CITY OF CRETE, NEBRASKA

CITY COUNCIL REGULAR MEETING

November 3, 2020

Notice of the meeting was given by posting and publishing in The Crete News, the appointed method for giving notice as shown by the Proof of Publication attached to the minutes. Advance notice of the meeting was also given to the Mayor and City Council. Pursuant to Section 84-1412(8) of the Nebraska Open Meetings Act, the City has posted a current copy of the Open Meetings Act, Laws of the State of Nebraska in the back of the Council Chambers. Additional copies are available to read. The City may consider items listed on the agenda in random order. All proceedings shown were taken while the meeting was open to the attendance of the public.

Those in attendance pledged allegiance to the flag.

1. Open Meeting
   Brian Carnes Present:
   Travis Sears: Present

   Dale Strehle Present:
   Present: 3.

2. Roll Call
3. Items of Business

A. Review and discuss the Substation Feasibility Study and substation/transformer options.
B. Discuss and provide a recommendation to the City Council on Radiant Springs Church's request for no parking signs at the end of W 12th Street.

4. Officers' Reports
5. Adjournment

Mayor

(SEAL)

City Clerk

I, Judi Meyer, City Clerk for the City of Crete, hereby certify that the foregoing is a true and correct copy of the proceedings had and done by the Mayor and Council. I hereby certify that a copy of the Open Meetings Act was posted in the back of the Council Chambers. I certify that all of the subjects included in the foregoing proceedings were contained in the agenda for the meeting, kept continually current and available for public inspection at the office of the City Clerk. I certify that such subjects were contained in said agenda for at least twenty-four hours prior to said meeting and that at least one copy of all reproducible material discussed at the meeting was available at the meeting for examination and copying by members of the public. I certify that the minutes were in written form and available for public inspection within ten working days and prior to the next convened meeting of the City Council. I certify that all news media requesting notification concerning meetings of the City Council were provided with advance notification of the time and place of said meeting and the subjects to be discussed.

_____

City Clerk (S E A L)

September 30, 2020

City of Crete
243 East 13th Street
Crete, NE 68333

Attn: Tom Ourada, City Administrator

RE: Crete, Nebraska
Crete 2020 Substation Feasibility Study
JEO Project No. 201368.00

The following is a substation feasibility study to assist the City of Crete (City) with consideration of adding a 10,000 KVA transformer to the existing Braden substation or adding a new substation to the City electrical infrastructure. This is to establish an optimum location of a transformer, confirm KVA capacity size and quantity of branch feeders for improved reliability of normal and back-up redundancy operations. The study includes a review of three (3) new site locations with determination of the best site location, develop preliminary site plan including one-line diagram with connections and provide an all-inclusive opinion of cost for each location option.

Summary of Results:

The Braden substation and three (3) additional locations were evaluated for the additional capacity. With existing infrastructure already in place, the Braden substation would be the most economic, but would limit the additional feeder circuits that could be added to allow for the capacity to be utilized as back-up redundancy for outages, voltage drop and improved operations. Option 4 with a new substation located along Iris Ave near 2350 Rd has adequate space available, access to sub-transmission, most availability for connections of new circuits to the existing distribution system, would provide for improved voltage regulation and allow for future growth.

The goals of the project

1. Provide engineering analysis of existing Braden substation and three (3) additional locations of a substation for installation of a 10,000 KVA transformer and proposed connections to existing distribution circuits. The final location is to allow the City the most opportune location to allow for improved normal operations and additional back-up redundancy.
2. Provide all-inclusive opinion of cost established from vendors, contactors, and past projects with a cost vs benefit of results for locations considered.
3. Develop a technical memorandum summarizing the conclusions and recommendations for use by the City in making future capital improvement decisions. The City council is anticipated to complete a risk assessment to determine comfort level of proposed locations.

Project Background:

The City has an approximate population of 7,300 with an estimated summer peak demand of 23,047 KW. The primary loads of the City are residential, small/large commercial, industrial, and public facilities. The City is currently connected to the statewide grid with two (2) 34.5 kV sub-transmission lines. The City owns and maintains a 6,200 KW power plant, two (2) substations with 13.8/7.97 kV distribution system and two (2) substations with 4.16/2.4 kV distribution. The distribution system has been continuously upgraded and appears to be in good condition.

Sub-Transmission
The City is currently operating with a 34.5 kV "delta" sub-transmission line that serves the Mill and Braden downtown substations, Breaker 304. A second 34.5 kV "delta" sub-transmission line serves the Beyer substation, Breaker 322. The two sub-transmission lines are connected with a normal open for redundancy. The newly established standard size of sub-transmission conductor is #477 ACSR.

4.16/2.4 kV Substations and Distribution
The Mill substation has a distribution voltage of 4.16/2.4 kV "wye" with two 3,750 KVA transformers, each transformer feeds a service bay in a metalclad switchgear. The metalclad switchgear also provides two sources of power to a grain handling facility. The Braden substation has a 7,500 KVA transformer with a distribution voltage 4.16/2.4 kV 'wye' that has one feeder extending to the Mill substation which is utilized as a backup and a second feeder that serves the downtown area.

13.8/7.96 kV Substations and Distribution
The downtown Braden substation has a 10,000 KVA transformer with a distribution voltage 13.8/7.97 kV 'wye' Generator No. 7 breaker and five (5) distribution feeder breakers. An additional breaker was installed in 2016 for the downtown 4.16/2.4 kV 'wye' distribution system to be upgraded and converted to 13.8/7.97 kV 'wye'. The Beyer substation has two (2) 10,000 KVA transformers with a distribution voltage 13.8/7.97 kV 'wye' and five (5) distribution feeder breakers. Three (3) feeders (north, east, and south feeders) are capable of being back fed from either substation.

Existing Power Plant
The City currently has one (1) 6,200 KW dual fuel (natural gas and diesel) generator that is connected to the Braden substation.

The City is a summer peaking community with the highest peak demand observed this past summer, 23,047 kW (7/24/2020 at 13:45). The City has provided the demand kW loading of the substations, transformers, and branch feeders of the system at 20,231 kW peak demand. The system loading was scaled up to match the highest peak demand. The following kW demand data was used in this analysis.

