR	=	1.0 (EXISTING PUMP STATION) 1.2 (EXTERIOR STRUCTURES)

G4. SAFETY
SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.

G5. OPENINGS
OPENINGS FOR PIPES, DUCTS, CONDUITS, ETC. ARE NOT ALL SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE AND PROVIDE OPENINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

G6. STANDARD DETAILS
THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN APPROVAL OF ENGINEER IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.

G7. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION AS REQUIRED TO COORDINATE NEW CONSTRUCTION. SUBMIT REQUIRED CHANGES FOR APPROVAL.

G8. CONTRACTOR TO SUBMIT FOR REVIEW ALL EQUIPMENT SIZES, OPERATING WEIGHTS, VIBRATION FORCES, SUPPORT LOCATIONS, ALONG WITH ANY FLOOR OPENINGS, NOTCHES, AND RECESSES REQUIRED BY SUCH EQUIPMENT. CONCRETE SUPPORT PADS AND/OR FRAMING REQUIRED TO SUPPORT SAID EQUIPMENT SHALL NOT BE FABRICATED AND PLACED UNTIL THE CONCRETE SUPPORT PADS AND/OR FRAMING IS APPROVED TO SUPPORT THE EQUIPMENT.

STEEL

S1. DESIGN STRENGTHS:

WIDE FLANGE AND TEES:	Fy=50 KSI
PIPES:	Fy=35 KSI
STAINLESS STEEL	Fy=33 KSI
HSS SECTIONS	Fy=46 KSI
ALL OTHER PLATES AND SHAPES:	Fy=36 KSI

S2. DIMENSIONS:
TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNO.

S3. ELEVATIONS:
TOP OF STEEL REFERS TO TOP SURFACE OF MEMBER OR FLANGE UNO.

S4. WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE BASED ON MATERIAL THICKNESS IN ACCORDANCE WITH AISC SPECIFICATIONS.

S5. ALL BOLTED STRUCTURAL CONNECTIONS ARE BEARING TYPE CONNECTIONS UNLESS OTHERWISE SPECIFIED TO BE SLIP-CRITICAL. PROVIDE LOAD INDICATING WASHERS AT SLIP-CRITICAL CONNECTIONS.

S6. CONFORM TO AISC 360, STEEL CONSTRUCTION MANUAL.

CONCRETE

C1.CONCRETE WORK ON THIS PROJECT SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301-10, EXCEPT AS MODIFIED BY THESE NOTES.

C2.ALL CONCRETE TO BE NORMAL WEIGHT CONCRETE WITH 28-DAY MINIMUM COMPRESSIVE STRENGTH F'C=4,500 PSI WITH CEMENT TYPE II PER ASTM C150 WITH MAXIMUM WATER/CEMENT RATIO 0.42, SLUMP 1 TO 4 INCHES, AIR CONTENT 5 TO 7 PERCENT, AGGREGATES ARE TO CONFORM TO ASTM C33. COARSE AGGREGATE SIZE - 3/4 INCH MAXIMUM.

C3.ALL CONCRETE HORIZONTAL SURFACES TO HAVE TROWEL FINISH AT TOP OF SLAB AND BROOM FINISH ON TOP OF SLAB WALKING SURFACE. ALL CONCRETE VERTICAL SURFACES TO HAVE SMOOTH FORM FINISH.

C4.ALL REINFORCING TO BE ASTM A615 GRADE 60. ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING SHALL BE ALLOWED WITHOUT SPECIFIC APPROVAL FROM THE STRUCTURAL ENGINEER.

C5.CONTRACTOR IS RESPONSIBLE FOR CONCRETE TESTING. FOUR (4) CYLINDERS SHALL BE TAKEN FOR EACH TEST PER ASTM C31. STRENGTH TEST FREQUENCY: NOT LESS THAN ONE (1) EACH DAY CONCRETE IS PLACED, AND NOT LESS THAN ONE (1) TEST FOR EACH CONRETE COMPONENT EXCEEDING TWO (2) CUBIC YARDS VOLUME.

C6.PLACE 3/4 INCH CHAMFER STRIPS (CLEAR WHITE PINE, SURFACE AGAINST CONCRETE PLANNED) IN FORMS TO PRODUCE 3/4 INCH WIDE BEVELED EDGES ON PERMANENTLY EXPOSED CORNERS OF MEMBERS.

C7.MINIMUM CONCRETE PROTECTIVE COVER FOR REINFORCEMENT IS 2 INCHES UNLESS NOTED OTHERWISE. CONCRETE CAST AGAINST EARTH SHALL HAVE A REINFORCEMENT COVER OF 3 INCHES.

C8.CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES WHERE NECESSARY. COORDINATE WITH OWNER.

C9.CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR CONCRETE MIX DESIGN AND REINFORCING SHOP DRAWINGS FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO FABRICATION.

C10.REFER TO OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION FOR EMBEDDED ITEMS AND PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS AS REQUIRED TO ACCOMMODATE ALL WORK SHOWN OR SPECIFIED IN THE CONTRACT DOCUMENTS AND OTHERWISE REQUIRED FOR THE FURNISHING OF A FUNCTIONALLY COMPLETE PROJECT. REINFORCE AROUND OPENINGS PER STANDARD STRUCTURAL DETAILS UNLESS OTHERWISE SHOWN.

C11.FIELD ADJUST REINFORCING AT OPENINGS AND EMBEDDED ITEMS AS INDICATED.

C12.ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER, RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH APPLICABLE PROJECT AND CODE REQUIREMENTS. SUBMIT AS A SHOP DRAWING FOR REVIEW AND APPROVAL BY THE ENGINEER. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.

C13.CONTRACTOR SHALL SUBMIT A CONCRETE PLACEMENT PLAN IDENTIFYING JOINT TYPES, JOINT LOCATIONS AND CONCRETE PLACEMENT SEQUENCE.

C14.ALL CAST IN PLACE AND POST-INSTALLED ANCHORS INDICATED IN THE STRUCTURAL DOCUMENTS SHALL COMPLY WITH APPENDIX D OF ACI 318 AND CHAPTER 19 OF THE IBC. ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE THE ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT.

MASONRY

M1. DESIGN STRENGTHS:
F'm= 1500 PSI
Fy = 60,000 PSI

M2. GROUT FOR FILLING MASONRY CAVITIES TO BE COARSE GROUT UNO, MAXIMUM COARSE AGGREGATE SIZE IS 3/8 INCH.

M3. GROUT POURS SHALL NOT EXCEED 4 FEET IN HEIGHT UNLESS CLEANOUTS ARE PROVIDED IN THE BOTTOM COURSE OF THE CELL(S) TO BE GROUTED AND WRITTEN PERMISSION IS OBTAINED FOR HIGH LIFT GROUTING.

M4. RESTRICTED BAR ANCHORAGE:
IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOK. SHOW ON SHOP DRAWINGS AND HIGHLIGHT WITH A BOX TO BRING TO ENGINEER'S ATTENTION.

M5. ANCHOR BOLTS:
ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE THE ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT.

M6. IF BOND BEAMS AT INTERSECTING WALLS ARE SHOWN ON THE DRAWINGS TO MEET AT DIFFERENT ELEVATIONS, EXTEND REIFORCING OF BOTH BOND BEAMS AROUND INTERSECTING CORNER NOT LESS THAN 4 FEET IN EACH DIRECTION.

M7. LINTEL BLOCKS SHALL NOT BE USED AS BOND BEAM BLOCKS EXCEPT AT OPENINGS WHERE BOND BEAMS AND LINTELS COINCIDE.

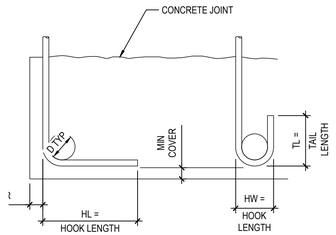
1 - **GENERAL STRUCTURAL NOTES**
NO SCALE

LAP SPLICE AND EMDEDMENT LENGTHS
f'c =4.0 ksi fy = 60 ksi
f'c =4.5 ksi

BAR	BARS SPACED GREATER THAN 4"	BARS SPACED LESS THAN OR EQUAL TO 4"
#3	14"	20"
#4	19"	32"
#5	29"	46"
#6	39"	62"
#7	55"	87"
#8	69"	107"
#9	76"	116"
#10	97"	140"
#11	120"	146"

NOTES:
1. PROVIDE MINIMUM LAP SPLICE LENGTHS AND EMBEDMENTS PER TABLE UNLESS NOTED OTHERWISE. EMBEDMENT LENGTH EQUALS THE LAP SPLICE LENGTH UNLESS OTHERWISE NOTED.
2. BAR SPACING AT LAP SPLICE IS THE MINIMUM CLEAR DISTANCE BETWEEN LAPPED BARS PLUS ONE BAR DIAMETER.
3. ALL SPLICES TO BE CONTACT SPLICES AND WIRED TOGETHER UNLESS OTHERWISE APPROVED BY THE ENGINEER.

2 - **CONCRETE REINFORCEMENT LAP AND EMBEDMENT SCHEDULE**
NO SCALE



90 DEG STD HOOK **180 DEG STD HOOK**

BAR SIZE GRADE 60	HL	HW	TL	D
#3	6"	3"	3"	2 1/4"
#4	8"	4"	4 1/2"	3"
#5	10"	5"	5"	3 3/4"
#6	1'-0"	6"	6"	4 1/2"
#7	1'-2"	7"	7"	5 1/4"
#8	1'-4"	8"	8"	6"
#9	1'-7"	11 3/4"	10 1/2"	9 1/2"
#10	1'-10"	1'-1 1/4"	11 1/2"	10 3/4"
#11	2'-0"	1'-2 3/4"	1'-1"	12"

4 - **REINFORCING HOOK SCHEDULE**
NO SCALE

METRIC	INCH-POUND
#10	#3
#13	#4
#16	#5
#19	#6
#22	#7
#25	#8
#29	#9
#32	#10
#36	#11
#43	#14
#57	#18
GRADE 420	GRADE 60

NOTE:
BAR SIZES NOTED ON DRAWINGS ARE GIVEN IN "INCH-POUND" BAR SIZES. EQUIVALENT "METRIC BARS" HAVING THE SAME PHYSICAL SIZE AND MINIMUM YIELD STRENGTH MAY BE SUBSTITUTED PER THE TABLE ABOVE.

3 - **REINFORCING BAR SIZE**
NO SCALE

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PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *SVEIN K. MAGNUSSEN, E-10194,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE BLAIR, NEBRASKA 68008

STRUCTURAL GENERAL NOTES

0 1" 2"

FILENAME 10417756-00S001.dwg
SCALE NO SCALE

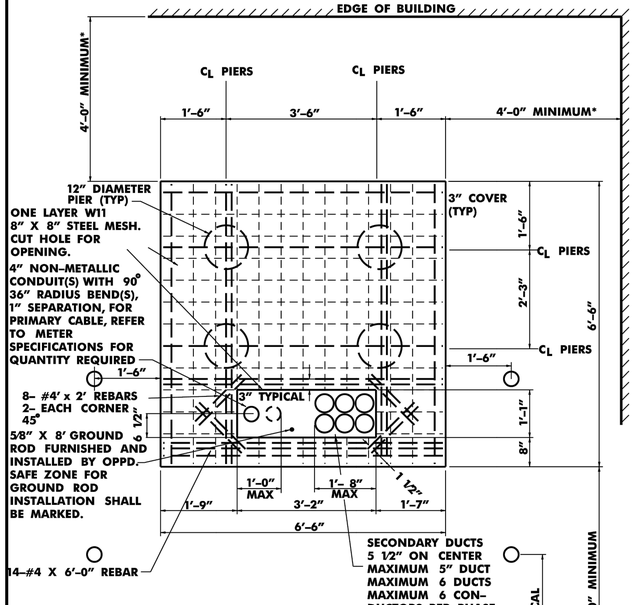
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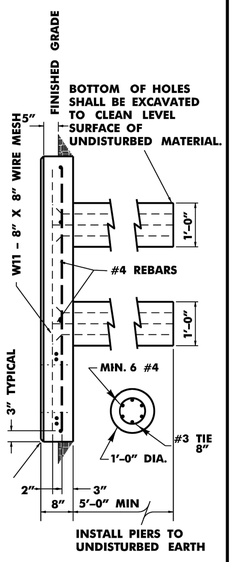
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3Ø PADMOUNT TRANSFORMER SLAB DETAIL

75 KVA TO 500 KVA
7000 POUNDS

8.08.4





ORGANIC AND/OR OTHER UNSUITABLE MATERIAL SHALL BE REMOVED FROM SUBGRADE AND BACKFILL AREAS AND BACKFILLED WITH ACCEPTABLE GRANULAR FILL, COMPACTED TO 95 % OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT ASTM D1557 AND D2049. IF THE TOP THREE (3) FEET OF SUBGRADE BENEATH THE SLAB IS SUSCEPTIBLE TO A HIGH WATER TABLE OR PERIODIC SATURATION, THE EXISTING SOIL SHALL BE EXCAVATED AND BACKFILLED WITH A CLEAN ACCEPTABLE GRANULAR FILL AND THOROUGHLY COMPACTED TO 90% OF MAXIMUM DENSITY PER ASTM D2049 AND D1556.

SLAB TO BE MADE OF CONCRETE WITH A MINIMUM 28 DAY STRENGTH OF 4,000 PSI AND 6 % AIR CONTENT

TOP OF SLAB MUST BE SMOOTH, FLAT AND LEVEL.
NO WALLS TO BE BUILT AROUND OR CANOPIES ABOVE TRANSFORMER. PLACE TRANSFORMER AWAY FROM DOORS, WINDOWS, & BUILDING OPENINGS.*

CUSTOMER TO FURNISH ALL MATERIAL, EXCEPT WHERE NOTED

ALL MATERIAL FURNISHED BY THE CUSTOMER SHALL EQUAL OR EXCEED THE STANDARDS AS SPECIFIED IN THE "NATIONAL ELECTRICAL CODE"

ALL CUSTOMER INSTALLED PRIMARY CONDUITS TO BE RODDED AND PROVEN CLEAR, AND A JET LINE TO BE LEFT IN EACH CONDUIT

ALL CONDUITS ENTERING SLAB TO BE VERTICAL AND AT A 90° ANGLE WITH TOP OF SLAB

*** THIS DRAWING SHOWS THE MINIMUM CLEARANCE NEEDED FOR PHYSICAL REASONS; FACTORY MUTUAL INSURANCE COMPANY RECOMMENDS THE FOLLOWING SEPARATION DISTANCES BETWEEN THE SPECIFIED TYPE OF BUILDING AND TRANSFORMER FOR MINERAL–OIL FILLED TRANSFORMERS WITH UNDER 500 GALLONS OF OIL. BUILDING OWNERS AND THEIR CONTRACTORS ARE RESPONSIBLE FOR LOCATING THE SLAB PER OPPD MINIMUM CLEARANCE GUIDELINES AND THEIR INSURANCE COMPANY RECOMMENDATIONS.**

COORDINATE WITH OPPD TO INSPECT SITE PRIOR TO POURING CONCRETE. INSPECTION WILL INCLUDE LOCATION AND DEPTH OF HOLES FOR SUPPORT PIERS (IF REQUIRED), AND CONDUIT PLACEMENT. OPPD INSPECTION DOES NOT INCLUDE INSPECTING FOR INSURANCE RECOMMENDED BUILDING CLEARANCES.

TWO HOURS FIRE RESISTANT CONSTRUCTION	NON–COMBUSTIBLE CONSTRUCTION	COMBUSTIBLE CONSTRUCTION
5'	15'	25'

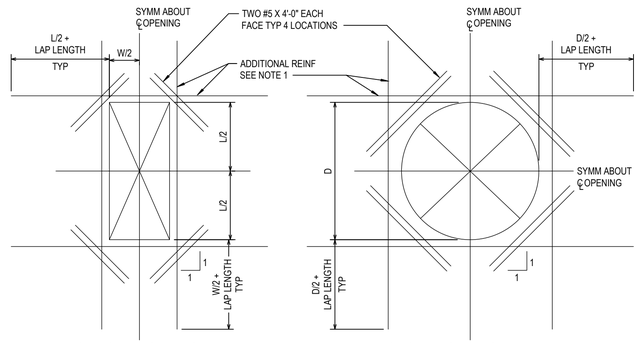
Revised 01-15-20 By CLS
DESIGN ENTRY BY: ROBERT B ADAMS

ISSUED DATE _____

NOTE:

1. TRANSFORMER PAD DETAIL PROVIDED BY UTILITY. COORDINATE ADDITIONAL REQUIREMENTS WITH UTILITY SERVICE MANUAL.

1 - **TRANSFORMER PAD DETAIL**
NO SCALE



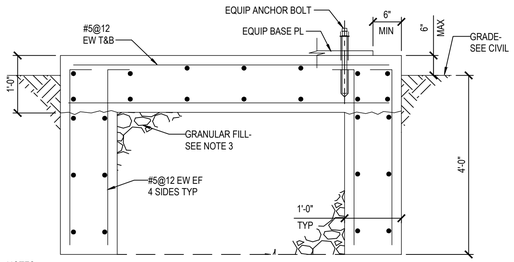
RECTANGULAR OPENING DETAIL

CIRCULAR OPENING DETAIL

NOTES:

1. PROVIDE ADDITIONAL REINFORCING THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING. QUANTITY OF REINFORCING IN EACH DIRECTION SHALL BE EQUAL TO OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS. PLACE 1/2 OF ADDITIONAL REINFORCING BARS EACH SIDE OF OPENING, PLACE ADDITIONAL REINFORCEMENT AT 3" OC (TYPICAL BOTH DIRECTIONS AND ALL LAYERS OF REINFORCEMENT). START FIRST BAR 2" CLEAR TO OPENING.
2. EXTEND ADDITIONAL REINFORCING BEYOND EDGE OF OPENING AS SHOWN ABOVE. ADDITIONAL BARS MAY TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK WHERE THE LENGTH OF THE WALL WILL NOT PERMIT BARS TO EXTEND AS SHOWN ABOVE.
3. TYPICAL WALL OR SLAB REINFORCING NOT SHOWN FOR CLARITY. TERMINATE TYPICAL REINFORCING 2" CLEAR TO OPENING.
4. OPENINGS 12" OR LESS IN SLABS AND WALLS, NO EXTRA REBARS ARE REQUIRED UNLESS SHOWN OTHERWISE. TYPICAL REINFORCING SHALL BE RESPACED (NOT CUT) TO ALLOW FOR OPENINGS TO BE MADE.
5. UNLESS SHOWN OTHERWISE ON DRAWINGS, PROVIDE EXTRA REINFORCING AROUND OPENINGS AS SHOWN AND INDICATED ABOVE.
6. PROVIDE ADDITIONAL DOWELS PER NOTE 1 ABOVE FOR ALL OPENINGS NEAR THE FLOOR SLAB, BASE SLAB, OR CORNERS.

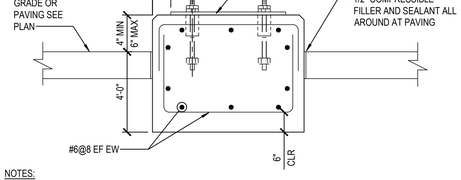
2 - **EXTRA REINFORCEMENT AROUND OPENINGS**
NO SCALE



NOTES:

1. SEE PAD NOTES THIS SHEET.
2. INCREASE SLAB THICKNESS AS REQUIRED TO MAINTAIN MINIMUM 3" CONCRETE COVER BELOW EQUIPMENT ANCHOR BOLTS.
3. PROVIDE ABOVE PAD UNDER ALL ELECTRICAL AND MECHANICAL EQUIPMENT WEIGHING MORE THAN 5000 POUNDS AND SUPPORTED ON GRADE UNLESS NOTED OTHERWISE ON PLANS.
4. AT CONTRACTOR'S OPTION REPLACE GRANULAR FILL WITH CONCRETE POURED WITH PERIMETER GRADE BEAM AND TOP SLAB PROVIDE ALL REINF SHOWN IN SECTION.
5. PROVIDE OPENINGS AS REQD FOR PENETRATIONS. REINFORCE AROUND OPENINGS PER DETAIL 2 THIS SHEET.

3 - **EXTERIOR EQUIPMENT PAD DETAIL**
NO SCALE



NOTES:

1. SEE PAD NOTES THIS SHEET.
2. CONTRACTOR SHALL COORDINATE ALL CONDUIT STUB-UPS AND ANCHOR BOLT LOCATIONS WITH EQUIPMENT FURNISHED PRIOR TO POURING CONCRETE.
3. THE SIZE AND LOCATION OF THE EQUIPMENT PAD FOR THE GENERATOR SHALL BE COORDINATED TO KEEP THE EQUIPMENT CENTER OF GRAVITY ABOVE THE CENTER OF THE EQUIPMENT PAD.
4. APPROXIMATE FOOTPRINT OF GENERATOR PAD IS 18'-6" x 6'-6" TO BE CONFIRMED AFTER APPROVAL OF GENERATOR SUBMITTAL.

PAD NOTES:

1. EQUIPMENT PAD DETAILS ON THIS SHEET APPLY FOR SUPPORT OF ALL EQUIPMENT UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
2. BEFORE EQUIPMENT SUPPORT PADS ARE CAST, THE PAD SIZES AND REINFORCING SHALL BE APPROVED BY THE ENGINEER AS BEING CAPABLE OF SUPPORTING EQUIPMENT TO BE PLACED THEREON. EQUIPMENT BASE DIMENSIONS SHALL BE THE LARGER OF AS DETERMINED BY THE EQUIPMENT MANUFACTURER OR AS INDICATED ON THE DRAWINGS. SUBMIT ALL EQUIPMENT DIMENSIONS AND LOADS TO ENGINEER.
3. 6" MINIMUM PAD EDGE DIMENSION TO EQUIPMENT ANCHOR BOLT APPLIES FOR ALL NON-ELECTRICAL EQUIPMENT SUPPORT PADS. AT ELECTRICAL EQUIPMENT, PROVIDE 1" FROM EDGE OF EQUIPMENT TO EDGE OF PAD.
4. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE AS DETERMINED BY THE EQUIPMENT MANUFACTURER AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE EQUIPMENT BASE IS BEING CAST.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE, TOLERANCE IS 1/8" ACROSS PLAN DIAGONALS.

4 - **GENERATOR PAD DETAIL**
NO SCALE

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ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *SVEIN K. MAGNUSSEN, E-10194,* ON *6/13/2025.* THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

BLACK ELK PUMP STATION MODIFICATIONS

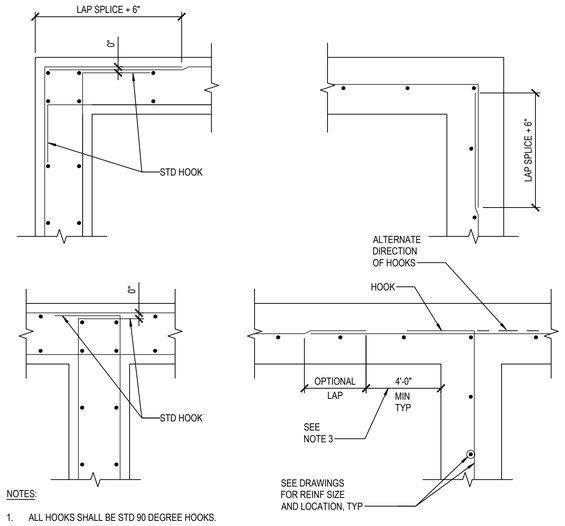
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

STRUCTURAL DETAILS

0 1" 2"

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SCALE AS INDICATED

SHEET **00S501**

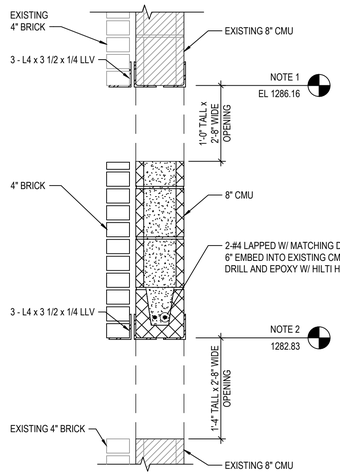


NOTES:

1. ALL HOOKS SHALL BE STD 90 DEGREE HOOKS.
2. SEE DRAWINGS FOR ADDITIONAL HORIZONTAL BARS. STAGGER BETWEEN TYPICAL REINF SPACING, EXTEND TO 1/5 OF DISTANCE TO NEAREST ADJACENT WALL IN EACH DIRECTION, UNO.
3. OPTIONAL LAP LOCATION. APPLIES TO BOTH DOUBLE AND SINGLE LAYER CONDITIONS TYP.

1 WALL REINFORCEMENT AT CORNERS AND INTERSECTIONS

NO SCALE

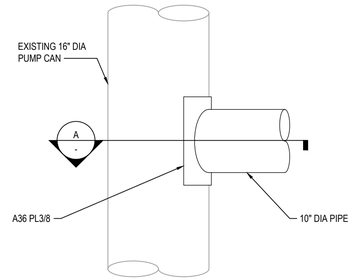


NOTES:

1. CONTRACTOR TO VERIFY ELEVATIONS AND OPENINGS WITH FINAL EQUIPMENT.
2. PLACE STEEL LINTELS IN MORTAR JOINTS PRIOR TO DEMO OF EXISTING AND PLACING OF NEW MASONRY.
3. PROVIDE 6" MIN END BEARING ON EACH END OF OPENING FOR ALL STEEL LINTELS.
4. PROVIDE 9 GAGE WIRE HORIZONTAL JOINT REINFORCING AT EACH BED JOINT IN NEW CMU EMBED 6" INTO EXISTING JOINTS.

2 LOOSE LINTEL AT LOUVER OPENING

1" = 1'-0"

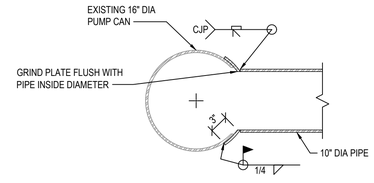


NOTES:

1. REMOVE STUB PIPE AS INDICATED ON SHEET 01D101.
2. GRIND PUMP CAN SMOOTH AND PROVIDE PRIMER AND SEALANT, SEE 01D101 FOR DETAILS.
3. PROVIDE 10" DIAMETER AWWA C200 STEEL PIPE SPOOL WITH 2" HOLDBACK OF INTERIOR CEMENT MORTAR LINING ON END TO BE WELDED TO EXISTING PUMP CAN.
4. ALIGN PIPE WITH CL OF EXISTING SUCTION HEADER AND WELD TO PUMP CAN IN ACCORDANCE WITH AWWA C206.
5. TOUCH UP ANY DEFECTS BEFORE APPLYING PRIMER AND PAINT PER KEYNOTE 12 ON SHEET 01D101.
6. CONTRACTOR TO VERIFY FINAL PIPE DIMENSIONS PRIOR TO FABRICATION.

3 DETAIL AT PUMP CAN

1" = 1'-0"



A SECTION

1" = 1'-0"

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PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

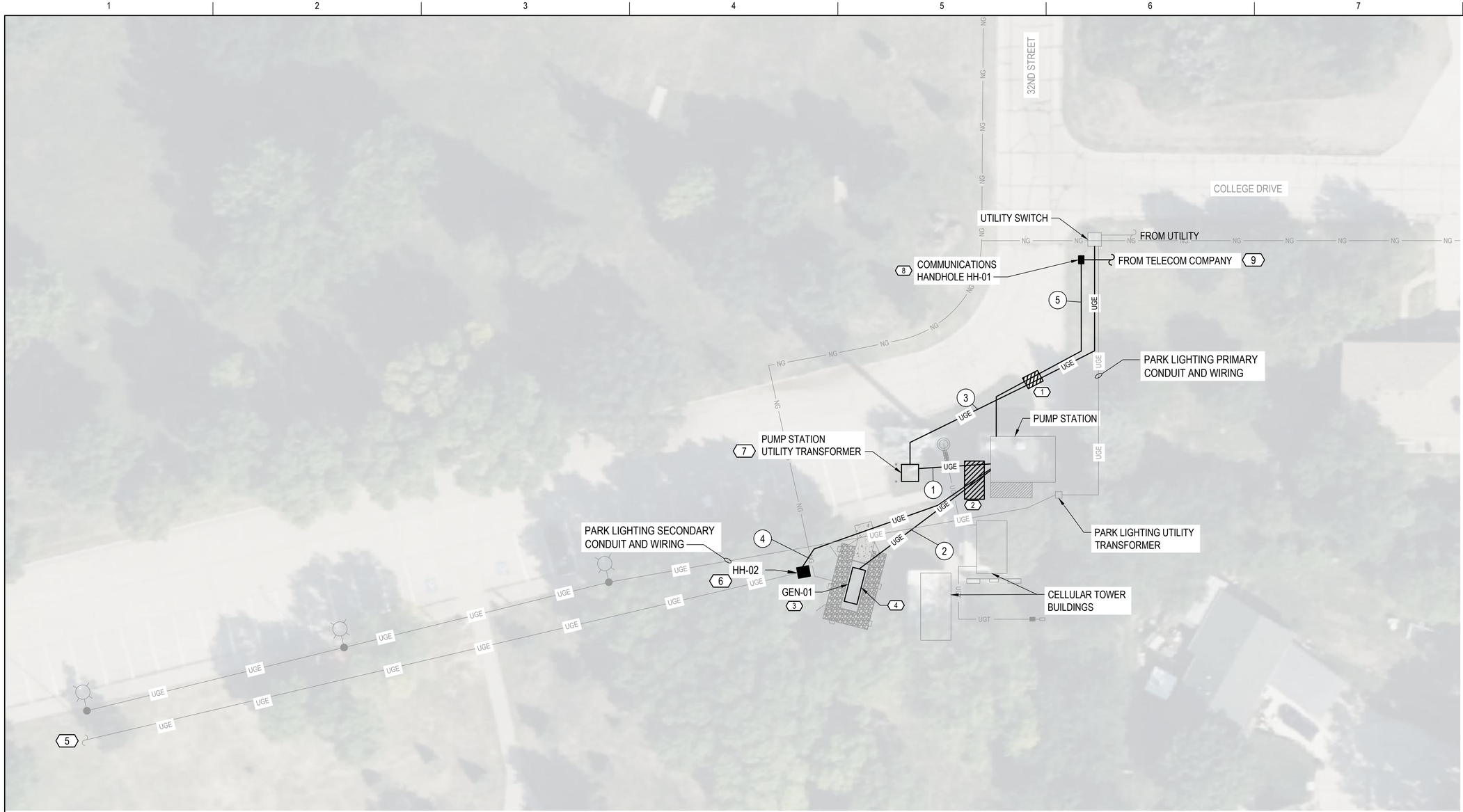
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

STRUCTURAL DETAILS

0 1" 2"

FILENAME 10417756-00S502.dwg
SCALE AS INDICATED

SHEET 00S502



GENERAL NOTES:

1. HAND DIG ONLY IN CONGESTED AREAS.
2. LOCATIONS SHOWN FOR NEW WORK ARE APPROXIMATE. FIELD COORDINATE FINAL LOCATIONS.

KEYNOTES (#)

1. INSTALLATION OF NEW UNDERGROUND CONDUIT WILL REQUIRE THE REMOVAL AND REPLACEMENT OF CURB AND GUTTER AND CONCRETE ROADWAY. FOR BIDDING PURPOSES ASSUME A 5 FEET WIDE REMOVAL AND REPLACEMENT AREA. SAW CUT CURB AND GUTTERS AND PAVEMENT AT EXISTING JOINTS TO FACILITATE FULL PANEL REMOVAL IF POSSIBLE.
2. INSTALLATION OF NEW UNDERGROUND CONDUIT WILL REQUIRE THE REMOVAL AND REPLACEMENT OF EXISTING SIDEWALK. FOR BIDDING PURPOSES ASSUME A 15 FEET WIDE REMOVAL AND REPLACEMENT AREA. SAW CUT SIDEWALK AT EXISTING JOINTS TO FACILITATE FULL PANEL REMOVAL IF POSSIBLE.
3. SEE EXTERIOR EQUIPMENT PAD DETAIL 4 ON DRAWING 00SS01 FOR GENERATOR PAD INFORMATION. COORDINATE CONDUIT STUB UP LOCATIONS WITH APPROVED GENERATOR SHOP DRAWING.
4. GENERATOR SHALL BE ORIENTED SO THAT ALL ELECTRICAL AND CONTROL CONNECTIONS ARE ON THE NORTH OR EAST SIDE OF THE GENERATOR PAD.
5. POWER AND CONTROL CONDUIT AND WIRING TO RESERVOIR. FOR ESTIMATING PURPOSES THE APPROXIMATE DISTANCE TO RESERVOIR IS 750 FEET.
6. INTERCEPT EXISTING POWER AND CONTROL CONDUITS TO RESERVOIR OUTSIDE OF GENERATOR AREA. PROVIDE HANDHOLE AT INTERCEPT LOCATION AND ROUTE NEW POWER AND CONTROL CONDUITS TO PUMP STATION BUILDING. SPLICE POWER WIRING AT HANDHOLE WITH WATERPROOF SPLICES. REPLACE CONTROL WIRING TO RESERVOIR.
7. SEE TRANSFORMER PAD DETAIL 1 ON DRAWING 00SS01 FOR TRANSFORMER PAD INFORMATION.
8. PROVIDE 24" W X 36" L X 24" D COMMUNICATIONS HANDHOLE PER THE REQUIREMENTS OF SPECIFICATION SECTION 26 05 43.
9. STUB OUT 3 FEET OF 2" CONDUIT AND CAP. IDENTIFY STUB OUT LOCATION WITH A 4 FEET TALL, 4" X 4" WOODEN POST.

DUCT BANK SCHEDULE

DWG MARK	FROM	TO	DUCT BANK TYPE	DUCT CONDUIT NUMBER	CONDUIT SIZE	CABLE NUMBER PER CABLE SCHEDULES OR CABLE/CONDUIT DESCRIPTION
1	UTILITY TRANSFORMER	ATS-01	FLOWABLE FILL	1	4"	480/277V UTILITY FEED (SEE 01E601)
2	GEN-01	ATS-01	FLOWABLE FILL	1	4"	480/277V GEN FEED (SEE 01E601)
	LP-01	GEN-01 (AUX POWER)	FLOWABLE FILL	3	1 1/2"	120V GEN AUX POWER CIRCUIT LP-01:7 (SEE 01E651)
	LP-01	GEN-01 (AUX POWER)	FLOWABLE FILL	4	1 1/2"	120V JACKET WATER HEATER CIRCUIT LP-01:8 (SEE 01E651)
	GEN-01 (CNTRL PNL)	(ATS-01)	FLOWABLE FILL	5	1"	GEN CONTROL CONDUIT - ANALOG WIRING (SEE 01E601)
	GEN-01 (CNTRL PNL)	(CP-01)	FLOWABLE FILL	6	1 1/2"	GEN CONTROL CONDUIT - DISCRETE WIRING (SEE 01E601)
3	UTILITY SWITCH	UTILITY	FLOWABLE FILL	1	4"	UTILITY PRIMARY CONDUIT (SEE 01E601)
4	LP-01	RESERVOIR (POWER)	DIRECT BURY	1	1 1/2"	120V RESERVOIR POWER CIRCUIT LP-01:4 (SEE 01E651)
	CP-01	RESERVOIR (CONTROLS)	DIRECT BURY	2	2 1/2"	RESERVOIR CONTROL WIRING (SEE 01E601)
5	HANDHOLE HH-01	CONTROL PANEL CP-01	FLOWABLE FILL	1	2"	FIBEROPTIC CONNECTION TO WATER TREATMENT PLANT
		FIBER PULLBOX	FLOWABLE FILL	2	2"	SPARE CONDUIT

HDR

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STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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CITY OF BLAIR, NEBRASKA · 1869

BLACK ELK PUMP STATION MODIFICATIONS

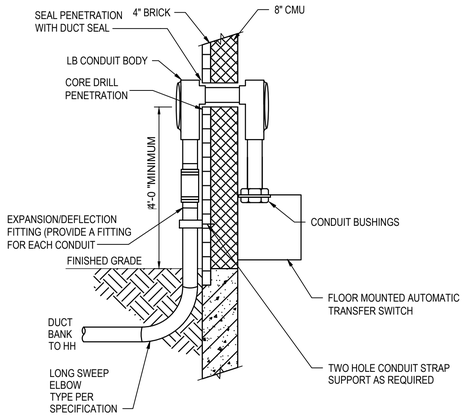
3100 COLLEGE DRIVE BLAIR, NEBRASKA 68008

ELECTRICAL SITE PLAN

0 1" 2"

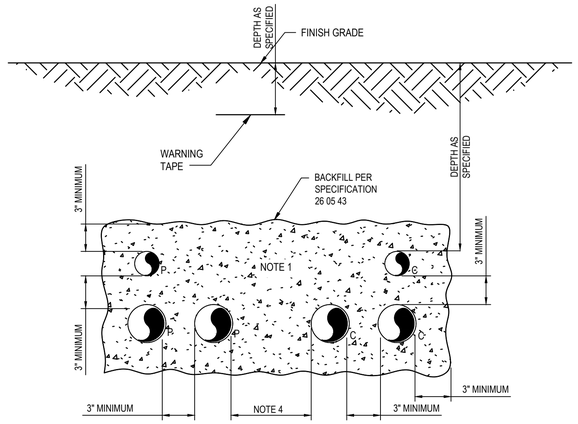
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SHEET	00E100

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ABOVE GRADE FACILITY ENTRANCE DETAIL

NOT TO SCALE

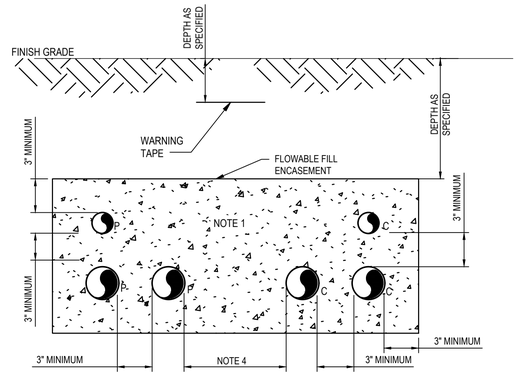


NOTES:

1. NUMBER OF CONDUIT AS REQUIRED FOR THE APPLICATION.
2. P SUBSCRIPT ELECTRICAL POWER OR CONTROL CONDUIT.
3. C SUBSCRIPT COMMUNICATION (TELEPHONE, DATA, INSTRUMENTATION) CONDUIT.
4. 6" MINIMUM WHEN POWER CONDUIT CONTAINS LESS THAN 1000V. 12" MINIMUM WHEN POWER CONDUIT CONTAINS MORE THAN 1000V.

DIRECT BURIED CONDUIT(S) SECTION

NOT TO SCALE

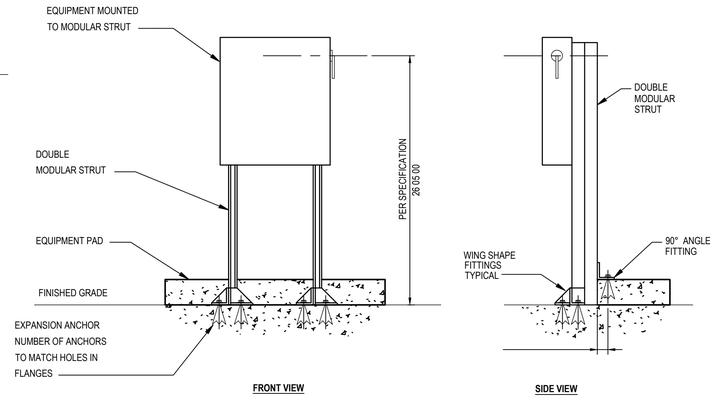


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FLOWABLE FILL ENCASED DUCTBANK SECTION

NOT TO SCALE



FRONT VIEW

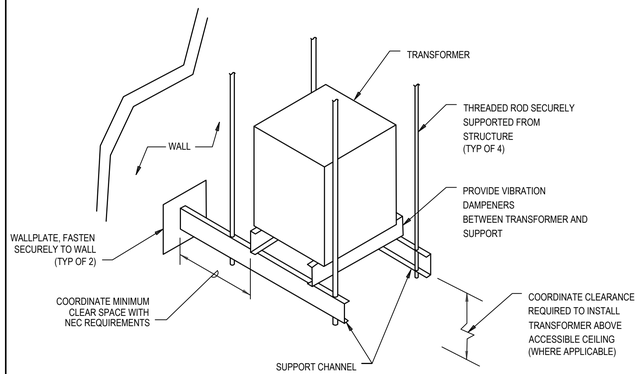
SIDE VIEW

NOTES:

1. EQUIPMENT LOAD SHALL NOT EXCEED 200 LBS.
2. RACK ASSEMBLY MATERIAL: PER SPECIFICATION 26 05 00.
3. MODULAR STRUT WIDTH: 1 5/8".
4. ANCHORS: STAINLESS STEEL, 3/8" DIAMETER, 3 1/2" EMBEDMENT PER SPECIFICATION 03 15 19.
5. PROTECT SURFACES WITH DISSIMILAR MATERIALS.
6. REPAIR CUT ENDS AND DAMAGED SURFACES.

MODULAR SUPPORT RACK

NOT TO SCALE

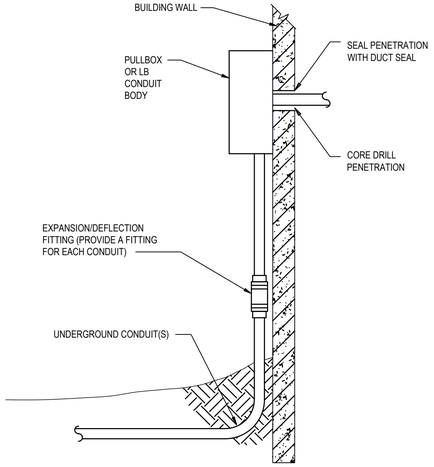


NOTES

1. ASSEMBLY MATERIAL: PER SPECIFICATION 26 05 00.

WALL MOUNT TRANSFORMER DETAIL

NOT TO SCALE

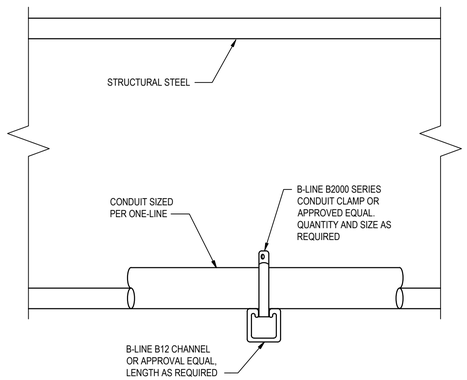


NOTES

1. CONCRETE ENCASEMENT IF REQUIRED, IS NOT SHOWN. SEE SITE PLAN FOR ENCASEMENT OR DIRECT BURIED.

UNDERGROUND CONDUIT-BUILDING ENTRY

NOT TO SCALE



NOTES

1. CONDUIT SUPPORTS SPACED EVERY 10 FEET, MAX.

CONDUIT MOUNTING DETAIL

NOT TO SCALE

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PROJECT MANAGER	STEVEN HANNA
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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

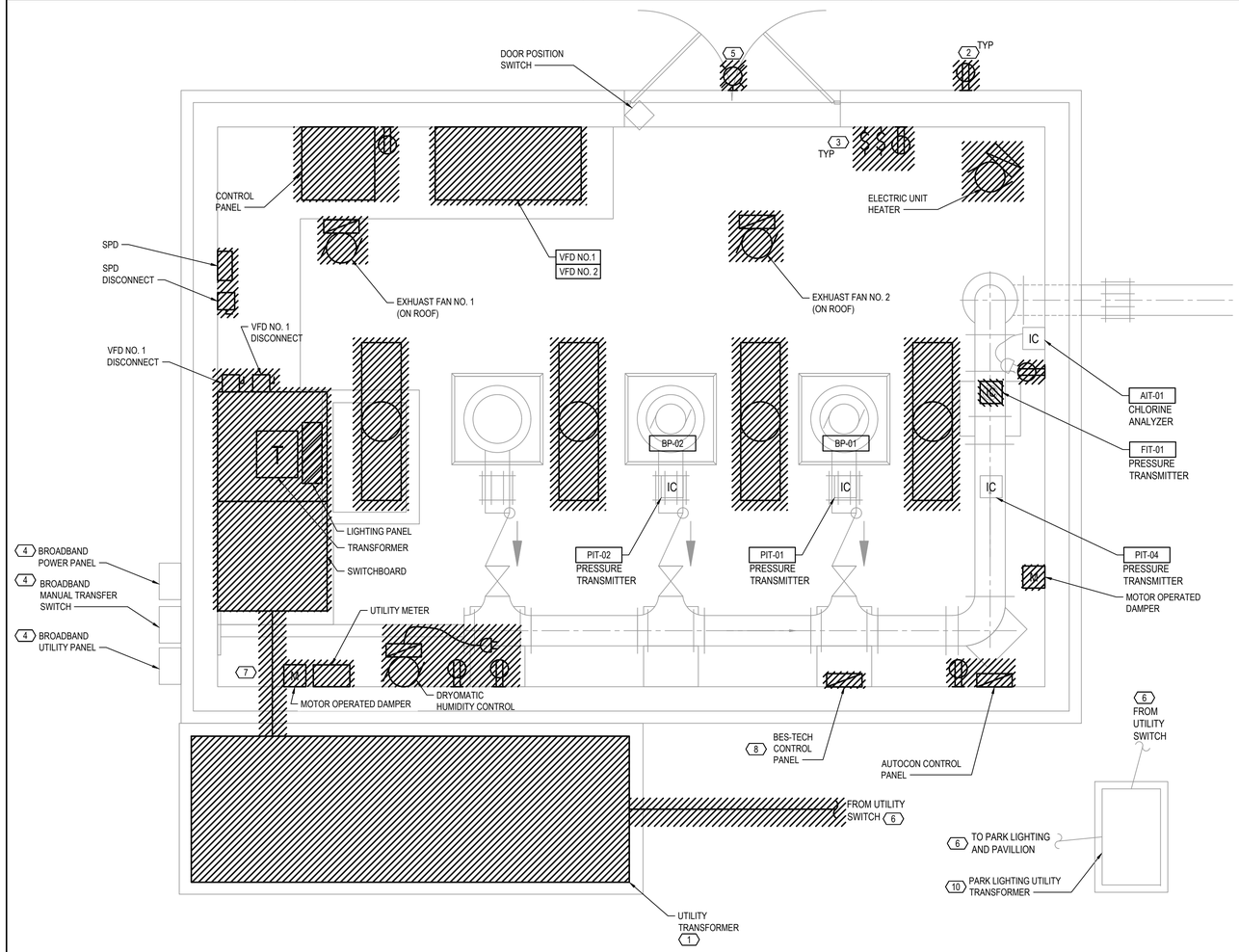
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ELECTRICAL DETAILS

0 1" 2"

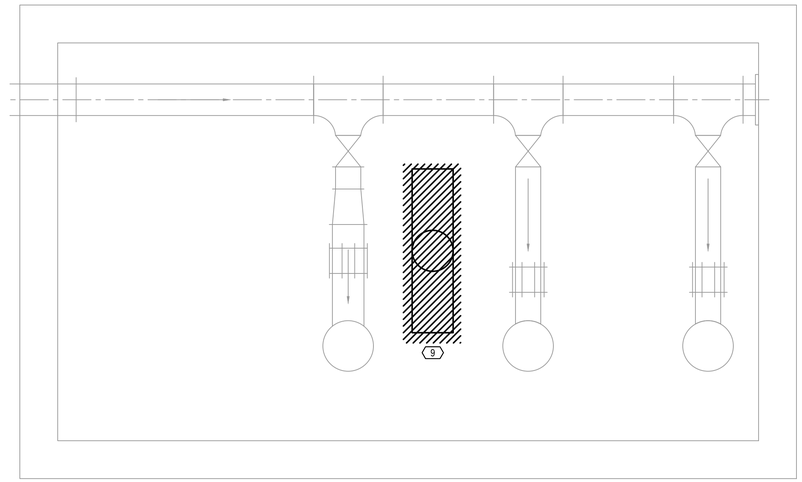
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GROUND LEVEL PLAN

1/2" = 1'-0"



PIT LEVEL PLAN

1/2" = 1'-0"

GENERAL NOTES

1. THESE DRAWINGS SHOW SOME SPECIFIC DETAIL AS TO THE GENERAL EXTENT OF THE DEMOLITION, THEY DO NOT SHOW EVERY DETAIL OF THE REQUIRED DEMOLITION WORK. EXISTING DRAWINGS WERE PREPARED USING AVAILABLE DRAWINGS AND MAY NOT ACCURATELY REPRESENT AS-BUILT CONDITIONS.
2. WHERE THE DRAWINGS INDICATE THAT EQUIPMENT OR A DEVICE IS TO BE REMOVED THE ASSOCIATED CONDUITS, WIRING, CABLING, BOXES, FITTINGS, SUPPORTS, AND HARDWARE SHALL ALSO BE REMOVED UNLESS OTHERWISE INDICATED.
3. NOTIFY THE OWNER AND THE ENGINEER AND REQUEST CLARIFICATION IF FIELD CONDITIONS APPEAR TO BE DIFFERENT FROM THAT SHOWN ON THE DRAWINGS. FIELD VERIFY WHICH EXISTING ELECTRICAL LOADS HAVE BEEN ABANDONED. IF ELECTRICAL LOADS ARE DETERMINED TO HAVE BEEN ABANDONED THE CONTRACTOR SHALL NOT RECONNECT THOSE LOADS TO NEW PANELS.
4. PROTECT EQUIPMENT, RACEWAY, WIRING, SUPPORTS AND HARDWARE TO REMAIN IN PLACE OR BE REMOVED AND REINSTALLED THROUGHOUT THE CONSTRUCTION PROCESS.
5. FIELD VERIFY WIRING TO BE DEMOLISHED PRIOR TO DEMOLITION. NOTIFY THE OWNER AND ENGINEER IF THERE ARE DISCREPANCIES BETWEEN WHAT IS SHOWN ON THE DRAWINGS AND ACTUAL FIELD CONDITIONS THAT COULD POTENTIALLY DISRUPT PLANT OPERATIONS IF THE CIRCUIT WERE TO BE DEMOLISHED AS INDICTED.

KEYNOTES: (#)

1. OPPD TO REMOVE EXISTING TRANSFORMER.
2. REMOVE RECEPTACLE AND ASSOCIATED SURFACE MOUNTED CONDUIT AND WIRING. EXISTING FLUSH MOUNTED BOX AND NON SURFACE MOUNTED CONDUIT TO REMAIN FOR REUSE.
3. REMOVE SWITCH AND ASSOCIATED SURFACE MOUNTED CONDUIT AND WIRING. EXISTING FLUSH MOUNTED BOX AND NON SURFACE MOUNTED CONDUIT TO REMAIN FOR REUSE.
4. EXISTING BROADBAND EQUIPMENT, CONDUIT, AND WIRING TO REMAIN. PROTECT FROM DAMAGE DURING CONSTRUCTION.
5. REMOVE EXISTING EXTERIOR WALL PACK, VANDAL RESISTANT GUARD, AND ASSOCIATED SURFACE MOUNTED CONDUIT AND WIRING. EXISTING FLUSH MOUNTED BOX AND NON SURFACE MOUNTED CONDUIT TO REMAIN FOR REUSE.
6. SEE TO DRAWING 00X100 FOR CONTINUATION.
7. DISCONNECT AND REMOVE EXISTING CONDUCTORS BETWEEN UTILITY TRANSFORMER AND SWITCHBOARD. CUT CONDUIT BELOW GRADE, CAP, AND ABANDON IN PLACE.
8. REMOVE BES-TECH CONTROL PANEL AND SALVAGE TO OWNER.
9. FOR THE PIT LEVEL LUMINAIRE ANY EXISTING CONDUIT THAT PENETRATES THE FLOOR SLAB SHALL REMAIN AND BE REUSED. ALL SURFACE MOUNTED CONDUIT SHALL BE REMOVED AND REPLACED.
10. EXISTING PARK LIGHTING UTILITY TRANSFORMER, CONDUIT, AND WIRING TO REMAIN.

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BLACK ELK PUMP STATION MODIFICATIONS

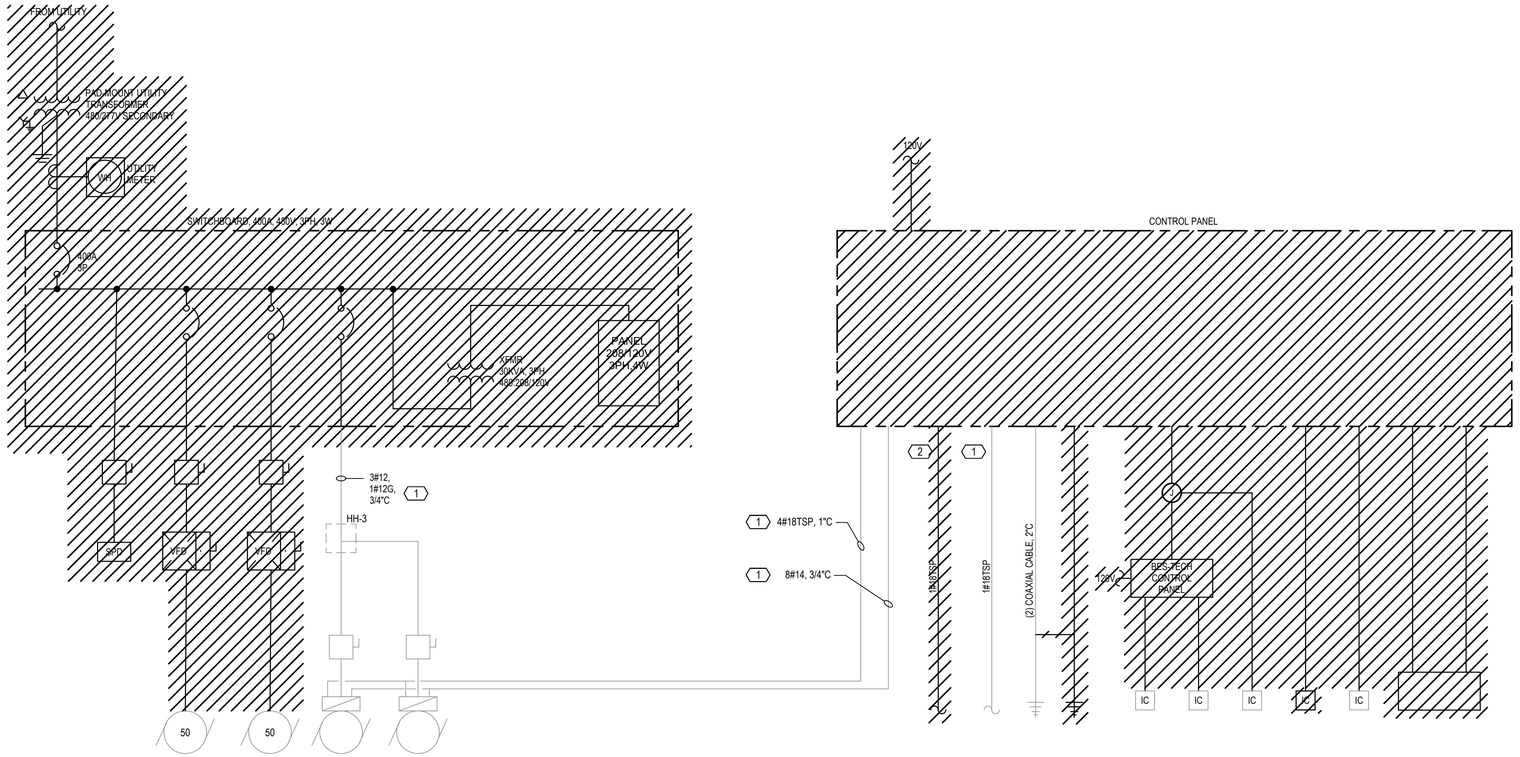
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

PUMP STATION POWER AND LIGHTING DEMOLITION PLAN

0 1" 2"

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SCALE 1/2" = 1'-0"

SHEET 01X101



SURGE PROTECTIVE DEVICE

BOOSTER PUMP NO. 1

BOOSTER PUMP NO. 2

EAST MANHOLE VALVE

WEST MANHOLE VALVE

RESERVOIR LEVEL

CL2 RESIDUAL

HIGHWAY 91 PRV VAULT PLANT ANTENNA

WATER TREATMENT PLANT ANTENNA

PRESSURE TRANSMITTER PIT-01

PRESSURE TRANSMITTER PIT-02

PRESSURE TRANSMITTER PIT-04

FLOW METER FIT-01

DOOR POSITION SWITCH

VFD NO. 1 AND VFD NO. 2 PANEL

1 - DEMOLITION POWER ONE LINE DIAGRAM

1 - CONTROL DEMOLITION ONE LINE DIAGRAM

GENERAL NOTES

1. THESE DRAWINGS SHOW SOME SPECIFIC DETAIL AS TO THE GENERAL EXTENT OF THE DEMOLITION, THEY DO NOT SHOW EVERY DETAIL OF THE REQUIRED DEMOLITION WORK. EXISTING DRAWINGS WERE PREPARED USING AVAILABLE DRAWINGS AND MAY NOT ACCURATELY REPRESENT AS-BUILT CONDITIONS.
2. WHERE THE DRAWINGS INDICATE THAT EQUIPMENT OR A DEVICE IS TO BE REMOVED THE ASSOCIATED CONDUITS, WIRING, CABLING, BOXES, FITTINGS, SUPPORTS, AND HARDWARE SHALL ALSO BE REMOVED UNLESS OTHERWISE INDICATED.
3. NOTIFY THE OWNER AND THE ENGINEER AND REQUEST CLARIFICATION IF FIELD CONDITIONS APPEAR TO BE DIFFERENT FROM THAT SHOWN ON THE DRAWINGS. FIELD VERIFY WHICH EXISTING ELECTRICAL LOADS HAVE BEEN ABANDONED. IF ELECTRICAL LOADS ARE DETERMINED TO HAVE BEEN ABANDONED THE CONTRACTOR SHALL NOT RECONNECT THOSE LOADS TO NEW PANELS.
4. PROTECT EQUIPMENT, RACEWAY, WIRING, SUPPORTS AND HARDWARE TO REMAIN IN PLACE OR BE REMOVED AND REINSTALLED THROUGHOUT THE CONSTRUCTION PROCESS.
5. FIELD VERIFY WIRING TO BE DEMOLISHED PRIOR TO DEMOLITION. NOTIFY THE OWNER AND ENGINEER IF THERE ARE DISCREPANCIES BETWEEN WHAT IS SHOWN ON THE DRAWINGS AND ACTUAL FIELD CONDITIONS THAT COULD POTENTIALLY DISRUPT PLANT OPERATIONS IF THE CIRCUIT WERE TO BE DEMOLISHED AS INDICTED.

KEYNOTES ⟨#⟩

1. EXISTING DEVICE, CONDUIT, AND WIRING TO REMAIN. PROTECT FROM DAMAGE DURING CONSTRUCTION.
2. REFER TO DRAWING 00X100 AND 00E100 FOR DETAILED RESERVOIR LEVEL CONTROL WIRING REMOVAL AND REPLACEMENT REQUIREMENTS.

ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY *KYLE L. GANSKOP, E-13884,* ON *6/13/2025*. THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE BLAIR, NEBRASKA 68008

DEMOLITION ONE-LINE DIAGRAMS

0 1" 2"

FILENAME 10417756-01X601.dwg

SCALE NO SCALE

SHEET 01X601

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PANELBOARD NO:	Existing Lighting Panel						
VOLTAGE:	208/120V	**BUS RATING (A):**	100	**ENCLOSURE:**	NEMA 1		
PHASE:	3	**MAIN OC DEVICE:**	100/3	**MOUNTING:**	INTEGRAL TO SWBD		
WIRE:	4+GND	**INTERRUPTING RATING (KA):**		**LOCATION:**	PUMP STATION		
200% NEUTRAL:	NO	**SERVICE ENTRANCE LABEL:**	NO				

CKT NO.	DESCRIPTION	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	OCP AMPS	P	GCP AMPS	P	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	DESCRIPTION	CKT NO.
1	LIGHTS					20	1	A	20	1				EXHAUST FAN NO. 1	2
3	RECEPTACLE					20	1	B	20	1				RESERVOIR POWER	4
5	EXHAUST FAN NO. 2					20	1	C	20	1				SWBD CONTROL PWR	6
7	SPARE					20	1	A	30	2				SPARE	8
9	AIM PANEL					20	1	B							10
11	SPARE					20	1	C	20	1				SPARE	12
13								A				5,000		ELECTRIC UNIT HEATER	14
15	SPARE					20	1	B	50	3		5,000			16
17								C				5,000			18

LOAD SUMMARY								
	LTS	REC	MECH	MISC	SPARE	TOTAL		PHASE BALANCE
CONNECTED LOAD (kVA)	0.0	0.0	18.0	0.0	--	15.0	208 LINE TO LINE VOLTS	PHASE A (kVA) 5
DEMAND FACTOR	1.25	NEC	1.00	1.00	20%	--	42 CONNECTED AMPS	PHASE B (kVA) 5
DESIGN LOAD (kVA)	0.0	0.0	15.0	0.0	3.0	18.0	58 DESIGN AMPS	PHASE C (kVA) 5

GENERAL NOTES

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2. WHERE THE DRAWINGS INDICATE THAT EQUIPMENT OR A DEVICE IS TO BE REMOVED THE ASSOCIATED CONDUITS, WIRING, CABLING, BOXES, FITTINGS, SUPPORTS, AND HARDWARE SHALL ALSO BE REMOVED UNLESS OTHERWISE INDICATED.
3. NOTIFY THE OWNER AND THE ENGINEER AND REQUEST CLARIFICATION IF FIELD CONDITIONS APPEAR TO BE DIFFERENT FROM THAT SHOWN ON THE DRAWINGS. FIELD VERIFY WHICH EXISTING ELECTRICAL LOADS HAVE BEEN ABANDONED. IF LOADS ARE DETERMINED TO BE ABANDONED CONSULT WITH ENGINEER AS TO WHETHER THESE LOADS NEED TO BE RECONNECTED
4. PROTECT EQUIPMENT, RACEWAY, WIRING, SUPPORTS AND HARDWARE TO REMAIN IN PLACE OR BE REMOVED AND REINSTALLED THROUGHOUT THE CONSTRUCTION PROCESS.
5. FIELD VERIFY WIRING TO BE DEMOLISHED PRIOR TO DEMOLITION. NOTIFY THE OWNER AND ENGINEER IF THERE ARE DISCREPANCIES BETWEEN WHAT IS SHOWN ON THE DRAWINGS AND ACTUAL FIELD CONDITIONS THAT COULD POTENTIALLY DISRUPT PLANT OPERATIONS IF THE CIRCUIT WERE TO BE DEMOLISHED AS INDICTED.

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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
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BLACK ELK PUMP STATION MODIFICATIONS

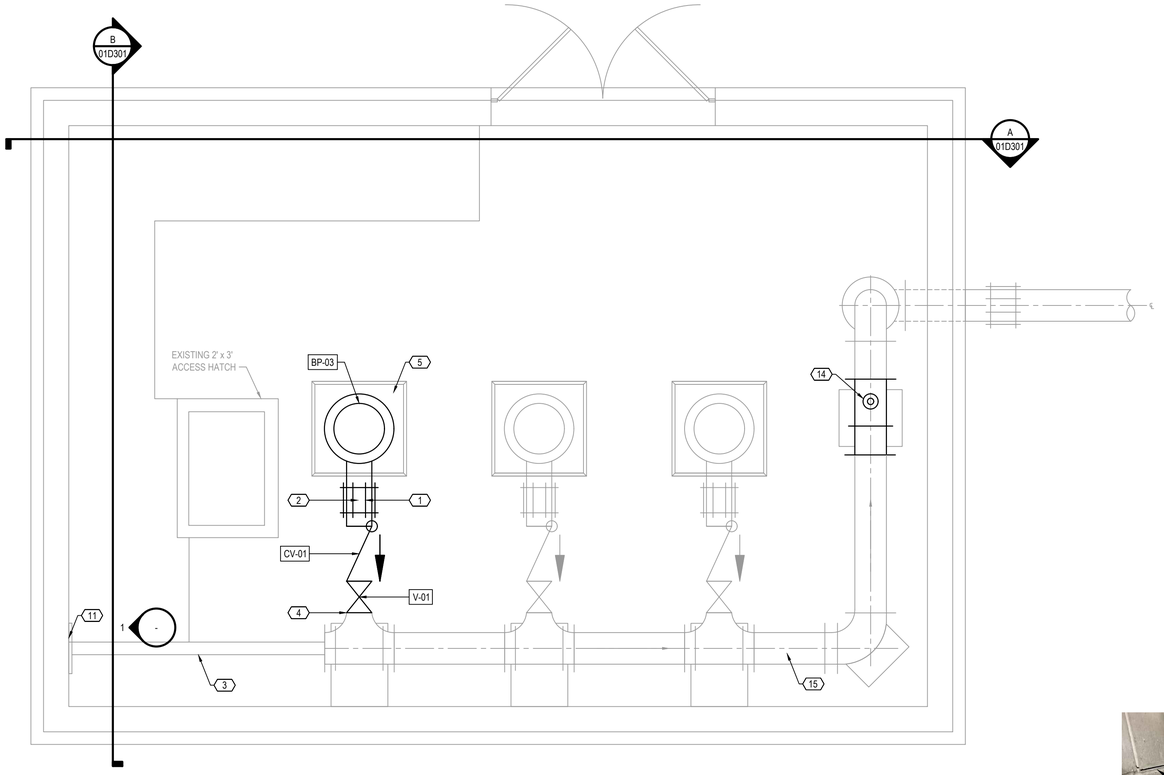
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

DEMOLITION ELECTRICAL SCHEDULES

0 1" 2"

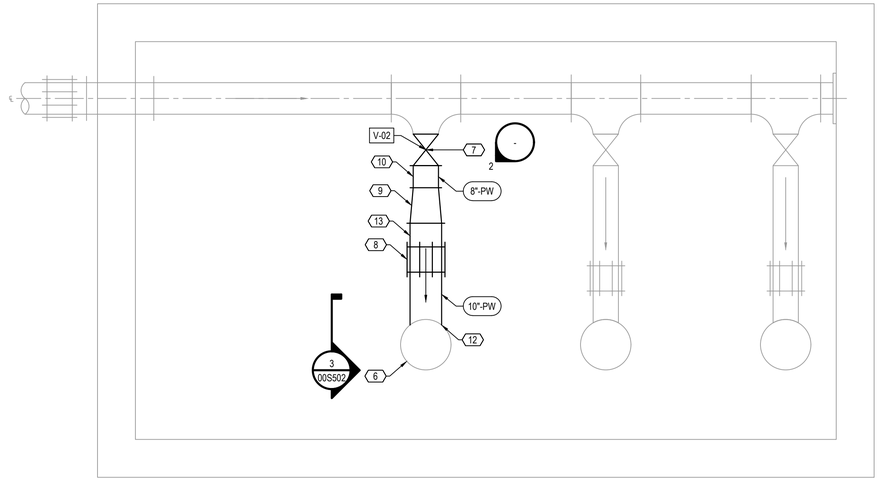
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SCALE NO SCALE

SHEET 01X651



GROUND LEVEL PLAN

1/2" = 1'-0"



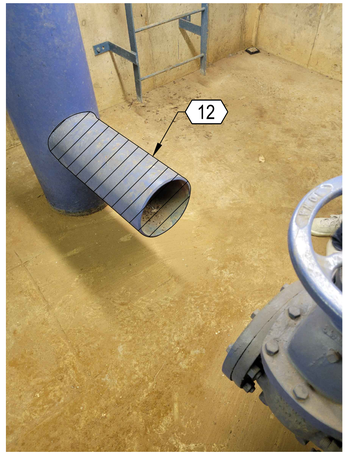
PIT LEVEL PLAN

1/2" = 1'-0"



1 - PHOTO 1 - CRACKED CMU BLOCKS

NO SCALE



2 - PHOTO 2 - EXISTING STUB OUT DEMOLITION

NO SCALE

KEY NOTES:

1. 8" DISMANTLING JOINT.
2. PRESSURE SENSOR TAP. SEE DETAIL 1/01D301. PLACE TAP ON DISMANTLING JOINT SIMILAR TO EXISTING PRESSURE SENSOR TAPS.
3. REMOVE EXISTING THRUST BEAM.
4. REMOVE EXISTING BLIND FLANGE AND MAKE CONNECTION TO EXISTING 8"x10"x10" TEE. COORDINATE SHUTDOWN OF PUMP STATION WITH OWNER TO MAKE THIS CONNECTION.
5. EXISTING 2'-6" SQUARE CONCRETE PUMP PEDESTAL. REMOVE EXISTING 4" CONCRETE CAP OVER PUMP OPENING. SEE DETAIL 2/01D301 FOR PUMP PEDESTAL DETAIL.
6. EXISTING 16" DIA. PUMP CAN.
7. REMOVE EXISTING 8" GATE VALVE. RETURN TO OWNER. INSTALL NEW GATE VALVE V-02.
8. 10" TRANSITION COUPLING.
9. 8" x 10" FLANGED DUCTILE IRON CONCENTRIC REDUCER.
10. CONTRACTOR TO FIELD VERIFY LENGTH OF 8" DUCTILE IRON PIPING NEEDED TO CONNECT EXISTING PIPING TO PUMP CAN SUCTION.
11. REPAIR CRACKED CMU BLOCKS AND ANCHORAGE HOLES NEAR CONNECTION OF THRUST BEAM. SEE PHOTO 1, THIS SHEET. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR MORTAR MIX DESIGN AND REPAIR PROCEDURE FOR REVIEW AND APPROVAL BY ENGINEER. ASSUME REPAIR AREA EQUAL TO 10 SQ FT FOR BIDDING PURPOSES.

MORTAR MIX DESIGN

INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND TMS 602. AGGREGATE TO FOLLOW ASTM C144 FREE OF GYPSUM. TYPE S MORTAR WITH CEMENT-LIME TO BE USED COMPLYING WITH ASTM C270. FLY ASH SHALL BE LIMITED TO 20% REPLACEMENT OF THE CEMENT CONTENT. PROVIDE ONLY AN INTEGRAL WATER REPELLENT ADMIXTURE IN MORTAR. MIX MATERIALS A MINIMUM OF THREE MINUTES AND MAXIMUM OF FIVE MINUTES BEFORE APPLYING.

MORTAR JOINT REPAIR

ENSURE CMU WALL IS SUPPORTED PRIOR TO PERFORMING ANY WORK. RAKE OUT AND REMOVE MORTAR AT ALL CRACKED LOCATIONS. GRIND DOWN AND CLEAN WALL AS NECESSARY TO CREATE AN EVEN SURFACE. FILL IN JOINTS, SPREADING MORTAR TO A UNIFORM THICKNESS. TOOL JOINTS AS RECOMMENDED BY THE UNIT MANUFACTURER.

12. REMOVE EXISTING STUB OUT PIPE CONNECTED TO EXISTING PUMP CAN. SEE PHOTO 2, THIS SHEET, FOR DEMOLITION LIMITS. SEE DETAIL 3/00S502 FOR NEW PIPE CONNECTION TO EXISTING PUMP CAN. NEW PIPE AND PLATE SHALL MEET REQUIREMENTS SPECIFIED BELOW. TOUCH UP COATING WHERE NECESSARY DUE TO PUMP CAN MODIFICATIONS.

NEW PIPE

10-INCH DIAMETER AWWA C200, CEMENT LINED CARBON STEEL.

COATING

SURFACE PREPARATION: SSPC-SP 6/NACE NO. 3.

PRIME COAT: 2.5 TO 3.5 MIL ZRU (TNEMEC SERIES 94-H2O HYDRO-ZINC OR SHERWIN WILLIAMS COROTHANE 1 GALVAPAK)

INTERMEDIATE COATS: 3.0 TO 4.0 MIL MPE (TNEMEC SERIES N69 HI-BUILD EPOXOLINE II OR SHERWIN WILLIAMS MACROPOXY 646)

FINISH COAT: 3.0 TO 4.0 MIL MPE (TNEMEC SERIES N69 HI-BUILD EPOXOLINE II OR SHERWIN WILLIAMS MACROPOXY 646)

13. PROVIDE FLG x PE SPOOL OF 10" DIA. DIP.
14. REMOVE EXISTING FLOW METER AND INSTALL NEW FLOW METER PROVIDED BY AUTOMATIC SYSTEMS.
15. REPLACE EXISTING SURGE RELIEF VALVE WITH A GA INDUSTIRES 4" ANGLE STYLE SURGE RELIEF VALVE MODEL 6600-D.

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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

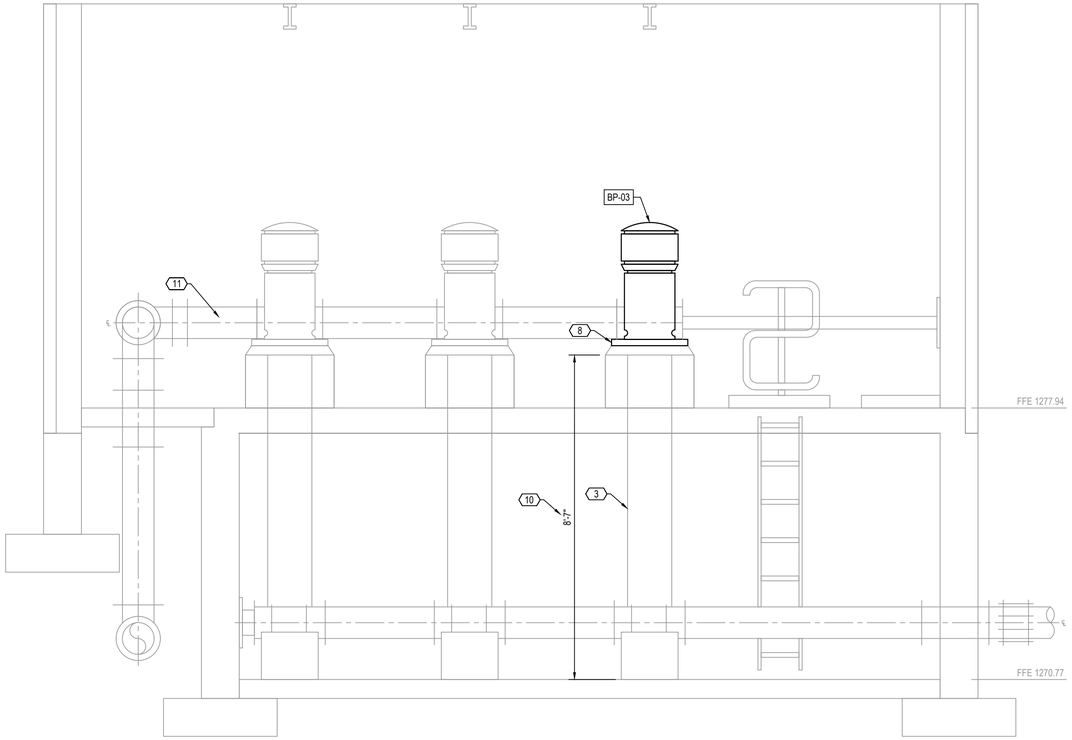
PROCESS PLAN VIEWS

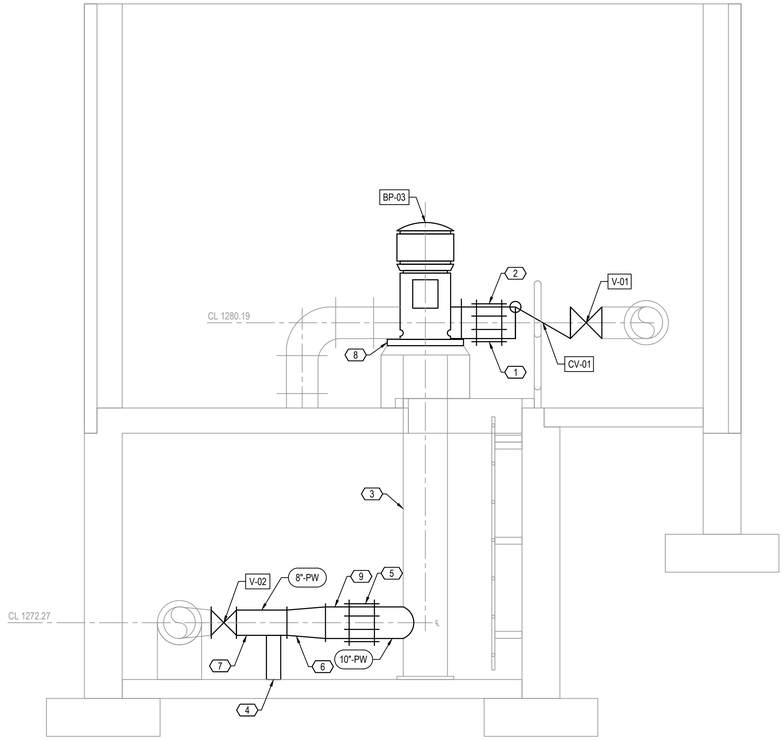
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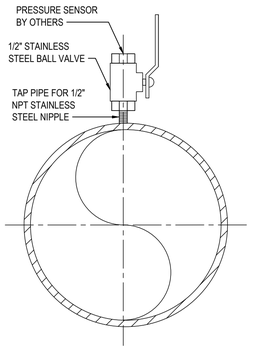


KEY NOTES:

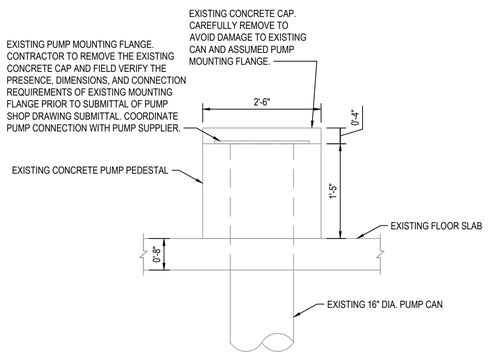
1. 8" DISMANTLING JOINT.
2. PRESSURE SENSOR TAP. SEE DETAIL 1 ON THIS SHEET. PLACE TAP ON DISMANTLING JOINT SIMILAR TO EXISTING PRESSURE SENSOR TAPS.
3. EXISTING 16" DIA. PUMP CAN. CONTRACTOR TO FIELD VERIFY INSIDE AND OUTSIDE DIAMETER OF EXISTING PUMP CAN.
4. PIPE SUPPORT.
5. 10" TRANSITION COUPLING.
6. 8" x 10" FLANGED DUCTILE IRON CONCENTRIC REDUCER.
7. CONTRACTOR TO FIELD VERIFY LENGTH OF 8" DUCTILE IRON PIPING NEEDED TO CONNECT EXISTING PIPING TO PUMP CAN SUCTION.
8. EXISTING 2'-6" SQUARE CONCRETE PUMP PEDESTAL. REMOVE EXISTING 4" CONCRETE CAP OVER PUMP OPENING. PROVIDE WATERTIGHT SEAL PER PUMP MANUFACTURER.
9. PROVIDE FLG X PE SPOOL OF 10" DIA. DIP.
10. CONTRACTOR TO FIELD VERIFY EXISTING PUMP CAN LENGTH.
11. REPLACE EXISTING SURGE RELIEF VALVE WITH A GA INDUSTRIES 4" ANGLE STYLE SURGE RELIEF VALVE MODEL 6600-D.

A 01D101 **SECTION**
1/2" = 1'-0"

B 01D101 **SECTION**
1/2" = 1'-0"



1 - **PRESSURE SENSOR TAP**
NOT TO SCALE



2 01D101 **EXISTING PUMP PEDESTAL DETAIL**
3/4" = 1'-0"

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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

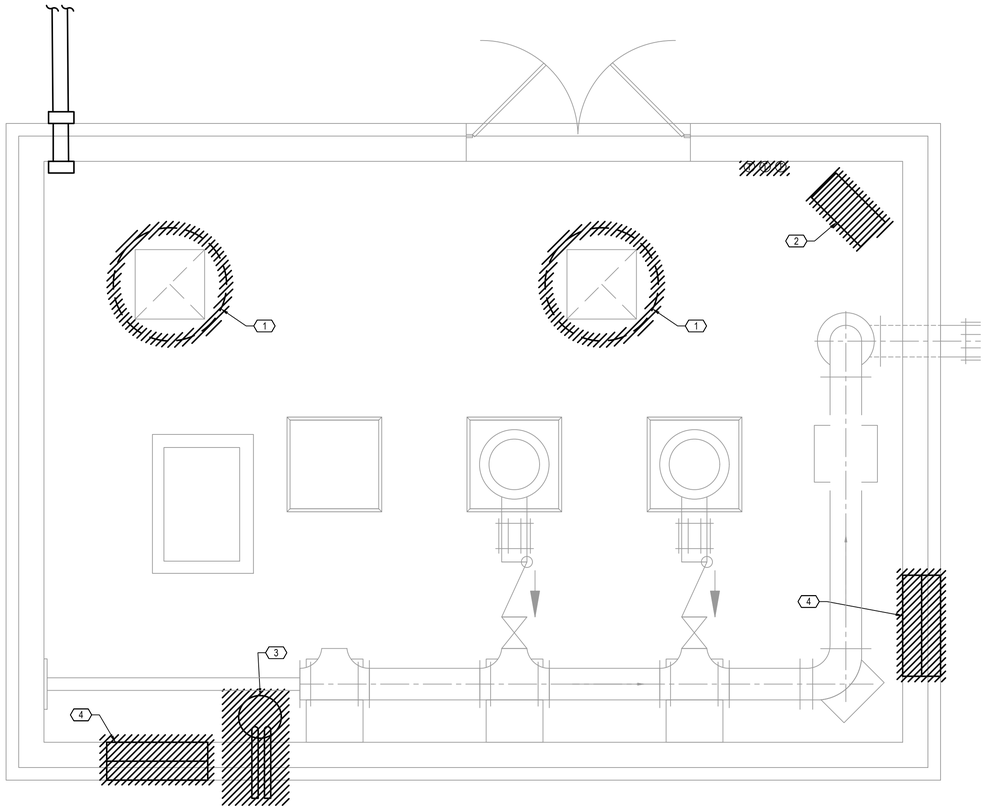
PROCESS SECTIONS AND DETAILS

0 1" 2"

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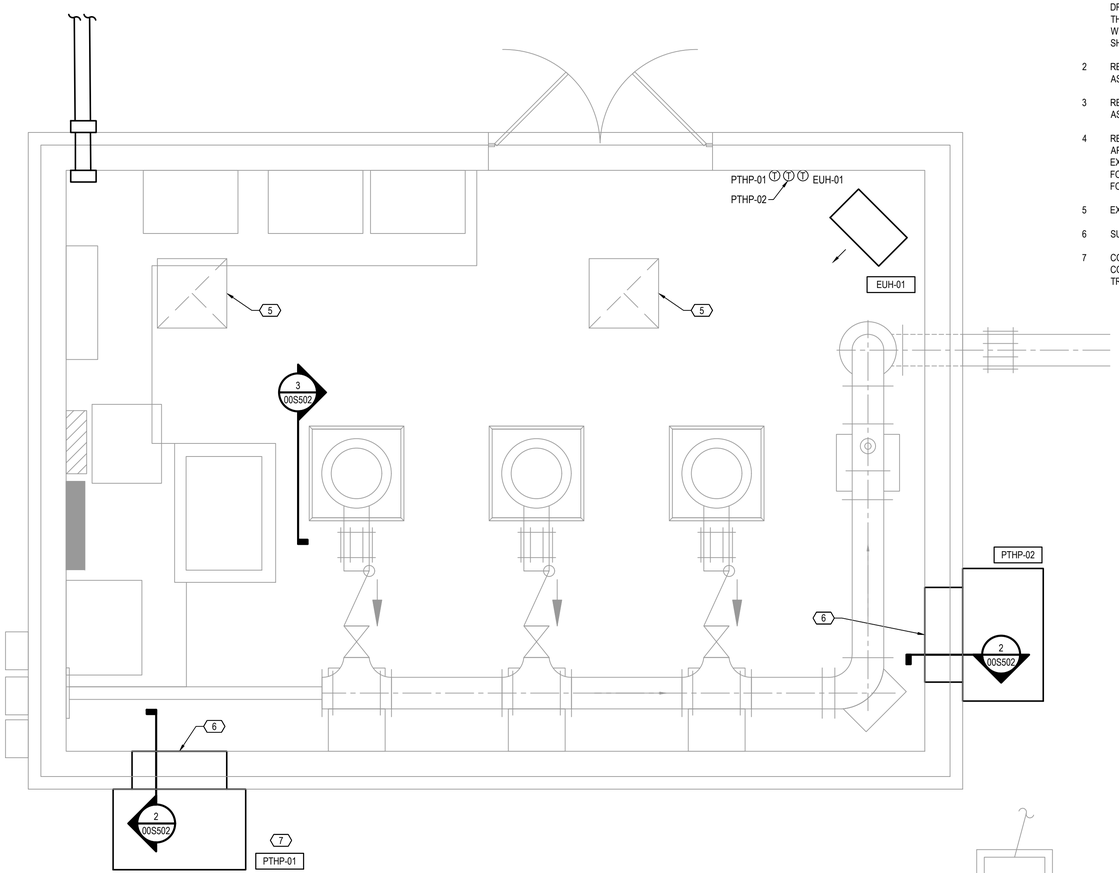
SHEET 01D301

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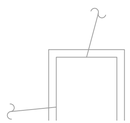
GROUND LEVEL HVAC DEMOLITION PLAN

1/2" = 1'-0"



GROUND LEVEL HVAC PLAN

1/2" = 1'-0"



KEYNOTES (#)

1 REMOVE EXHAUST FAN, CONTROLS, AND ALL ASSOCIATED APPURTENANCES. ROOF CURB, 22" x 22" DUCT AND BACKDRAFT DAMPER TO REMAIN. PROTECT THE ROOF AND CURB FLASHING FROM DAMAGE. COVER THE EXPOSED OPENING WITH 3/4" EXTERIOR GRADE PLYWOOD, C-C PLUGGED AND 2X4 DIMENSIONAL LUMBER SUPPORT FRAMING SECURED TO THE CURBS. PROVIDE MINIMUM 2" THICK POLYISOCYANURATE ROOF INSULATION AND CUSTOM FABRICATED MINIMUM 20 GA, G-60 GALVANIZED, CROSS-BRAKE STIFFENED SHEET METAL COVER. TURN SHEET METAL DOWN MINIMUM 4" AND PROVIDE SOLDERED CORNERS AND HEMMED DRIP EDGES. SECURE SHEET METAL TO CURB WITH NOT LESS THAN TWO (2) 1/4"DIA SELF-DRILLING SHEET METAL SCREWS WITH INTEGRAL SEALING WASHER ON EACH SIDE. FABRICATE SHEET METAL IN ACCORDANCE WITH SMACNA STANDARDS.

2 REMOVE ELECTRIC UNIT HEATER, CONTROLS, AND ALL ASSOCIATED APPURTENANCES.

3 REMOVE HUMIDIFIER, PIPING, CONTROLS, AND ALL ASSOCIATED APPURTENANCES.

4 REMOVE LOUVER, DAMPER, AND ALL ASSOCIATED APPURTENANCES. INFILL INTERIOR BLOCK WALL AND EXTERIOR BRICK BETWEEN SUPPLY AND RETURN OPENINGS FOR NEW PTHP UNITS. SEE STRUCTURAL SECTION 2/00S502 FOR ADDITIONAL INFORMATION.

5 EXISTING 22" x 22" DUCT AND BACKDRAFT DAMPER TO REMAIN.

6 SUPPLY AND RETURN GRILLE INTEGRAL WITH UNIT.

7 COORDINATE SEQUENCE OF INSTALLATION AND CONSTRUCTION TO ACCOMMODATE FOR REMOVAL OF TRANSFORMER LOCATED OUTSIDE.

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STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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CITY OF BLAIR, NEBRASKA · 1869

BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

HVAC PLANS

0 1" 2"

FILENAME 10417756-01M101.dwg
SCALE 1/2" = 1'-0"

SHEET 01M101

PACKAGED TERMINAL HEAT PUMP SCHEDULE

MARK	SERVES	NOMINAL AIRFLOW (CFM)	MINIMUM OA (CFM)	COOLING CAPACITY				HEATING CAPACITY						ESP (IN.W.G.)	REFRIGERANT	ELECTRICAL DATA					BASIS OF DESIGN	NOTES
				E.A.T. (°F / °F)	SUPPLY AIR TEMP. (°F / °F)	SENS. (MBH)	TOTAL (MBH)	E.A.T. DB (°F)	SUPPLY AIR TEMP. (°F)	HEAT PUMP CAP. (MBH)	ELECTRIC HEAT SIZE (KW)	ELECTRIC HEAT OUTPUT (MBH)	TOTAL (MBH)			VOLTS	PHASE	HZ	MCA	MAXIMUM EXTERNAL FUSE (A)		
PTHP-01	PUMP STATION	1759	100	80 / 67	56.3 / 56.3	45.1	46.02	70	87.4	17.3	5	15.7	33.0	0.03	R-454B	480.0	3.0	60.0	19.0	20	BARD W48HF-C052PXXXJ	1-9
PTHP-02	PUMP STATION	1759	100	80 / 67	56.3 / 56.3	45.1	46.02	70	87.4	17.3	5	15.7	33.0	0.03	R-454B	480.0	3.0	60.0	19.0	20	BARD W48HF-C052PXXXJ	1-9

NOTES:

1. *F / *F REPRESENTS DRY BULB AND WET BULB TEMPERATURES.
2. PROVIDE MANUFACTURER WALL MOUNTED PROGRAMMABLE THERMOSTAT.
3. PROVIDE MANUFACTURER ECONOMIZER.
4. PROVIDE UNIT WITH LOW AMBIENT CONTROL CAPABILITIES.
5. PROVIDE ELECTRICAL DISCONNECT.
6. OPERATE ELECTRIC UNIT HEATER IN TANDOM WITH PACKAGED TERMINAL HEAT PUMPS TO MEET SPACE HEAT LOAD REQUIREMENTS.
7. PROVIDE MANUFACTURER INTEGRATED SUPPLY REGISTER AND RETURN GRILLE.
8. ELECTRIC UNIT HEATER WILL ADDRESS REMAINING HEATING LOAD FOR AMBIENT TEMPERATURES LESS THAN 10 DEGREES FARENHEIT,
9. CAPACITIES BASED ON AMBIENT DRY BULB TEMPERATURES OF 96 DEGREES FARENHEIT IN THE SUMMER AND 10 DEGREES FARENHEIT IN THE WINTER

ELECTRIC UNIT HEATER SCHEDULE

MARK	SERVES	CFM	RECOM'D. MOUNTING HEIGHT (FT.)	ELECTRICAL DATA					BASIS OF DESIGN	NOTES
				KW	AMPS	VOLT	PH	HZ		
EUH-01	PUMP STATION	650	9	10	12	480	3	60	QMARK MUH-10-4	1,2

NOTES:

1. PROVIDE MANUFACTURER REMOTE THERMOSTAT.
2. PROVIDE MANUFACTURER WALL MOUNTING KIT.

SEQUENCE OF OPERATION - GENERAL

1. SEQUENCE OF OPERATION INDICATES BASIC OPERATING FUNCTIONS ONLY.

2. PUMP STATION

A. PACKAGED TERMINAL HEAT PUMPS (PTHP-01, PTHP-02)

1. MANUFACTURER SHALL PROVIDE FACTORY INSTALLED LEAD/LAG CONTROL SYSTEM WITH A REMOTE WALL MOUNTED PROGRAMMABLE THERMOSTAT.

2. LEAD/LAG OPERATION: PROVIDE AUTOMATIC SWITCHING OF LEAD/LAG UNIT OPERATION TO PROVIDE APPROXIMATELY EQUAL RUN TIME OF PACKAGED TERMINAL HEAT PUMPS ON A YEARLY BASIS. UNITS TO ALTERNATE LEAD/LAG POSITIONS EVERY 7 DAYS.

3. FAN OPERATION: LEAD UNIT FAN SHALL RUN CONTINUOUSLY WITH THE OUTSIDE AIR DAMPER OPEN TO ITS MINIMUM POSITION TO MAINTAIN A POSITIVE PRESSURIZATION OF THE BUILDING.

4. COOLING: ON A CALL FOR COOLING FROM THE SPACE THERMOSTAT, THE LEAD UNIT SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 85 DEGF (ADJ.). IF SPACE TEMPERATURE CONTINUES TO RISE TO 90 DEGF (ADJ.), THE SECOND UNIT SHALL CYCLE TO MAINTAIN A SPACE TEMPERATURE OF 85 DEGF (ADJ.).

5. HEATING: ON A CALL FOR HEATING FROM THE SPACE THERMOSTAT, THE LEAD UNIT SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 50 DEGF (ADJ.). IF SPACE TEMPERATURE CONTINUES TO DROP TO 45 DEGF (ADJ.), THE SECOND UNIT SHALL CYCLE TO MAINTAIN A SPACE TEMPERATURE OF 50 DEGF (ADJ.).

B. UNIT HEATER (EUH-01)

1. MANUFACTURER SHALL PROVIDE FACTORY INSTALLED CONTROL SYSTEM WITH A REMOTE WALL-MOUNTED PROGRAMMABLE THERMOSTAT:

2. HEATING: UPON A CALL FOR HEATING, THE UNIT SHALL MAINTAIN A SPACE SETPOINT OF 43 DEGF (ADJ.).

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ISSUE	DATE	DESCRIPTION
	01/14/2026	ISSUED FOR BID

PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
PROCESS	M. MILLER
MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

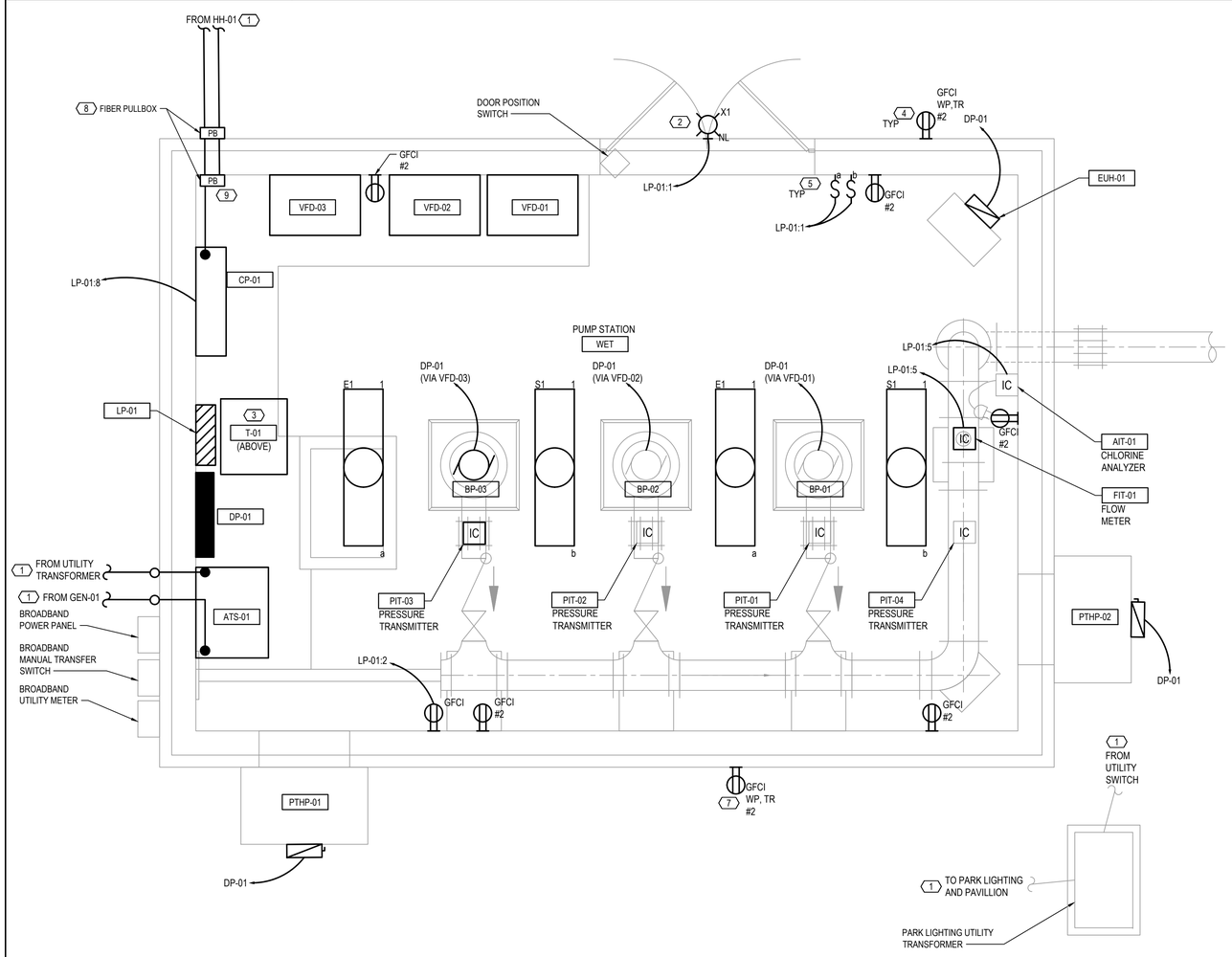
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

HVAC SCHEDULES

0 1" 2"

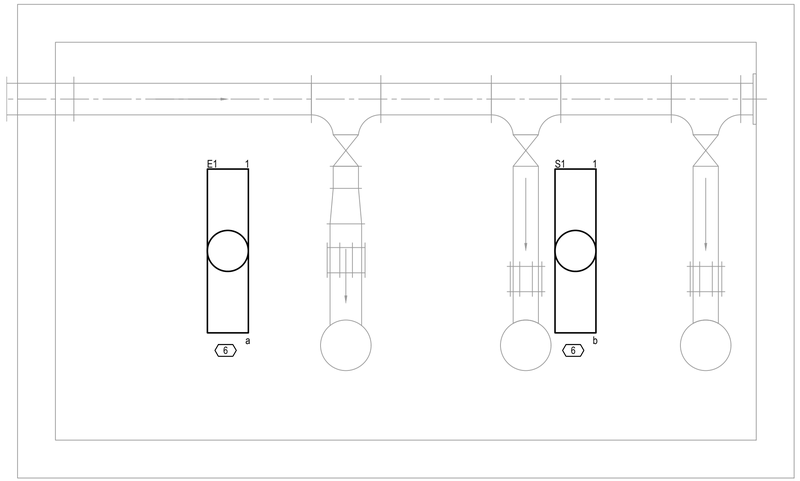
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GROUND LEVEL PLAN

1/2" = 1'-0"



PIT LEVEL PLAN

1/2" = 1'-0"

KEYNOTES #

1. SEE SITE PLAN DRAWING 00E100 FOR CONTINUATION.
2. MOUNT NEW LIGHT FIXTURE TO EXISTING FLUSH MOUNTED BOX. NON SURFACE MOUNTED CONDUIT BETWEEN LIGHTING PANEL AND BOX TO BE REUSED AS REQUIRED TO CONNECT TO NEW LIGHT FIXTURE.
3. SEE TRANSFORMER MOUNTING DETAIL ON DRAWING 00E501.
4. MOUNT NEW RECEPTACLE IN EXISTING FLUSH MOUNTED BOX. NON SURFACE MOUNTED CONDUIT BETWEEN LIGHTING PANEL AND BOX TO BE REUSED AS REQUIRED TO CONNECT NEW WIRING DEVICE.
5. MOUNT NEW SWITCH IN EXISTING FLUSH MOUNTED BOX. NON SURFACE MOUNTED CONDUIT BETWEEN LIGHTING PANEL AND BOX TO BE REUSED AS REQUIRED TO CONNECT NEW WIRING DEVICE.
6. REUSE EXISTING EMBEDDED CONDUITS TO REFEED PIT LEVEL LUMINAIRES. ALL SURFACE MOUNTED CONDUIT SHALL BE NEW.
7. PROVIDE SURFACE MOUNTED RECEPTACLE WITHIN 25 FEET OF EXTERIOR MOUNTED MECHANICAL EQUIPMENT.
8. PULLBOX SHALL BE SIZED PER NEC.
9. ROUTE 2" SPARE FIBER CONDUIT TO INTERIOR PULLBOX AND TERMINATE. EXTEND 2" CONDUIT WITH FIBEROPTIC CABLE TO CONTROL PANEL CP-01.

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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

PUMP STATION POWER AND LIGHTING PLAN

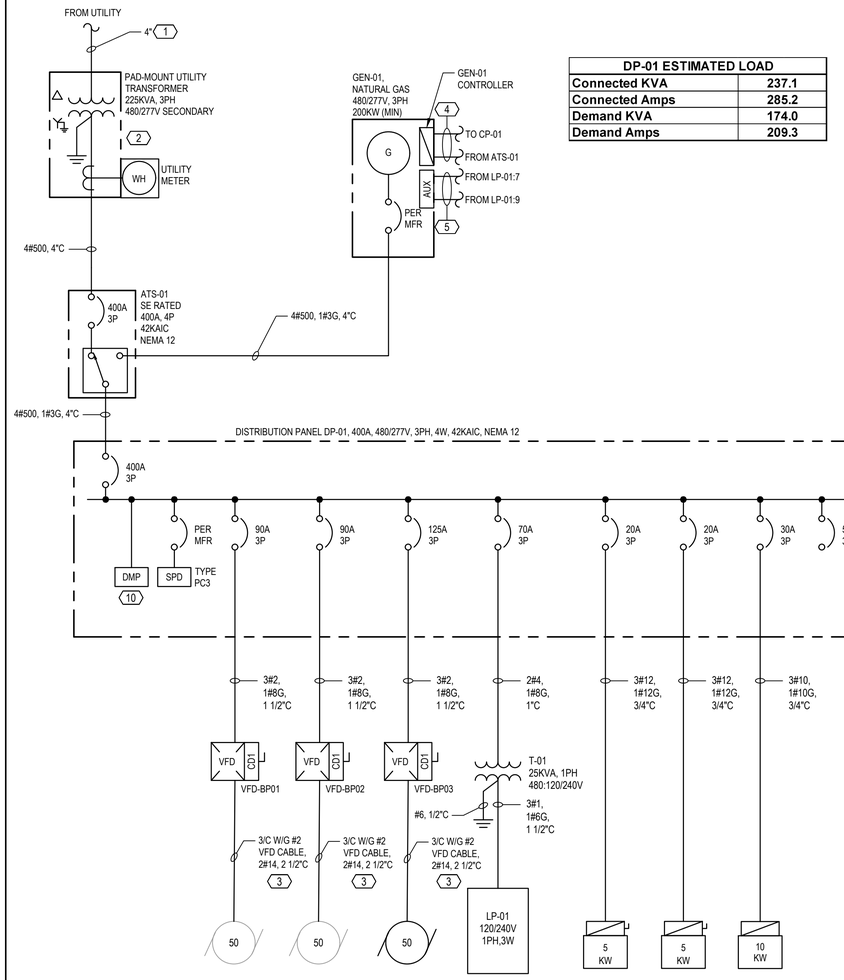
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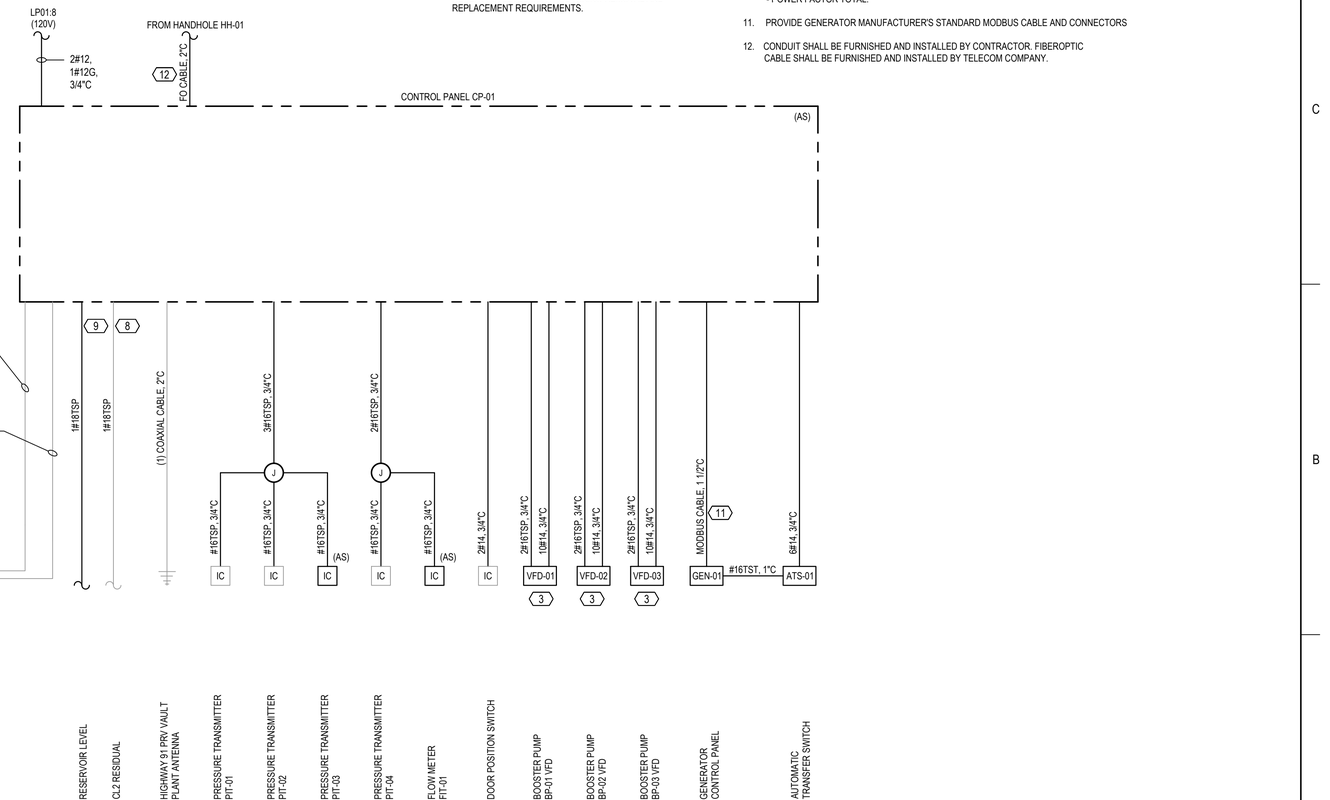
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DP-01 ESTIMATED LOAD	
Connected KVA	237.1
Connected Amps	285.2
Demand KVA	174.0
Demand Amps	209.3



1 POWER ONE LINE DIAGRAM



2 CONTROL ONE LINE DIAGRAM

GENERAL NOTES:

1. (AS) - FURNISHED BY AUTOMATIC SYSTEMS.

KEYNOTES (#)

1. CONTRACTOR TO PROVIDE CONDUIT. UTILITY TO PROVIDE PRIMARY WIRING.
2. UTILITY TO PROVIDE TRANSFORMER AND TRANSFORMER MOUNTED METERING DEVICE.
3. MOTOR WINDING THERMOSTAT CONDUCTORS ROUTED IN SAME CONDUIT AS VFD CABLE.
4. SEE CONTROL ONE LINE DIAGRAM BELOW AND DUCTBANK SCHEDULE ON DRAWING 00E100.
5. SEE PANEL SCHEDULE DRAWING ON 01E651 AND DUCTBANK SCHEDULE ON DRAWING 00E100.
6. RECONNECT EXISTING VALVE POWER WIRING TO NEW BREAKER IN DISTRIBUTION PANEL DP-01.EXTEND CONDUIT AND WIRING TO PANEL LOCATION AS REQUIRED.
7. RECONNECT EXISTING VALVE CONTROL WIRING TO CONTROL PANEL. EXTEND CONDUIT AND WIRING TO CONTROL PANEL LOCATION AS REQUIRED.
8. EXISTING DEVICE, CONDUIT, AND WIRING TO BE RECONNECT TO NEW CONTROL PANEL. EXTEND EXISTING CONDUIT AND WIRING AS REQUIRED TO COMPLETE INSTALLATION.
9. REFER TO DRAWING 00X100 AND 00E100 FOR DETAILED RESERVOIR LEVEL CONTROL WIRING REMOVAL AND REPLACEMENT REQUIREMENTS.

KEYNOTES (#)

10. PROVIDE MANUFACTURER'S STANDARD DIGITAL METERING PACKAGE. METER SHALL BE MICROPROCESSOR BASED, INCLUDE AN INTEGRAL LED OR LCD DISPLAY, AND BE PROVIDED WITH CURRENT AND POTENTIAL TRANSFORMERS AS REQUIRED. METER SHALL MEET NEMA/ANSI C12.20 AND UL 508 STANDARDS. ADDITONAL REQUIREMENTS:

    DISPLAY THE FOLLOWING MINIMUM ELECTRICAL PARAMETERS (ACCURACY):
    - RMS CURRENT PER PHASE (+0.3% FULL SCALE).
    - RMS VOLTAGE LINE-TO-LINE AND LINE-TO-NEUTRAL (+0.3% FULL SCALE).
    - REAL POWER (W): 3 PH TOTAL (+0.6% FULL SCALE).
    - APPARENT POWER (VA): 3 PH TOTAL (+0.6% FULL SCALE).
    - REACTIVE POWER (VAR): 3 PH TOTAL (+0.6% FULL SCALE).
    - POWER FACTOR (+1.0%).
    - FREQUENCY (+0.17%).
    - PERCENT CURRENT TOTAL HARMONIC DISTORTION (31ST).
    - PERCENT VOLTAGE TOTAL HARMONIC DISTORTION (31ST).

    DATA LOGGING:
    - 128 KB.
    - SELECTABLE FOR PARAMETERS LISTED ABOVE FOR DISPLAY.
    - SOFTWARE FOR CONFIGURATION, RETRIEVAL, AND TRENDING.
    - COMMUNICATION PORTS AND PROTOCOLS: ETHERNET TCP/IP.

    METER SHALL HAVE A DATA SCREEN WITH THE FOLLOWING MINIMUM DATA:
    - VOLTAGE LINE-TO-LINE FOR EACH PHASE AND AN AVERAGE.
    - VOLTAGE LINE-TO-NEUTRAL FOR EACH PHASE AND AN AVERAGE.
    - CURRENT FOR EACH PHASE, NEUTRAL AND AVERAGE AND PEAK DEMANDS.
    - KILOWATTS (KW) FOR EACH PHASE, TOTAL, DEMAND AND PEAK DEMAND.
    - KILOVOLT-AMPERES (KVA) FOR EACH PHASE, TOTAL, DEMAND AND PEAK DEMAND.
    - KILOVOLT-AMPERES REACTIVE (KVAR) FOR EACH PHASE, TOTAL, DEMAND AND PEAK DEMAND.
    - POWER FACTOR TOTAL.

11. PROVIDE GENERATOR MANUFACTURER'S STANDARD MODBUS CABLE AND CONNECTORS
12. CONDUIT SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR. FIBEROPTIC CABLE SHALL BE FURNISHED AND INSTALLED BY TELECOM COMPANY.

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PROJECT MANAGER	STEVEN HANNA
CIVIL	S. SCHMOKER
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MECHANICAL	P. KONECK-WILWERDING
ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

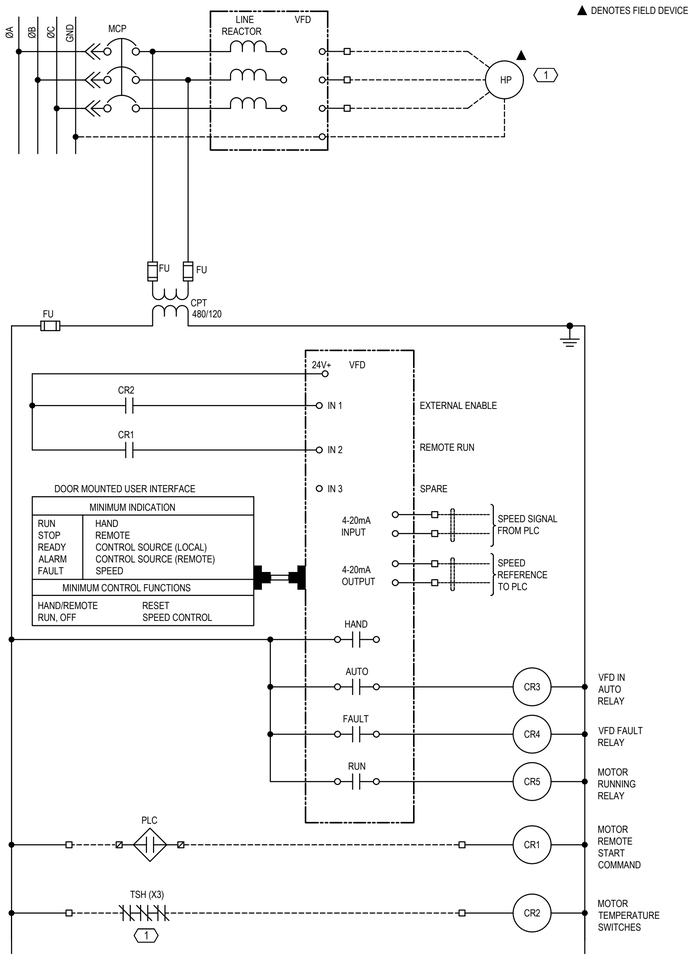
3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ONE-LINE DIAGRAMS

0 1" 2"

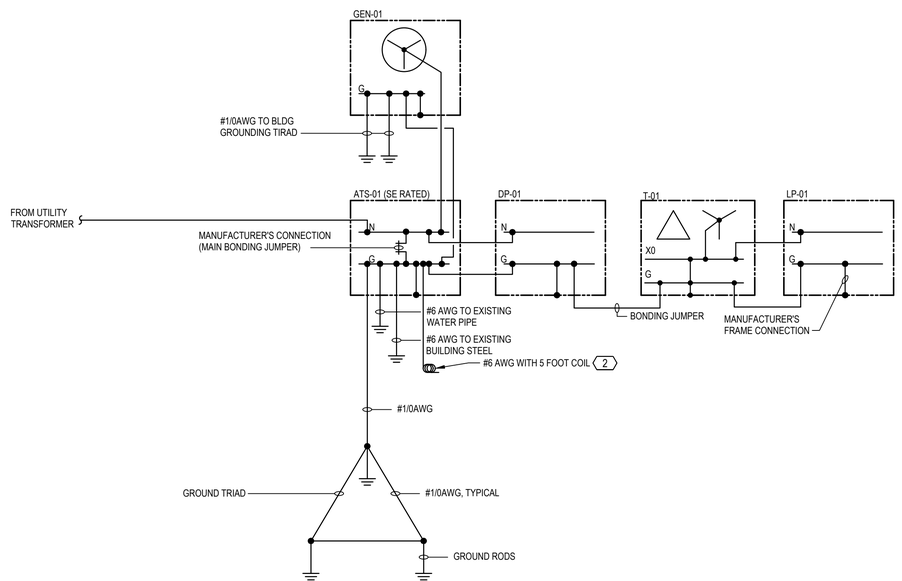
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CONTROL DIAGRAM CD1

BOOSTER PUMP: BP-01, BP-02, BP-03



PUMP STATION GROUNDING DIAGRAM

NOT TO SCALE

KEYNOTES (#)

1. EXISTING FOR BOOSTER PUMPS BP-01 AND BP-02.
2. BOND TELECOM COMPANY PROVIDED FIBEROPTIC CABLE METALLIC JACKET AT AS REQUIRED.

ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	STEVEN HANNA
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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

CONTROL AND GROUNDING DIAGRAMS

0 1" 2"

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SCALE NO SCALE

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PANELBOARD NO: LP-01

VOLTAGE:	120/240	**BUS RATING (A):**	150	**ENCLOSURE:**	NEMA 12
PHASE:	1	**MAIN OC DEVICE:**	125	**MOUNTING:**	SURFACE
WIRE:	3+GND	**INTERRUPTING RATING (KA):**	10	**LOCATION:**	PUMP STATION
200% NEUTRAL:	NO	**SERVICE ENTRANCE LABEL:**	NO		

CKT NO.	DESCRIPTION	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	OCP AMPS	P		OCP AMPS	P	CONNECTED LOAD (VA) LTS	REC	MECH	MISC	DESCRIPTION	CKT NO.
1	LIGHTING	500				20	1	A	20	1		1,440			RECEPTACLES	2
3	SPARE					20	1	B	20	1				500	RESERVOIR POWER	4
5	I&C DEVICES				250	20	1	A	20	1					SPARE	6
7	GEN-01 BAT CHARGER				1,200	20	1	B	20	1				1,000	CNTRL PNL CP-01	8
9	GEN-01 JACKET HEATER				1,500	30	1	A	20	2					SPARE	10
11	SPARE					20	1	B								12
13	SPARE					20	1	A	20	1					SPARE	14
15	SPARE					20	1	B	20	1					SPARE	16
17	SPARE					20	1	A	1	2					SPD	18
19	SPARE					20	1	B								20

LOAD SUMMARY

	LTS	REC	MECH	MISC	SPARE	TOTAL				PHASE BALANCE	
CONNECTED LOAD (KVA)	0.5	1.4	0.0	4.5	---	6.4		240	LINE-TO-LINE VOLTS	PHASE A (KVA)	4
DEMAND FACTOR	1.25	NEC	1.00	1.00	20%	---		27	CONNECTED AMPS	PHASE B (KVA)	3
DESIGN LOAD (KVA)	0.6	1.4	0.0	4.5	1.3	7.8		32	DESIGN AMPS		

LUMINAIRE SCHEDULE

DWG ID	MANUFACTURER AND SERIES	DESCRIPTION	WATTS (MAX)	VOLTAGE	COLOR TEMP (K)	CRI (MIN)	LUMENS DOWN	LUMENS UP	MOUNTING TYPE	MOUNTING HEIGHT	NOTES
S1	LITHONIA VAP SERIES	4' ENCLOSED IMPACT RESISTANT POLYCARBONATE STRIP HOUSING WITH FROSTED IMPACT RESISTANT LENS. WET LOCATION FIXTURE. MEDIUM DISTRIBUTION.	67	120	4000	90	8000	0	CEILING, PENDANT	AS NOTED	1
E1	LITHONIA VAP SERIES	4' ENCLOSED IMPACT RESISTANT POLYCARBONATE STRIP HOUSING WITH FROSTED IMPACT RESISTANT LENS. WET LOCATION FIXTURE. MEDIUM DISTRIBUTION.	67	120	4000	90	8000	0	CEILING, PENDANT	AS NOTED	1,2
X1	HOLOPHANE HLWPC2	WALLPACK, FULL CUTOFF, BUTTON STYLE PHOTOCONTROL, BRONZE, TYPE 3 MEDIUM, P20	47	120	4000	70	5510	0	SURFACE, WALL	AS NOTED	1

NOTES:
1. WHEN REPLACING EXISTING FIXTURES, MATCH HEIGHT AND LOCATION. SEE PLAN DRAWINGS FOR ADDITONAL INFORMATION.
2. FIXTURE SHALL BE PROVIDED WITH BATTERY BACKUP.

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED PROVIDE CONDUIT AND CONDUCTOR SIZE OF 2#12, 1#12G, 3/4"C.

KEYNOTES (#)

1. SPD OVERCURRENT PROTECTIVE DEVICE PER MANUFACTURER.
2. CONDUIT AND CONDUCTOR SIZE: 2#8, 1#10G, 1 1/2"C.
3. CONDUIT AND CONDUCTOR SIZE: 2#6, 1#10G, 1 1/2"C.

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PROJECT MANAGER	STEVEN HANNA
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PROCESS	M. MILLER
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ELECTRICAL	S. POLK
STRUCTURAL	T. DRAHOTA
PROJECT NUMBER	10417756

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BLACK ELK PUMP STATION MODIFICATIONS

3100 COLLEGE DRIVE
BLAIR, NEBRASKA 68008

ELECTRICAL SCHEDULES

0 1" 2"

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Blair Black Elk Pump Station Modifications Issued for Bid OPCC, 1/7/2026

Discipline	Item Description	Quantity	Unit	Unit Cost			Total Cost
				Material	Labor	Total Unit Cost	
D	Vertical Turbine Pump, 750 gpm, 50 HP	1	EA	$ 75,000	$ 22,500	$ 97,500	$ 97,500
D	8" Gate Valve	2	EA	$ 3,720	$ 1,116	$ 4,836	$ 9,672
D	8" Check Valve	1	EA	$ 10,800	$ 1,620	$ 12,420	$ 12,420
D	10" Dresser Coupling	1	EA	$ 1,500	$ 450	$ 1,950	$ 1,950
D	8" Dismantling Joint	1	EA	$ 1,550	$ 465	$ 2,015	$ 2,015
D	8"x10" Reducer	1	EA	$ 2,200	$ 660	$ 2,860	$ 2,860
D	8" DIP, FL	1	LS	$ 3,150	$ 945	$ 4,095	$ 4,095
D	8" Pipe Support Saddle	3	EA	$ 250	$ 75	$ 325	$ 975
D	4" Surge Relief Valve	1	EA	$ 10,775	$ 3,233	$ 14,008	$ 14,008
D	Adjust Existing Suction Can Alignment	1	LS	$ 1,500	$ 1,200	$ 2,700	$ 2,700
C	Fencing	95	LF	$ 60	$ 18	$ 78	$ 7,410
C	Concrete Washout	1	EA	$ 1,500	$ 450	$ 1,950	$ 1,950
C	Construct 6" PCC Multi-Use Trail	11	SY	$ 150	$ 45	$ 195	$ 2,145
C	Crushed Rock	39	SY	$ 15	$ 5	$ 20	$ 758
C	SWPPP Maintenance	1	LS	$ 10,000	$ 3,000	$ 13,000	$ 13,000
C	Bollards	2	EA	$ 1,000	$ 300	$ 1,300	$ 2,600
C	Temporary Traffic Control	1	LS	$ 4,000	$ 1,200	$ 5,200	$ 5,200
E	Demo Electrical - Site Work	1	LS	$ -	$ 20,000	$ 20,000	$ 20,000
E	Demo Electrical - Interior Equipment	1	LS	$ -	$ 10,000	$ 10,000	$ 10,000
E	Demo Electrical - Interior Conduit & Wiring	1	LS	$ -	$ 10,000	$ 10,000	$ 10,000
E	New Electrical - Electrical Ductbank & Site Work	1	LS	$ 35,000	$ 35,000	$ 70,000	$ 70,000
E	New Electrical - Site Wiring	1	LS	$ 25,000	$ 15,000	$ 40,000	$ 40,000
E	New Electrical - 175kW Minimum Gas Generator	1	LS	$ 100,000	$ 20,000	$ 120,000	$ 120,000
E	New Electrical - Automatic Transfer Switch	1	EA	$ 20,000	$ 5,000	$ 25,000	$ 25,000
E	New Electrical - Distribution Panelboard	1	EA	$ 20,000	$ 5,000	$ 25,000	$ 25,000
E	New Electrical - Dry Type Transformer (30kVA)	1	EA	$ 5,000	$ 2,000	$ 7,000	$ 7,000
E	New Electrical - Dry Type Transformer (15kVA)	1	EA	$ 4,000	$ 2,000	$ 6,000	$ 6,000
E	New Electrical - Lighting Panel	1	EA	$ 6,000	$ 2,500	$ 8,500	$ 8,500
E	New Electrical - Booster Pump VFD	3	EA	$ 30,000	$ 10,000	$ 40,000	$ 120,000
E	New Electrical - Fused Disconnect	1	EA	$ 1,000	$ 1,000	$ 2,000	$ 2,000
E	New Electrical - Switches (Lighting & Misc.)	2	EA	$ 250	$ 250	$ 500	$ 1,000
E	New Electrical - Receptacles	7	EA	$ 50	$ 50	$ 100	$ 700
E	New Electrical - Lighting	6	EA	$ 200	$ 100	$ 300	$ 1,800
E	New Electrical - Interior Conduit + Wiring	1	LS	$ 15,000	$ 15,000	$ 30,000	$ 30,000
E	New Electrical - Equipment Rack, Boxes, & Misc.	1	LS	$ 2,500	$ 2,500	$ 5,000	$ 5,000
E	New Electrical - Acceptance Testing	1	LS	$ -	$ 10,000	$ 10,000	$ 10,000
M	Demo Mechanical - Exhaust Fans	2	EA	$ -	$ 210	$ 210	$ 420
M	Demo Mechanical - Louvers	2	EA	$ -	$ 270	$ 270	$ 540
M	Demo Mechanical - Modulating Dampers	2	EA	$ -	$ 100	$ 100	$ 200
M	Demo Mechanical - Dehumidifier	1	EA	$ -	$ 140	$ 140	$ 140
M	Demo Mechanical - Electric Unit Heater	1	EA	$ -	$ 115	$ 115	$ 115
M	New Mechanical - Bard Units	2	EA	$ 13,440	$ 3,000	$ 16,440	$ 32,880
M	New Mechanical - Electric Unit Heater	1	EA	$ 1,110	$ 120	$ 1,230	$ 1,230
S	New Structural - Generator Pad	20	CY	$ 350	$ 250	$ 600	$ 11,822
S	Demo Existing Transformer Pad	29	EA	$ 60	$ 150	$ 210	$ 6,100
S	New Structural - Transformer Pad	1	CY	$ 350	$ 250	$ 600	$ 626
S	New Structural - Transformer Piers	13	CY	$ 650	$ 725	$ 1,375	$ 17,279
S	Existing Structural - CMU Mortar Joint Repair	1	LS	$ -	$ -	$ 2,500	$ 2,500
S	Demo Structural - Masonry	2	EA	$ -	$ -	$ 1,000	$ 2,000
S	New Structural - Masonry	2	EA	$ -	$ -	$ 1,000	$ 2,000
S	New Structural - Steel Lintels	12	EA	$ 60	$ 30	$ 90	$ 1,080

Direct Subtotal =	**$**	**772,190**
Mob/Dmob (4%) =	$	30,888
Contractor's Home Office OH (4%) =	$	30,888
Contractor's GCs (12%) =	$	92,663
Bonds and Insurance (2.5%) =	$	19,305
Contractor's Profit (15%) =	$	115,828
Contingency (5%) =	$	38,609
Automatic Systems Quote (12/3/2025) =	$	112,605
Construction Subtotal =	**$**	**1,212,975**
Construction Subtotal (Rounded) =	**$**	**1,213,000**
Black Hills Energy (New Service Install) =	$	16,095
TOTAL (Rounded) =	**$**	**1,230,000**

City of Blair, NE

Black Elk Pump Station Modifications

Construction Documents
Project Manual

Issued for Bid

01/07/2026

HDR Project No. 10417756

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COORDINATING PROFESSIONAL

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00 01 07

SEALS AND SIGNATURES

Owner Name: City of Blair
Facility or Site Name: Black Elk Pump Station
Project Name: Black Elk Pump Station Modifications Project
Engineer: HDR

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END OF SEALS AND SIGNATURES

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00 21 13 - INSTRUCTIONS TO BIDDERS (EJCDC C-200-2018)
00 41 13 - BID FORM (EJCDC C-410-2018)
00 41 13A - AUTOMATIC SYSTEM CO. PROPOSAL
00 41 13B - Certification Regarding Debarment, Suspension, and Other Responsibility Matters
00 41 13C - Nebraska State Revolving Contractor Bidding Certifications
00 41 13D - DBE Subcontractor Utilization Form
00 41 13E - DBE Subcontractor Performance Form
00 43 13 - BID BOND PENAL SUM FORM (EJCDC C-430-2018)
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PROCUREMENT AND CONTRACTING REQUIREMENTS

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ADVERTISEMENT FOR BIDS

CITY OF BLAIR
BLAIR, NEBRASKA
BLACK ELK PUMP STATION MODIFICATIONS

General Notice

The City of Blair (Owner) is requesting Bids for the construction of the following Project:

BLACK ELK PUMP STATION MODIFICATIONS

Bids for the construction of the Project will be received at the office of the City Clerk located at City Hall, 218 South 16th Street, Blair, Nebraska until Wednesday, February 4th, 2026 at 2:00 PM local time. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

Installation of a third pump in the existing pump station including a variable frequency drive (VFD), installation of a standby generator and automatic transfer switch for the pump station, replacement of the two existing VFDs, replacement of the motor control center (MCC) and electrical power panels, replacement of the existing HVAC system with through wall heat pumps, and other associated modifications as shown and described in the Contract Documents.

Bids are requested for the following Contract: Black Elk Pump Station Modifications Project.

Obtaining the Bidding Documents

The Issuing Office for the Bidding Documents is:

A&D Technical Supply Company, Inc.
4320 South 84th Street, Omaha, NE 68127

Prospective Bidders may obtain or examine the Bidding Documents at the Issuing Office on Monday through Friday between the hours of 8:00 AM to 5:00 PM local time and may obtain copies of the Bidding Documents from the Issuing Office as described below. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda, if any, obtained from sources other than the Issuing Office.

Bidding Documents may be purchased from the Issuing Office during the hours indicated above. Cost does not include shipping charges. Upon Issuing Office's receipt of payment, paper Bidding Documents will be sent via the prospective Bidder's delivery service. Electronic download of the Bidding Documents is also available by visiting the hyperlink listed in the table below. The shipping charge amount for physical copies will depend on the shipping method chosen. Bidding Documents are available for purchase in the following formats:

Format	Cost
Bidding Documents (including full-size Drawings)	$100.00
Bidding Documents (including half-size Drawings)	$65.00
Electronic download of Bidding Documents from https://plans.adtechsupply.com/View/Default.aspx	$50.00

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State Revolving Fund (SRF) Requirements

1. DAVIS-BACON ACT WAGE DETERMINATIONS
    a. Contractors and subcontractors on USEPA federally assisted construction projects are required to pay their laborers and mechanics wages not less than those established by the U.S. Department of Labor. A current wage decision containing the appropriate building and/or heavy type rates is included in the specifications for bidding purposes.
2. DEBARMENT AND SUSPENSION
    a. The prospective participants must certify by submittal of EPA Form 5700-49, Certification Regarding Debarment, Suspension and Other Responsibility Matters, that to the best of its knowledge and belief that it and its principals are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency.
3. NONDISCRIMINATION IN EMPLOYMENT
    a. Bidders on this work will be required to comply with the President's Executive Order No. 11246. Requirements for bidders and contractors under this order are explained in the specifications.
4. DISADVANTAGED BUSINESS ENTERPRISE (DBE)
    a. Each bidder must fully comply with the requirements, terms and conditions of the U.S. Environmental Protection Agency, Disadvantaged Business Enterprise (DBE) requirements, including the fair share objectives for disadvantaged business participation during the performance of this contract. The bidder commits itself to the fair share objective for disadvantaged business participation contained herein and all other requirements, terms and conditions of these bid conditions by submitting a properly signed bid.
5. AMERICAN IRON AND STEEL PRODUCTS
    a. On January 17, 2014, H.R. 3547, "Consolidated Appropriations Act, 2014," was enacted. Section 436 of the Act requires that none of the appropriated funds may be used for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States, unless a waiver is provided to the recipient by EPA. Conditions for the waiver are found under the Information for Bidders. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. For more information on AIS, please visit: https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement.

Pre-bid Conference

A pre-bid conference for the Project will be held on Wednesday, January 28th at 9:00 AM local time at City Hall located at 218 S 16th St, Blair, NE 68008. Attendance at the pre-bid conference is encouraged but not required. A site visit to the pump station will occur after the pre-bid conference.

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Instructions to Bidders

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: City of Blair
By: Brenda Wheeler
Title: City Clerk
Date: 1/14/2026

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INSTRUCTIONS TO BIDDERS

FOR CONSTRUCTION CONTRACT

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ARTICLE 1—DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.

2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use, nor does it grant or confer ownership or any property interest in the Bidding Documents and other documents distributed for the Project. Authorization to download documents, or other distribution, includes the right for Bidding Documents holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the Bidding Documents holder pays all costs associated with printing or reproduction. Paper or other types of printed documents may not be re-sold under any circumstances.

2.03 Bidder may register as a Bidding Documents holder and obtain complete sets of Bidding Documents, in the format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered Bidding Documents holders will receive Addenda issued by Owner or Issuing Office.

2.04 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as Bidding Documents holders from the Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms or other such sources (such as other prospective bidders), or for a Bidder's failure to obtain Addenda from a plan room.

2.05 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to prospective Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 2024.005.20399 or later. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and

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Engineer cannot totally control the transmission and receipt of Electronic Documents nor any bidder's or the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.05.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 5 days of Owner's or Engineer's request, Bidder must submit the following information:

A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.

B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract. Such statement or certification, as applicable, shall be signed by the same officer of Bidder's company that signed the Bid.

C. Bidder's state (or other issuing entity) contractor license number, if applicable.

D. Subcontractor and Supplier qualification information.

E. Other required information regarding qualifications.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidders shall be experienced in the kind of Work to be performed, shall have the or be able to obtain construction equipment necessary for the Work, and shall possess sufficient capital to properly perform the Work within the time allowed. Bids received from Bidders who have previously failed to complete work within the time required, or who have previously performed similar work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show and document to Owner's satisfaction that Bidder has the necessary ability, facilities, equipment, and resources to commence the Work at the time prescribed and thereafter to prosecute and complete the Work at the rate or within the times specified. A Bid may be rejected

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if Bidder is already obligated for the performance of other work which would delay the commencement, prosecution or completion of the Work.

ARTICLE 4—PRE-BID CONFERENCE

4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.

4.02 Information presented at the pre-bid conference does not alter the Bidding Documents. Owner or Issuing Office will issue Addenda to make any changes to the Bidding Documents that result from discussions at the pre-bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents, including in Specifications Section 01 11 00 – Summary of Work. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.

b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.

c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any prospective Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data,

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interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-Related Documents*

A. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

A. A Site visit is scheduled following the pre-bid conference. Access to the site shall not be provided during other times.

B. Bidders visiting the Site are required to: (1) arrange their own transportation to the Site; and (2) each Bidder visiting the Site is responsible for providing and using its own personal protective equipment appropriate for the Site and conditions, and in accordance with posted requirements, if any. Comply with Paragraph 5.05 of these Instructions to Bidders.

C. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

5.05 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be indicated in the Supplementary Conditions. Where the Bidding Documents indicate an Owner's safety program, visitors to the Site during the bidding phase and at other times shall comply with Owner's safety programs.

5.06 *Other Work at the Site*

A. Reference is made to Specifications Section 01 11 00 – Summary of Work, for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other potentially confidential matters), if any.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

A. The Bid Form that each Bidder will complete and submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications and assure that Bidder can

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make the representations and certifications in good faith, before executing and submitting its Bid.

B. If Bidder is awarded the Contract, Successful Bidder (as Contractor) will make similar express representations and certifications when it signs the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:

A. Mr. Mitch Miller; 1917 S. 67th Street, Omaha, NE 68106; Ph: 402-399-1375; E-mail: Mitchell.Miller@hdrinc.com.

7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all Bidding Documents holders registered with the Issuing Office. Questions received less than seven days prior to the date for opening of Bids may not be answered.

7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Bidding Documents.

7.05 Addenda that engineer judges to have a material or significant effect on Bidders' preparation of pricing and other requirement element of the Bid will be transmitted via Addendum for Bidders' receipt not less than three days prior to the scheduled date for receipt of the Bids. Clarifications or modifications that Engineer deems will not have a material or substantial effect on the preparation of Bids may be transmitted for Bidders' receipt later, for receipt prior to the deadline for receipt of Bids.

ARTICLE 8—BID SECURITY

8.01 *Required Form and Amount of Bid Security*

A. A Bid must be accompanied by bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions.

B. Such bid bond will be issued in the form included in the Bidding Documents.

8.02 *Bid Security of Successful Bidder*

A. The Bid security of the apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has signed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Successful Bidder's bid security will be released.

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B. If the Successful Bidder fails to sign and deliver the Contract and furnish the required Contract security within the number of days, indicated in Paragraph 20.01 of these Instructions to Bidders, after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the bid security of that Bidder will be forfeited.

C. Upon Successful Bidder's default:

1. When the bid security is a penal sum bid bond, the entire penal sum amount of the bid bond will be forfeit and due Owner.

2. When the bid security is a damages form of bid bond, to the extent of Owner's damages will be forfeit and due Owner.

3. If a type of bid security other than a bid bond is allowed and is furnished, the amount that will be forfeit and due Owner will be the same as for the form of bid bond included in the Bidding Documents. Owner will so notify the defaulting Bidder in writing of the annulment and the amount of the forfeiture, with documentation of the amount forfeited.

D. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 *Bid Security of Bidders other than the Successful Bidder*

A. The bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon bid security furnished by such Bidders will be released.

B. Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the bid opening.

C. Release of Bid Security: Owner may release any Bidder's bid security by returning such bid security to the associated Bidder. When bid security is in the form of a bid bond, Owner may dispose of or destroy the bid bond and so advice the associated Bidder in writing that the bid bond has been released.

ARTICLE 9—CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any), are to be achieved are set forth in the Agreement.

9.02 Provisions for liquidated and special damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

10.01 The Contract for the Work, as awarded, will be on the basis of materials, equipment, and procedures specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items or procedures. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment or procedure, application for such

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acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, and will perform the Work in accordance with procedures indicated in the Bidding Documents, as supplemented by Addenda, if any. Assumptions regarding the possibility of post-bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so in the Specifications or elsewhere in the Bidding Documents. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should not submit a Bid.

11.02 The apparent Successful Bidder, and any other Bidder so requested by Owner or Engineer, must submit to Owner (with a copy to Engineer) a list of the Subcontractors and Suppliers proposed for the following portions of the Work within five days after the bid opening:

A. Electrical.

B. Mechanical.

C. Pump supplier.

D. VFD supplier.

E. Standby generator supplier.

11.03 If requested by Owner or Engineer, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and awarding the Contract.

11.04 If apparent Successful Bidder declines to make a requested substitution, Owner may award the Contract to another Bidder, consistent with the basis for evaluating the Bids for award as set forth in these Instructions to Bidders, that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to issuance of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be

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indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8.5inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

12.03 A Bid by a corporation must be signed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.

12.05 A Bid by a limited liability company must be signed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

12.06 A Bid by an individual must show the Bidder's name and official address.

12.07 A Bid by a joint venture must be signed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

12.08 All names must be printed in ink below the signatures.

12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be indicated on the Bid Form.

12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such

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certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump Sum*

A. Bidders must submit a Bid on a lump sum basis as set forth in the Bid Form.

ARTICLE 14—SUBMITTAL OF BID

14.01 The Bidding Documents include one separate, unbound copy of the Bid Form, and, where required, the Bid Bond Form and other supplements to the Bid Form. The unbound copy of the Bid Form and supplements (if any) is to be completed and submitted with the Bid security and the other documents required with the Bid by Article 2 of the Bid Form.

14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, and the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery method, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement or invitation to bid.

14.03 Bids received after the date and time prescribed for the opening of Bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened. Owner accepts no responsibility for delays in returning Bids submitted or delivered to the incorrect location.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

15.01 An unopened Bid may be withdrawn by an appropriate document duly signed in the same manner that a Bid must be signed and delivered to the place where Bids are to be submitted, prior to the date and time established in the Bidding Documents for the receipt of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 of this Article and submit a new Bid prior to the date and time for established in the Bidding Documents the receipt of Bids.

15.03 If, within 24 hours after Bids are opened, any Bidder files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a

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material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the bid security will be returned.

ARTICLE 16—OPENING OF BIDS

16.01 Bids will be opened at the time and place indicated in the Advertisement or invitation to bid and, unless obviously non-responsive, will be read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

16.02 An abstract of the amounts of the base Bids and major alternates, if any, will be furnished by Owner or Engineer to plan rooms and construction information subscription services.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.

18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. Owner may reject the Bid of any Bidder that fails to demonstrate appropriate qualifications, experience, and resources for the Work, in accordance with Article 3 of these Instructions to Bidders.

18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 *Basis for Award of Contract*

A. If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest-priced, responsive Bid that has not otherwise been disqualified.

18.05 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or elsewhere in the Bidding Documents, or prior to the Notice of Award.

18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications, experience, and resources of the Bidder and may consider the qualifications, experience, and resources of

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Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.07 Owner, with or without Engineer's assistance, may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

19.01 Paragraph 2.01 and Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, set forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the signed Agreement to Owner (or Owner's representative), it must be accompanied by required bonds and insurance documentation.

19.02 Article 8 ("Bid Security") of these Instructions to Bidders addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unsigned counterparts of the Agreement, along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and required bonds and insurance documentation (as required by the Contract Documents) to Owner. Within 10 days thereafter, Owner will deliver one fully signed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES

21.01 Owner is not exempt from Nebraska State sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes must be included in the Bid. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

ARTICLE 22—REQUIREMENTS FOR SRF PROJECTS

22.01 *DAVIS-BACON ACT WAGE DETERMINATIONS*

A. Contractors and subcontractors on USEPA federally assisted construction projects are required to pay their laborers and mechanics wages not less than those established by the U.S. Department of Labor. A current wage decision containing the appropriate building and/or heavy type rates is included in these specifications for bidding purposes. In addition, wage rate requirements under Public Law 111-88 are found in the federal assurances of these specifications.

22.02 *CONTRACT PROVISIONS (CONTRACT WORK HOURS AND SAFETY STANDARDS ACT; COPELAND ACT*

A. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued

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by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor.

22.03 *NONDISCRIMINATION IN EMPLOYMENT*

A. Discrimination on the basis of race, color, national origin, disability, age, or sex is prohibited and the intimidation or retaliation against any individual or group because they have exercised their rights to participate in or oppose actions protected/prohibited by 40 C.F.R. Parts 5 and 7 is prohibited. All employment under the project is subject to and must be in compliance with the following: i) the Civil Rights Act of 1964, 42 U.S.C. 2000d, et seq., as amended; ii) Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. 794, et seq., as amended; and iii) Age Discrimination Act of 1975, 42 U.S.C. 6102, et seq., as amended.

B. By the submission of its bid, each bidder acknowledges that they understands and agrees to be bound by the equal opportunity requirements of EPA regulations (40 CFR Part 8, particularly Section 8.49(b)), which shall be applicable throughout the performance of work under any contract awarded pursuant to this solicitation. Each bidder agrees that if awarded a contract, it will similarly bind contractually each subcontractor.

C. In implementation of the foregoing policies, each bidder further understands and agrees that if awarded a contract, it must engage in affirmative action directed at promoting and ensuring equal employment opportunity in the workforce used under the contract (and that it must require contractually the same effort of all subcontractors whose subcontracts exceed $10,000). The bidder understands and agrees that "affirmative action" as used herein shall constitute employment in the on-site workforce used on the project which corresponds, for each trade used, to the minority population in the serving labor market area from which workers are reasonably available for hire for the project.

22.04 *EPA "FAIR SHARE" POLICY, MBE/WBE SUBCONTRACTING GOAL*

A. The successful prime contractor agrees to ensure to the fullest extent possible that at least a 14 percent (6% - MBE; 8% - WBE) "Fair Share" of SRF funds for subcontracts for supplies, construction, equipment or services are made available to organizations owned or controlled by socially and economically disadvantaged individuals, women, and historically black colleges and universities.

B. The prime contractor agrees to include in their bid specifications for subcontracts, a 14 percent (6% - MBE; 8% - WBE) "Fair Share". The prime contractor agrees to report on all procurement actions regardless of the size of the sub-agreement. The prime contractor agrees to provide documentation of all efforts taken to achieve the "Fair Share". To evaluate compliance with the "Fair Share" policy, the prime contractor also agrees to comply with the six affirmative steps stated in 40 CFR 33.240; or 40 CFR 31.36(e), or 40 CFR 35.6580, whichever is applicable.

22.05 *EMPLOYMENT UNDER PUBLIC CONTRACTS, LB 403, APPROVED BY THE GOVERNOR APRIL 8, 2009*

A. The following language is required and will be included in all contracts made with contractors and is a pass through requirement for his or her subcontractors.

B. The Contractor is required and hereby agrees to use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska. A federal immigration verification system means the

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electronic verification of the work authorization program authorized by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324a, known as the EVerify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of a newly hired employee. If the Contractor is an individual or sole proprietorship, the following applies:

1. The Contractor must complete the United States Citizenship Attestation Form, available on the Department of Administrative Services website at www.das.state.ne.us;
2. If the Contractor indicates on such attestation form that he or she is a qualified alien, the Contractor agreesto provide the US Citizenship and Immigration Services documentation required to verify the Contractor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program; and,
3. The Contractor understands and agrees that lawful presence in the United States is required and the Contractor may be disqualified or the contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. §4-108.

22.06 *AMERICAN IRON AND STEEL PRODUCTS*

A. Public Law 114-113, Consolidated Appropriations Act, 2016 requires that none of the appropriated funds for the DWSRF or the CWSRF as found in the amendments in the Water Resources Reform and Development Act (WRRDA) to Titles I, II, V and VI of the Federal Water Pollution Control Act (FWPCA): Section 5004. American Iron and Steel (Section 608), may be used for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project is produced in the United States unless a waiver is provided to the recipient by EPA. In order to receive a waiver, the Assistance Recipient must send a written request to the Administrator. A decision will be made based on the following criteria:

1. The requirement is inconsistent with the public interest for purposes of the project for which a waiver has been requested.
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality, and
3. Inclusion of iron and steel products produced in the United States will increase the overall cost of the project by more than 25 percent.

B. If the Administrator receives a request for a waiver, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

C. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. Steel means an alloy that includes at least 50 percent iron, between 0.02 and 2.0 percent carbon, and may include other elements.

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22.07 *RIGHT OF ENTRY*

A. Environmental Protection Agency regulations provide for site visits by federal agencies and associated state agencies. The Nebraska Department of Water, Energy, and Environment is an associated state agency and provision for site visits and right of entry shall be granted.

22.08 *HISTORICAL AND ARCHAEOLOGICAL*

A. If, during the course of construction, evidence of deposits of historical, prehistoric, paleontological, or archaeological interest is found, the contractor shall cease operations affecting the find and shall notify the owner who shall notify the State, c/o Nebraska Historical Society, State Preservation Officer, P.O. Box 82554, Lincoln, Nebraska 68508, Toll Free (800) 833-6747. No further disturbance of the deposits shall ensue until the contractor has been notified by the owner that he may proceed. The owner will issue a notice to proceed only after the state official has surveyed the find and make a determination to the Department of Water, Energy, and Environment and owner. Compensation to the contractor, if any, for lost time or change in construction to avoid the find, shall be determined in accordance with changed site conditions or change order provisions of the specifications.

22.09 *COMPLIANCE WITH THE MIGRATORY BIRD TREATY ACT (MBTA)*

A. This Federal Act (16 U.S.C. 703-712: Ch. 128 as amended) makes illegal those construction activities that kill (take) migratory birds or destroys eggs, young or active nests. The construction contractor should make reasonable effort to avoid occupied bird nests with eggs or young during clearing and grubbing of trees or trenching and backfilling or other construction activities.

B. Although the provisions of the MBTA are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period April 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. Raptors can be expected to nest in woodland habitats during February 1 through July 15. Sedge wrens, which occur in some wetland habitats normally, nest from July 15 to September 10. If the construction may result in the taking of nesting migratory birds, U.S. Fish and Wildlife Service (USFWS) recommends that the construction contractor arrange to have a qualified biologist conduct a field survey of the affected habitats.

C. The USFWS's Nebraska Field Office should be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests, which cannot be avoided by the planned construction activities. Adherence to these guidelines will help to avoid the unnecessary take of migratory birds and the possible need for law enforcement action. The USFWS address and phone number is the following:

United States Department of the Interior Fish and
Wildlife Service Nebraska Field Office
9325 South Alda Road
Wood River, NE 68883
Phone: (308) 382-6468 / Fax: (308) 384-8835 / Email: nebraskaes@fws.gov

Ground Nesting Birds in Nebraska covered by MBTA:

Western Meadowlark (*Sturnella neglecta*), Nebraska State Bird
Piping plover (*Charadrius melodus*), Endangered Species
Interior least tern (*Sterna antillarum*), Endangered Species

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Sandhill crane (*Grus Canadensis*)
Whooping crane (*Grus Americana*), Endangered Species

Above Ground Nesting Birds (Raptors) in Nebraska covered by MBTA:
Bald Eagle (*Haliaeetus leucocephalus*), Threatened Species
Peregrine Falcon (*Falco peregrine*)
Red-tailed Hawk (*Buteo jamaicensis*)

FOR THE FULL COMPREHENSIVE LIST OF BIRDS COVERED BY MBTA SEE:
https://www.fws.gov/law/migratory-bird-treaty-act-1918.

22.10 *COMPLIANCE WITH THE BALD AND GOLDEN EAGLE PROTECTION ACT (EAGLE ACT)*

A. The golden eagle is found in arid, open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Bald eagles utilize mature, forested riparian areas near rivers, streams, lakes and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and wintering period extends from December-March. Additionally, many eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5 mile of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching and roosting habitats. If it is determined that either species could be affected by the proposed project, the USFWS should be notified at the above phone and email address as well as the Nebraska Game and Parks Commission for recommendations to avoid adverse impacts to the bald and golden eagles.

22.11 *COMPLIANCE WITH TRAFFICKING VICTIMS PROTECTION ACT*

A. The Borrower, its employees, sub-recipients under this award, and sub-recipients' employees may not engage in severe forms of trafficking in persons during the period of time that the award is in effect; procure a commercial sex act during the period of time that the award is in effect; or use forced labor in the performance of the award or sub-awards under the award.

22.12 *ADDITIONAL ASSURANCES AND REQUIREMENTS*

A. Additional assurances and requirements of EPA and NDWEE related to SRF funded projects are more fully described in later sections of these Contract Documents. In addition, all work done on the project should be in accordance with all applicable federal, state, and local regulations and authorities, including cross-cutter requirements as stated in Attachment D of the SRF loan agreement.

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BID FORM

FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

City of Blair
218 South 16th Street
Blair, NE 68008

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

D. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids; and

E. SRF Forms:

1. NDWEE Form NDWEE-BC01 – Certification Regarding Debarment, Suspension, and Other Responsibility Matters.

2. NDWEE Form NDWEE-BC02a – Nebraska State Revolving Contractor Bidding Certifications.

3. NDWEE Form NDWEE-BC03 (EPA Form 6100-4) – Disadvantaged Business Enterprise (DBE) Program Subcontractor Utilization Form.

4. NDWEE Form NDWEE-BC04 (EPA Form 6100-3) - Disadvantaged Business Enterprise (DBE) Program Subcontractor Performance Form.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

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3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum prices shown in the Lump Sum Bid Schedule:

1. Lump Sum Price (Single Lump Sum)

LUMP SUM BID SCHEDULE				
No.	**Item**	**Unit**	**Quantity**	**Bid Amount**
1	Instrumentation for Process Controls	LS	1	$99,488.00[a]
2	All Remaining Work for the Black Elk Pump Station Modifications Project	LS	1	$
TOTAL LUMP SUM BID (Bid Items No. 1 thru 2)				**$**

[a]See Proposal by Automatic Systems Company attached to this Bid Form as well as Section 01 22 00 – Measurement and Payment for a detailed description of this Bid Item.

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

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ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

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6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.

c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Bidder's Address for giving notices:

_____

_____

Bidder's Contact Person:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

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AUTOMATIC SYSTEMS CO.

Mr. Steven Hanna
HDR, Inc.
1917 south 67th Street
Omaha, NE 68106-2973

December 31, 2025

SUBJECT: Blair, NE WTP – Black Elk Booster Station Improvements Budget Proposal

Mr. Hanna,

We are pleased to offer the following budgetary proposal for controls and instrumentation associated services for the upcoming Black Elk Booster Station project.

The programmable logic controller (PLC) & operator interface in the existing Control Panel have been discontinued by Allen-Bradley along with the associated hardware and are beyond their useful operating life. Procurement of replacement parts for the existing PLC & HMI have elevated costs and long lead times. Ethernet radios will provide ethernet communications with your SCADA System.

Our proposal includes equipment and services as detailed below.

Control Panels

A One (1) **Control Panel**, NEMA 12, 120 VAC, UL-508 labeled, including the following control equipment described below.

Proposed panel shall be complete with the installation of an Allen-Bradley PanelView Plus 7 Performance 10" Touchscreen, Allen-Bradley CompactLogix Programmable Logic Controller (PLC), I/O cards, UPS, Ethernet switch, Ethernet/IP to Modus protocol converter, power supplies, push buttons and switches, indicator lights, fusing, terminals, and internal panel wiring.

Instrumentation

B One (1) **Pressure transducer**, to include block and bleed valve, diaphragm seal, and snubber. Unit shall have LCD digital indicator with onboard buttons and have 4-20mA output.

C One (1) **Building Temperature Sensor,** IP20, Range of 32°F to 122°F and has 4-20mA output.

D One (1) **Discharge Flow Meter,** 10" Electromagnetic Flowmeter system with 120VAC integral mount transmitter, carbon steel with hard rubber liner, stainless steel sensing electrodes, two

grounding rings, 4-20mA analog and dual relay outputs, and adhesive device identification label.

E One (1) **Suction Low Pressure Switch,** Duragauge Pressure Gauge with electrical warning contact kit.

General Conditions and Services

F One (1) **Professional Services**, to include engineering, PLC programming, HMI programming, and on-site field services to include start-up, testing, instrumentation checkout sheets, and operator training.

G One (1) Complete set of **electronic submittals.**

H One (1) Complete set of **Installation, Operation, and Maintenance Manuals.**

Your net budgetary price for Items A through H, FOB factory with **freight allowed** to jobsite including one (1) year warranty from date of startup (not to exceed 18 months from date of shipment)…… **$99,488.00 PLUS TAX .**

The above price for Items A through H **does not** include any:

1. Sales or use taxes.
2. Bond costs.
3. License fees or permits of any kind.
4. Motor Control Center (MCC) with Variable Frequency Drives.
5. Interconnecting wire, cables, or conduits between control panels, MCCs, workstations, and primary devices.
6. Any fiber optic networking equipment. Plan for network connection is to have ethernet cable brought to us from ISP ONT unit.
7. Generator sets of any kind.
8. Automatic Transfer Switches of any kind.
9. Generator control panels.
10. Generator receptacles.
11. Junction boxes.
12. Setting or mounting of any control panels/MCCs or primary devices.
13. Pressure taps or saddles associated with mounting pressure switches.
14. Mounting hardware or brackets.

15. Wall of floor stands or mounting supports for primary devices.
16. Pumps or motors of any kind.
17. Pipe spool pieces, gaskets or bolt kits for flow meter installation.
18. Concrete housekeeping pads.
19. Switchgear pad modifications.
20. Control valves of any kinds.
21. Valve actuators or solenoid valves.
22. HVAC equipment for controls of any kind.
23. Plywood mounting boards, painting or installation thereof.
24. Grounding of equipment.
25. Stilling wells.
26. Transducer mounting brackets.
27. Unloading of equipment from delivery trucks.
28. Power Company coordination or associated utility fees.
29. Labor or any other miscellaneous materials that may be required for installation not specifically detailed above.

Thank you very much for the opportunity of providing you with the above proposal, should you wish to proceed with an order please sign on the space provided below and return a copy to this office.

We look forward to hearing from you, should you have any questions please don't hesitate to give me a call.

Sincerely,

Randy Shotkoski

Randy Shotkoski
Automatic Systems Company

Accepted by:_____Date:_____

Items Accepted:_____Purchase Order No:_____

Purchase Order Amount:_____

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Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals, in accordance with Section 306 of the Clean Air Act and Section 508 of the Clean Water Act, including executive Order 11738, Administration of the Clean Air Act and the Federal Water Pollution Control Act, with Respect to Federal Contracts, Grants, or Loans, as amended:

a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public: (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____

Printed Name and Title of Authorized Representative

_____

Signature of Authorized Representative Date

☐ Checking this box indicates that I am unable to certify the above statements and have provided a written explanation along with this form.

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Nebraska State Revolving Contractor Bidding Certifications

This project that the Contractor is submitting a bid for is receiving funding from the Nebraska State Revolving Fund (SRF) Program. The Contractor acknowledges to and for the benefit of the SRF Recipient and the Nebraska Department of Water, Energy, and Environment (the "Funding Authority") that by accepting this contract, the Contractor acknowledges and agrees to the following terms and requirements of the project:

- **Davis-Bacon & Related Acts**
- **American Iron and Steel (AIS)**

DAVIS-BACON AND RELATED ACTS CERTIFICATION

The Davis-Bacon and Related Acts (DBRA) is a collection of labor standards provisions administered by the Department of Labor that are applicable to projects funded with SRF funding. These labors include the:

- **Davis-Bacon Act**, which requires payment of prevailing wage rates for laborers and mechanics on construction contracts;
- **Copeland "Anti-Kickback" Act**, which prohibits a contractor or subcontractor from inducing an employee into giving up any part of the compensation to which they are entitled; and
- **Contract Work Hours and Safety Standards Act**, which requires overtime wages to be paid for over 40 hours of work per week, under contracts in excess of $100,000.

The Contractor acknowledges that by accepting this contract, the contractor acknowledges and agrees to the terms provided in the EPA'S DBRA Requirements for Contractors and Subcontractors (https://www.epa.gov/grants/contract-provisions-davis-bacon-and-related-acts) and terms and conditions in accordance with 29 CFR Part 5. The Contractor hereby represents and warrants to and for the benefit of the SRF Recipient and Funding Authority:

a) the Contractor has reviewed and understands the DBRA;
b) will include a copy of all applicable wage determinations applied to the project with their contract agreement;
c) the applicable wage determination shall apply to any and all subcontractors under the Contractor; and
d) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary as may be requested by the SRF Recipient or the Funding Authority.

For Sole Proprietors and Business Owners Performing Labor and Mechanical Work

☐ Please check this box if you, the Contractor, are a sole proprietor and a "business owner" as defined by 29 CFR 541.101, or plan to have a business owner perform labor and mechanical work on the project. This does **not** include laborers and mechanics classified as independent contractors or "1099 workers".

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AMERICAN IRON AND STEEL PRODUCTS CERTIFICATION

1. Identification of American-made Iron and Steel Products: Consistent with the terms of the Assistance Recipient's bid solicitation and provisions of Section 436(a) of H.R. 3547, the Bidder certifies that this bid reflects the Bidder's best, good faith effort to identify domestic sources of iron and steel products. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.
2. Verification of U.S. Production: The Bidder certifies that all iron and steel products contained in the bid solicitation that are American-made have been so identified, and if this bid is accepted, the Bidder agrees that it will provide reasonable, sufficient, and timely verification to the Assistance Recipient of the U.S. production of each iron and steel product so identified.
3. Documentation Regarding Non-American-made Iron and Steel Products: The Bidder certifies that for any iron and steel products that are not American-made and are so identified in this bid, the Bidder has included in or attached to this bid one or both of the following, as applicable:

a. Identification of and citation to a categorical waiver published by the U.S. Environmental Protection Agency on the official public Internet Web site of the Environmental Protection Agency that is applicable to such iron and steel products, and an analysis that supports its applicability to the iron and steel products:

b. Verifiable documentation sufficient to the Assistance Recipient, as required in the bid solicitation or otherwise, that the Bidder has sought to secure American-made iron and steel products but has determined that such iron and steel products are not available on the schedule and consistent with the deadlines prescribed in the bid solicitation, or in sufficient and reasonably available quantities and of a satisfactory quality, or inclusion of iron and steel products produced in the United State will increase the cost of the overall project by more than 25 percent, with assurance adequate for the Bidder under the applicable conditions stated in the bid solicitation or otherwise.

4. Information and Detailed Justification Regarding Non-American-made Iron and Steel Products: The Bidder certifies that for any iron and steel products that are not so available, the Bidder has also provided in or attached to this bid information, including but not limited to the verifiable documentation and full description of the bidder's efforts to secure any such American-made iron and steel products, that the Bidder believes are sufficient to provide and as far as possible constitute the detailed justification required for a waiver under Section 436(b) with respect to such iron and steel products. The Bidder further agrees that, if this bid is accepted, it will assist the Assistance Recipient in amending, supplementing, or further supporting such information as required by the Assistance Recipient to request and, as applicable, implement the terms of a waiver with respect to any such iron and steel products.

The Contractor hereby acknowledges that they have read and understand these requirements and that they shall be responsible for and shall comply with the Davis-Bacon and Related Acts and American Iron and Steel regulations.

Project: _____

_____
Printed Name and Title of Authorized Representative

_____ _____
Signature of Authorized Representative Date

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EPA Form 6100-4 Supplement
For Primary Contractor
Disadvantaged Business Enterprise (DBE) Program
Subcontractor Utilization Form
FORM NDWEE-BC03 (Revised: 07/01/2025)

This form is intended to depict the use of identified certified Disadvantaged Business Enterprise (DBE)[1] prime contractors and subcontractors[2] and the estimated dollar amount of each subcontract. An SRF Financial Assistance Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

To be completed by Primary Contractor

Prime Contractor Name:		**Project Name:**
Bid / Proposal / Contract No.:	**Assistance Agreement ID No. (if known):**	**Point of Contact:**
Address:		
Telephone No.:		**Email Address:**
Are you a Certified DBE[1]? ☐ **YES** ☐ **NO** ● If yes, please identify the certifying entity:		

I have, or plan to have, work that will be subcontracted out on this project: ☐ **YES** ☐ **NO**

I have identified and utilized DBE certified subcontractors: ☐ **YES** ☐ **NO**

● If yes, please complete the table below. If no, please explain:

Subcontractor Name / Company Name	Company Address / Phone / Email	Est. Dollar Amt	Currently DBE Certified?

[Continue on back if needed]

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205. Approved certifying entities include The United States Small Business Administration (SBA); The United States Department of Transportation; or an Indian Tribal Government, State Government, local Government or independent private organization in accordance with EPA's 8% or 10% statute as applicable.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an SRF award of financial assistance.

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EPA Form 6100-4 Supplement
For Primary Contractor
Disadvantaged Business Enterprise (DBE) Program
Subcontractor Utilization Form
FORM NDWEE-BC03 (Revised: 07/01/2025)

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I agree that any subcontractors employed will be provided with EPA Form 6100-2 Supplement and EPA Form 6100-3 Supplement. I have read and agree to comply with the requirements set forth in 40 CFR Part 33 (https://www.ecfr.gov/current/title-40/part-33) including in the event of a replacement of a subcontractor.

Prime Contractor Signature	Print Name
Title	**Date**

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EPA Form 6100-3 Supplement
For Subcontractor
Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form
FORM NDWEE-BC04a (Revised: 07/01/2025)

As required by 40 CFR Part 33 (https://www.ecfr.gov/current/title-40/part-33), prime contractors must provide this form to all of their DBE[1] subcontractors[2]. This form is for the documentation of participation from a selected DBE contractor. An SRF Financial Assistance Recipient must require its prime contractors to provide this form to their DBE Subcontractors for completion and submit it to the Nebraska Department of Water, Energy, and Environment - SRF Program. Prime contractors should also maintain a copy of this form on file.

To be completed by DBE subcontractor

Subcontractor Name:		**Project Name:**	
Prime Contractor Name:			
Bid / Proposal / Contract No.:	**Assistance Agreement ID No. (if known):**	**Point of Contact:**	
Address:			
Telephone No.:		**Email Address:**	

Contract Item Number	**Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment, or Supplies**	**Price of Work Submitted to the Prime Contractor**

DBE Certified By: ☐ DOT ☐ SBA ☐ OTHER: _____	Meets / exceeds EPA certification standards? ☐ YES ☐ NO

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205. Approved certifying entities include The United States Small Business Administration (SBA); The United States Department of Transportation; or an Indian Tribal Government, State Government, local Government or independent private organization in accordance with EPA's 8% or 10% statute as applicable.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an SRF award of financial assistance.

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I certify under penalty of perjury that the forgoing statements are true and correct. By signing this form, I agree that I have read and will comply with the requirements set forth in 40 CFR Part 33 (https://www.ecfr.gov/current/title-40/part-33).

Subcontractor Signature	Print Name
Title	**Date**

Primary Contractor Signature	Print Name
Title	**Date**

BID BOND (PENAL SUM FORM)

Bidder	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Bid**
Name: City of Blair	Project *(name and location)*:
Address *(principal place of business)*:	Black Elk Pump Station Modifications Project
218 South 16th Street Blair, NE 68008	Bid Due Date: [Enter date bid is due]
Bond	
Penal Sum:	
Date of Bond:	

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

Bidder	Surety
_____	_____
(Full formal name of Bidder)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature) (Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title:	Title:

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.

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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
    3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
    3.2. All Bids are rejected by Owner, or
    3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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AGREEMENT

BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between the City of Blair ("Owner") and _____ _____("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Installation of a third pump in the existing pump station including a variable frequency drive (VFD); installation of a standby generator and automatic transfer switch for the pump station; replacement of the two existing VFDs; replacement of the motor control center (MCC) and electrical power panels; and other associated modifications as shown and described in the Contract Documents.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Black Elk Pump Station Modifications Project.

ARTICLE 3—ENGINEER

3.01 The Owner has retained HDR Engineering, Inc., 1917 South 67th Street, Omaha, NE 68106 ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially complete on or before December 1st, 2026, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before December 31st, 2026.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also

**EJCDC® C-520, Agreement between Owner and Contractor for Construction Contract (Stipulated Price).
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recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $1,500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

4.04 Owner reserves the right to withhold from payments due Contractor under the Contract amounts for liquidated damages (if any), special damages (if any), and performance damages (if any) in accordance with the Contract.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments

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previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. 90 percent of the value of the Work completed (with the balance being retainage).

1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 97 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 3 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.
5. Wage Determination Schedules.
6. Statutory and Funding-Financing Entity Requirements.
7. Specifications as listed in the table of contents of the project manual (copy of list attached).
8. Drawings (not attached but incorporated by reference) consisting of 26 sheets with each sheet bearing the following general title: Black Elk Pump Station Modifications Project.
9. Addenda (numbers _____ to _____ , inclusive).
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.

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b. Work Change Directives.

c. Change Orders.

d. Field Orders.

e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price,

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within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on [indicate date on which Contract becomes effective] (which is the Effective Date of the Contract).

	Contractor:
_____	_____
(typed or printed name of organization)	*(typed or printed name of organization)*
By: _____	By: _____
(individual's signature)	*(individual's signature)*
Date: _____	Date: _____
(date signed)	*(date signed)*
Name: _____	Name: _____
(typed or printed)	*(typed or printed)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
	*(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____	Attest: _____
(individual's signature)	*(individual's signature)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____	Name: _____
(typed or printed)	*(typed or printed)*
Title: _____	Title: _____
(typed or printed)	*(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____
*(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	License No.: _____
	(where applicable)
	State: _____

EJCDC® C-520, Agreement between Owner and Contractor for Construction Contract (Stipulated Price).
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PERFORMANCE BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name: City of Blair	Description *(name and location)*:
Mailing address *(principal place of business)*:	Black Elk Pump Station Modifications Project
218 South 16th Street	
Blair, NE 68008	Contract Price:
	Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

EJCDC® C-610, Performance Bond.
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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

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5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

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statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: [Describe modification or enter "None"]

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PAYMENT BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name: City of Blair Mailing address *(principal place of business)*: 218 South 16th Street Blair, NE 68008	Description *(name and location)*: Black Elk Pump Station Modifications Project Contract Price: Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

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8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

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16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: [Describe modification or enter "None"]

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

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requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

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recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

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33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

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43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

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1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

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into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

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ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

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inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

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B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

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established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

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3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

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of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

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Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

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L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

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4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

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Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

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B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

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2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

    a. will certify that the proposed substitute item will:

        1) perform adequately the functions and achieve the results called for by the general design;

        2) be similar in substance to the item specified; and

        3) be suited to the same use as the item specified.

    b. will state:

        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

    c. will identify:

        1) all variations of the proposed substitute item from the item specified; and

        2) available engineering, sales, maintenance, repair, and replacement services.

    d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

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E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

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H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

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7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

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7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

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I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

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3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

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document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

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d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

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9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

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D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

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E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

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B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

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9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

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ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

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E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

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ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

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B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

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1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

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11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

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Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

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and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

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2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

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consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

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g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

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D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

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losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

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or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

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establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

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b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

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submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

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significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

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d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

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appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

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provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

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18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS

OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS

OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms, if any, used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The paragraph address system used in these Supplementary Conditions is the same as the paragraph address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

SC-1.01.A.40 Add the following to Paragraph 1.01.A.40:

Trucking, shipping, delivery firms, consultants, and entities performing testing or inspection retained by Contractor or any Subcontractor are considered to be Subcontractors.

SC-1.01.A.45 Add the following to Paragraph 1.01.A.45:

Entities that rent construction equipment or machinery, but are not incorporated into the Work, are considered to be Suppliers. If such rental entity furnishes both equipment and one or more personnel to operate and maintain the equipment, such entity is a Subcontractor.

ARTICLE 2—PRELIMINARY MATTERS

2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

A. Owner shall furnish to Contractor two paper copies of conformed Contract Documents incorporating and integrating all Addenda and amendments, if any, negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional paper copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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SC-3.01 Delete Paragraph 3.01.C in its entirety.

SC-3.01 Add the following new paragraphs immediately after Paragraph 3.01.E:

F. The Specifications and other verbal components of the Contract Documents may vary in form, format, and style. Some Specification sections are written in varying degrees of streamlined or declarative style and some Specifications sections may, in comparison, employ a more-narrative style. Omissions of such words and phrases as "Contractor shall," "in conformity with," "as shown," or "as specified" are intentional in streamlined language in the Contract Documents. Omitted words and phrases are incorporated by inference. Similar types of provisions may appear in various parts of a Specifications section or elsewhere in the Contract Documents. Contractor shall not attempt to take advantage of any variation of form, format or style in Change Proposal(s) and Claim(s).

G. Cross referencing of Specification sections in a Specifications section's heading "Related Sections includes, but are not necessarily limited to: "and elsewhere within each Specifications section is provided as an aid and convenience to Contractor. Contractor shall not rely on cross referencing indicated and is responsible for coordinating the entire Work and providing a complete Project whether or not cross referencing is provided in each Specifications section or whether or not cross referencing is complete.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

No Supplementary Conditions in this Article.

ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
Black Elk Pump Station As-Built Drawings	September 1977	Pump station as-built drawings.

F. Contractor may request electronic (PDF) copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents from Engineer.

SC-5.04.A Add the following new paragraph immediately after Paragraph 5.04.A.4:

5. Contractor encounters human remains, recognizes the existence of burial markers, archaeological sites, historical sites, artifacts of potential archaeological or historical interest, or wetlands not

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shown or indicated in the Contract Documents, Contractor shall immediately cease operations that may disturb such area(s) and secure the adjacent Work; and Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations (Contractor shall continue to suspend such operations until otherwise instructed by Owner but shall continue with all other operations that do not affect those remains or features);

5.06 *Hazardous Environmental Conditions*

SC-5.06 Delete paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Not used.

ARTICLE 6—BONDS AND INSURANCE

6.02 *Insurance—General Provisions*

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

6.03 *Contractor's Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance.

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Employer's Liability	
Each accident	$100,000

E. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	$1,000,000

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Commercial General Liability	Policy limits of not less than:
Products—Completed Operations Aggregate	$3,000,000
Personal and Advertising Injury	$1,000,000
Bodily Injury and Property Damage—Each Occurrence	$1,000,000

F. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	$1,000,000
Each Accident	$1,000,000
Property Damage	
Each Accident	$1,000,000

G. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	$1,000,000
General Aggregate	$1,000,000

H. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

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Contractor's Professional Liability	Policy limits of not less than:
Each Claim	$5,000,000
Annual Aggregate	$5,000,000

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.02 *Supervision and Superintendence*

SC-7.02 Add the following to Paragraph 7.02, following Paragraph 7.02.B:

C. Unless Owner otherwise agrees in writing, the superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

D. Any superintendent or other personnel, who repeatedly fails to follow Engineer's written or oral orders, directions, instructions, or determinations, shall be subject to removal from the project. Upon written request of Engineer, the Contractor shall remove such superintendent or other personnel and name a replacement in writing. Noncompliance with the Engineer's request to remove and replace personnel at any level shall be grounds for terminating the Contract.

7.03 *Labor; Working Hours*

SC-7.03 Amend Paragraph 7.03.C to state "…all Work at the Site will be performed during the hours of 7:00 AM through 7:00 PM, Monday through Friday. Work may be performed at the Site on Saturdays during the hours of 9:00 AM through 5:00 PM. Contractor will not perform Work on a Sunday, or any legal holiday. Contractor may perform work outside regular working hours or on Sundays or legal holidays with Owner's written consent, which will not be unreasonably withheld."

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

D. Owner shall be responsible for the cost of overtime (premium) pay and other expense incurred by Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

7.04 *Services, Materials, and Equipment*

SC-7.04 Add the following new paragraph immediately after Paragraph 7.04.C:

D. Where the Work requires equipment to be furnished, due to lack of standardization of equipment as produced by the various manufacturers, it may become necessary to make minor modifications in the structures, buildings, piping, mechanical work, electrical work, accessories, controls, or other work to accommodate the particular equipment offered.

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Contractor's bid price for any equipment offered shall include the cost of making necessary changes, subject to the approval of Engineer.

7.16 *Submittals*

SC-7.16.E.1 Delete in its entirety Paragraph 7.16.E.1.b, and replace with the following:

b. Engineer will provide timely review of such Submittals in accordance with the Schedule of Submittals accepted by Engineer. When Engineer deems such Submittals to be not in conformance with the Contract Documents, Engineer will furnish to Contractor written indication of such non-acceptance. When such Submittals are acceptable, Engineer's acceptance will be indicated in accordance with Specifications Section 01 33 00 – Submittal Procedures.

ARTICLE 8—OTHER WORK AT THE SITE

No Supplementary Conditions in this Article.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.13 *Owner's Site Representative*

SC-9.13 Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions:

9.13 *Owner's Site Representative*

A. Owner will furnish an "Owner's Site Representative" (OSR) to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner's Site Representative will be a City employee.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new subparagraph immediately after Paragraph 10.03.A:

1. On this Project, by agreement with Owner, the Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work.

ARTICLE 11—CHANGES TO THE CONTRACT

No Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

No Supplementary Conditions in this Article.

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ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

No Supplementary Conditions in this Article.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

No Supplementary Conditions in this Article.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.03 *Substantial Completion*

SC-15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined by Engineer not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer or other entity retained by Owner, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.02 *Arbitration*

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 *Arbitration*

A. All matters subject to final resolution under this Article will be settled by arbitration subject to the conditions and limitations of this Paragraph SC-17.02. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be concurrently sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or, if no specified time is applicable, within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.

C. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

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1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;

D. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

E. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

17.03 *Attorneys' Fees*

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

SC-17.03 *Attorneys' Fees*

A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18—MISCELLANEOUS

No Supplementary Conditions in this Article.

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SECTION 00 73 73

STATUTORY AND FUNDING-FINANCING ENTITY REQUIREMENTS

Bound following this page are statutory requirements and requirements of entities that are furnishing funding or financing for the Project. These documents are part of the Contract Documents and consist of this page and the following:

A. General Wage Decisions.

B. U.S. Department of Labor Memorandum No. 130 – Application of the Standard of Comparison "Projects of A Character Similar" Under the Davis-Bacon And Related Acts.

C. U.S. Department of Labor Memorandum No. 131 – Clarification of All Agency Memorandum No. 130.

D. Wage Rate Requirements

1. Wage Rate Requirements Under Public Law 111-88.
2. EPA Memorandum dated November 16, 2012 – Class Deviation---Prevailing Wage Interview Interval Requirement in Clean Water and Drinking Water State Revolving Funds (CWSRF and DWSRF) Capitalization Grants.
3. Standard Form 1445 – Labor Standards Interview.
4. Standard Form 1444 – Request for Authorization of Additional Classification and Rate.
5. Wage and Hour (WH) Form 347: Davis-Bacon and Related Acts Weekly Certified Payroll Form.

E. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246).

F. EPA Disadvantaged Business Enterprise (DBE) Program Prime Contractor Responsibilities:

1. EPA Form 6100-2: DBE Subcontractor Participation Form.

G. EPA Memorandum: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014.

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"General Decision Number: NE20260062 01/02/2026

Superseded General Decision Number: NE20250062

State: Nebraska

Construction Type: Building
BUILDING CONSTRUCTION INCLUDING WORK ON INDUSTRIAL SITES

County: Washington County in Nebraska.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Modification Number	Publication Date
0	01/02/2026

BRNE0001-001 06/01/2025

	Rates	Fringes
BRICKLAYER	$ 34.80	19.94

CARP0427-001 06/01/2025

	Rates	Fringes
CARPENTER (Including Acoustical Ceiling Installation)	$ 33.42	18.66

CARP0427-004 06/01/2025

	Rates	Fringes
CARPENTER (Drywall Hanging, Finishing/Taping Only)	$ 33.42	18.66

ELEC0022-001 06/01/2025

	Rates	Fringes
ELECTRICIAN	$ 46.40	20.89

ELEV0028-001 01/01/2025

	Rates	Fringes
ELEVATOR MECHANIC	$ 55.88	38.435+a+b

FOOTNOTE:
  a. Vacation Pay: 8% for persons with 5 or more years of service, 6% for persons with less than 5 years of service.
  b. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0571-004 10/01/2024

	Rates	Fringes
OPERATOR: Crane	$ 36.44	18.69

OPERATOR: Forklift.....$ 31.06 18.69

IRON0021-002 06/01/2025

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	$ 39.00	22.30

LABO1140-003 10/01/2023

	Rates	Fringes
LABORER (Mason Tender, Brick & Hod).....	$ 24.00	13.48

PLUM0016-003 05/25/2025

	Rates	Fringes
PLUMBER (Excluding HVAC Pipe Installation).....	$ 44.26	16.90

PLUM0464-006 06/01/2025

	Rates	Fringes
PIPEFITTER (Includes HVAC Pipe Installation and Excludes HVAC System Installation).....	$ 46.25	21.10

SFNE0669-001 04/01/2025

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	$ 43.79	28.35

SHEE0003-003 07/01/2023

	Rates	Fringes
SHEET METAL WORKER (Including HVAC System Installation & Excluding HVAC Duct Installation).....	$ 39.65	19.87

SUNE2011-036 10/27/2011

	Rates	Fringes
CARPENTER (Form Work Only).....	$ 19.35	4.29
CAULKER.....	$ 17.44	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 19.05	4.34
ELECTRICIAN (Low Voltage Wiring).....	$ 20.66	5.74
GLAZIER.....	$ 17.86	1.70
LABORER: Common or General.....	$ 14.80	5.12

OPERATOR:

Backhoe/Excavator/Trackhoe.....$ 21.20 5.47

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 23.02 0.91

OPERATOR: Loader.....$ 20.11 5.23

PAINTER: Brush, Roller and
Spray.....$ 14.26 0.00

ROOFER.....$ 13.57 0.77

SHEET METAL WORKER (HVAC Duct
Installation Only).....$ 20.16 9.22

TRUCK DRIVER, Includes Dump
and Tandem Truck.....$ 15.34 3.22

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates
in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor

200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION
"

"General Decision Number: NE20260054 01/02/2026

Superseded General Decision Number: NE20250054

State: Nebraska

Construction Type: Heavy

Counties: Cass, Douglas and Washington Counties in Nebraska.

HEAVY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/02/2026

ELEC0022-019 06/01/2025

Cass and Douglas

	Rates	Fringes
ELECTRICIAN	$ 46.40	20.89

ELEC0265-008 09/01/2025

Washington County only

	Rates	Fringes
Electricians:		
Zone 1	$ 35.00	18.88
Zone 2	$ 35.30	18.91
Zone 3	$ 35.60	18.94
Zone 4	$ 36.00	18.99

ZONE DEFINITIONS [Mileage from main Post Office in Lincoln]
  Zone 1: 0 to 35 miles
  Zone 2: 36 to 50 miles
  Zone 3: 51 to 75 miles
  Zone 4: 76 miles and over
FOOTNOTE:
  Work on scaffolds, hanging scaffolds, boatswains chairs or ladders, etc., in any area where the worker is in a position to fall 40 ft. or more, or where objects above the worker can fall 40 ft. or more: to be paid one and one-half times the straight- time rate of pay.

SUNE2011-021 08/31/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 18.72	4.72
FORM WORKER	$ 16.88	4.85
LABORER: Common or General	$ 17.31	4.03
LABORER: Pipelayer	$ 17.14	3.50
OPERATOR: Backhoe/Excavator	$ 22.92	5.98
OPERATOR: Loader	$ 18.19	3.72

TRUCK DRIVER, Includes Dump
and Tandem Truck.....$ 13.60 2.59

TRUCK DRIVER: Lowboy Truck.....$ 21.49 7.40

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

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?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications

and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

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Washington, DC 20210

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Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION
"

U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
Wage and Hour Division
WASHINGTON, D.C. 20210

MAR 17 1978

ALL AGENCY MEMORANDUM NO. 130

TO: ALL GOVERNMENT CONTRACTING AGENCIES AND THE DISTRICT OF COLUMBIA

FROM: XAVIER M. VELA
ADMINISTRATOR

SUBJECT: Application Of The Standard Of Comparison "Projects Of A Character Similar" Under The Davis-Bacon And Related Acts

The purpose of this memorandum is to set forth present policies of the Wage and Hour Division with regard to the determination of "projects of a character similar to the contract work" for wage determination purposes. The guidelines contained in the memorandum are to be used by the contracting agencies in selecting the proper schedule(s) of wage rates from the Federal Register and in instructing contractors regarding the application of multiple schedules. This memorandum supersedes A11 Agency Memorandum No. 68 (July 19, 1966).

The Davis-Bacon and related Acts require the Secretary of Labor to determine the prevailing wage rates for corresponding classes of laborers and mechanics on projects in the area which are of a "character similar" to the proposed contract work to which the determination will be applied. The Department's Wage Appeals Board in a decision specifically relating to high-rise apartment buildings (WAB Case No. stated:76-11, dated January 27, 1977) stated:

> The test of whether a project is of a character similar to another project refers to the nature of the project itself in a construction sense, not to whether union or nonunion wages are paid or whether union or nonunion workers are employed. Since the 1935 amendments to the Davis-Bacon Act, the statutory focus has always been on the character of the project itself rather than on who was employed on the project or how much he or she was being paid.

Again, in a decision relating to a water treatment plant project (WAB Case No. 77-20, dated September 30, 1977), the Board stated: "When it is clear from the nature of the project itself in a construction sense that it is to be categorized as either building, heavy, or highway construction it is not necessary to resort to an area practice survey to determine the appropriate categorization of the project."

Generally construction projects are classified as either Building, Heavy, Highway or Residential. 1/ Below are descriptions of these classifications with an illustrative listing of the kinds of projects that are generally included within the classification. Contracting agencies should utilize these descriptions and illustrations in carrying out their responsibilities, to insure a uniform and consistent administration of the Davis-Bacon and related prevailing wage statutes. The advertised and contract specifications should identify as specifically as possible the segments of work to which the schedules will apply. Note, however, that the descriptions and illustrations are guides. Contracting agencies should seek a determination from the Department of Labor on close questions or when the appropriate classification is in dispute. In making this determination where a project does not readily fall within any category, the Department of Labor may consider wages being paid on analogous projects as an indication of the proper category. As stated by the Wage Appeals Board in WAB Case No. 77-23, dated December 30, 1977: "Wages, however, are only one indication. It is also necessary to look at other characteristics of the project, including the construction techniques, the material and equipment being used on the project, the type of skills called for on the project work and other similar factors which would indicate the proper category of construction."

BUILDING CONSTRUCTION

Building construction generally is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes a11 construction of such structures, the installation of utilities and the installation of equipment, both above and below grade

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I/ Generally, for wage determination purposes, a project consists of all construction necessary to complete a facility regardless of the number of contracts involved so long as al1 contracts awarded are closely related in purpose, time and place. For example, demolition or site work preparatory to building construction is considered a part of the building project for wage determination purposes. Where a project, such as a water and sewage treatment plant, includes construction items that in themselves would be otherwise classified, a multiple classification may be justified if such construction items are a substantial part of the project. Further, however, a separate classification would not apply if such construction items are merely incidental to the total project to which they are closely related in function. For example, water or sewer line work which is a part of a building project would not generally be separately classified. Where construction is "incidental" in function, 20 percent of project cost is used as a rough guide for determining when construction is also "incidental" in amount to the overall project.

level, as well as incidental grading, utilities and paving. Additionally, such structures need not be "habitable" to be building construction. The installation of heavy machinery and/or equipment does not generally change the project's character as a building.

Examples

Alterations and additions to buildings
Apartment buildings (5 stories and above)
Arenas (enclosed)
Auditoriums
Automobile parking garages
Banks and financial buildings
Barracks
Churches
City halls
Civic centers
Commercial buildings
Court houses
Detention facilities
Dormitories
Farm buildings
Fire stations
Hospitals
Hotels
Industrial buildings
Institutional buildings
Libraries
Mausoleums
Motels
Museums
Nursing and convalescent facilities
Office buildings
Out-patient clinics
Passenger and freight terminal buildings
Police stations
Post offices Power plants
Prefabricated buildings
Remodeling buildings
Renovating buildings
Repairing buildings
Restaurants
Schools
Service stations
Shopping centers
Stores
Subway stations
Theaters
Warehouses Water and sewage treatment plants (buildings only)

RESIDENTIAL CONSTRUCTION

Residential projects for Davis-Bacon purposes are those involving the construction, alteration, or repair of single family houses or apartment buildings of no more than four(4) stories in height. This includes all incidental items such as site work, parking areas, utilities, streets and sidewalks.

Examples

Town or row houses
Apartment buildings (4 stories or less)
Single family houses
Mobile home developments
Multi-family houses
Married student housing

HEAVY CONSTRUCTI0N

Heavy projects are those projects that are not properly classified as either "building", "highway", or "residential". Unlike these classifications, heavy construction is not a homogeneous classification. Because of this catch-all nature, projects within the heavy classification may sometimes be distinguished on the basis of their particular project characteristics, and separate schedules issued. For example, separate schedules may be issued for dredging projects, water and sewer line projects, dams, major bridges, and flood control projects.

Examples

Antenna towers
Bridges (major bridges designed for commercial naviqation) 2/
Breakwaters
Caissons (other than building or highway)
Canals
Channels
Channel cut-offs
Chemical complexes or facilities (other than buildings)
Cofferdams
Coke ovens
Dams
Demolition (not incidental to construction)
Dikes
Docks
Drainage projects

2/ Major bridges contain elements of both heavy and higMy construction. See WAB Case No. 772 (October 21, 1977)

Dredging projects
Electrification projects (outdoor)
Flood control projects
Industrial incinerators (other than building)
Irrigation projects
Jetties
Kilns
Land drainage (not incidental to other construction)
Land leveling (not incidental to other construction)
Land reclamation
Levees
Locks, waterways
Oil refineries (other than buildings)
Pipe lines
Ponds
Pumping stations (prefabricated drop-in units - not buildings)
Railroad construction
Reservoirs
Revetments
Sewage collection and disposal 1ines
Sewers (sanitary, storm, etc)
Shoreline maintenance
Ski tows
Storage tanks
Swimming pools (outdoor)
Subways (other than buildings)
Tipples
Tunnels
Unsheltered piers and wharves
Viaducts (other than highway)
Water mains
Water-way construction
Water supply lines (not incidental to building)
Water and sewage treatment plants (other than buildings)
Wells

HIGHWAY CONSTRUCTION

Highway projects include the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction.

Examples

Alleys
Base courses
Bituminous treatments
Bridle paths
Concrete pavement
Curbs
Excavation and embankment (for road construction)

Fencing (highway)
Grade crossing elimination (overpasses or underpasses)
Guard rails on highway
Highway signs
Highway bridges (overpasses; underpasses; grade separation)
Medians
Parking lots
Parkways
Resurfacing streets and highways
Roadbeds
Roadways
Runways
Shoulders
Stabilizing courses
Storm sewers incidental to road construction
Street Paving
Surface courses
Taxiways
Trails

In applying these guidelines contracting agencies are reminded that they have the authority only in the first instance to designate the appropriate wage schedule(s) from the Federal Resister, and to determine the application of multiple schedules issued by the Wage and Hour Division in project wage determinations. Any questions regarding the application of the guidelines set forth in this memorandum to a particular project or any disputes regarding the application of the wage schedules are to be referred to the Wage and Hour Division for resolution, and the instructions of the Wage and Hour Division are to be observed in all instances. Furthermore, where multiple schedules are issued by the Wage and Hour Division, they must be utilized in the contract specifications unless the agency requests and receives a change in the wage determination from the Wage and Hour Division. To ensure that appropriate schedules are issued, contracting agencies are advised to provide the Wage and Hour Division in their requests for wage determinations with a sufficiently specific description of the project to be able to determine its character.

U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
Wage and Hour Division
WASHINGTON, D.C. 20210

JUL 14 1978

ALL AGENCY MEMORANDUM NO. 131

TO: ALL GOVERNMENT CONTRACTING AGENCIES AND THE DISTRICT OF COLUMBIA

FROM: XAVIER M. VELA
ADMINISTRATOR

SUBJECT: Clarification of All Agency Memorandum No. 130

The purpose of this memorandum is to clarify Memorandum No. 130, dated March 17, 1978. Although the Wage and Hour Division has received a positive reaction from most contracting agencies who work regularly with the issues raised, some questions have arisen over specific aspects of the memorandum.

Memorandum No. 130 is intended to be a guide to categories of projects in a construction sense and is to be applied uniformly by the contracting agencies in the absence of specific direction on the wage determination or advice by the Wage and Hour Division. However, the Wage and Hour Division is aware that in some circumstances the category of a project may appear to be unclear or a literal application of the guidelines may be inappropriate. For example, questions frequently arise over pumping stations, which may vary greatly in sophistication and construction techniques. Therefore, if the contracting agency has any questions regarding application of the guidelines in a specific case, or if a question is raised with the agency by interested parties, the issue of application of the wage rate schedules should be referred to the Wage and Hour Division. This referral should include a complete description of the project, any evidence available of area practice regarding wages paid on similar projects, comments by interested parties which may have been submitted to the agency, and- the agency's recommendation. Where the nature of the project in a construction sense is not clear, area practice regarding wages paid will be taken into consideration together with other factors such as construction techniques and classifications of workers required on the project. See WAB Case No. 77-23 (December 30, 1977).

Questions have also arisen regarding the circumstances in which multiple schedules of wage rates are issued for a project which includes construction items that in themselves would be

different categories of construction. Because of the complexities in application of multiple schedules, the contracting agency should consult with the Wage and Hour Division whenever it appears that more than one schedule of rates is appropriate for a project, unless the wage decision(s) as issued indicates that multiple schedules are applicable.

Generally, multiple schedules are issued if the construction items are substantial in relation to project cost -- more than approximately 20 percent. Only one schedule is issued if construction items are "incidental" in function to the over-all character of a project (e.g. paving of parking lots or an access road on a building project), and if there is not a substantial amount of construction in the second category. Note, however, that 20 percent is a rough guide. For example, when a project is very large, items of work of a different character may be sufficiently substantial to warrant a separate schedule even though these items of work do not specifically amount to 20 percent of the total project cost.

Although the example given is that of incidental paving and utilities, the same principles are applied to other categories, such as building construction on a heavy or highway project. Thus, in a recent case, the Wage and Hour Division deleted the building schedule when it learned that a small building under a contract primarily for runway construction was approximately 4 percent of project cost. Another example of general interest is the applicability of the building schedule to a building in a rest area of a highway. In this situation, applying the principles of MARTA, WAB Case No. 75-5, for extensive projects, the project for comparison purposes is the rest area itself, rather than the entire highway.

These principles regarding incidental construction are not in conflict with the Wage and Hour Division's recognition in certain circumstances (WAB Case No. 77-19) of a clearly established practice of paying different wage rates on specific portions of building projects. For example, different rates may be paid for incidental paving and utilities than are paid in the construction of buildings on building projects. These projects are building projects, and the wage rates issued by the Wage and Hour Division for incidental paving and utilities reflect wages paid on such work on building projects.

Contracting agencies are reminded of their responsibility to advise contractors on the application of multiple wage schedules issued by the Wage and Hour Division or obtained by the agency from the Federal Register. If any questions arise regarding application of the schedules to the project in accordance with these guidelines, or if it appears that a

wage schedule may have been issued in error, a ruling should be requested from the Wage and Hour Division. On these issues, as in all other matters in the administration of the Davis-Bacon and related acts, we will continue to work cooperatively with the contracting agencies. For convenience, Memorandum No. 130 is attached.

Attachment

WAGE RATE REQUIREMENTS UNDER PUBLIC LAW 111-88

Public Law 111-88 (effective 10/1/09) requires that all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government via USEPA pursuant to Public Law 111-88 shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code.

Pursuant to Reorganization Plan No. 14 and the Copeland Act, 40 U.S.C. 3145, the Department of Labor has issued regulations at 29 CFR Parts 1, 3, and 5 to implement the Davis-Bacon (DB) and related Acts. Regulations in 29 CFR 5.5 instruct agencies concerning application of the standard DB contract clauses set forth in that section. Federal agencies providing grants, cooperative agreements, and loans under Public Law 111-88 shall ensure that the standard DB contract clauses found in 29 CFR 5.5(a) are incorporated in any resultant covered contracts that are in excess of $2,000 for construction, alteration or repair (including painting and decorating).

For additional guidance on the wage rate requirements of Public Law 111-88, contact your awarding agency. Recipients of grants, cooperative agreements and loans should direct their initial inquiries concerning the application of DB requirements to a particular federally assisted project to the Federal agency funding the project. The Secretary of Labor retains final coverage authority under Reorganization Plan Number 14.

With respect to the Clean Water and Safe Drinking Water State revolving Funds, EPA provides capitalization grants to each State, which in turn provides subgrants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman Numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I-5.

I. Requirements for Subrecipients That Are Governmental Entities

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact (insert name or organizational unit Regional EPA DB contact) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at http://www.dol.gov/whd/index.htm.

1. <u>Applicability of the Davis- Bacon (DB) prevailing wage requirements.</u>

Davis-Bacon prevailing wage requirements apply to the construction, alteration, and repair activity of infrastructure, including all construction, alteration and repair activity involving wastewater or drinking water treatment plants is subject to DB. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. **<u>Obtaining Wage Determinations.</u>**

(a) Subrecipients must obtain proposed wage determinations for specific localities at https://sam.gov/content/wagedeterminations. After the Sub recipient obtains its proposed wage determination, it must submit the wage determination to NDWEE, SRF Program's email at DWEE.SRF@nebraska.gov for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments, or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official). Questions and assistance can be directed to the NDWEE SRF program at (402) 471-2186.

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts.

Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipients shall monitor https://sam.gov/content/wagedeterminations on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipients.

(ii) If the subrecipients are not awarded the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipients, obtains an extension of the 90 day period from DOL pursuant to 29 CFR Part 1 §1.6(c)(3)(iv). The subrecipients shall monitor https://sam.gov/content/wagedeterminations on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment, or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subecipient shall insert the appropriate DOL wage determination from https://sam.gov/content/wage-determinations into the ordering instrument.

(d) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR Part 1 §1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall ensure that the subrecipient(s) shall insert in full in any contract, for projects in excess of $2,000, which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 CFR Part 5 §5.1, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5 §5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, https://sam.gov/content/wage-determinations.

(ii) (A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

1. The work to be performed by the classification requested is not performed by a classification in the wage determination; and

2. The classification is utilized in the area by the construction industry; and

3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a Standard Form 1444, Request for Authorization of Additional Classification and Rate (SF-1444) shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the SF-1444 Form, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR Part 5 §5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of

apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) (A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR Part 5 §5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5 §5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/whd/forms/wh347.pdf instructions are also found on-line at: http://www.dol.gov/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient (s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR Part 5 §5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR Part 5 §5.5 (a)(3)(ii), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 29 CFR Part 5 §5.5 (a)(3)(ii)(b).

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph 29 CFR Part 5 §5.5 (a)(3)(i) available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5 §5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his

or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR Part 5 §5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5 §5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5 §5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR Part 5 §5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR Part 5 §5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor

(or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR Part 5 §5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR Part 5 §5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3 above, or 29 CFR Part 4 §4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR Part 5 §5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification.

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR Part 5 §5.6(a)(6), all interviews must

be conducted in confidence. The subrecipient must use Standard Form 1445 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient must spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract (see the following, November 16, 2012, EPA MEMORANDUM, Class Deviation – Prevailing Wage Interview Interval Requirement in Clean Water and Drinking Water State Revolving Funds (CWSRF and DWSRF) Capitalization Grants). Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d). The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e). Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Nebraska Office listed at https://www.dol.gov/whd/WHD_district_offices.pdf.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ADMINISTRATION
AND RESOURCE
MANAGEMENT

November 16, 2012

MEMORANDUM

SUBJECT: Class Deviation---Prevailing Wage Interview Interval Requirement in Clean Water and Drinking Water State Revolving Funds (CWSRF and DWSRF) Capitalization Grants

FROM: Denise A. Polk, Director
National Policy, Training and Compliance Division
Office of Grants and Debarment

TO: Randall Hill, Acting Director
Office of Wastewater Management (OWM)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (OGWDW)

I am responding to your request for a class waiver from the prevailing wage interview interval requirement in EPA's State Revolving Fund (SRF) Davis-Bacon Act Terms and Conditions (T&C) included in Agency's Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) grants that fund construction projects. This waiver would allow the Office of Wastewater Management (OWM) and the Office of Ground Water and Drinking Water (OGWDW) to omit the reference to required timing of interviews in EPA's SRF Davis-Bacon T&C. Currently, both programs are subject to the prevailing wage provisions of the Davis-Bacon Act.

BACKGROUND

EPA's Appropriations Act language applies the Davis-Bacon Act prevailing wage requirements to the Agency's SRF programs. EPA's SRF Davis-Bacon T&C is based on the requirements of certain Department of Labor (DOL) regulations implementing the Act. The Director of the Office of Grants and Debarment has the authority to waive provisions in EPA's Davis-Bacon terms and conditions that are not specifically required by DOL regulations or the Act.

The language in EPA's SRF Davis-Bacon T&C from which OWM and OGWDW are seeking a waiver is as follows (in italics):

5. (b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. *At a minimum, the subrecipient should conduct interviews with a representative group of*

covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

The provision for two week interview intervals is not a regulatory or statutory requirement.

Due to the large scope of most CWSRF and DWSRF projects, very few laborers and mechanics are typically on-site at the minimal intervals prescribed by the T&C. The DWSRF and CWSRF programs believe that recipients or sub-recipients should be allowed to conduct such interviews if and when the recipient finds it necessary to ensure that contractors are complying with the prevailing wage requirements.

CONCURRENCES

The Office of General Counsel concurs with the approval of this waiver.

ACTION

I have reviewed and approve this request for a waiver from the two week interview interval requirements contained in EPA's standard SRF Davis-Bacon Terms and Conditions. This approval exempts both new and existing CWSRF and DWSRF awards from these requirements.

For new awards, this means that EPA may modify the standard Terms and Condition to delete these requirements.

For existing awards, Project Officers must place a copy of this class deviation in their official project file, with a notation on the award stating that the requirements have been superseded by the class deviation. A formal amendment to the grant agreement is not required. Project Officers must also notify the recipient of the class deviation.

cc: Howard Corcoran, Office of Grants and Debarment
Laurice Jones, Office of Grants and Debarment
Joanne Hogan, Office of General Counsel
Jordan Dorfman, Office of General Counsel
Ellen O'Boyle, Office of Grants and Debarment
Alexandra Raver, Office of Grants and Debarment
George Ames, State Revolving Fund Branch
Chuck Job, Infrastructure Branch

LABOR STANDARDS INTERVIEW

CONTRACT NUMBER	EMPLOYEE INFORMATION		
	LAST NAME	FIRST NAME	MI
NAME OF PRIME CONTRACTOR			
	STREET ADDRESS		
NAME OF EMPLOYER			
	CITY	STATE	ZIP CODE
SUPERVISOR'S NAME			
LAST NAME / FIRST NAME / MI	WORK CLASSIFICATION	WAGE RATE	

ACTION	CHECK BELOW YES	NO
Do you work over 8 hours per day?		
Do you work over 40 hours per week?		
Are you paid at least time and a half for overtime hours?		
Are you receiving any cash payments for fringe benefits required by the posted wage determination decision?		

WHAT DEDUCTIONS OTHER THAN TAXES AND SOCIAL SECURITY ARE MADE FROM YOUR PAY?

	TOOLS YOU USE	
HOW MANY HOURS DID YOU WORK ON YOUR LAST WORK DAY BEFORE THIS INTERVIEW?		
DATE OF LAST WORK DAY BEFORE INTERVIEW *(YYMMDD)*		
DATE YOU BEGAN WORK ON THIS PROJECT *(YYMMDD)*		

THE ABOVE IS CORRECT TO THE BEST OF MY KNOWLEDGE

EMPLOYEE'S SIGNATURE	DATE *(YYMMDD)*

INTERVIEWER	SIGNATURE	TYPED OR PRINTED NAME	DATE *(YYMMDD)*

INTERVIEWER'S COMMENTS

WORK EMPLOYEE WAS DOING WHEN INTERVIEWED	ACTION *(If explanation is needed, use comments section)*	YES	NO
	IS EMPLOYEE PROPERLY CLASSIFIED AND PAID?		
	ARE WAGE RATES AND POSTERS DISPLAYED?		

FOR USE BY PAYROLL CHECKER

IS ABOVE INFORMATION IN AGREEMENT WITH PAYROLL DATA?

☐ YES ☐ NO

COMMENTS

CHECKER

LAST NAME	FIRST NAME	MI	JOB TITLE

SIGNATURE	DATE *(YYMMDD)*

Request For Authorization Of Additional Classification And Rate	Check Appropriate Box ☐ Service Contract ☐ Construction Contract	**OMB Control Number: 9000-0066** **Expiration Date: 5/31/2027**

Instructions: The Contractor shall complete items 3 through 16, keep a pending copy, and submit the request, in quadruplicate, to the Contracting Officer.

1. **To:** Administrator, Wage And Hour Division U.S. Department Of Labor Washington, DC 20210	2. **From:** (Reporting Office)
3. Contractor	4. Date Of Request

5. Contract Number	6. Date Bid Opened (Sealed Bidding)	7. Date Of Award	8. Date Contract Work Started	9. Date Option Exercised (If Applicable) (Service Contract Only)

10. Subcontractor (If Any)

11. Project And Description Of Work (Attach Additional Sheet If Needed)

12. Location (City, County, And State)

13. In Order To Complete The Work Provided For Under The Above Contract, It Is Necessary To Establish The Following Rate(s) For The Indicated Classification(s) Not Included In The Department Of Labor Determination

Number: Dated:

a. List In Order: Proposed Classification Title(s); Job Description(s); Duties; And Rationale For Proposed Classifications (Service contracts only)	b. Wage Rate(s)	c. Fringe Benefits Payments
(Use reverse or attach additional sheets, if necessary)		

14. Signature And Title Of Subcontractor Representative (If Any)	15. Signature And Title Of Prime Contractor Representative

16. Signature Of Employee Or Representative	Title	Check Appropriate Box - Referencing Block 13. ☐ Agree ☐ Disagree

To Be Completed By Contracting Officer (Check As Appropriate - See FAR 22.1019 (Service Contract Labor Standards) Or FAR 22.406-3 (Construction Wage Rate Requirements))

☐ The Interested Parties Agree And The Contracting Officer Recommends Approval By The Wage And Hour Division. Available Information And Recommendations Are Attached.

☐ The Interested Parties Cannot Agree On The Proposed Classification And Wage Rate. A Determination Of The Question By The Wage And Hour Division Is Therefore Requested. Available Information And Recommendations Are Attached.

(Send 3 copies to the Department of Labor)

Signature Of Contracting Officer Or Representative	Title And Commercial Telephone Number	Date Submitted

Paperwork Reduction Act Statement

This information collection meets the requirements of 44 U.S.C. § 3507, as amended by section 2 of the Paperwork Reduction Act of 1995. You do not need to answer these questions unless we display a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 9000-0066. We estimate that it will take .5 hours to read the instructions, gather the facts, and answer the questions. Send only comments relating to our time estimate, including suggestions for reducing this burden, or any other aspects of this collection of information to: U.S. General Services Administration, Regulatory Secretariat Division (M1V1CB), 1800 F Street, NW, Washington, DC 20405.

U.S. Department of Labor
Wage and Hour Division

Davis-Bacon and Related Acts Weekly Certified Payroll Form

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Unless otherwise noted, the information requested is specific to the named project below.

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division

Rev. January 2025
OMB No.: 1235-0008
Expires: 01/31/2028

☐ SUBMISSION OF FINAL DBRA CERTIFIED PAYROLL FORM ☐ PRIME CONTRACTOR ☐ SUBCONTRACTOR

PROJECT NAME	PROJECT NO. or CONTRACT NO.	CERTIFIED PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION	**WAGE DETERMINATION NO.**	**WEEK ENDING DATE**	**PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS ADDRESS**

(1A)	(1B)	(1C)	(1D)	(1E)	(2)	(3)		(4)		(5)		(6A)	(6B)	(6C)	(7A)	(7B)	(8)				(9)
WORKER ENTRY NO.	WORKER LAST NAME	WORKER FIRST NAME	WORKER MIDDLE INITIAL	WORKER IDENTIFYING NO.	(J) JOURNEYWORKER (RA) REGISTERD APPRENTICE	LABOR CLASSIFICATION		ST = STRAIGHT TIME OT = OVERTIME	(TOP) DAYS OF WORK WEEK (BOTTOM) DATES HOURS WORKED EACH DAY	TOTAL HOURS WORKED FOR WEEK		HOURLY WAGE RATE PAID FOR ST AND OT	TOTAL FRINGE BENEFIT CREDIT	PAYMENT IN LIEU OF FRINGE BENEFITS	GROSS AMT EARNED	GROSS AMT EARNED FOR **ALL WORK**	DEDUCTIONS FOR **ALL WORK**				NET PAY TO WORKER FOR **ALL WORK**
								ST									TAX WITH-HOLDINGS	FICA	OTHER (MUST SPECIFY, SEE INSTRUCTIONS)	TOTAL DEDUCTIONS	
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While use of Form WH-347 itself is optional, covered contractors and subcontractors performing work on Federal or federally assisted construction contracts are required by the DBRA regulations and the contract clauses to submit payroll information on a weekly basis. The Copeland Act (40 U.S.C. § 3145) requires contractors and subcontractors performing work on Federal or federally financed construction contracts to, on a weekly basis, "furnish a statement on the wages paid each employee during the prior week." U.S. Department of Labor (DOL) Regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors and subcontractors to submit weekly certified payrolls to the appropriate Federal agency if the agency is a party to the contract (or, if the agency is not such a party, to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the Federal agency). Each certified payroll must be accompanied by a signed "Statement of Compliance" (e.g., page 2 of the WH-347 or another document with identical wording) indicating that the certified payrolls are accurate and complete, and that each laborer or mechanic has been paid not less than the required Davis-Bacon prevailing wage rate(s) (including any fringe benefits) for the work performed. DOL and contracting agencies receiving this information review the information to determine whether workers have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

PROJECT NAME	PROJECT NO. or CONTRACT NO.	PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION		**WEEK ENDING DATE**	**CERTIFYING OFFICIAL's NAME AND TITLE**

I paid or supervised the payment of the laborers or mechanics working on the above project during the stated time period. I certify the following:

☐ The payroll information submitted with this statement is correct and complete for the above project during the above period, and the wage and fringe benefit rates paid to the workers, including credit taken for the reasonably anticipated costs of a bona fide fringe benefit plan, fund or program, are not less than the applicable wage and fringe benefits rates for the classification(s) of work actually performed, as specified in the wage determination(s) incorporated into the contract.

☐ All regular payrolls and all other basic records that the contractor is required to maintain for this payroll period are complete and accurate and will be made available upon request from the agency or the Department of Labor.

☐ The classifications reported for each laborer or mechanic are the classification(s) of work that each worker actually performed.

☐ Any workers paid as apprentices during the above period are duly registered in a bona fide apprenticeship program registered with the Office of Apprenticeship, Employment and Training Administration, United States Department of Labor ("OA"), or a State Apprenticeship Agency ("SAA") recognized by Department of Labor. I have verified the registered apprenticeship program information provided below as accurate and applicable to any apprentices identified on page 1 of this form.

APPRENTICESHIP PROGRAM NAME	REGISTERED		NAME OF LABOR CLASSIFICATION
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	

☐ Fringe benefits have been paid in cash and/or to bona fide fringe benefit plans, funds, or programs. Where the contractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of a bona fide fringe benefit plan, fund, or program, provide plan information and the hourly credit claimed for each worker listed on the previous page of this form.

HOURLY CREDIT FOR FRINGE BENEFITS

If an amount is listed in (6B) on the first page of this certified payroll form, enter the hourly credit claimed under each plan name, type and number for each worker and check whether the plan is funded or unfunded.

NAME OF WORKER	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	TOTAL HOURLY CREDIT
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hrly Credit $	$

☐ All workers on the project have been paid the full weekly wages earned, and no rebates or deductions have been or will be made either directly or indirectly, other than permissible deductions as defined in 29 CFR part 3.

ADDITIONAL REMARKS

SIGNATURE OF CERTIFYING OFFICIAL	DATE	TELEPHONE NUMBER	EMAIL ADDRESS
		(___) ___ -____	

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE), AS WELL AS DEBARMENT FROM FUTURE FEDERAL AND FEDERALLY-ASSISTED CONTRACTS. INFORMATION REPORTED IN CERTIFIED PAYROLLS MAY BE SUBJECT TO DISCLOSURE IN RESPONSE TO A FREEDOM OF INFORMATION ACT REQUEST.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

(EXECUTIVE ORDER 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted:

   b. "Director" means Director, Office of Federal Contract compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority:

   c. "Employer Identification Number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941:

   d. "Minority" includes:

      i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

      ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race):

      iii. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Sub-continent, or the Pacific Islands); and

      iv. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participation in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provide in paragraphs 7(a) through (p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonable be able to achieve in each construction trade in which it has employees in the covered areas. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or Federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or woman shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to trading programs approved by the U. S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foreman, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

    b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available and maintain a record of the organizations' responses.

    c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore; along with whatever additional actions the Contractor may have taken.

    d. Provide immediate written notification to the Director when the union or unions with which the Contractor has collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

    e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7(b) above.

    f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

    g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

    h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notifications to and discussing the Contractor's

EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of these affirmative action obligations (7(a) through (p)). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be assured as fulfilling any one or more of its obligations under 7(a) through (p) of these Specifications effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill and obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetable or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal

Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps at least as extensive as those standards prescribed in paragraph 7 of these specifications so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in the easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws, which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Federal Register, Vol. 43, No. 68 – Friday, April 7, 1978 (Corrected May 5, 1978) – Effective Date; May 8, 1978
Federal Register, Vol. 45, No. 194, Paragraph 4, revised October 3, 1980
Effective Date: September 30, 1980

Department of Labor EEO Minority Goals for Contractor Workforce as per the October 3, 1980 Federal Register by Region 7 Counties

Iowa

Adair	2.4
Adams	5.3
Allamakee	0.5
Appanoose	2.4
Audubon	5.3
Benton	1.5
Black Hawk	4.7
Boone	2.4
Bremer	2.0
Buchanan	2.0
Buena Vista	0.4
Butler	2.0
Calhoun	0.4
Carroll	0.4
Cass	5.3
Cedar	1.5
Cerro Gordo	2.0
Cherokee	1.2
Chickasaw	2.0
Clarke	2.4
Clay	0.4
Clayton	0.5
Clinton	3.4
Crawford	1.2
Dallas	2.4
Davis	2.4
Decatur	2.4
Delaware	0.5
Des Moines	3.4
Dickinson	0.4
Dubuque	0.6
Emmet	0.4
Fayette	2.0
Floyd	2.0
Franklin	2.0
Fremont	5.3
Greene	0.4
Grundy	2.0
Guthrie	2.4
Hamilton	0.4
Hancock	2.0
Hardin	2.0
Harrison	5.3
Henry	3.4
Howard	2.0
Humboldt	0.4
Ida	1.2
Iowa	1.5
Jackson	0.5
Jasper	2.4
Jefferson	2.4
Johnson	1.5
Jones	1.5
Keokuk	2.4
Kossuth	0.4
Lee	3.4
Linn	1.7
Louisa	3.4
Lucas	2.4
Lyon	0.8
Madison	2.4
Mahaska	2.4
Marion	2.4
Marshall	2.4
Mills	5.3
Mitchell	2.0
Monona	1.2
Monroe	2.4
Montgomery	5.3
Muscatine	3.4
O'Brien	1.2
Osceola	0.8
Page	5.3
Palo Alto	0.4
Plymouth	1.2
Pocahontas	0.4
Polk	4.5
Pottawattamie	7.6
Poweshiek	2.4
Ringgold	2.4
Sac	0.4
Scott	4.6
Shelby	5.3
Sioux	1.2
Story	2.4
Tama	2.4
Taylor	5.3
Union	2.4
Van Buren	2.4
Wapello	2.4
Warren	4.5
Washington	1.5
Wayne	2.4
Webster	0.4
Winnebago	2.0
Winneshiek	0.5
Woodbury	1.9
Worth	2.0
Wright	0.4

Kansas

Allen	2.3
Anderson	10.0
Atchison	10.0
Barber	5.7
Barton	5.7
Bourbon	2.3
Brown	10.0
Butler	7.9
Chase	5.7
Chautauqua	5.7
Cherokee	2.3
Cheyenne	1.5
Clark	5.7
Clay	6.5
Cloud	1.5
Coffey	6.5
Comanche	5.7
Cowley	5.7
Crawford	2.3
Decatur	1.5
Dickinson	1.5
Doniphan	10.0
Douglas	7.2
Edwards	5.7
Elk	5.7
Ellis	1.5
Ellsworth	1.5
Finney	5.7
Ford	5.7
Franklin	10.0
Geary	6.5
Gove	1.5
Graham	1.5
Grant	5.7
Gray	5.7
Greeley	5.7
Greenwood	5.7
Hamilton	5.7
Harper	5.7
Harvey	5.7
Haskell	5.7
Hodgeman	5.7
Jackson	6.5
Jefferson	9.0
Jewell	1.5
Johnson	12.7
Kearny	5.7
Kingman	5.7
Kiowa	5.7
Labette	2.3
Lane	5.7
Leavenworth	10.0
Lincoln	1.5
Linn	10.0
Logan	1.5
Lyon	6.5
Marion	5.7
Marshall	6.5
McPherson	5.7
Meade	5.7
Miami	10.0
Mitchell	1.5
Montgomery	2.3
Morris	6.5
Morton	5.7
Nemaha	6.5
Neosho	2.3
Ness	5.7
Norton	1.5
Osage	9.0
Osborne	1.5
Ottawa	1.5
Pawnee	5.7
Phillips	1.5
Pottawatomie	6.5
Pratt	5.7
Rawlins	1.5
Reno	5.7
Republic	1.5
Rice	5.7
Riley	6.5
Rooks	1.5
Rush	5.7
Russell	1.5
Saline	1.5
Scott	5.7
Sedgwick	7.9
Seward	5.7
Shawnee	9.0
Sheridan	1.5
Sherman	1.5
Smith	1.5
Stafford	5.7
Stanton	5.7
Stevens	5.7
Sumner	5.7
Thomas	1.5
Trego	1.5
Wabaunsee	6.5
Wallace	1.5

Washington 6.5
Wichita 5.7
Wilson 2.3
Woodson 2.3
Wyandotte 12.7

Missouri

Adair.....4.0
Andrew.....9.2
Atchison.....10.0
Audrain.....4.0
Barry.....2.3
Barton.....2.3
Bates.....10.0
Benton 10.0
Bollinger.....11.4
Boone 6.3
Buchanan.....9.2
Butler.....11.4
Caldwell.....10.0
Callaway.....4.0
Camden.....4.0
Cape Girardeau.....11.4
Carroll.....10.0
Carter.....11.4
Cass 12.7
Cedar 2.3
Chariton.....4.0
Christian 2.0
Clark.....3.4
Clay 12.7
Clinton.....10.0
Cole 4.0
Cooper.....4.0
Crawford.....11.4
Dade 2.3
Dallas.....2.3
Daviess 10.0
De Kalb 10.0
Dent 11.4
Douglas 2.3
Dunklin.....26.5
Franklin 14.7
Gasconade 11.4
Gentry.....10.0
Greene 2.0
Grundy.....10.0
Harrison.....10.0
Henry.....10.0
Hickory.....2.3
Holt.....10.0
Howard.....4.0
Howell.....2.3
Iron 11.4
Jackson 12.7
Jasper 2.3
Jefferson 14.7
Johnson 10.0
Knox.....4.0
Laclede 2.3
Lafayette.....10.0
Lawrence 2.3
Lewis 3.1
Lincoln 11.4
Linn 4.0
Livingston 10.0
McDonald 2.3
Macon 4.0
Madison 11.4
Maries 11.4
Marion 3.1
Mercer.....10.0
Miller 4.0
Mississippi 11.4
Moniteau 4.0
Monroe.....4.0
Montgomery 11.4
Morgan.....4.0
New Madrid 26.5
Newton 2.3
Nodaway 10.0
Oregon 2.3
Osage.....4.0
Ozark 2.3
Pemiscot 26.5
Perry 11.4
Pettis.....10.0
Phelps 11.4
Pike 3.1
Platte 12.7
Polk 2.3
Pulaski 2.3
Putnam 4.0
Ralls 3.1
Randolph.....4.0
Ray 12.7
Reynolds 11.4
Ripley 11.4
St. Charles 14.7
St. Clair 2.3
St. Francois 11.4
Ste. Genevieve 11.4
St. Louis 14.7
St. Louis City 14.7
Saline.....10.0
Schuyler 4.0
Scotland.....4.0
Scott 11.4
Shannon 2.3
Shelby 4.0
Stoddard 11.4
Stone 2.3
Sullivan.....4.0
Taney.....2.3
Texas 2.3
Vernon 2.3
Warren 11.4
Washington.....11.4
Wayne.....11.4
Webster.....2.3
Worth.....10.0
Wright.....2.3

Nebraska

Adams.....1.4
Antelope 1.2
Arthur 1.4
Banner 5.3
Blaine.....1.4
Boone.....1.4
Box Butte.....5.3
Boyd 1.4
Brown 1.4
Buffalo.....1.4
Burt.....5.3
Butler.....1.9
Cass 5.3
Cedar 1.2
Chase 1.4
Cherry.....1.4
Cheyenne 5.3
Clay 1.4
Colfax 5.3
Cuming 1.2
Custer.....1.4
Dakota 1.9
Dawes 5.3
Dawson.....1.4
Deuel 5.3
Dixon.....1.2
Dodge 5.3
Douglas.....7.6
Dundy 1.4
Fillmore 1.9
Franklin.....1.4
Frontier 1.4
Furnas 1.4
Gage.....1.9
Garden 5.3
Garfield.....1.4
Gosper 1.4
Grant.....1.4
Greeley 1.4
Hall 1.4
Hamilton 1.4
Harlan.....1.4
Hayes.....1.4
Hitchcock 1.4
Holt 1.4
Hooker.....1.4
Howard.....1.4
Jefferson 1.9
Johnson.....1.9
Kearney 1.4
Keith.....1.4
Keya Paha 1.4
Kimball.....5.3
Knox.....1.2
Lancaster 2.8
Lincoln 1.4
Logan 1.4
Loup 1.4
McPherson 1.4
Madison.....1.2
Merrick.....1.4
Morrill 5.3
Nance 1.4
Nemaha 1.9
Nuckolls 1.4
Otoe.....1.9
Pawnee 1.9
Perkins.....1.4
Phelps 1.4
Pierce.....1.2
Platte 5.3
Polk 1.9
Red Willow 1.4
Richardson 1.9
Rock 1.4
Saline.....1.9
Sarpy 7.6
Saunders 5.3
Scotts Bluff 5.3
Seward.....1.9
Sheridan 5.3
Sherman 1.4
Sioux 5.3
Stanton 1.2
Thayer 1.9
Thomas.....1.4
Thurston 1.2
Valley.....1.4
Washington 5.3
Wayne 1.2
Webster 1.4
Wheeler 1.4
York 1.9

EPA DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

(See http://www.epa.gov/osbp/dbe_team.htm for more information)

Prime Contractor Responsibilities:

1. The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 (DBE regulations) in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

2. If the contractor awards subcontracts, the contractor should employ the good faith efforts in paragraph No. 3 to try to meet the following subcontracting goals: Minority business enterprise – 6% Women's business enterprise – 8%.

3. If the contractor awards subcontracts, the contractor should take the following good faith efforts to subcontract with small business enterprises, minority business enterprises, and women's business enterprises (i.e. DBEs):

    a. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State, and local government grant recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.

    b. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

    c. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State, and local government grant recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

    d. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

    e. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.

4. The contractor should provide the attached DBE subcontractor Participation Form (6100-2) and the attached DBE Subcontractor Performance Form (6100-3) to each DBE subcontractor when soliciting bid proposals.

5. The contractor should complete the attached DBE subcontractor Utilization Form (6100-4).

6. The contractor should submit to the Owner with the bid package the completed DBE Subcontractor Utilization Form (6100-4), plus a DBE Subcontractor Performance Form (6100-3) for each DBE subcontractor used in the contractor's bid.

7. The contractor should pay DBE subcontractors for satisfactory performance no more than 30 days from receipt of payment from owner.

8. The contractor should notify the Owner in writing prior to the termination of a DBE subcontractor for convenience.

9. The contractor should employ the good faith efforts in paragraph No. 3 if soliciting a replacement after a DBE subcontractor fails to complete work under the subcontract for any reason.

10. The contractor should employ the good faith efforts in paragraph No. 3 even if the prime contractor has achieved its fair share objectives in paragraph No. 2.

11. The contractor should report to the Owner each April 5 and October 5, the DBE participation achieved in each semiannual period ending March 31 and September 30.

12. The contractor should maintain records documenting efforts to comply with DBE requirements, including documentation of good faith efforts. The records of the successful bidder will be requested by Owner to be maintained in Owner's file. Subcontractor Responsibilities:

    a. A DBE must be certified as per the EPA regulation at 40 CFR 33.204. The DBE must first attempt to be certified by the U.S. Small Business Administration, the U.S. Department of Transportation, an Indian Tribal Government, State Government, local Government, or independent private organization. If unsuccessful, the DBE may apply to EPA.

    b. The DBE may submit the attached DBE Subcontractor Participation Form (6100-2) to ATTN: Grant Assistant, EPA Region 7 PLMG, 901 N 5th St., Kansas City, KS 66101.

    c. The DBE should complete the attached DBE Subcontractor Performance Form (6100-3), and submit it to the prime contractor soliciting services from the subcontractor prior to the opening of bids for the prime contract.

Attachments

Website for forms:
http://www.epa.gov/osbp/dbe_forms.htm under Contract Administration Forms section.
3/26/10

NEBRASKA
DEPT. OF WATER, ENERGY, AND ENVIRONMENT

State Revolving Fund Section
P:402-471-2186 | F:402-471-2909
dwee.srf@nebraska.gov

EPA Form 6100-2 Supplement
For Subcontractor
Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form
FORM NDWEE-BC04b (Revised: 07/01/2025)

As required by 40 CFR Part 33 (https://www.ecfr.gov/current/title-40/part-33), prime contractors must provide this form to all of their DBE[1] subcontractors[2]. This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid, and any other concerns the DBE subcontractor might have (e.g. reasons why the DBE subcontractor believes they were terminated by the prime contractor). DBE subcontractors may send completed copies of this form dwee.srf@nebraska.gov or to Nebraska Department of Water, Energy, and Environment: SRF Program.

To be completed by DBE subcontractor

Subcontractor Name:		**Project Name:**	
Prime Contractor Name:			
Bid / Proposal / Contract No.:	**Assistance Agreement ID No. (if known):**	**Point of Contact:**	
Address:			
Telephone No.:		**Email Address:**	

Please use the space below to report any concerns regarding the above SRF-funded project (e.g. reasons for termination by prime contractor, late payment, etc.)		
Contract Item Number	**Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment, or Supplies**	**Price of Work Submitted to the Prime Contractor**

Subcontractor Signature	**Print Name**
Title	**Date**

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205. Approved certifying entities include The United States Small Business Administration (SBA); The United States Department of Transportation; or an Indian Tribal Government, State Government, local Government or independent private organization in accordance with EPA's 8% or 10% statute as applicable.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an SRF award of financial assistance.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: For Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products				
— Relevant excerpts from the bid documents used by the contractors to complete the comparison				
— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market				
• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials				
• Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers?				
• Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information)				
• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials				
• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ ("Purchaser") and the _____ (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 2 0 2018

OFFICE OF WATER

MEMORANDUM

SUBJECT: Application of American Iron and Steel Requirements for Drinking Water State Revolving Fund Projects for Fiscal Years 2019 Through 2023

FROM: Anita Maria Thompkins, Director
Drinking Water Protection Division

TO: Water Management Division Directors
Regions I-X

On October 23, 2018, the President signed the "America's Water Infrastructure Act of 2018" (AWIA), which includes several updates and revisions to the Safe Drinking Water Act (SDWA), including the Drinking Water State Revolving Fund (DWSRF) provisions. Section 2022 of AWIA amended Section 1452(a)(4)(A) of SDWA to extend the requirement for the use of American Iron and Steel (AIS) products in projects receiving financial assistance from the DWSRF during fiscal years 2019 through 2023. Section 1452(a)(4) includes "American Iron and Steel" requirements that recipients of DWSRF assistance are to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system.

All assistance agreements starting October 1, 2018, through September 30, 2023, must include the AIS requirements until that condition is no longer statutorily mandated. Prior appropriations acts, starting with the Consolidated Appropriations Act of 2014 (P.L. 113-76) and continuing through FY2018, have included the AIS requirements. In addition, all guidance issued since FY 2014 will also continue to be applicable until the AIS provision is no longer required.

If you have any questions, please contact Kiri Anderer (202-564-3134 or anderer.kirsten@epa.gov).

cc: Ronald Bergman, Associate Division Director, Drinking Water Protection Division
Elizabeth Corr, Associate Division Director, Drinking Water Protection Division
Felecia Fort, Associate Chief, Infrastructure Branch
Kiri Anderer, Senior Environmental Engineer, DWSRF
Jorge Medrano, Environmental Engineer, DWSRF
Dallas Shattuck, Physical Scientist, DWSRF

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency…finds that— (1) applying subsection (a) would be inconsistent with the public interest" 436(b)(1).

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

- What percentage of total project costs were consumables or incidental costs?

- What percentage of materials costs were consumables or incidental costs?

- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Issued on: APR 15 2014

Approved by: _____

Nancy K. Stoner
Acting Assistant Administrator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 2 7 2015

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: National Product Waiver for Minor Components within Iron and Steel Products (with Cost Ceiling) for State Revolving Fund Projects

FROM: Kenneth J. Kopocis
Deputy Assistant Administrator

The U.S. Environmental Protection Agency is hereby granting a national product waiver pursuant to the "American Iron and Steel" provisions of the Clean Water Act and Public Law 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," (hereinafter referred to as "the Acts") for minor components within a product under an established cost ceiling.[1] The waiver will permit projects funded by the Clean Water State Revolving Fund or Drinking Water State Revolving Fund to use non-domestically produced miscellaneous minor components within an otherwise domestically produced iron and steel product for up to 5 percent of the total material cost of the product. These products could be prohibited absent this waiver. This waiver is retroactive, and so also applies to products purchased before the signature date of this waiver.

Coverage: The items covered by this waiver include miscellaneous minor components within iron and steel products as defined in the AIS provisions of the Acts. The specific minor components in covered iron and steel products will vary by product and manufacturer. Pursuant to this waiver, non-domestically produced miscellaneous minor components comprising up to 5 percent of the total material cost of an otherwise domestically produced iron and steel product may be used. This waiver does not exempt the whole product from the AIS requirements, and the primary iron or steel components of the product must be produced domestically. Unless subject to a separate waiver, all other iron and steel components in these products must still meet the AIS requirements. Valves and hydrants are also subject to the cost ceiling requirements described here. This waiver supersedes the EPA's previous guidance issued on May 30, 2014, (Question 1) related to minor components in valves and hydrants.

The coverage of this waiver is different from that of the existing national de minimis waiver. While the national de minimis waiver covers entire products (when those products are generally of low cost and incidental to the construction of the project), this waiver covers minor components within an iron and steel product. In addition, the national de minimis waiver is intended for assistance recipients to use for their projects, while this minor components waiver is intended to allow manufacturers to certify that their products comply with the AIS requirements.

[1] Absent a waiver, all treatment works and drinking water facilities that are constructed, in whole or in part, with funds from the CWSRF or the DWSRF, must use American made iron and steel. The EPA is allowed under certain circumstances to provide waivers of this requirement.

Rationale: The AIS provisions require recipients of CWSRF and DWSRF assistance to use specific domestically-produced iron and steel products in their project, unless the Agency determines it is necessary to waive this requirement. The EPA has authority to issue waivers in accordance with Section 608(c)(1) of the Clean Water Act and the AIS provisions extended by P.L. 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," under the authority of Section 424(b)(1). The provisions state in part: "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency…finds that…applying subsection (a) would be inconsistent with the public interest."

Many product manufacturers and suppliers identified significant compliance challenges absent this waiver. Water and wastewater utilities are generally unable to obtain a range of AIS compliant iron and steel products (such as valves, hydrants and pipe restraints) that contain 100 percent domestic components. The manufacturers stated that the origin of a significant proportion of very small minor components cannot be reliably tracked or even discerned. They provided examples of product lines that would need duplicative inventories of extremely low-cost miscellaneous minor components in order to supply AIS compliant products. Manufacturers also raised concerns related to challenges of inventory tracking, inventory control and excessive costs associated with duplicative inventory needed to supply utilities with essential domestic products.

The EPA concludes that requiring manufacturers and suppliers to overcome the challenges identified above would be inconsistent with the public's interest. In order to balance the reliability, availability and maximum supply of domestically produced iron and steel products, it is acceptable for a manufacturer to incorporate a relatively small proportion of miscellaneous minor components of non-domestic or unknown origin within an otherwise domestically manufactured product.

Legal Authority: Legal authority for the AIS requirements for CWSRF projects is included under Sec. 608(c)(1) of the Clean Water Act and previously under P.L. 113-76, "Consolidated Appropriations Act, 2014," under the authority of Section 436(b)(1). Legal authority for the AIS requirements for DWSRF projects is included under P.L. 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015", under the authority of Section 424(b)(1) and also previously under P.L. 113-76. This waiver will continue in force for DWSRF projects under any continuing resolutions or statutes that use similar language as Section 424 of the "Consolidated and Further Continuing Appropriations Act, 2015."

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kiri Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 18 2015

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: National Product Waiver for Pig Iron and Direct Reduced Iron for State Revolving Fund Projects

FROM: Kenneth J. Kopocis
Deputy Assistant Administrator

The U.S. Environmental Protection Agency is hereby granting a national product waiver pursuant to the "American Iron and Steel" provisions of the Clean Water Act and Public Law 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," for certain intermediate goods used in the manufacture of iron and steel products.[1] This waiver permits the use of pig iron and direct reduced iron manufactured outside of the United States in domestic manufacturing processes for iron and steel products used in projects funded by a Clean Water or Drinking Water State Revolving Fund that may otherwise be prohibited absent this waiver. The waiver is retroactive and thus also applies to the use of non-domestic pig iron and direct reduced iron before the signature date.

Background: Pig iron and direct reduced iron are intermediate products of iron and steel manufacturing used as material feed sources in iron and steel foundries and steel mills. Pig iron is a product of iron ore smelting in a blast furnace. It is made from molten iron, which has been cast in the shape of "pigs" as it comes from the blast furnace. Direct reduced iron ore is produced from iron ore, pellets or fines, which are reduced in a solid state using natural gas. Hot briquetted iron, or HBI, is a compacted form of direct reduced iron with enhanced physical characteristics for shipment and storage.

Coverage: This waiver permits the use of iron and steel products that were manufactured using non-domestic pig iron and direct reduced iron in projects that receive funds from either the CWSRF or DWSRF. Any project that received or will receive funds from the CWSRF or DWSRF beginning with the enactment of P.L. 113-76, the "Consolidated Appropriations Act, 2014," may use this waiver for iron and steel that use these intermediate goods.

Rationale: The AIS provisions require CWSRF and DWSRF assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded

[1]Absent a waiver, all treatment works and drinking water facilities that are constructed, in whole or in part, with funds from the CWSRF or the DWSRF, must use American made iron and steel. EPA is allowed under certain circumstances to provide waivers of this requirement.

through an SRF assistance agreement unless the Agency determines that it is necessary to waive this requirement. EPA has authority to issue waivers in accordance with Section 608(c)(2) of the Clean Water Act and the AIS provisions extended by P.L. 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," under the authority of Section 424(b)(2). The provision states in part: "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency…finds that – iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality."

Product manufacturers and suppliers informed EPA of concerns about the sufficient availability of domestically produced pig iron and direct reduced iron. The iron and steel products produced at steel mills and foundries that use non-domestic intermediate goods are not compliant with the AIS requirements. AIS compliant products used at water and wastewater projects could be in extremely short supply should a waiver of the intermediate goods not be available.

