

# BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

In the Matter of the Application of Ameren )  
Transmission Company of Illinois for a )  
Certificate of Convenience and Necessity )  
Authorizing it to Operate and Maintain an )  
Interconnection of the High Prairie Wind )  
Project with the Mark Twain Transmission )  
Line )

**File No. EA-2021-0167**

## **ORDER DIRECTING NOTICE AND SETTING DEADLINES FOR INTERVENTION APPLICATIONS AND STAFF'S RECOMMENDATION**

Issue Date: December 15, 2020

Effective Date: December 15, 2020

On December 11, 2020, Ameren Transmission Company of Illinois (ATXI) filed its application seeking an order declining jurisdiction or, alternatively, requesting a certificate of convenience and necessity to operate and maintain interconnection facilities in Schuyler County, Missouri. ATXI's application states the facilities generally consist of a switchyard connecting High Prairie Wind Generation Facility with ATXI's Mark Twain Transmission Line. ATXI requests expedited treatment and a Commission order within 90 days of its application. Finally, ATXI requests a waiver of the Commission's 60-day notice requirement under 20 CSR 4240-4.017.

The Commission will direct notice be given and set a deadline for intervention applications. The Commission will also direct Staff to file a recommendation with regard to ATXI's application.

### **THE COMMISSION ORDERS THAT:**

1. The Commission's data center shall provide notice of this order and ATXI's application to the county commission for Schuyler County, Missouri.

2. The Commission's Public Policy and Outreach Department shall provide notice of ATXI's application to members of the General Assembly representing residents of Schuyler County, Missouri.

3. The Commission's Public Policy and Outreach Department shall provide notice of ATXI's application to news media serving residents of Schuyler County, Missouri.

4. Applications for intervention shall be filed no later than January 4, 2021. Any such filing shall be submitted through the Commission's electronic filing information system or delivered to:

Secretary  
Missouri Public Service Commission  
P. O. Box 360  
Jefferson City, MO 65102

5. No later than January 11, 2021, the Commission's Staff shall file either a recommendation regarding ATXI's application or a status report advising when it expects to file a recommendation.

6. This order shall be effective when issued.



**BY THE COMMISSION**

A handwritten signature in black ink that reads "Morris L. Woodruff".

Morris L. Woodruff  
Secretary

Jana C. Jacobs, Regulatory Law Judge,  
by delegation of authority pursuant to  
Section 386.240, RSMo (2016).

Dated at Jefferson City, Missouri,  
on this 15th day of December, 2020.

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

|                                            |   |                        |
|--------------------------------------------|---|------------------------|
| In the Matter of the Application of Ameren | ) |                        |
| Transmission Company of Illinois for a     | ) |                        |
| Certificate of Convenience and Necessity   | ) |                        |
| Authorizing it to Operate and Maintain an  | ) | Case No. EA-2021-_____ |
| Interconnection of the High Prairie Wind   | ) |                        |
| Project with the Mark Twain Transmission   | ) |                        |
| Line.                                      | ) |                        |

**APPLICATION OF AMEREN TRANSMISSION COMPANY OF ILLINOIS FOR  
ORDER DECLINING JURISDICTION OR, ALTERNATIVELY, GRANTING A CCN  
TO OPERATE AND MAINTAIN AN INTERCONNECTION; AND MOTION FOR  
EXPEDITED TREATMENT AND FOR WAIVER OF 60-DAY NOTICE  
REQUIREMENT**

COMES NOW Ameren Transmission Company of Illinois ("ATXI"), pursuant to Section 393.170, 20 CSR 4240-2.060, 20 CSR 4240-20.045, and 20 CSR 4240-4.017, and hereby submits its Application for an order declining jurisdiction or, alternatively, for a certificate of convenience and necessity ("CCN") to operate and maintain Interconnection Facilities generally consisting of a 345 kilovolt ("kV") switchyard in Schuyler County, Missouri that connect the High Prairie Wind Generation Facility ("High Prairie") with the Applicant's 345 kV electric transmission line, which is commonly referred to as the "Mark Twain Transmission Line" or the "Mark Twain Project"; and its motion for a waiver of the 60-day notice requirement under 20 CSR 4240-4.017 and for expedited treatment of its Application pursuant to 20 CSR 4240-2.080(14).

**I. APPLICANT**

1. ATXI is a corporation organized under the laws of Illinois with its principal office at 1901 Chouteau Avenue, St. Louis, Missouri 63103. ATXI is duly authorized to do business in

Missouri. A certified copy of ATXI's Certificate of Corporate Good Standing in Illinois and a certified copy of its Authority to Conduct Business in the State of Missouri are attached hereto as **Appendix A** and **Appendix B**, respectively.

2. ATXI is engaged in the construction, ownership, and operation of interstate transmission lines and related facilities that transmit electricity for the public use, including in Missouri.

3. ATXI states that it has no pending actions or final unsatisfied judgments or decisions against it from any state or federal court or agency within the past three (3) years which involve customer service or rates. ATXI has no annual reports or assessment fees that are overdue.

4. All correspondence, communications, notices, orders, and decisions of the Commission with respect to this matter should be sent to the undersigned counsel and to:

Eric Dearmont  
Director, Reg. Affairs & Interconnection Policy  
AMEREN SERVICES COMPANY  
One Ameren Plaza  
1901 Chouteau Avenue  
St. Louis, Missouri 63166  
(T) (314) 554-3543  
[EDearmont@ameren.com](mailto:EDearmont@ameren.com)

5. In 2018, ATXI obtained a CCN from the Commission to construct, finance, own, and operate the Mark Twain Transmission Line. See *Order Approving Unanimous Stipulation and Agreement*, File No. EA-2017-0345 (Jan. 10, 2018) ("Mark Twain Order"). Because ATXI has no retail customers, the Mark Twain Order granted ATXI waivers of 20 CSR 4240-3.145, .165, .175, and .190(1), (2), (3)(A)-(D).<sup>1</sup>

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<sup>1</sup> The rules that were waived were formerly codified in Chapter 3 of Division 240 of the Department of Economic Development's rules, and pertain to retail rate schedules (3.145), annual reports (3.165), depreciation studies (3.175), and certain outage and other reporting applicable to retail load serving entities (3.190). These rules have

## II. THE INTERCONNECTION FACILITIES

6. In approving ATXI's CCN for the Mark Twain Transmission Line, the Commission stated that the line was "needed to integrate wind energy in Missouri and to assist Missouri public utilities in complying with Missouri's Renewable Energy Standard" (the "RES"). Mark Twain Order, p. 3. Among the areas that are traversed by the Mark Twain Project is an area rich in wind resources, identified by MISO as RGOS Zone 7 (in Schuyler and Adair Counties). Direct Testimony of Midcontinent Independent System Operator, Inc. ("MISO") witness J.T. Smith, EFIS Item No. 16 (Schedule JTA-1 p. 4 of 90), File No. EA-2017-0345.<sup>2</sup>

7. In File No. EA-2018-0202, the Commission issued to Ameren Missouri a CCN for High Prairie, which is a 400 mega-watt ("MW") wind generation facility located within the above-referenced RGOS Zone, and which is primarily located in Schuyler County, Missouri. The CCN authorized Ameren Missouri to construct High Prairie pursuant to a Build-Transfer Agreement ("BTA") with TG High Prairie Holdings, LLC. It is ATXI's understanding that Ameren Missouri is expected to close on its purchase of High Prairie this month, and that it will begin commercial operation upon closing, meaning it will start producing energy and capacity revenues to be flowed-through to Ameren Missouri's customers via Ameren Missouri's RESRAM, and will produce RECs to be used by Ameren Missouri to comply with the RES.<sup>3</sup> In order to deliver its anticipated 400 MW to load, High Prairie must interconnect to 345 kV transmission in its area. To that end, High Prairie is interconnected to Mark Twain via an-ATXI-

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since been re-codified (when state administrative changes placed the Commission in the Department of Commerce and Insurance) as 20 CSR 4240-20.105 (retail rate schedules), 20 CSR 4240-10.145 (annual reports), 20 CSR 4240-3.175 (depreciation studies), and 20 CSR 4240-3.190 (certain outage and other reporting applicable to retail load serving entities).

<sup>2</sup> Submitted with MISO's Motion for Leave to File, which was sustained by the Presiding Officer. Tr., Vol. I, p. 8, l. 22 to p. 9, l. 17.

<sup>3</sup> RESRAM (Renewable Energy Standard Rate Adjustment Mechanism, approved in File No. EA-2018-0202); REC (Renewable Energy Credit).

owned switchyard (known as and referred to herein as the “Hughes Switchyard”) located on land owned by ATXI that is contiguous to the Mark Twain Transmission Line. The location of the Hughes Switchyard in relation to the Mark Twain line is shown on **Appendix C** hereto. In essence, the Hughes Switchyard constitutes the High Prairie interconnection to the Mark Twain Project. A diagram of the Hughes Switchyard and surrounding facilities is attached hereto as **Appendix D**. The legal description of the real property on which the Hughes Switchyard is located is attached as **Appendix E**.<sup>4</sup> A technical description of the Hughes Switchyard is part of the Generator Interconnection Agreement (“GIA”, discussed further below), attached hereto as **Appendix F**.

8. As required by MISO’s Energy and Operating Reserve Margin Tariff, on file with and approved by the Federal Energy Regulatory Commission (“FERC”) (the “MISO EMT”), the interconnection is governed by the GIA among ATXI, Ameren Missouri, and MISO. The interconnection (accomplished by the Hughes Switchyard) and the GIA memorializing it was contemplated by the BTA, which is Schedule AKA-D2 to the Direct Testimony of Ameren Missouri witness Ajay K. Arora (Ex. 100 in File No. EA-2018-0202) (the BTA included as Schedule AKA-D2 included the form of GIA between ATXI, MISO, and the High Prairie “project company,” TG High Prairie, LLC).

### **III. REQUEST THAT THE COMMISSION DECLINE JURISDICTION**

9. For the reasons discussed in detail below, ATXI believes that implicit in the Mark Twain CCN is a Commission determination that the public convenience and necessity requires that ATXI own, operate, and maintain interconnections to the Mark Twain Project.

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<sup>4</sup> As noted, ATXI owns the land on which the Hughes Switchyard sits in fee, and that land is located in zoning district A-1 under the Schuyler County zoning ordinance. Switchyards are permitted uses in district A-1, meaning no additional permission is required from Schuyler County for operation of the facility.

Notwithstanding, ATXI has filed this Application, in part because it became aware that Transource Missouri, Inc. (“Transource”) sought, Staff recommended, and the Commission granted, CCNs for two switchyards that interconnect Transource’s 345 kV electric transmission line in northwest Missouri with two area wind farms. See File Nos. EA-2016-0188 and EA-2016-0190.

10. After ATXI learned of the Transource cases, ATXI consulted Staff. Staff recommended that the Company seek a CCN under section 393.170 to operate and maintain the Hughes Switchyard. Staff analogized the situation to many cases where operators have been granted “after-the-fact” CCNs to operate water or sewer facilities. In many of those cases, the systems had been operated (sometimes not well) for years without CCNs until their owners or operators requested—often upon informal prompt by Staff, upon complaint by customers or Staff, or upon Commission order on complaint—and were granted a CCN. Unlike here, however, in those cases no prior, related CCN proceeding(s) of any kind had ever occurred. Regardless, ATXI has opted to put the question before the Commission, given the Transource cases and Staff’s recommendation.

11. Before addressing other regulatory history and practice at the Commission that calls into question whether a CCN specific to the Hughes Switchyard is required, ATXI wants to acknowledge that this is a cloudy area of Commission regulation, and wants to make clear that it appreciates Staff’s recommendation that the question be brought before the Commission.

12. To clear up the cloudiness that arguably exists, it is important to view the facts relating to the Mark Twain Project and the Hughes Switchyard in the context of what ATXI and its Mark Twain Transmission Line do. Unlike the water and sewer utilities, ATXI transmits a commodity, but does not serve retail customers. Similar to other transportation facilities (here,

for the transmission of electricity; in other cases for the transport of natural gas), ATXI's Mark Twain Transmission Line must necessarily interconnect with other facilities or else it cannot deliver energy to the market and load. Put another way, the Mark Twain Project serves the public convenience or necessity when generators interconnect to it and inject power into the system to be transmitted to load. Specifically, one function of the Mark Twain Transmission Line is, as recognized by the Commission in the Mark Twain Order, to integrate (i.e., connect with and transmit energy from) new renewable generation in Missouri. Switchyards like the Hughes Switchyard are the *sine qua non* of that integration. In this way, ATXI perceives the situation with the Mark Twain Project and the Hughes Switchyard to be closely analogous to situations involving Missouri Pipeline Company ("MPC") and Missouri Gas Company ("MoGas"), entities which, like ATXI, transported a commodity for others, but did not serve retail customers. The facts relating to CCN orders for MPC and MoGas and later interconnections with facilities of their transportation customers are instructive.

13. In 1989, MPC sought and received a CCN for a new approximately 85-mile intrastate natural gas transportation line from a connection with the Panhandle Eastern Pipeline Company ("PEPL") interstate gas pipeline near Curryville, Missouri to connections with Laclede Gas Company in St. Charles County, Missouri. See *Report and Order*, Case No. GA-89-126 (Aug. 1, 1989). A couple of years later, MPC sought and received a second CCN for an additional approximately 56-mile intrastate natural gas transportation line connected to the original approximately 84-mile line down to south Franklin County. See *Report and Order*, Case No. GA-91-81 (consolidated with Case No. GA-90-280 et al.) (June 28, 1991). By the same order, MPC's affiliate, MoGas, received a CCN for an approximately 67.5 mile intrastate

natural gas transportation line connected to the MPC line in Franklin County and running along I-44 to Ft. Leonard Wood. *Id.*

14. In the years that followed the grant of these three CCNs, MPC added at least nine interconnection facilities along its lines without seeking CCNs for the interconnection facilities. See MPC Tariff, PSC Mo. No. 3, 1st Revised Sheet Nos. 3, 40 (Filed Dec. 20, 1999).<sup>5</sup> Similarly, MoGas added at least five such facilities along its line, also without seeking any further CCNs. See MoGas Tariff, PSC Mo. No. 2, 2nd Revised Sheet Nos. 3, 40 (Filed Apr. 17, 2000).<sup>6</sup> Though the Commission was made aware of the numerous later-added interconnection facilities through the tariff filings, neither MoGas nor MPC were urged (by Staff) or ordered by the Commission, subsequent to the above-referenced tariff filings, to apply for CCNs to operate the interconnection facilities. The necessary implication, of course, is that the CCNs MPC and MoGas possessed for the roughly 207 miles of trunkline were sufficient, *without more*, for MPC's and MoGas' operation of these interconnections.

15. The MPC/MoGas interconnections and the interconnection at issue in this docket are distinct in a couple of ways: (i) ATXI's Mark Twain Transmission Line is an *interstate electric* transmission line; and (ii) the commodity being transported on Mark Twain is flowing *to* the line (and is *electricity*) (i.e., Hughes Switchyard is a generator interconnection) versus in the case of MPC/MoGas, where the commodity being transported is flowing *from* the line (and is *natural gas*) (i.e., the interconnections are for load-serving entities). ATXI respectfully submits that those distinctions are completely without a difference, however, given that the same statute,

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<sup>5</sup> Additional interconnections 4 through 13 listed on Sheet No. 40.

<sup>6</sup> Additional interconnections at Cuba, St. James, Rolla, Salem, and Owensville (and likely at Waynesville and St. Robert).

section 393.170, applies equally to electrical corporations (and electric transmission lines) and to gas corporations (and natural gas transmission lines).

16. As with the Mark Twain Project, the reason the MPC/MoGas lines existed at all (and the reason the public convenience or necessity justified the CCNs for them in the first place) was that the lines allowed load-serving entities to move a commodity to where it was needed. But to do so, interconnections between MPC's and MoGas' lines, and the facilities of its transportation customers were needed, just as interconnections like the Hughes Switchyard are necessary in order to integrate renewable generation like High Prairie into Missouri. Since MPC/MoGas did not need additional CCNs to operate those 14 interconnections, there appears to be no reason that ATXI would need a CCN specific to operate the Hughes Switchyard.

17. The MPC and MoGas examples aside, there are other Commission rulings that strongly suggest interconnections with transmission lines are implicitly authorized by the CCNs for the transmission lines themselves, and that there is no requirement for a further CCN for an interconnection to a certificated transmission line, as long as the interconnection is within a reasonable distance of the line. Those cases include *In the Matter of Diekroeger*, Report and Order, Case No. 14,297, 9 Mo. P.S.C. (N.S.) 127 (Apr. 14, 1960). In *Diekroeger*, Missouri Power & Light Company ("MP&L")<sup>7</sup> had an electric transmission line covered by a line certificate that ran through a rural area in Cooper County, Missouri. MP&L did not have an area certificate for the area in question. Two individuals then being served by the local cooperative were unhappy with the cooperative's service and wanted MP&L to connect to them and provide service. The Commission's decision was that an electric utility with a transmission line constructed under a line certificate has not only a right, but a duty, to connect to those desiring

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<sup>7</sup> MP&L was acquired by Ameren Missouri several decades ago and its assets became owned by Ameren Missouri when MP&L was merged into Ameren Missouri.

service within a reasonable distance of the line in question (in that case, that distance was about 1.25 miles). A further CCN was unnecessary.

18. ATXI of course has no retail customers, and at least in the case of the Hughes Switchyard, is not *delivering* electricity to a utility that is in turn serving load. As noted, however, that is a distinction without a difference. Indeed, ATXI has a line certificate for the Mark Twain Project, there is an interconnection customer that needs transmission service, and the interconnection (the Hughes Switchyard) necessary to serve that customer is without question located within a reasonable distance of the line. The Hughes Switchyard is literally right on top of the Mark Twain Transmission Line. ATXI can see no reason why its line certificate does not give it the right to operate and maintain an interconnection with its customer on property adjoining ATXI's line, given that the line certificate in *Diekroeger* meant MP&L could (and was required to) interconnect those two customers in Cooper County about 1.25 miles away.

19. Finally, ATXI does not believe subsection 3 of subsection (A) of section (2) of 20 CSR 4240-20.045 applies here, but acknowledges that there could be a lack of clarity on that point. The cited rule requires a CCN for the “[o]peration of an asset *pursuant to section 393.170.2.*” (emphasis added). Section 393.170.2 gives the Commission authority to allow a utility to exercise its franchise rights to serve end-use customers in a given territory (in a county, in a city, town, or village). In the typical water or sewer case referenced above, the entity seeking authority to operate the water or sewer system is serving end-use customers and in addition to needing a CCN (having not received one at all), also needs to file retail tariffs with the Commission setting the rates and terms and conditions of the water or sewer service. Given the unique posture of a “transmission-only” electrical corporation like ATXI, which has no-end use customers and whose transmission service is regulated by the FERC under FERC-approved

tariffs, it is unclear that subsection 2 of section 393.170 applies. The outcomes in the MPC/MoGas cases lend credence to this conclusion and if a CCN is not required by the statute, the rule itself could not then require a CCN on its own.

#### **IV. ALTERNATIVE REQUEST FOR A CCN**

20. Should the Commission determine that it has jurisdiction because a specific CCN to operate the Hughes Switchyard is required, ATXI requests that it be granted a CCN to operate and maintain the Hughes Switchyard because the Hughes Switchyard is clearly necessary in order for High Prairie to integrate renewable energy in Missouri by interconnecting with the transmission grid to deliver generation capacity and energy to the market and load. As noted above, when the Commission granted ATXI a CCN, it specifically recognized its need to facilitate the integration of renewable generation in Missouri, as well as improve grid reliability and minimize transmission congestion. The Hughes Switchyard is a necessary component of that transmission grid, and the same public policy considerations that supported the Commission's decision to grant a CCN to ATXI to own and operate the Mark Twain Transmission Line apply here.

21. The "Tartan Factors,"<sup>8</sup> typically relied upon by the Commission in evaluating CCN requests, support issuance of a further CCN if deemed necessary, as follows:

- a. The operation and maintenance of the Hughes Switchyard is needed for the reasons given above.
- b. The operation and maintenance of the Hughes Switchyard is economically feasible given that its cost will be covered by the generator as generally addressed in the

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<sup>8</sup> While a project is not required as a matter of law to meet the "Tartan Factors," the Commission has traditionally analyzed CCN applications using those factors. See *In Re Tartan Energy*, GA-94-127, 3 Mo.P.S.C.3d 173, 177 (1994).

GIA, per MISO's EMT. The BTA between Ameren Missouri and the developer contemplated that the wind project owner would ultimately be responsible for the costs to interconnect the wind facility with the transmission system, and that responsibility was reflected in the financial analyses presented by Ameren Missouri in File No. EA-2018-0202.<sup>9</sup>

- c. ATXI has the financial ability to own, operate, and maintain the Hughes Switchyard, which was constructed at a cost of approximately \$9.6 million using funds from ATXI's treasury and which, as noted, will be covered by the charges addressed in the GIA.
- d. ATXI is qualified to own, operate, and maintain the Hughes Switchyard given that it has developed and owns and operates over 500 miles of 345 kV electric transmission line and 15 substations/switchyards.
- e. Operation and maintenance of the Hughes Switchyard is in the public interest for the reasons discussed herein. It should be noted that because factors a through d are satisfied, the Commission would generally conclude, without more, that factor e, the public interest, is also served by granting the CCN.<sup>10</sup>

22. The foregoing facts demonstrate that the issuance of a CCN authorizing ATXI to operate and maintain the Hughes Switchyard is required by the public convenience and necessity.

23. Finally, while for the reasons discussed earlier it is at best unclear whether 20 CSR 4240-20.045(2) or (5) apply here, to the extent the provisions of the rule are deemed to apply, ATXI states in accordance with subsection (5) that:

- a. The Hughes Switchyard is valued at its cost, approximately \$9.6 million;

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<sup>9</sup> See Ex. 101 (Matt Michels' Direct Testimony), File No. EA-2018-0202.

<sup>10</sup> *Id.* at 189 (citing *In re: Intercon Gas, Inc.*, 30 Mo. P.S.C. at 561).

- b. There is no purchase price aside from its cost and as noted above, it was financed from funds from ATXI's treasury (and its cost will be covered from Ameren Missouri); and
- c. **Appendix G** contains the plans and specifications and as-builts for the Hughes Switchyard.

**V. MOTION FOR EXPEDITED TREATMENT AND REQUEST FOR WAIVER OF 60-DAY NOTICE**

24. ATXI requests that the Commission grant the CCN Application or that it decline jurisdiction as soon as reasonably practical, but in any event no later than 90 days after the filing of this Application.

25. The Application was filed as quickly as circumstances would allow given ATXI's above-described discovery of the actions taken by Transource and discussions with the Staff that led to the filing of the Application.

26. ATXI also requests that the Commission waive the 60-day notice requirement of 20 CSR 4240-4.017 for good cause. 20 CSR 4240-4.017 generally requires that a notice be filed with the Commission at least 60-days prior to the filing of a case. The subject rule also provides for, and contemplates, that the Commission may waive the 60-day notice requirement for good cause shown and expressly provides that good cause is established if the filing party provides "a verified declaration . . . that it has had no communication with the office of the commission within the prior one hundred fifty (150) days regarding any substantive issued likely to be in the case . . . ." Such a declaration is included with this Application, below. Consequently, good cause exists to waive the 60-day notice requirement.

**WHEREFORE**, ATXI respectfully requests that the Commission:

1. Grant the Applicant's Motion for Expedited Treatment filed pursuant to 20 CSR 4240-2.080(14) and its request for a waiver of the 60-day notice requirement of 20 CSR 4240-2.017; and

2. Either:

- a. Decline jurisdiction because a further CCN is unnecessary respecting the Hughes Switchyard, for the reasons addressed in Section III of this Application; or
- b. Grant the Applicant a Certificate of Convenience and Necessity to operate and maintain the Hughes Switchyard, pursuant to Section 393.170.

Dated: December 11, 2020

Respectfully submitted,

SMITH LEWIS, LLP

/s/ James B. Lowery

James B. Lowery, #40503

Sarah E. Giboney, #50299

111 South Ninth Street, Suite 200

P.O. Box 918

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Attorneys for Ameren Transmission  
Company of Illinois

### **DECLARATION**

The undersigned, being first duly sworn and upon his oath, hereby states that the foregoing *Application* is true and correct to the best of his knowledge, information, and belief.

The Company has had no communication with the office of the commission within the prior one hundred fifty (150) days regarding any substantive issued likely to be in the case

**/s/ Shawn E. Schukar**

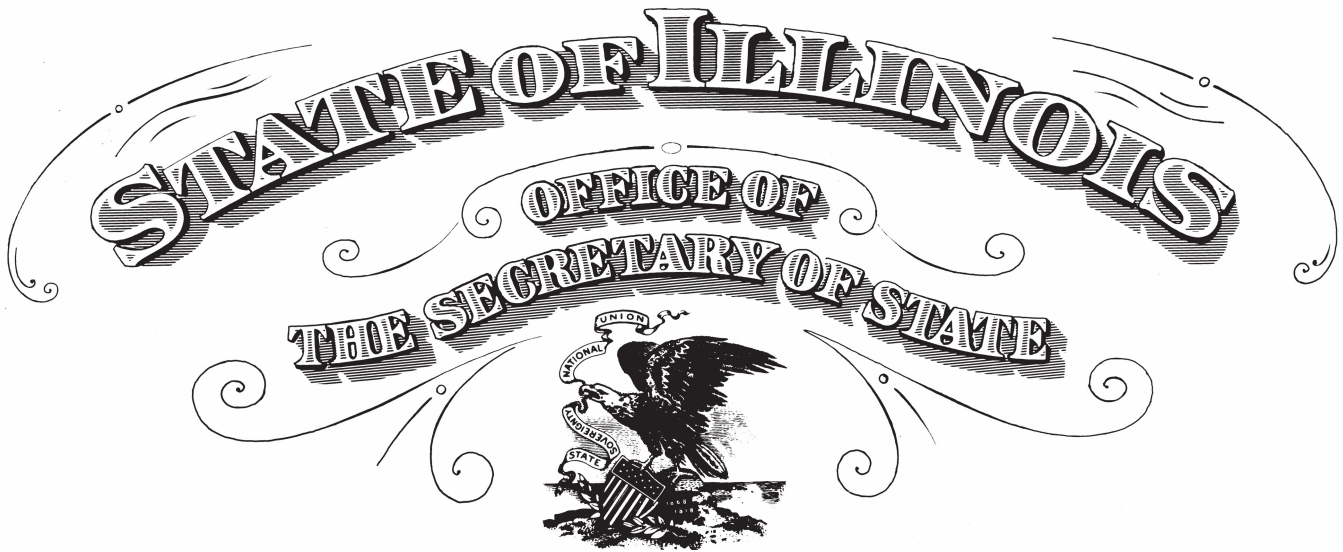
Shawn E. Schukar, President

Ameren Transmission Company of Illinois

### **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a true and correct copy of the foregoing was served on the Staff of the Commission and the Office of the Public Counsel via electronic mail (email) on this 11th day of December, 2020.

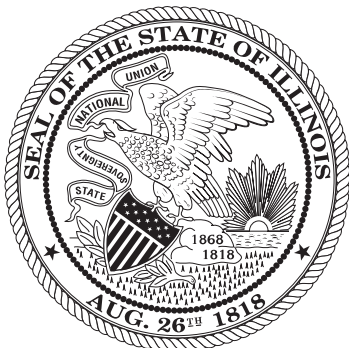
/s/ James B. Lowery  
James B. Lowery



***To all to whom these Presents Shall Come, Greeting:***

*I, Jesse White, Secretary of State of the State of Illinois, do hereby certify that I am the keeper of the records of the Department of Business Services. I certify that*

AMEREN TRANSMISSION COMPANY OF ILLINOIS, A DOMESTIC CORPORATION, INCORPORATED UNDER THE LAWS OF THIS STATE ON MARCH 02, 2006, APPEARS TO HAVE COMPLIED WITH ALL THE PROVISIONS OF THE BUSINESS CORPORATION ACT OF THIS STATE, AND AS OF THIS DATE, IS IN GOOD STANDING AS A DOMESTIC CORPORATION IN THE STATE OF ILLINOIS.



***In Testimony Whereof, I hereto set***  
*my hand and cause to be affixed the Great Seal of*  
*the State of Illinois, this 7TH*  
*day of DECEMBER A.D. 2020 .*

*Jesse White*

SECRETARY OF STATE

# STATE OF MISSOURI



John R. Ashcroft  
Secretary of State

## CERTIFICATE OF GOOD STANDING

I, John R. Ashcroft, Secretary of State of the STATE OF MISSOURI, do hereby certify that the records in my office and in my care and custody reveal that

**AMEREN TRANSMISSION COMPANY OF ILLINOIS**

**F01245931**

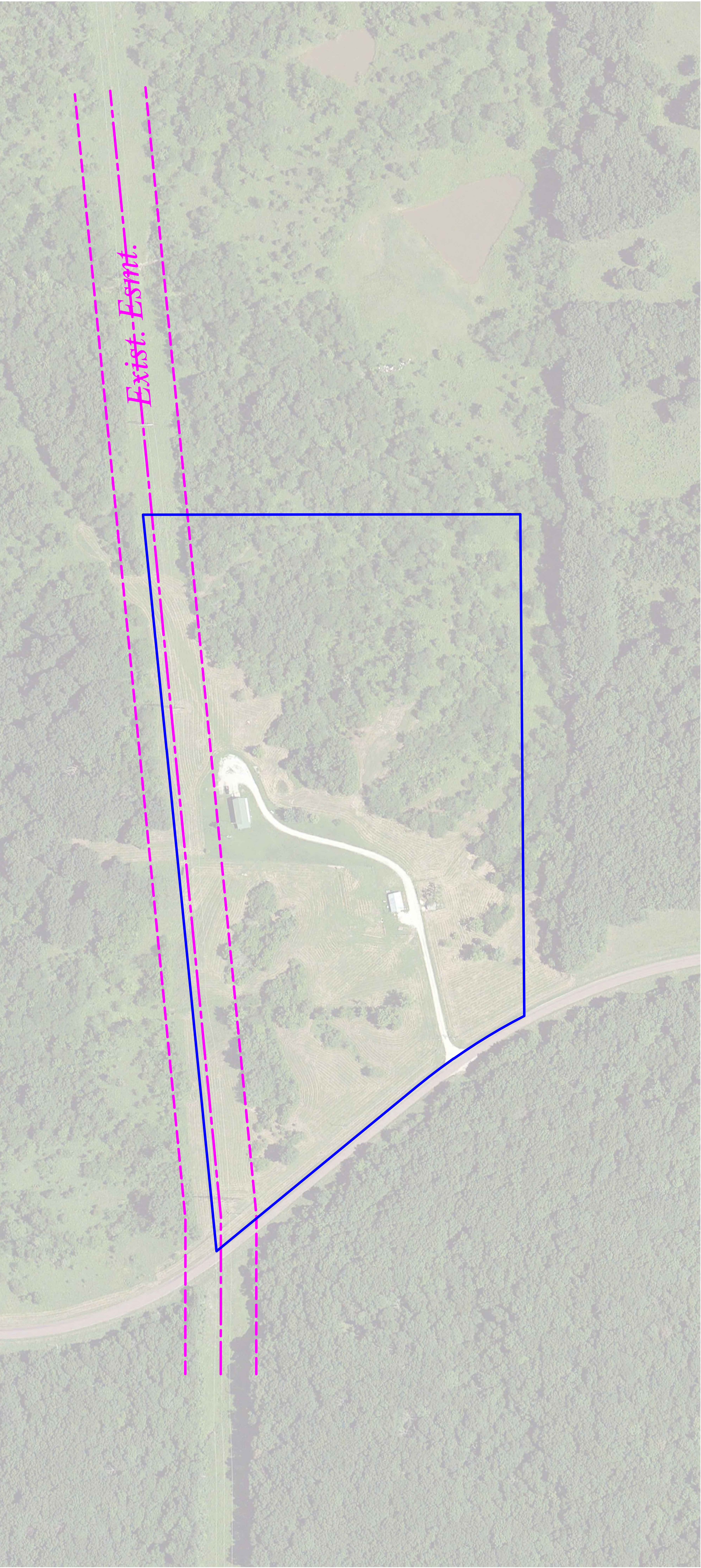
A Illinois entity was created under the laws of this State on 8/1/2012, and in Good Standing, having fully complied with all the requirements of this office.

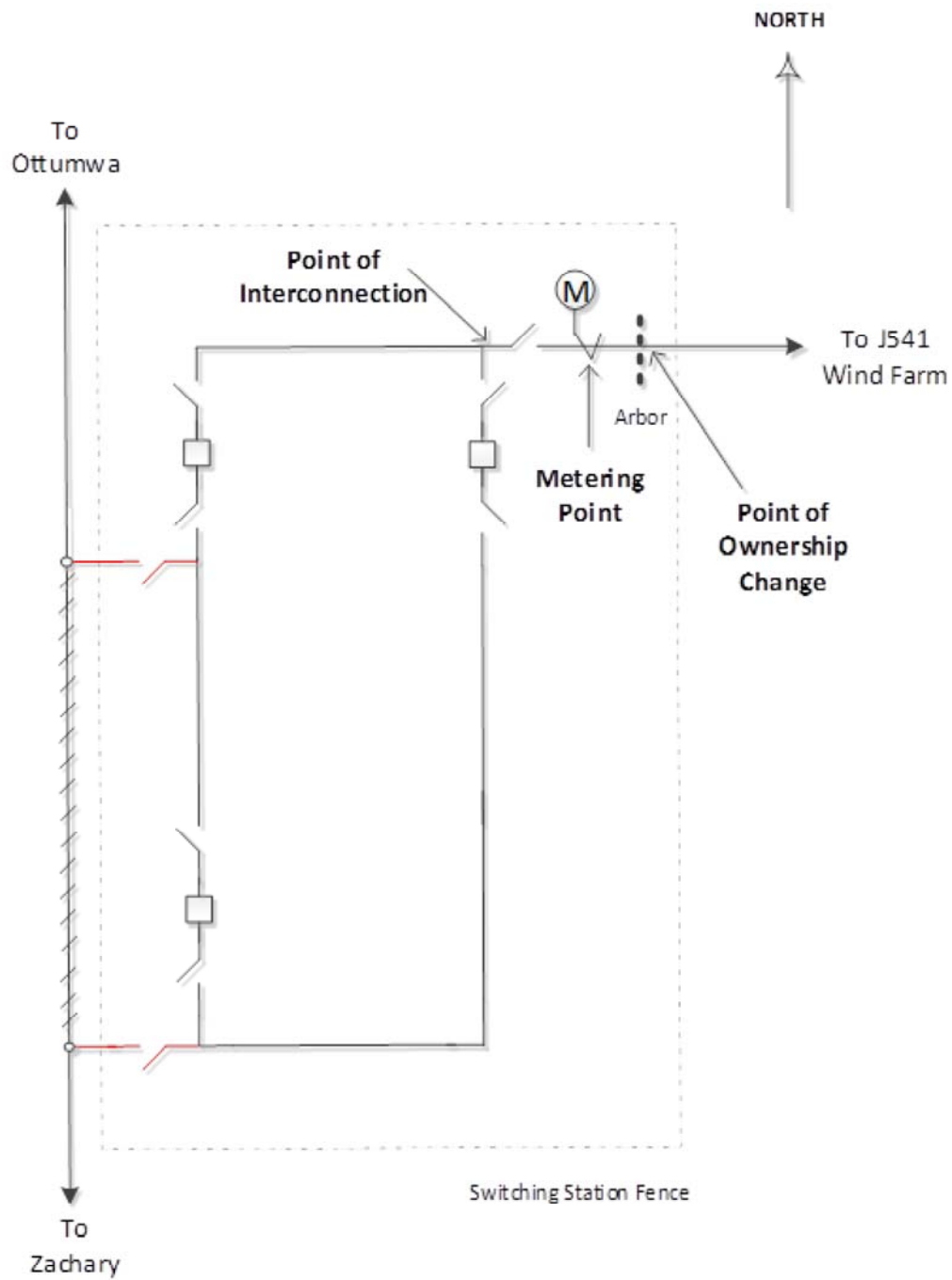
IN TESTIMONY WHEREOF, I hereunto set my hand and cause to be affixed the GREAT SEAL of the State of Missouri.  
Done at the City of Jefferson, the 8th day of December, 2020.