Existing Loading of Substations and Transformers

Distribution System 4.16 kV	**Demand**	**Total %**
Mill Substation		
Trans #1 & 2 - 7,500 KVA	5,587 kW	24.2%
Braden Substation		
Trans #2 - 7,500 KVA	769 kW	3.3%
Sub-Total 4.16 kV System	**6,356 kW**	**27.6%**
Distribution System 13.8 kV		
Braden Substation		
Trans #1 - 10,000 KVA	7,234 kW	31.4%
Beyer Substation		
Trans #1 - 10,000 KVA	5,419 kW	23.5%
Trans #2 - 10,000 KVA	4,039 kW	17.5%
Sub-Total 13.8 kV System	**16,692 kW**	**72.4%**
Total System	**23,047 kW**	**100%**

The feeder loading data provided and system load upscaling for each of the substations is provided in Table 1.

Table 1
City of Crete
Substation and Branch Circuit Estimated Demand

Substation			13.8/7.97 kV		
Braden	Feeder	Phase	Amps	kW	Peak
	West	A	58		
		B	50	1,362	1,552
		C	63		
	East	A	40		
		B	43	1,060	1,207
		C	50		
	North Ring	A	49		
		B	41	980	1,116
		C	33		
	South Ring	A	67		
		B	79	1,665	1,897
		C	63		
	Southeast Ring	A	63		
		B	48	1,283	1,461
		C	50		
				Peak	
				6,350	7,234
	Transformer 1				7,234

Substation			13.8/7.97 kV		
Beyer	Feeder	Phase	Amps	kW	Peak
	Industrial	A	39		
		B	41	940	1,071
		C	38		
	Friskies	A	148		
		B	149	3,545	4,039
		C	148		
	North Ring	A	0		
		B	8	64	73
		C	0		
	South Ring	A	98		
		B	117	2,430	2,768
		C	90		
	Southeast Ring	A	57		
		B	52	1,323	1,507
		C	57		
					Peak
				8,302	9,458
	Transformer 1				5,419
	Transformer 2	Friskies Only			4,039

Substation	To be converted		4.16/2.4 kV		
Braden	Downtown	Phase	Amps	kW	Peak
	Bus E	A	34		
		B	32	216	246
		C	24		
	Bus W	A	58		
		B	69	459	523
		C	64		
				Peak	
	Total Downtown			675	769
	Transformer 1				769

		4.16/2.4 kV	Peak
Mill	Substation	4,904	5,587
	Transformer 1 & 2		5,587

City Demand Total kW	
	20,231
City Peak 23,047 kW (7/24/20 at 13:45)	
	1.14

Proposed Substation/Feeder Loading:

The Mill substation would remain 4.16 kV with two (2) transformers and the downtown feeder would be upgraded to 13.8 kV. Feeders that are already dedicated or in close proximity, would remain connected to the existing substations with back-up operations from feeders in close proximity and connected to other substations. Feeders that are interconnected between substations, the designated normal open connections would allow for operations to transfer load from other substations.

Distribution System 4.16 kV	**Demand**	**Total %**
Mill Substation (Two Transformers)	5,587 KW	24.2%
Distribution System 13.8 kV		
Braden Substation (Back-up Options from other Substation Feeders)		
West Feeder	1,552 KW	6.7%
North Feeder	1,189 KW	5.2%
Beyer Substation (Back-up Options from other Substation Feeders)		
Friskies Feeder	4,039 KW	17.5%
Industrial Feeder	1,071 KW	4.6%
Braden, Beyer, and New Substation (Feeders with normal open interconnections between Substations)		
East Feeder	1,207 KW	5.2%
South Feeder	4,665 KW	20.2%
Southeast Feeder	2,968 KW	12.9%
Downtown	769 KW	3.3%
13.8 kV Total	**17,460 KW**	**75.8%**
Total System	**23,047 KW**	**100%**

Sizing of Additional Capacity:

The following calculations are summarized to determine optimum KW size of capacity necessary for back-up redundancy and future growth.

1. 23,047 kW (7/24/2020 at 13:45) Peak Demand provided by City data recording system, transmission losses not included, no reduction of demand is provided.
2. 4.16 kV Mill Substation 5,587 kW would not be included = 17,460 KW
3. North Loop, Beyer Industrial Circuit and Friskies Mfg. priority redundancy would remain with Braden and Beyer Substations = 6,299 KW
4. 11,160 kW capacity increased 20.0% for future growth and cold load pickup = 13,390 KW Capacity

To provide for redundant operations a 10,000/12,500/15,000 KVA OA/FA/FA transformer is recommended.

Optional site locations of additional capacity:

The following site locations were coordinated with the City and selected based on locations that would allow for easy access to the sub-transmission grid, improve the reliability of the distribution system and/or was property the City already owns or could possibly be purchased at a reasonable cost. Connecting to an existing substation would be the least cost option for adding

capacity. If a new substation is necessary, the additional costs to connect sub-transmission and distribution systems are included.

1. Option 1 – Existing Branden Substation with addition of transformer.
2. Option 2 – New Substation at intersection County Road GG and Boswell.
3. Option 3 – New Substation at intersection 5th Street and Boswell.
4. Option 4 - New Substation at intersection Iris Avenue and 2350 Road.

Utilizing field observation notes, pictures of each site and google earth to confirm, the following results were compiled. An appendix is included with highlighted feeders and site plans for each of the proposed options.

1. **Option 1 – Existing Branden Substation.**
   a. Existing 4.16 kV Transformer could be removed and replaced with 13.8 KV Transformer as they share opposite ends of the distribution structure. A Main Breaker and Tie Breaker would need to be added. Structure bussing would be modified.
   b. The existing 4.16 kV Transformer is a 7,500 KVA that is currently being used as an additional back-up for the Mill Substation, it's removal would be a redundancy reduction of the substation.
   c. Substation is existing and already connected to sub-transmission.
   d. One spare distribution breaker is installed for future conversion of the 4.16 kV downtown circuit. Additional circuits from substation would not be advantageous.
   e. With only one distribution circuit added, additional redundancy and reliability is minimal.
   f. Voltage regulation would not be improved.
   g. Allowance for growth would be minimal as additional circuits not included.
   h. No complications included.

