

**EDGERTON PLANNING COMMISSION
MEETING AGENDA
EDGERTON CITY HALL - 404 EAST NELSON STREET
November 12, 2024
7:00 P.M.**

The City of Edgerton encourages public participation in local governance issues. To facilitate an efficient and effective meeting, persons wishing to address the Planning Commission must sign-up before the meeting begins. During public hearings, comments must be limited to three (3) minutes per speaker. The maximum time limit for all speakers during each public hearing will be one (1) hour.

The chair may modify these provisions, as necessary. Speakers should state their name and address and then make comments that pertain to the public hearing item.

The chair may limit any unnecessary, off-topic, or redundant comments or presentations. Speakers should address their comments to Planning Commission members only and should not speak to fellow audience members. Commission members will not engage in a dialogue or debate with speakers. Speakers and audience members should conduct themselves in a civil and respectful manner. Disruptive conduct may result in removal from the meeting.

Call to Order

1. **Roll Call** ____ Daley ____ Draskovich ____ Mathos ____ Little ____ Mueller
2. **Welcome**
3. **Pledge of Allegiance**

Consent Agenda *(Consent Agenda items will be acted upon by one motion unless a Planning Commissioner requests an item be removed for discussion and separate action.)*

4. Minutes from the October 8, 2024 Planning Commission Meeting.

Regular Agenda

5. **Declaration.** At this time Planning Commission members may declare any conflict or communication they have had that might influence their ability to impartially consider the agenda items.

Business Requiring Action

New Business

6. **CU2024-0102: CONDITIONAL USE PERMIT APPLICATION FOR EVERGY COMMUNICATIONS TOWER LOCATED AT 18827 DILLIE ROAD**

- a. Presentation from Rob Goetz, SSC, applicant for Conditional Use Permit Application CU2024-0102
- b. Presentation from City Staff for Conditional Use Permit Application CU2024-0102

- c. Public Hearing for Conditional Use Permit Application CU2024-0102
- d. Discussion of Conditional Use Permit Application CU2024-0102
- e. Consideration of Conditional Use Permit Application CU2024-0102

7. Future Meeting Reminders

- December 10, 2024 at 7:00 PM – Regular Session
- January 14, 2025 at 7:00 PM – Regular Session
- February 11, 2025 at 7:00 PM – Regular Session

8. Announcements

9. Adjourn

**PLANNING COMMISSION
October 8, 2024 Minutes**

A regular session of the Edgerton Planning Commission (the Commission) was held in the Edgerton City Hall, 404 E. Nelson Street, Edgerton, Kansas on October 8, 2024. The meeting convened when Vice Chair Jeremy Little called the meeting to order at 7:02PM.

1. ROLL CALL

Jeremy Little	present
Tina Mathos	present
Adam Draskovich	present
John Daley	absent
Jordyn Mueller	absent

With a quorum present, the meeting commenced.

Staff in attendance: Zachary Moore, Development Services Director
Alex Clower, City Clerk

2. WELCOME Vice Chair Little welcomed all in attendance to the meeting.

3. PLEDGE OF ALLEGIANCE All present participated in the Pledge of Allegiance.

CONSENT AGENDA

4. Minutes from the September 12, 2024 Planning Commission Meeting.
5. FP2024-0003 Edgerton Crossing, Second Plat Located on the Southwest Corner of W. 200th Street and Homestead Lane
6. FP2024-0004 Edgerton Crossing, Third Plat Located on the Northeast Corner of W. 200th Street and Jubilee Street

Commissioner Mathos moved to approve the Consent Agenda. The motion was seconded by Commissioner Draskovich. The Consent Agenda was approved, 3-0.

Regular Agenda

7. Declaration. None

Business Requiring Action

New Business

- 8. FSP2024-0006: FINAL SITE PLAN APPLICATION FOR MAVERIK LOCATED ON THE NORTHEAST CORNER OF W. 200TH STREET AND JUBILEE STREET**

Mr. Josh Rabe, representative with Maverik stated they purchased the site from the

developer but did not obtain the portion in the middle in that original purchase. Ultimately it made more sense to buy that ground to allow for better flow and services for the area. He stated he wants to make sure they're a good addition to the neighborhood and figured out a way to spend more money to do just that. They're very excited to close on this and begin movement on this project, they're very close to having everything buttoned up and will begin moving dirt before the season is over.

Vice Chair Little opened the public hearing at 7:07PM

Mr. Jason Sowers, 19911 Pepper Tree Lane, Edgerton, KS 66021 requested time to speak. Mr. Little allowed.

Mr. Sowers stated he knows they already voted on the item on consent, but would like to address some of his concerns. He stated the sign at TA Express is a beacon in the night, and those that have moved out here or live out here are there to get away from the noise. He stated he would like to petition that if the sign moves forward, there are color restrictions, blinders on it, or something done so it only shines toward the interstate.

With no further questions or comments, Commissioner Little then closed the public hearing at 7:09PM.

Mr. Moore stated he would first like to address the comment from Mr. Sowers regarding future sign. He stated the application approved this evening was for a plat to subdivide the land, and a sign will require a Conditional Use Permit which will come back before Planning Commission, at a future date at which time a public hearing will also happen and the public can address their concerns there.

He stated the Final Site Plan when originally submitted had carved out this just over two acres in the previously approved plan. Maverik then decided to purchase that land that was not previously included in the plan. The site was zoned to be C-2 in 2011, the preliminary plat was approved in 2019, and subsequent plats were approved in 2021 and then what brings us to today. The original Final Site Plan was approved in April of this year. He stated nothing about the footprint below the dash line on plan shown has changed, and therefore, the applicant could submit a building permit for the structure provided the stipulations are addressed from the previously approved site plan. He stated there is a slight change to walls of the dumpster enclosure height, a couple more additions of diesel stations, the CAT scale will be placed in a different location than originally submitted, but the layout of the area is generally the same. The previously approved site plan had truck stalls further away from the building, those have now been brought in to the interior portion of the site. There will be no additional parking, however will have a greater area of greenspace along the northern portion of the property. He stated throughout the report, there were a few concerns needed addressed by applicant, including lightpoles as the original plan did not meet code requirements but the applicant will revise to meet requirements. The photometric plan and stormwater need to be addressed prior to a building permit being pulled.

Commissioner Draskovich stated this plan shows a much better parking area.

Commissioner Mathos stated she appreciates the addition of greenspace.

There were no further questions or comments.

Commissioner Little stated now that the discussion has been concluded on this item, he would request motion on approval of application FSP2024-0006 for Maverik located at the northeast corner of W. 200th Street and Jubilee Street with stipulations provided.

Commissioner Draskovich made motion to approve the motion, seconded by Commissioner Mathos. The item was approved, 3-0.

9. FUTURE MEETING REMINDERS

Vice Chair Little stated that the next regular session is scheduled for November 12, 2024; December 10, 2024; and January 14, 2025.

10. ANNOUNCEMENTS

There were no announcements.

11. ADJOURN

Commissioner Mathos moved to adjourn the meeting. Commissioner Draskovich seconded the motion. The meeting was adjourned at 7:18PM, 3-0.

Submitted by Alex Clower, City Clerk

EVERGY COMMUNICATIONS TOWER

Application CU2024-0102
18827 Dillie Road

QUICK FACTS

PROJECT SUMMARY AND REQUESTED APPROVALS

The Applicant is requesting approval of a Conditional Use Permit for a communications tower taller than 60 feet.

Owner and Applicant

K C Power & Light Co.

Existing Zoning and Land Use

The property is currently zoned A-G (Agricultural) District. A communications tower and Evergy substation are currently on the property.

Parcel Size

67.69± acres

Staff Report Prepared by

Chris Clinton



BACKGROUND

1. Proposal

The applicant is requesting a Conditional Use Permit for a new 230-foot tall communications tower on the property located at 18829 Dillie Road. The existing 220-foot tower will be removed from the site. As part of the new tower, a new equipment shelter is also proposed. The applicant has indicated that the equipment and area will be enclosed by a fence. Communication towers greater than 60 feet in height require approval of a Conditional Use Permit, which requires a public hearing before the Planning Commission.

2. Subject Site History

The 67.69± acre subject property was annexed on April 23, 2009 (Ordinance 854). The existing communications tower was located on the subject property prior to the annexation into the City of Edgerton. There is a 10.10± acre section of the subject property that is zoned I-H (Heavy Industrial) which has an electrical sub-station located on it to the east of the existing tower. The proposed tower will be located just south of the existing tower.

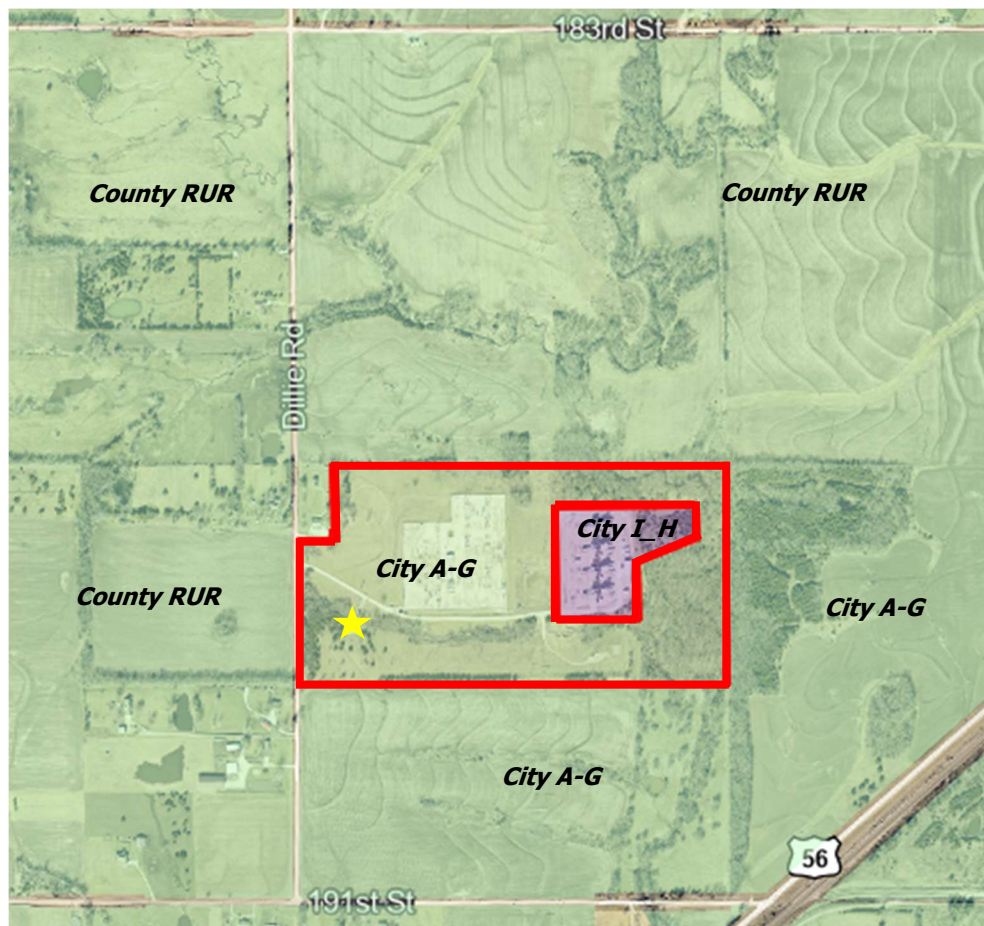


Figure 1 – Zoning Map. Subject Property Outlined in Red. Location of the communications tower is indicated by the Yellow star.

CONDITIONAL USE PERMIT REVIEW

Figure 2 below shows the future land use designation for the area, with the subject property outlined in black:

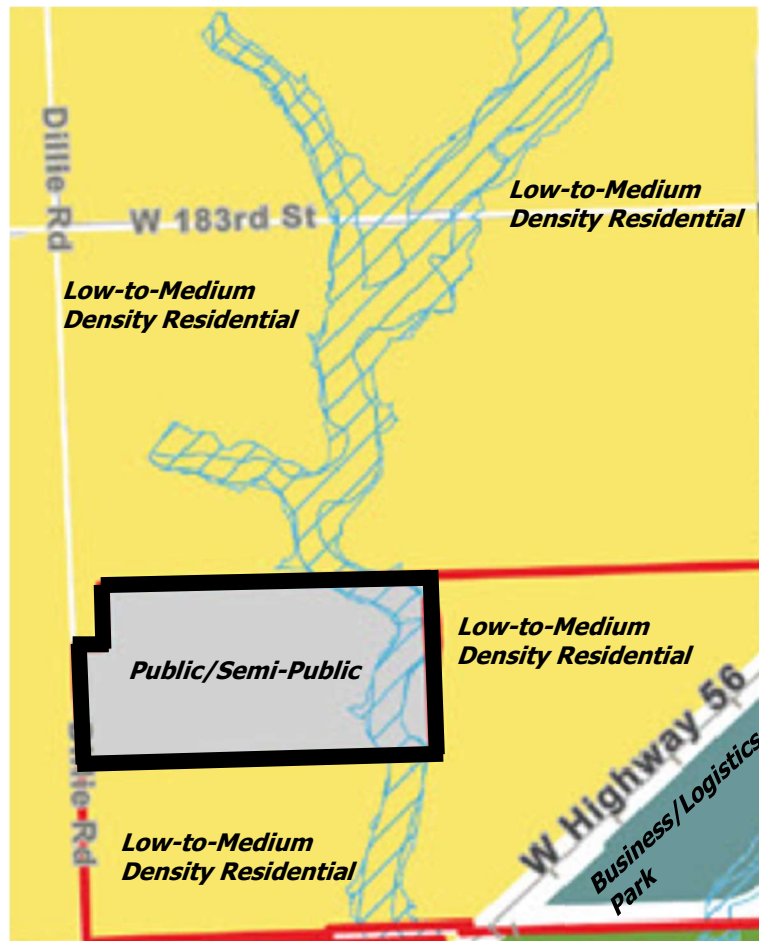


Figure 2

City staff reviewed the Conditional Use Permit under the requirements outlined in Article 7 – Conditional Uses of the UDC.

The purpose of this article is to provide for certain uses, which because of their unique characteristics cannot be distinctly listed as a permitted use in a particular zoning district. The Planning Commission may recommend approval of Conditional Uses to the Governing Body after consideration in each case of the impact of such uses upon neighboring uses, the surrounding area, and the public need for the particular use at the particular location. Limitations and standards are herein established to ensure the use's consistency with the character, uses and activities in the zoning district. Before any Conditional Use may be approved, the Governing Body shall review the record of the public hearing held by the Planning Commission.

The Planning Commission, in accordance with the procedures and standards of the UDC, may recommend the Governing Body authorize buildings, structures, and uses as Conditional Uses in specific instances and in particular districts set forth provided that:

- a. the location is appropriate and consistent with the Comprehensive Plan;

- b. that the public health, safety, morals, and general welfare will not be adversely affected;
- c. the necessary safeguards will be provided to surrounding property, persons, and neighborhood values; and
- d. further provide that additional standards of this Article be specified as a condition of approval.

Section 7.1 Issuance of Conditional Uses

Criteria. In order to recommend approval or disapproval of a proposed conditional use permit, both the Planning Commission and the Governing Body shall determine whether the proposed use is found to be generally compatible with surrounding development and is in the best interest of the City. In making such determination, the Planning Commission and Governing Body may consider all factors they deem relevant to the questions of compatibility and the best interest of the City, including the following:

1. The extent to which there is a need in the community for the proposed use.
 - a. *The proposed communications tower will replace the existing tower and be outfitted with new equipment to provide the community with connections to televisions, radio, cell phones, and internet.*
2. The character of the neighborhood, including but not limited to: zoning, existing and approved land use, platting, density (residential), natural features, and open space.
 - a. *The subject property is in a low-density residential area that is zoned Rural or Agricultural. The subject property does have an electrical sub-station in an I-H (Heavy Industrial) zoned area. There is landscaping along the property lines along Dillie Road and the southern property line. There is a historical site to the north of the location of the tower, the Lanesfield School.*
3. The nature and intensity of the proposed use and its compatibility with the zoning and uses of nearby properties. Such determination should include the location, nature, and height of structures, walls, fences, and other improvements connected with the proposed use, their relation to adjacent property and uses, and the need for buffering and screening.
 - a. *The neighboring properties are all zoned either RUR (Rural) or A-G (Agricultural). There is an existing electrical sub-station and supporting infrastructure to the east of the sub-station. The existing tower is 220 feet tall and is proposed to be replaced by a 230-tall tower. The existing tower is guyed to remain upright and the proposed tower is self-supporting, resulting in a smaller area needed for the overall structural support of the tower. The proposal is compatible with the surrounding properties.*
4. Suitability of the uses of the property without the proposed conditional use permit.
 - a. *The subject property is currently developed with an electrical substation, which is permitted by right in the AG District. Communication towers are permitted by right if the height of the tower does not exceed 60 feet. A lower height of the tower would not allow the applicant to utilize the proposed antennas on the tower, limiting community access to television, radio, cellular reception, and internet.*
5. Length of time the subject property has remained vacant without the proposed conditional use permit.
 - a. *Per Johnson County AIMS, a communications tower has been on the subject property since at least 1994. The electrical sub-station has been on the subject property for the same timeframe.*

6. The extent to which the proposed use may detrimentally affect nearby property.
 - a. *The nearby properties are not detrimentally affected by the existing tower and the proposed tower will not detrimentally affect nearby properties.*
7. The adequacy of ingress and egress to and within the site of the proposed use, traffic flow and control, the adequacy of off-street parking and loading areas, the adequacy of required yard and open space requirements and sign provisions.
 - a. *The proposed tower does have an access drive from Dillie Road and does allow for vehicles to turn around off the road. Any vehicles needing to access the tower will have space to park well off the road. All requirements for A-G zoned parcels have been met.*
8. The availability and adequacy of required utilities and services to serve the proposed use. These utilities and services include, but are not limited to, sanitary and storm sewers, water, electrical and gas service, police and fire protection, schools, parks and recreation facilities and services, and other similar public facilities and services.
 - a. *The only utility that would be required for the tower would be electricity which is onsite.*
9. The extent to which the proposed use would adversely affect the capacity or safety of that portion of the road network influenced by the proposed use, or present parking problems in the vicinity of the property.
 - a. *The tower will not affect the capacity or safety of the road network or present any parking problems.*
10. The environmental impacts that the proposed use would create (if any) including, but not limited to, excessive storm water runoff, water pollution, air pollution, noise pollution, excessive nighttime lighting or other environmental harm.
 - a. *There are no environmental impacts of the proposed tower.*
11. The economic impact of the proposed use on the community.
 - a. *The new tower does not provide a direct economic impact to the community.*
12. The relative gain (if any) to the public health, safety, and welfare from a denial of the application for conditional use permit as compared to the hardship imposed upon the conditional use applicant from such denial.
 - a. *There would be little to no gain to the public health, safety, and welfare of the City of Edgerton should this request be denied. If the request is denied, the existing tower would be permitted to remain, however upgrades to the tower that are required would not be able to be made, as the applicant has indicated that the tower cannot structurally support the upgrades required for grid modernization.*
13. Consistency with the Comprehensive Plan, Capital Improvement Plan, ordinances, policies, and applicable City Code of the City of Edgerton, and the general safety, health, comfort and general welfare of the community.
 - a. *The Future Land Use Map (FLUM) within the Comprehensive Plan designates the subject property as Public/Semi-Public, and the proposed tower is consistent with the FLUM.*
14. In addition to the above criteria, the recommendation of professional staff is also required per Ordinance 798 (2005). Staff recommendations are addressed in the Recommendations Section of this Staff Report.

Section 7.2.A.6 Specific District Requirements

1. Facility must not be located in an area used or planned for residential purposes.
 - a. *The FLUM shows the subject property remaining Public/Semi-Public and is not planned for residential development.*
2. The facility must be located a horizontal distance equal to its total height plus 50 feet from any building used for human habitation (other than the principal use), and/or any road.
 - a. *The proposed tower is over 320 feet away from Dillie Road, which is the closest road or building used for human habitation. This requirement has been met as the tower would need to be at a minimum distance of 280 feet from Dillie Road.*
3. The applicant must demonstrate the necessity for the tower by demonstrating that this facility cannot reasonably be co-located on an existing tower or structure.
 - a. *The applicant has indicated that the proposed equipment cannot be located on the existing tower per structural analysis. The equipment is needed to modernize the grid.*
4. The applicant shall show that the new tower is designed to accommodate additional antennae equal in number to the applicant's present and future need and will accommodate two co-located antennae requested by public or private concerns.
 - a. *The provided plans show that the existing tower currently has four (4) antennas, and the new proposed tower will have the four (4) relocated antennas, six (6) new antennas, and possible location of new antennas that could be added to the tower.*
5. Submission of an acceptable agreement to remove the tower and/or antenna within 180 days after cessation of use.
 - a. *This agreement is currently being drafted and must be completed prior to completion of the final inspection of the tower. This is included as a stipulation of staff's recommendation.*

DOCUMENTS INCLUDED IN PACKET

Sheet #	Title	Date on Document
T-1.0	Title Sheet	09/26/2024
	Survey	09/26/2024
A-1.0	Overall Site Plan	09/26/2024
A-1.1	Existing Enlarged Site Plan	09/26/2024
A-1.2	Final Enlarged Site Plan	09/26/2024
A-2.0	Tower Elevations	09/26/2024
A-2.1	Antenna Plan & Key	09/26/2024
A-3.0	Equipment Details (1 of 4)	09/26/2024
A-3.1	Equipment Details (2 of 4)	09/26/2024
A-3.2	Equipment Details (3 of 4)	09/26/2024
A-3.3	Equipment Details (4 of 4)	09/26/2024
A-4.0	Shelter Elevations	09/26/2024
E-1.0	Enlarged Utility Plan	09/26/2024
E-2.0	One Line Diagram	09/26/2024
E-3.0	Electrical Details	09/26/2024
E-4.0	Meter Center Detail	09/26/2024

E-5.0	PLTE Rack Layout & Power Distribution	09/26/2024
E-6.0	PLTE Terminal Strip Layout	09/26/2024
E-7.0	Network Schematic One-Line Diagram	09/26/2024
E-8.0	Tower OVP Wiring Diagram	09/26/2024
G-1.0	Grounding Plan	09/26/2024
G-2.0	Grounding Rising Diagram	09/26/2024
G-3.0	Grounding Details (1 of 3)	09/26/2024
G-3.1	Grounding Details (2 of 3)	09/26/2024
G-3.2	Grounding Details (3 of 3)	09/26/2024
G-4.0	Grounding Systems	09/26/2024
SP-1.0	Specifications (1 of 6)	09/26/2024
SP-1.1	Specifications (2 of 6)	09/26/2024
SP-1.2	Specifications (3 of 6)	09/26/2024
SP-2.0	Specifications (4 of 6)	09/26/2024
SP-3.0	Specifications (5 of 6)	09/26/2024
SP-3.1	Specifications (6 of 6)	09/26/2024

STAFF RECOMMENDATION

Staff recommends approval of Conditional Use Permit **Application CU2024-0102**, *Everygy Communications Tower* with the following stipulations:

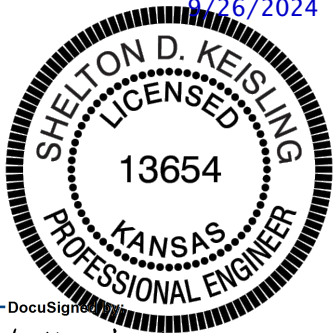
1. This Conditional Use Permit will be valid for ten (10) years from the date of approval by the City of Edgerton Governing Body.
2. The agreement to remove the tower following the cessation of use must be entered into prior to the completion of the final inspection of the tower.

Note: For Application CU2024-0102 the Planning Commission is the recommending body for the application to the Governing Body. This application will be presented to the Governing Body on December 12, 2024.



APPLICANT SITE NAME:
WEST GARDNER

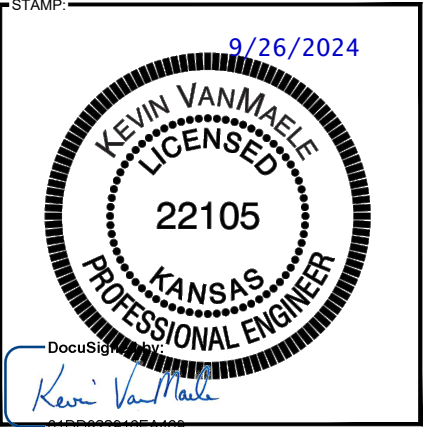
APPLICANT SITE NUMBER:
KS1019



DocuSign Envelope ID: EF94D8A5B80B407...
Shelton Keisling

EVERGY PROJECT TYPE:
NSB REPLACEMENT

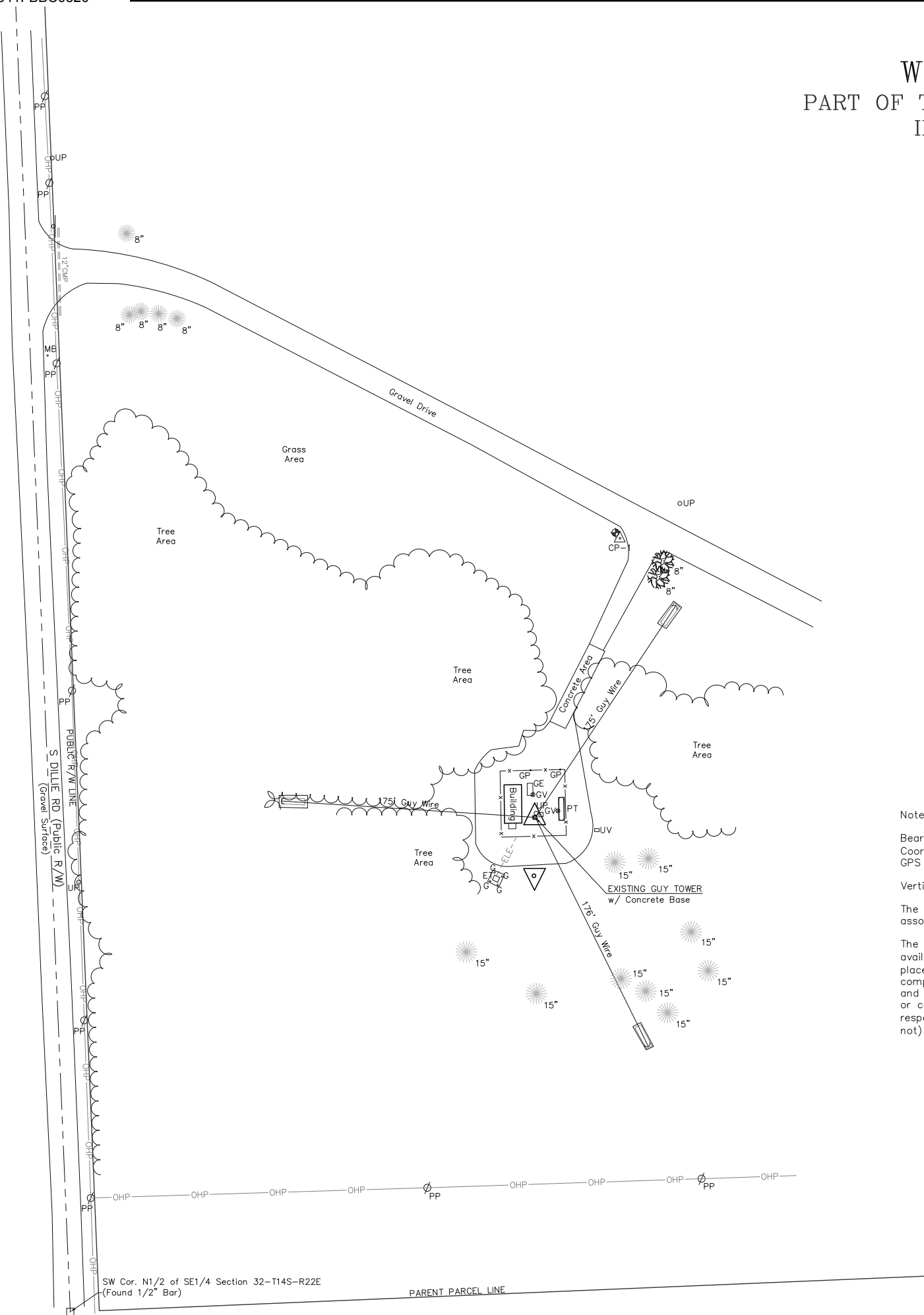
DRAWING DESCRIPTION:
FINAL CD



ENGINEERING LICENSE STATE OF KANSAS		
PE CERTIFICATE OF AUTHORIZATION # E-571		
ENGINEER:	PE#:	DISCIPLINE:
KMV KEVIN M. VANMAELE	22105	CIVIL
REJ ROBERT E. JENSEN	16096	CIVIL
CG CHRISTOPHER GIANNOTTI	26673	CIVIL
SDK SHELTON D. KEISLING	13654	ELECTRICAL
TMS TERRANCE M. SUPER	9250	ELECTRICAL

AERIAL MAP		SITE INFORMATION	PROJECT INFORMATION	DRAWING INDEX		
		<u>SITE ADDRESS:</u> 18827 DILLIE RD EDGERTON, KS 66021 <u>COUNTY:</u> JOHNSON <u>PROPERTY OWNER:</u> EVERGY <u>TOWER INFORMATION:</u> LATITUDE: 38.786614° N (NAD 83) LONGITUDE: 94.990875° W (NAD 83) GROUND ELEV: 1009.00' AMSL TOWER HEIGHT: 230'-0" AGL TOWER TYPE: SELF SUPPORT TOWER APPLICANT CL: 180'-0" AGL ASR NUMBER: 1031287 <u>APPLICANT:</u> EVERGY 1200 MAIN ST KANSAS CITY, MO 64105	<u>PROJECT:</u> NSB REPLACEMENT	SHEET NO.	SHEET DESCRIPTION	DISC.
				T-1.0	TITLE SHEET	C/E
					SURVEY (BY OTHERS)	
				A-1.0	OVERALL SITE PLAN	C
				A-1.1	EXISTING ENLARGED SITE PLAN	C
				A-1.2	FINAL ENLARGED SITE PLAN	C
				A-2.0	TOWER ELEVATIONS	C
				A-2.1	ANTENNA PLAN & KEY	C
				A-3.0	EQUIPMENT DETAILS (1 OF 4)	C
				A-3.1	EQUIPMENT DETAILS (2 OF 4)	C
				A-3.2	EQUIPMENT DETAILS (3 OF 4)	C
				A-3.3	EQUIPMENT DETAILS (4 OF 4)	C
				A-4.0	SHELTER ELEVATIONS	C
				E-1.0	ENLARGED UTILITY PLAN & DETAILS	E
				E-2.0	ONE LINE DIAGRAM	E
				E-3.0	ELECTRICAL DETAILS	E
				E-4.0	METER CENTER DETAIL	E
				E-5.0	PLTE RACK LAYOUT & POWER DISTRIBUTION	E
				E-6.0	PLTE TERMINAL STRIP LAYOUT	E
				E-7.0	NETWORK SCHEMATIC ONE-LINE DIAGRAM	E
				E-8.0	TOWER OVP WIRING DIAGRAM	E
				G-1.0	GROUNDING PLAN	E
				G-2.0	GROUNDING RISER DIAGRAM	E
				G-3.0	GROUNDING DETAILS (1 OF 3)	E
				G-3.1	GROUNDING DETAILS (2 OF 3)	E
				G-3.2	GROUNDING DETAILS (3 OF 3)	E
				G-4.0	GROUNDING SYSTEMS	E
				SP-1.0	SPECIFICATIONS (1 OF 6)	C
				SP-1.1	SPECIFICATIONS (2 OF 6)	C
				SP-1.2	SPECIFICATIONS (3 OF 6)	C
				SP-2.0	SPECIFICATIONS (4 OF 6)	C
				SP-3.0	SPECIFICATIONS (5 OF 6)	E
				SP-3.1	SPECIFICATIONS (6 OF 6)	E

SITE PLAN EXHIBIT
WEST GARDNER KS1019
PART OF THE SE 1/4, SECTION 32, T14S, R22E,
IN JOHNSON COUNTY, KANSAS



PROPOSED CELL TOWER DATA
Center of Tower
Lat 38°47'11.81" North
(38.786614°)
Long 94°59'27.15" West
(-94.990875°)

Ground Elevation = 1009ft

BENCH MARK
Top of 1/2" Iron Bar w/
Control Cap at CP-1
Elevation = 1010.17ft

EXISTING CELL TOWER DATA
Center of Tower
Lat 38°47'12.21" North
(38.786725°)
Long 94°59'27.12" West
(-94.990867°)

Ground Elevation = 1008ft
Top of Tower = 1228ft
Top of Top Appurtenance = 1253ft

LEGEND	
POWER POLE	Ø PP
UTILITY PEDESTAL	o UP
ELECTRIC TRANSFORMER	□ ET
UTILITY VAULT	□ UV
ANCHOR	⌋
GAS VALVE	• GV
MAIL BOX	• MB
SIGN	—
GATE POST	• GP
GUARD POST	• G
EXISTING GUY TOWER	△
PROPOSED SELF-SUPPORT TOWER	△
TREE (DIA.)	⊗
CEDAR/PINE (DIA.)	⊗
TREE LINE	⌋
FENCE	— x —
OVERHEAD POWER LINE	— OHP —
UNDERGROUND ELECTRIC LINE	--- ELE ---
BENCHMARK	⊕
CONTROL POINT	△
GENERATOR ON CONCRETE PAD	GE
PROPANE TANK ON CONCRETE PAD	PT

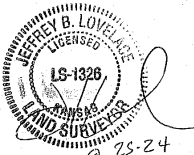
Notes:

Bearings shown hereon are referenced to Grid North of the Kansas State Plane Coordinate System of 1983 (NAD 83), (2011 ADJ.), North Zone. Obtained by static GPS observations and Rinex File submittals for NGS Opus solutions.