  
Secretary of State

Certification Number: CERT-IN41457







## APPENDIX E

A PARCEL OF LAND LOCATED IN SECTION 19, TOWNSHIP 65 NORTH, RANGE 15 WEST, SCHUYLER COUNTY, MISSOURI, SAID PARCEL BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF LOT 2 OF THE NORTHWEST QUARTER OF SAID SECTION 19; THENCE SOUTH 00 DEGREES 27 MINUTES 35 SECONDS EAST ALONG THE EAST LINE OF SAID LOT 2, A DISTANCE OF 1684.08 FEET; THENCE SOUTH 89 DEGREES 55 MINUTES 51 SECONDS WEST, A DISTANCE OF 101.22 FEET TO THE POINT OF BEGINNING OF THE PARCEL TO BE DESCRIBED; THENCE SOUTH 00 DEGREES 27 MINUTES 35 SECONDS EAST, A DISTANCE OF 1060.06 FEET TO THE NORTH RIGHT-OF-WAY LINE OF ROUTE W; THENCE SOUTHWESTERLY ALONG SAID RIGHT-OF-WAY LINE BEING A NON-TANGENTIAL CURVE CONCAVED TO THE SOUTHEAST, HAVING A CENTRAL ANGLE OF 7 DEGREES 51 MINUTES 44 SECONDS, A RADIUS OF 1272.66 FEET, AN ARC LENGTH OF 174.63 FEET, THE CHORD OF SAID CURVE BEARS SOUTH 58 DEGREES 49 MINUTES 00 SECONDS WEST, WITH A CHORD LENGTH OF 174.50 FEET; THENCE NORTH 12 DEGREES 57 MINUTES 14 SECONDS WEST ALONG THE EAST LINE OF TRACT "A" RECORDED IN (BOOK 128, PAGE 14), A DISTANCE OF 670.87 FEET TO THE NORTH LINE OF SAID TRACT "A"; THENCE SOUTH 89 DEGREES 55 MINUTES 51 SECONDS WEST ALONG SAID NORTH LINE, A DISTANCE OF 456.47 FEET; THENCE NORTH 05 DEGREES 44 MINUTES 13 SECONDS WEST, A DISTANCE OF 498.67 FEET; THENCE NORTH 89 DEGREES 55 MINUTES 51 SECONDS EAST, A DISTANCE OF 797.49 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 522,807 SQUARE FEET OR 12 ACRES, MORE OR LESS.

PIN

AND

A TRACT OF LAND SITUATED IN THE SOUTHWEST FOURTH OF THE NORTHWEST QUARTER AND IN THE NORTHWEST FOURTH OF THE SOUTHWEST QUARTER OF SECTION 19, TOWNSHIP 65 NORTH, RANGE 15 WEST OF THE 5TH PRINCIPAL MERIDIAN, SCHUYLER COUNTY, MISSOURI, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF THE NORTHWEST FOURTH OF THE SOUTHWEST QUARTER OF SAID SECTION 19, THENCE SOUTH 1 DEGREE 28 MINUTES 18 SECONDS EAST, A DISTANCE OF 34.13 FEET TO A POINT ON THE NORTHERLY RIGHT OF WAY LINE OF ROUTE W, BEING THE POINT OF CURVATURE OF A NON-TANGENT CURVE, CONCAVE TO THE LEFT, HAVING A RADIUS OF 1272.66 FEET, A CENTRAL ANGLE OF 12 DEGREES 49 MINUTES 59 SECONDS, AND A CHORD OF 284.45 FEET BEARING SOUTH 61 DEGREES 21 MINUTES 37 SECONDS WEST; THENCE SOUTHWEST ALONG THE ARC OF SAID CURVE, A DISTANCE OF 285.05 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTHWEST ALONG SAID CURVE, A DISTANCE OF 96.49 FEET TO THE POINT OF TANGENT; THENCE CONTINUING ALONG SAID RIGHT OF WAY LINE, SOUTH 50 DEGREES 36 MINUTES 00 SECONDS WEST, A DISTANCE OF 549.33 FEET; THENCE LEAVING SAID RIGHT OF WAY LINE, NORTH 5 DEGREES 40 MINUTES 53 SECONDS WEST, A DISTANCE OF 1065.65 FEET; THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST, A DISTANCE OF 456.41 FEET; THENCE SOUTH 12 DEGREES 57 MINUTES 41 SECONDS EAST, A DISTANCE OF 670.46 FEET TO THE POINT OF BEGINNING.

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## **GENERATOR INTERCONNECTION AGREEMENT (GIA)**

**THIS GENERATOR INTERCONNECTION AGREEMENT (“GIA”)** is made and entered into this 16<sup>th</sup> day of August, 2019, by and among **TG High Prairie , LLC**, a limited liability company organized and existing under the laws of the State of Delaware (“Interconnection Customer” with a Generating Facility), **Ameren Services Company** as agent for **Ameren Transmission Company of Illinois**, a corporation organized and existing under the laws of the State of Illinois (“Transmission Owner”), and the **Midcontinent Independent System Operator, Inc.**, a non-profit, non-stock corporation organized and existing under the laws of the State of Delaware (“Transmission Provider”). Interconnection Customer, Transmission Owner and Transmission Provider each may be referred to as a “Party,” or collectively as the “Parties.”

### **RECITALS**

**WHEREAS**, Transmission Provider has functional control of the operations of the Transmission System, as defined herein, and is responsible for providing Transmission Service and Interconnection Service on the transmission facilities under its control; and

**WHEREAS**, Interconnection Customer intends to own, lease and/or control and operate the Generating Facility identified as a Generating Facility in Appendix A to this GIA; and

**WHEREAS**, Transmission Owner owns or operates the Transmission System, whose operations are subject to the functional control of Transmission Provider, to which Interconnection Customer desires to connect the Generating Facility, and may therefore be required to construct certain Interconnection Facilities and Network Upgrades, as set forth in this GIA; and

**WHEREAS**, Interconnection Customer, Transmission Owner and Transmission Provider have agreed to enter into this GIA, and where applicable subject to Appendix H for a provisional GIA, for the purpose of interconnecting the Generating Facility with the Transmission System;

**NOW, THEREFORE**, in consideration of and subject to the mutual covenants contained herein, it is agreed:

## ARTICLE 1. DEFINITIONS

When used in this GIA, terms with initial capitalization that are not defined in Article 1 shall have the meanings specified in the Article in which they are used. Those capitalized terms used in this GIA that are not otherwise defined in this GIA have the meaning set forth in the Tariff.

**Adverse System Impact** shall mean the negative effects due to technical or operational limits on conductors or equipment being exceeded that may compromise the safety and reliability of the electric system.

**Affected System** shall mean an electric transmission or distribution system or the electric system associated with an existing generating facility or of a higher queued Generating Facility, which is an electric system other than the Transmission Owner's Transmission System that is affected by the Interconnection Request. An Affected System may or may not be subject to FERC jurisdiction.

**Affected System Operator** shall mean the entity that operates an Affected System.

**Affiliate** shall mean, with respect to a corporation, partnership or other entity, each such other corporation, partnership or other entity that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with, such corporation, partnership or other entity.

**Ancillary Services** shall mean those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission System in accordance with Good Utility Practice.

**Applicable Laws and Regulations** shall mean all duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority having jurisdiction over the Parties, their respective facilities and/or the respective services they provide.

**Applicable Reliability Council** shall mean the Regional Entity of NERC applicable to the Local Balancing Authority of the Transmission System to which the Generating Facility is directly interconnected.

**Applicable Reliability Standards** shall mean Reliability Standards approved by the Federal Energy Regulatory Commission (FERC) under section 215 of the Federal Power Act, as applicable.

**Base Case** shall mean the base case power flow, short circuit, and stability databases used for the Interconnection Studies by Transmission Provider or Interconnection Customer.

**Breach** shall mean the failure of a Party to perform or observe any material term or

condition of this GIA.

**Breaching Party** shall mean a Party that is in Breach of this GIA.

**Business Day** shall mean Monday through Friday, excluding Federal Holidays.

**Calendar Day** shall mean any day including Saturday, Sunday or a Federal Holiday.

**Commercial Operation** shall mean the status of a Generating Facility that has commenced generating electricity for sale, excluding electricity generated during Trial Operation.

**Commercial Operation Date (COD)** of a unit shall mean the date on which the Generating Facility commences Commercial Operation as agreed to by the Parties pursuant to Appendix E to this GIA.

**Common Use Upgrade (CUU)** shall mean an Interconnection Facility, Network Upgrade, System Protection Facility, or any other classified addition, alteration, or improvement on the Transmission System or the transmission system of an Affected System, not classified under Attachment FF as a Baseline Reliability Project, Market Efficiency Project, or Multi-Value Project, that is needed for the interconnection of multiple Interconnection Customers' Generating Facilities and which is the shared responsibility of such Interconnection Customers.

**Confidential Information** shall mean any proprietary or commercially or competitively sensitive information, trade secret or information regarding a plan, specification, pattern, procedure, design, device, list, concept, policy or compilation relating to the present or planned business of a Party, or any other information as specified in Article 22, which is designated as confidential by the Party supplying the information, whether conveyed orally, electronically, in writing, through inspection, or otherwise, that is received by another Party.

**Default** shall mean the failure of a Breaching Party to cure its Breach in accordance with Article 17 of this GIA.

**Definitive Planning Phase Queue Position** shall mean the order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, in the Definitive Planning Phase. The Definitive Planning Phase Queue Position is established based upon the date Interconnection Customer satisfies all of the requirements of Section 7.2 to enter the Definitive Planning Phase.

**Demonstrated Capability** shall mean the continuous net real power output that the Generating Facility is required to demonstrate in compliance with Applicable Reliability Standards.

**Dispute Resolution** shall mean the procedure for resolution of a dispute between or among the Parties in which they will first attempt to resolve the dispute on an informal basis.

**Distribution System** shall mean the Transmission Owner's facilities and equipment, or the Distribution System of another party that is interconnected with the Transmission Owner's Transmission System, if any, connected to the Transmission System, over which facilities Transmission Service or Wholesale Distribution Service under the Tariff is available at the time Interconnection Customer has requested interconnection of a Generating Facility for the purpose of either transmitting electric energy in interstate commerce or selling electric energy at wholesale in interstate commerce and which are used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among Local Balancing Authorities and other entities owning distribution facilities interconnected to the Transmission System.

**Distribution Upgrades** shall mean the additions, modifications, and upgrades to the Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the delivery service necessary to affect Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

**Effective Date** shall mean the date on which this GIA becomes effective upon execution by the Parties subject to acceptance by the Commission, or if filed unexecuted, upon the date specified by the Commission.

**Emergency Condition** shall mean a condition or situation: (1) that in the reasonable judgment of the Party making the claim is imminently likely to endanger, or is contributing to the endangerment of, life, property, or public health and safety; or (2) that, in the case of either Transmission Provider or Transmission Owner, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Transmission System, Transmission Owner's Interconnection Facilities or the electric systems of others to which the Transmission System is directly connected; or (3) that, in the case of Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility or Interconnection Customer's Interconnection Facilities. System restoration and blackstart shall be considered Emergency Conditions; provided that Interconnection Customer is not obligated by this GIA to possess blackstart capability. Any condition or situation that results from lack of sufficient generating capacity to meet load requirements or that results solely from economic conditions shall not constitute an Emergency Condition, unless one of the enumerated conditions or situations identified in this definition also exists.

**Energy Displacement Agreement** shall mean an agreement between an Interconnection Customer with an existing generating facility on the Transmission Provider's Transmission System and an Interconnection Customer with a proposed Generating Facility seeking to interconnect with Net Zero Interconnection Service. The Energy Displacement Agreement specifies the term of operation, the Generating Facility Interconnection Service limit, and the mode of operation for energy production (common or singular operation).

**Energy Resource Interconnection Service (ER Interconnection Service)** shall mean

an Interconnection Service that allows Interconnection Customer to connect its Generating Facility to the Transmission System or Distribution System, as applicable, to be eligible to deliver the Generating Facility's electric output using the existing firm or non-firm capacity of the Transmission System on an as available basis. Energy Resource Interconnection Service does not convey transmission service.

**Engineering & Procurement (E&P) Agreement** shall mean an agreement that authorizes Transmission Owner to begin engineering and procurement of long lead-time items necessary for the establishment of the interconnection in order to advance the implementation of the Interconnection Request.

**Environmental Law** shall mean Applicable Laws or Regulations relating to pollution or protection of the environment or natural resources.

**Federal Holiday** shall mean a Federal Reserve Bank holiday for a Party that has its principal place of business in the United States and a Canadian Federal or Provincial banking holiday for a Party that has its principal place of business located in Canada.

**Federal Power Act** shall mean the Federal Power Act, as amended, 16 U.S.C. §§ 791a *et seq.*

**FERC** shall mean the Federal Energy Regulatory Commission, also known as Commission, or its successor.

**Force Majeure** shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure event does not include an act of negligence or intentional wrongdoing by the Party claiming Force Majeure.

**Generating Facility** shall mean Interconnection Customer's device(s) for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities. A Generating Facility consists of one or more generating unit(s) and/or storage device(s) which usually can operate independently and be brought online or taken offline individually.

**Generating Facility Capacity** shall mean the net capacity of the Generating Facility and the aggregate net capacity of the Generating Facility where it includes multiple energy production devices.

**Generating Facility Modification** shall mean modification to an Existing Generating Facility, including comparable replacement of only a portion of its equipment at the Existing Generating Facility.

**Generating Facility Replacement** shall mean replacement of one or more generating

units and/or storage devices at the Existing Generating Facility with one or more new generating units or storage devices at the same electrical Point of Interconnection as the generating units and/or storage devices that is/are being decommissioned and electrically disconnected.

**Generator Interconnection Agreement (GIA)** shall mean the form of interconnection agreement, set forth herein.

**Generator Interconnection Procedures (GIP)** shall mean the interconnection procedures set forth in Attachment X of the Tariff.

**Generator Upgrades** shall mean the additions, modifications, and upgrades to the electric system of an existing generating facility or of a higher queued Generating Facility at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the Transmission Service necessary to affect Interconnection Customer's wholesale sale of electricity in interstate commerce.

**Good Utility Practice** shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

**Governmental Authority** shall mean any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include Interconnection Customer, Transmission Provider, Transmission Owner, or any Affiliate thereof.

**Group Study(ies)** shall mean the process whereby more than one Interconnection Request is studied together, instead of serially, for the purpose of conducting one or more of the required Studies.

**Hazardous Substances** shall mean any chemicals, materials or substances defined as or included in the definition of "hazardous substances," "hazardous wastes," "hazardous materials," "hazardous constituents," "restricted hazardous materials," "extremely hazardous substances," "toxic substances," "radioactive substances," "contaminants," "pollutants," "toxic pollutants" or words of similar meaning and regulatory effect under any applicable Environmental Law, or any other chemical, material or substance, exposure to which is prohibited, limited or regulated by any applicable Environmental Law.

**HVDC Facilities** shall mean the high voltage direct current transmission facilities,

including associated alternating current facilities, if any, that are subject to Section 27A of the Tariff and that are specifically identified in (i) any Agency Agreement pertaining to such facilities between Transmission Provider and Transmission Owner that owns or operates such facilities, or (ii) in any other arrangement that permits or will permit Transmission Provider to provide HVDC Service over such facilities as set forth in Section 27A of the Tariff.

**HVDC Service** shall mean Firm and Non-Firm Point-To-Point Transmission Service provided by Transmission Provider on HVDC Facilities pursuant to Section 27A of the Tariff.

**Initial Synchronization Date** shall mean the date upon which the Generating Facility is initially synchronized and upon which Trial Operation begins.

**In-Service Date (ISD)** shall mean the date upon which Interconnection Customer reasonably expects it will be ready to begin use of the Transmission Owner's Interconnection Facilities to obtain backfeed power.

**Interconnection Customer** shall mean any entity, including Transmission Provider, Transmission Owner or any of the Affiliates or subsidiaries of either, that proposes to interconnect its Generating Facility with the Transmission System.

**Interconnection Customer's Interconnection Facilities (ICIF)** shall mean all facilities and equipment, as identified in Appendix A of this GIA, that are located between the Generating Facility and the Point of Change of Ownership, including any modification, addition, or upgrades to such facilities and equipment necessary to physically and electrically interconnect the Generating Facility to the Transmission System or Distribution System, as applicable. Interconnection Customer's Interconnection Facilities are sole use facilities.

**Interconnection Facilities** shall mean the Transmission Owner's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Transmission System. Interconnection Facilities shall not include Distribution Upgrades, Generator Upgrades, Stand Alone Network Upgrades or Network Upgrades.

**Interconnection Facilities Study** shall mean a study conducted by Transmission Provider, or its agent, for Interconnection Customer to determine a list of facilities (including Transmission Owner's Interconnection Facilities, System Protection Facilities, and if such upgrades have been determined, Network Upgrades, Distribution Upgrades, Generator Upgrades, Common Use Upgrades, and upgrades on Affected Systems, as identified in the Interconnection System Impact Study), the cost of those facilities, and the time required to interconnect the Generating Facility with the Transmission System.

**Interconnection Facilities Study Agreement** shall mean the form of agreement contained in Appendix 4 of the Generator Interconnection Procedures for conducting the Interconnection Facilities Study.

**Interconnection Request** shall mean an Interconnection Customer's request, in the form of Appendix 1 to the Generator Interconnection Procedures, to interconnect a new Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Transmission System.

**Interconnection Service** shall mean the service provided by Transmission Provider associated with interconnecting the Generating Facility to the Transmission System and enabling it to receive electric energy and capacity from the Generating Facility at the Point of Interconnection, pursuant to the terms of this GIA and, if applicable, the Tariff.

**Interconnection Study (or Study)** shall mean any of the studies described in the Generator Interconnection Procedures.

**Interconnection Study Agreement** shall mean the form of agreement contained in Attachment B to Appendix 1 of the Generator Interconnection procedures for conducting all studies required by the Generator Interconnection Procedures.

**Interconnection System Impact Study** shall mean an engineering study that evaluates the impact of the proposed interconnection on the safety and reliability of Transmission System and, if applicable, an Affected System. The study shall identify and detail the system impacts that would result if the Generating Facility were interconnected without project modifications or system modifications, or to study potential impacts, including but not limited to those identified in the Scoping Meeting as described in the Generator Interconnection Procedures.

**IRS** shall mean the Internal Revenue Service.

**Local Balancing Authority** shall mean an operational entity or a Joint Registration Organization which is (i) responsible for compliance with the subset of NERC Balancing Authority Reliability Standards defined in the Balancing Authority Agreement for their local area within the MISO Balancing Authority Area, (ii) a Party to Balancing Authority Agreement, excluding MISO, and (iii) provided in the Balancing Authority Agreement.

**Loss** shall mean any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's performance, or non-performance of its obligations under this GIA on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing, by the indemnified party.

**Material Modification** shall mean: (1) modification to an Interconnection Request in the queue, that has a material adverse impact on the cost or timing of any other Interconnection Request with a later queue priority date; or (2) planned modification to an Existing Generating Facility, that is undergoing evaluation for a Generating Facility Modification or Generating Facility Replacement, and has a material adverse impact on the Transmission System with

respect to: i) steady-state thermal or voltage limits, ii) dynamic system stability and response, or iii) short-circuit capability limit; compared to the impacts of the Existing Generating Facility prior to the modification or replacement.

**Metering Equipment** shall mean all metering equipment installed or to be installed at the Generating Facility pursuant to this GIA at the metering points, including but not limited to instrument transformers, MWh-meters, data acquisition equipment, transducers, remote terminal unit, communications equipment, phone lines, and fiber optics.

**Monitoring and Consent Agreement** shall mean an agreement that defines the terms and conditions applicable to a Generating Facility acquiring Net Zero Interconnection Service. The Monitoring and Consent Agreement will list the roles and responsibilities of an Interconnection Customer seeking to interconnect with Net Zero Interconnection Service and Transmission Owner to maintain the total output of the Generating Facility inside the parameters delineated in the GIA.

**NERC** shall mean the North American Electric Reliability Corporation or its successor organization.

**Net Zero Interconnection Service** shall mean a form of ER Interconnection Service that allows Interconnection Customer to alter the characteristics of an existing generating facility, with the consent of the existing generating facility, at the same POI such that the Interconnection Service limit remains the same.

**Network Customer** shall have that meaning as provided in the Tariff.

**Network Resource** shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer's Network Load on a non-interruptible basis.

**Network Resource Interconnection Service (NR Interconnection Service)** shall mean an Interconnection Service that allows Interconnection Customer to integrate its Generating Facility with the Transmission System in the same manner as for any Generating Facility being designated as a Network Resource. Network Resource Interconnection Service does not convey transmission service. Network Resource Interconnection Service shall include any network resource interconnection service established under an agreement with, or the tariff of, a Transmission Owner prior to integration into MISO, that is determined to be deliverable through the integration deliverability study process.

**Network Upgrades** shall mean the additions, modifications, and upgrades to the Transmission System required at or beyond the point at which the Interconnection Facilities connect to the Transmission System or Distribution System, as applicable, to accommodate the interconnection of the Generating Facility to the Transmission System. Network Upgrade shall not include any HVDC Facility Upgrades.

**Notice of Dispute** shall mean a written notice of a dispute or claim that arises out of or in connection with this GIA or its performance.

**Operating Horizon Study** shall mean an Interconnection System Impact Study that includes in service transmission and generation for an identified timeframe to determine either the available injection capacity of an Interconnection Request or Interconnection Facilities and/or Transmission System changes required for the requested Interconnection Service.

**Optional Interconnection Study** shall mean a sensitivity analysis based on assumptions specified by Interconnection Customer in the Optional Interconnection Study Agreement.

**Optional Interconnection Study Agreement** shall mean the form of agreement contained in Appendix 5 of the Generator Interconnection Procedures for conducting the Optional Interconnection Study.

**Party or Parties** shall mean Transmission Provider, Transmission Owner, Interconnection Customer, or any combination of the above.

**Planning Horizon Study** shall mean an Interconnection System Impact Study that includes a future year study to determine either the available injection capacity of an Interconnection Request or Interconnection Facilities and/or Transmission System changes required for the requested Interconnection Service.

**Point of Change of Ownership (PCO)** shall mean the point, as set forth in Appendix A to the Generator Interconnection Agreement, where the Interconnection Customer's Interconnection Facilities connect to the Transmission Owner's Interconnection Facilities.

**Point of Interconnection (POI)** shall mean the point, as set forth in Appendix A of the GIA, where the Interconnection Facilities connect to the Transmission System.

**Provisional Interconnection Study** shall mean an engineering study, performed at Interconnection Customer's request, as a condition to entering into a provisional GIA, that evaluates the impact of the proposed interconnection on the safety and reliability of the Transmission System and, if applicable, any Affected System. The study shall identify and detail the impacts on the Transmission System and, if applicable, an Affected System, from stability, short circuit, and voltage issues that would result if the Generating Facility were interconnected without project modifications or system modifications.

**Queue Position** shall mean the order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests. The Queue Position is established based upon the date and time of receipt of the valid Interconnection Request by Transmission Provider.

**Reasonable Efforts** shall have that meaning as provided in the Tariff.

**Replacement Generating Facility** shall mean a Generating Facility that replaces an Existing Generating Facility, or a portion thereof, at the same electrical Point of Interconnection

pursuant to Section 3.7 of this Attachment X.

**Scoping Meeting** shall mean the meeting between representatives of Interconnection Customer, Transmission Owner, Affected System Operator(s) and Transmission Provider conducted for the purpose of discussing alternative interconnection options, to exchange information including any transmission data and earlier study evaluations that would be reasonably expected to impact such interconnection options, to analyze such information, and to determine the potential feasible Points of Interconnection.

**Shared Network Upgrade** shall mean a Network Upgrade or Common Use Upgrade that is funded by an Interconnection Customer(s) and also benefits other Interconnection Customer(s) that are later identified as beneficiaries.

**Site Control** shall mean documentation reasonably demonstrating: (1) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the Generating Facility and when applicable (i.e. when Interconnection Customer is providing the site for the TOIFs and Network Upgrades at the POI) the Interconnection Facilities, and; (2) an option to purchase or acquire a leasehold site for such purpose; or (3) an exclusivity or other business relationship between Interconnection Customer and the entity having the right to sell, lease or grant Interconnection Customer the right to possess or occupy a site for such purpose. Such documentation must support a reasonable determination of 75% of the sufficient land area to support the size and type of Generating Facility proposed. If an Interconnection Customer cannot demonstrate Site Control for Interconnection Facilities as a result of regulatory requirements or obligations, the Interconnection Customer must demonstrate such regulatory requirements or obligations to the Transmission Provider and provide cash in-lieu of Site Control until the time that the regulatory requirements allow the Site Control requirement to be met.

**Small Generating Facility** shall mean a Generating Facility that has an aggregate net Generating Facility Capacity of no more than five MW and meets the requirements of Section 14 and Appendix 3 of the GIP.

**Special Protection System (SPS)** shall mean an automatic protection system or remedial action scheme designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components, to maintain system reliability. Such action may include changes in demand (MW and MVar), energy (MWh and MVarh), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) underfrequency or undervoltage load shedding, (b) fault conditions that must be isolated, (c) out-of-step relaying not designed as an integral part of an SPS, or (d) Transmission Control Devices.

**Stand Alone Network Upgrades** shall mean Network Upgrades that an Interconnection Customer may construct without affecting day-to-day operations of the Transmission System during their construction. Transmission Provider, Transmission Owner and Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify them in Appendix A to this GIA.

**System Protection Facilities** shall mean the equipment, including necessary protection signal communications equipment, required to protect (1) the Transmission System or other delivery systems or other generating systems from faults or other electrical disturbances occurring at the Generating Facility and (2) the Generating Facility from faults or other electrical system disturbances occurring on the Transmission System or on other delivery systems or other generating systems to which the Transmission System is directly connected.

**Tariff** shall mean the Transmission Provider's Tariff through which open access transmission service and Interconnection Service are offered, as filed with the Commission, and as amended or supplemented from time to time, or any successor tariff.

**Transmission Control Devices** shall mean a generally accepted transmission device that is planned and designed to provide dynamic control of electric system quantities, and are usually employed as solutions to specific system performance issues. Examples of such devices include fast valving, high response exciters, high voltage DC links, active or real power flow control and reactive compensation devices using power electronics (*e.g.*, unified power flow controllers), static var compensators, thyristor controlled series capacitors, braking resistors, and in some cases mechanically-switched capacitors and reactors. In general, such systems are not considered to be Special Protection Systems.

**Transmission Owner** shall mean that Transmission Owner as defined in the Tariff, which includes an entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System at which Interconnection Customer proposes to interconnect or otherwise integrate the operation of the Generating Facility. Transmission Owner should be read to include any Independent Transmission Company that manages the transmission facilities of Transmission Owner and shall include, as applicable, the owner and/or operator of distribution facilities interconnected to the Transmission System, over which facilities transmission service or Wholesale Distribution Service under the Tariff is available at the time Interconnection Customer requests Interconnection Service and to which Interconnection Customer has requested interconnection of a Generating Facility for the purpose of either transmitting electric energy in interstate commerce or selling electric energy at wholesale in interstate commerce.

**Transmission Provider** shall mean the Midcontinent Independent System Operator, Inc. ("MISO"), the Regional Transmission Organization that controls or operates the transmission facilities of its transmission-owning members used for the transmission of electricity in interstate commerce and provides transmission service under the Tariff.

**Transmission Owner's Interconnection Facilities (TOIF)** shall mean all facilities and equipment owned by Transmission Owner from the Point of Change of Ownership to the Point of Interconnection as identified in Appendix A to this GIA, including any modifications, additions or upgrades to such facilities and equipment. Transmission Owner's Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Generator Upgrades, Stand Alone Network Upgrades or Network Upgrades.

**Transmission System** shall mean the facilities owned by Transmission Owner and controlled or operated by Transmission Provider or Transmission Owner that are used to provide

Transmission Service (including HVDC Service) or Wholesale Distribution Service under the Tariff.

**Trial Operation** shall mean the period during which Interconnection Customer is engaged in on-site test operations and commissioning of the Generating Facility prior to Commercial Operation.

**Variable Energy Resource** shall mean a device for the production of electricity that is characterized by an energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and (3) has variability that is beyond the control of the facility owner or operator.

**Wholesale Distribution Service** shall have that meaning as provided in the Tariff. Wherever the term “transmission delivery service” is used, Wholesale Distribution Service shall also be implied.

## ARTICLE 2. EFFECTIVE DATE, TERM AND TERMINATION

- 2.1 Effective Date.** This GIA shall become effective upon execution by the Parties subject to acceptance by FERC (if applicable), or if filed unexecuted, upon the date specified by FERC. Transmission Provider shall promptly file this GIA with FERC upon execution in accordance with Article 3.1, if required.
- 2.2 Term of Agreement.** Subject to the provisions of Article 2.3, this GIA shall remain in effect for a period of 30 years from the Effective Date and shall be automatically renewed for each successive one-year period thereafter on the anniversary of the Effective Date.
- 2.3 Termination Procedures.** This GIA may be terminated as follows:
- 2.3.1 Written Notice.** This GIA may be terminated by Interconnection Customer after giving Transmission Provider and Transmission Owner ninety (90) Calendar Days advance written notice. This GIA shall be terminated by Transmission Provider if the Generating Facility or a portion of the Generating Facility fails to achieve Commercial Operation by the Commercial Operation Date established in accordance with Section 4.4.4 of Attachment X, including any extension provided thereunder, or has ceased Commercial Operation for three (3) consecutive years, beginning with the last date of Commercial Operation for the Generating Facility, after giving Interconnection Customer ninety (90) Calendar Days advance written notice. Where only a portion of the Generating Facility fails to achieve Commercial Operation by the Commercial Operation Date established in accordance with Section 4.4.4 of Attachment X, including any extension provided thereunder, Transmission Provider shall only terminate that portion of the GIA. Notwithstanding the foregoing, in the limited circumstance that the Interconnection Request is served by a contingent Network Upgrade with an in-service date that is farther out than the Commercial Operation Date permitted under Section 4.4.4 of Attachment X, Transmission Provider shall only terminate this GIA for failure to achieve Commercial Operation by that later in-service date of the contingent Network Upgrade. The Generating Facility will not be deemed to have ceased Commercial Operation for purposes of this Article 2.3.1 if Interconnection Customer can document that it has taken other significant steps to maintain or restore operational readiness of the Generating Facility for the purpose of returning the Generating Facility to Commercial Operation as soon as possible.
- 2.3.1.1 Net Zero Interconnection Service.** Where this GIA provides for Net Zero Interconnection Service and the Energy Displacement Agreement or the Monitoring and Consent Agreement required for Net Zero Interconnection Service are no longer in effect, Interconnection Customer shall immediately cease Commercial Operation of the Generating Facility and this GIA shall be deemed terminated.
- 2.3.2 Default.** Any Party may terminate this GIA in accordance with Article 17.

**2.3.3** Notwithstanding Articles 2.3.1 and 2.3.2, no termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination, including the filing with FERC of a notice of termination of this GIA, if required, which notice has been accepted for filing by FERC.

**2.4 Termination Costs.** If a Party elects to terminate this GIA pursuant to Article 2.3 above, each Party shall pay all costs incurred for which that Party is responsible (including any cancellation costs relating to orders or contracts for Interconnection Facilities, applicable upgrades, and related equipment) or charges assessed by the other Parties, as of the date of the other Parties' receipt of such notice of termination, under this GIA. In the event of termination by a Party, the Parties shall use commercially Reasonable Efforts to mitigate the costs, damages and charges arising as a consequence of termination. Upon termination of this GIA, unless otherwise ordered or approved by FERC:

**2.4.1** With respect to any portion of the Transmission Owner's Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades, Generator Upgrades, and if so determined and made a part of this GIA, upgrades on Affected Systems, that have not yet been constructed or installed, Transmission Owner shall to the extent possible and to the extent of Interconnection Customer's written notice under Article 2.3.1, cancel any pending orders of, or return, any materials or equipment for, or contracts for construction of, such facilities; provided that in the event Interconnection Customer elects not to authorize such cancellation, Interconnection Customer shall assume all payment obligations with respect to such materials, equipment, and contracts, and Transmission Owner shall deliver such material and equipment, and, if necessary, assign such contracts, to Interconnection Customer as soon as practicable, at Interconnection Customer's expense. To the extent that Interconnection Customer has already paid Transmission Owner for any or all such costs of materials or equipment not taken by Interconnection Customer, Transmission Owner shall promptly refund such amounts to Interconnection Customer, less any costs, including penalties incurred by Transmission Owner to cancel any pending orders of or return such materials, equipment, or contracts.

If an Interconnection Customer terminates this GIA, it shall be responsible for all costs incurred in association with that Interconnection Customer's interconnection, including any cancellation costs relating to orders or contracts for Interconnection Facilities and equipment, and other expenses including any upgrades or related equipment for which Transmission Owner has incurred expenses and has not been reimbursed by Interconnection Customer.

**2.4.2** Transmission Owner may, at its option, retain any portion of such materials, equipment, or facilities that Interconnection Customer chooses not to accept delivery of, in which case Transmission Owner shall be responsible for all costs associated with procuring such materials, equipment, or facilities. If

Transmission Owner does not so elect, then Interconnection Customer shall be responsible for such costs.

- 2.4.3** With respect to any portion of the Interconnection Facilities, and any other facilities already installed or constructed pursuant to the terms of this GIA, Interconnection Customer shall be responsible for all costs associated with the removal, relocation, reconfiguration or other disposition or retirement of such materials, equipment, or facilities, and such other expenses actually incurred by Transmission Owner necessary to return the Transmission, Distribution or Generator System, as applicable, to safe and reliable operation.
- 2.5 Disconnection.** Upon termination of this GIA, the Parties will take all appropriate steps to disconnect the Generating Facility from the Transmission or Distribution System, as applicable. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this GIA or such non-terminating Party otherwise is responsible for these costs under this GIA.
- 2.6 Survival.** This GIA shall continue in effect after termination to the extent necessary to provide for final billings and payments and for costs incurred hereunder, including billings and payments pursuant to this GIA; to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while this GIA was in effect; and to permit each Party to have access to the lands of the other Party pursuant to this GIA or other applicable agreements, to disconnect, remove or salvage its own facilities and equipment.

### ARTICLE 3. REGULATORY FILINGS

- 3.1 Filing.** Transmission Provider shall file this GIA (and any amendment hereto) with the appropriate Governmental Authority, if required. A Party may request that any information so provided be subject to the confidentiality provisions of Article 22. If that Party has executed this GIA, or any amendment thereto, the Party shall reasonably cooperate with Transmission Provider with respect to such filing and to provide any information reasonably requested by Transmission Provider needed to comply with applicable regulatory requirements.

### ARTICLE 4. SCOPE OF SERVICE

- 4.1 Interconnection Product Options.** Interconnection Customer has selected the following (checked) type of Interconnection Service:

Check: \_\_\_\_\_ NZ or \_\_\_\_\_ ER and/or   X   NR (See Appendix A for details)

**4.1.1 Energy Resource Interconnection Service (ER Interconnection Service).**

**4.1.1.1 The Product.** ER Interconnection Service allows Interconnection

Customer to connect the Generating Facility to the Transmission or Distribution System, as applicable, and be eligible to deliver the Generating Facility's output using the existing firm or non-firm capacity of the Transmission System on an "as available" basis. To the extent Interconnection Customer wants to receive ER Interconnection Service, Transmission Owner shall construct facilities consistent with the studies identified in Appendix A.

An Interconnection Customer seeking ER Interconnection Service for new or added capacity at a Generating Facility may be granted conditional ER Interconnection Service status to the extent there is such capacity available on the Transmission System to accommodate the Interconnection Customer's Generating Facility. At the request of Interconnection Customer, conditional ER Interconnection Service status may be granted subject to the system being able to accommodate the interconnection without upgrades, until such time as a higher queued project(s) with a later service date affecting the same common elements is placed into service. The conditional ER Interconnection Service shall be terminated in the event Interconnection Customer fails to fund the necessary studies and the Network Upgrades necessary to grant the Interconnection Customer's ER Interconnection Service upon the completion of higher queued projects involving the same common elements.

**4.1.1.2 Transmission Delivery Service Implications.** Under ER Interconnection Service, Interconnection Customer will be eligible to inject power from the Generating Facility into and deliver power across the Transmission System on an "as available" basis up to the amount of MW identified in the applicable stability and steady state studies to the extent the upgrades initially required to qualify for ER Interconnection Service have been constructed. After that date FERC makes effective MISO's Energy Market Tariff filed in Docket No. ER04-691-000, Interconnection Customer may place a bid to sell into the market up to the maximum identified Generating Facility output, subject to any conditions specified in the Interconnection Service approval, and the Generating Facility will be dispatched to the extent the Interconnection Customer's bid clears. In all other instances, no transmission or other delivery service from the Generating Facility is assured, but Interconnection Customer may obtain Point-To-Point Transmission Service, Network Integration Transmission Service or be used for secondary network transmission service, pursuant to the Tariff, up to the maximum output identified in the stability and steady state studies. In those instances, in order for Interconnection Customer to obtain the right to deliver or inject energy beyond the Point of Interconnection or to improve its ability to do so, transmission delivery service must be obtained pursuant to the provisions of the Tariff. The Interconnection

Customer's ability to inject its Generating Facility output beyond the Point of Interconnection, therefore, will depend on the existing capacity of the Transmission or Distribution System as applicable, at such time as a Transmission Service request is made that would accommodate such delivery. The provision of Firm Point-To-Point Transmission Service or Network Integration Transmission Service may require the construction of additional Network or Distribution Upgrades.