EPA conducted extensive market research on the supply of pig iron and direct reduced iron and found that domestic supplies of these goods sold on the open market are generally not available. There are three major types of facilities that manufacture iron and steel finished products: basic oxygen furnace steel mills (BOF), electric arc furnace steel mills (EAF) and foundries. BOF steel mills undertake both iron making and steel making, as molten iron from the blast furnace is the required feedstock for BOF steel production. EAF steel mills and foundries, on the other hand, use iron and steel scrap as their principal feedstock, which must be supplemented with the use of pig iron and/or direct reduced iron in their manufacturing processes to achieve required steel qualities.

EPA market research has shown that BOF steel mills are able to produce adequate amounts of pig iron to meet their own demands, but these mills use the bulk of this production for their own processes and do not sell pig iron on the open market in sufficient quantities. At this time, there is only one producer of direct reduced iron operating in the U.S. and the company uses the output internally for EAF steel production. Therefore, EAF steel mills and foundries must import pig iron and direct reduced iron to meet their iron needs.

At least 60 percent of the nation's steel production comes from the EAF steel mills that use non-domestic pig iron and direct reduced iron in their manufacturing processes. Consequently, the majority of steel used in water and wastewater projects would not be compliant with the AIS requirements absent this waiver. Similarly, most, if not all, of the iron foundries in the United States use non-domestic pig iron and direct reduced iron to produce cast and ductile iron products used by water and wastewater projects. Therefore, the majority of iron used in water and wastewater projects would not be compliant with the AIS requirements absent this waiver. Hence, EPA is hereby providing a nationwide waiver pursuant to AIS requirements to cover the non-domestic intermediate iron goods used in the manufacture of iron and/or steel components and products for water and wastewater projects.

Public Comments: EPA requested comments on the draft national waiver and a majority of the comments received were supportive of a national waiver. The commenters in support of the waiver agreed with the Agency's conclusion that pig iron and direct reduced iron are not

produced in the United States in sufficient and reasonably available quantities to meet the needs of many domestic foundries and steel mills. These commenters believe that the waiver will ensure that pig iron and direct reduced iron are treated similarly to raw material inputs in iron and steel manufacturing and by doing so the EPA will preserve the viability of the AIS requirement. These commenters also state that the waiver would treat pig iron and direct reduced iron in a manner consistent with the implementation of other similar federal laws such as the Federal Highway Administration's Buy America requirement. The FHWA issued a similar nationwide waiver of the Buy America requirements in 1995 for pig iron and processed, pelletized and reduced iron ore.

A few commenters challenged the Agency's issuance of a nationwide waiver of the AIS requirements for pig iron and direct reduced iron. These commenters disagreed with the Agency's interpretation of the AIS requirements and stated that raw materials used in iron and steel production must also be produced in the United States. In addition, the commenters questioned whether the Agency could exempt iron and steel products that are composed of non-domestic materials.

The statutory language lists the categories of products that are considered "iron and steel products." The statutory requirements include provisions that allow the EPA to issue waivers under defined conditions, including the case where iron and steel products are not produced in the United States in sufficient and reasonably available quantities. The Agency's market research, supported by comments from manufacturers, has shown that pig iron and direct reduced iron are not produced in the United States in sufficient and reasonably available quantities. Therefore the Agency is authorized to issue a waiver for iron and steel products composed of non-domestic pig iron and direct reduced iron.

Legal Authority: Legal authority for the AIS requirements for CWSRF projects is included under Sec. 608(c)(2) of the Clean Water Act and previously under P.L. 113-76, the "Consolidated Appropriations Act, 2014," under the authority of Section 436(b)(2). Legal authority for the AIS requirements for DWSRF projects is included under P.L. 113-235, the "Consolidated and Further Continuing Appropriations Act, 2015," under the authority of Section 424(b)(2) and also previously under P.L. 113-76. This waiver will continue in force for DWSRF projects under any continuing resolutions or statutes that use similar language as in Section 424 of the "Consolidated and Further Continuing Appropriations Act, 2015."

If you have questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kiri Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

DIVISION 01

GENERAL REQUIREMENTS

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Location and description of Work and prior uses of the Site.
2. Construction Contracts for this Project.
3. Others retained by Owner for the Project.
4. Work by Owner.
5. Sequence and progress of Work.
6. Contractor's use of the Site.
7. Easements and rights-of-way.
8. Utility owners.
9. Tree trimming, clearing, and tree removal.

B. Related Requirements:

1. Include, but are not limited to, the following:
   a. Section 01 71 33 - Protection of the Work and Property.

1.2 LOCATION AND DESCRIPTION OF WORK

A. The Work is located at the Black Elk Pump Station, 3100 College Drive, Blair, NE 68008.

B. The Project includes constructing the Work broadly described below, in accordance with the Contract Documents, with all related appurtenances. Work shown on the Drawings, or indicated in the Specifications, or indicated elsewhere in the Contract Documents is part of the Work, regardless of whether indicated below. The Work includes, but is not limited to, the following:

1. Addition of a third pump in the existing pump station including a variable frequency drive (VFD).
2. Addition of a standby generator and automatic transfer switch for the pump station.
3. Replacement of the two existing VFDs.
4. Replacement of the motor control center (MCC) and electrical power panels.
5. Demolition of existing exhaust fans, louvers and dampers, unit heater, dehumidifier, condensate lines, thermostat, and HVAC controls.
6. Installation of two through-wall heat pumps.

C. Contracting Method: The Project will be constructed under a single prime construction Contract.

D. Hazardous Environmental Conditions:

1. To the best of Owner's knowledge, information, and belief, the Site has been a drinking water booster pump station since 1977.

1.3 CONSTRUCTION CONTRACTS FOR THIS PROJECT

A. Single Prime Construction Contract: The Contract requires all the Work for the Project not expressly allocated to Owner or others in the Contract Documents.

1.4 OTHERS RETAINED BY OWNER FOR THE PROJECT

A. Engineer:

1. Engineer is identified in the Agreement.

2. Engineer's responsibilities for the Project, relative to Contractor, are indicated throughout the Contract Documents.
3. Whether the Engineer will furnish the services of a Resident Project Representative (RPR) for the Project is indicated in the Supplementary Conditions.

1.5 WORK BY OWNER

A. Owner will perform the following in connection with the Work:

1. Operate all existing valves, flow-control gates, pumps, equipment, and appurtenances that will affect Owner's operations or facility processes, unless otherwise specified or indicated.

1.6 SEQUENCE AND PROGRESS OF WORK

A. Requirements for sequencing and coordinating with Owner's operations, including maintenance of facility operations during construction, and requirements for tie-ins and shutdowns, are in Section 01 14 16 - Coordination with Owner's Operations.

1.7 CONTRACTOR'S USE OF SITE

A. Use of Site - General:

1. Limits on Contractor's use of the Site are indicated on the Drawings.
2. Contractors shall share use of the Site with other contractors and others specified in Articles 1.3 through 1.6 (inclusive) of this Section.
3. Relocate stored materials and equipment that interfere with operations of Owner, other contractors, and others performing work for Owner.

1.8 EASEMENTS AND RIGHTS-OF-WAY

A. Easements and Rights-of-Way - General:

1. Easements and rights-of-way required for the permanent improvements included in the Work will be provided by Owner in accordance with the General Conditions and Supplementary Conditions.
2. Confine construction operations within Owner's property, public rights-of-way, easements obtained by Owner, and limits shown, and property for which Contractor has made arrangements directly with property owner(s).
3. Use care in placing construction tools, machinery and equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic.
4. Do not enter private property outside the construction limits without permission from the owner of the property.

1.9 UTILITY OWNERS

A. Utilities known to Engineer and that may have Underground Facilities or other facilities in the vicinity of the Work are:

1. City of Blair
   a. Sanitary Sewers, potable water lines, and electric service lines to the pump station and City Park Lights.
   b. 218 South 16th Street, Blair, NE 68008.
   c. Telephone: (402) 426-4191.
2. Omaha Public Power District:
   a. Electric utility.
   b. Contact Name: Mark O'Connor.
   c. Address: 1101 N 180th St, Elkhorn, NE 68022.
   d. Telephone: (531) 226-5873.
   e. E-mail: msoconnor@oppd.com.

3. Black Hills Energy:
    a. Natural gas utility.
    b. Contact Name: Jamison Kollars.
    c. Address: 11526 Valley Ridge Dr, La Vista, NE 68128.
    d. Telephone: (402) 949-2266.
    e. E-mail: Jamison.Kollars@blackhillscorp.com.
4. Verizon:
    a. Underground communication lines.
5. AT&T:
    a. Underground communication lines.
    b. Contact Name: Jacob Flott.
    c. E-mail: jf8259@att.com

B. Utilities and their owners indicated in the Contract Documents are for Contractor's convenience. Neither Owner nor Engineer will be liable to Contractor or any utility owner for failure to indicate utility, its owner, or complete and correct contact information in the Contract Documents where Contractor's reasonable and ordinarily-exercised diligence would reveal the presence of the utility and its owner. Nothing in the Contract mitigates Contractor's responsibilities under the General Conditions, Section 01 71 33 - Protection of the Work and Property, and Laws and Regulations, including "call before you dig" regulations.

1.10 TREE TRIMMING, CLEARING, AND TREE REMOVAL

A. Provide all required labor and equipment for trimming, clearing, and tree removal as follows:
    1. Remove tree directly west of the standby generator as indicated on the Drawings.
    2. Comply with Section 01 71 33 - Protection of the Work and Property.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 14 16
COORDINATION WITH OWNER'S OPERATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for coordinating with Owner’s operations during the Project.
2. Requirements for shutdowns necessary to complete the Work without impact on Owner’s operations except as allowed in this Specifications Section.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, and incidentals shown, specified, and required to coordinate with Owner’s operations during the Work in accordance with this Specifications Section.
2. Except for shutdowns specified in this Specifications Section, perform the Work such that Owner’s facilities remain in continuous, satisfactory operation during the Project. Schedule and perform the Work such that the Work does not impede Owner’s production or processes, create potential hazards to operating equipment and personnel, reduce the quality of the facility’s products or effluent, cause odors or other nuisances, does not affect the public health, safety, welfare, and convenience, and does not adversely affect the environment resulting in violation of Laws or Regulations.
3. Work not specifically addressed in this Specifications Section or in referenced sections may, in general, be performed, to be completed within the Contract Times, at any time during regular working hours in accordance with the Contract Documents, subject to the requirements in this Section.

C. Related Requirements: Include but are not necessarily limited to:

1. Section 01 11 00 - Summary of Work.
2. Section 01 75 00 - Checkout and Startup Procedures.
3. Section 02 41 00 - Demolition.

1.2 REFERENCES

A. Terminology:

1. Terminology indicated below are not defined terms and are not indicated with initial capital letters, but when used in this Specifications section have the meaning indicated below:
   a. The term “Owner” is used throughout this section. When the facility is operated or managed by an entity other than Owner, references in this section to “Owner” as the operator or manager of the facility will be interpreted as referring to the facility manager.
   b. A “shutdown” is when a portion of the normal operation of Owner’s facility, whether equipment, systems, conduit (including piping and ducting), has to be temporarily suspended or taken out of service to perform the Work.

c. A “tie-in” is a connection of new Work to existing facilities, including connecting to existing conduits (including piping and ducting), electrical systems, structural elements, process/mechanical elements, and other physical connections. Some tie-ins may require that the tie-in be made without an associated shutdown.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Review construction procedures under other Specifications sections and coordinate Work that will be performed with or before the Work indicated in this Section.

B. Sequencing and Scheduling:

1. Refer to this Specifications sections articles on sequencing, tie-ins, and shutdowns.

1.4 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Shutdown Planning Submittal:
   a. For each shutdown, submit an inventory of labor, materials, and equipment required to perform the shutdown and tie-in tasks, an estimate of time required to accomplish the complete shutdown including time for Owner to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.
   b. Furnish submittal to Engineer not less than 30 days prior to proposed shutdown start date. Do not start shutdown until obtaining Engineer’s acceptance of shutdown planning Submittal.
2. Shutdown Notification:
   a. After Engineer’s acceptance of shutdown planning Submittal and prior to starting the shutdown, submit written notification to Owner and Engineer of date and time each shutdown is to start. Submit notification not less than 72 hours in advance of each shutdown.

1.5 GENERAL CONSTRAINTS

A. Indicated in the Contract Documents are the sequence and shutdown durations, where applicable, for Owner’s equipment, systems, and conduits (including piping and ducting) that are to be taken out of service temporarily for the Work. New materials and equipment may be used by Owner after the specified field quality control activities are successfully completed and the materials or equipment are substantially complete in accordance with the Contract Documents.

B. The following constraints apply to coordination with Owner’s operations:

1. Schedule and perform equipment and system start-ups in accordance with Section 01 75 00 - Checkout and Startup procedures. Equipment and systems shall not be placed into operation on Friday, Saturday, Sunday, or holidays without prior approval of Owner, unless specifically indicated otherwise in the Contract Documents.
2. Dead End Valves or Conduits:
   a. Provide blind flanges, watertight bulkheads, or valve at temporary and permanent terminuses of conduits, including piping and ducting.
   b. Blind flanges and bulkheads shall be suitable for the service and braced and blocked, as required, or otherwise restrained as necessary or as required by Engineer.

c. Temporary valves shall be suitable for their associated service. Where valve is provided at permanent terminus of conduit, including piping or ducting, also provide on downstream side of valve a blind flange with drain/flushing connection.

3. Owner will assist Contractor in dewatering process pipes and other work areas to be dewatered for shutdowns. Maintain clean, dry work area by pumping and properly disposing of fluid and other material that accumulates in work areas.

1.6 SEQUENCE OF WORK

A. Perform the Work in the indicated sequence. Certain phases or stages of the Work may require working 24-hour days or work during hours outside of regular working hours. Work may be accelerated from a later stage to an earlier stage if Owner's operations are not adversely affected by proposed substitute sequence, with Engineer's approval. Stages specified in this article are sequence-dependent.

B. Stage I – Pre-Shutdown Work:

1. Install primary conduit between new transformer pad and OPPD switch.
2. Install secondary conduits between new transformer pad and proposed ATS-01 location within pump station.
3. Construct new OPPD transformer pad.
4. Intercept reservoir power and control conduits and install handhole and new section of conduits between handhole and pump station.
5. Construct standby generator pad.
6. Install generator conduits between generator pad and proposed ATS-01 location within pump station.
7. Coordinate the following work with OPPD:
   a. OPPD to install new transformer and meter on transformer pad.
   b. OPPD to install primary conductors between new transformer and OPPD switch. Primary conductors will not be terminated at OPPD's switch at this Stage I.

C. Stage II – Disconnect Pump Station:

1. Coordinate with City staff to isolate the pump station from the distribution system. Only City staff will operate distribution system valves.
2. Coordinate with OPPD for the following work:
   a. Disconnect electrical service to pump station from existing transformer.
   b. Remove conductors between existing transformer and main switchboard.
   c. Abandon existing conduits between existing transformer and main switchboard.
3. Maintain power to existing parking lighting transformer.

D. Stage III – Demolition and New Equipment Installation

1. Demolish all equipment, conduit, and wiring within the pump station as indicated elsewhere in the Contract Documents.
2. Install the following:
   a. New transfer switch ATS-01 in the proposed location within the pump station.
   b. Secondary wiring between the new transformer and the proposed location of ATS-01 within the pump station. Terminate secondary conductors at the new transformer and ATS-01.

c. New distribution panelboard DP-01 in the proposed location within the pump station. Install conduit and wiring between DP-01 and ATS-01.

d. New booster pump BP-03 and all conduit, wiring, piping, valves, Control Panel (CP-01), and other equipment as indicated elsewhere in the Contract Documents.

e. Repull/Refeed Reservoir power and control conductors and terminate in equipment as indicated in the Drawings.

f. Standby generator wiring between generator and pump station.

3. Stage IV – Removal of Existing Electrical Service and Energization of New Service:
   a. OPPD to perform the following work:
      1) De-energize existing service.
      2) Disconnect and remove existing pump station transformer and primary service conductors.
      3) Terminate new transformer primary conductors within OPPD switch and energize new service.
   b. Contractor to perform the following work:
      1) Finish all remaining work.
4. Stage V – Startup:
   a. Comply with Specification Section 01 75 00.
   b. Test all equipment not requiring process flows prior to startup.
   c. Coordinate with City to open system valves and prepare the pump station for startup.
   d. Complete startup.

1.7 SHUTDOWNS

A. Shutdowns shall be in accordance with Table 01 14 16-B of this Specifications section. Work requiring service interruptions for tie-ins shall be performed during scheduled shutdowns.

B. Work that may interrupt normal operations shall be accomplished at times convenient to Owner unless otherwise indicated in the Contract Documents.

C. If Contractor's operations cause an unscheduled interruption of Owner's operations, immediately re-establish satisfactory operation for Owner.

D. Fines and Penalties Imposed by Authorities Having Jurisdiction:

1. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of Owner's facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by Contractor if, in Engineer's opinion, Contractor did not comply with requirements of the Contract Documents, or was negligent in the Work, or did not exercise proper precautions in performing the Work and complying with applicable permits, Laws, and Regulations.
2. Owner or Engineer may deduct as set-offs such amounts from payments due Contractor.

E. Temporary, short-term shutdowns of smaller conduits (including piping and ducting), equipment, and systems may not be included in Table 01 14 16-B. Coordinate requirements for such shutdowns with Engineer and Owner. Where necessary, obtain Engineer's interpretation or clarification before proceeding.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 SUBSTITUTE PROCEDURES

A. Proposal of Substitute Sequencing, Shutdowns, and Tie-Ins:

1. As a substitute to the procedures indicated in this Specifications section, Contractor may propose providing additional temporary facilities that can eliminate or mitigate a constraint without additional cost to Owner, provided such additional temporary facilities: Do not present hazards to the public, personnel, structures, and equipment; that such additional temporary facilities do not adversely affect Owner's ability to comply with Laws and Regulations, permits, and operating requirements; that such temporary facilities do not generate or foster the generation of odors and other nuisances; and that requirements of the Contract Documents are fulfilled.
2. Engineer will consider proposals for substitute procedures after the Effective Date of the Contract. All Bids shall be based on the requirements of the Contract Documents, including this Section.
3. Substitution Requests:
    a. When proposing a substitute procedure for a tie-in or shutdown or other requirements of this section, comply with the requirements of the General Conditions and Supplementary Conditions (regarding substitutes) and Section 01 25 00 - Substitution Procedures.
    b. When deviation from specified sequence or procedures is proposed, Contractor's proposal shall explain in detail the proposed sequence and procedures and associated effects, including evidence that Owner's operations will not be adversely affected, to an extent greater than originally contemplated in the Contract Documents, by proposed substitution. List benefits of proposed substitution, including benefits to Progress Schedule.

3.2 PREPARATION

A. Coordinate preparations for removals with requirements of Section 02 41 00 - Demolition, as applicable.

B. Shutdowns - General Preparation:

1. Coordinate shutdowns with Owner and Engineer.
2. Submit shutdown planning Submittals and shutdown notification Submittals in accordance with this Specifications section's "Submittals" Article.
3. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, materials, equipment, spare parts, both temporary and permanent, necessary to successfully perform the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to commencing the associated shutdown. Demonstrate to Engineer's satisfaction that Contractor has complied with such requirements before commencing the shutdown.
4. Engineer shall have no duty to Contractor to advise Contractor of inadequate preparations by Contractor; Contractor is solely responsible for the means, methods, procedures, techniques, and sequences of construction.

3.3 DETAILED SHUTDOWN REQUIREMENTS

A. Shutdown A – Pump Station Shutdown:

1. General:
    a. Affected Equipment Operating Prior to Shutdown: Entire pump station.

b. Equipment Operating During Shutdown: In accordance with Table 01 14 16-B of this Specifications section.

c. Equipment Out of Service During Shutdown: In accordance with Table 01 14 16-B of this section.

d. Impact on Other Equipment and Processes: None.

e. Procedure:

1) Coordinate with Owner to isolate pump station from the distribution system. Only Owner will operate existing distribution isolation valves to isolate the pump station.

2) Coordinate with OPPD to isolate the pump station electrically.

3) Perform demolition work as shown in the drawings and specifications.

4) Install new equipment as shown in the drawings and specifications.

f. Dates: Shutdown shall be accomplished between September 1st and May 31st for a duration no greater than shown in Table 01 14 16-B.

2. Prior to Shutdown:

a. Obtain Engineer's acceptance of proposed shutdown planning Submittal and shutdown notification Submittal.

b. Bring necessary piping, couplings, valves, equipment, and appurtenances to the work areas.

c. Assist Owner in preparing to take equipment and conduits (including piping and ducting) temporarily out of service.

d. Coordinate other tie-ins to be performed simultaneously.

3. During Shutdown:

a. Dewater the existing suction and discharge headers as necessary to complete the installation of the new pump.

b. Maintain power to the existing park lighting transformer during shutdown.

c. Remove existing equipment as required.

d. Install new equipment as shown in the drawings and specifications.

e. With Owner, return equipment and system to operation.

4. Following Shutdown:

a. Verify functionality of equipment and systems.

b. Verify operation of new equipment and systems and verify that joints in conduits (including piping and ducting) are watertight or gastight as applicable.

c. Repair joints that are not watertight or gastight, as applicable.

3.4 ATTACHMENTS

A. The following, bound after this Specifications Section's "End of Section" designation, are part of this Specifications Section:

1. Tables:

a. Table 01 14 16-B, Schedule of Shutdowns (1 page).

END OF SECTION

Table 01 14 16-B Schedule of Shutdowns			
Shut- down No.	**Process Equipment and Service Lines Out-of-Service During Shutdown**	**Equipment In Operation During Shutdown**	**Maximum Duration**
A	Entire pump station.	Park lighting.	30 days

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SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements applicable to all bid/pay items.
2. General provisions on lump sums.

B. Related Requirements: Include, but are not necessarily limited to:

1. Section 01 26 00 - Contract Modification Procedures.
2. Section 01 29 76 - Progress Payment Procedures.

1.2 REQUIREMENTS APPLICABLE TO ALL BID/PAY ITEMS

A. In this Section and elsewhere in the Contract Documents, the terms “bid item”, “pay item”, “bid/pay item”, “Item” followed by a number designation, “this item”, and the like all have the same meaning, and refer to one or more specific elements of the Contract, established for pricing and payment, as indicated in the Bid Form and in the Agreement (or exhibit to the Agreement) at the time the Contract was signed by the parties.

B. This Article applies to all bid/pay items in the Contract.

C. Prices – General:

1. The bid/pay items listed starting with Article 1.4 of this Section refer to and are the same bid items listed in the Bid Form and included in the Contract, and constitute all bid/pay items for the Work at the time the Contract was signed by the parties.
2. No direct or separate payment will be made, outside of the bid/pay items in the Contract, for the following: providing miscellaneous temporary or accessory materials or equipment, temporary works, temporary construction facilities, Contractor’s project management, superintendence, and similar costs for Subcontractors or Suppliers; bonds and insurance; schedules and schedule updates; coordination (with: Owner’s operations (including, but not limited to, lockout/tag-out procedures), other contractors, utility owners, owners of transportation facilities, adjacent property owners and occupants, authorities having jurisdiction, Subcontractors and Suppliers, and others with whom Contractor is to coordinate the Work); information technology systems required by the Contract Documents; Submittals; photographic documentation; Project meetings; Contractor’s hazard communication program; Contractor’s compliance with environmental procedures for Constituents of Concern (including spill control and countermeasures plans and implementation); professional services (required for Contractor’s means and methods of construction, and for delegated designs required by the Contract Documents); obtaining and complying with permits and licenses; temporary utilities (including electric power, water supply and disposal, fuel, and communications); temporary lighting; temporary fire protection; temporary enclosures and HVAC; temporary sanitary facilities; temporary first-aid facilities and services; Contractor’s field offices and sheds, Engineer’s field offices (when required elsewhere in the Contract Documents); temporary vehicular access and parking (including access to the Site, temporary access roads and parking, onsite traffic controls for construction traffic, and offsite haul routes); traffic control of non-construction vehicular and pedestrian traffic; temporary controls (including temporary erosion and sediment controls, noise control, control of storm water, surface water, and groundwater, pollution controls (including solid waste control, water pollution control, and control of atmospheric pollution), dust control, pest and rodent controls, odor controls, and other temporary controls required by the Contract Documents); temporary security for the Work; temporary barriers; Project signage (when required elsewhere in the Contract Documents); delivering, handling, and storing materials and equipment to be incorporated into the Work;

layouts and surveys for the Work; construction equipment, machinery, tools, and vehicles; safety and protection; Site maintenance during construction; cleaning and removal and disposal of waste and debris; checkout and startup; testing and other quality control activities required by the Contract Documents; record documents, operation and maintenance data; warranties; spare parts and extra materials required by the Contract Documents; instruction of facility personnel as required by the Contract Documents; commissioning (when required elsewhere in the Contract Documents); Contractor's correction period, Contractor's general warranty and guarantee; Contractor's indemnification obligations; other labor, cost, or effort required by the General Conditions and Supplementary Conditions, Division 01 Specifications, and other requirements of the Contract Documents.

3. Price Escalation:
    a. Unless expressly indicated otherwise in the Contract Documents, Owner is not obligated to change the stipulated prices (including lump sums, unit prices, and allowances) that are all or part of the Contract Price because of escalation of costs when there is no corresponding change in the Contract Times.
    b. Changes in the Contract Times do not necessarily entitle Contractor to a change in Contract Price due to escalation.
    c. Should Contractor claim a change in Contract Price for one or more stipulated price pay items without a corresponding change in scope, extent, or quality in the associated Work, prior to receiving any such change in Contract Price, Contractor shall submit with Contractor's associated Change Proposal, documentation satisfactory to Engineer supporting and documenting that Contractor's costs have increased because of delays beyond Contractor's control within the associated change in Contract Times included in such Change Proposal.
4. Compensation for all services, labor, materials, and equipment shall be included in prices stipulated for the lump sum bid/pay items in the Contract.
5. Each lump sum in the Contract shall include an amount considered by Contractor as sufficient for all overhead and profit for each separately identified bid/pay item.

D. Contract Price, Payment Procedures, and Related Matters:

1. Contract Price: The Contract Price, as apportioned among bid/pay items in the Contract, is indicated in the Agreement and may be modified by Change Order.
2. Payments to Contractor: Refer to the General Conditions (as may be modified by the Supplementary Conditions), the Agreement (including provisions on retainage, if any), and Section 01 29 76 - Progress Payment Procedures, among other applicable Contract Documents.
3. Schedule of Values: Refer to the General Conditions (as may be modified by the Supplementary Conditions) and Section 01 29 73 - Schedule of Values.
4. Procedures for Changes in Contract Price: Refer to the General Conditions (as may be modified by the Supplementary Conditions) and Section 01 26 00 - Contract Modification Procedures.
5. Defective Work is not eligible for payment.

1.3 GENERAL PROVISIONS ON LUMP SUM ITEMS

A. Progress payments for Work paid on a lump sum basis will be based on Engineer's estimate of the Work (in accordance with the Contract Documents) performed through the end of the associated pay period, based on the Schedule of Values accepted by Engineer in accordance with the Contract Documents.

B. At its sole discretion, Engineer may correct amounts of lump sum Work included in prior payment requests based on improved data or information available to Engineer, or Engineer's knowledge or reasonable belief that Work is incomplete or defective.

1.4 BID/PAY ITEMS - GENERAL CONTRACT

A. Item 1 – Instrumentation for Process Control:

1. Under this item, the Contractor shall be paid the lump sum price identified on the Bid Form as full compensation for all labor and materials for instrumentation and controls for the pump station as identified in the Proposal from Automatic Systems Company of Ames, IA attached to the Bid Form. Automatic Systems Co. has been selected by the Owner as the Systems Integrator on the Project and shall function as a Subcontractor to the Contractor.
2. Measurement: As set forth in the Contract's provisions regarding the Schedule of Values and progress payment procedures.
3. Payment: Lump sum payment for this item will be full compensation for completing the Work, as shown and indicated in the Contract Documents not included under other bid/pay items.

B. Item 2 – All Remaining Work for the Black Elk Pump Station Modifications Project:

1. Under this item, the Contractor shall be paid the lump sum price on the Bid Form as full compensation for all other work associated with the Black Elk Pump Station Modifications Project as defined in the Contract Documents.
2. Measurement: In accordance with the Contract's provisions on Schedule of Values and progress payments for lump sum Work.
3. Payment: Lump sum payment for this item will be full compensation for completing the Work, as shown and indicated in the Contract Documents not included under other bid/pay items.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements applicable to all substitution requests.
2. Provisions specific to Contractor's substitution requests for:
   a. Materials and equipment to be incorporated into the Work.
   b. Methods, procedures, and sequences indicated in the Contract Documents.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, and incidentals, and pay all costs associated with requests for approval of substitutes.
2. Where the Contract Documents expressly indicate that substitutes are not allowed, are unacceptable, or time-barred, do not submit substitution requests for such items or procedures.
3. Requirements for Contractor's proposal of "or-equals", where allowed by the Contract, are in the General Conditions, as may be modified by the Supplementary Conditions.

C. Related Requirements:

1. Include, but are not necessarily limited to:
   a. Section 01 26 00 - Contract Modification Procedures.

1.2 REFERENCES

A. Terminology:

1. The following terminology, although not indicated with initial capital letters, has the following meaning in this Section:
   a. "Or-equal" and "or equal" each means material or equipment items to be incorporated into the completed Work as a functioning whole, or method, procedure, or sequence that, in Engineer's sole opinion, are equivalent to that shown or indicated in the Contract Documents.
   b. "Substitute" means a proposed materials or equipment to be incorporated into the completed Work as a functioning whole, or a proposed construction method, procedure, or sequence that is not, in Engineer's sole opinion, equivalent to the associated, similar material or equipment item or method, procedure, or sequence shown or indicated in the Contract Documents, but accomplishes the same or similar purpose. Unless expressly indicated otherwise in the Contract Documents, Contractor's proposals for "value engineering" (and similar terms) are substitutes.
   c. "Substitution request" means Contractor's written request for Engineer's approval of a proposed substitute, in accordance with this Section. Substitution requests are separate from Shop Drawings and other Submittals required by the Contract Documents.

1.3 SUBSTITUTES - GENERAL

A. This Article applies to all substitutes and substitution requests, whether for substitute materials or equipment, or for substitute methods, procedures, or sequences.

B. This Section expands on the provisions on substitutes in the General Conditions, as may be modified by the Supplementary Conditions.

C. Time Limits for Submitting Substitution Requests:

1. Where the Contract allows Contractor's substitution requests, such proposals will be considered by Engineer only during a period of 30 days after the date the Contract Times start to run, unless otherwise indicated.
2. Substitution requests will be accepted for consideration by Engineer after the time limit indicated in the paragraph above this, when materials or equipment shown or indicated, and all associated "or-equals", are either:
    a. Unavailable; or
    b. Despite Contractor's due diligence, are unavailable in time for the Work to be completed within the Contract Times.
3. The foregoing notwithstanding, substitutes will not be approved when received by Engineer after Contractor has commenced the associated Work at the Site, where approval of the substitute would require rework or removing Work already installed.

D. Design Professional:

1. Engineer is responsible for design of the completed Project as a functioning whole and has responsible charge of the Project except for Work for which design responsibility is expressly delegated by the Contract Documents.
2. Do not retain services of any third-party design professional to prepare modifications of Engineer's design of the completed Project as a functioning whole without Engineer's express, written consent via an appropriate Contract modification setting forth appropriate performance and design criteria for delegating the design of the substitute.

E. Contractor's Representations:

1. In submitting each substitution request, Contractor represents that:
    a. Contractor has read and understands the Contract's provisions on substitutes, as indicated in the General Conditions, as may be modified by the Supplementary Conditions, this Section, and elsewhere in the Contract Documents.
    b. Substitution request is complete and includes all documents and information required by the Contract Documents.
    c. Contractor certifications required by the General Conditions, as may be modified by the Supplementary Conditions, and this Section is valid and made with Contractor's full knowledge, information, and belief.
    d. Contractor will provide the same or better guarantees and warranties for substitute as for the specified materials, equipment, methods, procedures, and sequences (as applicable).

e. Contractor waives all rights for increasing the Contract Price or extending the Contract Times, related to the substitute, that subsequently may become apparent to Contractor after issuance of the associated Contract modification instrument approving such substitute, except for those associated with differing subsurface or physical conditions or discovery of a previously unforeseen Hazardous Environmental Condition associated with the Work involving the approved substitute.

F. Submittal of Substitution Requests - General:

1. Substitution requests must be submitted by Contractor. Engineer will not accept or review substitution requests from prospective or bona-fide Subcontractors or Suppliers.
2. Submit separate substitution request for each proposed substitute.
3. Submit substitution requests in accordance with requirements for Shop Drawings and other Submittals, as indicated in the General Conditions, as may be modified by the Supplementary Conditions, and Section 01 33 00 - Submittal Procedures.
4. Do not submit substitution requests as any of the following (such substitution requests will be returned by Engineer without review):
   a. Shop Drawing, Sample, or other Submittal.
   b. Request for approval of an “or-equal”.
   c. Request for interpretation (RFI) or clarification.
   d. Change Proposal without all other, required substitution request elements indicated below.
   e. Other oral or written communication not in accordance with this Section.
5. Each substitution request shall include:
   a. Transmittal letter (one per substitution request) expressly indicating the communication is a substitution request.
   b. Completed substitution request form, on the form attached to this Section.
   c. Change Proposal, submitted in accordance with the Contract Documents, including Section 01 26 00 - Contract Modification Procedures. Clearly indicate the proposed changes in Contract Price and Contract Times if substitute is approved; if none, clearly so indicate on the Change Proposal.
   d. Certifications and written representations required by the Contract Documents to accompany substitution requests.
   e. Other information: (1) required elsewhere in this Section and in other elements of the Contract Documents, and (2) deemed appropriate by Contractor to support Contractor’s substitution request.
6. When Engineer requires additional information to evaluate a substitution request, furnish such information within five days of receipt of Engineer’s request, unless additional time is granted by Engineer, in writing.
7. Engineer and Owner have the right to rely upon the completeness and accuracy of information, documents, certifications, and representations in Contractor’s substitution request. Contractor accepts full responsibility for completeness and accuracy of substitution requests (except for Engineer’s professional liability).

G. Engineer’s Review of Substitution Requests:

1. Engineer has no obligation to approve any substitute.

2. Substitutes will not be approved unless all of the following are satisfied for the associated substitute:
    a. The Contract supports submittal of such substitution request; and
    b. Substitute is reasonably consistent with Engineer's design intent for the Project as a completed, functioning whole; and
    c. As indicated in Paragraph 1.3.A.3 of this Section.
    d. Substitute will not have an adverse effect on the work of other contractors, or existing or proposed construction; and
    e. Substitution request is complete in accordance with the Contract Documents and Engineer's requests, and
    f. Owner agrees to the substitute; and
    g. Associated changes in Contract Price and Contract Times, if any, are acceptable to Owner.
3. Engineer is not obligated to approve any substitute where such approval is conditioned on an increase in the Contract Price, the Contract Times, or both.
4. Timeliness of Engineer's Review:
    a. Allow not less than 21 days for Engineer's review of each substitute. Allow longer for larger, more-complex substitutes.
    b. Engineer will endeavor to perform timely review of substitution requests. However, Contractor is responsible for complying with the Contract Times, regardless of whether the substitute is approved.
    c. Where approval of a substitute would necessitate other changes to the Project's design, additional time, beyond that indicated above, will be necessary for Engineer's preparation of revisions to the design.
5. When Design Changes are Required with Approval of Substitute:
    a. Engineer will advise Contractor promptly following Engineer's review (and Owner's comment, if any) on substitution request to indicate whether the substitute will be acceptable. Engineer's advisory to Contractor will indicate whether changes in Engineer's design are necessary and include a preliminary estimate of Engineer's fee and time required for modifying the design and preparing an associated Proposal Request to Contractor.
    b. Engineer's preliminary estimates of fee and time for design modifications will be prepared in good faith but are not binding on Owner or Engineer.
    c. Contractor shall reimburse Owner for costs incurred by Owner for design modifications necessitated by approval of substitute. Owner may deduct such amounts, as one or more set-offs, from payments due Contractor under the Contract.
    d. Upon Contractor's receipt of Engineer's estimate of fee and time for design modifications, contractor shall advise Engineer, in writing, within three days whether Contractor will continue pursing approval of the substitute.
    e. Request to Contractor.
    f. Engineer may reject a substitute that would require substantial changes in the Project's design.

H. Approval of Substitutes:
1. Substitutes are approved only via issuance of an appropriate Field Order or Change Order in accordance with Section 01 26 00 - Contract Modification procedures.

2. Approval of a substitute does not relieve Contractor from obligation to comply with the Contract Documents, including submitting Shop Drawings, Samples, and other Submittals in accordance with the Contract Documents.

1.4 SUBSTITUTE MATERIALS AND EQUIPMENT

A. In addition to other requirements of this Section and elsewhere in the Contract Documents, substitution requests for substitute materials or equipment shall include:

1. Manufacturer and Location:
   a. Name and address of manufacturer of the proposed substitute. Indicate country where manufacturer is incorporated and owned.
   b. Companies and brands owned by or affiliated with manufacturer.
   c. Name of manufacturers of principal component items, such as motors, bearings, and similar items.
   d. Location where the items would be manufactured, including country and address. Indicate the total percentage of the items' value that will be manufactured outside of the United States and its territories.
   e. Name, address, and driving distance from the Site of:
      1) Manufacturer's sales representative.
      2) Nearest service center offering full array of service capabilities.
      3) Warehouse or other location where spare parts for the proposed substitute are available.
   f. Number of years that manufacturer has actively participated the North American market.
2. Proposed Materials and Equipment:
   a. Model designation and quantity of each proposed for the Work.
   b. Manufacturer's literature for proposed substitute, with description of the materials and equipment.
   c. Performance information and representative test data.
   d. Indication of reference standards with which materials and equipment comply.
   e. Preliminary process and instrumentation diagrams (P&ID), where applicable.
   f. Identification of hazardous materials, including Constituents of Concern, used in the materials and equipment, and associated permitting or licensing required.
   g. Manufacturer's standard warranty and applicable, proposed special or extended warranties, including indication of specific entities that will be beneficiary of such warranties.
   h. Complete list of proposed deviations from requirements of the Contract Documents.
   i. Itemized comparison of specified materials and equipment and proposed substitute, indicating:
      1) Size (physical dimensions) when: item is in use, when not in use, and space required for routine and major maintenance.
      2) Weight and loading at supports, when item is full and empty.

         Materials of construction.
3. Operation requirements, including:
   a. Anticipated consumption of each item of: Electricity, other energy sources, water, chemicals (indicate each), and other needs for operation at the Site.
   b. Typical labor required for operation and associated skill level.

c. Description of remote monitoring and control capabilities, as applicable.

4. Maintenance requirements, including:
   a. Anticipated life in the service and environment required.
   b. Frequency and general scope of routine and major maintenance typically necessary.
   c. Typical labor requirements and general qualifications of personnel performing routine maintenance.
   d. Major, associated equipment necessary for routing and major maintenance, including hoisting equipment type and capacity (when applicable).
   e. Availability, scope, cost, and general conditions of service and maintenance contracts, if any.
5. References for similar projects on which the materials and equipment were used. Indicate for each:
   a. Project Owner name, name of facility where installed, and name of project.
   b. City, state, and country of installation.
   c. Model number/size and quantity furnished and installed.
   d. Year of installation.
   e. Contact information for owner and design professional, including telephone numbers.
6. Other information required by the Contract Documents.
7. Other information reasonably requested by Engineer.

1.5 SUBSTITUTE CONSTRUCTION METHODS, PROCEDURES, OR SEQUENCES

A. Provisions of the General Conditions, as may be modified by the Supplementary Conditions, regarding substitutes of materials and equipment are hereby extended to apply to substitute methods, procedures, and sequences as shown or indicated in the Contract Documents.

B. In addition to other requirements of this Section and elsewhere in the Contract Documents, substitution requests for substitute methods, procedures, or sequences shall include:

1. Clear identification of the method, procedure, or sequence shown or indicated in the Contract Documents for which substitute is requested.
2. Detailed description of proposed substitute method, procedure, sequence, or combination thereof.
3. Reasons why substitute is proposed and benefits to the Project should the substitute be approved.
4. Detailed list of how the proposed substitute deviates from associated method, procedure, or sequence shown or indicated in the Contract Documents.
5. Impact of the substitute, if approved, on Owner’s or facility manager’s operations, when the Work is at an existing facility.
6. Effect on other contractors working at the Site, if substitute is approved.
7. Description of temporary equipment and temporary facilities needed, should the substitute be approved, including quantity of items, capacities, performance characteristics, permitting and approvals required by authorities having jurisdiction, and proposed location at the Site.
8. Written evaluation of how substitute method, procedure, or sequence complies with Laws and Regulations.

9. Drawings illustrating method, procedure, or sequence.
10. Materials to be used that contain Constituents of Concern or that have potential to cause or exacerbate a Hazardous Environmental Condition.
11. Other information and data required by the Contract Documents.
12. Other information reasonably required by Engineer.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

A. The following, bound after this Section's "End of Section" designation, are part of this Specifications Section:

1. Exhibit A - Substitution Request Form (one page).

END OF SECTION

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EXHIBIT A

Substitution Request Form

(One Item per each Form)

Project:	Date:	
Substitution Requestor:		
Contractor:		
Specification Section No:	Paragraph No. (i.e. 2.1.A.1.c):	Specified Item:
Proposed Substitution:		

Provide Product Data Sheets, Manufacturer's written installation instructions, drawings, diagrams, or any other information as an attached to this Form that will demonstrate the proposed substitution is an Approved Equal.

State differences between proposed substitutions and specified item. Differences include but are not limited to interrelationship with other items; materials, equipment, function, utility, life cycle costs, applied finished, appearances, and quality.

[_____][_____] [_____][_____] [_____][_____] [_____][_____]

Document how the proposed substitution is compatible with or modifies other systems, parts, equipment or components of the Project and Work under the Contract

[_____][_____] [_____][_____] [_____][_____]

Describe what effect the proposed substitution has on dimensions indicated on the Drawings and previously reviewed Shop Drawings?

[_____][_____] [_____][_____] [_____][_____]

Describe what effect the proposed substitution has on the Construction Schedule and Contract Time.

[_____][_____] [_____][_____] [_____][_____]

Describe what effect the proposed substitution has on the Contract Price. This includes all direct, indirect, impact and delay costs.

[_____][_____] [_____][_____] [_____][_____]

Manufacturer's guarantees of the proposed and specified items are:

☐ Same ☐ Different (explain on attachment)

The undersigned state that the function, utility, life cycle costs, applied finishes, appearance and quality of the proposed substitution are equal or superior to those of the specified item.

For use by Engineer:

☐ Accepted – eligible for approval via Change Order

☐ Accepted as Noted – approval via Change Order

☐ Not Accepted

[_____] [_____]
Date *(Telephone)*:

[_____]
Signature of PE, RA, or PG in Responsible Charge

[_____] *(Contractor's Signature)*

[_____] *(Contractor's Firm)*

[_____] *(Firms Address)*

[_____] *(Telephone)*

Comments:

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SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

1.1 SUMMARY

A. Section Includes:

1. This Specifications section expands upon provisions of the General Conditions, as may be modified by the Supplementary Conditions, and includes:
   a. Requests for interpretation.
   b. Written clarifications.
   c. Minor changes in the Work and Field Orders.
   d. Work Change Directives.
   e. Proposal Requests.
   f. Change Proposals.
   g. Change Orders.

1.2 GENERAL – APPLICABLE TO ALL PROVISIONS OF THIS SECTION

A. Submit Contract modification documents to Engineer, addressed to the contact person and contact information indicated in Section 01 33 00 - Submittal Procedures, and in accordance with Section 01 31 26 - Electronic Communication Protocols.

B. Retain at Contractor's office and at the Site complete copy of each Contract modification document, all interpretations and clarifications, related documents, and Engineer's response.

1.3 REQUESTS FOR INTERPRETATION

A. General.

1. Transmit written requests for interpretation to Engineer. Contractor and Owner may prepare and transmit requests for interpretation.
2. Prepare and transmit request for interpretation to obtain clarifications or interpretations of the Contract Documents. Report conflicts, errors, ambiguities, and discrepancies in the Contract Documents by requesting an interpretation.
3. Do not transmit request for interpretation when other form of communication is appropriate, such as Submittals, requests for approvals of substitutes, notices, ordinary correspondence, or other form of communication. Improperly prepared or inappropriate requests for interpretation will be returned without response or action by Engineer.
4. Do not submit request for interpretation or clarification when:
   a. answer may be obtained by observations at the Site; or.
   b. required information is clearly indicated in the Contract Documents; or.
   c. required information is included in industry standards referenced in the Contract Documents or Supplier's instructions that are consistent with the Contract Documents; or.
   d. are reasonably inferable from any of foregoing.
5. Engineer will return requests for interpretation without response for any of the following reasons:
   a. Request is regarding one of the items addressed in Paragraphs 1.3.A.3 and 4 of this Specifications section.
   b. Request is unclear or incomplete.
   c. Request was answered in Engineer's response to a prior request for interpretation.
   d. Request is related to construction means, methods, techniques, procedures, or sequences of construction that are not required by the Contract Documents.
   e. Request is related to safety and protection matters that are solely Contractor's responsibility.

f. Request resulted in whole or in part to lack of adequate coordination by Contractor, including coordination of Subcontractors and Suppliers.

g. Requests that are otherwise frivolous or unnecessary.

6. Should requests be categorized by Engineer as within the limits of Paragraphs 1.3.A.3, 4, or 5 of this Specifications Section, Engineer may recommend and Owner may withhold from payments due Contractor under the Contract set-off(s) sufficient to cover Owner's costs of Contractor's submittal of invalid, frivolous, unnecessary, or inappropriate requests for interpretation or clarification.

7. Contractor shall have sole financial responsibility for Contractor's costs for requests for interpretation or clarification that are submitted late, out of sequence, or that are unnecessary.

B. Procedure.

1. Transmit requests for interpretation in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Include with each request for interpretation a separate letter of transmittal.

2. If Engineer requests additional information to make an interpretation, entity requesting the interpretation shall transmit the information requested within 10 days, unless Engineer allows additional time, via correspondence referring to request for interpretation number.

3. Engineer will review and respond to requests for interpretation with reasonable promptness. Allow sufficient time for review and response.

4. Engineer will maintain log of requests for interpretation. Upon request, copy of log will be transmitted to requestor.

5. Engineer's response to requests for interpretation will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each response to a request for interpretation will include a separate letter of transmittal.

6. Engineer's response to each request for interpretation will be distributed to:

a. Contractor.

b. Owner.

c. Engineer.

7. If Contractor desires to appeal Engineer's interpretation or clarification, comply with the appeals procedure set forth in the General Conditions, as may be modified by the Supplementary Conditions.

8. Interpretations that One or Both Parties Believes Entails a Change to the Contract:

a. If Contractor or Owner believes that a change in the Contract Price or Contract Times or other change to the Contract is required as a result of Engineer's interpretation, so advise Engineer in writing before proceeding with the Work associated with the request for interpretation.

b. If, after this initial communication, either Owner or Contractor believes that change in Contract Price, Contract Times, both, or other relief with respect to the terms of the Contract is necessary, recourse shall be in accordance with the Contract Documents.

C. Preparation of Requests for Interpretation:

1. Prepare each request for interpretation on the "Request for Interpretation" form included with this Specifications section, or other form acceptable to Engineer.

2. In space provided on form, describe the interpretation requested. Provide additional sheets as necessary. Include text and sketches as required in sufficient detail to describe the need for interpretation.

3. When applicable, request for interpretation shall include Contractor's recommended resolution.

1.4 WRITTEN CLARIFICATIONS

A. General:

1. Written clarifications, when required, will be initiated and issued by Engineer.
2. Written clarifications do not change the Contract Price or Contract Times, and do not alter the Contract Documents.
3. Written clarifications will be issued as correspondence or using clarification notice form acceptable to Engineer, with additional information as required.

B. Procedure.

1. Engineer's written clarifications will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section.
2. Each written clarification will be distributed to:
   a. Contractor.
   b. Owner.
   c. Engineer.
3. If Contractor desires to appeal Engineer's interpretation or clarification, comply with the appeals procedure set forth in the General Conditions, as may be modified by the Supplementary Conditions.
4. Written Clarifications that One or Both Parties Believes Entails a Change to the Contract:
   a. If Contractor or Owner believe that a change in the Contract Price or Contract Times or other change to the Contract is required as a result of Engineer's written clarification, so advise Engineer in writing before proceeding with the Work associated with the written clarification.
   b. If, after this initial communication, either Owner or Contractor believes that change in the Contract Price, Contract Times, both, or other relief with respect to the terms of the Contract is necessary, recourse shall be in accordance with the Contract Documents.
5. If Engineer's written clarification is unclear, prepare and transmit a request for interpretation in accordance with the Contract Documents.

1.5 MINOR CHANGES IN THE WORK AND FIELD ORDERS

A. General:

1. Field Orders, when required, will be initiated and issued by Engineer.
2. Field Orders authorize minor changes in the Work but do not change the Contract Price or Contract Times.
3. Field Orders will be in the form of Engineers Joint Contract Documents Committee document EJCDC C-942, "Field Order".
4. Engineer will maintain a log of Field Orders issued. Copy of Engineer's log of Field Orders will be transmitted to Contractor or Owner upon request.

B. Procedure:

1. Field Orders will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each Field Order will include a separate letter of transmittal.
2. Each Field Order will be distributed to the following:
   a. Contractor.
   b. Owner.
   c. Resident Project Representative (RPR).
   d. Engineer.
3. Field Orders that One or Both Parties Believes Entails a Change to the Contract Price or Contract Times:

a. If Contractor or Owner believes that a change in the Contract Price or Contract Times or other change to the Contract is required as a result of a Field Order, so advise Engineer in writing before proceeding with the Work associated with the Field Order.
b. If, after this initial communication, Contractor believes that change in Contract Price, Contract Times, both, or other relief with respect to the terms of the Contract is necessary, recourse shall be in accordance with the Contract Documents.

4. If the Field Order is unclear, submit request for interpretation.
5. If Owner disagrees with the Field Order, Engineer may issue a revised or amended Field Order, or a Change Order or Work Change Directive may be issued.

1.6 WORK CHANGE DIRECTIVES

A. General:

1. Work Change Directives, when issued, order additions, deletions, or revisions to the Work. When issued, Contractor shall promptly implement the changes ordered in the associated work Change Directive.
2. Work Change Directives do not change the Contract Price or Contract Times but are evidence that the parties to the Contract expect that the change ordered or documented by the Work Change Directive will be incorporated in subsequently issued Change Order following agreement by the parties as to the Work Change Directive's effect, if any, on the Contract Price, Contract Times, or both.
3. Work Change Directives will be in the form of EJCDC C-940, "Work Change Directive".

B. Procedure.

1. Work Change Directives signed by Owner and Engineer will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each Work Change Directive will include a separate letter of transmittal. Signed Work Change Directives will be transmitted to:
   a. Contractor.
   b. Owner.
   c. Engineer.
   d. Resident Project Representative.
   e. Contractor: One original.
   f. Owner: One original.
   g. Engineer: One original.
   h. Resident Project Representative (RPR): One copy.
2. Documentation of Costs:
   a. Promptly following receipt of the Work Change Directive:
      1) Advise Engineer and Owner in writing of the anticipated quantity and types of construction equipment and machinery required or anticipated for the associated Work.
      2) Advise Engineer and Owner in writing of which construction equipment and machinery is owned by the Contractor or Subcontractor and which is, or will be, rented from an equipment rental firm.
      3) When construction equipment and machinery is rented from a rental firm, transmit to Engineer and Owner copy of the associated rental agreements(s) pertinent to the Work ordered by the Work Change Directive.
      4) For all construction equipment and machinery, indicate to Engineer and Owner whether each item is required only for the Work ordered by the Work Change Directive and whether each item is being, or will be, used for other Work on the Project or other projects for Owner.
      5) Advise Engineer and Owner in writing of information on anticipated temporary materials (including items such as temporary support of excavations, scaffolding,

temporary barriers, temporary plates covering excavations, and other temporary materials) to the same extent as that required for construction equipment and machinery.

b. When basis of payment for Work ordered under a Work Change Directive will be paid as Cost of the Work plus a fee, or when otherwise required by Engineer, document for the Work performed under each separate Work Change Directive, for each day, the following:
   1) Number and labor classifications of workers employed and hours worked each day on the Work ordered via the Work Change Directive.
   2) Construction equipment used, including manufacturer, model, and year of manufacture, and number of hours such equipment was onsite and used each day for the Work under the Work Change Directive. Indicate where the equipment was used for other Work under the Contract and idle time.
   3) Temporary materials; furnish the same information as required for construction equipment and machinery. Where rental costs of such items approaches the purchase cost of such item, or when otherwise requested by Engineer, furnish evidence, satisfactory to Engineer, of the purchase price of such temporary materials.
   4) Consumables and similar materials used.
   5) Suppliers' receipts, bills, or invoices for and descriptions of materials and equipment incorporated into the Work.
   6) Invoices and labor and equipment breakdowns for Subcontractors.
   7) Other information required by Owner or Engineer.
   8) Transmit such documentation as a Change Proposal promptly after such documentation is available to Contractor. Actively pursue Subcontractors and Suppliers for required documentation to promptly furnish required documentation to Engineer.

c. Separately track and document Work performed in accordance with each Work Change Directive and Work performed under stipulated price methods of compensation (including lump sums and Unit Price Work).

d. Submit such information in a format acceptable to Engineer.

3. Documentation of Time:
   a. General:
      1) Contractor will be entitled to change of Contract Times Work ordered by a Work Change Directive in accordance with the requirements of the General Conditions, as may be modified by the Supplementary Conditions.
      2) Contractor will be entitled to a change in Contract Times only when the Work ordered by the Work Change Directive is implemented promptly and affects the Contractor's ability to comply with the Contract Times.
   b. Requirement Documentation: Submit the following as part of the Change Proposal documenting price-related impact of the Work ordered by the Work Change Directive:
      1) Statement on whether the subject Work affected Contractor's ability to comply with the Contract Times.
      2) If Contractor's ability to comply with the Contract Times was so affected, indicate the effect on each of the relevant Contract Times.
      3) Document that Contractor acted promptly and properly upon receipt of the Work Change Directive to promptly implement the Work ordered thereby.
   4) Time impact analysis for the affected Work, in accordance with Section 01 32 16 - Construction Progress Schedule.
   5) Other time-related documentation required by Engineer.

1.7 PROPOSAL REQUESTS

A. General:

1. Proposal Requests may be initiated by Engineer or Owner.
2. Proposal Requests are for requesting the effect on the Contract Price and the Contract Times and other information relative to contemplated changes in the Work. Proposal Requests do not authorize changes or variations in the Work, and do not change the Contract Price or Contract Times or terms of the Contract.
3. Proposal Requests will be furnished using the “Proposal Request” form included with this Specifications section.

B. Procedure:

1. Proposal Requests will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Section. Each Proposal Requests will include a separate letter of transmittal.
2. Each signed Proposal Request will be transmitted to the following:
   a. Contractor.
   b. Owner.
   c. Resident Project Representative (RPR).
   d. Engineer.
3. Transmit request for interpretation to obtain clarification of conflicts, errors, ambiguities, and discrepancies in Proposal Request.
4. Upon receipt of Proposal Request, Contractor shall prepare and transmit to Engineer a Change Proposal, in accordance with the Contract Documents, for the proposed Work described in the Proposal Request.

1.8 CHANGE PROPOSALS

A. General:

1. Prepare and transmit written Change Proposal to Engineer in response to each Proposal Request; or when Contractor believes a change in the Contract Price, Contract Times, both, or other change to the terms of the Contract is required; or to appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract.

B. Procedure:

1. Prepare and transmit Change Proposals within time limits indicated in the General Conditions, as may be modified by the Supplementary Conditions.
2. Submit only one Change Proposal for each change issue, unless Engineer requires additional information or clarification. Do not submit repeated Change Proposals for the same change issue. Rather, when Contractor is dissatisfied with Engineer’s decision on a Change Proposal, recourse is set forth in the General Conditions, as may be modified by the Supplementary Conditions, and elsewhere in this Article.
3. Transmit Change Proposals in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Include with each Change Proposal all required supporting documentation and a separate letter of transmittal.
4. Engineer’s Review and Requests for Additional Information:
   a. Engineer will review and act on each Change Proposal in accordance with, and within the time limits indicated in, the General Conditions, as may be modified by the Supplementary Conditions.
   b. When, Engineer requests additional information to render a decision, submit required information within five days of receipt of Engineer’s request, unless Engineer allows

more time. Submit the required information via correspondence that refers to the specific Change Proposal number.

c. Owner shall transmit to Engineer such comments, if any, that Owner has on the Change Proposal, within 10 days of Owner's receipt of the Change Proposal.

d. Engineer will render a written decision on the Change Proposal or take other action in accordance with the General Conditions, as may be modified by the Supplementary Conditions.

e. Engineer's response to Change Proposals will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section, the General Conditions, and the Supplementary Conditions.

5. Engineer's response to each Change Proposal will be distributed to:
   a. Contractor.
   b. Owner.
   c. Resident Project Representative (RPR).
   d. Engineer.
6. If Change Proposal is recommended for approval by Engineer and is approved by Owner, a Change Order will be issued or, when applicable, an appropriate use of an allowance (already included in the Contract Price) will be authorized by Owner.
7. If parties do not agree on terms for the change, Owner or Contractor may file a Claim against the other, in accordance with the General Conditions, as may be modified by the Supplementary Conditions.

C. Preparation of Change Proposals:

1. Each Change Proposal shall be submitted on the "Change Proposal" form included with this Specifications section, or other form acceptable to Engineer.
2. In space provided on Change Proposal form:
   a. Describe scope of each proposed change. Include text and sketches on additional sheets as required to provide detail sufficient for Engineer's review and response. If a change item is submitted in response to Proposal Request, write in as scope, "In accordance with Proposal Request No." followed by the Proposal Request number. Submit written clarifications, if any, to scope of change.
   b. Submit justification for each proposed change. If change is in response to proposal request, write in as justification, "In accordance with Proposal Request No." followed by the Proposal Request number.
   c. Indicate the total change in the Contract Price and Contract Times for each separate change item included in the Change Proposal.
3. Proposed Effect on Contract Price: Unless otherwise directed by Engineer, attach to the Change Proposal detailed breakdowns of pricing (Contractor's cost and Contractor's fee) including:
   a. List of Work tasks to accomplish the change.
   b. For each task, labor cost breakdown including labor classification, total hours per labor classification, and hourly cost rate for each labor classification. Where overtime is included, indicate the overtime hours, labor classifications, and associated overhead rates.
   c. Construction equipment and machinery to be used, including manufacturer, model, and year of manufacture, and number of hours for each. Indicate whether the construction equipment or machinery is owned by Contractor, Subcontractor, or leased from a rental firm; if leased, include with the Change Proposal a copy of the rental agreement. Indicate whether the construction equipment and machinery is already onsite and used for other activities, or whether it is required solely for the Work in the contemplated change. Indicate overtime hours budgeted, if any, and the associated cost rate for overtime compared with the straight-time rate.

d. Indicate temporary materials required, including description of extent, scope, and quality, and associated cost. Temporary materials include items such as temporary sheeting for support of excavations, scaffolding, temporary plates to cover open excavations, temporary barriers, and other temporary items. Indicate ownership or source of such items. Include copy of rental agreement if rented from a third-party rental firm in which neither Contractor nor any Subcontractor has a financial interest. Indicate intended duration of use for such items and purchase cost of such items.

e. Detailed breakdown of cost of materials and equipment to be incorporated into the Work, including quantities, unit costs, and total cost, with Supplier's written quotations. When requested by Engineer, submit quotes by multiple prospective Suppliers.

f. Breakdowns of each Subcontractors' pricing, including labor, construction equipment and machinery, temporary materials, and materials and equipment incorporated into the Work, other costs, and Subcontractor fees (e.g., overhead and profit). Breakdown of Subcontractors' pricing shall be the same level of detail as that for Contractor.

g. Breakdown of other costs eligible, in accordance with the General Conditions and the Supplementary Conditions under "Cost of the Work" provisions.

h. Other information required by Engineer.

i. Contractor's fees (overhead and profit) applied to eligible Contractor costs and eligible Subcontractor costs.

4. Proposed Effect on Contract Times: Unless otherwise directed by Engineer, attach to the Change Proposal detailed information substantiating the proposed change in Contract Times, including:

a. Time impact analysis required by Section 01 32 16 - Construction Progress Schedule.

b. Indication of whether the Work associated with the contemplated change will affect Contractor's ability to comply with the Contract Times.

c. Other time-related information requested by Engineer.

1.9 CHANGE ORDERS

A. General:

1. Change Orders will be recommended by Engineer (when required by the General Conditions) and will be signed by Owner and Contractor (subject to the General Conditions related to a party withholding its signature from a contractually-required Change Order)), to authorize additions, deletions, or revisions to the Work, changes to the Contract Price, changes in the or Contract Times, changes to the terms of the Contract, or a combination thereof.

2. Change Orders will be in the form of EJCDC C-941, "Change Order".

B. Procedure.

1. Change Orders for signature by Contractor will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each Change Order will include a separate letter of transmittal. Contractor shall print three originals of Change Order for Contractor's signature.

2. Contractor shall promptly sign each original Change Order and, within five days of receipt, deliver all originals to Engineer.

3. Engineer will sign each original Change Order and forward them to Owner.

4. After approval and signature by Owner, original Change Orders will be distributed as indicated below.

5. Original, signed Change Orders will be distributed as follows:

a. Contractor: One original.

b. Owner: One original.

c. Engineer: One original.

d. Resident Project Representative (RPR): One copy.

6. Upon Contractor's receipt of the fully-signed Change Order, promptly perform the Work ordered thereby in accordance with the Contract Documents and the Progress Schedule accepted by Engineer.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

A. The forms listed below and bound following this Specifications section's "End of Section" designation, are part of this Specifications section:

1. Request for Interpretation form (one page).
2. Proposal Request form (one page).
3. Change Proposal form (one page).

END OF SECTION

REQUEST FOR INTERPRETATION

Owner: _____

Project Name: _____

Contractor: _____ RFI No. [_____]

Date Transmitted: _____Date Received: [_____]

Date Response Requested: _____ Date Response Transmitted: [_____]

Subject: _____ [_____]

Specification Section and Paragraph: _____

Drawing References: _____

INTERPRETATION REQUESTED:

Signature: _____ Date: [_____]

ENGINEER'S RESPONSE:

Signature: _____ Date: [_____]

PROPOSAL REQUEST

Owner: _____

Project Name: _____

Proposal Request No.: _____ Date: [_____]

Contract Name and No.: _____

Contractor: _____

Other Contracts Involved in Proposed Change: _____

TO CONTRACTOR: Please submit a complete Change Proposal for the proposed modifications described below. If the associated Change Proposal is approved, a Change Order or allowance authorization will be issued to authorize adjustment so the Contract. This Proposal Request is not a Change Order, Work Change Directive, Field Order, or an authorization to proceed with the proposed Work described below.

SCOPE OF PROPOSED CHANGE(S) IN THE WORK:

1. *[Title 1]*:
2. *[Title 2]*:
3. *[Title 3]*:

Attachments to this Proposal Request:

1. [None].

Proposal requested by: _____
HDR (Engineer)

Signature of Requestor: _____

CHANGE PROPOSAL

Owner: _____

Project Name: _____

Change Proposal No.: _____ Date: [_____]

Submitted in Response to Proposal No.: _____

Contractor Name and No.: _____

Contractor: _____

Subject: _____

_____

The following changes to the Contract are proposed:

SCOPE OF PROPOSED CHANGE TO CONTRACT: *(attach supporting information as required)*

1. *[Title 1]*:
2. *[Title 2]*:

JUSTIFICATION:

1. *[Title 1]*:
2. *[Title 2]*:

PROPOSED CHANGES IN CONTRACT PRICE AND CONTRACT TIMES:

We propose that the Contract Price and Contract Times be changed as follows:

For Contract Price, attach detailed cost breakdowns for Contractor and Subcontractors, Supplier quotations, and other information required.

For the Contract Times, state increase, decrease, or no change to Contract Times for Substantial Completion, readiness for final payment, and Milestones, if any. If increase or decrease, state specific number of days for changes to the Contract Times. Submit supporting data, including time impact analysis for the Progress Schedule.

		Contract Times (days)	
Description	**Amount**	**Substantial**	**Final**
1. [Title 1]	$0.00	0	0
2. [Title 2]	$0.00	0	0
Total This Change Proposal	**$0.00**	**0**	**0**

Changes to Milestones, if any: [_____][_____]

Contractor represents that supporting data attached to this Change Proposal are accurate and complete. The requested time or price adjustment indicated in this Change Proposal is the entire adjustment to which Contractor believes it is entitled as a result of the proposed change(s) indicated herein.

Change Proposal by: _____

Signature of Proposer: _____

SECTION 01 29 73
SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for the Schedule of values, including:
   a. Applicability.
   b. General provisions for Schedules of Values.
   c. Format, organization, and content of Schedule of Values.

B. Related Requirements: Include but are not necessarily limited to:

1. Section 01 22 00 - Measurement and Payment.
2. Section 01 29 76 - Progress Payment Procedures.

1.2 PRICE AND PAYMENT PROCEDURES

A. Schedule of Values and Payment – General:

1. Contractor shall prepare and submit to Engineer for acceptance Schedule of Values that presents (as applicable): (a) an appropriate, detailed breakdown of the price of lump sum bid/pay items. The total of all Work among the various bid/pay items shall equal the Contract Price.
2. For each item of lump sum Work, the Schedule of Values shall, establish in detail the portion of the Contract Price allocated to each component of such Work.
3. Upon request of Engineer, promptly furnish data and information that substantiates and supports the amounts indicated in the Schedule of Values.
4. Submit preliminary Schedule of Values to Engineer for initial review. Contractor shall incorporate Engineer's comments into the Schedule of Values and resubmit to Engineer. Engineer may require corrections and re-submittals until Schedule of Values is acceptable.
5. Schedule of Values may be used, where appropriate, as a basis for negotiating price of changes, if any, in the Work.

B. Applicability:

1. Lump Sum Work:
   a. For Work paid on a lump sum basis, progress payments will be on the basis of Work performed in accordance with the Contract Documents, for each line item in the Schedule of Values, as recommended to Owner by Engineer..

1.3 ADMINISTRATIVE PROCEDURES

A. General Provisions for Schedules of Values:

1. This Section augments requirements for the Schedule of Values, indicated in the General Conditions, as may be augmented by the Supplementary Conditions.

1.4 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Submit to Engineer the Schedule of Values in the form and quantity required in Section 01 33 00 - Submittals, and in accordance with Section 01 31 26 - Electronic Communication Protocols.
2. Content of Schedule of Values Submittals shall be in accordance with this Section.
3. Timing of Submittals:
   a. Preliminary Schedule of Values:

1) Submit preliminary Schedule of Values within time limit indicated in the General Conditions.

b. Initial Acceptable Schedule of Values:

1) Revise the preliminary Schedule of Values in accordance with Engineer's comments.

2) Contractor will not be eligible for progress payment until acceptable Schedule of Values is submitted in accordance with the Contract Documents.

3) Submit the Schedule of Values acceptable to Engineer in accordance with the General Conditions.

c. Updates: Submit updated Schedule of Values when:

1) The Contract Price has changed.

2) Requested by Engineer

1.5 FORMAT, ORGANIZATION, AND CONTENT OF SCHEDULE OF VALUES

A. Organization and Major Elements of Schedule of Values.

1. Prepare Schedule of Values on the "progress estimate" or "continuation sheets", as applicable, of the Application for Payment form indicated in Section 01 29 76 - Progress Payment Procedures.
2. Include in Schedule of Values itemized list of Work for each major work area included in the Work, for each lump sum payment item included in the Contract.
3. Organization in Accordance with Specification Sections:
   a. Within each work area, organize the Schedule of Values by the various Specifications section numbers and titles included in the Contract Documents.
   b. Label each row in the Schedule of Values with the appropriate Specifications section number. Include an amount for each row in the Schedule of Values.
   c. List sub-items of major materials, equipment, or systems, as appropriate or when requested by Engineer.

B. Requirements for both the preliminary Schedule of Values Submittal and the Schedule of Values Submittal for Engineer's acceptance are:

1. Subcontracted Work:
   a. Schedule of Values shall indicate division of Work between Contractor and each Subcontractor.
   b. Line items for Work to be performed by each Subcontractor shall include the word, "(SUBCONTRACTED)" and the name of the Subcontractor once the associated subcontract is signed and effective.
2. Apportionment between Materials and Equipment, and Installation: Schedule of Values shall include separate apportionment of costs for:
   a. Cost of materials and equipment to be incorporated into the completed construction.
   b. Cost of delivery, handling, and storage of materials and equipment to be incorporated into the completed construction.
   c. Cost of temporary materials (such as excavation supports, scaffolding, and other temporary materials), and their associated delivery, handling, and storage costs, if any.
   d. Cost of rentals of construction equipment and machinery, whether owned by Contractor or Subcontractor or leased from a third-party equipment rental entity.
   e. Cost of installing materials and equipment.
   f. Travel and subsistence costs, if any.
   g. Other costs used in preparing the Bid by Contractor and each Subcontractor.
3. Sum of individual line item amounts indicated on the Schedule of Values shall equal the total of associated bid/pay item. Sum of bid/pay item totals in the Schedule of Values shall equal the total Contract Price.

4. Overhead and Profit:
    a. Include in each line item a directly proportional amount of Contractor's overhead and profit in the Contract Price.
    b. Do not include overhead and profit as separate line item(s).
5. Bonds and Insurance Costs:
    a. Include line item for bonds and insurance in bid/pay item for All Other Work (Bid Item No. 2), in amount not greater than 1.5 percent of the total Contract Price.
    b. When greater than the amount stipulated immediately above is proposed by Contractor in the Schedule of Values, submit to Engineer documentation substantiating the proposed amounts. Submit to Engineer such documentation when otherwise requested by Engineer.
    c. When Contractor has furnished performance and payment bonds and evidence of insurance acceptable to Owner and in accordance with the Contract Documents, entire amount for bonds and insurance may be applied for in the first Application for Payment.
6. Construction Support, Project Management, and Administrative Cost Elements:
    a. Costs under this category are sometimes informally referred to as "field overhead", but are Project costs rather than costs related to Contractor's general business operations.
    b. Include in the Schedule of Values relevant line items and amounts for work and services required by the General Conditions and specific Division 01 Specifications sections, such as:
        1) Project management costs.
        2) Onsite superintendence and supervision costs.
        3) Itemized list of Work by work area, as applicable, for costs associated with coordination with the Owner's operations, including required sequencing, as set forth in the Contract Documents.
        4) Updating the construction Progress Schedule, preparing time impact analyses, and preparing recovery schedules. Preparation of preliminary Progress Schedule and the initial ("baseline") Progress Schedule acceptable to Engineer are part of mobilization.
        5) Updates of the Schedule of Submittals.
        6) Contractor's safety representative and ongoing implementation of Contractor's Site-specific health and safety plan (SSHASP). Establishing the SSHASP is part of mobilization.
        7) Ongoing compliance with permits (when applicable). Contractor's securing of required work permits is part of mobilization.
        8) Ongoing cost for temporary utilities and temporary facilities. Establishing such services and facilities is part of mobilization.
        9) Ongoing costs for temporary security.
        10) Ongoing site maintenance, such as temporary controls (dust, air pollution, water pollution, solid waste control, pest and rodent control, temporary erosion and sediment controls, and others), snow and ice removal, and similar activities.
        11) Field engineering and surveying.
        12) Progress cleaning and cleaning for Substantial Completion.
        13) Record documents (preparation, maintenance, and submittal).
            a) If adequate record documents are maintained, up to 50 percent of the value of the record documents line item will be eligible for payment, spread evenly over those progress payments in which construction at the Site is performed.
            b) Remainder of Project record documents line item will be eligible for payment when complete record documents are submitted in accordance with the Contract Documents.

c) If record documents submitted are unsatisfactory to Engineer, amount may be reduced via set-offs in accordance with the Contract Documents.

14) Other items required by Engineer.

c. Include such items in Applications for Payment on payment schedule acceptable to Engineer.

d. Such line items in the Schedule of Values shall exclude any and all costs associated with Contractor's permanent place(s) of business, personnel stationed at permanent office(s), salaries and bonuses of executive and administrative personnel not directly performing work on the Project, and general business expenses, all of which are part of Contractor's overhead costs.

7. Mobilization and Demobilization:

a. Include separate line items under each appropriate lump sum bid/pay item for mobilization and demobilization.

b. Document for Engineer the activities included in mobilization and demobilization line items.

c. Mobilization includes:

1) Obtaining Owner's acceptance of proposed Subcontractors and Suppliers and entering into subcontracts and purchase orders needed to start the Work.

2) Preparing and obtaining Engineer's approval of Shop Drawings.

3) Preparing and obtaining Engineer's acceptance of schedules, including Progress Schedule, Schedule of Submittals, and Schedule of Values.

4) Preconstruction conference(s) required by the Contract Documents.

5) Establishing Contractor's Site-specific health and safety plan, preconstruction activities needed to start implementing Contractor's safety programs, and verifying status of training of construction workers and personnel and condition of construction equipment, machinery, and tools.

6) Submitting acceptable emergency contact information

7) Obtaining required permits needed to start the Work.

8) Initial establishment of temporary utilities and temporary facilities.

9) Establishing Contractor's field office and sheds, Contractor's storage areas, staging and laydown areas, and other areas necessary to perform the Work.

10) Establishing construction equipment, machinery, and tools at the Site.

11) Providing initial temporary controls.

12) Other mobilization acceptable to Engineer.

d. Mobilization will be limited to 5 percent of the Contract Price.

1) Owner will pay 50 percent of the Mobilization lump sum price when 5 percent of the original Contract Amount is earned.

2) Owner will pay the remaining 50 percent of the Mobilization lump sum price when 10 percent of the original Contract Amount is earned.

3) Should Contractor propose mobilization in an amount greater than the limit indicated in this paragraph or on an alternative schedule from that indicated in this paragraph, submit to Engineer for acceptance information and documentation sufficient to support and substantiate the proposed amount and payment schedule for mobilization.

a. Demobilization includes:

1) Removal from the Site and adjacent areas of excess materials and equipment.

2) Removal of temporary controls, temporary facilities, temporary barriers, and similar materials and equipment.

3) Removal of temporary access roads and parking areas not part of permanent pavement or otherwise allowed to remain by Owner, including temporary traffic controls established for construction vehicles and equipment.

4) Removal of all field office and sheds, storage areas, staging and laydown areas, and other areas needed to perform the Work and restoration of such areas.
5) Removal from the Site of all construction equipment, machinery, tools, Contractor's containers, temporary fuel storage tanks, and similar items.
6) Closeout of permits on which Contractor is a permittee or co-permittee.
7) Final cleaning.
8) Furnishing required closeout documents.
9) Other costs and effort by Contractor for demobilization.

b. Demobilization shall be not less than 1 percent of the Contract Price and shall be included with the Application for Payment following Substantial Completion, or other schedule acceptable to Engineer.

8. Costs for Submittals, field quality control activities, and training of operations and maintenance personnel shall be as follows, unless otherwise accepted by Engineer:
   a. Submittals: Up to 8.0 percent of cost (including all associated overhead and profit) of each equipment item, exclusive of transportation and installation costs associated therewith, may be allocated to preparation of Shop Drawings, Samples ,and other Submittals required for release for purchase, fabrication, or delivery (as applicable) and may be included in the Application for Payment following Engineer's approval of Shop Drawings (and acceptance of other Submittals, as applicable) required for fabricating or purchasing for that item for the Work.
   b. Field Quality Control: Up to 3.0 percent of total cost of each item (including all associated overhead and profit), including materials and equipment, and installation, may be apportioned to specified or required field quality control activities (including required testing and inspections) and included in the Application for Payment following Engineer's acceptance of the associated written field quality control report Submittal(s).
   c. O&M Manual Submittals and Training: Up to a total of 4.0 percent of equipment cost (including all associated overhead and profit), exclusive of transportation and installation costs, may be apportioned to operations and maintenance manuals and training of operations and maintenance personnel, which may be included in the Application for Payment following completion of training for the associated item.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 29 76
PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for Contractor's progress payments.

B. Scope:

1. Contractor's requests for payment shall be in accordance with the Agreement, General Conditions and Supplementary Conditions, and the Specifications.
2. Form: Applications for Payment shall be the Engineers Joint Contract Documents Committee (EJCDC) document EJCDC C-620, "Contractor's Application for Payment" (2018 edition or later) or other form acceptable to the Owner and Engineer.

1.2 CONTENT AND PROCEDURE FOR REQUESTING PROGRESS PAYMENTS

A. Procedure:

1. Review with Owner Representative (OR) quantities and the Work proposed for inclusion in each progress payment request. Application for Payment shall cover only the Work and quantities recommended by the OR.
2. Contractor will review with Engineer or OR the status of Project record documents, in connection with Engineer's review of each Application for Payment. Failure to maintain record document current will be cause for Engineer to recommend a reduction in payment for record documents in accordance with Section 01 29 73 - Schedule of Values, and will entitle Owner to set-offs in accordance with the Contract Documents.
3. Submit to Engineer an electronic copy (PDF), with Contractor's signature, of each complete Application for Payment and other documents to accompany the Application for Payment.
4. Engineer will act on request for payment in accordance with the General Conditions and Supplementary Conditions.

B. Content: Each request for payment shall include:

1. Completed Application for Payment form, including summary/signature page, progress estimate sheets, and stored materials summary. Progress estimate sheets shall have the same level of detail as the Schedule of Values.
2. Documentation for Stored Materials and Equipment:
    a. For materials and equipment not incorporated in the Work but suitably stored, submit documentation in accordance with the General Conditions and Supplementary Conditions.
    b. Legibly indicate on invoice or bill of sale the specific stored materials or equipment included in the payment request and corresponding bid/payment item number for each and the Supplier price for each item.
3. Partial Release or Reduction of Retainage:
    a. For each Application for Payment where Contractor requests partial release or reduction of retainage in any amount (other than request for final payment), submit with associated progress payment request consent of surety to partial release or reduction of retainage, duly completed by Contractor and surety.
    b. Acceptable form includes AIA G707A, "Consent of Surety to Reduction in or Partial Release of Retainage" (1994 or later edition), or other form acceptable to Owner.
    c. For payment requests that include reduction in or payment of retainage in an amount greater than that required by the Contract Documents, obtain Owner's concurrence for

partial release or reduction in retainage prior to submitting such Application for Payment.

C. Final Payment:

1. Requirements for request for final payment are in the General Conditions, as may be modified by the Supplementary Conditions, and Section 01 77 19 - Closeout Requirements.

1.3 ADDITIONAL PROCEDURES FOR PAYMENT FOR STORED MATERIALS AND EQUIPMENT

A. Other Requirements for Stored Items: Regardless of storage location, perform the following for stored materials and equipment for which payment is sought:

1. Clearly mark each stored container, crate, or item as follows: “Property of City of Blair” using permanent marking. Such marking shall not blemish or deface the finish of items that will be exposed to view after installation at the Site.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION – (NOT USED)

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for:
   a. Project coordination when the Project is implemented using a single prime construction Contract.
   b. Coordination meetings.
   c. Coordination drawings and layout drawings.

B. Scope:

1. Contractor shall coordinate the Work, whether performed by Contractor's employees or by Subcontractors, Suppliers, or others for whom Contractor is responsible, to provide Work in accordance with the Contract Documents.
2. Coordinate the Work with testing entities and inspectors (whether hired by Contractor, Owner, or others) employed on the Project, forces of Owner and facility manager (if other than Owner), and other contractors retained by Owner or facility manager, and other entities with which the Work needs to be coordinated.
3. Requirements for preconstruction meetings are in the General Conditions (as may be modified by the Supplementary Conditions) and Section 01 31 19 - Project Meetings.

C. Related Requirements:

1. Include, but are not necessarily limited to, the following:
   a. Section 01 11 00 - Summary of Work.
   b. Section 01 31 19 - Project Meetings.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordination – General:
   a. In accordance with the General Conditions as may be modified by the Supplementary Conditions, and Section 01 11 00 - Summary of Work, Contractor shall coordinate the Work with, and cooperate with, other contractors, utility owners and their contractors, owners of transportation facilities and their contractors, Owner's and facility manager's workers at the Site, and other entities working at or adjacent to the Site.
2. Advise other contractors (if any) of schedule for the Work to allow other contractors sufficient time to perform their work that must be performed prior to the Work. Coordinate and communicate with other contractors and other entities when the Work must be performed prior to the work of others and make good-faith efforts to avoid delaying work of others.
3. Coordination, Inspection, and Observation to Ensure Quality:
   a. Contractor shall continuously inspect the Work throughout the Project to ensure that the Work complies with the Contract Documents.
   b. Inspect (including testing, where required or necessary) substrates and surfaces on which the Work will be constructed, applied, adhered, or attached, to ensure substrate and surface conditions are appropriate for providing Work in accordance with the Contract Documents.
4. Contractor is not responsible for, or liable for, damage or loss unless damage or loss resulted from action, inaction, or negligence of Contractor, or Subcontractor(s), Supplier(s),

or other entity for whom Contractor is responsible. This provision does not mitigate or reduce Contractor's responsibility for security for the Work, in accordance with the Contract.

B. Coordination Meetings:

1. Contractor's Coordination Meetings:

a. Schedule, attend, chair, and actively participate in coordination meetings deemed appropriate by Contractor for purposes of coordinating the Work of Contractor's employees, Subcontractors, Suppliers, and others for whom Contractor is responsible.

b. Frequency, location, date, time, and duration of Contractor's coordination meetings are at Contractor's discretion. Record and distribute to attendees and other members of Contractor's team a record of topics discussed, decisions made, and other relevant matters at Contractor's coordination meetings.

c. Engineer, Resident Project Representative (if any), Owner, and Owner's Site Representative (if any) will not attend Contractor's coordination meetings.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for the following types of conferences and meetings required during the Work:
   a. Requirements applicable to all conferences.
   b. Preconstruction conference(s).
   c. Pre-shutdown conference.
   d. Closeout conference(s).
   e. Other construction conferences.

B. Scope:

1. This Section addresses the types of conferences indicated in Paragraph 1.1.A of this Section.
2. Requirements for coordination meetings, including meetings between Contractor and its Subcontractors and Suppliers, are in Section 01 31 13 - Project Coordination.
3. Requirements for pre-installation conferences, if any, are in the Specifications of Divisions 02-49.

C. Related Requirements: Include, but are not necessarily limited to:

1. Section 01 29 76 - Progress Payment Procedures.
2. Section 01 31 13 - Project Coordination.
3. Section 01 32 16 - Construction Progress Schedule.

1.2 REQUIREMENTS APPLICABLE TO ALL CONSTRUCTION CONFERENCES

A. Requirements of this Article apply to all conferences required under this Section.

B. Participants:

1. Lead participant for each participating entity of each conference shall be authorized to represent their employer and its interests on the Project and shall be sufficiently familiar with the status of their employer's work, services, and activities related to the Project for purposes of the associated conference.
2. Required participants for each type of conference are indicated elsewhere in this Section.
3. Failure to participate by required participants:
   a. Should a required participant be unavailable for a required conference, inform the designated conference chair not less than one day prior to start of the subject conference. Furnish both oral (either in person or via telephone) and written communication regarding planned non-attendance. Expressly indicate the authorized substitute person who will be empowered to represent that entity at the conference.
   b. Failure to properly inform the conference chair as required, or repeated or habitual non-participation by mandatory participants, will be grounds for Owner to withhold (as "set-offs") amounts for mandatory meeting attendance from payments due Contractor under the Contract.
   c. Sending as a substitute lead participant an authorized representative who is ill-informed of their organization's work status and administrative matters related to the Project, or who is not properly authorized to represent their employer for all required matters indicated on the agenda, will be grounds for Owner to withhold payment, as set-offs, of amounts associated with such unpreparedness.

d. Should Contractor fail to attend without proper, advance notice to conference chair or furnish ill-prepared or unauthorized substitute lead participant, Contractor shall bear full responsibility, including cost- and time-related impacts, for lack of coordination, progress, and other, potentially adverse effects.

4. Conduct:
   a. Conference participants shall, at all times, exhibit appropriate, professional conduct and demeanor.
   b. Inappropriate conduct, including shouting, unprofessional language, threatening attitudes, or other types of insult or intimidation are unacceptable.
   c. Conference chair has the authority to eject from a conference, participants exhibiting inappropriate conduct.
   d. Person's exhibiting repeated or habitual inappropriate conduct will not be allowed to participate in conferences. Such person's employer and the contracting party they represent shall bear full responsibility for consequences of actions by its employees and representatives.

C. Agenda:

1. Each conference required by this Section shall have an established, written agenda available to required attendees not less than one day prior to the subject conference, unless extenuating circumstances dictate a shorter time period.
2. Unless written agenda specific to a given conference is issued in writing, the default agenda shall be in accordance with this Section.
3. If a person or entity intending to participate in a required conference desires that such conference should address a given topic not already part of the typical agenda indicated in this Section, a written request for such topic to be added to the agenda must be received by the conference chair not later than two days prior to the scheduled start of such conference.
4. The agenda may be amended at the outset of the conference, by consent of a majority of conference participants. Thereafter, the conference will be conducted, and topics discussed will be in accordance with the established agenda, as may be modified in accordance with this paragraph.

D. Conference Date, Time, and Location:

1. Date, start time, anticipated duration, and location of each required conference will be established by conference chair, unless otherwise indicated in the Contract Documents.
2. Conference chair will advise, in writing, required participants of conference date, start time, anticipated duration, and location. Such information may be transmitted as part of an agenda. Upon mutual agreement of required participants, date, start time, anticipated duration, and location of recurring conferences, such as construction progress conferences, may be initially established at the outset of the series and, therefore, do not require written advisory for each individual conference.
3. Change of Conference Date, Time, or Location:
   a. In general, required conferences will be held on the date, at the time, and at the location required.
   b. Designated conference chair may, at their sole discretion, elect to change the conference date, start time, duration, location, or any combination thereof. Such change, if any, shall be communicated in writing to all required conference participants, and others as appropriate. Contractor is responsible for communicating changes to its Subcontractors and Suppliers.
   c. Notice of such change shall be communicated in accordance with Section 01 31 26 – Electronic Communication Protocols, not later than one day prior to scheduled start of the subject conference. Such changes may be communicated by distributing a written agenda for the subject conference, expressly indicating changes from previous arrangements.

d. When changes in date, time, or location are necessary, less than the period indicated in the paragraph immediately above, such changes shall be communicated orally, whether in-person or via telephone. When communicated via telephone, calls shall be made to all of the participant's designated telephone numbers on file with the conference chair. Persons intending to participate in such conference are encouraged to check their voicemail and written communications prior to departing for the conference.

E. Minutes:

1. For each conference required in this Section, the conference chair will be responsible for preparing and distributing a written record ("minutes") of the conference proceedings, unless expressly indicated otherwise for a specified type of conference.
2. Purpose of minutes is to furnish a written record of the following for the associated conference: participants (indicating whether each individual participated in-person, virtually, arrived late, or departed early), topics discussed, questions asked and answered, and decisions made, and other pertinent matters as indicated on the established agenda for the associated conference. Minutes are not intended as a transcript or as complete record of minutia discussed at the associated conference.
3. Distribution of Minutes:
   a. Minutes will be distributed promptly after the associated conference.
   b. Minutes will be distributed, in accordance with Section 01 31 26 - Electronic Communication Protocols.
   c. Minutes will be distributed to all conference participants, personnel invited to or required to attend the conference but who did not attend or participate, and others as appropriate.
   d. Unless indicated otherwise in this Section or elsewhere in the Contract Documents, minutes of conferences required by this Section will be distributed to Owner, Contractor, and Engineer.
4. Amendment of Minutes:
   a. Minutes distributed by, or on behalf of, the conference chair are subject to comments and potential amendments by other attendees of the subject conference. The period for commenting on, or requesting amendments to, minutes is limited to 30 days following initial distribution of the minutes, unless indicated otherwise elsewhere in the Contract Documents.
   b. Comments or requests for amendments may be furnished at the next, subsequent meeting in the same series of conferences. For example, comments on minutes of a construction progress conference may be presented at the next, subsequent construction progress conference. Comments on the minutes of the preconstruction conference may be presented at the first construction progress conference unless the designated time limit for requesting amendments has elapsed prior to the first progress conference.
   c. Minutes may be amended either by issuing revised minutes for the subject conference or by appropriate indication in the minutes of the next, subsequent conference in the same series, at the sole discretion of the conference chair.
   d. Conference chair has sole authority to accept or reject comments or requests for amendments on previously issued minutes.
   e. In general, requests, by persons who participated in the subject conference, for amendments to minutes will be given greater consideration by conference chair than request for amendments received from persons who did not participate in the subject conference.
   f. Should a person or entity believe the final minutes do not accurately reflect their opinion of how events transpired at the subject conference, such person or entity may prepare and submit appropriate correspondence presenting their viewpoint.

1.3 PRECONSTRUCTION CONFERENCES

A. The requirements of Article 1.2 of this Section also apply to this Article.

B. Preconstruction Conferences - General:

1. Purpose of preconstruction conference is reviewing administrative and procedural requirements, site mobilization matters, coordination with utility owners, coordination with authorities having jurisdiction, and related matters. Required agenda, unless otherwise amended by conference chair, is indicated in this Article.
2. Conference Chair: Engineer's project manager.
3. Location, Date, and Time:
    a. Preconstruction conference will be held in the City Council Chamber at City Hall, 218 South 16th Street, Blair, NE 68008.
    b. Preconstruction conference will be held following the Effective Date of the Contract on a day and at a time to be established by Engineer, following consultation with principal representatives of Owner, Contractor, and other required participants. Preconstruction conference will be held prior to commencement of the Work at the Site.
    c. Anticipated duration of preconstruction conference is one hour, followed by time necessary for visiting the Site.
    d. Location, date, and time will be established in accordance with requirements of Article 1.2 of this Section.
4. Required Participants:
    a. Owner: Project manager.
    b. Contractor: Project manager and site superintendent.
    c. Engineer: Project manager or delegate.
5. Required participants may invite to the preconstruction conference others they deem necessary or appropriate.
6. Designation of Authorized Representatives:
    a. Either prior to or at the preconstruction conference, Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

C. Agenda:

1. Procedural and Administrative:
    a. Personnel and Teams:
        1) Designation of roles and personnel.
        2) Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
        3) Subcontractors and Suppliers in attendance.
        4) Authorities having jurisdiction.
    b. Procedures for communications and correspondence, including electronic communication protocols.
    c. Copies of the Contract Documents and availability.
    d. The Work and Scheduling:
        1) General scope of the Work.
        2) Contract Times, including Milestones (if any).
        3) Phasing and sequencing.
        4) Preliminary Progress Schedule.
        5) Critical path activities.

e. Safety and Protection:
    1) Responsibility for safety.
    2) Contractor’s safety representative.
    3) Emergency procedures and accident reporting.
    4) Emergency contact information.
    5) Hazardous materials communication program.
    6) Impact of the construction on public safety.
    7) Responsibilities for protection of property.
f. Review of insurance requirements and insurance claim procedures.
g. Coordination:
    1) Coordination of Subcontractors and Suppliers.
    2) Coordination with Owner’s operations.
    3) Construction progress conferences – schedule and frequency.
    4) Coordination conferences with other, separate projects.
h. Submittals:
    1) Current Critical Submittals:
        a) Preliminary schedules – Progress Schedule, Schedule of Submittals, Schedule of Values.
        b) List of proposed Subcontractors and Suppliers.
        c) List of emergency contact information.
        d) Notice of elements of Contractor’s safety program with which Owner and Engineer are to comply.
    2) Work is ineligible for payment without approved or accepted Submittals (as applicable).
    3) Submittal procedures.
        a) Compliance with accepted Schedule of Submittals.
        b) Actions required of Contractor prior to furnishing Shop Drawings and other Submittals.
        c) Contractor’s Submittal approval stamp required; Contractor’s coordination of Submittals.
        d) Furnishing of Submittals.
        e) Submittal types and meaning of Engineer’s action on each.
        f) Resubmittals: Responsibility for, limitations on quantity.
    4) Identification of initial, critical Shop Drawings and product data.
i. Substitutes and "Or-Equals":
    1) Product options.
    2) Procedures for proposing "or-equals".
    3) Procedures for proposing substitutes.
j. Contract Modification Procedures:
    1) Requests for interpretation.
    2) Written clarifications.
    3) Field Orders.
    4) Proposal Requests.
    5) Change Proposals.
    6) Work Change Directives.
    7) Change Orders.

8) Differing site conditions or discovery of unanticipated Hazardous Environmental Condition.
9) Substantiating and documenting Change Proposals and Claims.
10) Claims.

k. Progress Payment:
1) Owner's Project financing and funding, as applicable.
2) Owner's tax-exempt status.
3) Preliminary Schedule of Values.
4) Procedures for measuring for payment.
5) Retainage.
6) Progress payment procedures; documents to accompany Applications for Payment.
7) Payment for stored items not yet installed.
8) Date of Owner's payments; payment is due.

l. Subcontractors and Suppliers:
1) List of proposed Subcontractors and Suppliers; monthly updates.
2) Coordination and management.
3) Subcontracts and purchase orders.

m. Testing and inspections:
1) Owner-hired and contractor-hired.
2) Identification of Owner-hired testing entity and special inspectors.
3) Responsibility for advising testing entity and special inspectors of need for services.
4) Results of code-required special inspections and tests.
5) Prompt remedy of apparent defects.
6) Notices of defective Work.
7) Remedy of defective Work.
8) Defective Work is ineligible for payment.
9) Covering up defective Work.
10) Cost responsibility for defective Work and retesting/re-inspection.

n. Disposal of demolition and spoil materials.

o. Record documents.

p. Preliminary discussion of Contract closeout:
1) Procedures for Substantial Completion.
2) Contract closeout requirements.
3) Correction period; duration of Contractor's general warranty and guarantee.
4) Duration of bonds and insurance.

2. Authorities Having Jurisdiction (if not covered in a separate conference):
a. Municipal licenses.
b. Municipal permits required.
1) Permits required and status.
2) Inspections for building code official.
3) Code-required special inspections and tests (if not covered in Administrative and Procedures part of conference).

3. Site Mobilization (if not covered in a separate conference):
a. Working days, working hours, and overtime.
b. Use of Site and other areas; use of existing facilities.
c. Field offices, storage trailers, and staging areas.

d. Temporary facilities.
e. Temporary utilities and limitations on utility use (where applicable).
f. Utility company coordination (if not done as a separate conference).
g. Access to Site, access roads, and parking for construction vehicles.
h. Traffic controls.
i. Temporary controls:
    1) Erosion and sediment control; storm water pollution prevention plans.
    2) Dust control and air pollution control (including emissions control).
    3) Water control (storm water, surface water, groundwater).
    4) Water pollution control; spill prevention control and countermeasures plan.
    5) Solid waste control.
    6) Pest control.
    7) Other temporary controls.
j. Temporary security; temporary security fencing (where required).
k. Storage of materials and equipment to be incorporated into the Work.
l. Protection of the Work and property; protective barriers.
m. Field engineering:
    1) Reference points and benchmarks.
    2) Surveys and layouts.
    3) Professional services for Contractor's means and methods (not delegated design).
    4) Contractor's site superintendent's daily records and submittal requirements.
n. Site maintenance during the Project:
    1) Progress cleaning; removal of trash and debris.
    2) Maintenance and cleaning of existing access roads and parking areas.
o. Restoration.

4. Next conference.
5. Site visit, as necessary.

1.4 PRE-SHUTDOWN CONFERENCE

A. The requirements of Article 1.2 of this Section also apply to this Article.

B. Pre-Shutdown Conference - General:

1. Purpose of the pre-shutdown conference is to review the planned work during the pump station shutdown.
2. Conference Chair: Engineer's project manager or delegate.
3. Location, Date, and Time:
    a. Pre-shutdown conference will be held in a location as determined during the preconstruction conference.
    b. Pre-shutdown conference will occur no less than two (2) weeks prior to the planned pump station shutdown on a date and time to be agreed upon by all parties.
4. Required Participants:
    a. Owner: Project manager and Owner's construction coordinator.
    b. Contractor: Project manager, site superintendent, and safety representative.
    c. Principal Subcontractors: Project manager or site superintendent, for Subcontractors performing significant Work since the previous conference and that will perform significant Work prior to the next, subsequent construction progress conference. When Subcontractor's site superintendent represents Subcontractor at construction progress conferences, site superintendent shall be authorized and informed of administrative matters relating to Subcontractor's Work in accordance with Article 1.2 of this Section.

d. Major Suppliers: Field representative of Suppliers of significant materials and equipment, when such field representatives are performing onsite services under the Contract, or as otherwise deemed necessary by Contractor relative to conference participation.

e. Engineer: Project manager or delegate.

f. OPPD.

g. Automatic Systems Co.

5. Required participants may invite to pre-shutdown conference others they deem necessary or appropriate.

C. Handouts:

1. Contractor shall bring to the pre-shutdown conference not less than 5 paper copies of each of the following:

a. Planned sequence of work.

b. Up-to-date Progress Schedule, in accordance with Section 01 32 16 - Construction Progress Schedule.

c. “Look-ahead” schedule, in accordance with Section 01 32 16 - Construction Progress Schedule.

1.5 CLOSEOUT CONFERENCES

A. The requirements of Article 1.2 of this Section also apply to this Article.

B. Closeout Conferences – General.

1. Purpose of closeout conferences is to familiarize participants with administrative and procedural requirements for Substantial Completion (including partial utilization by Owner) and readiness for final payment, and status of the Work required for achieving Substantial Completion and readiness for final payment.

2. Conference Chair: Same as indicated elsewhere in this Section for construction progress conferences.

3. Location, Date, and Time:

a. Location, date, and time will be the same as indicated elsewhere in this Section regarding construction progress conferences.

b. The conference chair may require one or more additional closeout conferences as the conference chair deems necessary. Required participants shall participate in such conferences without changes in the Contract Price or the Contract Times.

c. Should additional closeout conferences be necessary, the conference chair will so advise required participants, and others as appropriate, in accordance with Article 1.2 of this Section.

4. Required Participants: Same as required participants for preconstruction conference, unless otherwise indicated by conference chair.

C. Preliminary Agenda for Closeout Conferences:

1. Checkout and startup planning meeting, in accordance with Section 01 75 00 - Checkout and Startup Procedures.

2. Training schedule conference.

3. Additional closeout related topics as determined by closeout conference chair.

1.6 OTHER CONSTRUCTION CONFERENCES

A. The requirements of Article 1.2 of this Section also apply to this Article.

B. Other Construction Conferences – General.

1. Other construction conferences may be scheduled and held as deemed necessary by Owner or Engineer. Such conferences may be focused on specific matters, such as discussing remedies and schedules for defective Work, negotiating changes in the Contract Price and Contract Times, or other matters related to the Project where time limits prevent addressing such items as part of other conferences addressed elsewhere in the Contract Documents.
2. Conference Chair: Engineer's project manager or delegate.
3. Location, Date, and Time:
    a. Location: Same location as other conferences referenced in this specification section unless otherwise changed by Owner or Engineer.
    b. Other construction conferences will be held on a day and at a time to be established by Engineer, following consultation with principal representatives of Owner, Contractor, and other required participants.
    c. Each other construction conference is one hour, plus time that may be necessary for visiting the Site when conference purpose warrants.
    d. Location, date, and time will be established in accordance with requirements of Article 1.2 of this Section.
4. Required Participants: As deemed necessary by conference chair.

C. Agenda: Agenda presenting topics to be discussed at each other construction conference will be developed by the conference chair and distributed to required participants, and others as appropriate, in accordance with Article 1.2 of this Section.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 31 26
ELECTRONIC COMMUNICATION PROTOCOLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Procedures with which Users will comply regarding transmission or exchange of Electronic Documents for the Project.

B. Related Requirements:

1. Refer to the General Conditions, as may be modified by the Supplementary Conditions, regarding transmitting Electronic Documents by Electronic Means.
2. In addition to the requirements of this Specifications Section, comply with the requirements for Electronic Documents in the following Specifications:
   a. Section 01 32 16 - Construction Progress Schedule.
   b. Section 01 33 00 - Submittals.
   c. Section 01 78 39 - Project Record Documents.

1.2 DEFINITIONS

A. The following terms are defined for use in this Specifications Section and are indicated herein using initial capital letters. The terms have the associated meaning regardless of whether indicated in singular or plural.

1. Electronic Documents Protocol (abbreviated as “EDP”): Procedures and requirements set forth in this Specifications Section for the exchange of Electronic Documents by Electronic Means.
2. Project Website: An internet-based software platform, such as a website or other project management information system (PMIS) designated by Contract or mutual consent of Users as the means of exchanging Electronic Documents during the Project.
3. System Infrastructure: Hardware, operating system(s) software, internet access, e-mail service and software, security software, and large-file transfer functions.
4. Users: Owner, Contractor, Engineer, and others exchanging Electronic Documents on the Project in accordance with the EDP.

1.3 ADMINISTRATIVE REQUIREMENTS.

A. Coordination:

1. Contractor shall require all Subcontractors and Suppliers to comply with the EDP established in the Contract Documents.

1.4 GENERAL PROVISIONS OF ELECTRONIC DOCUMENT PROTOCOL

A. EDP – General:

1. To the fullest extent practical, Users agree to and will transmit and accept Electronic Documents transmitted by Electronic Means in accordance with the requirements of this Specifications Section. Use of the Electronic Documents and any information contained therein is subject to requirements of this Specifications Section and other provisions of the Contract Documents governing transmittal of Electronic Documents.
2. Content of Electronic Documents will be the responsibility of transmitting User.
3. Unless otherwise provided in: (1) the EDP, (2) elsewhere in the Contract Documents, or (3) or other agreement between two or more Users governing use of Electronic Documents, Electronic Documents exchanged in accordance with the Contract Documents may be used in the same manner as paper or other printed versions of the same documents exchanged

using other than Electronic Means, subject to the same governing requirements, limitations, and restrictions set forth in the Contract Documents.

4. Except as otherwise explicitly indicated in the EDP, the terms of this EDP will be incorporated into any other agreement or subcontract between a party and a third party for a portion of the Work or Project-related services, where such third party is, either directly or indirectly, required to exchange Electronic Documents with Owner, Contractor, or Engineer. Nothing in this EDP modifies the requirements of the Contract Documents regarding communications between and among Owner, Contractor, and Engineer Subcontractors, Suppliers, consultants, and others for which each is responsible.
5. When transmitting Electronic Documents, transmitting User makes no representations regarding long-term compatibility, usability, or readability of the items resulting from the receiving User's use of software applications or System Infrastructure differing from those established in this EDP.
6. This EDP does not negate or mitigate any obligation: (1) in the Contract Documents to create, provide, or maintain an original paper record version of Drawings and Specifications, signed and sealed in accordance with Laws or Regulations; (2) to comply with Laws and Regulations governing signing and sealing of design documents or signing and electronic transmission of other documents; or (3) to comply with notice requirements of the General Conditions (as. May be modified by the Supplementary Conditions).
7. Modifications to EDP:
    a. When modifications to the EDP are necessary to address issues affecting System Infrastructure, Users shall cooperatively resolve the issues.
    b. If resolution within a reasonable time is not achieved, Owner is empowered to require reasonable and necessary changes to the EDP consistent with the original intent of the EDP.
    c. If such changes result in additional cost or delay to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in the Contract Price, Contract Times, or both in accordance with the Contract Documents.

B. System Infrastructure and Systems for Exchanging Electronic Document:

1. Each User will provide System Infrastructure (as defined in this EDP) at its own cost and sufficient for complying with EDP requirements. Except for minimum standards set forth in this EDP, it is the obligation of each User to determine, for itself, such User's own System Infrastructure.
    a. Maximum size of e-mail file attachment under this EDP is 25 megabytes (MB). Attachments larger than the maximum size indicated in this paragraph shall be exchanged via secure electronic transfer using method mutually acceptable to Owner, Engineer, and Contractor.
    b. Each entity transmitting or receiving Electronic Documents has full responsibility for its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, and otherwise enabling its System Infrastructure for use in accordance with this EDP.
    c. Each User will provide its own printing facilities and will be responsible for its own costs of printing Electronic Documents.
2. Each User is responsible for its own system operations, security, back-up, archiving, audits, and other technology and resources for operations of its System Infrastructure during the Project, including coordination with the User's individual(s) or subcontractor(s) responsible for managing its System Infrastructure and capable of addressing communications and other technology issues affecting exchange of Electronic Documents.
3. Security:
    a. Each User will operate and maintain industry-standard, industry-accepted, ISO standard, commercial-grade security software and systems to protect against threats including software viruses and other malicious software including worms, trojans, adware; data breaches; loss of confidentiality; and other threats in transmission to, or storage of, Electronic Documents from other Users, including transmission of Electronic

Documents by physical media including flash drives/thumb drives, hard drives, compact discs (CD), digital video discs (DVD), and other portable devices, whether connected physically or wirelessly.

b. To the extent that a User maintains and operates such security software and appropriate System Infrastructure, such User will not be liable to other Users participating in the Project for breach of system security.

4. Project Website:

a. Engineer will establish, operate, and maintain a Project Website (as defined in this EDP) for use of Owner, Engineer, Contractor, and other Users as appropriate during the Project, for exchanging and storing Project Electronic Documents.

b. Unless otherwise provided in the Contract Documents, use of Project Website by Owner, Contractor, and Engineer is mandatory for exchanging Project documents as set forth in the EDP.

c. Project Website Conditions and Standards:

1) Project Management Information System or other Software Application(s): Newforma Info Exchange (Newforma).

2) Duration of Project Website Availability and Reliance by Users: The date final payment is due Contractor under the Contract.

3) Services and Functions Available on Project Website include, but not limited to, large file transfer, e-mail, communication, and electronic document archiving.

d. Address of Project Website will be furnished to Contractor, and Project Website will be available to Contractor, within 10 days following the Effective Date of the Contract.

C. General Requirements and Limitations for Software for Electronic Document Exchange:

1. Software and file formats for exchange of Electronic Documents shall be as indicated in Article 1.5 of this Specifications Section.

2. Software Versions:

a. Each User will acquire the software and associated licenses necessary to create, transmit, receive, read, and use Electronic Documents for the Project, using the software and file formats indicated in Article 1.5 of this Specifications Section.

b. Prior to using any updated version of the software required in the EDP for Electronic Document(s) transmitted to other User(s), the originating User will first notify and either (1) receive concurrence from receiving User(s) for use of the updated version, or (2) adjust its transmission to comply with the EDP.

3. Preservation of Intellectual Property and Confidentiality of Electronic Documents:

a. Users agree to not intentionally edit, reverse-engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes Electronic Documents, and information and data contained therein, transmitted in a file format, including portable document format (PDF), intended by transmitting User to not be modified, unless the receiving User (1) obtains permission from owner of the Electronic Document and intellectual property contained therein, or (2) is expressly allowed by the EDP to edit or modify the Electronic Document.

b. Where modifying, editing, decryption, or reverse-engineering is allowed by the EDP, such use is conferred only for the Project.

c. The EDP does not transfer any ownership or rights of any sort regarding use outside of the Project of Electronic Documents.

d. Users shall not cite or quote excerpts of Electronic Documents for purposes outside of the Project unless required to do so by Laws and Regulations.

D. Contractor's Requests for Electronic Documents in Other Formats:

1. Release of Electronic Documents in format(s) other than those indicated in in Article 1.5 of this Specifications Section and elsewhere in the Contract Documents will be at the

discretion of Owner and subject to terms and conditions required by the owner of such files and documents, and the provisions indicated below.

2. To extent determined by Owner, in its sole discretion, to be appropriate, release of Electronic Documents in alternative format(s) requested by Contractor ("Request") are subject to provisions of Owner's response to the Request and to the following:
   a. Contractor's Request shall be in writing. Owner and others, as appropriate, will consider and respond to Request promptly, but neither Owner nor Engineer will be responsible for any time or cost impacts on Contractor associated with timing of the Request, or with Owner's decision associated therewith.
   b. When Engineer is the owner of the Electronic Documents requested by Contractor in native format, prior to Engineer transmitting such Electronic Documents to Contractor, Contractor shall sign and deliver to Engineer, without modifying or amending, Engineer's "Electronic Media Release" agreement.
   c. Content included in Electronic Documents created by Engineer and furnished in response to the Request was prepared by Engineer as an internal working document for Engineer's purposes solely and, when provided to Contractor, is on an "as-is" basis without warranties of any kind, including, but not limited to any implied warranties of fitness for purpose. Contractor acknowledges that content of Electronic Documents furnished in response to the Request may not be suitable for Contractor's purpose(s), or may require substantial modification and independent verification by Contractor. Content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other shown or indicated information that may affect subsequent use by Contractor or others for whom Contractor is responsible.
   d. Electronic Documents containing text, graphics, metadata, or other types of data furnished by Engineer in response to the Request are only for Contractor's convenience and any and all conclusions or information obtained or derived from such Electronic Documents will be at Contractor's sole risk and expense. Contractor waives any and all claims against Engineer, Owner, or both arising from Contractor's use of Electronic Documents furnished in response to the Request.
   e. Contractor shall indemnify and hold harmless Owner, Engineer, and their respective consultants and subconsultants from any and all claims, damages, losses, and expenses, including attorneys' fees and defense costs, fees and costs of engineers, architects, geologists, accountants, and other professionals, and any and all other costs, direct and indirect, resulting from Contractor's use, adaptation, or distribution of Electronic Document(s) furnished in response to the Request.
   f. Contractor shall not sell, copy, transfer, forward, give away or otherwise distribute the Electronic Documents (in source format or modified file format) to any third party without direct written authorization of Engineer or other entity that owns the Electronic document(s), unless such distribution is specifically indicated in the Request and is limited to Subcontractors and Suppliers. Contractor warrants that subsequent use by Subcontractors and Suppliers complies with terms and conditions of the Contract Documents, Owner's response to the Request, and release agreement(s) (if any) by owner of the Electronic Documents (including Engineer, where applicable).

1.5 EXCHANGE OF ELECTRONIC DOCUMENTS

A. Comply with the Electronic Document formats, transmission methods, and permitted uses set forth in Table 01 31 26-A, Exchange of Electronic Documents, below, when transmitting or using Electronic Documents on the Project. Where a row in the table has no indicated means of transmitting Electronic Documents, use for such documents only paper copies transmitted to the receiving party via appropriate delivery method.

TABLE 01 31 26-A – EXCHANGE OF ELECTRONIC DOCUMENTS

Electronic Document Type	Format	Transmitting User	Transmission Method	Receiving User	Allowed Uses	Notes
1.5.A.1. Project communications						
General communications & correspondence	EM, PDF	O, E, C	EM, EMA	O, E, C	R	
Meeting notices and agendas	EM, PDF	E	EM,PW	O, C	R	
Meeting minutes	PDF	E	EM, PW	O, C	R	
1.5.A.2. Contractor's Submittals to Engineer						
Shop Drawings	PDF	C	PW	E	M (1)	(1)
Product data Submittals, delegated design Submittals, and other action Submittals (except Samples)	PDF	C	PW	E	M (1)	(1)
Informational and closeout Submittals:	PDF	C	PW	E	M (1)	(1) (5)
Documentation of delivery of maintenance materials Submittals	PDF	C	PW	E	M (1)	
1.5.A.3. Engineer's return of reviewed Submittals to Contractor						
Shop Drawings	PDF	E	PW	O., C	R	
Product data Submittals, delegated design Submittals, and other action Submittals	PDF	E	PW	O., C	R	
Informational and closeout submittals:	PDF	E	PW	O., C	R	(5)
Documentation of delivery of maintenance materials submittals	PDF	E	PW	O. C	R	
1.5.A.4. Contract Modifications Documents						
Requests for interpretation to Engineer	PDF	C., O	PW	E	M (1)	(1)
Engineer's interpretations (RFI responses)	PDF	E	PW	C, O	R	
Engineer's clarifications to Contractor	EM, PDF	E	PW	C, O	R	
Engineer's issuance of Field Orders	PDF	E	PW	C, O	R	
Proposal Requests	PDF	E, O	PW	C	R	
Change Proposals – submitted to Engineer	PDF	C	PW	O, E	S	
Change Proposals – Engineer's response	PDF	E	PW	C. O		
Work Change Directives (for Contractor signature)	PDF	E	PW	C	R	(2)
Change Orders (for Contractor signature)	PDF	E	PW	C	R	(2)
1.5.A.5. Applications for Payment	PDF	C	EM, EMA	O	I	
1.5.A.6. Claims and other notices						(3)
1.4.A.7. Closeout Documents						
Record drawings	DWG and PDF	C	PW	E, O	M (5)	(4)

Electronic Document Type	Format	Transmitting User	Transmission Method	Receiving User	Allowed Uses	Notes
Other record documents	PDF	C	PW	E. O	M (5)	(4)

1. Key to Table 01 31 26-A:
   a. Data Format:
      1) EM: .msg, .htm, .txt, .rtf, e-mail text.
      2) W: .docx, Microsoft Word 2013 or later.
      3) EX: .xlsx, Microsoft Excel 2013 or later.
      4) PDF: .pdf. portable document format.
      5) DWG: .dwg. Autodesk AutoCAD 2014 drawing.
   b. Transmitting User:
      1) O: Owner.
      2) C: Contractor.
      3) E: Engineer.
   c. Transmission Method:
      1) EM: Via e-mail.
      2) EMA: Attachment to e-mail transmission.
      3) PORT: Delivered via portable media such as flash drive/thumb drive, CD, or DVD
      4) PW: Posted to Project Website.
      5) FTP: FTP transfer to receiving FTP server.
   d. Receiving User:
      1) O: Owner.
      2) C: Contractor.
      3) E: Engineer.
   e. Permitted Uses:
      1) S: Store and view only.
      2) R: Reproduce and distribute.
      3) I: Integrate (incorporate additional electronic data without modifying data received)
      4) M: Modify as required to fulfill obligations for the Project.
   f. Notes:
      1) Modifications by Engineer to Contractor's Submittals and requests for interpretations are limited to printing, marking-up, and adding comment sheets.
      2) May be distributed only to affected Subcontractors and Suppliers. Print, sign document, and return signed paper originals to Engineer.
      3) Submit notices, including Claims, in accordance with the notice provisions of the General Conditions, as may be modified by the Supplementary Conditions.
      4) Submit record drawings in native CAD format indicated when Contractor has signed Engineer's standard agreement for release of electronic media. In addition, always submit record drawings as PDF files. Comply with Contract Documents requirements for Project record documents.
      5) For operation and maintenance data, also submit paper copies as required by Section 01 78 23 - Operations and Maintenance Manuals.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for Contractor's construction Progress Schedules and related Submittals, including:
   a. Administrative requirements regarding progress Schedules.
   b. Qualifications of Progress Schedule preparer and related personnel.
   c. Submittals of Progress Schedules and associated schedule-related Submittals.
   d. Initial Progress Schedules.
   e. Progress Schedule updates.
   f. Time impact analyses.
   g. Recovery schedules.

B. Scope:

1. Contractor shall prepare and submit to Engineer required Progress Schedules and related Submittals, as required by this Section and elsewhere in the Contract Documents. Maintain and update Progress Schedules and related Submittals throughout the Project.
2. Owner, facility manager (if other than Owner), Engineer, and others involved with the Project have the right to rely on accuracy of Contractor-prepared Progress Schedule.
3. Engineer's review or acceptance of the Progress Schedule or related Submittals, and Engineer's comments on and expressed opinions concerning activities in the Progress Schedule and related Submittals, and progress of the Work, does not control Contractor's independent judgment concerning construction means, methods, techniques, sequences and procedures, unless the associated means, method, technique, sequence, or procedure is required by the Contract Documents. Contractor is solely responsible for complying with the Contract Times.

C. Related Requirements: Include, but are not necessarily limited to:

1. Section 01 11 00 - Summary of Work.
2. Section 01 26 00 - Contract Modification Procedures.
3. Section 01 31 19 - Project Meetings.