2. **Option 2 – New Substation at intersection County Road GG and Boswell.**
   a. A residential home is on the corner, otherwise farm ground. This location has lots of available space.
   b. The east sub-transmission line is on the south side of County Road GG, access is good.
   c. Distribution circuits could be extended to connect west, south and southeast feeders. New circuit to Doane College is also available from this location.
   d. Back-up redundancy for south and southeast feeders from Braden and Beyer and west feeder from Braden are possible.
   e. Voltage regulation would be greatly improved as this location would be end of line for current feeders.
   f. Growth east and south are ideal.
   g. No complications included.

3. **Option 3 – New Substation at intersection 5th Street and Boswell**
   a. This location has limited space, the area east of Boswell is heavily treed with severe grading issues. Other areas at this location are residential.
   b. This site does not have access to sub-transmission, a line would need to be extended approximately ¾ miles and would be a radial feed.
   c. Distribution circuits would be easily connected and a new feed to Doane Campus could be achieved.
   d. This site would greatly enhance the reliability and redundancy of all distribution circuits.
   e. This site has flood plain issues and additional grading would be required.

4. **Option 4 - New Substation at intersection Iris Avenue and 2350 Road.**
   a. This site has lots of space available, northwest side is a hill that is owned by the College. South and East sides are drainage ditch. Further south is golf course and farm ground.
   b. The east sub-transmission line is along the east side of Iris Avenue, access is good.
   c. Distribution circuits would be easily connected and a new feed to Doane Campus could be achieved.
   d. This site would greatly enhance the reliability and redundancy of all distribution circuits.
   e. No complications included.

Rating Criteria:

Table 2 is the Rating Criteria for each option with scale 1-5. The rating allows for a comparison of each site location to be weighed with respect to the other options.

Table 2
Substation Feasibility Study
2020 Substation Location Rating Criteria
Crete, NE

Criteria	Braden Substation Site 1	County Rd GG & Boswell Site 2	5th & Boswell Site 3	Iris Ave & 2350 Rd Site 4
a. Adequate space available for transformer/substation	5	5	1	5
b. Access to sub-transmission lines	5	5	1	5
c. Distribution Circuits Availabilty	1	3	5	4
d. Redundancy & Reliabilty	1	5	5	5
e. Voltage Regulation	1	3	5	4
f. Allows for Growth	2	5	5	5
g. Other Complications	5	5	3	5
	20	**31**	**25**	**33**

Criteria

a. adequate space available 5, little to no space 1
b. access to loop 5, on radial & extension necessary 1
c. access to circuits 5, least desirable 1
d. reliability and redundancy improved 5, no improvement 1
e. voltage regulation improved 5, no improvement 1
f. growth improved 5, no improvement 1
g. physical space, building relocated, concrete removal, flood plain issues

Opinion of Cost:

Tables 3 is an opinion of cost for modifications of the Braden substation to include replacing the existing 4.16 kV with new 13.8 kV transformer, modifications to the site and bus and installing new main and tie breakers. Tables 4 & 5 are for each option to construct a new substation with consideration of one to two transformers. Appendix Sheet E2.0 is the one-line diagrams of the proposed substations. The costs are from transformer suppliers, contractors, material vendors and previous projects completed, transformer costs include delivery and setting in place.

Table 3
2020 Substation Feasibility Study
Opinion of Cost
Add Capacity to Braden Substation
Crete, NE

	Opinion of Cost	Braden Substation Site 1
1	Site Demolition	$ 45,000
2	Concrete Removal	$ 5,000
3	Site Development/Grading/Fence/Rock	$ 5,000
4	Concrete Breaker Pads	$ 5,000
5	Busing and Switches	$ 35,000
6	Breakers 1,200 Amp	$ 60,000
7		
8		
9	**Sub-Total**	**$ 155,000**
10		
11	**Transformer 10/12/15 KVA (Delivered & Set on Pad)**	**$ 700,000**
12		
13	Sub-transmission lines/connections	
14	Distribution lines/connections	$ 50,000
15	**Sub-Total**	**$ 50,000**
16		
17	Contigencies 10% (Excluding Transformer)	$ 41,000
18	Permitting/Legal/Engineering 10% (Excluding Trans)	$ 49,200
19	**Total**	**$ 995,200**
20	$$/KVA	$ 99.52

Table 4
2020 Substation Feasibility Study
Opinion of Cost
Option "A" Add Capacity with New Location (One Transformer)
Crete, NE

	Opinion of Cost	County Rd GG & Boswell Option 2	5th & Boswell Option 3	Iris Ave & 2350 Rd Option 4
1	Site Demolition			
2	Tree/Concrete Removal		$ 50,000	$ 10,000
3	Site Development/Grading/Fence/Rock	$ 50,000	$ 100,000	$ 50,000
4	Low Profile Bus and Switches	$ 75,000	$ 75,000	$ 75,000
5	Circuit Switcher	$ 40,000	$ 40,000	$ 40,000
6	Pre-Engineered Building 24' x 36'	$ 130,000	$ 130,000	$ 130,000
7	Pier & Building Concrete	$ 167,500	$ 167,500	$ 167,500
8	Building Switchgear, Electrical & Mechanical	$ 665,500	$ 665,500	$ 665,500
9	**Sub-Total**	**$ 1,128,000**	**$ 1,228,000**	**$ 1,138,000**
10				
11	**Transformer 10/12/15 KVA (Delivered & Set on Pad)**	**$ 675,000**	**$ 675,000**	**$ 675,000**
12				
13	Sub-transmission lines/connections	$ 50,000	$ 250,000	$ 50,000
14	Distribution lines/connections	$ 265,000	$ 55,000	$ 100,000
15	**Sub-Total**	**$ 315,000**	**$ 305,000**	**$ 150,000**
16				
17	Contigencies 10% (Excluding Transformer)	$ 144,300	$ 153,300	$ 128,800
18	Permitting/Legal/Engineering 10% (Excluding Trans)	$ 158,730	$ 168,630	$ 141,680
19	**Total**	**$ 2,421,030**	**$ 2,529,930**	**$ 2,233,480**
20	$$/KVA	$ 242.10	$ 252.99	$ 223.35