#### **4.1.2 Network Resource Interconnection Service (NR Interconnection Service).**

**4.1.2.1 The Product.** Transmission Provider must conduct the necessary studies and Transmission Owner shall construct the facilities identified in Appendix A of this GIA, subject to the approval of Governmental Authorities, needed to integrate the Generating Facility in the same manner as for any Generating Facility being designated as a Network Resource.

**4.1.2.2 Transmission Delivery Service Implications.** NR Interconnection Service allows the Generating Facility to be designated by any Network Customer under the Tariff on the Transmission System as a Network Resource, up to the Generating Facility's full output, on the same basis as existing Network Resources that are interconnected to the Transmission or Distribution System, as applicable, and to be studied as a Network Resource on the assumption that such a designation will occur. Although NR Interconnection Service does not convey a reservation of Transmission Service, any Network Customer can utilize Network Integration Transmission Service under the Tariff to obtain delivery of energy from the Generating Facility in the same manner as it accesses Network Resources. A Generating Facility receiving NR Interconnection Service may also be used to provide Ancillary Services after technical studies and/or periodic analyses are performed with respect to the Generating Facility's ability to provide any applicable Ancillary Services, provided that such studies and analyses have been or would be required in connection with the provision of such Ancillary Services by any existing Network Resource. However, if the Generating Facility has not been designated as a Network Resource by any Network Customer, it cannot be required to provide Ancillary Services except to the extent such requirements extend to all generating facilities that are similarly situated. The provision of Network Integration Transmission Service or Firm Point-To-Point Transmission Service may require additional studies and the construction of additional upgrades. Because such studies and upgrades would be associated with a request for delivery service under the Tariff, cost responsibility for the studies and upgrades would be in accordance with FERC's policy for pricing transmission delivery services.

NR Interconnection Service does not necessarily provide Interconnection Customer with the capability to physically deliver the output of its Generating Facility to any particular load on the Transmission System without incurring congestion costs. In the event of transmission or distribution constraints on the Transmission or Distribution System, as applicable, the Generating Facility shall be subject to the applicable congestion management procedures in the Transmission System in the same manner as Network Resources.

There is no requirement either at the time of study or interconnection, or at any point in the future, that the Generating Facility be designated as a Network Resource by a Network Customer or that Interconnection Customer identify a specific buyer (or sink). To the extent a Network Customer does designate the Generating Facility as a Network Resource, it must do so pursuant to the Tariff.

Once an Interconnection Customer satisfies the requirements for obtaining NR Interconnection Service, any future Transmission Service request for delivery from the Generating Facility within the Transmission System of any amount of capacity and/or energy, up to the amount initially studied, will not require that any additional studies be performed or that any further upgrades associated with such Generating Facility be undertaken, regardless of whether such Generating Facility is ever designated by a Network Customer as a Network Resource and regardless of changes in ownership of the Generating Facility. To the extent Interconnection Customer enters into an arrangement for long term Transmission Service for deliveries from the Generating Facility to customers other than the studied Network Customers, or for any Point-To-Point Transmission Service, such request may require additional studies and upgrades in order for Transmission Provider to grant such request. However, the reduction or elimination of congestion or redispatch costs may require additional studies and the construction of additional upgrades.

To the extent Interconnection Customer enters into an arrangement for long term Transmission Service for deliveries from the Generating Facility outside the Transmission System, such request may require additional studies and upgrades in order for Transmission Provider to grant such request.

**4.1.2.3 Conditional NR Interconnection Service.** An Interconnection Customer seeking NR Interconnection Service for new or added capacity at a Generating Facility may be granted conditional NR Interconnection Service status to the extent there is such capacity available on the Transmission System to accommodate the Interconnection Customer's Generating Facility. At the request of Interconnection Customer,

conditional NR Interconnection Service status may be granted subject to the system being able to accommodate the interconnection without upgrades, until such time as higher queued project(s) with a later service date affecting the same common elements is placed into service. The conditional NR Interconnection Service status may be converted to ER Interconnection Service if either of the following occurs:

- 1) Interconnection Customer fails to fund necessary studies and Network Upgrades required to allow the Interconnection Customer's Generating Facility to receive NR Interconnection Service upon the completion of higher queued projects involving the same common elements; or
- 2) The higher queued project(s) or planned and required Network Upgrades are placed in service and the Network Upgrades required to provide NR Interconnection Service status to the Interconnection Customer's Generating Facility are not in service.

In the event Interconnection Customer fails to fund the necessary studies and Network Upgrades for NR Interconnection Service, the Interconnection Customer's conditional NR Interconnection Service status shall be converted to ER Interconnection Service status unless Interconnection Customer makes a new Interconnection Request. Such new Interconnection Request shall be evaluated in accordance with the GIP and its new queue position.

Some or all of the conditional NR Interconnection Service status may be temporarily revoked if the Network Upgrades are not in service when the higher queued project(s) are placed in service. The availability of conditional NR Interconnection Service status will be determined by Transmission Provider's studies. Upon funding and completion of the Network Upgrades required to establish the Generating Facility's NR Interconnection Service status, the Generating Facility will be granted NR Interconnection Service status.

The Parties agree that the portion of the Generating Facility classified as NR Interconnection Service is the first portion of the output of the combined output of all the units at the Generating Facility except in circumstances where Interconnection Customer otherwise elects this GIA, as amended, to allocate that portion to the output of specific unit(s) at the Generating Facility, the total of which will not exceed the output eligible for NR Interconnection Service as shown by the additional studies. To the extent Interconnection Customer desires to obtain NR Interconnection Service for any portion of the Generating Facility in addition to that supported by such additional studies, Interconnection Customer will be required to request such additional NR Interconnection Service through a

separate Interconnection Request in accordance with the GIP.

**4.1.3 Net Zero Interconnection Service (NZ Interconnection Service).**

**4.1.3.1 The Product.** Net Zero Interconnection Service is restricted ER Interconnection Service that allows an Interconnection Customer to increase the gross generating capability at the same Point of Interconnection of an existing generating facility without increasing the existing Interconnection Service limit at that Point of Interconnection.

**4.1.3.2 Transmission Delivery Service Implications.** Net Zero Interconnection Service does not convey any right to deliver electricity to any specific customer or Point of Delivery.

**4.2 Provision of Service.** Transmission Provider shall provide Interconnection Service for the Generating Facility at the Point of Interconnection.

**4.3 Performance Standards.** Each Party shall perform all of its obligations under this GIA in accordance with Applicable Laws and Regulations, Applicable Reliability Standards, and Good Utility Practice. To the extent a Party is required or prevented or limited in taking any action by such regulations and standards, or if the obligations of any Party may become limited by a change in Applicable Laws and Regulations, Applicable Reliability Standards, and Good Utility Practice after the execution of this GIA, that Party shall not be deemed to be in Breach of this GIA for its compliance therewith. The Party so limited shall notify the other Parties whereupon Transmission Provider shall amend this GIA in concurrence with the other Parties and submit the amendment to the Commission for approval.

**4.4 No Transmission Delivery Service.** The execution of this GIA does not constitute a request for, or the provision of, any transmission delivery service under the Tariff, and does not convey any right to deliver electricity to any specific customer or Point of Delivery.

**4.5 Interconnection Customer Provided Services.** The services provided by Interconnection Customer under this GIA are set forth in Article 9.6 and Article 13.4.1. Interconnection Customer shall be paid for such services in accordance with Article 11.7.

**ARTICLE 5. INTERCONNECTION FACILITIES ENGINEERING, PROCUREMENT, AND CONSTRUCTION**

**5.1 Options.** Unless otherwise mutually agreed to between the Parties, Interconnection Customer shall select: 1) the In-Service Date, Initial Synchronization Date, and Commercial Operation Date based on a reasonable construction schedule that will allow sufficient time for design, construction, equipment procurement, and permit acquisition of Transmission System equipment or right-of-way; and 2) either Standard Option or

Alternate Option set forth below for completion of the Transmission Owner's Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades and Generator Upgrades, as applicable, and set forth in Appendix A, and such dates and selected option shall be set forth in Appendix B. The dates and selected option shall be subject to the acceptance of Transmission Owner taking into account the type of construction to be employed and the regulatory requirements of Governmental Authority, and does not convey any right to deliver electricity to any specific customer or Point of Delivery, including the need to obtain permits or other authorizations for construction of the Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades, Generator Upgrades, the Generating Facility and Stand-Alone Network Upgrades.

**5.1.1 Standard Option.** Transmission Owner shall design, procure, and construct the Transmission Owner's Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades, and Generator Upgrades using Reasonable Efforts to complete the Transmission Owner's Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades and Generator Upgrades by the dates set forth in Appendix B, Milestones, subject to the receipt of all approvals required from Governmental Authorities and the receipt of all land rights necessary to commence construction of such facilities, and such other permits or authorizations as may be required. Transmission Provider or Transmission Owner shall not be required to undertake any action which is inconsistent with its standard safety practices, its material and equipment specifications, its design criteria and construction procedures, its labor agreements, Applicable Laws and Regulations and Good Utility Practice. In the event Transmission Owner reasonably expects that it will not be able to complete the Transmission Owner's Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades and Generator Upgrades by the specified dates, Transmission Owner shall promptly provide written notice to Interconnection Customer and Transmission Provider and shall undertake Reasonable Efforts to meet the earliest dates thereafter.

**5.1.2 Alternate Option.** If the dates designated by Interconnection Customer are acceptable to Transmission Provider and Transmission Owner, Transmission Provider shall so notify Interconnection Customer within thirty (30) Calendar Days, and Transmission Owner shall assume responsibility for the design, procurement and construction of the Transmission Owner's Interconnection Facilities by the designated dates.

If Transmission Owner subsequently fails to complete the Transmission Owner's Interconnection Facilities by the In-Service Date, to the extent necessary to provide back feed power; or fails to complete Network Upgrades by the Initial Synchronization Date to the extent necessary to allow for Trial Operation at full power output, unless other arrangements are made by the Parties for such Trial Operation; or fails to complete the Network Upgrades by the Commercial Operation Date, as such dates are reflected in Appendix B, Milestones;

Transmission Owner shall pay Interconnection Customer liquidated damages in accordance with Article 5.3, Liquidated Damages, provided, however, the dates designated by Interconnection Customer shall be extended day for day for each Calendar Day that Transmission Provider refuses to grant clearances to install equipment.

Transmission Owner and Interconnection Customer may adopt an incentive payment schedule that is mutually agreeable to encourage Transmission Owner to meet specified accelerated dates. Such payment by Interconnection Customer is not subject to refund.

**5.1.3 Option to Build.** If the dates designated by Interconnection Customer are not acceptable to Transmission Owner to complete the Transmission Owner's Interconnection Facilities or Stand Alone Network Upgrades, Transmission Provider shall so notify Interconnection Customer within thirty (30) Calendar Days, and unless the Parties agree otherwise, Interconnection Customer shall have the option to assume responsibility for the design, procurement and construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades by the dates originally designated by Interconnection Customer under Article 5.1.2. The Parties must agree as to what constitutes Stand Alone Network Upgrades and identify such Stand Alone Network Upgrades in Appendix A. Except for Stand Alone Network Upgrades, Interconnection Customer shall have no right to construct Network Upgrades under this option.

**5.1.4 Negotiated Option.** If Interconnection Customer elects not to exercise its option under Article 5.1.3, Option to Build, Interconnection Customer shall so notify Transmission Provider and Transmission Owner within thirty (30) Calendar Days, and the Parties shall in good faith attempt to negotiate terms and conditions (including revision of the specified dates and liquidated damages, the provision of incentives or the procurement and construction of a portion of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades by Interconnection Customer) pursuant to which Transmission Owner is responsible for the design, procurement and construction of the Transmission Owner's Interconnection Facilities and Network Upgrades. If the Parties are unable to reach agreement on such terms and conditions, Transmission Owner shall assume responsibility for the design, procurement and construction of the Transmission Owner's Interconnection Facilities and Network Upgrades pursuant to 5.1.1, Standard Option.

Transmission Owner and Interconnection Customer may adopt an incentive payment schedule that is mutually agreeable to encourage Transmission Owner to meet specified accelerated dates. Such payment by Interconnection Customer is not subject to refund.

**5.2 General Conditions Applicable to Option to Build.** If Interconnection Customer

assumes responsibility for the design, procurement and construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades after receipt of all required approvals from Governmental Authorities necessary to commence construction,

(1) Interconnection Customer shall engineer, procure equipment, and construct the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades (or portions thereof) using Good Utility Practice and using standards and specifications provided in advance by Transmission Owner, or as required by any Governmental Authority;

(2) Interconnection Customer's engineering, procurement and construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades shall comply with all requirements of law or Governmental Authority to which Transmission Owner would be subject in the engineering, procurement or construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades;

(3) Transmission Provider, at Transmission Provider's option, and Transmission Owner shall be entitled to review and approve the engineering design, equipment acceptance tests(including witnessing of acceptance tests), and the construction (including monitoring of construction) of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades, and shall have the right to reject any design, procurement, construction or acceptance test of any equipment that does not meet the standards and specifications of Transmission Provider, Transmission Owner and any Governmental Authority;

(4) prior to commencement of construction, Interconnection Customer shall provide to Transmission Provider and Transmission Owner a schedule for construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades, and shall promptly respond to requests for information from Transmission Provider and Transmission Owner;

(5) at any time during construction, Transmission Provider and Transmission Owner shall have unrestricted access to the construction site for the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades and to conduct inspections of the same;

(6) at any time during construction, should any phase of the engineering, equipment procurement, or construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades not meet the standards and specifications provided by Transmission Owner, Interconnection Customer shall be obligated to remedy deficiencies in that portion of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades to meet the standards and specifications provided by Transmission Provider and Transmission Owner;

(7) Interconnection Customer shall indemnify Transmission Provider and Transmission Owner for claims arising from the Interconnection Customer's construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades under the terms and procedures applicable to Article 18.1, Indemnity;

(8) Interconnection Customer shall transfer control of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades to Transmission Owner;

(9) Unless Parties otherwise agree, Interconnection Customer shall transfer ownership of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades to Transmission Owner;

(10) Transmission Provider, at Transmission Provider's option, and Transmission Owner shall approve and accept for operation and maintenance the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades to the extent engineered, procured, and constructed in accordance with this Article 5.2 only if the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades meet the standards and specifications of Transmission Provider, Transmission Owner and any Governmental Authority.

(11) Interconnection Customer shall deliver to Transmission Owner "as-built" drawings, information, and any other documents that are reasonably required by Transmission Owner to assure that the Interconnection Facilities and Stand-Alone Network Upgrades are built to the standards and specifications required by Transmission Owner.

**5.3 Liquidated Damages.** The actual damages to Interconnection Customer, in the event the Transmission Owner's Interconnection Facilities or Network Upgrades are not completed by the dates designated by Interconnection Customer and accepted by Transmission Provider and Transmission Owner pursuant to subparagraphs 5.1.2 or 5.1.4, above, may include Interconnection Customer's fixed operation and maintenance costs and lost opportunity costs. Such actual damages are uncertain and impossible to determine at this time. Because of such uncertainty, any liquidated damages paid by Transmission Owner to Interconnection Customer in the event that Transmission Owner does not complete any portion of the Transmission Owner's Interconnection Facilities or Network Upgrades by the applicable dates, shall be an amount equal to  $\frac{1}{2}$  of 1 percent per day of the actual cost of the Transmission Owner's Interconnection Facilities and Network Upgrades, in the aggregate, for which Transmission Owner has assumed responsibility to design, procure and construct.

However, in no event shall the total liquidated damages exceed 20 percent of the actual cost of the Transmission Owner's Interconnection Facilities and Network Upgrades for which Transmission Owner has assumed responsibility to design, procure, and construct.

The foregoing payments will be made by Transmission Owner to Interconnection Customer as just compensation for the damages caused to Interconnection Customer, which actual damages are uncertain and impossible to determine at this time, and as reasonable liquidated damages, but not as a penalty or a method to secure performance of this GIA. Liquidated damages, when the Parties agree to them, are the exclusive remedy for the Transmission Owner's failure to meet its schedule.

No liquidated damages shall be paid to Interconnection Customer if: (1) Interconnection Customer is not ready to commence use of the Transmission Owner's Interconnection Facilities or Network Upgrades to take the delivery of power for the Generating Facility's Trial Operation or to export power from the Generating Facility on the specified dates, unless Interconnection Customer would have been able to commence use of the Transmission Owner's Interconnection Facilities or Network Upgrades to take the delivery of power for Generating Facility's Trial Operation or to export power from the Generating Facility, but for Transmission Owner's delay; (2) the Transmission Owner's failure to meet the specified dates is the result of the action or inaction of Transmission Provider, Interconnection Customer or any other earlier queued Interconnection Customer who has entered into an earlier GIA with Transmission Provider and/or a Transmission Owner or with an Affected System Operator, or any cause beyond Transmission Owner's reasonable control or reasonable ability to cure; (3) Interconnection Customer has assumed responsibility for the design, procurement and construction of the Transmission Owner's Interconnection Facilities and Stand Alone Network Upgrades; (4) the delay is due to the inability of Transmission Owner to obtain all required approvals from Governmental Authorities in a timely manner for the construction of any element of the Interconnection Facilities, Network Upgrades or Stand Alone Network Upgrades, or any other permit or authorization required, or any land rights or other private authorizations that may be required, and Transmission Owner has exercised Reasonable Efforts in procuring such approvals, permits, rights or authorizations; or (5) the Parties have otherwise agreed.

**5.4 Power System Stabilizers.** Interconnection Customer shall procure, install, maintain and operate power system stabilizers in accordance with the guidelines and procedures established by the Applicable Reliability Council. Transmission Provider and Transmission Owner reserve the right to reasonably establish minimum acceptable settings for any installed power system stabilizers, subject to the design and operating limitations of the Generating Facility. If the Generating Facility's power system stabilizers are removed from service or are not capable of automatic operation, Interconnection Customer shall immediately notify the Transmission Provider's system operator, or its designated representative. The requirements of this paragraph shall not apply to induction generators.

**5.5 Equipment Procurement.** If responsibility for construction of the Transmission Owner's Interconnection Facilities, Network Upgrades and/or Distribution Upgrades is to be borne by Transmission Owner, then Transmission Owner shall commence design of the Transmission Owner's Interconnection Facilities, Network Upgrades and/or Distribution Upgrades, and procure necessary equipment as soon as practicable after all

of the following conditions are satisfied, unless the Parties otherwise agree in writing:

**5.5.1** Transmission Provider has completed the Interconnection Facilities Study pursuant to the Interconnection Facilities Study Agreement; and

**5.5.2** Where applicable, Interconnection Customer has provided security to Transmission Owner in accordance with Article 11.6 by the dates specified in Appendix B, Milestones.

**5.6 Construction Commencement.** Transmission Owner shall commence construction of the Transmission Owner's Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities, Distribution Upgrades, and Generator Upgrades for which it is responsible as soon as practicable after the following additional conditions are satisfied:

**5.6.1** Approval of the appropriate Governmental Authority has been obtained for any facilities requiring regulatory approval; and

**5.6.2** Where applicable, Interconnection Customer has provided security to Transmission Owner in accordance with Article 11.6 by the dates specified in Appendix B, Milestones.

**5.7 Work Progress.** Transmission Owner and Interconnection Customer will keep each other and Transmission Provider advised periodically as to the progress of their respective design, procurement and construction efforts. Either Transmission Owner or Interconnection Customer may, at any time, request a progress report from the other, with a copy to be provided to the other Parties. If, at any time, Interconnection Customer determines that the completion of the Transmission Owner's Interconnection Facilities, Network Upgrades, or Transmission Owner's System Protection Facilities will not be required until after the specified In-Service Date, Interconnection Customer will provide written notice to Transmission Provider and Transmission Owner of such later date upon which the completion of the Transmission Owner's Interconnection Facilities, Network Upgrades or Transmission Owner's System Protection Facilities will be required. Transmission Owner may delay the In-Service Date of its facilities accordingly.

**5.8 Information Exchange.** As soon as reasonably practicable after the Effective Date, the Parties shall exchange information regarding the design and compatibility of the Interconnection Facilities and compatibility of the Interconnection Facilities with the Transmission System or Distribution System, as applicable, and shall work diligently and in good faith to make any necessary design changes.

**5.9 Limited Operation.** If any of the Transmission Owner's Interconnection Facilities, Network Upgrades, or Transmission Owner's System Protection Facilities, Distribution Upgrades or Generator Upgrades are not reasonably expected to be completed prior to the Commercial Operation Date of the Generating Facility, Transmission Provider shall, upon the request and at the expense of Interconnection Customer, perform operating

studies on a timely basis to determine the extent to which the Generating Facility and the Interconnection Customer's Interconnection Facilities may operate prior to the completion of the Transmission Owner's Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities, Distribution Upgrades or Generator Upgrades consistent with Applicable Laws and Regulations, Applicable Reliability Standards, Good Utility Practice, and this GIA. Transmission Provider and Transmission Owner shall permit Interconnection Customer to operate the Generating Facility and the Interconnection Customer's Interconnection Facilities in accordance with the results of such studies; provided, however, such studies reveal that such operation may occur without detriment to the Transmission System as then configured and in accordance with the safety requirements of Transmission Owner and any Governmental Authority.

The maximum permissible output of the Generating Facility will be updated on a quarterly basis if the Network Upgrades necessary for the interconnection of the Generating Facility pursuant to this GIA are not in service within six (6) months following the Commercial Operation Date of the Generating Facility as specified in Appendix B of this GIA. These quarterly studies will be performed using the same methodology set forth in Section 11.5 of the GIP. These quarterly updates will end when all Network Upgrades necessary for the interconnection of the Generating Facility pursuant to this GIA are in service.

**5.10 Interconnection Customer's Interconnection Facilities.** Interconnection Customer shall, at its expense, design, procure, construct, own and install the ICIF, as set forth in Appendix A.

**5.10.1 Interconnection Customer's Interconnection Facility Specifications.**

Interconnection Customer shall submit initial design and specifications for the ICIF, including Interconnection Customer's System Protection Facilities, to Transmission Provider and Transmission Owner at least one hundred eighty (180) Calendar Days prior to the Initial Synchronization Date; and final design and specifications for review and comment at least ninety (90) Calendar Days prior to the Initial Synchronization Date. Transmission Provider at Transmission Provider's option, and Transmission Owner shall review such specifications to ensure that the ICIF are compatible with their respective technical specifications, operational control, and safety requirements and comment on such design and specifications within thirty (30) Calendar Days of Interconnection Customer's submission. All specifications provided hereunder shall be deemed confidential.

**5.10.2 Transmission Provider's and Transmission Owner's Review.** Transmission Provider's and Transmission Owner's review of Interconnection Customer's final specifications shall not be construed as confirming, endorsing, or providing a warranty as to the design, fitness, safety, durability or reliability of the Generating Facility, or the ICIF. Interconnection Customer shall make such changes to the ICIF as may reasonably be required by Transmission Provider and Transmission Owner, in accordance with Good Utility Practice, to ensure

that the ICIF are compatible with the technical specifications, operational control and safety requirements of Transmission Provider and Transmission Owner.

**5.10.3 ICIF Construction.** The ICIF shall be designed and constructed in accordance with Good Utility Practice. Within one hundred twenty (120) Calendar Days after the Commercial Operation Date, unless the Parties agree on another mutually acceptable deadline, Interconnection Customer shall deliver to Transmission Provider and Transmission Owner “as-built” drawings, information and documents for the ICIF, such as: a one-line diagram, a site plan showing the Generating Facility and the ICIF, plan and elevation drawings showing the layout of the ICIF, a relay functional diagram, relaying AC and DC schematic wiring diagrams and relay settings for all facilities associated with the Interconnection Customer’s step-up transformers, the facilities connecting the Generating Facility to the step-up transformers and the ICIF, and the impedances (determined by factory tests) for the associated step-up transformers and the Generating Facility. Interconnection Customer shall provide Transmission Provider and Transmission Owner with Interconnection Customer’s specifications for the excitation system, automatic voltage regulator, Generating Facility control and protection settings, transformer tap settings, and communications, if applicable.

**5.11 Transmission Owner’s Interconnection Facilities Construction.** The Transmission Owner’s Interconnection Facilities shall be designed and constructed in accordance with Good Utility Practice. Upon request, within one hundred twenty (120) Calendar Days after the Commercial Operation Date, unless the Parties agree on another mutually acceptable deadline, Transmission Owner shall deliver to Transmission Provider (if requested) and Interconnection Customer the “as-built” drawings, information and documents for the Transmission Owner’s Interconnection Facilities specified in Appendix C to this GIA.

Such drawings, information and documents shall be deemed Confidential Information.

Upon completion, the Transmission Owner’s Interconnection Facilities and Stand Alone Network Upgrades shall be under the control of Transmission Provider or its designated representative.

**5.12 Access Rights.** Upon reasonable notice by a Party, and subject to any required or necessary regulatory approvals, a Party (“Granting Party”) shall furnish *at no cost* to the other Party (“Access Party”) any rights of use, licenses, rights of way and easements with respect to lands owned or controlled by the Granting Party, its agents (if allowed under the applicable agency agreement), or any Affiliate, that are necessary to enable the Access Party to obtain ingress and egress to construct, operate, maintain, repair, test (or witness testing), inspect, replace or remove facilities and equipment to: (i) interconnect the Generating Facility with the Transmission System; (ii) operate and maintain the Generating Facility, the Interconnection Facilities and the Transmission System; and

(iii) disconnect or remove the Access Party's facilities and equipment upon termination of this GIA. In exercising such licenses, rights of way and easements, the Access Party shall not unreasonably disrupt or interfere with normal operation of the Granting Party's business and shall adhere to the safety rules and procedures established in advance, as may be changed from time to time, by the Granting Party and provided to the Access Party.

- 5.13 Lands of Other Property Owners.** If any part of the Transmission Owner's Interconnection Facilities, Network Upgrades, and/or Distribution Upgrades is to be installed on property owned by persons other than Interconnection Customer or Transmission Owner, Transmission Owner shall at Interconnection Customer's expense use efforts, similar in nature and extent to those that it typically undertakes on its own behalf or on behalf of its Affiliates, including use of its eminent domain authority to the extent permitted and consistent with Applicable Laws and Regulations and, to the extent consistent with such Applicable Laws and Regulations, to procure from such persons any rights of use, licenses, rights of way and easements that are necessary to construct, operate, maintain, test, inspect, replace or remove the Transmission Owner's Interconnection Facilities, Network Upgrades and/or Distribution Upgrades upon such property.
- 5.14 Permits.** Transmission Provider or Transmission Owner and Interconnection Customer shall cooperate with each other in good faith in obtaining all permits, licenses and authorizations that are necessary to accomplish the interconnection in compliance with Applicable Laws and Regulations. With respect to this paragraph, Transmission Owner shall provide permitting assistance to Interconnection Customer comparable to that provided to the Transmission Owner's own, or an Affiliate's, generation to the extent that Transmission Owner or its Affiliate owns generation.
- 5.15 Early Construction of Base Case Facilities.** (Includes facilities required for all queued projects with interconnection agreements ).Interconnection Customer may request Transmission Owner to construct, and Transmission Owner shall construct, using Reasonable Efforts to accommodate Interconnection Customer's In-Service Date, all or any portion of any Network Upgrades, Transmission Owner's System Protection Facilities or Distribution Upgrades required for Interconnection Customer to be interconnected to the Transmission or Distribution System, as applicable, which are included in the Base Case of the Interconnection Facilities Study for Interconnection Customer, and which also are required to be constructed for another Interconnection Customer with a prior GIA, but where such construction is not scheduled to be completed in time to achieve Interconnection Customer's In-Service Date. Any such Network Upgrades, System Protection Facilities or Distribution Upgrades are included in the facilities to be constructed and as set forth in Appendix A to this GIA to the extent they are reasonably known.
- 5.16 Suspension.**

**5.16.1 Interconnection Customer's Right to Suspend for Force Majeure Event;**

**Obligations.** Provided that such suspension is permissible under the authorizations, permits or approvals granted for the construction of such Interconnection Facilities, Network Upgrades or Stand Alone Network Upgrades, Interconnection Customer will not suspend unless a Force Majeure event occurs.

Interconnection Customer must provide written notice of its request for suspension to Transmission Provider and Transmission Owner, and provide a description of the Force Majeure event that is acceptable to Transmission Provider. Suspension will only apply to Interconnection Customer milestones and Interconnection Facilities described in the Appendices of this GIA. Prior to suspension, Interconnection Customer must also provide security acceptable to Transmission Owner, equivalent to the higher of \$5 million or the total cost of all Network Upgrades, Transmission Owner's System Protection Facilities, and Distribution Upgrades listed in Appendix A of this GIA. Network Upgrades and Transmission Owner's Interconnection Facilities will be constructed on the schedule described in the Appendices of this GIA unless: (1) construction is prevented by the order of a Governmental Authority; (2) the Network Upgrades are not needed by any other project; or (3) Transmission Owner or Transmission Provider determines that a Force Majeure event prevents construction. In the event of (1), (2), or (3) security shall be released upon the determination that the Network Upgrades will no longer be constructed.

If suspension occurs, the Transmission or Distribution System, as applicable, shall be left in a safe and reliable condition in accordance with Good Utility Practice and the Transmission Provider's and Transmission Owner's safety and reliability criteria. In such event, Interconnection Customer shall be responsible for all reasonable and necessary costs which Transmission Provider and Transmission Owner (i) have incurred pursuant to this GIA prior to the suspension and (ii) incur in suspending such work, including any costs incurred to perform such work as may be necessary to ensure the safety of persons and property and the integrity of the Transmission or Distribution System, as applicable, during such suspension and, if applicable, any costs incurred in connection with the cancellation or suspension of material, equipment and labor contracts which Transmission Provider and Transmission Owner cannot reasonably avoid; provided, however, that prior to canceling or suspending any such material, equipment or labor contract, Transmission Provider and Transmission Owner shall obtain Interconnection Customer's authorization to do so.

Transmission Provider and Transmission Owner shall each invoice Interconnection Customer for such costs pursuant to Article 12 and shall use Reasonable Efforts to minimize its costs. In the event Interconnection Customer suspends work by Transmission Owner required under this GIA pursuant to this Article 5.16, and has not requested Transmission Owner to recommence the work required under this GIA on or before the expiration of three (3) years following commencement of such suspension, this GIA shall be deemed terminated. The three-year period shall begin on the date the suspension is requested, or the date

of the written notice to Transmission Provider, if no effective date is specified.

**5.16.2 Effect of Missed Interconnection Customer Milestones.** If Interconnection Customer fails to provide notice of suspension pursuant to Article 5.16, and Interconnection Customer fails to fulfill or complete any Interconnection Customer Milestone provided in Appendix B (“Milestone”), this constitutes a Breach under this GIA. Depending upon the consequences of the Breach and effectiveness of the cure pursuant to Article 17, the Transmission Owners’ Milestones may be revised, following consultation with Interconnection Customer, consistent with Reasonable Efforts, and in consideration of all relevant circumstances. Parties shall employ Reasonable Efforts to maintain their remaining respective Milestones.

**5.16.3 Effect of Suspension; Parties Obligations.** In the event that Interconnection Customer suspends work pursuant to this Article 5.16, no construction duration, timelines and schedules set forth in Appendix B shall be suspended during the period of suspension unless ordered by a Governmental Authority, with such order being the Force Majeure event causing the suspension. Should Interconnection Customer request that work be recommenced, Transmission Owner shall be obligated to proceed with Reasonable Efforts and in consideration of all relevant circumstances including regional outage schedules, construction availability and material procurement in performing the work as described in Appendix A and Appendix B. Transmission Owner will provide Interconnection Customer with a revised schedule for the design, procurement, construction, installation and testing of the Transmission Owner’s Interconnection Facilities and Network Upgrades. Upon any suspension by Interconnection Customer pursuant to Article 5.16, Interconnection Customer shall be responsible for only those costs specified in this Article 5.16.

## **5.17 Taxes.**

**5.17.1 Interconnection Customer Payments Not Taxable.** The Parties intend that all payments or property transfers made by Interconnection Customer to Transmission Owner for the installation of the Transmission Owner’s Interconnection Facilities, Network Upgrades, Transmission Owner’s System Protection Facilities, Distribution Upgrades and Generator Upgrades shall be non-taxable, either as contributions to capital, or as an advance, in accordance with the Internal Revenue Code and any applicable state income tax laws and shall not be taxable as contributions in aid of construction or otherwise under the Internal Revenue Code and any applicable state income tax laws. To the extent that Transmission Owner is a limited liability company and not a corporation, and has elected to be taxed as a partnership, then the following shall apply: Transmission Owner represents, and the Parties acknowledge, that Transmission Owner is a limited liability company and is treated as a partnership for federal income tax purposes. Any payment made by Interconnection Customer to Transmission Owner for Network Upgrades is to be treated as an upfront payment in

accordance with Rev Proc 2005-35. It is anticipated by the parties that any amounts paid by Interconnection Customer to Transmission Owner for Network Upgrades will be reimbursed to Interconnection Customer in accordance with the terms of this GIA, provided Interconnection Customer fulfills its obligations under this GIA.

- 5.17.2 Representations and Covenants.** In accordance with IRS Notice 2016-36, Interconnection Customer represents and covenants that (i) ownership of the electricity generated at the Generating Facility will pass to another party prior to the transmission of the electricity on the Transmission System, (ii) for income tax purposes, the amount of any payments and the cost of any property transferred to Transmission Owner for the Transmission Owner's Interconnection Facilities will be capitalized by Interconnection Customer as an intangible asset and recovered using the straight-line method over a useful life of twenty (20) years, and (iii) any portion of the Transmission Owner's Interconnection Facilities that is a "dual-use intertie," within the meaning of IRS Notice 2016-36, is reasonably expected to carry only a de minimis amount of electricity in the direction of the Generating Facility. For this purpose, "de minimis amount" means no more than 5 percent of the total power flows in both directions, calculated in accordance with the "5 percent test" set forth in IRS Notice 2016-36. This is not intended to be an exclusive list of the relevant conditions that must be met to conform to IRS requirements for non-taxable treatment.

At Transmission Owner's request, Interconnection Customer shall provide Transmission Owner with a report from an independent engineer confirming its representation in clause (iii), above, with a copy to Transmission Provider. Transmission Owner represents and covenants that the cost of the Transmission Owner's Interconnection Facilities paid for by Interconnection Customer will have no net effect on the base upon which rates are determined.

- 5.17.3 Indemnification for the Cost Consequences of Current Tax Liability** Upon Transmission Owner. Notwithstanding Article 5.17.1 and to the extent permitted by law, Interconnection Customer shall protect, indemnify and hold harmless Transmission Owner from the cost consequences of any tax liability imposed against Transmission Owner as the result of payments or property transfers made by Interconnection Customer to Transmission Owner under this GIA for Interconnection Facilities, as well as any interest and penalties, other than interest and penalties attributable to any delay caused by Transmission Owner.

Transmission Owner shall not include a gross-up for the cost consequences of any current tax liability in the amounts it charges Interconnection Customer under this GIA unless (i) Transmission Owner has determined, in good faith, that the payments or property transfers made by Interconnection Customer to Transmission Owner should be reported as income subject to taxation or (ii) any

Governmental Authority directs Transmission Owner to report payments or property as income subject to taxation; provided, however, that Transmission Owner may require Interconnection Customer to provide security for Interconnection Facilities, in a form reasonably acceptable to Transmission Owner (such as a parental guarantee or a letter of credit), in an amount equal to the cost consequences or any current tax liability under this Article 5.17. Interconnection Customer shall reimburse Transmission Owner for such costs on a fully grossed-up basis, in accordance with Article 5.17.4, within thirty (30) Calendar Days of receiving written notification from Transmission Owner of the amount due, including detail about how the amount was calculated.

The indemnification obligation shall terminate at the earlier of (1) the expiration of the ten-year testing period and the applicable statute of limitation, as it may be extended by Transmission Owner upon request of the IRS, to keep these years open for audit or adjustment, or (2) the occurrence of a subsequent taxable event and the payment of any related indemnification obligations as contemplated by this Article 5.17.

**5.17.4 Tax Gross-Up Amount.** Interconnection Customer's liability for the cost consequences of any current tax liability under this Article 5.17 shall be calculated on a fully grossed-up basis. Except as may otherwise be agreed to by the parties, this means that Interconnection Customer will pay Transmission Owner, in addition to the amount paid for the Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities, and/or Distribution Upgrades, an amount equal to (1) the current taxes imposed on Transmission Owner ("Current Taxes") on the excess of (a) the gross income realized by Transmission Owner as a result of payments or property transfers made by Interconnection Customer to Transmission Owner under this GIA (without regard to any payments under this Article 5.17) (the "Gross Income Amount") over (b) the present value of future tax deductions for depreciation that will be available as a result of such payments or property transfers (the "Present Value Depreciation Amount"), plus (2) an additional amount sufficient to permit Transmission Owner to receive and retain, after the payment of all Current Taxes, an amount equal to the net amount described in clause (1).