1.2 REFERENCES.

A. Defined Terms and Terminology:

1. Defined terms, indicated with initial capital letters, are indicated in the General Conditions, as may be modified by the Supplementary Conditions.
2. Terminology: The following are not defined terms and are not indicated with initial capital letters but, when used in this Section, have the meaning indicated below, whether applied to the singular or plural thereof.
   a. "Activity" is an element of the Work that has the following specific characteristics: consumes time, requires resources, has a definable start and finish, is assignable, and is measurable.
   b. "Baseline Progress Schedule" means, in addition to the General Conditions' definition of "Progress Schedule", the version of the Progress Schedule (for the entire Project) initially accepted by the Engineer. In the event of subsequent modifications to the Project, Contractor and Engineer may mutually agree that a subsequent revision of the

Progress Schedule constitutes a new baseline Progress Schedule that supersedes the prior baseline Progress Schedule.

c. “Constraint” means an imposed date on the Progress Schedule or an imposed time between activities. The Contract Times are constraints.

d. “CPM Progress Schedule” means, in addition to the General Conditions’ definition of “Progress Schedule”, a computerized Progress Schedule in critical path method (CPM) format, for the entire Work, indicating interrelationships between elements of the Work; indicates sequences, dates, and durations for Work performed to date; indicates sequences, dates, and duration for incomplete Work yet to be performed; indicates constraints; and indicates the critical path for the Work.

e. “Critical path” is the continuous chain of activities, from start to completion of the Work, with the longest duration for completion within the Contract Times.

f. “Early finish” means the earliest date an activity can finish according to the assigned relationships among the activities in the Progress Schedule.

g. “Early start” means the earliest possible date an activity can start according to the assigned relationships among activities in the Progress Schedule.

h. “Float” means the time difference between the calculated duration of an activity chain on the Progress Schedule and the critical path.

i. “Late finish” means the latest date an activity on the Progress Schedule can finish without extending the Contract Times.

j. “Late start” means the latest date an activity on the Progress Schedule can start without extending the Contract Times.

k. “Schedule date” (and similar terms, whether used in this Section or Project communications related to Progress Schedules) mean the “early start” and “early finish” date for the associated activity. “Late start” and “late finish” dates are for determining float and do not represent the schedule dates.

l. “Total float” means the total number of days an activity (or chain of activities) on the Progress Schedule can be delayed without affecting the Contract Times.

m. “Work areas” and “work system” means a logical breakdown of the Work elements or a group of activities which, when collectively assembled, are readily identifiable on the Project (for example: yard piping, a structure or building, a treatment process, or other logical grouping).

1.3 ADMINISTRATIVE REQUIREMENTS

A. General Provisions on Progress Schedules:

1. This Section augments requirements for the Progress Schedule, and Contractor’s control of the Work, indicated in the General Conditions, as may be augmented by the Supplementary Conditions.

B. Use of Float:

1. Float belongs to the Project and may be used by Contractor or Owner to accommodate changes in the Work, or to mitigate the effect of events delaying the Work or compliance with the Contract Times.
2. Changes or delays that influence activities that have float and do not extend the critical path do not justify changes in the Contract Times.
3. Float Suppression: Pursuant to float sharing requirements of this Section, use of float suppression techniques in Progress Schedules, such as preferential sequencing logic, special lead/lag logic restraints, and extended activity durations are unacceptable.

C. Factors Affecting the Progress Schedule:

1. In preparing and updating the Progress Schedule, take into consideration: preparing and signing subcontracts and purchase orders, complying with Submittal requirements and Submittal review times, fabricating materials and equipment, source quality control (including required shop tests and inspections), shipping and deliveries, field quality control

(including required field tests and inspections at the Site), Work by Subcontractors, coordination with others (such as other contractors including those indicated in Section 01 11 00 – Summary of Work, utility owners, and owners of transportation facilities), compliance with Laws and Regulations and permits, availability of construction equipment and machinery, abilities of workers, weather conditions, condition of the Site, seasonal restrictions, restrictions in operations at the Site and coordination with Owner's (or facility manager's) operations, training of facility operation and maintenance personnel, checkout, startup, adjusting and balancing, and other factors that have the potential to affect completion of the Work within the Contract Times.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Progress Schedule Preparer.
    a. Contractor shall retain services of a scheduling consultant to, or shall self-perform, preparation and updating of the Progress Schedule using qualified personnel experienced in: (1) construction scheduling, (2) the scheduling software required for the Project, and (3) serving as Progress Schedule preparer on construction projects of similar type, size, and complexity as the Project.
    b. Progress Schedule preparer shall have not less than two years' experience using the required schedule software on construction projects of similar type, size, and complexity as the Project.

1.5 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Progress Schedule:
    a. Acceptable Progress Schedule ("baseline Progress Schedule").
2. Progress Schedule Updates:
    a. Progress Schedule updates shall comply with requirements of this Section, and shall include updated Progress Schedule and associated, required, schedule-related Submittals.
    b. Submit updated Progress Schedule when major revisions are made or as requested by Engineer or Owner.
3. Time Impact Analyses: Submit in accordance with this Section.
4. Recovery Schedules: Submit in accordance with this Section.

1.6 INITIAL PROGRESS SCHEDULE

A. Applicability of this Article:

1. This Article addresses the initial Progress Schedules and selected, related Submittals required at the outset of the Project's construction phase, through Engineer's acceptance of the Progress Schedule and its related Submittals.
2. Subsequent Progress Schedule Submittals, including Progress Schedule updates, recovery schedules, and other schedule-related Submittals, shall comply with software, type, organization, content, and similar requirements of this Article.

B. Type and Organization of Progress Schedules:

1. Prepare Progress Schedules using Microsoft Project or Oracle Primavera P6 software, unless other scheduling software is acceptable to Engineer.
2. Sheet Size: 11 inches by 17 inches, unless otherwise accepted by Engineer.
3. Time Scale: Indicate first date of each work week.
4. Activity Assignments and Designations:
    a. Activity description shall include sufficient detail to clearly communicate the intended activity. Descriptions shall include identifiers for physical locations of work area or work

system, such as (where appropriate): column lines, stationing (for linear projects), and elevations. Indicate unique description for each activity.

b. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.

5. Indicate interfaces and dependencies with preceding, concurrent, and follow-on activities, including those associated with the Work, other contractors at the Site, Owner and facility manager, Owner's consultants (including Engineer), authorities having jurisdiction, and others as appropriate. Clearly indicate activities not under Contractor's control.
6. Progress Schedules shall be CPM Progress Schedules.
7. Indicate on the separate Schedule of Submittals dates for submitting and reviewing Shop Drawings, product data Submittals, Samples, and other required Submittals. Coordinate Progress Schedule with the Schedule of Submittals.
8. Clearly indicate the critical path on the Progress Schedule.

C. Preliminary Progress Schedule:

1. Within 10 days after the Contract Times commence running, Contractor shall submit to Engineer the preliminary Progress Schedule covering the entire Project, with associated schedule-related Submittals required in this Section's "Submittals" Article..
2. Submit preliminary Progress Schedule in accordance with Section 01 31 26 - Electronic Communication Protocols and Section 01 33 00 - Submittal Procedures.
3. Engineer will perform timely review of the preliminary Progress Schedule.

D. Initial Acceptance of Progress Schedule:

1. Contractor will not be eligible for first progress payment until acceptable Progress Schedule and associated schedule-related Submittals are submitted to Engineer and are acceptable to Engineer.
2. Submit acceptable Progress Schedule, together with associated schedule-related Submittals in accordance with this Section's "Submittals" Article, Section 01 31 26 - Electronic Communication Protocols, and Section 01 33 00 - Submittal Procedures.
3. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times, in accordance with the Contract Documents.
4. Initially-accepted Progress Schedule shall be identified as the baseline Progress Schedule.

1.7 PROGRESS SCHEDULE UPDATES

A. Updates – General:

1. Update the Progress Schedule not less-often than once per month. If during progress of the Work events develop that necessitate changes in the initially accepted Progress Schedule (baseline Progress Schedule), identify updated Progress Schedules sequentially as "Progress Schedule Revision "1", "2", "3", and continuing in sequence as required. Number the Progress Schedule submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Starting with first Progress Schedule update, and continuing with each subsequent update, indicate on the Progress Schedule the actual start and finish dates of each activity that is completed or is currently underway. Inaccurate representation of completed or in-progress activities will be grounds for Engineer's non-acceptance of the Progress Schedule update.
3. Progress Schedule update shall be based on retained logic. Progress override logic is not allowed.
4. Required scheduling software, and schedule organization, format, and content for updated Progress Schedules are identical to that required in this Section for initial Progress Schedules.
5. Submit to Engineer updated Progress Schedule if major revisions are made or as requested by Engineer. Requests by Engineer will not be more frequent than monthly.

1.8 TIME IMPACT ANALYSIS

A. Time Impact Analyses – General:

1. Prepare and submit time impact analysis when one or more of the following occurs: (a) Change Proposal is prepared; (b) Work Change Directive is issued that will affect the Progress Schedule; or (c) when delays occur.
2. Time impact analysis shall illustrate influence of each Change Order, Work Change Directive, allowance authorization, or delay, as applicable, on Contractor's ability to comply with the Contract Times and Progress Schedule constraints.
3. In performing time impact analysis, use Progress Schedule having revision date closest to and prior to the event giving rise to the delay or other change in the Work.
4. Indicate in time impact analysis activities on the Project's critical path prior to the event giving rise to the delay or other Change in the Work; activities added, extended, or deleted as a result of the delay or change in the Work; and impact of such changes on the Project's critical path activities.
5. Indicate in time impact analysis activities not within Contractor's control.
6. Time impact analysis shall demonstrate the time impact, based on date the Change Order, Work Change Directive, or allowance authorization was given to Contractor or, as applicable, date the delay started to occur; the status of the Work at that time; and activity duration of affected activities. Activity duration used in time impact analysis shall be those included in most recent Progress Schedule update accepted by Engineer, closest to start of the delay or start of the Change Order, Work Change Directive, or allowance authorization as adjusted by mutual, written agreement of the parties and Engineer.
7. Timing of Time Impact Analysis:
    a. Submit time impact analysis with Change Proposal, in accordance with Section 01 26 00 - Contract Modification procedures.
    b. When time impact analysis is not part of a Change Proposal, submit each time impact analysis within 15 days after the following, as applicable:
        1) Start of the delay.
        2) After Contractor's receipt of Work Change Directive.
    c. When Contractor does not submit time impact analysis for a specific change or delay, within the specified period for such submittal, such non-submittal will indicate extension of the Contract Times is not needed.

B. Evaluation by Engineer and Acceptance:

1. Engineer's evaluation of each time impact analysis comprised of complete information will be completed in timely manner (in accordance with the Contract Documents) after Engineer's receipt.
2. When time impact analysis is incomplete or otherwise inappropriate, Engineer will furnish comments to Contractor. When time impact analysis is complete and apparently appropriate, its acceptability will be indicated by associated Contract modification or allowance authorization.
3. Changes in the Contract Times will be made only by Change Order.
4. When mutual agreement is reached between the parties on effect of the change or delay in the Project, incorporate into the next Progress Schedule update the associated Progress Schedule revisions illustrating the influence of changes and delays.

1.9 RECOVERY SCHEDULES

A. Recovery Schedules – General:

1. When updated Progress Schedule indicates the ability to comply with the Contract Times falls 14 days or more behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Times, Contractor shall prepare and submit to Engineer Contractor's recovery schedule.

2. Recovery schedule is a Progress Schedule demonstrating Contractor's plan to accelerate the Work to achieve compliance with the Contract Times. If achieving the Contract Times is not feasible, Contractor's recovery schedule shall indicate Contractor's plan to recover as much of the lost time as possible to complete the Work as close as possible to the Contract Times.
3. Submit recovery schedule within 10 days after submittal of updated Progress Schedule where need for recovery schedule is indicated.

B. Recovery Schedule Report:

1. With each recovery schedule Submittal, include recovery schedule narrative report, manually prepared by Contractor, on Contractor's company letterhead, indicating name of person responsible for preparing the recovery schedule and report.
2. Recovery schedule report shall verbally indicate Contractor's plan for accelerating the Work and recovering lost time, and shall indicate the total number of days expected to be recovered by Contractor's implementation of the recovery schedule. Clearly indicate how the intended actions will recover lost time.
3. Contractor is fully responsible for complying with the Contract Documents, including the contract Times.

C. Implementation of Recovery Schedule:

1. At no additional cost to Owner, do one or more of the following, as appropriate: (a) furnish additional labor, (b) provide additional construction equipment and machinery, (c) provide suitable materials to accelerate the Work, (d) employ additional work shifts, (e) expedite procurement of materials and equipment to be incorporated into the Work or otherwise expedite delivery of such items, (f) provide other needed resources, and (g) provide other measures necessary to complete the Work within the Contract Times.
2. Upon acceptance of recovery schedule by Engineer, incorporate recovery schedule into the next Progress Schedule update.

D. Contractor's Failure to Recover Lost Time:

1. Contractor's refusal, failure, or neglect to take appropriate measures to recover lost time, or to submit a recovery schedule, shall constitute reasonable evidence that Contractor is not prosecuting the Work, or designated part of the Work, with diligence to ensure completion in accordance with the Contract Times. Such action or inaction by Contractor shall constitute sufficient basis for Owner to exercise remedies available to Owner under the Contract Documents.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Definition of various types of Submittals.
2. Coordination requirements for Submittals.
3. General provisions concerning Submittals.
4. Schedule of Submittals.
5. Contractor's preparation of Submittals, including:
    a. Numbering.
    b. Marking.
    c. Organization and content.
    d. Proposed "or-equals", substitutes, and deviations from Contract requirements.
    e. Electronic Documents Submittals.
    f. Contractor's review and approval of each Submittal.
    g. Resubmittals.
6. Contractor's transmittal of Submittals, including transmittal letters, transmittal and delivery method, and delivery of Samples, Closeout Submittals, and Maintenance Materials Submittals.
7. Engineer's review, including:
    a. Timing.
    b. Meaning of Engineer's Submittal action code(disposition) assigned.
    c. Delivery of Engineer's responses on Submittals.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, incidentals, and other effort necessary to furnish Shop Drawings, product data Submittals, Samples, and other Submittals in accordance with the Contract Documents.
2. This Section's Article, "General Provisions Concerning Submittals" includes a summary of the Contract Documents' locations of Submittals requirements.
3. Shop Drawings, product data Submittals, Samples, and other Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Engineer's approval or acceptance, as applicable, of a Submittal does not alter or modify the Contract Documents.
4. Engineer and Owner have the right to rely on Contractor's representations and certifications made regarding each Submittal.

C. Related Requirements: Include but are not limited to:

1. Section 01 25 00 - Substitution Procedures.
2. Section 01 31 26 - Electronic Communication Protocols.
3. Section 01 32 16 - Construction Progress Schedule.

1.2 REFERENCES

A. References – Introduction:

1. This Article presents definitions and terminology used in this Section and throughout the Contract Documents.
2. Applicability of the Term “Submittals”: Where reference is made to Shop Drawings, product data Submittals, Samples, or other Submittals in this Section and elsewhere in the Contract Documents, the term “Submittals”, as defined in the Contract Documents, is intended. The foregoing applies regardless of whether such term is indicated with an initial capital letter, unless context of the subject provision clearly indicates otherwise.
3. Types of Submittals:
    a. Submittal types are classified as follows: (1) Action Submittals, (2) Informational Submittals, (3) Closeout Submittals, and (4) Maintenance Materials Submittals.
    b. Type of each required Submittal is indicated in the associated Specifications section. When Submittal type is not clearly indicated in the associated Specifications section, Submittal will be classified as indicated in this Article. Submit request for interpretation when Contractor is uncertain of required Submittal type.

B. Action Submittals:

1. Action Submittals require an explicit, written approval or other appropriate action by Engineer (or other entity to whom the Submittal is required to be furnished, in accordance with the Contract Documents) before Contractor may release the associated item(s) for raw materials procurement, fabrication, production, and shipping.
2. Unless otherwise indicated in the Contract Documents, Action Submittals include the following:
    a. Shop Drawings.
    b. Product data.
    c. Samples.
    d. Testing plans for quality control activities required by the Contract Documents.
3. General Conditions’ requirements for Shop Drawings and Samples hereby apply to all Action Submittals.

C. Informational Submittals:

1. Informational Submittals are so indicated in the Contract Documents. Unless otherwise indicated, Informational Submittals include certifications, evaluation reports, results of source quality control activities, results of field quality control activities, Supplier instructions, reports of Suppliers’ visits to the Site, sustainable design Submittals (that are not Closeout Submittals), delegated design Submittals that are not “instruments of service” Submittals, qualifications statements, and others.
2. Informational Submittals, when submitted in accordance with the Contract and indicating full compliance with the Contract Documents, do not require explicit response from Engineer (or other entity to whom the Submittal is to be delivered); Engineer’s (or other entity’s) acceptance thereof will be indicated in the Engineer’s Submittals log. Copy of Engineer’s Submittals log is available to Contractor upon Contractor’s written request.

3. When Informational Submittal does not indicate full compliance with the Contract Documents, Engineer (or other entity to which Submittal is to be delivered) will indicate the non-compliance in a written response to Contractor.

D. Closeout Submittals:

1. Closeout Submittals are so indicated in the Contract Documents and are, in general, required before the associated Work is completed, unless earlier submittal is required by the Contract Documents.
2. Unless indicated otherwise in the Contract Documents, Closeout Submittals include maintenance contracts, operation and maintenance data, warranties, bonds (other than performance and payment bonds required prior to the start of construction), record documents, sustainable design closeout Submittals, software, keys, and others.
3. Closeout Submittals are processed in the same manner as described above for Informational Submittals.

E. Maintenance Materials Submittals:

1. Maintenance materials include spare parts, extra materials, tools, and similar items required to be furnished in accordance with the Contract Documents.
2. Furnish required physical maintenance materials, delivered to Owner or facility manager (if other than Owner), as applicable, at the location(s) indicated in the Contract Documents, for the corresponding required Maintenance Materials Submittals.
3. Maintenance Materials Submittals are documentation of delivery to Owner's or facility manager, and their acceptance of, required physical maintenance materials.
4. Maintenance Materials Submittals are processed in the same manner as described above for Informational Submittals.

F. Additional Terms:

1. The following terms have the meanings indicated below, regardless of whether such terms are indicated using initial capital letters, and apply to singular and plural of each:
   a. "Product data" means illustrations, standard schedules, performance charts, Supplier's published instructions, brochures, diagrams, and other information furnished by Contractor to illustrate or describe materials or equipment for some portion of the Work. In general, product data are manufacturers' pre-published information on the items proposed to be incorporated into the Work. Product data includes manufacturer's catalog pages and similar documents with contractor-made markings and indications of proposed products and proposed options.
   b. The term "Shop Drawings", defined in the General Conditions, is supplemented by the following: Shop Drawings include: (1) fabrication and assembly drawings, usually having a title block, or (2) schedules, prepared specifically for the Project. Here, "schedules" means a Project-specific summary of systems and components, such as a schedule of HVAC equipment, schedules of doors and door hardware, or windows, or a schedule of paint systems by room and surface, or other, similar Project information in a tabular format. In contrast, construction Progress Schedules, Schedules of Submittals, and Schedules of Values are not Shop Drawings. Unless expressly required otherwise in the Contract Documents, Shop Drawings shall not be prepared from, or on, the Drawings or any other component of the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Furnish Submittals well in advance of need for the associated material or equipment, or procedure (as applicable), in the Work and with ample time necessary for delivery of materials and equipment and to implement procedures following Engineer's approval or acceptance of the associated Submittal.
2. Work covered by a Submittal will not be included in payments by Owner until approval or acceptance (as applicable) of related Submittals has been obtained in accordance with the Contract Documents.

1.4 GENERAL PROVISIONS CONCERNING SUBMITTALS

A. Locations of Requirements:

1. Requirements concerning Submittals are generally located as follows:
   a. General Conditions, as may be modified by the Supplementary Conditions, applicable to the Project.
   b. This Section presents general requirements for Submittals applicable to the Project.
   c. Other Division 01 Specifications that include general requirements for certain types of Submittals, such as Section 01 31 26 - Electronic Communications Protocols, Section 01 78 23 - Operation and Maintenance Data, and others.
   d. The "Submittals" Article of the various Specifications sections, which indicates the required Submittals for the associated Work. Furnish all Submittals required by the Contract Documents regardless of whether explicitly indicated in the associated Specifications' "Submittals" Article.

B. This Section augments and supplements the requirements of the General Conditions, as may be modified by the Supplementary Conditions, relative to Submittals.

1.5 SCHEDULE OF SUBMITTALS

A. Informational Submittals: Submit the following:

1. Schedule of Submittals:
   a. Timing:
      1) Furnish Schedule of Submittals within time frames indicated in the General Conditions, as may be modified by the Supplementary Conditions.
      2) Submit updated Schedule of Submittals with each submittal of the updated Progress Schedule.
   b. Content: In accordance with the General Conditions, as may be modified by the Supplementary Conditions, and this Section. Requirements for content of preliminary Schedule of Submittals and subsequent Submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all Submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Clearly indicate Submittals that are on the Project's critical path. Indicate the following for each Submittal:
      1) Date by which Submittal will be received by Engineer.
      2) Whether Submittal will be for a substitution or "or-equal".
      3) Date by which Engineer's response is required. Allow not less than 14 days for Engineer's review, starting on Engineer's actual receipt of each Submittal. Allow increased time for large or complex Submittals.

4) For Submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of others (if any).

c. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules in Section 01 32 16 - Construction Progress Schedule.

d. Coordinate Schedule of Submittals with the Progress Schedule.

e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate Submittals on the Project's critical path, or that places extraordinary demands on Engineer for time and resources, is unacceptable. Do not include Submittals not required by the Contract Documents.

f. In preparing Schedule of Submittals:

1) Considering the nature and complexity of each Submittal, allow sufficient time for reviews and revisions.

2) Allow reasonable time for: Engineer's review and processing of Submittals, for Submittals to be revised and resubmitted, and for returning Submittals to Contractor.

3) Identify and accordingly schedule Submittals that are expected to have long anticipated review times.

1.6 PREPARATION OF SUBMITTALS

A. Prior to Submittal Preparation:

1. The General Conditions, as may be modified by the Supplementary Conditions, address Contractor's responsibility for submitting for Owner's acceptance identification of Subcontractors and Suppliers. Obtain Owner's acceptance before entering into subcontracts and purchase orders for the Work.
2. Comply with the Contract Documents relative to terms and conditions of subcontracts and purchase orders for the Work.
3. Contractor's responsibilities for the following are set forth in the General Conditions, as may be modified by the Supplementary Conditions, and as may be augmented elsewhere in the Contract Documents:
   a. Obtaining field measurements and dimensions.
   b. Determining and verifying required quantities.
   c. Verifying compatibility of materials.
   d. Apportioning the Work among Subcontractors, Suppliers, and Contractor.
   e. Reconciling required materials, equipment, and other Contract requirements with Contractor's means, methods, techniques, sequences, and procedures of construction and with Contractor's safety and protection programs and precautions incident thereto.
   f. Reviewing applicable provisions of the Contract Documents and obtaining from Engineer necessary interpretations or clarifications.

B. Submittal Identification:

1. Submittal Number: Shall be a unique number assigned to each individual Submittal. Assign Submittal numbers as follows:
   a. First part of Submittal number shall be the applicable Specifications section number, followed by a hyphen.

b. Second part of Submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate Submittal furnished under the associated Specifications section.

c. Example: Submittal number for the third Submittal furnished for Section 10 14 00 - Signage, would be “10 14 00-003”.

2. Review Cycle Number: Each resubmittal of a given Submittal shall be indicated with a lower-case letter designation:

a. No letter designation for initial (first) submittal of the Submittal number.

b. “a” shall indicate first resubmittal of the Submittal number.

c. “b” shall indicate second resubmittal of the Submittal number.

3. Examples:

Example Description	Submittal Identification	
	Submittal No.	Review Cycle
Initial (first) review cycle of the third Submittal furnished under Section 10 14 00 – Signage	10 14 00-003-	
Second review cycle (first resubmittal) of third Submittal furnished under Section 10 14 00 - Signage	10 14 00-003-	a

C. Marking of Submittals:

1. Mark on each page of each Submittal and each individual component submitted with Submittal number and applicable Specifications paragraph.

2. Mark each page of each Submittal with the Submittal page number.

3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Engineer.

4. For product data Submittals, operation and maintenance data Submittals, and other Submittals:

a. Mark options to be furnished using broad, dark arrows or “clouds” clearly drawn around the relevant text or diagrams. Do not use highlighter for indicating options and features.

b. Indicate options and features not furnished using clear strikeouts through the text or diagrams.

D. Submittal Organization and Content – General:

1. Page or Sheet Size; Furnish Submittals with one or more of the following page or sheet sizes: (a) 8.5 inches by 11 inches; (b) 11 inches by 17 inches; (c) 22 inches by 34 inches; unless another sheet size is acceptable to Engineer.

2. Language: All parts of each Submittal shall be in the English language.

3. Units of Measurement: Clearly indicate units of measurement on Shop Drawings, product data Submittals, record documentation, and operation and maintenance data Submittals.

4. Organize each Submittal logically to facilitate ease of understanding and review.

5. To the extent practicable, arrange Submittal information in same order as requirements are written in the associated Specifications Section.

6. Each Submittal shall cover Work under only one Specifications Section.

7. To the extent practicable, package together Submittals for the same Specifications section. Do not furnish required information piecemeal.
8. For large or complex Submittals, include a title page and table of contents.
9. Include appropriately labeled fly sheets to separate distinct parts of each Submittal.
10. Ensure legibility of all pages in each Submittal.
11. Minimize extraneous and unnecessary information in Submittals for materials and equipment. Do not submit information not relevant to the Submittal and associated requirements of the Contract Documents.
12. Contractor's, Subcontractor's, and Supplier's written comments on Shop Drawings and product data diagrams shall be colored green.
13. Do not submit under Specifications sections with title that includes either, "Common Work Results for" or, "Basic Requirements", unless the subject material or equipment is specified, in total, in a Specifications section with the words, "Common Work Results for" or, "Basic Requirements" in its title.

E. Electronic Documents Submittals:

1. Format: Electronic Documents Submittals shall be "portable document format" (.PDF) files unless expressly required otherwise by applicable provisions of the Contract Documents.
2. Electronic Documents Submittals must be electronically searchable when delivered to Engineer and other recipients.
3. Organization and Content:
   a. Each Electronic Documents Submittal shall be one file; do not divide individual Submittals into multiple Electronic Documents files.
   b. When Submittal is large or contains multiple parts, furnish PDF file with suitably titled electronic bookmark for each section of the Submittal.
   c. Content shall be identical to paper or other original Submittal. First page of each Electronic Documents Submittal shall be transmittal letter required in this's Paragraph 1.7.A.
4. Quality and Legibility: Electronic Documents Submittal files shall be made from the original and shall be clear and legible. Markings applied by Contractor, Subcontractor, or Supplier shall be clear, distinct, and readily apparent. Electronic Documents file shall be full size of original documents. Properly orient all pages for convenient reading on a computer display; do not furnish pages sideways or upside-down.
5. Provide sufficient internet service, software, and systems for Contractor with capability appropriate for transmitting the necessary files and receiving responses from Engineer or other entities.
6. Check not less than once per day for distribution of Electronic Documents Submittals responses and related Electronic Documents correspondence.

F. Proposed "Or-Equals", Substitutes, and Deviations from Contract Requirements:

1. "Or-Equals":
   a. The meaning of "or-equal" is addressed in Section 01 25 00 - Substitution Procedures.
   b. Contractor's request for approval of "or-equals" is to be presented via the associated Action Submittal(s).
   c. Expressly and prominently indicate, "Proposed Or-Equal" on the associated Action Submittals when Submittal is for an "or-equal".

d. Submittals requesting approval of an “or-equal” but not accompanied by the required, supplemental information will be deemed incomplete by Engineer and returned to Contractor without approval.

2. Substitutes:
   a. The meaning of “substitute” is indicated in Section 01 25 00 - Substitution Procedures.
   b. Requests for approval of substitutes shall comply with Section 01 25 00 - Substitution procedures, and other relevant provisions of the Contract Documents.
   c. Contractor’s request for approval of substitute is separate from the associated Action Submittal(s). Action Submittals that request approval of a substitute when a separate, formal substitution request (furnished in accordance with the Contract Documents) was not previously furnished to Engineer, followed by formal approval in via an appropriate contract modification (typically either a Field Order or Change Order), will be deemed by Engineer as non-compliant with the Contract Documents and will be returned to Contractor without approval.
   d. Contractor is solely responsible for delays incurred due to substitutes proposed via Submittals that have not been previously duly approved via an appropriate Contract modification.
   e. Action Submittals for items or procedures approved via an appropriate Contract modification shall include a copy of the Contract modification in which the substitute was approved.
3. Submittals with Proposed Deviations from Contract Requirements:
   a. When Submittal proposes deviations from requirements of the Contract Documents, the Submittal shall clearly and expressly indicate each proposed deviation.
   b. Also comply with this Section’s provision, in the Article below, on Contractor’s transmittal letter expressly alerting Engineer to the proposed deviations.
   c. Comply with requirements of the Contract regarding substitutes and “or-equals”.
   d. When deviation is proposed, also appropriately revise text of Contractor’s approval, from that required below in this Article.
   e. When Submittal includes deviations from Contract requirements and either the Submittal itself, Contractor’s transmittal letter, or both, do not comply fully with Contract requirements for indicating deviations in Submittals and giving separate written notice thereof, Engineer’s approval of such deviations will be deemed null and void unless Engineer’s written response to the Submittal has expressly acknowledged such deviation and indicated Engineer’s approval thereof.
   f. Contractor is solely responsible for delays and costs incurred due to any and all Submittals with deviations from Contract requirements that were not properly, expressly indicated and approved in accordance with the Contract Documents. Deviations not duly approved in accordance with the Contract Documents may be deemed defective Work. Contractor is solely responsible for remedying defective Work and all associated cost and time impacts.

G. Contractor's Approval of Submittals:

1. Contractor's Review: Before transmitting Submittals to Engineer, review each Submittal to:
   a. Ensure proper coordination of the Work.
   b. Determine that each Submittal is in accordance with Contractor's desires.
   c. Verify that Submittal contains sufficient information for Engineer to determine compliance with the Contract Documents.
2. Incomplete or inadequate Submittals will be returned without detailed review by Engineer.
3. Contractor's Approval Stamp and Signature:
   a. Each Submittal furnished shall bear Contractor's approval stamp (or facsimile thereof) and signature, as evidence that the Submittal has been reviewed and approved by Contractor and verified as complete and in accordance with the Contract Documents.
   b. Submittals without Contractor's approval and signature (as required by the contract Documents) will be returned to Contractor without further review by Engineer and deemed incomplete.
   c. Engineer reserves the right to reject as incomplete Submittals where Contractor's approval signature appears computer-generated or reproduced without the active involvement or review of Contractor's signatory.
   d. Contractor's approval shall contain the following text:

      Project Name: _____
      Contractor's Name: _____
      Contract Designation: _____
      Date: _____

      ---------- *Reference* ----------

      Submittal Title: _____
      Specifications:
      Section: _____
      Page No.: _____
      Paragraph No.: _____
      Drawing No.: [_____] of _____
      Location of Work: _____

      Submittal No. and Review Cycle: _____
      Coordinated by Contractor with Submittal Nos.: _____
      _____

      I hereby certify that Contractor has satisfied Contractor's obligations under the Contract Documents relative to Contractor's review and approval of this Submittal, including: (1) reviewed and coordinated the Submittal with other Submittals and with the requirements of the Work and the Contract Documents; (2) determined and verified all: field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal, (b) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work, and (c) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; (3)

confirmed the Submittal is complete with respect to all related data included in the Submittal; and (4) clearly and expressly indicated all proposed deviations (if any) from the requirements of the Contract Documents both in the Submittal itself and in the Submittal's transmittal letter. Accordingly, this Submittal is hereby approved for Contractor by:

Approved for Contractor by: _____

H. Resubmittals:

1. Refer to the General Conditions, as may be modified by the Supplementary Conditions, for requirements regarding resubmitting required Submittals.
2. Do not increase the scope of prior review cycle of the same Submittal.
3. Indicate on Contractor's transmittal letter how Submittal was revised from previous review cycle of the Submittal and where the revisions or corrections are located within the resubmittal.
4. Expressly address and provide response for all components previously transmitted by Engineer on prior review cycles of the subject Submittal. Where resubmittal lacks complete response to Engineer's prior comments, Engineer may deem such resubmittal as incomplete and return it to Contractor without further review.
5. Where part of the Submittal's prior review cycle was expressly approved or accepted, as applicable, by Engineer, do not include such items in subsequent resubmittals.
6. Indicate, "Not Yet Resolved—To Be Resubmitted at a Later Date" for any items not approved in prior review cycle of the Submittal for items not included in the subject resubmittal. Engineer reserves the right to deem incomplete Submittals "Not Approved" or "Revise and Resubmit". Furnishing incomplete or partial resubmittals is discouraged.
7. Resubmittal of Previously Approved or Accepted Items:
    a. Do not resubmit on a given item previously approved or accepted, as applicable, by Engineer, without Engineer's advance consent. Consent will be given for bona-fide unavailability of a previously approved or accepted item where Contractor has acted in good faith in a timely manner with due diligence to comply with the Contract Times.
    b. Destroy or conspicuously mark "SUPERSEDED" on all documents having previously received Engineer's approval or acceptance, as applicable, that are superseded by a resubmittal.

1.7 TRANSMITTAL OF SUBMITTALS BY CONTRACTOR

A. Contractor's Transmittal Letters for Submittals:

1. Furnish separate transmittal letter with each Submittal. Use transmittal form attached to this Section (as Exhibit 01 33 00-A) unless other transmittal form is acceptable to Engineer at the start of the Project's construction.
2. When transmittal form other than this Section's Exhibit 01 33 00-A is acceptable to Engineer, at beginning of each transmittal, include a reference heading indicating: Contractor's name, Owner's name, Project designation, Contract designation, transmittal number, and Submittal number (with review cycle).
3. "Or-Equals": When the Submittal is proposing an "or-equal", expressly so indicate on transmittal form submitted by Contractor.

4. Proposed Deviations from Contract Requirements: When the Submittal proposes deviations from requirements of the Contract Documents, transmittal letter shall specifically describe each proposed deviation.

B. Submittal Delivery Method:

1. This provision presents general requirements for delivery or all Submittals unless otherwise required elsewhere in the Contract Documents.
2. Furnish Submittals as Electronic Documents delivered in accordance with Section 01 31 26 – Electronic Communication Protocols.
3. Furnish Submittals to Engineer and each other entity indicated in the Contract Documents as receiving a Submittal directly from Contractor.
4. Address Submittals to Engineer as follows: HDR, 1917 South 67th Street, Omaha, NE 68106, to attention of Mitch Miller, Mitchell.miller@hdrinc.com.

C. Samples - Transmittal and Delivery:

1. Labeling and Tagging Samples:
   a. Securely label or tag each Sample with Submittal identification number.
   b. Label or tag shall include clear space at least 4 inches by 4 inches in size for affixing Engineer's review stamp indicating disposition assigned by Engineer.
   c. Label or tag shall not cover, conceal, or alter Sample's appearance or features.
   d. Label or tag shall not be separated from the Sample.
2. Timing: Deliver required Samples concurrently with other Action Submittals required for the same element of the Work, unless other delivery time frame is indicated in the Schedule of Submittals accepted by Engineer.
3. Quantity Required:
   a. Where the Contract Documents require a Sample as a field mock-up, provide Sample at the Site or in the Work at location acceptable to Engineer. Provide the quantity of field mock-ups required by the contract Documents; if not otherwise shown or specified, provide one of each required field mock-up.
   b. For reasonably portable Samples, deliver the quantity of Samples required in the associated Specifications. If quantity of Samples is not indicated in the associated Specifications section, deliver to Engineer not less than two identical Samples of each item for which Sample is required.
   c. Samples will not be returned to Contractor. If Contractor requires Sample(s) for Contractor's use, so advise Engineer in writing and furnish additional copies of the Sample. Contractor is responsible for furnishing, shipping, and transporting additional Samples.

D. Closeout Submittals –Transmittal and Delivery:

1. Furnish the following Closeout Submittals in accordance with general requirements for transmitting and delivering Submittals, indicated above in this Article: Maintenance contracts; warranty bonds (when required) and other bonds required for specific materials, equipment, or systems; warranty documentation; and sustainable design closeout documentation (when required). On documents such as maintenance contracts and bonds, include on each document furnished original ("wet") signature of entity issuing said document. When original "wet" signatures are required, furnish such Submittals to Engineer both on original paper and as Electronic Documents, and to other entities furnish as indicated above in this Article for general requirements for Submittals.
2. Operations and Maintenance Manuals: Submit in accordance with Section 01 78 23 - Operation and Maintenance Data.

3. Record Documents: Submit in accordance with Section 01 78 39 - Project Record Documents.
4. Software: In addition to software installed on Owner's computer system, furnish number of copies of software required in the Specifications section where the software is specified. Preferred means of transmittal is via secure file transfer directly to Owner (or facility manager, if other than Owner) via secure file transfer method mutually acceptable to software developer and the receiving entity. When secure file transfer is used, submit to Engineer documentation signed or electronically acknowledged by Owner that the files were received. Where such software is available only on the software developer's portable media, furnish such software on software developer's original, portable media, sealed in software developer's original, unopened, clearly labeled packaging.

E. Maintenance Materials Submittals – Delivery:

1. Deliver physical maintenance materials required by the Contract Documents in accordance with applicable provisions of the Contract.
2. Submit documentation of delivery of (Maintenance Materials Submittals) in accordance with general requirements for Submittals as indicated in this Section.

1.8 ENGINEER'S REVIEW OF SUBMITTALS

A. This Article applies to review of all Submittals by Engineer or other entity to whom the Contract Documents require such Submittal be furnished.

B. Timing:

1. Timing of Engineer's review will be in accordance with the Schedule of Submittals accepted by Engineer.
2. When Submittal is delivered to Engineer on a date other than that indicated in the Schedule of Submittals accepted by Engineer, duration of Engineer's review may differ from that indicated in the Schedule of Submittals, based on Engineer's availability and resources. Engineer will make good-faith effort to furnish responses to Submittals in a timely manner.
3. Contractor is responsible for communicating to Engineer when a Submittal is on the Project's critical path.

C. Engineer's Review:

1. Markings:
   a. Comments or responses marked directly on Submittal by Engineer (or other entity reviewing Submittal) will be colored red.
   b. Engineer may also present narrative comments on a comment sheet inserted by Engineer into the Submittal or included on Engineer's transmittal letter for the Submittal. Such comments will be in black text. When a separate comment sheet is included by Engineer, such sheet will be clearly identified as Engineer's comments.
2. Engineer's review and disposition assigned to Submittal are subject to the following:
   a. Submittal disposition is subject to: Engineer's comments on the Submittal; disclaimer language on Engineer's Submittal transmittal letter; Engineer's Submittal review stamp (when used) or equivalent (when used); and this provision.
   b. Engineer's review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.

c. Contractor shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner's directions, and Laws and Regulations. Contractor is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.

d. Engineer is not responsible for resubmittals not yet furnished by Contractor or tracking Contractor's progress on resubmittals.

3. Documents not required by the Contract Documents but nonetheless furnished by Contractor as submittals will not be reviewed by Engineer.

D. Meaning of Submittal disposition Assigned by Engineer:

1. Action Submittals:

a. "Approved" (Action Code A): Upon return of Submittal marked "Approved", order, ship, or fabricate materials and equipment included in the Submittal (pending Engineer's approval or acceptance, as applicable, of production-related qualifications statements and certifications, and required source quality control Submittals) or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents.

b. "Approved as Noted" (Action Code B): Upon return of Submittal marked "Approved as Noted", order, ship, or fabricate materials and equipment included in the Submittal (pending Engineer's approval or acceptance, as applicable, of production-related qualifications statements and certifications, and required source quality control Submittals) or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents, and in accordance with Engineer's comments and notes indicated in Engineer's Submittal response.

c. "Revise and Resubmit" (Action Code C): Upon return of Submittal marked "Revise and Resubmit", make the revisions necessary and indicated and resubmit to Engineer for approval.

d. "Not Approved" (Action Code D): This disposition indicates material or equipment that cannot be approved. "Not Approved" disposition may also be applied to Submittals that are incomplete. Upon return of Submittal marked "Not Approved", repeat initial submittal procedure utilizing approvable material or equipment, with a complete Submittal clearly indicating all information required.

2. Informational, Closeout, and Maintenance Materials Submittals:

a. "Accepted" (Action Code F): Information included in Submittal complies with the applicable requirements of the Contract Documents and is acceptable. No further action by Contractor is required relative to such Submittal, and the Work covered by the Submittal may proceed. Materials and equipment with Submittals with this disposition may be shipped or operated, as applicable. Submittals assigned "Accepted" by Engineer (or other reviewing entity) does not indicate Engineer's acceptance of the associated Work, which is indicated only as set forth in the General Conditions and Section 01 77 19 – Closeout Requirements.

b. “Not Acceptable” (Action Code G): Submittal, or part thereof, does not indicate full compliance with applicable requirements of the Contract Documents and is not acceptable. Provide labor, materials, equipment, services, and incidentals necessary to properly and accurately revise Submittal and resubmit to indicate acceptability and compliance with the Contract Documents.

3. Other:

a. “Submittal Not Reviewed” (Action Code E): Documents so marked by Engineer are not required by the Contract Documents. Submittals may also be marked with this disposition when information in the document was previously reviewed and approved or accepted by Engineer, as applicable.

E. Distribution of Engineer’s Responses:

1. Unless otherwise indicated in the Contract Documents, Engineer will distribute written responses (as Electronic Documents) to Submittals to the following:

a. Contractor.

b. Owner.

c. Engineer’s file.

2. Engineer’s acceptance of Informational Submittals, Closeout Submittals, and Maintenance Materials Submittals will be recorded in Engineer’s Submittal log. Copy of Engineer’s Submittals log is available from Engineer upon written request of Owner or Contractor. If no such request is received by Engineer, Engineer will distribute copy of Engineer’s Submittals log once per month (when Submittals have been received or acted on by Engineer). Engineer may distribute copy of Engineer’s Submittals log as an Electronic Document or as handout at construction progress meetings.

3. Paper copies of Engineer’s Submittal responses will not be distributed unless otherwise required by the Contract Documents or otherwise agreed to by Engineer.

4. Contractor is responsible for forwarding Engineer’s Submittals responses to Subcontractors and Suppliers as appropriate, and for coordinating the Work of all trades.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

A. The documents listed below, following this Section’s “End of Section” designation, are part of this Specifications Section:

1. “Exhibit 01 33 00-A – Transmittal for Submittal No. ” (one page).

END OF SECTION

Exhibit 01 33 00-A

Transmittal for Submittal No. [_____]-[_____]

Project Name:		Date Received:	
Project Owner:		Checked By:	
Contractor:	HDR Engineering, Inc.	Log Page:	
Address:	Address:	HDR No.:	
		Spec Section:	
		Drawing/Detail No.:	
Attn (Contractor):	Attn (HDR):	Review Cycle	
Date Transmitted by Contractor:	Date of Engineer's Response Transmittal:		

Item No.	Submittal No.	Description (indicate number of copies where paper copies of physical Samples are returned)	Manufacturer	Supplier Dwg or Data No.	Engineer's Disposition (Action Code) *
1					
2					
3					
4					

Contractor's Remarks *(insert text)*:

Engineer's Remarks *(insert text)*: :

* **Legend for Action Code** indicated above, assigned by Engineer:

Action Submittal:
- A – Approved
- B – Approved as Noted
- C – Revise and Resubmit
- D – Not Approved
- E – Submittal Not Reviewed

Informational, Closeout, or Maintenance Materials Submittal:
- F – Accepted (this code normally recorded in Engineer's Submittals log).
- G – Not Acceptable

Engineer's Disclaimer (for Submittals that do not involve delegated design):

a. Submittal action code is subject to: Engineer's comments on the Submittal, comment sheets (if any), and this transmittal letter; disclaimer language on Engineer's Submittal review stamp or equivalent; and Specifications Section 01 33 00 – Submittal Procedures.

b. Engineer's review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.

c. Contractor shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner's directions, and Laws and Regulations. Contractor is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.

d. Engineer is not responsible for resubmittals or tracking progress of resubmittals.

Reviewed for HDR by:	**Date of Engineer's Review:**

Distribution: Contractor ☐ File ☐ Field ☐ Owner ☐ Other ☐

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SECTION 01 42 00
REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Defined terms and terminology.
2. Construction Codes: Indication of applicable building code and other construction codes.
3. Abbreviations in general use in the Contract Documents.
4. Reference Standards: General requirements regarding reference standards, including a listing of reference standard-issuing organizations (and their acronyms) used in the Contract Documents.

1.2 REFERENCES

A. Contract Language Addressed to Contractor:

1. Unless expressly indicated otherwise, language of the Contract Documents addresses Contractor, and the Contract Documents show and indicate Contractor's obligations.
2. Unless indicated otherwise, expressions such as, "provide", "furnish", "install", "perform", "retain services of", "remove", "demolish", "replace", and the like refer to Contractor's obligations under the Contract.

B. Defined Terms:

1. Defined terms, indicated with initial capital letters or with all-capital letters, used in the Contract Documents, are indicated in the General Conditions, as may be modified by the Supplementary Conditions. Additional defined terms, if any, in general use in the Contract Documents are indicated below. Where used, such defined terms apply to the singular and plural thereof.
    a. None.
2. Additional defined terms, applicable to the Work of a given Specifications Section, may be indicated in the associated Specifications Section.

C. Terminology:

1. Terminology, indicated without initial capital letters, used in the Contract Documents, are indicated in the General Conditions, as may be modified by the Supplementary Conditions. Additional terminology in general use in the Contract Documents are indicated below. Where used, such terminology applies to the singular and plural thereof.
    a. "Shown" means information or requirements presented on the Drawings, in schedules, or in other types of graphic instruments.
    b. "Indicated" means, as applicable: (1) graphic representations, notes, or schedules on the Drawings, or (2) other paragraphs, provisions, tables, or schedules in the Specifications and elsewhere in the Contract Documents.
    c. "Specified", "noted", "scheduled", and similar terms, have the same meaning as "shown" and "indicated", as applicable, and are used to help the user locate the reference without limitation on the location.
    d. "Installer", "applicator", or "erector" is Contractor's employees or Subcontractor, engaged to perform a specific construction activity, including installation, erection, application, or similar Work. Installers shall be experienced in the Work that installer is engaged to perform.
    e. "Experienced", when used in conjunction with terms such as "installer", "Subcontractor", "Supplier", "manufacturer", and similar terms means (unless expressly indicated otherwise for the subject Work elsewhere in the Contract Documents) such person or

entity, as applicable, has successfully completed not less than five previous projects similar in size, scope, and complexity to such person's or entity's work on this Project; being familiar with the special requirements indicated and required; being familiar with Laws and Regulations; and having complied with requirements of authorities having jurisdiction, and complying with written requirements of the Supplier of the material or equipment being installed.

f. "Assigned specialists" and similar terms: Certain Specifications require specific construction activities be performed by specialists with recognized, extensive experience in such operations. Engage said specialists for such activities, and their engagement is a requirement over which Contractor has no option. These requirements do not conflict with enforcement of building codes and other Laws and Regulations. Such requirements are not intended to interfere with local trade union jurisdictional settlements and similar conventions. Such assignments shall not relieve Contractor of responsibility for complying with the requirements of the Contract Documents.

g. Trades: Use of terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter", unless otherwise indicated in the Contract Documents or required by Laws or Regulations, or required by an applicable project labor agreement. Such terminology also does not imply that indicated requirements apply exclusively to trade personnel of the corresponding generic name..

2. Additional terminology, applicable to the Work of a given Specifications Section, may be indicated in the associated Specifications Section.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:

1. References in the Contract Documents to local building and construction code(s) means the following:
   a. Building Code: International Building Code (IBC), 2018.
   b. Electrical Code: National Electric Code (NEC), 2017.
   c. City of Omaha Standard Specifications, 2024.
   d. City of Omaha Standard Plates, 2024.

1.4 ABBREVIATIONS.

A. Abbreviations - General:

1. Abbreviations commonly used in the Contract Documents are indicated in this Article or on the Drawings, except as further indicated in the following paragraphs, .
2. Additional abbreviations, specific to the Work of a given Specifications section, may be indicated in the associated Specifications.
3. Typical equipment abbreviations are indicated in Section 01 61 03 - Common Work Results for Equipment.
4. Piping system abbreviations are indicated in Section 40 05 01 - Common Work Results for Process Piping.

B. Common abbreviations that may be used in the Contract Documents are indicated below, alphabetically by their written-out meaning:

alternating current	AC
ampere	A, or amp
Americans with Disabilities Act	ADA
Americans with Disabilities Act Accessibility Guidelines	ADAAG

ante meridian	a.m.
Architectural Barriers Act	ABA
average	avg
biochemical oxygen demand	BOD
five-day biochemical oxygen demand	BOD_5
brake horsepower	Bhp or BHP
British thermal unit	Btu
building information model	BIM
carbonaceous biochemical oxygen demand	CBOD
five-day carbonaceous biochemical oxygen demand	$CBOD_5$
chemical oxygen demand	COD
Celsius (or Centigrade)	C
chlorinated polyvinyl chloride	CPVC
chlorofluorocarbons	CFC
Code of Federal Regulations	CFR
computer-aided drafting and design	CADD, or CAD
cubic inch	cu in, or CU IN, or in^3
cubic foot	cu ft, or CU FT, cf, CF, or ft^3
cubic yard	cu yd, or CU YD, or CY, or yd^3
cubic feet per minute	CFM, or cfm
cubic feet per second	CFS, or cfs
decibel	dB, dBA, or dBa
degree Celsius	degrees C, ˚C, or deg C
degrees Fahrenheit	degrees F, ˚F, or deg F
diameter	dia
direct current	DC
dollars	$
each	ea
efficiency	eff
Fahrenheit	F
feet	ft or FT
feet per hour	FPH, or ft/hr
feet per minute	FPM or ft/min
feet per second	fps, or ft/s
figure	fig
flange	flg
foot-pound	ft-lb or FT-LB

gallon	gal or GAL
gallons per hour	GPH, gph, or gal/hr
gallons per minute	GPM, or gpm
gallons per second	GPS, or gps
gram	g
grams per liter	g/L
heating, ventilating, and air conditioning	HVAC
Hertz	Hz
horsepower	hp or HP
hour	hr or HR
human-machine interface	HMI
inch	in. or IN
inches of mercury	in. Hg
inches water gage	in. w.g.
inch-pound	in.-lb
inside diameter	ID
iron pipe size	IPS
thousand pounds	kips
thousand pounds per square inch	ksi or KSI
kilovolt-ampere	kva, or kVA
kilowatt	Kw, or
kilowatt-hour	Kwhr, kWhr, or kwh, kWh
linear foot	lin ft or LF
liter	L
Leadership in Energy and Environmental Design (USGBC)	LEED
maximum	max
mercury	Hg
mile	mi
miles per hour	mph or MPH
milligram	mg
milligrams per liter	mg/l or mg/L
milliliter	ml
millimeter	mm
million gallons per day	MGD or MGD
million gallon	MG
minimum	min
national pipe threads	NPT

net positive suction head	NPSH
net positive suction head available	NPSHA
net positive suction head required	NPSHR
nitrogen oxide (total concentration of mono-nitrogen oxides such as nitric oxide (NO) and nitrogen dioxide (NO_2))	NOx
nominal pipe size	NPS
number	no. or #.
operator interface terminal	OIT
ounce	oz
ounce-force	ozf
outside diameter	OD
parts per hundred	PPH, or pph
parts per million	PPM, or ppm
parts per billion	PPB, or ppb
polychlorinated biphenyl	PCB
polyvinyl chloride	PVC
post meridian	p.m.
pound	lb, LB, lbs, or LBS
pounds per square inch	PSI, or psi
pounds per square inch absolute	PSIA, or psia
pounds per square inch gauge	PSIG, or psig
pounds per square foot	PSF, or psf
process control system	PCS
programmable logic controller	PLC
revolutions per minute	RPM, or rpm
second	sec, or s
specific gravity	sp gr, or SG
square	sq
square foot	sq ft, or SQ FT, or sf, or ft^2
square inch	sq in., or SQ IN, or in^2
square yard	sq yd, or SY, or yd^2
standard	std
standard cubic feet per minute	SCFM, or scfm
total dynamic head	TDH
totally-enclosed fan-cooled	TEFC, or tefc
volt	V
volts alternating current	VAC, or vac

volts direct current	VDC, or vdc
volatile organic compounds	VOC

1.5 REFERENCE STANDARDS AND ORGANIZATIONAL ACRONYMS

A. Reference Standards - General:

1. Each entity engaged in the Work, including Contractor, Subcontractors, and Suppliers, shall be familiar with reference standards applicable to its portion(s) of the Work. Comply with such reference standards when required by the Contract Documents or appropriate fabrication and construction practice, unless the Contract Documents requirements exceed those of the associated reference standard.
2. Refer to the General Conditions, as may be modified by the Supplementary Conditions, relative to reference standards and resolving discrepancies between reference standards and the Contract Documents.
3. Provisions of reference standards are in effect in accordance with the Specifications and other provisions of the Contract Documents where reference standards are cited.
4. Copies of applicable reference standards are not included in or bound with the Contract Documents. Where reference standards are needed for the Work, obtain such reference standards(s) from the publication source.

B. Organization Names and Acronyms:

1. Where reference standards, specifications, manuals, Laws or Regulations, or other published data of international, national, regional, or local organizations are cited in the Contract Documents, the organization issuing the standard (or other type of document) may be referred to by its acronym only.
2. The following acronyms that may appear in the Contract Documents shall have the meanings indicated below, unless expressly indicated otherwise in that part of the Contract Documents where such standard (or other document) is cited.
3. Listing is alphabetical by acronym.

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearing Manufacturers Association (formerly Anti-Friction Bearing Manufacturers Association (AFBMA))
ACI	American Concrete Institute
ACS	American Chemical Society
ADSC-IAFD	International Association of Foundation Drilling.
AEIC	Association of Edison Illuminating Companies
AF&PA	American Forest and Paper Association
AGI	American Geosciences Institute
AGMA	American Gear Manufacturers Association
AI	Asphalt Institute
AIA	American Institute of Architects

AIChE	American Institute of Chemical Engineers
AIPG	American Institute of Professional Geologists
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standards Committee
AMA	Acoustical Materials Association
AMCA	Air Movement and Control Association
AMP	National Association of Architectural Metal Manufacturers, Architectural Metal Products Division
AMPP	Association for Materials Protection and Performance
ANSI	American National Standards Institute
APA	The Engineered Wood Association
APHA	American Public Health Association
API	American Petroleum Institute
AREA	American Railway Engineering Association
ARI	Air Conditioning and Refrigeration Institute
ARS	American Rail Standard
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society for Non-Destructive Testing
ASQ	American Society for Quality
ASSE	American Society of Safety Engineers
ASTM	ASTM International
AWCI	Association of the Wall and Ceiling Industry
AWI	Architectural Woodwork Institute
AWPA	American Wood Protection Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BAAQMD	Bay Area Air Quality Management District
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association
CASE	Coalition of American Structural Engineers (part of the American Council of Engineering Companies (ACEC))
CBMA	Certified Ballast Manufacturers Association
CBP	United States Customs and Border Protection

CDA	Copper Development Association
CEMA	Conveyor Equipment Manufacturers Association
CGA	Compressed Gas Association
CISCA	Ceilings and Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CMAA	Crane Manufacturers Association of America
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DBIA	Design-Build Institute of America
DHS	United States Department of Homeland Security
DIN	Deutsches Institut für Normung, eV (German Institute for Standardization)u
DIPRA	Ductile Iron Pipe Research Association
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
ETL	Intertek Testing Services, Inc. (formerly ETL Testing Laboratories, Inc.)
FAA	Federal Aviation Administration (US Department of Transportation)
FCC	United States Federal Communications Commission
FEMA	Federal Emergency Management Agency (US Department of Homeland Security)
FHWA	Federal Highway Administration (US Department of Transportation)
FIDIC	International Federation of Consulting Engineers
FM	Factory Mutual (FM Global)
FRPI	Fiberglass Reinforced Plastics Institute
FS	Federal Specification
FTA	Federal Transit Administration, United States Department of Transportation
GA	Gypsum Association
GANA	Glass Association of North America
HEW	United States Department of Health, Education and Welfare
HI	Hydraulic Institute
HMI	Hoist Manufacturers Institute
HUD	United States Department of Housing and Urban Development
IBC	International Building Code
ICC	International Code Council
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IFI	Industrial Fasteners Institute

IRI	Industrial Risk Insurers
ISA	International Society of Automation
ISI	Institute for Sustainable Infrastructure
ISO	Insurance Services Office
ISO	International Organization for Standardization
LPI	Lightning Protection Institute
MIA	Marble Institute of America
ML/SFA	Metal Lath/Steel Framing Association
MS	Military Specifications
MSS	Manufacturers' Standardization Society
MMA	Monorail Manufacturers Association
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NAPF	National Association of Pipe Fabricators, Inc.
NARUC	National Association of Regulatory Utilities Commissioners
NAVFAC	Naval Facilities Engineering Command (US Navy)
NBHA	National Builders Hardware Association
NBS	National Bureau of Standards (United States Department of Commerce)
NCMA	National Concrete Masonry Association
NEC	National Electric Code
NELMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association
NFRC	National Fenestration Rating Council
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NHPMA	Northern Hardwood and Pine Manufacturers Association
NICET	National Institute for Certification in Engineering Technologies
NIST	National Institute of Standards and Technology (United States Department of Commerce)
NLGA	National Lumber Grades Authority
NRC	United States Nuclear Regulatory Commission
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	National Sanitation Foundation

NSPE	National Society of Professional Engineers
NSSGA	National Stone, Sand, and Gravel Association
NTMA	National Terrazzo and Mosaic Association
OSHA	Occupational Safety and Health Administration, United States Department of Labor
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
PFI	Pipe Fabrication Institute
PPI	Plastics Pipe Institute
PGMC	Primary Glass Manufacturers Council
PS	Product Standards Section, United States Department of Commerce
RCSC	Research Council on Structural Connections (part of AISC)
RMA	Rubber Manufacturers Association
RUS	Rural Utility Service (division of Rural Development of the USDA)
SAE	Society of Automotive Engineers
SCAQMD	Southern California Air Quality Management District
SCPRF	Structural Clay Products Research Foundation
SCTE	Society of Cable Telecommunications Engineers
SDI	Steel Deck Institute
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturing Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractor’s National Association
SPI	Society of the Plastics Industry
SPIB	Southern Pine Inspection Bureau
SSPC	Society for Protective Coatings (formerly, Steel Structures Painting Council)
SWI	Steel Window Institute
TCNA	Tile Council of North America
TEMA	Tubular Exchanger Manufacturers Association
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TSA	Transportation Security Administration (United States Department of Homeland Security)
UCC	Uniform Commercial Code
UL	Underwriters Laboratories, Inc.
USAB	United States Access Board
USACE	United States Army Corps of Engineers (also abbreviated as COE or USACOE)
USDA	United States Department of Agriculture
USDOE	United States Department of Energy

USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USGBC	United States Green Building Council
USGS	United States Geological Survey
USPHS	United States Public Health Service
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association
WCMA	Wood Component Manufacturers Association
WDMA	Window and Door Manufacturers Association
WEF	Water Environment Federation (formerly the Water Pollution Control Federation)
WWEMA	Water and Wastewater Equipment Manufacturers Association
WWPA	Western Wood Products Association

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 51 05
TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary electricity.
2. Temporary lighting.
3. Temporary heating, cooling, ventilating, and temporary enclosures.
4. Temporary water supply.
5. Temporary sanitary facilities.
6. Temporary first-aid facilities.
7. Temporary fire protection.

B. Scope:

1. Contractor shall provide all temporary utilities and temporary facilities required for the Project, including those indicated in this Specifications section.
2. Make all arrangements with utility owners for temporary utilities and with others as appropriate for temporary facilities. Obtain required permits and approvals for temporary utilities and temporary facilities.
3. Pay all service costs for utilities and facilities indicated in this Specifications section as Contractor's responsibility, including cost of electricity, water, fuel, and other utility services and temporary facilities required for the Work.
4. Continuously maintain adequate temporary utilities and temporary facilities for all purposes for the Project, until removal of temporary utilities and temporary facilities. At minimum, provide and maintain temporary utilities and temporary facilities through Substantial Completion and removal of temporary field offices and sheds unless otherwise approved in writing by Engineer.
5. Should Owner occupy part of the Work prior to Substantial Completion of the entire Work, cost of utilities consumed via temporary utilities serving the portion occupied by Owner will be shared proportionately by Owner and Contractor as mutually agreed to by the parties.
6. Maintain, including cleaning, temporary utilities and temporary facilities, and continuously provide consumables as necessary.
7. Temporary utilities and temporary facilities shall be adequate for personnel using the Site and the needs of the Project.
8. Provide temporary utilities and temporary facilities in compliance with Laws and Regulations and requirements of authorities having jurisdiction and, when applicable, requirements of utility owners.

1.2 REQUIREMENTS FOR TEMPORARY UTILITIES AND TEMPORARY FACILITIES

A. Temporary Electricity:

1. Provide temporary electric service necessary for the Work, including continuous power for temporary field offices and sheds. Provide temporary outlets with circuit breaker protection and ground fault protection.

B. Temporary Lighting:

1. Do not work in areas with insufficient lighting. Where lighting is insufficient for the work activities to be performed, provide additional temporary lighting.
2. Provide temporary lighting sufficient for observation of the Work by Engineer and inspection by Contractor, entities performing code-required tests and special inspections, and

authorities having jurisdiction. Where required by Engineer, provide additional temporary lighting.

C. Temporary Heating, Cooling, Ventilating, and Enclosures:

1. Provide sufficient temporary heating, cooling, and ventilating and temporary enclosures to ensure safe working conditions and prevent damage to existing property and the Work.
2. Except where otherwise specified, temporary heating shall maintain temperature of the space served between 50 degrees F and maximum design temperature of building or facility and its contents.
3. Required temperature range for storage areas and certain elements of the Work, including preparation of materials and surfaces, installation or application, and curing as applicable, shall be in accordance with the Contract Documents for the associated Work and the Supplier's recommended temperature and humidity ranges for storage, application, or installation, as appropriate.
4. Provide temporary ventilation sufficient to prevent accumulation in construction areas and areas occupied by Owner of hazardous and nuisance levels or concentrations of dust and particulates, mist, fumes, vapors, odors, and gases, associated with construction. Similarly, provide temporary ventilation for building or structure spaces temporarily without ventilation due to the Work.

D. Temporary Water:

1. General:
   a. Provide temporary water service and facilities including piping, valves, meters if not provided by owner of existing waterline, backflow preventers, pressure regulators, and other appurtenances. Provide freeze-protection as necessary to prevent freezing of temporary services.
   b. Continuously maintain adequate water flow and pressure for all purposes during the Project, until removal of temporary water systems.
2. Water for Construction Purposes:
   a. Provide water for Site maintenance and cleaning and, water necessary for construction activities, and water for disinfecting and testing of systems.
   b. Contractor may use existing hose bibs for short-term wash-downs and intermittent use of water for work areas in existing building and existing structures. Obtain consent of Engineer and Owner if connections to existing hose bibs and similar existing connections will be used for more than one day at a time.
3. Water for Human Consumption and Sanitation:
   a. Provide potable water in accordance with Laws and Regulations for consumption by personnel at the Site, for field offices, and for sanitary facilities.
   b. When necessary, provide bottled, potable water for use and consumption by personnel at the Site, including Contractor, Engineer, and visitors to the Site.

E. Temporary Sanitary Facilities:

1. Provide suitably-enclosed chemical or self-contained toilets for Contractor's employees, Subcontractors, Suppliers, Engineer, and visitors to the Site. Location of temporary toilets shall be acceptable to Owner and Engineer.
2. Refer to Paragraph 1.2.E of this Specification Section for requirements for temporary water service intended for human consumption during construction.
3. Provide suitable temporary washing facilities for employees and visitors.

F. Temporary First-aid Facilities.

1. Provide temporary first-aid stations at or immediately adjacent to the Site's work areas, and inside Contractor's field office. Locations of temporary first-aid stations shall be determined by Contractor's safety representative. Replenish supplies in first-aid stations as items are

used, prior to expiration of items, and as necessary. Monitor and log inventory of supplies in temporary first-aid stations.

2. Provide list of emergency telephone numbers at each hardwired telephone at the Site.

G. Temporary Fire Protection.

1. Provide temporary fire protection in accordance with Laws and Regulations and the requirements of this Specifications section.
2. For work areas without standpipe fire protection systems, during construction provide portable fire extinguishers rated not less than 2A or 5B in accordance with NFPA 10 – Portable Fire Extinguishers, for each temporary building and for every 3,000 square feet of floor area under construction.
3. Provide Class A (ordinary combustibles), Class B (combustible liquids and gases), and Class C (electrical equipment) fire extinguishers as necessary.
4. Comply with NFPA 241 – Standard for Safeguarding Construction, Alternation, and Demolition Operations, and requirements of fire marshals and authorities having jurisdiction at the Site.

1.3 USE OF OWNER'S SYSTEM

A. Existing Utility Systems: Do not use systems in existing buildings or structures for temporary utilities without Owner's written permission and mutually acceptable basis agreed upon by the parties for proportionate sharing of costs between Owner and Contractor.

B. Use of Permanent Utility Systems Provided Under the Project:

1. Permanent electrical, lighting, water, heating, ventilating, and fire protection systems and first-aid facilities may be used to provide temporary utilities and temporary facilities if the following are met:
   a. Obtain Owner's written permission to use permanent systems.
   b. Permanent systems to be used for temporary utilities or temporary facilities shall be substantially complete, including complete functionality of all controls. Engineer will not certify Substantial Completion for facilities and systems used solely by Contractor during construction.
   c. Contractor shall pay all costs while using permanent system, including operation, maintenance, replacement of consumables, and provide replacement parts.
2. Do not use the following permanent facilities:
   a. Telephone and communication facilities.
   b. Sanitary facilities.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment for temporary utilities and temporary facilities:

1. may be new or used but, if used, shall be in good condition;
2. shall be adequate for purposes intended;
3. shall not create unsafe or unsanitary conditions; and
4. shall comply with Laws and Regulations.

B. Provide required materials, equipment, and facilities, including piping, cabling, supports, controls, and appurtenances.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install temporary utilities and temporary facilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.

B. Location of Temporary Utilities and Temporary Facilities:

1. Locate temporary systems for proper function and service.
2. Temporary systems shall not interfere with or provide hazards or nuisances to: the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility owners and others.
3. Do not install temporary utilities on the ground, with the exception of temporary extension cords, hoses, and similar systems in place for short durations.

C. Modify and extend temporary systems as required by progress of the Work.

3.2 USE

A. Maintain temporary systems to provide safe, continuous service as necessary and as required.

B. Properly supervise operation of temporary systems:

1. Enforce compliance with Laws and Regulations.
2. Enforce safe practices.
3. Prevent abuse of services.
4. Prevent nuisances and hazards caused by temporary systems and their use.
5. Prevent damage to finishes.
6. Ensure that temporary systems and equipment do not interrupt continuous progress of construction.

C. At end of each work day, check temporary systems and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient for continuous operation.

3.3 REMOVAL

A. Completely remove temporary utilities, temporary facilities, equipment, and materials when no longer required. Repair damage caused by temporary systems and their removal and restore the Site to condition required by the Contract Documents; if restoration of damaged areas is not otherwise specified, restore to preconstruction condition.

B. Where temporary utilities are disconnected from existing utility, provide suitable, watertight or gastight (as applicable) cap or blind flange, as applicable, on service line, in accordance with requirements of utility owner. If utility owner will perform such work, coordinate with and pay utility owner for such work.

C. Where permanent utilities and systems were used for temporary utilities, upon Substantial Completion replace all consumables such as filters and light bulbs and parts used during the Work.

END OF SECTION

SECTION 01 57 05
TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for temporary controls during construction, including:
   a. Temporary erosion and sediment controls.
   b. Noise control.
   c. Dust control.
   d. Water control, including storm water, surface water, and groundwater.
   e. Pollution control, including solid waste, water pollution, atmospheric pollution, and other types of pollution.

B. Scope:

1. Contractor shall provide and maintain materials, equipment, labor, services, and temporary construction as necessary and required to control environmental conditions at the Site and adjacent areas during construction.
2. Contractor shall pay all costs, including fines and civil penalties, if any, for failure to implement and maintain temporary controls in accordance with the Contract Documents and Laws and Regulations. Contractor is not eligible for increase in Contract Price or Contract Times due to failure to comply with requirements for temporary controls.
3. Maintain temporary controls until no longer necessary or required. Provide temporary controls at all times when Contractor is working at the Site.

C. Related Requirements:

1. Include, but are not necessarily limited to, the following:
2. Section 01 57 33 - Temporary Security.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with applicable provisions and recommendations of the following:
   a. 2024 City of Omaha Standard Specifications for Public Works Construction.
   b. 2024 City of Omaha Standard Plates.
   c. 2014 Omaha Regional Stormwater Design Manual (ORSDM).

1.3 SUBMITTALS

A. Action Submittals:

1. Submit the following:
   a. Shop Drawings:
      1) Plan for construction staging and maintenance of the Site relative to erosion and sediment controls. Indicate on a site plan approximate areas of planned disturbance of soil and soil cover over time during the Project. For areas not indicated in the Contract Documents as being disturbed and that Contractor proposes to disturb, Shop Drawing shall include proposed erosion and sediment control measures for the additional areas.
   b. Product Data:
      1) All temporary erosion and sediment controls.

B. Informational Submittals:

1. Submit the following:
    a. Procedural Submittals:
        1) Proposed dust control measure, when Submittal is requested by Engineer.
    b. Field Quality Control:
        1) When requested by Engineer, promptly obtain and submit results of field measurements and field test data substantiating compliance of Contractor's temporary controls with the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS FOR TEMPORARY EROSION AND SEDIMENT CONTROLS

A. Materials for temporary erosion and sediment controls shall be as shown or indicated on the Drawings.

2.2 MATERIALS FOR TEMPORARY EROSION AND SEDIMENT CONTROLS

A. Temporary Erosion and Sediment Control Materials – General:

1. Materials utilized for temporary erosion and sediment controls shall be in accordance with applicable regulatory requirements indicated in this Section's "Quality Assurance" Article, unless otherwise shown or indicated in the Contract Documents.

B. Wattle

1. Wattle shall comply with Section 101.02.J of the referenced City of Omaha Specifications.

C. Rolled Erosion Control Product:

1. Type II per Table 803.01 of the referenced City of Omaha Standard Specifications.

D. Concrete Washout Materials: Comply with Section 9.6.8 of the ORSDM.

PART 3 - EXECUTION

3.1 NOISE CONTROL

A. Noise Control – General:

1. Contractor's vehicles, construction equipment, and machinery shall minimize noise emissions to greatest degree practicable. When necessary, provide mufflers and silencers on construction equipment, machinery, and vehicles, and provide temporary sound barriers sound-absorbing blankets, sound-reducing enclosures, modified backup alarms, and other mitigation measures when necessary.
2. Noise threshold levels shall comply with Laws and Regulations, including (a) OSHA requirements and recommendations, and (b) local ordinances or other Laws or Regulations.
3. Noise emissions shall not interfere with the work of Owner, facility manager (if other than Owner), or others. The use of noise-producing signals, including horns, whistles, alarms, and bells shall be for safety warning and emergency purposes only.
4. Music or entertainment systems, including personal and vehicle radios, media players, and the like, when used, shall not be audible at the property line and shall not disturb others at the Site.
5. Field Quality Control of Noise:
    a. If Owner or Engineer believes potential exists that allowable noise levels are being exceeded, Contractor will be required to, and shall promptly perform, appropriate noise monitoring in presence of Owner or Engineer and shall submit written results to Engineer.
    b. Owner and Engineer reserve the right to perform independent noise monitoring at any time during the Work.

6. If noise level exceeds allowable maximum, Contractor shall immediately cease the activity emitting the excessive noise and promptly implement noise-mitigating measures to comply with noise limitations.

3.2 DUST CONTROL

A. Dust Control – General:

1. Control objectionable dust caused by Contractor's operation of vehicles and construction equipment and machinery, site clearing, demolition, cleaning, and other actions. To minimize airborne dust, apply water or use other methods subject to acceptance of Engineer and approval of Authorities Having Jurisdiction.
2. Contractor shall prevent blowing and movement of dust from exposed soil surfaces and access roads to reduce onsite and off-Site damage, inconvenience, nuisances, and health hazards associated with dust emissions from Contractor’s activities.

B. Dust Control Methods:

1. Dust control may be accomplished by irrigation in which the dust-prone work activity or area of the Site is sprinkled with water until the surface is moist.
2. Apply dust controls as frequently as necessary or required without creating inconveniences, nuisances, or hazards, such as excessive mud and ponding of water at or adjacent to the Site. Do not use water for dust control when water will cause hazardous or objectionable conditions such as ice, mud, ponds, and pollution.
3. Provide dust control that is non-polluting and does not contribute to tracking-out of dirt, mud, and dust onto pavement.
4. Do not allow water used for dust control to discharge to storm water drainage system or surface waters.
5. Where appropriate, reduce travel speed of construction vehicles and construction equipment to reduce the potential for dust emissions arising from vehicle and equipment passage.
6. Where appropriate, apply gravel or other appropriate binder to access roads and parking areas.

C. Removal of Dust and Dirt from Pavement and Other Travelled Ways:

1. Remove dust, mud, and dirt from roads, parking areas, and other travelled ways not less than weekly.
2. Perform dust and dirt removal from travelled ways by mechanical wet vacuum sweeping or other method acceptable to Engineer.
3. Remove mud from roads, parking areas, and other travelled ways by appropriate means, including scraping. Avoid damaging surface of travelled way. Remedy damage to roads, parking areas, and travelled ways resulting from mud removal activities.

D. Removal of Dust and Dirt from Buildings and Structures:

1. When dust and dirt from Contractor’s activities has accumulated to a noticeable or objectionable extent (compared with preconstruction conditions) on buildings or structures, remove the dust and dirt caused by Contractor’s operations by appropriate methods, including power-washing using mild detergent. Remedy damage caused by dust, dirt, and power-washing.
2. Dust in sensitive equipment, such as electrical and control panels, instruments, HVAC systems and other equipment shall be cleaned by a Subcontractor specializing in cleaning such items.
3. During the Project, remove objectionable and noticeable dust, dirt, and mud in areas occupied by Owner or facility manager, and Contractor’s work areas, resulting from Contractor’s activities. Owner and facility manager will take reasonable measures to avoid tracking dust, dirt, and mud into their occupied areas.

3.3 WATER CONTROL

A. Water Control – General:

1. During the Project provide methods to appropriately control storm water, surface water, water from excavations and structures, groundwater flows altered by Contractor's activities, and groundwater discharges from the Site, to prevent damage to the Work, the Site, adjacent properties, and downstream properties.
2. Control trenching, filling, and grading to direct water away from excavations, pits, tunnels and other construction areas, and prevent water from entering existing buildings and structures.
3. Properly manage and control storm water, surface water, and groundwater entering the Site from upstream, where such flows or discharges have potential to affect the Work or to be exacerbated by Contractor's activities.
4. Avoid ponding of water onsite, except in specially designated, temporary settlement basins. Where water ponding occurs during construction, perform rough grading to eliminate ponding.
5. Prevent water from discharging onto roads, parking areas, paved or finished areas, and other travelled ways. Prevent storm water runoff from discharging across access roads and parking areas.

B. Materials, Equipment, and Facilities for Water Control:

1. Provide, operate, and maintain materials, equipment, and facilities of adequate size, materials, and capacity to control storm water, surface water, groundwater, and discharges from tanks.

C. Discharge and Disposal of Water during Construction:

1. Discharge storm water, surface water, and groundwater from the Site, and discharges of clean water from tanks, to proper discharge locations, in accordance with Laws and Regulations and the Contract Documents.
2. Prevent damage and nuisances arising from water discharges on the Site and discharges from the Site.
3. Dispose of water in manner that avoids flooding, erosion, sediment transport, and other damage, in accordance with Laws and Regulations.
4. Avoid overland discharges from the Site and construction activities to adjacent properties.
5. Water discharges from the Site and construction activities shall be via a storm water drainage route or conduit with sufficient capacity for the flow under associated weather and flow conditions and in accordance with requirements of Authorities Having Jurisdiction.
6. Do not discharge storm water, surface water, groundwater, or clean water from tanks, into sanitary sewers. Obtain consent of sewerage system owner before discharging such flows into existing combined sewers.
7. Obtain sewerage system owner's consent and approval before discharging polluted water to sewerage system.

3.4 POLLUTION CONTROL

A. Pollution Control – General:

1. Provide means, methods, and facilities necessary and required to prevent contamination of soil, water, and atmosphere caused by accumulation or discharge of substances and materials that are either noxious, polluting, or both, from or caused by construction and related activities.
2. Construction equipment and machinery shall comply with Laws and Regulations.

B. Spills and Contamination:

1. Perform emergency containment, cleanup, and remedy of spills and contamination resulting from construction and related activities. Promptly remove and properly dispose of contaminated soils and liquids.
2. Excavate contaminated material and properly dispose of off-Site and replace with suitable compacted fill and appropriate cover.

C. Protection of Surface Water and Groundwater:

1. Provide and maintain appropriate, temporary measures to prevent harmful substances from entering surface water, groundwater, and drinking water. Prevent disposal of wastes, effluents, chemicals, and the like into or adjacent to groundwater, surface water, drainage routes (including swales, ditches, and storm sewers) and drinking water.
2. Obtain sewerage system owner's consent and approval prior to discharging into sanitary sewers or combined sewers. Do not discharge pollutants not in accordance with Laws and Regulations into combined sewers, or sewers tributary to combined sewers, when wet weather overflows to receiving waters may occur.

D. Atmospheric Pollutants:

1. Provide and maintain temporary controls for atmospheric pollutants resulting from construction and related activities, whether to outdoor or indoor atmospheres.
2. Prevent harmful dispersal of pollutants into atmosphere.
3. Do not discharge exhaust from internal combustion engines or combustion operations into buildings, structures, or near ventilation intakes for buildings or structures.
4. Prevent toxic and noxious concentrations of chemicals, fumes, and vapors.

E. Solid Waste:

1. Provide and maintain temporary controls for managing solid waste related to the Work.
2. Prevent solid waste from:
   a. Becoming airborne or blowing in the wind.
   b. Being inadvertently transmitted to adjacent, offsite properties, and areas of the Site not part of the Project.
   c. Being deposited in or discharging to surface waters and drainage routes.
3. Properly handle and dispose of solid waste. Burning or burying solid waste, including unused materials, at the Site or adjacent areas is prohibited.
4. Cleaning and Disposal of Debris: Comply with applicable requirements of the General Conditions, as may be modified by the Supplementary Conditions.
5. Do not mix or store in the same container solid waste containing Constituents of Concern (and constitutes, or may constitute, a Hazardous Environmental Condition) with solid waste that does not contain Constituents of Concern.
6. Store solid waste in appropriate, covered, containers.
7. Promptly, and at regular intervals, remove solid waste from the Site for transport and disposal in accordance with Laws and Regulations.

3.5 EROSION AND SEDIMENT CONTROLS

A. Installation and Maintenance of Temporary Erosion and Sediment Controls – General:

1. General Provisions:
   a. Provide temporary erosion and sediment controls as shown and indicated on the Drawings and as indicated in this Section and elsewhere in the Contract Documents, and as necessary for compliance with Laws and Regulations.
   b. Provide erosion and sediment controls as the Work progresses into areas where ground cover was previously undisturbed.

c. Use necessary and required methods to appropriately control erosion and sediment transport in storm water runoff, including using soil conservation-oriented construction practices (including scheduling and sequencing), vegetative measures, and temporary physical controls.

d. Use best management practices (BMP) in accordance with Laws and Regulations, and regulatory requirements indicated in this Section‘s “Quality Assurance” Article (unless more-stringent requirement are shown or indicated in the Contract Documents), to control erosion and sediment transport in storm water runoff during the Project.

e. Plan and execute disturbances of soils and soil cover, and earthwork by methods to control storm water runoff from exposed soil (including stockpiles, borrow areas, and spoil disposal areas), banks of surface waters affected by the Work, and discharges of groundwater, to prevent erosion and sediment transport.

f. Where areas must be cleared for storage of materials or equipment, or for temporary facilities, provide measures for regulating storm water discharges and controlling erosion and sediment transport. Where Owner is a co-permittee with Contractor for applicable permits, or when plans for temporary erosion and sediment controls were sealed and signed by Engineer, such methods are subject to Engineer’s approval or acceptance, as applicable.

g. Provide erosion and sediment controls, including stabilization of soils, at the end of each workday.

2. Coordination:

a. Coordinate temporary erosion and sediment controls with this Section's requirements on water control.

b. Coordinate temporary erosion and sediment controls with construction of permanent drainage facilities, permanent erosion controls and soil stabilization (if any), and other Work, to the extent necessary for effective and continuous erosion and sediment controls.

3. Before commencing activities that will disturb soil or soil cover at the Site or other areas to be occupied by Contractor during the Project, provide all appropriate temporary erosion and sediment controls required by the Contract Documents for the areas where soil or soil cover will be disturbed.

4. Vegetation Removal and Disturbance:

a. Remove only those shrubs, grasses, trees, and other vegetation that must be removed for construction.

b. Protect undisturbed vegetation. Do not wantonly or unnecessarily drive construction vehicles and equipment over undisturbed vegetation and soil cover.

c. Promptly stabilize exposed soil where vegetation or soil cover was unnecessarily disturbed. Fill and restore ruts and damage to vegetation and soil cover caused by wanton or unnecessary passage of construction vehicles and equipment.

5. Access Roads and Parking Areas:

a. When possible, locate and construct temporary access roads and parking areas to avoid adverse effects on the environment.

b. Provide measures to regulate drainage, avoid erosion and sediment transport in storm water runoff, and minimize damage to vegetation and soil cover.

6. Earthwork and Temporary Controls:

a. Perform excavation, fill, and related activities in accordance with the City of Omaha Standard Specifications Section 200.

b. Temporary erosion and sediment control measures may include, but are not limited to, using berms, swales and ditches, silt fencing, straw bale sediment barriers, gravel or crushed stone, mulching and soil stabilization, slope drains, and other methods. Apply such temporary measures to erodible soils and other erodible materials exposed by construction activities.

c. Minimize areas of bare soil exposed at one time. Provide fills and spoil areas by selectively placing fill and spoil materials to reduce or eliminate exposed erodible soils.

d. Exercise special care on and above steep slopes, where disturbance of vegetation and soil cover shall be minimized to greatest extent reasonably practicable.

e. Protect stockpile storage not in active use by providing suitable, durable covering prevent sediment transport in storm water runoff and windblown transport. Covering shall be suitable for outdoor exposure.

7. Inspection and Maintenance:

a. Periodically inspect areas of non-stabilized, erodible soils, including all areas of soil cover disturbance and stockpiles, for evidence of start of erosion and sediment transport. Promptly implement corrective action as necessary and appropriate to control erosion and sediment transport. Continue inspections and corrective action until soils are permanently stabilized and permanent vegetation has been appropriately established.

b. Inspect not less often than once per week and after each precipitation event of 0.5 inches of water or greater.

c. Repair or replace damaged erosion and sediment controls within 24 hours of Contractor becoming aware of such damage.

d. Periodically remove sediment that has accumulated in or behind sediment and erosion controls. Remove sediment less often than when sediment is at approximately one-half of storage capacity of associated control element, unless more-frequent interval is indicated elsewhere in the Contract Documents. Properly dispose of sediment.

8. Duration of Temporary Erosion and Sediment Controls:

a. Maintain temporary erosion and sediment controls in effective, working condition until soil cover of the associated storm water drainage area has been permanently stabilized.

9. Work Stoppage:

a. If the Work is temporarily stopped or suspended for any reason, Contractor shall provide additional temporary controls necessary to prevent environmental damage to the Site and adjacent areas while the Work is stopped or suspended.

b. When temporary erosion and sediment controls remain in place during periods of stopped or suspended Work, continue to perform Contractor’s obligations relative to periodic inspection and maintenance of temporary erosion and sediment controls, including removal of accumulated sediment.

10. Failure to Provide Adequate Temporary Erosion and Sediment Controls:

a. If Contractor repeatedly fails to satisfactorily control erosion and sediment transport in storm water runoff, Owner reserves the right to use Owner's own forces or employ a third-party contractors for temporary erosion and sediment control. Owner’s costs for such work, including engineering and inspection costs, will be deducted from amounts due Contractor, as set-offs in accordance with the Contract Documents.

B. Wattle: Installation and maintenance per Section 101 of the referenced City of Omaha Specifications and City of Omaha Standard Plate 101-05.

C. Rolled Erosion Control Product:

1. Install per Section 803.03 of the referenced City of Omaha Specifications and City of Omaha Standard Plate 803-01.

D. Concrete Washout:

1. Install and maintain per Section 101 of the referenced City of Omaha Standard Specifications and City of Omaha Standard Plate 101-06.

3.6 REMOVAL OF TEMPORARY CONTROLS

A. Removals – General:

1. Unless otherwise indicated elsewhere in this Section in requirements for respective temporary controls, upon completion of the associated Work and when temporary controls are no longer necessary, remove temporary controls and restore the Site to condition in accordance with the Contract Documents; if condition is not shown or indicated, restore the Site to pre-construction condition.
2. After soils are permanently stabilized, remove from the Site temporary erosion and sediment controls.

END OF SECTION

SECTION 01 57 33
TEMPORARY SECURITY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for security during the Project.
2. Restrictions on possessing and using weapons, intoxicants, fireworks, and other items and activities at the Site and adjacent areas.
3. Temporary security fencing.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, and incidentals necessary and required to comply with requirements of this Section.
2. Contractor is solely responsible for delays and costs incurred to comply with requirements of this Section and security procedures at the Site.
3. Comply with Section 01 71 33 - Protection of the Work and Property.

C. Related Requirements:

1. Include, but are not limited to:
   a. Section 01 32 16 - Construction Progress Schedule.
   b. Section 01 71 33 - Protection of the Work and Property.

1.2 GENERAL PROVISIONS FOR SECURITY DURING THE PROJECT

A. Security – General:

1. Prior to Substantial Completion:
   a. Contractor shall safely guard all the Work, the Project, materials, equipment, and property from loss, theft, damage, and vandalism by any and all persons and cause, until Substantial Completion, unless otherwise agreed upon by Owner and Contractor.
2. After Substantial Completion:
   a. Contractor’s responsibility for security of the Work resumes after Substantial Completion when Contractor is at the Site performing punch list Work, correction of defective Work, or warranty Work. Such security responsibility is in effect only for the subject Work being performed, Contractor’s construction equipment and machinery, tools, and property immediately adjacent to the active work areas.
3. Contractor’s duty includes safely guarding Owner’s property in vicinity of the Work and Project, and other private property in the vicinity of the Project, from injury and loss in connection with performance of the Project, theft, vandalism, and other causes.
4. Costs for security required under this Section are Contractor’s responsibility.
5. Contractor is not eligible for additional Contract Time or additional compensation due to delays or unanticipated costs incurred by Contractor due to compliance with security requirements in effect at the time Bids were submitted or, if there were no Bids, as of the Effective Date of the Contract.
6. Responsibility for Losses:
   a. Make no claim against Owner, facility manager (if other than Owner), Engineer, or their respective consultants and subcontractors for damage resulting from trespass, theft, vandalism, or other failure of Contractor’s security obligations under the Contract.
   b. Remedy damage to property of Owner and others arising from failure to furnish adequate security.
7. Provide temporary fencing in accordance with the Contract Documents.

8. Contractor's security measures shall be at least equal to those usually provided by Owner or facility manager (if other than Owner) to protect existing facilities during normal operation.

B. Restrictions:

1. At all times when Contractor's workers and personnel are at the Site or adjacent areas, the following are prohibited:
   a. Weapons:
      1) Firearms and ballistic weapons of any sort, including rifles, shotguns, handguns, automatic and semi-automatic weapons (whether or not of historical vintage or non-firing), air rifles, muskets, black-powder weapons, and similar items; heavier, military-type ordnance; crossbows; bows with arrows; and slings are prohibited, except as otherwise expressly allowed in writing by Owner in accordance with Laws and Regulations.
      2) Use of firearms and other ballistic weapons, including crossbows, bows with arrows, slings, and other such items, is prohibited.
      3) Possession or use of weapons such as swords, medieval-type weapons (whether or not of historical vintage, reproduction, homemade, or improvised), long knives, tomahawks and similar items, brass knuckles, nunchucks, other martial arts-type weapons, and the like are prohibited.
   b. Explosives and Similar Items:
      1) Explosives and similar items, including fireworks, firecrackers, rockets, grenades and artillery shells (whether or not of historical vintage, and regardless of whether live, inert, reproduction, or non-functional), and similar items, are prohibited.
      2) Plastic explosives are prohibited unless used in the Work; no personnel except magazine keeper and appropriate personnel shall possess such substances at or adjacent to the Site.
      3) All explosives required for the Work, when use of explosives is allowed by the Contract and by authorities having jurisdiction, shall be kept in an appropriate, secured, locked, managed magazine.
   c. Drugs and Alcohol:
      1) Use of alcohol, cannabis, illegal narcotics, illicit or inappropriate use of prescription drugs, and similar substances is prohibited. Do not employ on the Work personnel under the influence of such substances. Do not tolerate such personnel at or adjacent to the Site.
   d. Stolen and Illicit Items and Criminal Activity:
      1) Do not bring to the Site stolen property of any sort or any property resulting from actions that would constitute a misdemeanor or felony under Laws or Regulations. Sale or resale at the Site and adjacent areas of stolen or illicitly obtained property is prohibited.
      2) Personnel shall not engage in criminal activity at or adjacent to the Site.
2. Contractor's personnel shall not access the Site outside normal working hours without express knowledge of and consent of Contractor.

1.3 SUBMITTALS

A. Action Submittals:

1. Submit the following:
   a. Shop Drawings:
      1) Temporary Fencing: Submit site plan drawings showing proposed locations and extent of temporary site security fencing and each opening therein.
   b. Product Data:
      1) Temporary Fencing: Manufacturer's literature, specifications, and installation instructions for temporary site security fencing proposed.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 TEMPORARY FENCING

A. Installation:

1. Provide temporary security fencing for site security so that integrity of site security is maintained throughout the Project.
2. Install temporary security fencing in accordance with the Contract Documents and fence Supplier's instructions.

B. Maintenance:

1. Maintain temporary security fencing throughout the Project, until removal.
2. Promptly repair damage to temporary security fencing and replace fencing when necessary to preserve Site security.

C. Removal:

1. Remove required temporary security fencing at Site perimeter and other temporary security fencing required by the Contract prior to inspection for Substantial Completion.

END OF SECTION

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SECTION 01 61 03
COMMON WORK RESULTS FOR EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements of this Specification Section apply to all equipment provided on the Project including those found in other Divisions even if not specifically referenced in individual "Equipment" Articles of those Specification Sections.

B. Related Sections include but are not necessarily limited to:

1. Section 03 15 19 - Anchorage to Concrete.
2. Section 10 14 00 - Identification Devices.
3. Section 26 29 23 - Variable Frequency Drives - Low Voltage.
4. Section 40 05 01 - Common Work Results for Process Piping.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Bearing Manufacturers Association (ABMA).
2. American Gear Manufacturers Association (AGMA).
3. American Petroleum Institute
   a. API 686 - Recommended Practice for Machinery Installation and Installation Design
4. ASTM International (ASTM):
   a. E1934, Standard Guide for Examining Electrical and Mechanical Equipment with Infrared Thermography.
   b. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
5. Hydraulic Institute (HI):
   a. 9.6.4, Rotodynamic Pumps for Vibration Measurements and Allowable Values.
6. International Electrotechnical Commission (IEC).
7. Institute of Electrical and Electronics Engineers, Inc. (IEEE).
8. International Organization for Standardization (ISO):
   a. 1940, Mechanical Vibration - Balance Quality Requirements for Rotors in a Constant (Rigid) State - Part 1: Specification and Verification of Balance Tolerances.
   b. 21940-11, Mechanical Vibration - Rotor Balancing - Part 11: Procedures and Tolerances for Rotors with Rigid Behavior.
9. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. ICS 6, Enclosures for Industrial Control and System.
   c. MG 1, Motors and Generators.
10. InterNational Electrical Testing Association (NETA):
    a. ATS, Acceptance Testing Specification for Electrical Power Distribution Equipment and Systems.

11. National Fire Protection Association (NFPA):
    a. 70, National Electrical Code (NEC):
12. National Institute for Certification in Engineering Technologies (NICET).
13. National Institute of Standards and Technology (NIST).
14. Occupational Safety and Health Administration (OSHA):
    a. 29 CFR 1910, Occupational Safety and Health Standards, referred to herein as OSHA Standards.
15. Underwriters Laboratories, Inc. (UL).
    a. 508, Standard for Safety Industrial Control Equipment.
    b. 508A, Standard for Safety Industrial Control Panels.
    c. 698A, Standard for Industrial Control Panels Relating to Hazardous (Classified) Locations.
16. Vibration Institute.

B. Supplier's Vibration Analyst:
    1. Supplier's vibration analyst shall prepare pre-Shop Drawing vibration analysis of equipment.
    2. Where required, Supplier's vibration analyst shall be either equipment manufacturer's qualified employee or independent business entity whose sole business, or principal part of its business, is evaluating and determining natural frequencies of rotating equipment.
    3. Shall possess not less than 10 years' relevant experience.
    4. Supplier's Vibration Analyst's Professional Engineer:
        a. Vibration analysis shall be performed by, or under the direct, personal supervision of, Professional Engineer licensed and registered Nebraska experienced in preparing finite element analyses, rotodynamic analyses, and experimental modal analysis similar to that required for the Work.
        b. Professional Engineer shall possess not less than five years' combined experience in field testing and data analysis for vibration analysis.
        c. Vibration analysis Professional Engineer's seal and signature, with indication of date seal and signature were applied to the subject document, shall clearly appear on all results and reports furnished as Submittals.

C. Field Vibration Testing Subcontractor:
    1. Field vibration testing Subcontractor shall, where required by the Contract Documents, perform vibration testing of equipment installed at the Site and perform associated vibration analyses.
    2. Vibration testing Subcontractor shall be an independent entity that has performed as its sole business, or principal part of its business, for not less than 10 years, inspection, testing, calibrating, adjusting equipment and systems, and performing vibration testing of equipment.
    3. Entities whose principal business is one or more of the following are not considered independent vibration testing entities and, therefore, shall not be field vibration testing Subcontractor:
        a. Motor sales, service, or repairs.
        b. Process equipment sales, service, or repairs.
    4. Acceptable entities include, but are not necessarily limited to:
        a. AVS Engineering: https://www.avsengineering.net/

b. Engineering Testing Services: https://etestinc.com/
c. Maritech, LLC: http://www.maritech-llc.com/contact.html
d. Mechanical Solution, Inc. (MSI): www.mechsol.com
e. Or equal.

5. Field vibration testing Subcontractor must have an established program for monitoring and testing equipment calibration, with accuracy traceable in an unbroken chain, in accordance with NIST requirements.
6. Field Personnel: Each person employed for field vibration testing on the Work shall possess not less than the following qualifications:
   a. Three years' field experience covering all phases of field vibration testing and data gathering.
   b. Current, valid Vibration Category II certification from Vibration Institute or a licensed, registered Professional Engineer who need not be licensed and registered in the same jurisdiction as the Site.
7. Analysis Personnel: Personnel performing analysis for field vibration testing Subcontractor shall possess not less than the following qualifications:
   a. Five years' combined field testing and data analysis experience.
   b. Current, valid Vibration Category III certification from the Vibration Institute.
8. Analysis Equipment: Field vibration testing Subcontractor shall have access to and use, where appropriate, the following testing equipment, properly maintained and calibrated:
   a. Impact Hammer:
      1) Frequency Range: 1 kHz.
      2) Range (5v output) 5,000 pounds-force (22,200 newtons).
      3) Hammer sensitivity (approx.) 1mV/lbf (0.23 mV/N).
   b. Analyzer:
      1) Frequency Range: 1 Hz to 10,000Hz.
      2) Frequency Accuracy: 0.02%.
      3) Non-Integrated Spectral Amplitude Accuracy: 5%, 3 Hz to 65 Hz.
      4) Single Integrated Spectral Amplitude Accuracy: 5%, 10 Hz to 20 Hz.
      5) Supports measurements of acceleration, velocity, and displacement.
   c. Vibration Sensor:
      1) Sensitivity: ±5% = 100 mV/g.
      2) Acceleration Range: ±5 g.
      3) Amplitude Nonlinearity: ±1%.
      4) Frequency Response: ±10Hz to 7kHz (±3 dB).
   d. Data logging equipment for simultaneous recording of the following data points:
      1) Vibration in the X, Y, and axial planes (for all pumps pursuant to ANSI/HI Standard).
      2) Digital tachometer recording RPM.
      3) Discharge Pressure Transmitter:
         a) Accuracy: 0.3% of range.
         b) Fluid Temperature Range: 32 to 100 DEGF.
      4) Suction Pressure Transmitter (when other than submersible pump or vertical turbine (suspended) pump.

a) Accuracy 0.35% of range.
b) Fluid Temperature Range: 32 to 100 DEGF.
c) For submersible pumps and vertical turbine (suspended) type pumps, suction liquid surface level signal from Site's monitoring and control system (e.g., plant PLC/SCADA system).

5) For pumps, pumping rate (flow) signal from Site's monitoring and control system (e.g., plant PLC/SCADA system)
6) Equipment/motor bearing temperature signal from Site's monitoring and control system (e.g., plant PLC/SCADA system).
7) Pump/motor vibration signal from Site's monitoring and control system (e.g., plant PLC/SCADA system).

D. Electrical Equipment and Connections Testing Program:

1. Qualification requirements as specified in section 26 08 13 - Acceptance Testing.

E. Miscellaneous:

1. A single manufacturer of a "product" shall be selected and utilized uniformly throughout Project even if:
   a. More than one manufacturer is listed for a given "product" in Specifications.
   b. No manufacturer is listed.
2. Equipment, electrical assemblies, related electrical wiring, instrumentation, controls, and system components shall fully comply with specific NEC requirements related to area classification and to NEMA 250 and NEMA ICS 6 designations shown on Electrical Power Drawings and defined in the Electrical Specifications.
3. Variable speed equipment applications: The driven equipment manufacturer shall have single source responsibility for coordination of the equipment and VFD system and verify their compatibility.

1.3 DEFINITIONS

A. Product: Manufactured materials and equipment.

B. Major Equipment Supports - Supports for Equipment:

1. Located on or suspended from elevated slabs with supported equipment weighing 2000 pounds or greater, or;
2. Located on or suspended from roofs with supported equipment weighing 500 pounds or greater, or;
3. Located on slab-on-grade or earth with supported equipment weighing 5000 pounds or more.

C. Equipment:

1. One or more assemblies capable of performing a complete function.
2. Mechanical, electrical, instrumentation or other devices requiring an electrical, pneumatic, electronic or hydraulic connection.
3. Not limited to items specifically referenced in "Equipment" articles within individual Specifications.

D. Installer or Applicator:

1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
2. Installer and applicator are synonymous.

E. Baseplate or Equipment Base Plate or Machine Base:

1. Are fabricated frames of structural shapes and plates with enough strength and sturdiness to serve as the surface to which other equipment is attached to and supported by. Baseplates can be directly mounted and grouted to concrete equipment support bases or machined and bolted to a sole plate.

F. Sole Plate:

1. A thick steel machined plate that is attached to and grouted to a concrete equipment support base.
2. Base plates are bolted to a sole plate when a sole plate is specified and/or provide.

1.4 SUBMITTALS

A. Shop Drawings:

1. General for all equipment:
    a. Data sheets that include manufacturer's name and complete product model number.
        1) Clearly identify all optional accessories that are included.
    b. Acknowledgement that products submitted comply with the requirements of the standards referenced.
    c. Manufacturer's delivery, storage, handling, and installation instructions.
    d. Equipment identification utilizing numbering system and name utilized in Drawings.
    e. Equipment installation details:
        1) Location of anchorage.
        2) Anchorage setting templates.
        3) Manufacturer's installation instructions.
    f. Equipment area classification rating.
    g. Shipping and operating weight.
    h. Equipment physical characteristics:
        1) Dimensions (both horizontal and vertical).
        2) Materials of construction and construction details.
    i. Equipment factory primer and paint data.
    j. Manufacturer's recommended spare parts list.
    k. Equipment lining and coatings.
    l. Equipment utility requirements include air, natural gas, electricity, and water.
2. Mechanical and process equipment:
    a. Operating characteristics:
        1) Technical information including applicable performance curves showing specified equipment capacity, rangeability, and efficiencies.
        2) Brake horsepower requirements.
        3) Copies of equipment data plates.
    b. Piping and duct connection size, type and location.
    c. Equipment bearing life certification.
    d. Equipment foundation data:
        1) Equipment center of gravity.

2) Criteria for designing vibration, special or unbalanced forces resulting from equipment operation.
3) Type, size, and materials of construction of anchorage.

3. Electric motor:
   a. Motor manufacturer and model number.
   b. Complete motor nameplate data.
   c. Weight.
   d. NEMA design type.
   e. Enclosure type.
   f. Frame size.
   g. Winding insulation class and temperature rise.
   h. Starts per hour.
   i. Performance data:
      1) Motor speed-torque curve superimposed over driven machine speed-torque curve during start-up acceleration and at rated terminal voltage a minimum permissible or specified terminal voltage for all motors 50 HP and larger.
      2) Time-current plots with acceleration versus current and thermal damage curves at the operating and ambient temperatures and at rated terminal voltage and minimum permissible or specified terminal voltage for all motors 50 HP and larger.
      3) Guaranteed minimum efficiencies at 100%, 75%, and 50% of full load.
      4) Guaranteed minimum power factor at 100%, 75%, and 50% of full load.
      5) Locked rotor and full load current at rated terminal voltage and minimum permissible or specified terminal voltage.
      6) Starting, full load, and breakdown torque at rated terminal voltage and minimum permissible or specified terminal voltage.
   j. Bearing data and lubrication system.
   k. Natural frequency calculations for:
      1) Completed assembly including but not limited to the equipment base, rotating piece of equipment, and the rotating piece of equipment driver.
      2) Individual piece of rotating equipment.
      3) Equipment driver and connected gear reducer, if applicable.
   l. Thermal protection system including recommended alarm and trip settings for winding and bearing RTD’s.
   m. Fabrication and/or Layout Drawings:
      1) Dimensioned Outlined Drawing.
      2) Connection diagrams including accessories (strip heaters, thermal protection, etc.).
   n. Certifications:
      1) When utilized with a reduced voltage starter, certify that motor and driven equipment are compatible.
      2) When utilized with a variable frequency controller, certify motor is inverter duty and the controller and motor are compatible.
         a) Include minimum speed at which the motor may be operated for the driven machinery.

o. Electrical gear:
1) Unless specified in a narrow-scope Specification Section, provide the following:
a) Equipment ratings: Voltage, continuous current, kVa, watts, short circuit with stand, etc., as applicable.
2) Control panels:
a) Panel construction.
b) Point-to-point ladder diagrams.
c) Scaled panel face and subpanel layout.
d) Technical product data on panel components.
e) Panel and subpanel dimensions and weights.
f) Panel access openings.
g) Nameplate schedule.
h) Panel anchorage.
i) Short Circuit Current Rating (SCCR) nameplate marking per NFPA 70. Include any required calculations.

4. Systems schematics and data:
a. Provide system schematics where required in system specifications.
1) Acknowledge all system components being supplied as part of the system.
2) Utilize equipment, instrument and valving tag numbers defined in the Contract Documents for all components.
3) Provide technical data for each system component showing compliance with the Contract Document requirements.
4) For piping components, identify all utility connections, vents and drains which will be included as part of the system.

5. Qualifications for:
a. Natural frequency analysis firm and personnel.
b. Vibration testing firm and personnel.
c. Infrared thermography testing firm and personnel.
d. Electrical equipment and connections testing firm and personnel.

6. Equipment Monitoring and Testing plans, in accordance with PART 3 of this Specification Section:
a. Natural frequency analysis and calculations.
b. Vibration testing.
c. Electrical equipment and connection testing.

B. Factory Test Reports:

1. Natural frequency bump test reports where required for rotating equipment.
a. Minimum characteristics of impact hammer.
1) Frequency Range 1 kHz.
2) Range (5v output) 5,000 pounds-force (22,200 N).
3) Hammer Sensitivity (7pprox.) 1 mV/lbf (0.23 mV/N).
4) Resonant Frequency: 12 kHz.

2. Motor, equipment and final assembled equipment including motor.
    a. Determine natural frequency of assembled motor prior to shipping to equipment manufacturer or job site.
        1) Individual motor fastened to an “infinitely rigid” mass at the same bolt circle as the final assembled equipment.
    b. Determine natural frequency of the pump.
        1) Pump fastened to an “infinitely rigid” mass at the same bolt circle as the final assembled equipment.
    c. Determine natural frequency of the pump/motor assembly.
        1) Pump/motor assembly fastened to an “infinitely rigid” mass at the same bolt circle as the final field assembled equipment.
    d. For this use, the "infinitely rigid" mass shall be at least 10 times the weight of the equipment being tested.
3. Submit natural frequency report(s) for approval prior to shipment.
4. Equipment performance tests.
    a. As listed in individual equipment specifications.

C. Contract Closeout Information:
1. Operation and Maintenance Data:
    a. See Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

D. Informational Submittals:
1. Notification, at least one week in advance, that testing will be conducted at factory.
2. Certification from equipment manufacturer that all manufacturer-supplied control panels that interface in any way with other controls or panels have been submitted to and coordinated with the supplier/installer of those interfacing systems.
3. Submit sample Manufacturer's Field Service Report (MFSR). Report shall use manufacturer’s standard report or use the form in the Exhibits and have at least the following information:
    a. Certification that equipment has been installed properly, has been initially started up, has been calibrated and/or adjusted as required, and is ready for operation.
    b. Certification for major equipment supports that equipment foundation design loads shown on the Drawings or specified have been compared to actual loads exhibited by equipment provided for this Project and that said design loadings are equal to or greater than the loads produced by the equipment provided.
    c. Motor test reports.
    d. Field noise testing reports if such testing is specified.
    e. Preliminary field quality control testing format to be used as a basis for final field quality control reporting.
    f. Provide three bound final written reports documenting natural frequency testing, vibration monitoring and testing for specified equipment.
        1) Include the acceptance criteria of all equipment tested.
        2) Provide individual tabbed sections for information associated with each piece of tested equipment.

g. Certification prior to Project closeout that electrical panel drawings for manufacturer-supplied control panels truly represent panel wiring including any field-made modifications.
h. Testing and monitoring reports in accordance with PART 3 of this Specification Section.
i. Certification that driven equipment and VFD are compatible.

4. Submit completed Manufacturer's Field Service Report (MFSR) for each piece of equipment supplied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Motors:
   a. ABB Baldor-Reliance.
   b. General Electric.
   c. Hyundai Heavy Industries.
   d. Marathon Electric.
   e. Siemens.
   f. TECO-Westinghouse.
   g. Toshiba U.S.
   h. U.S. Motors, Nidec Motor Corporation.
   i. WEG.

2.2 MANUFACTURED UNITS

A. Electric Motors:

1. Where used in conjunction with adjustable speed AC or DC drives, provide motors that are fully compatible with the speed controllers.
2. Design for frequent starting duty equivalent to duty service required by driven equipment.
3. Design for full voltage starting.
4. Design bearing life based upon actual operating load conditions imposed by driven equipment.
5. Size for altitude of Project.
6. Furnish with stainless steel nameplates which include all data required by NEC Article 430.
7. Use of manufacturer's standard motor will be permitted on integrally constructed motor driven equipment specified by model number in which a redesign of the complete unit would be required in order to provide a motor with features specified.
8. AC electric motors less than 1/3 hp:
   a. Single phase, 60 Hz, designed for the supply voltage shown on the Drawings.
   b. Permanently lubricated sealed bearings conforming to ABMA standards.
   c. Built-in manual reset thermal protector or integrally mounted manual motor starter with thermal overload element with stainless steel enclosure.
9. AC electric motors 1/3 to 1 hp:
   a. Single or 3 PH, 60 Hz, designed for the supply voltage shown on the Drawings.

b. Permanently lubricated sealed bearings conforming to ABMA standards.
    1) For single phase motors, provide built-in manual reset thermal protector or integrally mounted manual motor starter with thermal overload element.

10. AC electric motors 1-1/2 to 10 hp:
    a. Single or 3 PH, 60 Hz, designed for the supply voltage shown on the Drawings.
    b. Permanently lubricated sealed bearings conforming to ABMA standards.
    c. For vertical motors provide 15 year, average-life thrust bearings conforming to ABMA standards.
11. AC electric motors greater than 10 hp:
    a. Single or 3 PH, 60 Hz, designed for the supply voltage shown on the Drawings.
    b. Oil or grease lubricated antifriction bearings conforming to ABMA standards.
        1) Design bearing life for 90% survival rating at 50,000 hours of operation for motors up to and including 100 hp.
        2) For motors greater than 100 hp, design bearing life for 90% survival rating at 100,000 HRS of operation.
    c. For vertical motors provide 15 year, average-life thrust bearings conforming to ABMA standards.
    d. Thermal protection:
        1) For motors 50 hp and above, provide the following:
            a) Integral thermal detectors (thermostat) per phase with normally closed contacts wired in series that will open on overtemperature.
12. Severe duty motor to have the following minimum features:
    a. All cast iron construction.
    b. Gasketed conduit box.
    c. Epoxy finish for corrosion protection.
    d. Hydroscopic varnish on windings for corrosion protection.
    e. Drain plug and breather.

B. NEMA Design Squirrel Cage Induction Motors:
1. Provide motors designed and applied in compliance with NEMA and IEEE for the specific duty imposed by the driven equipment.
2. Motors to meet NEMA MG 1 (NEMA Premium) efficiencies.
3. Do not provide motors having a locked rotor kVA per HP exceeding the NEMA standard for the assigned NEMA code letter.
4. For use on variable frequency type adjustable speed drives, provide:
    a. Induction motors that are in compliance with NEMA MG 1, Part 31.
    b. Nameplate identification meeting NEMA MG 1 Part 31 requirements.
    c. Insulated drive end bearing on all motors.
    d. Shaft grounding ring on all motors:
        1) Factory installed, maintenance free, circumferential, bearing protection ring with conductive microfiber shaft contacting material.
        2) Electro Static Technology AEGIS SGR Bearing Protection Ring or approved equal.
    e. Have the following minimum turndown ratio without the use of additional cooling, such as a blower, to provide continuous supply of cooling air over the motor.

1) Variable torque: 10:1.
2) Constant torque: 6:1.

5. Design motor insulation in accordance with NEMA standards for Class F insulation with Class B temperature rise above a 40 DEGC ambient.
6. Design motors for continuous duty.
7. Size motors having a 1.0 service factor so that nameplate HP is a minimum of 15% greater than the maximum HP requirements of the driven equipment over its entire operating range.
   a. As an alternative, furnish motors with a 1.15 service factor and size so that nameplate HP is at least equal to the maximum HP requirements of the driven equipment over its entire operating range.
8. Motor enclosure and winding insulation application:
   a. The following shall apply unless modified by specific Specification Sections:

MOTOR LOCATION	MOTOR ENCLOSURE / WINDING INSULATION
Wet indoor Areas	TEFC, Standard Insulation

NOTE: Provide TENV motors in the smaller horsepower ratings where TEFC is not available.

9. Provide oversize conduit box complete with clamp type grounding terminals inside the conduit box.
10. Balance motors to ISO G2.5 level.
    a. Submit prior to shipping to equipment manufacturer or job site.

C. Vibration Isolators:

1. Provide all equipment subject to vibration with restrained spring type vibration isolators or pads according to the manufacturer's written recommendation.

D. Space Heaters:

1. Silicone rubber strip type, 120 V rated.
2. Provided on:
   a. All motors 10 hp and larger mounted outdoors.
   b. Indoor motors in humid environments as indicated.

2.3 COMPONENTS

A. Gear Drives and Drive Components:

1. Size drive equipment capable of supporting full load including losses in speed reducers and power transmission.
2. Provide nominal input horsepower rating of each gear or speed reducer at least equal to nameplate horsepower of drive motor.
3. Design drive units for 24 hour continuous service, constructed so oil leakage around shafts is precluded.
4. Utilize gears, gear lubrication systems, gear drives, speed reducers, speed increasers and flexible couplings meeting applicable standards of AGMA.
5. Gear reducers:
   a. Provide gear reducer totally enclosed and oil lubricated.
   b. Utilize antifriction bearings throughout.
   c. Provide worm gear reducers having a service factor of at least 1.20.

d. Furnish other helical, spiral bevel, and combination bevel-helical gear reducers with a service factor of at least 1.50.

2.4 ACCESSORIES

A. Guards:

1. Provide each piece of equipment having exposed moving parts with full length, easily removable guards, meeting OSHA requirements.
2. Interior applications:
   a. Construct from expanded galvanized steel rolled to conform to shaft or coupling surface.
   b. Utilize non-flattened type 16 GA galvanized steel with nominal 1/2 inches spacing.
   c. Connect to equipment frame with hot-dip galvanized bolts and wing nuts.
3. Exterior applications:
   a. Construct from 16 GA stainless steel or aluminum.
   b. Construct to preclude entrance of rain, snow, or moisture.
   c. Roll to conform to shaft or coupling surface.
   d. Connect to equipment frame with stainless steel bolts and wing nuts.

B. Anchorage:

1. Cast-in-place anchorage:
   a. Provide ASTM F593, Type 316 stainless steel anchorage for all equipment.
   b. Configuration and number of anchor bolts shall be per manufacturer's recommendations.
   c. Provide two nuts for each bolt.
2. Drilled anchorage:
   a. Adhesive anchors per Section 03 15 19.
   b. Epoxy grout:
      1) Manufacturers and Products: Subject to compliance with the Contract Documents, the following are acceptable:
         a) Master Builders Solutions, Masterflow 648.
         b) Five Star Products, DP Five Start Epoxy Grout.
         c) Euclid Chemical Company, E3 Flowable.
         d) Sika, Sikadur 42, Grout Pak.
         e) Or equal.
         f) One manufacturer shall furnish both aggregate and adhesive.
      2) Description:
         a) Three-component epoxy resin system, comprised of two liquid epoxy components and one inert aggregate filler component.
         b) Furnish each component in separate package for mixing at the Site.
      3) Performance Criteria:
         a) Minimum 28-day Compressive Strength: 13,000 psi.
      4) Materials:
         a) Aggregate shall be compatible with adhesive.
   c. Threaded rods same as cast-in-place.

C. Data Plate:

1. Attach a stainless steel data plate to each piece of rotary or reciprocating equipment.
2. Permanently stamp information on data plate including manufacturer's name, equipment operating parameters, serial number and speed.

D. Lifting Eye Bolts or Lugs:

1. Provide on all equipment 50 pounds or greater.
2. Provide on other equipment or products as specified in the narrow-scope Specification Sections.

2.5 FABRICATION

A. Design, fabricate, and assemble equipment in accordance with modern engineering and shop practices.

B. Manufacture individual parts to standard sizes and gages so that repair parts, furnished at any time, can be installed in field.

C. Furnish like parts of duplicate units to be interchangeable.

D. Ensure that equipment has not been in service at any time prior to delivery, except as required by tests.

E. Furnish equipment which requires periodic internal inspection or adjustment with access panels which will not require disassembly of guards, dismantling of piping or equipment or similar major efforts.

1. Quick opening but sound, securable access ports or windows shall be provided for inspection of chains, belts, or similar items.

F. Provide common, lipped base plate mounting for equipment and equipment motor where said mounting is a manufacturer's standard option.

1. Provide drain connection for 3/4 inches PVC tubing.

G. Machine the mounting feet of rotating equipment.

H. Fabricate equipment which will be subject to Corrosive Environment in such a way as to avoid back to back placement of surfaces that cannot be properly prepared and painted.

1. When such back to back fabrication cannot be avoided, provide continuous welds to seal such surfaces from contact with corrosive environment.
2. Where continuous welds are not practical, after painting seal the back to back surfaces from the environment.

I. Natural frequency/critical Speed:

1. All rotating parts accurately machined and in as near perfect rotational balance as practicable.
2. Excessive vibration is sufficient cause for equipment rejection.
3. Ratio of all rotative speeds to natural frequency/critical speed of a unit or components: Greater than 1.2.

J. Equipment Base

1. Adequate grout and vent openings to allow grout to flow under entire base.

2.6 SHOP OR FACTORY PAINT FINISHES

A. Electrical Equipment:

1. Provide factory-applied paint coating system(s) for all electrical equipment components.

2.7 SOURCE QUALITY CONTROL

A. Motor Tests:

1. Test motors in accordance with NEMA and IEEE standards.
2. Provide routine test for all motors.
3. The Owner reserves the right to select and have tested, either routine or complete, any motor included in the project.
   a. The Owner will pay all costs, including shipping and handling, for all motors successfully passing the tests.
   b. Pay all costs, including shipping and handling, for all motors failing the tests.
   c. If two successive motors of the same manufacturer fail testing, the Owner has the right to reject all motors from that manufacturer.