Table 5
2020 Substation Feasibility Study
Opinion of Cost
Option "B" Add Capacity with New Location (Future 2nd Transformer)
Crete, NE

	Opinion of Cost	County Rd GG & Boswell Option 2	5th & Boswell Option 3	Iris Ave & 2350 Rd Option 4
1	Site Demolition			
2	Tree/Concrete Removal		$ 50,000	$ 10,000
3	Site Development/Grading/Fence/Rock	$ 50,000	$ 100,000	$ 50,000
4	Low Profile Bus and Switches	$ 150,000	$ 150,000	$ 150,000
5	Circuit Switcher	$ 80,000	$ 80,000	$ 80,000
6	Pre-Engineered Building 24' x 42'	$ 145,000	$ 145,000	$ 145,000
7	Pier & Building Concrete	$ 250,000	$ 250,000	$ 250,000
8	Building Switchgear, Electrical & Mechanical	$ 785,500	$ 785,500	$ 785,500
9	**Sub-Total**	**$ 1,460,500**	**$ 1,560,500**	**$ 1,470,500**
10				
11	**Transformer 10/12/15 KVA (Delivered & Set on Pad)**	**$ 675,000**	**$ 675,000**	**$ 675,000**
12				
13	Sub-transmission lines/connections	$ 50,000	$ 250,000	$ 50,000
14	Distribution lines/connections	$ 265,000	$ 55,000	$ 100,000
15	**Sub-Total**	**$ 315,000**	**$ 305,000**	**$ 150,000**
16				
17	Contigencies 10% (Excluding Transformer)	$ 177,550	$ 186,550	$ 162,050
18	Permitting/Legal/Engineering 10% (Excluding Trans)	$ 195,305	$ 205,205	$ 178,255
19	**Total**	**$ 2,823,355**	**$ 2,932,255**	**$ 2,635,805**
20	$$/KVA	$ 282.34	$ 293.23	$ 263.58

Iris Avenue Sub-Transmission Line Underground:

To enhance the aesthetics of improvements along Iris Avenue, consideration of relocating the overhead 34.5 kV sub-transmission line with two (2) spacer cable underbuilds to underground is included. This is only included as an enhancement and would not be included in any option for comparison of substation locations.

It should be noted that a complete design of this underground project was not included, actual lengths of cable possible to be delivered to the site is necessary and then the cable pulling strength calculations need to be completed to determine the number of terminations required. Consideration of installing all conductors in one conduit or each conductor installed separately also needs to be determined based on cable lengths and pulling strengths.

Table 6
2020 Substation Feasibility Study
Opinion of Cost
34.5 kV UG and 13.8 kV Distribution along Iris Ave.
Crete, NE

	Item	Qty	Unit	$/Unit	Cost
1	Trench and Backfill	6,600	FT	$ 15.00	$ 99,000
2	6" Conduit HDPE	6,600	FT	$ 20.00	$ 132,000
3	34.5 kV UG #500 MCM AL	19,800	FT	$ 27.50	$ 544,500
4	Pole Riser	2	EA	$ 4,500.00	$ 9,000
5	34.5 kV Termination Cabinet	4	EA	$ 15,000.00	$ 60,000
6	34.5 kV Termination	18	EA	$ 2,500.00	$ 45,000
7	**Sub-Transmission Sub-Total**				**$ 658,500**
8	**Item**	**Qty**	**Unit**	**$/Unit**	**Cost**
9	15 KV Doane College Distribution Circuit #500 AL 1/3 CN	8,000	FT	$ 17.50	$ 140,000
10	15 kV South Distribution Circuit #500 AL 1/3 CN	12,000	FT	$ 17.50	$ 210,000
11	15 kV Southeast Distribution Circuit #500 AL 1/3 CN	16,000	FT	$ 17.50	$ 280,000
12	Trench and Backfill	500	FT	$ 15.00	$ 7,500
13	Pole Riser	6	FT	$ 5,500.00	$ 33,000
14	6" Conduit HDPE	12,000	FT	$ 20.00	$ 240,000
15	15 kV Padmount Switchgear	4	EA	$ 20,000.00	$ 80,000
16	15 kV Termination Cabinet	6	EA	$ 7,500.00	$ 45,000
17	15 kV Termination	36	EA	$ 1,000.00	$ 36,000
18	**Distribution Sub-Total**				**$ 1,071,500**
19					
20	Contigencies 10%				$ 173,000
21	Permitting/Legal/Engineering 10%				$ 190,300
22	**Total**				**$ 2,093,300**

Conclusion:

A 10,000 KVA base transformer with provisions for two sets of fans to increase the rating to 12,500 and 15,000 KVA is recommended to provide for back-up redundancy and future growth. The City essentially has seven (7) 13.8 kV distribution feeders that are utilized to provide for customer service, four (4) of these feeders are more dedicated to a load or location and three (3) feeders are more inter-connected between substations with normal opens to easily allow for transfer of load between substations. Options 2 and 4 have the best rating criteria, both options have access to sub-transmission, Option 2 would require more distribution line length for connections, but would allow for better growth south and west, also connection of the Braden west circuit. Option 4 allows for more distribution circuits with better connection available to Doane College. Option 4 also provides better growth to the east and additional back-up redundancy to Beyer substation. Both options provide improved voltage regulation for the south and southeast branch circuits.

If you have any further questions or comments, please do not hesitate to call.