Vertical Datum = NAVD88 using GEOID12B

The purpose of this survey is to establish and describe a Lease Area and associated Easements. This is not a boundary survey of the Parent Parcel.

The utilities as shown on this drawing were developed from the information available (existing utility maps, aboveground observations and or surface markings placed on the ground by the utility company or a representative thereof). This company has made no attempt to excavate or go below surface to locate utilities and does not extend or imply a guaranty or warranty as to the exact location of or complete inventory of utilities in this area. It shall be the contractors responsibility to verify the location and depth of all utilities (whether shown or not) prior to excavation or construction and to protect said utilities from damage.



LOVELACE & ASSOCIATES
Land Surveying - Land Planning
Telecommunications Surveys
929 SE 3rd Street Lee's Summit, Missouri 64063
Phone: (816) 347-9997 Fax: (816) 347-9979

SURVEY PROVIDED BY:

LOVELACE AND ASSOCIATES, LLC
P.O. BOX 68,
LEE'S SUMMIT, MO 64063
TELEPHONE: 816-347-9997
FAX: 816-347-9979

SURVEY PROVIDED FOR:

SSC
7171 W. 95TH STREET,
SUITE 600
OVERLAND PARK, KS 66212
TELEPHONE: 913-438-7700

FLOOD NOTE:

According to my interpretations of Community Panel No. 20091C0118G of the Flood Insurance Rate Map for Johnson County, Kansas, the subject property is in Flood Zone "X", ie. "areas determined to be Outside the 0.2% annual chance floodplain".

CALL BEFORE YOU
DIG - DRILL - BLAST
CALL 811 WITHIN STATE
(DIG-SAFE)
kansasonecall.com
KANSAS ONE CALL SYSTEM, INC.

SITE I.D.: KS1019

SITE NAME: WEST GARDNER

SITE LOCATION:
CITY OF EDGERTON,
JOHNSON COUNTY, KS

LA PROJECT NO.: 23223

DRAWN BY: A.C.T.

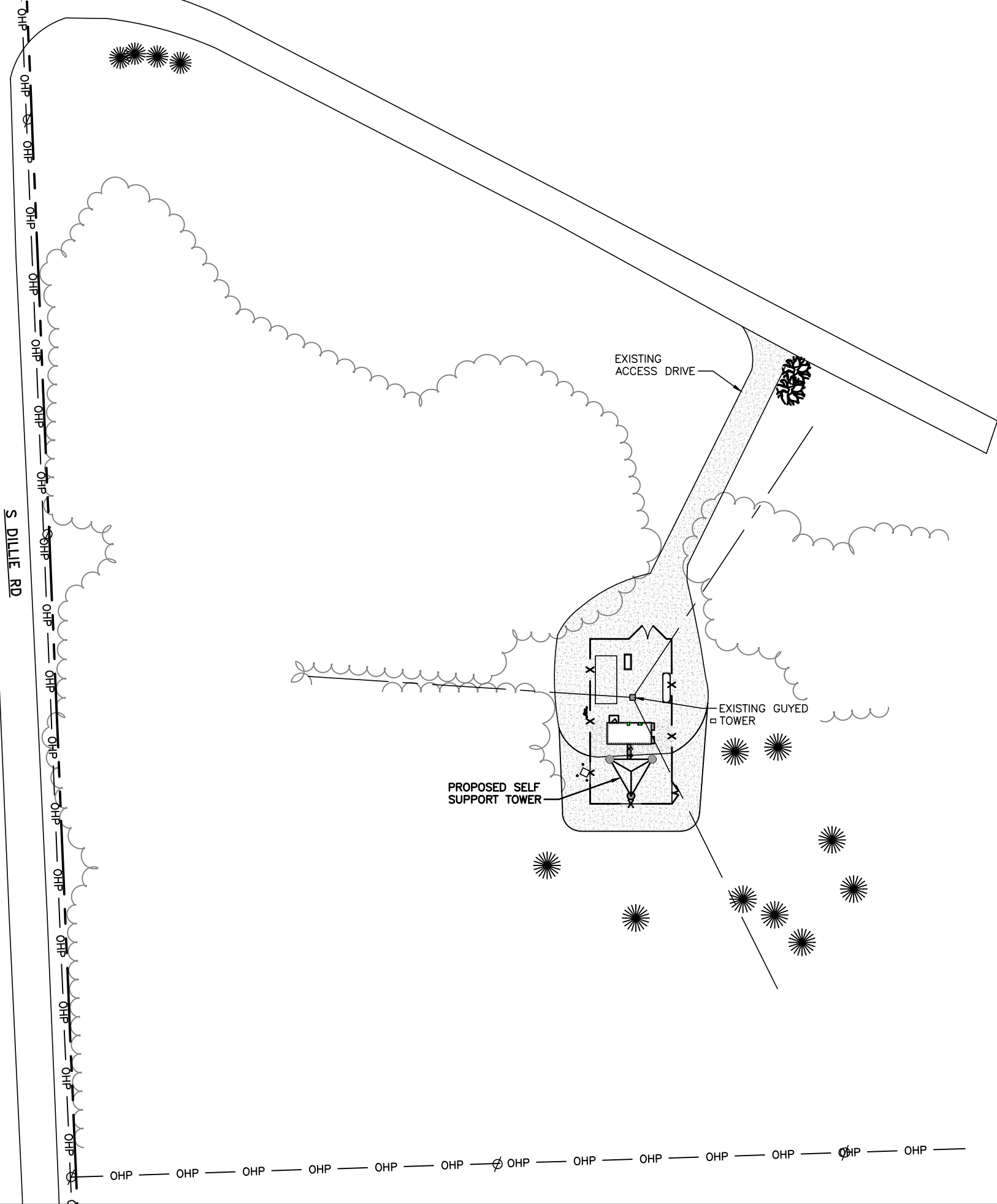
CHECKED BY: J.B.L.

DATE: 11-16-23

FIELDWORK DATE: 11-12-23

Certificate of Authority:
Kansas - LS-154

SHEET NUMBER
1 OF 1



OVERALL SITE PLAN

STAMP: 9/26/2024
KEVIN VANMAELE
LICENSED
22105
KANSAS
PROFESSIONAL ENGINEER
DocuSign Envelope ID: 98F6F607-3E32-4993-8AC0-B541FBBC0320
Kevin VanMaele

ENGINEERING LICENSE
STATE OF KANSAS
PE CERTIFICATE OF AUTHORIZATION # E-571
ENGINEER: PE#: DISCIPLINE:
KMV KEVIN M. VANMAELE 22105 CIVIL C
REJ ROBERT E. JENSEN 16096 CIVIL CC
CG CHRISTOPHER GIANNOTTI 26673 CIVIL C
SDK SHELTON D. KEISLING 13654 ELECTRICAL E
TMS TERRANCE M. SUPER 9250 ELECTRICAL E

PLANS PREPARED FOR:
evergy

PLANS PREPARED BY:
SSC

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SUBMITTALS:

	DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW		08/27/24	WAG	A
REISSUED FOR CLIENT COMMENTS		09/26/24	WAG	B
ISSUED FOR CONSTRUCTION		09/26/24	WAG	0

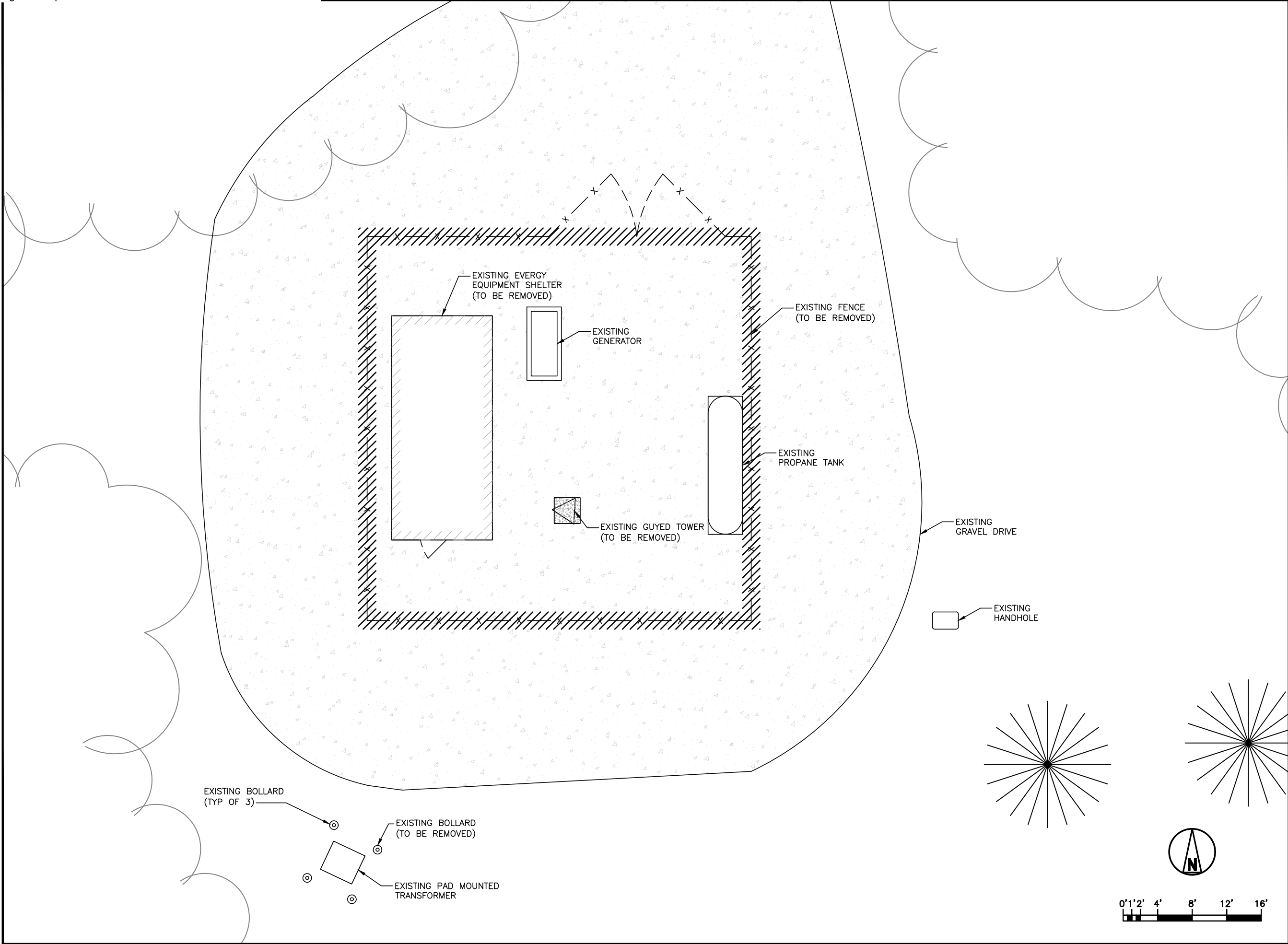
APPLICANT SITE NAME:
WEST GARDNER

APPLICANT SITE NUMBER:
KS1019

SITE ADDRESS:
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:
OVERALL SITE PLAN

SHEET #:
A-1.0



STAMP:

9/26/2024

KEVIN VANMAELE

LICENSED

22105

KANSAS

PROFESSIONAL ENGINEER

DocuSign Envelope ID: 98F6F607-3E32-4993-8AC0-B541FBBC0320

Kevin VanMaele

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SDK SHELTON D. KEISLING	13654	ELECTRICAL	E
TMS TERRANCE M. SUPER	9250	ELECTRICAL	E



PLANS PREPARED FOR:

PLANS PREPARED BY:

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WEST GARDNER

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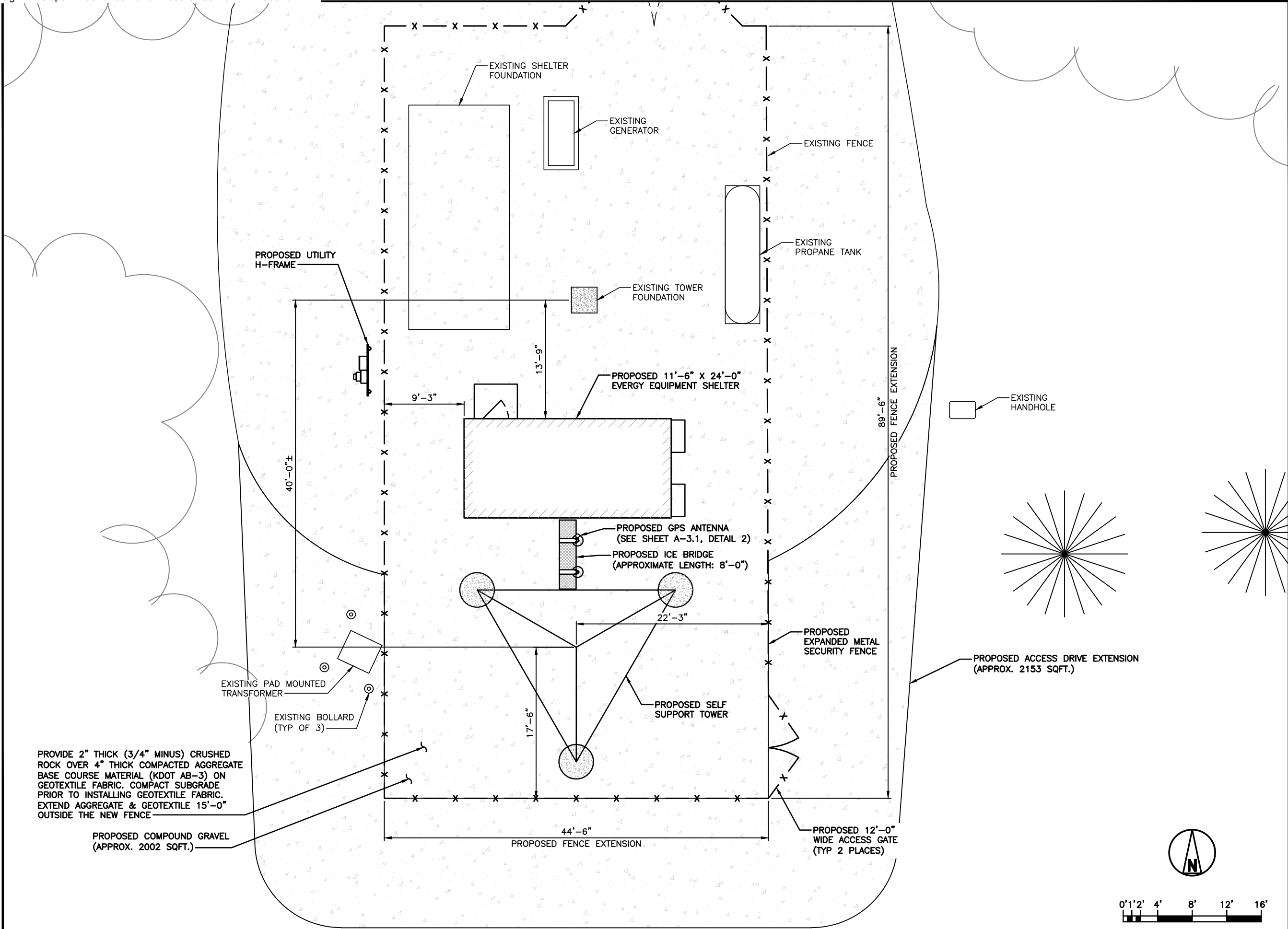
KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:	SHEET #:
EXISTING ENLARGED SITE PLAN	A-1.1

EXISTING ENLARGED SITE PLAN



STAMP:

9/26/2024

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22105
KANSAS
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STATE OF KANSAS

PE CERTIFICATE OF AUTHORIZATION # E-571

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TMS TERRANCE M. SUPER 9250 ELECTRICAL

PLANS PREPARED FOR:

PLANS PREPARED BY:

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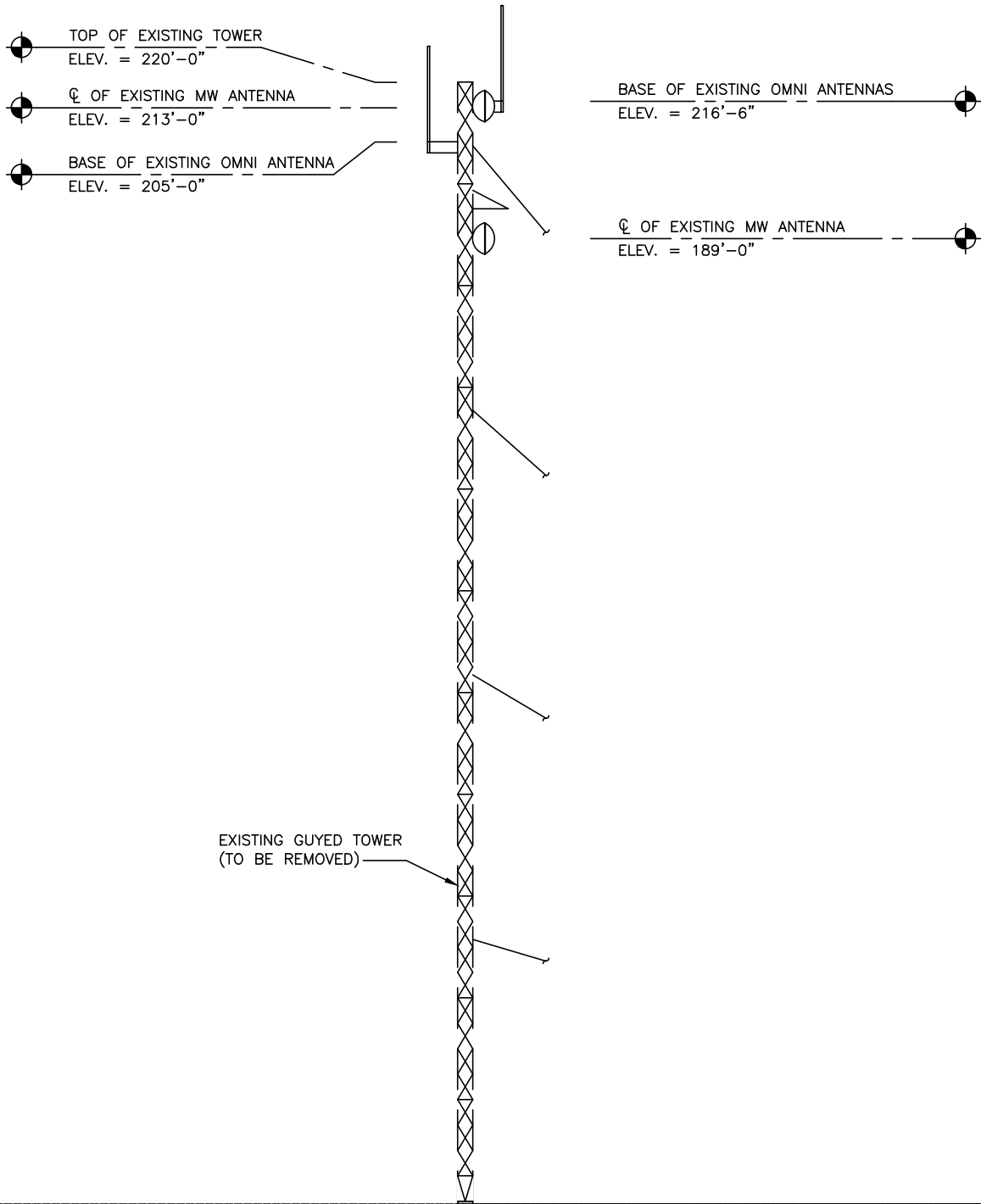
SHEET DESCRIPTION:

FINAL
ENLARGED
SITE PLAN

SHEET #:

A-1.2

STRUCTURE INFORMATION IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. STRUCTURAL INTEGRITY OF SUPPORTING STRUCTURE, ANTENNA MOUNTS, AND FOUNDATION SHALL BE VERIFIED AS ACCEPTABLE BY ENGINEER CERTIFIED STRUCTURAL ANALYSIS, UTILIZING THE LOADING REPRESENTED WITHIN THESE DRAWINGS PRIOR TO THE EXECUTION OF EQUIPMENT CHANGES CONTAINED IN THESE DRAWINGS. CONTRACTOR SHALL OBTAIN ALL STRUCTURAL REPORTS AND FOLLOW ALL RECOMMENDATIONS.



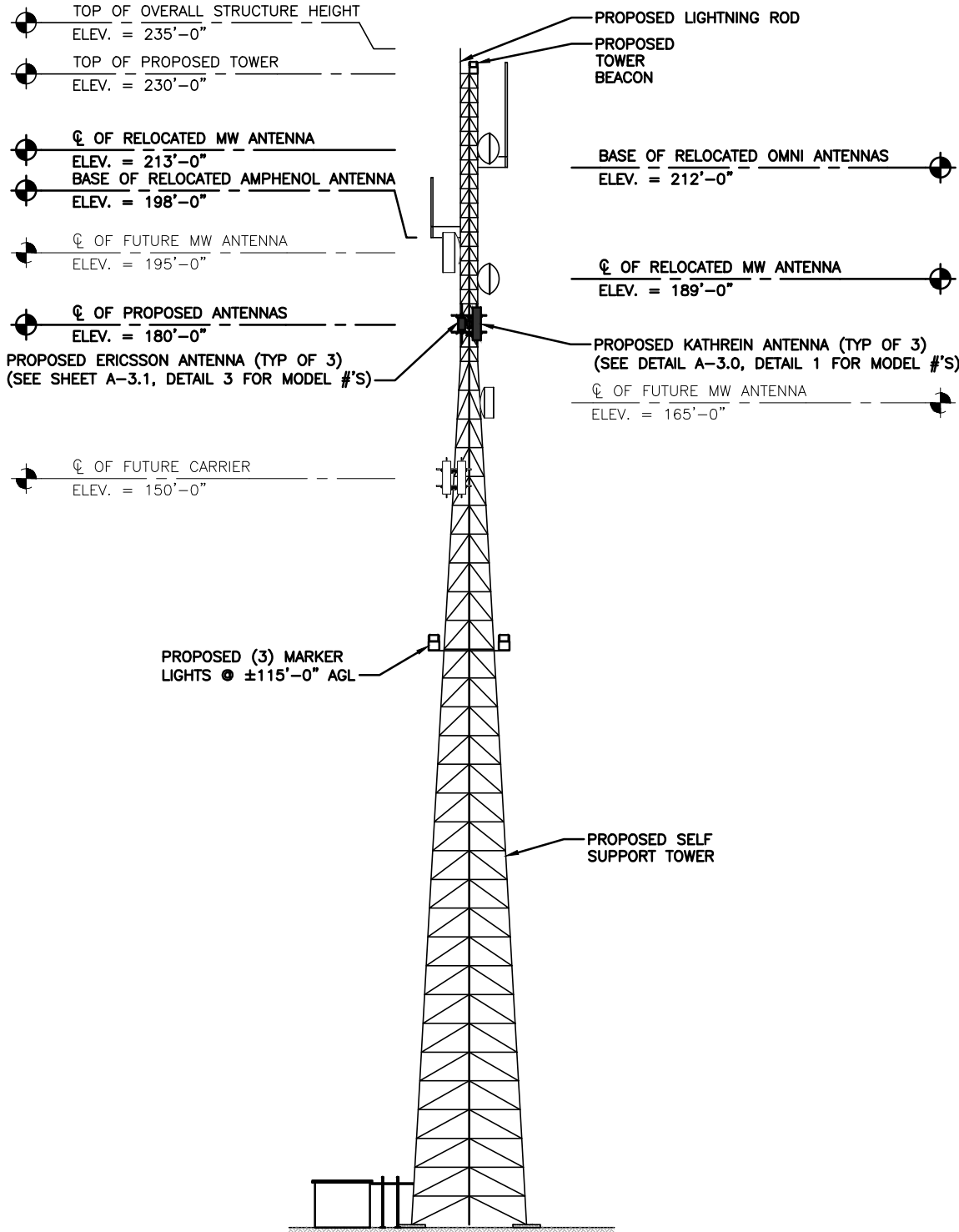
EXISTING GUYED TOWER
(TO BE REMOVED)

EXISTING TOWER ELEVATION

1

EQUIPMENT LEGEND:

- EXISTING
- PROPOSED
- RELOCATED
- FUTURE



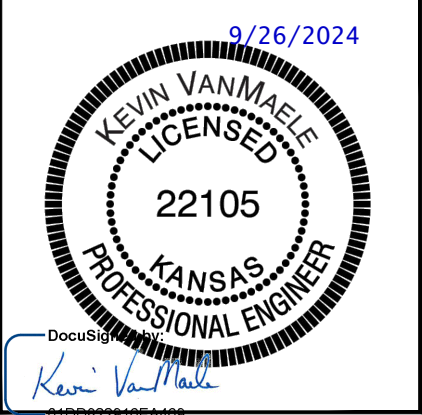
FINAL TOWER ELEVATION

2

TOWER LIGHTING NOTE:

PROPOSED TOWER BEACON/MARKER LIGHTS
● TOP OF TOWER TO COMPLY WITH FAA
TYPE E1 FROM 200'-0" - 350'-0" AGL
(FTS PART# F1702010 OR EQUIVALENT).

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APPLICANT SITE NAME:
WEST GARDNER

APPLICANT SITE NUMBER:
KS1019

SITE ADDRESS:
**18827 DILLIE RD
EDGERTON, KS 66021**

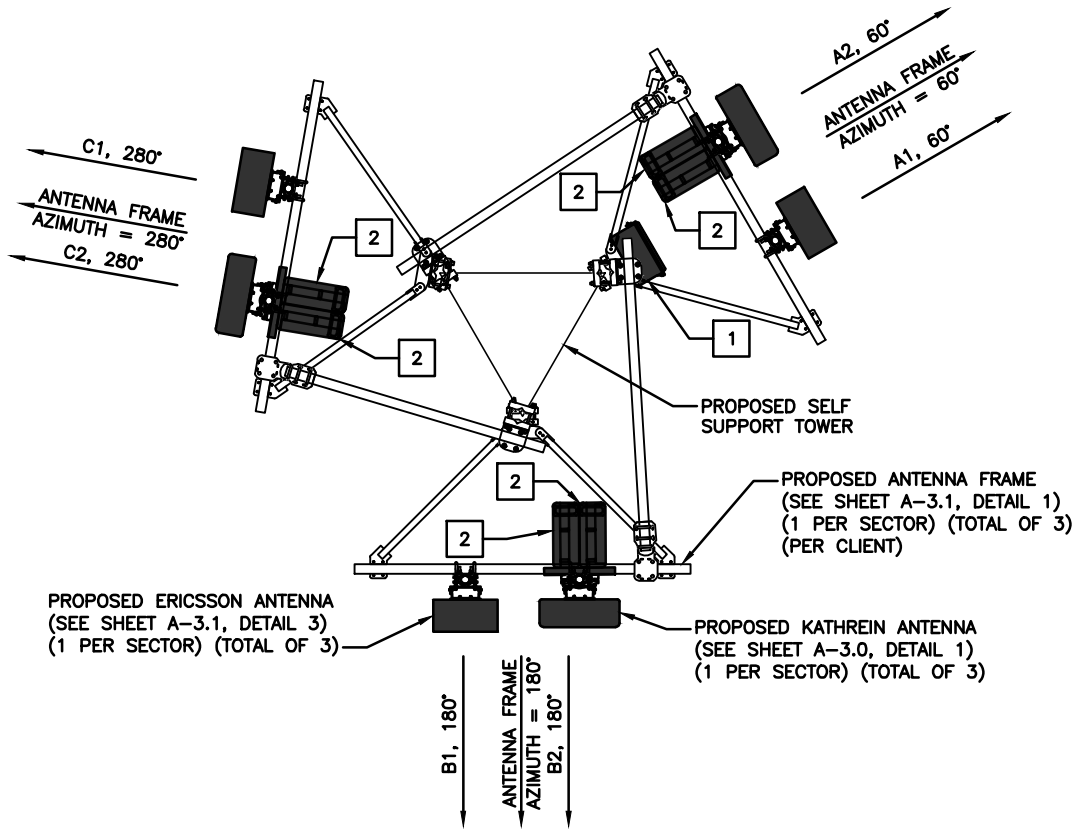
SHEET DESCRIPTION: TOWER ELEVATIONS	SHEET #: A-2.0
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EQUIPMENT KEYED NOTES:

1	OVP
2	ERICSSON RRU

EQUIPMENT LEGEND:

	EXISTING
	PROPOSED
	RELOCATED



TOWER PLAN

1

ANTENNA SCHEDULE

STATUS	ANTENNA NUMBER	ANTENNA VENDOR	MODEL #	AZIMUTH	ELECTRICAL DOWNTILT	MECHANICAL DOWNTILT	ANTENNA $\varnothing$ AGL	TECH	HYBRID FEEDER
									QUANTITY
PROPOSED	A1	ERICSSON	AIR 6419 B41	60°	2°	0°	180'-0"	2.5GHz	(1) HYBRID CABLE
PROPOSED	A2	KATHREIN	80010901	60°	2°	0°	180'-0"	900MHz	(1) HYBRID CABLE
PROPOSED	B1	ERICSSON	AIR 6419 B41	180°	2°	0°	180'-0"	2.5GHz	SHARED WITH A1
PROPOSED	B2	KATHREIN	80010901	180°	2°	0°	180'-0"	900MHz	SHARED WITH A2
PROPOSED	C1	ERICSSON	AIR 6419 B41	280°	2°	0°	180'-0"	2.5GHz	SHARED WITH A1
PROPOSED	C2	KATHREIN	80010901	280°	2°	0°	180'-0"	900MHz	SHARED WITH A2

EQUIPMENT KEY – SECTOR

LOCATION	VENDOR	EQUIPMENT	MODEL NUMBER	TECH	QTY.	STATUS
2 PER SECTOR	ERICSSON	RRU	2212 B8	900 MHz	6	PROPOSED
ALPHA SECTOR	RAYCAP	OVP	RCMDC-6627-PF-48	900 MHz	1	PROPOSED
2 PER SECTOR	ERICSSON	RADIO FILTER	KRF 102 456/1	900 MHz	6	PROPOSED