B. Balance:

1. Unless specified otherwise, for all equipment 10 hp or greater, all rotating elements in motors, pumps, blowers, and centrifugal compressors shall be fully assembled, including coupling hubs, before being statically and dynamically balanced. Balance all rotating elements to the following criteria, per ISO 21940-11:

$$Uper = \frac{G\ x\ 6.015\ x\ W/2}{N}$$

Where:

Uper = Permissible residual unbalance for each correction plane in ounce-inches (OZ-IN). See ISO 21940-11 for acceptable values.

G = ISO Balance Quality Grade Number, per ISO 21940-11

W = Rotor weight in pounds

N = Maximum continuous operating RPM

   a. Where specified, balancing reports, demonstrating compliance with this requirement, shall be submitted as product data.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install equipment as shown on the Drawings and other Contract Documents, in accordance with manufacturer's written instructions, and in accordance with Laws and Regulations. Where the Contract Documents, manufacturer's written instructions, or Laws and Regulations conflict, obtain interpretation or clarification from Engineer before proceeding.

B. Utilize appropriate templates for anchorage placement for equipment installed on concrete.

C. Equipment Drainage Discharges:

1. For equipment having drainage requirements, such as seal water, provide 3/4-inch copper, PVC, or clear plastic tubing from drainage discharge at equipment base to nearest floor drain or equipment drain. Do not discharge liquid across floors.
2. Furnish and install bell up at each equipment base.
3. Route equipment drainage piping clear of major traffic areas, to discharge to locations approved by Engineer. To the extent practical, avoid creating tripping hazards.

D. Coordination of Equipment Supports and Bases with Structures:

1. Do not construct foundations until major equipment supports are approved by Engineer.

E. Equipment Lubrication Points:

1. Extend all non-accessible or difficult-to-access lubrication fittings to reasonably accessible locations to facility operation and maintenance personnel without use of ladders or elevating devices, by providing stainless steel tubing (of appropriate wall thickness for the service and application) to a location which allows easy access of fittings from closest operating floor level.

F. Concrete Equipment Support Bases:

1. Install level in both directions, with acceptable vertical tolerance of 1/4-inch±.
2. At anchorage locations, install bases flat and level.

G. Machine Bases / Sole Plates:

1. Grease or tape anchorages and jack screws to inhibit grout from adhering to bolts and other anchors.
    a. Jack screws number and size by equipment manufacturer.
        1) Jack screw
            a) 304 Stainless Steel minimum.
            b) 0.5 inches diameter minimum.
        2) Jack Screw Pad:
            a) 2 inch diameter minimum.
            b) Anchored in place with a structural epoxy adhesive.
2. Install machine base of rotating equipment on equipment base.
3. Level in both directions using jack screws, with a machinist level, according to machined surfaces on base. Base shall be level within vertical tolerance of the lesser of (a) 0.005 inch per foot with no more than 0.0005 inches difference between any two points, or (b) equipment manufacturer’s written instructions.
4. Level machine base on equipment base and align couplings between driver and driven equipment.

H. Couplings for Rotating Equipment:

1. Align in annular and parallel positions.
    a. For equipment rotating at 1200 rpm or less, align both annular and parallel within 0.001 inch tolerance for couplings four-inch size and smaller.
    b. Couplings larger than four-inch size: Increase tolerance 0.0005 inch per inch of coupling diameter above four-inch; for example: For six-inch coupling, tolerance is 0.002 inch. For 10 inch coupling, required tolerance is 0.004 inch.

c. For equipment rotating at speeds greater than 1200 rpm, tolerance for both annular and parallel positions shall be rate of 0.00025 inch (or less) per inch of coupling diameter.

2. If equipment is furnished by manufacturer as mounted unit, verify factory alignment after installation at the Site. Realign if as necessary, in accordance with equipment manufacturers' written instructions, to provide required factory tolerance.
3. Inspect surfaces for runout before attempting to trim or align units.

I. Grouting:

1. Level onto equipment base with jack screws in accordance with the Contract Documents, provide a dam or formwork around base to contain grout between equipment base and equipment support pad.
2. Preparation:
   a. Extend dam or formwork to cover leveling shims and blocks.
   b. Anchor sleeves:
      1) Required for equipment (Pumps, Mixers, Blowers) greater than 50 hp.
      2) If anchor sleeves were used, fill voids in anchor sleeves with foam or room temperature vulcanizing (RTV) silicone to keep grout from filling sleeves.
   c. Do not use nuts below the machine base to level the unit.
   d. Saturate top of roughened concrete surface with water before grouting.
3. Grout Installation:
   a. Install grout until entire space under machine base is completely filled to underside of base. Voids are unacceptable.
   b. Puddle grout by working a stiff wire through the grout and vent holes, to ensure grout is installed properly and to release air entrained in grout or base cavity.
4. After Grout Installation:
   a. When grout is sufficiently hardened, remove dam or formwork and finish exposed grout surface to fine, smooth surface.
   b. Completely cover exposed grout surfaces with wet burlap and keep covering sufficiently wet to prevent too-rapid evaporation of water from grout.
   c. Check for voids by tapping along the top deck of the mounting plate. A solid thud indicates grout-filled areas while a drum-like hollow sound indicates a void requiring filling.
      1) Void areas are to be filled by drilling 1/8 inches NPT holes in opposite corners of each void area. Grout to be pumped into one void with a grout gun until grout emerges from the other vent hole.
   d. When grout is fully hardened (after not less than seven days), remove jack screws, and tighten nuts on anchor bolts and similar anchors to required torque.
   e. Inspect and verify levelness of machine base and, if not in accordance with requirements, remedy by removing base and reinstalling in accordance with the Contract Documents.
   f. Inspect driver-driven equipment for proper alignment. When not in accordance with requirements, remedy so that the Work is not defective.

3.2 INSTALLATION CHECKS

A. For all equipment specifically required in detailed specifications, secure services of experienced, competent, and authorized representative(s) of equipment manufacturer to visit site of work and inspect, check, adjust and approve equipment installation.

1. In each case, representative(s) shall be present during placement and start-up of equipment and as often as necessary to resolve any operational issues which may arise.

B. Secure from equipment manufacturer's representative(s) a written report certifying that equipment:

1. Has been properly installed and lubricated.
2. Is in accurate alignment.
3. Is free from any undue stress imposed by connecting piping or anchor bolts.
4. Has been operated under full load conditions and that it operated satisfactorily.
    a. Secure and deliver a field written report to Owner immediately prior to leaving jobsite.

C. No separate payment shall be made for installation checks.

1. All or any time expended during installation check does not qualify as Operation and Maintenance training or instruction time when specified.

3.3 IDENTIFICATION OF EQUIPMENT AND HAZARD WARNING SIGNS

A. Identify equipment and install hazard warning signs in accordance with Section 10 14 00.

3.4 WIRING CONNECTIONS AND TERMINATION

A. Clean wires before installing lugs and connectors.

B. Coat connection with oxidation eliminating compound for aluminum wire.

C. Terminate motor circuit conductors with copper lugs bolted to motor leads.

D. Tape stripped ends of conductors and associated connectors with electrical tape.

1. Wrapping thickness shall be 150% of the conductor insulation thickness.

E. Connections to carry full ampacity of conductors without temperature rise.

F. Terminate spare conductors with electrical tape.

3.5 FIELD QUALITY CONTROL

A. General:

1. Furnish equipment manufacturer’s field quality control services and testing as specified in the individual equipment Specification Sections.
2. Execute pre-demonstration requirements in accordance with Section 01 75 00.
3. Perform and report on all tests required by the equipment manufacturer’s Operation and Maintenance Manual.
4. Provide testing for all equipment furnished or installed as part of the Work.
5. Repair or replace equipment shown to be out of range of the acceptable tolerance until the equipment meets or exceeds acceptable standards.

6. Equip testing and analysis personnel with all appropriate project related reference material required to perform tests, analyze results, and provide documentation including, but not limited to:
    a. Contract Drawings and Specifications.
    b. Related construction change documentation.
    c. Approved Shop Drawings.
    d. Approved Operation and Maintenance Manuals.
    e. Other pertinent information as required.

B. Equipment Monitoring and Testing Plans:
    1. Approved in accordance with Shop Drawing submittal schedule.
    2. Included as a minimum:
        a. Qualifications of firm, field personnel, and analysis personnel doing the Work.
        b. List and description of testing and analysis equipment to be utilized.
        c. List of all equipment to be tested, including:
            1) Name and tag numbers identified in the Contract Documents.
            2) Manufacturer's serial numbers.
            3) Other pertinent manufacturer identification,

C. Instruments Used in Equipment and Connections Quality Control Testing:
    1. Minimum calibration frequency:
        a. Field analog instruments: Not more than 6 months.
        b. Field digital instruments: Not more than 12 months.
        c. Laboratory instruments: Not more than 12 months.
        d. If instrument manufacturer's calibration requirements are more stringent, those requirements shall govern.
    2. Carry current calibration status and labels on all testing instruments.
    3. See individual testing programs for additional instrumentation compliance requirements.

D. Testing and Monitoring Program Documentation:
    1. Provide reports with tabbed sections for each piece of equipment tested.
    2. Include all testing results associated with each piece of equipment under that equipment's tabbed section.
        a. Include legible copies of all forms used to record field test information.
    3. Prior to start of testing, submit one copy of preliminary report format for Engineer review and comment.
        a. Include data gathering and sample test report forms that will be utilized.
    4. In the final report, include as a minimum, the following information for all equipment tested:
        a. Equipment identification, including:
            1) Name and tag numbers identified in the Contract Documents.
            2) Manufacturer's serial numbers.
            3) Other pertinent manufacturer identification,
        b. Date and time of each test.
        c. Ambient conditions including temperature, humidity, and precipitation.

d. Visual inspection report.
e. Description of test and referenced standards, if any, followed while conducting tests.
f. Results of initial and all retesting.
g. Acceptance criteria.
h. "As found" and "as left" conditions.
i. Corrective action, if required, taken to meet acceptance.
j. Verification of corrective action signed by the Contractor, equipment supplier, and Owner's representative.
k. Instrument calibration dates of all instruments used in testing.

5. Provide three (3) bound final reports prior to Project final completion.

E. Electrical Equipment and Connections Testing Program:

1. Perform testing on Electrical equipment, connections, and motors in accordance with 26 08 13 - Acceptance Testing.

F. Other Testing:

1. Perform tests and inspections not specifically listed but required to ensure equipment is safe to energize and operate.
2. Subbase that supports the equipment base and that is made in the form of a cast iron or steel structure that has supporting beams, legs, and cross members that are cast, welded, or bolted shall be tested for a natural frequency of vibration after equipment is mounted.
   a. The ratio of the natural frequency of the structure to the frequency of the disturbing force shall not be between 0.5 and 1.5.

G. Equipment Field Vibration Monitoring and Testing Program:

1. Perform vibration monitoring and testing for equipment specified in other Divisions during the Equipment Demonstration Period.
2. Perform field vibration testing on each item of rotating and reciprocating equipment having driver 50 HP and greater
3. Acceptability of equipment conditions, except pumps, based on ISO 1940-1 Balance Quality Grade G6.3 criteria.
4. Acceptability of pumping equipment to be based on current ANSI/HI criteria:
   a. ANSI/HI 11.6-2012 for Submersible Pumps in a Wet-pit or Dry-pit configuration.
   b. ANSI/HI 9.6.4-2016 for all other centrifugal pumps.
5. Utilize an Engineer approved 3rd party testing agency to perform vibration monitoring and testing on equipment.
6. For variable speed equipment provide vibration testing at no more than 3% increments of maximum speed throughout entire operating range.
7. Provide machinery condition diagnosis based on an acceptable machinery vibration severity guide or machinery fault guide analysis provided by the testing agency.
8. Tolerances for pumping equipment shall be per HI published standards.
9. Repair or replace equipment shown to be out of range of the specified tolerance until the equipment meets the specified normal operation range required in the machinery fault guide analysis.

10. Document testing with written report.
    a. Report to include initial testing results, acceptance criteria, corrective action taken to meet acceptance, verification of corrective action and acceptance report and baseline.
    b. Natural frequency of installed equipment utilizing an impact hammer.
    c. Report to include graphical plots of vibration signature for each test point at a scale which illustrates all vibration levels greater than 0.025 ips RMS.

3.6 DEMONSTRATION

A. Demonstrate equipment in accordance with Section 01 75 00.

3.7 ABBREVIATION TABLE

A. As indicated on the Drawings.

END OF SECTION

EXHIBIT A

MANUFACTURER FIELD SERVICE REPORT

This field service report is generic in nature. An electronic copy of this form will be furnished upon request from the Engineer. This report is to reflect that all requirements of the Operations and Maintenance Manual and the individual equipment specification requirements have been performed for the installation and operation and also to provide a baseline for amperage draw for each phase, vibration readings, rotation, alignment and all other applicable tests required to insure that the equipment has been installed properly. A MFSR will be required for each individual piece of equipment requiring a MFSR.

Definitions of Reports:

Initial service report: Required for construction preparations. Equipment delivered to site is in good condition and conforms to specification requirements. Anchor bolts, hardware and ancillary items (piping, flanges, conduits, fuel/power supply) are compatible with equipment.

Interim service report: Required for equipment installation onto base or foundation. Piping connections, electrical and control connections or structural attachment are complete. For equipment stored on site over four weeks, interim service report will document that manufacturer's long-term storage procedures have been incorporated and equipment has not been damaged, nor coatings deteriorated.

Final service report is to be completed when equipment can be started, electrical amperage and voltage draw measured, cold and hot alignments performed, vibration testing and monitoring performed and the equipment is found to be in compliance with Manufacturer's operating parameters and the requirements of the individual equipment specifications.

PROJECT: _____

Report Status:

Initial Service Report completed and submitted on _____

Interim Service Report completed and submitted on _____

Final Service Report completed and submitted on _____

Commencement of Warranty _____

I Description

A. Equipment Name and Identification: _____

_____

B. Serial Number: _____

C. Specification Section Number: _____

D. Manufacturer: _____

E. Representative: _____

F. Type of Service: Initial {_____} Interim {_____} Final {_____}

II General Review

A. The above referenced equipment/material/supplies have been inspected, checked, and adjusted. Yes {_____} No {_____}

Summary: _____

_____

B. The above referenced equipment/material/supplies were placed upon properly prepared or suitable substrate. N/A {_____} Yes {_____} No {_____}

Summary: _____

_____

C. The above referenced equipment/material/supplies are free from any undue stress imposed by any connected piping, anchor bolts or any other load. N/A {_____} Yes {_____} No {_____}

Summary: _____

_____

D. The above referenced equipment/material/supplies have operated under design conditions. N/A {_____} Yes {_____} No {_____}

Summary: _____

_____

E. The above referenced equipment/material/supplies have been installed in accordance with the manufacturer's recommendations and the Procurement Documents, require no corrective work, and are hereby approved. Yes {_____} No {_____}

Summary: _____

_____

F. The above referenced equipment/material/supplies are acceptable to the manufacturer as installed providing the following corrective action(s) are performed:

1. _____
2. _____
3. _____
4. _____
5. _____

III Inspection Checklist

Item	Acceptable (Yes/No)	Readings/Comments
Bearings (1)		
Belts (tension reading)		
Lubrication Levels		
Vibration (1) (2) (MILS/SEC)		
Infrared Thermography (1) (2)		
Starting AMPS		
Full Load AMPS		
Volts		
Rotation		
Jacket Temperature (DEGF)		
Seal Water Flow Rate (GPH or GPM)		
Seal Water Pressure (PSI)		
O-rings/Packing		
Alignment (1)		
Anchor Bolts		
Anchor Bolt Torque		
Grout		

Item	Acceptable (Yes/No)	Readings/Comments
Substrate Approval		
Sound level (4 feet from unit) (1) (dB)		
Other		

(1) Inspection or testing reports must be attached.
(2) Provide vibration testing and monitoring procedures for Engineer's review and approval prior to testing.

IV O&M Manuals

A. The O&M manual as presented contains all information required for proper operation, maintenance, and instruction of this system. N/A {_____} Yes {_____} No {_____}

Summary: _____

_____

V Preventive Maintenance

A. The preventive maintenance summary outlined in the O&M manual is acceptable for operation of the system throughout the warranty period. N/A {_____} Yes {_____} No {_____}

Summary: _____

_____

VI Operator Training/Classroom Instruction

A. Training and instruction have been performed in accordance with the requirements of the Procurement Documents. N/A {_____} Yes {_____} No {_____}

B. Final Training/Classroom Instruction Completed on: _____

Summary: _____

_____

VII Remarks

_____

_____

_____

VIII Certification

I hereby certify, that I, {_____}, am a duly authorized representative of the manufacturer, that I am empowered by the manufacturer to inspect, approve, and operate his equipment, and that I am authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as modified herein. I also certify that all information contained herein is true and accurate.

By: _____
(Authorized Representative)

For: _____

Date: _____

IX Acknowledgments

By: _____

For: _____
(Contractor)

Date: _____

By: _____

For: _____
(Engineer)

Date: _____

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SECTION 01 66 00
PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for:
   a. Payment considerations for stored materials and equipment.
   b. Handling of materials and equipment.
   c. Storage of materials and equipment, including:
      1) General provisions for storage.
      2) Storage locations.
      3) Protection of stored items.
      4) Storage of items containing Constituents of Concern.
      5) Outdoor, uncovered storage.
      6) Outdoor, covered storage.
      7) Fully-protected storage.
      8) Removal of temporary storage facilities and restoration of storage areas.
   d. Maintenance of storage.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, lands, and incidentals necessary and required to store and handle materials and equipment to be incorporated into the Work, and other materials and equipment at the Site, adjacent areas, and offsite storage areas.
2. Comply with Section 01 71 33 - Protection of the Work and Property, relative to handling and storing materials and equipment.

C. Related Requirements: Include but are not limited to:

1. Section 01 29 76 - Progress Payment Procedures.
2. Section 01 57 05 - Temporary Controls.
3. Section 01 71 33 - Protection of the Work and Property.

1.2 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment:

1. Materials and equipment delivered but not suitably stored and protected will not be eligible for payment.
2. Engineer may recommend reduction in payment, and Owner may reduce payments to Contractor (“set-offs”) by an appropriate amount when stored items are subsequently revealed to be improperly stored or protected.
3. Payment for Suitably Stored Items:
   a. Requirements for payment for materials and equipment delivered and suitably stored, but not yet incorporated into the Work, are in the General Conditions, as may be modified by the Supplementary Conditions, and Section 01 29 76 - Progress Payment Procedures.

1.3 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Affidavits of Inspection and Maintenance Performed on Mechanical and Electrical Equipment in Long-Term Storage:
   a. Submit in accordance with requirements of Article 3.1 of this Section.
2. Other Records of Inspection and Maintenance of Stored Materials and Equipment:
   a. Establish and maintain such records as required by this Section.
   b. Submit to Engineer or Owner (as applicable) within three days of Contractor's receipt of such request.

1.4 HANDLING

A. Handling of Materials and Equipment – General:

1. Handle materials and equipment to be incorporated into the Work in accordance with the Contract Documents and manufacturer's written instructions.
2. During handling and assembling of materials and equipment:
   a. Maintain validity of manufacturers' warranties.
   b. Comply with:
      1) Section 01 71 33 - Protection of the Work and Property.
   c. Do not drop, drag (without appropriate rollers or skids), or scrape materials and equipment.
   d. Use proper construction equipment and machinery, and tools, operated by sufficient number of qualified personnel.
   e. Maintain materials and equipment in neutral position.
   f. Do not exert undue stress on materials and equipment.
   g. Do not deform, bend, or damage materials and equipment.
   h. Do not deform or mar shafts, bearings, or other parts.

B. Additional Requirements for Hoisting and Lifting:

1. When lifting or hoisting, support materials and equipment from appropriate lifting points using proper hooks and suitable nylon lifting straps, chains, and cables. Do not mar or scrape surfaces of materials and equipment during handling.
2. Do not support rigging from building or structure without written approval of Engineer.
3. Contractor is responsible for and shall remedy damage to building, structure, resulting from Contractor's operations, in accordance with Section 01 71 33 - Protection of the Work and Property.

1.5 STORAGE

A. Storage – General:

1. Contractor shall make all arrangements and provide all measures necessary and required for, and pay all costs associated with, storing materials and equipment.
2. Store materials and equipment in accordance with the Contract Documents and manufacturer's written instructions. In event of conflict between the Contract Documents and manufacturer's written instructions regarding storage and protection, comply with the more-stringent, more-protective requirements.
3. Comply with Section 01 71 33 - Protection of the Work and Property.
4. Records:
   a. Establish and maintain up-to-date account of materials and equipment in storage, to facilitate preparation of progress payment requests, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.

b. Submit affidavits of inspection and maintenance of mechanical and electrical equipment in long-term storage in accordance with this Section's Article 3.1 ("Maintenance of Storage").

5. Arrange stored materials and equipment to allow easy access for observation or inspection by Owner, Engineer, Owner-hired testing and inspection entities, and authorities having jurisdiction.
6. Inspect and maintain stored materials and equipment in accordance with this Section's Article 3.1 ("Maintenance of Storage").

B. Storage Location:

1. When onsite storage is insufficient, Contractor shall provide additional lands for storage facilities as necessary and required for the Work.
2. Restrictions on Storage Locations:
   a. Do not store materials or equipment in structures being constructed unless approved by Engineer in writing.
   b. Do not use lawns, landscaped areas, or private property for storage without written permission of property owner.
   c. Comply with:
      1) Section 01 71 33 - Protection of the Work and Property.

C. Protection of Stored Items – General:

1. Store materials and equipment indicated below to ensure preservation of quality and fitness for intended uses in the Work, including proper protection against damage and deterioration resulting from: water (including precipitation, flood, and other), moisture, humidity, wind, dust, freezing, and outdoor ambient air high temperature as high as 100 DEGF. Temperature and humidity inside crates, containers, storage structures, and packaging may be significantly higher than outdoor ambient air temperature.
2. Store in indoor, climate-controlled storage all materials and equipment subject to damage or deterioration by water, moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner and Engineer.
3. Do not open manufacturer's crates, containers, and packaging until time of installation, unless recommended by the manufacturer or otherwise required in the Contract Documents.
4. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
5. Electrical Equipment, Instrumentation and Controls, Items Containing Computer Chips, Solid-State Devices, and Other Electronics:
   a. Contractor shall obtain, coordinate, and comply with specific temperature, humidity, and environmental limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 DEGF.
   b. Protect from water, moisture, humidity, dust, heat, cold, and other potentially harmful elements and environments. Space heaters provided in equipment shall be connected and operating at all times until equipment is connected to active, permanent, electrical power.
   c. Provide inside each electrical panel, control panel, and other enclosures with electronic device(s) each of the following: (1) desiccant, (2) volatile corrosion inhibitor (VCI) blocks, (3) moisture indicator, and (4) maximum- and minimum-indicating thermometer.
   d. Check panels and equipment not less than once per month. Replace desiccant, VCI, and moisture indicator the earlier of: (1) as often as necessary, or (2) every six months.
   e. Establish and maintain certified record of daily maximum and minimum temperature and humidity in storage facility. Such records shall be available for Engineer's and Owner's inspection upon request. Certified record of monthly inspection, noting maximum and minimum temperature for month, condition of desiccant, VCI, and moisture indicator, shall be available to Engineer and Owner upon request.

6. Finished Surfaces:
    a. Protect finished surfaces against impact, abrasion, discoloration, and other damage.
    b. Remedy, in accordance with requirements of item manufacturer and finishing system manufacturer damaged, marred, or deteriorated finishes, to Engineer's satisfaction.
7. Contractor is fully responsible for loss, damage, and deterioration, including theft and vandalism, to stored materials and equipment.

D. Storage of Materials or Equipment Containing Constituents of Concern:
1. Prevent contamination of personnel, storage areas, the Site, and adjacent areas.
2. Comply with Laws and Regulations and other provisions of the Contract Documents relative to Constituents of Concern and Hazardous Environmental Conditions.

E. Uncovered Storage:
1. The following materials may be stored outdoors without cover on supports, so there is no contact with the ground:
    a. Reinforcing steel.
    b. Structural steel.
    c. Castings.
    d. Rigid electrical conduit, except PVC-coated conduit.
    e. Fencing intended for permanent, outdoor installation.
    f. Piping, except PVC or chlorinated PVC (CPVC) pipe.

F. Covered Storage:
1. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
    a. Grout and mortar materials.
    b. Masonry units.
    c. Soil materials and granular materials such as aggregate.
    d. PVC and CPVC pipe.
    e. PVC-coated electrical conduit.
2. Properly and fully secure covers against coming loose in strong winds.
3. Install coverings properly sloped to prevent accumulation of water.
4. Loose Soil Material and Loose Granular Material:
    a. Store such materials in well-drained areas.
    b. Prevent mixing of such materials with foreign matter. Provide underlying separation layer or store on solid, impervious surface, where appropriate.
    c. Provide temporary erosion and sediment controls for stockpiled soil materials in accordance with Section 01 57 05 - Temporary Controls.

G. Fully-Protected Storage:
1. Store all materials and equipment not indicated in the provisions above regarding uncovered storage and covered storage on supports, in buildings, trailers, or other suitable temporary storage facility with concrete or wood flooring, solid and impervious roof, and fully closed walls on all sides.
2. Covering with visqueen plastic sheeting or similar material in storage space without floor, roof, and walls is unacceptable.
3. Provide heated storage for materials and equipment that could be damaged or deteriorate by low temperatures or freezing.
4. Provide air-conditioned storage for materials and equipment that could be damaged or deteriorate by high temperature or humidity.

5. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
6. Maintain temperature and humidity at levels recommended by materials and equipment manufacturers.
7. Prevent infestation of stored items by pests and rodents. Promptly and properly remedy such infestation when apparent.

H. Removal of Temporary Storage Facilities and Restoration of Storage Areas:

1. Completely remove temporary storage facilities when no longer necessary for the Work.
2. Restore areas used for storage and areas occupied by temporary storage facilities, in accordance with the Contract Documents, including Section 01 71 33 - Protection of the Work and Property.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF STORAGE

A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:

1. Condition and status of storage facilities is adequate to provide required storage conditions.
2. Required environmental conditions are maintained on continuing basis.
3. Materials and equipment exposed to weather elements or other environment are not adversely affected.

B. Mechanical and Electrical Equipment in Long-Term Storage:

1. Meaning of the term “long-term storage’ is as established in written instructions of manufacturer of associated materials or equipment.
2. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer’s written instructions for servicing each item, with notice of enclosed instructions shown on exterior of crate, container, or packaging.
3. Frequency of inspections and maintenance of stored items shall be in accordance with manufacturer’s written instructions.
4. For mechanical equipment with bearings and shafts, manually rotate shaft during inspection and maintenance, as recommended by equipment manufacturer.
5. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is connected to permanent electrical power supply.
6. Other requirements for maintenance during storage of electrical equipment, instrumentation and controls, items with computer chips, solid-state devices and other electronics are in this Section’s provision on general protection during storage.

C. Affidavits:

1. Submit to Engineer affidavit for each time maintenance and inspection was performed on materials and equipment in long-term storage. Affidavit shall be signed by Contractor and entity performing the inspection and maintenance on the stored items.
2. Indicate on affidavit:
   a. Date of inspection.
   b. Personnel involved and employer of each.
   c. Condition of storage environment.
   d. Specific stored items inspected, equipment condition, problems observed, problems corrected, maintenance tasks performed, and other relevant information.
   e. Signature of Contractor’s person responsible for the inspection and maintenance.

f. Signed and notarized statement by items' manufacturer indicating whether storage conditions and tasks performed are suitable for continued compliance with manufacturer's warranties.

3. Submit each affidavit, complete, not later than seven days after performing associated inspection and maintenance.

END OF SECTION

SECTION 01 71 33
PROTECTION OF THE WORK AND PROPERTY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for protecting the Work and property, including:
   a. Accessing or entering property.
   b. Temporary barricades and temporary warning lights and signs.
   c. Responsibility to remedy damaged property.
   d. Protecting natural habitats, including trees, plants, and lawns and meadows.
   e. Protecting Underground Facilities.
   f. Protecting existing surface structures.
   g. Protecting floors, walls, and roofs.
   h. Protecting other installed items and landscaping.

B. Scope:

1. This Section augments requirements of the General Conditions as may be modified by the Supplementary Conditions regarding protection of the Work and property, including Underground Facilities.
2. Contractor shall provide all labor, materials, equipment, tools, services, and incidentals necessary and required for protecting the Work and property in accordance with the Contract Documents.
3. Responsibilities for security during the Project are indicated in Section 01 57 33 - Temporary Security.

C. Related Requirements: Include, but are not necessarily limited to:

1. Section 01 57 05 - Temporary Controls.
2. Section 01 57 33 - Temporary Security.
3. Section 01 66 00 - Product Storage and Handling Requirements.

1.2 PROTECTION - GENERAL

A. Contractor shall provide all precautions and programs and perform all actions necessary to protect personnel health and safety, and to protect the Work and all public and private property and facilities from damage, in accordance with the Contract Documents, Laws and Regulations, and other applicable requirements.

B. To prevent damage, injury, and loss, Contractor's actions shall include the following:

1. Providing measures for safety of all personnel at and adjacent to the Site, whether engaged in performing the Work, operating or maintaining the facility, or performing other functions for Owner or others.
2. Storing construction equipment, machinery, tools, and similar items, materials and equipment to be incorporated into the Work, supplies, and other items in an orderly, safe manner that does not unduly interfere with progress of the Work or work of others, including Owner and facility manager (if other than Owner).
3. Suitably storing materials and equipment to be incorporated into the Work, in accordance with the Contract Documents, including Section 01 66 00 - Product Storage and Handling Requirements.
4. Placing upon the Work or any part thereof only loads consistent with the safety and integrity of that portion of the Work and existing construction and facilities.

5. Frequently removing and disposing of rubbish, scrap materials, and debris, in accordance with the Contract Documents, resulting from Contractor's operations.
6. Providing temporary controls, including controlling pests and rodents, in accordance with the Contract Documents.

PART 2 - PRODUCTS

2.1 TEMPORARY BARRICADES

A. Materials and Construction - General:

1. Temporary barricades shall be of materials that are either new or of good quality and sufficient for the intended purpose, exposure, and duration of use.
2. Provide temporary barricades of sturdy materials of grade, thickness, and durability sufficient for the probable loads to which they will be subject. Temporary barricades intended for fall prevention, such as railings and handrails on temporary stairs and temporary walkways and at openings, shall be in accordance with Laws and Regulations, including the applicable building and safety codes.
3. Color: Use appropriately colored and reflective barricades, or paint barricades accordingly, to be visible at night and during periods of low visibility.
4. Where owner of transportation right-of-way or transportation facility having jurisdiction or other authority having jurisdiction requires compliance with standards more stringent than the Contract Documents, comply with both the Contract Documents and requirements of the authorities having jurisdiction.

PART 3 - EXECUTION

3.1 ACCESSING OR ENTERING PROPERTY

A. Accessing or Entering Property - General:

1. Use and occupy only lands and easements furnished by Owner, unless appropriate consent from property owner and occupants is obtained by Contractor.
2. The foregoing applies to personnel, construction equipment and machinery, tools, vehicles, materials or equipment to be incorporated into the Work, supplies, temporary facilities, and other items or obstructions.

3.2 BARRICADES

1. Temporary Barriers for Areas Not Subject to Vehicular Traffic:
   a. Provide temporary barriers around:
      1) Openings.
      2) Scaffolding.
      3) Temporary stairs and ramps.
      4) Around excavations.
      5) Around elevated walkways, slabs, and platforms.
      6) Other areas that may present a fall-hazard or hazard to persons and property.
   b. Provide appropriate temporary barriers, warning signs and, where necessary, warning lights, at ground level and other low elevations, and at higher elevations. Protect persons and property from fall-hazards and protect persons and property at lower elevations from falling objects.
2. Duration of Temporary Barriers, Barricades, Signs, and Warning Lights:
   a. Contractor's responsibility for maintaining temporary barriers, barricades, signs, and warning lights shall continue until the associated Work is substantially complete in accordance with the Contract Documents, unless other provision for protection are agreed to by the parties.

b. After Substantial Completion, protect Work and property during periods when Contractor is onsite: completing the remaining Work, performing correction period work, and performing warranty work.

3. Removal:

a. Remove temporary barriers from the Site when associated excavation is properly filled and the area is sufficiently safe for persons and other property.

3.3 RESPONSIBILITY TO REMEDY DAMAGED PROPERTY

A. Contractor to Remedy Damage:

1. Contractor has full responsibility for preserving public and private property and facilities on and adjacent to the Site.
2. Direct or indirect damage done by, or on account of, any act, omission, neglect (including inadvertent acts), or misconduct by Contractor (including any person or entity for whom contractor is responsible) in performing the Work, shall be promptly remedied by Contractor, at Contractor's expense, in accordance with the Contract Documents.
3. If the Contract Documents do not show or indicate the required restoration, or remedy, restore or remedy the damage to condition equal or better than that existing before damage was done.

B. Owner May Remedy:

1. Should Contractor fail to protect and safeguard property and the Work after requests from Engineer or Owner, Owner reserves the right to implement measures to protect property and the Work.
2. Cost of such Owner-implemented measures shall be paid by Contractor. Owner may deduct from payments due Contractor such amounts as set-offs in accordance with the Contract Documents.
3. Such right, however, does not obligate Owner or Engineer to continuously monitor or have responsibility for protection of property and the Work, which responsibility is exclusively Contractor's.
4. In exercising its rights under this provision, Owner will endeavor to give Contractor sufficient notice to allow Contractor to remedy the damage or defect within a reasonable time. However, if Owner or Engineer deems that the situation requires prompt remedy, Owner may act as quickly as Owner deems appropriate, without infringing on or mitigating Owner's rights under this provision and elsewhere in the Contract Documents

3.4 PROTECTION OF NATURAL HABITATS

A. Tree and Plant Protection – General:

1. Protect existing trees, shrubs, and plants on or adjacent to the Site, against unnecessary cutting, breaking, damage, and skinning of trunk, branches, bark, and roots.
2. Protect irrigation servicing existing trees, shrubs, and plants on or adjacent to the Site that remain in place.
3. Do not store materials or equipment or park construction equipment, machinery, or vehicles within foliage drip lines.
4. In areas subject to traffic, provide temporary fencing or temporary barricades to protect trees and plants.
5. Burning is not allowed at or adjacent to the Site, including burning, in open fires or otherwise, trees, plants, debris, or other combustible materials.

B. Protection of Lawns and Meadows:

1. Protect lawns and meadows from unnecessary damage during performance of the Work.
2. To extent practicable, do not drive vehicles, construction equipment, machinery, or wheeled items such as carts and wheelbarrows, across lawns and meadows.

3. When existing lawn or meadow areas are disturbed, promptly stabilize exposed soil in accordance with Section 01 57 05 - Temporary Controls.
4. Remedy damaged lawns and meadows in accordance with the Contract Documents. If not otherwise addressed in the Contract Documents, restore to preconstruction condition or better with the same or substantively similar species.

3.5 PROTECTION OF UNDERGROUND FACILITIES

A. Underground Facilities – General:

1. Underground Facilities known to Owner and Engineer, except laterals or services to individual structures or properties, such as water, wastewater, storm water, gas and fuel, hydronic, steam, electric, and communications laterals or services, are shown on the Drawings. Information shown for Underground Facilities is the best available to Engineer but, in accordance with the General Conditions, as may be modified by the Supplementary Conditions, is not guaranteed to be correct or complete.
2. Comply with Laws and Regulations regarding notification of utility owners prior to performing the Work, including necessary “call before you dig” notifications.
3. Contractor shall explore ahead of trenching and excavating Work and shall sufficiently uncover Underground Facilities that will or may interfere with the Work to determine their location, to prevent damage to Underground Facilities, and to prevent service interruption to structures and properties served by Underground Facilities.
4. If Contractor damages an Underground Facility, Contractor shall promptly restore the damaged Underground Facility in accordance with requirements of the owner of the damaged facility and the Contract Documents. If the Contract Documents do not address repair or remedy of the damaged facility, restore to not less than preconstruction condition.
5. Necessary changes in the location of the Work may be directed by Engineer to avoid Underground Facilities not shown or indicated on the Contract Documents.
6. If permanent relocation of an existing Underground Facility is required and is not otherwise shown or indicated in the Contract Documents, Contractor may be directed in writing to perform the required work. When such relocation Work results in a change in the Contract Price, Contract Times, or both, the associated Contract modification procedures and payment for such Work shall be in accordance with the Contract Documents.

B. Protection of Underground Facilities under Roads and Parking Areas:

1. Provide temporary, heavy-duty steel roadway plates to protect existing manholes, handholes, valve boxes, vaults, and other Underground Facilities near to, or visible at, the ground surface.
2. Avoid imparting heavy loads, especially transitory loading (such as heavy truck traffic), vibration forces, and impact loads on Underground Facilities that are close to the ground surface and below-grade work areas. Provide temporary bridging or other appropriate protection where traffic must pass over Underground Facilities in close proximity to the ground surface.

C. Temporary Support of Underground Facilities:

1. Where Contractor exposes or excavates around or under one or more existing Underground Facilities, provide appropriate and adequate temporary supports for the associated Underground Facilities.
2. Do not allow Underground Facilities exposed by Contractor’s operations to remain exposed without temporary support necessary to properly protect the Underground Facility. Where joint of Underground Facility is exposed by excavation, provide temporary support for each exposed joint and other temporary support as necessary.

3.6 PROTECTION OF EXISTING SURFACE STRUCTURES

A. Surface Structures – General:

1. Surface structures are existing buildings, structures, and other facilities at or extending above ground surface, including their foundations and any extension below ground surface.

Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage routes, exposed piping and utilities, poles, exposed wires and cabling, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.

2. Protect surface structures as necessary and promptly remedy damage and defects resulting or arising from Contractor's operations. Unless expressly shown or indicated otherwise in the Contract Documents, protect such items regardless of whether shown or indicated on the Drawings or elsewhere in the Contract Documents.
3. Protection of Overhead Utilities:
    a. Protect visible, overhead utilities, including electrical power, communications, and piped utilities, and related supports, regardless of whether such items are shown or indicated in the Contract Documents.
    b. When required by the Contract Documents or when acceptable to owner of such utility or facility, temporarily relocate overhead utilities or facilities as necessary perform the Work.
    c. Provide temporary barriers, barricades, and warning signs identifying overhead utilities within reach of Contractor's construction equipment, machinery, or operations.

B. Temporary Removals of Surface Structures:

1. Existing surface facilities, including but not limited to guard rails, handrails, posts, guard cables, signs, poles, markers, curbs, and fencing, that are temporarily removed to facilitate the Work shall be replaced and restored promptly after the associated Work is performed.
2. Replace and restore such items in accordance with the Contract Documents. If not addressed in the Contract Documents, replace and restore such items to preconstruction condition or better.
3. Remedy damage to all items temporarily removed and later replaced and restored.
4. All such temporary relocations, replacement, and restoration is at Contractor's cost.

C. Protection of Surface Structures:

1. Sustain in their original location and protect from direct and indirect injury all surface structures located within or adjacent to the Site. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure or facility.
2. Before proceeding with the Work of sustaining and supporting such structure or facility, Contractor shall, upon Engineer's request, promptly satisfy Engineer that methods and procedures to be used have been approved by party owning the surface structure or facility.
3. Regardless of approval or acceptance by owner of property, structure, or facility, responsibility for protecting the Work and property is solely Contractor's.

3.7 PROTECTION OF FLOORS, WALLS, AND ROOFS

A. Protection of Floors, Walls, and Roofs – General:

1. Use proper protective covering when moving equipment, handling materials or other loads, when painting, handling mortar or grout, and when cleaning walls, ceilings, or structure contents.
2. Use metal pans to collect oil and cuttings from piping, conduits, and rod threading machines, and under metal cutting machines.
3. Maintain at the Site and use spill kits and absorbent pads for remedying spills.
4. Do not load concrete floors less than 28 days after concrete placement without Engineer's written permission.
5. Do not load slabs, floors, walls, or roofs in excess of design loading.
6. Do not load roofs without Engineer's written permission.
7. Restrict access to roofs, and keep Contractor's workers and personnel off existing roofs, except as necessary for the Work.

8. If access to roofs is necessary, roofing, parapets, openings, and all other construction on or adjacent to roof shall be protected with suitable plywood, barricades, or other appropriate means.

3.8 PROTECTION OF INSTALLED MATERIALS, EQUIPMENT, AND LANDSCAPING

A. General:

1. Protect existing facilities and installed Work to prevent damage from subsequent operations.
2. Remove protective items when no longer needed, prior to Substantial Completion of the associated Work.
3. Where work will continue in adjacent area(s) after Substantial Completion of a portion of the Work, protect the substantially completed Work until all work in the area is complete.

B. Control traffic (foot traffic, wheeled items such as carts, vehicles, and other traffic) to prevent damage to equipment, materials, and surfaces.

C. Coverings:

1. Provide temporary coverings to protect materials and equipment from damage.
2. Cover: projections, wall corners and jambs, sills, and soffits of openings, in areas used for traffic and for passage of materials and equipment in subsequent work.
3. Fasten protective items without harming the Work. Use tape or adhesives that do not leave residue when removed.

END OF SECTION

SECTION 01 75 00
CHECKOUT AND START-UP PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for checkout and startup of equipment, systems, and facilities.

B. Scope:

1. Contractor shall initially check out, start up, and place equipment and systems installed under the Contract into successful operation, in accordance with the material and equipment manufacturers' written instructions, Suppliers' recommendations at the Site, and the Contract Documents.
2. Provide the following:
   a. All labor, tools, materials, and equipment required to complete equipment and system checkout and startup.
   b. Chemicals, lubricants, and other required operating fluids necessary for checkout, startup, and initial operation of the Work.
   c. Filters and other temporary or consumable items necessary for checkout, startup, and initial operation of the Work.
   d. Fuel, electricity, water, and other temporary utilities and temporary facilities necessary for checkout and startup of equipment and systems, unless otherwise specified.
3. The General Conditions, as may be modified by the Supplementary Conditions, and Section 01 77 19 - Closeout Requirements, address requirements for documenting Substantial Completion.

C. Related Sections include but are not necessarily limited to:

1. Section 01 78 23 - Operation and Maintenance Data
2. Section 01 61 03 - Common Work Results for Equipment.
3. Section 01 77 19 - Closeout Requirements.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate checkout and startup with other contractors, as necessary.
2. Do not start up equipment or system(s) for continuous operation until all components of that equipment item or system, including instrumentation and controls, have been tested to the extent practicable and proven to be operable as intended by the Contract Documents.
3. Subject to the constraints of this Specifications section, Owner will furnish sufficient personnel to assist Contractor in starting up equipment and system(s), but responsibility for proper operation of the Work is Contractor's.
4. Supplier shall be present during checkout, startup, and initial operation, unless otherwise acceptable to Engineer or otherwise required by the Contract Documents.
5. For startup of heating equipment, air conditioning equipment, and other equipment and systems that provide temperature control, that are dependent upon the time of year, return to the Site at beginning of next heating or cooling season (as applicable) to recheck and start the appropriate equipment and system(s).
6. Do not start up equipment and system(s), without submitting acceptable preliminary operations and maintenance manuals by Contractor in accordance with the Contract Documents.

B. Checkout and Startup Planning Meeting:

1. Contractor, with appropriate Subcontractors and Suppliers, shall attend and participate in a meeting with Owner, facility manager, and Engineer to discuss planning, scheduling, and coordination of checkout and startup activities.
2. Meeting shall be held by the earlier of: (1) not less than 30 days prior to first scheduled training session for the equipment and system(s) to be checked out and started-up, and (2) not less than 30 days prior to the checkout and startup of the associated equipment and system(s).
3. Attend meeting prepared to knowledgably and effectively discuss:
    a. Status of the Work and schedule-to-complete for requirements prerequisite to checkout and startup.
    b. Schedule for and status of training required for each equipment item and system.
    c. Schedule for checkout, startup, and field quality control activities for the subject Work.
    d. Status and quantities of required consumables, lubricants, and utility services necessary for checkout and startup.
4. Meeting will be chaired by Engineer. Engineer will prepare and distribute a record of topics discussed and decisions made during the meeting.
5. Comply with decisions made at the meeting and the Contract Documents.

C. Sequencing:

1. Comply with Section 01 14 16 - Coordination with Owner's Operations, regarding staging (phasing) of the Work and allowable shutdowns.

D. Scheduling:

1. Progress Schedule:
    a. Clearly indicate in the Progress Schedule planned and actual dates for checkout, startup, and field quality control activities, including all demonstration testing activities addressed in this Specifications section and elsewhere in the Contract Documents. Separately indicate checkout, startup, and field quality control activities for each equipment item and system.
    b. Perform startup and field quality control activities on the associated, scheduled dates, unless otherwise acceptable to Owner, facility manager, and Engineer.
2. Restrictions for Scheduling:
    a. Checkout of materials, equipment, and systems by Contractor that do not involve or require Owner's or facility manager's personnel may be performed at any time during normal working hours. Where required by the Contract Documents or requested by Engineer, perform checkout in the presence of Engineer or Owner.
    b. Startup, including initial operation of materials, equipment, and systems, shall not be initiated on: Monday, Friday, Saturday, Sunday, Owner's holidays, the day immediately prior to a holiday, or the day immediately following a holiday, unless otherwise acceptable to Owner, facility manager, and Engineer.
    c. Unless otherwise indicated in the Contract Documents or acceptable to Owner, facility manager, and Engineer, perform all startup during normal working hours of the day shift.
    d. To the extent practicable, where extended-duration startup or field quality control activities are required by the Contract, avoid having such activities extend into evening, night, weekend, or holiday hours.
    e. Owner reserves the right to require a minimum seven days' notice of rescheduled startup when Contractor cannot perform the associated activities as scheduled.
3. Operation and Maintenance Data:
    a. Comply with Section 01 78 23 - Operation and Maintenance Data.

b. A preliminary copy of all operation and maintenance manuals shall be received by Engineer prior to the start of the demonstration period.

4. Training:
   a. Refer to training requirements in equipment technical specification sections.
5. Spare Parts, Tools, and Extra Materials.
   a. Deliver to Owner or facility manager (as applicable) all required spare parts, tools, and extra materials prior to commencing the demonstration period, unless earlier delivery is required elsewhere in the Contract Documents.

1.3 DEFINITIONS

A. The following defined terms are used in this Specifications Section:

1. Instrumentation Supplier: Entity retained by Contractor, Subcontractor, or Supplier to furnish instrumentation or controls that will be part of the completed Work, including manufacturers, manufacturer representatives, wholesalers, retailers, and others, including entities retained to perform systems integration Work.
2. Pre-Demonstration Period: The period of time, of unspecified duration after initial construction and installation activities during which Contractor, with assistance from manufacturer's representatives, performs in the following sequence:
   a. Finishing type construction work to ensure the Project has reached a state of Substantial Completion.
   b. Equipment start-up.
   c. Personnel training.
3. Demonstration Period: A period of time, of specified duration, following the Pre-Demonstration Period, during which the Contractor initiates process flow through the facility and starts up and operates the facility, without exceeding specified downtime limitations, to prove the functional integrity of the mechanical and electrical equipment and components and the control interfaces of the respective equipment and components comprising the facility as evidence of Substantial Completion.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Data collection and reporting log for each required Demonstration Period.

B. Informational Submittals: Submit the following:

1. Progress Schedules indicating dates for checkout, startup, and field quality control activates.
2. Completed checkout and startup log required in Paragraph 3.2.C of this Specifications section.
3. Manufacturer's installation check letters (also known as Manufacturer’s Field Services Report) required in Paragraph 3.2.C of this Specifications section.
4. Instrumentation Supplier’s Instrumentation Installation Certificate, required in Paragraph 3.2.C of this Specifications section.
5. Letter verifying completion of all pre-demonstration startup activities, required in Paragraph 3.2.C of this Specifications section.
6. Report of data collected during each required Demonstration Period.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 CHECKOUT AND STARTUP – GENERAL

A. Facility Startup Divided into Two Periods:

1. Pre-Demonstration Period including:
    a. Obtain Engineer's approval or acceptance (as applicable) of Submittals required prior to checkout and startup, including all Shop Drawings, Samples, source quality control (shop testing) Submittals, preliminary operation and maintenance manuals, and other Submittals required by the Contract Documents, other than Submittals that cannot be furnished until after startup.
    b. Complete the Work to a point ready for checkout and startup, including operation available in all manual, automatic, and other modes.
    c. Checkout and initial field quality control activities that can be performed prior to startup of the equipment or system.
    d. Startup of the associated Work.
    e. Field quality control activities for the subject Work as indicated elsewhere in the Specifications and other Contract Documents, other than this section.
    f. Training of operations and maintenance personnel.
2. Demonstration Period, including:
    a. Demonstration of functional integrity of equipment or system.

3.2 PRE-DEMONSTRATION PERIOD

A. Prior to the Pre-Demonstration Period, complete the Work to the point where it is ready for checkout and startup.

B. Checkout.

1. Comply with Section 01 61 03 - Common Work Results for Equipment, including provisions concerning installation checks

C. Startup:

1. Comply with requirements for startup of materials, equipment, and systems indicated in the associated Specification sections and elsewhere in the Contract Documents.
2. Prepare the Work so it will operate properly and safely and be ready to demonstrate functional integrity during the Demonstration Period.
3. Perform startup to the extent possible without introducing process flow.
4. Procedures include but are not necessarily limited to the following:
    a. Test or check and correct deficiencies of:
        1) Power, control, and monitoring circuits for continuity prior to connection to power source.
        2) Voltage of all circuits.
        3) Phase sequence.
        4) Cleanliness of connecting piping systems.
        5) Alignment of connected machinery.
        6) Vacuum and pressure of all closed systems.
        7) Lubrication.
        8) Valve orientation and position status for manual operating mode.
        9) Pumping equipment using process flow.
        10) Instrumentation and control signal generation, transmission, reception, and response.
        11) Tagging and identification systems.
        12) Proper connections, alignment, calibration and adjustment.
    b. Calibrate safety equipment.
    c. Manually rotate or move moving parts to assure freedom of movement.
    d. "Bump-start" electric motors to verify proper rotation.

e. Perform other tests, checks, and activities required to make the Work ready for Demonstration Period.

f. Checkout and Startup Log:

1) Prepare a log showing each equipment item and system requiring checkout and startup. Indicate in the log activities to be accomplished during checkout and startup.

2) Provide a place for Contractor to record date and person performing required checkout and startup. Indicate associated date(s), personnel, and employer of each.

3) Submit completed checkout and startup log to Engineer and obtain Engineer's acceptance.

5. Obtain Suppliers' certifications of the installed and operational Work, without restrictions, and submit to Engineer:

a. Manufacturer's installation check letters (sometimes referred to as Manufacturer's Field Services Report).

b. Instrumentation Supplier's Instrumentation Installation Certificate.

6. Letter verifying completion of all pre-demonstration startup activities including receipt of all specified items from Suppliers as final item prior to initiation of Demonstration Period.

7. Personnel Training:

3.3 DEMONSTRATION PERIOD

A. Demonstration Period – General:

1. Demonstrate the operation and performance of mechanical, electrical, instrumentation, and control interfaces of the Work undergoing the Demonstration Period, in accordance with the Contract Documents.

2. Duration of Demonstration Period: 120 consecutive hours.

3. If, during the Demonstration Period, the aggregate time used for repair, alteration, or unscheduled adjustments to any part of the Work that renders the affected Work inoperative or operation outside of recommended ranges exceeds 10% of the Demonstration Period, the demonstration of operation and performance will be deemed unacceptable and Contractor shall provide appropriate adjustments and remedies and re-perform the Demonstration Test, at no additional cost to Owner or facility manager, until acceptable results are obtained. Re-performance of the Demonstration Period shall comply with the same requirements as the original Demonstration Period.

4. Perform the demonstration of operation and performance of the Work under full operational conditions.

5. Owner's or Facility Manager's Personnel:

a. Owner or facility manager (as applicable) will make available operations personnel to make process decisions affecting facility performance and compliance with applicable operating permits.

b. Owner's or facility manager's assistance will be available only for process decisions.

c. Contractor will perform all other functions associated with the Demonstration Period including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period in accordance with the Contract Documents.

6. Owner or facility manager reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, and similar actions and events during the Demonstration Period to verify the operation and performance of the Work in automatic, manual, and other types of operating modes, backup systems, and alternate operating modes.

7. Timing of Start and End of Demonstration Period:

a. Time of beginning and ending Demonstration Period shall be agreed upon by Contractor, Owner (and facility manager, if other than Owner), and Engineer in advance of initiating Demonstration Period.

B. Demonstration Period, Evaluation, and Acceptance:

1. Throughout the Demonstration Period, provide knowledgeable personnel to answer Owner's or facility manager's questions, provide final field instruction on select systems (where appropriate) and to respond to problems or failures of the Work.

END OF SECTION

SECTION 01 77 19
CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for:

1. Substantial Completion.
2. Final inspection.
3. Request for final payment and acceptance of the Work.

1.2 SUBSTANTIAL COMPLETION

A. Substantial Completion – General:

1. Prior to requesting inspection for Substantial Completion, perform the following for the substantially completed Work:
   a. Materials and equipment for which Substantial Completion is requested shall be fully ready for their intended use, including full operating and monitoring capability in automatic, manual, and other operating modes set forth in the Contract Documents.
   b. Permanent provisions for safety and protection, shown and indicated in the Contract Documents and associated with the substantially completed Work or for personnel accessing and using the substantially completed Work, shall be in place and ready for their intended use.
   c. Complete field quality control Work, including inspections and testing at the Site, indicated in Specifications sections for individual materials and equipment items and related Contract Documents. Submit results of, and obtain Engineer's acceptance of, field quality control tests and inspections required by the Contract Documents.
   d. Complete checkout and startup in accordance with Section 01 75 00 - Checkout and Startup Procedures, requirements of the Specifications for the various materials and equipment in the substantially completed Work, and related Contract Documents.
   e. Cleaning for Substantial Completion shall be completed in accordance with the Contract Documents.
   f. Spare parts, tools, and extra materials shall be delivered and accepted in accordance with the Contract Documents.
   g. Training of the facility's operations and maintenance personnel shall be completed in accordance with the Contract Documents.
   h. Submit and obtain Engineer's acceptance of final operations and maintenance manuals in accordance with Section 01 78 23 - Operation and Maintenance Data.
   i. Obtain and submit to Engineer all required permits, inspections, and approvals of authorities having jurisdiction for the substantially completed Work to be occupied and used by Owner.
   j. Complete other tasks that the Contract requires be completed prior to Substantial Completion.
2. Procedures for requesting and documenting Substantial Completion are in the General Conditions, as may be modified by the Supplementary Conditions.

3. Sample letter for Contractor's request for inspection for Substantial Completion is attached to this Specifications section. Use the model language of the sample letter, modified to suit the Project and the needs of Contractor's request.
4. Unless decided otherwise by Owner and Engineer, form of certificate of Substantial Completion will be EJCDC C-625, "Certificate of Substantial Completion" (2018 edition or later), prepared by Engineer.

1.3 FINAL INSPECTION

A. Final Inspection – General:

1. Prior to requesting final inspection, verify that all the Work is fully complete and ready for final payment.
2. Sample letter for Contractor to request final inspection is attached to this Specifications section. Use the model language of the sample letter, modified to suit the Project.
3. Procedures for requesting and documenting the final inspection are in the General Conditions, as may be modified by the Supplementary Conditions, and as augmented in this Specifications section.

1.4 REQUEST FOR FINAL PAYMENT AND ACCEPTANCE OF THE WORK

A. Procedure:

1. After successful completion of the final inspection, submit request for final payment in accordance with the Agreement and General Conditions, as may be modified by the Supplementary Conditions, and using procedure specified in Section 01 29 76 - Progress Payment Procedures, and this Specifications section.
2. Acceptance of the Work:
    a. Upon Engineer's concurrence that the Work is complete and ready for final payment (as a result of the final inspection and other communications between the parties and Engineer) and receipt of the final Application for Payment, accompanied by other required Contract closeout documentation, all in accordance with the Contract Documents, Engineer will issue to Owner and Contractor a notice of acceptability of the Work, in accordance with the General Conditions, as may be modified by the Supplementary Conditions.
    b. Unless decided otherwise by Owner and Engineer, form of acceptance will be EJCDC C-626, "Notice of Acceptability of Work", (2018 edition or later).
    c. Nothing other than receipt of such notice of acceptability from Engineer constitutes acceptance of the Work.
    d. Receipt of Engineer's notice of acceptability of the Work does not relieve Contractor of Contractor's continuing obligations under the Contract, including correction period obligations, warranty obligations, indemnification obligations, insurance requirements, and Contractor's other obligations following acceptance of the Work by Engineer and final payment. Such obligations shall commence and remain in effect as indicated elsewhere in the Contract Documents.

B. Request for final payment shall include:

1. Documents required for progress payments in Section 01 29 76 - Progress Payment Procedures.
2. Documents required in the General Conditions, as may be modified by the Supplementary Conditions.

3. List, on Contractor's letterhead, of all Change Proposals, Claims, and disputes that Contractor believes are unsettled. If there are no such Change Proposals, Claims, or disputes, so indicate in writing.
4. Releases of Liens:
    a. Submit complete and legally effective releases (satisfactory to Owner) of all Liens filed in connection with the Work, regardless of whether such Lien was filed by Contractor, Subcontractor, or Supplier.
    b. Each release of Lien shall be signed by an authorized representative of the entity submitting the release of Lien, and shall include Contractor's, Subcontractor's, or Supplier's (as applicable) corporate seal, when applicable.
5. Waivers of Lien Rights:
    a. Submit legally-binding waivers of rights to file Liens, acceptable to Owner, as required in the General Conditions (as may be modified by the Supplementary Conditions) from Contractor and each Subcontractor and Supplier that furnished or provided labor, material, or equipment totaling $1,000 or more for the Work.
    b. Furnish final list of Subcontractors and Suppliers indicating final amount of the associated subcontract or purchase order for each. Include on the list all lower-tier Subcontractors and Suppliers retained by higher-tier Subcontractors and Suppliers.
    c. Each waiver of Lien rights shall be signed by an authorized representative of the entity submitting waiver of Lien rights, and shall include Contractor's, Subcontractor's, or Supplier's (as applicable) corporate seal, when applicable.
    d. Waiver of Lien rights may be conditional upon receipt of final payment.
    e. Required Affidavits: Submit the following:
        1) Affidavit of payment of debts and claims, submitted by Contractor. Acceptable form includes AIA G706, "Contractor's Affidavit of Payment of Debts and Claims" (1994 or later edition), or other form acceptable to Owner, and;
        2) Affidavit of release of Liens, submitted by Contractor. Acceptable form includes AIA G706A, "Affidavit of Release of Liens" (1994 or later edition).
        3) Each affidavit shall be signed by an authorized representative of Contractor and shall bear Contractor's corporate seal, as applicable.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

A. The documents listed below, following this Specification section's "End of Section" designation, are part of this Specifications section:

1. Sample letter for Contractor's use in requesting inspection for Substantial Completion (two pages).
2. Sample letter for Contractor's use in requesting final inspection (one page).

B. In the model language of the attached sample letters for Contractor to request inspection for Substantial Completion and the final inspection, italicized language in brackets, e.g., "[insert date]" indicates instructions to the drafter of the letter and often indicates specific information to be inserted by Contractor; do not include bracketed, italicized text in the final version of the letter(s) prepared for the Project. Non-italicized

language in brackets is optional language; use the appropriate language to complete the actual letter for the Project and edit where required to suit the specific circumstances.

END OF SECTION

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING INSPECTION FOR SUBSTANTIAL COMPLETION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

[Name of Engineer's contact person]
HDR
[Street address]
[City, state, postal code]

Subject:
[Project name, Contract designation]
Request for Inspection for Substantial Completion

Dear [addressee]:

In our opinion, [all of] [or] [a portion of] the Work under the above-referenced Contract is substantially complete as of [insert month, day, year on which Substantial Completion was achieved]. [The specific portion of the Work that we believe is substantially complete is [insert identification of that portion of the Work that is substantially complete].]

Enclosed is our listing of uncompleted Work items ("punch list"). In accordance with Paragraph 15.03.A of the General Conditions, we hereby request: (1) That the Engineer schedule and perform the inspection for Substantial Completion as soon as possible, and (2) Issuance of the certificate of Substantial Completion.

In accordance with Paragraph 15.03.D of the General Conditions, upon Substantial Completion, we propose the following relative to apportionment of responsibilities between the Owner and the Contractor:

1. Security, Protection, Insurance:
    a. Site Security: [insert proposal; address whether Owner or Contractor will be responsible for security of the Site].
    b. Protection of the Substantially Completed Work: [insert proposal; address whether Owner or Contractor will be responsible for protection].
    c. Property Insurance: [insert proposal; typically Owner assumes responsibility for property insurance upon Substantial Completion]
2. Operation and Maintenance:
    a. Operation: [insert proposal; address whether Owner or Contractor will be responsible for operating the substantially completed Work].
    b. Maintenance: [insert proposal; address whether Owner or Contractor will be responsible for maintaining the substantially completed Work].
3. Utilities: [for each of the following, indicate whether Owner or Contractor will be responsible for utilities and services, or whether responsibility will be shared; if shared, indicate proposed cost-sharing]
    a. Electricity: [insert proposal].
    b. Natural Gas/Fuel/Heating: [insert proposal].

c. Water Supply: [insert proposal].

d. Wastewater: [insert proposal].

e. Communications (Telephone, Internet, Video): [insert proposal].

In accordance with Paragraph 15.08.A of the General Conditions, we understand that the Contract's correction period for the Work covered by the certificate of Substantial Completion commences on the Substantial Completion date documented in said certificate. [Drafter: Also see Paragraph 15.04 ("Partial Utilization") of the General Conditions and, where necessary, edit this paragraph of the letter accordingly.]

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]
[Signatory's title]

Attachments:
Preliminary list of uncompleted Work items ("punch list"; [##] pages)

Copies:
[Owner's project manager]

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING FINAL INSPECTION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

[Name of Engineer's contact person]
HDR
[Street address]
[City, state, postal code]

Subject:
[Project name, Contract designation]
Request for Final Inspection

Dear [addressee]:

The Work under the above-referenced Contract is complete and ready for final payment as of [insert month, day, year on which final completion was achieved]. In accordance with Paragraph 15.05 of the General Conditions, we hereby request that the Engineer schedule and perform the final inspection as soon as possible. Upon successful completion of the final inspection, we will submit our final Application for Payment accompanied by the required Contract closeout documentation in accordance with the Contract Documents.

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]
[Signatory's title]

Attachments:
None

Copies:
[Owner's project manager]

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SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for Contractor-furnished, manufacturers' operation and maintenance (O&M) data, including:
    a. Required operation and maintenance data groupings into operation and data manuals and timing of such Submittals.
    b. Requirements for paper copies of operation and maintenance data and related Electronic Documents.
    c. Content of operation and maintenance data Submittals.

B. Scope:

1. Contractor shall submit operation and maintenance data, and related information, in accordance with this Section and requirements elsewhere in the Contract Documents, as instructional and reference information for use by: (a) Owner's operation and maintenance personnel, and (b) others retained by or working for Owner.
2. In addition to operation and maintenance data expressly required elsewhere in the Contract Documents, also submit operation and maintenance data for:
    a. All equipment and systems, including facility equipment, HVAC equipment, electrical equipment, communications equipment, electronic safety and security systems, utility equipment, process equipment, and other equipment.
    b. Valves, gates, actuators, and related accessories.
    c. Instrumentation and control devices and systems.
    d. Building materials, systems, and finishes that need post-construction troubleshooting, cleaning, or maintenance, such as louvers, paint and coatings, and other items.

C. Related Requirements:

1. Section 01 31 26 - Electronic Communication Protocols.
2. Section 01 33 00 - Submittal Procedures.
3. Section 01 75 00 - Checkout and Startup Procedures.

1.2 SUBMITTALS

A. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data:
    a. Submit operation and maintenance data, required by the Contract Documents, grouped into operation and maintenance manual Submittals indicated in the detailed technical specifications.
    b. Where operation and maintenance data required by the Contract Documents, is not expressly indicated in the detailed technical specifications, obtain written clarification or interpretation from Engineer prior to preparing and transmitting such Submittal.

c. For each required operation and maintenance manual Submittal, furnish preliminary Submittal and final Submittal. Timing of preliminary and final operation and maintenance manual Submittals, and differences between preliminary and final Submittals, are indicated in this Section.

B. Timing of Submittals and Quantity Required:

1. Preliminary Operation and Maintenance Manual Submittals:
   a. Paper Copies: None, exclusive of copies required for Contractor's use.
   b. Electronic Documents: In accordance with Section 01 31 26 - Electronic Communication Protocols.
   c. Submit to entity indicated in Section 01 33 00 – Submittal Procedures, by the earlier of: 90 days following approval of Shop Drawings and product data Submittals, or 14 days prior to starting training of operation and maintenance personnel, or 14 days prior to field quality control testing at the Site.
   d. Do not perform checkout, startup, and training without Engineer's acceptance of preliminary operation and maintenance data Submittals for the associated Work.
2. Final Operation and Maintenance Manual Submittals: Furnish final Submittal prior to Substantial Completion of the associated Work, unless submittal is required prior to an interim Milestone.
   a. Paper Copies: Two copies, exclusive of copies required for Contractor's use.
   b. Electronic Documents: In accordance with Section 01 31 26 - Electronic Communication Protocols.
   c. Work will not be eligible for Substantial Completion until associated, required final operation and maintenance data Submittals are accepted by Engineer.

1.3 PAPER COPIES OF O&M MANUALS

A. Binding and Cover:

1. Bind each operation and maintenance manual in durable, permanent, stiff-cover binder(s), comprising one or more volumes per copy, as necessary.
2. Binders shall be not less than one inch wide and maximum of three inches wide. Binders for each copy of each volume shall be same size and color.
3. Binders shall be locking three-ring ("D"-ring) type, or three-post type. Three-ring binders shall be riveted to back cover and include plastic sheet lifter (page guard) at front and back of each volume.
4. Do not overfill binders.
5. Covers shall be oil-, moisture-, and wear-resistant, including identifying information on cover and spine of each volume.
6. Indicate the following information on cover of each volume:
   a. Title: "OPERATING AND MAINTENANCE INSTRUCTIONS". For submittal of preliminary operation and maintenance data, include the word, "PRELIMINARY" in the title.
   b. Name or type of material or equipment covered in the manual.
   c. Volume number, if more than one volume is submitted, listed as "Volume _____ of _____", with appropriate volume-designating numbers filled in.
   d. Name of Project and, when applicable, Contract name and number.
   e. Name of building or structure, as applicable.
7. Provide the following information on spine of each volume:

a. Title: “OPERATING AND MAINTENANCE INSTRUCTIONS”. For submittal of preliminary operation and maintenance data, include the word, “PRELIMINARY” in the title.
b. Name or type of material or equipment covered in the manual.
c. Volume number, when more than one volume is submitted, listed as “Volume _____ of _____”, with appropriate volume-designating numbers filled in.
d. Project name and building or structure name.

B. Pages:

1. Print pages in paper copies of operation and maintenance manuals on 30-pound (minimum) paper, 8.5-inch by 11-inch size.
2. Reinforce binding holes in each individual paper sheet with plastic, cloth, or metal. When published, separately-bound booklets or pamphlets are part of manuals, reinforcing of pages within booklet or pamphlet is not required.
3. Furnish each page with binding margin not less than 3/4-inch wide.
4. Properly punch each paper page with holes suitable for associated binding. Provide not less than 3/8-inch of paper between outer edge of punched holes and edge of paper. Manuals with improperly punched holes will be returned to Contractor as unacceptable.
5. In paper copies of manuals, each page in each copy shall be properly bound-through by the binder’s rings or posts. Paper manuals where some pages are not so bound will be returned to Contractor as unacceptable.

C. Drawings:

1. Bind into operation and maintenance manuals drawings, diagrams, and illustrations up to and including 11-inch by 17-inch size, with reinforcing and punched holes specified for paper pages.
2. Drawings or sheets larger than 11-inch by 17-inch shall be:
   a. Paper Copies: Neatly folded and inserted into clear plastic pockets bound into the manual. Neatly and permanently label each pocket with printed text indicating content and drawing numbers. Include not more than two drawings or sheets per pocket.
   b. Electronic Documents Copies: Included in electronic file at appropriate location.

D. Copy Quality and Document Clarity:

1. Provide original-quality copies. Documents in operation and maintenance manuals shall be either original manufacturer-printed documents or first-generation photocopies indistinguishable from originals. If original is in color, copies shall be in color. Manuals with copies that are unclear, not completely legible, off-center, skewed, or where text or drawings are cut by binding holes, are unacceptable. Pages that contain approval or date stamps, comments, or other markings that cover text or drawing are unacceptable.
2. Clearly mark, using ink, to indicate all components of materials and equipment on catalog pages for ease of identification. In standard or pre-printed documents, indicate options furnished and cross out inapplicable content. Using highlighters to so indicate options furnished is unacceptable.

E. Organization:

1. Indexed tabs between major categories of information, such as operating instructions, preventive maintenance instructions, and other major subdivisions of data in each manual.

1.4 ELECTRONIC DOCUMENTS O&M MANUALS

A. Electronic Documents of Operation and Maintenance Manuals:

1. Each Electronic Document copy of operation and maintenance data shall include all information included in the corresponding paper copy.
2. Submit Electronic Documents operation and maintenance data in accordance with Section 01 31 26 - Electronic Communication Protocols, and Section 01 33 00 - Submittal Procedures.
3. File Format:
    a. Unless otherwise required by Section 01 31 26 - Electronic Communication Protocols, or Section 01 33 00 - Submittal Procedures, operation and maintenance data Electronic Documents shall be “portable document format” (PDF) files.
    b. Electronic Documents shall be electronically searchable upon delivery.
    c. Electronic Documents shall not be password-protected and shall not be protected against Owner’s or facility manager’s copying and printing such files for Owner’s or facility manager’s use in operating and maintaining the facility.
    d. Electronic Documents shall open to its first page.
    e. Submit each operation and maintenance manual as a single Electronic Document file, unless file size is over-large, in which case divide into as few separate files, each with similar filename, as possible.
    f. Within each Electronic Document, provide bookmarks for the following:
        1) Each chapter and subsection indicated in the corresponding printed copy document’s table of contents.
        2) Each figure.
        3) Each table.
        4) Each appendix and attachment.

1.5 CONTENT OF OPERATION AND MAINTENANCE MANUALS

A. Operation and Maintenance Manual Content – General:

1. Prepare each operation and maintenance manual specifically for the Project. Include in each manual all pertinent instructions, as-constructed drawings as applicable, bills of materials, technical information, installation and handling requirements, maintenance and repair instructions, and other information required for complete, accurate, and comprehensive data for safe and proper operation, maintenance, and repair of materials and equipment furnished for the Project. Include in manuals specific information required in the Specification Section for the material or equipment, data required by Laws and Regulations, and data required by authorities having jurisdiction.
2. Provisions of this Article were written for equipment. Where operation and maintenance data are required for building products, such as finishes, openings, thermal and moisture protection, and similar items, comply with this Article to the extent practical and reasonable for the associated item.
3. Completeness and Accuracy:
    a. Operation and maintenance manuals that include language stating or implying that the manual’s content may be insufficient or stating that the manual’s content is not guaranteed to be complete and accurate are unacceptable.
    b. Operation and maintenance manuals shall be complete and accurate.

c. Operation and maintenance manuals shall indicate the specific alternatives and features furnished, and the specific operation and maintenance provisions for the material or equipment furnished.

4. Provide dividers and Include manufacturer's information, diagrams, schematics, and equipment cutaways. Avoid submitting catalog excerpts unless they are the only document available showing identification or description of particular component of the equipment. Where published documents, included in operation and maintenance data, pertain to multiple models or types, mark the literature to indicate specific material or equipment supplied. Marking may be in the form of checking, arrows, or underlining to indicate pertinent information, or by crossing out or other means of obliterating information that does not apply to the materials and equipment furnished.
5. Identify each equipment item consistent with names and identification numbers shown or indicated in the Contract Documents, rather than manufacturer's model numbers.
6. Neatly type data not furnished in computer-printed text. Handwriting, except for strikeouts, arrows, and the like, is unacceptable.
7. Include copy of warranty in accordance with the Contract Documents.
8. Include copy of proposed service contract, when applicable.
9. When copyrighted material is used in operation and maintenance manuals, obtain copyright holder's written permission to use such material in the operation and maintenance manual.

B. Differences Between Preliminary and Final Operation and Maintenance Manuals:

1. In preliminary operation and maintenance manuals, include flysheet or placeholder for information to be included in final operation and maintenance manual Submittal.
2. In final operation and maintenance manuals, include information such as the following, as applicable for the associated materials and equipment:
   a. Equipment data that requires collection after startup, for example: (1) system and equipment balancing reports, including those for HVAC systems; and (2) final settings for electrical switchgear, automatic transfer switches, and circuit breakers: and (3) materials and equipment field testing results.
   b. Equipment startup reports and Suppliers' field service reports (the latter on form in Section 01 75 00 - Checkout and Startup Procedures).

C. Initial Documents in Operation and Maintenance Manuals:

1. Table of Contents:
   a. Provide table of contents in each volume of each operation and maintenance manual.
   b. In table of contents and not less than once in each chapter or section, identify materials and equipment by their functional names. Thereafter, abbreviations and acronyms may be used if their meaning is clearly indicated in a table bound at or near beginning of each volume. Using material or equipment model or catalog designations for identifying items is unacceptable.
2. Equipment Record:
   a. Provide "Equipment Record" section of operation and maintenance manual immediately following the table of contents. "Equipment Record" section is not required for operation and maintenance data for other than equipment (such as building materials and finishes).

b. Provide “Equipment Record” on forms included as this Section’s Attachments 1, 2, and 3.
c. For instrumentation and control equipment, International Society of Automation (ISA) data sheets are acceptable in lieu of the forms included as this Section’s Attachments 1, 2, and 3.
d. This Section’s Attachments 1, 2, and 3 are available from Engineer as “fillable PDF forms”.
e. Complete in detail each section of “Equipment Record”. Merely referencing the associated equipment’s operation and maintenance data for nameplate, maintenance, spare parts, lubricants, or other required information, is unacceptable.
f. For equipment or systems with multiple, separate components (for example, motor and gearbox), fully completed “Equipment Record” is required for each component.
g. Operation and maintenance data Submittals without complete and accurate “Equipment Record” sheets are unacceptable.

3. Supplier’s Field Service Reports:
a. Include in final operation and maintenance manuals copies of associated Supplier’s field services reports in accordance with Section 01 75 00 - Checkout and Startup Procedures.
b. Include Supplier’s completed field service reports in operation and maintenance manual in section immediately following “Equipment Record” section.

D. Operation and Maintenance Instructions:

1. Safety Considerations:
a. Submit written descriptions of safety considerations relating to operation and maintenance procedures for materials and equipment.
b. Describe safety devices and alarms provided with materials and equipment and proper operation and use.
c. Indicate procedures for proper, safe operating and maintenance of materials and equipment furnished, including manufacturer’s recommended personal protection equipment, apparatus, and devices not furnished under the Contract.
d. Describe recommended safety-related training for personnel operating and maintaining the subject materials or equipment.
e. Include in appendix to operation and maintenance manual manufacturers’ relevant “safety data sheets” (SDS), formerly “material safety data sheets” (MSDS).
f. Engineer’s review of operation and maintenance data expressly does not extend to adequacy, completeness, and accuracy of SDS or other safety and protection practices and procedures indicated in the operation and maintenance data.

2. Operation:
a. Include in operation and maintenance data Submittals complete, detailed written operating instructions for each material or equipment item including: function; operating characteristics; limiting conditions; and regulation and control. Also include, as applicable, written descriptions of alarms generated by equipment and proper responses to such alarm conditions.
b. Include pre-startup instructions and checklists and complete startup instructions for each material and equipment item.

c. Indicate recommended operating instructions for all operating modes and conditions, with associated recommendations for safe operation.
d. Explain available controls and instrumentation and associated function(s).
e. Indicate required shutdown checklists and procedures for: normal shutdown, emergency shutdown, and long-term shutdowns.
f. Troubleshooting instructions.

3. Maintenance – General:
   a. Include in operation and maintenance data complete, written instructions for necessary and recommended maintenance, including mechanical maintenance and electrical/instrumentation and controls maintenance, as applicable.
   b. Include in operation and maintenance data complete instructions for necessary assembly, disassembly, installation, re-installation, storage, and shipping for materials and equipment.
   c. Tools: Include list of required maintenance tools and equipment.
   d. Spare Parts and Extra Materials:
      1) Submit complete instructions for ordering replaceable parts, including reference numbers (such as shop order number or serial number) that will expedite the ordering process.
      2) Submit manufacturer's recommended inventory levels for spare parts, extra stock materials, and consumable supplies for the initial two years of operation. Consumable supplies are items consumed or worn by operation of materials or equipment, and items used in maintaining the operation of material or equipment, including items such as lubricants, seals, reagents, and testing chemicals used for calibrating or operating the equipment. Include estimated delivery times, shelf life limitations, and special storage requirements.
      3) Also refer to this Article's provision, "Bills of Materials", below, for additional requirements regarding ordering replacement parts.
4. Routine and Preventative Maintenance:
   a. Submit complete, detailed, written instructions for routine and preventive maintenance including all information and instructions to keep materials, equipment, and systems properly lubricated, adjusted, and maintained so that materials, equipment, and systems function economically throughout their expected service life. Instructions shall include:
      1) Written explanations with illustrations for each routine and preventive maintenance task such as inspection, adjustment, anchor bolt torque checks, lubrication, calibration, cleaning, replacement of filters, and the like.
      2) Recommended schedule for each routine and preventive maintenance task.
      3) Lubricants:
         a) Provide lubrication charts indicating recommended types of lubricants, frequency of application or change, and where each lubricant is to be used or applied.
         b) Table of alternative lubricants.
5. Major Maintenance:
   a. Include detailed, written instructions and illustrations for required periodic (non-routine, non-preventative) maintenance.
   b. Indicate relative level of training and expertise required to perform such maintenance and recommended tools and equipment.

6. Special Maintenance:
    a. Include maintenance instructions for long-term shutdowns and storage.

E. Bills of Materials:

1. Include in operation and maintenance manuals complete bills of material or parts lists for materials and equipment furnished. Lists or bills of material may be furnished on a per-drawing or per-equipment assembly basis. Bills of material shall indicate:
2. Manufacturer's name, physical address, telephone number, internet website address.
3. Manufacturer's local service representative's or local parts supplier's name, physical address, telephone number, internet website address, and e-mail addresses.
4. Manufacturer's shop order and serial number(s) for materials, equipment or assembly furnished.
5. For each part or piece include the following information:
    a. Parts cross-reference number. Cross-reference number shall be used to identify the part on assembly drawings, Shop Drawings, or other type of graphic illustration where the part is clearly shown or indicated.
    b. Part name or description.
    c. Manufacturer's part number.
    d. Quantity of each part used in each assembly.
    e. Current unit price of the part at the time the operation and maintenance manual is submitted. Price list shall be dated.

F. Record Copy of Shop Drawings, Product data, and Other Previously Approved and Accepted Submittals:

1. Submit original-quality copies of each approved and accepted (as applicable) Shop Drawing, product data Submittal, written results of source quality control activities, and other Submittals, updated to indicate as-installed condition. Do not include prior Submittals that were not approved or were not accepted. Reduced drawings are acceptable only when reduction is to not less than one-half original size and all lines, dimensions, lettering, and text are completely legible on the reduction.

G. Electrical Schematics, Diagrams, and Information:

1. Submit complete electrical schematics and wiring diagrams, including complete point-to-point wiring and wiring numbers or colors between all terminal points.
2. Include as-constructed drawings of layouts of electrical panels (such as switchgear and motor control centers) and control panels.

H. NFPA 70 (National Electric Code) Documentation:

1. Include in operation and maintenance manuals for electrically-powered equipment documented calculations of: (1) arc-fault current, equipment available fault current and (2) short-circuit current rating (SCCR), provided as part of equipment Submittals.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

A. The following, bound after this Section's "End of Section" designation, are part of this Section:

1. Attachment 1 - Equipment Data and Spare Parts Summary form (one page)
2. Attachment 2 - Recommended Maintenance Summary form (one page)
3. Attachment 3 - Lubrication Summary form (one page)

END OF SECTION

ATTACHMENT 1

Equipment Record

Equipment Data and Spare Parts Summary

Project Name	Specification Section:
Equipment Name	Year Installed:
Project Equipment Tag No(s).	
Equipment Manufacturer	Project/ Order No.
Address	Phone
Website / Web Site / E-mail	
Local Representative/Service Center	
Address	Phone
Website / E-mail	

MECHANICAL NAMEPLATE DATA

Equip.		Serial No.		
Make		Model No.		
ID No.	Frame No.	HP	RPM	Cap.
Size	TDH	Imp. Size	CFM	PSI
Other:				

ELECTRICAL NAMEPLATE DATA

Equip.			Serial No.					
Make			Model No.					
ID No.	Frame No.	HP	V.	Amp.	Hertz	PH	RPM	SF
Duty	Code	Ins. Cl.	Type	NEMA	C Amb.	Temp. Rise	Rating	
Other:								

SPARE PARTS PROVIDED PER CONTRACT

Part No.	Part Name	Quantity

RECOMMENDED SPARE PARTS

Part No.	Part Name	Quantity

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ATTACHMENT 2

Equipment Record

Recommended Maintenance Summary

Equipment Description	Project Equip. Tag No(s).	

RECOMMENDED BREAK-IN MAINTENANCE (FIRST OIL CHANGES, ETC.)	INITIAL COMPLETION * FOLLOWING START-UP							
	D	W	M	Q	S	A	RT	Hours

RECOMMENDED PREVENTIVE MAINTENANCE	PM TASK INTERVAL *							
	D	W	M	Q	S	A	RT	Hours

* D = Daily W = Weekly M = Monthly Q = Quarterly S = Semiannual A = Annual Hours = Run Time Interval

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ATTACHMENT 3

Equipment Record

Lubrication Summary

Equipment Description	Project Equip. Tag No(s).

Lubricant Point

Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

Lubricant Point

Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

Lubricant Point

Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

Lubricant Point

Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

Lubricant Point

Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

Lubricant Point

Lubricant Type		Manufacturer	Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

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SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for Project record documents, to supplement record documents requirements of the General Conditions, as may be modified by the Supplementary Conditions.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Engineer Project record documents in accordance with the Contract Documents.

C. Related Sections include but are not necessarily limited to:

1. Section 01 29 73 - Schedule of Values.
2. Section 01 29 76 - Progress Payment Procedures.
3. Section 01 31 26 - Electronic Communication Protocols.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Obtain necessary field measurements and record all data required for Project record documents before covering up the Work or building on subsequent phases of the Work.
2. Promptly after obtaining measurements and information, record the data and information on Project record documents.
3. Where a licensed, registered professional land surveyor is retained on the Project, whether by Contractor or others, to perform field measurements and record other data for as-constructed Project or Site conditions, coordinate with such entity and schedule and perform the Work accordingly. Allow surveyor sufficient time and proper conditions for performing surveyor's work. Assist the surveyor as necessary in performance of surveyor's responsibilities.

B. Monthly Status Evaluation:

1. Not less than once per month, as a condition precedent to submitting Application for Payment, Contractor's site superintendent will meet with either Engineer or Owner at the Site to review status of Contractor's Project record documents.
2. When Engineer or RPR directs corrections to Project record documents, promptly make such corrections on the Project record documents. Engineer's or Owner's directions or lack thereof do not in any way relieve or mitigate Contractor's sole responsibility for the accuracy, completeness, and clarity of Project record documents.
3. Requirements for review of record documents status as a condition precedent to progress payments is in Section 01 29 73 - Schedule of Values, and Section 01 29 76 - Progress Payment Procedures.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Recorder of Changes and Field Conditions on Project Record Documents:
   a. Contractor's staff at the Site shall include not less than one person with suitable training and drafting (drawing) experience to record on the Project record documents changes made and field conditions encountered.

b. Recorder of changes and field conditions on the Project record documents shall possess not less than two semesters of drafting (drawing) training in a classroom, either in high school, college, or bona-fide vocational school.

c. Upon Engineer's request, submit name of proposed recorder at the Site, resume', or list of relevant experience, and copy of credentials of completion of such drafting (drawing) course(s).

d. If original recorder of changes and field conditions is replaced, promptly advise Engineer and Owner in writing and submit to Engineer qualifications of proposed replacement.

1.4 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Qualifications Statements:

a. When requested by Engineer, submit qualifications of proposed recorder of changes and field conditions for Project record documents at Contractor's field office at the Site. Qualifications shall comply with the "Quality Assurance" Article of this Specifications section.

B. Closeout Submittals: Submit the following:

1. Record Documentation:

a. Prior to readiness for final payment, submit to Engineer one copy of Project's final record documents and obtain Engineer's acceptance of same. Submit complete record documents; do not make partial Submittals without Engineer's concurrence.

b. Submit the following Project record documents:

1) Record Drawings, including those issued via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

2) Record project manual, including Specifications, indicating changes made via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

c. Submit record documents with transmittal letter on Contractor's letterhead in accordance with requirements in Section 01 33 00 - Submittal Procedures.

2. Certifications:

a. Record documents Submittal shall include certification, with original signature of official authorized to sign legally-binding contracts on behalf of Contractor, reading as follows:

1) (Contractor's legal/contractual entity name) has maintained, continuously updated, and submitted Project record documentation in accordance with the General Conditions and Supplementary Conditions, Section 01 78 39 - Project Record Documents, and other elements of Contract Documents, for the City of Blair, Blair. NE, Black Elk Pump Station Modifications Project. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

By: _____ (signature)
Print Name: _____
Title: _____

1.5 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain in Contractor's field office, in clean, dry, legible condition, complete sets of the following record documents:

1. Drawings, Specifications, and Addenda;
2. Shop Drawings, Samples, and other Submittals, including records of test results, approved or accepted as applicable, by Engineer;

3. Change Orders, Work Change Directives, Field Orders, allowance authorizations;
4. copies of all interpretations and clarifications issued;
5. survey data; and
6. all other documents pertinent to the Work.

B. Provide files and racks for proper storage and easy access to Project record documents. File record documents in accordance with the edition of the Construction Specification Institute's *MasterFormat* used for organizing the project manual, unless otherwise accepted by Engineer or Owner.

C. Promptly make Project record documents available for observation and review upon request of Engineer or Owner.

D. Do not use Project record documents for any purpose other than serving as Project record. Do not remove Project record documents from Contractor's field office without Engineer's approval.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

A. Recording Changes, Field Conditions, and Other Information – General:

1. At the start of the Project, label each record document to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
2. Keep record documents current consistent with the progress of the Work. Make entries on record documents within two working days of receipt of information required to record the change, field condition, or other pertinent information.
3. Do not permanently conceal the Work until required information has been recorded for Project record documents.
4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Engineer-accepted Project record documents.
5. Marking of Entries:
   a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to Project record documents.
   b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files in "portable document format" (.PDF) files.
   c. Date each entry on record documents.
   d. Indicate changes by drawing a "cloud" around the change(s) indicated.
   e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on copy of the Drawings. Submittal of Contractor-originated or -produced drawings as a substitute for recording changes on a copy of the Drawings is unacceptable.
2. Record changes on plans, sections, elevations, schematics, schedules, and details as required for clarity, accuracy, and completeness, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction including:
   a. Depths of various elements of foundation relative to Project datum.
   b. Horizontal and vertical location of Underground Facilities referenced to permanent surface improvements and Project elevation datum. For each Underground Facility, including pipe fittings, show and indicate dimensions to not less than two permanent, visible surface improvements.

c. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure and, where applicable, to Project elevation datum.

d. Changes in structural and architectural elements of the Work, including changes in reinforcing.

e. Field changes of dimensions, arrangements, and details.

f. Changes made in accordance with Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

g. Changes in details on the Drawings. Submit additional details prepared by Contractor when required to document such changes.

4. Recording Changes for Schematic Layouts:

a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by Contractor subject to acceptance by Engineer.

b. Record on the Project record documents all revisions to schematics on the Drawings, including: piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Drawings. Show and indicate actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.

c. When dimensioned plans and dimensioned sections or elevations on the Drawings show the Work schematically, indicate on the Project record documents, by dimensions accurate to within one inch in the field, centerline location of items of Work such as conduit, piping, ducts, and similar items

1) Clearly identify each item of the Work by accurate notations such as “cast iron drain”, “rigid electrical conduit”, “copper waterline”, and similar descriptions.

2) Show by symbol or by note the vertical location of each item of the Work; for example, “embedded in slab”, “under slab”, “in ceiling plenum”, “exposed”, and similar designations. For piping not embedded, also indicate elevation dimension relative to Project elevation datum.

3) Descriptions shall be sufficiently detailed to be related to the Specifications.

d. Engineer may furnish written waiver of requirements relative to schematic layouts shown on plans, sections, and elevations when, in Engineer’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on such waiver(s) being issued.

5. Supplemental Drawings:

a. In some cases, drawings produced during construction by Engineer or Contractor supplement the Drawings and shall be included with Project record documents submitted by Contractor. Supplemental record drawings shall include drawings or sketches that are part of Change Orders, Work Change Directives, Field Orders, and allowance authorizations and that cannot be incorporated into the Drawings because of space limitations.

b. Supplemental drawings submitted with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.

c. When supplemental drawings developed by Contractor using computer-aided drafting/design (CAD), building information models (BIM), or civil information models (CIM) software are to be included in record drawings, submit electronic files for such drawings in accordance with Section 01 31 26 – Electronic Communication Protocols, as part of record drawing Submittal. Label such files, “Supplemental Record Drawings”, including with Contractor’s name, Project name, and Contract designation.

C. Specifications and Addenda:

1. Mark each Specifications section to record:
    a. Manufacturer, trade name, catalog number, and Supplier of each material and equipment item actually furnished.
    b. Changes made by Addendum, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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DIVISION 02

EXISTING CONDITIONS

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SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General provisions applicable to all demolition and removals.
2. Civil/site demolition and removals.
3. Mechanical demolition and removals.
4. Electrical demolition and removals.
5. Disposal of demolition debris, materials, and equipment.

1.2 REFERENCES

A. Reference Standards: Standards referenced in this section include, but are not necessarily limited to, the following:

1. National Fire Protection Association (NFPA):
   a. 241 - Safeguarding Construction, Alteration, and Demolition Operations.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Review procedures under this and other Sections and coordinate the Work that will be performed with, or before, demolition and removals.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of Authorities Having Jurisdiction and relevant permits, if any, required and obtained for demolition Work.

B. Qualifications:

1. Electrical Removals: Entity and personnel performing electrical removals shall be electrician(s) legally qualified to perform electrical construction and electrical work in the jurisdiction where the Site is located.
2. Plumbing Removals: Entity and personnel performing plumbing removals shall be plumber(s) legally qualified to perform plumbing construction and plumbing work in the jurisdiction where the Site is located.

1.5 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Procedure Submittals:
   a. Demolition and Removal Plan: Not less than ten days prior to starting demolition Work, submit acceptable plan for demolition and removal Work, including:
      1) Plan for coordinating shut-offs, capping, temporary services, and continuing utility services.
      2) General indication of intended approach for performing demolition Work, including how proposed demolition will affect Owner and others, including owners and occupants of properties at and adjacent to the Site and the public.
      3) Disposal and recycling facilities proposed, including facility owner, facility name, location, and processes. Include copy of appropriate permits and licenses, and compliance status.

4) Planned demolition operating sequences, relative to their effect on Owner and others, including owners and occupants of properties at and adjacent to the Site and the public.
5) Detailed schedule of demolition Work in accordance with the Progress Schedule accepted by Engineer.
6) Copy of demolition permit (when required) obtained from authorities having jurisdiction.

b. Engineer's review, comments upon, and acceptance of Contractor's procedure Submittals for demolition are only for the limited purposes indicated in the Contract Documents. Engineer's review, comments upon, action, or inaction concerning such Submittals, shall not, in any way, reduce or mitigate Contractor's sole responsibility for construction means, methods, techniques, procedures, and sequences, or associated safety and protection measures.

2. Notification of Intended Demolition Start: Submit in accordance with Paragraph 3.1.B of this Section.
3. Field Quality Control Test Results:
   a. Results of megger-testing of existing motors that will remain Owner's property.
4. Qualifications Statements:
   a. Name and qualifications of entity performing electrical removals, including copy of licenses required by authorities having jurisdiction.
   b. Name and qualifications of entity performing plumbing removals.

1.6 FIELD CONDITIONS

A. Existing Conditions:

1. Owner and Engineer make no representation of condition or structural integrity of areas to be demolished or where removals are required by the Contract Documents.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Notification:

1. Not less than 48 hours prior to commencing demolition or removal, advise Engineer in writing of planned start of demolition Work. Do not start removals when either Owner or Engineer furnishes reasonable objection in a timely manner.
2. Where demolition or removal has potential to affect adjacent properties, occupants, streets, or other public thoroughfare, transportation facilities, utilities, water courses, or any combination thereof, furnish required notices to owners and occupants of properties, buildings, and structures that may be affected by the demolition or removal.
3. In accordance with Laws and Regulations, and applicable permits, furnish to authorities having jurisdiction, including emergency services as necessary, appropriate notices of planned demolition and removals.
4. Submit to Engineer copies of notices furnished to adjacent property owners, occupants, and Authorities Having Jurisdiction.

B. Protection of In-Place Conditions:

1. Perform demolition and removal Work in manner that prevents damage and injury to property, structures, occupants, the public, and facilities. Do not interfere with use of, and free and safe access to and from, buildings, structures, and properties, unless allowed by the Contract Documents or otherwise allowed in writing by Owner.

2. Closing or obstructing roads, drives, sidewalks, and passageways adjacent to the Work is not allowed unless indicated otherwise in the Contract Documents. Perform the Work with minimum interference to vehicular and pedestrian traffic.
3. Provide temporary partitions between demolition work areas and (a) areas that will be occupied during demolition and removals, and (b) areas accessible to the public or visitors. Temporary partitions shall be sturdy, braced plywood in good condition, of dimensions sufficient to adequately screen demolition work from view of occupants, public, and visitors. Maintain temporary partitions in place until demolition and removal Work in the subject area is complete or until other work requires removal of temporary partitions.
4. Provide appropriate temporary barriers, lighting, sidewalk sheds, and other necessary protection.
5. Repair damage to facilities not subject to demolition or removal when such damage results from Contractor's action or inaction.

C. Existing Utilities: In addition to requirements of the General Conditions, as may be modified by the Supplementary Conditions, Section 01 71 33 - Protection of the Work and Property, and other Division 01 Specifications, perform the following:

1. Should unforeseen, unknown, or incorrectly shown or indicated Underground Facilities be encountered, Contractor responsibilities shall be in accordance with the General Conditions, as may be modified by the Supplementary Conditions. Cooperate with utility owners in keeping adjacent services and facilities in operation.
2. Other Utilities: Before proceeding with demolition, locate and cap as required all other utilities, such as fuel and gas; compressed air; heating, ventilating, and air conditioning; electric; and communications; and service laterals serving the building or structure being demolished.
3. Coordinate with utility owners relative to demolition and removal Work. Where utility owner requires that only the associated utility owner modify, disconnect, cap, or any combination thereof, its associated utility service, pay the utility owner for performing such modification, disconnection, capping, or other necessary work.
4. Shutdown of utility services shall be coordinated by Contractor, assisted by Owner as required relative to contacting utility owners.

D. Remediation:

1. If unanticipated Hazardous Environmental Condition is believed to be encountered during demolition and removals, comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

3.2 DEMOLITION - GENERAL

A. General, Common Requirements for Demolition and Removal Work:

1. Contractor shall provide all labor, materials, construction equipment and machinery, tools, services (including professional services when necessary), and incidentals as shown, specified and required for demolition, removals, and disposal Work.
2. The Work under this Section includes, but is not necessarily limited to:
    a. Demolition and removal of existing materials and equipment as shown or indicated in the Contract Documents. The Work includes demolition of masonry, concrete, piping, electrical and mechanical systems and equipment, and similar existing materials, equipment, and items.
3. Demolition and removals indicated in other Sections shall comply with requirements of this Section.
4. Perform demolition Work as shown or indicated on the Drawings and as indicated elsewhere in the Contract Documents.
5. Pay for transporting and, as applicable, disposing of materials and equipment resulting from demolition and removals Work.

6. Locate construction equipment used for demolition Work and remove demolished materials and equipment to avoid imposing excessive loading on supporting and adjacent walls, floors, framing, facilities, and Underground Facilities.

B. Pollution Controls:

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit emissions of dust and dirt to lowest practical level. Comply with Section 01 57 05 - Temporary Controls, and Laws and Regulations.
2. Do not use water when water may create hazardous or objectionable conditions such as icing, flooding, or pollution.
3. Clean adjacent structures, facilities, properties, and improvements of dust, dirt, and debris caused by demolition Work, in accordance with the General Conditions.

C. Explosives:

1. Explosives are not allowed at the Site. Do not use explosives for demolition and removal Work.

D. Salvage and Ownership:

1. The following applies to materials and equipment to remain Owner's property:
   a. Contractor shall carefully remove and appropriately handle materials and equipment to remain Owner's property in manner avoids damaging and invalidating warranties in effect for such items. Brace motors attached to flexible mountings until reinstallation or delivery to Owner's storage location. Fully remedy to pre-construction condition or replace items damaged during removal, handling, or storage by Contractor.
   b. Remove, as functional units, together with all appurtenances required for operation.
   c. Clean and tag for storage, items to remain Owner's property, and maintain comprehensive, detailed listing of such items. Update such listing when items are relocated.
   d. Protect from damage.
   e. Deliver to designated storage location at the Site, or other site, indicated in the Contract Documents, at place designated by Engineer or Owner.
2. Items to be and delivered to Owner are as indicated in Table 02 41 00-A.

Table 02 41 00-A - Items to be Salvaged

Equipment Name/ Designation	Equipment Location	Deliver to Owner's Location
8-inch gate valve	Lower pump station on suction inlet	Water Treatment Plant
Bes-Tech Control Panel	North Wall interior to pump station	Water Treatment Plant

3. Preparation of Owner's existing equipment for storage:
   a. Where appropriate, identify each component with markings or tags to indicate its position in the assembly and the assembly of which it is part.
   b. Place small parts in appropriate, durable boxes and clearly mark contents on the outside of box or container.
   c. Remove oil from oil-lubricated bearings and gear boxes and replace with storage oil.
   d. Provide grease for grease-lubricated bearings.
   e. Replace breather plugs with solid plugs.
   f. Megger-test motor windings: Attach report of the test results to the associated motor and submit copy to Engineer.
   g. Attach unit to suitable crate bottom.

h. Enclose unit in polyethylene film and seal all seams and the film to the base of the unit with tape.

i. Construct crate of wood slats around top and sides of unit.

j. Attach permanent instruction tag to outside of crate stating: “This unit has been prepared for storage. Replace oil, vent plugs, and lubricant in accordance with manufacturer's instructions before start-up.”

E. Finishing of Surfaces Exposed by Removals: Unless otherwise shown or indicated in the Contract Documents, surfaces of walls, floors, ceilings, and other areas exposed by removals, and that will remain as finished surfaces, shall be repaired and re-finished with materials that match existing adjacent surface, or as otherwise approved by Engineer.

3.3 STRUCTURAL REMOVALS

A. Remove structures to lines and grades shown or indicated, unless otherwise directed by Engineer. Where limits are not shown or indicated, limits shall be four inches outside item to be installed. Removals beyond limits shown or indicated shall be at Contractor’s risk and expense and such excess removals shall be reconstructed to satisfaction of Engineer without additional cost to Owner.

B. After removing concrete and masonry walls or portions thereof, mats, slabs, and similar construction that ties into the Work or to existing construction, neatly repair the junction point to leave exposed only finished edges and finished surfaces.

C. Where parts of existing structures are to remain in service following demolition:

1. Where parts of existing structures are to remain in service following demolition, remove the portions shown or indicated for removal, repair damage, and leave the building or structure in proper condition for the intended use.
2. Remove concrete and masonry to the lines shown or indicated by sawing, drilling, chipping, and other suitable methods. Leave the resulting surfaces true and even, with sharp, straight corners, resulting in neat joints with new construction and be satisfactory for the purpose intended.
3. Do not damage reinforcing bars beyond the area of concrete and masonry removal. Do not saw-cut beyond the area to be removed.
4. Reinforcing bars that are exposed at surfaces of removed concrete and masonry that will not be covered with new concrete or masonry shall be removed to 1.5 inches below the final surface. Repair resulting hole, with repair mortar (for concrete), or grout (for masonry), so that filled hole is flush with adjacent surface.
5. Where existing reinforcing bars are shown or indicated to extend into new construction, remove existing concrete so that reinforcing bars are clean and undamaged.

D. Removal of Anchorages and Protruding Metals:

1. Where equipment or material anchored to concrete or masonry are removed, and anchors are not to be re-used, and where existing metals (and to be removed) protrude from concrete, remove anchors and other metal to not less than 1.5 inches beneath surface of concrete or masonry member. Repair resulting hole, with repair mortar (for concrete), or grout (for masonry), so that filled hole is flush with adjacent surface.
2. At Contractor’s option, when anchor is stainless steel, anchor may be cut flush with surface of concrete or masonry, when so approved by Engineer.

E. Jambs, sills and heads of windows, passageways, doors, or other openings (as applicable) cut-in to the Work or to existing construction, shall be dressed with masonry, concrete, or metal to provide smooth, finished appearance.

F. Where anchoring materials, including bolts, nuts, hangers, welds, and reinforcing steel, are required to attach the Work to existing construction, provide such materials under this Section, unless specified elsewhere in the Contract Documents.

3.4 MECHANICAL REMOVALS

A. Mechanical demolition and removal Work includes dismantling and removing existing:

1. Mechanical equipment and appurtenances.
    a. Equipment to be removed:
        1) Electric unit heater.
        2) Roof fans and curbs.
        3) Humidifier and all piping.
        4) Louvers and dampers. These penetrations will be reused for packaged terminal heat pumps.
        5) All ductwork.
2. Mechanical elements of instrumentation and control systems, such as sensors and transmitters and similar items.
    a. Remove all existing controls for all dampers, electric unit heaters, fans, humidifiers, and any other removed mechanical equipment.

B. Refer to drawings for additional demolition information.

C. Equipment Demolition and Removals:

1. To the extent shown or indicated and to the extent necessary for the Work, remove existing mechanical equipment, including (but not limited to):
    a. Heating, ventilating, and air conditioning equipment.
    b. Appurtenances (including motors, drive systems, controls, cooling water and seal water systems) as shown, indicated, and necessary for completing the Work.
2. Where necessary, disassemble equipment to avoid imposing excessive loading on supporting walls, floors, framing, facilities, and Underground Facilities. Disassemble equipment as necessary for access through, and egress from, buildings and structures. Disassembly and removal shall comply with Laws and Regulations. Provide means to remove equipment from buildings and structures.
3. Remove control panels, operator stations, and instrumentation associated with equipment being removed, unless shown or indicated otherwise.
4. Remove equipment supports as applicable, anchorages, base, grout, and piping. Remove anchorage systems in accordance with the “Structural Removals” Article in this Section.

3.5 ELECTRICAL REMOVALS

A. Electrical Demolition Work Includes Performing the Following Activities and Removing Existing Electrical Items as follows:

1. Disconnecting cabling from motors, electrical sources, control panels, control stations, instrumentation and control items, and similar devices and equipment.
2. Conduits, raceways, cable trays, hangers and supports, cabling, and related items.
3. Switches, panelboards, control stations, and similar items.
4. Transformers, distribution switchboards, control panels, motors, starters, variable speed controllers, and similar items.
5. Lighting fixtures and related items.
6. Appurtenances and miscellaneous electrical equipment, as shown, specified, or required.

B. Electrical Removals – General:

1. Comply with Laws and Regulations, including applicable electrical construction codes.
2. Lock Out and Tagging:
    a. Contractor shall lock out and tag circuit breakers and switches operated by Owner or facility manager (if other than Owner) and shall verify that affected cabling are de-energized to ground potential before commencing electrical removals Work.

b. Upon completion of electrical removals and replacements Work, remove locks and tags and promptly advise Engineer and Owner and Owner's Site Representative (OSR) that existing facilities are available for use.

3. Remove existing electrical equipment, fixtures, and systems while avoiding damaging items required to remain. Unless shutdown is expressly allowed in Section 01 14 16 - Coordination with Owner's Operations, keep existing electrical systems in operation. Maintain integrity of grounding systems.
4. Disconnect and remove motors, control panels, and other electrical items where shown or indicated.
5. Store removed motors, microprocessors and electronics, and other electrical items to be reused in accordance with its manufacturer's recommendations and requirements of the Contract Documents.

C. Motor Control Centers and Switchgear:

1. Remove or modify motor control centers and switchgear as shown or indicated.
2. Modified openings shall be cut square and dressed smooth to dimensions required for installation of equipment.

D. Removal of Cabling, Conduits, Raceways and Similar Items:

1. Verify the function of each cable before disconnecting and removing.
2. Remove cabling, conduits, hangers and supports, and similar items back to the power source or control panel, unless otherwise shown or indicated.
3. Remove cabling, conduits, and similar items where shown or indicated for removal.
4. Protect conduits concealed in floors, ceiling slabs, or in walls for reuse as indicated in the Drawings.
5. Disassemble and remove exposed conduits, junction boxes, other electrical appurtenances, and their supports unless otherwise indicated in the Drawings.
6. Repair all areas of the Work to prevent rusting on exposed surfaces.
7. Underground Electric Demolition and Removal:
   a. Conduits in Underground Facilities not scheduled for reuse shall be suitably capped watertight where each enters building or structure to remain. Fill conduits with grout where indicated in the Drawings.
   b. Where shown or indicated, remove direct-burial cabling. Openings in buildings or structures for entrance of direct-burial cabling shall be patched with repair mortar or other material approved by Engineer for such purpose, and shall be watertight.

E. Electrical Service Entrances:

1. Make necessary arrangements with electric utility owner for removal of utility owner's transformers and metering equipment after new electrical system has been installed and energized.

F. Lighting fixtures, wall switches, receptacles, starters, and other miscellaneous electrical equipment, not designated as remaining as Owner's property, shall be removed and properly disposed off-Site as required in accordance with Laws and Regulations.

3.6 DEMOLITION OF SITE IMPROVEMENTS

A. Pavement, Sidewalks, Curbs, and Gutters:

1. Demolition of asphalt or concrete pavement, sidewalks, curbs, and gutters, as applicable, shall terminate at cut edges. Edges shall be linear and have a vertical cut face.
2. To cut pavement, sidewalks, curbs, and gutters, use machinery or tools that provide a smooth-cut edge, appropriate for the required result. Where cut edges are not smooth and vertical, appropriately repair cut edge to remain, or provide new cut (in accordance with the Contract Documents) through sound material not less than six inches from original cut, providing smooth, even appearance.

3.7 DISPOSAL OF DEMOLITION DEBRIS

A. Disposal – General:

1. Promptly remove from the Site all debris, waste, rubbish, material, and equipment resulting from demolition and removal Work. Promptly upon completion of demolition and removal Work, remove from the Site construction equipment used in demolition Work.
2. Do not sell at, or adjacent to, the Site demolition materials or removed equipment and items. If materials, equipment or debris will be sold by Contractor, remove the items from the Site and adjacent areas, and perform the sale or transaction elsewhere, in accordance with Laws and Regulations.
3. Cleaning and Removal of Debris: Comply with the General Conditions and Supplementary Conditions.

B. Transportation and Disposal:

1. Non-Hazardous Materials, Equipment, and Debris: Properly transport and dispose of non-hazardous demolition materials, equipment, and debris at appropriate landfill or other suitable location, in accordance with Laws and Regulations. Non-hazardous material does not contain Constituents of Concern such as (but not limited to) asbestos, PCBs, petroleum, hazardous waste, radioactive material, or other material designated as hazardous in Laws or Regulations.
2. Hazardous Materials, Equipment, and Debris: When handling and disposal of items containing Constituents of Concern is included in the Work, properly transport and dispose of such items in accordance with the Contract Documents and Laws and Regulations.

C. Submit to Engineer information required in this Section on proposed facilities where demolition materials, equipment, and debris will be recycled. Upon request, Engineer or Owner, shall be allowed to visit recycling facilities to verify adequacy and compliance status. During such visits, recycling facility operator shall cooperate and assist Engineer and Owner.

END OF SECTION

DIVISION 03

CONCRETE

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SECTION 03 15 19
ANCHORAGE TO CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for anchorages in concrete, including: Cast-in-place anchor bolts, anchor rods, reinforcing anchorage adhesive, and post-installed concrete anchors required for the Project but not specified elsewhere in the Contract Documents.
2. Delegated design requirements for concrete anchors not expressly shown or indicated on the Drawings or elsewhere in the Contract Documents, including, but not limited to, anchorages in concrete for the following structural and nonstructural components:
   a. Structural members and accessories.
   b. Metal, wood, and plastic fabrications.
   c. Architectural Work, including building components, finishes, specials, facility equipment and conveying equipment, furnishings, and special construction Work.
   d. Mechanical and electrical Work, including process-mechanical Work, site and infrastructure Work, electrical Work, communications Work, electronic safety and security systems Work, and others.
   e. Fire suppression, plumbing, and HVAC Work.
   f. Other components requiring anchorages to concrete.

1.2 REFERENCES

A. Definitions and Terminology:

1. This provision presents definitions and terminology, which have the meanings indicated in this provision, applied to the singular or plural thereof, and without regard to use of initial capital letters.
   a. Adhesive Anchors:
      1) Post-installed anchors developing their strength primarily from chemical bond between the concrete and the anchor.
      2) Includes anchors using acrylics, epoxy and other similar adhesives.
   b. Anchor Bolt: Any cast-in-place anchorage that is made of a headed (i.e. bolt) material.
   c. Anchor Rod: Any cast-in-place or post-installed anchorage made from unheaded, threaded, rod or deformed bar material.
   d. Concrete Anchor: Generic term for either an anchor bolt or an anchor rod.
   e. Galvanizing: Hot-dip galvanizing in accordance with ASTM A123, ASTM A153 or ASTM F2329 with minimum coating of 2.0 ounces of zinc per square foot of metal (average of specimens) unless noted otherwise or dictated by reference standard.
   f. Hardware: As defined in ASTM A153.
   g. MPII: Manufacturer’s printed installation instructions.
   h. Mechanical Anchors:
      1) Post-installed anchors developing their strength from attachment other than through adhesives or chemical bond to concrete.
      2) Includes expansion anchors, expansion sleeve, screw anchors, undercut anchors, specialty inserts and other similar types of anchorages.
      3) Drop-in anchors and other similar non-ICC ES approved anchors are unacceptable.
   i. Post-Installed Anchor: Adhesive or mechanical anchor installed into previously placed and adequately cured concrete.

B. Reference Standards:

1. American Concrete Institute (ACI):
   a. 318, Building Code Requirements for Structural Concrete and Commentary.
2. American Concrete Institute/Concrete Reinforcing Steel Institute (ACI-CRSI):
   a. Adhesive Anchor Installation Certification Program: Adhesive Anchor Installer.
3. American Institute of Steel Construction (AISC):
   a. 303, Code of Standard Practice for Steel Buildings and Bridges.
   b. 355.2, Seismic Testing of Post-Installed Concrete and Masonry Anchors in Cracked Concrete.
   c. 355.4, Qualification of Post-Installed Adhesive Anchors in Concrete.
4. ASTM International (ASTM):
   a. A36, Standard Specification for Carbon Structural Steel.
   b. A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
   c. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   d. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   e. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
   f. A496, Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
   g. A563, Standard Specification for Carbon and Alloy Steel Nuts.
   h. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
   i. F436, Standard Specification for Hardened Steel Washers.
   j. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
   k. F594, Standard Specification for Stainless Steel Nuts.
   l. F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
   m. F2329, Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners
5. International Code Council Evaluation Service (ICC-ES):
   a. AC193, Acceptance Criteria for Mechanical Anchors in Concrete Elements.
   b. AC308, Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Code-required Special Instructions:
   a. Special Inspection is required in accordance with the building code for all concrete anchorages.
   b. Notify the Special Inspector that an inspection is required prior to concrete placement (or during post-installed anchorage installation).
   c. See the “Field Quality Control” Article in “Part 3 – Execution” of this Section for additional requirements.

B. Qualifications:

1. Installer:
   a. Installer for post-installed anchors shall be trained by the manufacturer or certified by a training program approved by the Engineer.

b. Installer for adhesive anchors installed in horizontal, upward incline, or overhead applications shall be certified by ACI-CRSI Adhesive Anchor Installation Certification Program.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
   a. Submit schedule (table or listing) of types, sizes (diameter, length, embedment length), material, finish, and proposed manufacturers of anchorages to concrete to be provided. Apportion by Project-specific application (for example, “Anchorages for cooling water pumps in basement”) and indicate where anchorages are fully-designed by Engineer and those for which final design was prepared by delegated design professional.
   b. Engineer’s approval of such Shop Drawing will be only for anchorages fully designed by Engineer. For anchorages for which final design is by delegated design professional, include on such Shop Drawing delegated design professional’s approval stamp.
2. Product Data: Submit as Action Submittals product data for anchorages to concrete fully designed by Engineer. For anchorages to concrete for which final design is by delegated design professional, submit as Informational Submittals bearing approval stamp of delegated design professional.
   a. Manufacturer’s express, written acknowledgement that proposed items comply with referenced standards indicated in this Section and, as applicable, by delegated design professional.
   b. Manufacturer published data and information for each anchor.
      1) Clearly indicate items that are proposed for the Work. Neatly strike out or obscure materials and products not proposed.
   c. Manufacturer's published installation instructions and instructions for code-required special inspections and tests.
   d. Post-Installed Anchors: In addition, submit for each post-installed anchor system current ICC-ES report, indicating the following:
      1) Manufacturer’s certification that anchors comply with requirements indicated in the Contract Documents.
      2) Performance data indicating that anchor is approved by its manufacturer for use in cracked concrete.
      3) Seismic design categories for which anchor system is approved by ICC-ES report.
   e. Anchorage Layout Drawings and details:
      1) Drawings showing location, configuration, spacing and edge distance.
3. Samples:
   a. Submit representative Samples of anchorages to concrete, when requested by Engineer. Engineer’s approval of Samples will be for type and finish only.

B. Informational Submittals: Submit the following:

1. Shop Drawings and Product Data Approved by Delegated Design Professional:
   a. Submit with delegated design professional’s approval stamp those Shop Drawings and product data Submittals indicated in this Article but for which final design was performed by delegated design professional.
2. Calculations by Delegated Design Professional:
   a. Submit sealed and signed calculations for sizing and determining embedment length of anchorages to concrete not fully designed by Engineer.
   b. Post-Installed Anchors Designed by Delegated Design Professional: In addition, also submit design calculations:
      1) Indicate design load to each anchor.

2) When design load is not indicated on the Drawings, include calculations to develop anchor forces based on performance and design criteria indicated in this Section.

3. Supplier's Instructions:
   a. Submit manufacturer's published instructions for installation.
4. Field Quality Control Submittals:
   a. Submit written results of required field quality control activities indicated in this Section.
5. Reports of Supplier's Visits to Site:
   a. Submit each written report of visit to the Site by Supplier's factory trained representative and delegated design professional. For each, indicate date and time of visit, purpose of visit, observations made, decisions made, problems encountered, and other pertinent information.
6. Qualifications Statements:
   a. Delegated design professional.
   b. Each installer.

PART 2 - PRODUCTS

2.1 MATERIALS – ALL ANCHORAGES

A. Materials – General:

1. This Article applies to all anchorages to concrete, regardless of whether fully designed by Engineer or delegated design professional. Requirements for delegated designs are in the following Article.
2. Additional requirements for anchorages fully designed by Engineer are indicated in the Article following requirements for delegated design anchorages.
3. For structural applications, do not use powder actuated fasteners and other types of bolts or fasteners not specified in this Section unless approved by Engineer or otherwise required by the Contract Documents.

B. Description:

1. Provide anchorages to concrete, of the types shown or indicated, to secure to concrete materials, equipment, and appurtenances installed as part of the Work.
2. Locations where anchorages are required are generally shown or indicated on the Drawings. Where not shown or indicated on the Drawings provide anchorages or the types required for materials, equipment, and systems where such materials, equipment, and systems are shown on the Drawings.
3. Anchorages required include those for materials, equipment, and systems shown on the structural Drawings and Drawing other than the structural Drawings.
4. Design loads for concrete anchorages are shown or indicated on the Drawings for anchorages where design responsibility is delegated to Contractor's delegated design professional. For such anchorages, embedment depths are not shown or indicated.