Respectfully submitted,

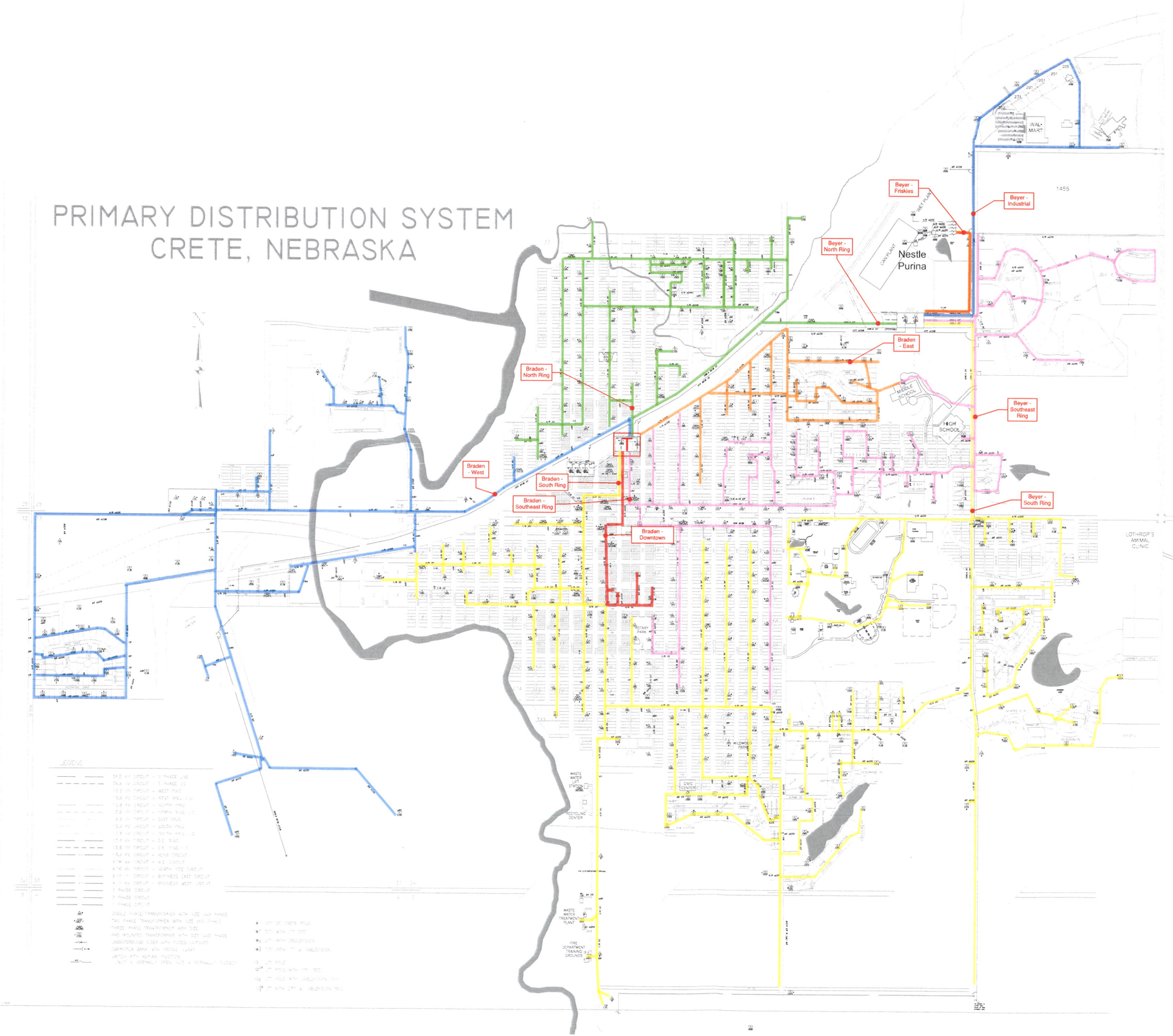
David R. Peterson

David R. Peterson, P.E.
Sr. Electrical Engineer

DRP:skw

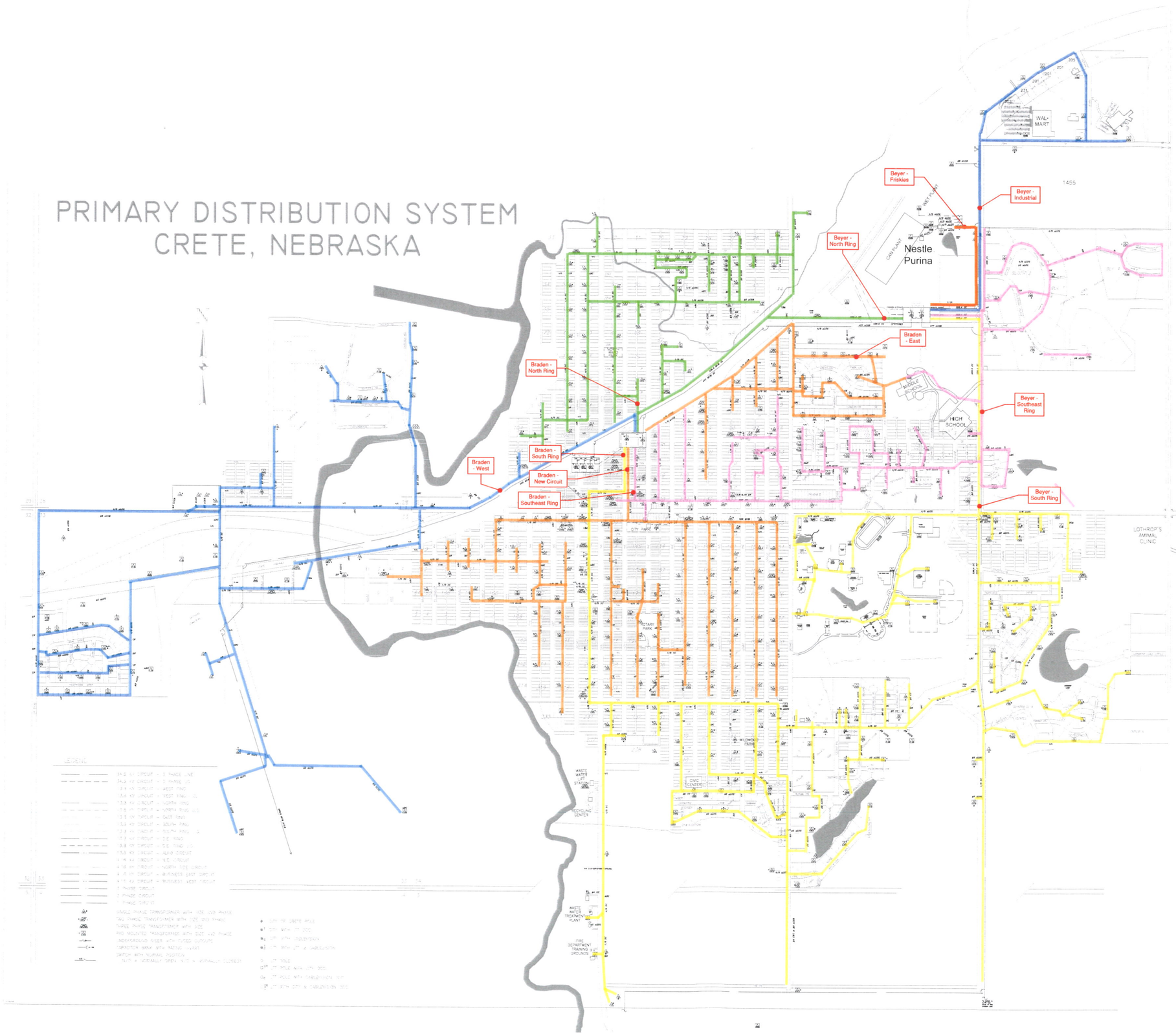