For this purpose, (i) Current Taxes shall be computed based on Transmission Owner's composite federal and state tax rates at the time the payments or property transfers are received and Transmission Owner will be treated as being subject to tax at the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting Transmission Owner's anticipated tax depreciation deductions as a result of such payments or property transfers by Transmission Owner's current weighted average cost of capital. Thus, the formula for calculating Interconnection Customer's liability to Transmission Owner pursuant to this Article 5.17.4 can be expressed as follows:  $(\text{Current Tax Rate} \times (\text{Gross Income Amount} - \text{Present Value of Tax Depreciation})) / (1 - \text{Current Tax Rate})$ .

Interconnection Customer's estimated tax liability in the event taxes are imposed shall be stated in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades.

- 5.17.5 Private Letter Ruling or Change or Clarification of Law.** At Interconnection Customer's request and expense, Transmission Owner shall file with the IRS a request for a private letter ruling as to whether any property transferred or sums paid, or to be paid, by Interconnection Customer to Transmission Owner under this GIA are subject to federal income taxation. Interconnection Customer will prepare the initial draft of the request for a private letter ruling, and will certify under penalties of perjury that all facts represented in such request are true and accurate to the best of Interconnection Customer's knowledge. Transmission Owner and Interconnection Customer shall cooperate in good faith with respect to the submission of such request.

Transmission Owner shall keep Interconnection Customer fully informed of the status of such request for a private letter ruling and shall execute either a privacy act waiver or a limited power of attorney, in a form acceptable to the IRS, that authorizes Interconnection Customer to participate in all discussions with the IRS regarding such request for a private letter ruling. Transmission Owner shall allow Interconnection Customer to attend all meetings with IRS officials about the request and shall permit Interconnection Customer to prepare the initial drafts of any follow-up letters in connection with the request.

- 5.17.6 Subsequent Taxable Events.** If, within 10 years from the date on which the relevant Transmission Owner's Interconnection Facilities are placed in service, (i) Interconnection Customer breaches the covenant contained in Article 5.17.2, (ii) a "disqualification event" occurs within the meaning of IRS Notice 88-129, or (iii) this GIA terminates and Transmission Owner retains ownership of the Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities, and/or Distribution Upgrades, Interconnection Customer shall pay a tax gross-up for the cost consequences of any current tax liability imposed on Transmission Owner, calculated using the methodology described in Article 5.17.4 and in accordance with IRS Notice 90-60.

- 5.17.7 Contests.** In the event any Governmental Authority determines that Transmission Owner's receipt of payments or property constitutes income that is subject to taxation, Transmission Owner shall notify Interconnection Customer, in writing, within thirty (30) Calendar Days of receiving notification of such determination by a Governmental Authority. Upon the timely written request by Interconnection Customer and at Interconnection Customer's sole expense, Transmission Owner may appeal, protest, seek abatement of, or otherwise oppose such determination. Upon Interconnection Customer's written request and sole expense, Transmission Owner shall file a claim for refund with respect to any taxes paid under this Article 5.17, whether or not it has received such a determination. Transmission Owner reserves the right to make all

decisions with regard to the prosecution of such appeal, protest, abatement or other contest, including the selection of counsel and compromise or settlement of the claim, but Transmission Owner shall keep Interconnection Customer informed, shall consider in good faith suggestions from Interconnection Customer about the conduct of the contest, and shall reasonably permit Interconnection Customer or an Interconnection Customer representative to attend contest proceedings.

Interconnection Customer shall pay to Transmission Owner on a periodic basis, as invoiced by Transmission Owner, Transmission Owner's documented reasonable costs of prosecuting such appeal, protest, abatement or other contest. At any time during the contest, Transmission Owner may agree to a settlement either with Interconnection Customer's consent or after obtaining written advice from nationally-recognized tax counsel, selected by Transmission Owner, but reasonably acceptable to Interconnection Customer, that the proposed settlement represents a reasonable settlement given the hazards of litigation. Interconnection Customer's obligation shall be based on the amount of the settlement agreed to by Interconnection Customer, or if a higher amount, so much of the settlement that is supported by the written advice from nationally-recognized tax counsel selected under the terms of the preceding sentence. The settlement amount shall be calculated on a fully grossed-up basis to cover any related cost consequences of the current tax liability. Any settlement without Interconnection Customer's consent or such written advice will relieve Interconnection Customer from any obligation to indemnify Transmission Owner for the tax at issue in the contest.

**5.17.8 Refund.** In the event that (a) a private letter ruling is issued to Transmission Owner which holds that any amount paid or the value of any property transferred by Interconnection Customer to Transmission Owner under the terms of this GIA is not subject to federal income taxation, (b) any legislative change or administrative announcement, notice, ruling or other determination makes it reasonably clear to Transmission Owner in good faith that any amount paid or the value of any property transferred by Interconnection Customer to Transmission Owner under the terms of this GIA is not taxable to Transmission Owner, (c) any abatement, appeal, protest, or other contest results in a determination that any payments or transfers made by Interconnection Customer to Transmission Owner are not subject to federal income tax, or (d) if Transmission Owner receives a refund from any taxing authority for any overpayment of tax attributable to any payment or property transfer made by Interconnection Customer to Transmission Owner pursuant to this GIA, Transmission Owner shall promptly refund to Interconnection Customer the following:

- (i) any payment made by Interconnection Customer under this Article 5.17 for taxes that is attributable to the amount determined to be non-taxable, together with interest thereon,

(ii) interest on any amounts paid by Interconnection Customer to Transmission Owner for such taxes which Transmission Owner did not submit to the taxing authority, calculated in accordance with the methodology set forth in 18 C.F.R. Section 35.19a(a)(2)(iii) from the date payment was made by Interconnection Customer to the date Transmission Owner refunds such payment to Interconnection Customer, and

(iii) with respect to any such taxes paid by Transmission Owner, any refund or credit Transmission Owner receives or to which it may be entitled from any Governmental Authority, interest (or that portion thereof attributable to the payment described in clause (i), above) owed to Transmission Owner for such overpayment of taxes (including any reduction in interest otherwise payable by Transmission Owner to any Governmental Authority resulting from an offset or credit); provided, however, that Transmission Owner will remit such amount promptly to Interconnection Customer only after and to the extent that Transmission Owner has received a tax refund, credit or offset from any Governmental Authority for any applicable overpayment of income tax related to the Transmission Owner's Interconnection Facilities.

The intent of this provision is to leave both parties, to the extent practicable, in the event that no taxes are due with respect to any payment for Interconnection Facilities and Network Upgrades hereunder, in the same position they would have been in had no such tax payments been made.

**5.17.9 Taxes Other Than Income Taxes.** Upon the timely request by Interconnection Customer, and at Interconnection Customer's sole expense, Transmission Owner shall appeal, protest, seek abatement of, or otherwise contest any tax (other than federal or state income tax) asserted or assessed against Transmission Owner for which Interconnection Customer may be required to reimburse Transmission Owner under the terms of this GIA. Interconnection Customer shall pay to Transmission Owner on a periodic basis, as invoiced by Transmission Owner, Transmission Owner's documented reasonable costs of prosecuting such appeal, protest, abatement, or other contest. Interconnection Customer and Transmission Owner shall cooperate in good faith with respect to any such contest. Unless the payment of such taxes is a prerequisite to an appeal or abatement or cannot be deferred, no amount shall be payable by Interconnection Customer to Transmission Owner for such taxes until they are assessed by a final, non-appealable order by any court or agency of competent jurisdiction. In the event that a tax payment is withheld and ultimately due and payable after appeal, Interconnection Customer will be responsible for all taxes, interest and penalties, other than penalties attributable to any delay caused by Transmission Owner.

**5.18 Tax Status.** Each Party shall cooperate with the other Parties to maintain each Party's tax status. Nothing in this GIA is intended to adversely affect any Party's tax-exempt status with respect to the issuance of bonds including, but not limited to, Local Furnishing Bonds.

**5.19 Modification.**

**5.19.1 General.** Either Party may undertake modifications to its facilities. If a Party plans to undertake a modification that reasonably may be expected to affect another Party's facilities, that Party shall provide to the other Parties sufficient information regarding such modification so that the other Parties may evaluate the potential impact of such modification prior to commencement of the work. Such information shall be deemed to be Confidential Information hereunder and shall include information concerning the timing of such modifications and whether such modifications are expected to interrupt the flow of electricity from the Generating Facility. The Party desiring to perform such work shall provide the relevant drawings, plans, and specifications to the other Parties at least ninety (90) Calendar Days in advance of the commencement of the work or such shorter period upon which the Parties may agree, which agreement shall not unreasonably be withheld, conditioned or delayed.

In the case of Generating Facility modifications that do not require Interconnection Customer to submit an Interconnection Request, Transmission Provider shall provide, within thirty (30) Calendar Days (or such other time as the Parties may agree), an estimate of any additional modifications to the Transmission or Distribution System as applicable, Transmission Owner's Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities, and/or Distribution Upgrades necessitated by such Interconnection Customer modification and a good faith estimate of the costs thereof which shall be the responsibility of Interconnection Customer.

**5.19.2 Standards.** Any additions, modifications, or replacements made to a Party's facilities shall be designed, constructed and operated in accordance with this GIA and Good Utility Practice.

**5.19.3 Modification Costs.** Interconnection Customer shall not be directly assigned the costs of any additions, modifications, or replacements that Transmission Owner makes to the Transmission Owner's Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities, Distribution Upgrades, or the Transmission or Distribution System, as applicable, to facilitate the interconnection of a third party to the Transmission Owner's Interconnection Facilities or the Transmission or Distribution System, as applicable, or to provide transmission service to a third party under the Tariff. Interconnection Customer shall be responsible for the costs of any additions, modifications, or replacements to the Interconnection Customer's Interconnection Facilities that may be necessary to maintain or upgrade such

Interconnection Customer's Interconnection Facilities consistent with Applicable Laws and Regulations, Applicable Reliability Standards or Good Utility Practice.

## **ARTICLE 6. TESTING AND INSPECTION**

- 6.1 Pre-Commercial Operation Date Testing and Modifications.** Prior to the Commercial Operation Date, Transmission Owner shall test the Transmission Owner's Interconnection Facilities, Network Upgrades, Transmission Owner's System Protection Facilities and Distribution Upgrades, and Interconnection Customer shall test each electric production device at the Generating Facility, Interconnection Customer's System Protection Facilities and the Interconnection Customer's Interconnection Facilities to ensure their safe and reliable operation. Similar testing may be required after initial operation. Transmission Owner and Interconnection Customer shall make any modifications to their respective facilities that are found to be necessary as a result of such testing. Interconnection Customer shall bear the cost of all such testing and modifications. Interconnection Customer shall generate test energy at the Generating Facility only if it has arranged for the delivery of such test energy.
- 6.2 Post-Commercial Operation Date Testing and Modifications.** Each Party shall at its own expense perform routine inspection and testing of its facilities and equipment in accordance with Good Utility Practice as may be necessary to ensure the continued interconnection of the Generating Facility with the Transmission or Distribution System, as applicable, in a safe and reliable manner. Each Party shall have the right, upon advance written notice, to require reasonable additional testing of the Interconnection Facilities, at the requesting Party's expense, as may be in accordance with Good Utility Practice.
- 6.3 Right to Observe Testing.** Each Party shall notify the other Parties in advance of its performance of tests of its Interconnection Facilities. The other Parties shall each have the right, at its own expense, to observe such testing.
- 6.4 Right to Inspect.** Each Party shall have the right, but shall have no obligation to: (i) observe Transmission Owner's and Interconnection Customer's tests and/or inspection of any of their respective System Protection Facilities and other protective equipment, including power system stabilizers; (ii) review the settings of the System Protection Facilities and other protective equipment; and (iii) review the maintenance records relative to the Interconnection Facilities, the System Protection Facilities and other protective equipment. A Party may exercise these rights from time to time as it deems necessary upon reasonable notice to the other Parties. The exercise or non-exercise by a Party of any such rights shall not be construed as an endorsement or confirmation of any element or condition of the Interconnection Facilities or the System Protection Facilities or other protective equipment or the operation thereof, or as a warranty as to the fitness, safety, desirability, or reliability of same. Any information that a Party obtains through the exercise of any of its rights under this Article 6.4 shall be deemed to be Confidential Information and treated pursuant to Article 22 of this GIA.

## ARTICLE 7. METERING

- 7.1 General.** Each Party shall comply with the Applicable Reliability Council requirements. Unless otherwise agreed by the Parties, Transmission Owner, at its election, or otherwise Interconnection Customer, shall install Metering Equipment (the “Metering Party”) at the Point of Interconnection prior to any operation of the Generating Facility and Transmission Owner, at its election, or otherwise Interconnection Customer shall own, operate, test and maintain such Metering Equipment. Power flows to and from the Generating Facility shall be measured at or, at the Metering Party’s option, compensated to, the Point of Interconnection. In addition to the Metering Equipment installed at the Point of Interconnection, if Interconnection Customer will share Interconnection Facilities with any other projects, Interconnection Customer shall install Metering Equipment either on its own Generating Facility or its own non-shared facilities sufficient to measure the output of such Interconnection Customer’s Generating Facility separately from any other Generating Facilities with which it will share Interconnection Facilities. The Metering Party shall provide metering quantities, in analog and/or digital form, to the other Parties upon request. Interconnection Customer shall bear all reasonable documented costs associated with the purchase, installation, operation, testing and maintenance of the Metering Equipment.
- 7.2 Check Meters.** Interconnection Customer, at its option and expense, may install and operate, on its premises and on its side of the Point of Interconnection, one or more check meters to check the Metering Equipment owned by the Metering Party. Such check meters shall be for check purposes only and shall not be used for the measurement of power flows for purposes of this GIA, except as provided in Article 7.4 below. The check meters shall be subject at all reasonable times to inspection and examination by Transmission Provider, Transmission Owner or their designees. The installation, operation and maintenance thereof shall be performed entirely by Interconnection Customer in accordance with Good Utility Practice.
- 7.3 Standards.** The Metering Party shall install, calibrate, and test revenue quality Metering Equipment in accordance with applicable ANSI standards.
- 7.4 Testing of Metering Equipment.** The Metering Party shall inspect and test Metering Equipment upon installation and at least once every two (2) years thereafter. If requested to do so by a Party, the Metering Party shall, at the requesting Party’s expense, inspect or test Metering Equipment more frequently than every two (2) years. The Metering Party shall give reasonable notice to the other Parties of the time when any inspection or test shall take place, and the other Parties may have representatives present at the test or inspection. If at any time Metering Equipment is found to be inaccurate or defective, it shall be adjusted, repaired or replaced at Interconnection Customer’s expense, in order to provide accurate metering, unless the inaccuracy or defect is due to the Metering Party’s failure to maintain, then the Metering Party shall pay. If Metering Equipment fails to register, or if the measurement made by Metering Equipment during a test varies by more than two percent (2%) from the measurement made by the standard meter used in the test,

the Metering Party shall adjust the measurements by correcting all measurements for the period during which Metering Equipment was in error by using Interconnection Customer's check meters, if installed. If no such check meters are installed or if the period cannot be reasonably ascertained, the adjustment shall be for the period immediately preceding the test of the Metering Equipment equal to one-half the time from the date of the previous test of the Metering Equipment.

- 7.5 Metering Data.** At Interconnection Customer's expense, the metered data shall be telemetered to one or more locations designated by Transmission Provider and Transmission Owner and one or more locations designated by Interconnection Customer. Such telemetered data shall be used, under normal operating conditions, as the official measurement of the amount of energy delivered from the Generating Facility to the Point of Interconnection.

## **ARTICLE 8. COMMUNICATIONS**

- 8.1 Interconnection Customer Obligations.** Interconnection Customer shall maintain satisfactory operating communications with Transmission Provider's Transmission System dispatcher or representative designated by Transmission Provider. Interconnection Customer shall provide standard voice line, dedicated voice line and facsimile communications at its Generating Facility control room or central dispatch facility through use of either the public telephone system, or a voice communications system that does not rely on the public telephone system. Interconnection Customer shall also provide the dedicated data circuit(s) necessary to provide Interconnection Customer data to Transmission Provider as set forth in Appendix D, Security Arrangements Details. The data circuit(s) shall extend from the Generating Facility to the location(s) specified by Transmission Provider. Any required maintenance of such communications equipment shall be performed by and at the cost of Interconnection Customer. Operational communications shall be activated and maintained under, but not be limited to, the following events: system paralleling or separation, scheduled and unscheduled shutdowns, equipment clearances, and hourly and daily load data.

Unless the Generating Facility is an Intermittent Resource not relying on wind as a fuel source, Interconnection Customer shall install communication and control equipment such that the Generating Facility can receive and respond to the appropriate dispatch signals while operating under the Tariff. Where applicable, the requirements of the communication and control equipment will be enumerated in Appendix C to this GIA.

- 8.2 Remote Terminal Unit (RTU).** Prior to the Initial Synchronization Date of the Generating Facility, a remote terminal unit, or equivalent data collection and transfer equipment acceptable to both Parties, shall be installed by Interconnection Customer, or by Transmission Owner at Interconnection Customer's expense, to gather accumulated and instantaneous data to be telemetered to the location(s) designated by Transmission Owner and Transmission Provider through use of a dedicated point-to-point data circuit(s) as indicated in Article 8.1. The communication protocol for the data circuit(s) shall be specified by Transmission Owner and Transmission Provider. Instantaneous bi-

directional analog real power and reactive power flow information must be telemetered directly to the location(s) specified by Transmission Provider and Transmission Owner.

Each Party will promptly advise the other Parties if it detects or otherwise learns of any metering, telemetry or communications equipment errors or malfunctions that require the attention and/or correction. The Party owning such equipment shall correct such error or malfunction as soon as reasonably feasible.

- 8.3 No Annexation.** Any and all equipment placed on the premises of a Party shall be and remain the property of the Party providing such equipment regardless of the mode and manner of annexation or attachment to real property, unless otherwise mutually agreed by the Parties.
- 8.4 Provision of Data from a Variable Energy Resource.** The Interconnection Customer whose Generating Facility is a Variable Energy Resource shall provide meteorological and forced outage data to the Transmission Provider to the extent necessary for the Transmission Provider's development and deployment of power production forecasts for that class of Variable Energy Resources. The Interconnection Customer with a Variable Energy Resource having wind as the energy source will, upon request by the Transmission Provider, be required to provide the Transmission Provider with site-specific meteorological data including: temperature, wind speed, wind direction, and atmospheric pressure. The Interconnection Customer with a Variable Energy Resource having solar as the energy source will, upon request by the Transmission Provider, be required to provide the Transmission Provider with site-specific meteorological data including: temperature, atmospheric pressure, and irradiance. The Transmission Provider and Interconnection Customer whose Generating Facility is a Variable Energy Resource shall mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. The Interconnection Customer whose Generating Facility is a Variable Energy Resource also shall submit data to the Transmission Provider regarding all forced outages to the extent necessary for the Transmission Provider's development and deployment of power production forecasts for that class of Variable Energy Resources. The exact specifications of the meteorological and forced outage data to be provided by the Interconnection Customer to the Transmission Provider, including the frequency and timing of data submittals, shall be made taking into account the size and configuration of the Variable Energy Resource, its characteristics, location, and its importance in maintaining generation resource adequacy and transmission system reliability in its area. All requirements for meteorological and forced outage data must be commensurate with the power production forecasting employed by the Transmission Provider. Data requirements for meteorological and forced outage data will be negotiated by the Transmission Provider and the Interconnection Customer, and will be set forth in Appendix C, Interconnection Details, of this GIA.

## ARTICLE 9. OPERATIONS

- 9.1 General.** Each Party shall comply with the Applicable Reliability Council requirements.

Each Party shall provide to any Party all information that may reasonably be required by that Party to comply with Applicable Laws and Regulations and Applicable Reliability Standards.

- 9.2 Local Balancing Authority Notification.** At least three (3) months before Initial Synchronization Date, Interconnection Customer shall notify Transmission Provider and Transmission Owner in writing of the Local Balancing Authority in which the Generating Facility will be located. If Interconnection Customer elects to locate the Generating Facility through dynamic metering/scheduling in a Local Balancing Authority other than the Local Balancing Authority in which the Generating Facility is physically located, and if permitted to do so by the relevant transmission tariffs, all necessary arrangements, including but not limited to those set forth in Article 7 and Article 8 of this GIA, and remote Local Balancing Authority generator interchange agreements, if applicable, and the appropriate measures under such agreements, shall be executed and implemented prior to the placement of the Generating Facility in the other Local Balancing Authority.
- 9.3 Transmission Provider and Transmission Owner Obligations.** Transmission Provider shall cause the Transmission System and the Transmission Owner's Interconnection Facilities to be operated, maintained and controlled in a safe and reliable manner in accordance with this GIA. Transmission Provider, or its designee, may provide operating instructions to Interconnection Customer consistent with this GIA and the Tariff and, if applicable, Transmission Owner's operating protocols and procedures as they may change from time to time. Transmission Provider will consider changes to its operating protocols and procedures proposed by Interconnection Customer.
- 9.4 Interconnection Customer Obligations.** Interconnection Customer shall at its own expense operate, maintain and control the Generating Facility and the Interconnection Customer's Interconnection Facilities in a safe and reliable manner and in accordance with this GIA. The Generating Facility must be operated in accordance with the operating limits, if any, in the Interconnection Facilities Study and specified in Appendix C of this GIA. Interconnection Customer shall operate the Generating Facility and the Interconnection Customer's Interconnection Facilities in accordance with all applicable requirements of Transmission Provider or its designated Local Balancing Authority Operator of which the Generating Facility is part, as such requirements are set forth in Appendix C, Interconnection Details, of this GIA. Appendix C, Interconnection Details, will be modified to reflect changes to the requirements as they may change from time to time. Any Party may request that a Party provide copies of the requirements set forth in Appendix C, Interconnection Details, of this GIA.
- 9.5 Start-Up and Synchronization.** Consistent with the Parties' mutually acceptable procedures, Interconnection Customer is responsible for the proper synchronization of the Generating Facility to the Transmission or Distribution System, as applicable.
- 9.6 Reactive Power and Primary Frequency Response.**

**9.6.1 Power Factor Design Criteria.**

**9.6.1.1 Synchronous Generation.** Interconnection Customer shall design the Generating Facility to be capable of maintaining a composite power delivery at continuous rated power output at the Point of Interconnection at all power factors over 0.95 leading to 0.95 lagging, unless the Transmission Provider has established different requirements that apply to all synchronous generators in the Local Balancing Authority on a comparable basis. The applicable Local Balancing Authority power factor requirements are listed on the Transmission Provider's website at

[https://cdn.misoenergy.org/Reactive\\_Generator\\_Requirements108137.pdf](https://cdn.misoenergy.org/Reactive_Generator_Requirements108137.pdf)

and may be referenced in the Appendices to this GIA. The Generating Facility shall be capable of continuous dynamic operation throughout the power factor design range as measured at the Point of Interconnection. Such operation shall account for the net effect of all energy production devices on the Interconnection Customer's side of the Point of Interconnection.

**9.6.1.2 Non-Synchronous Generation.** Interconnection Customer shall design the Generating Facility to be capable of maintaining a composite power delivery at continuous rated power output at the high-side of the generator substation at all power factors over 0.95 leading to 0.95 lagging, unless the Transmission Provider has established different requirements that apply to all non-synchronous generators in the Local Balancing Authority on a comparable basis. The applicable Local Balancing Authority power factor requirements are listed on the Transmission Provider's website at

[https://cdn.misoenergy.org/Reactive\\_Generator\\_Requirements108137.pdf](https://cdn.misoenergy.org/Reactive_Generator_Requirements108137.pdf)

and may be referenced in the Appendices to this GIA. This power factor range standard shall be dynamic and can be met using, for example, power electronics designed to supply this level of reactive capability (taking into account any limitations due to voltage level, real power output, etc.) or fixed and switched capacitors, or a combination of the two. This requirement shall only apply to newly interconnecting non-synchronous generators that have not yet completed a System Impact Study as of the effective date of the Final Rule establishing this requirement (Order No. 827). These requirements apply to existing non-synchronous generators making upgrades that require a new Generator Interconnection Agreement only where the Transmission Provider's System Impact Study shows the need for reactive power as a result of an upgrade. If applicable, these requirements will be memorialized in Appendix C to this GIA.

**9.6.2 Voltage Schedules.** Once Interconnection Customer has synchronized the Generating Facility with the Transmission System, Transmission Provider shall require Interconnection Customer to operate the Generating Facility to produce or absorb reactive power within the design limitations of the

Generating Facility set forth in Article 9.6.1 (Power Factor Design Criteria), to maintain the output voltage or power factor at the Point of Interconnection as specified by Transmission Provider. Transmission Provider's voltage schedules shall treat all sources of reactive power in the Local Balancing Authority in an equitable and not unduly discriminatory manner. Transmission Provider shall exercise Reasonable Efforts to provide Interconnection Customer with such schedules at least one (1) Calendar Day in advance, and may make changes to such schedules as necessary to maintain the reliability of the Transmission or Distribution System as applicable. Interconnection Customer shall operate the Generating Facility to maintain the specified output voltage or power factor at the Point of Interconnection within the design limitations of the Generating Facility set forth in Article 9.6.1 (Power Factor Design Criteria). If Interconnection Customer is unable to maintain the specified voltage or power factor, it shall promptly notify Transmission Provider's system operator, or its designated representative.

**9.6.2.1 Voltage Regulators.** Whenever the Generating Facility is operated in parallel with the Transmission or Distribution System as applicable and voltage regulators are capable of operation, Interconnection Customer shall operate the Generating Facility with its speed governors and voltage regulators in automatic operation. If the Generating Facility's voltage regulators are not capable of such automatic operation, Interconnection Customer shall immediately notify Transmission Provider's system operator, or its designated representative, and ensure that such Generating Facility's reactive power production or absorption (measured in MVARs) are within the design capability of the Generating Facility's generating unit(s) and steady state stability limits. Interconnection Customer shall not cause its Generating Facility to disconnect automatically or instantaneously from the Transmission or Distribution System, as applicable, or trip any generating unit comprising the Generating Facility for an under or over frequency condition unless the abnormal frequency condition persists for a time period beyond the limits set forth in ANSI/IEEE Standard C37.106, or such other standard as applied to other generators in the Local Balancing Authority on a comparable basis.

**9.6.3 Payment for Reactive Power.** Payments for reactive power shall be pursuant to any tariff or rate schedule filed by Transmission Provider and approved by the FERC.

**9.6.4 Primary Frequency Response.** This Section 9.6.4 shall only apply in the event that the Interconnection Request for the Generating Facility completed Definitive Planning Phase Interconnection Customer Decision Point 2 after May 15, 2018.

Interconnection Customer shall ensure the primary frequency response capability of its Generating Facility by installing, maintaining, and operating a functioning governor or equivalent controls. The term “functioning governor or equivalent controls” as used herein shall mean the required hardware and/or software that provides frequency responsive real power control with the ability to sense changes in system frequency and autonomously adjust the Generating Facility’s real power output in accordance with the droop and deadband parameters and in the direction needed to correct frequency deviations. Interconnection Customer is required to install a governor or equivalent controls with the capability of operating: (1) with a maximum 5 percent droop and  $\pm 0.036$  Hz deadband; or (2) in accordance with the relevant droop, deadband, and timely and sustained response settings from an approved NERC Reliability Standard providing for equivalent or more stringent parameters. The droop characteristic shall be: (1) based on the nameplate capacity of the Generating Facility, and shall be linear in the range of frequencies between 59 to 61 Hz that are outside of the deadband parameter; or (2) based on an approved NERC Reliability Standard providing for an equivalent or more stringent parameter. The deadband parameter shall be: the range of frequencies above and below nominal (60 Hz) in which the governor or equivalent controls is not expected to adjust the Generating Facility’s real power output in response to frequency deviations. The deadband shall be implemented: (1) without a step to the droop curve, that is, once the frequency deviation exceeds the deadband parameter, the expected change in the Generating Facility’s real power output in response to frequency deviations shall start from zero and then increase (for under-frequency deviations) or decrease (for over-frequency deviations) linearly in proportion to the magnitude of the frequency deviation; or (2) in accordance with an approved NERC Reliability Standard providing for an equivalent or more stringent parameter. Interconnection Customer shall notify Transmission Provider that the primary frequency response capability of the Generating Facility has been tested and confirmed during commissioning. Once Interconnection Customer has synchronized the Generating Facility with the Transmission System, Interconnection Customer shall operate the Generating Facility consistent with the provisions specified in Sections 9.6.4.1 and 9.6.4.2 of this GIA. The primary frequency response requirements contained herein shall apply to both synchronous and non-synchronous Generating Facilities.

- 9.6.4.1 Governor or Equivalent Controls.** Whenever the Generating Facility is operated in parallel with the Transmission System, Interconnection Customer shall operate the Generating Facility with its governor or equivalent controls in service and responsive to frequency. Interconnection Customer shall: (1) in coordination with Transmission Provider and/or the relevant balancing authority, set the deadband parameter to: (a) a maximum of  $\pm 0.036$  Hz and set the droop parameter

to a maximum of 5 percent; or (b) implement the relevant droop and deadband settings from an approved NERC Reliability Standard that provides for equivalent or more stringent parameters. Interconnection Customer shall be required to provide the status and settings of the governor or equivalent controls to Transmission Provider and/or the relevant balancing authority upon request. If Interconnection Customer needs to operate the Generating Facility with its governor or equivalent controls not in service, Interconnection Customer shall immediately notify Transmission Provider and the relevant balancing authority, and provide both with the following information: (1) the operating status of the governor or equivalent controls (i.e., whether it is currently out of service or when it will be taken out of service); (2) the reasons for removing the governor or equivalent controls from service; and (3) a reasonable estimate of when the governor or equivalent controls will be returned to service. Interconnection Customer shall make Reasonable Efforts to return its governor or equivalent controls into service as soon as practicable. Interconnection Customer shall make Reasonable Efforts to keep outages of the Generating Facility's governor or equivalent controls to a minimum whenever the Generating Facility is operated in parallel with the Transmission System.

**9.6.4.2 Timely and Sustained Response.** Interconnection Customer shall ensure that the Generating Facility's real power response to sustained frequency deviations outside of the deadband setting is automatically provided and shall begin immediately after frequency deviates outside of the deadband, and to the extent the Generating Facility has operating capability in the direction needed to correct the frequency deviation. Interconnection Customer shall not block or otherwise inhibit the ability of the governor or equivalent controls to respond and shall ensure that the response is not inhibited, except under certain operational constraints including, but not limited to, ambient temperature limitations, physical energy limitations, outages of mechanical equipment, or regulatory requirements. The Generating Facility shall sustain the real power response at least until system frequency returns to a value within the deadband setting of the governor or equivalent controls. A Commission-approved Reliability Standard with equivalent or more stringent requirements shall supersede the above requirements.

**9.6.4.3 Exemptions.** Generating Facilities that are regulated by the United States Nuclear Regulatory Commission shall be exempt from Sections 9.6.4, 9.6.4.1, and 9.6.4.2 of this GIA. Generating Facilities that are behind the meter generation that is sized-to-load (i.e., the thermal load and the generation are near-balanced in real-time operation and the generation is primarily controlled to maintain the unique thermal, chemical, or mechanical output necessary for the operating requirements of its host facility) shall be required to install primary frequency

response capability in accordance with the droop and deadband capability requirements specified in Section 9.6.4, but shall be otherwise exempt from the operating requirements in Sections 9.6.4, 9.6.4.1, 9.6.4.2, and 9.6.4.4 of this GIA.

**9.6.4.4 Electric Storage Resources.** Interconnection Customer interconnecting an electric storage resource shall establish an operating range in Appendix C that specifies a minimum state of charge and a maximum state of charge between which the electric storage resource will be required to provide primary frequency response consistent with the conditions set forth in Sections 9.6.4, 9.6.4.1, 9.6.4.2 and 9.6.4.3 of this GIA. Appendix C shall specify whether the operating range is static or dynamic, and shall consider (1) the expected magnitude of frequency deviations in the interconnection; (2) the expected duration that system frequency will remain outside of the deadband parameter in the interconnection; (3) the expected incidence of frequency deviations outside of the deadband parameter in the interconnection; (4) the physical capabilities of the electric storage resource; (5) operational limitations of the electric storage resource due to manufacturer specifications; and (6) any other relevant factors agreed to by Transmission Provider and Interconnection Customer, and in consultation with the relevant transmission owner or balancing authority as appropriate. If the operating range is dynamic, then Appendix C must establish how frequently the operating range will be reevaluated and the factors that may be considered during its reevaluation.

Interconnection Customer's electric storage resource is required to provide timely and sustained primary frequency response consistent with Section 9.6.4.2 of this GIA when it is online and dispatched to inject electricity to the Transmission System and/or receive electricity from the Transmission System. This excludes circumstances when the electric storage resource is not dispatched to inject electricity to the Transmission System and/or dispatched to receive electricity from the Transmission System. If Interconnection Customer's electric storage resource is charging at the time of a frequency deviation outside of its deadband parameter, it is to increase (for over-frequency deviations) or decrease (for under-frequency deviations) the rate at which it is charging in accordance with its droop parameter. Interconnection Customer's electric storage resource is not required to change from charging to discharging, or vice versa, unless the response necessitated by the droop and deadband settings requires it to do so and it is technically capable of making such a transition.

## **9.7 Outages and Interruptions.**

### **9.7.1 Outages.**

**9.7.1.1 Outage Authority and Coordination.** Interconnection Customer and Transmission Owner may each in accordance with Good Utility Practice in coordination with the other Party and Transmission Provider remove from service any of its respective Interconnection Facilities, System Protection Facilities, Network Upgrades, System Protection Facilities or Distribution Upgrades that may impact the other Party's facilities as necessary to perform maintenance or testing or to install or replace equipment. Absent an Emergency Condition, the Party scheduling a removal of such facility(ies) from service will use Reasonable Efforts to notify one another and schedule such removal on a date and time mutually acceptable to the Parties. In all circumstances, any Party planning to remove such facility(ies) from service shall use Reasonable Efforts to minimize the effect on the other Parties of such removal.

**9.7.1.2 Outage Schedules.** Transmission Provider shall post scheduled outages of transmission facilities on the OASIS. Interconnection Customer shall submit its planned maintenance schedules for the Generating Facility to Transmission Provider and Transmission Owner for a minimum of a rolling twenty-four (24) month period in accordance with the Transmission Provider's procedures. Interconnection Customer shall update its planned maintenance schedules as necessary. Transmission Provider may request Interconnection Customer to reschedule its maintenance as necessary to maintain the reliability of the Transmission System; provided, however, adequacy of generation supply shall not be a criterion in determining Transmission System reliability. Transmission Provider shall compensate, pursuant to applicable Transmission Provider tariff or rate schedule, Interconnection Customer for any additional direct costs that Interconnection Customer incurs as a result of having to reschedule maintenance, including any additional overtime, breaking of maintenance contracts or other costs above and beyond the cost Interconnection Customer would have incurred absent the Transmission Provider's request to reschedule maintenance. Interconnection Customer will not be eligible to receive compensation, if during the twelve (12) months prior to the date of the scheduled maintenance, Interconnection Customer had modified its schedule of maintenance activities.

Costs shall be determined by negotiation between Transmission Provider and Interconnection Customer prior to implementation of the voluntary change in outage schedules, or if such request is made by or on behalf of a Transmission Customer requesting firm service, costs and recovery of costs shall be determined through a bilateral agreement between the Transmission Customer and Interconnection Customer. Voluntary changes to outage schedules under this Article 9.7.1.2 are separate from actions and compensation required under Article 13 and for which costs

are recovered in accordance with Transmission Provider's applicable tariff or rate schedule.

**9.7.1.3 Outage Restoration.** If an outage on either the Interconnection Customer's or Transmission Owner's Interconnection Facilities, Network Upgrades, System Protection Facilities or Distribution Upgrades adversely affects a Party's operations or facilities, the Party that owns or controls the facility that is out of service shall use Reasonable Efforts to promptly restore such facility(ies) to a normal operating condition consistent with the nature of the outage. The Party that owns or controls the facility that is out of service shall provide the other Parties, to the extent such information is known, information on the nature of the Emergency Condition, an estimated time of restoration, and any corrective actions required. Initial verbal notice shall be followed up as soon as practicable with written notice to the other Parties explaining the nature of the outage.

**9.7.2 Interruption of Service.** If required by Good Utility Practice to do so, Transmission Provider may require Interconnection Customer to interrupt or reduce deliveries of electricity if such delivery of electricity could adversely affect Transmission Provider's ability to perform such activities as are necessary to safely and reliably operate and maintain the Transmission System. The following provisions shall apply to any interruption or reduction permitted under this Article 9.7.2:

**9.7.2.1** The interruption or reduction shall continue only for so long as reasonably necessary under Good Utility Practice;

**9.7.2.2** Any such interruption or reduction shall be made on an equitable, non-discriminatory basis with respect to all generating facilities directly connected to the Transmission or Distribution System, as applicable;

**9.7.2.3** When the interruption or reduction must be made under circumstances which do not allow for advance notice, Transmission Provider shall notify Interconnection Customer by telephone as soon as practicable of the reasons for the curtailment, interruption, or reduction, and, if known, its expected duration. Telephone notification shall be followed by written notification as soon as practicable;

**9.7.2.4** Except during the existence of an Emergency Condition, when the interruption or reduction can be scheduled without advance notice, Transmission Provider shall notify Interconnection Customer in advance regarding the timing of such scheduling and further notify Interconnection Customer of the expected duration. Transmission Provider shall coordinate with Interconnection Customer using Good Utility Practice to schedule the interruption or reduction during periods

of least impact to Interconnection Customer, Transmission Owner and Transmission Provider;

**9.7.2.5** The Parties shall cooperate and coordinate with each other to the extent necessary in order to restore the Generating Facility, Interconnection Facilities, and the Transmission or Distribution System, as applicable to their normal operating state, consistent with system conditions and Good Utility Practice.