C. Cast-in-place Concrete Anchors:

1. Buildings, non-building structures, and equipment, unless otherwise specified:
   a. ASTM F1554, Grade 36 or Grade 55 with weldability supplement S1 for galvanized threaded rods.
   b. ASTM A307, Grade A for galvanized headed bolts.
2. All other cast-in-place concrete anchors:
   a. Stainless steel with matching nut and washer.
   b. Submerged application: ASTM F593, Type 316, minimum yield strength of 45,000 psi.
   c. Non-submerged application: ASTM F593, Type 304 or Type 316, minimum yield strength of 45,000 psi.

D. Post-Installed Mechanical and Adhesive Concrete Anchors:

1. Submerged application: ASTM F593, Type 316, minimum yield strength of 45,000 psi with matching nut and washer.
2. Non-submerged application: ASTM F593, Type 304 or Type 316, minimum yield strength of 45,000 psi with matching nut and washer.
3. Post-installed anchors and related materials shall be listed by ICC-ES or Engineer-approved equivalent.

E. Washers:

1. ASTM F436 unless indicated otherwise, finish to match bolt.
2. When stainless steel anchorage is provided for cast-in-place anchorages, provide washers of the same material and alloy as in the associated anchorage.
3. Plate washers: Minimum 1/2 inch thick fabricated ASTM A36 square plates as required.
4. Comply with manufacturer's written instructions for all post-installed anchorages.

F. Nuts:

1. ASTM A563 for cast-in-place anchorages.
2. When stainless steel anchorages are provided for cast-in-place anchorages, nuts shall comply with ASTM F594 and shall match material and alloy of the associated anchorage.
3. Follow manufacturer's requirements if using post-installed anchorage.

G. Galvanizing Repair Paint:

1. High zinc dust content paint for regalvanizing welds and abrasions.
2. ASTM A780.
3. Zinc content: Minimum 92% in dry film.
4. Products and Manufacturers: "ZRC Cold Galvanizing", by ZRC; or "High Performance Zinc Spray", by Clearco; or equal.

H. Dissimilar Materials Protection:

1. Non-ferrous metals, including piping:
   a. Surface Preparation: Society for Protective Coatings (SSPC) SP-2.
   b. Prime Coat: 4.5 to 5.5 mil, Multi-Purpose Epoxy.
2. Coat all aluminum in contact with dissimilar materials.

2.2 DELEGATED DESIGN ANCHORAGES TO CONCRETE

A. Manufacturers:

1. Post-installed anchor systems for indicated manufacturers are acceptable only when a current ICC-ES evaluation report is furnished as a Submittal and the subject anchorage system is approved by delegated design professional.
   a. Hilti.
   b. Dewalt.
   c. Simpson Strong-Tie.
   d. Or equal.

B. Description: Perform delegated design for anchorages when one or more of the following applies:

1. Design load for concrete anchorage is shown or indicated on the Drawings and anchorage embedment depth is not shown or indicated.
2. When specifically required by the Contract Documents.
3. When an anchorage is necessary but is not shown or indicated on the Drawings.
4. Anchorages shown on the Drawings other than the structural Drawings.

C. Performance and Design Criteria for Delegated Design Anchorages:

1. Determine design loads, including wind and seismic loads, in accordance with applicable building code and other Laws and Regulations.
2. For anchorage of equipment and non-structural components, use actual dead load and operating loads obtained by Contractor or delegated design professional from manufacturer. Design loads shall include operating conditions when equipment or element of the Work is in operation, dynamic loads, and other loads as appropriate or required by the building code or other Laws or Regulations.
3. Design assuming cracked concrete.

2.3 ANCHORAGES FULLY DESIGNED BY ENGINEER

A. When size, length, and details of anchorage are shown or indicated on the structural Drawings, such anchorages are considered as fully designed by Engineer and delegated design of such anchorage is not required.

B. Manufacturers:

1. For post-installed anchor systems regardless of whether proposed manufacturer is indicated below, furnish as Submittal current evaluation agency report and anchor system is certified by ICC-ES for cracked concrete conditions.
2. Mechanical Anchors:
   a. Hilti:
      1) Kwik Bolt TZ (ICC-ES ESR-1917).
   b. Dewalt:
      1) Power-Stud+ SD1 (ICC-ES ESR-2818).
   c. Simpson Strong-Tie:
      1) Strong-Bolt 2 (ICC-ES ESR-3037).
   d. Or equal.
3. Adhesive Anchors for Concrete:
   a. Hilti:
      1) HIT RE 500 V3 (ICC ESR-3814).
   b. Dewalt:
      1) PURE110+ (ICC-ES ESR-3298).
   c. Simpson Strong-Tie:
      1) SET-3G (ICC ES 4057).
   d. Or equal.
4. Screw Anchors for Concrete:
   a. Hilti:
      1) Kwik HUS-EZ Screw (ICC-ES ESR-3027).
   b. Dewalt:
      1) Screw-Bolt+ (ICC-ES ESR-3889).
   c. Simpson Strong-Tie:
      1) Titen HD (ICC-ES ESR-2713).
   d. Or equal.
5. Requests, if any, for Engineer's approval of "or-equals" or substitutes shall indicate proposed anchor has at least the same tension and shear strength as the associated anchorage products indicated by name in this Article.

PART 3 - EXECUTION

3.1 PREPARATION

A. For cast-in-place concrete anchorages, allow adequate time for proper installation, inspection, and observation prior to placing concrete.

B. Prior to installation, inspect and verify areas and conditions under which concrete anchorages will be installed.

1. Notify Engineer of conditions detrimental to proper and timely completion of the Work.
2. Do not proceed with the Work until unsatisfactory conditions are properly remedied.

3.2 INSTALLATION

A. Installation Requirements - General:

1. Install items in accordance with the Contract Documents, manufacturer's written instructions, and Laws and Regulations. Where such requirements conflict, obtain interpretation or clarification from Engineer prior to commencing the associated Work.
2. Perform the following unless shown or indicated otherwise:
    a. Provide stainless steel anchorages for connecting aluminum and steel members to concrete and masonry. Provide dissimilar materials protection.
    b. Provide washers for all anchorages.
    c. Where exposed, extend threaded anchorage a minimum of 0.5 inch above top of fully engaged nut. If anchorage is cut off to required maximum height, dress the threads to allow nuts to be removed without damage to nuts.
3. Tightening of nuts: Do the following after nuts are snug tightened down:
    a. Upset anchorage threads to prevent nuts from backing off. Provide double nut or lock nut in lieu of upset threads for items that may require future removal.
    b. For cast-in-place anchorages (excluding post-installed anchorages), tighten nuts an additional 1/8 turn beyond snug tight to prevent nuts from backing off.
    c. When two nuts are used per concrete anchor above the base plate, tighten top nut an additional 1/8 turn to "lock" the two nuts together.
    d. For post-installed anchorages, comply with MPII.
4. Secure architectural components to avoid aesthetic distortion and to avoid overstressing fasteners from expansion, contraction, or installation.

B. Cast-in-Place Anchorages:

1. Provide where anchor rods or anchor bolts are indicated on the Drawings, unless another anchor type is approved by Engineer.
2. Provide concrete anchorages as shown on the Drawings or as required to secure the Work to concrete.
3. Tie cast-in-place anchorage in position to embedded reinforcing steel using wire.
4. Tack welding of anchorage is prohibited.
5. Chase threads as required and coat projected portion of carbon steel anchors and nut threads with a heavy coat of clean grease after concrete has cured.
6. Anchorage location Tolerance: In accordance with AISC 303.
7. Provide steel or durable wood templates for all column and equipment anchorages. Place templates above top of concrete; do not impede proper concrete placement and consolidation.

C. Mechanical Anchorages:

1. Use only where specifically indicated on the Drawings or when approved for use by the Engineer.
2. Do not use where subjected to vibration.

3. May be used in overhead applications.
4. Contact Engineer for clarification when anchors will not be installed in compliance with manufacturer's printed installation requirements.

D. Post-installed Anchorages:

1. For post-installed anchors, comply with MPII regarding hole diameter and depth required to fully develop the tensile strength of anchor or reinforcing bar.
2. Use hammer drills to create holes.
3. Properly clean out holes in accordance with the associated ICC-ES report using non-metallic, fiber bristle brush and compressed air, or as otherwise necessary to remove all loose material from each hole prior to installing anchor in the presence of Special Inspector.
4. Adhesive Anchorages:
   a. Provide only where specifically indicated on the Drawings or when approved for use by Engineer.
   b. May be provided where subjected to vibration or at buried or submerged locations.
   c. Do not install for overhead applications or sustained tension loading conditions such as utility hangers.
   d. Install adhesive anchors in concrete aged not less than 21 days.

E. Finishes:

1. Coat aluminum surfaces in contact with dissimilar materials in accordance with Paragraph 2.1.H.
2. Repair of damaged galvanized surfaces:
   a. Prepare damaged surfaces by abrasive blasting or power sanding.
   b. Repair damaged galvanized surfaces in accordance with ASTM A780.
   c. Apply galvanizing repair paint to not less than 6 mils dry film thickness in accordance with galvanizing repair material manufacturer's instructions and ASTM A780.

F. Ensure that embedded items are protected from damage and are not filled in with concrete or related materials.

3.3 FIELD QUALITY CONTROL

A. Field Tests and Inspections:

1. Tests and inspections of anchorages shall comply with ACI 355.2 and/or ACI 355.4 as applicable.
2. Owner reserves the right to inspect and test completed anchorages at 100% of provided anchorages.

B. Supplier’s Services:

1. Post-installed anchor manufacturer’s representative shall demonstrate and observe the proper installation procedures for the post-installed anchors.

C. Defective Work:

1. Anchorages that do not successfully pass required field tests and inspections or that are otherwise deemed defective by Engineer shall be remedied, in accordance with the Contract Documents, at no cost to Owner.

3.4 CLEANING

A. After concrete has been placed, remove protection and clean all anchorage of all concrete, dirt, and other foreign matter.

B. Provide surface acceptable to receive field applied coatings.

END OF SECTION

DIVISION 10

SPECIALTIES

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SECTION 10 14 00
IDENTIFICATION DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Tag, tape and stenciling systems for equipment, piping, valves, pumps, ductwork and similar items.
2. Hazard and safety signs.

B. Related Specification Sections include but are not necessarily limited to:

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Society of Mechanical Engineers (ASME):
   a. A13.1, Scheme for the Identification of Piping Systems.
2. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
   a. Z535.1, Safety Color Code.
   b. Z535.2, Environmental and Facility Safety Signs.
   c. Z535.3, Criteria for Safety Symbols.
   d. Z535.4, Product Safety Signs and Labels.
3. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
4. Occupational Safety and Health Administration (OSHA):
   a. 29 CFR 1910.145, Specification for Accident Prevention Signs and Tags.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Catalog information for all identification systems.
   b. Acknowledgement that products submitted meet requirements of standards referenced.
2. Identification register, listing all items in PART 3 of this Specification Section to be identified, type of identification system to be used, lettering, location and color.
3. Schedule of Hazard and Safety Signage indicating text and graphics.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. W.H. Brady Co.
2. Panduit.
3. Seton.
4. National Band and Tag Co.
5. Carlton Industries, Inc.
6. Engineer approved equal.

2.2 MANUFACTURED UNITS

A. Type A1 - Round Metal Tags:

1. Materials:
    a. Aluminum or stainless steel.
    b. Stainless steel shall be used in corrosive environments.
2. Size:
    a. Diameter: 1-1/2 inches minimum.
    b. Thickness: 0.035 inches (20 GA) minimum.
3. Fabrication:
    a. 3/16 inches minimum mounting hole.
    b. Legend: Stamped and filled with black coloring.
4. Color: Natural.

B. Type A3 - Metal Tape Tags:

1. Materials: Aluminum or stainless steel.
2. Size:
    a. Width 1/2 inches minimum.
    b. Length as required by text.
3. Fabrication:
    a. 3/16 inches minimum mounting hole.
    b. Legend: Embossed.
4. Color: Natural.

C. Type B1- Square Nonmetallic Tags:

1. Materials: Fiberglass reinforced plastic.
2. Size:
    a. Surface: 2 x 2 inches minimum.
    b. Thickness: 100 mils.
3. Fabrication:
    a. 3/16 inches mounting hole with metal eyelet.
    b. Legend: Preprinted and permanently embedded and fade resistant.
4. Color:
    a. Background: Manufacturer standard or as specified.
    b. Lettering: Black.

D. Type B2 - Nonmetallic Signs:

1. Materials: Fiberglass reinforced or durable plastic.
2. Size:
    a. Surface: As required by text.
    b. Thickness: 60 mils minimum.
3. Fabrication:
    a. Rounded corners.
    b. Drilled holes in corners with grommets.
    c. Legend: Preprinted, permanently embedded and fade resistant for a 10 year minimum outdoor durability.
4. Color:
    a. Background: Manufacturer standard or as specified.
    b. Lettering: Black.

5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.

E. Type C - Laminated Name Plates:
   1. Materials: Phenolic or DR (high impact) acrylic.
   2. Size:
      a. Surface: As required by text.
      b. Thickness: 1/16 inches.
   3. Fabrication:
      a. Outdoor rated and UV resistant when installed outdoors.
      b. Two layers laminated.
      c. Legend: Engraved through top lamination into bottom lamination.
      d. Two drilled side holes, for screw mounting.
   4. Color: Black top surface, white core, unless otherwise indicated.

F. Type D - Self-Adhesive Tape Tags and Signs:
   1. Materials: Vinyl tape or vinyl cloth.
   2. Size:
      a. Surface: As required by text.
      b. Thickness: 5 mils minimum.
   3. Fabrication:
      a. Indoor/Outdoor grade.
      b. Weather and UV resistant inks.
      c. Permanent adhesive.
      d. Legend: Preprinted.
      e. Wire markers to be self-laminating.
   4. Color: White with black lettering or as specified.
   5. Standards for OSHA signs: NEMA/ANSI Z535.1, NEMA/ANSI Z535.2, NEMA/ANSI Z535.3, NEMA/ANSI Z535.4, OSHA 29 CFR 1910.145.

G. Type E - Heat Shrinkable Tape Tags:
   1. Materials: Polyolefin.
   2. Size: As required by text.
   3. Fabrication:
      a. Legend: Preprinted.
   4. Color: White background, black printing.

H. Type F - Underground Warning Tape:
   1. Materials: Polyethylene.
   2. Size:
      a. 6 inches wide (minimum).
      b. Thickness: 3.5 mils.
   3. Fabrication:
      a. Legend: Preprinted and permanently imbedded.
      b. Message continuous printed.
      c. Tensile strength: 1750 psi.
   4. Color: As specified.

I. Type G - Stenciling System:

1. Materials:
   a. Exterior type stenciling enamel.
   b. Either brushing grade or pressurized spray can form and grade.
2. Size: As required.
3. Fabrication:
   a. Legend: As required.
4. Color: Black or white for best contrast.

J. Underground Tracer Wire:

1. Materials:
   a. Wire:
      1) 12 GA AWG.
      2) Solid.
   b. Wire nuts: Waterproof type.
   c. Split bolts: Brass.

2.3 ACCESSORIES

A. Fasteners:

1. Bead chain: #6 brass, aluminum or stainless steel.
2. Plastic strap: Nylon, urethane or polypropylene.
3. Screws: Self-tapping, stainless steel.
4. Adhesive, solvent activated.

2.4 MAINTENANCE MATERIALS

A. Where stenciled markers are provided, clean and retain stencils after completion and include in extra stock, along with required stock of paints and applicators.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Install identification devices at specified locations.

B. All identification devices to be printed by mechanical process, hand printing is not acceptable.

C. Attach tags to equipment with sufficient surface or body area with solvent activated adhesive applied to back of each tag.

D. Attach tags with 1/8 inches round or flat head screws to equipment without sufficient surface or body area, or porous surfaces.

1. Where attachment with screws should not or cannot penetrate substrate, attach with plastic strap.

E. Single items of equipment enclosed in a housing or compartment to be tagged on outside of housing.

1. Several items of equipment mounted in housing to be individually tagged inside the compartment.

F. Tracer Wire:

1. Attach to pipe at a maximum of 10 feet intervals with tape or tie-wraps.
2. Continuous pass from each valve box and above grade at each structure.
3. Coil enough wire at each valve box to extend wire a foot above the ground surface.
4. 1,000 feet maximum spacing between valve boxes.

5. If split bolts are used for splicing, wrap with electrical tape.
6. If wire nuts are used for splicing, knot wire at each splice point leaving 6 inches of wire for splicing.
7. Use continuous strand of wire between valve box where possible.
    a. Continuous length shall be no shorter than 100 feet.

3.2 SCHEDULES

A. Process Systems:

1. General:
    a. Provide arrows and markers on piping.
        1) At 20 feet maximum centers along continuous lines.
        2) At changes in direction (route) or obstructions.
        3) At valves, risers, "T" joints, machinery or equipment.
        4) Where pipes pass through floors, walls, ceilings, cladding assemblies and like obstructions provide markers on both sides.
    b. Position markers on both sides of pipe with arrow markers pointing in flow direction.
        1) If flow is in both directions use double headed arrow markers.
    c. Apply tapes and stenciling in uniform manner parallel to piping.
2. Valves and slide gates:
    a. Tag type:
        1) Indoor noncorrosive:
            a) Type A1 - Round Metal Tags.
            b) Type B1 - Square Nonmetallic Tags.
    b. Fastener:
        1) Type A1: Chain of the same material.
        2) Type B1: Stainless steel chain.
    c. Color: Per ASME A13.1 corresponding to the piping system.
    d. Legend:
        1) Letter height: 1/4 inches minimum.
        2) Valve designation as indicated on the Drawings (e.g., “V-01”).
3. Process equipment (e.g., pumps, pump motors, blowers, air compressors, bar screens, clarifier drive mechanism, etc.):
    a. Tag type:
        1) Type B2 - Nonmetallic Signs.
        2) Type D - Self-Adhesive Tape Tags and Signs.
        3) Type G - Stenciling System.
    b. Fastener:
        1) Self.
        2) Screws.
        3) Adhesive.
    c. Legend:
        1) Letter height: 1/2 inches minimum.
        2) Equipment designation as indicated on the Drawings (e.g., “Booster Pump BP-03”).
4. Piping systems:
    a. Tag type:
        1) Indoor locations:
            a) Type D - Self-Adhesive Tape Tags and Signs.

b) Type G - Stenciling System.

b. Fastener: Self.

c. Color: Per ASME A13.1.

d. Legend:

1) Letter height: Manufacturers standard for the pipe diameter.

2) Mark piping in accordance with ASME A13.1.

3) Use piping designation as indicated on the Drawings.

4) Arrow: Single arrow.

5. Equipment that starts automatically:

a. Tag type:

1) Type B2 - Nonmetallic Signs.

2) Type D - Self-Adhesive Tape Tags and Signs.

b. Fastener:

1) Type B2 - Screw or adhesive.

2) Type D - Self.

c. Size: 5 inches x 7 inches.

d. Location: Booster Pump #3 (BP-03).

e. Legend:

1) OSHA Warning Sign.

2) Description of Warning: “THIS MACHINE STARTS AUTOMATICALLY”.

B. HVAC Systems:

1. General:

a. Degrease and clean surfaces to receive adhesive for identification materials.

2. HVAC Equipment (e.g., unit heaters, packaged terminal heat pumps, etc.):

a. Tag type:

1) Type C - Phenolic Name Plates.

b. Fastener: Screws.

c. Legend:

1) Letter height: 1 inch minimum.

2) Equipment designation as indicated on the Drawings (e.g., "EF-01").

3. Natural Gas Piping:

a. Tag type:

1) Above ground: Type D - Self-Adhesive Tape Tags and Signs.

2) Below ground: Tracer wire.

b. Fastener: Self.

c. Legend:

1) Letter height: 1 inch minimum.

2) Description of natural gas piping, (e.g., “NATURAL GAS”).

4. Enclosure for instrumentation and control equipment, (e.g., fan control panels, etc.):

a. Tag type: Type C - Phenolic Name Plates.

b. Fastener: Screws.

c. Legend:

1) Letter height: 1/2 inches minimum.

2) Equipment designation as indicated on the Drawings (e.g., "FAN CONTROL PANEL FCP-xxx").

5. Wall mounted thermostats:
    a. Tag type: Type D - Self-Adhesive Tape Tags and Signs.
    b. Fastener: Self.
    c. Legend:
        1) Letter height: 3/16 inches minimum.
        2) Description of equipment controlled (e.g., "UH-xxx" or AHU-xxx").
6. Components inside equipment enclosure, (e.g., controller's, control relays, contactors, and timers):
    a. Tag type: Type D - Self-Adhesive Tape Tags and Signs.
    b. Fastener: Self.
    c. Legend:
        1) Letter height: 3/16 inches minimum.
        2) Description or function of component (e.g., "CR-xxx").

C. Electrical Systems:

1. Trenches with ductbanks, direct-buried conduit, or direct-buried wire and cable.
    a. Tag type: Type F - Underground Warning Tape.
    b. Letter height: 1-1/4 inches minimum.
    c. Location:
        1) Where trench is 12 inches or more below finished grade: In trench 6 inches below finished grade.
        2) Where trench is less than 12 inches below finished grade: In trench 3 inches below finished grade.
    d. Electrical power (e.g., low and medium voltage):
        1) Color: Red with black letters.
        2) Legend:
            a) First line: "CAUTION CAUTION CAUTION".
            b) Second line: "BURIED ELECTRIC LINE BELOW".
    e. Communications (e.g., telephone, instrumentation, LAN, SCADA):
        1) Color: Orange with black letters.
        2) Legend:
            a) First line: "CAUTION CAUTION CAUTION".
            b) Second line: "BURIED COMMUNICATION LINE BELOW".
2. Exterior pad mounted equipment (e.g., transformers, switchgear):
    a. Tag type: Type D - Self-Adhesive Tape Tags.
    b. Fastener: Self.
    c. General legend:
        1) Letter height:
            a) First line: 1-1/2 inches minimum.
            b) Subsequent lines: 1/2 inches minimum.
        2) First line: Equipment name (e.g., "TRANSFORMER Txxx").
        3) Second line: System voltage (e.g., "13,800 V: 480/277 V").
        4) Third line: Date installed (e.g., "INSTALLED JULY 20xx").
    d. Each section/cubical legend:
        1) Letter height: 1-1/2 inches minimum.
        2) Description of source or load (e.g., "MAIN DISCONNECT" or "TO SWITCHGEAR SGxxx" or "TO TRANSFORMER Txxx").

3. Switchgear, switchboards and motor control centers:
    a. Tag type: Type C - Phenolic Name Plates.
    b. Fastener: Screws.
    c. Main equipment legend:
        1) Letter height:
            a) First line: 1 inch minimum.
            b) Subsequent lines: 3/8 inches minimum.
        2) First line: Equipment name (e.g., "MAIN SWITCHBOARD MSBxxx").
        3) Second line:
            a) Source of power (e.g., "FED FROM MCCxxx LOCATED IN ROOM xxx").
            b) Include the building name or number if the source is in another building.
        4) Third line: System voltage and phase (e.g., “480/277 V, 3PH”).
        5) Fourth line: Date installed (e.g., “INSTALLED JULY 20xx”).
    d. Main and feeder device legend:
        1) Letter height: 3/8 inches minimum.
        2) Description of load (e.g., “MAIN DISCONNECT”, "PUMP Pxxx" or "PANELBOARD HPxxx").
4. Panelboards and transformers:
    a. Tag type: Type C - Phenolic Name Plates.
    b. Fastener: Screws.
    c. Legend:
        1) Letter height:
            a) First line: 3/8 inches minimum.
            b) Subsequent lines: 3/16 inches minimum.
        2) First line: Equipment name (e.g., "PANELBOARD LPxxx" or "TRANSFORMER Txxx").
        3) Second line (panelboards only): System voltage and phase (e.g., “208/120V, 3PH”).
        4) Third line:
            a) Source of power (e.g., "FED FROM MCCxxx LOCATED IN ROOM xxx").
            b) Include the building name or number if the source is in another building.
        5) Fourth line: Date installed (e.g., “INSTALLED JULY 20xx”).
5. Transfer switches:
    a. Tag type: Type C - Phenolic Name Plates.
    b. Fastener: Screws.
    c. Legend:
        1) Letter height:
            a) First line: 3/8 inches minimum.
            b) Subsequent lines: 3/16 inches minimum.
        2) First line: Equipment name (e.g., "AUTOMATIC TRANSFER SWITCH ATSxxx").
        3) Second line: Normal source of power (e.g., "NORMAL SOURCE FED FROM MCCxxx").
        4) Third line: Emergency source of power (e.g., "EMERGENCY SOURCE FED FROM SGENxxx").
        5) Fourth line: Date installed (e.g., “INSTALLED JULY 20xx”).
6. Safety switches, separately mounted circuit breakers and motor starters, VFD’s, etc.:
    a. Tag type: Type C - Phenolic Name Plates.

b. Fastener: Screws.
c. Legend:
1) Letter height: 1/4 inches minimum.
2) First line: Description of load equipment is connected to (e.g., "PUMP Pxxx").
3) Second line:
a) Source of power (e.g., "FED FROM MCCxxx LOCATED IN ROOM xxx").
b) The source of power room number is only required when there are multiple electrical rooms, if the source is in another building, the building name or number shall be used.

7. Enclosure for instrumentation and control equipment, (e.g., lighting control panels, etc.):
a. Tag type: Type C - Phenolic Name Plates.
b. Fastener: Screws.
c. Legend:
1) Letter height: 1/2 inches minimum.
2) Equipment name (e.g., "LIGHTING CONTROL PANEL LCPxxx").

8. Components inside equipment enclosures (e.g., circuit breakers, fuses, control power transformers, control relays, contactors, timers, etc.):
a. Tag type: Type D - Self-Adhesive Tape Tags and Signs.
b. Fastener: Self.
c. Legend:
1) Letter height: 3/16 inches minimum.
2) Description or function of component (e.g., "M-xxx", “CR-xxx” or “TR-xxx").

9. Through enclosure door mounted equipment (e.g., selector switches, controller digital displays, etc.):
a. Tag type: Type C - Phenolic Name Plates.
b. Fastener: Screws.
c. Legend:
1) Letter height: 1/4 inches minimum.
2) Component tag number as indicated on the Drawings or as defined by contractor (e.g., “HS-xxx”).

10. Conductors in control panels and in pull or junction boxes where multiple circuits exist.
a. Tag type: Type E - Heat Shrinkable Tape Tags.
b. Fastener: Self.
c. Tag conductor at both ends.
d. Legend:
1) Letter height: 1/8 inches minimum.
2) Circuit number or wire number as scheduled on the Drawings or as furnished with the equipment.

11. Conductors in handholes and manholes.
a. Tag type: Type A3 - Metal Tape Tags.
b. Fastener: Nylon strap.
c. Tag conductor at both ends.
d. Legend:
1) Letter height: 1/8 inches minimum.
2) Circuit number or wire number as scheduled on the Drawings.

12. Grounding conductors associated with grounding electrode system in accordance with the following:
a. Tag type: Type D - Self-Adhesive Tape Tags.

b. Fastener: Self.
c. Legend:
1) Letter height: 1/8 inches minimum.
2) Function of conductor (e.g., "MAIN BONDING JUMPER", "TO GROUND RING", "TO MAIN WATER PIPE").

13. Flash protection for switchboards, panelboards, industrial control panels and motor control centers:
a. Tag type: Type D - Self-Adhesive Tape Signs.
b. Fastener: Self.
c. Legend: Per NFPA 70.

14. Equipment where more than one voltage source is present:
a. Tag type:
1) Type B2 - Nonmetallic Signs.
2) Type D - Self-Adhesive Tape Signs.
b. Fastener:
1) Screw or adhesive.
2) Self.
c. Size: 1-3/4 inches x 2-1/2 inches.
d. Location: Exterior face of enclosure or cubical.
e. Legend:
1) OSHA Danger Sign.
2) Description of Danger: “MULTIPLE VOLTAGE SOURCES”.

END OF SECTION

DIVISION 23

HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

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SECTION 23 05 03
PIPE AND PIPE FITTINGS - HVAC SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Natural Gas Piping.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 40 05 51 - Common Requirements for Process and Utility Valves.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Society of Mechanical Engineers (ASME):
   a. B1.2, Gages and Gaging for Unified Screw Threads.
   b. B31.1, Power Piping.
   c. B31.3, Process Piping.
   d. B31.9, Building Services Piping.
   e. B40.100, Pressure Gauges and Gauge Attachments.
2. ASTM International (ASTM):
   a. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   b. A74, Standard Specification for Cast Iron Soil Pipe and Fittings.
   c. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   d. A234, Standard Specification for Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
   e. B32, Standard Specification for Solder Metal.
   f. B88, Standard Specification for Seamless Copper Water Tube.
   g. C564, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
   h. D1248, Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
   i. D2241, Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter.
   j. D2513, Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings.
   k. D2683, Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.
   l. D3261, Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
   m. D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
3. American National Standards Institute (ANSI/ASTM):
   a. B16.3, Malleable Iron Threaded Fittings.
   b. B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
   c. B16.22, Wrought Copper and Bronze Solder - Joint Pressure Fittings.
   d. B16.23, Cast Copper Alloy Solder Joint Drainage Fittings (DWV).
   e. B16.26, Cast Copper Alloy Fittings for Flared Copper Tubes.
4. American Water Works Association (AWWA):
   a. B300, Standard for Hypochlorites.

b. C110, Standard for Ductile-Iron and Gray-Iron Fittings.
c. C150, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
d. C151, Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
e. C203, Coal-Tar Protective Linings for Steel.
f. C206, Field Welding of Steel Water Pipe.
g. C207, Steel Pipe Flanges for Waterworks Service.
h. C606, Grooved and Shouldered Joints.
i. C651, Disinfecting Water Mains.
j. M11, Steel Pipe- A Guide for Design and Installation.

5. American Welding Society (AWS):
   a. A5.8M/A5.8, Specification for Filler Metals for Brazing and Braze Welding.
6. Chlorine Institute, Inc. (CI):
   a. Pamphlet 6, Piping Systems for Dry Chlorine.
7. Cast Iron Soil Pipe Institute (CISPI):
   a. 301, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

B. Qualifications:

1. Use only certified welders meeting procedures and performance outlined in ASME Section IX, AWWA C200 Section 3.3.3 and other codes and requirements per local building and utility requirements.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
   c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
      1) Attach technical product data on gaskets, pipe, fittings, and other components.
2. Welders’ certificates.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

C. Informational Submittals:

1. Qualifications of lab performing disinfection analysis on water systems.
2. Test reports:
   a. Copies of pressure test results on all piping systems.
   b. Reports defining results of dielectric testing and corrective action taken.
   c. Disinfection test report.
   d. Notification of time and date of piping pressure tests.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Couplings:
    a. Dresser.
    b. Smith-Blair.
2. Mechanical Couplings:
    a. Victaulic.
    b. Tyler.
3. Expansion Fittings:
    a. Flexicraft.
    b. Mason.
    c. Metraflex.

2.2 MATERIALS

A. Piping Systems:

1. Piping systems are scheduled by service in PART 3 of this specification.

B. Pipe and Tube:

1. Steel:
    a. Schedule 40 per ASTM A53.
    b. Finish: Black per ASTM A53.
    c. Fittings (Per System Type):
        1) Malleable iron: Per ASTM B16.3.
        2) Forged Steel: Per ASTM A234.
    d. Joints: Per System Type:
        1) Threaded.
            a) With unions and valves and equipment.
        2) Socket or butt welded.
    e. Unions: Class 250, malleable iron, threaded.

PART 3 - EXECUTION

3.1 PREPARATION

A. Ream pipe and tube ends. Remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges and unions.

D. Deep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.2 INTERIOR AND EXPOSED EXTERIOR PIPING INSTALLATION

A. Install piping in vertical and horizontal alignment as shown on Drawings.

B. Alignment of piping smaller than 4 inches may not be shown; however, install according to Drawing intent and with clearance and allowance for:

1. Expansion and contraction.
2. Operation and access to equipment, doors, windows, hoists, moving equipment.

3. Headroom and walking space for working areas and aisles.
4. System drainage and air removal.

C. Enter and exit through structure walls, floor and ceilings using penetrations and seals specified in Specifications and as shown on the Drawings.

D. Install vertical piping runs plumb and horizontal piping runs parallel with structure walls.

E. Pipe Support:

1. Use methods of piping support as shown on Drawings and as required in Specifications.
2. Where pipes run parallel and at same elevation or grade, they may be grouped and supported from common trapeze-type hanger, provided hanger rods are increased in size as specified for total supported weight.
    a. The pipe in the group requiring the least maximum distance between supports shall set the distance between trapeze hangers.
3. Size pipe supports with consideration to specific gravity of liquid being piped.

F. Locate and size sleeves and castings required for piping system.

1. Arrange for chases, recesses, inserts or anchors at proper elevation and location.

G. Use reducing fittings throughout piping systems.

1. Bushings will not be allowed unless specifically approved.

H. Equipment Drainage and Miscellaneous Piping:

1. Provide drip pans and piping at equipment where condensation may occur.
2. Avoid piping over electrical components such as motor control centers, panelboards, etc.
    a. If piping must be so routed, utilize 16 GA, 316 stainless steel drip pan under piping and over full length of electrical equipment.
    b. Hard pipe drainage to nearest floor drain.
3. Miscellaneous Piping: If system is not otherwise specified, provide stainless steel tubing. Size to handle application with 3/4 inches being minimum size provided.

I. Unions:

1. Install in position which will permit valve or equipment to be removed without dismantling adjacent piping.
2. Mechanical type couplings may serve as unions.
3. Additional flange unions are not required at flanged connections.

J. Install expansion devices as necessary to allow expansion/contraction movement.

K. Provide full face gaskets on all systems.

L. Anchorage and Blocking:

1. Block, anchor, or harness exposed piping subjected to forces in which joints are installed to prevent separation of joints and transmission of stress into equipment or structural components not designed to resist those stresses.

M. Equipment Pipe Connections:

1. Make piping connections to HVAC equipment, including but not limited to installation of fittings, strainers, pressure reducing valves, flow control valves and relief valves provided with or as integral part of equipment.
2. Furnish and install sinks, fittings, strainers, pressure reducing valves, flow control valves, pressure relief valves, and shock absorbers which are not specified to be provided with or as integral part of equipment.

3. Stub piping for equipment, sinks, lavatories, supply and drain fittings, key stops, "P" traps, miscellaneous traps and miscellaneous brass through wall or floor and cap and protect until such time when later installation is performed.

N. Provide insulating components where dissimilar metals are joined together.

3.3 CONNECTIONS WITH EXISTING PIPING

A. Where connection between new work and existing work is made, use suitable and proper fittings to suit conditions encountered.

B. Perform connections with existing piping at time and under conditions which will least interfere with service to customers affected by such operation.

C. Undertake connections in fashion which will disturb system as little as possible.

D. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to adjacent property.

E. Where connections to existing systems necessitate employment of past installation methods not currently part of trade practice, utilize necessary special piping components.

F. Where connection involves potable water systems, provide disinfection methods as prescribed in this Specification Section.

G. Once tie-in to each existing system is initiated, continue work continuously until tie-in is made and tested.

3.4 ACCESS PROVISIONS

A. Provide access doors or panels in walls, floors, and ceilings to permit access to valves, piping and piping appurtenances requiring service.

B. Size of access panels to allow inspection and removal of items served, minimum 10 x 14 inches size.

C. Fabricate door and frame of minimum 14 GA, stretcher leveled stock, zinc-nickel plated or galvanized after fabrication and fitted with screwdriver lock of cam type.

D. Provide with key locks, keyed alike, in public use areas.

E. Furnish panels with prime coat of paint.

F. Style and type as required for material in which door installed.

G. Where door is installed in fire-rated construction, provide door bearing UL label required for condition.

3.5 CATHODIC PROTECTION

A. Isolate, dielectrically, all piping from all other metals including reinforcing bars in concrete slabs, other pipe lines, and miscellaneous metal.

B. Make all connections from wire or cable by Thermit Cadwelding accomplished by operators experienced in this process.

C. Install all cables with a loop and overhead knot around each pipe and slack equal to at least 50 percent of the straight line length.

D. After cadwelding, coat all exposed metallic surfaces with hot applied tape.

3.6 INSTALLATION - PIPE SYSTEM SPECIFIC

A. Natural Gas Piping Installation:

1. Install piping in accordance with NFPA, local gas company regulations, codes and local ordinances, complete with necessary appurtenances.
2. Install buried pipe at approximately 30 inches deep.

3. Gas cocks:
    a. Install before gas utilization equipment connected to system at each branch main and at connection to meter.
    b. Design to operate safely under pressures indicated.
    c. Install ground joint unions at intervals to facilitate repairs.
    d. Cocks shall be of type and lubricant recommended by manufacturer for this class of service, and as approved by local gas company.
4. Pipe drainage:
    a. Drain horizontal piping to risers.
    b. Locate drains where required for system drainage.
    c. Install tee fitting with bottom outlet plugged or provide with threaded, capped nipple at bottom of risers or in accordance with applicable codes.
5. Make piping connections with shellacked joints or ground joint unions.
6. Provide vents from gas regulators, pressure reducing valves, and other vented devices to the outdoors and terminate in accordance with applicable codes.
7. Connect piping to pressure reducing valve outside each building as shown on drawings and schedule.
8. Provide flexible connections to vibration isolated equipment suitable for pressures, local and national codes and intended application.
9. Remove cutting and threading burrs.
10. Plug each gas outlet (including valves) with threaded plugs or caps immediately after installation and retain until the piping or equipment connections are completed.
11. Continuously ground gas piping electrically, bond tightly to the grounding connection.
12. Install piping parallel to other piping, but maintain a minimum 12 inches clearance between gas piping and any piping that could reach 200 DEGF.
13. All gas piping in air plenums to be all-welded and encased in a Schedule 40 pipe sleeve.
    a. Ends of the sleeve open to atmosphere or sealed with the annulus vented (gas pipe size) to atmosphere.

3.7 JOINING

A. Install products in accordance with manufacturer's instructions.

B. Joining Methods - Flanges:

1. Facing method:
    a. Insert slip-on flange on pipe.
    b. Assure maximum tolerances for flange faces from normal with respect to axis of pipe is 0.005 inches per foot of flange diameter.
    c. Test flanges after welding to pipe for true to face condition and reface, if necessary, to bring to specified tolerance.
2. Joining method:
    a. Leave 1/8 to 3/8 inches of flange bolts projecting beyond face of nut after tightening.
    b. Coordinate dimensions and drillings of flanges with flanges for valves, pumps, equipment, tank, and other interconnecting piping systems.
    c. When bolting flange joints, exercise extreme care to assure that there is no restraint on opposite end of pipe or fitting which would prevent uniform gasket compression or cause unnecessary stress, bending or torsional strains being applied to cast flanges or flanged fittings.
        1) Allow one flange free movement in any direction while bolts are being tightened.
    d. Do not assemble adjoining flexible coupled, mechanical coupled or welded joints until flanged joints in piping system have been tightened.
    e. Gradually tighten flange bolts uniformly to permit even gasket compression.

f. Do not overstress bolts to compensate for poor installation.

C. Joining Method - Welded Joints:

1. Perform welding in accordance with AWWA C206 and this Section.
2. For flange attachment perform in accordance with AWWA C207.
3. Have each welding operator affix an assigned symbol to all his welds.
   a. Mark each longitudinal joint at the extent of each operator's welding.
   b. Mark each circumferential joint, nozzle, or other weld into places 180 degrees apart.
4. Welding for all process piping shall conform to ASME B31.3.
   a. Welding of utility piping 125 psi and less shall be welded per ASME B31.9.
   b. Utility piping above 125 psi shall conform to ASME B31.1.
5. Provide caps, tees, elbows, reducers, etc., manufactured for welded applications.
6. Weldolets may be used for 5 inches and larger pipe provided all slag is removed from inside the pipe.
7. Weld-in nozzles may be used for branch connections to mains and where approved by Engineer.
8. Use all long radius welding elbows for expansion loops and bends.
9. Use long radius reducing welding elbows 90 degrees bends and size changes are required.

D. Joining Method - Couplings:

1. Compression sleeve:
   a. Install coupling to allow space of not less than 1/4 inches but not more than 1 inch.
   b. Provide harnessed joint.
      1) Use joint harness arrangements detailed in AWWA M11.
   c. Design harness assembly with adequate number of tie rods for test pressures indicated in Section 40 05 01 and allow for expansion of pipe.
   d. Provide ends to be joined or fitted with compression sleeve couplings of the plain end type.
   e. Grind smooth welds the length of one coupling on either side of joint to be fitted with any coupling.
   f. Assure that outside diameter and out-of-round tolerances are within limits required by coupling manufacturer.
2. Mechanical coupling:
   a. Arrange piping so that pipe ends are in full contact.
   b. Groove and shoulder ends of piping in accordance with manufacturer's recommendations.
   c. Provide coupling and grooving technique assuring a connection which passes pressure testing requirements.

E. Joining Method - Threaded and Coupled (T/C):

1. Provide T/C end conditions that meet ASME B1.2 requirements.
2. Furnish pipe with factory-made T/C ends.
3. Field cut additional threads full and clean with sharp dies.
4. Leave not more than three pipe threads exposed at each branch connection.
5. Ream ends of pipe after threading and before assembly to remove burrs.
6. Use Teflon thread tape on male thread in mating joints.

3.8 FIELD QUALITY CONTROL

A. Pipe Testing - General:

1. Test piping systems as follows:
   a. Test exposed, non-insulated piping systems upon completion of system.
   b. Test exposed, insulated piping systems upon completion of system but prior to application of insulation.
   c. Test concealed interior piping systems prior to concealment and, if system is insulated, prior to application of insulation.
   d. Test buried piping (insulated and non-insulated) prior to backfilling and, if insulated, prior to application of insulation.
2. Isolate equipment which may be damaged by the specified pressure test conditions.
3. Perform pressure test using calibrated pressure gages and calibrated volumetric measuring equipment to determine leakage rates.
   a. Select each gage so that the specified test pressure falls within the upper half of the gage's range.
   b. Notify the Engineer 24 hours prior to each test.
4. Completely assemble and test new piping systems prior to connection to existing pipe systems.
5. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.
6. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.

B. Pressure Testing:

1. Testing medium:
   a. Natural gas systems: Cylinder nitrogen.
2. Testing pressure:
   a. See below for gravity systems.
   b. For pumped systems, test at no less than 125% of pump head plus the system fill pressure.
   c. For pressurized systems, test at 150 psiG.
3. Allowable leakage rates:
   a. Natural gas systems, all exposed piping systems, all pressure piping systems and all buried, insulated piping systems which are hydrostatically pressure tested shall have zero leakage at the specified test pressure throughout the duration of the test.
   b. Non-hazardous gas and air systems which are tested with air shall have a maximum pressure drop of 5% of the specified test pressure throughout the duration of the test.
4. Hydrostatic pressure testing methodology:
   a. General:
      1) All joints, including welds, are to be left exposed for examination during the test.
      2) Provide additional temporary supports for piping systems designed for vapor or gas to support the weight of the test water.
      3) Provide temporary restraints for expansion joints for additional pressure load under test.
      4) Isolate equipment in piping system with rated pressure lower than pipe test pressure.
      5) Do not paint or insulate exposed piping until successful performance of pressure test.

b. Soil, waste, drain and vent systems:
1) Test at completion of installation of each stack or section of piping by filling system with water and checking joints and fittings for leaks.
2) Eliminate leaks before proceeding with work or concealing piping.
3) Minimum test heights shall be 10 feet above highest stack inlet.

5. Natural gas systems - testing methodology:
a. Maintain specified test pressure until each joint has been thoroughly examined for leaks by means of soap suds and glycerine.
b. Wipe joints clean after test.

6. Air testing methodology:
a. General:
1) Assure air is ambient temperature.
b. Low pressure air testing:
1) Place plugs in line and inflate to 25 psiG.
2) Check pneumatic plugs for proper sealing.
3) Introduce low pressure air into sealed line segment until air pressure reaches 4 psiG greater than ground water that may be over the pipe.
a) Use test gage conforming to ASME B40.100 with 0 to 15 psi scale and accuracy of 1% of full range.
4) Allow 2 minutes for air pressure to stabilize.
5) After stabilization period (3.5 psiG minimum pressure in pipe) discontinue air supply to line segment.
6) Record pressure at beginning and end of test.

C. Dielectric Testing Methods and Criteria:
1. Provide electrical check between metallic non-ferrous pipe or appurtenances and ferrous elements of construction to assure discontinuity has been maintained.
2. Wherever electrical contact is demonstrated by such test, locate the point or points of continuity and correct the condition.

3.9 CLEANING, DISINFECTION AND PURGING

A. Cleaning:
1. Clean interior of piping systems thoroughly before installing.
2. Maintain pipe in clean condition during installation.
3. Before jointing piping, thoroughly clean and wipe joint contact surfaces and then properly dress and make joint.
4. Immediately prior to pressure testing, clean and remove grease, metal cuttings, dirt, or other foreign materials which may have entered the system.
5. At completion of work and prior to Final Acceptance, thoroughly clean work installed under these Specifications.
a. Clean equipment, fixtures, pipe, valves, and fittings of grease, metal cuttings, and sludge which may have accumulated by operation of system, from testing, or from other causes.
b. Repair any stoppage or discoloration or other damage to parts of building, its finish, or furnishings, due to failure to properly clean piping system, without cost to Owner.
6. After erection of piping and tubing, but prior to installation of service outlet valves, blow natural gas systems clear of free moisture and foreign matter by means of air, nitrogen or carbon dioxide.
a. Oxygen shall never be used.
7. Clean chlorine piping in accordance with CI Pamphlet 6.

B. Purging Natural Gas:

1. Existing piping:
   a. Turn off gas supply.
   b. Vent line pressure outdoors.
   c. If section exceeds the following, then remaining gas shall be displaced with an inert gas.
      1) 50 feet for 2-1/2 inches pipe.
      2) 30 feet for 3 inches pipe.
      3) 15 feet for 4 inches pipe.
      4) 10 feet for 6 inches pipe.
      5) Any length for 8 inches or larger pipe.
2. New piping:
   a. Including but not limited to:
      1) All fuel gas piping.
      2) Fuel gas trains.
   b. Purge air filled system with fuel gas:
      1) Providing piping length is less than:
         a) 30 feet for 3 inches pipe.
         b) 15 feet for 4 inches pipe.
         c) 10 feet for 6 inches pipe.
         d) Any length for 8 inches and larger pipe.
      2) Providing a moderately rapid and continuous flow of fuel gas is introduced.
         a) Introduce fuel gas at one end.
         b) Vent air at opposite end.
      3) Provided fuel gas flow is continuous without interruption until vented gas is free of air.
      4) The point of discharge shall not be left unattended during purging.
   c. If the piping is 3 inches or larger and exceeds lengths stated above.
      1) Purge air with inert gas in accordance with NFPA 54 and NFPA 69.
      2) Purge inert gas with fuel gas.
3. Discharge of purged gases:
   a. Open end of piping shall not discharge into confined spaces or areas where there are sources of ignition.

3.10 SCHEDULES

A. System 4 - Natural Gas:

1. Piping symbol and service:
   a. NG - Natural Gas.
2. Above ground:
   a. Pipe: Schedule 40 Black Steel.
   b. Fittings: Malleable Iron or Forged Steel.
   c. Joints: Butt or socket weld.
      1) Threaded joints are acceptable for pipes 2 inches diameter and smaller and pressures less than 14 inches WC.

END OF SECTION

SECTION 23 05 93
HVAC SYSTEMS - BALANCING AND TESTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adjusting, balancing, and testing of all heating, ventilating and air conditioning (HVAC) systems, including the following systems:

B. Related Sections include but are not necessarily limited to:

1. Section 23 80 00 - HVAC - Equipment.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Associated Air Balance Council (AABC):
   a. National Standards for Total System Balance.
2. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE):
   a. HVAC Applications Handbook, Chapter entitled "Laboratories".
   b. HVAC Systems and Equipment Handbook, Chapter entitled "Testing, Adjusting, and Balancing".
3. National Environmental Balancing Bureau (NEBB):
   a. Procedural Standards for Testing Adjusting Balancing of Environmental Systems.

B. Qualifications:

1. Work of this Section to be accomplished by an independent testing and balancing firm certified by one (1) of the following:
   a. Associated Air Balance Council (AABC).
   b. National Environmental Balancing Bureau (NEBB).
   c. Other certification entity approved by Engineer.
2. The independent firm shall not be the same firm as the firm installing the HVAC equipment, nor under contract to the firm installing the equipment.

1.3 SUBMITTALS

A. Shop Drawings:

1. Certifications:
   a. Letter stating the name and qualifications of the firm proposed.
   b. Evidence that relevant subcontractors have been notified of the requirement to coordinate balance and test elements in the work with the testing and balancing firm.
2. Report forms:
   a. Procedures and forms to be used calibrating of test instruments, balancing systems, and recording and reporting test data.

B. Informational Submittals:

1. Completed test reports and data forms upon completion of installation, balance and testing of HVAC systems.
   a. Insert recorded information on report forms required by specifications and approved for use on project.
   b. Additional written verification and other related information clearly identifying project, date and specifics of verification.

c. Utilize report forms similar to those shown in Section V of AABC Standard.
d. Provide forms typed and signed by the testing and balancing firm.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Secure approved Shop Drawings of all HVAC equipment.

B. Procedures and Forms:

1. Submit procedures and forms to be used in calibration of test instruments, balancing systems, and recording and reporting test data.
2. Obtain approval before beginning balancing and testing.

C. Do not begin balancing and testing until HVAC systems are complete and in full working order.

1. Place HVAC systems into full operation and continue their operation during each working day of balancing and testing.

D. Provide qualified heating and ventilating Engineer(s) to supervise and perform balancing and testing.

E. Review design Drawings, specifications, approved Shop Drawings and other related items to become thoroughly acquainted with the design of HVAC systems.

F. Check all installed systems against Contract Drawings, Specifications and Shop Drawings to see that system is installed as required.

1. Report deficiencies to the Engineer.
2. Report deficiencies to Contractor for remedial action including providing corrective measures required in the function of any part of system to complete balancing.

G. Make necessary adjustments as required to balance the systems.

3.2 FIELD QUALITY CONTROL

A. Balance and Test Air Systems:

1. Adjust equipment RPM to design requirements.
2. Report motor full load amperes.
3. Obtain design CFM at fans.
   a. Make pitot tube traverse of main supply and exhaust ducts within 5%.
4. Test and record system static pressures, suction and discharge.
5. Obtain design CFM for recirculated air.
6. Obtain design CFM outside air.
7. Test and record entering air temperatures, (DB, heating and cooling).
8. Test and record leaving air temperatures, (DB, heating and cooling).
9. Test and record leaving air temperatures, (WB, cooling).
10. Adjust dampers in supply, exhaust and return air ducts to design CFM.
11. Test diffusers, grilles, and registers as follows:
    a. Adjust to comply with design requirements within 10%.
    b. Identify location and area of each.
    c. Adjust face velocity to establish required CFM.
       1) Retest after initial adjustments.
    d. Adjust to minimize drafts and to ensure uniform air distribution in all areas.

12. Identify and list size, type and manufacturer of diffusers, grilles, registers, and HVAC equipment.
    a. Use manufacturer's ratings on equipment to make required calculations.
13. Adjust and assure that the operation of automatically operated dampers are as specified.
    a. Check and calibrate controls.
14. Prepare and submit reports.

END OF SECTION

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SECTION 23 80 00
HVAC - EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Heating, ventilating, and cooling equipment.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 23 05 93 - HVAC Systems - Balancing and Testing.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Air Movement and Control Association (AMCA).
2. Air Conditioning and Refrigeration Institute (ARI).
3. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE):
   a. HVAC Applications Handbook, Chapter entitled "Sound and Vibration Control."
   b. 20, Methods of Testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
   c. 52.2, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
4. Canadian Standards Association (CSA).
5. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
6. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
7. National Roofing Contractors Association (NRCA).
8. Underwriters Laboratories, Inc. (UL):
   a. 507, Standard for Electric Fans.

B. Miscellaneous:

1. Gage thickness specified herein shall be manufacturer's standard gage for steel and Brown and Sharpe gage for non-ferrous metals.
2. Corrosion protection of equipment to be as specified herein.

1.3 SUBMITTALS

A. Shop Drawings:

1. Fabrication and/or Layout Drawings.
2. Product technical data including:
   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Manufacturer's installation instructions.
   c. Wiring diagrams.
   d. Control diagrams.
   e. Manufacturer's catalog cuts and technical data.
   f. Corrosion-protection information.
   g. Fan curves.
   h. Sound data.
   i. Vibration isolation.

j. Control description.
k. Performance data on all equipment.

3. Certifications:
   a. Provide certification of thickness of corrosion-protection coating.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Unit heater - electric:
   a. Brasch.
   b. Chromalox.
   c. QMark.
2. Packaged Terminal Heat Pumps:
   a. Bard.
   b. Daikin Applied.
   c. AAON.
   d. Carrier.

2.2 GENERAL

A. All Manufactured Units:

1. Comply with Specification Section 01 61 03.
2. Factory wired and assembled.
3. Use fasteners made of same material as unit.
4. Fabricate motor assemblies and unit housings with vibration isolation assemblies:
   a. Type: As per ASHRAE HVAC Applications Handbook.

2.3 MANUFACTURED UNITS

A. Unit Heater - Electric:

1. Type: Horizontal.
2. UL listed for non-rated areas.
3. Material:
   a. Cabinet: 18 GA steel.
   b. Heating elements: Copper-clad steel.
4. Fan motors:
   a. See Specification Section 01 61 03.
   b. Built-in automatic reset overload protection.
5. Dynamically balanced fan.
6. Built-in automatic reset cutout protection.
7. Accessories:
   a. Mounting bracket.
   b. 40 to 90 DEGF, 5 DEGF differential wall-mounted thermostat.

8. Electrical, fan motor, and airflow data as scheduled on Drawings.

B. Packaged Terminal Heat Pump Units:

1. UL listed.
2. Designed for outdoor application.
3. Unit construction:
   a. Fabricate unit with 14 GA channel posts and panels secured with mechanical fasteners.
      1) Seal all panels, access doors, and ship sections with permanently applied bulb-type gasket.
      2) Loose shipped gasketing is not allowed.
   b. Construct panels and access doors as a 2 inches nominal thick; thermal broke double wall assembly, injected with foam insulation for an R-value of not less than R-13.
      1) Construct the outer panel and inner liner of G90 galvanized steel.
   c. Panel deflection:
      1) Do not exceed L/240 ratio at 125% of design static pressure, maximum positive or negative 8 inches of static pressure.
      2) Measure deflection at the midpoint of the panel height.
   d. Casing leakage rate: Do not exceed 0.5 cfm per square foot of cabinet area at 6 inches of negative static pressure or 5 inches of positive static pressure.
   e. Module to module assembly:
      1) Provide an overlapping, full perimeter, insulated, internal splice joint sealed with bulb type gasketing on both mating modules to minimize on-site labor and meet indoor air quality standards.
   f. Entire unit:
      1) Provide with a 4 inches full perimeter base rail for structural rigidity and condensate trapping.
      2) Overhang the roof curb for positive water runoff and seat on the roof curb gasket to provide positive weather tight seal.
      3) Provide lifting lugs on unit base and with fork lift slots in unit base.
   g. Access doors:
      1) Flush mounted to cabinetry, with minimum of two, 6 inches long stainless steel piano-type hinges, latch and full size (4.5 inches minimum) handle assembly (provide inspection window for fan section).
      2) Swing door outward for unit sections under negative pressure (inward for unit sections under positive pressure).
      3) Provide a secondary latch to relieve pressure and prevent injury upon access doors limited from swinging inward (such as side access filter sections) on positive pressure sections, shall have.
   h. Construct drain pans from microbial resistant coated galvanized steel with cross break and double sloping pitch to drain connection.
      1) Provide drain pans under cooling coil section.
      2) Drain connection centerline: A minimum of 3 IN above the base rail to aid in proper condensate trapping.
      3) Drain connections that protrude from the base rail are not acceptable.
      4) There must be a full 2 inches thickness of insulation under drain pan.
4. Refrigerant condensing section:
   a. Compressors:
      1) Inverter scroll type, with five year non-prorated warranty.
      2) Suction and discharge service valves.
      3) Crankcase heater.

4) Thermal overload protection.

b. Refrigeration circuit:
   1) Sight glass.
   2) Filter dryer.
   3) Manual shut-off valve.
   4) High pressure relief valve.
   5) Refrigerant bypass valve between suction and discharge lines for low head pressure starting.

c. Compressor isolators.

d. Condenser coils:
   1) Nominal 3/8 inches OD seamless copper mechanically bonded to corrugated aluminum fins.
   2) Factory leak tested at 315 psiG under water.

e. Condenser fans:
   1) Direct drive: See Specification Section 01 61 03.
   2) Propeller-type.

f. Condenser fan motors:
   1) Heavy duty, inherently protected, non-reversing.
   2) Permanently lubricated bearings.
   3) Integral rain shield.

g. Provide low ambient run control.
   1) Unit to operate down to 0 DEGF outside ambient.

5. Cooling coil section:
   a. Evaporator coils: See paragraph(s) in Article 2.3, Equipment Coils.
   b. Evaporator coil circuiting:
      1) Adjustable thermal expansion valve per circuit with external equalizer.
      2) Combination row/split face circuiting.
   c. Drain pan:
      1) Mastic-coated:
      2) Threaded drain connections.

6. Heating section:
   a. Heat Pump:
      1) Reversing valve to utilize heat pump technology of provided unit.
   b. Supplemental electric heat:
      1) Coil: See paragraph(s) in the EQUIPMENT COILS Article.
      2) Automatic reset high limit control.

7. Supply fan section:
   a. Supply fans:
      1) Double-width, double-inlet centrifugal type.
      2) Forward curved.
      3) Solid steel shafts.
      4) 200,000 hour relubricative ball-bearings.
   b. Fan motors:
      1) See Specification Section 01 61 03.
      2) Relubricative ball-bearings.
      3) Adjustable base.

c. Driver and driven sheaves:
    1) Keyed hub type.
    2) Drive sheaves: Fixed pitch diameter.
    3) Driver:
        a) Shipped with variable pitch diameter sheave.
        b) Fixed pitch diameter size based on approved test and balance reports.
    4) V-belt drives sized for 150% motor horsepower.
d. Isolated fan assembly.

8. Filter section:
    a. Filters: Provide each unit with filters as scheduled (with a minimum MERV of 8).
        1) Provide 2 sets of filters in addition to the ones that are used during construction and testing and balancing. Remove the filters that were used for testing and balancing.
    b. Access doors for filter removal.
9. Return air section:
    a. Non ducted configuration, see plans.
10. Outdoor air section:
    a. Designed to form a plenum.
    b. 0 to 100% outside air with economizer control.
    c. Horizontal louvers with rain lip and birdscreen.
    d. Floor sloped for water drainage.
    e. Dampers:
        1) Sized to handle 100% supply air volume.
        2) Arranged vertically to encourage mixing of return and outside airstreams.
        3) Airfoil type.
        4) Fully gasketed and side sealed.
    f. Adjustable potentiometer.
    g. Adjustable enthalpy control outside of airstream.
    h. Modulating spring return type damper motor.
11. Electrical:
    a. Factory wired in accordance with NFPA 70 requirements.
    b. 115 V control circuit transformer.
    c. 115 V receptacle.
    d. Return air firestat.
    e. Supply air firestat.
    f. System service switch.
    g. Control circuit fuse.
    h. Individually fused supply and return fan motors, compressor and condenser fan motor branch circuits.
    i. Weatherproof control panel with dead-front cover over main power controls.
    j. Disconnect switch.
12. Manufacturer controls and accessories:
    a. Lead/lag controller.
    b. Remote wall mounted 24/7 programmable thermostats.
13. Size and capacity as scheduled on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with Specification Section 01 61 03.

B. Install fixed pitched drive sheave after sheave has been sized based on accepted test and balance report.

3.2 FIELD QUALITY CONTROL

A. Comply with Specification Section 23 05 93.

3.3 ADJUSTING

A. Install new filters on units which have been running prior to acceptance of Project.

END OF SECTION

DIVISION 26

ELECTRICAL

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SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Basic requirements for electrical systems.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 03 15 19 - Anchorage to Concrete.
3. Section 10 14 00 - Identification Devices.
4. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
5. Section 26 05 33 - Raceways and Boxes for Electrical Systems.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Aluminum Association (AA):
   a. ADM, Aluminum Design Manual.
2. American Institute of Steel Construction (AISC):
   a. Steel Construction Manual.
3. American National Standards Institute (ANSI).
4. ASTM International (ASTM):
   a. A36/A36M, Standard Specification for Carbon Structural Steel.
   b. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   c. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
5. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   a. C2, National Electrical Safety Code (NESC).
6. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
7. National Electrical Manufacturers Association (NEMA):
8. Underwriters Laboratories, Inc. (UL).

B. Products to be listed by a Nationally Recognized Testing Laboratory (NRTL) in accordance with applicable product standards.

1. Applicable product standards including, but not limited to, ANSI, FM, IEEE, NEMA and UL.
2. NRTL includes, but is not limited to, CSA Group Testing and Certification (CS), FM Approvals LLC (FM), Intertek Testing Services NA, Inc. (ETL), and Underwriters Laboratories, Inc. (UL).

1.3 DEFINITIONS

A. For the purposes of providing materials and installing electrical work the following definitions shall be used.

1. Outdoor area: Exterior locations where the equipment is normally exposed to the weather and including below grade structures, such as vaults, manholes, handholes and in-ground pump stations.
2. Non-architecturally finished interior area: Pump, chemical, mechanical, electrical rooms and other similar process type rooms.

3. Shop fabricated: Manufactured or assembled equipment for which a UL test procedure has not been established.

1.4 SYSTEM DESCRIPTION

A. Coordinate installation of the service transformer and metering with the serving utility.

1. The serving utility for this Project is Omaha Public Power District (OPPD).
   a. Contact: Mark O' Connor.
2. Provide the transformer pad, secondary conduit and wire, and primary conduit.
   a. Size and construct transformer pad in conformance with the utilities requirements.
3. The utility will furnish the transformer, primary service wire, meter and meter socket, and make all connections at the transformer and meter socket.

B. Execution of this Contract will involve replacement of existing equipment.

1. The Contractor is responsible for coordinating with the Engineer and the Owner those drives which shall remain in service, or which shall have a limited downtime, and to schedule his work accordingly.
2. Temporary equipment and wiring, installed in accordance with the NFPA70, may be used if necessary to maintain operation or to limit downtime.
3. Under no circumstances shall equipment be taken out of service without the Owner's permission.
4. Comply with requirements of Specification Section 01 42 00.

1.5 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 61 03 and individual specification sections for submittal requirements for products defined as equipment.
2. General requirements:
   a. Provide manufacturers' technical information on products to be used, including product descriptive bulletin.
   b. Include data sheets that include manufacturer's name and product model number.
      1) Clearly identify all optional accessories.
   c. Acknowledgement that products are NRTL listed or are constructed utilizing NRTL recognized components.
   d. Manufacturer's delivery, storage, handling and installation instructions.
   e. Product installation details.
   f. Short Circuit Current Rating (SCCR) nameplate marking per NFPA 70, include any required calculations.
   g. See individual specification sections for any additional requirements.
3. Fabrication and/or layout drawings:
   a. Concrete and reinforcing steel, per Contract Drawing requirements.

B. Operation and Maintenance Manuals:

1. See Specification Section 01 78 23 for requirements for:
   a. The mechanics and administration of the submittal process.
   b. The content process of Operation and Maintenance Manuals.

C. When a Specification Section includes products specified in another Specification Section, each Specification Section shall have the required Shop Drawing transmittal form per Specification Section 01 33 00 and all Specification Sections shall be submitted simultaneously.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect nameplates on electrical equipment to prevent defacing.

1.7 AREA DESIGNATIONS

A. Designation of an area will determine the NEMA rating of the electrical equipment enclosures, types of conduits and installation methods to be used in that area.

1. Outdoor areas:
    a. Wet.
2. Indoor areas:
    a. Wet.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, refer to specific Electrical Specification Sections and specific material paragraphs below for acceptable manufacturers.

B. Provide all components of a similar type by one (1) manufacturer.

2.2 MATERIALS

A. Electrical Equipment Support Pedestals and/or Racks:

1. Manufacturers:
    a. Modular strut:
        1) Unistrut Building Systems.
        2) B-Line by Eaton.
        3) Globe Strut.
        4) Superstrut by Thomas & Betts.
2. Material requirements:
    a. Modular strut:
        1) Galvanized steel: ASTM A123/123M or ASTM A153/A153M.
        2) Aluminum: AA Type 6063-T6.
    b. Structural members (e.g., I beams, L and C channels):
        1) Galvanized steel: ASTM A36/A36M steel with galvanizing per ASTM A123/A123M.
        2) Aluminum: AA Type 6061-T6 or 6063-T6.
    c. Mounting plates:
        1) Galvanized steel: ASTM A36/A36M steel with galvanizing per ASTM A123/A123M.
        2) Aluminum: AA Type 6063-T6.
    d. Mounting hardware:
        1) Galvanized steel.
        2) Stainless steel.
    e. Anchorage per Specification Section 03 15 19.

B. Equipment pads (interior and exterior):

1. Concrete and reinforcing steel: See Contract Drawings.

C. Field touch-up of galvanized surfaces.

1. Zinc-rich primer.
    a. One coat, 3.0 mils, ZRC by ZRC Products.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install and wire all equipment, including prepurchased equipment, and perform all tests necessary to assure conformance to the Drawings and Specification Sections and ensure that equipment is ready and safe for energization.

B. Install equipment in accordance with the requirements of:

1. NFPA 70.
2. IEEE C2.
3. The manufacturer's instructions.

C. In general, conduit routing is not shown on the Drawings.

1. The Contractor is responsible for routing all conduits including those shown on one-line and control block diagrams and home runs shown on floor plans.
2. Conduit routings and stub-up locations that are shown are approximate; exact routing to be as required for equipment furnished and field conditions.

D. When complete branch circuiting is not shown on the Drawings:

1. A homerun indicating panelboard name and circuit number will be shown and the circuit number will be shown adjacent to the additional devices (e.g., light fixture and receptacles) on the same circuit.
2. The Contractor is to furnish and install all conduit and conductors required for proper operation of the circuit.
3. The indicated home run conduit and conductor size shall be used for the entire branch circuit.
4. See Section 26 05 19 for combining multiple branch circuits in a common conduit.

E. Do not use equipment that exceed dimensions or reduce clearances indicated on the Drawings or as required by the NFPA 70.

F. Install equipment plumb, square and true with construction features and securely fastened.

G. Install electrical equipment, including pull and junction boxes, minimum of 6 inches from process, gas, air and water piping and equipment.

H. Install equipment so it is readily accessible for operation and maintenance, is not blocked or concealed and does not interfere with normal operation and maintenance requirements of other equipment.

I. Device Mounting Schedule:

1. Unless indicated otherwise on the Drawings, mounting heights are as indicated below:
   a. Light switch (to center): 46 inches.
   b. Receptacle on exterior wall of building (to center): 18 inches.
   c. Receptacle in non-architecturally finished areas (to center): 46 inches.
   d. Safety switch (to center of operating handle): 54 inches.
   e. Separately mounted motor starter (to center of operating handle): 54 inches.
   f. Pushbutton or selector switch control station (to center): 46 inches.
   g. Panelboard (to top): 72 inches.

J. Avoid interference of electrical equipment operation and maintenance with structural members, building features and equipment of other trades.

1. When it is necessary to adjust the intended location of electrical equipment, unless specifically dimensioned or detailed, the Contractor may make adjustments of up to 6 inches in equipment location with the Engineer's approval.

K. Provide electrical equipment support system per the following area designations:

1. Wet areas:
    a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.
    b. Aluminum system consisting of aluminum channels and fittings with stainless steel nuts and hardware.
    c. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.

L. Provide all necessary anchoring devices and supports rated for the equipment load based on dimensions and weights verified from approved submittals, or as recommended by the manufacturer.

1. See Specification Section 03 15 19.
2. Do not cut, or weld to, building structural members.
3. Do not mount safety switches or other equipment to equipment enclosures, unless enclosure mounting surface is properly braced to accept mounting of external equipment.

M. Provide non-metallic corrosion resistant spacers to maintain 1/4 inches separation between metallic equipment and/or metallic equipment supports and mounting surface in wet areas, on below grade walls and on walls of liquid containment or processing areas such as Basins, Clarifiers, Digesters, Reservoirs, etc.

N. Do not place equipment fabricated from aluminum in direct contact with earth or concrete.

O. Screen or seal all openings into equipment mounted outdoors to prevent the entrance of rodents and insects.

P. Do not use materials that may cause the walls or roof of a building to discolor or rust.

Q. Identify electrical equipment and components in accordance with Specification Section 10 14 00.

R. Provide field markings and/or documentation of available short-circuit current (available fault current) and related information for equipment as required by the NFPA 70 and other applicable codes.

S. Provide equipment or control panels with Short Circuit Current Rating (SCCR) labeling as required by NFPA 70 and other applicable codes.

1. Determine the SCCR rating by one of the following methods:
    a. Method 1: SCCR rating meets or exceeds the available fault current of the source equipment when indicated on the Drawings.
    b. Method 2: SCCR rating meets or exceeds the source equipment's Amp Interrupting Current (AIC) rating as indicated on the Drawings.
    c. Method 3: SCCR rating meets or exceeds the calculated available short circuit current at the control panel.
2. The source equipment is the switchboard, panelboard, motor control center or similar equipment where the equipment or control panel circuit originates.
3. For Method 3, provide calculations justifying the SCCR rating. Utilize source equipment available fault current or AIC rating as indicated on the Drawings.

3.2 FIELD QUALITY CONTROL

A. Verify exact rough-in location and dimensions for connection to electrified equipment, provided by others.

1. Secure Shop Drawings for equipment furnished by Automatic Systems and installed by Contractor.

B. Replace equipment and systems found inoperative or defective and re-test.

C. Cleaning:

1. Complete the following prior to requesting inspection for Substantial Completion:
    a. Clean and remove from the Site waste material (including rubbish and debris) and other foreign and undesirable items and substances.
    b. Repair pavement, roads, sod, and other areas affected by construction operations and restore to specified condition; if condition is not specified, restore to preconstruction condition.
    c. Remove non-permanent tags and labels.
    d. Surface Finishes:
        1) Touch-up and otherwise repair and restore chipped, scratched, dented or otherwise marred surfaces to specified finish and match adjacent surfaces.
        2) Do not paint over “UL” or similar labels, including electrical nameplates.
    e. Wipe surfaces of electrical equipment, and similar equipment. Remove excess lubrication, paint, and mortar droppings, and other foreign or undesirable substances.
    f. Clean lighting fixtures, lamps, globes, and reflectors to function with full efficiency.
    g. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Engineer.

D. The protective coating integrity of support structures and equipment enclosures shall be maintained.

1. Repair galvanized components utilizing a zinc rich paint.
2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
3. Repair surfaces which will be inaccessible after installation prior to installation.
4. See Specification Section 26 05 33 for requirements for conduits and associated accessories.

E. Replace nameplates damaged during installation.

3.3 DEMONSTRATION

A. Demonstrate equipment in accordance with Specification Section 01 75 00.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
    a. Building wire.
    b. Control cable.
    c. Shielded VFD cable.
    d. Instrumentation cable.
    e. Wire connectors.
    f. Insulating tape.
    g. Pulling lubricant.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.
2. Section 26 08 13 - Acceptance Testing.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Insulated Cable Engineers Association (ICEA):
    a. S-58-679, Standard for Control Cable Conductor Identification.
2. National Electrical Manufacturers Association (NEMA):
    a. ICS 4, Industrial Control and Systems: Terminal Blocks.
3. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):
    a. WC 57/S-73-532, Standard for Control Cables.
    b. WC 70/S-95-658, Non-Shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
4. National Fire Protection Association (NFPA):
    a. 70, National Electrical Code (NEC).
    b. 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
5. Telecommunications Industry Association/Electronic Industries Alliance/American National Standards Institute (TIA/EIA/ANSI):
    a. 568, Commercial Building Telecommunications Cabling Standard.
6. Underwriters Laboratories, Inc. (UL):
    a. 44, Standard for Safety Thermoset-Insulated Wires and Cables.
    b. 83, Standard for Safety Thermoplastic-Insulated Wires and Cables.
    c. 467, Standard for Safety Grounding and Bonding Equipment.
    d. 486A, Standard for Safety Wire Connectors and Soldering Lugs for use with Copper Conductors.
    e. 486C, Standard for Safety Splicing Wire Connections.
    f. 510, Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
    g. 1277, Standard for Safety Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

h. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.

i. 2250, Standard for Safety Instrumentation Tray Cable.

1.3 DEFINITIONS

A. Cable: Multi-conductor, insulated, with outer sheath containing either building wire or instrumentation wire.

B. Instrumentation Cable:

1. Multiple conductor, insulated, twisted or untwisted, with outer sheath.
2. The following are specific types of instrumentation cables:
   a. Analog signal cable:
      1) Used for the transmission of low current (e.g., 4-20mA DC) or low voltage (e.g., 0-10 VDC) signals, using No. 16 AWG and smaller conductors.
      2) Commonly used types are defined in the following:
         a) TSP: Twisted shielded pair.
         b) TST: Twisted shielded triad.
   b. Digital signal cable: Used for the transmission of digital signals between computers, PLC's, RTU's, etc.

C. Shielded VFD Cable: Multi-conductor, insulated, with shield, drain wire and building wires, No. 12 and larger.

D. Control Cable: Multi-conductor, insulated, with outer sheath containing building wires, No. 14, No. 12 or No. 10 AWG.

E. Building Wire: Single conductor, insulated, with or without outer jacket depending upon type.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
   a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      1) Wire connectors.
      2) Insulating tape.
      3) Cable lubricant.
   b. See Section 26 05 00 for additional requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. See Section 26 05 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Building wire, power and control cable:
   a. Aetna Insulated Wire.
   b. Alphawire.
   c. Cerrowire.
   d. Encore Wire Corporation.
   e. General Cable.
   f. Okonite Company.

g. Southwire Company.

2. Shielded VFD cable:
   a. Belden Inc.
   b. General Cable.
   c. Okonite Company.
   d. Olfex Wire and Cable, Inc.
   e. Priority Wire and Cable (Prysmian).
   f. Rockbestos-Surprenant Cable Corp.
   g. Southwire Company.
3. Instrumentation cable:
   a. Analog cable:
      1) Alphawire.
      2) Belden Inc.
      3) General Cable.
4. Wire connectors:
   a. Burndy Corporation.
   b. Buchanan.
   c. Ideal.
   d. Ilsco.
   e. 3M Co.
   f. Teledyne Penn Union.
   g. Thomas and Betts.
   h. Phoenix Contact.
5. Insulating and color coding tape:
   a. 3M Co.
   b. Plymouth Bishop Tapes.
   c. Red Seal Electric Co.

2.2 MANUFACTURED UNITS

A. Building Wire:

1. Conductor shall be copper with 600 V rated insulation.
2. Conductors shall be stranded, except for conductors used in lighting and receptacle circuits which may be stranded or solid.
3. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
4. Conform to NEMA/ICEA WC 70/S-95-658 and UL 83 for type THHN/THWN and THHN/THWN-2 insulation.
5. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 for type XHHW-2 insulation.

B. Control Cable:

1. Conductor shall be copper with 600 V rated insulation.
2. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
3. Conform to NEMA/ICEA WC 57/S-73-532 and UL 83 and UL 1277 for type THHN/THWN insulation with an overall PVC jacket.
4. Conform to NEMA/ICEA WC 57/S-73-532 and UL 44 and UL 1277 for type XHHW-2 insulation with an overall PVC jacket.

5. Number of conductors as required, provided with or without bare ground conductor of the same AWG size.
    a. When a bare ground conductor is not provided, an additional insulated conductor shall be provided and used as the ground conductor (e.g., 6/c No. 14 w/g and 7/c No. 14 are equal).
6. Individual conductor color coding:
    a. ICEA S-58-679, Method 1, Table E-2.
    b. See PART 3 of this Specification Section for additional requirements.
7. Conform to NFPA 70 Type TC.

C. Electrical Equipment Control Wire:

1. Conductor shall be copper with 600 V rated insulation.
2. Conductors shall be stranded.
3. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
4. Conform to UL 44 for Type SIS insulation.
5. Conform to UL 83 for Type MTW insulation.

D. Shielded VFD Cable:

1. Conductor shall be copper, stranded with 600 V rated insulation.
2. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
3. Cables No. 1 AWG and less:
    a. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 and UL 1277 for type RHW-2 or XHHW-2 insulation with an overall PVC jacket.
    b. Shielding: 85% tinned copper braid, full size tinned copper drain wire and 100% foil shield.
    c. Number of conductors: 3 PH and 1 full size ground.
4. Cables No. 12 through 750 kcmil:
    a. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 type XHHW-2 insulation.
    b. Shielding: Continuous corrugated copper-free aluminum sheath covered with a PVC jacket 5 mil copper tape, longitudinally applied with a minimum overlap of 15%.
    c. Number of conductors: 3 PH and 3 equally spaced ground conductors.
5. Individual conductor color coding:
    a. ICEA S-58-679, Method 4.
    b. See PART 3 of this Specification Section for additional requirements.
6. For continuously corrugated cable, use manufacturer approved fittings.

E. Instrumentation Cable:

1. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
2. Analog cable:
    a. Tinned copper conductors.
    b. 300 V or 600 V PVC insulation with PVC jacket.
    c. Twisted with 100% foil shield coverage with drain wire.
    d. Six (6) twists per foot minimum.
    e. Individual conductor color coding: ICEA S-58-679, Method 1, Table E-2.
3. Digital cable:
    a. Modbus Cable: As recommended by generator manufacturer.

F. Wire Connectors:

1. Twist/screw on type:
    a. Insulated pressure or spring type solderless connector.
    b. 600 V rated.
    c. Ground conductors: Conform to UL 486C and/or UL 467 when required by local codes.
    d. Phase and neutral conductors: Conform to UL 486C.
2. Compression and mechanical screw type:
    a. 600 V rated.
    b. Ground conductors: Conform to UL 467.
    c. Phase and neutral conductors: Conform to UL 486A.
3. Terminal block type:
    a. High density, screw-post barrier-type with white center marker strip.
    b. 600 V and ampere rating as required, for power circuits.
    c. 600 V, 20 ampere rated for control circuits.
    d. 300 V, 15 ampere rated for instrumentation circuits.
    e. Conform to NEMA ICS 4 and UL 486A.

G. Insulating and Color Coding Tape:

1. Pressure sensitive vinyl.
2. Premium grade.
3. Heat, cold, moisture, and sunlight resistant.
4. Thickness, depending on use conditions: 7, 8.5, or 10 mil.
5. For cold weather or outdoor location, tape must also be all-weather.
6. Color:
    a. Insulating tape: Black.
    b. Color coding tape: Fade-resistant color as specified herein.
7. Comply with UL 510.

H. Pulling Lubricant: Cable manufacturer's standard containing no petroleum or other products which will deteriorate insulation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Permitted Usage of Insulation Types:

1. Type XHHW-2:
    a. Building wire and power cable No. 6 AWG and larger in non-architectural finished areas.
    b. Building wire and power and control cable in conduit in outdoor areas and below grade.
2. Type THHN/THWN and THHN/THWN-2:
    a. Building wire and power and control cable No. 8 AWG and smaller in non-architectural finished areas.
3. Type SIS and MTW:
    a. For the wiring of control equipment within control panels and field wiring of control equipment within switchgear, switchboards, motor control centers.

B. Shielded VFD Cable:

1. For wiring between a VFD and motor when routing in cable trays or conduit other than RGS or RAC.

C. Conductor Size Limitations:

1. Feeder and branch power conductors shall not be smaller than No. 12 AWG unless otherwise indicated on the Drawings.
2. Control conductors shall not be smaller than No. 14 AWG unless otherwise indicated on the Drawings.
3. Instrumentation conductors shall not be smaller than No. 18 AWG unless otherwise indicated on the Drawings.

D. Color Code All Wiring as Follows:

1. Building wire:

	240 V, 208 V, 240/120 V, 208/120 V	480 V, 480/277 V
Phase 1	Black	Brown
Phase 2	Red *	Orange
Phase 3	Blue	Yellow
Neutral	White	White or Gray
Ground	Green	Green

* Orange when it is a high leg of a 120/240 V Delta system.

   a. Conductors No. 6 AWG and smaller: Insulated phase, neutral and ground conductors shall be identified by a continuous colored outer finish along its entire length.
   b. Conductors larger than No. 6 AWG:
      1) Insulated phase and neutral conductors shall be identified by one of the following methods:
         a) Continuous colored outer finish along its entire length.
         b) 3 inches of colored tape applied at the termination.
      2) Insulated grounding conductor shall be identified by one of the following methods:
         a) Continuous green outer finish along its entire length.
         b) Stripping the insulation from the entire exposed length.
         c) Using green tape to cover the entire exposed length.
      3) The color coding shall be applied at all accessible locations, including but not limited to: Junction and pull boxes, wireways, manholes and handholes.
2. Power cables ICEA S-58-679, Method 4 with:
   a. Phase and neutral conductors identified with 3 inches of colored tape, per the Table herein, applied at the terminations.
   b. Ground conductor: Bare.
3. Shielded VFD cable ICEA S-58-679, Method 4 with:
   a. Phase conductors identified with 3 inches of colored tape, per the Table herein, applied at the terminations.
   b. Ground conductor: Green color insulation or bare.
4. Control cables ICEA S-58-679, Method 1, Table E-2:
   a. When a bare ground is not provided, one of the colored insulated conductors shall be re-identified by stripping the insulation from the entire exposed length or using green tape to cover the entire exposed length.
   b. When used in power applications the colored insulated conductors used as phase and neutral conductors may have to be re-identified with 3 inches of colored tape, per the Table herein, applied at the terminations.

E. Install all wiring in raceway unless otherwise indicated on the Drawings.

F. Feeder, branch, control and instrumentation circuits shall not be combined in a raceway, cable tray, junction or pull box, except as permitted in the following:

1. Where specifically indicated on the Drawings.
2. Where field conditions dictate and written permission is obtained from the Engineer.
3. Control circuits shall be isolated from feeder and branch power and instrumentation circuits but combining of control circuits is permitted.
    a. The combinations shall comply with the following:
        1) 12 VDC, 24 VDC and 48 VDC may be combined.
        2) 125 VDC shall be isolated from all other AC and DC circuits.
        3) AC control circuits shall be isolated from all DC circuits.
4. Instrumentation circuits shall be isolated from feeder and branch power and control circuits but combining of instrumentation circuits is permitted.
    a. The combinations shall comply with the following:
        1) Analog signal circuits may be combined.
5. Multiple branch circuits for similar loads may be combined in a common raceway, such as multiple lighting circuits or multiple receptacle circuits or other 120Vac circuits. Do not combine lighting and receptacle circuits.
    a. Do not combine control device circuits with lighting or receptacle circuits.
    b. Contractor is responsible for making the required adjustments in conductor and raceway size, in accordance with all requirements of the NFPA 70, including but not limited to:
        1) Up sizing conductor size for required ampacity de-ratings for the number of current carrying conductors in the raceway.
        2) The neutral conductors may not be shared.
        3) Up sizing raceway size for the size and quantity of conductors.

G. Ground the drain wire of shielded instrumentation cables at one end only.

1. The preferred grounding location is at the load (e.g., control panel), not at the source (e.g., field mounted instrument).

H. Splices and terminations for the following circuit types shall be made in the indicated enclosure type using the indicated method.

1. Feeder and branch power circuits:
    a. Device outlet boxes:
        1) Twist/screw on type connectors.
    b. Junction and pull boxes and wireways:
        1) Twist/screw on type connectors for use on No. 8 and smaller wire.
        2) Compression, mechanical screw or terminal block or terminal strip type connectors for use on No. 6 AWG and larger wire.
    c. Motor terminal boxes:
        1) Twist/screw on type connectors for use on No. 10 AWG and smaller wire.
        2) Insulated mechanical screw type connectors for use on No. 8 AWG and larger wire.
    d. Manholes or handholes:
        1) Twist/screw on type connectors pre-filled with epoxy for use on No. 8 AWG and smaller wire.
        2) Watertight compression or mechanical screw type connectors for use on No. 6 AWG and larger wire.
2. Control circuits:
    a. Junction and pull boxes: Terminal block type connector.
    b. Manholes or handholes: Twist/screw on type connectors pre-filled with epoxy.

c. Control panels and motor control centers: Terminal block or strips provided within the equipment or field installed within the equipment by the Contractor.

3. Instrumentation circuits can be spliced where field conditions dictate and written permission is obtained from the Engineer.
   a. Maintain electrical continuity of the shield when splicing twisted shielded conductors.
   b. Junction and pull boxes: Terminal block type connector.
   c. Control panels and motor control centers: Terminal block or strip provided within the equipment or field installed within the equipment by the Contractor.
4. Non-insulated compression and mechanical screw type connectors shall be insulated with tape or hot or cold shrink type insulation to the insulation level of the conductors.

I. Insulating Tape Usage:

1. For insulating connections of No. 8 AWG wire and smaller: 7 mil vinyl tape.
2. For insulating splices and taps of No. 6 AWG wire or larger: 10 mil vinyl tape.
3. For insulating connections made in cold weather or in outdoor locations: 8.5 mil, all weather vinyl tape.

J. Color Coding Tape Usage: For color coding of conductors.

3.2 FIELD QUALITY CONTROL

A. Acceptance Testing:

1. See Specification Section 26 08 13.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Material and installation requirements for grounding and bonding system(s).

B. Related Specification Sections include but are not necessarily limited to:

1. Section 10 14 00 - Identification Devices.
2. Section 26 05 00 - Common Work Results for Electrical.
3. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
4. Section 26 05 33 - Raceways and Boxes for Electrical Systems.
5. Section 26 08 13 - Acceptance Testing.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
   a. B8, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
2. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   a. 837, Standard for Qualifying Permanent Connections Used in Substation Grounding.
3. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
4. Underwriters Laboratories, Inc. (UL):
   a. 467, Grounding and Bonding Equipment.

B. Assure ground continuity is continuous throughout the entire Project.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data.
   a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      1) Grounding clamps, terminals and connectors.
      2) Exothermic welding system.
   b. See Section 26 05 00 for additional requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Ground rods and bars and grounding clamps, connectors and terminals:
   a. ERICO by Pentair.
   b. Harger Lightning & Grounding.
   c. Heary Bros. Lightning Protection Co. Inc.
   d. Burndy by Hubbell.
   e. Robbins Lightning, Inc.

f. Blackburn by Thomas & Betts.
g. Thompson Lightning Protection, Inc.

2. Exothermic weld connections:
   a. ERICO by Pentair - Cadweld.
   b. Harger Lightning & Grounding - Ultraweld.
   c. Burndy by Hubbell - Thermoweld.
   d. FurseWELD by Thomas & Betts.

2.2 COMPONENTS

A. Wire and Cable:

1. Bare conductors: Soft drawn stranded copper meeting ASTM B8.
2. Insulated conductors: Color coded green, per Section 26 05 19.

B. Conduit: As specified in Section 26 05 33.

C. Ground Rods:

1. 5/8 inches x 10 feet.
2. Copper-clad:
   a. 10 mil minimum uniform coating of electrolytic copper molecularly bonded to a rigid steel core.
   b. Corrosion resistant bond between the copper and steel.
   c. Hard drawn for a scar-resistant surface.

D. Grounding Clamps, Connectors and Terminals:

1. Mechanical type:
   a. Standards: UL 467.
   b. High copper alloy content.
2. Compression type for interior locations:
   a. Standards: UL 467.
   b. High copper alloy content.
   c. Non-reversible.
   d. Terminals for connection to bus bars shall have two bolt holes.
3. Compression type suitable for direct burial in earth or concrete:
   a. Standards: UL 467, IEEE 837.
   b. High copper alloy content.
   c. Non-reversible.
   d. Factory filled with oxide inhibiting compound.

E. Exothermic Weld Connections:

1. Copper oxide reduction by aluminum process.
2. Molds properly sized for each application.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Install products in accordance with manufacturer's instructions.
2. Size grounding conductors and bonding jumpers in accordance with NFPA 70, Article 250, except where larger sizes are indicated on the Drawings.

3. Remove paint, rust, or other non-conducting material from contact surfaces before making ground connections. After connection apply manufacturers approved touch-up paint to protect metallic surface from corrosion.
4. Where ground conductors pass through floor slabs or building walls provide nonmetallic sleeves and install sleeve.
    a. Seal the sleeve interior to stop water penetration.
5. Do not splice grounding electrode conductors except at ground rods.
6. Install ground rods and grounding electrode conductors in undisturbed, firm soil.
    a. Provide excavation required for installation of ground rods and conductors.
    b. Use driving studs or other suitable means to prevent damage to threaded ends of sectional rods.
    c. Unless otherwise specified, connect conductors to ground rods with compression type connectors or exothermic weld.
    d. Provide sufficient slack in conductor to prevent conductor breakage during backfill or due to ground movement.
    e. Backfill excavation completely, thoroughly tamping to provide good contact between backfill materials and ground rods and conductors.
7. Do not use exothermic welding if it will damage the structure the grounding conductor is being welded to.

B. Grounding Electrode System:

1. Provide a grounding electrode system in accordance with NFPA 70, Article 250 and as indicated on the Drawings.
    a. All grounding electrode conductors terminate on a main ground bar located adjacent to the service entrance equipment.
2. Grounding electrode conductor terminations:
    a. Ground bars in electrical equipment: Use compression type conductor terminal and bolt it to the ground bar or manufacture's provided mechanical type termination device.
    b. Piping systems: Use mechanical type connections.
    c. Building steel, above grade: Use a two-hole compression type conductor terminal and bolt to the steel with two bolts or exothermic weld.
    d. Ground rod: Compression type or exothermic weld, unless otherwise specified.
    e. At all above grade terminations, the conductors shall be labeled per Specification Section 10 14 00.
3. Triad grounding system:
    a. Triad consists of three ground rods arranged in a triangle separated by 20 feet and a conductor interconnecting each ground rod.
    b. Place first ground rod a minimum of 10 feet from the structure foundation and 2 FT-6 IN below grade.
    c. Grounding conductor: Bare conductor, size as indicated on the Drawings.

C. Supplemental Grounding Electrode:

1. Provide the following grounding in addition to the equipment ground conductor supplied with the feeder conductors whether or not shown on the Drawings.
    a. See Grounding Electrode System paragraph for conductor termination requirements.
2. Equipment support rack and pedestals mounted outdoors:
    a. Connect metallic structure to a ground rod.
    b. Grounding conductor: #6 AWG minimum.
3. Engine generator:
    a. Connect generator frame to the ground ring at two locations (opposite corners of frame).

b. Grounding conductor: Bare conductor, size as indicated on the Drawings.

D. Other Bonding Requirements:

1. Other metal piping:
   a. Connect in a daisy chain or radial fashion: , process piping to the service entrance electrical equipment ground bus as indicated on the Drawings.
   b. See Grounding Electrode System paragraph for conductor termination requirements.
2. Chain link fence and gates:
   a. See Specification Section 32 31 13.

E. Transformer Separately Derived Grounding System:

1. Install the System Bonding Jumper at the transformer. At the first disconnect, ensure the neutral is isolated from ground.
2. Structures with a single electrical room/area:
   a. Connect grounding electrode conductor to the Grounding Electrode System main ground bar.
3. See Grounding Electrode System paragraph for conductor termination requirements.

F. Raceway Bonding/Grounding:

1. Install all metallic raceway so that it is electrically continuous.
2. Provide an equipment grounding conductor in all raceways with insulation identical to the phase conductors, unless otherwise indicated on the Drawings.
3. NFPA 70 required grounding bushings shall be of the insulating type.
4. Provide double locknuts at all panels.
5. Bond all conduits, at entrance and exit of equipment, to the equipment ground bus or lug.
6. Provide bonding jumpers if conduits are installed in concentric knockouts.
7. Make all metallic raceway fittings and grounding clamps tight to ensure equipment grounding system will operate continuously at ground potential to provide low impedance current path for proper operation of overcurrent devices during possible ground fault conditions.

G. Equipment Grounding:

1. Ground all utilization equipment with an equipment grounding conductor.
2. Use generator manufacturer's provisions for grounding electric generators, or manufacturer's written instructions, except as shown on the Drawings.

H. Handhole Grounding:

1. Provide a ground rod and ground bar, when indicated or as needed, in each handhole with exposed metal parts.
   a. Expose a minimum of 4 inches of the rod above the floor for field connections to the rod.
2. Connect all exposed metal parts (e.g., conduits and cable racks) to the ground rod, and largest equipment grounding conductor passing through the handhole.

3.2 FIELD QUALITY CONTROL

A. Acceptance Testing:

1. See Specification Section 26 08 13.

END OF SECTION

SECTION 26 05 33
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
   a. Conduits.
   b. Conduit fittings.
   c. Conduit supports.
   d. Wireways.
   e. Outlet boxes.
   f. Pull and junction boxes.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.
2. Section 26 05 43 - Underground Work for Electrical Systems.
3. Section 26 27 26 - Wiring Devices.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Aluminum Association (AA).
2. American Iron and Steel Institute (AISI).
3. ASTM International (ASTM):
   a. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   b. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   c. D2564, Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
4. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. RN 1, Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
   c. TC 2, Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
   d. TC 3, Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
   e. TC 14.AG, Aboveground Reinforced Thermosetting Resin Conduit and Fittings.
   f. TC 14.BG, Belowground Reinforced Thermosetting Resin Conduit and Fittings.
5. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
   a. C80.1, Electric Rigid Steel Conduit (ERSC).
   b. C80.3, Steel Electrical Metallic Tubing (EMT).
   c. C80.5, Electrical Aluminum Rigid Conduit (ERAC).
   d. OS 1, Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
6. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
7. Underwriters Laboratories, Inc. (UL):

a. 1, Standard for Flexible Metal Conduit.
b. 6, Electrical Rigid Metal Conduit - Steel.
c. 50, Enclosures for Electrical Equipment, Non-Environmental Considerations.
d. 360, Standard for Liquid-Tight Flexible Metal Conduit.
e. 467, Grounding and Bonding Equipment.
f. 514A, Metallic Outlet Boxes.
g. 514B, Conduit, Tubing, and Cable Fittings.
h. 651, Standard for Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.
i. 797, Electrical Metallic Tubing - Steel.
j. 870, Standard for Wireways, Auxiliary Gutters, and Associated Fittings.
k. 1203, Standard for Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations.
l. 2420, Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
m. 2515, Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.

1.3 SUBMITTALS

A. Shop Drawings:
1. Product technical data:
a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
1) Conduit fittings.
2) Support systems.
b. See Section 26 05 00 for additional requirements.
2. Fabrication and/or layout drawings:
a. Identify dimensional size of pull and junction boxes to be used.

1.4 DELIVERY, STORAGE, AND HANDLING

A. See Section 26 05 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Rigid metal conduits:
a. Allied Tube and Conduit.
b. Western Tube and Conduit Corporation.
c. Wheatland Tube.
d. Patriot Aluminum Products, LLC.
2. Rigid nonmetallic conduit:
a. Prime Conduit.
b. Cantex, Inc.
c. Osburn Associates, Inc.
d. Champion Fiberglass, Inc.
e. United Fiberglass of America, Inc.
3. Flexible conduit:
a. AFC Cable Systems.
b. Anamet, Inc.

c. Electri-Flex Company.
d. International Metal Hose Company.
e. Southwire Company, LLC.

4. Wireway:
   a. Hoffman Engineering.
   b. Wiegmann by Hubbell.
   c. Square D by Schneider Electric.
5. Conduit fittings and accessories:
   a. Appleton by Emerson Electric Co.
   b. Carlon by Thomas & Betts.
   c. Cantex, Inc.
   d. Crouse-Hinds by Eaton.
   e. Killark by Hubbell.
   f. Osburn Associates, Inc.
   g. O-Z/Gedney by Emerson Electric Co.
   h. Raco by Hubbell.
   i. Steel City by Thomas & Betts.
   j. Thomas & Betts.
6. Support systems:
   a. Unistrut by Atkore International, Inc.
   b. B-Line by Eaton.
   c. Kindorf by Thomas & Betts.
   d. Minerallac Company.
   e. CADDY by Pentair.
   f. Superstrut by Thomas & Betts.
7. Outlet, pull and junction boxes:
   a. Appleton by Emerson Electric Co.
   b. Crouse-Hinds by Eaton
   c. Killark by Hubbell.
   d. O-Z/Gedney by Emerson Electric Co.
   e. Steel City by Thomas & Betts.
   f. Raco by Hubbell
   g. Bell by Hubbell.
   h. Hoffman Engineering.
   i. Wiegmann by Hubbell.
   j. B-Line by Eaton.
   k. Adalet.
   l. RITTAL North America LLC.
   m. Stahlin by Robroy Enclosures.

2.2 RIGID METAL CONDUITS

A. Rigid Galvanized Steel Conduit (RGS):

1. Mild steel with continuous welded seam.
2. Metallic zinc applied by hot-dip galvanizing or electro-galvanizing.
3. Threads galvanized after cutting.
4. Internal coating: Baked lacquer, varnish or enamel for a smooth surface.

5. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.1, UL 6.

B. Rigid Aluminum Conduit (RAC):

1. AA Type 6063 aluminum alloy, T-1 temper.
2. Maximum copper content of 0.10%.
3. Extruded, seamless.
4. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.5, UL 6.

2.3 RIGID NONMETALLIC CONDUIT

A. Schedules 40 (PVC-40) and 80 (PVC-80):

1. Polyvinyl-chloride (PVC) plastic compound which includes inert modifiers to improve weatherability and heat distribution.
2. Rated for direct sunlight exposure.
3. Fire retardant and low smoke emission.
4. Shall be suitable for use with 90 degrees C wire and shall be marked "maximum 90 degrees C".
5. Standards: NFPA 70 Type PVC, NEMA TC 2, UL 651.

B. Fiberglass:

1. Epoxy based resin system using an anhydride curing agent.
2. Continuous E-glass roving.
3. Winding angle approximately 54.75 degrees.
4. Smooth internal walls with all fibers imbedded in the epoxy.
5. Above grade rated: Halogen free additive for flame spread and smoke control.
6. Ultraviolet inhibitor: Carbon black.
7. Two-step curing process.
8. Tensile strength: 11,000 psi per ASTM D2105.
9. Dimensions: Iron Pipe Size (IPS).
10. Wall thickness:
    a. Standard: 3/4 inches to 4 inches nominal size.
    b. Medium: 5 inches to 6 inches nominal size.
    c. Extra Heavy for “bullet proof” and Class 1, Division 2 areas: 3/4 inches to 6 inches nominal size.
11. Integral bell and spigot.
12. Conduits and fittings to be joined with an interference joint and epoxy adhesive creating a concrete and water tight connection.
13. Standard: NFPA 70 Type RTRC, NEMA TC14.BG, UL 2420.

2.4 FLEXIBLE CONDUIT

A. PVC-Coated Flexible Galvanized Steel (liquid-tight) Conduit (FLEX-LT):

1. Core formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
2. Extruded PVC outer jacket positively locked to the steel core.
3. Liquid and vaportight.
4. Standard: NFPA 70 Type LFMC, UL 360.

2.5 WIREWAY

A. General:

1. Suitable for lay-in conductors.

2. Designed for continuous grounding.
3. Covers:
    a. Hinged or removable in accessible areas.
    b. Non-removable when passing through partitions.
4. Finish: Rust inhibiting primer and manufacturer's standard paint inside and out except for stainless steel type.
5. Standards: UL 870, NEMA 250.

B. Dust tight (NEMA 12 rated) Wireway:

1. 14 GA steel bodies and covers without knockouts and 10 GA steel flanges.
2. Cover: Fully gasketed and held in place with captive clamp type latches.
3. Flanges: Fully gasketed and bolted.

2.6 CONDUIT FITTINGS AND ACCESSORIES

A. Fittings for Use with RGS and RAC:

1. Locknuts:
    a. Threaded steel or malleable iron.
    b. Gasketed or non-gasketed.
    c. Grounding or non-grounding type.
2. Bushings:
    a. Threaded, insulated metallic.
    b. Grounding or non-grounding type.
3. Hubs: Threaded, insulated and gasketed metallic for raintight connection.
4. Couplings:
    a. Threaded straight type: Same material and finish as the conduit with which they are used on.
    b. Threadless type: Gland compression or self-threading type, concrete tight.
5. Unions: Threaded galvanized steel or zinc plated malleable iron.
6. Conduit bodies (ells and tees):
    a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    b. Standard and mogul size.
    c. Cover:
        1) Clip-on type with stainless steel screws.
        2) Gasketed or non-gasketed galvanized steel, zinc plated cast iron or cast copper free aluminum.
7. Conduit bodies (round):
    a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    b. Cover: Threaded screw on type, gasketed, galvanized steel, zinc plated cast iron or cast copper free aluminum.
8. Sealing fittings:
    a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    b. Standard and mogul size.
    c. With or without drain and breather.
    d. Fiber and sealing compound: UL listed for use with the sealing fitting.
9. Expansion couplings:
    a. 2 inches nominal straight-line conduit movement in either direction.
    b. Galvanized steel with insulated bushing.
    c. Gasketed for wet locations.

d. Internally or externally grounded.

10. Expansion/deflection couplings:
    a. 3/4 inches nominal straight-line conduit movement in either direction.
    b. 30 degrees nominal deflection from the normal in all directions.
    c. Metallic hubs, neoprene outer jacket and stainless steel jacket clamps.
    d. Internally or externally grounded.
    e. Watertight, raintight and concrete tight.
11. Standards: UL 467, UL 514B, UL 1203.

B. Fittings for Use with FLEX-LT:

1. Connector:
    a. Straight or angle type.
    b. Metal construction, insulated and gasketed.
    c. Composed of locknut, grounding ferrule and gland compression nut.
    d. Liquid tight.
2. Standards: UL 467, UL 514B.

C. Fittings for Use with Rigid Nonmetallic PVC Conduit:

1. Coupling, adapters and conduit bodies:
    a. Same material, thickness, and construction as the conduits with which they are used.
    b. Homogeneous plastic free from visible cracks, holes or foreign inclusions.
    c. Bore smooth and free of blisters, nicks or other imperfections which could damage the conductor.
2. Solvent cement for welding fittings shall be supplied by the same manufacturer as the conduit and fittings.
3. Standards: ASTM D2564, NEMA TC 3, UL 651, UL 514B.

D. Fittings for Use with Rigid Nonmetallic Fiberglass Conduit:

1. Coupling and adapters shall be of the same material, thickness, and construction as the conduit.
2. Epoxy adhesive for joining conduits and fittings shall be supplied by the same manufacturer as the conduit and fittings and shall provide a concrete and water tight connection.
3. Standard: NFPA 70 Type RTRC, NEMA TC14.BG, UL 2420.

E. Weather and Corrosion Protection Tape:

1. PVC based tape, 10 mils thick.
2. Protection against moisture, acids, alkalis, salts and sewage and suitable for direct bury.
3. Used with appropriate pipe primer.

2.7 ALL RACEWAY AND FITTINGS

A. Mark Products:

1. Identify the nominal trade size on the product.
2. Stamp with the name or trademark of the manufacturer.

2.8 OUTLET BOXES

A. Cast Outlet Boxes:

1. Zinc plated cast iron or die-cast copper free aluminum with manufacturer's standard finish.
2. Threaded hubs and grounding screw.
3. Styles:
    a. "FS" or "FD".

b. "Bell".
c. Single or multiple gang and tandem.
d. "EDS" or "EFS" for hazardous locations.

4. Accessories: 40 mil PVC exterior coating and 2 mil urethane interior coating.
5. Standards: UL 514A, UL 1203.

B. See Specification Section 26 27 26 for wiring devices, wallplates and coverplates.

2.9 PULL AND JUNCTION BOXES

A. NEMA 3R Rated:

1. Body and cover: 14 GA minimum, steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
2. Drip shield top and seam-free sides, front and back.
3. With or without concentric knockouts on bottom.
4. Slip-on removable cover fastened on bottom edge with screws or continuous hinged cover fastened with screws.

B. NEMA 4 Rated:

1. Body and cover: 14 GA steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
2. Seams continuously welded and ground smooth.
3. No knockouts.
4. External mounting flanges.
5. Hinged or non-hinged cover held closed with stainless steel screws and clamps.
6. Cover with oil resistant gasket.

C. NEMA 12 Rated:

1. Body and cover:
   a. 14 GA steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
   b. Type 5052 H-32 aluminum, unpainted.
2. Seams continuously welded and ground smooth.
3. No knockouts.
4. External mounting flanges.
5. Non-hinged cover held closed with captivated cover screws threaded into sealed wells or hinged cover held closed with stainless steel screws and clamps.
6. Flat door with oil resistant gasket.

D. Miscellaneous Accessories:

1. Rigid handles for covers larger than 9 square feet or heavier than 25 pounds.
2. Split covers when heavier than 25 pounds.
3. Weldnuts for mounting optional panels and terminal kits.
4. Terminal blocks: Screw-post barrier-type, rated 600 volt and 20 ampere minimum.

E. Standards: NEMA 250, UL 50.

2.10 SUPPORT SYSTEMS

A. Multi-conduit Surface or Trapeze Type Support and Pull or Junction Box Supports:

1. Material requirements.
   a. Galvanized steel: ASTM A123/A123M or ASTM A153/A153M.
   b. Stainless steel: AISI Type 316.

c. Aluminum: AA Type 6063-T6.
d. Fiberglass: Fire-retardant polyester or vinylester resin, ASTM E84, UL 94.

B. Single Conduit and Outlet Box Support Fasteners:

1. Material requirements:
a. Zinc plated steel.
b. Stainless steel.
c. Steel protected with zinc phosphate and oil finish.

2.11 OPENINGS AND PENETRATIONS IN WALLS AND FLOORS

PART 3 - EXECUTION

3.1 RACEWAY INSTALLATION - GENERAL

A. Shall be in accordance with the requirements of:

1. NFPA 70.
2. Manufacturer instructions.

B. Size of Raceways:

1. Raceway sizes are shown on the Drawings, if not shown on the Drawings, then size in accordance with NFPA 70.
2. Unless specifically indicated otherwise, the minimum raceway size shall be:
a. Conduit: 3/4 inches.
b. Wireway: 2-1/2 inches x 2-1/2 inches.

C. Field Bending and Cutting of Conduits:

1. Utilize tools and equipment recommended by the manufacturer of the conduit, designed for the purpose and the conduit material to make all field bends and cuts.
2. Do not reduce the internal diameter of the conduit when making conduit bends.
3. Prepare tools and equipment to prevent damage to the PVC coating.
4. Degrease threads after threading and apply a zinc rich paint.
5. Debur interior and exterior after cutting.

D. Male threads of conduit systems shall be coated with an electrically conductive anti-seize compound.

E. The protective coating integrity of conduits, fittings, outlet, pull and junction boxes and accessories shall be maintained.

1. Repair galvanized components utilizing a zinc rich paint.
2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
3. Repair PVC coated components utilizing a patching compound, of the same material as the coating, provided by the manufacturer of the conduit; or a self-adhesive, highly conformable, cross-linked silicone composition strip, followed by a protective coating of vinyl tape.
a. Total nominal thickness: 40 mil.
4. Repair surfaces which will be inaccessible after installation prior to installation.

F. Remove moisture and debris from conduit before wire is pulled into place.

1. Pull mandrel with diameter nominally 1/4 inches smaller than the interior of the conduit, to remove obstructions.
2. Swab conduit by pulling a clean, tight-fitting rag through the conduit.
3. Tightly plug ends of conduit with tapered wood plugs or plastic inserts until wire is pulled.

G. Only nylon or polyethylene rope shall be used to pull wire and cable in conduit systems.

H. Where portions of a raceway are subject to different temperatures and where condensation is known to be a problem, as in cold storage areas of buildings or where passing from the interior to the exterior of a building, the raceway shall be sealed to prevent circulation of warm air to colder section of the raceway.

I. Fill openings in walls, floors, and ceilings and finish flush with surface.

3.2 RACEWAY ROUTING

A. Raceways shall be routed in the field unless otherwise indicated.

1. Conduit and fittings shall be installed, as required, for a complete system that has a neat appearance and is in compliance with all applicable codes.
2. Run in straight lines parallel to or at right angles to building lines.
3. Do not route conduits:
    a. Through areas of high ambient temperature or radiant heat.
    b. In suspended concrete slabs.
    c. In concrete members including slabs, slabs on grade, beams, walls, and columns unless specifically located and detailed on structural Drawings.
4. Locate sleeves or conduits penetrating floors, walls, and beams so as not to significantly impair the strength of the construction. Do not place conduit penetrations in columns.
5. Conduit shall not interfere with, or prevent access to, piping, valves, ductwork, or other equipment for operation, maintenance and repair.
6. Provide pull boxes or conduit bodies as needed so that there is a maximum of 360 degrees of bends in the conduit run or in long straight runs to limit pulling tensions.

B. All conduits within a structure shall be installed exposed except as follows:

1. As indicated on the Drawings.

C. Maintain minimum spacing between parallel conduit and piping runs in accordance with the following when the runs are greater than 30 feet:

1. Between instrumentation and telecommunication: 1 inch.
2. Between instrumentation and 125 V, 48 V and 24 VDC, 2 inches.
3. Between instrumentation and 600 V and less AC power or control: 6 inches.
4. Between instrumentation and greater than 600 VAC power: 12 inches.
5. Between telecommunication and 125 V, 48 V and 24 VDC, 2 inches.
6. Between telecommunication and 600 V and less AC power or control: 6 inches.
7. Between telecommunication and greater than 600 VAC power: 12 inches.
8. Between 125 V, 48 V and 24 VDC and 600 V and less AC power or control: 2 inches.
9. Between 125 V, 48 V and 24 VDC and greater than 600 VAC power: 2 inches.
10. Between 600 V and less AC and greater than 600 VAC: 2 inches.
11. Between process, gas, air and water pipes: 6 inches.

D. Conduits shall be installed to eliminate moisture pockets.

1. Where water cannot drain to openings, provide drain fittings in the low spots of the conduit run.

E. Conduit shall not be routed on the exterior of structures except as specifically indicated on the Drawings.

F. Where sufficient room exists within the housing of roof-mounted equipment, the conduit shall be stubbed up inside the housing.

G. Provide all required openings in walls, floors, and ceilings for conduit penetration.

1. Existing construction:
    a. Core drill openings in masonry and concrete.
    b. Avoid structural members and rebar.

3.3 RACEWAY APPLICATIONS

A. Permitted Raceway Types Per Wire or Cable Types:
    1. Power wire or cables: All raceway types.
    2. Control wire or cables: All raceway types.
    3. Instrumentation cables: Metallic raceway except nonmetallic may be used underground.
    4. Motor leads from a VFD: RGS, RAC or shielded VFD cables in all other raceways.

B. Permitted Raceway Types Per Area Designations:
    1. Wet areas:
        a. RGS.
        b. RAC.
        c. Fiberglass (above grade rated).

C. Permitted Raceway Types Per Routing Locations:
    1. Through floor penetrations:
        a. RGS wrapped with factory applied weather and corrosion protection tape when emerging from concrete into areas designated as dry, wet, corrosive or highly corrosive.
        b. Fiberglass (above grade rated) in areas designated as wet, corrosive or highly corrosive.
    2. Direct buried conduits and ductbanks:
        a. PVC-80.
        b. Fiberglass (above or below grade rated).
        c. 90 degrees elbows for transitions to above grade:
            1) RGS wrapped with factory applied weather and corrosion protection tape.
            2) Fiberglass (above grade rated).
        d. Long sweeping bends greater than 15 degrees:
            1) RGS wrapped with factory applied weather and corrosion protection tape.
            2) Fiberglass (above or below grade rated).
    3. Concrete encased ductbanks:
        a. PVC-40.
        b. Fiberglass (above or below grade rated).
        c. 90 degree elbows for transitions to above grade:
            1) RGS wrapped with factory applied weather and corrosion protection tape.
            2) Fiberglass (above grade rated).
        d. Long sweeping bends greater than 15 degrees:
            1) RGS for sizes 2 inches and larger.
            2) Fiberglass (above or below grade rated).

D. FLEX-LT conduits shall be installed as the final conduit connection to light fixtures, dry type transformers, motors, electrically operated valves, instrumentation primary elements, and other electrical equipment that is liable to vibrate.
    1. The maximum length shall not exceed:
        a. 6 feet to light fixtures.
        b. 3 feet to motors.
        c. 2 feet to all other equipment.

E. NEMA 3R Wiring Trough:

1. Surface mounted in wet or exterior locations.

F. NEMA 12 Rated Wireway:

1. Surface mounted in in interior wet locations.

G. Underground Conduit: See Specification Section 26 05 43.

3.4 CONDUIT FITTINGS AND ACCESSORIES

A. Rigid nonmetallic conduit and fittings shall be joined utilizing solvent cement.

1. Immediately after installation of conduit and fitting, the fitting or conduit shall be rotated 1/4 turn to provide uniform contact.

B. Install Expansion Fittings:

1. Where conduits are exposed to the sun and conduit run is greater than 200 feet.
2. Elsewhere as identified on the Drawings.

C. Install Expansion/Deflection Fittings:

1. Where conduits enter a structure.
   a. Except electrical handholes.
   b. Except where the ductbank is tied to the structure with rebar.
2. Where conduits span structural expansions joints.
3. Elsewhere as identified on the Drawings.

D. Threaded connections shall be made wrench-tight.

E. Conduit joints shall be watertight:

1. Where subjected to possible submersion.
2. In areas classified as wet.
3. Underground.

F. Terminate Conduits:

1. In metallic outlet boxes:
   a. RGS and RAC:
      1) Conduit hub and locknut.
      2) Insulated bushing and two locknuts.
      3) Use grounding type locknut or bushing when required by NFPA 70.
2. In NEMA 12 rated enclosures:
   a. Watertight, insulated and gasketed hub and locknut.
   b. Use grounding type locknut or bushing when required by NFPA 70.
3. In NEMA 4 rated enclosures:
   a. Watertight, insulated and gasketed hub and locknut.
4. When stubbed up through the floor into floor mount equipment:
   a. With an insulated grounding bushing on metallic conduits.
   b. With end bells on nonmetallic conduits.

G. Threadless couplings shall only be used to join new conduit to existing conduit when the existing conduit end is not threaded and it is not practical or possible to cut threads on the existing conduit with a pipe threader.

3.5 CONDUIT SUPPORT

A. Permitted multi-conduit surface or trapeze type support system per area designations and conduit types:

1. Wet areas:
    a. Galvanized system consisting of: Galvanized steel channels and fittings, nuts and hardware and conduit clamps.
    b. Aluminum system consisting of: Aluminum channels, fittings and conduit clamps with stainless steel nuts and hardware.
2. Conduit type shall be compatible with the support system material.
    a. Galvanized steel system may be used with RGS.
    b. Stainless steel system may be used with RGS and RAC.
    c. Aluminum system may be used with RAC.
    d. Fiberglass system may be used with PVC-40 and PVC-80.

B. Permitted single conduit support fasteners per area designations and conduit types:
1. Wet areas:
    a. Material: Zinc plated steel, stainless steel and malleable iron.
    b. Types of fasteners: Straps, hangers with bolts, clamps with bolts and bolt on beam clamps.
2. Conduit type shall be compatible with the support fastener material.
    a. Zinc plated steel, steel protected with zinc phosphate and oil finish and malleable iron fasteners may be used with RGS.
    b. Stainless steel system may be used with RGS and RAC.
    c. Nonmetallic fasteners may be used with PVC-40, PVC-80 and fiberglass.

C. Conduit Support General Requirements:
1. Maximum spacing between conduit supports per NFPA 70.
2. Support conduit from the building structure.
3. Do not support conduit from process, gas, air or water piping; or from other conduits.
4. Provide hangers and brackets to limit the maximum uniform load on a single support to 25 LBS or to the maximum uniform load recommended by the manufacturer if the support is rated less than 25 pounds.
    a. Do not exceed maximum concentrated load recommended by the manufacturer on any support.
    b. Conduit hangers:
        1) Continuous threaded rods combined with struts or conduit clamps: Do not use perforated strap hangers and iron bailing wire.
    c. Do not use suspended ceiling support systems to support raceways.
    d. Hangers in metal roof decks:
        1) Utilize fender washers.
        2) Not extend above top of ribs.
        3) Not interfere with vapor barrier, insulation, or roofing.
5. Conduit support system fasteners:
    a. Use sleeve-type expansion anchors as fasteners in masonry wall construction.
    b. Do not use concrete nails and powder-driven fasteners.

3.6 OUTLET, PULL AND JUNCTION BOX INSTALLATION

A. General:
1. Install products in accordance with manufacturer's instructions.
2. See Section 26 05 00 and the Drawings for area classifications.
3. Fill unused punched-out, tapped, or threaded hub openings with insert plugs.

4. Size boxes to accommodate quantity of conductors enclosed and quantity of conduits connected to the box.
5. Use tamper proof screws on pull and junction box covers in all exterior locations.