EXISTING FEEDER CIRCUITS

PRIMARY DISTRIBUTION SYSTEM
CRETE, NEBRASKA



OPTION 1
NEW BRADEN FEEDER

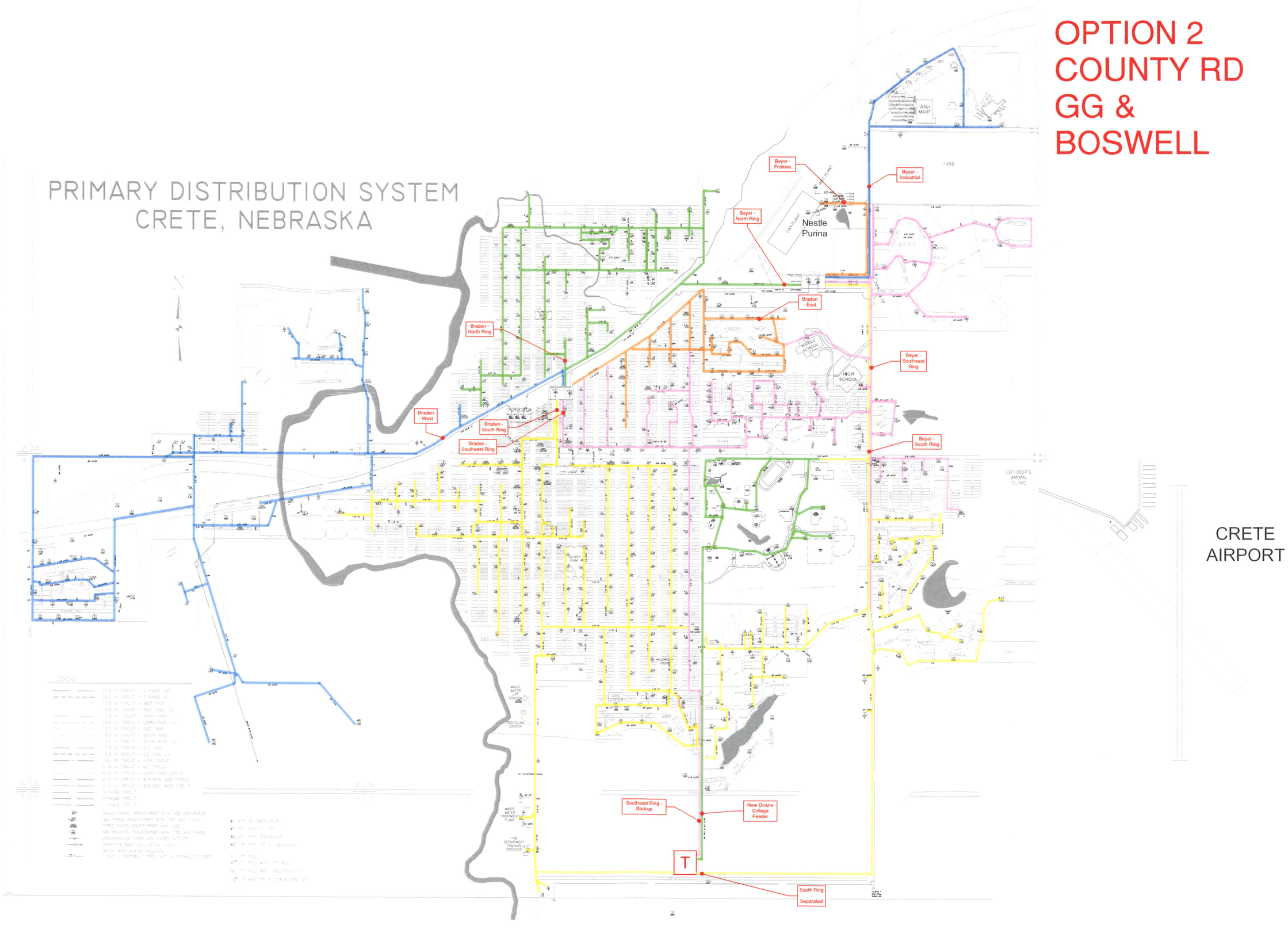
PRIMARY DISTRIBUTION SYSTEM
CRETE, NEBRASKA