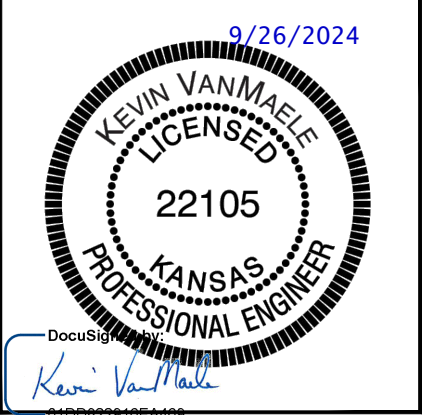
EQUIPMENT KEY – FEEDLINES

LOCATION	VENDOR	EQUIPMENT	MODEL NUMBER	QTY.	LENGTH	STATUS
ALPHA SECTOR	ROSENBERGER	HYBRID CABLE	6x12 HYBRID RISER CABLE	2	200'-0"	PROPOSED

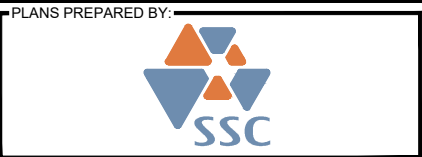
ANTENNA KEY

2

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ENGINEERING LICENSE STATE OF KANSAS		
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ENGINEER:	PE#:	DISCIPLINE:
KMV KEVIN M. VANMAELE	22105	CIVIL
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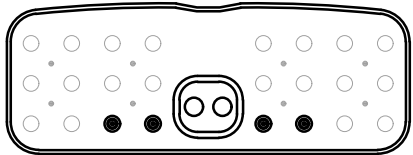
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ISSUED FOR CONSTRUCTION			09/26/24	WAG	0

APPLICANT SITE NAME:
WEST GARDNER

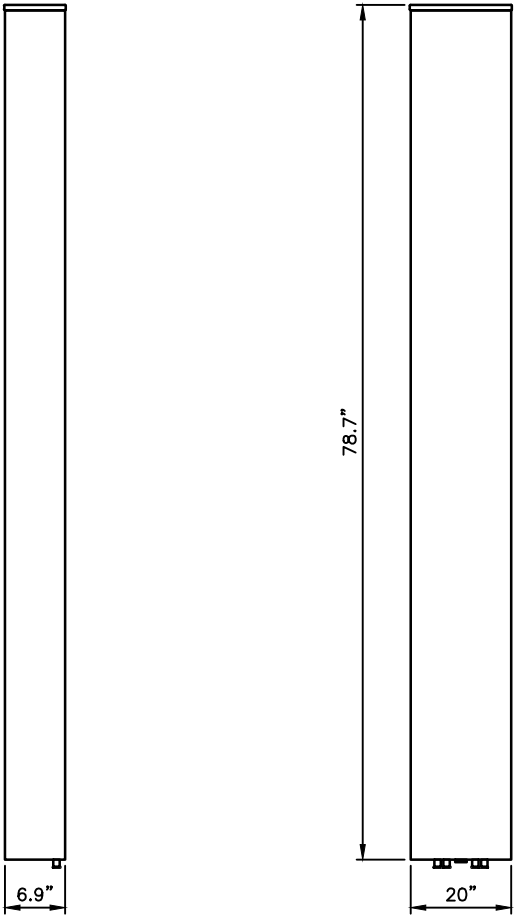
APPLICANT SITE NUMBER:
KS1019

SITE ADDRESS:
**18827 DILLIE RD
EDGERTON, KS 66021**

SHEET DESCRIPTION:	SHEET #:
ANTENNA PLAN & KEY	A-2.1

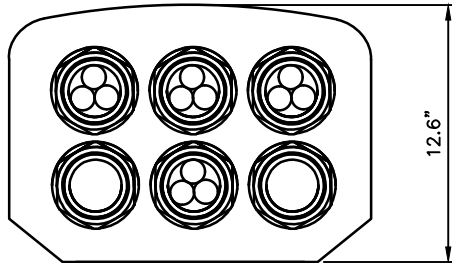


SPECIFICATIONS:	
VENDOR:	KATHREIN
MODEL #:	80010901
DIMENSIONS (HxWxD):	78.7"x20"x6.9"
WEIGHT:	94.4 lbs
CONNECTORS:	(4) RF – 4.3–10 (1) RET – AISG



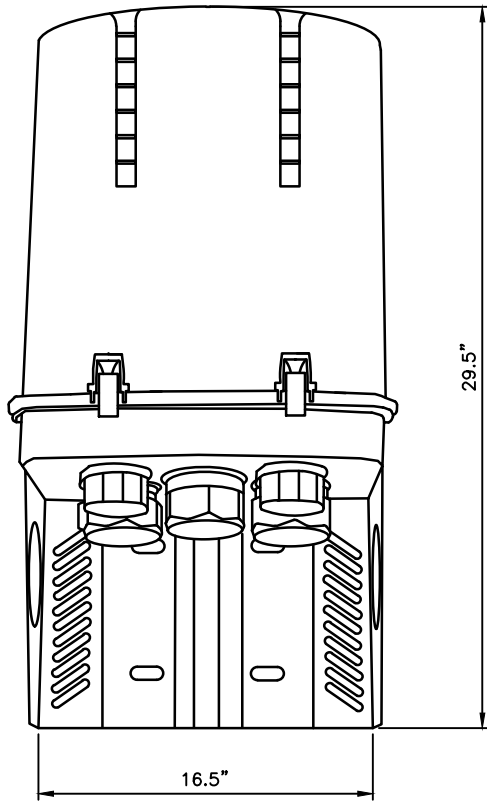
ANTENNA DETAIL

1



BOTTOM

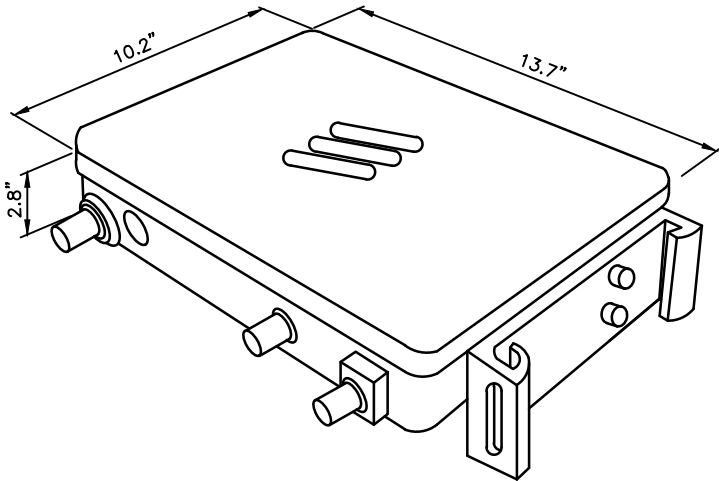
SPECIFICATIONS:	
RAYCAP MODEL #:	RCMDC–6627–PF–48
DIMENSIONS (HxWxD):	29.5"x16.5"x12.6"
WEIGHT:	32.0 lbs



FRONT

JUNCTION BOX DETAIL

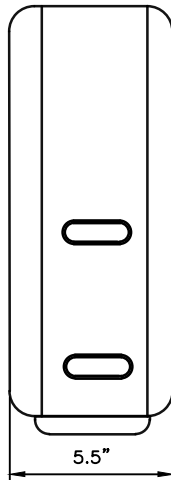
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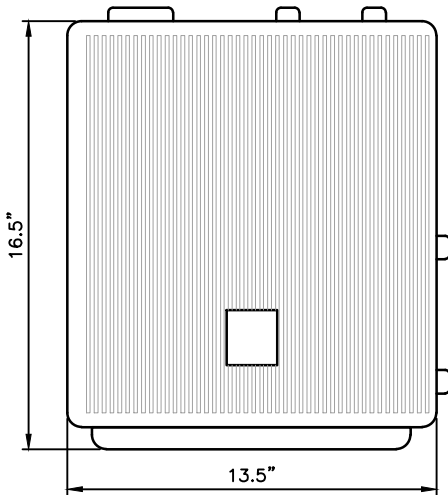
SPECIFICATIONS:	
ERICSSON MODEL #:	SL FILTER B8C (2–2)
DIMENSIONS (HxWxD):	10.2"x13.7"x2.8"
WEIGHT:	19.8416 lbs

FILTER DETAIL

4



SPECIFICATIONS:	
VENDOR	ERICSSON
MODEL #:	2212 B8
DIMENSIONS (HxWxD):	16.5"x13.5"x5.5"
WEIGHT:	43 lbs



RRU DETAIL

3

STAMP:

9/26/2024

KEVIN VANMAELE

LICENSED

22105

KANSAS

PROFESSIONAL ENGINEER

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Kevin VanMaele

ENGINEERING LICENSE STATE OF KANSAS			
PE CERTIFICATE OF AUTHORIZATION # E-571			
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KMV KEVIN M. VANMAELE	22105	CIVIL	CCC
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CG CHRISTOPHER GIANNOTTI	26673	CIVIL	
SDK SHELTON D. KEISLING	13654	ELECTRICAL	E
TMS TERRANCE M. SUPER	9250	ELECTRICAL	



PLANS PREPARED FOR:

PLANS PREPARED BY:

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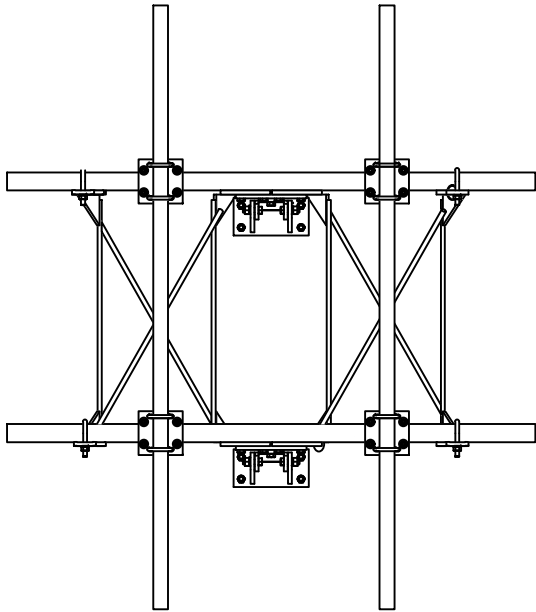
SITE ADDRESS:

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EDGERTON, KS 66021

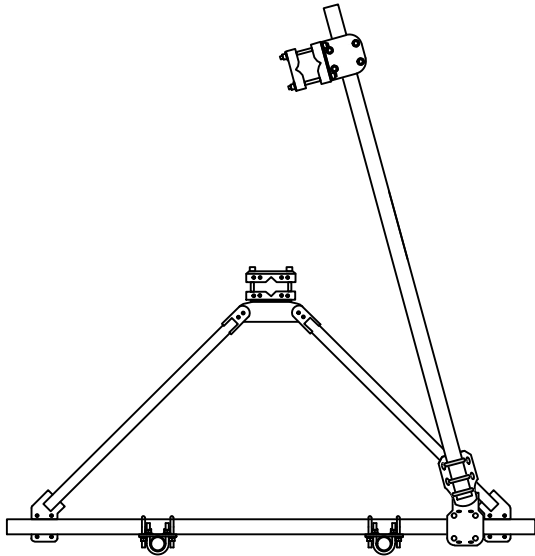
SHEET DESCRIPTION:	SHEET #:
EQUIPMENT DETAILS (1 OF 4)	A-3.0

SPECIFICATIONS: (PER CLIENT)	
VENDOR	BETTER METAL
PART #:	1BVM-07SD-02AMK-000000-1SAK
FACE WIDTH:	7'-0"
WEIGHT:	306.56 lbs

- NOTES:
- GPS ANTENNA TO BE MOUNTED TO EXISTING ICE BRIDGE 2" SUPPORT LEG. GPS ANTENNA SHALL BE MOUNTED AT A MINIMUM EXTENSION OF 1'-0" ABOVE ICE BRIDGE WITH ASSURANCES OF NO SIGNAL INTERFERENCE ABOVE INSTALLATION.
 - ALL GROUNDS AND LUGS SHALL HAVE S.S. HARDWARE AND BE COATED WITH AN OXIDE INHIBITING GEL.



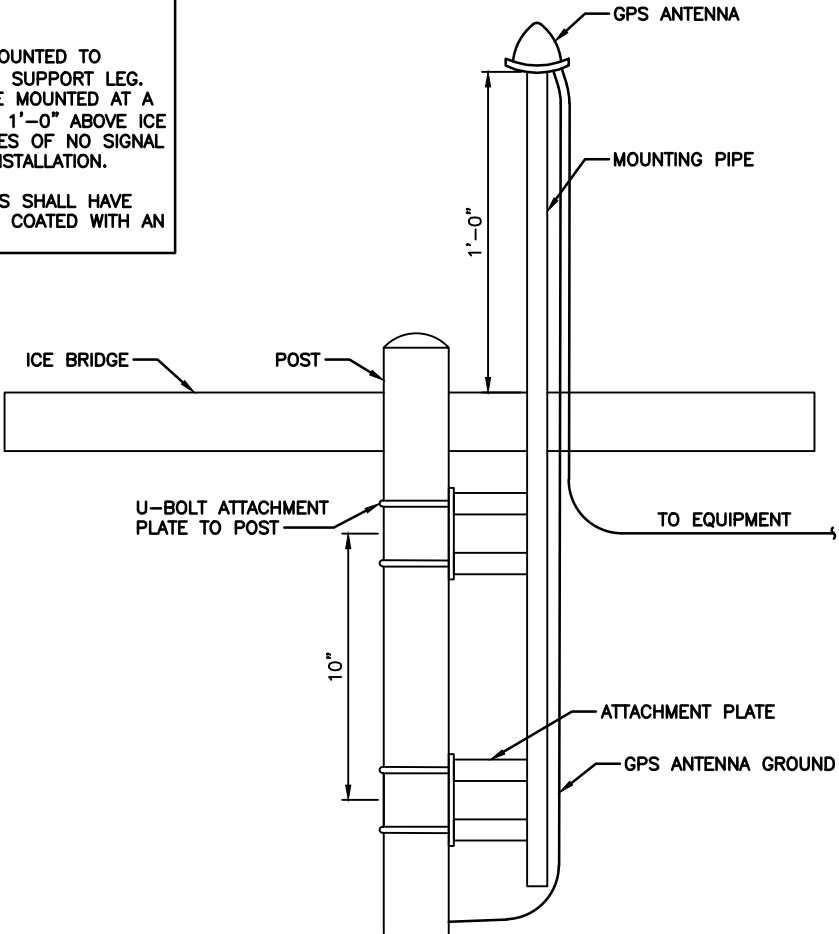
ELEVATION VIEW



PLAN VIEW

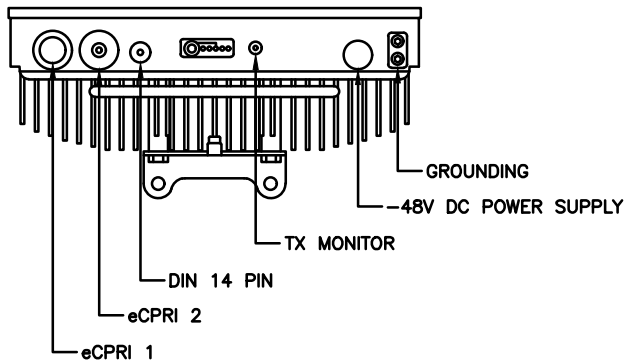
ANTENNA FRAME DETAIL

1



GPS MOUNTING DETAIL

2



SPECIFICATIONS:	
VENDOR:	ERICSSON
MODEL #:	AIR 6419 B41
DIMENSIONS (HxWxD):	34.5" x 20" x 8"
WEIGHT:	75 lbs
CONNECTORS:	SEE ABOVE

DETAIL NOT USED

4

MASSIVE MIMO ANTENNA DETAIL

3

STAMP:

9/26/2024

KEVIN VANMAELE
LICENSED
22105
KANSAS
PROFESSIONAL ENGINEER

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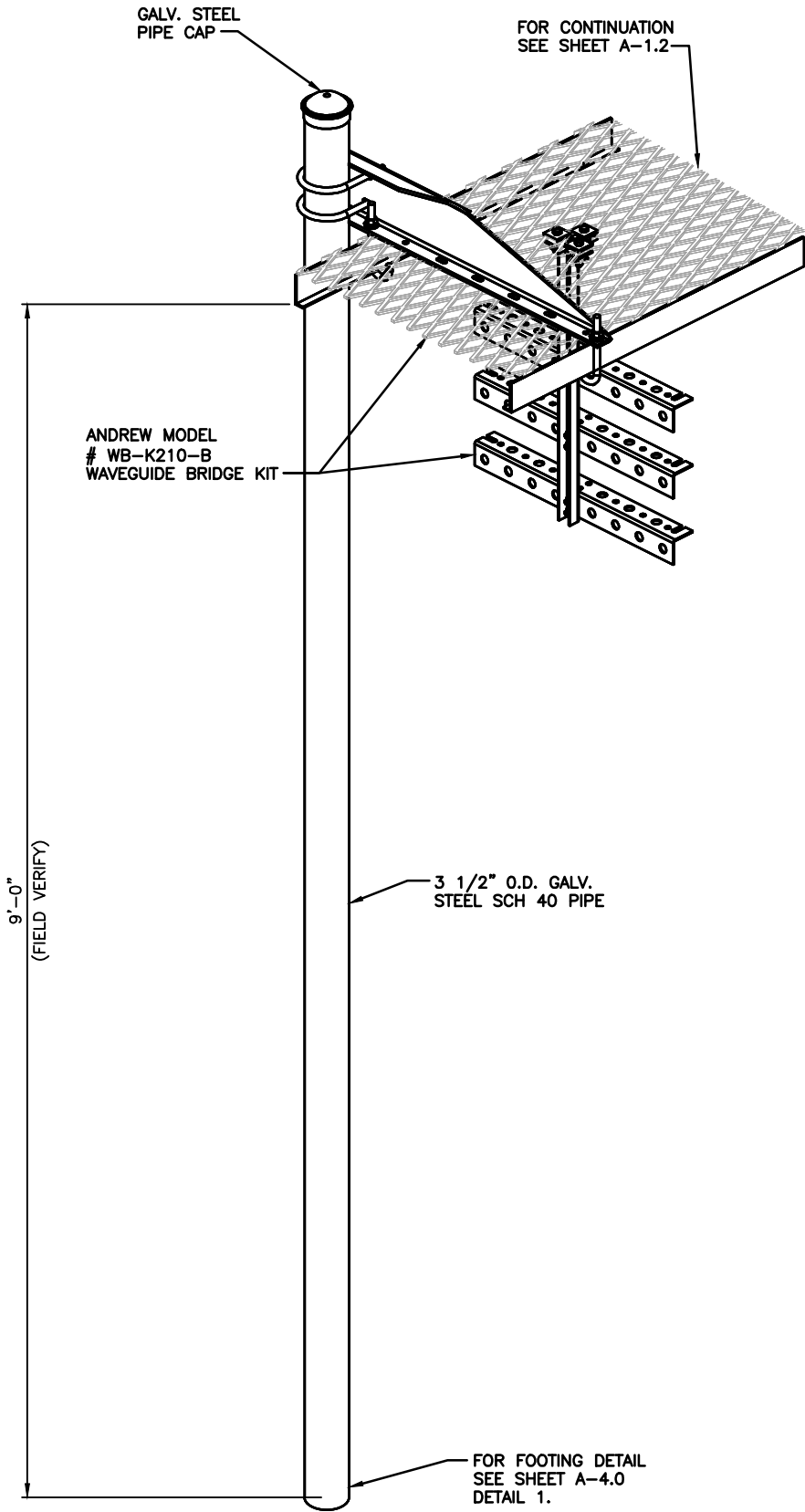
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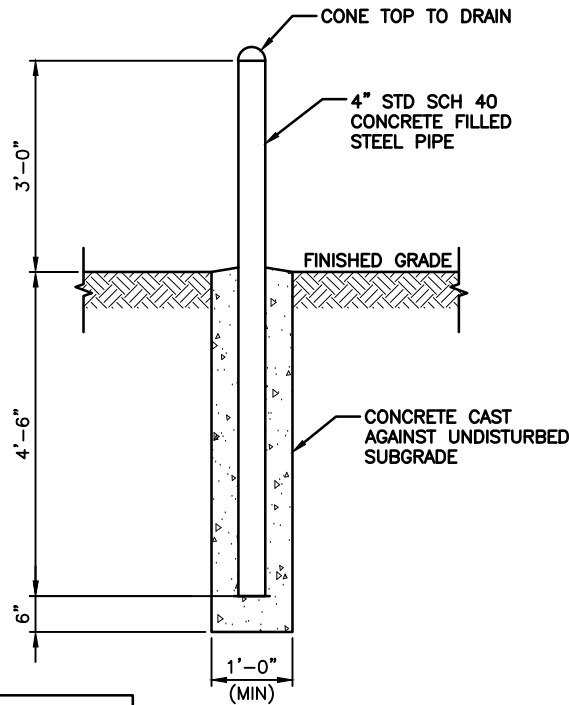
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:		SHEET #:
EQUIPMENT DETAILS (2 OF 4)		A-3.1



ICE BRIDGE SUPPORT POST DETAIL

1

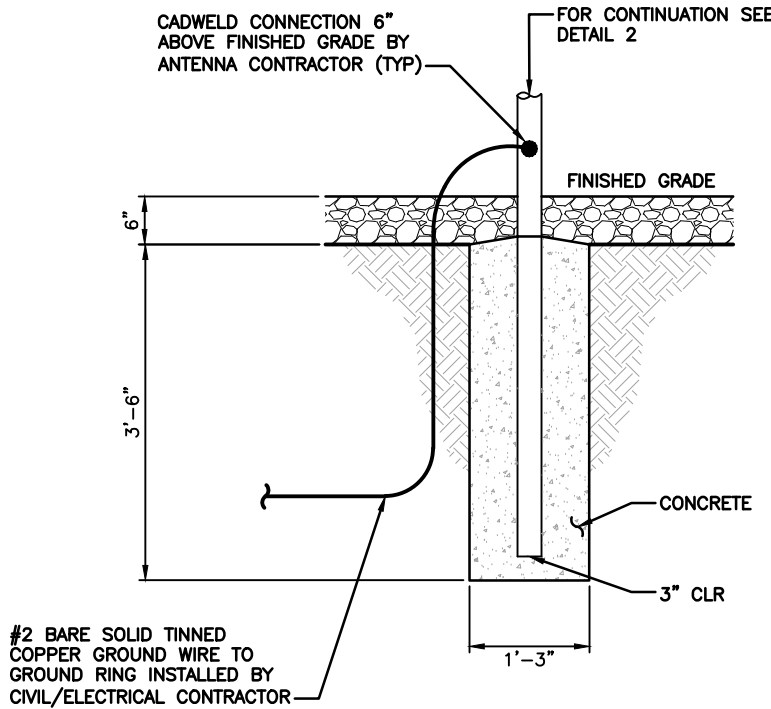


SPECIFICATIONS:

MATERIAL:	STEEL
FINISH:	POWDER COATED - SEMI GLOSS
COLORING:	SAFETY YELLOW

BOLLARD DETAIL

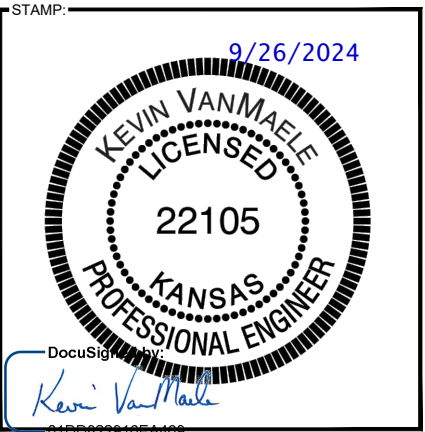
2



FURNISHED AND INSTALLED BY ANTENNA CONTRACTOR

SUPPORT POST (CONCRETE PIER)

3



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PLANS PREPARED FOR:



PLANS PREPARED BY:



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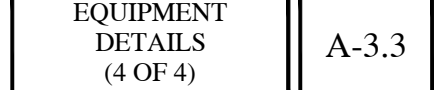
KS1019

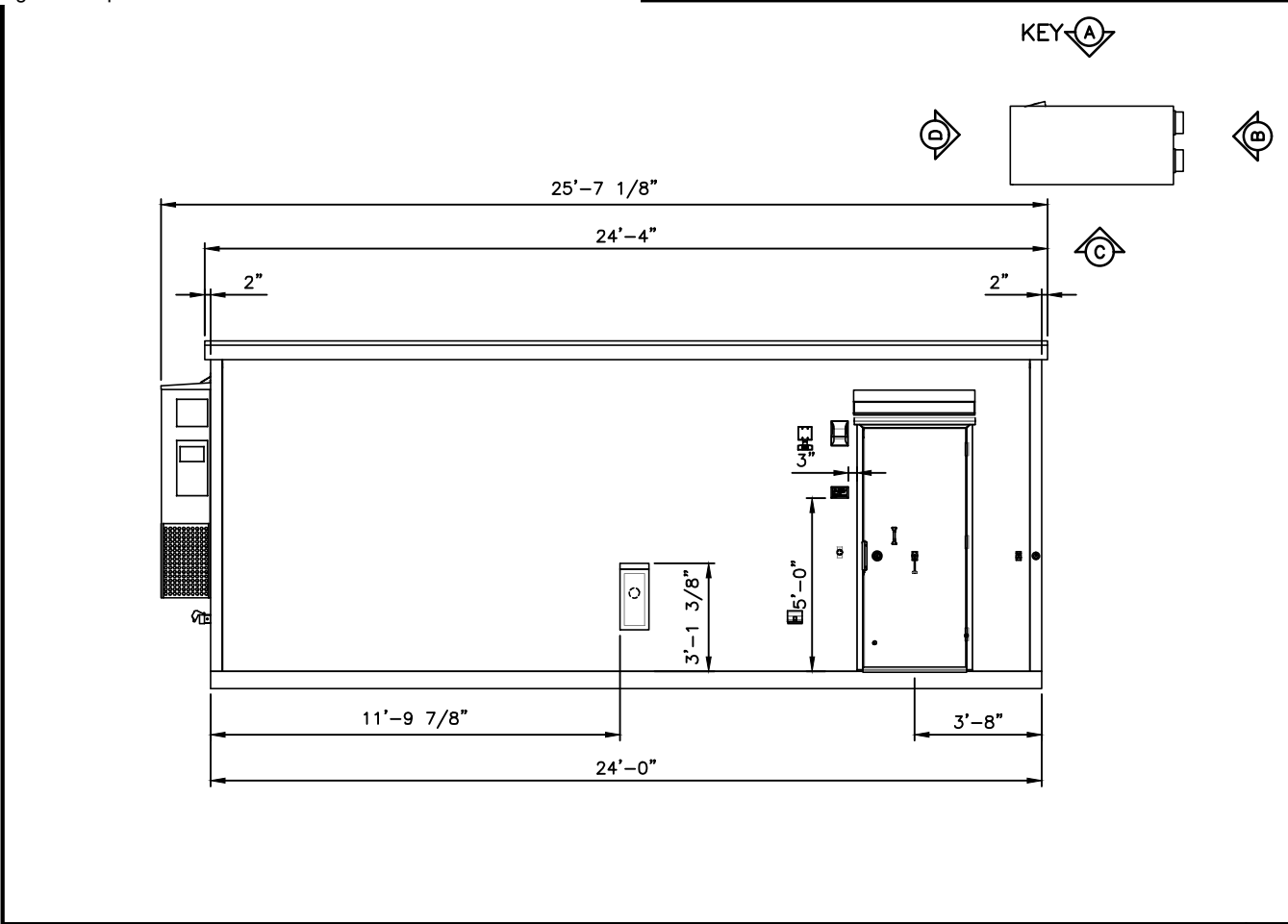
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18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION: EQUIPMENT DETAILS (3 OF 4)	SHEET #: A-3.2
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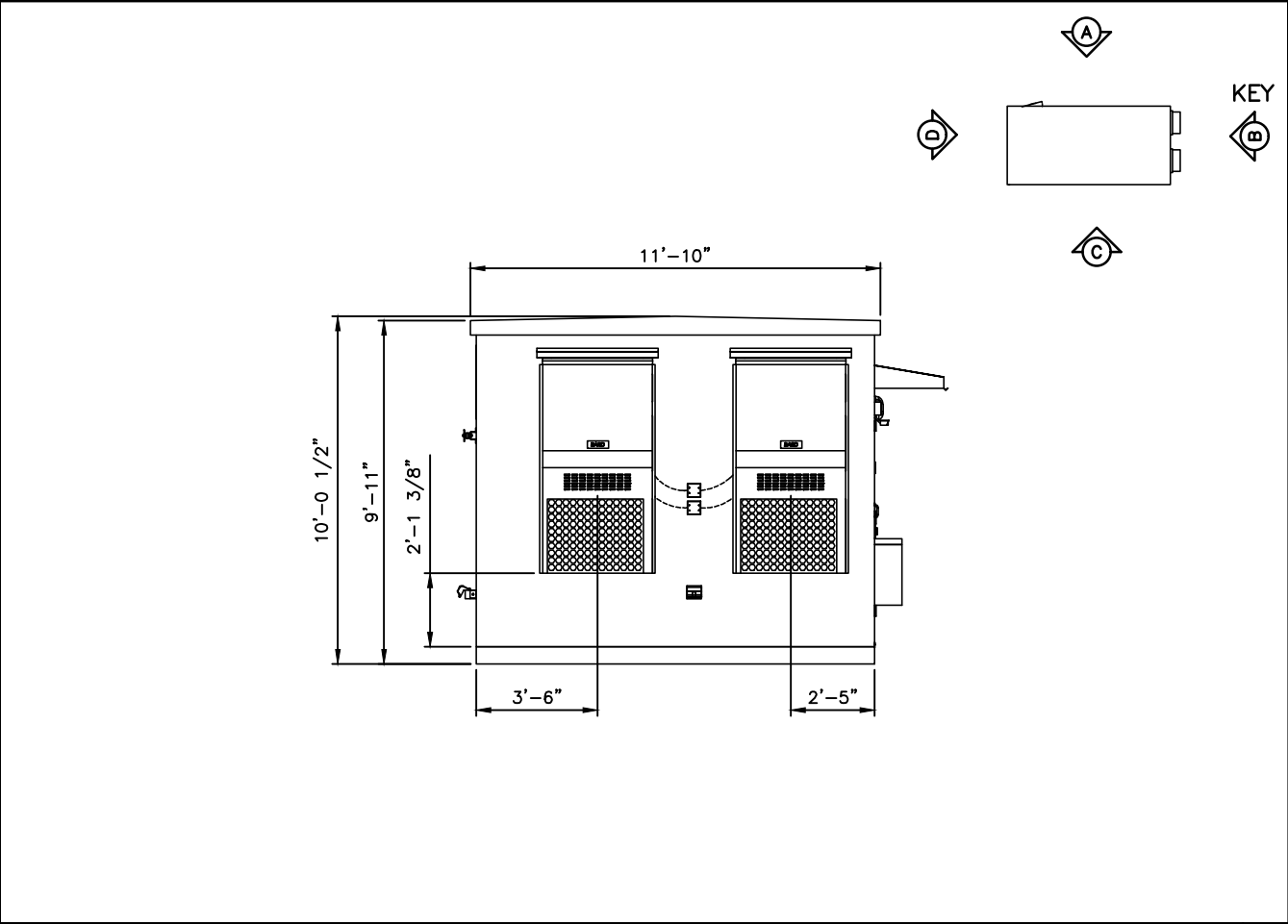
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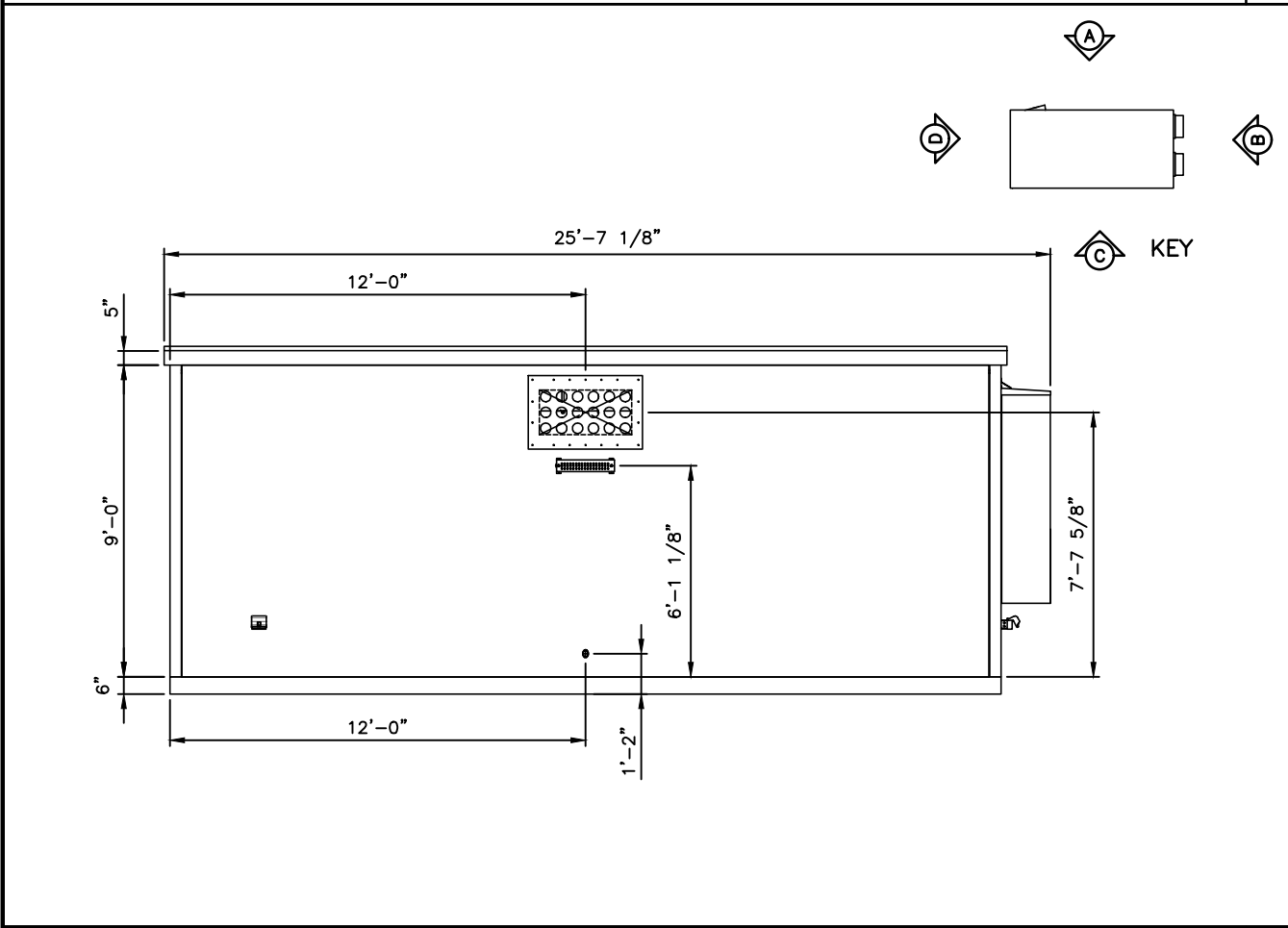
SHELTER ELEVATION – A