B. Outlet Boxes:

1. Permitted uses of cast outlet boxes:
   a. Housing of wiring devices surface mounted in non-architecturally finished dry, wet, corrosive, highly corrosive and hazardous areas.
   b. Pull and junction box surface mounted in non-architecturally finished dry, wet, corrosive and highly corrosive areas.
2. Mount device outlet boxes where indicated on the Drawings and at heights as scheduled in Section 26 05 00.
3. Set device outlet boxes plumb and vertical to the floor.
4. Place barriers between switches in boxes with 277 V switches on opposite phases.
5. Back-to-back are not permitted.
6. When an outlet box is connected to a PVC coated conduit, the box shall also be PVC coated.

C. Pull and Junction Boxes:

1. Install pull or junction boxes in conduit runs where indicated or required to facilitate pulling of wires or making connections.
   a. Make covers of boxes accessible.
2. Permitted uses of NEMA 3R enclosure:
   a. Pull or junction box surface mounted in exterior locations.
3. Permitted uses of NEMA 4 enclosure:
   a. Pull or junction box surface mounted in areas designated as wet.
4. Permitted uses of NEMA 12 enclosure:
   a. Pull or junction box surface mounted in interior areas designated as wet.

END OF SECTION

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SECTION 26 05 43
UNDERGROUND WORK FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
   a. Handhole.
   b. Underground conduits and ductbanks.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 10 14 00 - Identification Devices.
2. Section 26 05 26 - Grounding.
3. Section 26 05 33 - Raceways and Boxes for Electrical Systems.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Association of State Highway and Transportation Officials (AASHTO):
   a. HB-17, Standard Specifications for Highway Bridges.
2. ASTM International (ASTM):
   a. A536, Standard Specification for Ductile Iron Castings.
3. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
4. Society of Cable Telecommunications Engineers (SCTE):
   a. 77, Specifications for Underground Enclosure Integrity.

1.3 DEFINITIONS

A. Direct-Buried Conduit(s):

1. Individual (single) underground conduit.
2. Multiple underground conduits, arranged in one or more planes, in a common trench.

B. Flowable Fill Encased Ductbank: An individual (single) or multiple conduit(s), arranged in one or more planes, encased in a common flowable fill envelope.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
   a. Provide submittal data for all products specified in PART 2 of this Specification Section.
   b. Provide signed and sealed design computations for handholes indicating compliance with design load rating.
2. Fabrication and/or Layout Drawings:
   a. Provide dimensional drawings of each handhole indicating all specified accessories and conduit entry locations.
   b. Provide cross-sectioned sketch of each concrete encased ductbank.
      1) Dimension spacing between conduits.
      2) Dimension concrete envelope and reinforcing, where applicable.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Prefabricated composite handholes:
    a. Armorcast Products Company.
    b. Quazite by Hubbell.
    c. Synertech by Oldcastle Enclosure Solutions.
2. Handhole and ductbank accessories:
    a. Cantex, Inc.
    b. Condux International, Inc.
    c. Neenah Enterprises, Inc.
    d. Prime Conduit.
    e. Thomas and Betts.
    f. Underground Devices, Inc.
    g. Unistrut by Atkore International, Inc.

2.2 HANDHOLES

A. Prefabricated Composite Material Handholes:

1. Handhole body and cover: Fiberglass reinforced polymer concrete conforming to all test provisions of SCTE 77.
2. Minimum load ratings: SCTE 77 Tier 15.
3. Solid bottom.
4. Stackable design as required for specified depth.
5. Cover:
    a. Engraved legend of "ELECTRIC" or "COMMUNICATIONS".
    b. Non-gasketed bolt down with stainless steel Penta head bolts.
    c. Lay-in non-bolt down, when cover is over 100 pounds.
    d. One or multiple sections so the maximum weight of a section is 125 pounds.
6. Cover lifting hook: 24 inches minimum in length.

2.3 UNDERGROUND CONDUIT AND ACCESSORIES

A. Flowable Fill:

1. See City of Omaha Standard Specification Section 204 for Flowable Fill requirements.

B. Conduit: See Specification Section 26 05 33.

C. Duct Spacers/Supports:

1. High density polyethylene or high impact polystyrene.
2. Non-interlocking type provided with adequate holes for concrete to flow.
3. Provide 3 inches minimum spacing between conduits.
4. Accessories, as required:
    a. Hold down bars.
    b. Ductbank strapping.

PART 3 - EXECUTION

3.1 INSTALLATION OF UNDERGROUND ELECTRICAL SYSTEMS - GENERAL

A. Drawings indicate the intended location of handholes and routing of ductbanks and direct buried conduit.

1. Field conditions may affect actual routing.

B. Handhole Locations:

1. Approximately where shown on the Drawings.
2. As required for pulling distances.
3. As required to keep pulling tensions under allowable cable tensions.
4. As required for number of bends in ductbank routing.
5. Shall not be installed in a swale or ditch.
6. Determine the exact locations after careful consideration has been given to the location of other utilities, grading, and paving.
7. Locations are to be approved by the Engineer prior to excavation and placement or construction of handholes.

C. Install products in accordance with manufacturer's instructions.

D. Install handholes in conduit runs where indicated or as required to facilitate pulling of wires or making connections.

E. See City of Omaha Standard Specification Section 200 for Trenching and Backfilling.

3.2 HANDHOLES

A. Prefabricated Composite Material Handholes:

1. For use in areas subjected to occasional non-deliberate vehicular traffic.
2. Provide handhole on six -inch compacted layer of fill material in accordance with the City of Omaha Standard Specification 200 and six inches larger than handholes footprint on all sides.
3. Provide concrete encasement ring around handhole per manufacturers installation instructions (minimum of 10 inches wide x 12 inches deep).
4. Install so that the surrounding grade is 1 inch lower than the top of the handhole.
5. Size: As indicated on the Drawings or as required for the number and size of conduits.
6. Provide cable rails and pulling eyes as needed.

3.3 UNDERGROUND CONDUITS

A. General Installation Requirements:

1. Ductbank types per location:
   a. Flowable Fill Encased Ductbank:
      1) As indicated in the Ductbank Schedule.
   b. Direct-buried conduit(s):
      1) As indicated in the Ductbank Schedule.
2. Do not place concrete or other required fill materials until conduits have been observed by Engineer.
3. Ductbanks shall be sloped a minimum of 4 inches per 100 feet or as detailed on the Drawings.
   a. Low points shall be at handholes.
4. During construction and after conduit installation is complete, plug the ends of all conduits.

5. Provide conduit supports and spacers.
    a. Place supports and spacers for rigid nonmetallic conduit on maximum centers as indicated for the following trade sizes:
        1) 1 inches and less: 3 feet.
        2) 1-1/4 to 3 inches: 5 feet.
        3) 3-1/2 to 6 inches: 7 feet.
    b. Place supports and spacers for rigid steel conduit on maximum centers as indicated for the following trade sizes:
        1) 1 inches and less: 10 feet.
        2) 1-1/4 to 2-1/2 inches: 14 feet.
        3) 3 inches and larger: 20 feet.
    c. Securely anchor conduits to supports and spacers to prevent movement during placement of concrete or other required fill materials.
6. Stagger conduit joints at intervals of 6 inches vertically.
7. Make conduit joints watertight and in accordance with manufacturer's recommendations.
8. Accomplish underground changes in direction of runs exceeding a total of 15 degrees by long sweep bends having a minimum radius of 10 feet.
    a. Sweep bends may be made up of one or more curved or straight sections or combinations thereof.
9. Furnish manufactured elbows at end of runs as the conduit transitions to above grade.
    a. Minimum radius of 18 inches for conduits less than 3 inches trade size and 36 inches for conduits 3 inches trade size and larger.
10. Field cuts requiring tapers shall be made with the proper tools and shall match factory tapers.
11. After the conduit run has been completed:
    a. Prove joint integrity and test for out-of-round duct by pulling a test mandrel through each conduit.
        1) Test mandrel:
            a) Length: Not less than 12 inches.
            b) Diameter: Approximately 1/4 inches less than the inside diameter of the conduit.
    b. Clean the conduit by pulling a heavy duty wire brush mandrel followed by a rubber duct swab through each conduit.
12. Pneumatic rodding may be used to draw in lead wire.
    a. Install a heavy nylon cord free of kinks and splices in all unused new ducts.
    b. Extend cord 3 feet beyond ends of conduit.
13. Transition from rigid nonmetallic conduit to rigid metallic conduit, per Specification Section 26 05 33, prior to entering a structure or going above ground.
    a. Except rigid nonmetallic conduit may be extended directly to handholes.
    b. Terminate rigid PVC conduits with end bells.
    c. Terminate steel conduits with insulated bushings.
14. Place warning tape in trench directly over ductbanks, direct-buried conduit, and direct-buried wire and cable in accordance with Specification Section 10 14 00.
15. Placement of conduits stubbing into handholes shall be located to allow for proper bending radiuses of the cables.

B. Direct-Buried Conduit(s):
1. Install so that the top of the uppermost conduit, at any point:
    a. Is not less than 30 inches below grade.

b. Is below pavement sub-grading.

2. Provide a uniform minimum clearance of 3 inches between conduits or as required in Specification Section 26 05 33 for different cabling types.
   a. Maintain the separation of multiple planes of conduits by one of the following methods:
      1) Provide multilevel conduits with conduit supports and separators to maintain required separations, and backfill with flowable fill in accordance withthe City of Omaha Standard Specification Section 200.
      2) Install multilevel conduits one level at a time.
         a) Each level shall be backfilled with required materials and compacted in accordance with the City of Omaha Standard Specification Section 200,while maintaining required separations.

C. Flowable Fill Encased Ductbank:

1. Ductbank system consists of conduits completely encased in minimum 2 IN of flowable fill and with separations between different cabling types as required in Specification Section 26 05 33 or as detailed on the Drawings.
2. Install so that top of flowable fill encased duct, at any point:
   a. Is not less than 30 IN below grade.
   b. Is below pavement sub-grading.
3. Conduit supports shall provide a uniform minimum clearance of 3 IN between the bottom of the trench and the bottom row of conduit.
4. Conduit separators shall provide a uniform minimum clearance of 3 IN between conduits or as required in Specification Section 26 05 33 for different cabling types.

END OF SECTION

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SECTION 26 08 13
ACCEPTANCE TESTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Basic requirements for acceptance testing.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 26 32 13.16 - Gas-Engine-Driven Generator Sets.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. InterNational Electrical Testing Association (NETA):
   a. ATS, Standard for Acceptance Testing Specifications for Electric Power Equipment and Systems.
2. Nationally Recognized Testing Laboratory (NRTL).

B. Qualifications:

1. Testing firm:
   a. An independent firm performing, as the sole or principal part of its business for a minimum of 10 years, the inspection, testing, calibration, and adjusting of systems.
   b. Must have an established monitoring and testing equipment calibration program with accuracy traceable in an unbroken chain, according to NIST.
2. Field personnel:
   a. Minimum of one year field experience covering all phases of electrical equipment inspection, testing, and calibration.
   b. Relay test technician having previous experience with testing and calibration of relays of the same manufacturer and type used on project and proficient in setting and testing the types of protection elements used.
   c. Supervisor certified by NETA or NICET.
      1) As an alternative, supervising technician may be certified by the equipment manufacturer.
3. Analysis personnel:
   a. Minimum three years combined field testing and data analysis experience.
   b. Supervisor certified by NETA or NICET.
      1) As an alternative, supervising technician may be certified by the equipment manufacturer.

C. Phasing Diagram:

1. Coordinate with Utility Company for phase rotations and Phase A, B and C markings.
   a. Create a phasing diagram showing the coordinated phase rotations with generators and motors through the transformers.

1.3 SUBMITTALS

A. Shop Drawings: Equipment Monitoring and Testing Plan.

B. Informational Submittals:

1. Prior to energizing equipment:
   a. Coordinated phasing diagram.

b. Photocopy of continuity test.

2. Within two weeks after successful completion of Demonstration Period (Commissioning Period):
   a. Single report containing information including:
      1) Information from pre-energization testing.
      2) Testing and monitoring reports.

PART 2 - PRODUCTS

2.1 FACTORY QUALITY CONTROL

A. Provide Electrical equipment with all factory tests required by the applicable industry standards or NRTL.

B. Factory testing will not be accepted in lieu of specified field acceptance testing requirements.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. General:

1. Complete electrical testing in three phases:
   a. Pre-energization testing phase.
   b. Equipment energized with no load.
   c. Equipment energized under load.
2. Perform testing in accordance with this Specification Section and NETA ATS.
3. Provide field setting and programming of all adjustable protective devices and meters to settings as determined by the approved coordination study.
4. Equip testing and analysis personnel with all appropriate project related reference material required to perform tests, analyze results, and provide documentation including, but not limited to:
   a. Contract Drawings and Specifications.
   b. Related construction change documentation.
   c. Approved Shop Drawings.
   d. Approved Operation and Maintenance Manuals.
   e. Other pertinent information as required.

B. Equipment Monitoring and Testing Plan:

1. Approved in accordance with Shop Drawing submittal schedule.
2. Included as a minimum:
   a. Qualifications of firm, field personnel, and analysis personnel doing the Work.
   b. List and description of testing and analysis equipment to be utilized.
   c. List of all equipment to be testing, including:
      1) Name and tag numbers identified in the Contract Documents.
      2) Manufacturer’s serial numbers.
      3) Other pertinent manufacturer identification,

C. Instruments Used in Equipment and Connections Quality Control Testing:

1. Minimum calibration frequency:
   a. Field analog instruments: Not more than 6 months.
   b. Field digital instruments: Not more than 12 months.
   c. Laboratory instruments: Not more than 12 months.

d. If instrument manufacturer's calibration requirements are more stringent, those requirements shall govern.

2. Carry current calibration status and labels on all testing instruments.
3. See individual testing programs for additional instrumentation compliance requirements.

D. Testing and Monitoring Program Documentation:

1. Provide reports with tabbed sections for each piece of equipment tested.
2. Include all testing results associated with each piece of equipment under that equipment's tabbed section.
   a. Include legible copies of all forms used to record field test information.
3. Prior to start of testing, submit one copy of preliminary report format for Engineer review and comment.
   a. Include data gathering and sample test report forms that will be utilized.
4. In the final report, include as a minimum, the following information for all equipment tested:
   a. Equipment identification, including:
      1) Name and tag numbers identified in the Contract Documents.
      2) Manufacturer's serial numbers.
      3) Other pertinent manufacturer identification,
   b. Date and time of each test.
   c. Ambient conditions including temperature, humidity, and precipitation.
   d. Visual inspection report.
   e. Description of test and referenced standards, if any, followed while conducting tests.
   f. Results of initial and all retesting.
   g. Acceptance criteria.
   h. "As found" and "as left" conditions.
   i. Corrective action, if required, taken to meet acceptance.
   j. Verification of corrective action signed by the Contractor, equipment supplier, and Owner's representative.
   k. Instrument calibration dates of all instruments used in testing.
5. Provide three (3) bound final reports prior to Project final completion.

E. Electrical Equipment and Connections Testing Program:

1. See individual Division 26 Specification Sections for equipment specific testing requirements.
2. Test all electrical equipment.
   a. Perform all required NETA testing.
   b. Perform all required NETA testing plus the optional testing identified with each specific type of equipment in Article 3.2 of this Specification Section.

3.2 SPECIFIC EQUIPMENT TESTING REQUIREMENTS

A. Transformers - Small Dry Type:

1. Perform inspections and tests per NETA ATS 7.2.1.1.
2. Perform the following additional tests:
   a. Record phase-to-phase, phase-to-neutral, and neutral-to-ground voltages at no load after energizing, and at operating load after startup.
3. Adjust tap connections as required to provide secondary voltage within 2-1/2% of nominal under normal load after approval of Engineer.
4. Record as-left tap connections.

B. Cable - Low Voltage:

1. Perform inspections and tests per NETA ATS 7.3.2.
    a. Insulation resistance testing is limited to conductors #4 AWG and larger.

C. Low Voltage Molded Case Circuit Breakers:

1. Perform inspections and tests per NETA ATS 7.6.1.1.
2. Components:
    a. Test all components per applicable paragraphs of this Specification Section and NETA ATS.
    b. Thermal magnetic breakers: Visual and mechanical inspection per NETA ATS only.
    c. Solid state trip type: Visual and mechanical inspection and electrical tests per NETA ATS.
3. Record as-left settings.

D. Metering:

1. Perform inspections and tests per NETA ATS 7.11.
2. Components: Test all components per applicable paragraphs of this Specification Section and NETA ATS.

E. Grounding:

1. Perform inspections and tests per NETA ATS 7.13.
2. Components: Test all components per applicable paragraphs of this Specification Section and NETA ATS.

F. Motors:

1. Perform inspections and tests per NETA ATS 7.15.
2. Testing of motors:
    a. After installation and prior to energizing the motor, perform inspections and tests per NETA ATS 7.15 for all motors 50 HP or above.
    b. Ensure motor has been lubricated.
    c. Bump motor to check for correct rotation.

G. Motor Controllers:

1. Perform inspections and tests per NETA ATS 7.16.
2. Components: Test all components per applicable paragraphs of this Specification Section and NETA ATS.

H. Generators:

1. Perform inspections and tests per NETA ATS 7.15.2.
2. Components: Test all components per applicable paragraphs of this Specification Section and NETA ATS.

END OF SECTION

SECTION 26 09 16
ELECTRICAL CONTROL COMPONENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Operator control devices (selector switches, pushbuttons, indicator lights, etc.).
2. Control devices (timers, relays, contactors, etc.).

B. Related Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. ICS 2, Industrial Control and System Controllers, Contactors and Overload Relays Rated 600 Volts.
   c. ICS 5, Control Circuit and Pilot Devices.
2. Underwriters Laboratories, Inc. (UL):
   a. 508, Standard for Safety Industrial Control Equipment.
   b. 508A, Standard for Industrial Control Panels.

1.3 SYSTEM DESCRIPTION

A. This Specification specifies components used within other equipment as referenced in other technical specifications.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
   a. Provide submittal data for all products specified in PART 2 of this Specification:
      1) When components are used within equipment specified in another Section, submittal data for components specified herein shall be included with the submittal for the equipment the components are used in.
   b. See Section 26 05 00 for additional requirements.

B. Informational Submittals: Functional Test Plan.

C. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Pilot devices, relays, contactors, and termination equipment:
   a. Allen-Bradley by Rockwell Automation, Inc.

b. ATC Diversified Electronics by Bellofram Group of Companies.
c. ASCO by Emerson Electric Co.
d. c3controls.
e. Eaton.
f. GE/ABB.
g. IDEC Corporation.
h. Phoenix Contact.
i. Potter and Brumsfield (P&B) by TE Connectivity.
j. Schneider Electric.
k. Siemens Corporation.
l. Time Mark Corporation.

2.2 PILOT DEVICES

A. General Requirements:

1. Standards: NEMA ICS 5, UL 508.
2. Heavy-duty NEMA 4/13 watertight/oiltight.
3. Mounting hole: 30.5 mm.
4. Contact blocks: 10 amp, NEMA A600 rated, number as required to fulfill functions shown or specified.
5. Legend plate marked as indicated on Drawings or specified.

B. Selector Switches:

1. Two, three- or four-position rotary switch as required to fulfill functions shown or specified.
2. Maintained contact type.
3. Knob or lever type operators.

C. Pushbuttons:

1. Non-illuminated type:
   a. Protective boot.
   b. Momentary contact.
   c. Standard flush and mushroom operators.
   d. Green colored buttons for START or ON and red color for STOP or OFF.
   e. Emergency stop pushbuttons: Mushroom head operator and maintained contact.
2. Illuminating type:
   a. Protective boot.
   b. Momentary contact.
   c. Standard flush operator.
   d. Serves as both pushbutton control and indicating light.
   e. Green colored lenses: START or ON.
   f. Green colored lenses: STOP or OFF.
   g. Resistor-type full voltage light unit with lens and panel gasket.

D. Indicating Lights:

1. Allowing replacement of bulb without removal from control panel.
2. Lamp: LED, 120 V or 24 V as required.
3. Full voltage type.
4. Push-to-test indicating lights.
5. Plastic lens.

6. Color code lights as follows:
    a. Green: ON or running.
    b. Amber: Standby; auto mode; ready.
    c. Red: OFF or stopped.

2.3 RELAYS

A. General Requirements:

1. Standards: NEMA ICS 5, UL 508.

B. Control Relays:

1. General purpose (ice cube) type:
    a. Plug-in housing.
    b. Clear polycarbonate dust cover with clip fastener.
    c. Coil voltage: 120 VAC or as required.
    d. Contacts:
        1) 10 amp continuous.
        2) Silver cadmium oxide.
        3) Minimum of 3 SPDT contacts.
    e. Sockets: DIN rail mounted.
    f. Internal neon or LED indicator is lit when coil is energized.
    g. Manual operator switch.
2. Industrial type:
    a. Coil voltage: 120 VAC or as required.
    b. Contacts:
        1) 10 amp, NEMA A600 rated.
        2) Double break, silver alloy.
        3) Convertible from normally open to normally closed or vice versa, without removing any wiring.
        4) Expandable from 2 poles to 12 poles.
    c. Provide contacts for all required control plus two spares.

2.4 CONTACTORS

A. General Requirements:

1. Standards: NEMA ICS 2, UL 508.

B. Remote Control Switches:

1. Electrically operated, electrically held.
2. Coil voltage: 120 VAC or as required.
3. Contacts: Totally enclosed, double-break silver-cadmium-oxide.
4. Rated for ballasted lighting, tungsten and general use loads.
5. Number of poles, continuous ampere rating and voltage, as indicated on Drawings or as specified.
6. Auxiliary control relays, as indicated on Drawings or as specified.
7. Auxiliary contacts, as indicated on Drawings or as specified.

C. Definite Purpose:

1. Coil voltage: 120 VAC or as required.
2. Contacts: Totally enclosed, double-break silver-cadmium-oxide.
3. Resistive load and horsepower rated.

4. Number of poles, continuous ampere rating and voltage, as indicated on Drawings or as specified.
5. Auxiliary contacts, as indicated on Drawings or as specified.

2.5 MISCELLANEOUS DEVICES

A. Control Power Transformer:

1. Primary voltage: 480 V.
2. Secondary voltage: 120 V.
3. Sized for 125% of required load.
4. Fused on primary and secondary.
5. Standard: NEMA ST 1.

2.6 TERMINATION EQUIPMENT

A. General Requirements:

1. Modular type with screw compression clamp.
2. Screws: Stainless steel.
3. Current bar: Nickel-plated copper alloy.
4. Thermoplastic insulation rated for -40 to +90 DEGC.
5. Wire insertion area: Funnel-shaped to guide all conductor strands into terminal.
6. End sections and end stops at each end of terminal strip.
7. Machine-printed terminal markers on both sides of block.
8. Spacing: 6 mm.
9. Wire size: 22-12 AWG.
10. Rated voltage: 600 V.
11. DIN rail mounting.

B. Standard-Type Block:

1. Rated current: 30 A.
2. Color: Gray body.

C. Bladed-Type Disconnect Block:

1. Terminal block with knife blade disconnect which connects or isolated the two sides of the block.
2. Rated current: 10 A.
3. Color:
   a. Panel control voltage leaves enclosure - normal: Gray body, orange switch.
   b. Foreign voltage entering enclosure: Orange body, orange switch.

D. Grounded-Type Block:

1. Electrically grounded to mounting rail.
2. Terminal ground wires and analog cable shields.
3. Color: Green and yellow body.

E. Fuse Holders:

1. Blocks can be ganged for multi-pole operation.
2. Spacing: 9.1 mm.
3. Wire size: 30-12 AWG.
4. Rated voltage: 300 V.
5. Rated current: 12 A.
6. Fuse size: 1/4 x 1-1/4.

7. Blown fuse indication.
8. DIN rail mounting.

2.7 FABRICATION

A. Supplier of Industrial Control Panels shall build control panel under the provisions of UL 508A or UL 698A.

1. Entire assembly shall be affixed with a UL 508A or UL 698A label "Listed Enclosed Industrial Control Panel" prior to shipment to the jobsite.
2. Provide equipment or control panels with Short Circuit Current Rating (SCCR) labeling as required by NFPA 70 and other applicable codes.
   a. Determine the SCCR rating by one of the following methods:
      1) Method 1: SCCR rating meets or exceeds the available fault current of the source equipment when indicated on the Drawings.
      2) Method 2: SCCR rating meets or exceeds the source equipment's Amp Interrupting Current (AIC) rating as indicated on the Drawings.
      3) Method 3: SCCR rating meets or exceeds the calculated available short circuit current at the control panel.
   b. The source equipment is the switchboard, panelboard, motor control center or similar equipment where the control panel circuit originates.
3. For Method 3, provide calculations justifying the SCCR rating. Utilize source equipment available fault current or AIC rating as indicated on the Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as indicated and in accordance with manufacturer's recommendations and instructions.

3.2 FIELD QUALITY CONTROL

A. See Section 26 05 00.

END OF SECTION

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FSECTION 26 24 16
PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Branch circuit panelboards.
2. Distribution panelboards.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 10 14 00 – Identification Devices.
2. Section 26 05 00 - Common Work Results for Electrical.
3. Section 26 28 01 - Low-Voltage Circuit Protective Devices.
4. Section 26 43 13 - Low Voltage Surge Protective Devices (SPD).

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. PB 1, Panelboards.
2. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
3. Underwriters Laboratories, Inc. (UL):
   a. 50, Enclosures for Electrical Equipment, Non-Environmental Considerations.
   b. 67, Standard for Panelboards.

1.3 DEFINITIONS

A. Branch Circuit Panelboard: Bus rating of less than 400A or where labeled as Branch Circuit Panelboard on the Drawings.

B. Distribution Panelboard: Bus rating of 400A and greater or where labeled as Distribution Panelboard on the Drawings.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data.
   a. Provide submittal data for all products specified in PART 2 of this Specification Section.
   b. See Section 26 05 00 for additional requirements.
2. Fabrication and/or layout drawings:
   a. Panelboard layout with alphanumeric designation, branch circuit breakers size and type, as indicated in the panelboard schedules.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
2. Panelboard schedules with as-built conditions.

C. Informational Submittals:

1. Service equipment marking and documentation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Eaton.
2. GE by ABB.
3. Square D by Schneider Electric.
4. Siemens Corporation.

2.2 MANUFACTURED UNITS

A. Standards: NEMA PB 1, NFPA 70, UL 50, UL 67.

B. Ratings:

1. Current, voltage, number of phases, number of wires as indicated on the Drawings.
2. Short Circuit Current Rating (SCCR) and/or Ampere Interrupting Current (AIC) ratings equal to or greater than the interrupting rating indicated on the Drawings or in the schedule.
   a. Series rating is not acceptable.
   b. When fault current or minimum interrupting rating is not indicated, use rating of upstream equipment or infinite bus calculation of transformer secondary.
3. Service Entrance Equipment rated when indicated on the Drawings or when shown to be fed from a utility source.

C. Construction:

1. Interiors factory assembled and designed such that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors.
2. Multi-section panelboards: Feed-through or sub-feed lugs.
3. Main lugs: Solderless type approved for copper and aluminum wire.

D. Bus Bars:

1. Main bus bars:
   a. Tin plated aluminum or tin-plated copper sized to limit temperature rise to a maximum of 65 degrees C above an ambient of 40 degrees C.
   b. Drilled and tapped and arranged for sequence phasing of the branch circuit devices.
2. Ground bus and isolated ground bus, when indicated on the Drawings: Solderless mechanical type connectors.
3. Neutral bus bars: Insulated 100% rated or 200% rated, when indicated on the Drawings and with solderless mechanical type connectors.

E. Overcurrent and Short Circuit Protective Devices:

1. Main overcurrent protective device:
   a. Molded case circuit breaker.
2. Branch overcurrent protective devices:
   a. Molded case circuit breaker.
3. See Specification Section 26 28 01 for overcurrent and short circuit protective device requirements.
4. Factory installed.

F. Integral surge protective device:

1. Provide for panelboards where indicated on the Drawings

2. See Specification Section 26 43 13.

G. Enclosure:

1. Boxes: Code gage galvanized steel, furnish without knockouts.
2. Trim assembly: Code gage steel finished with rust inhibited primer and manufacturers standard paint inside and out.
3. Branch circuit panelboard:
   a. Trims supplied with hinged door-in-door construction.
      1) Outer door:
         a) Allows access to the interior of the enclosure.
         b) Hinged to the enclosure.
         c) Opened by removal of screws or by operating a mechanical latch located behind the inner door.
      2) Inner door:
         a) Allows access to breakers (non-live parts).
         b) Hinged to outer door.
         c) Opened by operation of a keyed corrosion resistant chrome-plated combination lock and catch. Locks for all branch circuit panelboards keyed alike.
   b. Trims for surface mounted panelboards, same size as box.
   c. Trims for flush mounted panelboards, overlap the box by 3/4 inches on all sides.
   d. Nominal 20 inches wide and 5-3/4 inches deep with gutter space in accordance with NFPA 70.
   e. Clear plastic cover for directory card mounted on the inside of each door.
   f. Where NEMA 12 rating is indicated: Door gasketed.
4. Distribution panelboard:
   a. Trims cover all live parts with switching device handles accessible.
   b. Minimum 8 inches deep and less than or equal to 12 inches deep with gutter space in accordance with NFPA 70.
   c. Clear plastic cover for directory card mounted front of enclosure.
   d. Where NEMA 12 rating is indicated: Doors gasketed and lockable with corrosion resistant chrome-plated combination lock and catch, all locks keyed alike, or provisions for padlocks.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as indicated on the Drawings, in accordance with the NFPA 70, and in accordance with manufacturer's instructions.

B. Support panelboard enclosures from wall studs or modular channels support structure, per Section 26 05 00.

C. Provide NEMA rated enclosure as indicated on the Drawings. Where enclosure type is not indicated, provide enclosure rating suitable for the atmosphere where equipment is installed.

D. Equipment Marking and Documentation:

1. Provide labeling per NFPA 70 and other applicable codes.
2. Service equipment:
   a. Arc-flash hazard warning label. (Ref. NFPA 70 Article 110.16(A) and (B))
   b. Available fault current label and documentation of the calculations made for compliance with marking requirements. (Ref. NFPA 70 Article 110.24)
3. Other than service equipment:

a. Arc-flash hazard warning label. (Ref. NFPA 70 Article 110.16(A))
b. Available fault current label. (Ref. NFPA 70 Article 408.6)

4. Identify (tag) all equipment and equipment components.
5. Provide labels and tags in accordance with Section 10 14 00.
6. Available fault current and other required label data from Coordinated Power System Study as required by the contract documents.

E. Provide each panelboard with a typed directory:

1. Identify all circuit locations in each panelboard with the load type and location served.
2. Use Owner-furnished mechanical equipment designation if different than designation indicated on the Drawings.
3. Use final building room names and numbers as identified by the Owner if different than designation indicated on the Drawings.
4. Identify spare overcurrent devices.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
    a. Wall switches.
    b. Receptacles.
    c. Device wallplates and coverplates.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.
2. Section 26 05 33 - Raceways and Boxes for Electrical Systems.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Electrical Manufacturers Association (NEMA):
    a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
    b. WD 1, General Color Requirements for Wiring Devices.
    c. WD 6, Wiring Devices - Dimensional Requirements.
2. Underwriters Laboratories, Inc. (UL):
    a. 20, General-Use Snap Switches.
    b. 498, Standard for Attachment Plugs and Receptacles.
    c. 514A, Metallic Outlet Boxes.
    d. 943, Ground-Fault Circuit-Interrupters.
    e. 1310, Standard for Class 2 Power Units.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
    a. Provide submittal data for all products specified in PART 2 of this Specification Section.
    b. See Section 26 05 00 for additional requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Wall switches and receptacles:
    a. Bryant Electric.
    b. Cooper Wiring Devices by Eaton.
    c. Hubbell Incorporated Wiring Device-Kellems.
    d. Leviton Manufacturing Company.
    e. Legrand/Pass & Seymour.
    f. Eaton Crouse-Hinds.
    g. Appleton Electric Co.

h. Hubbell Killark.

2.2 WALL SWITCHES

A. Basic requirements unless modified in specific requirements paragraph of switches per designated areas or types:

1. Industrial Specification Grade.
2. Quiet action, snap switch.
3. Self-grounding with grounding terminal.
4. Back and side wired.
5. Solid silver cadmium oxide contacts.
6. Rugged thermoplastic and/or nylon housing and one-piece switch arm.
7. Ratings: 20 A, 120/277 VAC.
8. Switch handle type: Toggle.
9. Switch handle color: Gray.
10. Types as indicated on the Drawings:
    a. Single-pole.
    b. Double-pole.
    c. Momentary contact.
11. Standards: UL 20, UL 514A, NEMA WD 1, NEMA WD 6.

B. Wet or Damp Non-Architecturally Finished or Exterior Area Specific Requirements:

1. Coverplate:
    a. Cast aluminum, gasketed, stainless steel hardware, natural, lacquer, or factory painted finish.
    b. Operator type:
        1) Front mounted lever type handle to operate snap switch.
    c. Wet location rated.
    d. Single or multiple gang as required.

2.3 RECEPTACLES

A. Basic requirements unless modified in specific requirements paragraph of receptacles and per designated areas:

1. Industrial Specification Grade.
2. Straight blade.
3. Brass triple wipe line contacts.
4. One-piece grounding system with double wipe brass grounding contacts and self-grounding strap with grounding terminal.
5. Back and side wired.
6. Rating: 20 A, 125 VAC.
7. High impact nylon body.
8. Receptacle body color:
    a. Normal power: Gray.
9. Duplex or simplex as indicated on the Drawings.
10. Configuration: NEMA 5-20R.
11. Standards: UL 498, UL 514A, NEMA WD 1, NEMA WD 6.

B. Receptacle Type Specific Requirements:

1. Ground Fault Circuit Interrupter (GFCI):
    a. Specification Grade.

b. Class A protection.
c. Feed through type.
d. Test and reset buttons.
e. Self-testing.
f. Visual indicator light.
g. Weather-resistant when located in exterior locations or interior damp or wet areas as indicated on the Drawings.
1) Identification: Letters “WR” on face of receptacle.
h. Tamper resistant (TR) when indicated on the Drawings.
i. Additional standards: UL 943.

C. Wet Non-architecturally Finished Areas Specific Requirements:
1. Wallplate for use on recessed outlet boxes:
a. Steel, galvanized.
b. High impact thermoplastic or nylon, color to match body.
c. 302 or 304 brushed finish stainless steel.
d. Single or multiple gang as required.
e.

D. Exterior Locations Specific Requirements:
1. Coverplate:
a. Extra-duty rated, weatherproof (NEMA 3R) while in use, gasketed, stainless steel hardware, copper-free aluminum, 3.2 inches minimum cover depth for #12 AWG cord.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Mount devices where indicated on the Drawings and as scheduled in Section 26 05 00.

C. See Specification Section 26 05 33 for device outlet box requirements.

D. Provide blank plates for empty outlets.

E. Momentary contact switches shall be installed and connected such that the up position is 'on only' and the down position is 'off only.’

F. Use tamper proof screws on pull and junction box covers in exterior locations.

END OF SECTION

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SECTION 26 28 01
LOW-VOLTAGE CIRCUIT PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Low voltage circuit breakers.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.
2. Section 26 08 13 - Acceptance Testing.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   a. C37.13, Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures.
   b. C37.16, Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors - Preferred Ratings, Related Requirements, and Application Recommendations.
   c. C37.17, Trip Devices for AC and General Purpose DC Low Voltage Power Circuit Breakers.
2. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
3. Underwriters Laboratories, Inc. (UL):
   a. 489, Standard for Safety Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.
   b. 943, Standard for Safety for Ground-Fault Circuit-Interrupters.
   c. 1053, Standard for Ground-Fault Sensing and Relaying Equipment.
   d. 1066, Standard for Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Provide submittal data for all products specified in PART 2 of this Specification Section.
   b. See Section 26 05 00 for additional requirements.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

C. Informational Submittals:

1. Reports:
   a. As-left condition of all circuit breakers that have adjustable settings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Circuit breakers:
    a. Eaton.
    b. GE by ABB.
    c. Square D Company.
    d. Siemens.

2.2 CIRCUIT BREAKERS

A. Molded Case Type:

1. General:
    a. Standards: UL 489.
    b. Unit construction.
    c. Over-center, toggle handle operated.
    d. Quick-make, quick-break, independent of toggle handle operation.
    e. Manual and automatic operation.
    f. All poles open and close simultaneously.
    g. Three position handle: On, off and tripped.
    h. Molded-in ON and OFF markings on breaker cover.
    i. One-, two- or three-pole as indicated on the Drawings.
    j. Current and interrupting ratings as indicated on the Drawings.
2. Thermal magnetic type:
    a. Inverse time overload and instantaneous short circuit protection by means of a thermal magnetic element.
    b. Frame size 150 amp and below:
        1) Non-interchangeable, non-adjustable thermal magnetic trip units.
    c. Frame sizes 225 to 400 amp (trip settings less than 400A):
        1) Interchangeable and adjustable instantaneous thermal magnetic trip units.
3. Motor circuit protector:
    a. Adjustable instantaneous short circuit protection by means of a magnetic or solid state trip element.
    b. Sized for the connected motor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Current and interrupting ratings as indicated on the Drawings.

B. Series rated systems not acceptable.

C. Devices shall be ambient temperature compensated.

D. Circuit Breakers:

1. Molded case circuit breakers shall incorporate the following, unless indicated otherwise on the Drawings:
    a. Frame sizes 400 amp and less with trip setting less than 400A shall be thermal magnetic type.
    b. Motor circuit protectors sized for the connected motor.

2. Insulated case circuit breakers shall incorporate the following, unless indicated otherwise on the Drawings:
    a. Set current sensor or rating plugs long time pick-up setting so that the indicated trip level is near the 75% trip point.

3.2 FIELD QUALITY CONTROL

A. Coordinated Power System Protection:

1. Prepare a study to demonstrate that the equipment and system constructed within the scope of these Contract Documents, meet the specified requirements for equipment ratings, coordination and protection.
2. Perform the studies in accordance with IEEE 242 and IEEE 399.
3. Include the name of the software developer, software package and software version number in the computer generated studies.
4. System short circuit study report:
    a. Begin the study at the main service electrical gear and extend down the system through all buses.
        1) Perform a balanced three-phase fault, bolted line-to-line fault and line-to-ground fault study.
    b. Prepare a one-line diagram to show the electrical system buses, transformers and all sources of fault current including generators and motors.
    c. Utilize manufacturer's data for the actual proposed equipment (e.g., transformer impedance).
    d. Coordinate the available utility fault current with the power utility company.
    e. Show input data in tabular form in the report and/or on the one-line diagram.
        1) Input data shall include but is not limited to:
            a) Utility fault current or MVA and X/R ratio.
            b) Bus voltages.
            c) Conductor sizes and type of conduit.
            d) Generator and motor sizes and contributions.
            e) Transformer sizes and impedances.
    f. Show available fault current at each bus in tabular form in the report and/or on the one-line diagram.
    g. Perform studies for both normal power and emergency/standby power scenarios.
5. System protective coordination study report:
    a. Begin the study at the main service electrical gear and extend down the system through all buses as required to ensure a coordinated power system.
    b. Demonstrate that the maximum possible degree of selectivity has been obtained between devices specified for the protection of equipment and conductors from damage from overloads and fault conditions.
        1) Where necessary, an appropriate compromise shall be made between system protection and service continuity.
        2) Consider system protection and service continuity to be of equal importance.
    c. Prepare a one-line diagram to show the electrical system buses, transformers and protective devices.
    d. Utilize manufacturer's data for the actual proposed protective devices.
    e. Summarize the coordination study, conclusions and recommendations.
        1) As a minimum, include the following:
            a) The manufacturer's information used to prepare the study.
            b) Assumptions made during the study.
            c) Recommended taps and settings of all adjustable devices in tabulated form.

d) Composite coordination time-current curves on log-log paper showing:
   (1) That the settings for each protective device will provide protection and selectivity.
   (2) Identify each curve.
   (3) Cable and equipment damage points.
   (4) Circuit interrupting device operating and interrupting times.
   (5) One-line sketch of the part of the system being investigated.
   (6) Include as many curves as possible on a graph while maintaining readability.
e) Position time-current curves for each device to provide for maximum selectivity to minimize system disturbances during fault clearing.
f) Advise the Engineer of potential coordination problems discovered during the study and include recommendations to resolve the problem.
   (1) Provide time-current curves for the "as found" and "proposed" conditions for upgrade/retrofit projects.
g) Submit the report for approval 90 days prior to equipment energization.

B. Arc Flash Study:

1. Prepare an incident energy study in accordance with the IEEE 1584-2004a, ”IEEE Guide for Performing Arc Flash Hazard Calculations” as referenced in NFPA 70E, “Standard for Electrical Safety in the Workplace”, 2021 Revision, in order to quantify the hazard for selection of personal protective equipment (PPE). Tables that assume fault current levels and clearing time for proper PPE selection are not acceptable.
2. Study Report
   a. The supplier shall supply a comprehensive report that includes:
   b. Report summary with analysis methodology, findings, and recommendations.
   c. Summary of input data for utility source, equipment, and cables.
   d. Available fault current at each equipment location with comparison to equipment rating.
   e. Recommended overcurrent device settings.
   f. Incident energy level (calories/cm2) for each equipment location and recommended PPE.
   g. Overcurrent device coordination curves including related section of the single-line diagram.
   h. Complete system single-line diagram for the system analyzed.
   i. A copy of the Owner’s previous arc flash study will be made available to assist in the development of the new study. The Contractor shall field verify data for existing equipment and materials that are not replaced as part of this project and provide that data to the study supplier.

C. Labels:

1. Based on the results of the incident energy study, the supplier shall produce and install a warning label (orange <40 cal/cm^2) or danger label (red > 40 cal/cm^2) for each piece of equipment as specified in “Section A” in accordance with ANSI Z535.4-2002. The label must be readable in both indoor and outdoor environments for at least 3 years and contain the following information:
   a. Arc hazard boundary (IN).
   b. Working distance (IN).
   c. Arc flash incident energy at the working distance (calories/ cm^2).
   d. PPE category and description including the glove rating.
   e. Voltage rating of the equipment.
   f. Limited approach distance (IN).

g. Restricted approach distance (IN).
h. Prohibited approach distance (IN).
i. Equipment/bus name.
j. Date prepared.

2. Provide labels for both normal power operations on utility power and standby power operations on generator power.
3. Remove old labels and provide new labels for all existing equipment that is not replaced.

D. Supplier name and address.

E. Adjustable Circuit Breakers:

1. Set all circuit breaker adjustable taps as defined in the coordination study, except adjust motor circuit protectors per the motor nameplate and NFPA 70 requirements.

F. Testing:

1. Acceptance testing: See Specification Section 26 08 13.

END OF SECTION

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SECTION 26 28 16.16
ENCLOSED SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Safety switches.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.
2. Section 26 28 01 - Low-Voltage Circuit Protective Devices.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. KS 1, Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum).
2. Underwriters Laboratories, Inc. (UL):
   a. 98, Enclosed and Dead-Front Switches.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
   a. Provide submittal data for all products specified in PART 2 of this Specification Section.
   b. Provide a Summary Table or use Exhibit A that associates the safety switch features with connected equipment tag number. Exhibit A indicates minimum data required.
   c. See Section 26 05 00 for additional requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following safety switch manufacturers are acceptable:

1. Eaton.
2. GE by ABB.
3. Square D by Schneider Electric.
4. Siemens Corporation.
5. Appleton by Emerson Electric Co.
6. Crouse-Hinds by Eaton.
7. Killark by Hubbell.

2.2 SAFETY SWITCHES

A. General:

1. Non-fusible or fusible as indicated on the Drawings.
2. Suitable for service entrance when required.
3. NEMA Type HD heavy-duty construction.
4. Switch blades will be fully visible in the OFF position with the enclosure door open.
5. Quick-make/quick-break operating mechanism.

6. Deionizating arc chutes.
7. Manufacture double-break rotary action shaft and switchblade as one common component.
8. Clear line shields to prevent accidental contact with line terminals.
9. Operating handle:
    a. Red and easily recognizable.
    b. Padlockable in the OFF position.
    c. Interlocked to prevent door from opening when the switch is in the ON position with a defeater mechanism.

B. Ratings:
1. Horsepower rated of connected motor.
2. Voltage and amperage: As indicated on the Drawings.
3. Short circuit withstand:
    a. Non-fused: 10,000A.
    b. Fused: 200,000A.

C. Accessories, when indicated in PART 3 of this Specification Section or on the Drawings:
1. Neutral kits.
2. Ground lug kits.

D. Enclosures:
1. NEMA 3R rated:
    a. Body and cover: Sheet steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
    b. With or without knockouts, hinged and lockable door.
2. NEMA 4 rated:
    a. Body and cover: Sheet steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
    b. No knockouts, external mounting flanges, hinged, gasketed and lockable door.
3. NEMA 12 rated:
    a. Body and cover: Sheet steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
    b. No knockouts, external mounting flanges, hinged and gasketed door.

E. Overcurrent and short circuit protective devices:
1. Fuses.
2. See Specification Section 26 28 01 for overcurrent and short circuit protective device requirements.

F. Standards: NEMA KS 1, UL 98.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as indicated and in accordance with manufacturer's instructions and recommendations.

B. Install switches adjacent to the equipment they are intended to serve unless otherwise indicated on the Drawings.

C. Permitted uses of NEMA 3R enclosure:
1. Surface mounted in exterior areas and areas designated as wet.

D. Permitted uses of NEMA 4 enclosure:

1. Surface mounted in exterior areas and areas designated as wet.

E. Permitted uses of NEMA 12 enclosure:

1. Surface mounted in areas designated as wet in non-architecturally finished areas.

END OF SECTION

EXHIBIT A

Safety Switch Summary Table					
Equipment Tag	Switch Model Number	Rated Amps	Fused / Non-fused	Enclosure Type	Accessories
Example	Per MFR	60A	NF	NEMA 4X non-metallic	Ground lug, Aux Contact

SECTION 26 29 23
VARIABLE FREQUENCY DRIVES - LOW VOLTAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Variable frequency drives (VFDs) for operation of inverter duty motors.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 10 14 00 - Identification Devices.
3. Section 26 05 00 - Common Work Results for Electrical.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American National Standards Institute (ANSI).
2. ETL Testing Laboratories (ETL).
3. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   a. 399, Recommended Practice for Industrial and Commercial Power Systems Analysis.
   b. 519, Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems.
   c. C62.41, Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
4. National Electrical Manufacturer's Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. MG 1, Motors and Generators.
5. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC):
      1) Article 430, Motors Motor Circuits, and Controllers.
6. Occupational Safety and Health Administration (OSHA).
7. Underwriters Laboratory, Inc. (UL):
   a. 508, Standard for Industrial Control Equipment.
   b. 508A, Standard for Industrial Control Panels.

B. Qualifications:

1. Provide drives that are listed and labeled by UL, ETL, or other Nationally Recognized Testing Laboratory (NRTL) as defined by OSHA regulations, or that have been inspected and subsequent field-labeled by such NRTL.
2. Where listed drives and other components are installed in a common enclosure, the assembly shall be listed and labeled per UL 508 and UL 508A or equivalent NRTL standard.
   a. Entire assembly shall be affixed with a UL 508A label "Listed Enclosed Industrial Control Panel" or equivalent NRTL label prior to shipment to the jobsite.
3. VFD Supplier shall maintain an authorized service organization within 100 miles of the Project Site.

C. Coordination:

1. Motor and VFD coordination: See Specification Section 01 61 03.

2. VFD shall be supplied complete with all required control components.
    a. Provide control as indicated:
        1) On the Electrical Drawings.
        2) As specified in this Specification Section.
    b. VFD manufacturer shall review the application and provide, at no additional cost to the Owner, the hardware and software necessary to allow the VFD to control the driven equipment motor over its required operating range.
        1) These may include, but are not limited to, analog and digital interface modules, communication interface modules, switches, lights and other devices.
    c. Coordinate control devices with devices furnished with driven equipment such as vibration switches, thermal sensors, leak detectors, etc.
3. Verify plan dimensions with equipment space requirements as indicated on the Drawings.
    a. Equipment which exceeds the allotted maximum dimensions may not be acceptable.
    b. Equipment which reduces clear workspace below the minimums established by the NFPA 70 will not be acceptable.

1.3 DEFINITIONS

A. Variable Torque (VT):

1. Defines a load characteristic in which the torque delivered from the motor to the load is reduced as speed is reduced below full rated.
2. This type of load permits the VFD and the motor to operate at reduced output current at reduced speed.

B. Constant Torque (CT):

1. Defines a load characteristic in which the torque delivered from the motor to the load remains constant as speed is varied.
2. This type of load requires the VFD to be able to continuously deliver rated output current over the entire speed range.

C. Constant Horsepower:

1. Defines a load characteristic in which the torque delivered from the motor to the load is reduced as the speed is increased.
2. This characteristic is required for operation of the VFD and motor above rated frequency to maintain output current within the rated value.

D. Inverter Duty Motor: An AC induction motor complying with all requirements of NEMA MG 1 Part 31 for definite-purpose inverter-fed motors.

E. Standard Motor: An AC induction motor that fails to comply with one or more requirements of NEMA MG 1 Part 31.

F. Low Voltage: 600 VAC or less.

1.4 SUBMITTALS

A. Shop Drawings:

1. Provide a schedule for each VFD including the following information:
    a. Equipment Tag Number.
    b. VFD Complete Catalog Number.
    c. VFD Amp Frame Size.
    d. Variable or Constant Torque Rating Basis.
    e. Rated Input Current.
    f. Rated Continuous Output Current.
    g. Rated Short Circuit Current.

h. VFD cable type specified (shielded or non-shielded).
i. VFD Maximum Motor Lead Length for the type of cable used.
j. Motor Manufacturer.
k. Motor Frame Size.
l. Motor Full Load Amps.
m. Motor Service Factor.
n. As installed motor Lead Length.
o. VFD options provided to meet harmonic or motor protection specifications.

2. Submit VFD Shop Drawings concurrently with driven equipment and motor Shop Drawings.
3. Product technical data:
   a. Complete electrical ratings and performance specifications confirming compliance with specified ratings and performance.
   b. Maximum rate of heat rejection from VFD and all related components and associated cooling requirements.
   c. Manufacturer's installation instructions.
   d. Manufacturer's programming and operating instructions.
   e. See Section 26 05 00 for additional requirements.
4. Fabrication and/or layout drawings:
   a. Top, front and side exterior views, with details showing maximum overall dimensions of enclosure, mounting provisions and conduit/cable entry provisions.
   b. Identify minimum clearances from other VFDs or electrical equipment required for proper cooling at top, bottom, side and back of enclosure.
   c. Three-line diagrams showing AC schematic of VFD, input, output and bypass devices including device ratings.
   d. Interior layout drawings showing location of all components within enclosure, field wiring terminal boards, and power and grounding connections.
   e. Field wiring diagrams showing locations and sizes of all electrical connections, ground terminations, and requirements for shielded wire usage or any other special installation considerations.
   f. Short Circuit Current Rating (SCCR) nameplate marking per NFPA 70, include any required calculations.
5. Certifications:
   a. Submit with Shop Drawings:
      1) Identification and location of closest authorized service organization.
      2) Harmonic analysis at each PCC per Harmonic Protection Requirements Article.
   b. Submit prior to shipment:
      1) Certified factory test reports confirming compliance with specified requirements.
   c. Submit after installation:
      1) Certified field service reports showing:
         a) Each VFD is operational.
         b) Each VFD and its driven equipment motor are compatible.
         c) Each VFD responds correctly to the input control signals.
         d) Critical frequencies of the drive system and that the VFD has been set to lockout these frequencies.
         e) Measured harmonic levels per Harmonic Protection Requirements Article.
         f) Measured motor terminal peak voltages per Motor Protection Requirements Article.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
2. Approved copy of VFD schedule per Submittals Article.
3. Manufacturer's instruction manuals.
4. Troubleshooting procedures with a cross-reference between symptoms and corrective recommendations.
5. Connection data to permit removal and installation of recommended smallest field-replaceable parts.
6. Recommended spare parts list.
7. Commissioning sheets showing "as-left" values of all user-programmable or adjustable drive parameters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Allen Bradley.
2. ABB.
3. Eaton.
4. Danfoss.
5. Siemens/Robicon.
6. Siemens.
7. Square D Company.
8. Toshiba.
9. Yaskawa.

2.2 GENERAL

A. VFDs shall consist of a rectifier-DC bus-inverter combination producing a sine-coded pulse-width-modulated (PWM) output voltage waveform.

B. VFDs shall constitute a complete combination motor controller per NFPA 70, Article 430 and shall provide the following per the requirements of that article without the addition of any external components or devices.

1. Motor control.
2. Motor overload protection.
3. Motor and motor branch circuit short circuit and ground fault protection.
4. Motor and controller disconnecting means.

C. It is the intent of this Specification that VFDs shall be an "engineered" or "configured" drive package in which the VFD chassis, all input, output and bypass power devices, VFD accessories, ancillary switches, contactors, relays, and related control devices are selected, furnished, factory-assembled and -tested by the VFD manufacturer in a single enclosure requiring only connection of the power supply circuit, motor branch circuit, and external control wiring in the field.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

A. Application:

1. VFD(s) shall be of sufficient capacity and shall provide a quality of output waveform for stepless motor control from 10 to 100% of base speed of the driven equipment.

2. VFDs shall be compatible with:
    a. Inverter duty induction motors.
    b. Standard induction motors.
3. VFDs shall be suitable for Constant Torque (CT) or Variable Torque (VT) applications.
    a. VFD manufacturer shall coordinate with the manufacturer of the driven equipment to identify CT and VT applications.
4. VFDs shall be designed to operate successfully under the following site conditions:
    a. Ambient:
        1) Temperature: 0-40 DEGC.
        2) 95% non-condensing relative humidity.
    b. Elevation: Less than 3,300 feet above MSL.
    c. Power supply characteristics:
        1) 480Vac, 3 PH, 60 Hz, 3 wire, (±10%).
        2) Effectively grounded.

B. Ratings and Performance Specifications:
1. Voltage rating:
    a. Nominal: 460 or 480 VAC, 3 PH, 60 Hz.
    b. Range for continuous full load operation: ±10% of nominal.
    c. Voltage imbalance tolerance for full load operation: 3% minimum.
2. Current ratings:
    a. Continuous:
        1) Equal to or greater than the motor nameplate full load.
    b. Short-term overload:
        1) VT: 110% for 1 minute.
        2) CT: 150% for 1 minute.
        3) Permissible for 1 minute every 10 minutes continuously.
    c. Short circuit:
        1) As indicated on the Drawings.
        2) Where a short circuit rating is not indicated or specified for individual VFDs, each VFD shall have a rating not less than indicated on the Drawings for the MCC, switchboard or panelboard the VFD is supplied from.
        3) Where specified short circuit rating indicates additional input impedance is required to protect semiconductors, provide input AC line reactors, whether required to meet harmonic performance specifications or not.
3. Efficiency:
    a. 97%, minimum, at full speed and full load.
    b. 93%, minimum at 1/2 speed and full load.
4. Displacement power factor:
    a. 95%, minimum from 50% to 100% speed and load.
5. Efficiency and power factor criteria apply from the input terminals to the output terminals of the VFD alone, excluding losses of input and output power circuit accessories.
6. Frequency drift:
    a. +0.5% of set frequency.
7. Speed regulation (motor dependent): 3%.
8. Speed range: 10:1.

9. Control type:
    a. Volts/Hertz ratio; constant over the entire operating range of the VFD except:
        1) When operating under voltage boost.
        2) At frequencies over 60 Hz.

C. Operational Features:
    1. Insensitive to input phase sequence.
    2. Continued operation with momentary voltage dips of 25% of rated voltage, or single phase condition: 4 seconds, minimum.
    3. Controls power loss ride-through: 500 MSEC, minimum.
    4. Electronic reversing.
    5. DC injection braking.
    6. Anti-windmilling: Synchronization of VFD starting frequency with spinning or coasting load, forward or reverse.
    7. Critical frequency band lockout:
        a. Minimum of three settings.
        b. Adjustable bandwidth, 1 - 5 Hz.
    8. Capable of operating without the motor connected for start-up and troubleshooting.

D. The VFD shall be provided with the following minimum user-programmable parameters:
    1. Carrier frequency.
    2. Independent maximum and minimum speeds for forward and reverse operation.
    3. Start frequency and hold time.
    4. Independent linear acceleration and deceleration time.
    5. Preset “jog” speed.
    6. Three critical frequency bands.
    7. One preset speed selectable by logic input.
    8. Volts/Hertz ratio.
    9. Voltage boost, magnitude and frequency range.
    10. Process controller gain, offset and bias.
    11. Current limit.
    12. Overcurrent pickup.
    13. Overcurrent delay.
    14. Ground fault pickup.
    15. DC injection level and time.

E. The VFD shall be designed such that the power circuit components are fully protected from line side disturbances and load side faults:
    1. General:
        a. Shutdown conditions associated with supply circuit conditions which can be corrected external to the VFD-motor system shall be provided with automatic reset, with shutdown cause logged in memory:
            1) Input under voltage.
            2) Input over voltage.
            3) Input under frequency.
            4) Input over frequency.
            5) Input Phase loss.
            6) DC Bus under voltage.

b. Shutdown conditions which indicate overload or fault within the VFD, the output circuit, or the motor shall require local manual reset at the VFD, requiring operator intervention.
    1) Over temperature.
    2) Blown fuse.
    3) Component failure.
    4) Overload.
    5) Short circuit.
    6) Ground fault.
    7) DC Bus over voltage.
    8) External safety input (e.g., motor thermal protection).
    9) Logic fault.
c. When automatic shutdown occurs, VFD shall restart only when remote run signal is removed and reapplied.
d. VFD shall hold cause of trip data for a minimum of four shutdowns in memory.
    1) Data to be accessible through the keypad, local communication link and remotely.

2. Input protection:
    a. Input circuit breaker or current-limiting fuses with externally operable disconnect.
        1) Fault current interrupting rating equal to or greater than the specified withstand rating of the VFD.
        2) Handle padlockable in the OFF position.
    b. Provide full protection for semiconductors integral to the VFD; units requiring current-limiting fuses or circuit breakers in the supply circuit are not acceptable.
    c. Incoming line transient suppression.
        1) 6000V peak per IEEE C62.41.
        2) Phase-to-phase and phase-to-ground protection.
    d. Sustained over voltage trip.
3. Internal protection:
    a. Surge suppression and power device snubbers.
    b. Power devices rated at 2.5 times line voltage.
    c. Instantaneous over current trip.
    d. DC bus over voltage trip.
    e. Power device over temperature trip.
    f. Control logic circuit malfunction trip.
4. Output protection:
    a. Inverse-time overload trip:
        1) UL Class 10 characteristic.
    b. Over voltage trip.
    c. Over frequency trip.
    d. Short circuit trip.
        1) Line to line and line to ground.
    e. Ground fault trip.

2.4 OPERATOR AND REMOTE CONTROL INTERFACE

A. Drive controls shall be microprocessor-based with on-board human machine interface and both local and remote digital communications capability.

1. All monitoring and control functions, other than those shutdowns specified to be manual reset only, shall be available both locally and remotely.

B. Control circuits shall be 120 VAC or 24 VAC or 24 VDC.

1. 120 VAC supplied by CPT in the VFD.
    a. CPT shall have minimum additional capacity of 60 VA greater than that required by control devices.
    b. CPT shall have two fuses on the primary side and one fuse on the secondary side.
    c. CPT shall have surge protection on the primary side independent of any other surge protection in the VFD.
2. 24 VAC or 24 VDC supplied by Class 2 power supply in the VFD.
    a. Power supply shall have minimum additional capacity of 33% greater than that required by control devices.
    b. Provide two current-limiting fuses on the AC supply to the power supply.
    c. Power supply shall have surge protection on the primary side independent of any other surge protection in the VFD.

C. Operator Interface:

1. Door mounted sealed keypad, membrane type with LED or LCD display.
    a. Messages shall be in English and engineering units.
    b. Drive operating parameters shall be programmable.
    c. Menu driven.
    d. Password security.
    e. Display fault and diagnostic data.
    f. Operating parameters, fault and diagnostic data maintained in non-volatile memory with historic log of fault and diagnostic data.
    g. Gold plated plug-in contacts.
2. Provide indication and control interface, integral in the keypad, as required in the sequence of operation and Drawings.
    a. Minimum indications:
        1) Run.
        2) Stop.
        3) Ready.
        4) Alarm.
        5) Fault.
        6) Local control.
        7) Remote control.
        8) Control source local.
        9) Control source remote.
        10) Speed indication.
    b. Minimum control functions:
        1) Local/Remote switch.
        2) Stop button.
        3) Start button.
        4) Reset button.
        5) Speed control buttons.
3. Diagnostic indicators located externally on the face of the drive shall show the type of fault responsible for drive warning, shutdown or failure.
    a. On occurrence of more than one condition, each shall be recorded or indicated by the diagnostics.

D. Remote Control Interface:

1. Local portable computer interface via RS232/RS242 serial communications port:
    a. Capability to:
        1) Start-Stop VFD.
        2) Control VFD Speed.
        3) Access fault and diagnostic data.
2. Analog and discrete inputs:
    a. Speed reference (setpoint) signal 4-20 mA DC.
    b. Isolated process PID controller with user-programmable setpoint, gain, rate, reset and span for accepting a remote 4-20 mA DC process variable signal.
3. Analog and discrete outputs:
    a. 4-20 mA DC output for remote speed indication, as a function of frequency, calibrated 0 to 100%.
    b. Drive FAULT contacts.
    c. Drive RUNNING contacts.
    d. Drive selector switch in AUTO status contacts.
4. Contacts:
    a. Contacts shall be rated 2 A inductive at 120 VAC.
    b. All contacts shall be wired to field wiring terminal boards.
5. Drive shutdown on external fault input:
    a. Provide isolated input for dry contact from external motor or system safety devices to cause immediate shutdown of VFD.
    b. Safety shutdown to be operable in all operating modes of drive, including local operation from keypad.

2.5 HARMONIC PROTECTION REQUIREMENTS

A. All VFDs shall be capable of satisfactory operation from a source having voltage distortion and notch characteristics identified as acceptable for a “dedicated system” in IEEE 519 Table 10.2.

B. The Engineer has performed preliminary calculations based on typical VFD data which indicate that the minimum mitigation measures required to meet the specified harmonic criteria are one of the following topologies:

1. 18-pulse rectifier topology for each VFD.
2. Active filters or active front end rectifier topology for each VFD.

2.6 MOTOR PROTECTION REQUIREMENTS

A. The VFD shall produce a quality of output waveform adequate to allow the motor to produce rated torque at rated RPM continuously without exceeding the temperature rise given in NEMA MG 1 Table 31-2.

B. Provide motor overload, short circuit and ground fault protection integral to drive electronics.

C. The VFD shall not produce voltage spikes in excess of the following values at the motor terminals when operated with the feeder types shown on the Drawings and the actual installed feeder lengths.

1. If unmitigated voltage peaks exceed the specified limits, provide output line reactors, filters, or other devices as required to meet the specified limits:
    a. Inverter duty motors: 1280 V.
    b. Standard motors: 800 V.
    c. Rise time shall be greater than or equal to 0.1 microsecond.
    d. Motor lead length and data shall be determined by the Contractor based on the actual routing of the conductors.

2.7 EQUIPMENT CONSTRUCTION

A. Fabrication and Assembly:

1. Each VFD system shall be factory-assembled in an enclosure for remote mounting, and shall utilize interchangeable plug-in printed circuit boards and power conversion components wherever possible.
    a. Factory assembly shall be performed by the VFD manufacturer or authorized agent.
    b. Systems fabricated or assembled in whole or in part by parties other than the VFD manufacturer or authorized agent will not be acceptable.
2. Reactors and/or filters, where required, shall be mounted within or in an ancillary enclosure adjacent to the drive enclosure, or with the Engineer's permission may be mounted in a separate enclosure..
3. Cooling fans, as required, shall be provided to run when drive is running.
4. Enclosures for separately mounted VFD's:
    a. NEMA Type 12 for installations in pump station building.
        1) Provide enclosure cooling required to not exceed drive temperature ratings.

B. Wiring:

1. The wiring in the VFD shall be neatly installed in wire ways or with wire ties where wire ways are not practical.
    a. Where wire ties are used, the wire bundles are to be held at the back panel with a screw-mounted wire tie mounting base.
    b. Bases with a self-sticking back will not be allowed.
2. All plug-in contacts shall be gold-plated.
3. Provide terminal boards for all field wiring and inter-unit connections, including analog signals.
    a. Provide terminals for shield continuity where required.
4. Terminal blocks shall be complete with marking strip, covers and pressure connectors.
    a. Non-brittle, interlocking, track-mounted type.
    b. Screw terminals will not be allowed.
    c. A terminal for each conductor of external circuits plus one ground for each shielded cable.
    d. For free-standing panels, 8 inches of clearance shall be provided between terminals and the panel base for conduit and wiring space.
    e. Not less than 25% spare terminals shall be provided.
    f. Terminals shall be labeled to agree with identification indicated on the suppliers submittal drawings.
    g. Individually fuse each control loop or system and all fuses or circuit breakers shall be clearly labeled and located for easy maintenance.
5. All grounding wires shall be attached to the enclosure sheet metal with a ring tongue terminal.
    a. The surface of the sheet metal shall be prepared to assure good conductivity and corrosion protection.
6. Wiring shall not be kinked or spliced and shall have markings on both ends or be color coded.
    a. Markings or color code shall match the manufacturer's drawings.
7. With the exception of electronic circuits, all interconnecting wiring and wiring to terminals for external connection shall be stranded copper, type MTW or SIS, insulated for not less than 600 V, with a moisture-resistant and flame-retardant covering rated for not less than 90 DEGC.

C. Nameplates:

1. All devices mounted on the face of the drive shall be provided with a suitable nameplate as specified in Specification Section 10 14 00.
2. Push buttons, selector switches, and pilot lights shall have the device manufacturer's standard legend plate.
3. Relays, terminals and special devices inside the control enclosure shall have permanent markings to match identification used on manufacturer's wiring diagrams.

D. Painting: Enclosure, after being phosphate washed, shall be thoroughly cleaned and given at least one (1) coat of rust-inhibiting primer on all inner surfaces prior to fabrication.

2.8 COMPONENTS AND ACCESSORIES

A. Reactors:

1. Impedance: 3%.
2. Continuous current: Not less than drive rating.
3. Current overload: 150% for 1 minute.
4. Insulation temperature rating: 180 DEGC.
5. Copper windings.
6. Saturation current rating: 3.5 to 5 times rated current.
7. Hi-potential rating: 2500 VAC line to ground and line to line, for 1 minute.
8. Noise reduction features:
   a. Epoxy over cast coil.
   b. Extra dips and bakes of varnish over continuous wound coil.

2.9 SOURCE QUALITY CONTROL

A. Factory Tests:

1. Conduct all standard tests in accordance with NEMA and ANSI standards to ensure conformance to Specification requirements.

2.10 MAINTENANCE MATERIALS

A. Provide manufacturer's recommended renewable spare parts (e.g., power and control fuses).

B. Spare parts utilized during pre-start-up or start-up and demonstration testing shall be immediately restocked, at no cost to the Owner.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions and as indicated on the Drawings.

B. Provide separately mounted VFD enclosure with Short Circuit Current Rating (SCCR) labeling as required by NFPA 70 and other applicable codes.

1. Determine the SCCR rating by one of the following methods:
   a. Method 1: SCCR rating meets or exceeds the available fault current of the source equipment when indicated on the Drawings.
   b. Method 2: SCCR rating meets or exceeds the source equipment’s Amp Interrupting Current (AIC) rating as indicated on the Drawings.
   c. Method 3: SCCR rating meets or exceeds the calculated available short circuit current at the control panel.
2. The source equipment is the switchboard, panelboard, motor control center or similar equipment where the equipment or control panel circuit originates.
3. For Method 3, provide calculations justifying the SCCR rating. Utilize source equipment available fault current or AIC rating as indicated on the Drawings.

C. Verify the installed motor nameplate electrical requirements do not exceed the VFD capacity.

D. Provide services of manufacturer's representative to perform start-up services.

E. The selection of input and output harmonic and voltage spike protection shall also be made on the available physical space.

1. The space available on the Drawings shall not be exceeded.

3.2 START UP

A. Pre-start-up Services:

1. Shall be completed a minimum of 30 days prior to the start-up and demonstration period described in Specification Section 01 75 00.
2. Shall consist of:
   a. Physical and electrical installation check.
   b. Final adjustments and calibration of drive parameters.
   c. VFD operation from simulated input signals.
3. Shall be complete when VFD(s) are fully operational.

B. Field Quality Control:

1. Perform field measurement of harmonics at each PCC per Harmonic Protection Requirements Article.
   a. For each individual VFD.
   b. For the maximum number of VFDs that will be operational at the same time.
   c. When all loads are at 75% load minimum.
   d. Duration: 1 hour minimum.
2. Perform field measurement of the maximum voltage peak at the terminals of each motor fed from a VFD per Motor Protection Requirements Article.
   a. Use a high speed oscilloscope to produce a plot of Voltage (Y axis) versus Time (X axis).
      1) Time shall be measured in microseconds.
   b. Tests shall be performed at full:
      1) Full voltage and speed.
      2) Loaded to 75% minimum.
      3) Duration: 1 hour minimum.
3. Record all data necessary for the preparation of required test reports.

C. Start-up and Demonstration Services:

1. Supervise start-up of all units including recheck of settings made during the pre-start-up tests.
   a. Perform all work in the presence of the Owner's designated representatives.
2. Setup all VFDs with carrier frequency at minimum value consistent with proper operation; inform Engineer of carrier frequencies set in excess of 5 kHz and reason for setting.
3. Simulate operation of the VFD and its associated control and instrumentation system in both the manual and automatic modes.
   a. Ensure compatibility of VFD with associated control and instrumentation signals.
4. Simulate VFD failures and demonstrate troubleshooting aids.

D. Instruct Owner's designated personnel:

1. Minimum of 8 hours at the jobsite.
2. Include both field and classroom instruction.

3. Instructions shall include proper operation and maintenance procedures including, but not limited to:
   a. Lubrication.
   b. Troubleshooting.
   c. Repair and replacement.
   d. Parts inventory.
   e. Maintenance records.

END OF SECTION

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SECTION 26 32 13.16
GAS-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Engine generator set and accessories.

B. Related Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Environmental Protection Agency (EPA):
   a. 40 CFR 60, Standards of Performance for New Stationary Sources, New Source Performance Standards (NSPS):
      1) Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.
2. Institute of Electrical and Electronics Engineers (IEEE):
   a. C57.16, Standard Requirements, Terminology, and Test Code for Dry-Type Air-Core Series-Connected Reactors.
   b. C62.11, Standard for Metal-Oxide Surge Arresters for Alternating Current Power Circuits (>1 kV).
3. National Electrical Manufacturers Association (NEMA):
   a. LA1, Surge Arresters.
   b. MG 1, Motors and Generators.
4. National Fire Protection association (NFPA):
   a. 70, National Electrical Code (NEC).
5. Society of Automotive Engineers (SAE).
6. Underwriters Laboratories, Inc. (UL):
   a. 810, Standard for Capacitors.

B. The engine generator set manufacturer, or authorized supplier is designated to have single source responsibility for the supply of all components and installation of the generators and associated equipment.

1.3 SYSTEM DESCRIPTION

A. The engine generators will be used and rated for:

1. Optional standby power during a utility power outage, NFPA 70, Article 702.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Provide submittal data for all products specified in PART 2 of this Specification.
   b. See Section 26 05 00 for additional requirements.
   c. Engine/generator performance curves.
   d. Manufacturer’s certification that engine meets exhaust emissions specified in PART 2 of this Specification.
2. Fabrication and/or Layout Drawings:
   a. Dimensional Plan and Elevation Drawings.

b. Wiring Interconnection Drawings.

3. Test reports:
   a. Factory test data.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

C. Informational Submittals:

1. Unit installation, startup and operational statement.
2. Field Quality Control test reports.

1.5 SITE CONDITIONS

A. Ambient Air Temperature:

1. Minimum: --30 DEGF.
2. Maximum: 105 DEGF.

B. Altitude: 1300 feet above sea level.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Engine generator unit:
   a. Caterpillar.
   b. Cummins.
   c. Generac.
   d. Kohler.
   e. MTU Onsite Energy.
2. Silencers:
   a. Manufacturer's standard.
3. Battery charger:
   a. Manufacturer's standard.
4. Governor:
   a. Manufacturer's standard.
5. Radiator:
   a. Manufacturer's standard.
6. Vibration isolators:
   a. Manufacturer's standard.

2.2 EQUIPMENT

A. Emissions Requirements:

1. A single units emissions shall meet all Federal, State and Local government requirements, including but not limited to:
   a. EPA NSPS 40 CFR 60, Subpart JJJJ.

2.3 COMPONENTS

A. Engine Generator Unit General:

1. Natural gas engine direct-connected to alternating current generator mounted on suitable rigid steel skid supports.
2. Mount unit on skid suitable for installation on concrete foundation.
3. Base rating on operation at rated RPM when equipped with all operating accessories.
4. Standards: UL 2200.

B. Engine:

1. Heavy duty, industrial, spark-ignited, water and fan cooled, turbocharged and aftercooled or innercooled, four-cycle engine.
2. Rotational speed: 1800 RPM.
3. Fuel supply: Natural gas.
4. Connecting rod:
   a. Use steel forging, angle-split for easy removal through cylinder liner.
   b. Serrated split line for precise cap alignment.
   c. Rifle drill for full pressure piston pin lubrication and piston crown cooling.
5. Crankcase:
   a. Provide rigid one piece ferrous alloy casting with integral cylinder frame.
   b. Vee angle of 60 degrees.
   c. Deep suction main bearing caps cross-tie bolted to crankcase for extra rigidity.
6. Crankshaft:
   a. Provide multi-plane forging of high alloy steel, with precision ground and hardened main bearing and crankpin journals.
   b. Dynamically balance.
   c. Provide generous overlap of main bearing and crankpin journals for increased crankshaft stiffness.
   d. Use large diameter main bearings with service rating.
7. Cylinder head:
   a. One interchangeable deep suction casting for each cylinder.
   b. Four overhead valves per cylinder; dual stellite-faced intake valves and dual stellite-faced inconel exhaust valves, 30 degrees angle seat.
      1) Solid stellite valve seat inserts.
   c. Valve lifters with hydraulic push rods.
   d. Valve guides of ferrous alloy.
      1) Alloy iron rocker arms.
   e. Cylinder head gasket with laminated fire ring to seal combustion.
   f. Mount each head casting rigidly to crankcase by minimum 1 inch diameter high strength steel alloy studs.
8. Cylinder liner: Removable wet type.
9. Flywheel housing: Provide SAE #00.
10. Oil pan:
    a. Provide base type with access openings to permit inspection, maintenance and removal of connecting rod and main bearings.
11. Pistons: Provide heavy section contour ground oil cooled aluminum alloy with NI-resist top ring groove insert and floating piston pin.
12. Vibration damper: Provide viscous type, mounted at front end of crankshaft.
13. Air cleaner: Provide dry, panel type air cleaners with rain shield and service indicator.

14. Flywheel: Machine to suit requirements.
15. Pyrometer: Provide RTD on exhaust and indicate on engine mounted panel.
16. Capable of operating at idle or light loads for extended periods of time without deterioration.

C. Lubricating System:

1. Positive displacement, gear-type lubricating oil pump to supply oil under pressure to main bearings, crank pin bearings, pistons, timing gears, camshaft bearings and valve rocker mechanism.
2. Spray cool and lubricate pistons.
3. Oil filters so located that lubricating oil is continuously filtered, except during periods when oil is automatically by-passed to protect vital parts when filters are clogged.
4. Filter elements accessible and easily removable.
5. Filter elements: Effective full flow, replaceable resin-impregnated cellulose type.
6. Equip filter system with spring-loaded by-pass valve.
7. Oil cooler: Water-cooled, engine-mounted.

D. Fuel System:

1. Single connection point.
2. Solenoid valve.
3. 10 psi gas will be provided from the utility. Utility gas will be regulated further as indicated in the Drawings. At the engine, provide additional regular as required.
4. Carburetor.

E. Governor:

1. Fully enclosed electronic type governor with actuator capable of providing accurate speed control within 1% of rated speed, complete with panel-mounted electronic assembly with ramp generator.

F. Air Cleaners: Engine-mounted, dry type air cleaners of sufficient capacity.

G. Electric Starting System:

1. Sufficient capacity to crank at speed which will start engine under normal operating conditions.
2. Controls to provide automatic cranking of engine when generator is called to start.
3. Prevent excessive cranking which could damage cranking motor.
4. Automatic stop controls.
5. Starter motors with positive-engagement feature.

H. Cooling System:

1. Capacity for cooling engine at the specified operating and ambient conditions.
2. Engine driven, centrifugal type water circulating pump and thermostatic valve to maintain the engine at recommended temperature level.
3. Unit mounted radiator.
    a. Core guard flexible duct adapter.
    b. Site glass at top of unit.
    c. Engine driven blower fan.
    d. Low water level cutoff switch.
4. Provide fan guards.

I. Heater:

1. Thermostatically controlled jacket water heater to maintain cooling jacket at the manufacturer's recommended temperature at the specified low ambient temperature.

2. 120 V, single phase.
3. Set at 130 - 139 DEGF.

J. Silencer:

1. Suitable type for residential silencing.
2. Material: All stainless steel.

K. Flex Exhaust Connector:

1. Seamless, stainless steel, exhaust adapter for exhaust outlet to silencer.

L. Batteries:

1. Lead acid type.
2. Furnish electrolyte separately for use when installation is complete and unit is ready for testing.
3. Provide battery rack.

M. Battery Charger:

1. Output current rating of at least 1/20th of ampere hour capacity of battery and capable of automatically switching between low rate (float) mode and high rate (equalize) mode.
2. Solid state rectifiers, DC voltmeter and ammeter, fuse input and output, and 115 VAC input.
3. Malfunction alarm contacts (minimum): Low and high battery voltage, weak battery and charger failure.
4. Mount on adjacent wall or support structure next to batteries.

N. Generator:

1. Brushless, 4 pole drip-proof revolving field type with permanent magnet, 2/3 pitch stator, direct-coupled rotor, Class F insulation, 4 wire, 0.8 power factor, 60 Hz, 480/277V.
2. Minimum standby ratings:
   a. As indicated on the Drawings, substantiated by manufacturer's standard published curves and conform to NEMA MG 1.
   b. Special ratings or maximum ratings are not acceptable.
3. Rated to serve up to 50% non-linear load without exceeding rated temperature rise.
4. Minimum efficiency: 92% at 50 to 110% of nominal standby rating.
5. Less than 30% instantaneous voltage dip at full load and rated power factor and suitable for simultaneous operation with other units connected in parallel.
6. Stator and rotor: 130 DEGC temperature rise with minimum Class F insulated with 100% epoxy impregnation and overcoat of resilient insulating material to reduce possible fungus and/or abrasive deterioration.
7. Directly connect stator to engine flywheel housing.
8. Drive rotor through semiflexible driving flange to ensure permanent alignment.
9. Self ventilating with suitable blower, air inlet and outlet openings.
10. Generator drive free from critical torsional vibration within operating range.
11. Provide two RTD per phase in stator windings.
    a. Connect to Generator Protection relay.
12. Provide condensation heater.
13. Provide generator mounted main circuit breaker:
    a. Solid state molded case type.
    b. Ratings as indicated on Drawing.

O. Voltage Regulator:

1. SCR type, to maintain 2% voltage regulation from 0 to full load with steady state modulation not exceeding plus 1/2% including cross-current compensation to provide maximum of 5% unbalance in kVA load sharing between parallel generators.
2. Automatic protection against short circuits on system.
    a. Provide 3.0 PU for 10 seconds.
3. Permit unit to operate at no load below rated frequency for engine start up and shut down procedures.
4. Provide voltage level and gain controls for normal operating adjustments.
5. Provide voltage level control with minimum range of ±5% from rated voltage.
6. Mount regulator, volts per hertz type, in generator housing on suitable vibration isolators.

P. Engine Control Panel (located at or on genset):

1. Microprocessor based controller with:
    a. Modbus communication protocol.
    b. Touchscreen Human Machine Interface (HMI).
    c. Programmable I/O.
2. Engine sensors:
    a. Oil pressure.
    b. Oil temperature.
    c. Coolant temperature.
    d. Coolant level.
    e. Fuel pressure.
    f. Engine speed.
    g. DC Battery Voltage
    h. Run-time hours.
    i. Generator voltage.
    j. Generator amps.
    k. Generator frequency.
    l. Generator power.
    m. Generator power factor.
3. Automatic cycle cranking and over-crank protection.
4. Safety controls: Equip engine with automatic safety controls to shut down engine in event of low lubricating oil pressure, high jacket water temperature, overspeed or overcrank.
5. Local and Remote Alarms/Statuses: The following alarms/statuses shall be displayed at the generator control panel mounted HMI and relayed to pump station SCADA control panel via Modbus connection.
    a. Low/High AC Voltage.
    b. Low/High Battery Voltage.
    c. Low/High Frequency.
    d. Low Oil Pressure.
    e. High Oil Temperature.
    f. Low Water Level.
    g. Lower Water Temperature.
    h. High Engine Temperature.
    i. High Fuel Pressure.
    j. Lower Fuel Pressure.
    k. Overcrank.

l. Over/Under Speed.
m. Unit Not in Automatic.

6. Three Form C auxiliary contacts for interface with louvers, fans or other miscellaneous equipment.
   a. Contacts shall be connected in a failsafe configuration.
7. Enclosure mounted emergency stop.
8. Run time meter.

Q. Vibration Isolators: Vibration system shall consist of engine and generator mount isolators with or without additional mechanical spring isolators rubber pads to control both high and low frequency vibrations between major components, sub-base and structural foundation and to provide required vibration isolation for the seismic zone of the Project.

R. Enclosure: Generator shall be provided with manufacturer's standard, Level 3 (steel) sound attenuated enclosure.

2.4 SOURCE QUALITY CONTROL

A. Individually test each prime mover.

1. Apply derating factors for the proposed site to test data.
2. Continuously test for a period no less than 2 hours.
3. Test procedure shall be as follows:
   a. Start prime mover and upon reaching rated RPM, pick up 50% of nameplate KW rating at rated power factor in one step.
   b. Load rejection test.
   c. Observe and record the cranking time(s) required to start and run for each prime mover.
   d. Observe and record the time required to come up to operating speed for each prime mover.
   e. Record voltage and frequency overshoot for each prime mover.
   f. Record voltage, frequency and amperes.
   g. Record oil pressure, water temperature where applicable and battery charge rate at first load acceptance and at 15 minute intervals thereafter for each prime mover.

2.5 MAINTENANCE MATERIALS

A. Spare Parts: Provide manufacturer's recommended spare parts.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all components as indicated and in accordance with manufacturer's recommendations and instructions.

B. Fill cooling system with solution of 50-50 water and ethylene glycol anti-freeze to prevent freezing at temperatures as low as minus 35 DEGF.

C. Install all wiring to engine in conduit. Control wiring on engine may be factory installed in high temperature loom.

D. Provide control wiring in conduit between generator control panel and remote devices as described under generator instrument and controls paragraph and remote annunciator paragraph of this Specification.

E. Mount on concrete pad utilizing vibration/seismic isolators, see structural drawings for pad detail.

3.2 FIELD QUALITY CONTROL

A. Employ and pay for services of equipment manufacturer's field service representative(s) to:

1. Inspect equipment covered by this Specification Section.
2. Supervise pre-startup adjustments and installation checks.
3. Conduct initial startup of equipment and perform operational checks.
4. Provide Owner written statement that manufacturer's equipment has been installed properly, started up, tested, and is ready for operation by Owner's personnel.
5. Provide 4 hours of the manufacturer's technical representative's time for on-site training of Owner's personnel.

B. Provide two load tests and one cycle crank tests.

1. Tests one and two shall be for continuous period of no less than 2 hours each.
   a. Engineer and Owner shall be notified 7 days prior to testing.
2. Test number one:
   a. With prime mover(s) in a "cold start" condition and emergency load at normal operating level, initiate a normal power failure by opening all switches or breakers supplying normal power to facility.
   b. Observe and record the time delay on engine start.
   c. Observe and record the cranking time(s) required to start and run for each prime mover.
   d. Observe and record the time required to come up to operating speed for each prime mover.
   e. Record voltage and frequency overshoot for each prime mover.
   f. Observe and record time required to achieve steady-state condition with all switches transferred to emergency position.
   g. Record voltage, frequency and amperes.
   h. Record oil pressure, water temperature where applicable and battery charge rate at 5 minute intervals for the first 15 minutes and at 15 minute intervals thereafter for each prime mover.
   i. Return normal power to facility, record time delay on retransfer to normal for each switch and cooldown time delay for each prime mover.
3. Test number two:
   a. Immediately after completion of test number one, start prime mover and upon reaching rated RPM, pick up 100% of nameplate KW rating in a maximum of three steps.
      1) Unity power factor is acceptable for on-site testing.
   b. Observe and record the cranking time(s) required to start and run for each prime mover.
   c. Observe and record the time required to come up to operating speed for each prime mover.
   d. Record voltage and frequency overshoot for each prime mover.
   e. Observe and record time required to achieve steady-state condition.
   f. Record voltage, frequency and amperes.
   g. Record oil pressure, water temperature where applicable and battery charge rate at first load acceptance and at 15 minute intervals thereafter for each prime mover.
4. Cycle crank test:
   a. Perform test for each prime mover.
      1) Utilize any method recommended by manufacturer to prevent prime mover(s) from running.
      2) Put control switch into "run" position to cause prime mover to crank.
   b. A complete cranking cycle shall consist of an automatic crank period of approximately 15 seconds duration followed by a rest period of approximately 15 seconds duration.
      1) Upon starting and running of the prime mover, further cranking shall cease.
      2) Two means of cranking termination shall be utilized so that one will act as a backup to the other to prevent inadvertent starter engagement.

3) Cranking limiter time shall be 75 seconds for cycle crank.

5. Furnish load banks of required ratings necessary for tests.
6. Record engine fuel consumption by means of test equipment.
7. Test all safeties specified for generator instruments and controls as recommended by manufacturer and as required to verify proper operation.
8. The Contractor shall be responsible for fuel and all consumables use during the test.

END OF SECTION

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SECTION 26 36 00
TRANSFER SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Automatic transfer switches.

B. Related Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
   b. KS 1, Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
2. Underwriters Laboratories, Inc. (UL):
   a. 98, Standard for Safety Enclosed and Dead-Front Switches.
   b. 1008, Standard for Safety Switch Equipment.

1.3 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
   a. Provide submittal data for all products specified in PART 2 of this Specification:
   b. See Section 26 05 00 for additional requirements.
2. Fabrication and/or Layout Drawings.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

1.4 DELIVERY, STORAGE, AND HANDLING

A. See Section 26 05 00.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the listed manufacturers are acceptable:

1. Automatic transfer switches:
   a. Automatic Switch Company.
   b. Kohler.
   c. Onan.
   d. Russelectric.
   e. ABB Zenith.

2.2 AUTOMATIC TRANSFER SWITCH

A. Construction:

1. Electrically operated mechanically held, double throw, air-break type.

2. Silver-surface main contacts and protect by arcing contacts.
3. Switch shall have provisions for visual inspection of switch blades and contacts.
4. Mechanical design will positively open all ungrounded conductors from normal source before connection is made to alternate source and will positively open alternate source before connection is made to normal source.
5. Mechanical interlock to ensure the switch cannot be readily disabled, disconnected, improperly adjusted, removed or otherwise made inoperative.
6. Make all contacts and coils readily accessible for replacement from front of panel without major disassembly.
7. Ratings:
   a. Continuous duty in both normal and emergency.
   b. Three-phase, three-pole, four-wire.
   c. Voltage and current ratings as indicated on the Drawings.
   d. Short circuit withstand rating equal to or greater than the normal source electrical gear.
8. Standards: UL 1008.

B. Operation:

1. Microprocessor based control module.
2. Open transition.
3. Red and green indicating lights with fuses, identification nameplates, and test switch on front to simulate normal power failure at switch.
4. Engine starting contacts and all other auxiliary contacts and accessory devices for functions to be performed.
5. Supervisory voltage relays on each phase of normal source and single phase supervisory voltage and frequency relay for emergency source.
   a. Normal source voltage sensing.
      1) Adjustable pickup from 85-100% of rated voltage, factory set 90%.
      2) Adjustable dropout from 75-98% of pickup setting, factory set 85%.
   b. Emergency source voltage and frequency sensing:
      1) Adjustable pickup from 85-100% of rated voltage, factory set 90%.
      2) Fixed voltage dropout at 85% of pickup setting.
      3) Adjustable pickup from 90-100% of rated frequency, factory set 95%.
      4) Fixed frequency dropout at 88% of pickup setting.
6. Time delays:
   a. Engine start, adjustable from 0 to 10 seconds, factory set at 4 seconds, to avoid unnecessary starting caused by short time outages.
   b. Transfer to generator, adjustable from 0 to 120 seconds, factory set at 10 seconds.
   c. Retransfer to normal, adjustable from 2 to 30 minutes, factory set at 15 minutes to avoid erratic operation caused by short time reestablishment of normal source.
      1) Automatically bypassed when emergency source fails and normal source is available.
   d. Generator cool down, adjustable from 0 to 60 minutes, factory set at 10 minutes.
7. Exerciser timer:
   a. Enable and disable function.
   b. Selectable to exercise with or without transferring load.
   c. Adjustable exercise duration from 1 minute to 24 hours, factory set at 15 minutes.
   d. Adjustable day of the week exercise setting, factory set for Monday.

8. Inphase monitor:
    a. Compare the phase relationship and frequency difference between the normal and emergency sources and permit transfer the first time the sources are within 15 electrical degrees and only if transfer can be accomplished within 60 electrical degrees as determined by monitoring the frequency differences.
    b. Inphase transfer accomplished if both sources are within 2 Hz of rated frequency and 70% or more of rated voltage.
9. Statuses and Alarms:
    a. At a minimum, provide the following outputs for remote monitoring:
        1) Source 1 Status.
        2) Source 2 Status.
        3) General Alarm.

C. Enclosure:
1. NEMA 12 rated.
2. Body and cover: Sheet steel finished with a rust inhibiting primer and manufacturers standard paint inside and out.
3. No knockouts, hinged and lockable door.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as indicated and in accordance with manufacturer's recommendations and instructions.

B. Connect as indicated in one-line diagram.

C. Mounting of automatic transfer switches:
1. Wall-mounted or floor mounted on 4 inches high concrete pad.

3.2 FIELD QUALITY CONTROL

A. Automatic Transfer Switch Testing:
1. Simulate power outage by opening normal source overcurrent device.
    a. Verify engine generator starts and switch transfers in the specified time.
2. Close normal source overcurrent device to simulate the return of normal power.
    a. Verify the switch retransfers and engine generator shuts down in the specified time.
3. Perform a manual transfer and retransfer.
4. Verify the indicator lights function properly.

END OF SECTION

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SECTION 26 43 13

SURGE PROTECTION DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type PC3 SPD - Medium exposure locations (switchboard, panelboard and motor control center), integrally mounted.

B. Related Sections include but are not necessarily limited to:

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   a. C62.41, Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
   b. C62.41.1, Guide on the Surge Environment in Low-Voltage (1000V and Less) AC Power Circuits.
   c. C62.41.2, Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits.
   d. C62.45, Recommended Practice on Surge Testing For Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits.
2. Military Standard:
   a. MIL-STD-220B, Method of Insertion Loss Measurement.
3. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
4. National Fire Protection Association (NFPA):
   a. 70, National Electrical Code (NEC).
5. Underwriters Laboratories, Inc. (UL):
   a. 1283, Standard for Electromagnetic Interference Filters.
   b. 1449, Standard for Surge Protective Devices.

B. Qualifications:

1. Provide devices from a manufacturer who has been regularly engaged in the development, design, testing, listing and manufacturing of SPDs of the types and ratings required for a period of 10 years or more and whose products have been in satisfactory use in similar service.
   a. Upon request, suppliers or manufacturers shall provide a list of not less than three customer references showing satisfactory operation.

1.3 DEFINITIONS

A. Clamping Voltage:

1. The applied surge shall be induced at the 90 degrees phase angle of the applied system frequency voltage.
2. The voltage measured at the end of the 6 inches output leads of the SPD and from the zero voltage reference to the peak of the surge.

B. Let-Through Voltage:

1. The applied surge shall be induced at the 90 degrees phase angle of the applied system frequency voltage.

2. The voltage measured at the end of the 6 inches output leads of the SPD and from the system peak voltage to the peak of the surge.

C. Maximum Continuous Operating Voltage (MCOV): The maximum steady state voltage at which the SPD device can operate and meet its specification within its rated temperature.

D. Maximum Surge Current:

1. The maximum 8 x 20 microsecond surge current pulse the SPD device is capable of surviving on a single-impulse basis without suffering either performance degradation or more than 10% deviation of clamping voltage at a specified surge current.
2. Listed by mode, since number and type of components in any SPD may very by mode.

E. Protection Modes: This parameter identifies the modes for which the SPD has directly connected protection elements, i.e., line-to-neutral (L-N), line-to-line (L-L), line-to-ground (L-G), neutral-to-ground (N-G).

F. Surge Current per Phase:

1. The per phase rating is the total surge current capacity connected to a given phase conductor.
   a. For example, a wye system surge current per phase would equal L-N plus L-G; a delta system surge current per phase would equal L-L plus L-G.
   b. The N-G mode is not included in the per phase calculation.

G. System Peak Voltage: The electrical equipment supply voltage sine wave peak (i.e., for a 480/277 V system the L-L peak voltage is 679V and the L-N peak voltage is 392 V).

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Manufacturer's qualifications.
   b. Standard catalog cut sheet.
   c. Electrical and Mechanical Drawing showing unit dimensions, weights, mounting provisions, connection details and layout diagram of the unit.
   d. Testing procedures and testing equipment data.
   e. Create a Product Data Sheet for each different model number of SPD provided (i.e., Model XYZ with disconnect and Model XYZ without disconnect, each require a Product Data Sheet).
      1) Data in the Product Data Sheet heading:
         a) SPD Type Number per PART 2 of the Specification.
         b) Manufacturer’s Name.
         c) Product model number.
      2) Data in the Product Data Sheet body:
         a) Column one: Specified value/feature of every paragraph of PART 2 of the Specification.
         b) Column two: Manufacturer’s certified value confirming the product meets the specified value/feature.
         c) Name of the nationally recognized testing laboratory that preformed the tests.
         d) Warranty information.
      3) Data in the Product Data Sheet closing:
         a) Signature of the manufacturer’s official (printed and signed).
         b) Title of the official.
      4) Date of signature.

B. Operation and Maintenance Manuals:

1. See Specification Section 01 78 23 for requirements for:
   a. The mechanics and administration of submittal process.
   b. The content of the Operation and Maintenance Manuals.
2. Warranty.

1.5 WARRANTY

A. Minimum of a five year Warranty from date of shipment against failure when installed in compliance with applicable national/local electrical codes and the manufacturer's installation, operation and maintenance instructions.

PART 2 - PRODUCTS

2.1 GENERAL

A. Standards: IEEE C62.41.1, IEEE C62.41.2, IEEE C62.45, MIL-STD 220B, UL 1283, UL 1449.

2.2 TYPE PC3 SPD

A. Product:

1. SPD tag number or electrical equipment tag number SPD is connected to DP-01, LP-01.
2. Integrally mounted in panelboards.
3. Hybrid solid state high performance suppression system.
   a. Do not use gas tubes, spark gaps or other components in suppression system which might short or crowbar the line resulting in interruption of normal power flow to connected loads.
4. Do not connect multiple SPD modules in series to achieve the specified performance.
5. Designed for parallel connection.
6. Field connection: Use mechanical or compression lugs for each phase, neutral and ground that will accept bus bar or #10 through #1/0 conductors.
7. Device monitor:
   a. Long-life, solid state, externally visible indicators and Form C contact(s) that monitor the on-line status of each mode of the units suppression filter system or power loss in any of the phases.
   b. A fuse status only monitor system is not acceptable.

B. Operating Voltage: The nominal unit operating voltage and configuration as indicated on the Drawings.

C. Modes of Protection: All modes.

1. Three phase (delta): L-L, L-G.
2. Three phase (wye): L-N, L-L, L-G and N-G.
3. Single phase (2 pole): L-L, L-N, L-G and N-G.
4. Single phase: L-N, L-G and N-G.

D. Maximum Continuous Operating Voltage: Less than 130% of system peak voltage.

E. Operating Frequency: 45 to 65 Hz.

F. Short Circuit Rating: Equal to or greater than rating of equipment SPD is connected to.

G. Maximum Surge Current: 160,000 A per phase, 80,000 A per mode minimum.

H. Minimum Repetitive Surge Current Capacity: 4000 IEEE C High or B combination waveform impulses with no degradation of more than 10% deviation of the clamping voltage.

I. SPD Protection:

1. Integral unit level and/or component level overcurrent fuses and sustained overvoltage thermal cutout device.
2. An IEEE B combination wave shall not cause the fuse to open and render the SPD inoperable.

J. Maximum Clamping Voltages: Dynamic test at the 90 degrees phase angle including 6 inches lead length and measured from the zero voltage reference:

System Voltage	Test Mode	IEEE C62.41		UL 1449
		B Comb. Wave	B3 Ring Wave	
L-L < 250 V L-N < 150 V	L-L	1000 V	700 V	800 V
	L-N	600 V	400 V	500 V
	L-G	800 V	550 V	600 V
	N-G	800 V	550 V	600 V
L-L > 250 V L-N > 150 V	L-L	2000 V	1400 V	1800 V
	L-N	1150 V	800 V	1000 V
	L-G	1550 V	1000 V	1200 V
	N-G	1550 V	1000 V	1200 V

K. EMI-RFI Noise Rejection: Attenuation greater than 30 dB for frequencies between 100 kHz and 100 MHz.

2.3 SOURCE QUALITY CONTROL

A. SPD approvals and ratings shall be obtained by manufacturers from nationally recognized testing laboratories.

B. The SPD are to be tested as a complete SPD system including:

1. Integral unit level and/or component level fusing.
2. Neutral and ground shall not be bonded during testing.
3. 6 inches lead lengths.
4. Integral disconnect switch when provided.

C. The “as installed” SPD system including the manufacturers recommended circuit breaker, the SPD is connected to, will not open when tested with a IEEE C3 combination waveform.

D. Tests to be performed in accordance with IEEE C62.45:

1. Clamping voltage performance testing using IEEE C62.41 Category waveforms.
2. Single pulse surge current capacity test.
3. Repetitive surge current capacity testing.
4. Spectrum analysis for EMI-RFI noise rejection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Type PC3 SPD:

1. Connected in parallel to the equipment.

2. Install in dedicated electrical equipment compartment, bucket or panelboard box at the factory before shipment.
3. Provide leads that are as short and straight as possible.
4. Maximum lead length: 12 inches.
5. Minimum lead size: #2 stranded AWG or bus bar.
6. Connect leads to the equipment to be protected by one of the following means:
    a. Through a circuit breaker or molded case switch mounted in the equipment.
    b. Use manufacturer recommended circuit breaker size.
    c. Circuit breaker or switch to be operable from the equipment exterior or from behind a hinged door.

END OF SECTION

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SECTION 26 50 00
INTERIOR AND EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Material and installation requirements for:
    a. Interior building and exterior building mounted luminaires.
    b. Exterior and site luminaires.
    c. LEDs.
    d. Drivers.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 26 05 00 - Common Work Results for Electrical.
2. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
3. Section 26 09 16 - Electrical Control Components.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American National Standards Institute (ANSI):
    a. C78.377, Specification for the Chromaticity of Solid State Lighting Products.
2. Federal Communications Commission (FCC):
    a. Code of Federal Regulations (CFR), 47 CFR 18, Industrial, Scientific and Medical Equipment.
3. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
    a. C62.41, Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
4. Illuminating Engineering Society of North America (IESNA):
    a. LM-79, Electrical and Photometric Measurements of Solid-State Lighting Products.
    b. LM-80, Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules.
5. National Electrical Manufacturers Association (NEMA):
    a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
    b. 410, Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts.
    c. LE 4, Recessed Luminaires, Ceiling Compatibility.
6. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
    a. SSL 1, Electronic Drivers for LED Devices, Arrays or Systems.
7. National Fire Protection Association (NFPA):
    a. 70, National Electrical Code (NEC).
    b. 101, Life Safety Code.
8. Underwriters Laboratories, Inc. (UL):
    a. 248-4, Low-Voltage Fuses - Part 4: Class CC Fuses.
    b. 844, Standard for Luminaires for Use in Hazardous (Classified) Locations.
    c. 924, Standard for Emergency Lighting and Power Equipment.
    d. 1012, Power Units Other Than Class 2.
    e. 1310, Standard for Class 2 Power Units.

f. 1598, Luminaires.
g. 8750, Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products.

9. United States Department of Energy (USDOE):
   a. EPAct, the National Energy Policy Act.

1.3 DEFINITIONS

A. Useful Life for LED luminaire light sources:

1. The operating hours before reaching 70% of the initial rated lumen output (L70) with no catastrophic failures under normal operating conditions.
2. This is also known as 70% "Rated Lumen Maintenance Life" as defined in IESNA LM-80.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data:
   a. Provide submittal data for all products specified in PART 2 of this Specification Section.
   b. Identify luminaire by Luminaire Schedule designation.
   c. Luminaire data sheet:
      1) Name of manufacturer.
      2) Complete order information (catalog number).
      3) Description of construction and optics.
      4) Total input wattage.
      5) Luminous efficacy (lumens/Watt).
      6) Photometric performance data including candlepower distribution and coefficient of utilization (CU) table.
      7) Dimensional size.
      8) Weight.
   d. Solid state Luminaire additional data:
      1) Voltage.
      2) Initial and IES L70 lumens.
      3) Luminous efficacy (lumens/Watt).
      4) Correlated Color Temperature (CCT).
      5) Color Rendering Index (CRI).
      6) Total Harmonic Distortion (THD).
      7) Lamp life.
      8) Driver manufacturer and model number.
      9) Driver life.
      10) Driver type (0-10V, constant voltage, constant current).
      11) Dimming range and control device compatibility.
      12) Remote driver: Maximum wire length to luminaire.
      13) Emergency battery driver:
         a) Compatibility with lighting module.
         b) Lumen output of lighting module in emergency operation.
         c) Battery life.
         d) Description of testing.
         e) Ambient operating temperature.
      14) Toxicity Characteristic Leaching Procedure (TCLP) compliance.
      15) DesignLights Consortium (DLC) Listing.

16) Warranty information.

e. See Section 26 05 00 for additional requirements.

2. Test Reports:
   a. IESNA LM-79 Test Report for Solid-State Luminaire.
   b. IESNA LM-80 Test Report Solid-State Light Source.
3. Certifications: Solid-state Luminaire Useful Life Certificate.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
   b. Submittal data for each component covered by warranty.
   c. Warranty.

1.5 WARRANTY

A. Minimum of a five year Warranty from date of manufacture against failure for solid-state luminaire including LED arrays, LED drivers and integral control devices. The solid-state product is considered defective if more than 15% of the individual light emitting diodes fail to illuminate.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Luminaires: Per Luminaire Schedule or equal.
2. Solid State Light Sources:
   a. Luminaire manufacturer’s proprietary system.
3. LED Driver: Luminaire manufacturer's standard.
4. Emergency ballasts:
   a. Iota Engineering.
   b. Philips Bodine.
5. Emergency transfer devices: Philips Bodine.
6. Poles: Luminaire manufacturer's standard.

2.2 GENERAL REQUIREMENTS

A. Luminaires complete with LED modules and drivers.

B. Rated for area classification as indicated on the Drawings.

C. Provide all recessed luminaires with gaskets of rubber, fiberglass, or equivalent material to prevent light leaks around flush trim.

D. No live parts normally exposed to contact.

E. When intended for use in wet areas: Mark luminaire "Suitable for wet locations."

2.3 LUMINAIRES

A. Standards and Listings:

1. DesignLights Consortium (DLC).
2. UL 1598.
3. UL 844 for hazardous locations.
4. NEMA LE 4 for recessed locations.

B. Housings:

1. As indicated in the Luminaire Schedule and the following:
    a. Troffer luminaires:
        1) Minimum 22 gage sheet steel.
        2) Integral end plates and trim flanges to suit ceiling construction.
        3) Wire way covers with captive retainers to allow access to electrical components without use of tools.
    b. Down Light luminaires:
        1) Minimum 22 gage sheet steel, or minimum 16 gage sheet aluminum, unless noted otherwise.
        2) Auxiliary junction box secured to mounting frame.
    c. Extruded aluminum housings, where scheduled, shall be at least 1/8 inches thick.
    d. Punch and form housings prior to finishing (post-paint).

C. Castings:

1. As indicated in the Luminaire Schedule and the following:
    a. Uniform quality, free from imperfections affecting strength and appearance.
    b. Exterior surfaces, if not receiving a finish coat, shall be smooth and match adjacent surfaces. At least one coat of clear methacrylate lacquer shall be applied unless a painted finish is specified.

D. Fasteners:

1. As indicated in the Luminaire Schedule and the following:
    a. Aluminum or steel luminaires: Zinc-Nickel plated, stainless steel, or equivalent.
    b. Stainless steel luminaires: Stainless steel.
    c. Bronze luminaires: Bronze or stainless steel.
    d. Non-metallic luminaires: Stainless steel.

E. Finishes:

1. As indicated in the Luminaire Schedule and the following:
    a. Painted surfaces:
        1) Manufacturer's standard metal pretreatment and baked or air-dried, light-stabilized enamel finish, acrylic, alkyd, epoxy, polyester, or polyurethane.
        2) White finishes shall have minimum 85% reflectance.
    b. Unpainted surfaces:
        1) Interior: Clear anodic coating, satin finish.
        2) Exterior: Clear anodic coating.

F. Lens/Louver Frames:

1. As indicated in the Luminaire Schedule and the following:
    a. Extruded aluminum with mitered corners.
    b. Hinging or other normal motion shall not cause lens or louver to drop out.
    c. No light leak between frame and housing.

G. Lenses:

1. As Indicated in the Luminaire Schedule and the Following:
    a. 100% virgin, UV stabilized acrylic.
    b. Held securely in place but must also be removable for cleaning and servicing.
    c. Luminaires with directional lenses shall include a lens orientation device to ensure that lens installation provides light distribution as designed.

d. No light leaks between the lens and the luminaire.

H. Reflectors:

1. As Indicated in the Luminaire Schedule and the Following:
   a. Down Light Reflector and Baffle Finishes: First-quality "Alzak" anodized specular finish.
   b. Troffer reflector finish: Integral reflectors shall be painted white after fabrication with a minimum reflectance value of 90%.

I. Gaskets:

1. As Indicated in the Luminaire Schedule and the Following:
   a. Gaskets at face plates or frames of recessed luminaires which serve as ceiling trim and allow interior access.
   b. Moisture seal gaskets at exterior locations and in other designated wet areas.
   c. Secure frames to luminaire bodies with screws or other means, to result in tight installation, without light leaks.

J. Ventilation:

1. Ventilation openings of adequate size and quantity to permit operation of driver without affecting rated output or life expectancy. Include wire mesh screens.

K. Wiring:

1. Factory-wired to be compatible with the project electrical and controls systems.

L. Mounting Accessories:

1. Provide appropriate mounting accessories for each luminaire, compatible with various structural conditions encountered.
2. All luminaires with adjustable beam angles shall have a locking device to ensure that the beam distribution is not effected during servicing or cleaning.
3. Luminaire Suspension Material:
   a. Unfinished Spaces:
      1) 1/2 inches minimum diameter swivel stem, unless otherwise noted.
      2) Safety chain on high bay type.

2.4 SOLID-STATE LUMINAIRES - ADDITIONAL REQUIREMENTS

A. Standards:

1. IESNA LM-79, IESNA LM-80.
2. NEMA SSL 1.
3. UL 1012, 1310, and 8750.

B. Solid state modules and driver to be provided and warrantied by luminaire manufacturer.

C. Solid-State Modules:

1. Uniform color temperature of 4000K unless otherwise noted on the Luminaire schedule.
   a. Color temperature measurement shall have a maximum 3 SDCM on the MacAdam Ellipse for frosted lensed luminaires, and 2 SDCM for other luminaire types (ANSI C78.377).
2. Minimum color rendering index (CRI) of 80 for indoor and 70 for outdoor applications.
3. LED module light output and efficacy: Measured in accordance with IESNA LM-79 standards.
4. LED useful life and lumen maintenance: Measured in accordance with IESNA LM-80 standards.
5. Driver and LED module: Minimum useful life of 50,000 hours (L70).

6. Individual LEDs connected such that a failure of one LED will not result in a light output loss of the entire luminaire.

D. Driver:

1. Compatible with solid-state modules and control devices specified.
2. Operate from 60 Hz input source of 120V through 277V with sustained variations of ±10% (voltage and frequency).
3. Input current Total Harmonic Distortion (THD): Less than 20% when operated at nominal line voltage.
4. Power Factor: Greater than 0.90.
5. Avoid interference with infrared devices and eliminate visible flicker.
6. Comply with ANSI C62.41 Category A for Transient protection.
7. Comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
8. Dimmable drivers capable of continuous dimming over a range of 100% to 10% of rated lumen output, unless otherwise specified in Luminaire Schedule. Dimming controlled by a 0 - 10 VDC signal, unless otherwise specified in Luminaire Schedule.
9. Control device must be compatible with type of driver and coordinated prior to submission of Shop Drawings. List of compatible dimming controllers must include the range of perceived brightness. No visible flicker throughout the dimming range.
10. Operating temperature range must be suitable for site temperature conditions within exterior and gasketed luminaires.

E. Luminaire properly heat sinked to assure LED junction temperature ratings are not exceeded.

1. Provide ambient operating temperature range for which product is warrantied.

2.5 MAINTENANCE MATERIALS

A. Furnish a minimum of 10% of total of each type and amperage of fuses for fixtures indicated to be fused.

B. Spare parts are to be stored in a box clearly labeled as to its contents.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate Luminaire Types with Ceiling Construction:

1. Provide mounting hardware for the ceiling system in which the luminaire is to be installed.

B. Fasten luminaires supported by suspended ceiling systems to ceiling framing system with hold down clips.

C. Provide mounting brackets and/or structural mounting support for wall-mounted luminaires.

1. Do not support luminaire from conduit system.
2. When luminaire is supported from outlet boxes, install per NFPA 70.
3. Supports for luminaire mounted on exterior walls shall not be attached to exterior face of the wall.

D. Support surface mounted luminaires from the building structure and not from the ceiling suspension system.

1. Luminaires up to 4 feet wide and 4 feet long: A minimum of four supporting points, one at each corner.
2. Luminaires 8 feet long: A minimum of five support points, one at center of luminaire and one at each corner.
3. Luminaires smaller than 2 feet in length: A minimum of two supporting points.

E. Mount luminaire at heights indicated in Section 26 05 00 or per Luminaire Schedule or as indicted on the Drawings.

F. Install exterior luminaires so that water cannot enter or accumulate in the wiring compartment.

G. Ground luminaire.

3.2 ADJUST AND CLEAN

A. See Section 26 05 00.

END OF SECTION

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DIVISION 32

EXTERIOR IMPROVEMENTS

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SECTION 32 31 13
CHAIN LINK FENCE AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Chain link fencing and gates.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
   a. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   b. A392, Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
   c. A824, Standard Specification for Metallic-Coated Steel Marcelled Tension Wire for Use with Chain-Link Fence.
   d. F552, Standard Terminology Relating to Chain Link Fencing.
   e. F567, Standard Practice for Installation of Chain-Link Fence.
   f. F626, Standard Specification for Fence Fittings.
   g. F900, Standard Specification for Industrial and Commercial Steel Swing Gates.
   h. F1043, Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework.
   i. F1083, Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
2. American Welding Society (AWS).
3. National Fire Protection Association (NFPA):
   a. NFPA 70, National Electrical Code (NEC).
4. Underwriters Laboratories, Inc. (UL).

B. Qualifications:

1. Installer bonded and licensed in the Project state.
2. Installer shall have a minimum two years' experience installing similar fencing.
3. Utilize only AWS certified welders.

1.3 DEFINITIONS

A. See ASTM F552.

B. NPS: Nominal pipe size, in inches.

C. Installer or Applicator:

1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
2. Installer and applicator are synonymous.

1.4 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Manufacturer's installation instructions.
2. Scaled plan layout showing spacing of components, accessories, fittings, and post anchorage.

PART 2 - PRODUCTS

2.1 COMPONENTS

A. Chain Link Fabric:

1. Fabric type:
    a. ASTM A392 zinc-coated steel:
        1) Coated before weaving, 2.0 OZ/SQFT.
2. Wire gage: 9.
3. Mesh size: 2 inches.
4. Selvage treatment:
    a. Top: Twisted and barbed.
    b. Bottom: Knuckled.

B. Concrete:

1. ASTM C150 Type I.
2. 1 inch maximum size aggregate (ASTM C33).
3. Clean water.
4. Minimum 28-day compressive strength of 2500 psi.
5. Not less than four sacks of cement per cubic yard.
6. 3 inches minimum slump.
7. 2 to 4% entrained air.

C. Line Post:

1. ASTM F1083 pipe:
    a. Schedule 40, NPS 2.

D. Corner or Terminal Posts:

1. ASTM F1083 pipe:
    a. Schedule 40, NPS 2-1/2.

E. Brace and Rails:

1. ASTM F1083 pipe:
    a. Schedule 40, NPS 1-1/4.

F. Tension Wire:

1. Top and bottom of fabric:
    a. ASTM A824, galvanized steel, Class 3.

G. Fence Fittings (Post and Line Caps, Rail and Brace Ends, Sleeves-Top Rail, Tie Wires and Clips, Tension and Brace Bands, Tension Bars, Truss Rods):

1. ASTM F626.

H. Swing Gate:

1. ASTM F900.
2. Materials as specified for fence framework and fabric.
3. Hardware:
    a. Galvanized per ASTM A153/A153M.
    b. Hinges to permit 180 degrees outward gate opening.

I. Privacy Slats:

1. Material: HDPE.

2. Dimensions:
    a. Height: 7-FT.
    b. Width: Minimum 1 1/4-IN.
3. Visibility Blockage: Minimum 85%.
4. Temperature Range:
    a. Maximum: 250 degF.
    b. Minimum: -70 degF.
5. Tensile Strength: Minimum 3,000 psi.

2.2 SOURCE QUALITY CONTROL

A. Test related fence construction materials to meet the following standards:

1. Posts and rails: ASTM F1043, Heavy Industrial.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with:

1. Manufacturer's instructions.
2. Lines and grades shown on Drawings.
3. ASTM F567.

B. Do not start fence installation before final grading is complete and finish elevations are established.

C. Drill holes in firm, undisturbed or compacted soil.

D. Place fence with bottom edge of fabric at maximum clearance above grade, as shown on Drawings.

1. Correct minor irregularities in earth to maintain maximum clearance.

E. Space line posts at equal intervals not exceeding 10 feet on-center.

F. Provide post braces for each gate, corner, pull and terminal post and first adjacent line post.

G. Install tension bars full height of fabric.

H. Rails:

1. Fit rails with expansion couplings of outside sleeve type.
2. Rails continuous for outside sleeve type for full length of fence.

I. Provide expansion couplings in top rails at not more than 20 feet intervals.

J. Anchor top rails to main posts with appropriate wrought or malleable fittings.

K. Install bracing assemblies at all end and gate posts, as well as side, corner, and pull posts.

1. Locate compression members at mid-height of fabric.
2. Extend diagonal tension members from compression members to bases of posts.
3. Install so that posts are plumb when under correct tension.

L. Pull fabric taut and secure to posts and rails.

1. Secure so that fabric remains in tension after pulling force is released.
2. Secure to posts at not over 15 inches on-center, and to rails at not over 24 inches on-center, and to tension wire at not over 24 inches on-center.
3. Use U-shaped wire conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.
4. Bend ends of wire to minimize hazards to persons or clothing.

M. Install post top at each post.

N. Gates:

1. Construct with fittings or by welding.
2. Provide rigid, weatherproof joints.
3. Assure right, non-sagging, non-twisting gate.
4. Coat welds with rust preventive paint, color to match pipe.

END OF SECTION

DIVISION 40

PROCESS INTERCONNECTIONS

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SECTION 40 05 01
COMMON WORK RESULTS FOR PROCESS PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Process piping systems.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 10 14 00 - Identification Devices.
2. Section 40 05 51 - Common Requirements for Process and Utility Valves.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Water Works Association (AWWA):
   a. B300, Standard for Hypochlorites.
   b. C651, Standard for Disinfecting Water Mains.
2. American Water Works Association/American National Standards Institute (AWWA/ANSI):
   a. C110/A21.10, Standard for Ductile-Iron and Gray-Iron Fittings.
   b. C111/A21.11, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   c. C115/A21.15, Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.