CRETE AIRPORT

OPTION 2
COUNTY RD GG & BOSWELL

PRIMARY DISTRIBUTION SYSTEM
CRETE, NEBRASKA



OPTION 3
5th & BOSWELL

PRIMARY DISTRIBUTION SYSTEM
CRETE, NEBRASKA

Beyer - Friskies

Beyer - Industrial

Beyer - North Ring

Braden - East

Braden - North Ring

Braden - West

Braden - South Ring

Braden - Southeast Ring

Beyer - Southeast Ring

Beyer - South Ring

New Doane College Feeder

Southeast Ring - Backup

South Ring - Separated

T

Nestle Purina

WAL-MART

MIDDLE SCHOOL

HIGH SCHOOL

CITY PARK

ROTARY PARK

WILDWOOD PARK

CIVIC CENTER

WASTE WATER LIFT STATION

RECYCLING CENTER

WASTE WATER TREATMENT PLANT

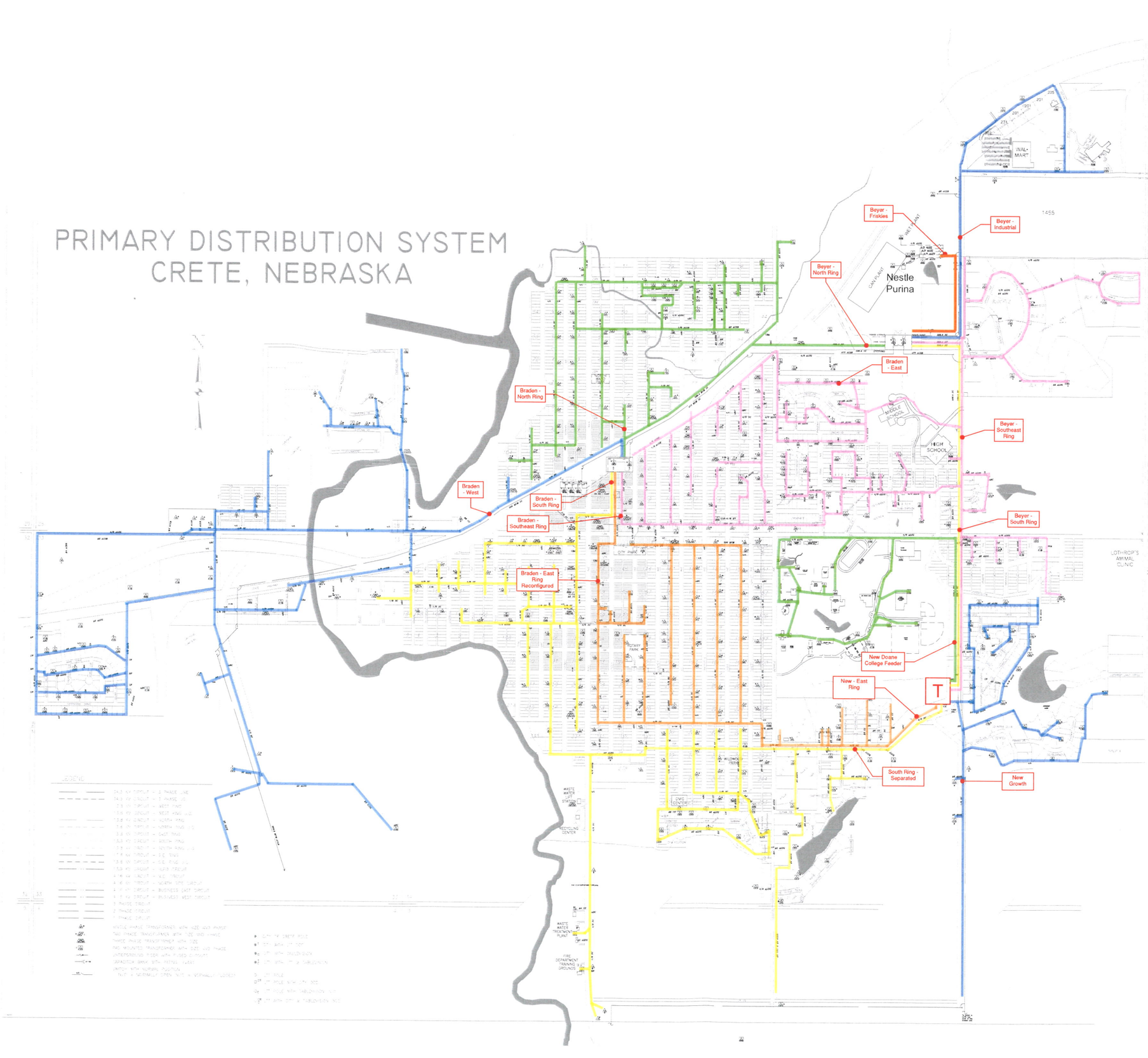
FIRE DEPARTMENT TRAINING GROUNDS

LOTHROP'S ANIMAL CLINIC

CRETE AIRPORT

OPTION 4
IRIS AVE
& 2350 RD

PRIMARY DISTRIBUTION SYSTEM
CRETE, NEBRASKA



JEO CONSULTING GROUP
1-800-723-8567

2020
CRETE SUBSTATION FEASIBILITY STUDY
CRETE, NE

SUBSTATION PLAN - OPTION 1

PRELIMINARY
NOT FOR CONSTRUCTION
0%
DATE:
9/28/2020

PROJECT NO.	201368
DATE	9/28/2020
DRAWN BY	ACC
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FIELD BOOK	FIELD BOOK
FIELD CREW	FIELD CREW
SURVEY FILE NO.	SURVEY FILE #
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70 PERCENT REVIEW INITIALS	70% INI
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95 PERCENT REVIEW DATE	95% DATE
REVISIONS	

811 Know what's below. Call before you dig.

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CRETE, NE

SUBSTATION PLAN - OPTION 2

PRELIMINARY
NOT FOR CONSTRUCTION
0%
DATE:
9/28/2020

PROJECT NO.	201368
DATE	9/28/2020
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FILE NAME	S-201380-ELEC.dwg
FIELD BOOK	FIELD BOOK
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DATE	70% DATE
95 PERCENT REVIEW INITIALS	95% INI
DATE	95% DATE
REVISIONS	

E1.1

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2020
CRETE SUBSTATION FEASIBILITY STUDY
CRETE, NE
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SUBSTATION PLAN - OPTION 3

PRELIMINARY PRELIMINARY PRELIMINARY PRELIMINARY
NOT FOR CONSTRUCTION
0%
DATE:
9/28/2020

PROJECT NO.	201368
DATE	9/28/2020
DRAWN BY	ACC
FILE NAME	S-201380-ELEC.dwg
FIELD BOOK	FIELD BOOK
FIELD CREW	FIELD CREW
SURVEY FILE NO.	SURVEY FILE #
PLAN IN HAND INITIALS / DATE	PIH INI / PIH DATE
70 PERCENT REVIEW INITIALS / DATE	70% INI / 70% DATE
95 PERCENT REVIEW INITIALS / DATE	95% INI / 95% DATE
REVISIONS	