1



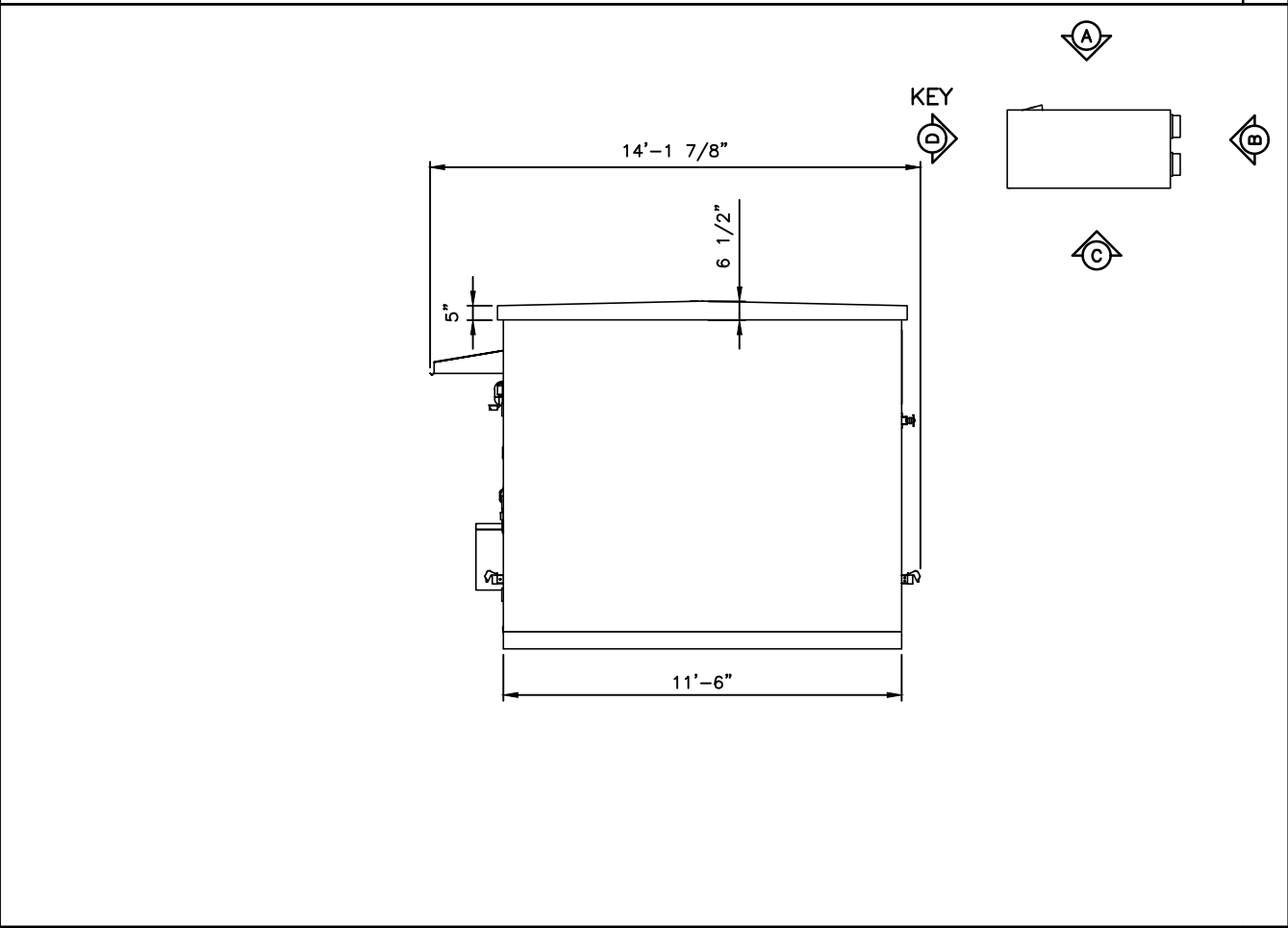
SHELTER ELEVATION – B

2



SHELTER ELEVATION – C

4



SHELTER ELEVATION – D

3

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9/26/2024

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22105
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PROFESSIONAL ENGINEER

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KEVIN VANMAELE

ENGINEERING LICENSE

STATE OF KANSAS

PE CERTIFICATE OF AUTHORIZATION # E-571

ENGINEER: KMV KEVIN M. VANMAELE 22105 CIVIL
REJ ROBERT E. JENSEN 16096 CIVIL
CG CHRISTOPHER GIANNOTTI 26673 CIVIL

SDK SHELTON D. KEISLING 13654 ELECTRICAL
TMS TERRANCE M. SUPER 9250 ELECTRICAL

PLANS PREPARED FOR:

PLANS PREPARED BY:

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REISSUED FOR CLIENT COMMENTS	09/26/24	WAG	B
ISSUED FOR CONSTRUCTION	09/26/24	WAG	0

APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

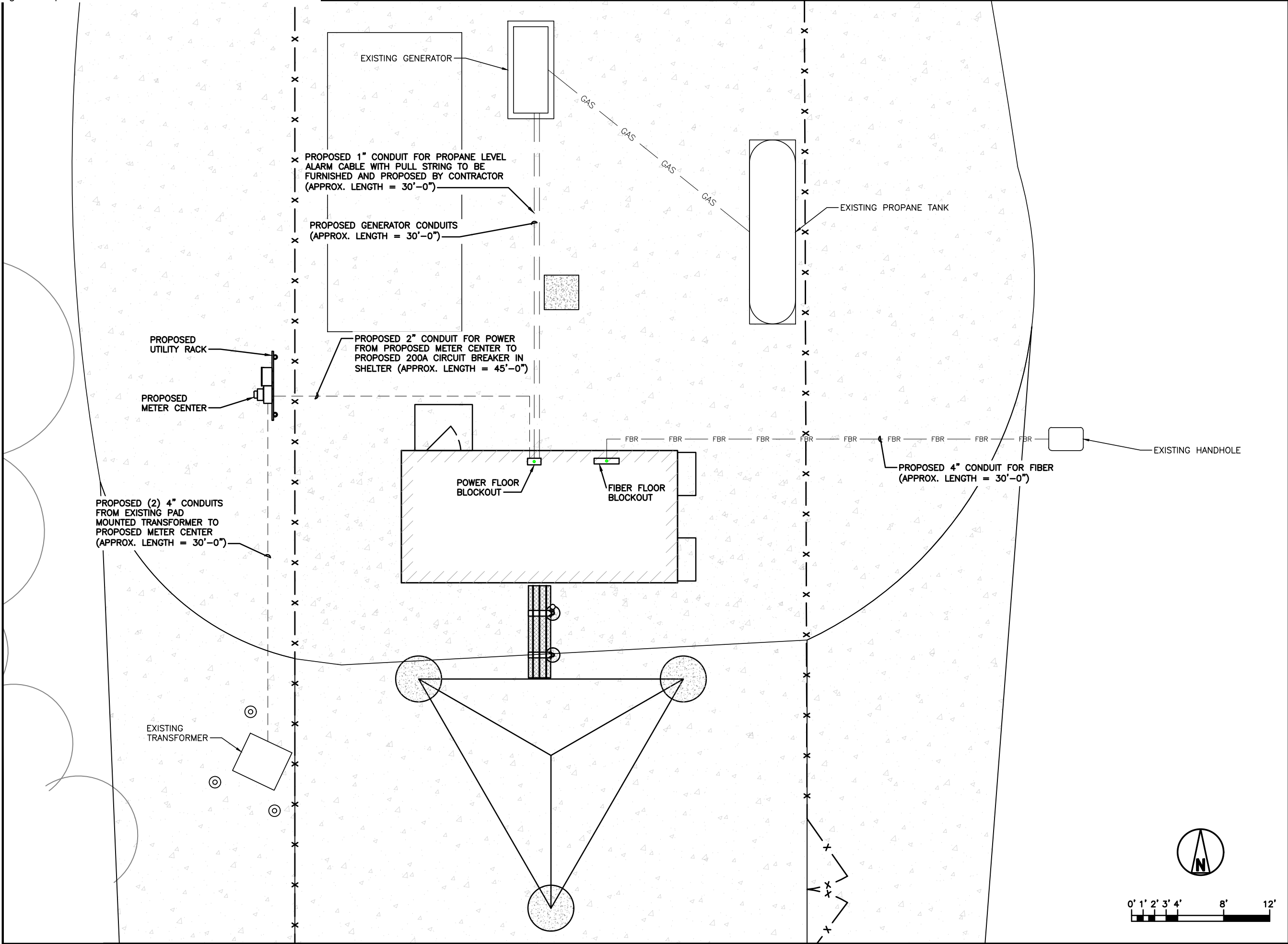
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

SHELTER
ELEVATIONS

SHEET #:

A-4.0



ENLARGED ELECTRICAL PLAN

STAMP:

9/26/2024

SHELTON D. KEISLING
LICENSED
13654
KANSAS
PROFESSIONAL ENGINEER

DocuSign Envelope ID: 98F6F607-3E32-4993-8AC0-B541FBBC0320

Shelton Keisling

ENGINEERING LICENSE

STATE OF KANSAS

PE CERTIFICATE OF AUTHORIZATION # E-571

ENGINEER:	PE#:	DISCIPLINE:
KMV KEVIN M. VANMAELE	22105	CIVIL
REJ ROBERT E. JENSEN	16096	CIVIL
CG CHRISTOPHER GIANNOTTI	26673	CIVIL
SDK SHELTON D. KEISLING	13654	ELECTRICAL
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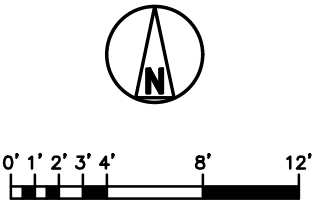
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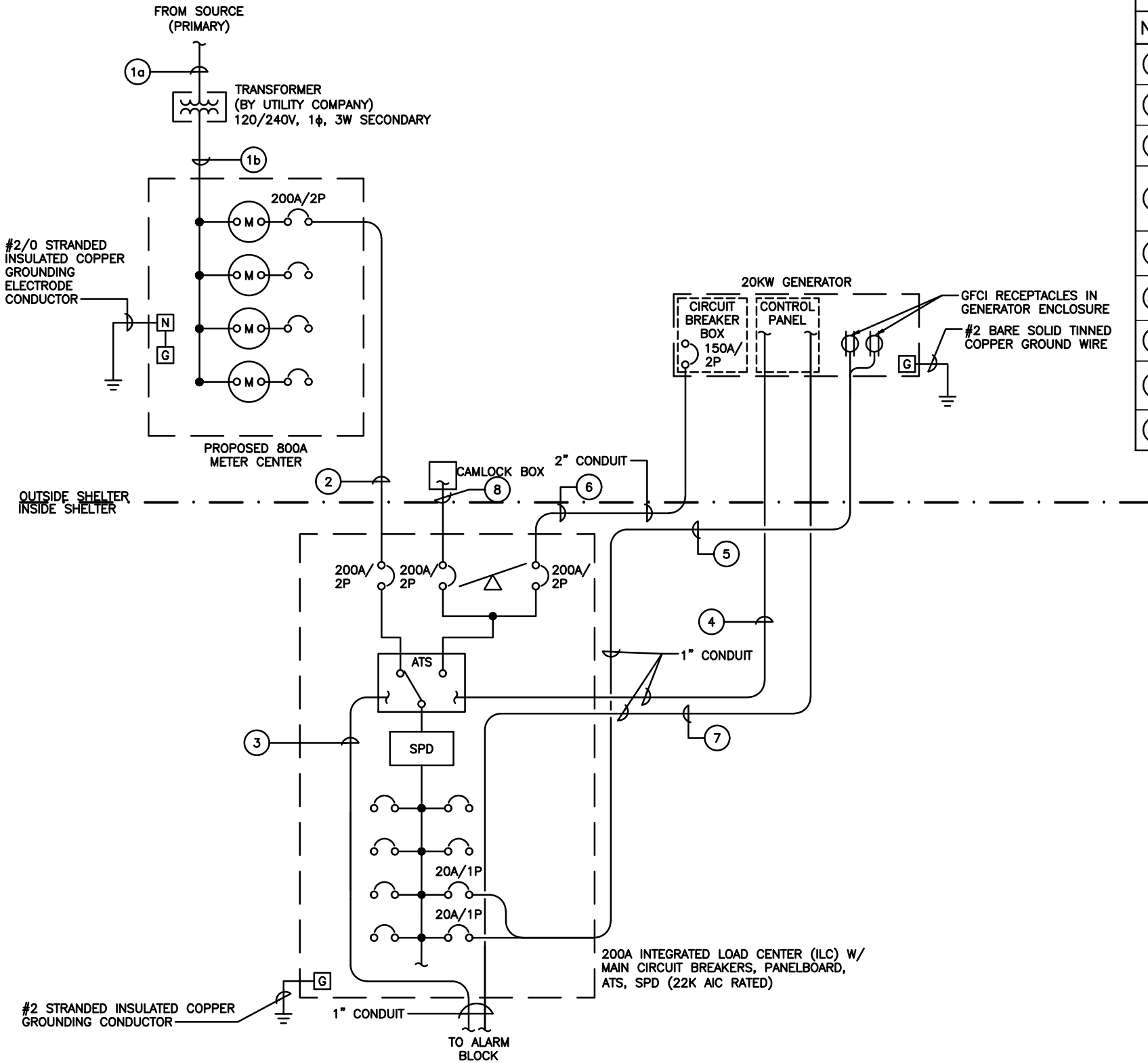
KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:	SHEET #:
ENLARGED UTILITY PLAN	E-1.0





CIRCUIT SCHEDULE				
NO.	FROM	TO	CONFIGURATION	FUNCTION
1a	SOURCE	TRANSFORMER	(BY UTILITY COMPANY)	PRIMARY
1b	TRANSFORMER	METER CENTER	(2) 3-500 KCML, EACH IN 4"C	SERVICE LATERAL
2	METER CENTER	ILC	3#3/0, 1#6G, 2"C	NORMAL POWER FEEDER TO ILC
3	ILC	ALARM BLOCK	(2) CAT5 CABLES	ATS STATUS AND ALARM WIRING CAT5 - TRANSFER (SWITCH) COMPLETE - UTILITY FAIL, SPD FAIL
4	ILC	GENERATOR	2#14, 1#14G	GENERATOR START CIRCUIT
5	ILC	GFCI RECEPTACLES IN GENERATOR	4#12, 1#12G	AUXILIARY GENERATOR LOADS (BATTERY CHARGER & JACKET WATER HEATER)
6	GENERATOR	ILC	3#3/0, 1#6G	EMERGENCY POWER FEEDER TO ATS
7	GENERATOR	ALARM BLOCK (VIA ILC)	(2) CAT 5 CABLES	GENERATOR STATUS & ALARM WIRING
8	CAM LOCK	ILC	(BY SHELTER MFR)	EMERGENCY POWER FEEDER TO ILC

1. ALL ELECTRICAL WORK SHALL CONFORM TO REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AS A MINIMUM STANDARD.
2. ALL EXTERIOR ABOVE GROUND CONDUIT SHALL BE RIGID GALVANIZED STEEL (RGS) AND ALL INTERIOR ABOVE GROUND CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) UNLESS OTHERWISE INDICATED.
3. ALL UNDERGROUND CONDUIT SHALL BE SCH 40 PVC UNLESS OTHERWISE INDICATED OR AS REQUIRED BY LOCAL UTILITY COMPANY. ALL UNDERGROUND ELBOWS SHALL BE SWEEPING BENDS.

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SHELTON D. KEISLING

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KANSAS

PROFESSIONAL ENGINEER

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Shelton Keisling

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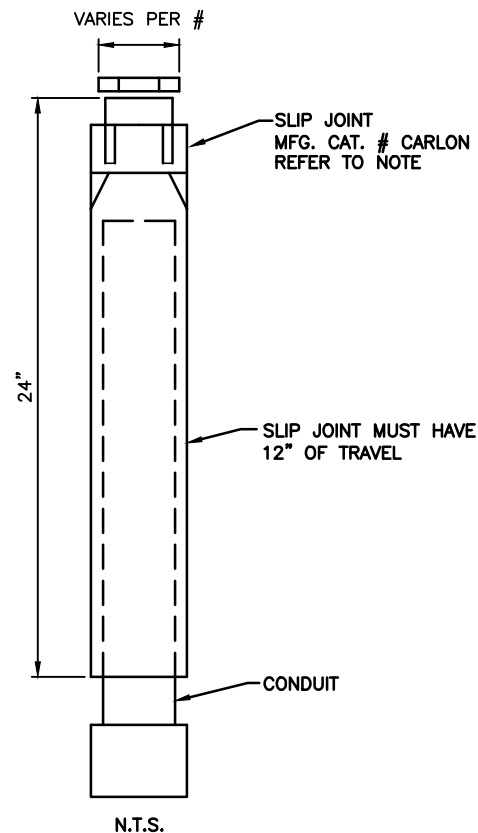
SITE ADDRESS:
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:
ONE LINE
DIAGRAM

SHEET #:
E-2.0



SEE ENLARGED SITE PLAN
FOR EXACT QUANTITY AND
SIZE OF CONDUITS.



	CONDUIT RUN ABOVEGROUND
	CONDUIT RUN UNDERGROUND
	NEUTRAL CONDUCTOR
	HASH MARKS INDICATE NUMBER OF WIRES IN CONDUIT
	CONDUIT STUB

1. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE POWER CONNECTION POINT WITH THE UTILITY COMPANY PRIOR TO COMMENCING WORK.
2. THE ELECTRICAL CONTRACTOR SHALL NOTIFY HAYDEN TOWER'S CONSTRUCTION MANAGER AFTER CALLING FOR ELECTRICAL INSPECTION OF BELOW-GRADE CONDUITS AND OTHER ELECTRICAL WORK PRIOR TO COVERING.
3. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE SITE CONSTRUCTION MANAGER AFTER THE ELECTRICAL INSPECTION HAS BEEN PERFORMED AND ACCEPTED (GREEN TAGGED).
4. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ALL ELECTRICAL UTILITY FEES PER NOTE #12 ON SHEET T01 OF THE CONSTRUCTION DOCUMENTS.
5. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE UTILITY COMPANY REQUESTING ENERGIZING OF THE SITE AND SHALL NOTIFY THE SITE CONSTRUCTION MANAGER WHEN THIS TASK HAS BEEN COMPLETED.
6. THE ELECTRICAL CONTRACTOR SHALL CONVEY THE POLE NUMBER, TRANSFORMER NUMBER, AND THE METER NUMBER TO THE SITE CONSTRUCTION MANAGER.

9/26/2024



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Shelton Keisling

STATE OF <u>KANSAS</u>			
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CG CHRISTOPHER GIANNOTTI	26673	CIVIL	C
SMS SHELTON D. KEISLING	13654	ELECTRICAL	E
TDK TERRANCE M. SUPER	9250	ELECTRICAL	E

PLANS PREPARED FOR



PLANS PREPARED BY:



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APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

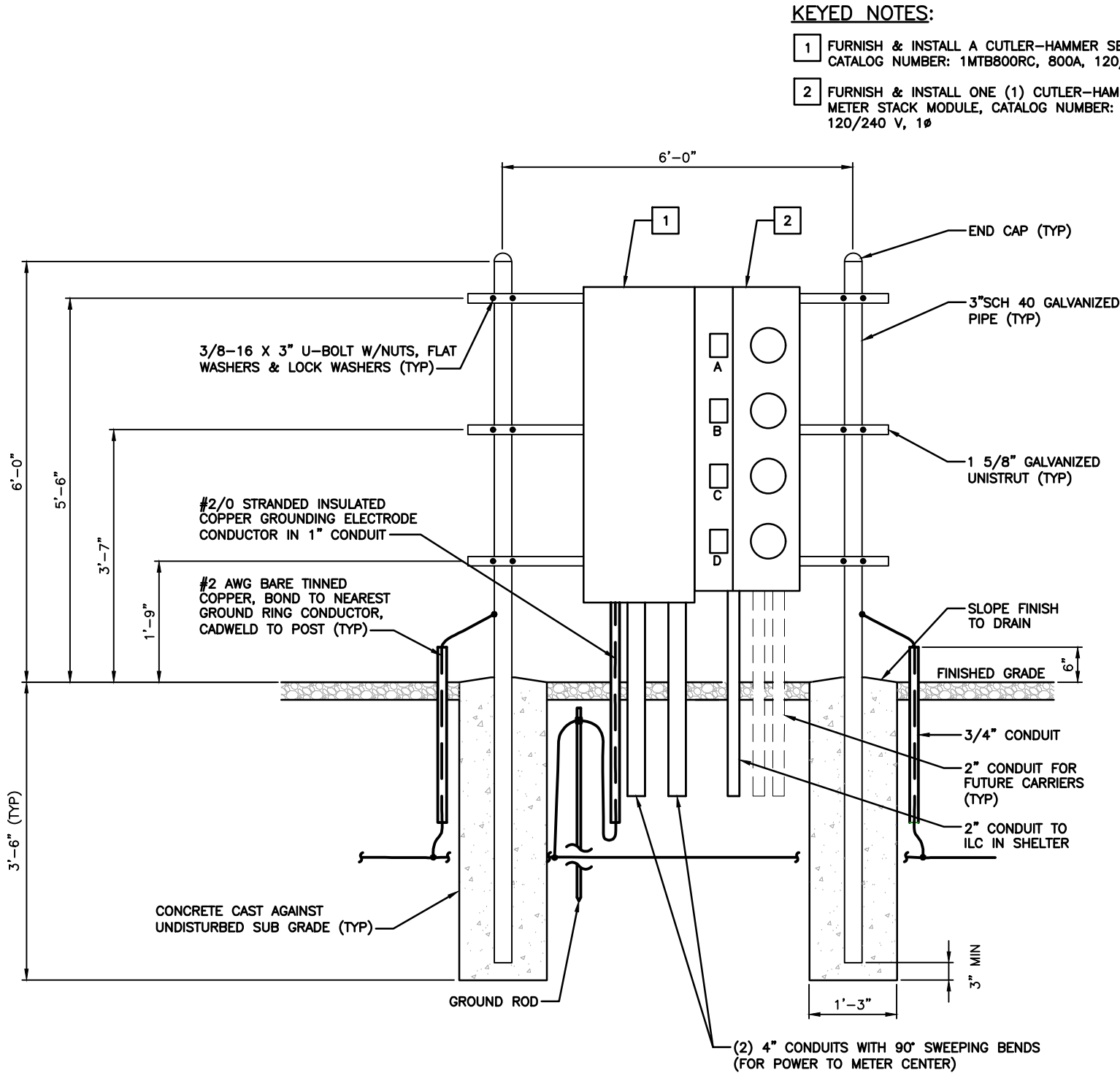
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

ELECTRICAL DETAILS

- SHEET #:

E-3.0



KEYED NOTES:

- 1 FURNISH & INSTALL A CUTLER-HAMMER SERVICE MODULE
CATALOG NUMBER: 1MTB800RC, 800A, 120/240 V, 1Ø, 3W
- 2 FURNISH & INSTALL ONE (1) CUTLER-HAMMER 4 GANG, 5 JAW
METER STACK MODULE, CATALOG NUMBER: 35MM420R12, 225A,
120/240 V, 1Ø

NOTES:

1. ALL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE
AND THE LOCAL BUILDING CODES. ALL COMPONENTS SHALL BE
U.L. LISTED
2. ALL COMPONENTS TO BE AS SPECIFIED OR EQUIVALENT AS
APPROVED BY VERIZON WIRELESS.
3. ALL BREAKERS SUPPLIED BY CARRIERS.
4. METERS SHALL FACE FENCE.
5. BELOW GRADE CADWELD CONNECTIONS ARE TYPE-TA.

SLIP JOINT NOTE:

CONTRACTOR SHALL INSTALL SLIP JOINTS ON
ALL CONDUITS. (SEE DETAIL 1)



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PLANS PREPARED FOR:



PLANS PREPARED BY:



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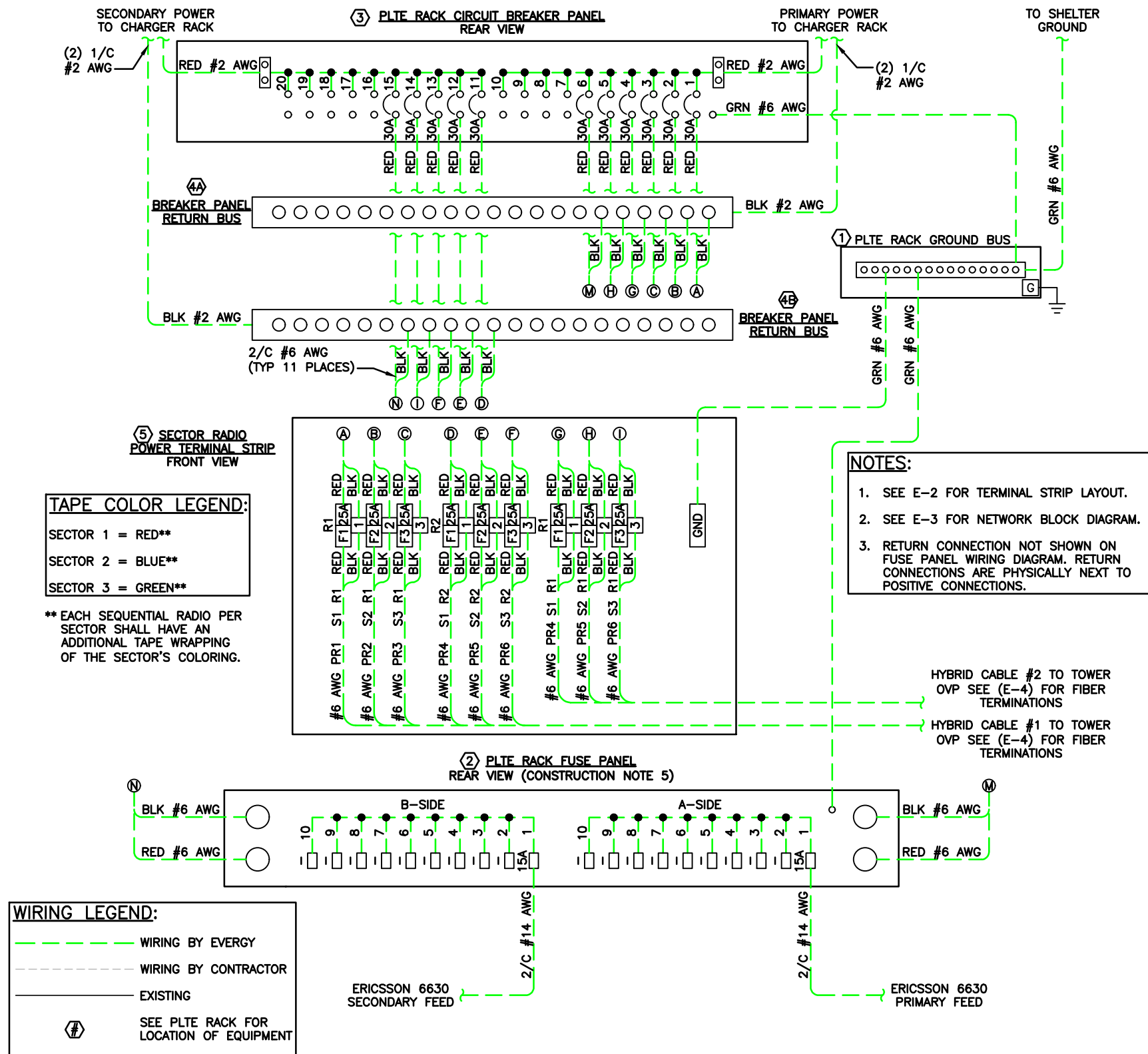
18827 DILLIE RD
EDGERTON, KS 66021

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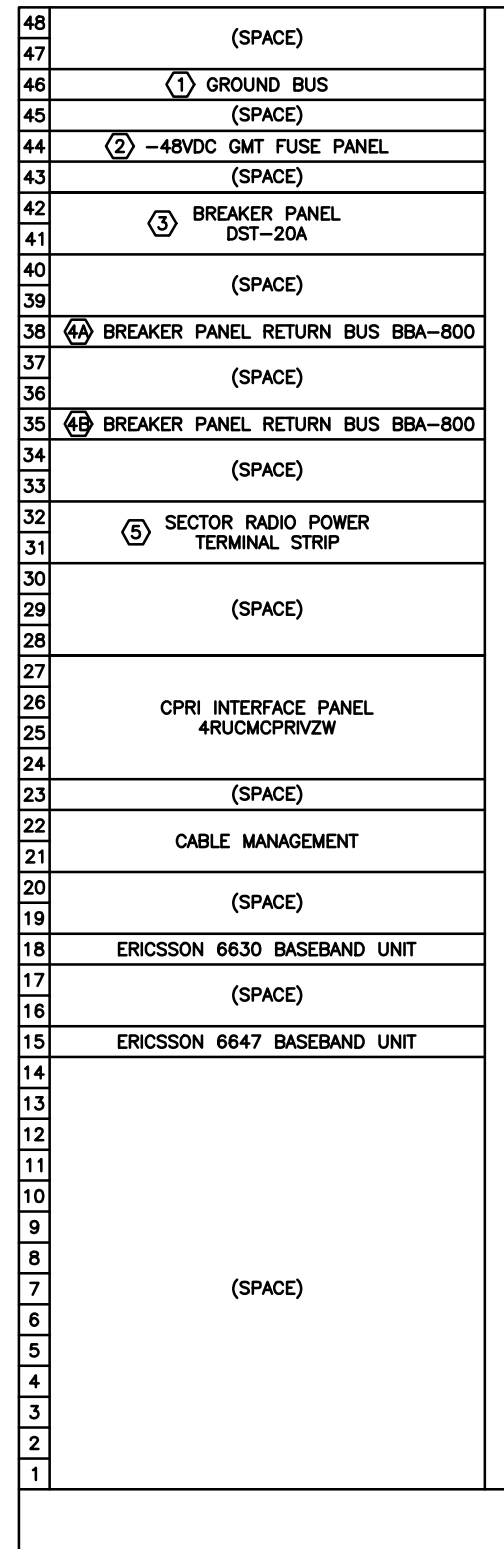
METER CENTER
DETAIL

SHEET #:

E-4.0



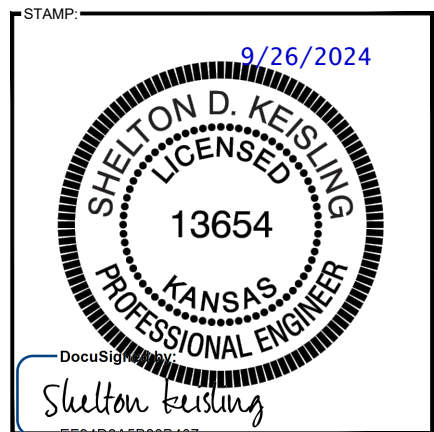
- CONSTRUCTION NOTES:**
1. EVERGY SHALL PROVIDE ALL ASSOCIATED POWER AND RACK HARDWARE ESTABLISHING A "ROOM READY" ENVIRONMENT FOR CONTRACTOR INSTALLATION OF PLTE EQUIPMENT.
 2. ALL CABLING FROM -48VDC POWER PLANT TO PLTE EQUIPMENT RACK CIRCUIT BREAKER, FUSE PANEL, AND TERMINAL STRIP SHALL BE WITHIN EVERGY'S SCOPE OF WORK.
 3. CIRCUIT BREAKER PANEL AND FUSE PANEL DRY CONTACT ALARMS TO SITEBOSS SYSTEM SHALL BE WIRED BY EVERGY DURING ROOM MAKE READY.
 4. ALL GROUNDS AND LUGS SHALL HAVE S.S. HARDWARE AND BE COATED WITH AN OXIDE INHIBITING GEL.
 5. FUSE PANEL WIRING DIAGRAM SHOWN ON THIS DOCUMENT IS FOR AMPHENOL FUSE PANEL ADDITIONAL FUSE PANEL MAKES MAY HAVE DIFFERENT PHYSICAL CONFIGURATION. WIRING TERMINATIONS SHALL FOLLOW THE CIRCUIT NUMBER TERMINATION LISTED ON THIS DRAWING IF THE FUSE PANEL IS PHYSICALLY DIFFERENT.
 6. ALL RACK FIBER JUMPERS, FIBER INSIDE THE CIPRI PANEL, POWER CABLES FROM THE CIRCUIT BREAKERS, AND HYBRID CABLE POWER CABLES SHALL BE TAPED USING THE TAPE COLOR LEGEND TO IDENTIFY THE SECTOR RADIO THE CABLES ARE SERVICING.