**9.7.3** Under-Frequency, Over-Frequency, Under-Voltage, and Over-Voltage Conditions. The Transmission System is designed to automatically activate a load-shed program as required by the Applicable Reliability Council in the event of an under-frequency or under-voltage system disturbance. Interconnection Customer shall implement under-frequency, over-frequency, under-voltage, and over-voltage relay set points for the Generating Facility as required by the Applicable Reliability Council to ensure “ride through” capability of the Transmission System. Generating Facilities that are not required to implement under-frequency, over-frequency, under-voltage, and over-voltage relays as directed by the Applicable Reliability Council shall implement such relays with set points according to guidelines published by the Applicable Reliability Council. Generating Facility response to frequency and/or voltage deviations of pre-determined magnitudes, including under-frequency, over-frequency, under-voltage, and over-voltage, shall be studied and coordinated with Transmission Provider in accordance with Good Utility Practice. The term “ride through” as used herein shall mean the ability of a Generating Facility to stay connected to and synchronized with the Transmission System during system disturbances within a range of under-frequency, over-frequency, under-voltage, and over-voltage conditions, in accordance with Good Utility Practice.

**9.7.4 System Protection and Other Control Requirements.**

**9.7.4.1** System Protection Facilities. Interconnection Customer shall, at its expense, install, operate and maintain its System Protection Facilities as a part of the Generating Facility or the Interconnection Customer’s Interconnection Facilities. Transmission Owner shall install at Interconnection Customer’s expense any Transmission Owner’s System Protection Facilities that may be required on the Transmission Owner’s Interconnection Facilities or the Transmission Owner’s transmission or distribution facilities as a result of the interconnection of the Generating Facility and the Interconnection Customer’s Interconnection Facilities.

**9.7.4.2** Interconnection Customer’s and Transmission Owner’s System Protection Facilities shall be designed and coordinated with Affected Systems in accordance with Good Utility Practice.

**9.7.4.3** Each Party shall be responsible for protection of its facilities consistent

with Good Utility Practice.

**9.7.4.4** Each Party's protective relay design shall incorporate the necessary test switches to perform the tests required in Article 6. The required test switches will be placed such that they allow operation of lockout relays while preventing breaker failure schemes from operating and causing unnecessary breaker operations and/or the tripping of the Generating Facility.

**9.7.4.5** Each Party will test, operate and maintain their respective System Protection Facilities in accordance with Good Utility Practice.

**9.7.4.6** Prior to the In-Service Date, and again prior to the Commercial Operation Date, Interconnection Customer or Transmission Owner, or their respective agents, shall perform a complete calibration test and functional trip test of the System Protection Facilities. At intervals suggested by Good Utility Practice and following any apparent malfunction of the System Protection Facilities, Interconnection Customer or Transmission Owner shall each perform both calibration and functional trip tests of their respective System Protection Facilities. These tests do not require the tripping of any in-service generating unit. These tests do, however, require that all protective relays and lockout contacts be activated.

**9.7.5 Requirements for Protection.** In compliance with Good Utility Practice, Interconnection Customer shall provide, install, own, and maintain relays, circuit breakers and all other devices necessary to remove any fault contribution of the Generating Facility to any short circuit occurring on the Transmission or Distribution System, as applicable, not otherwise isolated by Transmission Owner's equipment, such that the removal of the fault contribution shall be coordinated with the protective requirements of the Transmission or Distribution System, as applicable. Such protective equipment shall include, without limitation, a disconnecting device or switch with load-interrupting capability located between the Generating Facility and the Transmission or Distribution System, as applicable, at a site selected upon mutual agreement (not to be unreasonably withheld, conditioned or delayed) of the Parties. Interconnection Customer shall be responsible for protection of the Generating Facility and Interconnection Customer's other equipment from such conditions as negative sequence currents, over- or under-frequency, sudden load rejection, over- or under-voltage, and generator loss-of-field. Interconnection Customer shall be solely responsible to disconnect the Generating Facility and Interconnection Customer's other equipment if conditions on the Transmission or Distribution System, as applicable, could adversely affect the Generating Facility.

**9.7.6 Power Quality.** Neither Party's facilities shall cause excessive voltage flicker nor introduce excessive distortion to the sinusoidal voltage or current waves as

defined by ANSI Standard C84.1-1989, in accordance with IEEE Standard 519, or any applicable superseding electric industry standard. In the event of a conflict between ANSI Standard C84.1-1989, and any applicable superseding electric industry standard, the applicable superseding electric industry standard shall control.

**9.8 Switching and Tagging Rules.** Prior to the Initial Synchronization Date, each Party shall provide the other Parties a copy of its switching and tagging rules that are applicable to the other Parties' activities. Such switching and tagging rules shall be developed on a non-discriminatory basis. The Parties shall comply with applicable switching and tagging rules, as amended from time to time, in obtaining clearances for work or for switching operations on equipment.

**9.9 Use of Interconnection Facilities by Other Parties.**

**9.9.1 Purpose of Interconnection Facilities.** Except as may be required by Applicable Laws and Regulations, or as otherwise agreed to among the Parties, the Interconnection Facilities shall be constructed for the sole purpose of interconnecting the Generating Facility to the Transmission or Distribution System, as applicable, and shall be used for no other purpose.

**9.9.2 Other Users.** If required by Applicable Laws and Regulations or if the Parties mutually agree, such agreement not to be unreasonably withheld or delayed, to allow one or more Parties to use the Transmission Owner's Interconnection Facilities, or any part thereof, Interconnection Customer will be entitled to compensation for the capital expenses it incurred in connection with the Interconnection Facilities based upon the pro rata use of the Interconnection Facilities by Transmission Owner, all non-Party users, and Interconnection Customer, in accordance with Applicable Laws and Regulations or upon some other mutually-agreed upon methodology. In addition, cost responsibility for ongoing costs, including operation and maintenance costs associated with the Interconnection Facilities, will be allocated between Interconnection Customer and any non-Party users based upon the pro rata use of the Interconnection Facilities by Transmission Owner, all non-Party users, and Interconnection Customer, in accordance with Applicable Laws and Regulations or upon some other mutually agreed upon methodology. If the issue of such compensation or allocation cannot be resolved through such negotiations, it shall be submitted to Dispute Resolution pursuant to Section 12 of the Tariff.

**9.10 Disturbance Analysis Data Exchange.** The Parties will cooperate with one another in the analysis of disturbances to either the Generating Facility or the Transmission System by gathering and providing access to any information relating to any disturbance, including information from oscillography, protective relay targets, breaker operations and sequence of events records, and any disturbance information required by Good Utility Practice.

## ARTICLE 10. MAINTENANCE

- 10.1 Transmission Owner Obligations.** Transmission Owner shall maintain the Transmission Owner's Interconnection Facilities in a safe and reliable manner and in accordance with this GIA and all Applicable Laws and Regulations.
- 10.2 Interconnection Customer Obligations.** Interconnection Customer shall maintain the Generating Facility and the Interconnection Customer's Interconnection Facilities in a safe and reliable manner and in accordance with this GIA and all Applicable Laws and Regulations.
- 10.3 Coordination.** The Parties shall confer regularly to coordinate the planning, scheduling and performance of preventive and corrective maintenance on the Generating Facility and the Interconnection Facilities.
- 10.4 Secondary Systems.** Each Party shall cooperate with the other in the inspection, maintenance, and testing of control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers that directly affect the operation of a Party's facilities and equipment which may reasonably be expected to impact another Party. Each Party shall provide advance notice to the other Parties before undertaking any work on such circuits, especially on electrical circuits involving circuit breaker trip and close contacts, current transformers, or potential transformers.
- 10.5 Operating and Maintenance Expenses.** Subject to the provisions herein addressing the use of facilities by others, and except for operations and maintenance expenses associated with modifications made for providing Interconnection Service or Transmission Service to a non-Party and such non-Party pays for such expenses, Interconnection Customer shall be responsible for all reasonable expenses including overheads, associated with: (1) owning, operating, maintaining, repairing, and replacing Interconnection Customer's Interconnection Facilities; and (2) operation, maintenance, repair and replacement of Transmission Owner's Interconnection Facilities to the extent required by Transmission Owner on a comparable basis.

## ARTICLE 11. PERFORMANCE OBLIGATION

- 11.1 Interconnection Customer's Interconnection Facilities.** Interconnection Customer shall design, procure, construct, install, own and/or control the Interconnection Customer's Interconnection Facilities described in Appendix A at its sole expense.
- 11.2 Transmission Owner's Interconnection Facilities.** Transmission Owner shall design, procure, construct, install, own and/or control the Transmission Owner's Interconnection Facilities described in Appendix A at the sole expense of Interconnection Customer.
- 11.3 Network Upgrades, System Protection Facilities and Distribution Upgrades.**

Transmission Owner shall design, procure, construct, install, and own the Network Upgrades, Transmission Owner's System Protection Facilities and Distribution Upgrades described in Appendix A. Interconnection Customer shall be responsible for all costs related to Distribution Upgrades and/or Generator Upgrades. Transmission Owner shall provide Transmission Provider and Interconnection Customer with written notice pursuant to Article 15 if Transmission Owner elects to fund the capital for the Network Upgrades and Transmission Owner's System Protection Facilities; otherwise, such facilities, if any, shall be solely funded by Interconnection Customer.

**11.3.1** Contingencies Affecting Network Upgrades, System Protection Facilities and Distribution Upgrades. Network Upgrades, System Protection Facilities and Distribution Upgrades that are required to accommodate the Generating Facility may be modified because (1) a higher queued interconnection request withdrew or was deemed to have withdrawn, (2) the interconnection agreement associated with a higher queued interconnection request was terminated prior to the project's In-Service Date, (3) the Commercial Operation Date for a higher queued interconnection request is delayed, or the project itself is delayed (including due to suspension) such that facilities required to accommodate lower queued projects or the project itself may be altered, (4) the queue position is reinstated for a higher-queued interconnection request whose queue position was subject to dispute resolution, (5) changes occur in Transmission Provider or Transmission Owner equipment design standards or reliability criteria giving rise to the need for restudy, (6) the facilities required to accommodate a higher queued Interconnection Request were modified constituting a Material Modification pursuant to Section 4.4 of the GIP, (7) a GIA with an effective date prior to this GIA is terminated, or (8) when ordered to restudy by FERC. The higher queued Interconnection Requests that could impact the Network Upgrades, System Protection Facilities and Distribution Upgrades required to accommodate the Generating Facility, and possible Modifications that may result from the above listed events affecting the higher queued Interconnection Requests, to the extent such modifications are reasonably known and can be determined, and estimates of the costs associated with such required Network Upgrades, System Protection Facilities and Distribution Upgrades, are provided in Appendix A.

**11.3.2** Agreement to Restudy and Cost Reallocation. In the event that one of the contingencies listed in Article 11.3.1 occurs, at any time before the Network Upgrades, Common Use Upgrades, Shared Network Upgrades, System Protection Facilities and/or Distribution Upgrades associated with higher queued Interconnection Requests with GIA in effect prior to this GIA are completed, Transmission Provider may determine, in its discretion, that a restudy is required. If a restudy is required, Transmission Provider will provide notice to Interconnection Customer and Interconnection Customer agrees to enter into an Interconnection Study Agreement for such restudy. Transmission Provider will reevaluate the need for any Common Use Upgrade(s) and/or Shared Network Upgrade(s), and if still required, reallocate the cost and responsibility for any Common Use Upgrade and/or Shared Network Upgrade, without a restudy when

possible, or with a restudy if the Transmission Provider deems it necessary in order to ensure reliability of the Transmission System. The Parties agree to amend Appendix A to this GIA in accordance with Article 30.10 to reflect the results of any cost reallocation required under this Article 11.3.2.

**11.3.3 Agreement to Fund Shared Network Upgrades.** Interconnection Customer agrees to fund Shared Network Upgrades, as determined by Transmission Provider. Where applicable, payments to fund Shared Network Upgrade(s) that are made to Transmission Provider by Interconnection Customer will be disbursed by Transmission Provider to the appropriate entities that funded the Shared Network Upgrades in accordance with Attachment X and Attachment FF of the Tariff. In the event that Interconnection Customer fails to meet its obligation to fund Shared Network Upgrades, Transmission Owner and Transmission Provider shall not be responsible for the Interconnection Customer's funding obligation.

#### **11.4 Transmission Credits.**

**11.4.1** Repayment of Amounts Advanced for Network Upgrades. Interconnection Customer shall be entitled to a cash repayment by Transmission Owner(s) and the Affected System Owner(s) that own the Network Upgrades, of the amount paid respectively to Transmission Owner and Affected System Operator, if any, for the Network Upgrades, as provided under Attachment FF of this Tariff and including any tax gross-up or other tax-related payments associated with the repayable portion of the Network Upgrades, and not repaid to Interconnection Customer pursuant to Article 5.17.8 or otherwise, to be paid to Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Tariff and Affected System's Tariff for Transmission Services with respect to the Generating Facility. Any repayment shall include interest calculated in accordance with the methodology set forth in FERC's regulations at 18 C.F.R. § 35.19 (a)(2)(iii) from the date of any payment for Network Upgrades through the date on which Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. Interest shall not accrue during periods in which Interconnection Customer has suspended construction pursuant to Article 11 or the Network Upgrades have been determined not to be needed pursuant to this Article 11.4.1. Interconnection Customer may assign such repayment rights to any person.

If the Generating Facility is designated a Network Resource under the Tariff, or if there are otherwise no incremental payments for Transmission Service resulting from the use of the Generating Facility by Transmission Customer, and in the absence of another mutually agreeable payment schedule any repayments provided under Attachment FF shall be established equal to the applicable rate for Firm Point-To-Point Transmission Service for the pricing zone where the Network Load is located multiplied by the portion of the demonstrated output of the Generating Facility designated as a Network Resource by the Network

Customer(s) or in the absence of such designation, equal to the monthly firm single system-wide rate defined under Schedule 7 of the Tariff multiplied by the portion of the demonstrated output of the Generating Facility under contract to Network Customer(s) and consistent with studies pursuant to Section 3.2.2.2 of the GIP.

Notwithstanding the foregoing, as applicable and consistent with the provisions of Attachment FF of this Tariff, Interconnection Customer, Transmission Provider, Transmission Owner, and Affected System Operator may adopt any alternative payment schedule that is mutually agreeable so long as Transmission Owner and Affected System Operator take one of the following actions no later than five (5) years from the Commercial Operation Date: (1) return to Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that Transmission Owner or Affected System Operator will continue to provide payments to Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the Commercial Operation Date.

If the Generating Facility is installed in phases, the amount eligible for refund as each phase achieves Commercial Operation will be reduced by the proportional amount of generation capacity not yet installed. However, all facilities in Appendix A other than the Generating Facility shall be built without consideration for the phasing of the Generating Facility as though the entire Generating Facility will be placed in Commercial Operation for the full output or increased output of the Generating Facility constructed by Interconnection Customer under this GIA.

If the Generating Facility fails to achieve Commercial Operation, but it or another generating facility is later constructed and makes use of the Network Upgrades, Transmission Owner and Affected System Operator shall at that time reimburse Interconnection Customer for the remaining applicable amounts that may be refundable pursuant to Attachment FF of this Tariff that were advanced for the Network Upgrades on their respective systems as described above. Before any such reimbursement can occur, Interconnection Customer, or the entity that ultimately constructs the Generating Facility, if different, is responsible for identifying the entity to which the reimbursement must be made.

- 11.4.2** Special Provisions for Transmission Provider as an Affected System to be covered under Separate Agreements. When the Transmission Owner's Transmission or Distribution System (including for this Article 11.4.2 independent distribution systems connected to the Transmission System) is an Affected System for an interconnection in another electric system, Transmission Provider will coordinate the performance of Interconnection Studies with the

other system. Transmission Provider will determine if any Network Upgrades or Distribution Upgrades, which may be required on the Transmission System as a result of the interconnection, would not have been needed but for the interconnection. Unless Transmission Owner provides, under the interconnection agreement between Interconnection Customer and the other system, for the repayment of amounts advanced to Transmission Provider or an impacted Transmission Owner for Network Upgrades, Interconnection Customer, Transmission Provider, and the impacted Transmission Owner(s) shall enter into an agreement that provides for such repayment by Transmission Owner(s) as directed by Transmission Provider. The agreement shall specify the terms governing payments to be made by Interconnection Customer to the Affected System Operator as well as the payment of refunds by the Affected System Operator.

**11.4.3** Notwithstanding any other provision of this GIA, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that Interconnection Customer, shall be entitled to, now or in the future under any other agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursement or transmission credits for transmission service that is not associated with the Generating Facility.

**11.5 Initial Payment.** Interconnection Customer shall elect (and provide its election to the Transmission Provider within five days of the commencement of negotiation of the GIA pursuant to Section 11.2 of the GIP) to make either 1) an initial payment equal to twenty (20) percent of the total cost of Network Upgrades, Transmission Owner Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and/or Generator Upgrades (if the In-Service Date is less than or equal to five (5) years of the initial payment date); or 2) an initial payment equal to ten (10) percent of the total cost of Network Upgrades, Transmission Owner Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and/or Generator Upgrades (if the In-Service Date exceeds the initial payment date by more than five (5) years); or 3) the total cost of Network Upgrades, Transmission Owner Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and/or Generator Upgrades in the form of security pursuant to Article 11.6. The initial payment shall be provided to Transmission Owner by Interconnection Customer pursuant to this Article 11.5 within the later of a) forty-five (45) Calendar Days of the execution of the GIA by all Parties, or b) forty-five (45) Calendar Days of acceptance by FERC if the GIA is filed unexecuted and the payment is being protested by Interconnection Customer, or c) forty-five (45) Calendar Days of the filing if the GIA is filed unexecuted and the initial payment is not being protested by Interconnection Customer. If the Interconnection Customer made its milestone payments in the form of cash and the Interconnection Customer elects a cash initial payment, then the Transmission Provider shall transfer those funds to the Transmission Owner on the Interconnection Customer's behalf.

**11.6 Provision of Security.** Unless otherwise provided in Appendix B, at least forty-five (45) Calendar Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of an element, not otherwise funded under Article 11.5, of the Transmission Owner's Interconnection Facilities, Transmission Owner's System Protection Facilities, Network Upgrades, Distribution Upgrades or Stand-Alone Network Upgrades, or at the request of Transmission Owner if regulatory approvals are required for the construction of such facilities, Interconnection Customer shall provide Transmission Owner, at Interconnection Customer's selection, a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to Transmission Owner and is consistent with the Uniform Commercial Code of the jurisdiction identified in Article 14.2.1. Such security for payment shall be in an amount sufficient to cover the applicable costs and cost commitments, in addition to those funded under Article 11.5, required of the Party responsible for building the facilities pursuant to the construction schedule developed in Appendix B for designing, engineering, seeking regulatory approval from any Governmental Authority, constructing, procuring and installing the applicable portion of the Transmission Owner's Interconnection Facilities, Transmission Owner's System Protection Facilities, Network Upgrades, Distribution Upgrades or Stand-Alone Network Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to Transmission Owner for these purposes.

In addition:

- 11.6.1** The guarantee must be made by an entity that meets the creditworthiness requirements of Transmission Owner, and contain terms and conditions that guarantee payment of any amount that may be due from Interconnection Customer, up to an agreed-to maximum amount.
- 11.6.2** The letter of credit must be issued by a financial institution reasonably acceptable to Transmission Owner and must specify a reasonable expiration date.
- 11.6.3** The surety bond must be issued by an insurer reasonably acceptable to Transmission Owner and must specify a reasonable expiration date.
- 11.6.4** If the Shared Network Upgrade is not in service, Interconnection Customer will provide, as applicable, an Irrevocable Letter of Credit to fund any Shared Network Upgrade pursuant to Attachment FF of the Tariff. The Irrevocable Letter of Credit shall be in an amount sufficient to cover the Interconnection Customer's share of the applicable costs and cost commitments associated with the Shared Network Upgrades. Transmission Provider may periodically adjust the Interconnection Customer's share of the applicable costs and cost commitment of Shared Network Upgrades and may require Interconnection Customer to adjust the amount of the Irrevocable Letter of Credit accordingly.

**11.7 Interconnection Customer Compensation.** If Transmission Provider requests or directs

Interconnection Customer to provide a service pursuant to Article 13.4 of this GIA, Transmission Provider shall compensate Interconnection Customer in accordance with any tariff or rate schedule filed by Transmission Provider and approved by the FERC.

## **ARTICLE 12. INVOICE**

- 12.1 General.** Each Party shall submit to the other Party, on a monthly basis, invoices of amounts due, if any, for the preceding month. Each invoice shall state the month to which the invoice applies and fully describe the services and equipment provided. The Parties may discharge mutual debts and payment obligations due and owing to each other on the same date through netting, in which case all amounts a Party owes to the other Party under this GIA, including interest payments or credits, shall be netted so that only the net amount remaining due shall be paid by the owing Party.
- 12.2 Final Invoice.** Within six (6) months after completion of the construction of the Transmission Owner's Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and the Network Upgrades, Transmission Owner shall provide an invoice of the final cost of the construction of the Transmission Owner's Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and the Network Upgrades and shall set forth such costs in sufficient detail to enable Interconnection Customer to compare the actual costs with the estimates and to ascertain deviations, if any, from the cost estimates. Transmission Owner shall refund, with interest (calculated in accordance with 18 C.F.R. Section 35.19a(a)(2)(iii), to Interconnection Customer any amount by which the actual payment by Interconnection Customer for estimated costs exceeds the actual costs of construction within thirty (30) Calendar Days of the issuance of such final construction invoice.
- 12.3 Payment.** Invoices shall be rendered to the paying Party at the address specified in Appendix F. The Party receiving the invoice shall pay the invoice within thirty (30) Calendar Days of receipt. All payments shall be made in immediately available funds payable to the other Party, or by wire transfer to a bank named and account designated by the invoicing Party. Payment of invoices by a Party will not constitute a waiver of any rights or claims that Party may have under this GIA.
- 12.4 Disputes.** In the event of a billing dispute among the Parties, Transmission Provider shall continue to provide Interconnection Service under this GIA as long as Interconnection Customer: (i) continues to make all payments not in dispute; and (ii) pays to Transmission Provider or Transmission Owner or into an independent escrow account the portion of the invoice in dispute, pending resolution of such dispute. If Interconnection Customer fails to meet these two requirements for continuation of service, then Transmission Provider may or, at Transmission Owner's request upon Interconnection Customer's failure to pay, Transmission Owner, shall provide notice to Interconnection Customer of a Default pursuant to Article 17. Within thirty (30) Calendar Days after the resolution of the dispute, the Party that owes money to another Party shall pay the amount due with interest calculated in accord with the methodology set forth in 18 C.F.R. § 35.19a(a)(2)(iii).

## ARTICLE 13. EMERGENCIES

**13.1 Obligations.** Each Party shall comply with the Emergency Condition procedures of Transmission Provider, NERC, the Applicable Reliability Council, and Applicable Laws and Regulations.

**13.2 Notice.** Transmission Provider or Transmission Owner shall notify the other Parties promptly when it becomes aware of an Emergency Condition that affects the Transmission Owner's Interconnection Facilities or the Transmission or Distribution System, as applicable, that may reasonably be expected to affect Interconnection Customer's operation of the Generating Facility or the Interconnection Customer's Interconnection Facilities.

Interconnection Customer shall notify Transmission Provider and Transmission Owner, which includes by definition if applicable, the operator of a Distribution System, promptly when it becomes aware of an Emergency Condition that affects the Generating Facility or the Interconnection Customer's Interconnection Facilities that may reasonably be expected to affect the Transmission or Distribution System, as applicable, or the Transmission Owner's Interconnection Facilities.

To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of Interconnection Customer's or Transmission Provider's or Transmission Owner's facilities and operations, its anticipated duration and the corrective action taken and/or to be taken. The initial notice shall be followed as soon as practicable with written notice.

**13.3 Immediate Action.** Unless, in a Party's reasonable judgment, immediate action is required, the Party exercising such judgment shall notify and obtain the consent of the other Parties, such consent to not be unreasonably withheld, prior to performing any manual switching operations at the Generating Facility or the Interconnection Customer's Interconnection Facilities in response to an Emergency Condition either declared by Transmission Provider or otherwise regarding the Transmission or Distribution System, as applicable.

**13.4 Transmission Provider and Transmission Owner Authority.**

**13.4.1 General.** Transmission Provider or Transmission Owner may take whatever actions or inactions with regard to the Transmission System or the Transmission Owner's Interconnection Facilities it deems necessary during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the Transmission System or the Transmission Owner's Interconnection Facilities, (iii) limit or prevent damage, and (iv) expedite restoration of service.

Transmission Provider or Transmission Owner shall use Reasonable Efforts to

minimize the effect of such actions or inactions on the Generating Facility or the Interconnection Customer's Interconnection Facilities. Transmission Provider or Transmission Owner may, on the basis of technical considerations, require the Generating Facility to mitigate an Emergency Condition by taking actions necessary and limited in scope to remedy the Emergency Condition, including, but not limited to, directing Interconnection Customer to shut-down, start-up, increase or decrease the real or reactive power output of the Generating Facility; implementing a reduction or disconnection pursuant to Article 13.4.2; directing Interconnection Customer to assist with blackstart (if available) or restoration efforts; or altering the outage schedules of the Generating Facility and the Interconnection Customer's Interconnection Facilities. Interconnection Customer shall comply with all of Transmission Provider's or Transmission Owner's operating instructions concerning Generating Facility real power and reactive power output within the manufacturer's design limitations of the Generating Facility's equipment that is in service and physically available for operation at the time, in compliance with Applicable Laws and Regulations.

**13.4.2 Reduction and Disconnection.** Transmission Provider or Transmission Owner may reduce Interconnection Service or disconnect the Generating Facility or the Interconnection Customer's Interconnection Facilities, when such reduction or disconnection is necessary under Good Utility Practice due to Emergency Conditions. These rights are separate and distinct from any right of curtailment of Transmission Provider pursuant to the Tariff. When Transmission Provider can schedule the reduction or disconnection in advance, Transmission Provider shall notify Interconnection Customer of the reasons, timing and expected duration of the reduction or disconnection. Transmission Provider shall coordinate with Interconnection Customer and Transmission Owner using Good Utility Practice to schedule the reduction or disconnection during periods of least impact to Interconnection Customer, Transmission Owner and Transmission Provider. Any reduction or disconnection shall continue only for so long as reasonably necessary pursuant to Good Utility Practice. The Parties shall cooperate with each other to restore the Generating Facility, the Interconnection Facilities, and the Transmission System to their normal operating state as soon as practicable consistent with Good Utility Practice.

**13.5 Interconnection Customer Authority.** Consistent with Good Utility Practice and this GIA and the GIP, Interconnection Customer may take whatever actions or inactions with regard to the Generating Facility or the Interconnection Customer's Interconnection Facilities during an Emergency Condition in order to (i) preserve public health and safety, (ii) preserve the reliability of the Generating Facility or the Interconnection Customer's Interconnection Facilities, (iii) limit or prevent damage, and (iv) expedite restoration of service. Interconnection Customer shall use Reasonable Efforts to minimize the effect of such actions or inactions on the Transmission System and the Transmission Owner's Interconnection Facilities. Transmission Provider and Transmission Owner shall use Reasonable Efforts to assist Interconnection Customer in such actions.

- 13.6 Limited Liability.** Except as otherwise provided in Article 11.6 of this GIA, no Party shall be liable to any other for any action it takes in responding to an Emergency Condition so long as such action is made in good faith and is consistent with Good Utility Practice.
- 13.7 Audit.** In accordance with Article 25.3, any Party may audit the performance of another Party when that Party declared an Emergency Condition.

#### **ARTICLE 14. REGULATORY REQUIREMENTS AND GOVERNING LAW**

- 14.1 Regulatory Requirements.** Each Party's obligations under this GIA shall be subject to its receipt of any required approval or certificate from one or more Governmental Authorities in the form and substance satisfactory to the applying Party, or the Party making any required filings with, or providing notice to, such Governmental Authorities, and the expiration of any time period associated therewith. Each Party shall in good faith seek, and if necessary assist the other Party and use its Reasonable Efforts to obtain such other approvals. Nothing in this GIA shall require Interconnection Customer to take any action that could result in its inability to obtain, or its loss of, status or exemption under the Federal Power Act, the Public Utility Holding Company Act of 2005, as amended, or the Public Utility Regulatory Policies Act of 1978.
- 14.2 Governing Law.**
- 14.2.1** The validity, interpretation and performance of this GIA and each of its provisions shall be governed by the laws of the state where the Point of Interconnection is located, without regard to its conflicts of law principles.
- 14.2.2** This GIA is subject to all Applicable Laws and Regulations.
- 14.2.3** Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, rules, or regulations of a Governmental Authority.

#### **ARTICLE 15. NOTICES**

- 15.1 General.** Unless otherwise provided in this GIA, any notice, demand or request required or permitted to be given by any Party to the other Parties and any instrument required or permitted to be tendered or delivered by a Party in writing to the other Parties shall be effective when delivered and may be so given, tendered or delivered, by recognized national courier, or by depositing the same with the United States Postal Service with postage prepaid, for delivery by certified or registered mail, addressed to the Party, or personally delivered to the Party, at the address set out in Appendix F, Addresses for Delivery of Notices and Billings.

Either Party may change the notice information in this GIA by giving five (5) Business Days written notice prior to the effective date of the change.

- 15.2 Billings and Payments.** Billings and payments shall be sent to the addresses set out in Appendix F.
- 15.3 Alternative Forms of Notice.** Any notice or request required or permitted to be given by any Party to the other and not required by this GIA to be given in writing may be so given by telephone, facsimile or email to the telephone numbers and email addresses set out in Appendix F.
- 15.4 Operations and Maintenance Notice.** Each Party shall notify the other Parties in writing of the identity of the person(s) that it designates as the point(s) of contact with respect to the implementation of Articles 9 and 10.

## **ARTICLE 16. FORCE MAJEURE**

### **16.1 Force Majeure.**

- 16.1.1** Economic hardship is not considered a Force Majeure event.
- 16.1.2** A Party shall not be considered to be in Default with respect to any obligation hereunder, (including obligations under Article 4 and 5), other than the obligation to pay money when due, if prevented from fulfilling such obligation by Force Majeure. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the full particulars of such Force Majeure to the other Parties in writing or by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone, facsimile or email notices given pursuant to this Article shall be confirmed in writing as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise Reasonable Efforts to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.

## **ARTICLE 17. DEFAULT**

### **17.1 Default**

- 17.1.1** General. No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of Force Majeure as defined in this GIA or the result of an act or omission of another Party. Upon a Breach, the non-Breaching Party or Parties shall give written notice of such Breach to the Breaching Party with a copy to the other Party if one Party gives notice of such Breach. Except as provided in Article 17.1.2, the Breaching Party shall have thirty (30) Calendar Days from receipt of the Breach notice within which to cure

such Breach; provided however, if such Breach is not capable of cure within thirty (30) Calendar Days, the Breaching Party shall commence such cure within thirty (30) Calendar Days after notice and continuously and diligently complete such cure within ninety (90) Calendar Days from receipt of the Breach notice; and, if cured within such time, the Breach specified in such notice shall cease to exist.

- 17.1.2** Termination. If a Breach is not cured as provided in this Article, or if a Breach is not capable of being cured within the period provided for herein, the non-Breaching Party or Parties shall terminate this GIA, subject to Article 2.3.2 of this GIA, by written notice to the Breaching Party, with a copy to the other Party if one Party gives notice of termination, and be relieved of any further obligation hereunder and, whether or not that Party(ies) terminates this GIA, to recover from the Breaching Party all amounts due hereunder, plus all other damages and remedies to which it is (they are) entitled at law or in equity. The provisions of this Article will survive termination of this GIA.

## **ARTICLE 18. LIMITATION OF LIABILITY, INDEMNITY, CONSEQUENTIAL DAMAGES AND INSURANCE**

- 18.1** **Limitation of Liability.** A Party shall not be liable to another Party or to any third party or other person for any damages arising out of actions under this GIA, including, but not limited to, any act or omission that results in an interruption, deficiency or imperfection of Interconnection Service, except as provided in this Tariff. The provisions set forth in the Tariff shall be additionally applicable to any Party acting in good faith to implement or comply with its obligations under this GIA, regardless of whether the obligation is preceded by a specific directive.
- 18.2** **Indemnity.** To the extent permitted by law, an Indemnifying Party shall at all times indemnify, defend and hold the other Parties harmless from Loss.
- 18.2.1** Indemnified Party. If an Indemnified Party is entitled to indemnification under this Article 18 as a result of a claim by a non-Party, and the Indemnifying Party fails, after notice and reasonable opportunity to proceed under Article 18.2, to assume the defense of such claim, such Indemnified Party may at the expense of the Indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.
- 18.2.2** Indemnifying Party. If an Indemnifying Party is obligated to indemnify and hold any Indemnified Party harmless under this Article 18, the amount owing to the Indemnified Party shall be the amount of such Indemnified Party's actual Loss, net of any insurance or other recovery.
- 18.2.3** Indemnity Procedures. Promptly after receipt by an Indemnified Party of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in

Article 18.2 may apply, the Indemnified Party shall notify the Indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the Indemnifying Party.

The Indemnifying Party shall have the right to assume the defense thereof with counsel designated by such Indemnifying Party and reasonably satisfactory to the Indemnified Party. If the defendants in any such action include one or more Indemnified Parties and the Indemnifying Party and if the Indemnified Party reasonably concludes that there may be legal defenses available to it and/or other Indemnified Parties which are different from or additional to those available to the Indemnifying Party, the Indemnified Party shall have the right to select separate counsel to assert such legal defenses and to otherwise participate in the defense of such action on its own behalf. In such instances, the Indemnifying Party shall only be required to pay the fees and expenses of one additional attorney to represent an Indemnified Party or Indemnified Parties having such differing or additional legal defenses.

The Indemnified Party shall be entitled, at its expense, to participate in any such action, suit or proceeding, the defense of which has been assumed by the Indemnifying Party. Notwithstanding the foregoing, the Indemnifying Party (i) shall not be entitled to assume and control the defense of any such action, suit or proceedings if and to the extent that, in the opinion of the Indemnified Party and its counsel, such action, suit or proceeding involves the potential imposition of criminal liability on the Indemnified Party, or there exists a conflict or adversity of interest between the Indemnified Party and the Indemnifying Party, in such event the Indemnifying Party shall pay the reasonable expenses of the Indemnified Party, and (ii) shall not settle or consent to the entry of any judgment in any action, suit or proceeding without the consent of the Indemnified Party, which shall not be reasonably withheld, conditioned or delayed.

**18.3 Consequential Damages.** Other than the Liquidated Damages heretofore described, in no event shall either Party be liable under any provision of this GIA for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided; however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

**18.4 Insurance.** Transmission Owner and Interconnection Customer shall, at their own expense, maintain in force throughout the period of this GIA pursuant to 18.4.9, and until released by the other Party, the following minimum insurance coverages, with insurers authorized to do business or an approved surplus lines carrier in the state where the Point

of Interconnection is located:

- 18.4.1** Employers' Liability and Workers' Compensation Insurance providing statutory benefits in accordance with the laws and regulations of the state in which the Point of Interconnection is located.
- 18.4.2** Commercial General Liability Insurance including premises and operations, personal injury, broad form property damage, broad form blanket contractual liability coverage (including coverage for the contractual indemnification) products and completed operations coverage, coverage for explosion, collapse and underground hazards, independent contractors coverage, coverage for pollution to the extent normally available and punitive damages to the extent normally available and a cross liability endorsement, with minimum limits of One Million Dollars (\$1,000,000) per occurrence/One Million Dollars (\$1,000,000) aggregate combined single limit for personal injury, bodily injury, including death and property damage.
- 18.4.3** Comprehensive Automobile Liability Insurance, for coverage of owned and non-owned and hired vehicles, trailers or semi-trailers licensed for travel on public roads, with a minimum combined single limit of One Million Dollars (\$1,000,000) each occurrence for bodily injury, including death, and property damage.
- 18.4.4** Excess Public Liability Insurance over and above the Employer's Liability, Commercial General Liability and Comprehensive Automobile Liability Insurance coverage, with a minimum combined single limit of Twenty Million Dollars (\$20,000,000) per occurrence/Twenty Million Dollars (\$20,000,000) aggregate.
- 18.4.5** The Commercial General Liability Insurance, Comprehensive Automobile Insurance and Excess Public Liability Insurance policies shall name the other Parties, their parents, associated and Affiliate companies and their respective directors, officers, agents, servants and employees ("Other Party Group") as additional insured. All policies shall contain provisions whereby the insurers waive all rights of subrogation in accordance with the provisions of this GIA against the Other Party Groups and provide thirty (30) Calendar Days' advance written notice to the Other Party Groups prior to anniversary date of cancellation or any material change in coverage or condition.
- 18.4.6** The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance and Excess Public Liability Insurance policies shall contain provisions that specify that the policies are primary and shall apply to such extent without consideration for other policies separately carried and shall state that each insured is provided coverage as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount for which the insurer would have been liable had only one insured been

covered. Each Party shall be responsible for its respective deductibles or retentions.