E1.2

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Sterhout Ln

Iris Ave

2350

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SUBSTATION PLAN - OPTION 4

PRELIMINARY
NOT FOR CONSTRUCTION
0%
DATE:
9/28/2020

PROJECT NO.	201368
DATE	9/28/2020
DRAWN BY	ACC
FILE NAME	S-201380-ELEC.dwg
FIELD BOOK	FIELD BOOK
FIELD CREW	FIELD CREW
SURVEY FILE NO.	SURVEY FILE #
PLAN IN HAND INITIALS / DATE	PIH INI / PIH DATE
70 PERCENT REVIEW INITIALS / DATE	70% INI / 70% DATE
95 PERCENT REVIEW INITIALS / DATE	95% INI / 95% DATE
REVISIONS	

E1.3

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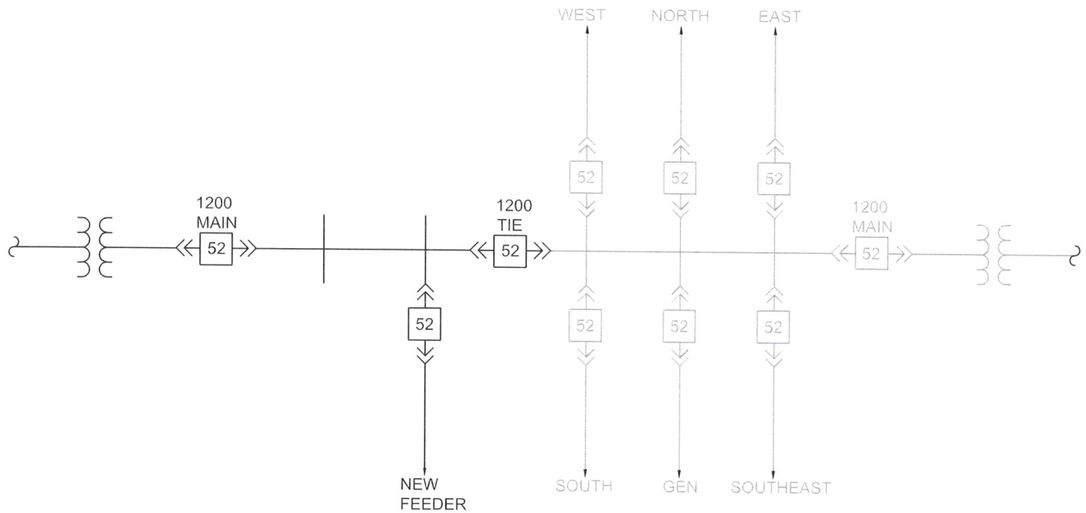
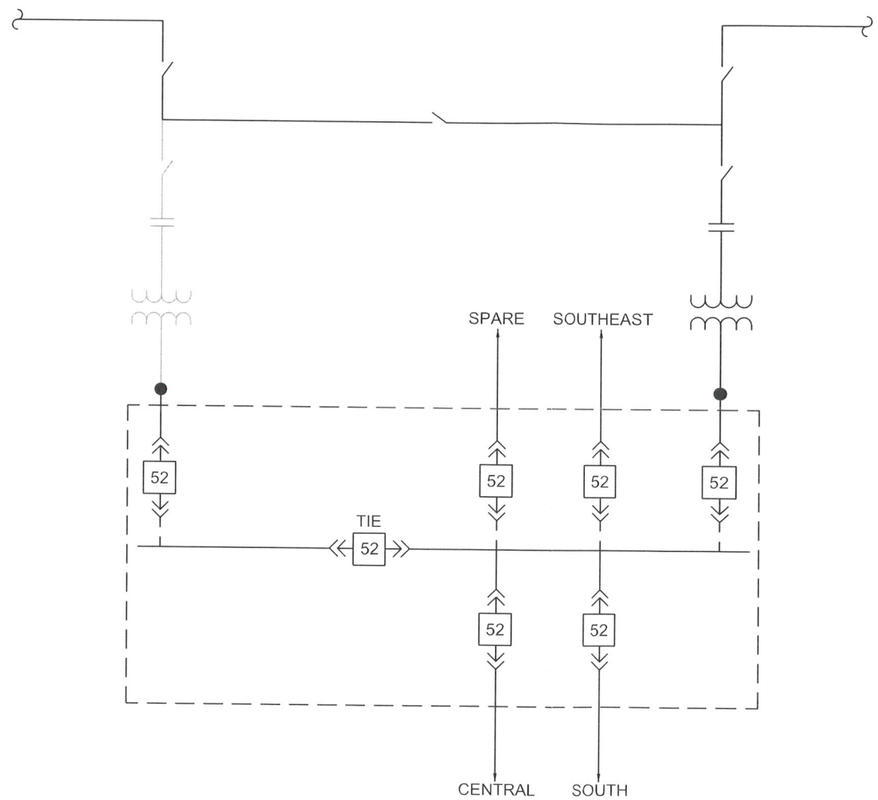


OPTION 1
SCALE: NO SCALE

NOTES:
1. HALF-TONE LINE WORK SHOWS EXISTING. FULL TONE SHOWS NEW/PROPOSED.



OPTIONS 2, 3, 4
SCALE: NO SCALE

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ONE-LINE DIAGRAMS

PRELIMINARY
NOT FOR CONSTRUCTION
0%
DATE:
9/28/2020

PROJECT NO	201368
DATE	9/28/2020
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FILE NAME	S-201380-ELEC.dwg
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FIELD CREW	FIELD CREW
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PLAN IN HAND INITIALS / DATE	PIH INI / PIH DATE
70 PERCENT REVIEW INITIALS / DATE	70% INI / 70% DATE
95 PERCENT REVIEW INITIALS / DATE	95% INI / 95% DATE
REVISIONS	

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