PLTE_RACK

CONSTRUCTION NOTES:

1. EQUIPMENT PROVIDED BY EVERGY, INSTALLED BY EVERGY.
2. EQUIPMENT PROVIDED BY EVERGY, INSTALLED BY CONTRACTOR.
3. ALL CABLING SHALL BE ROUTED INSIDE OF THE 19" RACK UPRIGHTS TO ALLOW FOR FUTURE RACK INSTALLATIONS ADJACENT TO THE PLTE RACK.
4. BASEBAND TO HAVE BUMPER INSTALLED ON THE FRONT OF RACK.
5. BASEBAND TO BE MOUNTED CENTRAL ON THE MOUNTING LOCATIONS TO EXTEND THE FRONT OF THE EQUIPMENT FROM THE FACE OF THE RACK.



ENGINEERING LICENSE: ***			
STATE OF <u>KANSAS</u>			
PE CERTIFICATE OF AUTHORIZATION # E-571			
ENGINEER:	PE#:	DISCIPLINE:	
KMV KEVIN M. VANMAELE	22105	CIVIL	C
REJ ROBERT E. JENSEN	16096	CIVIL	C
CG CHRISTOPHER GIANNOTTI	26673	CIVIL	C
SDK SHELTON D. KEISLING	13654	ELECTRICAL	E
TMS TERRANCE M. SUPER	9250	ELECTRICAL	E

PLANS PREPARED FOR:—



PLANS PREPARED BY: —



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APPLICANT SITE NAME: _____

WEST GARDNER

APPLICANT SITE NUMBER: _____

KS1019

SITE ADDRESS: _____

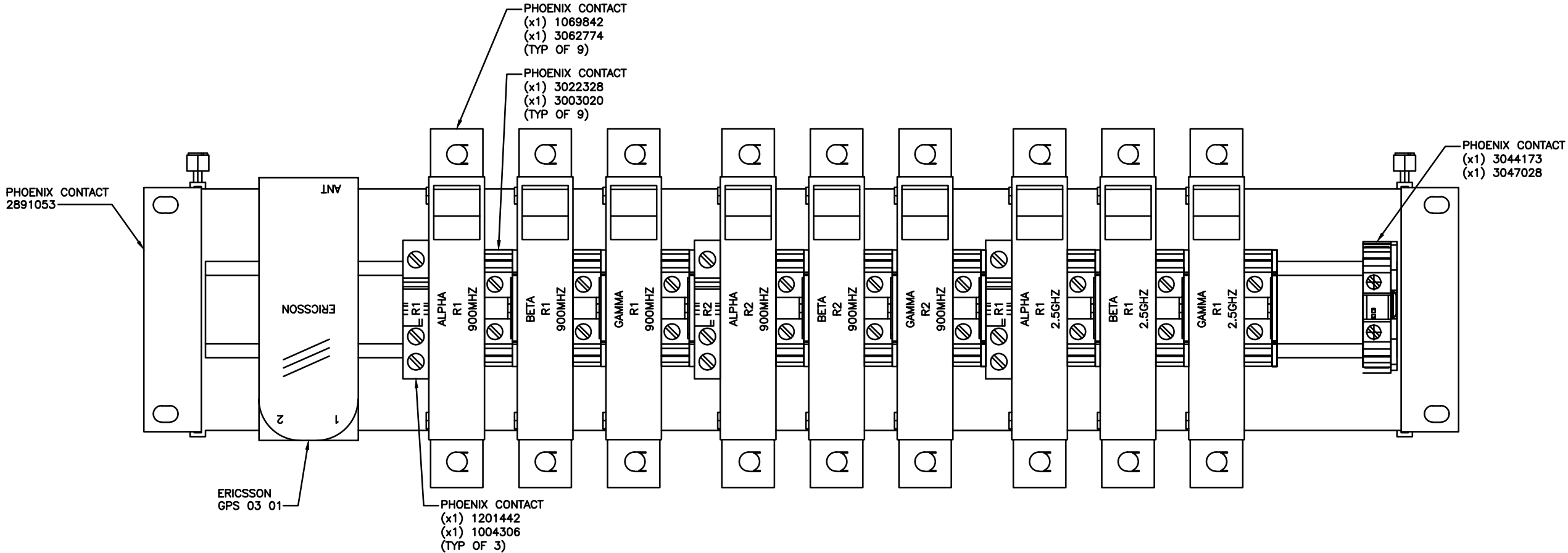
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION: —

PLTE RACK LAYOUT & POWER DISTRIBUTION

SHEET #:

E-5.0



CONSTRUCTION NOTES:

1. TERMINAL BLOCK MARKERS ARE TO BE ADDED TO TERMINAL BLOCK END CLAMPS. SEE TEXT ON THIS DRAWING FOR MARKINGS.
2. ALL FUSES SHALL BE LABELED WITH THEIR SERVICE EQUIPMENT AS SHOWN ON THIS DRAWING.

NOTES:

1. SEE E-3 FOR NETWORK ARCHITECTURE & CONNECTIONS.

STAMP:

9/26/2024

SHELTON D. KEISLING
LICENSED
13654
KANSAS
PROFESSIONAL ENGINEER

DocuSign Envelope ID: [Signature]

Shelton Keisling

ENGINEERING LICENSE STATE OF KANSAS			
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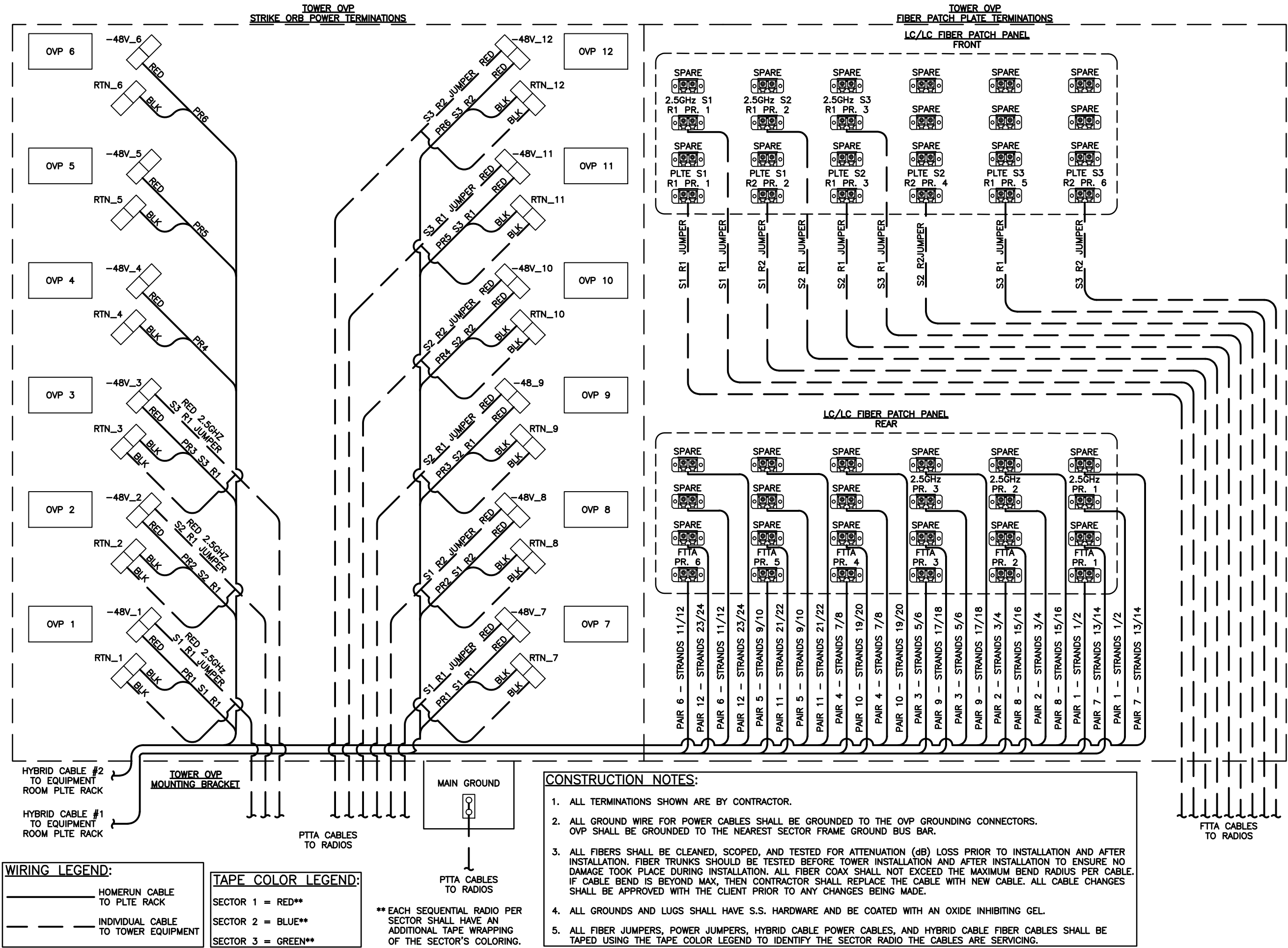
APPLICANT SITE NUMBER:

KS1019

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SHEET DESCRIPTION:	SHEET #:
PLTE TERMINAL STRIP LAYOUT	E-6.0



STAMP: 9/26/2024

SHELTON D. KEISLING
LICENSED
13654
KANSAS
PROFESSIONAL ENGINEER

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Shelton Keisling

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PLANS PREPARED FOR: evergy

PLANS PREPARED BY: SSC

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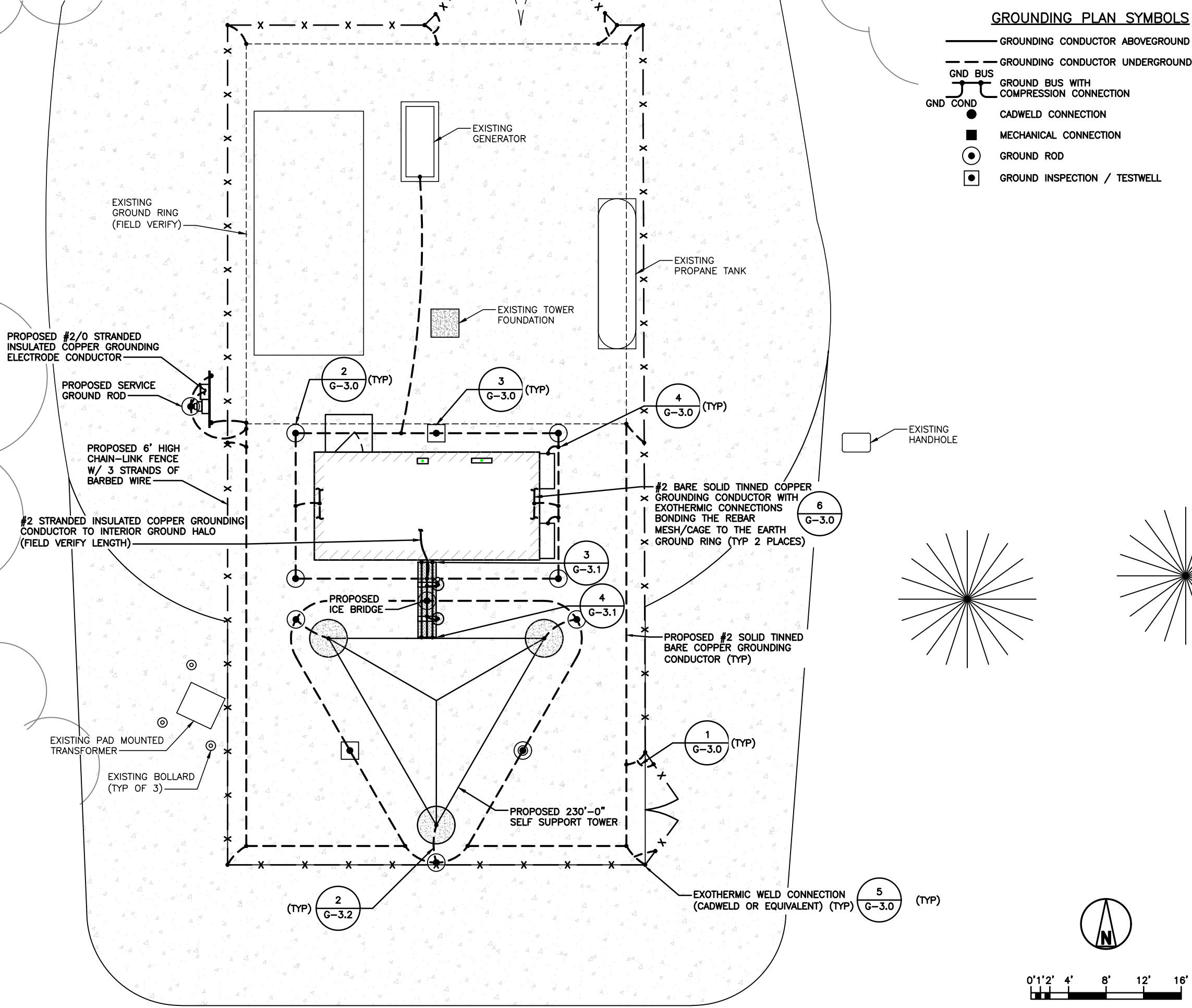
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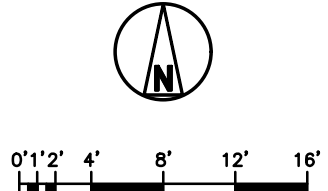
SHEET DESCRIPTION: TOWER OVP WIRING DIAGRAM

SHEET #: E-8.0



GROUNDING PLAN SYMBOLS

- GROUNDING CONDUCTOR ABOVEGROUND
- - - GROUNDING CONDUCTOR UNDERGROUND
- GND BUS
- GND COND
- GROUND BUS WITH COMPRESSION CONNECTION
- CADWELD CONNECTION
- MECHANICAL CONNECTION
- ⊙ GROUND ROD
- GROUND INSPECTION / TESTWELL



GROUNDING PLAN

STAMP:

9/26/2024

SHELTON D. KEISLING
LICENSED
13654
KANSAS
PROFESSIONAL ENGINEER

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Shelton Keisling

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PLANS PREPARED FOR:

evergy

PLANS PREPARED BY:

SSC

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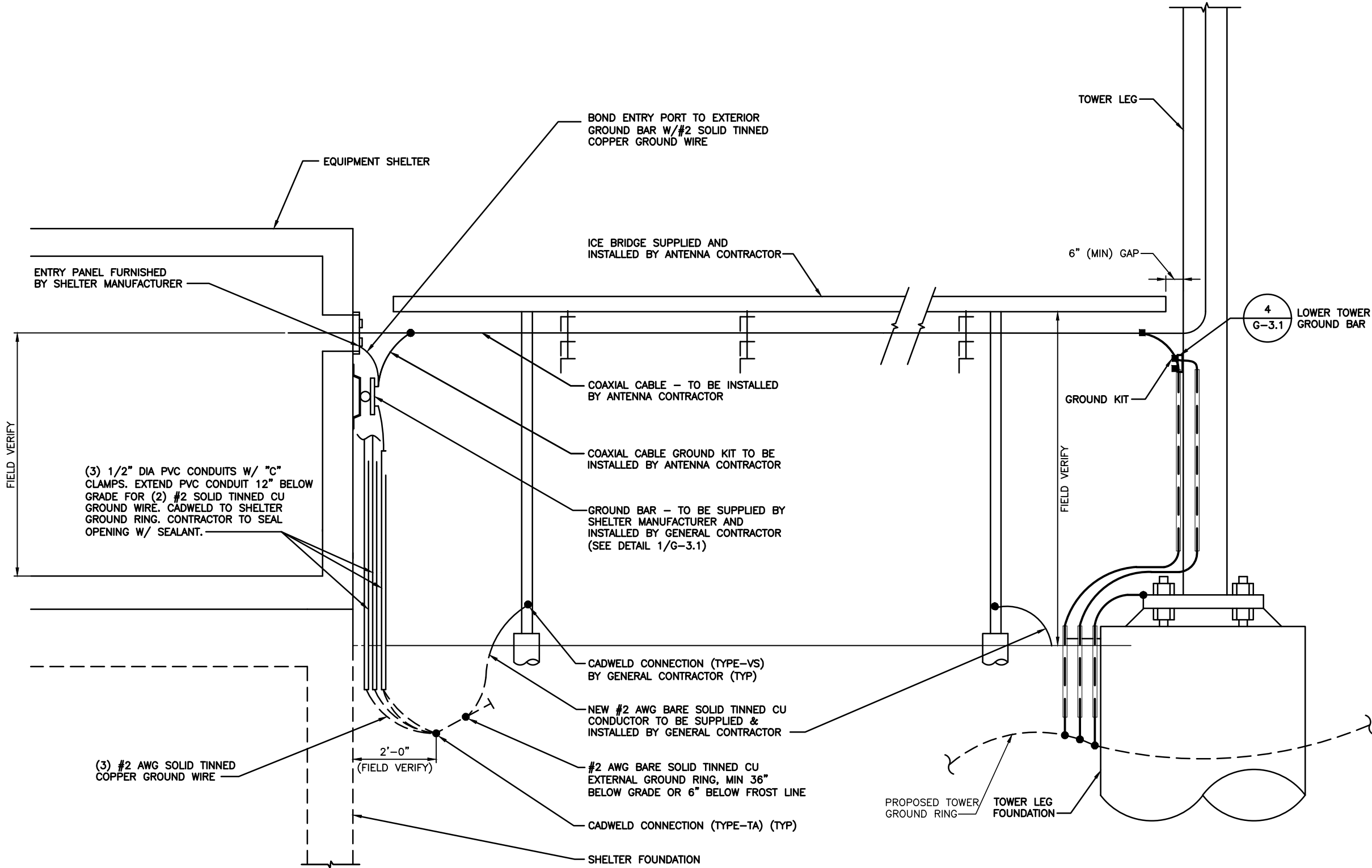
SITE ADDRESS:

**18827 DILLIE RD
EDGERTON, KS 66021**

SHEET DESCRIPTION:	SHEET #:
GROUNDING PLAN	G-1.0

NOTE:

GROUND LEADS ENTERING THE SHELTER SHALL HAVE 1/2" RIGID PVC SLEEVES 12" MIN BELOW FINISHED GRADE TO 6" FROM CONNECTION POINT. ALL OTHERS SHALL HAVE 1/2" NONMETALLIC FLEXIBLE CONDUIT SLEEVES MIN 12" BELOW GRADE TO 6" FROM CONNECTION POINT.



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LICENSED
13654
KANSAS
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ISSUED FOR REVIEW	08/27/24	WAG	A	
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APPLICANT SITE NAME:

WEST GARDNER

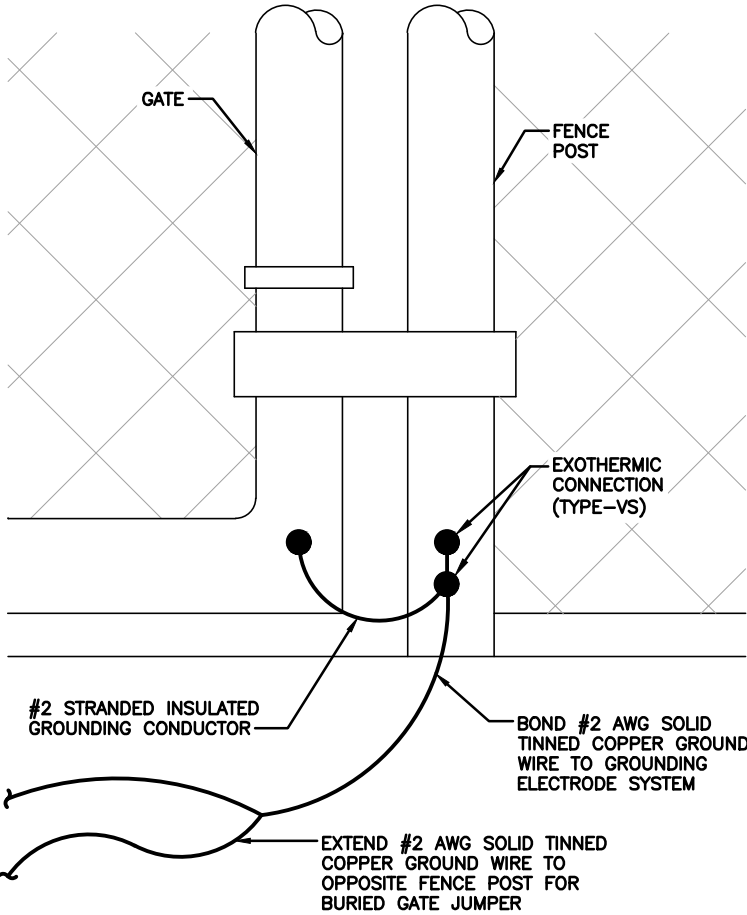
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KS1019

SITE ADDRESS:

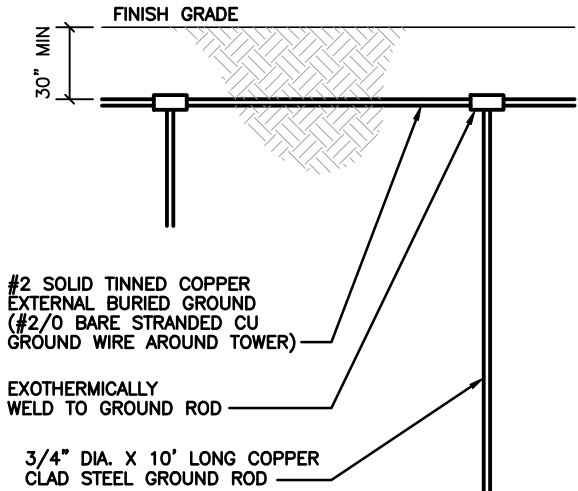
18827 DILLIE RD
EDGERTON, KS 66021

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FENCE GATE GROUNDING DETAIL

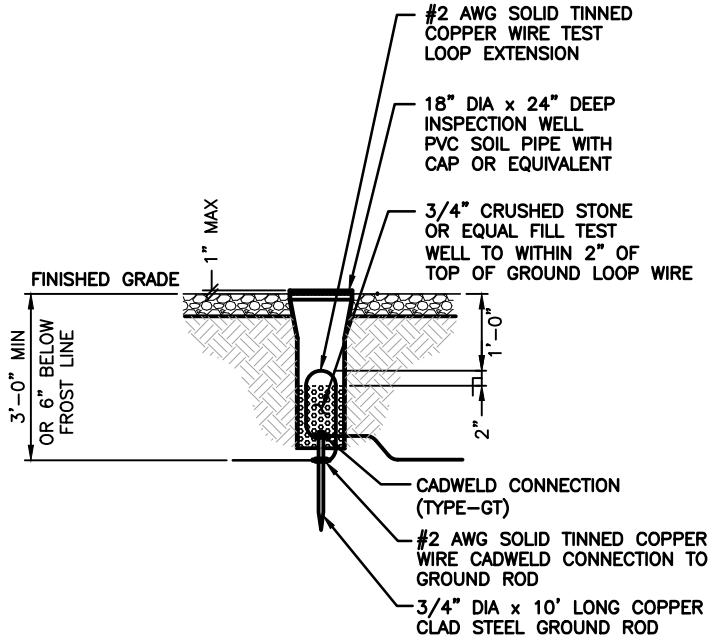
1



NOTE:
IF GROUND RODS CANNOT BE DRIVEN VERTICALLY TO FULL DEPTH DUE TO ROCK, DRIVE THEM AT AN ANGLE NOT TO EXCEED 45 DEGREES FROM VERTICAL. IF THAT IS NOT POSSIBLE THE RODS CAN BE LAID IN THE TRENCH HORIZONTALLY NO LESS THEN 30 INCHES DEEP.