- 18.4.7** The Commercial General Liability Insurance, Comprehensive Automobile Liability Insurance and Excess Public Liability Insurance policies, if written on a Claims First Made Basis, shall be maintained in full force and effect for two (2) years after termination of this GIA, which coverage may be in the form of tail coverage or extended reporting period coverage if agreed by Transmission Owner and Interconnection Customer.
- 18.4.8** The requirements contained herein as to the types and limits of all insurance to be maintained by Transmission Owner and Interconnection Customer are not intended to and shall not in any manner, limit or qualify the liabilities and obligations assumed by Transmission Owner and Interconnection Customer under this GIA.
- 18.4.9** As of the date set forth in Appendix B, Milestones, and as soon as practicable after the end of each fiscal year or at the renewal of the insurance policy and in any event within ninety (90) Calendar Days thereafter, Interconnection Customer and Transmission Owner shall provide the other Party with certification of all insurance required in this GIA, executed by each insurer or by an authorized representative of each insurer.
- 18.4.10** Notwithstanding the foregoing, Transmission Owner or Interconnection Customer may self-insure to meet the minimum insurance requirements of Articles 18.4.1 through 18.4.8, to the extent it maintains a self-insurance program; provided that, Transmission Owner's or Interconnection Customer's senior secured debt is rated at investment grade, or better, by Standard & Poor's and that its self-insurance program meets minimum insurance requirements under Articles 18.4.1 through 18.4.8. For any period of time that a Transmission Owner's or Interconnection Customer's senior secured debt is unrated by Standard & Poor's or is rated at less than investment grade by Standard & Poor's, such Party shall comply with the insurance requirements applicable to it under Articles 18.4.1 through 18.4.9. In the event that Transmission Owner or Interconnection Customer is permitted to self-insure pursuant to this article, it shall notify the other Party that it meets the requirements to self-insure and that its self-insurance program meets the minimum insurance requirements in a manner consistent with that specified in Article 18.4.9.
- 18.4.11** Transmission Owner and Interconnection Customer agree to report to each other in writing as soon as practical all accidents or occurrences resulting in injuries to any person, including death, and any property damage arising out of this GIA.

## **ARTICLE 19. ASSIGNMENT**

- 19.1 Assignment.** This GIA may be assigned by any Party only with the written consent of the other Parties; provided that a Party may assign this GIA without the consent of the other Parties to any Affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this GIA; and provided further that Interconnection Customer shall have the right to assign this GIA, without the consent of either Transmission Provider or Transmission Owner, for collateral security purposes to aid in providing financing for the Generating Facility, provided that Interconnection Customer will promptly notify Transmission Provider of any such assignment. Any financing arrangement entered into by Interconnection Customer pursuant to this Article will provide that prior to or upon the exercise of the secured party's, trustee's or mortgagee's assignment rights pursuant to said arrangement, the secured creditor, the trustee or mortgagee will notify Transmission Provider of the date and particulars of any such exercise of assignment right(s), including providing Transmission Provider and Transmission Owner with proof that it meets the requirements of Article 11.5 and 18.4. Any attempted assignment that violates this Article is void and ineffective. Any assignment under this GIA shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

## **ARTICLE 20. SEVERABILITY**

- 20.1 Severability.** If any provision in this GIA is finally determined to be invalid, void or unenforceable by any court or other Governmental Authority having jurisdiction, such determination shall not invalidate, void or make unenforceable any other provision, agreement or covenant of this GIA; provided that if Interconnection Customer (or any non-Party, but only if such non-Party is not acting at the direction of either Transmission Provider or Transmission Owner) seeks and obtains such a final determination with respect to any provision of the Alternate Option (Article 5.1.2), or the Negotiated Option (Article 5.1.4), then none of these provisions shall thereafter have any force or effect and the Parties' rights and obligations shall be governed solely by the Standard Option (Article 5.1.1).

## **ARTICLE 21. COMPARABILITY**

- 21.1 Comparability.** The Parties will comply with all applicable comparability and code of conduct laws, rules and regulations including such laws, rules and regulations of Governmental Authorities establishing standards of conduct, as amended from time to time.

## **ARTICLE 22. CONFIDENTIALITY**

- 22.1 Confidentiality.** Confidential Information shall include, without limitation, all information relating to a Party's technology, research and development, business affairs, and pricing, and any information supplied by a Party to another Party prior to the execution of this GIA.

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document, or, if the information is conveyed orally or by inspection, if the Party providing the information orally informs the Party receiving the information that the information is confidential. The Parties shall maintain as confidential any information that is provided and identified by a Party as Critical Energy Infrastructure Information (CEII), as that term is defined in 18 C.F.R. Section 388.113(c). Such confidentiality will be maintained in accordance with this Article 22.

If requested by the receiving Party, the disclosing Party shall provide in writing, the basis for asserting that the information referred to in this Article warrants confidential treatment, and the requesting Party may disclose such writing to the appropriate Governmental Authority. Each Party shall be responsible for the costs associated with affording confidential treatment to its information.

**22.1.1** Term. During the term of this GIA, and for a period of three (3) years after the expiration or termination of this GIA, except as otherwise provided in this Article 22 or with regard to CEII, each Party shall hold in confidence and shall not disclose to any person Confidential Information. CEII shall be treated in accordance with Commission policy and regulations.

**22.1.2** Scope. Confidential Information shall not include information that the receiving Party can demonstrate: (1) is generally available to the public other than as a result of a disclosure by the receiving Party; (2) was in the lawful possession of the receiving Party on a non-confidential basis before receiving it from the disclosing Party; (3) was supplied to the receiving Party without restriction by a non-Party, who, to the knowledge of the receiving Party after due inquiry, was under no obligation to the disclosing Party to keep such information confidential; (4) was independently developed by the receiving Party without reference to Confidential Information of the disclosing Party; (5) is, or becomes, publicly known, through no wrongful act or omission of the receiving Party or Breach of this GIA; or (6) is required, in accordance with Article 22.1.7 of this GIA, Order of Disclosure, to be disclosed by any Governmental Authority or is otherwise required to be disclosed by law or subpoena, or is necessary in any legal proceeding establishing rights and obligations under this GIA. Information designated as Confidential Information will no longer be deemed confidential if the Party that designated the information as confidential notifies the receiving Party that it no longer is confidential.

**22.1.3** Release of Confidential Information. No Party shall release or disclose Confidential Information to any other person, except to its Affiliates (limited by the Standards of Conduct requirements), subcontractors, employees, agents, consultants, or to non-parties who may be or are considering providing financing to or equity participation with Interconnection Customer, or to potential purchasers or assignees of Interconnection Customer, on a need-to-

know basis in connection with this GIA, unless such person has first been advised of the confidentiality provisions of this Article 22 and has agreed to comply with such provisions. Notwithstanding the foregoing, a Party providing Confidential Information to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Article 22.

- 22.1.4** Rights. Each Party retains all rights, title, and interest in the Confidential Information that it discloses to the receiving Party. The disclosure by a Party to the receiving Party of Confidential Information shall not be deemed a waiver by the disclosing Party or any other person or entity of the right to protect the Confidential Information from public disclosure.
- 22.1.5** No Warranties. By providing Confidential Information, no Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, no Party obligates itself to provide any particular information or Confidential Information to another Party nor to enter into any further agreements or proceed with any other relationship or joint venture.
- 22.1.6** Standard of Care. Each Party shall use at least the same standard of care to protect Confidential Information it receives as it uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination. Each Party may use Confidential Information solely to fulfill its obligations to another Party under this GIA or its regulatory requirements.
- 22.1.7** Order of Disclosure. If a court or a Government Authority or entity with the right, power, and apparent authority to do so requests or requires any Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the disclosing Party with prompt notice of such request(s) or requirement(s) so that the disclosing Party may seek an appropriate protective order or waive compliance with the terms of this GIA. Notwithstanding the absence of a protective order or waiver, the Party may disclose such Confidential Information which, in the opinion of its counsel, the Party is legally compelled to disclose. Each Party will use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.
- 22.1.8** Termination of Agreement. Upon termination of this GIA for any reason, each Party shall, within ten (10) Calendar Days of receipt of a written request from another Party, use Reasonable Efforts to destroy, erase, or delete (with such destruction, erasure, and deletion certified in writing to the requesting Party) or return to the requesting Party, without retaining copies thereof, any and all written or electronic Confidential Information received from the requesting Party, except that each Party may keep one copy for archival purposes, provided that the obligation to treat it as Confidential Information in accordance with this

Article 22 shall survive such termination.

- 22.1.9 Remedies.** The Parties agree that monetary damages would be inadequate to compensate a Party for another Party's Breach of its obligations under this Article 22. Each Party accordingly agrees that the disclosing Party shall be entitled to equitable relief, by way of injunction or otherwise, if the receiving Party Breaches or threatens to Breach its obligations under this Article 22, which equitable relief shall be granted without bond or proof of damages, and the Breaching Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed an exclusive remedy for the Breach of this Article 22, but shall be in addition to all other remedies available at law or in equity. The Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Party, however, shall be liable for indirect, incidental, or consequential or punitive damages of any nature or kind resulting from or arising in connection with this Article 22.
- 22.1.10 Disclosure to FERC, its Staff or a State.** Notwithstanding anything in this Article 22 to the contrary, and pursuant to 18 CFR § 1b.20, if FERC or its staff, during the course of an investigation or otherwise, requests information from a Party that is otherwise required to be maintained in confidence pursuant to this GIA, the Party shall provide the requested information to FERC or its staff, within the time provided for in the request for information. In providing the information to FERC or its staff, the Party must, consistent with 18 CFR § 388.112, request that the information be treated as confidential and non-public by FERC and its staff and that the information be withheld from public disclosure. Parties are prohibited from notifying the other Parties to this GIA prior to the release of the Confidential Information to FERC or its staff. The Party shall notify the other Parties to this GIA when it is notified by FERC or its staff that a request to release Confidential Information has been received by FERC, at which time any of the Parties may respond before such information would be made public, pursuant to 18 CFR § 388.112. Requests from a state regulatory body conducting a confidential investigation shall be treated in a similar manner if consistent with the applicable state rules and regulations.
- 22.1.11** Subject to the exception in Article 22.1.10, any information that a disclosing Party claims is competitively sensitive, commercial or financial information under this GIA shall not be disclosed by the receiving Party to any person not employed or retained by the receiving Party, except to the extent disclosure is (i) required by law; (ii) reasonably deemed by the receiving Party to be required to be disclosed in connection with a dispute between or among the Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the disclosing Party, such consent not to be unreasonably withheld; or (iv) necessary to fulfill its obligations under this GIA or as the Regional Transmission Organization or a Local Balancing Authority operator including disclosing the Confidential Information to a regional or national reliability

organization. The Party asserting confidentiality shall notify the receiving Party in writing of the information that Party claims is confidential. Prior to any disclosures of that Party's Confidential Information under this subparagraph, or if any non-Party or Governmental Authority makes any request or demand for any of the information described in this subparagraph, the Party who received the Confidential Information from the disclosing Party agrees to promptly notify the disclosing Party in writing and agrees to assert confidentiality and cooperate with the disclosing Party in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

### **ARTICLE 23. ENVIRONMENTAL RELEASES**

- 23.1** Each Party shall notify the other Parties, first orally and then in writing, of the release of any Hazardous Substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect another Party. The notifying Party shall: (i) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than twenty-four hours after such Party becomes aware of the occurrence; and (ii) promptly furnish to the other Parties copies of any publicly available reports filed with any Governmental Authorities addressing such events.

### **ARTICLE 24. INFORMATION REQUIREMENTS**

- 24.1 Information Acquisition.** Transmission Provider, Transmission Owner and Interconnection Customer shall submit specific information regarding the electrical characteristics of their respective facilities to each other as described below and in accordance with Applicable Reliability Standards.
- 24.2 Information Submission by Transmission Provider and Transmission Owner** The initial information submission by Transmission Provider to Interconnection Customer, with copy provided to Transmission Owner, shall occur no later than one hundred eighty (180) Calendar Days prior to Trial Operation and shall include Transmission or Distribution System information, as applicable and available, necessary to allow Interconnection Customer to select equipment and meet any system protection and stability requirements, unless otherwise mutually agreed to by the Parties. On a monthly basis, Transmission Owner shall provide Interconnection Customer a status report on the construction and installation of Transmission Owner's Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and Network Upgrades, including, but not limited to, the following information: (1) progress to date; (2) a description of the activities since the last report (3) a description of the action items for the next period; and (4) the delivery status of equipment ordered.
- 24.3 Updated Information Submission by Interconnection Customer.** The updated information submission by Interconnection Customer to Transmission Provider, with

copy to Transmission Owner, including manufacturer information, shall occur no later than one hundred eighty (180) Calendar Days prior to the Trial Operation. Interconnection Customer shall submit to Transmission Provider and Transmission Owner a completed copy of the Generating Facility data requirements contained in Appendix 1 to the GIP. It shall also include any additional information provided to Transmission Provider for the Interconnection Facilities Study. Information in this submission shall be the most current Generating Facility design or expected performance data. Information submitted for stability models shall be compatible with Transmission Provider standard models. If there is no compatible model, Interconnection Customer will work with a consultant mutually agreed to by Transmission Provider and Interconnection Customer to develop and supply a standard model and associated information.

If the Interconnection Customer's data is materially different from what was originally provided to Transmission Provider pursuant to the Interconnection Study Agreement between Transmission Provider and Interconnection Customer, then Transmission Provider will conduct appropriate studies to determine the impact on the Transmission System based on the actual data submitted pursuant to this Article 24.3. Interconnection Customer shall not begin Trial Operation until such studies are completed.

- 24.4 Information Supplementation.** Prior to the Commercial Operation Date, the Parties shall supplement their information submissions described above in this Article 24 with any and all "as-built" Generating Facility information or "as-tested" performance information that differs from the initial submissions or, alternatively, written confirmation that no such differences exist. Interconnection Customer shall conduct tests on the Generating Facility as required by Good Utility Practice, such as an open circuit "step voltage" test on the Generating Facility to verify proper operation of the Generating Facility's automatic voltage regulator.

Unless otherwise agreed, the test conditions shall include: (1) Generating Facility at synchronous speed; (2) automatic voltage regulator on and in voltage control mode; and (3) a five percent (5 %) change in Generating Facility terminal voltage initiated by a change in the voltage regulators reference voltage. Interconnection Customer shall provide validated test recordings showing the responses in Generating Facility terminal and field voltages. In the event that direct recordings of these voltages is impractical, recordings of other voltages or currents that mirror the response of the Generating Facility's terminal or field voltage are acceptable if information necessary to translate these alternate quantities to actual Generating Facility terminal or field voltages is provided. Generating Facility testing shall be conducted and results provided to Transmission Provider and Transmission Owner for each individual generating unit in a station.

Subsequent to the Commercial Operation Date, Interconnection Customer shall provide Transmission Provider and Transmission Owner any information changes due to equipment replacement, repair, or adjustment. Transmission Owner shall provide Interconnection Customer, with copy to Transmission Provider, any information changes

due to equipment replacement, repair or adjustment in the directly connected substation or any adjacent Transmission Owner substation that may affect the Interconnection Customer's Interconnection Facilities equipment ratings, protection or operating requirements. The Parties shall provide such information no later than thirty (30) Calendar Days after the date of the equipment replacement, repair or adjustment.

## **ARTICLE 25. INFORMATION ACCESS AND AUDIT RIGHTS**

- 25.1 Information Access.** Each Party (the “disclosing Party”) shall make available to the other Parties information that is in the possession of the disclosing Party and is necessary in order for the other Parties to: (i) verify the costs incurred by the disclosing Party for which another Party is responsible under this GIA; and (ii) carry out its obligations and responsibilities under this GIA. The Parties shall not use such information for purposes other than those set forth in this Article 25.1 and to enforce their rights under this GIA.
- 25.2 Reporting of Non-Force Majeure Events.** A Party (the “notifying Party”) shall notify the other Parties when the notifying Party becomes aware of its inability to comply with the provisions of this GIA for a reason other than a Force Majeure event. The Parties agree to cooperate with each other and provide necessary information regarding such inability to comply, including the date, duration, reason for the inability to comply, and corrective actions taken or planned to be taken with respect to such inability to comply. Notwithstanding the foregoing, notification, cooperation or information provided under this Article shall not entitle any Party receiving such notification to allege a cause for anticipatory breach of this GIA.
- 25.3 Audit Rights.** Subject to the requirements of confidentiality under Article 22 of this GIA, each Party shall have the right, during normal business hours, and upon prior reasonable notice to the other Parties, to audit at its own expense the other Parties' accounts and records pertaining to the Parties' performance or the Parties' satisfaction of obligations under this GIA. Such audit rights shall include audits of the other Parties' costs, calculation of invoiced amounts, the Transmission Provider's efforts to allocate responsibility for the provision of reactive support to the Transmission or Distribution System, as applicable, the Transmission Provider's efforts to allocate responsibility for interruption or reduction of generation, and each Party's actions in an Emergency Condition. Any audit authorized by this Article shall be performed at the offices where such accounts and records are maintained and shall be limited to those portions of such accounts and records that relate to each Party's performance and satisfaction of obligations under this GIA. Each Party shall keep such accounts and records for a period equivalent to the audit rights periods described in Article 25.4.
- 25.4 Audit Rights Periods.**
- 25.4.1 Audit Rights Period for Construction-Related Accounts and Records.** Accounts and records related to the design, engineering, procurement, and construction of the Transmission Owner's Interconnection Facilities, Transmission Owner's System Protection Facilities, Distribution Upgrades and

Network Upgrades shall be subject to audit for a period of twenty-four months following Transmission Owner's issuance of a final invoice in accordance with Article 12.2.

**25.4.2 Audit Rights Period for All Other Accounts and Records.** Accounts and records related to a Party's performance or satisfaction of all obligations under this GIA other than those described in Article 25.4.1 shall be subject to audit as follows: (i) for an audit relating to cost obligations, the applicable audit rights period shall be twenty-four (24) months after the auditing Party's receipt of an invoice giving rise to such cost obligations; and (ii) for an audit relating to all other obligations, the applicable audit rights period shall be twenty-four (24) months after the event for which the audit is sought.

**25.5 Audit Results.** If an audit by a Party determines that an overpayment or an underpayment has occurred, a notice of such overpayment or underpayment shall be given to the Party or from whom the overpayment or underpayment is owed together with those records from the audit which support such determination.

## **ARTICLE 26. SUBCONTRACTORS**

**26.1 General.** Nothing in this GIA shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this GIA; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this GIA in providing such services and each Party shall remain primarily liable to the other Parties for the performance of such subcontractor.

**26.2 Responsibility of Principal.** The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this GIA. The hiring Party shall be fully responsible to the other Parties for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall Transmission Provider or Transmission Owner be liable for the actions or inactions of Interconnection Customer or its subcontractors with respect to obligations of Interconnection Customer under Article 5 of this GIA. Any applicable obligation imposed by this GIA upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

**26.3 No Limitation by Insurance.** The obligations under this Article 26 will not be limited in any way by any limitation of subcontractor's insurance.

## **ARTICLE 27. DISPUTES**

**27.1 Submission.** In the event any Party has a dispute, or asserts a claim, that arises out of or in connection with this GIA or its performance, such Party (the "disputing Party") shall provide the other Parties with written notice of the dispute or claim ("Notice of Dispute"). Such dispute or claim shall be referred to a designated senior representative of each Party for resolution on an informal basis as promptly as practicable after receipt of

the Notice of Dispute by the non-disputing Parties. In the event the designated representatives are unable to resolve the claim or dispute through unassisted or assisted negotiations within thirty (30) Calendar Days of the non-disputing Parties' receipt of the Notice of Dispute, such claim or dispute shall be submitted for resolution in accordance with the dispute resolution procedures of the Tariff.

## **ARTICLE 28. REPRESENTATIONS, WARRANTIES AND COVENANTS**

**28.1 General.** Each Party makes the following representations, warranties and covenants:

- 28.1.1 Good Standing.** Such Party is duly organized, validly existing and in good standing under the laws of the state in which it is organized, formed, or incorporated, as applicable; that it is qualified to do business in the state or states in which the Generating Facility, Interconnection Facilities and Network Upgrades owned by such Party, as applicable, are located; and that it has the corporate power and authority to own its properties, to carry on its business as now being conducted and to enter into this GIA and carry out the transactions contemplated hereby and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this GIA.
- 28.1.2 Authority.** Such Party has the right, power and authority to enter into this GIA, to become a Party hereto and to perform its obligations hereunder. This GIA is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).
- 28.1.3 No Conflict.** The execution, delivery and performance of this GIA does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of such Party, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Party or any of its assets.
- 28.1.4 Consent and Approval.** Such Party has sought or obtained, or, in accordance with this GIA will seek or obtain, each consent, approval, authorization, order, or acceptance by any Governmental Authority in connection with the execution, delivery and performance of this GIA, and it will provide to any Governmental Authority notice of any actions under this GIA that are required by Applicable Laws and Regulations.

## **ARTICLE 29. {RESERVED}**

## **ARTICLE 30. MISCELLANEOUS**

**30.1 Binding Effect.** This GIA and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

**30.1.1 Reversion.** If offered pursuant to an Agency Agreement under which this GIA is executed by Transmission Provider as agent for the relevant Transmission Owner, in the event that the relevant Agency Agreement terminates, any HVDC Service offered by Transmission Provider under this GIA shall revert to the relevant Transmission Owner and Transmission Provider shall be released from all obligations and responsibilities under this GIA.

**30.2 Conflicts.** In the event of a conflict between the body of this GIA and any attachment, appendices or exhibits hereto, the terms and provisions of the body of this GIA shall prevail and be deemed the final intent of the Parties.

**30.3 Rules of Interpretation.** This GIA, unless a clear contrary intention appears, shall be construed and interpreted as follows: (1) the singular number includes the plural number and vice versa; (2) reference to any person includes such person's successors and assigns but, in the case of a Party, only if such successors and assigns are permitted by this GIA, and reference to a person in a particular capacity excludes such person in any other capacity or individually; (3) reference to any agreement (including this GIA), document, instrument or tariff means such agreement, document, instrument, or tariff as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof; (4) reference to any Applicable Laws and Regulations means such Applicable Laws and Regulations as amended, modified, codified, or reenacted, in whole or in part, and in effect from time to time, including, if applicable, rules and regulations promulgated thereunder; (5) unless expressly stated otherwise, reference to any Article, Section or Appendix means such Article of this GIA or such Appendix to this GIA, or such Section to the GIP or such Appendix to the GIP, as the case may be; (6) "hereunder", "hereof", "herein", "hereto" and words of similar import shall be deemed references to this GIA as a whole and not to any particular Article or other provision hereof or thereof; (7) "including" (and with correlative meaning "include") means including without limiting the generality of any description preceding such term; and (8) relative to the determination of any period of time, "from" means "from and including", "to" means "to but excluding" and "through" means "through and including."

**30.4 Entire Agreement.** This GIA, including all Appendices and attachments hereto, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this GIA. There are no other agreements, representations, warranties, or covenants, which constitute any part of the consideration for, or any condition to, any Party's compliance with its obligations under this GIA.

**30.5 No Third Party Beneficiaries.** This GIA is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations,

associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

- 30.6 Waiver.** The failure of a Party to this GIA to insist, on any occasion, upon strict performance of any provision of this GIA will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by any Party of its rights with respect to this GIA shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this GIA. Termination or Default of this GIA for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain Interconnection Service from Transmission Provider. Any waiver of this GIA shall, if requested, be provided in writing.

- 30.7 Headings.** The descriptive headings of the various Articles of this GIA have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this GIA.

- 30.8 Multiple Counterparts.** This GIA may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

- 30.9 Amendment.** The Parties may by mutual agreement amend this GIA by a written instrument duly executed by all of the Parties.

- 30.10 Modification by the Parties.** The Parties may by mutual agreement amend the Appendices to this GIA by a written instrument duly executed by all of the Parties. Such amendment shall become effective and a part of this GIA upon satisfaction of all Applicable Laws and Regulations.

- 30.11 Reservation of Rights.** Transmission Provider shall have the right to make a unilateral filing with FERC to modify this GIA with respect to any rates, terms and conditions, charges, classifications of service, rule or regulation under Section 205 or any other applicable provision of the Federal Power Act and FERC's rules and regulations thereunder, and Transmission Owner and Interconnection Customer shall have the right to make a unilateral filing with FERC to modify this GIA pursuant to Section 206 or any other applicable provision of the Federal Power Act and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this GIA shall limit the rights of the Parties or of FERC under Sections 205 or 206 of the Federal Power Act and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein.

- 30.12 No Partnership.** This GIA shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership among or between the Parties or to

impose any partnership obligation or partnership liability upon any Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Parties.

**IN WITNESS WHEREOF**, the Parties have executed this GIA in multiple originals;  
each of which shall constitute and be an original GIA among the Parties.

Transmission Provider  
**Midcontinent Independent System Operator, Inc.**

By: Jennifer Curran AAR 8/16/2019  
Name: Jennifer Curran  
Title: Vice President, System Planning & Chief Compliance Officer

Transmission Owner  
**Ameren Services Company, as agent for  
Ameren Transmission Company of Illinois**

By: Shawn E. Schukar  
Name: Shawn E. Schukar  
Title: Senior Vice President – Transmission

Interconnection Customer  
**TG High Prairie, LLC**

By: Randall W. Hoyle  
Name: Randall W. Hoyle  
Title: Chief Development Officer

Project No. J541

## **APPENDICES TO GIA**

|                     |                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Appendix A</b>   | Generating Facility, Interconnection Facilities, Network Upgrades, System Protection Facilities, Generator Upgrades, Distribution Upgrades, Affected System Upgrades, and Common Use Upgrades |
| <b>Appendix B</b>   | Milestones                                                                                                                                                                                    |
| <b>Appendix B-1</b> | Pre-Certification Generation Test Notification Form                                                                                                                                           |
| <b>Appendix C</b>   | Interconnection Details                                                                                                                                                                       |
| <b>Appendix D</b>   | Security Arrangements Details                                                                                                                                                                 |
| <b>Appendix E</b>   | Commercial Operation Date                                                                                                                                                                     |
| <b>Appendix F</b>   | Addresses for Delivery of Notices and Billings                                                                                                                                                |
| <b>Appendix G</b>   | Interconnection Requirements for a Wind Generating Plant                                                                                                                                      |
| <b>Appendix H</b>   | Interconnection Requirements for Provisional GIA                                                                                                                                              |
| <b>Appendix I</b>   | Requirements Applicable to Net Zero Interconnection Service                                                                                                                                   |

## **Appendix A To GIA**

Interconnection Customer's Project No. J541, which includes a Generating Facility, Interconnection Facilities, Network Upgrades, System Protection Facilities, Distribution Upgrades, Generator Upgrades, Affected System Upgrades, and Common Use Upgrades.

### **1. Description of Generating Facility**

Interconnection Customer shall install a 416.38 MVA facility, rated at 400 MW gross, with all studies performed at or below these outputs. The Generating Facility is composed of one hundred and sixty-three (163) Vestas V120 wind turbine units rated at 2.2 MW each, and twelve (12) Vestas V112 wind turbines rated at 3.45 MW each. Interconnection Service provided under this agreement is 400 MW of conditional ERIS that will become 400 MW of ERIS and/or NRIS upon completion of all Network Upgrades, Affected System Upgrades under this GIA and transmission assumptions listed in Table 10-1 of Exhibit A10.

Interconnection Customer shall install two collector substations with the appropriate protection equipment coordinated per Appendix C to this GIA. Each one of the Interconnection Customer's collector substations shall contain one (1) generator step-up transformer 34.5/345 kV, 135/180/225 MVA, Z=9.5%; one (1) 345 kV circuit breaker and transmission line/bus protection. These two collector substations, referred to as the North and South substations, will be connected via a 9-mile 345 kV transmission line.

Each of the two collector substations will include two (2) 15 MVAR capacitor banks at the 34.5 kV buses.

Each one of the two collector substations will include a SCADA system and a data concentrator as required to manage the project. All required status and output data for both collector substations will be sent to the Transmission Owner and the Transmission Provider from the North collector substation.

These facilities are shown in Exhibit A1-1.

### **2. Interconnection Facilities**

The J541 Generating Facility will interconnect with the Transmission System via an estimated 8.9 mile-long 345 kV radial line (the "leadline") running from the Interconnection Customer's North collector substation to Ameren's new Hughes switching station in Schuyler County, Missouri.

#### **(a) Point of Interconnection, Point of Change of Ownership, and Metering Point**

- i. The Point of Interconnection ("POI") shall be at the point where Transmission Owner Interconnection Facilities connect to the 345 kV bus at Transmission

- Owner's new Hughes switching station.
- ii. The Point of Change of Ownership shall be at the terminal pad connection of the Interconnection Customer's leadline conductor on the 345 kV arbor structure in the Hughes switching station.
  - iii. The metering point shall be at the 345 kV J541 leadline terminal within the Hughes switching station. Transmission Owner will install the necessary potential and current transformers as well as the meter at the Interconnection Customer's expense.

**(b) Interconnection Customer Interconnection Facilities (ICIF) to be constructed by Interconnection Customer**

Interconnection Customer shall construct the Interconnection Customer Interconnection Facilities. These facilities shall include only the following:

- 8.9 miles of 345 kV generator leadline consisting of two bundle 795 kcmil ACSR 26/7 "Drake" and 18 inch bundle spacing, with OPGW (the number of fibers to be finalized with Transmission Owner and Transmission Provider during detailed design) to connect the Generating Facility to the POI for data transfer and protection purposes.
- Interconnection Customer shall provide all connection hardware up to the arbor, OPGW, shield wire, and conductor, including a downward pointing NEMA four-hole terminal pad(s) (finished on both sides) for Transmission Owner connections at the Point of Change of Ownership.
- The Interconnection Customer's OPGW shall comply with the Transmission Owner's requirements during the design phase of the work.
- Interconnection Customer shall install, own, and maintain conductor, hardware, shield wire, and OPGW with prearranged escorted substation access provided by the Transmission Owner.
- The Interconnection Customer and Transmission Owner are to jointly complete all necessary testing activities. For transmission line OTDR fiber testing each party shall coordinate and supply their own testing equipment. Coordination shall occur to ensure all testing devices communicate effectively.
- All efforts will be made by Transmission Owner to support the Interconnection Customer with final end to end testing and relay points checkout.

**(c) Transmission Owner Interconnection Facilities (TOIF) (including metering equipment) to be constructed by Transmission Owner**

The Transmission Owner Interconnection Facilities will consist of one 345 kV line terminal in the new Hughes switching station. The terminal will consist of all necessary terminal equipment to connect the J541 leadline to the Hughes switching station ring bus. See Exhibit A2.

Transmission Owner will provide an acceptable arbor to which the line conductor, shield wire, and OPGW will attach.

**Major Items:**

- One (1) 345 kV steel dead-end arbor structure
- One (1) 345 kV Motor Operated Disconnect Switch, 3000A
- Three (3) 345 kV Surge Arresters
- Three (3) 345 kV Potential/Voltage Transformers
- Three (3) 345 kV Current Transformers
- One (1) Line Relay panel (SEL 411L and SEL 311C)
- One (1) Fiber Patch Panel Housing, fiber splice box, and fiber termination in control house
- Revenue Metering
- Bus and Fittings: five inch aluminum tube and portions of 2500 AAC (2) wire conductor with bolted aluminum bus connectors, fittings, and terminals
- Insulators: High strength porcelain station post insulators
- Foundations: Designed per Transmission Owner standard design criteria
- Structures: Steel tapered tube style

**Total Estimated Cost:** **\$910,000 \***

\* Estimated costs are in 2019 dollars, do not include tax gross-up or escalation, and are accurate to  $\pm 20\%$ . The J541 project is required to document that it satisfies the 'safe harbor' requirements for tax gross-up under IRS Notice 2016-36.

### 3. Network Upgrades

#### (a) Stand-Alone Network Upgrades to be installed by Transmission Owner

The new Hughes switching station will be located in Schuyler County, Missouri. It will be on the east side of the new Zachary-Ottumwa 345 kV transmission line right-of-way on the north side of Route W. The GPS coordinates are 40° 25' 26" N, 92° 37' 39" W.

The Hughes switching station will be a ring bus arrangement with three line terminal positions with space available for one additional future terminal position. The future terminal position is not included in the scope or cost listed within this GIA. The future terminal position will be funded by whatever entity drives the need for the future installation. The new Zachary-Ottumwa 345 kV transmission line will be cut and the new ends terminated at two line terminal positions in the switching station. The J541 Generating Facility will interconnect at the third terminal position. All Interconnection Customer transmission structures must be at least 150' away from the Hughes switching station fence.

The property for the Hughes switching station site will be purchased by the Interconnection Customer and quit claimed to the Transmission Owner. The Interconnection Customer will bear the full cost and responsibility for property acquisition, site grading to Transmission Owner specifications, constructing and furnishing an access road, permitting, right of way, and all other costs associated with acquiring the necessary real estate for this station.

Site work such as the clearing, compacting, and grading of the site shall be completed to Transmission Owner specifications by the Interconnection Customer before start of construction by the Transmission Owner. Transmission Owner shall review Interconnection Customer's final grading and site design for approval, in general accordance with the Transmission Owner's design review/deliverable schedule, prior to construction.

Soil borings required for the design of the switching station foundations will be obtained by the Transmission Owner. The Interconnection Customer shall provide the Transmission Owner and its contractors early access rights and an access route to the site for the purpose of site inspections, soil borings, and any other required site testing.

Detailed topographical and boundary survey of the site shall be provided by the Interconnection Customer.

Interconnection Customer shall inform Transmission Owner of the status of all regulatory, permitting and siting issues prior to the start of construction by the Transmission Owner.

The Interconnection Customer shall provide an access road to the Hughes switching station site prior to the start of construction activities by the Transmission Owner. The access road shall be constructed according to Transmission Owner specifications, complete with the required pavement surface.

The Interconnection Customer shall construct the switching station site to finished subgrade elevations and grades. The pavement surface for the switching station will be constructed by the Transmission Owner.

The Interconnection Customer shall be responsible for storm water run-off requirements. This includes meeting all storm water management plans and regulatory requirements listed by the local governing agencies. If no plans or requirements exist, it shall be assumed that the peak outflow rate be limited to that which existed from the same watershed before development for a specific range of flood frequencies.

The Interconnection Customer shall bear responsibility for all road damages caused by construction activities.

**Major Items:**

- Two (2) 345 kV steel dead-end arbor structures
- Three (3) 345 kV Gas Circuit Breakers, 3000A, 40kA interrupting capability
- Eight (8) 345 kV Motor Operated Disconnect Switches, 3000A
- Three (3) 345 kV Coupling Capacitor Voltage Transformers
- Six (6) 345 kV Potential Transformers
- Nine (9) 345 kV Surge Arresters
- Two (2) 345kV, 100kVA Power Pots (size may vary after calculation)
- Two (2) 345kV Wave Traps and Tuners (included at this time, may not be needed)
- AC Station Service:
  - Primary: One (1) Power Potential Transformer
  - Backup: One (1) Distribution source from the local utility serving the area
- Bus and Fittings: Five inch aluminum tube with portions of 2500AAC (2) wire conductor with bolted aluminum bus connectors, fittings, and terminals
- Insulators: High strength porcelain station post insulators
- Ground Grid: Designed per Transmission Owner standards utilizing buried copper wire and exothermic welds
- Fence: Standard chain link fencing with seven foot fabric (1" mesh), three strands of barbed wire, and 5 strands of ½" diameter galvanized reinforcement cables
- Prefabricated Steel Control Enclosure containing:
  - Relaying and Control: Two (2) protection relay panels, three (3) breaker control panels, one (1) Fiber Panel one (1) RTU panel, one (1) communications panel, and one (1) network panel.
  - DC Station Service: Two (2) 125 volt batteries, two (2) battery chargers and two (2) DC distribution panels
  - AC Station Service Equipment: An automatic AC transfer switch (480V) and three (3) AC distribution panels
- Foundations: Designed per Transmission Owner standard design criteria
- Structures: Steel tapered tube style

**Total Estimated Cost:** **\$7,694,000 \***

\* Estimated costs are in 2019 dollars, do not include tax gross-up or escalation, and are accurate to ±20%. The J541 project is required to document that it satisfies the 'safe harbor' requirements for tax gross-up under IRS Notice 2016-36.