B. Coordinate flange dimensions and drillings between piping, valves, and equipment.

1.3 DEFINITIONS

A. Hazardous Gas Systems: Digester gas, chlorine gas, sulfur dioxide gas, carbon dioxide gas, lab gases.

B. PVDF: Polyvinylidene fluoride.

1.4 SYSTEM DESCRIPTION

A. Piping Systems Organization and Definition:

1. Piping services are grouped into designated systems according to the chemical and physical properties of the fluid conveyed, system pressure, piping size and system materials of construction.
2. See PIPING SYSTEMS SCHEDULE in PART 3.

1.5 SUBMITTALS

A. Shop Drawings:

1. Product technical data including:
   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
   c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
      1) Attach technical product data on gaskets, pipe, fittings, and other components.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
    a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

C. Informational Submittals:

1. Qualifications of lab performing disinfection analysis on water systems.
2. Test reports:
    a. Copies of pressure test results on all piping systems.
    b. Reports defining results of dielectric testing and corrective action taken.
    c. Disinfection test report.
    d. Notification of time and date of piping pressure tests.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect pipe coating during handling using methods recommended by manufacturer.

1. Use of bare cables, chains, hooks, metal bars or narrow skids in contact with coated pipe is not permitted.

B. Prevent damage to pipe during transit.

1. Repair abrasions, scars, and blemishes.
2. If repair of satisfactory quality cannot be achieved, replace damaged material immediately.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Dielectric flange kit:
    a. PSI.
    b. Maloney.
    c. Central Plastics.
2. Dismantling Joint:
    a. Romac DJ400.
    b. Smith Blair 972.
3. Transition Coupling:
    a. Romac 501.
    b. Smith-Blair 441.

2.2 PIPING SYSTEMS SCHEDULE

A. Piping system materials, fittings and appurtenances are subject to requirements of specific piping systems schedule located at the end of PART 3 of this Specification Section.

2.3 COMPONENTS AND ACCESSORIES

A. Insulating Components:

1. Dielectric flange kits:
    a. Flat faced.
    b. 1/8 inches thick dielectric gasket, phenolic, non-asbestos.
    c. Suitable for 175 psi, 210 DEGF.
    d. 1/32 inches wall thickness bolt sleeves.
    e. 1/8 inches thick phenolic insulating washers.

B. Reducers:

1. Furnish appropriate size reducers and reducing fittings to mate pipe to equipment connections.
2. Connection size requirements may change from those shown on Drawings depending on equipment furnished.

C. Protective Coating and Lining:

1. Include pipe, fittings, and appurtenances where coatings, linings, coating, tests and other items are specified.
2. Piping systems scheduled in the PIPING SYSTEM SCHEDULES Article of this Section that are indicated to receive HPIC shall receive surface preparation and primer applied in the fabrication facility, at the coating applicator's shop, or other off-site location acceptable to the Engineer. Intermediate and topcoats are to be field applied unless noted otherwise.

D. Underground Warning Tape: See Specification Section 10 14 00.

E. Valves:

1. See schematics and details for definition of manual valves used in each system under 4 inches in size.
   a. See Specification Section 40 05 51 schedule for valve types 4 inches and above and for automatic valves used in each system.
2. See Specification Section 40 05 51.

PART 3 - EXECUTION

3.1 INTERIOR AND EXPOSED EXTERIOR PIPING INSTALLATION

A. Install piping in vertical and horizontal alignment as shown on Drawings.

B. Alignment of piping smaller than 4 inches may not be shown; however, install according to Drawing intent and with clearance and allowance for:

1. Expansion and contraction.
2. Operation and access to equipment, doors, windows, hoists, moving equipment.
3. Headroom and walking space for working areas and aisles.
4. System drainage and air removal.

C. Install vertical piping runs plumb and horizontal piping runs parallel with structure walls.

D. Pipe Support:

1. Size pipe supports with consideration to specific gravity of liquid being piped.

E. Locate and size sleeves and castings required for piping system.

F. Use reducing fittings throughout piping systems.

1. Bushings will not be allowed unless specifically approved.

G. Unions:

1. Install in position which will permit valve or equipment to be removed without dismantling adjacent piping.
2. Mechanical type couplings may serve as unions.
3. Additional flange unions are not required at flanged connections.

H. Install expansion devices as necessary to allow expansion/contraction movement.

I. Provide full face gaskets on all systems.

J. Anchorage and Blocking:

1. Block, anchor, or harness exposed piping subjected to forces in which joints are installed to prevent separation of joints and transmission of stress into equipment or structural components not designed to resist those stresses.

K. Equipment Pipe Connections:

1. Equipment - General:
    a. Exercise care in bolting flanged joints so that there is no restraint on the opposite end of pipe or fitting which would prevent uniform gasket pressure at connection or would cause unnecessary stresses to be transmitted to equipment flanges.
    b. Tighten flange bolts at uniform rate which will result in uniform gasket compression over entire area of joint.
        1) Provide tightening torque in accordance with manufacturer's recommendations.
    c. Support and match flange faces to uniform contact over their entire face area prior to installation of any bolt between the piping flange and equipment connecting flange.
    d. Permit piping connected to equipment to freely move in directions parallel to longitudinal centerline when and while bolts in connection flange are tightened.
    e. Align, level, and wedge equipment into place during fitting and alignment of connecting piping.
    f. Grout equipment into place prior to final bolting of piping but not before initial fitting and alignment.
    g. To provide maximum flexibility and ease of alignment, assemble connecting piping with gaskets in place and minimum of four bolts per joint installed and tightened.
        1) Test alignment by loosening flange bolts to see if there is any change in relationship of piping flange with equipment connecting flange.
        2) Realign as necessary, install flange bolts and make equipment connection.
    h. Provide utility connections to equipment shown on Drawings, scheduled or specified.

L. Provide insulating components where dissimilar metals are joined together.

M. Instrument Connections: See Drawing details.

3.2 CONNECTIONS WITH EXISTING PIPING

A. Where connection between new work and existing work is made, use suitable and proper fittings to suit conditions encountered.

B. Perform connections with existing piping at time and under conditions which will least interfere with service to customers affected by such operation.

C. Undertake connections in fashion which will disturb system as little as possible.

D. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to adjacent property.

E. Where connections to existing systems necessitate employment of past installation methods not currently part of trade practice, utilize necessary special piping components.

F. Where connection involves potable water systems, provide disinfection methods as prescribed in this Specification Section.

G. Once tie-in to each existing system is initiated, continue work continuously until tie-in is made and tested.

3.3 FIELD QUALITY CONTROL

A. Pipe Testing - General:

1. Test piping systems as follows:
    a. Test exposed, non-insulated piping systems upon completion of system.

2. Isolate equipment which may be damaged by the specified pressure test conditions.
3. Perform pressure test using calibrated pressure gages and calibrated volumetric measuring equipment to determine leakage rates.
    a. Select each gage so that the specified test pressure falls within the upper half of the gage's range.
    b. Notify the Engineer 24 hours prior to each test.
4. Completely assemble and test new piping systems prior to connection to existing pipe systems.
5. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.
6. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.

B. Pressure Testing:

1. Testing medium: Unless otherwise specified in the PIPING SYSTEMS SCHEDULE, utilize the following test media.
    a. Process systems:

PIPE LINE SIZE	SPECIFIED TEST PRESSURE	TESTING MEDIUM
2 inches and smaller	75 psi or less	Water
2 inches and smaller	Greater than 75 psi	Water
Greater than 2 inches	3 psi or less	Water
Greater than 2 inches	Greater than 3 psi	Water

2. Allowable leakage rates:
    a. Hazardous gas systems, all exposed piping systems, all pressure piping systems and all buried, insulated piping systems which are hydrostatically pressure tested shall have zero leakage goal at the specified test pressure throughout the duration of the test.
3. Hydrostatic pressure testing methodology:
    a. General:
        1) All joints, including welds, are to be left exposed for examination during the test.
        2) Provide additional temporary supports for piping systems designed for vapor or gas to support the weight of the test water.
        3) Provide temporary restraints for expansion joints for additional pressure load under test.
        4) Isolate equipment in piping system with rated pressure lower than pipe test pressure.
        5) Do not coat or insulate exposed piping until successful performance of pressure test.

3.4 CLEANING, DISINFECTION AND PURGING

A. Cleaning:

1. Clean interior of piping systems thoroughly before installing.
2. Maintain pipe in clean condition during installation.
3. Before jointing piping, thoroughly clean and wipe joint contact surfaces and then properly dress and make joint.

4. At completion of work and prior to Final Acceptance, thoroughly clean work installed under these Specifications.
    a. Clean equipment, fixtures, pipe, valves, and fittings of grease, metal cuttings, and sludge which may have accumulated by operation of system, from testing, or from other causes.
    b. Repair any stoppage or discoloration or other damage to parts of building, its finish, or furnishings, due to failure to properly clean piping system, without cost to Owner.

B. Disinfection of Potable Water Systems:

1. After favorable performance of pressure test and prior to Final Acceptance, thoroughly flush entire potable water piping system including supply, source and any appurtenant devices and perform disinfection as prescribed.
2. Perform work, including preventative measures during construction, in full compliance with AWWA C651.
3. Perform disinfection using sodium hypochlorite complying with AWWA B300.
4. Flush each segment of system to provide flushing velocity of not less than 2.5 feet per second.
5. Drain flushing water to sanitary sewer.
    a. Do not drain flushing water to receiving stream.
6. Use continuous feed method of application.
    a. Tag system during disinfection procedure to prevent use.
7. After required contact period, flush system to remove traces of heavily chlorinated water.
8. After final flushing and before placing water in service, obtain an independent laboratory approved by the Owner to collect samples and test for bacteriological quality.
    a. Repeat entire disinfection procedures until satisfactory results are obtained.
9. Secure and deliver to Owner, satisfactory bacteriological reports on samples taken from system.
    a. Ensure sampling and testing procedures are in full compliance to AWWA C651, local water purveyor and applicable requirements of State of Nebraska.

3.5 PIPING SYSTEM SCHEDULES

A. Piping System 10 – Exposed Potable Water Piping:

1. General:
    a. Piping symbol and service:
        1) PW - Potable Water.
    b. Test requirements:
        1) Test medium: Water.
        2) Pressure: 1.25 x working pressure.
        3) Duration: 6 hours.
    c. Gaskets and O-rings:
        1) O-rings: Neoprene or rubber.
        2) Flanged, push-on and mechanical joints (ductile iron): Rubber, AWWA/ANSI C111/A21.11.
2. System components:
    a. Pipe size 3 inches through 24 inches:
        1) Exposed service:
            a) Materials:
                (1) Flanged: Ductile iron, Class 350.
                (2) Provide screwed on flanges at equipment, valves and structural penetrations.

b) Reference: AWWA/ANSI C115/A21.15.

c) Lining: Cement.

d) Coating:

(1) Factory Primer:

(a) Surface Preparation – Pipe: NAPF 500-03-04.

(b) Surface Preparation – Fittings: NAPF 500-03-05.

(c) Primer: Tnemec Series N69 Hi Build Epoxoline II or Sherwin Williams Macropoxy 646 at 3.0 to 4.0 mil DFT.

(2) Field-Applied Coating:

(a) Surface Preparation: Minimum SSPC-SP1 solvent cleaning.

(b) For surfaces that have exceeded the coating manufacturer's published re-coat window, provide scarification and/or epoxy tie coating as recommended by the coating manufacturer's technical representative.

(c) Intermediate Coat: Tnemec Series N69 Hi Build Epoxoline II or Sherwin Williams Macropoxy 646 at 3.0 to 4.0 mil DFT.

(d) Finish Coat: Tnemec Series N69 Hi Build Epoxoline II or Sherwin Williams Macropoxy 646 at 3.0 to 4.0 mil DFT.

e) Fittings: Either AWWA/ANSI C110/A21.10 ductile or gray iron.

f) Joints:

(1) Flanged joints.

(2) Provide screwed-on flanges at valves, equipment, and structure penetration.

3. Install piping so as to be free to expand with proper loops, anchors and joints without injury to system or structure.

3.6 SERVICE SYSTEM SUMMARY

A. Service Systems as defined in the Drawings.

END OF SECTION

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SECTION 40 05 19
DUCTILE IRON PROCESS PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ductile iron piping, fittings, and appurtenances.

B. Related Sections include but are not necessarily limited to:

1. Section 40 05 01 - Common Work Results for Process Piping.

1.2 REFERENCE

A. Referenced Standards:

1. American Society of Mechanical Engineers (ASME):
   a. B1.1, Unified Inch Screw Threads (UN and UNR Thread Form).
   b. B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
2. ASTM International (ASTM):
   a. A536, Standard Specification for Ductile Iron Castings
   b. B695, Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
3. American Water Works Association/American National Standards Institute (AWWA/ANSI):
   a. C104/A21.4, Standard for Cement–Mortar Lining for Ductile-Iron Pipe and Fittings.
   b. C110/A21.10, Standard for Ductile-Iron and Gray-Iron Fittings.
   c. C115/A21.15, Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
   d. C150/A21.50, Standard for Thickness Design of Ductile-Iron Pipe.
   e. C151/A21.51, Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
   f. C153/A21.53, Standard for Ductile-Iron Compact Fittings for Water Service.
   g. C606, Standard for Grooved and Shouldered Joints.

1.3 SUBMITTALS

A. Shop Drawings:

1. Comply with Section 40 05 01.
2. Certification of factory hydrostatic testing.
3. If mechanical coupling system is used, submit piping, fittings, and appurtenant items which will be utilized to meet system requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Pipe and Fittings:
   a. American Ductile Iron Pipe.
   b. McWane Ductile.
   c. US Pipe.
   d. Engineer approved equal.
2. Flanged Adaptors (flanged coupling adapters):

a. Smith Blair, Style 912 (cast iron).
b. Dresser, Style 127 (cast iron).
c. Romac Style FCA501 (cast iron)

3. Compression Sleeve Coupling:
   a. Smith Blair, Style 431 (cast iron).
   b. Dresser, Style 153 (cast iron).
   c. Romac Industries, Style EC501 (ductile iron).

2.2 MATERIALS

A. Ductile Iron Pipe:
   1. AWWA/ANSI C115/A21.15.
   2. AWWA/ANSI C150/A21.50.
   3. AWWA/ANSI C151/A21.51.

B. Fittings and Flanges:
   1. AWWA/ANSI C110/A21.10.
   2. AWWA/ANSI C153/A21.53
      a. Do not use for pump suction piping.
   3. AWWA/ANSI C115/A21.15.
   4. Flanges drilled and faced per ASME B16.1 for both 125 and 250 psi applications.

C. Nuts and Bolts:
   1. Exposed: Mechanical galvanized ASTM B695, Class 40.
   2. Heads and dimensions per ASME B1.1.
   3. Threaded per ASME B1.1.
   4. Project ends 1/4 to 1/2 inches beyond nuts.

D. Gaskets: See individual piping system requirements in Section 40 05 01.

E. If mechanical coupling system is used, utilize pipe thickness and grade in accordance with AWWA C606.
   1. Manufactured from ductile iron conforming to ASTM A536.
   2. Gaskets: Flushseal® type, grade to suit the intended service.

F. See Piping Schedules in Section 40 05 01.

2.3 MANUFACTURED UNITS

A. Couplings:
   1. Flanged adaptors:
      a. Unit consisting of steel or carbon steel body sleeve, flange, followers, Grade 30 rubber gaskets.
      b. Provide units specified in the MANUFACTURERS Article.
      c. Supply flanges meeting standards of adjoining flanges.
      d. Rate entire assembly for test pressure specified on piping schedule for each respective application.

2.4 FABRICATION

A. Furnish and install without outside coatings of bituminous material any exposed pipe scheduled to be painted.

B. Furnish cast parts with lacquer finish compatible with finish coat.

2.5 LININGS AND COATINGS

A. Cement mortar lining: per AWWA/ANSI C104/A21.4

1. Standard thickness

B. Zinc Coating:

1. Provide in accordance with ISO 8179-1.

2.6 SOURCE QUALITY CONTROL

A. Factory Test:

1. Subject pipe to hydrostatic test of not less than 500 psi with the pipe under the full test pressure for at least 10 seconds.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Joining Method - Flanged Joints:

1. Install in accordance with AWWA/ANSI C115/A21.15.
2. Extend pipe completely through screwed-on flanged and machine flange face and pipe in single operation.
3. Make flange faces flat and perpendicular to pipe centerline.
4. When bolting flange joints, exercise extreme care to ensure that there is no restraint on opposite end of pipe or fitting which would prevent uniform gasket compression or would cause unnecessary stress, bending or torsional strains to be applied to cast flanges or flanged fittings.
5. Allow one flange free movement in any direction while bolts are being tightened.
6. Do not assemble adjoining flexible joints until flanged joints in piping system have been tightened.
7. Gradually tighten flange bolts uniformly to permit even gasket compression.

B. Flange Adaptors 12 inches and Less:

1. Locate and drill holes for anchor studs after pipe is in place and bolted tight.
2. Drill holes not more than 1/8 inches larger than diameter of stud projection.

C. Cutting:

1. Do not damage interior lining material during cutting.
2. Use abrasive wheel cutters or saws.
3. Make square cuts.
4. Bevel and free cut ends of sharp edges after cutting.

D. Support exposed pipe in accordance with Section 40 05 01.

E. Install restrained joint systems where specified in Section 40 05 01 under specific piping system.

3.2 FIELD QUALITY CONTROL

A. Test piping systems in accordance with Section 40 05 01.

END OF SECTION

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SECTION 40 05 51

COMMON REQUIREMENTS FOR PROCESS AND UTILITY VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Valving and valving appurtenances.

B. Related Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 40 05 01 - Common Work Results for Process Piping.
3. Section 40 05 57 - Actuators for Process Valves and Gates.
4. Section 40 05 61 - Gate Valves.
5. Section 40 05 66 - Check Valves.

1.2 REFERENCES

A. Definitions:

1. The following are definitions of abbreviations used in this Specification Section or one of the individual valve sections:
   a. CWP: Cold water working pressure.
   b. SWP: Steam working pressure.
   c. WOG: Water, oil, gas working pressure.
   d. WWP: Water working pressure.

B. Referenced Standards:

1. American Society of Mechanical Engineers (ASME):
   a. B1.20.1, Pipe Threads, General Purpose.
   b. B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
   c. B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
2. American Water Works Association (AWWA):
   a. C207, Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 inches through 144 inches.
   b. C550, Standard for Protective Coatings for Valves and Hydrants.
   c. C606, Standard for Grooved and Shouldered Joints.
3. American Water Works Association/American National Standards Institute (AWWA/ANSI):
   a. C111/A21.11, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

1.3 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
   a. See Section 40 05 57 - Actuators for Process Valves and Gates.
2. Product technical data including:
   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Manufacturer's installation instructions.
   c. Valve pressure and temperature rating.
   d. Valve material of construction.
   e. Special linings.
   f. Valve dimensions and weight.

g. Valve flow coefficient.

B. Informational Submittals:

1. Test reports if required in the individual valve specification.

C. Closeout Submittals:

1. Operation and Maintenance Data:
   a. Submit in accordance with Section 01 78 23 - Operation and Maintenance Data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, refer to individual valve Specification Sections for acceptable manufacturers.

2.2 MATERIALS

A. Refer to individual valve Specification Sections.

2.3 FABRICATION

A. End Connections:

1. Provide the type of end connections for valves as required in the Piping Schedules presented in Section 40 05 01 or as shown on the Drawings.
2. Comply with the following standards:
   a. Threaded: ASME B1.20.1.
   b. Flanged: ASME B16.1, Class 125 unless otherwise noted or AWWA C207.
   c. Bell and spigot or mechanical (gland) type: AWWA/ANSI C111/A21.11.
   d. Soldered: ASME B16.18.
   e. Grooved: Rigid joints per Table 5 of AWWA C606.

B. Refer to individual valve Specification Sections for specifications of each type of valve used on Project.

C. Nuts, Bolts, and Washers:

1. Exposed: Mechanical galvanized ASTM B695, Class 40.
2. Heads and dimensions per ASME B1.1.
3. Threaded per ASME B1.1.
4. Project ends 1/4 to 1/2 inches beyond nuts.

D. Epoxy Interior Coating: Provide epoxy interior coating for all ferrous surfaces in accordance with AWWA C550.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Painting Requirements: Match the valve coating system with the specific piping system coating requirements it is connected to, specified in Section 40 05 01.

C. Support exposed valves and piping adjacent to valves independently to eliminate pipe loads being transferred to valve and valve loads being transferred to the piping.

D. Install valves accessible for operation, inspection, and maintenance.

3.2 ADJUSTMENT

A. See section 40 05 57 for adjustment requirements.

3.3 VALVE SCHEDULE

A. Unless shown otherwise on Drawings and drawing schedules, provide valves as follows:

Valve Tag	Service[1]	Type	Size (dia), Inches	Actuator [2]	Voltage / Phase[3]	Supply Pressure, PSI[4]	Open / Close or Modulating [5]	Comment
CV-01	PW	Check Valve	8	N/A	N/A	N/A	O/C	
V-01	PW	Gate Valve	8	M	N/A	N/A	O/C	
V-02	PW	Gate Valve	8	M	N/A	N/A	O/C	

1. Service defined in section 40 05 01
2. M = Manual, N/A = Not Applicable
3. N/A = Not Applicable
4. O/C = Open/Close

END OF SECTION

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SECTION 40 05 57
ACTUATORS FOR PROCESS VALVES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Actuators for valves and gates.
    a. Manual actuators.

B. Related Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 40 05 51 - Common Requirements for Process and Utility Valves.

1.2 REFERENCES

A. Referenced Standards:

1. American Water Works Association (AWWA):
    a. C500, Standard for Metal-Seated Gate Valves for Water Supply Valves.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: actuator manufacturers must have at least 100 installations with each type of proposed actuators.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Provide actuators that are fully compatible with valve or gate for which it is intended.
2. Contractor to coordinate valve/gate manufacturer and actuator manufacturer for proper sizing of actuator.
    a. See below for safety factors.
3. Mounting hardware by actuator manufacturer.
4. Install actuators at valve/gate manufacturers facility to allow for testing prior to shipping to site.

1.5 SUBMITTALS

A. Action Submittals:

1. Shop Drawings.
    a. Layout drawings with dimensions.
        1) Include those dimensions necessary for interfacing with valve/gate.
2. Product technical data including:
    a. Acknowledgement that products submitted meet requirements of standards referenced.
    b. Torque or thrust output.
    c. Travel speed.
    d. Control methodology.
    e. Control Accessories.
3. Samples of the factory finish colors available at no additional cost to Owner for selection by Engineer.
4. Test reports.

B. Informational Submittals:

1. Manufacturer's installation instructions.
2. Acknowledgement that the Manufacturer meets the number of installations criteria.
   a. Submit for each different manufacturer.
   b. Submit detailed installation list if requested by Engineer.
3. Recommended storage procedures.
4. Certificate of Proper Installation that includes verification from actuator manufacturer that actuators have been installed properly, that all limit switches and position potentiometers have been properly adjusted, and that the actuator responds correctly to the position command.
5. Test Reports.

C. Closeout Information:

1. Operation and Maintenance Data:
   a. See Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
   b. Lubrication Guide.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Manual Valve Actuators:
   a. By valve manufacturer.
2. For other types of actuators, refer to the individual article for that actuator type for acceptable manufacturers.

2.2 MATERIALS

A. Refer to individual Articles for materials.

2.3 VALVE ACTUATORS

A. Valve Actuators - General:

1. Provide actuators as shown on Drawings or specified.
2. Counter-clockwise opening as viewed from the top.
3. Direction of opening and the word OPEN to be cast in handwheel or valve bonnet.
   a. Paint in a contrasting color such as white.
4. Size actuator to produce required torque with a maximum pull of 80 pounds at the maximum pressure rating of the valve provided and withstand without damage a pull of 200 pounds on handwheel or chainwheel or 300 foot-pounds torque on the operating nut.
5. Valve Lockout Devices:
   a. Device manufactured from same material as valve actuator, preventing access to valve actuator, to accept lock shackle.

B. Exposed Valve Manual Actuators:

1. Provide for all exposed valves not having electric, cylinder or electro-hydraulic actuators.
2. Provide handwheels for gate and globe valves.
   a. Size handwheels for valves in accordance with AWWA C500.
3. Gear actuators required for plug valves, butterfly valves, and ball valves 4 inches diameter and larger.
4. Gear actuators to be totally enclosed, permanently lubricated and with sealed bearings.

5. Provide cast iron floor stands where shown on Drawings.
    a. Stands to be furnished by valve manufacturer with actuator.
    b. Stands or actuator to include thrust bearings for valve operation and weight of accessories.

2.4 SOURCE QUALITY CONTROL

A. Source Quality Control – General:

1. Actuators for Valves: Prior to shipping equipment from the production or fabrication facility, perform manufacturer's standard factory tests and inspections and submit documentation of successful completion to Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Location and Orientation:

1. Provide actuators and operators as shown on the Drawings.
2. When not expressly shown on the Drawings, orient valve actuators so valve operator is in a position reasonably convenient for facility personnel.
3. When orientation of actuator, operator location, or both are unclear, submit to Engineer a request for interpretation and obtain Engineer's response before furnishing the associated Submittal and in no event, later than purchasing the associated valve and actuator.
4. Contractor is responsible for costs and delays incurred to remedy valve actuators furnished or installed in inconvenient or difficult-to-access positions and locations unless the Contract Documents require otherwise.
5. Contractor is not responsible for providing permanent platforms, stairs, or other extraordinary, permanent access measures unless so required by the Contract Documents.

C. Touch Up Painting Requirements:

1. Repair scuffs and scratches on factory-applied finishes using materials furnished by the actuator manufacturer, applied in accordance with the written instructions of both the actuator manufacturer and the Supplier of the touch-up material(s).

3.2 ADJUSTMENT

A. Adjust valves/gates, actuators, and appurtenant equipment to comply with Section 01 75 00.

1. Operate valve, open and close at system pressures.

3.3 SCHEDULE

A. See Section 40 05 51 - Common Requirements for Process and Utility Valves for valve schedules.

END OF SECTION

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SECTION 40 05 61
GATE VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gate valves.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 40 05 51 - Common Requirements for Process and Utility Valves.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Water Works Association (AWWA):
   a. C504, Standard for Rubber-Seated Butterfly Valves.
   b. C509, Standard for Resilient-Seated Gate Valves for Water Supply Service.
   c. C550, Standard for Protective Epoxy Interior Coatings for Valves and Hydrants.
2. Manufacturers Standardization Society of the Valve and Fittings Industry Inc. (MSS):
   a. SP-9, Spot Facing for Bronze, Iron and Steel Flanges.

1.3 DEFINITIONS

A. NRS: Non-rising Stem.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 40 05 51.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the manufacturers listed in the applicable Articles below are acceptable.

2.2 VALVES: WATER (POTABLE)

A. Resilient Wedge Gate Valves, 2 to 48 inches (Water, Wastewater Application):

1. Comply with AWWA C509.
2. Materials:
   a. Stem and stem nut: Bronze.
      1) Wetted bronze parts in low zinc bronze.
      2) Aluminum bronze components: Heat treated per AWWA C504.
   b. Body, gate: Ductile iron.
   c. Resilient wedge: Fully encapsulated rubber wedge. Ethylene Propylene Diene Monomer (EPDM).
3. Design requirements:

a. Minimum 350 PSIG working pressure.
b. Exposed: NRS, O-ring, stem seal, handwheel.
c. Counter clockwise open rotation.
d. Fusion bonded epoxy coating interior and exterior except stainless steel and bearing surfaces.
1) Comply with AWWA C550.
2) Comply with NSF 61.
3) Wetted bronze parts in low zinc bronze.
4) Aluminum bronze components: Heat treated per AWWA C504.

4. Manufacturers:
a. Mueller.
b. No “or equals”.

2.3 ACCESSORIES

A. Refer to Drawings and valve schedule for type of actuators.
1. Furnish actuator integral with valve.

B. Refer to Specification Section 40 05 51 for actuator requirements.

2.4 FABRICATION

A. General:
1. Provide valves with clear waterways the full diameter of the valve.

B. Spot valves in accordance with MSS SP-9.

PART 3 - EXECUTION

3.1 INSTALLATION

A. See Specification Section 40 05 51.

B. Do not install gate valves inverted or with the stems sloped more than 45 degrees from the upright unless the valve was ordered and manufactured specifically for this orientation.

END OF SECTION

SECTION 40 05 66
CHECK VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Swing check valves, three-inch to 24-inch diameter.

B. Related Requirements: Include but are not necessarily limited to:

1. Section 40 05 51 - Common Requirements for Process and Utility Valves.

1.2 REFERENCES

A. Referenced Standards:

1. American Water Works Association (AWWA):
   a. C508, Standard for Swing-Check Valves for Waterworks Service, 2 in. through 24 in. NPS.
2. NSF International (NSF), formerly National Sanitation Foundation:
   a. NSF/ANSI 61 – Drinking Water System Components– Health Effects.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Valve Manufacturers:
   a. Manufacturer shall be a business regularly engaged in manufacturing and furnishing check valves of the type required and similar equipment.
   b. Manufacturer shall be able to document having furnished not less than 50check valves, of the type required, of size equal to or larger than those required for the Work, during the past five years.
   c. When requested by Engineer, submit qualifications statement indicating manufacturer's record of manufacturing and furnishing check valves of the types and sizes required and furnish documentation of compliance with qualifications requirements of this Article.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. In accordance with Section 40 05 51.

B. Informational Submittals: Submit the following:

1. In accordance with Section 40 05 51.
2. Manufacturer's Instructions:
   a. Manufacturer's written instructions for delivery, handling, storage, installation, and startup.

C. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data:
   a. Submit in accordance with Section 01 78 23 - Operations and Maintenance Manuals.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT – GENERAL

A. For service in potable water applications or water that will be treated to become potable, materials and equipment shall be in conformance with NSF/ANSI 61.

2.2 SWING CHECK VALVES: 3 INCHES TO 24 INCHES

A. Swing Check Valves (Water):

1. Comply with AWWA C508.
2. Manufacturers:
    a. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
        1) Clow.
        2) America Darling.
        3) GA Industries.
        4) Nibco.
        5) Engineer approved equal.
3. Materials:
    a. Body and cover: Cast iron.
    b. Seat ring, hinge: Bronze.
    c. Disc:
        1) 6 to 24 inches: Cast iron with bronze face.
    d. Hinge shaft: Stainless steel.
    e. Bearings, connecting hardware: Bronze.
4. Design requirements:
    a. 175 psi working pressure (3 to 12 inches).
    b. Furnish with outside weight and lever.

2.3 SOURCE QUALITY CONTROL

A. Factory Tests and Inspections:

1. Perform manufacturer's standard factory tests and inspections on materials and equipment furnished. Correct defects prior to shipment to the Site.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation – General:

1. Provide check valves at locations shown and indicated in the Contract Documents.
2. Install in accordance with the Contract Documents and manufacturer's written instructions. In event of conflict between the Contract Documents and manufacturer's written instructions, obtain written interpretation or clarification from Engineer.
3. Comply with:
    a. Section 01 61 03 - Common Work Results for Equipment.
    b. Section 40 05 01 - Common Work Results for Process Piping.
    c. Section 40 05 51 - Common Requirements for Process and Utility Valves.
4. Before installing, ensure each check valve is clean and free of dirt and debris.

3.2 FIELD QUALITY CONTROL

A. Field Tests and Inspections:

1. Promptly after installing, before installing connecting pipe, verify proper and free operation of check valve.
2. Hydrostatically test check valves together with associated piping.
3. To extent practical, prior to Substantial Completion, verify proper operation of each installed check valve.

END OF SECTION

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DIVISION 43

PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT

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SECTION 43 05 23
COMMON WORK RESULTS FOR PROCESS LIQUID PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Pumping equipment.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 43 24 05 - Vertically Suspended Centrifugal Pumps.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. ANSI/Hydraulic Institute (ANSI/HI):
   a. 9.6.4, Rotodynamic Pumps for Vibration Measurements and Allowable Values.
   b. 14.6, Rotodynamic Pumps for Hydraulic Performance Acceptance Tests.

B. Coordinate all mechanical seal systems specified to ensure pump and seal compatibility.

C. Pump/motor and VFD coordination: See Specification Section 01 61 03.

1.3 DEFINITIONS

A. The abbreviations used in this section are defined as follows:

1. AOR: Allowable Operating Range.
2. BEP: Best Efficiency Point.
3. IPS: Iron Pipe Size.
4. NPSH3: Net Positive Suction Head for 3% head loss.
5. POR: Preferred Operating Range.
6. TDH: Total Dynamic Head.
7. TEFC: Totally Enclosed Fan Cooled.
8. VFD: Variable Frequency Drive.

B. Pump Service Category: Pump or pumps having identical names (not tag numbers) used for specific pumping service.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Specification Section 01 61 03.
2. Product technical data including:
   a. Performance data and curves with flow (GPM), head (FT), horsepower, hydraulic efficiency, rotating speed (RPM), AOR, BEP, POR, NPSH3 requirements, minimum bowl submergence requirements for vertical mixed flow, axial and turbine pumps.
   b. Pump accessory data.
   c. Bearing supports, shafting details and lubrication provisions.
      1) Bearing life calculations.
      2) Critical speed calculations.
   d. Solids passage information.
3. Certifications:
   a. Certified pump performance curves as described in the SOURCE QUALITY CONTROL Article.

b. Verification of Primary and Secondary conditions in POR and AOR.

4. Test reports:
   a. Factory testing results.

B. Contract Closeout Information:

1. Operation and Maintenance Data:
   a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

C. Informational Submittals:

1. Certifications:
   a. Provide a written statement that manufacturer's equipment has been installed properly, started up and is ready for operation by Owner's personnel.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Pumps:
   a. See individual pump Specification Sections.
2. Mechanical seals:
   a. Chesterton.
   b. John Crane.
   c. Garlock.
   d. Or as noted in the individual pump Specification Sections.

2.2 CENTRIFUGAL PUMP DESIGN

A. Provide units with increasing head characteristics from the end run out portion of the curve to:

1. Shut-off condition.

2.3 ACCESSORIES

A. See Specification Section 01 61 03.

B. Each Unit:

1. Lifting eye bolts or lugs.
2. Plugged gage cock connection at suction and discharge nozzles.
3. Tapped and plugged openings for casing and bearing housing vents and drains.
4. Fittings for properly adding flushing lubricant.
5. Pressure relief fittings for grease lubrication.

C. Mechanical Seals:

1. Provide as specified in the narrow-scope pump sections.
2. Provide rotating balanced O-ring type.
3. Provide water lubrication - cooling.
4. Materials:
   a. Metal parts except springs: 316 stainless steel.
   b. Springs: Hastelloy C.
   c. Seal faces: Unfilled carbon graphite versus silica-free Grade 99.5 ceramic.
   d. Elastomers: Viton.

2.4 FABRICATION

A. Pump Support:

1. Design base to support weight of drive, shafting and pump.
2. Comply with HI vibration limitations.
3. Mount vertical pumps on single piece pedestal machine base.
4. Mount vertical turbine/propeller/can pumps on a rigid machined base plate attached to the discharge elbow. Base plate to be bolted to the pump can or an independent rigid machined sole plate grouted to the concrete substructure with anchor rods and leveled with jackscrews.
5. Fabricate to withstand all operating loads transmitted from the pump and drive.

2.5 SOURCE QUALITY CONTROL

A. Verification primary design condition in POR.

B. Verification secondary design condition in AOR.

C. Factory hydrostatic test all pumps at 150% of shut-off head for a minimum of five minutes.

D. If specifically required in the individual pump specification sections, provide factory tests:

1. All units:
   a. Conduct tests in accordance with HI.
      1) Shut-off head and design condition: Positive unilateral performance tolerance meeting Grade 1U per ANSI/HI 14.6 for Rotodynamic Pumps.
2. All pumps:
   a. Head (FT) versus flow (GPM) pump curves:
      1) Efficiencies along curve.
      2) Brake horsepower along each curve.
3. Submit factory test results.

PART 3 - EXECUTION

3.1 INSTALLATION

A. See Specification Section 01 61 03.

B. Floor or Pad-Mounted Units (Non-Submersible):

1. Align vertically and horizontally level, wedge and plumb units to match piping interfaces.
2. Assure no unnecessary stresses are transmitted to equipment flanges.
3. Tighten flange bolts at uniform rate and manufacturer's recommended torque for uniform gasket compression.
4. Support and match flange faces to uniform contact over entire face area prior to bolting pipe flange and equipment.
5. Permit piping connecting to equipment to freely move in directions parallel to longitudinal centerline when and while bolts in connection flange are tightened.
6. Grout equipment into place prior to final bolting of piping but not before initial fitting and alignment.
7. Assemble connecting piping with gaskets in place and minimum of four bolts per joint installed and tightened.
   a. Test alignment by loosening flange bolts to see if there is any change in relationship of piping flange with equipment connecting flange.
   b. Realign as necessary, install flange bolts and make equipment connection.
8. Field paint as necessary for touch-up purposes only.

9. Provide pressure gage, visible from grade or operating floor, on discharge of all pumps and on suction and discharge of all non-submersible units.

3.2 FIELD QUALITY CONTROL

A. Provide services of equipment manufacturer's field service representative(s) to:

1. Inspect equipment covered by this Specification Section.
2. Supervise pre-start adjustments and installation checks.
3. Conduct initial start-up of equipment and perform operational checks.

B. If specifically required in the individual pump specification sections, provide field tests to:

1. Statically and dynamically balance each pump per ANSI/HI standards.
   a. To meet requirements of ANSI/HI 9.6.4 for Rotodynamic Pumps at any point on the pumps and motor.

END OF SECTION

SECTION 43 24 05
VERTICALLY SUSPENDED CENTRIFUGAL PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vertically suspended centrifugal pumps, also termed "vertical turbine pumps", configured as required in this Section and as shown on the Drawings.

B. Related Sections include but are not necessarily limited to:

1. Section 01 61 03 - Common Work Results for Equipment.
2. Section 01 78 23 - Operation and Maintenance Data.
3. Section 43 05 23 - Common Work Results for Process Liquid Pumps.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American National Standard Institute (ANSI):
   a. B16.1, Cast-Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
2. ASTM International (ASTM):
   a. A36, Standard Specification for Carbon Steel.
   b. A48, Standard Specification for Gray Iron Castings.
   c. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
   d. A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
   e. A582, Standard Specification for Free-Machining Stainless Steel Bars.
3. American Water Works Association (AWWA):
   a. E101, Vertical Turbine Pumps - Line Shaft Type.
4. Hydraulic Institute Standards (HI):
   a. ANSI/HI 9.6.4, Rotodynamic Pumps for Vibration Measurements and Allowable Values.
   b. ANSI/HI 14.6 Rotodynamic Pumps for Hydraulic Performance Acceptance Test.
5. International Organization for Standardization (ISO):
   a. ISO 1940-1, Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances.
6. NSF International:
   a. NSF/ANSI/CAN 61, Drinking Water System Components – Health Effects.

1.3 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings: See Specification Section 43 05 23.

B. Informational Submittals

1. Factory Test Reports
   a. Submit certified copies of factory test report pursuant to ANSI/HI 14.6.
      1) Receive Engineer’s approval before shipping equipment.
   b. Report shall include:
      1) Test log(s).
      2) Description of test piping, equipment, and setup.

3) Test procedure.

c. Certified performance curves with a minimum of 5 points for an Acceptance Grade “1U”.
   1) Head.
   2) Brake horsepower.
   3) Efficiency.
   4) Actual speed.

d. Plot curve(s) to be easily read at scales consistent with performance requirements.

2. Field Test Reports.
   a. Vibration Tests - See Section 01 61 03.
   b. Submit field vibration test reports pursuant to ANSI/HI 9.6.4.

C. Closeout Submittals:
   1. Operation and Maintenance Data:
      a. Submit in accordance with Section 01 78 23 - Operation and Maintenance Data.

1.4 UNIT RESPONSIBILITY

A. The supplier of the pumps shall coordinate the pump design with the motors and VFDs to create a pumping unit assembly.
   1. Assembly shall be tested and installed as a unit.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Pentair Fairbanks Nijhuis.
   2. Engineer approved equal.

2.2 PERFORMANCE AND DESIGN REQUIREMENTS

A. Performance Parameters:
   1. Booster Pump: BP-03
      a. Variable speed application.
      b. Primary Point Design Flow: 750 gpm.
      c. Primary Point Design TDH at pump discharge flange: 183 ft.
      d. Secondary Point Design Flow at Max RPM: 500 gpm.
      e. Secondary Point Design TDH at pump discharge flange: 210 ft.
      f. Minimum shutoff head: 225 ft.
      g. Minimum column size: 8 in.
      h. Minimum discharge flange size: 8 in.

B. Provide pumps with increasing head characteristics from secondary design conditions to shutoff condition.

C. Provide pumps with net positive suction head requirements (NPSHR) less than the net positive suction head available (NPSHA) at all operating conditions.

D. Secondary design point: within pump’s Allowable Operating Range (AOR).

E. Reduced Speed design point: within pump’s AOR.

2.3 MATERIALS

A. General:
   1. For potable water applications
      a. AWWA E101 as modified herein.
      b. NSF/ANSI/CAN 61 certification required.

B. All Pumps, Open or Enclosed Line Shaft:

1. Pump shaft and line shaft materials:
   a. 416 stainless steel (A582 Type 416).
2. Bowls: Cast iron, ASTM A48, Class 30.
3. Top, Intermediate and Bowl bearings: Bronze C89835.
4. Impeller: AISI 316 Stainless Steel.
5. Suction bell bearing: C89835 Bismuth Tin Bronze.
6. Suction case sand bearing collar: Bronze C89835.
7. Column and flanges: Steel, ASTM A53, Grade B.
8. Shaft coupling: 416 stainless steel.
9. Discharge head: Fabricated Steel.
10. Shaft sleeves: ASTM A 582, Type 416 stainless steel.
11. Baseplate: Steel ASTM A36.
12. Sole Plate: Steel ASTM A36.
13. Stuffing Box: Cast Iron, ASTM A48.
14. Adjustable Spacer Coupling: Steel, AISI 1040.
15. Suction Case Plug: Cast Iron, ASTM A48.
16. Suction Strainer: Type 316 stainless steel.
17. Fasteners bowls and columns:
    a. Nuts, bolts and washers: 316 SST.

2.4 FABRICATION

A. General:

1. Furnish units consisting of a vertical shaft turbine, direct connected to a vertical hollow shaft motor.
   a. Design unit with non-reversing ratchets.
2. Design such that weight of revolving parts of pump including unbalanced hydraulic thrust of impeller is carried by thrust bearing in driver.
3. Make provision at driver shaft for adjusting impeller with reference to bowls.
4. Provide registered fit between discharge head and motor.
5. Provide opening and guard for access to stuffing box and adjustable coupling.
6. Provide threaded inserts for lifting lugs.
7. All welds ground smooth.
8. Coating:
   a. For potable water applications provide coating systems and surface preparation that are NSF61 certified.
   b. Stripe coat all exposed sharp edges and exposed edges fabricated/machined parts, flanges and threads after assembly between prime coat and finish coat with intermediate/finish coat system.
9. All stainless-steel welded parts passivated, ASTM A380.
10. Mechanical seals: Shipped loose for installation by manufacturer at startup.
11. Design pumps to operate without damage from reverse rotation due to return of water through column.
12. Support weight of rotating assembly and thrust on motor bearings.
13. Design driver shaft to allow propeller adjustment relative to bowls.
14. Fabricate discharge head with long sweep elbow with minimum of four welded segments.
15. Support pump from baseplate sized to support entire operating pump assembly. If sole plate is used, machine base and sole plate for registered fit.

16. Locate shaft seal at or above baseplate.
17. Mount driver on support stand or column extension from base plate with access provided to shaft seal.
18. Dynamically balance propeller in accordance ISO 1940 Grade 6.3 standard.

B. Column:
1. Fabricate from steel pipe.
    a. Flanged connections.
2. Top and bottom sections of column pipes: Maximum 5-foot lengths.
3. Provide intermediate column sections not exceeding 5 feet in length.
4. Provide interior and exterior coating approved for use with potable water per NSF 61.
    a. Coat interior and exterior with a minimum of two (2) coats of TNEMEC 140N or equal resulting in a Dry Film Thickness (DFT) of 7-10 mils.

C. Open Line Shaft:
1. Maximum length: 5 feet.
2. Furnish renewable shaft sleeves at each bearing location.
3. Undercutting of shafting at sleeve locations is not permitted.
4. Provide rubber bearings at each column connection supported by retainers butted between machined faces of discharge column.

D. Pump Bowl and Suction Bell:
1. Provide bowl and suction bell constructed of close-grained cast iron, free from imperfections and accurately machined and fitted.
2. Coat pump bowl water passages with an abrasion-resistant baked enamel, phenolic or epoxy.
3. Provide coating suitable for potable water service. Coat interior and exterior with a minimum of two (2) coats of TNEMEC 140N or equal resulting in a Dry Film Thickness (DFT) of 7-10 mils.
4. Design to ensure easy removal of bearings and impeller.
5. Furnish suction bell with flared end to reduce entrance losses and with a sufficient number of vanes to support lower guide bearings and weight of impeller and pump shaft when dismantling pump.

E. Bearings:
1. Provide units with sleeve bearings in each bowl and in suction bell.
2. In bowl, provide main bronze bearing immediately above impeller and a lower bronze bearing immediately below impeller.
3. Furnish suction bell bearing having minimum length equal to five shaft diameters.
4. Ensure bell bearing is permanently packed type with packing to be a non-soluble grease.
5. Provide sand collar for bell bearing to prevent abrasives from entering bearing.

F. Column Adapter:
1. Provide cast iron column adapter with two by-pass port openings to drain leakage to a remote sump.
2. Furnish two lip seals below the enclosed line shaft bearing to prevent entrance of liquid and suspended matter.

G. Pump Shaft and Impeller:
1. Provide pump unit shaft constructed of rolled and ground stainless steel.
2. Furnish enclosed type impellers securely attached to impeller shaft.
3. Ensure impeller is accurately fitted and statically and dynamically balanced.

H. Discharge Head Assemblies:

1. Fabricated steel.
2. Design discharge head assembly for 150 psi working pressure and 250 psi test pressure.
3. Construct discharge nozzle with a vertical vane to minimize turbulence.
4. Furnish ASME B16.1, 125/150 LB flange.
5. Supply base plate with lifting lugs capable of supporting weight of entire unit.
6. Provide discharge head for above ground mounting constructed of fabricated steel with integral discharge flange.
    a. Mount discharge head on fabricated steel base plate which is of sufficient size to span opening in support structure.
7. Weld flange to column pipe at specified elevation.
8. Provide jackscrews on base/sole plate of sufficient size and quantity to support the entire motor, discharge head, column and pump.
9. Furnish cast iron stuffing box:
    a. Open line shaft.
        1) Mechanical seal:
            a) Split seal.
            b) Pipe flush water to separate drain.

I. Suction Strainer:

1. Supply basket type strainer with net open area of not less than four times the throat area of the suction bell.
2. Maximum opening shall not be more than 75% of the minimum opening of the water passage through the bowls and impellers.

J. Data Plates:

1. Provide stainless steel data plate securely attached to pump.
2. Include manufacturer's name, pump size and type, serial number, speed, impeller diameter, capacity and head rating, and other pertinent data.

K. Motors:

1. Full-voltage starting, vertical hollow shaft, squirrel cage, induction type.
2. 460 V, 60 HZ, 3 PH.
3. WP-I type with 1.0 service factor.
4. Size motor to drive pump continuously over the complete head - capacity range without the load exceeding the nameplate rating.
5. Design motor for 40 DEGC ambient.
6. Design Motors for 1280 FT elevation above sea level.
7. Comply with Section 01 61 03.
8. Motor – Pump shaft connection.
    a. Allow replacement of mechanical seal/packing without removing motor.
    b. Hollow quill motors: provide ultra-high molecular weight (UMMW) polyethylene steady bearing.

2.5 SOURCE QUALITY CONTROL

A. See Section 43 05 23.

B. Factory Performance Test:

1. Test one pump for each service category:
2. When pumps are fabricated, notify Engineer with serial numbers and Engineer will select the pump(s) to have the certified performance test performed on.

3. Submit certified copies of factory test report pursuant to ANSI/HI 14.6.
    a. Receive Engineer’s approval before shipping equipment.

2.6 MAINTENANCE MATERIALS

A. Extra Materials:

1. Furnish the Owner the following extra parts for each pump service category:
    a. One (1) set of bowl bearings.
    b. One (1) set of bowl wear ring.
    c. One (1) set of rubber line shaft bearings.
    d. One (1) set of stuffing box bearings.
    e. One (1) split seal repair kit.
    f. At least one quart of finish cost material shall be furnished for field touch up painting.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Level pump using machinist level.

3.2 FIELD QUALITY CONTROL

A. See Section 43 05 23.

END OF SECTION

This Document was originally issued and sealed by
(Steven Hanna, PE), (License No. E-18875), on 6/13/2025.
This media should not be considered a Certified Document.

COORDINATING PROFESSIONAL

LAST PAGE SEALS AND SIGNATURES

Owner Name: City of Blair
Facility or Site Name: Black Elk Pump Station
Project Name: Black Elk Pump Station Modifications Project
Engineer: HDR

This Document was originally issued and sealed by (Steven Hanna, PE), (License No. E-18875), on 6/13/2025. This media should not be considered a Certified Document.	The seal and signature to the left applies to the following Specifications divisions and sections of this project manual: Divisions: 00, 01, 02, 10, 32, 40, and 43 COORDINATING PROFESSIONAL
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END OF SEALS AND SIGNATURES

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MEMORANDUM

TO: Blair Mayor and City Council

From: CJ Heaton, Deputy City Administrator of Public Works

Date: 1/13/26

Re: Assistant Waste Water Supervisor

With the addition of another staff member at the Wastewater Treatment Plant, staff have asked to create an Assistant Wastewater Supervisor position. This would help oversee the department in the absence of the Supervisor and take on some of the day-to-day leadership, allowing the supervisor to focus on developing and expanding the plant. This would also bring this department into the same structure as the other Public Works divisions.

Recommendation: Approval of the new position

Fiscal Impact: Midline $36.89 per hour, or $76,731 per year.

RESOLUTION NO. 2026

COUNCIL MEMBER - INTRODUCED THE FOLLOWING RESOLUTION:

WHEREAS, the City of Blair wishes to adopt a job description for the newly created position of Waste Water Treatment Plant Assistant Supervisor; and

WHEREAS, the new position will be assigned a job classification and added to the city's "Hourly Wage Schedule" to be effective immediately, and

NOW, THEREFORE, BE IT RESOLVED by the Council of the Municipality of the City of Blair that the new job description for the position of Waste Water Treatment Plant Assistant Supervisor is attached hereto and marked **"Exhibit A"** and the same is hereby adopted and approved by the municipality and the Mayor and City Clerk of the City of Blair are hereby authorized and directed to execute the same on behalf of the municipality.

COUNCIL MEMBER - MOVED THAT THE RESOLUTION BE ADOPTED AS READ, WHICH SAID MOTION WAS SECONDED BY COUNCIL MEMBER -. UPON ROLL CALL, COUNCIL MEMBERS - VOTING "AYE" AND COUNCIL MEMBERS NONE VOTING 'NAY," THE MAYOR DECLARED THE FOREGOING RESOLUTION PASSED AND APPROVED THIS 13th DAY OF JANUARY 2026.

CITY OF BLAIR, NEBRASKA

BY: _____
MELINDA K. RUMP, MAYOR

ATTEST:

_____
BRENDA WHEELER, CITY CLERK

(SEAL)

STATE OF NEBRASKA)
) ss:
WASHINGTON COUNTY)

BRENDA WHEELER hereby certifies that she is the duly appointed, qualified and acting City Clerk of the City of Blair, Nebraska, and that the above and foregoing Resolution was passed and adopted at a regular meeting of the Mayor and City Council of said City, held on the 13th day of January 2026.

_____
BRENDA WHEELER, CITY CLERK

Assistant Waste Water Treatment Plant Supervisor

Reports to: Waste Water Treatment Plant Assistant Supervisor
Department: Waste Water Treatment Plant
Updated: January 8, 2026

Job Code:
FLSA Status: Nonexempt
EEOC Class: Craft Workers

Job Summary
The Assistant Waste Water Treatment Plant Supervisor assists in the day-to-day operations of the Blair Waste Water Treatment Plant. This position supports the Supervisor in ensuring that the City of Blair and surrounding areas reliably have their waste water treated and safely discharged in compliance with all state and federal regulations. This is a working supervisory position that may assume supervisory responsibilities in the absence of the Supervisor

Essential Job Responsibilities
- Waste Water Plant Operations and Support
  - Assist the Waste Water Treatment Plant Supervisor with daily operational oversight of the facility.
  - Provide input on employee work schedules to ensure adequate coverage in a 24/7 facility.
  - Assume supervisory responsibility during the Supervisor's absence, as assigned.
  - Assist with the preparation of required reports to ensure compliance with state and federal standards.
  - Support training of new associates and encourage continuing education for tenured associates.
- Testing and Treatment of Waste Water
  - Conduct required EPA and NDEQ testing at prescribed intervals and accurately record results.
  - Add chemicals as necessary to ensure effluent meets regulatory requirements.
  - Remain knowledgeable of current regulations, guidelines, and best practices related to waste water treatment.
- Maintenance and Upkeep of Equipment
  - Perform preventative maintenance tasks including greasing chains and fittings, minor pipe repairs, and equipment inspections.
  - Monitor equipment performance and promptly report issues or concerns to the Supervisor.
  - Follow all safety procedures and properly use required personal protective equipment (PPE).
- General Facilities Maintenance and Janitorial Work
  - Maintain cleanliness and order of facilities including sweeping, mopping, and trash removal.
  - Perform exterior maintenance as needed, including weed control and snow removal.
- Performs other duties as assigned.

Education
- High School Diploma or GED is required.

Experience

- Minimum three years of experience in waste water treatment operations or related work experience is required.
- Previous lead worker or supervisory experience is preferred.
- An equivalent combination of education and experience sufficient to successfully perform the job duties and responsibilities.

Certifications and Licenses

- State of Nebraska Grade 1 Waste Water Operator License is required within first year of employment.

Work Environment

- Work is performed in a Waste Water Treatment Plant with some exposure to dust, dirt, heat, fumes, contaminants, cold, noise, wetness, and other elements. Work may also need to be performed in confined spaces or at heights exceeding six feet.

Travel

- Less than 5% travel is required.

Physical Requirements

Physical Activity	Rarely	Occasionally	Frequently	Constantly
	0% - 25% of time (0-2 hours per day)	26% - 50% of time (2-4 hours per day)	51% - 75% of time (4-6 hours per day)	76% - 100% of time (6-8 hours per day)
Carrying ≥ 20 lbs.		X		
Climbing			X	
Driving			X	
Finger Dexterity				X
Hearing				X
Kneeling			X	
Lifting ≥ 20 lbs.		X		
Pulling ≥ 20 lbs.		X		
Pushing ≥ 20 lbs.		X		

Reaching			X	
Seeing				X
Sitting	X			
Standing			X	
Twisting		X		
Typing		X		
Walking			X	

Disclaimer
The above statements are not intended to be an all-inclusive list of the duties and responsibilities of the job described. Rather, they are intended to describe the general nature of the job. The City of Blair reserves the right to revise or change job duties and responsibilities as the need arises. This job description does not constitute a written or implied contract of employment.

Review/Approvals
I have read and understand this job description.

Printed Name – Employee	Signature – Employee	Date
Printed Name – Manager	Signature – Manager	Date
Printed Name – City Administrator	Signature – City Administrator	Date

MEMORANDUM

TO: Blair Mayor and City Council

From: CJ Heaton, Deputy City Administrator of Public Works

Date: 1/13/26

Re: Waterworth Utility Rate Software

Staff have been working on ways to better align our rates with our financial demands. Historically, the city has worked with a rate consultant when it was required as part of a loan or every 5 – 7 years. Keeping our rates as low as possible, while maintaining a high level of service in terms of operations, and meeting debt service requirements are the key components to our rates.

The software package provided by Waterworth will allow staff to have real-time rate information and modeling at any time. Rather than waiting for a consultant to review rates, operational costs, and debt, the software can track all of these and provide results whenever we want them. This can be used to help make decisions on future projects, staffing, or purchases, as we want the information. By building our model with our current costs and rates, we can see the impact of a major project instantly and predict what our rates need to be for the coming years.

This software will also allow us to customize our rates to put more emphasis on our industrial partners who are shouldering much of the debt for recent expansions.

Recommendation: Approval of the purchase of Waterworth software.

Fiscal Impact: $43,000 for three years, including a discount for multiple years.

RESOLUTION NO. 2026

COUNCILMEMBER - INTRODUCED THE FOLLOWING RESOLUTION:

WHEREAS, the Mayor and City Council have been presented with the proposal for the purchase of Waterworth Software for utility rate forecasting, shown in attached **Exhibit "A"**; and

WHEREAS, the proposal is acceptable to the municipality.

NOW THEREFORE BE IT RESOLVED that the Mayor and City Council of the City of Blair, Nebraska, hereby find and determine that the purchase of Waterworth Software is approved as presented and the Deputy City Administrator of Public Works and City Clerk of the City of Blair are hereby authorized and directed to execute the same on behalf of the municipality.

COUNCIL MEMBER - MOVED THAT THE RESOLUTION BE ADOPTED AS READ, WHICH SAID MOTION WAS SECONDED BY COUNCIL MEMBER -. UPON ROLL CALL, COUNCIL MEMBERS - VOTING "AYE" AND COUNCIL MEMBERS NONE VOTING 'NAY," THE MAYOR DECLARED THE FOREGOING RESOLUTION PASSED AND APPROVED THIS 13th DAY OF JANUARY 2026.

CITY OF BLAIR, NEBRASKA

BY_____
MELINDA K. RUMP, MAYOR

ATTEST:

_____
BRENDA WHEELER, CITY CLERK

(SEAL)

STATE OF NEBRASKA)
) :ss:
WASHINGTON COUNTY)

BRENDAWHEELER hereby certifies that she is the duly appointed, qualified and acting City Clerk of the City of Blair, Nebraska, and that the above and foregoing Resolution was passed and adopted at a regular meeting of the Mayor and City Council of said City held on the 13TH day of January 2026.

_____
BRENDAWHEELER, CITY CLERK

WATERWORTH™

Continuous Utility Rate Management

City of Blair, NE
Prepared by: Paul Barazzuol
Paulb@waterworth.net
206-672-2534

Date: 09/08/2025

CITY OF BLAIR NEBRASKA

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WATERWORTH™

OUR MISSION

Empowering financially sustainable local government services and winning back the public trust.

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CITY OF BLAIR NEBRASKA

YOUR GOALS

Based on conversations with the City of Blair's staff, we understand your key goals are:

- Understand impacts to water and sewer rates
- Proactively renew and replace aging infrastructure
- Be prepared to support growth with increased capacity
- Facilitate good communication between staff, elected officials, and the public

Related priorities:

- Understand financial impacts to large industrial user (Cargill Bio Campus)
- Present data-driven recommendations
- Ensure services remain affordable for the community
- Maintain a strategic financial plan that leverages the best mix of cash, debt and Federal or State funding
- Ensure services are priced equitably between customer classes

Waterworth can help achieve these goals and priorities through **Continuous Utility Rate Management.**

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Continuous Utility Rate Management

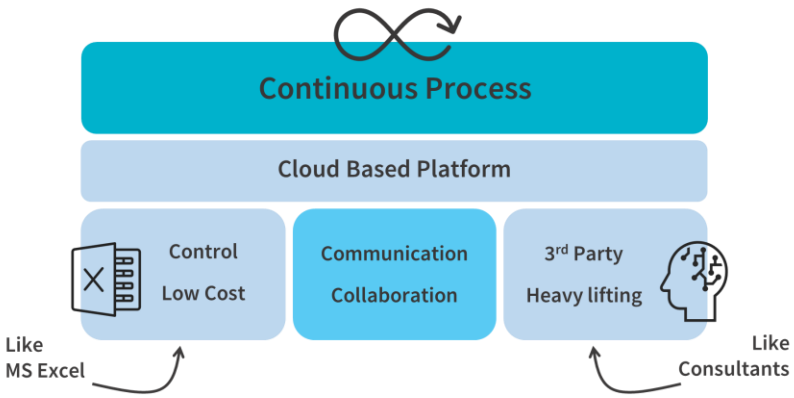
What is it?

There are two methods of rate management commonly used today.

Some organizations choose to build their own in-house models using Microsoft Excel. This approach offers full control, flexibility, and virtually no upfront cost. However, it also comes with challenges; maintaining complex spreadsheets can be time-consuming and error-prone. Waterworth provides a better alternative: the same level of control, but without the burdens of spreadsheet maintenance. It's intuitive, streamlined, and cost-effective.

Other communities rely on rate consultants. These professionals bring expertise and credibility to the process. Waterworth complements this approach by offering expert support from our team, who can step in to handle the heavy lifting and help facilitate communication and alignment among staff and elected officials.

More importantly, Waterworth bridges a critical gap enabling seamless Communication & Collaboration across departments, city administration, and decision-makers. With Waterworth, rate scenarios can be easily reviewed, updated, and compared. The platform helps you tell clear, compelling financial stories so both Council and the public can understand, support, and buy in to well-informed decisions.



What our customers appreciate most is how Waterworth enables Continuous Rate Management. Traditional rate studies provide a snapshot in time, but the reality is always shifting. Inflation remains high, project costs are constantly being repriced and reshuffled, interest rates fluctuate, and funding sources can be uncertain.

Waterworth gives you complete control over all these moving parts while ensuring alignment across departments and stakeholders. This makes rate management smooth, adaptive, and collaborative; fostering unified relationships between city staff and elected officials.

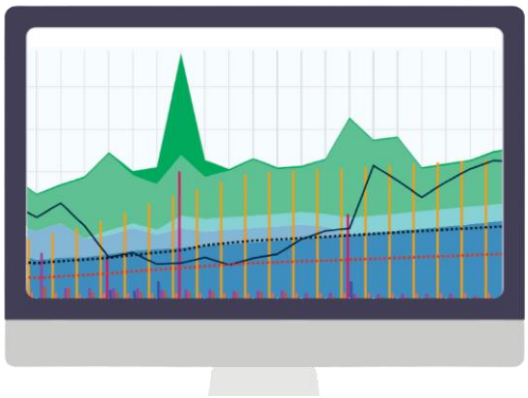
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KEY FEATURES

LONG-TERM FINANCIAL MODEL

Develop a full-cost recovery model to understand long-term revenue requirements. Integrate CIP, Master Plans, and future capital reinvestment budgeting along with debt service scenarios, cash reserve policies, and tie it all back to a rate schedule.



ASSET REPLACEMENT SCHEDULE

Leverage your GIS data to create a long-term asset replacement schedule that reveals the true cost of sustainable ownership. Use it to benchmark annual capital investments needed to prevent emergencies and maintain intergenerational equity.

COST OF SERVICE ANALYSIS (Upgrade Required)

Review historical demand patterns and work towards a true cost-of-service model for each customer category, including wholesale customers. Explore cost reallocation scenarios to see how you can make rates more equitable.

RATE DESIGN

Onboard your billing data and analyze your current rate structure with ease. Then model new rate structure options and instantly visualize their impact on revenue and affordability for residents.

SCENARIO EXPLORATION

Perhaps one of the most powerful features of Waterworth is the ability to quickly create and manage scenarios. These can then be compared visually using 3 comparative modes (difference, side-by-side, overlay), or combined with different service areas to create one complete organization-wide model.

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BENEFITS

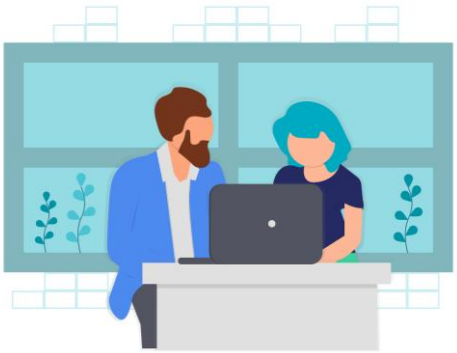
SAVE TIME AND AGGRAVATION

Take pride in telling a better financial story. This makes communicating complex issues easier, leading to more efficient conversations. In the end, smarter decisions are made more quickly and with very little effort. Everyone saves time and aggravation.



LEVERAGE YOUR DATA TO DRIVE BETTER DECISIONS

Up-to-date data reflects the real-world circumstances of your community so you can have confidence that analysis and recommendations plot the best path forward in real-time. Waterworth is compatible with many other systems, so onboarding is easy.



ENSURE LONG-TERM FINANCIAL SUSTAINABILITY

Plan for intergenerational equity by first determining the long-term cost of sustainable ownership of infrastructure. Then become financially resilient and mitigate uncertainty about future events through better planning by developing and exploring scenarios.

LEVERAGE PROFESSIONAL SUPPORT THAT'S TAILORED TO YOU

Short-staffed? Think of us as a specialized part of your team. We're here to make sure you are asking the right questions and making progress towards community goals. Support is here, whenever and however you need it: we'll assist with data needs, analysis, scenario exploration, presentation, and succession.

We've got your back!

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UNLIMITED SUPPORT & ADVISING

Included with all services; we're here for you by chat, email, phone, or zoom as much or as little as needed to ensure you meet your goals.

- Unlimited 1:1 coaching with all included tools
- Expert advice with Financial Modeling, Cost of Service Analysis, Infrastructure Analysis, and Rate Design
- Onboarding and refining of external financial models or Pro Formas into Waterworth's financial model
- Assistance with project management and organization to help meet deadlines and stay on track of priorities
- Training for effective communication with elected officials and between departments
- Assistance with analysis of complex datasets, and impact analysis of any scenarios or proposed changes
- Assistance with presenting models internally or to Boards/Councils
- Assistance with onboarding for Assets, Population, Flows or Billing Data
- Training of new staff on Waterworth
- Facilitating succession transitions

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METHODOLOGY

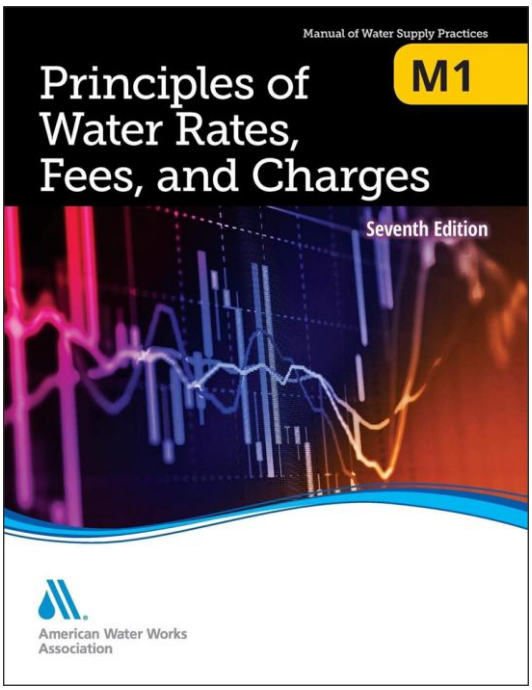
Waterworth is based on the fundamentals of rate design as outlined in AWWA M1 and WEF 27.

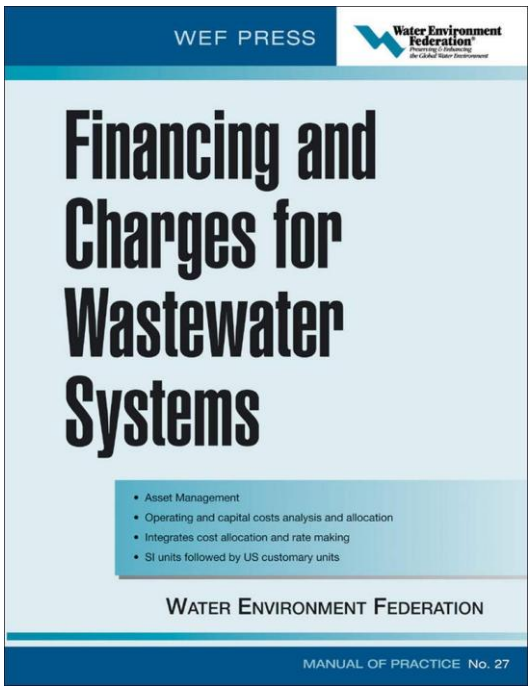
These manuals set the industry accepted standard practices in financial planning and rate making to establish cost-based rates, fees, and charges to recover the full costs associated with utilities.

American Water Works Association

Dedicated to the World's Most Important Resource®

Water Environment Federation®
the water quality people®





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WATERWORTH™

WHO ELSE DOES THIS?

Waterworth is trusted by over 350 cities and towns across North America.



ROSS COUNTY WATER COMPANY

CITY OF ST.CLOUD MINNESOTA

CITY OF MOLINE ILLINOIS

MOAPA VALLEY WATER DISTRICT

HARRISONBURG VA FRIENDLY BY NATURE

CITY OF TRAVERSE CITY

WEB Water

BENBROOK WATER AUTHORITY

CITY OF LA MARQUE GATEWAY TO THE GULF

HAVERHILL SETTLED 1640, INSTITUTED A CITY 1870

CITY OF WOOD DALE

LEONVALLEY

LINDON

Southfield the center of it all™

SAINT PAUL MINNESOTA

WARRENVILLE

City of Louisville

RioRancho City of Vision

CITY OF Northglenn

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CITY OF Grand Junction COLORADO

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CLIENT TESTIMONIALS

"We informed our Board that inflation has severely impacted the costs of our capital projects, and it became clear that without a $7,000,000 bond, we would be in trouble.

It is amazing how much easier this process is now that we have Waterworth. Whenever we have discussions with our Board we use Waterworth to review and explore options. Because we do this frequently, the board is familiar with the model and so they trust in Waterworth. The discussion regarding the need to obtain the $7,000,000 bond lasted less than 10 minutes."

Wes Smith, CFO
Virgin Valley Water District, Nevada

"What's great about Waterworth is that I don't have to wait for a consultant and compile all kinds of information.

I can go into my model and get a snapshot of what I'm looking at… it's the convenience of being able to get the information I need quickly and whenever I want."

Yvonne Acuña, Assistant Finance Director
City of Leon Valley, Texas

Lisa Vollbrecht, Public Utilities Director
City of St. Cloud, Minnesota

"We've been trying to do this on our own for 10 years, to have something so turnkey was just an absolute blessing."

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ANNUAL SUBSCRIPTION

Items	Description	Unit Price	Cumulative Price
Rate Design Financial Model Asset Features	Software Access to Water Service Areas Unlimited Support and Advising for Water	$11,000	$11,000
Rate Design Financial Model Asset Features	Software Access to Sewer Service Areas Unlimited Support and Advising for Sewer	$5,000	$16,000

Included:

- Implementation
- Unlimited User Licenses
- Unlimited Support and Advising
- Training
- Workshop Facilitation
- Presentation
- Assistance with: Data Onboarding, Data Analysis, Scenario Exploration



Service areas include Water, Wastewater, Stormwater, Airport, Fire Rescue, Solid Waste, Roads, Fleet, General Fund, Electric, Marinas, Recycling, and many more municipal services!

Subscription effective date is on the day of the Getting Started Meeting when user sign-in accounts are created. Renewal invoices will be sent 60 days before the anniversary of the effective date. Prices set to increase by 5% per year.

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3-YEAR SUBSCRIPTION

Modules	Description	Annual Price	3-Year Price	Inflated 3-Year Price
Rate Design Financial Model Asset Features Scenario Exploration	Software Access to Water and Sewer Service Areas Unlimited Support and Advising for Water and Sewer Service Areas 36 Month Subscription – upfront payment to receive discount	$16,000	$48,000	$50,440

Discounted	(-10%)	($4,800)
Inflationary Savings	(-5%)	($2,440)
Total	Savings	($7,240)
	Total USD	**$43,200**

Note: To receive discount, payment for the 36-month subscription must be made in full at the time of purchase.

The Subscriber may terminate the Subscription at any time. Upon termination, Muniworth will reimburse the Subscriber pro-rata for the remaining unused years of the Subscription, calculated at a rate of 75% of the remaining balance of the Subscription Fee for the unused years

Subscription effective date is on the day of the Getting Started Meeting when user sign-in accounts are created. Renewal invoices will be sent 60 days before the anniversary of the effective date. Prices set to increase by 5% per year.

MUNIWORTH™



MUNIWORTH

Waterworth's sister solution, Muniworth brings the same analytical and financial planning power to all your publicly funded services.

Muniworth is an easy-to-use cloud-based analytics platform that uses data visualization to make analysis, planning and communication about funding key infrastructure easier for everyone to understand and talk about.

Along with experienced advising and professional support, Muniworth makes your job easier.

- Easily communicate city-wide capital needs
- Develop a comprehensive financial plan
- View aggregated analysis across departments and entire organization
- Visualize data consistently
- Ensure sufficient funding for all services

Service areas include Streets, Facilities, Fleet, Parking, Landfill, Solid Waste, Recycling, Public Safety, Fire, Airport, Marina, and many more, in additional to General Fund.



"We're figuring out how to overlap these things, to see when water and sewer projects are coming up… and how they'll line up with our road projects. In Muniworth, you can jump in and out of those different utilities."

Anthony Theodorou, Engineer
benesh

benesch

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Unique Value Proposition Document

Waterworth is a unique and specialized solution with no comparable alternative. No customer has ever had to procure Waterworth through an RFP process.

Unique Value Proposition Letter highlights;

1. Unique & Proprietary Technology
2. Highly Specialized Purpose-Built
3. Compatibility with Existing Systems
4. Quick Implementation & Training
5. Professional Advice & Coaching

Unique Value Proposition Document available upon request:



- Detailed documentation describing what is unique and specialized about Waterworth to assist in varying procurement approaches

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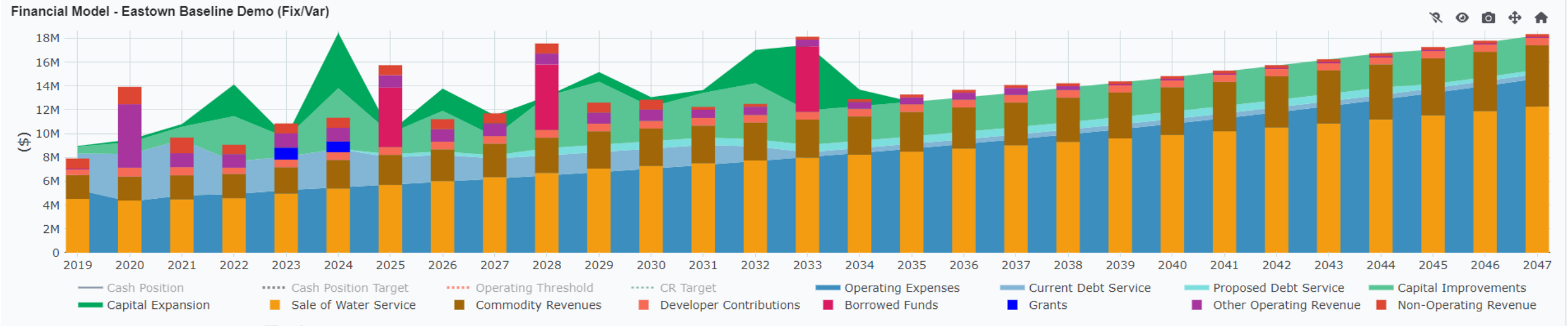
Long Term Financial Model

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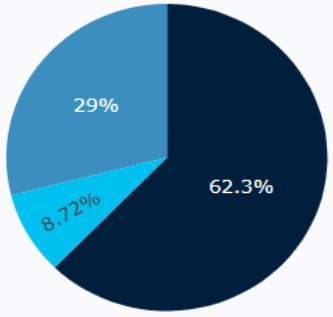
WATERWORTH™ | Eastown Baseline Demo (Fix/Var) Scenario | Notes | Eastown Organization | Eastown Water Water

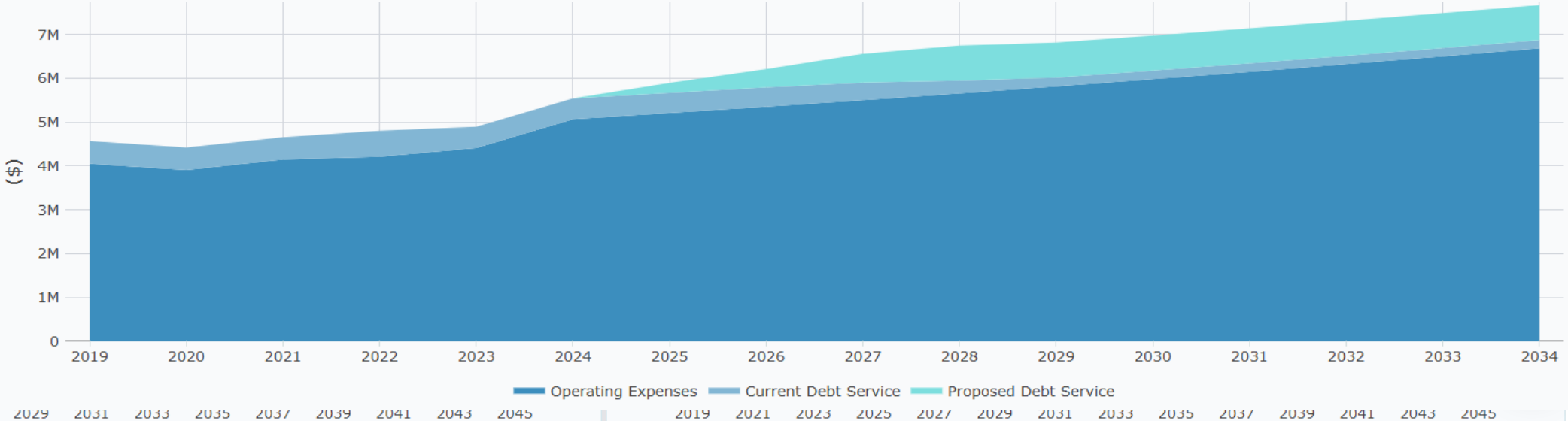
New Layout | Open | Save Layout | CBI Revenue Sufficient | Scratch Pad | Presentation | Save Template

Full



Group Summary Type | 2022 Fiscal Year



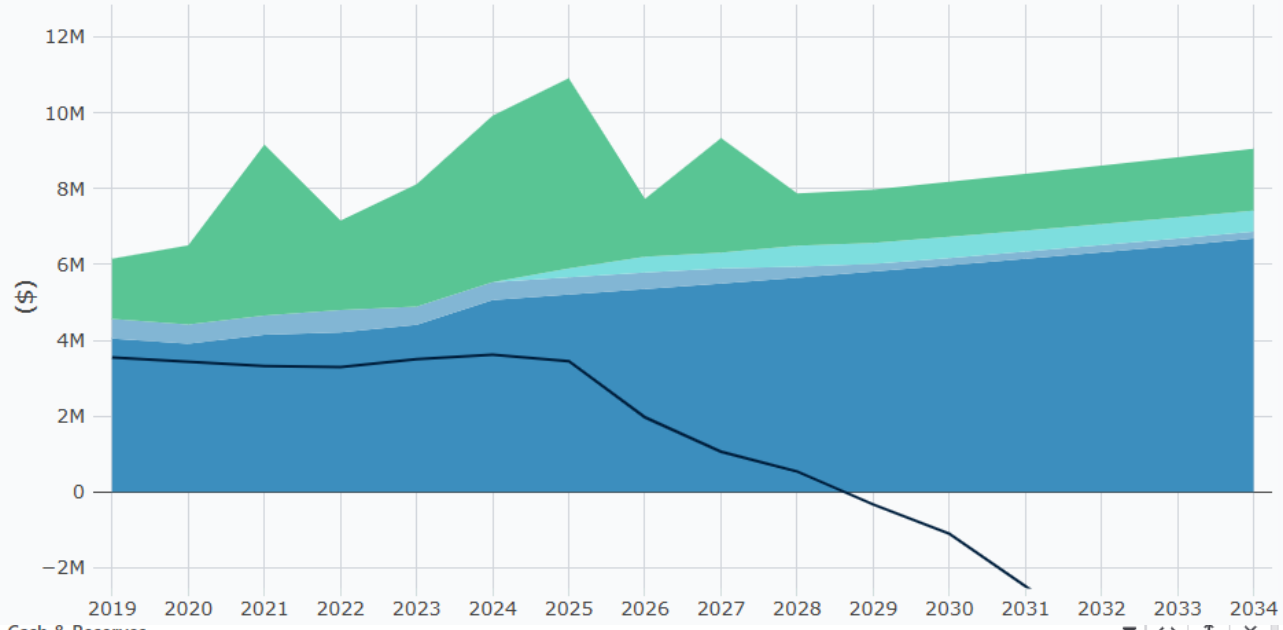


Capital Planning & Reinvestment

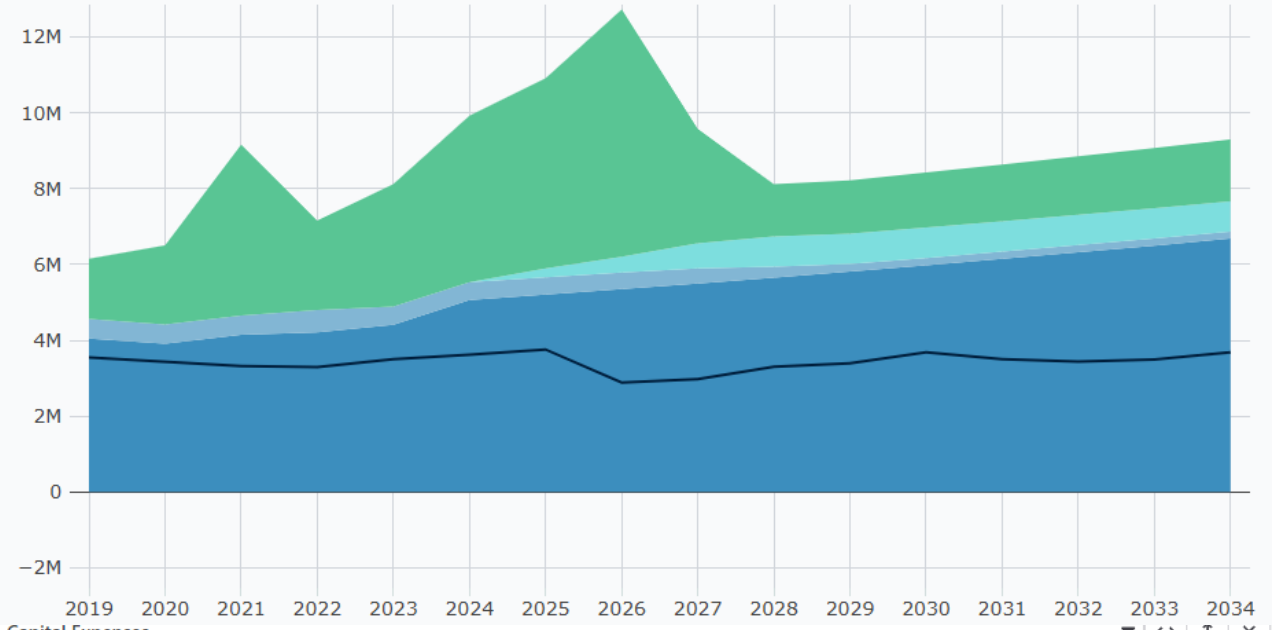
WATERWORTH™

WATERWORTH™ Eastown Baseline Demo (Fix/Var) Scenario Notes Eastown Organization Eastown Water Water

Financial Models: Baseline Model, Baseline Model Copy - Water Project

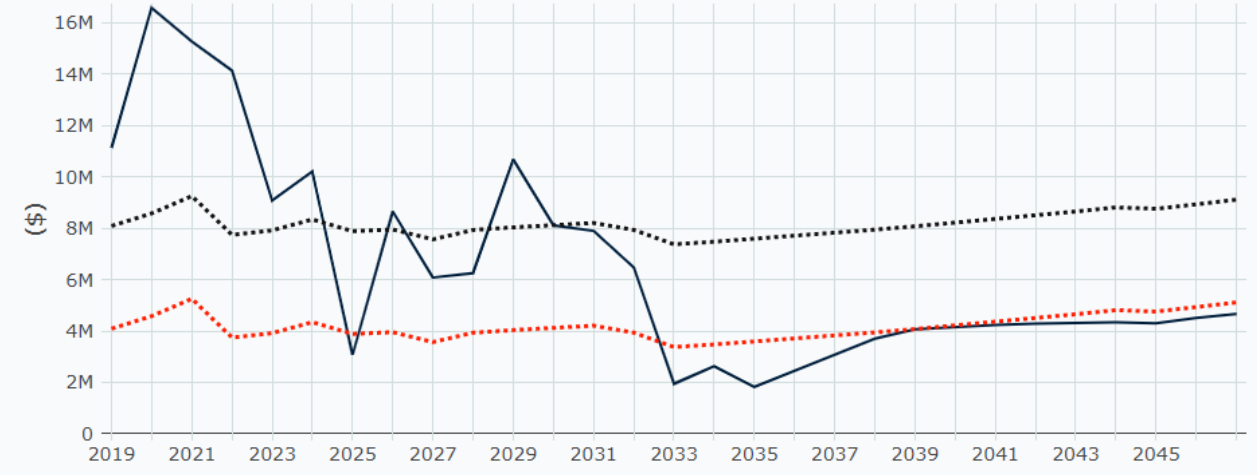


Cash & Reserves

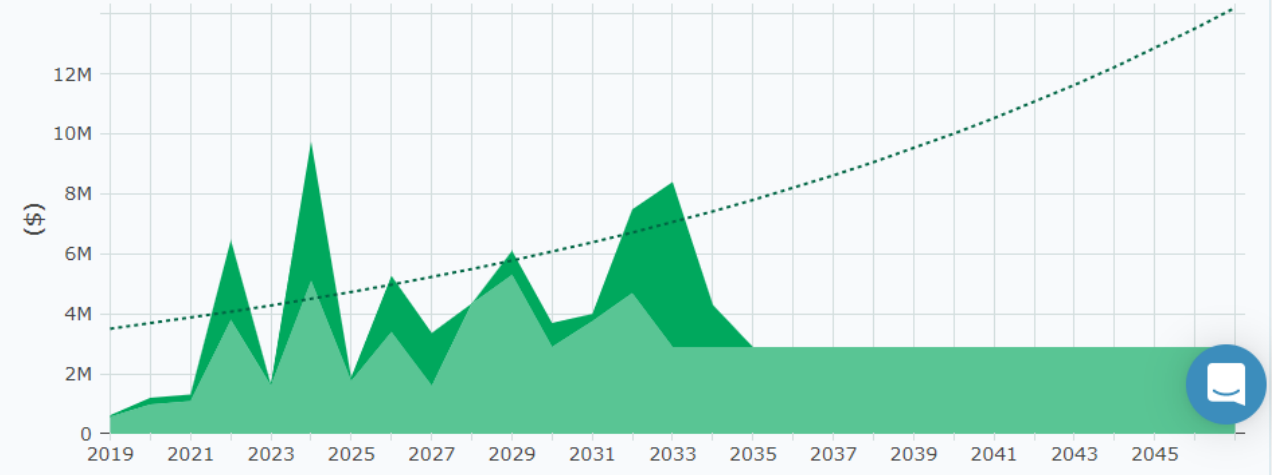


Capital Expenses

Financial Model - Eastown Baseline Demo (Fix/Var)



Financial Model - Eastown Baseline Demo (Fix/Var)



Utility Rate Design

WATERWORTH™

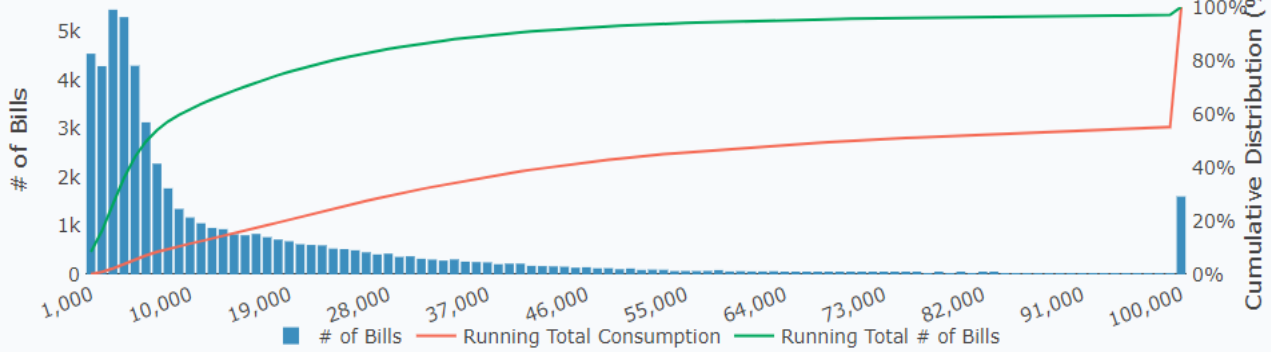
WATERWORTH™ | Financial Model (Scenario) | Notes | Linked Projects | Billyville, WW (Organization) | Water Enterprise Fund (Water)

New Layout | Open | Save Layout | Rate Impact Analysis | Scratch Pad | Presentation | Save Template

Billing Distribution

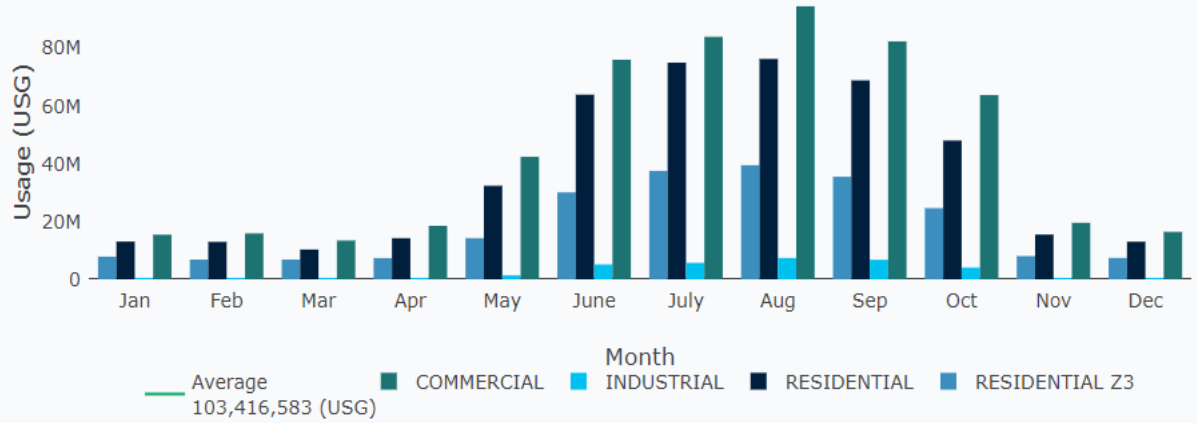
Billing Distribution | 2022 Year | 1 Period | To | 2022 Year | 12 Period | USG Volume | All Billing Class | All Meter Size | # of Bills Axis Options

Step Size: 1000 | # of Steps: 100



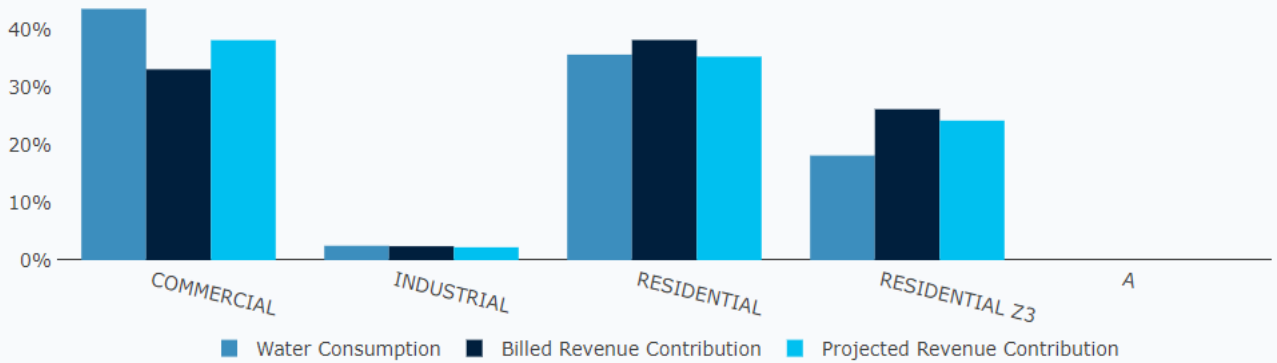
Usage Distribution

Usage Distribution | Stack | Group | USG Volume | 2022 Billing Year



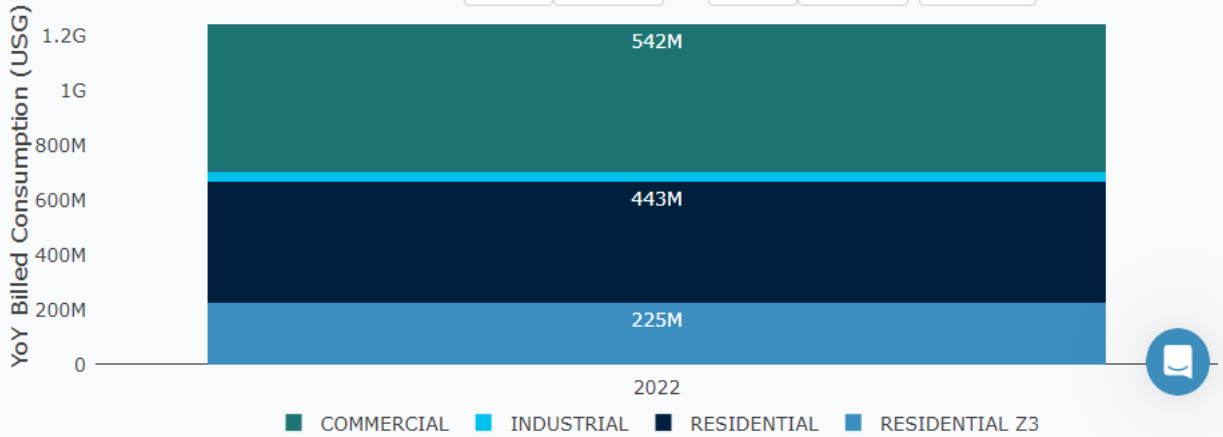
Billing Equity

Billing Equity | 2022 Year | 1 Period | To | 2022 Year | 12 Period



Annual Demand

Annual Water Demand | 2022 Year | 1 Period | To | 2022 Year | 12 Period | USG Volume



Asset Replacement Schedule

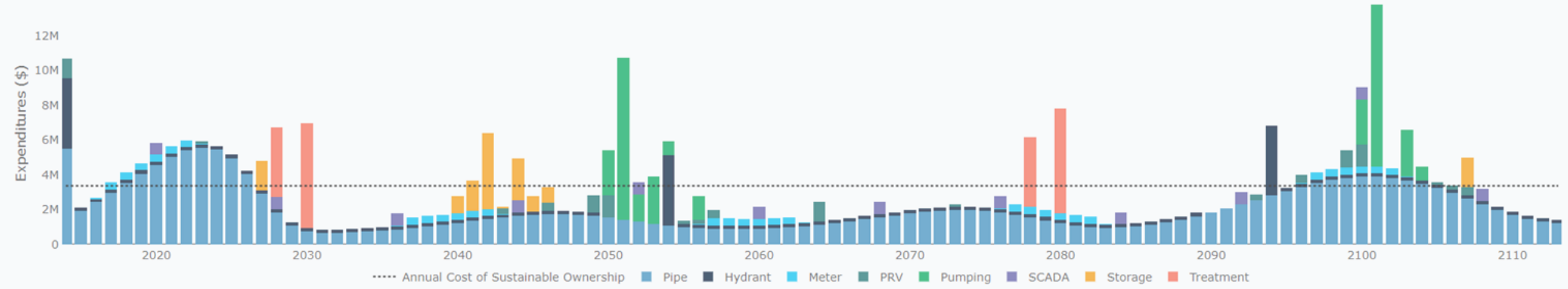
WATERWORTH™

WATERWORTH™ Eastown Baseline Demo (Fix/Var) Scenario Notes Eastown Organization Eastown Water Water

+ New Layout | Open | Save Layout | New Layout | Scratch Pad | Presentation | Save Template

Replacement Schedule

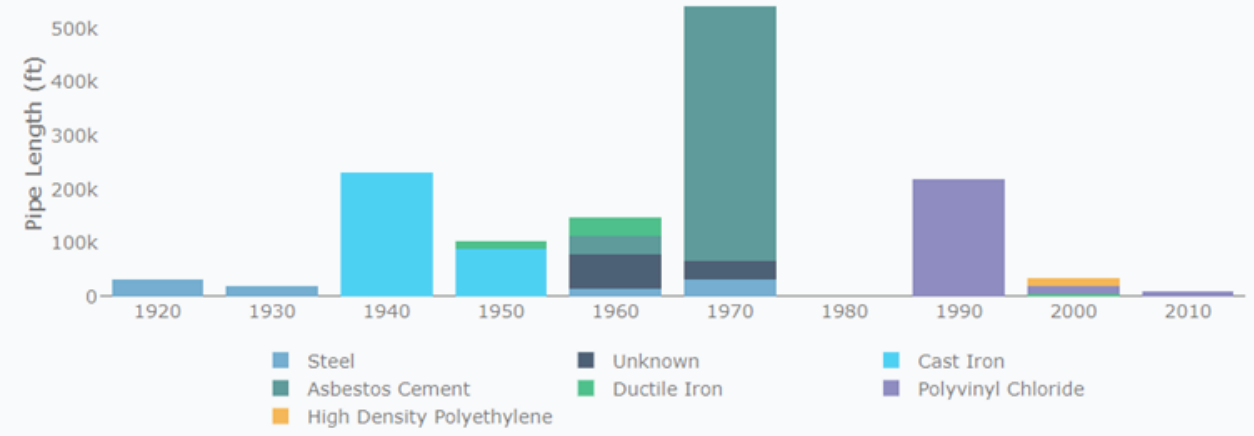
Asset Replacement Schedule (ARS)



Linear Asset Age

Pipe Age

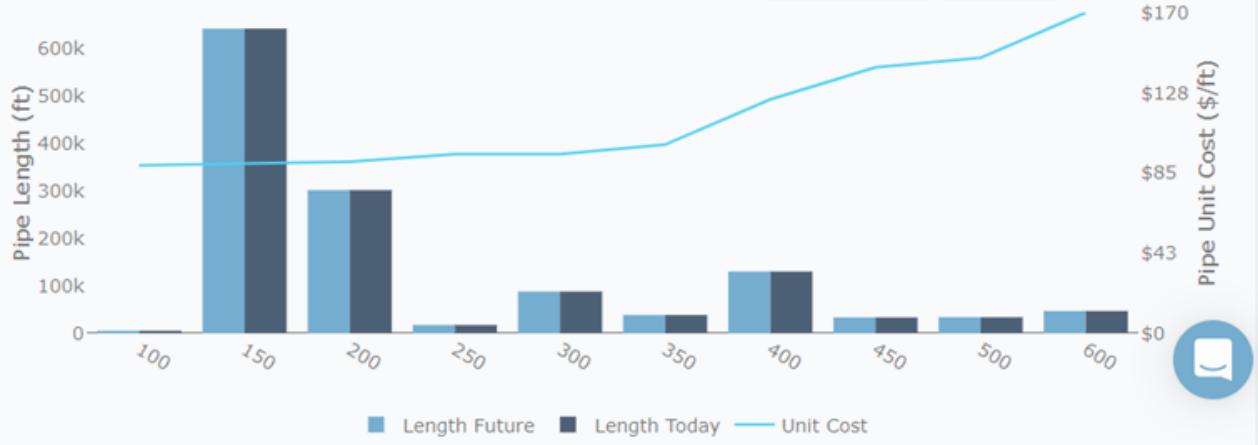
Feet Length



Linear Asset Size

Pipe Size

ec-11 Unit Cost Set | Feet Length

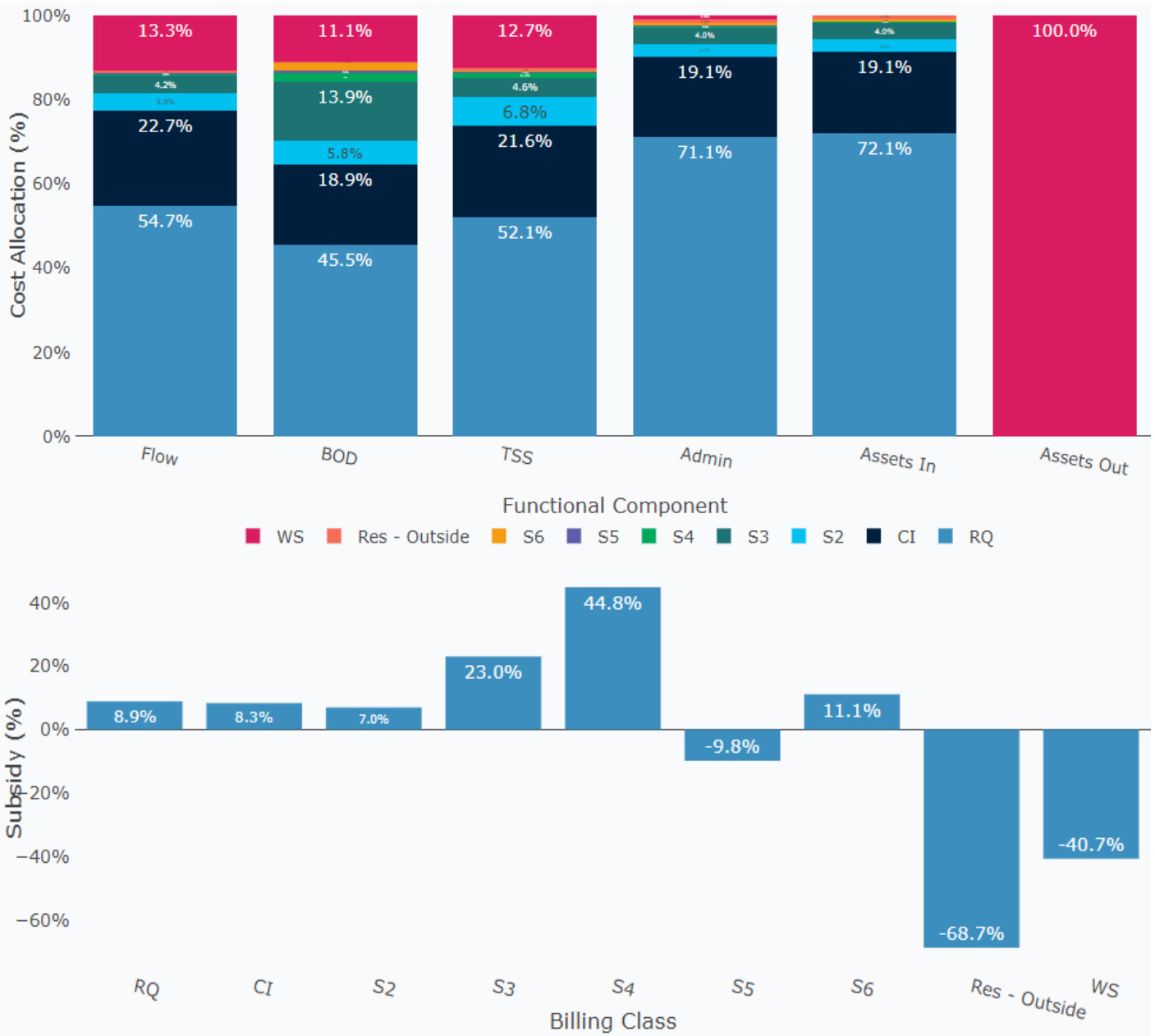


Equitability & Affordability Breakdown

WATERWORTH™

Cost of Service Analysis

1. Cost Allocation between **Customer Categories**
2. Determine Current **Level of Inequity**
3. Recalibrate Rates to **Promote Fairness**



Community Cost Comparison

WATERWORTH™

Designing Utility Rates in Waterworth

Compare multiple Rate Cards to see which performs best to achieve key goals:

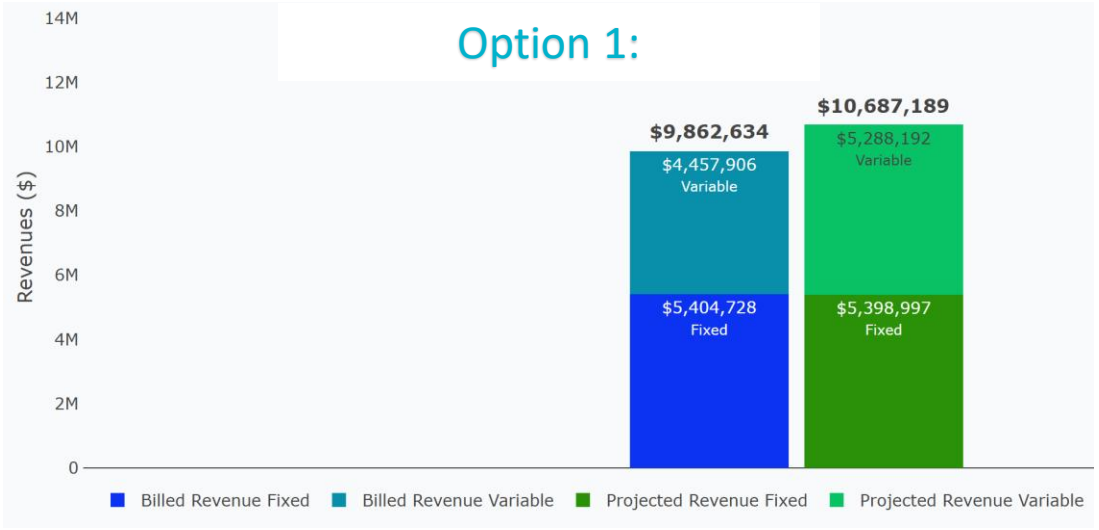
- Revenues
- Equity
- Affordability
- Conservation
- Asset longevity

Rate Cards

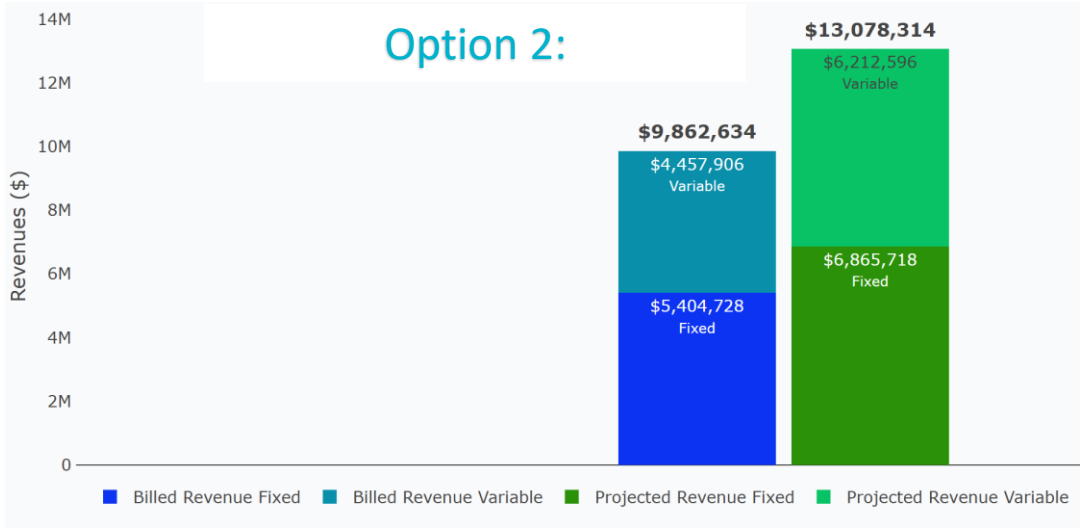
+ Rate Card

Rate Card	Description	Start Year	Start Period	End Year	End Period	Date Created	Date Edited	Active
Northtown Rate Option 1		2023	1	2025	12	Feb 11, 2025	Mar 26, 2025	☑
Northtown Rate Option 2		2023	1	2025	12	Feb 11, 2025	Mar 10, 2025	☐

Option 1:



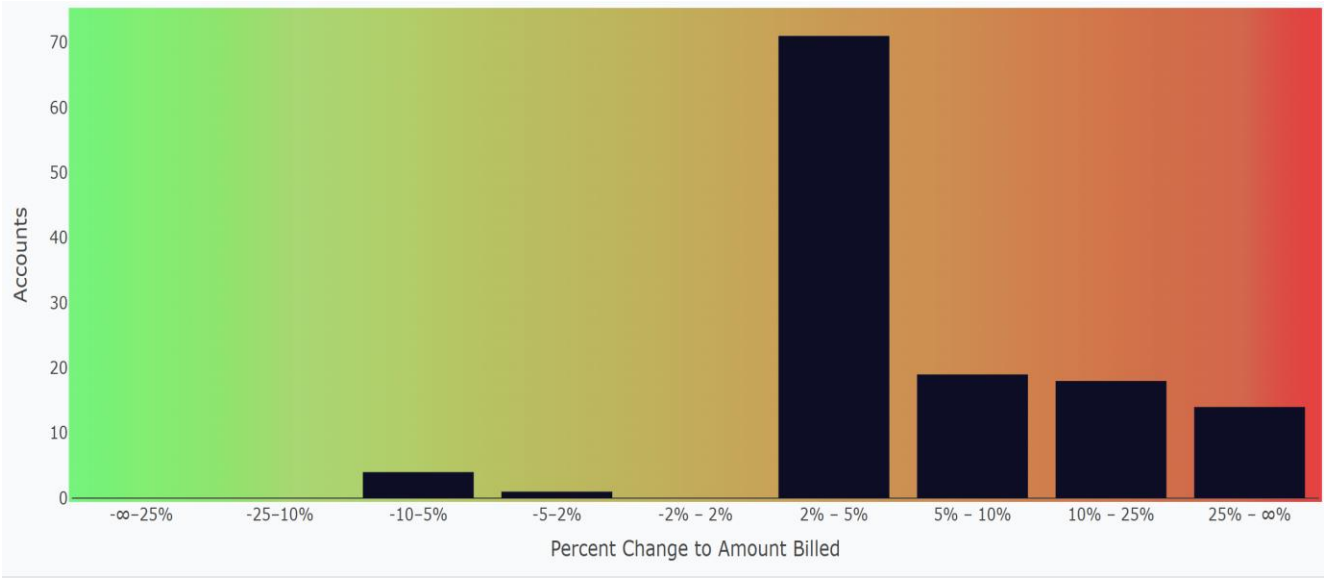
Option 2:



Measuring Billing Impact in Waterworth

Analyze detailed Before/After Bills on a highest-to-lowest impact scale:

Bill Parameters							Revenue	
Period	Billing Class	Meter Size	Billing Multiplier	Consumption [kUSG]	Csv Row	Account Id	Billed	Projected
8	Residential	5/8	1	1,013	38	12223-001	$131	$10,406
2	Residential	5/8	1	1,327	34	01357-001	$6,461	$13,615
3	Residential	5/8	1	805	289	02079-001	$3,985	$8,273
3	Residential	5/8	1	798	291	07683-001	$3,949	$8,196
2	Residential	5/8	1	779	295	05265-001	$3,862	$8,007
4	Residential	5/8	1	580	316	19247-001	$2,915	$5,963
2	Residential	5/8	1	543	322	14599-004	$2,740	$5,585
9	Residential	5/8	1	489	330	05218-001	$2,558	$5,035
3	Residential	5/8	1	463	335	03934-002	$2,358	$4,762
2	Residential	5/8	1	458	336	08049-001	$2,334	$4,710
4	Residential	1	1	226	419	10610-001	$262	$2,380
2	Residential	5/8	1	369	354	15124-001	$1,911	$3,797
1	Residential	1	1	349	363	09176-001	$1,818	$3,640



See overall % Billing impact of recommended Rate Card

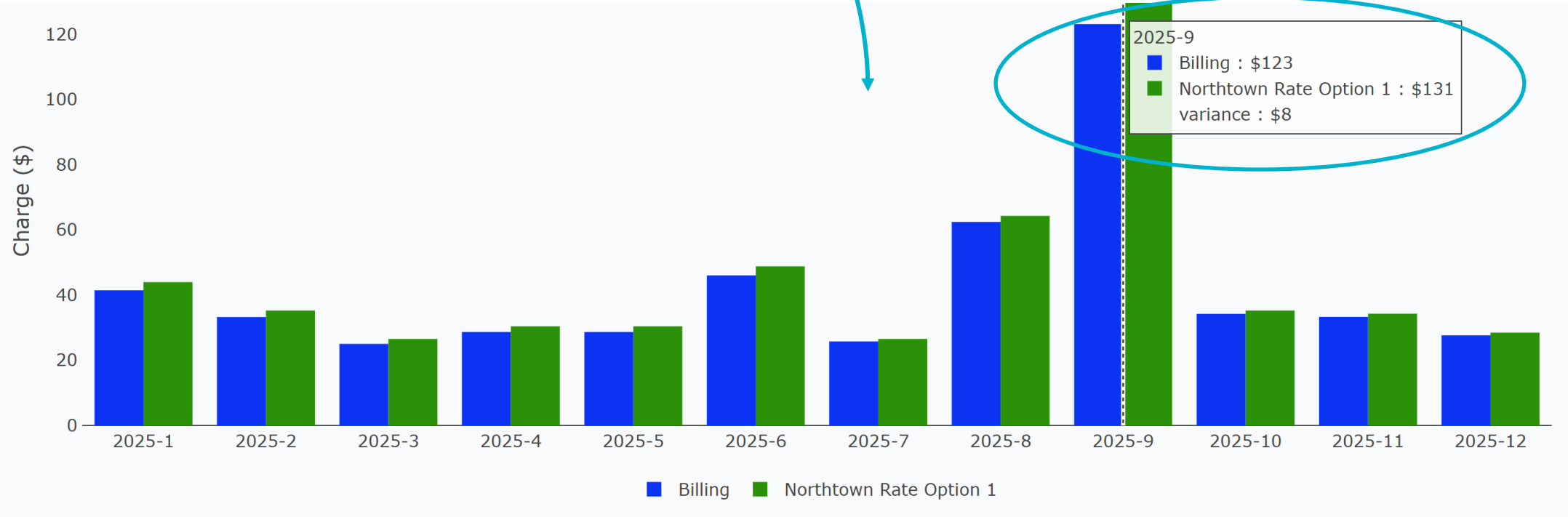
Live Customer Account Cost & Billing Comparison

WATERWORTH™

Measuring Billing Impact in Waterworth

Drill down to an account-by-account basis to see the dollar difference between last year's bill, and next year's forecasted bill with the same consumption

Example CustomerID - 19996-001



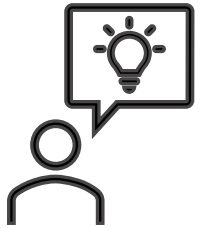
All Public Funds & Services

1. Analyze many **Infrastructure-Based Services**
2. View **Aggregated Analysis**
3. Consistency of **Data Visualization**
4. Easier **Communication**



What you'll Experience

- Scenario building and analysis
- Ongoing advisory
- Remote council presentations



Fractional CSO

- Real-time planning and analysis
- Effortless collaboration
- Get the decisions you need



Cloud SaaS

- Data onboarding = Zero learning curve
- Updates model with new data
- Model checks and validation



Model Manager

Thanks for reaching out. We have used the waterworth software for a couple of years. My goal with it was to help with our projections as we are working with a bond rating agency for a WIFIA loan for our wastewater treatment facility expansion. It has been really helpful for this and I have used it to compare with the rate studies we have had consultants do. I haven't ventured into the rate part of the software, I just haven't had the time to commit to it. I do like that I can build into the projections what I think the expenses are going to be and the capital and can put their rate increases into it and see how we are doing, with cash reserves, meeting expenses etc.

The good thing is I just give the data to the consultant at waterworth, he puts it in and then we walk through it all and talk about it. I can make changes and do some modeling myself, however, I mostly let him do it because of time constraints. Our consultant then put things in a presentation format for our last meeting with the rating agency.

Nanci A. Walsh, CMC
City Clerk/Finance Director
City of South Sioux City
1615 1st Avenue
South Sioux City, NE 68776
402-494-7594

CJ,

I am very happy with their modeling platform and I plan to expand my usage. Currently, I use it for my Sewer and Water Rates, and I plan to expand it to my Solid Waste program next. The ability to build out multiple if not unlimited scenarios is very helpful as we work through annual budgets.

Steven D. Rames PE,PLS
Public Works Director and City Engineer

Norfolk, Nebraska 68787
srames@norfolkne.gov
(402) 844-2000