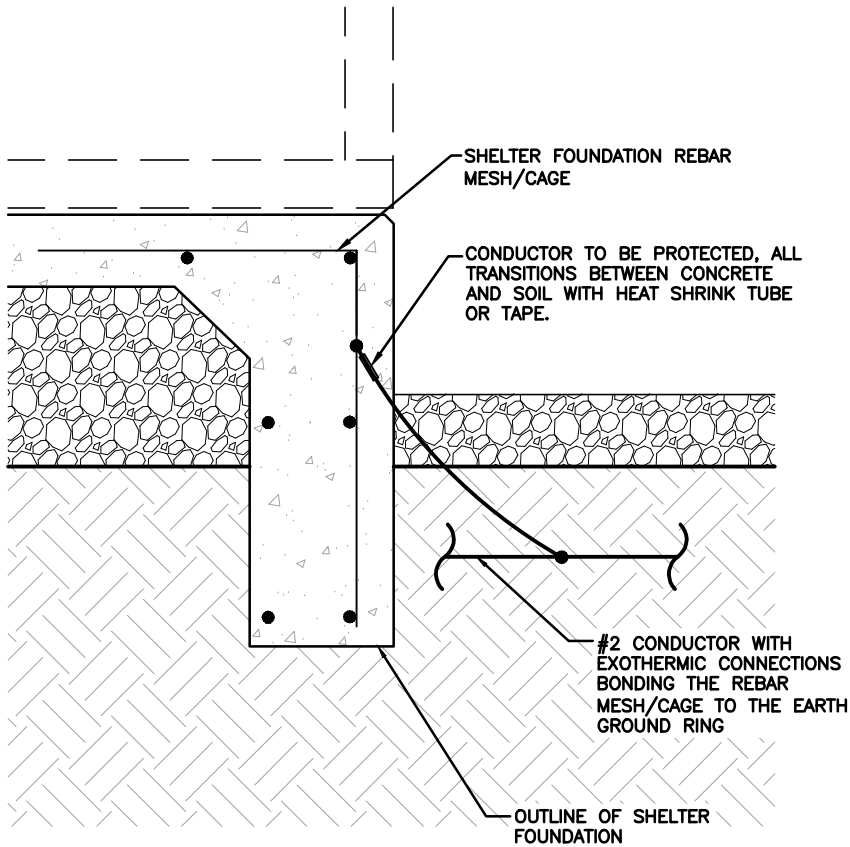
GROUND ROD DETAIL

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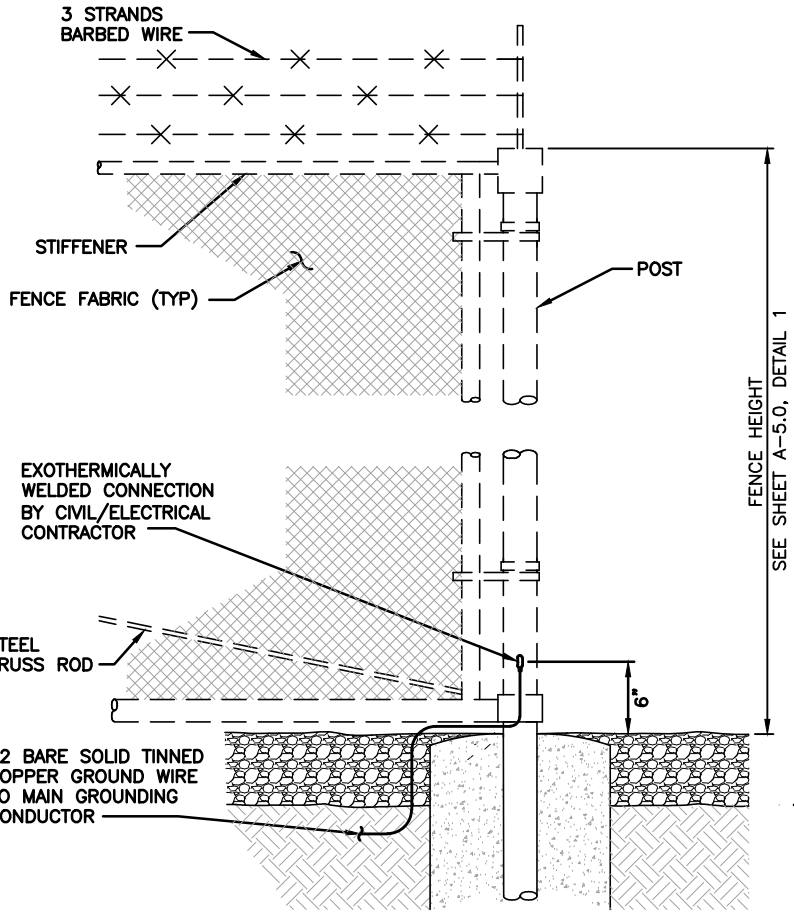
INSPECTION WELL

3



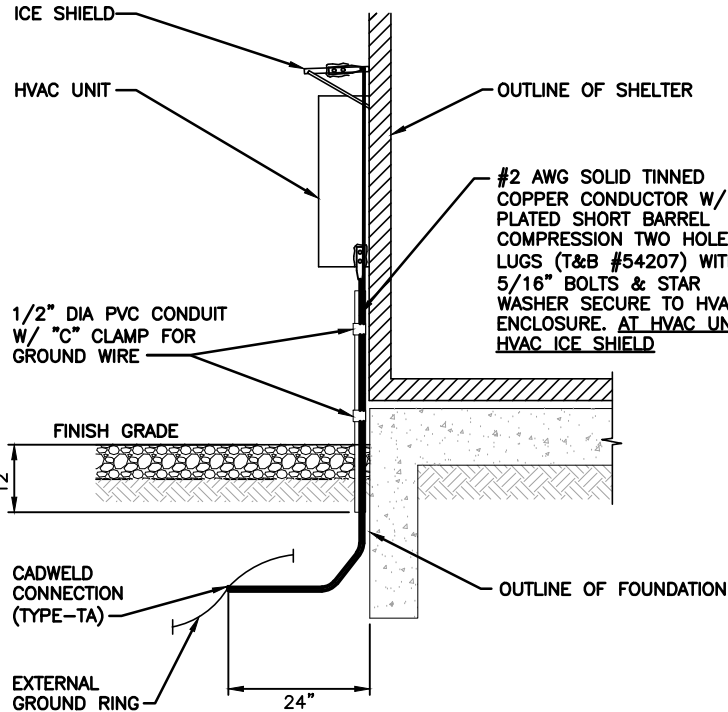
FOUNDATION GROUNDING DETAIL

6



FENCE END, CORNER, AND POST GROUNDING

5



HVAC GROUNDING DETAIL

4

STAMP:

9/26/2024

SHELTON D. KEISLING

LICENSED

13654

KANSAS

PROFESSIONAL ENGINEER

DocuSign Envelope ID: 98F6F607-3E32-4993-8AC0-B541FBBC0320

Shelton Keisling

ENGINEERING LICENSE

STATE OF KANSAS

PE CERTIFICATE OF AUTHORIZATION # E-571

ENGINEER: KMV KEVIN M. VANMAELE 22105 CIVIL
REJ ROBERT E. JENSEN 16096 CIVIL
CG CHRISTOPHER GIANNOTTI 26673 CIVIL

PE#: 13654

DISCIPLINE: CIVIL
CIVIL
ELECTRICAL

SDK SHELTON D. KEISLING 13654 ELECTRICAL
TMS TERRANCE M. SUPER 9250 ELECTRICAL

PLANS PREPARED FOR:

PLANS PREPARED BY:

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18827 DILLIE RD
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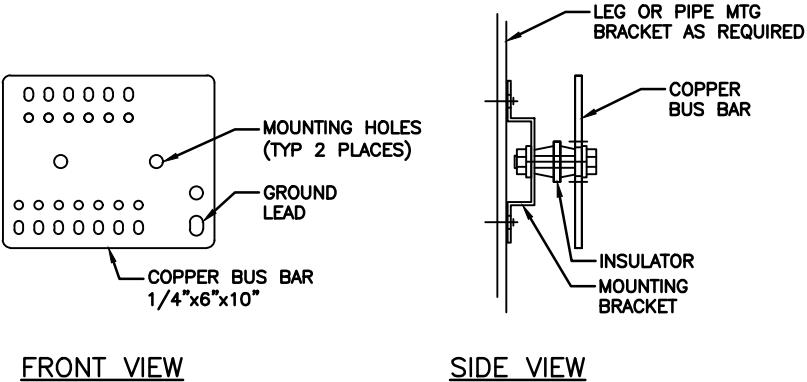
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GROUNDING
DETAILS
(1 OF 3)

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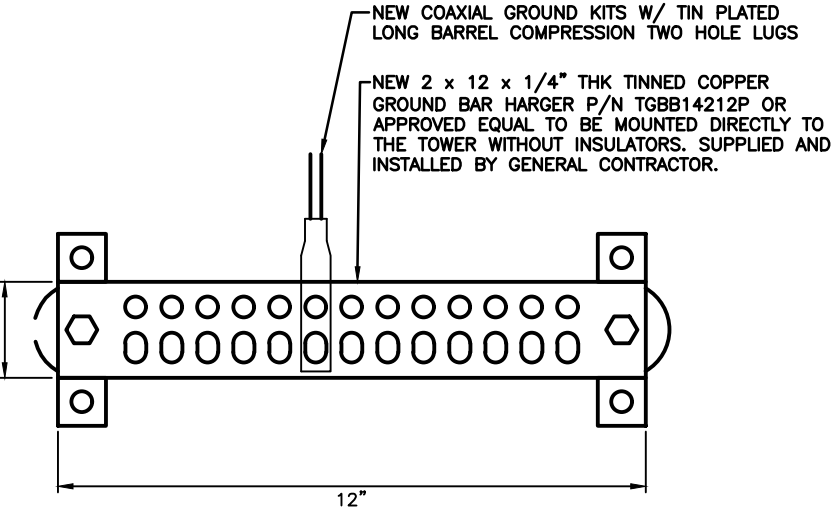
G-3.0

NOTES:
1. TOP & INTERMEDIATE GROUND BAR ASSEMBLY (CIGBE). SIMILAR FOR IGB AND TGB.



GROUND BAR ASSEMBLY

1

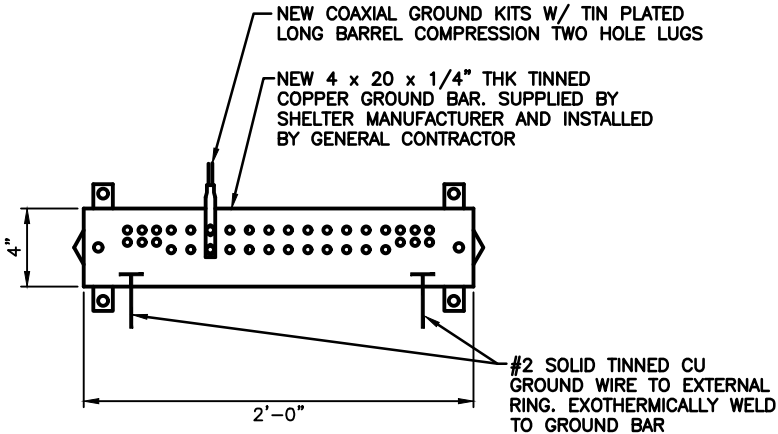


NOTES:

1. ALL HARDWARE 8-88 STAINLESS STEEL INCLUDING BELLVILLES, COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".
4. CONTRACTOR TO USE A THIN COAT OF ANTI-CORROSION GREASE AT THESE CONNECTIONS.
5. INSTALLED WITHIN 12" OF END OF COAX JUMPER CONNECTION.
6. DIMPLE OR MECHANICAL CRIMP LUGS WILL NOT BE PERMITTED.

ANTENNA GROUND BAR (ONE PER SECTOR)

2

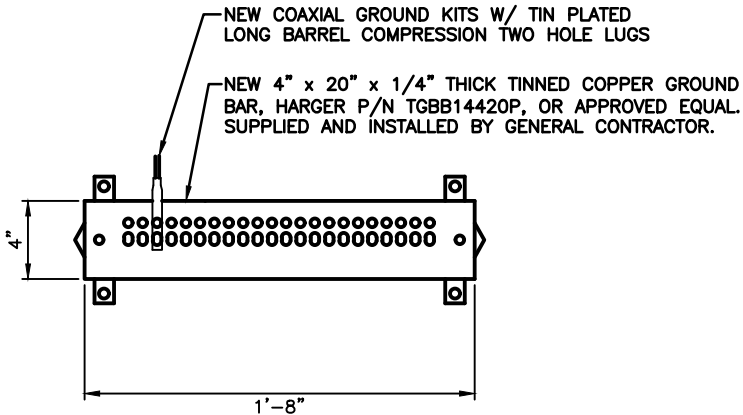


NOTES:

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2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".
4. CONTRACTOR TO USE A THIN COAT OF ANTI-CORROSION GREASE AT THESE CONNECTIONS.
5. INSTALLED AT 12" BELOW THE BOTTOM OF COAX ENTRY PORT.
6. DIMPLE OR MECHANICAL CRIMP LUGS WILL NOT BE PERMITTED.

EXTERIOR SHELTER GROUND BAR

3

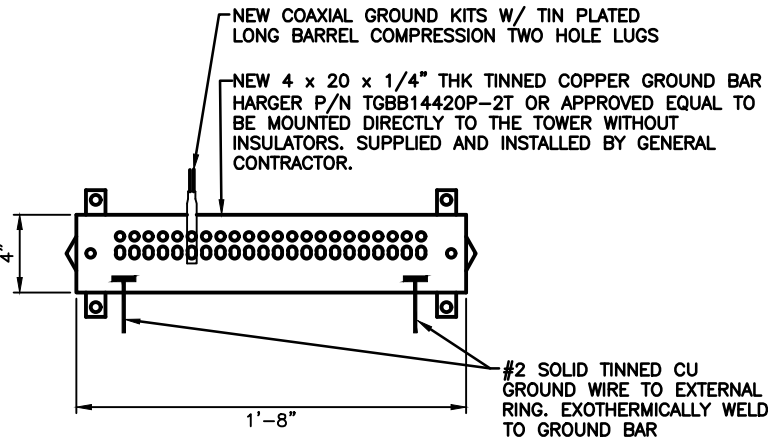


NOTES:

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2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".
4. CONTRACTOR TO USE A THIN COAT OF ANTI-CORROSION GREASE AT THESE CONNECTIONS.
5. INSTALLED WITHIN 12" OF INTERMEDIATE COAX GROUND KITS. COAX GROUND KITS SHALL BE AT 75' INTERVALS STARTING FROM THE ANTENNA CENTERLINE DOWN. SELF SUPPORT AND GUYED TOWERS ONLY.
6. DIMPLE OR MECHANICAL CRIMP LUGS WILL NOT BE PERMITTED.

INTERMEDIATE COAX GROUND KIT - GROUND BAR

5



NOTES:

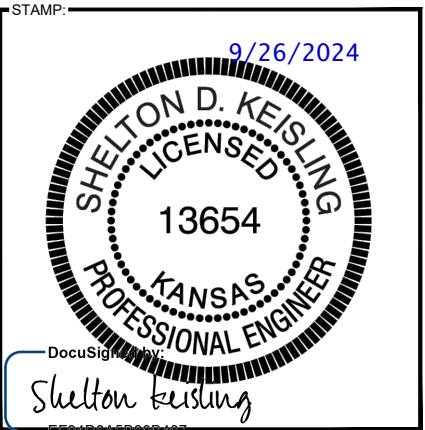
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2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".
4. CONTRACTOR TO USE A THIN COAT OF ANTI-CORROSION GREASE AT THESE CONNECTIONS.
5. INSTALLED AT NO GREATER THAN 36" BELOW ICE BRIDGE.
6. DIMPLE OR MECHANICAL CRIMP LUGS WILL NOT BE PERMITTED.

LOWER TOWER GROUND BAR

4

DETAIL NOT USED

6



ENGINEERING LICENSE		
STATE OF KANSAS		
PE CERTIFICATE OF AUTHORIZATION # E-571		
ENGINEER:	PE#:	DISCIPLINE:
KMV KEVIN M. VANMAELE	22105	CIVIL
REJ ROBERT E. JENSEN	16096	CIVIL
CG CHRISTOPHER GIANNOTTI	26673	CIVIL
SDK SHELTON D. KEISLING	13654	ELECTRICAL
TMS TERRANCE M. SUPER	9250	ELECTRICAL



PLANS PREPARED FOR:



PLANS PREPARED BY:



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APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

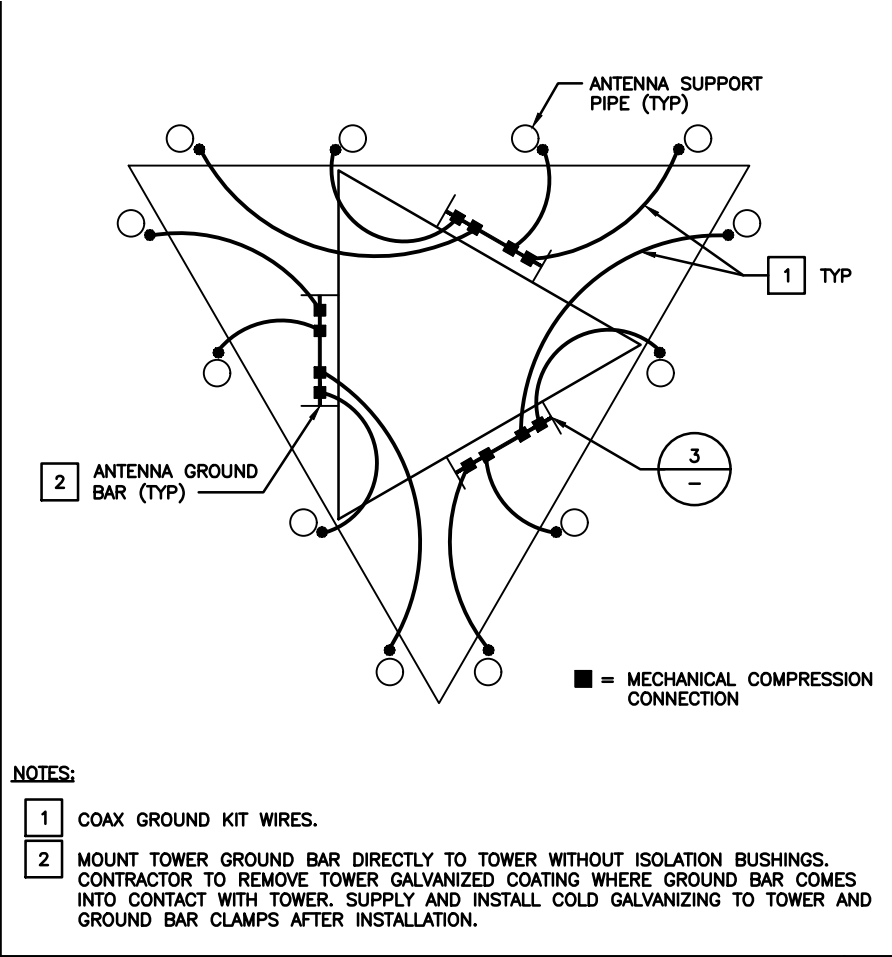
18827 DILLIE RD
EDGERTON, KS 66021

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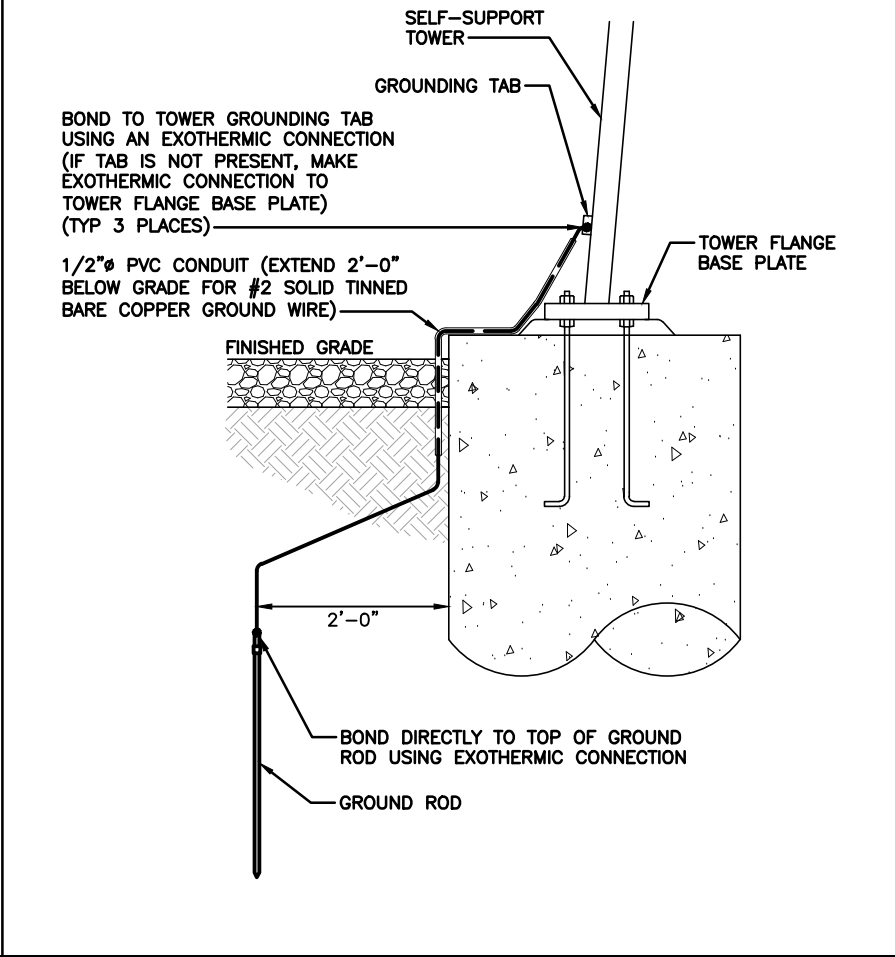
GROUNDING
DETAILS
(2 OF 3)

SHEET #:

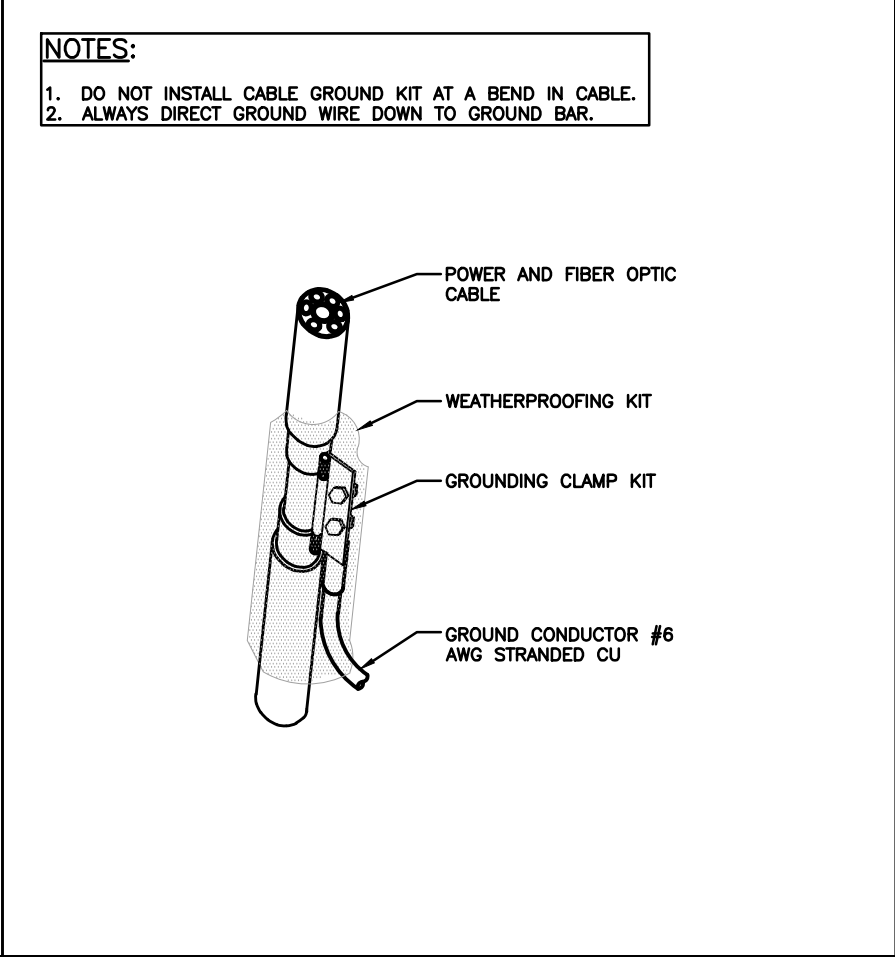
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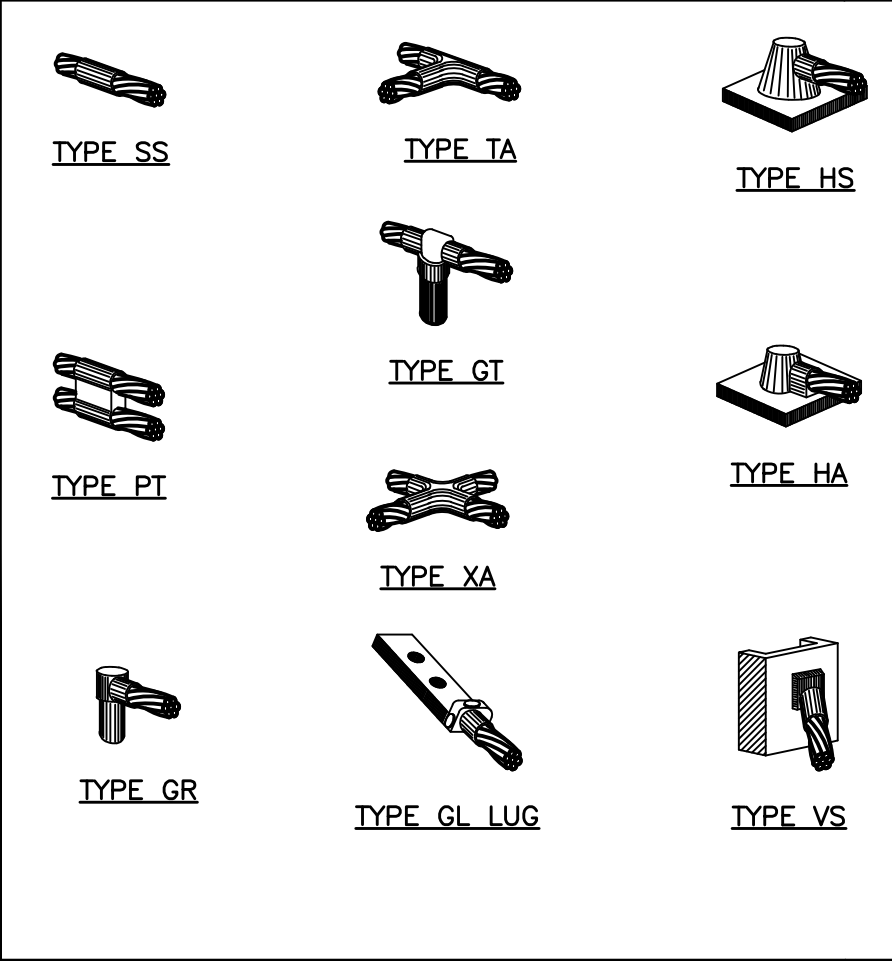
ANTENNA GROUNDING PLAN 1



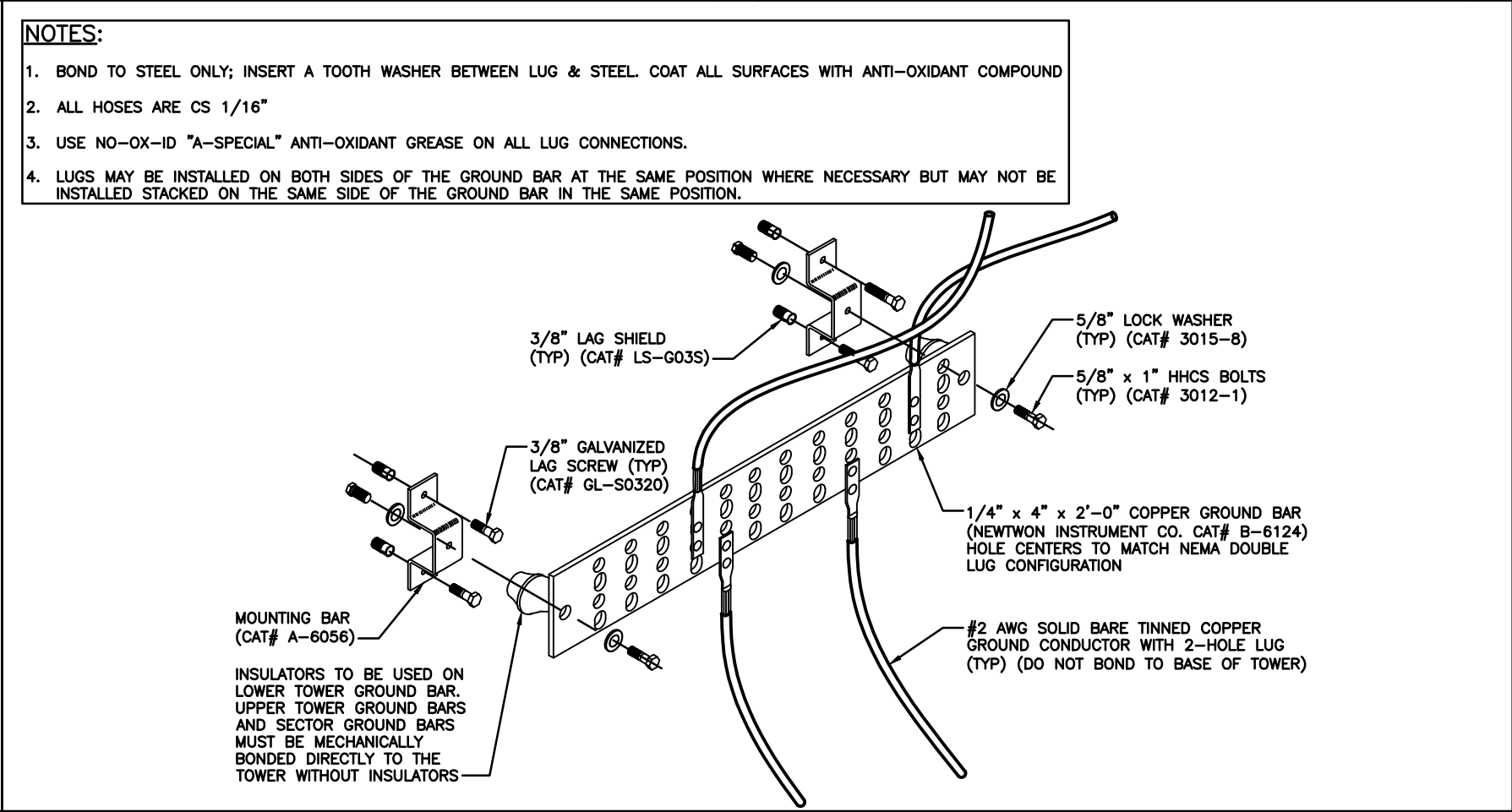
TOWER GROUNDING DETAIL 2



HYBRID CABLE GROUNDING 3



EXOTHERMIC CONNECTION TYPE DETAILS 5



GROUND BAR DETAIL 4

STAMP: 9/26/2024

SHELTON D. KEISLING
LICENSED
13654
KANSAS
PROFESSIONAL ENGINEER

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Shelton Keisling

ENGINEERING LICENSE
STATE OF KANSAS
PE CERTIFICATE OF AUTHORIZATION # E-571
ENGINEER: KMV KEVIN M. VANMAELE PE#: 22105 DISCIPLINE: CIVIL
REJ ROBERT E. JENSEN 16096 CIVIL
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SDK SHELTON D. KEISLING 13654 ELECTRICAL
TMS TERRANCE M. SUPER 9250 ELECTRICAL

PLANS PREPARED FOR:

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PLANS PREPARED BY:

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WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

GROUNDING
DETAILS
(3 OF 3)

SHEET #:

G-3.2

GROUNDING SYMBOL LEGEND

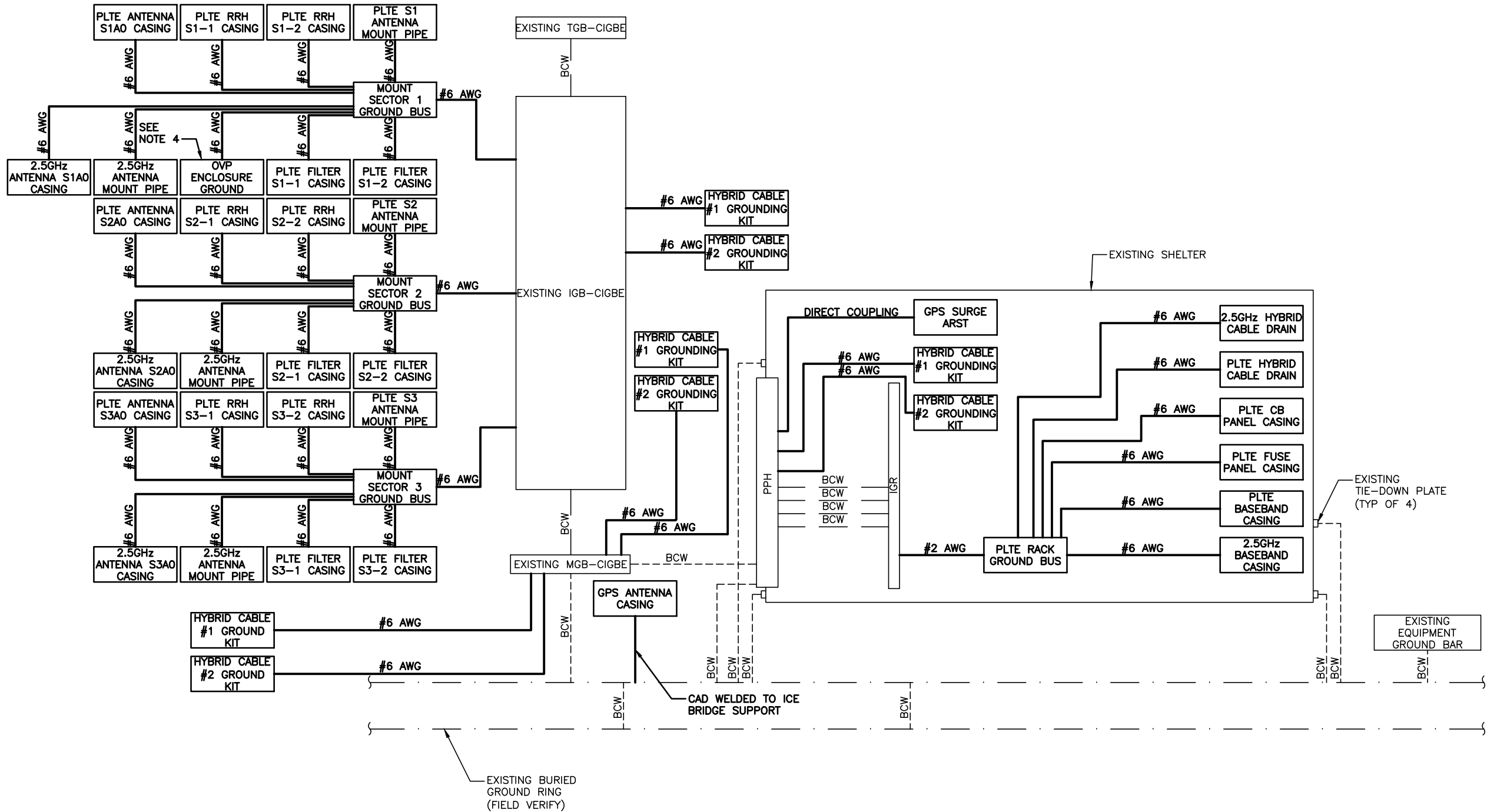
	GROUNDING CONDUCTOR - ABOVE GRADE
	EXISTING GROUNDING CONDUCTOR - ABOVE GRADE
	GROUNDING CONDUCTOR - BELOW GRADE
	EXISTING GROUNDING CONDUCTOR - BELOW GRADE
	EXISTING GROUNDING ELECTRODE SYSTEM

NOTES:

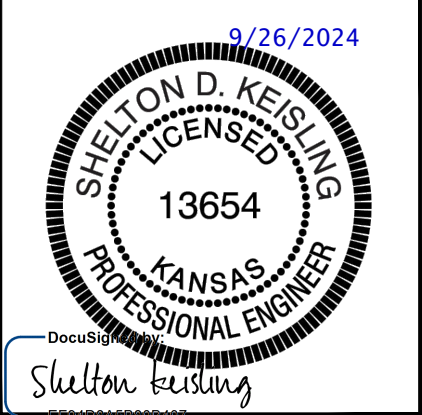
1. PROVIDE GROUNDING & BONDING CONDUCTORS WITH GREEN TYPE THHN INSULATION UNLESS OTHERWISE NOTED.
2. WELD GROUNDING CONNECTIONS TO EACH ANTENNA MOUNTING PIPE.
3. ALL GROUNDS AND LUGS SHALL HAVE S.S. HARDWARE AND BE COATED WITH AN OXIDE INHIBITED GEL.
4. OVP SHALL BE GROUNDED TO THE NEAREST SECTOR FRAME GROUND BUS BAR.