**(b) Network Upgrades to be installed by Transmission Owner**

Split the Zachary-Ottumwa 345 kV transmission line and terminate the ends at the

Hughes switching station. Transmission Owner will install two dead end steel structures in-line with the existing line. The existing conductor will be dead-ended on these tapping structures and new conductor will be run from these structures to interconnection switching station arbor structures. Jumpers will be installed at the tapping structures to connect the line conductor to the new tapping conductor.

**Major Items:**

- Two (2) 345 kV steel dead end structures
- Conductor, shield wire, and OPGW
- Typical 345 kV insulators
- Compression type connectors

**Total Estimated Cost:** **\$946,000 \***

\* Estimated costs are in 2019 dollars, do not include tax gross-up or escalation, and are accurate to  $\pm 20\%$ . The J541 project is required to document that it satisfies the 'safe harbor' requirements for tax gross-up under IRS Notice 2016-36.

**(c) Shared Network Upgrade(s) to be funded by Interconnection Customer**

- Project J541 is responsible for a portion of the cost of the following Shared Network Upgrade: MidAmerican Energy Company (MEC):
  - Upgrade the J530 POI – Hills 345 kV transmission line with interconnection customers for projects J475, J530, J555, and J598. J541's share is 18.82%, \$56,456.

**4. System Protection Facilities**

**(a) System Protection Facilities not listed in Section 2 or 3 to be constructed by Interconnection Customer.** None.

**(b) System Protection Facilities not listed in 2 or 3 to be constructed by Transmission Owner.** None.

**5. Distribution Upgrades.** None.

**6. Generator Upgrades.** None.

**7. Contingency List.** See Appendix A10.

**8. Affected System Upgrades**

Interconnection Customer is responsible to enter into Facilities Construction Agreements

and/or Multi-Party Facilities Construction Agreements with the Affected System Owners for the following upgrades:

- MEC:
  - Upgrade the J530 POI-Montezuma 345 kV transmission line
  - Install 2x150 Mvar switched capacitor bank at the Hills substation 345 kV bus
  - Upgrade the J530 POI-Hills 345 kV transmission line
  - Upgrade the J530 POI-Montezuma 345 kV transmission line (NRIS)
- Associated Electric Cooperative Inc. (AECI):
  - Replace the Novelty 161/69 kV transformer
  - Upgrade the South River-Emerson 161 kV transmission line
- Ameren Missouri:
  - Disconnect the Adair-Appanoose 161 kV transmission line from the Adair substation and reconnect it at the Zachary substation, cost to be shared with project J598.

## **9. Common Use Upgrades**

Interconnection Customer is responsible to enter into Facilities Construction Agreements and/or Multi-Party Facilities Construction Agreements with Transmission Provider, Transmission Owner, and Affected System Transmission Owner for Interconnection Customer's share of following Common Use Upgrades:

- install a second 345/161 kV transformer at the Zachary substation
- Construct a second 161 kV tie line between the Zachary-Adair substations

## **10. Additional Approvals**

Construction of the Transmission Owner's Interconnection Facilities is conditioned on receipt by Transmission Owner of approval from any jurisdiction having authority over the construction. No approvals, except approvals for outages, are contemplated at this time.

## **11. Cost Responsibility**

Interconnection Customer and Transmission Owner hereby acknowledge and agree that the costs listed in this appendix are only estimates. Interconnection Customer shall pay Transmission Owner for all actual costs associated with Transmission Owner's Interconnection Facilities, including any applicable direct or indirect taxes or tax-related gross-up. Transmission Owner has identified the facilities subject to reimbursement, as provided in Attachment FF of the Tariff, in Exhibit A9.

### **11.1 Cost Estimates**

- 11.1.1** Interconnection Customer's total estimated cost for the installation of Interconnection Customer's Interconnection Facilities under this GIA has not been provided by the Interconnection Customer.

- 11.1.2 Interconnection Customer's total estimated cost for the installation of Transmission Owner's Interconnection Facilities under this GIA is \$910,000.
- 11.1.3 Interconnection Customer's total estimated cost for the installation of Network Upgrades and Stand Alone Network Upgrades under this GIA is \$8,640,000.
- 11.1.4 Interconnection Customer's total estimated cost for the installation of System Protection Facilities under this GIA is \$0.
- 11.1.5 Interconnection Customer's total estimated cost for the installation of Distribution Upgrades under this GIA is \$0.
- 11.1.6 Interconnection Customer's total estimated cost for the installation of Generator Upgrades under this GIA is \$0.

**11.2 Transmission Owner Election to Fund the Capital for the Network Upgrades.**

As provided under Article 11.3 of this GIA, Transmission Owner has elected to fund the capital for the Network Upgrades to be constructed under this GIA. Pursuant to the Tariff, Interconnection Customer remains ultimately responsible for the costs of Network Upgrades and pursuant to Article 11.6 of the GIA, Interconnection Customer remains responsible for providing security to Transmission Owner.

In accordance with the milestones set forth in Appendix B, Transmission Owner and Interconnection Customer will establish a service agreement between the Interconnection Customer and the Transmission Owner, pursuant to which the Interconnection Customer will pay the Transmission Owner's revenue requirement associated with Network Upgrades as identified in Exhibit A9 to this GIA (the "Revenue Requirement"). The service agreement shall be filed with FERC for FERC's acceptance, either on an executed or unexecuted basis, as set forth in the milestones.

**12. Exhibits.**

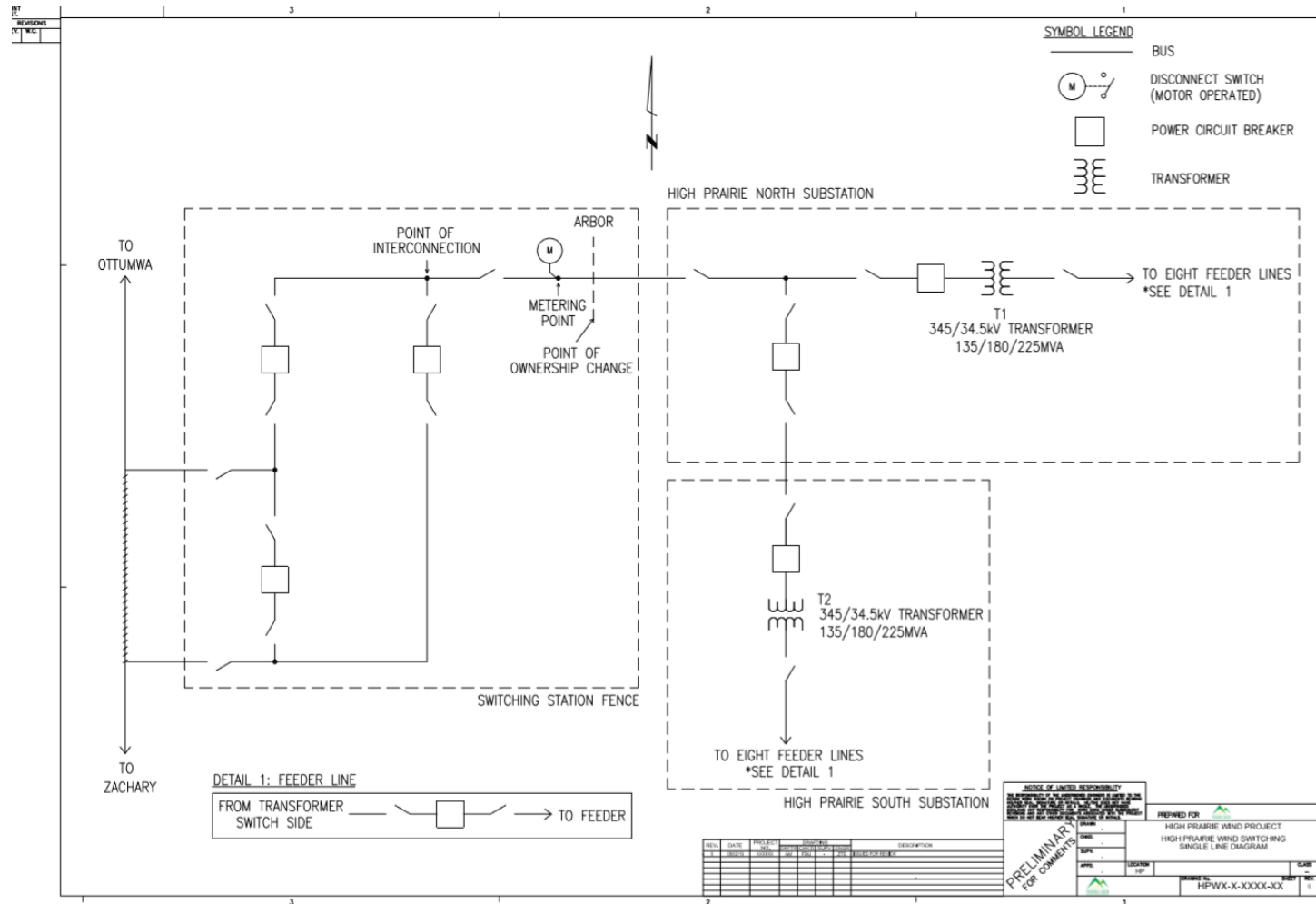
The following exhibits are included:

- A1 Interconnection Customer Generating Facility One-Line Diagram & Site-Map
  - A1-1: Interconnection Customer Generating Facility One-Line Diagram
  - A1-2: Interconnection Customer Generating Facility Site Map
- A2 Transmission Owner Hughes Switching Station One-Line Diagram

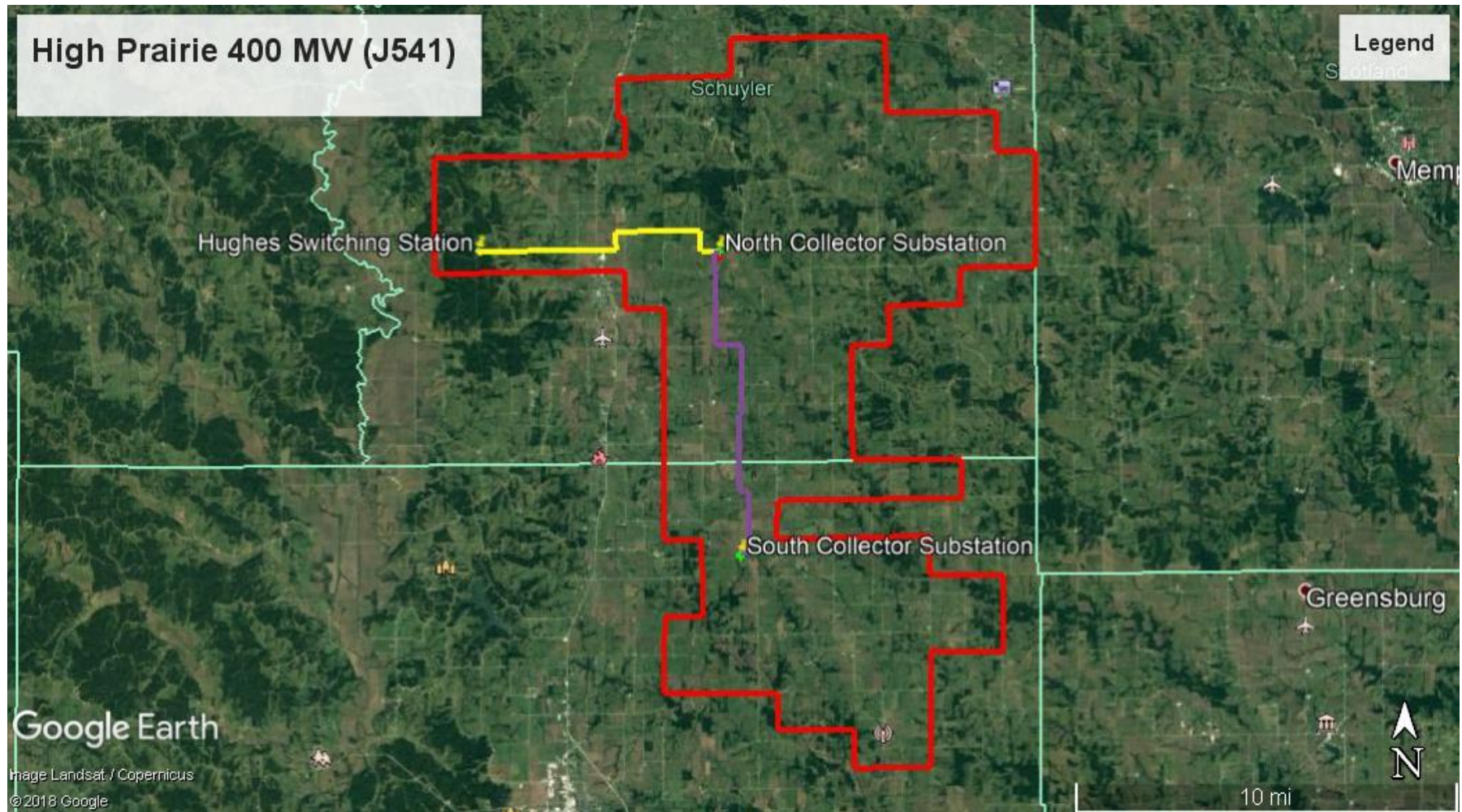
- A3 Transmission Owner Hughes Switching Station General Arrangement Drawing
- A4 Transmission Owner Typical Structure for Line Tap
- A5 Cost of Facilities to Be Constructed By Transmission Owner
- A6 Detailed Cost of Facilities to Be Constructed By Transmission Owner
- A7 Cost of Facilities to Be Constructed By Interconnection Customer
- A8 Detailed Cost of Facilities to Be Constructed By Interconnection Customer
- A9 Facilities To Be Financed By Transmission Owner
- A10 Contingent Facilities
- A11 Interconnection Customer and Transmission Owner Milestones
- A12 Construction and Coordination Schedules
- A13 Permits, Licenses, Regulatory Approvals and Authorization
- A14 Interconnection and Operating Guidelines

# Exhibit A1. Interconnection Customer Generating Facility One-Line Diagram and Site Map

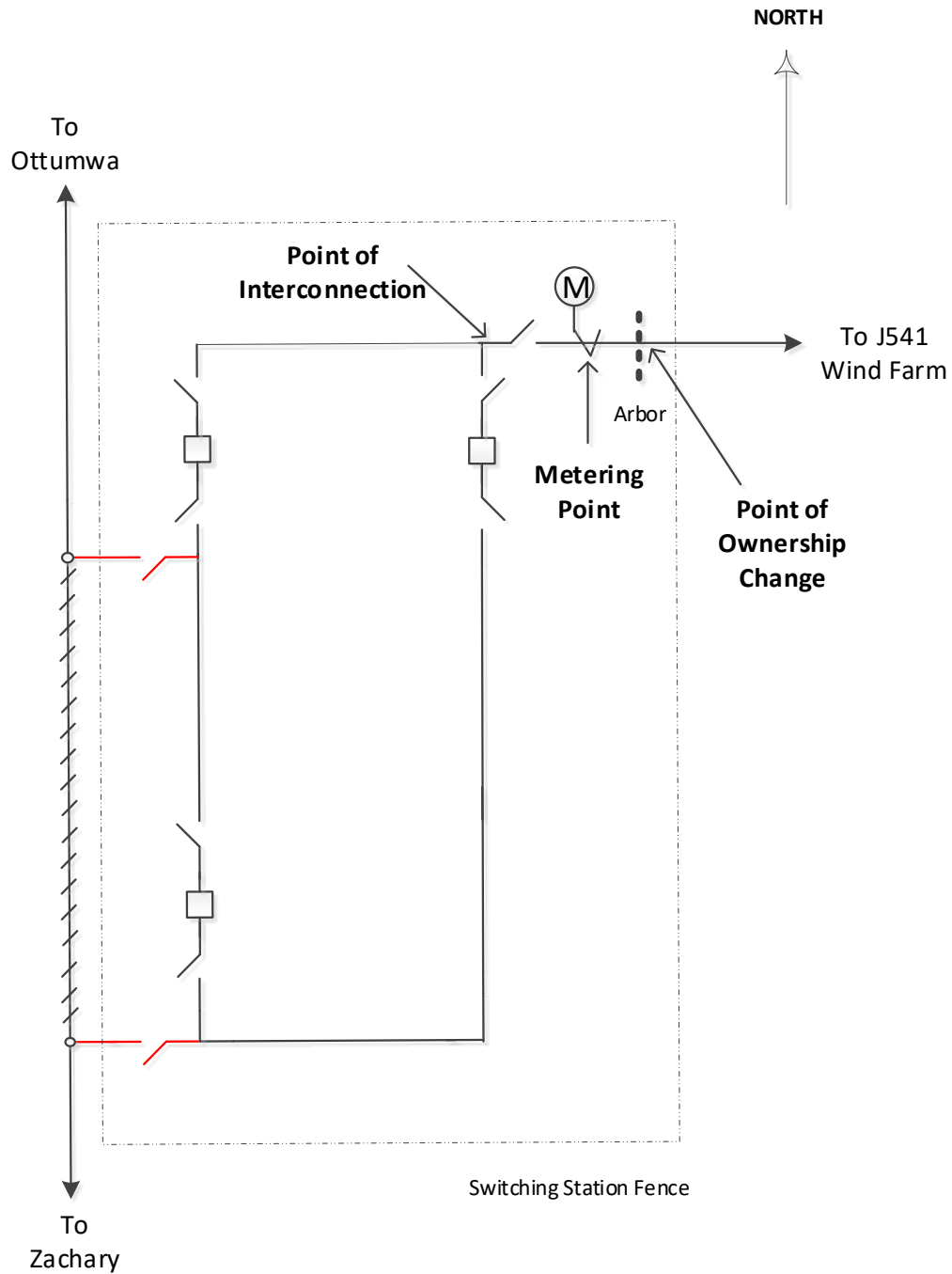
## A1-1. Interconnection Customer Generating Facility One-Line Diagram



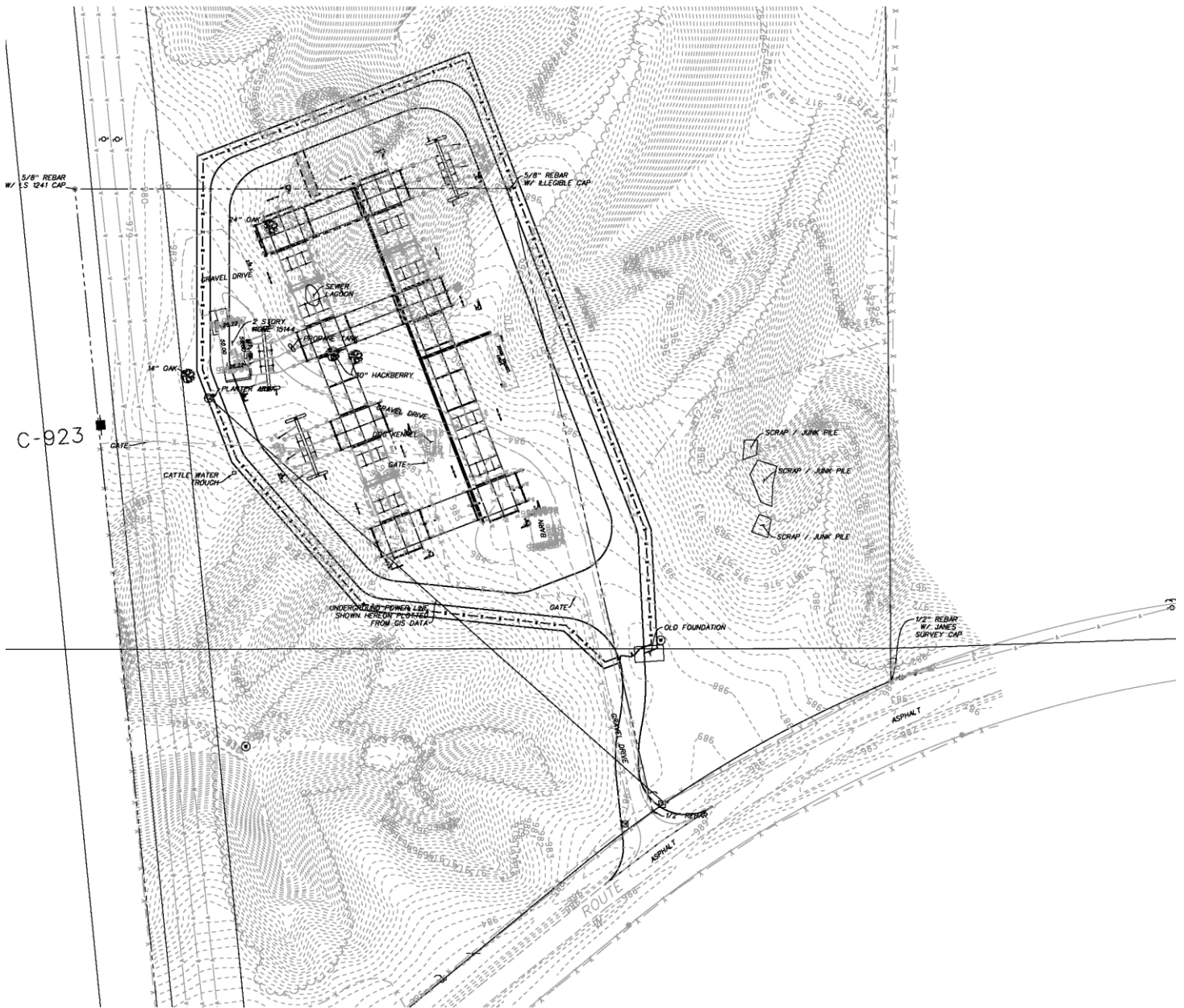
A1-2. Interconnection Customer Generating Facility Site Map



**Exhibit A2. Transmission Owner Hughes Switching Station One Line Diagram (CEII)**



**Exhibit A3. Transmission Owner Hughes Switching Station General Arrangement  
Drawing  
(CEII)**



**Exhibit A4. Transmission Owner Typical Structure for Line Tap**

**{Reserved}**

**Exhibit A5. Cost of Facilities to be Constructed by Transmission Owner**

| <b>Type</b>                        | <b>Facilities to be Constructed by the Transmission Owner</b>                             | <b>Cost Estimate *</b> |
|------------------------------------|-------------------------------------------------------------------------------------------|------------------------|
| <b>Interconnection Facilities</b>  | Construct Transmission Owner's Interconnection Facilities at the Hughes Switching Station | \$ 910,000             |
| <b>Stand Alone Network Upgrade</b> | Construct the Hughes Switching Station                                                    | \$ 7,694,000           |
| <b>Network Upgrade</b>             | Tap the Zachary-Ottumwa 345 kV transmission line to connect the Hughes Switching Station  | \$ 946,000             |
| <b>TOTAL</b>                       |                                                                                           | <b>\$ 9,550,000</b>    |

\* Estimated costs are in 2019 dollars, do not include tax gross-up or escalation, and are accurate to  $\pm 20\%$ . The J541 project is required to documentation that it satisfies the 'safe harbor' requirements for tax gross-up under IRS Notice 2016-36.

**Exhibit A6. Detailed Cost of Facilities to be Constructed by Transmission Owner****Table A6-1. Construct Transmission Owner's Interconnection Facilities \***

|                                             |                   |
|---------------------------------------------|-------------------|
| Engineering, Drafting, & Project Management | \$ 108,000        |
| Material                                    | \$ 497,000        |
| Construction & Construction Oversight       | \$ 266,000        |
| Indirect Overheads                          | \$ 39,000         |
| <b>Total</b>                                | <b>\$ 910,000</b> |

**Table A6-2. Construct the Hughes Switching Station \***

|                                             |                     |
|---------------------------------------------|---------------------|
| Engineering, Drafting, & Project Management | \$ 814,000          |
| Material                                    | \$ 3,911,000        |
| Construction & Construction Oversight       | \$ 2,638,000        |
| Indirect Overheads                          | \$ 331,000          |
| <b>Total</b>                                | <b>\$ 7,694,000</b> |

**Table A6-3. Cut the Zachary-Ottumwa 345 kV line into the Hughes Switching Station \***

|                                             |                   |
|---------------------------------------------|-------------------|
| Engineering, Drafting, & Project Management | \$ 64,000         |
| Material                                    | \$ 402,000        |
| Construction & Construction Oversight       | \$ 439,000        |
| Indirect Overheads                          | \$ 41,000         |
| <b>Total</b>                                | <b>\$ 946,000</b> |

\* Estimated costs are in 2019 dollars, do not include tax gross-up or escalation, and are accurate to  $\pm 20\%$ . The J541 project is required to documentation that it satisfies the 'safe harbor' requirements for tax gross-up under IRS Notice 2016-36.

**Exhibit A7. Cost of Facilities to be Constructed by Interconnection Customer**

| <b>Type</b>                         | <b>Facilities to be Constructed by Interconnection Customer</b>                       | <b>Cost Estimate</b> |
|-------------------------------------|---------------------------------------------------------------------------------------|----------------------|
| <b>Network Upgrades</b>             | No Network Upgrades are to be constructed by the Interconnection Customer             | Not Applicable       |
| <b>Stand Alone Network Upgrades</b> | No Stand Alone Network Upgrades are to be constructed by the Interconnection Customer | Not Applicable       |

**Exhibit A8. Detailed Cost of Facilities to be Constructed by Interconnection Customer**

No Network Upgrades or Stand Alone Network Upgrades are to be constructed by the Interconnection Customer.

**Exhibit A9. Facilities to be Financed by Transmission Owner**

| <b>Type</b>                        | <b>Facilities to be Constructed by Transmission Owner</b>                                              | <b>Cost Estimate *</b> |
|------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------|
| <b>Stand Alone Network Upgrade</b> | Construct the J541 Interconnection Switching Station                                                   | \$ 7,694,000           |
| <b>Network Upgrade</b>             | Tap the Zachary-Ottumwa 345 kV transmission line to connect the J541 Interconnection Switching Station | \$ 946,000             |
| <b>TOTAL</b>                       |                                                                                                        | <b>\$ 8,640,000</b>    |

- \* Estimated costs are in 2019 dollars, do not include tax gross-up or escalation, and are accurate to  $\pm 20\%$ . The J541 project is required to document that it satisfies the 'safe harbor' requirements for tax gross-up under IRS Notice 2016-36.

Transmission Owner will recover 90% of the actual cost of the Network Upgrades to be financed by the Transmission Owner under this GIA under a Facilities Service Agreement between the Transmission Owner and the Interconnection Customer. (See Section 10.2 of this Appendix A.)

**Exhibit A10. Contingent Facilities**

Higher queue and/or same DPP group study Interconnection Requests that may create contingencies pursuant to Article 11.3.1 are listed in tables below. Table A10-1 describes transmission assumptions modeled in the studies that were deemed necessary to allow for the Interconnection Service as described in Appendix A of this GIA and is not related to Article 11.3.1, i.e., does not describe projects associated with a higher queued and/or same DPP group study Interconnection Request. Nevertheless, if the transmission assumptions are not completed or significantly modified, the Interconnection Service granted under this GIA may be restricted until such time as the Interconnection Customer funds a study to determine the applicable ERIS and NRIS level that results due to the changes in Table 1.

The list of higher-queued and/or same DPP group study projects in Tables A10-2 and A10-3, not yet in service, were included in the interconnection study for queue project J541. However, a project's inclusion in the System Impact Study does not necessarily mean that these facilities would be contingencies for the Interconnection Customer's Generating Facility. In the event that any of the higher queued and/or same DPP group study generators were to drop out, then the Interconnection Customer may be subject to restudy pursuant to Article 11.3.2.

**Table A10-1. Transmission Assumptions**

| <b>MTEP ID</b> | <b>Facility ID</b> | <b>Facility</b>                                     | <b>Description</b>                                                                                                                                                                                                    | <b>Expected Completion Date</b> | <b>Status</b>                    |
|----------------|--------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------|
| 2248           | 4160, 5187         | MVP Portfolio 1<br>Zachary - Ottumwa 345 kV project | New Zachary Substation<br>New 560 MVA, 345/161 kV Transformer.<br>New 161 kV tie between the Zachary and Adair substations<br>New 71 mile 345 kV line from Zachary to Ottumwa with 3000 A summer emergency capability | 5/31/2019                       | All In Service                   |
| 3170           | 5601               | MVP Portfolio 1<br>Zachary-Maywood 345 kV project   | New Maywood Switching Station<br>New 64 mile 345 kV line from Zachary to Maywood with 3000 A summer emergency capability.                                                                                             | 12/15/2019                      | In Service<br>Under Construction |

|       |                                                      |                                                                                                     |                                                                                                                                                                   |            |                        |
|-------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|
| 9668  | 21079,<br>21080                                      | Cedar Rapids-<br>North Liberty<br>area-Hills<br>Upgrades                                            | Add a new Hills area 345/161kV source and upgrade the 161 and 69kV systems in the North Liberty area. This includes a new North Liberty 161/69kV substation also. | 12/31/2019 | Planned                |
| 11883 | 21848                                                | Huntley -<br>Wilmarth 345<br>kV                                                                     | Huntley to Wilmarth 345 kV Single Ckt Transmission Line - 38.5 miles                                                                                              | 1/1/2022   | Planned                |
| 3127  | 20577,<br>20578,<br>20579,<br>20580,<br>and<br>20581 | Proposed<br>MVP<br>Portfolio 1: N<br>LaCrosse-N<br>Madison-<br>Cardinal-<br>Hickory Creek<br>345 kV | Construct N LaCrosse-N Madison-<br>Cardinal 345 kV & Hickory Creek-<br>Cardinal 345 kV line.                                                                      | 12/31/2020 | M1_Final SPM<br>or OOC |

**Table A10-2. Higher Queued Projects**

| <b>MISO<br/>Project<br/>#</b> | <b>Service<br/>Type</b> | <b>TO</b>    | <b>County, State</b> | <b>Point Of<br/>Interconnection</b>              | <b>Capacity<br/>(MW)</b> | <b>Fuel<br/>Type</b> | <b>Status</b>         |
|-------------------------------|-------------------------|--------------|----------------------|--------------------------------------------------|--------------------------|----------------------|-----------------------|
| G549                          | NR                      | GRE          | Pope, MN             | Next to Williams<br>Substation (69 kV)           | 20                       | Wind                 | Under<br>Construction |
| G620                          | ER                      | XEL<br>(NSP) | Goodhue, MN          | Kenyon - Dodge 69<br>kV                          | 19                       | Wind                 | Under<br>Construction |
| G621                          | NR                      | XEL<br>(NSP) | Pipestone, MN        | Golf - Woodstock<br>34.5 kV                      | 20                       | Wind                 | Under<br>Construction |
| G830                          | NR                      | GRE          | McHenry, ND          | McHenry Substation                               | 99                       | Wind                 | Under<br>Construction |
| H081                          | ER                      | XEL<br>(NSP) | Lyon, MN             | Brookings – Lyon<br>County 345 kV                | 201                      | Wind                 | Under<br>Construction |
| J238                          | NR                      | IPL          | Morgan, IN           | 138kV at existing<br>Eagle Valley Power<br>Plant | 725                      | Gas                  | Under<br>Construction |

| <b>MISO Project #</b> | <b>Service Type</b> | <b>TO</b> | <b>County, State</b> | <b>Point Of Interconnection</b>        | <b>Capacity (MW)</b> | <b>Fuel Type</b> | <b>Status</b>              |
|-----------------------|---------------------|-----------|----------------------|----------------------------------------|----------------------|------------------|----------------------------|
| J228                  | NR                  | METC      | Mason, MI            | Ludington Substation                   | 70                   | Hydro            | Under Construction         |
| J230                  | NR                  | METC      | Mason, MI            | Ludington Substation                   | 70                   | Hydro            | Under Construction         |
| J231                  | NR                  | METC      | Mason, MI            | Ludington Substation                   | 70                   | Hydro            | Under Construction         |
| J340                  | NR                  | ITC       | Huron, MI            | Grassmere 345 kV Substation            | 100                  | Wind             | Under Construction         |
| J316                  | NR                  | MDU       | Dickey, ND           | Tatanka – Ellendale 230kV              | 150                  | Wind             | Active / DPP-2014-AUG-West |
| J329                  | NR                  | CFU       | Marion, IA           | Pella West sub                         | 55                   | Hydro            | Under Construction         |
| J344                  | NR                  | ITC-M     | Mahaska, IA          | Poweshiek – Oskaloosa 161kV            | 169                  | Wind             | Under Construction         |
| J299                  | ER                  | Xcel      | Blue Earth, MN       | Wilmarth sub                           | 73                   | CC               | DPP-2015-FEB-West          |
| J391                  | NR                  | MRES      | Lyon, MN             | MMU's N 7th Street sub                 | 50                   | CT               | DPP-2015-FEB-West          |
| J407                  | NR                  | ITCM      | Freeborn, MN         | Glenworth 161 kV Sub                   | 200                  | Wind             | DPP-2015-FEB-West          |
| J416                  | NR                  | ITCM      | Franklin, IA         | Emery-Blackhawk 345 kV Line            | 200                  | Wind             | DPP-2015-FEB-West          |
| J426                  | NR                  | Xcel      | Pipestone, MN        | Chanarambie 34.5 sub                   | 100                  | Wind             | DPP-2015-FEB-West          |
| J041                  | NR                  | ITCM      | Grundy, IA           | Wellsburg 161kV sub                    | 90                   | Wind             | DPP-2015-Aug-West          |
| J399                  | NR                  | Xcel      | Ida, IA              | Black Dog 115kV sub                    | 200                  | CT               | DPP-2015-Aug-West          |
| J412                  | NR                  | MEC       | Ida, IA              | Lehigh-Raun 345kV                      | 200                  | Wind             | DPP-2015-Aug-West          |
| J436                  | ER                  | OTP       | Codington Grant SD   | Big Stone South – Ellendale 345kV line | 150                  | Wind             | DPP-2015-Aug-West          |

| <b>MISO Project #</b> | <b>Service Type</b> | <b>TO</b> | <b>County, State</b> | <b>Point Of Interconnection</b>                                                             | <b>Capacity (MW)</b> | <b>Fuel Type</b> | <b>Status</b>     |
|-----------------------|---------------------|-----------|----------------------|---------------------------------------------------------------------------------------------|----------------------|------------------|-------------------|
| J437                  | ER                  | OTP       | Codington Grant SD   | Big Stone South – Ellendale 345kV line                                                      | 150                  | Wind             | DPP-2015-Aug-West |
| J438                  | NR                  | MEC       | Poweshiek, IA        | Poweshiek-Parnell 161kV                                                                     | 170                  | Wind             | DPP-2015-Aug-West |
| J442                  | NR                  | OTP       | Deuel, SD            | Big Stone substation                                                                        | 200                  | Wind             | DPP-2015-Aug-West |
| J443                  | NR                  | ITCM      | Delaware County, IA  | Greely Tap                                                                                  | 41                   | Wind             | DPP-2015-Aug-West |
| J449                  | NR                  | ITCM      | Mitchell County - IA | Pioneer Prairie I substation                                                                | 202                  | Wind             | DPP-2015-Aug-West |
| J455                  | ER                  | MEC       | Clay, IA             | Kossuth-Obrien 345kV                                                                        | 300                  | Wind             | DPP-2015-Aug-West |
| J460                  | NRIS                | GRE       | Lincoln, MN          | Brookings-H081 345 kV line                                                                  | 200                  | Wind             | DPP-2016-Feb-West |
| J475                  | NRIS                | MEC       | Poweshiek, IA        | Montezuma 345 kV                                                                            | 200                  | Wind             | DPP-2016-Feb-West |
| J485                  | NRIS                | RPU       | Olmsted, MN          | West Side 161 kV                                                                            | 46.85                | CT               | DPP-2016-Feb-West |
| J488                  | ERIS                | OTP       | Grant, Roberts, SD   | Big Stone-Ellendale 345 kV                                                                  | 151.8                | Wind             | DPP-2016-Feb-West |
| J489                  | ERIS                | OTP       | Grant, Roberts, SD   | Big Stone-Ellendale 345 kV                                                                  | 151.8                | Wind             | DPP-2016-Feb-West |
| J493                  | NRIS                | OTP       | Yellow Medicine, MN  | Big Stone-Brookings 345 kV                                                                  | 150                  | Wind             | DPP-2016-Feb-West |
| J495                  | NRIS                | ITCM      | Winnebago, IA        | Ledyard-Colby 345 kV line                                                                   | 200                  | Wind             | DPP-2016-Feb-West |
| J498                  | NRIS                | MEC       | Boone, Greene, IA    | Grimes-Lehigh 345 kV                                                                        | 340                  | Wind             | DPP-2016-Feb-West |
| J499                  | NRIS                | MEC       | Adair, Madison, IA   | Fallow-Grimes 345 Kv                                                                        | 340                  | Wind             | DPP-2016-Feb-West |
| J500                  | NRIS                | MEC       | Adair, IA            | New substation at intersection of Boone-Atchison 345 kV and Rolling Hills-Madison Co 345 kV | 500                  | Wind             | DPP-2016-Feb-West |

| <b>MISO Project #</b> | <b>Service Type</b> | <b>TO</b> | <b>County, State</b>  | <b>Point Of Interconnection</b>                         | <b>Capacity (MW)</b> | <b>Fuel Type</b> | <b>Status</b>     |
|-----------------------|---------------------|-----------|-----------------------|---------------------------------------------------------|----------------------|------------------|-------------------|
| J504                  | NRIS                | ITCM      | Linn, IA              | Bertram-Duane Anronld 161 kV (0.5 mi from Duane Arnold) | 50                   | Solar            | DPP-2016-Feb-West |
| J506                  | NRIS                | MEC       | Plymouth, IA          | Raun-Lakefield Jct 345 kV                               | 200                  | Wind             | DPP-2016-Feb-West |
| J510                  | NRIS                | OTP       | Deuel, SD             | Scandinavia Township                                    | 326.9                | CT               | DPP-2016-Feb-West |
| J514                  | NRIS                | ITCM      | Marshall, IA          | Marshalltown substation                                 | 65                   | CC               | DPP-2016-Feb-West |
| J523                  | NRIS                | ITCM      | Mower, MN             | Adams 161 kV                                            | 50                   | Solar            | DPP-2016-Feb-West |
| J524                  | NRIS                | MEC       | Webster, IA           | Webster 161 kV                                          | 100                  | Solar            | DPP-2016-Feb-West |
| J525                  | NRIS                | XEL       | Murray, MN            | Lake Wilson–Hadely 69 kV                                | 50                   | Solar            | DPP-2016-Feb-West |
| J526                  | NRIS                | OTP       | Deuel, SD             | Brooking Co-Big Stone South 345 kV                      | 300                  | Wind             | DPP-2016-Feb-West |
| J527                  | NRIS                | MEC       | Adair, IA             | Booneville-Cooper 345 kV                                | 250                  | Wind             | DPP-2016-Feb-West |
| J528                  | NRIS                | MEC       | Adair, IA             | Rolling Hills-Madison 345 kV                            | 200                  | Wind             | DPP-2016-Feb-West |
| J529                  | NRIS                | MEC       | Palo Alto, IA         | Obrien-Kossuth 345 kV                                   | 250                  | Wind             | DPP-2016-Feb-West |
| J530                  | NRIS                | MEC       | Iowa, IA              | Montezuma-Hills 345 kV                                  | 250                  | Wind             | DPP-2016-Feb-West |
| J534                  | NRIS                | MEC       | Humboldt, Kossuth, IA | Kossuth–Webster 345 kV                                  | 250                  | Wind             | DPP-2016-Feb-West |
| J535                  | NRIS                | MEC       | Sac, IA               | J411–Lehigh 345 kV                                      | 210                  | Wind             | DPP-2016-Feb-West |

**Table A10-3. Similar Queued Projects**

| <b>MISO Project #</b> | <b>Service Type</b> | <b>TO</b>                               | <b>County, State</b> | <b>Point Of Interconnection</b>          | <b>Capacity (MW)</b> | <b>Fuel Type</b> | <b>Status</b>     |
|-----------------------|---------------------|-----------------------------------------|----------------------|------------------------------------------|----------------------|------------------|-------------------|
| J302                  | NRIS                | MDU                                     | Emmons, Logan, ND    | Heskett-Wishek 230 kV                    | 101                  | Wind             | DPP-2016-AUG West |
| J476                  | NRIS                | MEC                                     | Atchison, MO         | Atchison Co 345 kV Sub                   | 246                  | Wind             | DPP-2016-AUG West |
| J503                  | NRIS                | MDU                                     | Emmons, Logan, ND    | Heskett-Wishek 230 kV                    | 100                  | Wind             | DPP-2016-AUG West |
| J512                  | NRIS                | Xcel                                    | Nobles, MN           | Nobles-Fenton 115 kV                     | 250                  | Wind             | DPP-2016-AUG West |
| J555                  | NRIS                | MEC                                     | Poweshiek, IA        | Montezuma 345 kV                         | 200                  | Wind             | DPP-2016-AUG West |
| J569                  | NRIS                | Xcel                                    | Rock, MN             | Rock County 161 kV                       | 100                  | Wind             | DPP-2016-AUG West |
| J583                  | NRIS                | MEC                                     | Audubon, IA          | Eclipse 345 kV                           | 200.1                | Wind             | DPP-2016-AUG West |
| J587                  | NRIS                | Xcel                                    | Lincoln, MN          | J460 Sub on the Brookings-H081 345 kV    | 200                  | Wind             | DPP-2016-AUG West |
| J590                  | NRIS                | MEC                                     | Palo Alto, IA        | Obrien-Kossuth 345 kV                    | 90                   | Wind             | DPP-2016-AUG West |
| J598                  | NRIS                | Ameren Transmission Company of Illinois | Adair, Schuyler, MO  | Zachary–Ottumwa 345 kV transmission line | 300                  | Wind             | DPP-2016-AUG West |
| J611                  | NRIS                | MEC                                     | Nodaway, MO          | Clarinda-Merryville 161 kV               | 110                  | Wind             | DPP-2016-AUG West |
| J614                  | NRIS                | ITCM                                    | Howard, IA           | Rice 161 kV                              | 66                   | Wind             | DPP-2016-AUG West |

**Exhibit A11. Interconnection Customer and Transmission Owner Milestones**

See Appendix B.