ABBREVIATIONS:

AWG - AMERICAN WIRE GAUGE
BCW - BARE COPPER WIRE
CIGBE - CABLE ISOLATED GROUND BAR EXTERNAL
IGB - INTERMEDIATE GROUND BAR (TOWER)
IGR - INTERIOR GROUND GRID (ENCLOSURE)
MGB - MASTER GROUND BAR
PPH - POLYPHASE SINGLE POINT GROUND (ENCLOSURE)
TGB - TOP GROUND BAR (TOWER)
EC - ELECTRICAL CONTRACTOR
BC - BUILDING CONTRACTOR



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ENGINEERING LICENSE STATE OF KANSAS			
PE CERTIFICATE OF AUTHORIZATION # E-571			
ENGINEER:	PE#:	DISCIPLINE:	
KMV KEVIN M. VANMAELE	22105	CIVIL	C
REJ ROBERT E. JENSEN	16096	CIVIL	C
CG CHRISTOPHER GIANNOTTI	26673	CIVIL	C
SDK SHELTON D. KEISLING	13654	ELECTRICAL	E
TMS TERRANCE M. SUPER	9250	ELECTRICAL	E

PLANS PREPARED FOR:



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KS1019

SITE ADDRESS:
18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:	SHEET #:
GROUNDING SYSTEMS	G-4.0

EXHIBIT B – SPECIFICATIONS & STANDARDS

13 34 45 – ANTENNA SYSTEMS

PART 1: GENERAL

2.01 SPECIFICATIONS: – NOT APPLICABLE TO THIS SECTION

3.01 GENERAL:

- A. ALL WORK SHALL BE DONE IN A NEAT AND PROFESSIONAL MANNER.
- B. ALL EQUIPMENT SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE ORIGINAL MANUFACTURER’S INSTRUCTIONS.
- C. ALL EQUIPMENT SHALL BE PLACED INTO OPERATION IN ACCORDANCE WITH SPECIFIED FUNCTION AND INTENT.

3.02 INSTALLATION:

- A. INSTALL ANTENNA SYSTEMS AT EACH APPROPRIATE SITE LISTED IN THE CONSTRUCTION DRAWINGS.
- B. ANTENNAS:
 - 1. ALIGN ANTENNAS TO THE SPECIFIED AZIMUTHS AND ADJUSTED TO MAXIMUM RECEIVED SIGNAL LEVEL. (ELECTRONIC AZIMUTH/DT TOOL MUST BE USED)
 - 2. STABILIZE THE ANTENNA TO THE TOWER STRUCTURE TO PREVENT MOVEMENT UNDER ICING AND WIND CONDITIONS SPECIFIED BY ASCE 7 AND ANSI/TIA–222–H (OR MOST UP TO DATE REVISION).
- C. FEEDLINES:
 - 1. ATTACH FEEDLINES TO TOWER CABLE SUPPORT SYSTEMS USING APPROVED HANGERS AT INTERVALS AS RECOMMENDED BY THE MANUFACTURER BUT NOT EXCEEDING FIVE (5) FEET AT ANY POINT. USE FEEDLINE HANGERS AND MEMBER ADAPTORS DESIGNED SPECIFICALLY FOR THE FEEDLINE; CABLE TIES SHALL NOT BE USED.
 - 2. GROUND OUTER CONDUCTOR OF HYBRID FEEDER CABLE PER THE MANUFACTURER’S INSTRUCTIONS, USING APPROVED GROUNDING KITS AT THE FOLLOWING LOCATIONS:
 - a. AT THE OVP.
 - b. AT INTERMEDIATE GROUND BARS THAT SHALL NOT BE SPACED GREATER THAN 75’ APART.
 - c. AT THE BASE OF THE TOWER WHERE THE FEEDLINES TURN TOWARD THE BUILDING,
 - d. AT THE OUTSIDE OF THE BUILDING ENTRY PORT TO THE COPPER BUSS MOUNTED BAR ON THE BUILDING EXTERIOR NEAR THE ENTRY PORT(S).
 - e. AT THE INSIDE OF THE BUILDING ENTRY PORT TO THE COPPER BUSS BAR MOUNTED ON THE BUILDING INTERIOR NEAR THE ENTRY PORT(S).
 - 3. EACH GROUND LEAD SHOULD BE DIRECTED DOWNWARD IN A GRADUAL ARC.
 - 4. USE INTERMEDIATE GROUND BARS WHERE PROVIDED, OR GROUND DIRECTLY TO THE STRUCTURAL STEEL OF THE TOWER.
 - 5. WEATHERPROOF ALL GROUND KITS AND EXTERIOR FEEDLINE CONNECTIONS WITH MANUFACTURER APPROVED WEATHERPROOFING MATERIALS.
 - 6. INSTALL FIBER JUMPERS AND POWER CABLES FOR CONNECTING THE OVP TO THE RRHS.
 - 7. INSTALL RET/AISG CONTROL CABLES AND RF COAXIAL JUMPERS FOR CONNECTION THE RRHS TO THE CORRESPONDING ANTENNAS.
 - 8. LABEL EACH FEEDLINE AT THE INTERIOR ENTRANCE TO THE BUILDING TO CLEARLY IDENTIFY ITS FUNCTION, HEIGHT OF ANTENNA, AND AZIMUTH OF ANTENNA IF DIRECTIONAL. ALL LABEL DESIGNATIONS SHALL BE APPROVED BY THE OWNER.
 - 9. LABELS SHALL BE AFFIXED TO THE FEEDLINE THAT CAN BE READ BY A PERSON STANDING IN THE BUILDING, BE MACHINE PRINTED, AND HAVE PERMANENT HIGH CONTRAST LETTERING.
- D. BUILDING PORT ENTRY:
 - 1. COVER ANY UNUSED PORT ENTRIES ACCORDING TO MANUFACTURER’S STANDARDS.
 - 2. USE PROPER BOOTS BASED ON FEEDLINE SIZE AND PORT ENTRY DIAMETER.

3.03 TESTING:

- A. ANTENNA FEEDLINE TESTING SHALL BE SPECIFIED IN COMMUNICATIONS DISTRIBUTION 33 82 00 FOUND IN EXHIBIT B.

END OF SECTION 13 34 45

SECTION 270528 – PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY:

- A. THIS SECTION COVERS THE FURNISHING AND INSTALLATION BY THE CONTRACTOR OF SITE INFRASTRUCTURE REQUIRED TO SUPPORT THE INSTALLATION OF THE ASSOCIATED ANTENNA SYSTEMS AND FEEDLINES AT EACH SITE.
- B. INFRASTRUCTURE IS HEREBY DEFINED TO INCLUDE:
 - 1. EARTH GROUNDING SYSTEMS INCLUDING GROUND CONDUCTORS AND GROUND BARS.
 - 2. CABLE ICE BRIDGES.
 - 3. VERTICAL CABLE LADDERS ON EXISTING TOWERS.
 - 4. WALL ENTRY PORT FOR FEEDLINES.
- C. THE CONTRACTOR, IF INDICATED IN THE DRAWINGS, SHALL INSTALL OWNER–FURNISHED LIGHTNING ROD AT THE TOP OF THE TOWER STRUCTURE IN ACCORDANCE WITH MANUFACTURER’S SPECIFICATIONS.
- D. THE CONTRACTOR, IF INDICATED IN THE DRAWINGS, SHALL FURNISH AND INSTALL AN ICE BRIDGE FOR THE TOWER SITES TO SUPPORT AND SHIELD THE NEW AND EXISTING CABLES AS SPECIFIED. THE TYPICAL ICE BRIDGE CONFIGURATION IS

- SHOWN IN THE DRAWINGS AND THE CONTRACTOR SHALL ADAPT THE SCHEME TO THE SPECIFIC PHYSICAL ARRANGEMENT OF THE SITE.
- E. THE CONTRACTOR, IF INDICATED IN THE DRAWINGS, SHALL FURNISH AND INSTALL A VERTICAL CABLE SUPPORT LADDER FOR THE TOWER TO SUPPORT THE NEW CABLES TO PROVIDE A NEAT AND ORDERLY TRANSITION FROM THE TOWER TO THE HORIZONTAL CABLE SUPPORT FACILITY AT THE BASE OF THE TOWER. CONTRACTOR SHALL COORDINATE WITH THE REQUIREMENTS OF SECTION 133445.
 - F. THE CONTRACTOR, IF INDICATED IN THE DRAWINGS, SHALL FURNISH AND INSTALL A NEW ENTRY PORT FOR NEW FEEDLINES WHERE SPECIFIED. THE CONTRACTOR SHALL ADAPT THE SCHEME TO THE SPECIFIC PHYSICAL ARRANGEMENT OF THE SITE.

1.02 QUALITY ASSURANCE:

- A. APPLICABLE STANDARDS:
 - 1. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) C2 NATIONAL ELECTRICAL SAFETY CODE (NESC).
 - 2. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 LIGHTNING PROTECTION CODE.

1.03 WORK BY OTHERS: – NOT APPLICABLE TO THIS SECTION

1.04 RELATED WORK SPECIFIED ELSEWHERE:

- A. COMMUNICATIONS DISTRIBUTION: SECTION 338200.
- B. ANTENNA SYSTEMS: SECTION 133445

1.05 COMPLIANCE SUBMITTALS:

- A. ALL SUBMITTALS SHALL BE EXECUTED IN ACCORDANCE WITH OWNER’S REQUIREMENTS.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. CABLE LADDERS:
 - 1. SABRE.
 - 2. VALMONT.
 - 3. APPROVED EQUAL.
- B. CABLE ICE BRIDGES:
 - 1. COMMSCOPE.
 - 2. SITE PRO 1.
 - 3. VALMONT.
 - 4. HUTTON.
 - 5. APPROVED EQUAL.

2.02 WIRE AND CABLE:

- A. CONDUCTOR SIZES:
 - 1. ANTENNAS AND FEEDLINES: STRANDED COPPER NO. 2 AWG THHN GREEN.

2.03 GROUND BARS:

- A. GROUND BARS SHALL BE UNIVERSAL TYPE, SOLID COPPER OF DIMENSIONS NOT LESS THAN 1/4X4X20 INCHES WITH 7/16–INCH PRE–DRILLED UNIVERSAL LUG HOLES.
- B. GROUND BARS SHALL INCLUDE INSULATORS AND HARDWARE APPROPRIATE FOR MOUNTING.
- C. EXTERIOR GROUND BARS AND TOWER GROUND BARS SHALL BE TINNED TO DISCOURAGE THEFT.
- D. INTERIOR GROUND BARS SHALL BE BARE COPPER.

2.04 FEEDLINE ENTRY PORT:

- A. PROVIDE CABLE BOOTS DESIGNED FOR THE FEEDLINE SIZE BEING INSTALLED. USE BOOTS WITH MULTIPLE CABLE CAPACITY TO MAXIMIZE THE NUMBER OF SPARE PORTS.
- B. FURNISH CAPS FOR ALL UNUSED PORTS TO PREVENT INGRESS OF DUST OR MOISTURE.

2.05 VERTICAL CABLE LADDER:

- A. CABLE LADDERS SHALL BE DESIGNED FOR THE SELF–SUPPORT 3–LEGGED TOWERS AND THE GUYED TOWERS AS INDICATED.
- B. FEEDLINE SUPPORT SHALL BE ENGINEERED TO PROVIDE SUPPORTS AT INTERVALS NOT GREATER THAN THREE FEET ON CENTER. THIS SUPPORT SHALL BE IN THE FORM OF A FULL–HEIGHT CABLE/WAVEGUIDE LADDER MOUNTED NEAR THE PERSONNEL LADDER TO FACILITATE FEEDLINE INSTALLATION. THE HORIZONTAL BRACKETS SHALL BE WIDE ENOUGH TO ACCOMMODATE THE INITIAL AND PLANNED FEEDLINES REQUIRED PLUS SPACE FOR AN ADDITIONAL TWENTY PERCENT OF FEED LINES.
- C. HORIZONTAL BRACKETS SHOULD HAVE 3/8 INCH HOLES TO ACCEPT BUTTERFLY HANGER CABLE ATTACHMENT HARDWARE AND 3/4 INCH HOLES TO ACCEPT SNAP–IN CABLE ATTACHMENT HARDWARE.
- D. EACH SECTION OF THE COAX/WAVEGUIDE CABLE LADDER SHALL BE BONDED TOGETHER AND TO THE TOWER EITHER USING MANUFACTURER SPECIFICATIONS OR A BONDING JUMPER THAT IS #6 AWG GREEN SUPER WELDING CABLE EXTRA FLEXIBLE.

2.06 ICE BRIDGE:

- A. FOR SITES NEEDING ROUTES TO A NEW CABLE ENTRY PORT, FURNISH AN ICE BRIDGE OF THE PROPER LENGTH.
- B. THE ICE BRIDGE SHALL BE CONSTRUCTED OF ALL GALVANIZED STEEL.
- C. HEIGHT SHALL BE DETERMINED ACCORDING TO SITE CONFIGURATION. THE HEIGHT SHALL ALLOW FOR THE FEEDLINES TO ENTER THE BUILDING HORIZONTALLY.
- D. TWO SUPPORT POSTS SHALL BE PROVIDED FOR EACH SECTION, OR ONE POST EACH FIVE FEET, WHICHEVER IS GREATER. USE 13–FOOT 4–INCH DIRECT–BURIAL

- PIPE SUPPORTS OR LONGER IF REQUIRED.
- E. CONFIGURE AS INDICATED IN DRAWINGS.

PART 3 – EXECUTION

3.01 INSTALLATION:

- A. CONNECTIONS:
 - 1. ALL EXTERIOR WALL PENETRATIONS SHALL BE APPROPRIATELY SEALED TO PREVENT INFILTRATION OF DUST, MOISTURE, AND INSECTS.
- B. CONTRACTOR–INSTALLED EQUIPMENT:
 - 1. GROUND ALL EXTERIOR METAL SURFACES AS INDICATED ON THE DRAWINGS. EACH SECTION OF NEW ICE BRIDGE SHALL BE BONDED TO ADJACENT SECTIONS WITH A TINNED GROUND JUMPER AS INDICATED ON THE DRAWINGS.
 - 2. INSTALL SURGE SUPPRESSORS AS INDICATED BY THE DRAWINGS AND BOND TO INTERIOR GROUND BAR (OR TO APPROPRIATE EARTH GROUND IF INTERIOR GROUND BAR IS NOT PROVIDED) WITH #6 AWG THHN GREEN JUMPER.
 - 3. INSTALL CABLE SUPPORT LADDER AS INDICATED BY THE DRAWINGS AND ATTACH TO TOWER WITH MANUFACTURER SUPPLIED MOUNTING HARDWARE AND INSTALLED AS SPECIFIED BY MANUFACTURER.
 - 4. FEEDLINE ENTRY PORT: CONTRACTOR SHALL USE WET CORE DRILLING TECHNIQUE FOR WALL PENETRATIONS.
 - 5. FOUNDATIONS: SHOULD ANY DAMAGE OCCUR TO EXISTING FOUNDATIONS OR THE EXISTING GROUNDING INFRASTRUCTURE DURING THE CONSTRUCTION OF NEW ICE BRIDGE SECTIONS (IF APPLICABLE), THE CONTRACTOR SHALL REPAIR THE AFFECTED AREAS.

END OF SECTION 270528

STAMP:

9/26/2024

KEVIN VANMAELE

LICENSED

22105

KANSAS

PROFESSIONAL ENGINEER

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Kevin VanMaele

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TMS TERRANCE M. SUPER 9250 ELECTRICAL E

PLANS PREPARED FOR:


PLANS PREPARED BY:


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ISSUED FOR REVIEW		08/27/24	WAG	A
REISSUED FOR CLIENT COMMENTS		09/26/24	WAG	B
ISSUED FOR CONSTRUCTION		09/26/24	WAG	0

APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

SPECIFICATIONS
(1 OF 6)

SHEET #:

SP-1.0

SECTION 338200 – COMMUNICATIONS DISTRIBUTION

PART 1 – GENERAL

- 1.01 **SUMMARY:**
- A. THIS SECTION COVERS THE TESTING OF RADIO ANTENNAS, HYBRID FEEDER CABLES, RF COAXIAL JUMPERS, CONNECTORS, AND OTHER ITEMS FURNISHED AND INSTALLED BY THE CONTRACTOR, REQUIRED FOR THE LTE ANTENNA SYSTEMS.
- B. THE CONTRACTOR SHALL INSTALL COMPLETE AND FULLY FUNCTIONAL LTE ANTENNA SYSTEMS FOR COMMUNICATION SITES, INCLUDING PROPER ALIGNMENT, PASSING TESTS, AND READY FOR CONNECTION TO THE BASEBAND UNIT (BBU).1.02
- 1.02 **REFERENCES:**
- A. AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL FIRE PROTECTION ASSOCIATION (ANSI/NFPA) –70– “NATIONAL ELECTRIC CODE.”.
- B. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES (ANSI/TIA 222–H).
- C. UNIFORM BUILDING CODE.
- 1.03 **WORK BY OTHERS:** – NOT APPLICABLE TO THIS SECTION
- 1.04 **RELATED WORK SPECIFIED ELSEWHERE:**
- A. PATHWAYS FOR COMMUNICATIONS SYSTEMS: EXHIBIT B SECTION 270528.B.
- B. ANTENNA SYSTEMS: EXHIBIT B SECTION 133445.
- C. FIBER OPTIC SUPPLY CABLE TEST PLAN FOUND IN EXHIBIT B.
- 1.05 **SUBMITTALS:**
- A. ALL SUBMITTALS SHALL BE EXECUTED IN ACCORDANCE WITH OWNER’S REQUIREMENTS.
- 1.06 **QUALITY ASSURANCE:**
- A. THE CONTRACTOR SHALL INSTALL AND TEST EQUIPMENT SO THAT UPON INSTALLATION AND OPERATION WITH MANUFACTURER’S RECOMMENDED PROCEDURES, THE EQUIPMENT WILL CONFORM TO ALL GOVERNING CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO, THE MOST CURRENT REVISIONS OF APPLICABLE INDUSTRY STANDARDS.
- B. ALL TESTING EQUIPMENT SHALL BE CALIBRATED PER THE MANUFACTURER’S RECOMMENDATION. AT LEAST TWO WEEKS BEFORE THE TESTING IS PERFORMED, THE CONTRACTOR SHALL PROVIDE PROOF THAT THE TEST EQUIPMENT IS CALIBRATED.

PART 2 – EXECUTION

- 2.01 **GENERAL:**
- A. ALL WORK SHALL BE DONE IN A NEAT AND PROFESSIONAL MANNER.
- B. ALL EQUIPMENT SHALL BE TESTED IN ACCORDANCE WITH THE ORIGINAL MANUFACTURER’S INSTRUCTIONS. THE OWNER SHALL RESERVE THE RIGHT TO WITNESS ALL TESTS. COPIES OF ALL TEST REPORTS SHALL BE SUBMITTED PER THE OWNER’S REQUIREMENTS.
- C. ALL EQUIPMENT SHALL BE PLACED INTO A READY CONDITION IN ACCORDANCE WITH SPECIFIED FUNCTION AND INTENT.
- D. ALL FACTORY PROVIDED CERTIFICATIONS SHALL BE MAINTAINED AND TURNED OVER TO THE OWNER WITH THE CLOSE OUT PACKAGE.
- 2.02 **TESTING:**
- A. THE CONTRACTOR SHALL CONDUCT ANY AND ALL TESTS AS NECESSARY TO ASSURE THAT EACH ANTENNA SYSTEM IS PROPERLY ALIGNED AND PROPERLY FUNCTIONING.
- B. ALL AZIMUTHS, MECHANICAL DOWN TILTS, AND ELECTRICAL DOWN TILTS SHALL BE SET AND VERIFIED VIA AN ELECTRONIC ALIGNMENT TOOL PER THE DESIGN REQUIREMENTS BEFORE ANY TESTING IS CONDUCTED.
- C. THE CONTRACTOR SHALL TEST EACH CABLE AND ANTENNA SYSTEM TO VERIFY THAT THE PERFORMANCE MEETS MANUFACTURER’S PUBLISHED SPECIFICATIONS.
- D. FOR EACH ANTENNA SYSTEM UTILIZING RF COAXIAL JUMPERS, THE CONTRACTOR SHALL:
1. CONDUCT ALL TESTS WITH A CALIBRATED PHASE STABLE CABLE. THE TESTS SHALL BE COMPLETED BY INDIVIDUALS WHO HAVE BEEN CERTIFIED BY THE TEST EQUIPMENT MANUFACTURER AS COMPETENT IN TESTING WITH THE TEST EQUIPMENT. ALL CERTIFICATIONS SHALL BE CURRENT AND VALID.
2. PERFORM THE FOLLOWING TESTS:
- a. AN INSERTION LOSS TEST AND A RETURN LOSS TEST SHALL BE CONDUCTED, AT A MINIMUM, ACROSS THE ENTIRE BAND OF FREQUENCIES FOR WHICH THE ANTENNA SYSTEM IS DESIGNED TO OPERATE USING A SWEEPING FREQUENCY TEST SET; TESTING SHALL NOT BE CONDUCTED USING THE DISCRETE FREQUENCY METHOD.
- (1)CABLE INSERTION LOSS SHALL BE TESTED TO VERIFY THAT IT IS WITH IN FACTORY SPECIFICATIONS.
- (2)CABLE RETURN LOSS WITHOUT ANTENNA.
- (a)RETURN LOSS SHALL BE GREATER THAN 18DB.
- (3)SYSTEM RETURN LOSS WITH JUMPER AND ANTENNA.
- (a)RETURN LOSS SHALL BE EQUAL TO OR GREATER THAN THE ANTENNA SPECIFICATION.
- b. PASSIVE INTERMODULATION (PIM) TESTING SHALL CONSIST OF TWO (2) 43DBM TONES AND PASS AT –153DBC.
- (1)TESTING SHALL INCLUDE BOTH STATIC AND DYNAMIC TESTING AND INCLUDE TAPPING/LIGHTLY SHAKING CONNECTORS AND CABLES WHILE UNDER DYNAMIC TEST.
- (2)DYNAMIC TESTING SHALL OCCUR FOR A MINIMUM DURATION OF SIXTY (60) SECONDS.

- (3)ALL CABLE ASSEMBLIES SHALL BE PIM TESTED FROM THE JUMPER INTO THE ANTENNA.
- (a)IF PIM FAILS INTO AN ANTENNA, THE JUMPER SHALL BE PIM TESTED INTO A PIM–RATED LOAD, AND THE ANTENNA SHALL BE PIM TESTED SEPARATELY TO IDENTIFY THE SOURCE.
- 1) IF THE ANTENNA FAILS, A “BLUE SKY” TEST SHALL BE PERFORMED TO CHECK FOR “RUSTY BOLT” EFFECT. IF THE ANTENNA STILL FAILS, IT SHALL BE REMOVED AND TESTED ON THE GROUND TO VERIFY THE PIM IS INTERNAL TO THE ANTENNA.
- 2) A “BLUE SKY” PIM TEST REQUIRES THE ANTENNA TO HAVE A CLEAR LINE OF SIGHT, BOTH IN FRONT OF AND BEHIND THE ANTENNA.
- 3) ANY ISSUES RELATED TO FINAL POSITION OF ANTENNAS, SUCH AS PIM PASSING OFF AZIMUTH, BUT FAILING ON AZIMUTH SHALL BE BROUGHT TO THE OWNER’S ATTENTION AS SOON AS THEY ARE IDENTIFIED FOR COORDINATION/CORRECTIVE ACTION.
- E. FOR EACH ANTENNA SYSTEM UTILIZING FIBER, THE CONTRACTOR SHALL PERFORM THE FOLLOWING OUTLINED IN FIBER OPTIC SUPPLY CABLE TEST PLAN LOCATED IN EXHIBIT B.
1. END FACE INSPECTION WITH VISUAL TEST PROBE TO VERIFY END CONNECTOR FACE IS CLEAN
- a. END CONNECTORS SHALL BE INSPECTED AND CLEANED IF REQUIRED EACH TIME BEFORE CONNECTING.
2. FIBER TESTING.
- a. POWER LOSS TESTING.
- b. OPTICAL RETURN LOSS (ORL) TESTING.
- c. OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) TESTING (AS NEEDED).
- (1)AN OTDR IS REQUIRED WHEN POWER LOSS AND/OR OPTICAL LOSS TESTING FAILS.
- (2)AN OTDR IS REQUIRED FOR ANY CABLE WITH FIELD TERMINATED SPLICES.
- (3)ALL OTDR TEST WILL REQUIRE BOTH LAUNCH AND RECEIVE (TAIL) CABLES.
- F. ELECTRONIC COPIES OF ALL TEST RESULTS SHALL BE FURNISHED TO OWNER FOR REVIEW.
- 2.03 **FINAL CLEAN–UP:**
- A. CLEAN UP BUILDING AND COMPONENTS TO BE FREE OF DIRT, GREASE, OIL, OR EXCESS SEALANTS.
- B. CLEAN UP THE AREA AROUND THE SITE, REMOVING ALL TESTING EQUIPMENT, AND RESTORING THE AREA TO ORIGINAL CONDITION PRIOR TO TESTING.

END OF SECTION 338200

FIBER OPTIC SUPPLY CABLE TEST PLAN

SUMMARY

THIS FIBER TEST PLAN COVERS TESTING REQUIREMENTS FOR THE END–TO–END FINAL OPTICAL TESTING OF SINGLE–MODE AND MULTIMODE FIBER OPTIC CABLES.

TIER 1 CERTIFICATION

- A MEASUREMENT OF THE TOTAL INSERTION LOSS OF THE CABLING FROM ONE END OF THE LINK TO THE OTHER. AN OPTICAL LOSS TEST SET (OLTS) IS USED TO PERFORM TIER 1 CERTIFICATION.

TIER 2 CERTIFICATION

- PROVIDES LOSS INFORMATION FOR EACH COMPONENT OF THE LINK. AN OPTICAL TIME–DOMAIN REFLECTOMETER (OTDR) IS USED TO PERFORM TIER 2 CERTIFICATION.

TOOLS AND TEST EQUIPMENT

PROVIDE A LIST OF ALL TOOLS AND TEST EQUIPMENT THAT WILL BE USED IN THE PERFORMANCE OF THE WORK, INCLUDING MAKE, MODEL, DESCRIPTION, AND PROOF OF DATE OF LAST CALIBRATION (CALIBRATION CERTIFICATE). THE TEST EQUIPMENT USED MUST BE CALIBRATED WITHIN THE TIMEFRAME RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT OR WITHIN A YEAR IF NOT SPECIFIED BY THE MANUFACTURER.

- OPTICAL FIBER INSPECTION SCOPE
- FIBER OPTIC LAUNCH CABLE (REFER TO PROJECT STANDARDS FOR LENGTH REQUIREMENTS)
- FIBER OPTIC RECEIVE CABLE (REFER TO PROJECT STANDARDS FOR LENGTH REQUIREMENTS)
- FIBER OPTIC CLEANING MATERIALS
- OPTICAL LOSS TEST SET (OLTS)
- OPTICAL TIME DOMAIN REFLECTOMETER (OTDR)

GENERAL SAFETY REQUIREMENTS

- KEEP ALL FOOD AND BEVERAGES OUT OF WORK AREA. INGESTING FIBER PARTICLES CAN BE EXTREMELY DANGEROUS.
- ALWAYS WEAR SAFETY GLASSES AND PROTECTIVE GLOVES TO AVOID ANY GLASS

SPLINTERS.

- ALL TESTS PERFORMED ON OPTICAL FIBER CABLING THAT USE A LASER OR LED IN A TEST SET SHALL BE CARRIED OUT WITH SAFETY PRECAUTIONS IN ACCORDANCE WITH ANSI Z136.2.
- TAKE EXTRA PRECAUTIONS BEFORE INSPECTING A FIBER CABLE. TECHNICIANS MUST BE POSITIVE THAT THERE IS NO LIGHT SOURCE AT THE OTHER END OF THE CABLE.
- IF NECESSARY, LOOK AT THE FIBER FROM AN ANGLE AT LEAST 6 INCHES AWAY FROM YOUR EYE TO DETERMINE IF ANY VISIBLE LIGHT IS PRESENT.
- TECHNICIAN MUST PROPERLY HANDLE ALL BROKEN ENDS OF FIBERS AND SCRAPS OF FIBER CREATED DURING TERMINATION AND SPLICING TO AVOID PUNCTURES AND CUTS. THESE SCRAPS MUST BE DISPOSED OF PROPERLY.

GENERAL TESTING REQUIREMENTS

- TESTING SHALL BE PERFORMED ON EVERY FIBER IN THE GIVEN CABLE, DEAD–ENDED OR TERMINATED AND A TRACE ANALYSIS PREFORMED. ANOMALIES IN RESULTS MUST BE INVESTIGATED AND CORRECTED BEFORE THE CABLE IS PUT IN SERVICE.
- END FACE INSPECTION
- FIBER END FACE INSPECTION NEEDS TO BE PERFORMED BEFORE ANY NEW FIBER CONNECTION IS MADE. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE FIBER, REQUIRING CONNECTOR REPLACEMENT.
- A FIBER INSPECTION PROBE AND/OR A FIBER SCOPE SHALL BE USED TO VERIFY THE END FACE AT 250X OR 400X OF EVERY CONNECTOR TO CONFIRM IT IS CLEAN EVERY TIME THE CONNECTOR IS MATED.
- DETERMINE THE END FACE TYPE OF THE FIBER CONNECTOR. SELECT AND INSTALL THE MATCHING ADAPTER FOR THE FIBER INSPECTION PROBE.
- FLAT: *OBSOLETE CONNECTOR TYPE* WILL ONLY BE UTILIZED IN EXISTING FIBER INSTALLATIONS
- PC/UPC: BLUE OR BEIGE CONNECTORS
- APC OR MPO: GREEN CONNECTORS
- TURN ON THE FIBER INSPECTION PROBE AND INSERT THE FIBER CONNECTOR.
- THE PROBE SHALL AUTOMATICALLY CENTER THE FIBER CORE IN THE PICTURE WINDOW AND ZOOM INTO HIGH MAGNIFICATION AT RESOLUTION OF AT LEAST 350 MM X 350 MM.
- THE PROBE SHALL IDENTIFY THE FOLLOWING AREAS OF THE CONNECTOR AND CONSIDER IT PASSING WITH THE FOLLOWING CRITERIA MET PER IEC–61300–3–35 FOR SINGLE MODE FIBER CONNECTIONS.

Zone	Multimode Polished Connectors		Zone	Singlemode Polished Connectors	
	Scratches	Defects		Scratches	Defects
Core	No limit ≤ 3 μm None > 3 μm	4 ≤ 5 μm None > 5 μm	Core	None	None
Cladding	No limit ≤ 5 μm None > 5 μm	No limit < 2 μm 5 from 2 μm to 5 μm None ≥ 5 μm	Cladding	No limit ≤ 3 μm None > 3 μm	No limit < 2 μm 5 from 2 μm to 5 μm None ≥ 5 μm
Adhesive	No limit	No limit	Adhesive	No limit	No limit
Contact	No limit	None ≥ 10 μm	Contact	No limit	None ≥ 10 μm

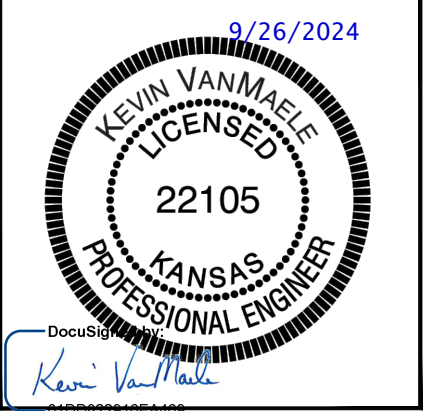
HTTPS://WWW.FLUKENETWORKS.COM/BLOG/CABLING–CHRONICLES/YOUR–FIBER–END–FACE–SCRATCH

- IF THE FIBER FAILS INSPECTION, REMOVE THE FIBER FROM THE PROBE AND CLEAN THE END FACE AGAIN. CONTINUED FAILED RESULTS WILL REQUIRE RE–TERMINATION OF THE FIBER.

– CLEANING OF FIBER CONNECTIONS

- FIBER END FACES MUST BE INSPECTED BEFORE CLEANING. IF NO CONTAMINATION IS PRESENT, CLEANING SHALL NOT BE PERFORMED. IF A FIBER END FACE IS CONTAMINATED ON INSPECTION, CLEANING IS REQUIRED TO ENSURE A READABLE TEST. CONTAMINATES MAY RESULT IN MISLEADING DATA INDICATING HIGHER LOSS THAT DOES NOT EXIST.
1. FIRST USE A STICK, SWAB, OR CLICK STYLE CLEANER TO CLEAN THE CONNECTOR.
2. IF THIS METHOD DOES NOT WORK, REMOVE THE CONNECTOR FROM THE BACK OF THE PANEL AND USE A LINT FREE WIPE, CLOTH, OR TISSUE AND A WET/DRY METHOD.
3. IF MOVING OF FIBER SPLICE TRAYS OR CASSETTES IS REQUIRED, CARE SHALL BE PROVIDED TO NOT KINK THE BUFFER TUBES. THEY ARE RIGID AND SUSCEPTIBLE TO KINKING AND CRACKING OF ALL FIBERS WITHIN.
4. BEFORE REMOVING A CONNECTOR FROM THE BACK OF THE PANEL CARE SHALL BE PROVIDED TO VERIFY THE CORRECT FIBER IS BEING REMOVED. FIBER COLORS MAY NOT BE AS EXPECTED.
5. WHEN CLEANING THE CONNECTOR DO NOT PLACE STRAIN ON OTHER FIBERS IN THE PANEL WHICH COULD DAMAGE THEM.
6. AFTER CLEANING, YOU MUST RE–INSPECT THE FIBER END FACE. IF NO CONTAMINATION IS PRESENT, PROCEED TO THE NEXT TESTING PROCEDURE. IF CONTAMINATION PERSISTS, REPEAT STEPS 1–6 IN THIS SECTION UNTIL CONTAMINATION IS NO LONGER PRESENT.

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PE CERTIFICATE OF AUTHORIZATION # E-571			
ENGINEER:	PE#:	DISCIPLINE:	
KMJ KEVIN M. VANMAELE	22105	CIVIL	C
REJ ROBERT E. JENSEN	16096	CIVIL	C
CG CHRISTOPHER GIANNOTTI	26673	CIVIL	C
SDK SHELTON D. KEISLING	13654	ELECTRICAL	E
TMS TERRANCE M. SUPER	9250	ELECTRICAL	E



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APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

SPECIFICATIONS
(2 OF 6)

SHEET #:

SP-1.1

POWER LOSS TESTING

- ☐ POWER LOSS TESTING IS USED TO EVALUATE THE PERFORMANCE OF FIBER OPTIC COMPONENTS AND SYSTEMS BY MEASURING THE LOSS OF POWER OVER THE COMPONENT/SYSTEM. AS FIBER OPTIC COMPONENTS ARE BEING DEVELOPED, THEY ARE POWER LOSS TESTED TO EVALUATE THEIR PERFORMANCE SPECIFICATIONS TO ALLOW DESIGNERS OF NETWORKS TO PROPERLY DESIGN THEIR FIBER OPTIC SYSTEMS.
- ☐ A POWER LOSS BUDGET IS THE ESTIMATED ACCEPTABLE POWER LOSS OF A COMPONENT OR SYSTEM. POWER LOSS BUDGETS CAN BE CALCULATED USING COMPONENT SPECIFICATIONS. IF THE POWER LOSS TEST EXCEEDS THAT OF THE POWER LOSS BUDGET, THEN THE SYSTEM AND TEST HAS FAILED.

POWER LOSS TEST EQUIPMENT

1. OPTICAL POWER METER CALIBRATED AT THE SAME WAVELENGTH AS THE SOURCE OUTPUT.
2. TEST SOURCE APPROPRIATE FOR THE FIBER BEING TESTED (MULTIMODE, SINGLE MODE...).
3. REFERENCE CABLE, WITH APPROPRIATE CONNECTORS, THAT IS SAME FIBER TYPE AND SIZE AS THE LAUNCH CABLE.

POWER LOSS TEST PROCEDURES

1. ICIC – INSPECT CLEAN INSPECT CONNECT

α.CLEAN ALL CONNECTORS AND ADAPTERS PRIOR TO TEST.
2. TURN ON EQUIPMENT AND ALLOW IT TO RUN FOR 1–2 MINUTES TO STABILIZE THE LIGHT SOURCE.
3. ATTACH REFERENCE CABLE TO SOURCE AND OPTICAL POWER METER. REFERENCE CABLE SHOULD NOT BE DISCONNECTED FROM SOURCE FOR THE DURATION OF THE TEST.
4. USING THE OPTICAL POWER METER SET A “0 DB” REFERENCE.
5. ATTACH REFERENCE CABLE TO THE FIBER OPTIC COMPONENT/SYSTEM UNDER TEST AND DOCUMENT POWER LOSS MEASUREMENT.
6. COMPARE POWER LOSS MEASUREMENT TO POWER LOSS BUDGET TO DETERMINE IF THE TEST WAS SUCCESSFUL.

OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) TESTING

- ☐ OPTICAL TIME DOMAIN REFLECTOMETER (OTDR) TESTING IS USED TO DETECT DISTINCT REFLECTIVE EVENTS OF THE OPTICAL CONNECTION DUE TO KINKS, BAD FUSION SPLICES, OR OTHER DEFECTS SUCH AS DIRTY END–FACE CONNECTORS. OTDR TEST SETS TO BE UTILIZED MUST HAVE CALIBRATION CERTIFICATIONS NO MORE THAN 2 YEARS.
- ☐ FUSION SPLICE POINTS SHALL NOT HAVE ATTENUATION OF MAGNITUDE HIGHER THAN SPECIFIED BELOW. SPLICES EXHIBITING POINT LOSS OF A GREATER MAGNITUDE SHALL BE RE–SPLICED UNTIL TEST RESULTS FALL WITHIN SPECIFIED LIMITS.

▪ SINGLE DIRECTION: 0.3 DB

▪ BI–DIRECTIONAL AVERAGE: 0.1 DB

OTDR TEST SETTINGS

- ☐ A REFERENCE LAUNCH CABLE (SOMETIMES CALLED PULSE SUPPRESSOR) AND RECEIVE CABLE OF 1 KM OR LONGER AND OF KNOWN QUALITY SHALL BE USED FOR ALL MEASUREMENTS. THE SAME LENGTH MUST BE USED ON BOTH ENDS OF THE PATH. A SHORTER LAUNCH CABLE CAN BE USED IF THE OTDR HAS VARIABLE PULSE WIDTH CONTROL AND CAN OVERLAY MULTIPLE TRACES WITH NARROW PULSE WIDTHS TO VISUALIZE THE BEGINNING THE CABLE AND LONGER PULSES TO VISUALIZE THE END OF THE CABLE.
- ☐ WAVELENGTHS: ALL TESTS SHALL BE PERFORMED AT 1310 NM, 1550 NM, AND 1625 NM.
- ☐ PULSE WIDTH: USE THE SMALLEST PRACTICAL PULSE WIDTH TO OPTIMIZE RESOLUTION. THE IDEAL PULSE IS ONE THAT WILL REACH THE FIBER END WITH MINIMAL TRACE NOISE AT THE FAR END AND SHOWS 5–10 DB DYNAMIC RANGE (AS MEASURED FROM THE POINT THAT THE TRACE MEETS THE FIBER END REFLECTION DOWN TO THE NOISE FLOOR).
- ☐ SHORT ACQUISITION: ON ANY FIBER >40KM A SHORT ACQUISITION OTDR SHOT (2–10NS PULSE WIDTH AT 2– 5KM RANGE) WILL BE TAKEN IN ADDITION TO THE FULL–LENGTH SHOT. THE PURPOSE IS TO ISOLATE THE FIRST CONNECTOR AT THE END OF THE LAUNCH REEL AND BEGINNING OF THE FIBER THROUGH THE DEAD ZONE OF THE FULL–LENGTH PULSE.
- ☐ DISTANCE: SET DISTANCE PER THE LENGTH OF THE FIBER CABLE UNDER TEST.
- ☐ FILTER OUT ONLY FUSION SPLICE LOSS RESULTS UNDER 0.05 DB.
- ☐ SET PASS FAIL CRITERIA FOR 0.1DB IN BOTH DIRECTIONS OF EACH FIBER OR 0.3DB IN A SINGLE DIRECTION.

- ☐ SET A AND B MARKERS AT THE ENDS OF THE FIBER UNDER TEST REMOVING LAUNCH CABLES AT BOTH ENDS.
- ☐ THE RECORDED TRACE FILES SHALL BE REVIEWED FOR DISTINCT POINT LOSSES (ATTENUATION) OR REFLECTIONS. ANY POINT THAT IS EQUAL TO OR GREATER THAN .10 DB LOSS WHEN MEASURED BI–DIRECTIONALLY BY THE OTDR, SHALL BE INVESTIGATED FOR CAUSE AND EXPLANATION NOTED ON SUBMITTALS.

OTDR TEST PROCEDURE

INITIAL SET–UP

1. POWER ON THE OTDR AND ENABLE AUTO–TEST MODE.
2. INSPECT, CLEAN (IF NECESSARY), AND CONNECT THE OTDR TEST PORT TO ONE END OF THE LAUNCH CABLE. LEAVE THE OTHER END OF THE LAUNCH CABLE DISCONNECTED AND CAPPED.
3. EXECUTE AN AUTO–TEST ON THE OTDR.
4. VERIFY THE RESULTING TRACE SHOWS ACCURATE LAUNCH CONDITION. TRACE SHOULD BE ONLY AS LONG AS THE LAUNCH CABLE, WITH A REFLECTION AT THE END.
5. SAVE THE RESULTING TRACE FILE WITH THE NAME “INITIAL” FOLLOWED BY THE DATE. (EX. “INITIAL 2022– 0X–XX.TRC”

TEST PROCEDURE

1. POWER ON THE OTDR AND CHECK THE DATE AND TIME SETTINGS.
2. INSPECT AND CLEAN (IF NECESSARY) THE PRIMARY OTDR EQUIPMENT TEST PORT.
3. INSPECT, CLEAN (IF NECESSARY), AND CONNECT ONE END OF THE LAUNCH CABLE TO THE PRIMARY OTDR EQUIPMENT TEST PORT.
4. INSPECT AND CLEAN (IF NECESSARY) THE OTHER END OF THE LAUNCH CABLE.
5. INSPECT, CLEAN (IF NECESSARY), AND CONNECT THE STRAND UNDER TEST TO THE END OF THE LAUNCH CABLE.
6. INSPECT AND CLEAN (IF NECESSARY) THE OTHER END OF THE STRAND UNDER TEST.
7. INSPECT, CLEAN (IF NECESSARY), AND CONNECT ONE END OF THE RECEIVE CABLE TO END OF THE FIBER STRAND UNDER TEST.
8. INSPECT AND CLEAN (IF NECESSARY) THE OTHER END OF THE RECEIVE CABLE.
9. INSPECT AND CLEAN (IF NECESSARY) THE SECONDARY OTDR EQUIPMENT TEST PORT.
10. CONNECT THE OTHER END OF THE RECEIVE CABLE TO THE SECONDARY OTDR EQUIPMENT TEST PORT.
11. CONFIGURE THE OTDR SETTINGS FOR THE LOCAL ORIGIN (SITE A) AND FAR END DESTINATION (SITE B).
12. EXECUTE A 1310 NM, 1550 NM, AND 1625 NM AUTO–TEST ON THE OTDR.
13. RECORD THE TEST DETAILS IN THE SHEET PROVIDED.
14. VERIFY THE RESULTING TRACE SHOWS ACCURATE TRACE DETAILS. DETECTED LENGTH SHOULD CLOSELY MATCH THE EXPECTED STRAND LENGTH.
15. SAVE THE RESULTING TRACE FILE WITH THE NAME IN THE FOLLOWING FORMAT: [PRIMARY OTDR LOCATION NAME]–[FAR END LOCATION]–[STRAND NUMBER].TRC
16. REPEAT ABOVE STEPS UNTIL TEST RESULTS FALL IN ACCEPTABLE RANGE.
17. REPEAT ABOVE STEPS FOR ALL STRANDS UNDER TEST.

OPTICAL RETURN LOSS (ORL) TESTING

- ☐ OPTICAL RETURN LOSS (ORL) IS THE SUM OF REFLECTIONS IN AN OPTICAL PATH GIVEN IN UNITS OF DB AND ALWAYS POSITIVE VALUES, WITH VALUES CLOSER TO 0 DB REPRESENTING MORE TOTAL LIGHT REFLECTED. LIGHT RETURNS INTO ITS ORIGINATING MATERIAL BOTH INTRINSICALLY, INSIDE FIBER OPTIC CABLE, AND EXTRINSICALLY, CONNECTORS, WHEN IT ENCOUNTERS THE INTERFACE OF TWO MATERIALS WITH DIFFERENT REFRACTIVE INDICES. THESE INTERFACES CAN BE CREATED BY MOLECULAR OR OPTICAL IMPURITIES INTRODUCED DURING MANUFACTURING.
- ☐ THE MAXIMUM OPTICAL REFLECTANCE IS LIMITED BY WHERE THE SIGNAL SATURATES AT THE TOP OF THE TRACE AND THE MINIMUM OPTICAL REFLECTANCE IS DETERMINED BY WHERE THE SIGNAL IS TOO SMALL RELATIVE TO THE NOISE. IN TURN, ORL IS LIMITED BY THESE MAXIMUM AND MINIMUM OPTICAL REFLECTANCE POINTS.
- ☐ MEASURING REFLECTANCE AND ORL CAN BE ACCOMPLISHED WITH AN OPTICAL TIME DOMAIN REFLECTOMETER (OTDR). SEE OTDR SECTION FOR PROPER OTDR TEST PROCEDURE. THE OTDR PROVIDES AN EVENT TABLE WHERE ALL THE REFLECTION VALUES AT AN EVENT ARE STORED. THE OPTICAL RETURN LOSS CAN BE CALCULATED BY THE INVERSE SUM OF ALL THE REFLECTIONS AT AN EVENT ACROSS THE SYSTEM THAT IS BEING TESTED.

END OF SECTION

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9/26/2024

KEVIN VANMAELE

LICENSED

22105

KANSAS

PROFESSIONAL ENGINEER

DocuSign Envelope ID: 31B20023-10E4-4103-8000-000000000000

Kevin VanMaele

ENGINEERING LICENSE

STATE OF KANSAS

PE CERTIFICATE OF AUTHORIZATION # E-571

ENGINEER:

PE#:

DISCIPLINE:

KMV KEVIN M. VANMAELE 22105 CIVIL C

REJ ROBERT E. JENSEN 16096 CIVIL C

CG CHRISTOPHER GIANNOTTI 26673 CIVIL C

SDK SHELTON D. KEISLING 13654 ELECTRICAL E

TMS TERRANCE M. SUPER 9250 ELECTRICAL E

PLANS PREPARED FOR:



PLANS PREPARED BY:



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	DESCRIPTION	DATE	BY	REV
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REISSUED FOR CLIENT COMMENTS		09/26/24	WAG	B
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APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

SHEET #:

SPECIFICATIONS
(3 OF 6)

SP-1.2

GENERAL REQUIREMENTS

PART 1: GENERAL

1.1 INTENT:

- A. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION. PLANS ARE NOT TO BE SCALED.
- B. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY, HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.
- C. THE INTENTION OF DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
- D. CONFLICTS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING MATERIALS OR DOING ANY WORK. NO COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND THOSE ON THE DOCUMENTS. ANY DISCREPANCY SHALL BE REPORTED TO THE OWNER OR THEIR AGENT FOR CONSIDERATION.

1.2 LICENSING REQUIREMENTS:

- A. THE CONTRACTOR IS RESPONSIBLE FOR PROCUREMENT AND MAINTAINING ALL APPLICABLE LICENSES AND BONDS.

1.3 STORAGE:

- A. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION THAT DOES NOT OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

1.4 CLEAN UP:

- A. THE CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH AT ALL TIMES.

1.5 QUALITY ASSURANCE:

- A. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.

PART 2: PRODUCTS – NOT APPLICABLE TO THIS SECTION

PART 3: EXECUTION – NOT APPLICABLE TO THIS SECTION

END OF SECTION

COMMUNICATIONS/ANTENNA’S

PART 1: GENERAL

1.1 WORK INCLUDED:

- A. ANTENNA AND FEEDLINE CABLES ARE FURNISHED BY OWNER UNDER SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND PROPERTY FROM HAZARDOUS EXPOSURE TO OVERHEAD DANGER.
- B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND OWNER SPECIFICATIONS.
- C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
- D. INSTALL FURNISHED GALVANIZED STEEL WAVEGUIDE LADDER AS INDICATED ON DRAWINGS.
- E. THE CONTRACTOR SHALL REFERENCE THE SOW DOCUMENTS FOR ALL TESTING REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE FREQUENCY DOMAIN REFLECTOMETER (FDR) TEST RESULTS TO THE CONSTRUCTION MANAGER AND OWNER WITHIN ONE WEEK OF COMPLETION.
- F. INSTALL FEEDLINE CABLES AND TERMINATORS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER’S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER’S REQUIREMENTS. TERMINATE ALL FEEDLINE CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
- G. ANTENNA AND FEEDLINE CABLE GROUNDING:

1. ALL FEEDLINE CABLE GROUNDING CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREW CONNECTOR/SPLICE WEATHERPROOFING KITS OR APPROVED EQUAL.

2. ALL FEEDLINE CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF FEEDLINE CABLE (NOT WITHIN BENDS)

1.2 RELATED WORK:

- A. FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:

1. FLASHING OF OPENING INTO OUTSIDE WALLS.

2. SEAL AND CAULK ALL OPENINGS.

3. PAINTING.

4. CUTTING AND PATCHING.

1.3 REQUIREMENTS OF REGULATOR AGENCIES:

- A. FURNISH UL LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE, INSTALL IN CONFORMANCE WITH UL STANDARDS WHERE APPLICABLE.
- B. INSTALL ANTENNA, ANTENNA CABLES, AND GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND ANY SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

1. TIA–222 (TELECOMMUNICATIONS INDUSTRY ASSOCIATION) – STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.

2. FAA (FEDERAL AVIATION ADMINISTRATION ADVISORY) – CIRCULAR AC 70/7460–1K, OBSTRUCTION MARKING AND LIGHTING.

3. FCC (FEDERAL COMMUNICATIONS COMMISSION) – RULES AND REGULATIONS OBSTRUCTION MARKING AND LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES AND HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.

4. AISC (AMERICAN INSTITUTE OF STEEL CONSTRUCTION) – SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.

5. NEC (NATIONAL ELECTRICAL CODE) – FOR TOWER LIGHTING KITS.

6. UL (UNDERWRITERS LABORATORIES) – APPROVED ELECTRICAL PRODUCTS.

7. IN ALL CASES, THE FAA RULES AND THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.

8. LIFE SAFETY CODE NFPA, LATEST EDITION.

PART 2: PRODUCTS – NOT APPLICABLE TO THIS SECTION

PART 3: EXECUTION – NOT APPLICABLE TO THIS SECTION

END OF SECTION

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SDK SHELTON D. KEISLING

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ELECTRICAL

E

TMS TERRANCE M. SUPER

9250

ELECTRICAL

E

PLANS PREPARED FOR:



PLANS PREPARED BY:



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SPECIFICATIONS
(4 OF 6)

SP-2.0

ELECTRICAL

PART 1: GENERAL

1.1 GENERAL CONDITIONS:

- A. THE CONTRACTOR SHALL INSPECT THE SITE WHERE THIS WORK IS TO BE PERFORMED AND FULLY FAMILIARIZE THEMSELVES WITH ALL CONDITIONS RELATED TO THIS PROJECT.
- B. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND LICENSES AND SHALL MAKE ALL DEPOSITS AND PAY ALL FEES REQUIRED FOR THE PERFORMANCE OF WORK UNDER THIS SECTION.
- C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWINGS SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES:

- A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES.

1.3 REFERENCES:

- A. THE PUBLICATIONS LISTED BELOW FORM PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS NOTED OTHERWISE. EXCEPT AS MODIFIED BY THE REQUIREMENTS SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE PUBLICATIONS.
1. NEC (NATIONAL ELECTRICAL CODE)
2. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
3. IEEE (INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS)
4. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
5. ICEA (INSULATED CABLE ENGINEERS ASSOCIATION)
6. NEMA (NATIONAL ELECTRICAL MANUFACTURER’S ASSOCIATION)
7. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
8. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
9. UL (UNDERWRITERS LABORATORIES, INC.)

1.4 SCOPE OF WORK:

- A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL AND ASSOCIATED SERVICES REQUIRED TO COMPLETELY CONSTRUCT AND LEAVE READY FOR OPERATION SYSTEMS AS SHOWN ON THE DRAWINGS AND HEREIN DESCRIBED.
- B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.
- D. THE CONTRACTOR SHALL FURNISH TO THE OWNER, CERTIFICATES OF FINAL INSPECTION AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION.

PART 2: PRODUCTS

2.1 GENERAL:

- A. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE NEW, FREE FROM DEFECTS AND OF THE BEST QUALITY NORMALLY USED FOR THE PURPOSE IN GOOD COMMERCIAL PRACTICE.
- B. ALL MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.
- C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
- D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING RATING EQUAL TO OR GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT.

2.2 MATERIALS AND EQUIPMENT:

- A. CONDUIT:

1. RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE HOT–DIP GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.

2. FLEXIBLE METAL CONDUIT SHALL BE GALVANIZED, ZINC–COATED STEEL, PVC COATED FOR OUTDOOR APPLICATIONS.

3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION TYPE AND WATERTIGHT.

4. NON–METALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC, HEAVY–WALL RIGID WITH SOLVENT–CEMENT–TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.
- B. WIRE AND CABLE:

1. WIRE AND CABLE SHALL BE FLAME–RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN–2, 600 VOLT, SIZES AS INDICATED, #12 AWG MINIMUM.

2. #10 AWG AND SMALLER CONDUCTORS SHALL BE SOLID AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.

3. SOLDERLESS, PRESSURE–TYPE CONNECTORS CONSTRUCTED OF HIGH–STRENGTH, NON–CORRODIBLE, TIN–PLATED COPPER DESIGNED TO FURNISH HIGH–PULLOUT STRENGTH AND HIGH CONDUCTIVITY JOINTS SHALL BE USED.

4. SUPPORT GRIPS SHALL BE SINGLE WEAVE, CLOSED MESH, HIGH–GRADE, NON–MAGNETIC, TIN–COATED BRONZE CAPABLE OF SUPPORTING TEN TIMES THE CABLE DEAD WEIGHT, HUBBELL KELLEMS OR APPROVED EQUAL.
- C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD–FRONT, QUICK–MAKE, QUICK–BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCKED WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, SQUARE D CLASS 3110 OR APPROVED EQUAL.
- D. SYSTEM GROUNDING:

1. GROUNDING CONDUCTOR SHALL BE SOLID TINNED BARE COPPER, SIZE AS INDICATED, EXCEPT ABOVE GROUND GROUNDING CONDUCTORS SHALL BE STRANDED INSULATED.

2. GROUND BUSSES SHALL BE GALVANIZED STEEL BARS OF RECTANGULAR CROSS SECTION.

3. CONNECTORS SHALL BE HIGH–CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO–HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS.

4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.

5. GROUND RODS SHALL BE COPPER–CLAD STEEL WITH HIGH–STRENGTH STEEL CORE AND ELECTROLYTIC–GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, 3/4" x 10'–0".
- E. OTHER MATERIALS:

1. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.

STAMP:

9/26/2024

SHELTON D. KEISLING
LICENSED
13654
KANSAS
PROFESSIONAL ENGINEER

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Shelton Keisling

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PLANS PREPARED FOR:

evergy™

PLANS PREPARED BY:

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SP-3.0

PART 3: EXECUTION

3.1 GENERAL:

- A. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER’S RECOMMENDATIONS.
- B. EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

3.2 LABOR AND WORKMANSHIP:

- A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE DONE BY EXPERIENCED MECHANICS OF THE PROPER TRADES.
- B. ALL ELECTRICAL EQUIPMENT FURNISHED SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.
- C. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

3.3 COORDINATION:

- A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER–FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

3.4 INSTALLATION:

- A. CONDUIT:
- ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS HEREIN SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4” NOMINAL SIZE SHALL BE USED.
 - PROVIDE RGS CONDUIT FOR ALL EXPOSED, EXTERIOR CONDUIT.
 - PROVIDE SCHEDULE 40 PVC OR RGS CONDUIT BELOW GRADE, 1” MINIMUM, UNLESS NOTED OTHERWISE. ALL 90 DEGREE BENDS TO ABOVE GRADE SHALL BE RGS. MINIMUM BURIAL DEPTH SHALL BE 24” CLEAR TO TOP OF CONDUIT, UNLESS NOTED OTHERWISE.
 - USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION IS NOT DESIRABLE FOR REASONS OF EQUIPMENT MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUIDTIGHT, PVC COATED FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS.
 - INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORTS TO ALLOW FOR EXPANSION AND CONTRACTION.
 - A RUN OF CONDUIT BETWEEN BOXES OR FITTINGS SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER–BENDS INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE BOX OR FITTING. THE RADIUS OF BENDS SHALL NEVER BE SHORTER THAN THAT OF THE CORRESPONDING TRADE ELBOW.
 - WHERE CONDUIT HAS TO BE CUT IN THE FIELD, IT SHALL BE CUT SQUARE WITH A PIPE CUTTER USING CUTTING KNIVES.
 - ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF WIRE OR CABLE. CLEAR ALL BLOCKAGES AND REMOVE BURRS, DIRT, AND DEBRIS.
 - INSTALL PULL STRINGS IN ALL EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END WITH ITS DESTINATION.
 - PROVIDE INSULATED GROUNDING BUSHINGS FOR ALL CONDUITS STUBBED INTO EQUIPMENT ENCLOSURES OR STUBBED OUT FOR FUTURE USE BY OTHERS.
 - CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
 - INSTALL 2” ORANGE DETECTABLE TAPE 12” ABOVE ALL UNDERGROUND CONDUIT AND WIRE.
 - CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
- B. WIRE AND CABLE:

DESCRIPTION	120/240V	208Y/120V	480Y/277V
PHASE A	BLACK	BLACK	BROWN
PHASE B	RED	RED	ORANGE
PHASE C		BLUE	YELLOW
NEUTRAL	WHITE	WHITE	GRAY
GROUND	GREEN	GREEN	GREEN

- SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAYS WITH PRESSURE–TYPE CONNECTORS.
- PULLING LUBRICANTS SHALL BE SOAPSTONE POWDER, POWDERED TALC, OR A COMMERCIAL PULLING COMPOUND. NO SOAP SUDS, SOAP FLAKES, OIL, OR GREASE SHALL BE USED, AS THESE MAY BE HARMFUL TO CABLE INSULATION. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CABLE TO AVOID SCORING THE CONDUIT.
- CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES, EQUIPMENT, ETC. TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS, AND SHALL BE PROTECTED FROM MECHANICAL INJURY AND FROM MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS ARE PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR’S EXPENSE.

C. DISCONNECT SWITCHES:

- INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUND AS INDICATED.

D. GROUNDING:

- ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
- PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEMS INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
- ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
- TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER’S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER’S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER’S INSTRUCTIONS.
- ALL GROUND CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC–WELDED CONNECTIONS SHALL BE APPROVED BY THE CONSTRUCTION INSPECTOR BEFORE BEING PERMANENTLY CONCEALED.
- APPLY CORROSION–RESISTANT FINISH TO FIELD CONNECTIONS, AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE COPPER–BASED “NO–OX” OR APPROVED EQUAL.
- A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS
- BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE #6 AWG GROUNDING CONDUCTOR TO A GROUND BUS OR GROUNDING LUG IN ENCLOSURE.
- DIRECT BURIED GROUND CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 30” BELOW GRADE, UNLESS NOTED OTHERWISE.
- ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSULATED OR INSTALLED IN PVC CONDUIT.
- INSTALL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
- DRIVE GROUND RODS UNTIL TOPS ARE 30” BELOW FINAL GRADE.
- GROUNDING CONDUCTOR TO EQUIPMENT GROUND LUGS:
 - BOLTED TO EQUIPMENT HOUSING WITH STAINLESS STEEL BOLTS AND LOCK WASHERS.
 - ALL EQUIPMENT TO BE GROUNDED SHALL BE FREE OF PAINT OR ANY OTHER MATERIAL COVERING BARE METAL AT THE POINT OF CONNECTION.

3.5 ACCEPTANCE TESTING:

(REFER TO TESTING STANDARDS IN SOW DOCUMENT)

- A. PROVIDE PERSONNEL AND EQUIPMENT, MAKE REQUIRED TESTS, AND SUBMIT TEST REPORTS UPON COMPLETION OF TESTS.
- B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NONCOMPLYING ITEMS SHALL BE REMOVED FROM THE JOBSITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE OF SUCH NON–COMPLIANCE.

C. TEST PROCEDURES:

- ALL FEEDERS SHALL HAVE THEIR INSULATION TESTED AFTER INSTALLATION, BUT BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. INVESTIGATE ANY VALUES LESS THAN 50 MEGAOHMS.
- PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
- MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE WIRES AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
- PERFORM GROUND TEST TO MEASURE GROUND RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3–POINT “FALL–OF–POTENTIAL” METHOD. PROVIDE PLOTTED TEST VALUES & LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

END OF SECTION

END OF SPECIFICATION

STAMP:

9/26/2024

SHELTON D. KEISLING

LICENSED

13654

KANSAS

PROFESSIONAL ENGINEER

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Shelton Keisling

ENGINEERING LICENSE
STATE OF KANSAS
PE CERTIFICATE OF AUTHORIZATION # E-571
ENGINEER: PE#: DISCIPLINE:
KJV KEVIN M. VANMAELE 22105 CIVIL C
REJ ROBERT E. JENSEN 16096 CIVIL C
CG CHRISTOPHER GIANNOTTI 26673 CIVIL C
SDK SHELTON D. KEISLING 13654 ELECTRICAL E
TMS TERRANCE M. SUPER 9250 ELECTRICAL E

PLANS PREPARED FOR:



PLANS PREPARED BY:



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SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	08/27/24	WAG	A
REISSUED FOR CLIENT COMMENTS	09/26/24	WAG	B
ISSUED FOR CONSTRUCTION	09/26/24	WAG	0

APPLICANT SITE NAME:

WEST GARDNER

APPLICANT SITE NUMBER:

KS1019

SITE ADDRESS:

18827 DILLIE RD
EDGERTON, KS 66021

SHEET DESCRIPTION:

SPECIFICATIONS
(6 OF 6)

SHEET #:

SP-3.1