**Exhibit A12. Construction & Coordination Schedules**

See Appendix B.

**Exhibit A13. Permits, Licenses, Regulatory Approvals and Authorization**

Permits required for the construction of the Hughes switching station shall be the responsibility of the Interconnection Customer. This includes, but is not limited to, building permits, associated with the site civil work to be performed by Interconnection Customer but not building permits required, if any, for work to be performed by Transmission Owner, roadway access, environmental permits (i.e. wetlands, cultural, natural resources, endangered species, historical artifacts, etc.), storm water discharge and/or SWPPP permitting, floodplain permit, land disturbance permit, Department of Transportation permits, and county zoning permits.

Permits required for the transmission line Network Upgrade shall be the responsibility of the Transmission Owner.

## **Exhibit A14. Interconnection and Operating Guidelines**

### **Power Factor Range**

FERC requires that an interconnecting generator must be able to operate over a power factor range of 0.95 lagging (supplying VARs to the system) to 0.95 leading (absorbing VARs from the system) at the high-voltage side of the Generating Facility step-up transformer.

### **Low Voltage Ride Through**

All wind turbine generators must meet the applicable FERC 661-A LVRT requirements.

### **Dynamic Reactive Power Capability**

The wind turbines chosen for the J541 project are expected to provide dynamic reactive capability. The reactive capability of a wind turbine is a function of the active power and terminal voltage.

### **Operating to a Specified Voltage or VAR Schedule**

The J541 wind generation facility will be required to operate to a voltage schedule estimated to be 359 kV to 362 kV (1.04 to 1.05 PU) at the POI. The specific voltage schedule applicable to J541 will be provided at the time of startup by the Transmission Owner's Transmission Operations group.

### **NERC Reporting Standards**

Complete and accurate modeling data is essential to the planning process. The following items are critical for the accuracy of data and are addressed by these requirements:

- field verifications of modeling parameters
- clear statement of data requirements
- protection system settings that impact system studies

In accordance with the periodicity established within the current NERC standards, the J541 wind generating facility will ensure that compliance with all applicable NERC Modelling Standards has been met. Applicability of these standards to the J541 wind generating facility will be determined based on the applicability criteria in the current version of the NERC standards. These standards are subject to change. For reference, at the time of signing, the current System Modelling Standards that may be applicable to the J541 wind generating facility include:

- **MOD-025** Verification and Data Reporting of Generator Real and Reactive Power Capability and Synchronous Condenser Reactive Power Capability
- **MOD-026** Verification of Models and Data for Generator Excitation Control System or Plant Volt/Var Control Functions
- **MOD-027** Verification of Models and Data for Turbine/Governor and Load Control or

Active Power/Frequency Control Functions

- **MOD-032** Data for Power System Modeling and Analysis
- **PRC-024** Generator Frequency and Voltage Protective Relay Settings

**Harmonic Requirements**

The harmonic content of the voltage and current waveforms injected into the Transmission Owner's electric system by the Interconnection Customer's Generating Facility shall be limited to levels that are in accordance with the latest version of IEEE Standard 519 or its replacement, and which will not cause excessive distortion of Transmission Owner's waveform, telephone interference, carrier interference, or equipment operating problems for Transmission Owner or other users of the transmission system. Interconnection Customer will, if required by Transmission Owner and/or Good Utility Practice, reduce or eliminate, at Interconnection Customer's expense, the existence of any excessive harmonics caused by the operation of the Interconnection Customer's Generating Facility.

**Operating Guidelines**

None required.

## Appendix B To GIA

### Milestones

#### 1. Resolution of Conflicts:

The Parties acknowledge that Section 30.2 provides that conflicts between the Appendices and the body of the GIA are to be resolved in favor of the body of the GIA. The Parties acknowledge that the items set forth below are intended to explain the provisions of the GIA and to set forth the specific agreement of the Interconnection Customer and Transmission Owner relating to certain aspects of the agreement that are not resolved by the terms of the GIA.

#### 2. Selected Option pursuant to Article 5.1:

Interconnection Customer selects the Standard Option as described in Article 5.1.1. Articles 5.1.2, 5.1.3 and 5.1.4 shall not apply to this GIA.

#### 3. Milestones:

The description and date entries listed in the following tables are provided solely for the convenience of the Parties in establishing their applicable Milestones consistent with the provisions of this GIA and the GIP. The failure of Transmission Owner to meet any date on this milestone schedule shall not result in any liability on the part of Transmission Owner if such failure is not the result of the negligence or willful misconduct of Transmission Owner.

#### 4. Commercial Operation Date:

The Interconnection Customer's desired Commercial Operation Date for the Generating Facility is 10/02/2020, and Interconnection Customer's desired In-Service Date is 04/01/2020.

##### A. Interconnection Customer and Transmission Owner Milestones

| NO. | MILESTONES                                                                                                                                      | SCHEDULE DATE                    | PAYMENT AMOUNT | SECURITY AMOUNT |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------|-----------------|
| 0   | Interconnection Customer and Transmission Owner enter into an Engineering and Procurement Agreement to begin Engineering and Design activities. | Effective January 3, 2019        | \$ 612,000     |                 |
| 1   | Anticipated Effective Date of the GIA.                                                                                                          | Estimated to be August 09, 2019. |                |                 |

| <b>NO.</b> | <b>MILESTONES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>SCHEDULE DATE</b>                                       | <b>PAYMENT AMOUNT</b> | <b>SECURITY AMOUNT</b> |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------|------------------------|
| 2          | Transmission Owner to enter Network Upgrade information into Transmission Provider's MOD and MTEP databases.                                                                                                                                                                                                                                                                                                                                                                                                | Within 10 Business Days of the Effective Date of the GIA.  |                       |                        |
| 3          | Interconnection Customer to provide to Transmission Provider (a) reasonable evidence of continued Site Control at Interconnection Customer's collection substation or (b) post \$250,000 non-refundable additional security.(GIP Article 11.3)                                                                                                                                                                                                                                                              | Within 15 Business Days of the Effective Date of the GIA.  |                       |                        |
| 4          | Interconnection customer to provide payment for the difference between the estimated cost of the Transmission Owner Interconnection Facilities and the \$612,000 payment from the Interconnection Customer to the Transmission Owner under the Engineering & Procurement Agreement effective as of January 3, 2019.                                                                                                                                                                                         | Within 30 Business Days of the Effective Date of the GIA.  | \$ 298,000            |                        |
| 5          | Interconnection Customer to provide to Transmission Provider evidence of one or more of the following milestones being achieved:<br>(a) execution of contract for fuel supply transport,<br>(b) execution of contract for cooling water supply,<br>(c) execution of contract for engineering procurement of major equipment or construction,<br>(d) execution of contract for sale of electric energy or capacity; or<br>(e) documentation of application for air, water or land use permits.<br>(GIP 11.3) | Within 180 Calendar Days of the Effective Date of the GIA. |                       |                        |

| NO. | MILESTONES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SCHEDULE DATE                                                                                                                                                                                                                                                                      | PAYMENT AMOUNT | SECURITY AMOUNT |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| 6   | <p>Interconnection Customer to provide to Transmission Owner security for 100% of the estimated cost of Network Upgrades associated with the Point of Interconnection. The amount of the security will be \$8,640,000, replacing the security that was provided in Milestone 11. Upon receiving \$8,640,000 security, Transmission Owner will release the posted security by Interconnection Customer in Milestone 11 for the amount of \$2,036,000. (GIA Article 11.5, Option 3)</p> <p>The security will be released upon the earlier of:</p> <p>(i) the execution of a service agreement between Transmission Owner and Interconnection Customer, or</p> <p>(ii) acceptance by FERC of a service agreement between Transmission Owner and Interconnection Customer.</p> <p>Security provided will be in the form of cash, letter of credit acceptable to Transmission Owner, or acceptable guarantee from an investment grade guarantor. (GIA Article 11.6)</p> | <p>Within the later of:</p> <p>(i) forty five (45) Calendar Days of the execution of the GIA by all Parties, or</p> <p>(ii) forty five (45) Calendar Days of acceptance by FERC if the GIA is filed unexecuted and the payment is being protested by Interconnection Customer.</p> |                | \$ 8,640,000    |

| NO. | MILESTONES                                                                                                                                                                                             | SCHEDULE DATE                                                                                                                                                                                            | PAYMENT AMOUNT | SECURITY AMOUNT |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| 7   | Interconnection Customer to provide to Transmission Owner initial relaying design and specifications for the Interconnection Customer's Interconnection Facilities for review.<br>(GIA Article 5.10.1) | At least 180 Calendar Days prior to Initial Synchronization Date, Milestone 27, but no later than Transmission Owner's start of engineering and design, Milestone 9.<br><br>Completed December 17, 2018. |                |                 |
| 8   | Transmission Owner to review and comment on Interconnection Customer's initial relaying design and specifications for Interconnection Customer's Interconnection Facilities.<br>(GIA Article 5.10.1)   | Completed January 8, 2019.                                                                                                                                                                               |                |                 |
| 9   | Transmission Owner to begin engineering and design of Transmission Owner's Interconnection Facilities and Network Upgrades for the Hughes switching station.                                           | Completed January 7, 2019.                                                                                                                                                                               |                |                 |
| 10  | Transmission Owner to provide to Interconnection Customer a specification package for site preparation for the Hughes switching station.                                                               | Completed July 20, 2019.                                                                                                                                                                                 |                |                 |

| NO. | MILESTONES                                                                                                                                                                                                                                                                                                                     | SCHEDULE<br>DATE                                                                                                                                                                                                                 | PAYMENT<br>AMOUNT | SECURITY<br>AMOUNT |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| 11  | Transmission Owner to begin procurement for long lead equipment.                                                                                                                                                                                                                                                               | Upon written notice, and provision of security in the amount of \$2,036,000, to perform Optional Services in accordance with the Engineering & Procurement Agreement effective January 3, 2019.<br><br>Completed March 15, 2019. |                   | N/A                |
| 12  | Interconnection Customer to provide to Transmission Owner a property survey showing physical benchmarks, a topographic survey, a grading package and civil design for the Hughes switching station site for review, and access rights and a truck access route to the property for soil borings and ground resistance testing. | Completed May 6, 2019.                                                                                                                                                                                                           |                   |                    |
| 13  | Transmission Owner to review and comment on Interconnection Customer's grading package and civil design for the Hughes switching station site.                                                                                                                                                                                 | Completed May 7, 2019.                                                                                                                                                                                                           |                   |                    |

| NO. | MILESTONES                                                                                                                                                                                                              | SCHEDULE DATE                                                                                                                                                                                                                     | PAYMENT AMOUNT | SECURITY AMOUNT |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| 14  | Interconnection Customer and Transmission Owner to each provide the other with all Certificates of Insurance required by the GIA.<br>(GIA Article 18.4.9)                                                               | Initially 30 Calendar Days prior to the start of construction of the facilities to be installed or modified under this GIA, Milestone 17, and thereafter within 90 Calendar Days of end of fiscal year or insurance renewal date. |                |                 |
| 15  | Transmission Owner to begin contractor bid and selection process.                                                                                                                                                       | Completed May 20, 2019.                                                                                                                                                                                                           |                |                 |
| 16  | Interconnection Customer to begin grading and site preparation for the Hughes switching station.                                                                                                                        | Completed July 31, 2019                                                                                                                                                                                                           |                |                 |
| 17  | Interconnection Customer to furnish to Transmission Owner a fully graded site, the deed to the property, a completed entrance road, permits, and permit approvals for the construction of the Hughes switching station. | Prior to or concurrent with Transmission Owner's start of construction, Milestone 18.<br><br>Estimated to be no later than September 3, 2019, to meet the April 1, 2020, in-service date                                          |                |                 |

| <b>NO.</b> | <b>MILESTONES</b>                                                                                                                                                                                                                                   | <b>SCHEDULE DATE</b>                                                                                                                                                                                                                         | <b>PAYMENT AMOUNT</b> | <b>SECURITY AMOUNT</b> |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|
| 18         | Transmission Owner to begin construction of Transmission Owner's Interconnection Facilities and Network Upgrades for the Hughes switching station.                                                                                                  | Upon transfer of the site, Milestone 17, and notification of the status of permits and site issues, Milestone 33.<br><br>Estimated to be no later than September 4, 2019, in order to meet the April 1, 2020, In Service Date, Milestone 26. |                       |                        |
| 19         | Interconnection Customer to install its 345 kV leadline connection to the J541 Interconnection Switching Station arbor.                                                                                                                             | No later than January 6, 2020, in order to meet the April 1, 2020, In Service Date, Milestone 26.                                                                                                                                            |                       |                        |
| 20         | Interconnection Customer to provide to Transmission Owner final design and specifications for Interconnection Customer's Interconnection Facilities, protection design, SCADA, and communication equipment for comment.<br>(GIA Article 5.10.1)     | Not later than 90 Calendar Days prior to the Initial Synchronization Date, Milestone 27.                                                                                                                                                     |                       |                        |
| 21         | Transmission Owner to provide to Interconnection Customer comments on the final design and specifications for Interconnection Customer's Interconnection Facilities, protection scheme, SCADA, and communication equipment.<br>(GIA Article 5.10.1) | Within 30 Calendar Days of receipt of Interconnection Customer's final design and specifications, Milestone 22.                                                                                                                              |                       |                        |
| 22         | Interconnection Customer to provide to Transmission Owner and Transmission Provider updated Generating Facility information.<br>(GIA Article 24.3)                                                                                                  | Not later than 180 Calendar Days prior to the Trial Operation Date, Milestone 28.                                                                                                                                                            |                       |                        |

| NO. | MILESTONES                                                                                                                                                                                           | SCHEDULE DATE                                                                                                                                      | PAYMENT AMOUNT | SECURITY AMOUNT |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| 23  | Interconnection Customer to provide to Transmission Owner and Transmission Provider notification in writing of the Local Balancing Authority where Generating Facility is located. (GIA Article 9.2) | Not later than 3 months prior to the Initial Synchronization Date, Milestone 27.                                                                   |                |                 |
| 24  | Interconnection Customer to enter into an agreement with the applicable Balancing Authority for control area metering.                                                                               | Not later than 180 Calendar Days prior to Commercial Operation Date, Milestone 29.<br>Not applicable if the Balancing Authority is Ameren Illinois |                |                 |
| 25  | Transmission Owner to connect the Hughes switching station to the existing Zachary-Ottumwa 345 kV transmission line.                                                                                 | No later than March 15, 2020, in order to meet April 1, 2020, In Service Date, Milestone 26.                                                       |                |                 |
| 26  | In Service Date<br>Transmission Owner to complete Transmission Owner's Interconnection Facilities and commission the Hughes switching station.                                                       | Estimated to be April 1, 2020.                                                                                                                     |                |                 |
| 27  | Initial Synchronization Date                                                                                                                                                                         | Interconnection Customer requests March 20, 2020, but not earlier than the In Service Date, Milestone 26.                                          |                |                 |
| 28  | Trial Operation Date                                                                                                                                                                                 | Interconnection Customer requests March 20, 2020, but not earlier than the Initial Synchronization Date, Milestone 27.                             |                |                 |

| NO. | MILESTONES                                                                                                                                                                                                             | SCHEDULE DATE                                                                                                     | PAYMENT AMOUNT    | SECURITY AMOUNT     |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 29  | Commercial Operation Date.                                                                                                                                                                                             | Not earlier than the Trial Operation Date, Milestone 28. Interconnection Customer requests October 2, 2020.*      |                   |                     |
| 30  | Interconnection Customer to provide Transmission Owner and Transmission Provider “as built” drawings, information, and documents regarding Interconnection Customer’s Interconnection Facilities. (GIA Article 5.10.3) | Not later than 120 Calendar Days following the Commercial Operation Date, Milestone 29.                           |                   |                     |
| 31  | Transmission Owner to provide to Interconnection Customer and Transmission Provider “as built” drawings, information, and documents regarding Transmission Owner’s Interconnection Facilities. (GIA Article 5.11)      | Not later than 120 Calendar Days following the Commercial Operation Date, Milestone 29.                           |                   |                     |
| 32  | Transmission Owner to provide to Interconnection Customer final cost invoices. (GIA Article 12.2 et seq.)                                                                                                              | Not later than 6 months following the completion of all facilities to be constructed under the GIA, Milestone 26. |                   |                     |
| 33  | Customer to advise the Owner of the status of all regulatory, permitting and siting issues prior to the start of construction by Transmission Owner                                                                    |                                                                                                                   |                   |                     |
|     |                                                                                                                                                                                                                        | <b>TOTAL</b>                                                                                                      | <b>\$ 910,000</b> | <b>\$ 8,640,000</b> |

\* Modified from the original Commercial Operation Date of December 1, 2017 contained in the Interconnection Request.

The schedule:

- is estimated and is not guaranteed.
- may be impacted by poor weather.
- is based on five business days per week instead of seven business days used for the milestone calendar.

- assumes Transmission Provider and Transmission Owner conditions allow transmission outages as required and without delay.
- assumes the Interconnection Customer will provide the necessary information to the Transmission Owner in a timely manner such that it does not cause delays. This information includes details concerning the incoming line to the switching station pull off structure, details on the fiber optics and terminations, relay coordination, and other information that maybe necessary.
- assumes material lead times will be similar to recent purchases of similar equipment.
- assumes the Interconnection Customer and the Transmission Owner, as appropriate, have resolved permit, jurisdictional and regulatory issues prior to the scheduled start of construction.
- assumes the Interconnection Customer will furnish a completed and Transmission Owner approved access road to the interconnection switching station site prior to the start of Transmission Owner field activities.
- assumes the Interconnection Customer will furnish the site fully graded to Transmission Owner specifications as indicated.

**B. Affected System Owner Milestones.** None.

**C. Transmission Provider Milestones**

| <b>No.</b> | <b>Description</b>                                                                                                                                                                                                                            | <b>Date</b>                                                      |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 1          | Transmission Provider to determine conditional limit for interconnection service.                                                                                                                                                             | Prior to Commercial Operation                                    |
| 2          | Transmission Provider to provide Notice to the Parties when unconditional interconnection service is achieved. Unconditional Service requires completion of MTEP Contingent Facilities listed in Exhibit A10 and all Interconnection Studies. | Within 30 Calendar days of unconditional service being achieved. |

## Appendix B-1 To GIA

## Pre-Certification Generation Test Notification Form

The following form would need to be submitted to MISO Real Time Operations at least five (5) Business Days prior to the first date of testing.

Project Number:

Project Name:

Point of Interconnection:

Dispatcher Contact Information:

[illegible]

## **Appendix C To GIA**

### **Interconnection Details**

1. The unique requirements of each generation interconnection will dictate the establishment of mutually agreeable Interconnection and/or Operating Guidelines that further define the requirements of this GIA. The Interconnection and/or Operating Guidelines applicable to this GIA consist of the following information. Additional detail may be provided through attachment to this Appendix C or through electronic means via the web address specified.

- (a) **System Protection Facilities**

The Transmission Owner along with the Interconnection Customer will construct a protective relaying scheme to protect the Transmission System from faults on the Interconnection Customer's Interconnection Facilities and faults on the Transmission Owner's Interconnection Facilities. The Interconnection Customer will be responsible for providing appropriate System Protection Facilities for the Interconnection Customer's Interconnection Facilities compatible with System Protection Facilities to be provided by the Transmission Owner at the Point of Interconnection. This scheme will be coordinated with and approved by Transmission Owner prior to implementation.

The 345 kV line position that will be connecting to the Interconnection Customer's leadline will have its own set of line protection relays. The line relay protection will consist of a SEL-411L and a SEL-311C, both utilizing fiber optic communications for dual pilot schemes. The implementation of these schemes will be provided by Ameren after additional system configuration is provided by the Interconnection Customer. Breaker failure relaying and reclosing will be accomplished with a SEL-351S.

The fiber optic cable required for the relaying will need to connect directly from the Transmission Owner's relays in the Hughes switching station to identical Interconnection Customer owned relays at the J541 Generating Facility. The Interconnection Customer will supply and install the OPGW.

The two 345 kV line positions that will be connecting to the Zachary-Ottumwa line will each have their own set of line protection relays. The line relays will consist of a SEL-411L and a SEL-311C, both of which provide step distance protection. The SEL-411L and SEL-311C will each provide separate pilot schemes to protect the line. Breaker failure logic and automatic reclosing will be accomplished with a SEL-351S. The 345 kV line position towards Zachary will have a set of three CCVTs for protective relaying purposes. The 345 kV line position towards Ottumwa will have a set of three PTs for protective relaying and interconnection metering purposes. One new remote terminal unit (RTU) will be installed at the Hughes switching station to provide the Transmission Owner with supervisory control and remote indication of the station.

(b) Communication requirements

- a. The Interconnection Customer is responsible to install all necessary equipment to transfer all required SCADA points to the Transmission Owner system control center(s) for equipment installed at both of the Interconnection Customer's Generating Facility collector substations, upon specification of such communication protocol to the Interconnection Customer by the Transmission Owner. The Interconnection Customer will be responsible to install all necessary equipment to transfer all required data for the required telemetry information to the Transmission Owner's system control center(s).
- b. The Interconnection Customer is responsible for all operations and maintenance costs of all the required communications equipment located at the Interconnection Customer's Generating Facility collector station required to transmit the required data to the Transmission Owner.

(c) Metering requirements

Interconnection revenue class metering equipment will be installed for the Generation Facility by the Transmission Owner at the Hughes switching station. Metering data will be telemetered to the Interconnection Customer, Transmission Owner, and Transmission Provider control centers via the SCADA system.

(d) Grounding requirements. Not used.

(e) Transmission Line and Substation Connection configurations

The Parties agree that the connections between the Interconnection Customer's Interconnection Facilities and Transmission Owner's Interconnection Facilities will be made in accordance with Transmission Owner's specifications.

(f) Unit Stability requirements. Not used.

(g) Equipment ratings

Transmission Owner will determine the individual equipment ratings for specific Transmission Owner's Interconnection Facilities. Interconnection Customer shall size the Interconnection Customer's Interconnection Facilities using Applicable Standards, Good Utility Practice and the information provided in the Transmission Owner design guide information, Interconnection Evaluation Study, or its equivalent, in order that the Interconnection Customer's Interconnection Facilities appropriately coordinates with the Transmission Owner's Interconnection Facilities.

(h) Short Circuit requirements

Transmission Owner will determine the required short circuit ratings for all

Transmission Owner's Interconnection Facilities. Interconnection Customer agrees to provide appropriately sized or short circuit-rated Interconnection Customer's Interconnection Facilities comparable to those required by Transmission Owner using Applicable Standards, Good Utility Practice and the information provided in the Transmission Owner design guide information document Interconnection Evaluation Study, or its equivalent.

(i) Synchronizing requirements

The Interconnection Customer's Interconnection Facilities will be backfed from the Transmission Owner's Interconnection Facilities utilizing the 345 kV breakers at the Interconnection Customer's Generating Facility collector substation. Transmission Owner may furnish transmission system bus potentials and bus voltage that may be used by the Interconnection Customer for synchronizing the Facility to Transmission Owner's transmission system. These potentials will be provided to the Interconnection Customer at the Transmission Owner's signal demarcation point.

(j) Generation and Operation Control requirements

The Interconnection Customer will install all necessary potential devices on its system to allow voltage control override to prevent high voltage conditions from occurring. Voltage control will override power factor in order to maintain safe and proper operation of the Transmission Owner's Transmission System as required by the standards of Transmission Owner, the Applicable Reliability Council and NERC, Good Utility Practice, and documented in the Transmission Owner design guide information.

(k) Data provisions

Interconnection Customer will install all necessary equipment to monitor and send the required telemetry information to the Transmission Owner's and Transmission Provider's system control centers. The required data includes, but is not limited to: meter kW, kVAR, kWh, kVARh, and breaker status on all 345 kV positions and stepdown transformers. The Transmission Owner will provide detailed specifications to the Interconnection Customer for the appropriate communications protocol in the Transmission Owner design guide information.

(l) Energization inspection and testing requirements

Interconnection Customer will provide Transmission Owner with checkout records to document that Interconnection Customer has tested all protection systems and equipment for correct operation.

(m) Harmonic requirements

See Appendix A, Exhibit A14.

**Appendix D  
To GIA**

**Security Arrangements Details**

Infrastructure security of Transmission or Distribution System equipment and operations, as applicable, and control hardware and software is essential to ensure day-to-day Transmission and Distribution System reliability and operational security. The Commission will expect all Transmission Providers, market participants, and Interconnection Customers interconnected to the Transmission or Distribution System, as applicable, to comply with the recommendations provided by Governmental Authorities regarding Critical Energy Infrastructure Information (“CEII”) as that term is defined in 18 C.F.R. Section 388.113(c) and best practice recommendations from the electric reliability authority. All public utilities will be expected to meet basic standards for system infrastructure and operational security, including physical, operational, and cyber-security practices.

**Appendix E  
To GIA**

**Commercial Operation Date**

**[Date]**

Midcontinent Independent System Operator, Inc.  
Attn: Director, Transmission Access Planning  
720 City Center Drive  
Carmel, IN 46032

Re: \_\_\_\_\_ Generating Facility

Dear \_\_\_\_\_:

On **[Date]** **[Interconnection Customer]** has completed Trial Operation of Unit No. \_\_\_\_.  
This letter confirms that **[Interconnection Customer]** commenced commercial operation of Unit  
No. \_\_\_\_ at the Generating Facility, effective as of **[Date plus one Calendar Day]**.

Thank you.

**[Signature]**

**[Interconnection Customer Representative]**

cc: Transmission Owner

**Appendix F  
To GIA**

**Addresses for Delivery of Notices and Billings**

**Notices:**

Transmission Provider:

MISO  
Attn: Director, Transmission Access Planning  
720 City Center Drive  
Carmel, IN 46032

Transmission Owner:

Senior Vice President – Transmission  
Ameren Services Company  
1901 Chouteau Avenue, MC 04  
PO Box 66149  
St. Louis, MO 63166-6149

Interconnection Customer:

Vice President – Transmission & Interconnection  
Terra Gen  
11455 El Camino Real, Suite 160  
San Diego, CA 92130

**Billings and Payments:**

Transmission Provider:

MISO  
Attn: Director, Transmission Access Planning  
720 City Center Drive  
Carmel, IN 46032

Transmission Owner:

Senior Vice President – Transmission  
Ameren Services Company  
1901 Chouteau Avenue, MC 04  
PO Box 66149

St. Louis, MO 63166-6149

Interconnection Customer:

Vice President – Transmission & Interconnection  
Terra Gen  
11455 El Camino Real, Suite 160  
San Diego, CA 92130

**Alternative Forms of Delivery of Notices (telephone, facsimile or email):**

Transmission Provider:

Phone: (317) 249-5700  
Email: misotap@misoenergy.org or  
MISOTransmissionAccessPlanning@misoenergy.org

Transmission Owner:

Voice telephone – (314) 554-2981  
Facsimile telephone – (314) 554-3066  
Email address – SSchukar@ameren.com

Interconnection Customer:

Voice telephone – (858) 764-3739  
Email Address - fUscategui@terra-gen.com

## **Appendix G To GIA**

### **Interconnection Requirements for a Wind Generating Plant**

Appendix G sets forth requirements and provisions specific to a wind generating plant. All other requirements of this GIA continue to apply to wind generating plant interconnections.

#### **A. Technical Standards Applicable to a Wind Generating Plant**

##### **i. Low Voltage Ride-Through (LVRT) Capability**

A wind generating plant shall be able to remain online during voltage disturbances up to the time periods and associated voltage levels set forth in the standard below.

1. Wind generating plants are required to remain in-service during three-phase faults with normal clearing (which is a time period of approximately 4-9 cycles) and single line to ground faults with delayed clearing, and subsequent post-fault voltage recovery to prefault voltage unless clearing the fault effectively disconnects the generator from the system. The clearing time requirement for a three-phase fault will be specific to the wind generating plant substation location, as determined by and documented by the transmission provider. The maximum clearing time the wind generating plant shall be required to withstand for a three-phase fault shall be 9 cycles after which, if the fault remains following the location-specific normal clearing time for three-phase faults, the wind generating plant may disconnect from the transmission system. A wind generating plant shall remain interconnected during such a fault on the transmission system for a voltage level as low as zero volts, as measured at the high voltage side of the wind GSU.

2. This requirement does not apply to faults that would occur between the wind generator terminals and the high side of the GSU.

3. Wind generating plants may be tripped after the fault period if this action is intended as part of a special protection system.

4. Wind generating plants may meet the LVRT requirements of this standard by the performance of the generators or by installing additional equipment (*e.g.* Static VAr Compensator) within the wind generating plant or by a combination of generator performance and additional equipment.

5. Existing individual generator units that are, or have been, interconnected to the network at the same location at the effective date of the Appendix G LVRT Standard are exempt from meeting the Appendix G LVRT Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet the Appendix G LVRT Standard.

##### **ii. Power Factor Design Criteria (Reactive Power)**

The following reactive power requirements apply only to a newly interconnecting wind generating plant that has completed a System Impact Study as of the effective date of the Final Rule establishing the reactive power requirements for non-synchronous generators in section 9.6.1 of this GIA (Order No. 827). A wind generating plant to which this provision applies shall maintain a factor within the range of 0.95 leading to 0.95 lagging, unless Transmission Provider has established different requirements that apply to all Generating Facilities in the Local Balancing Authority on a comparable basis, measured at the Point of Interconnection as defined in this GIA, if the Transmission Provider's System Impact Study shows that such a requirement is necessary to ensure safety or reliability. The power factor range standard can be met by using, for example, power electronics designed to supply this level of reactive capability (taking into account any limitations due to voltage level, real power output, etc.) or fixed and switched capacitors if agreed to by Transmission Provider, or a combination of the two. Interconnection Customer shall not disable power factor equipment while the wind plant is in operation. Wind plants shall also be able to provide sufficient dynamic voltage support in lieu of the power system stabilizer and automatic voltage regulation at the generator excitation system if the System Impact Study shows this to be required for system safety or reliability.

**iii. Supervisory Control and Data Acquisition (SCADA) Capability**

The wind plant shall provide SCADA capability to transmit data and receive instructions from Transmission Provider to protect system reliability. Transmission Provider and Interconnection Customer shall determine what SCADA information is essential for the proposed wind plant, taking into account the size of the plant and its characteristics, location, and importance in maintaining generation resource adequacy and transmission system reliability in its area.

## **Appendix H To GIA**

### **Interconnection Requirements for Provisional GIA**

#### **Not Applicable to This GIA**

#### **Provisional Agreement**

This GIA is being provided in accordance with Section 11.5 of the Transmission Provider's GIP, which provides among other things, that an Interconnection Customer may request that Transmission Provider provide Interconnection Customer with a provisional GIA that limits the transfer of energy by Interconnection Customer commensurate with that allowed for Energy Resource Interconnection Service. Interconnection Customer requested Transmission Provider to provide a provisional GIA for limited operation at the discretion of Transmission Provider based upon the results of available studies (by Interconnection Customer and by Transmission Provider).

A Provisional Interconnection Study, the results of which are posted on the confidential portion of the Transmission Provider's internet website, was performed by Transmission Provider in order to confirm the facilities that are required for provisional Interconnection Service and to require them to be in place prior to commencement of service under the GIA.

Interconnection Customer represents that the Interconnection Customer facilities (including Network Upgrades, Interconnection Facilities, Distribution Upgrades, System Protection Upgrades and/or Generator Upgrades) that are necessary to commence provisional Interconnection Service and meet the requirements of NERC, or any applicable regional entity for the interconnection of a new generator are in place prior to the commencement of generation from the Generating Facility and will remain in place during the term of the service. The requisite Interconnection Studies were performed for the Generating Facility. Interconnection Customer shall meet any additional requirements (including reactive power requirements) pursuant to the results of applicable future Interconnection System Impact Studies. Until such time as the applicable Interconnection Studies and any identified facilities are completed, the output of the Generating Facility will operate within the output limit prescribed in a future, if applicable, operating guide.

The maximum permissible output of the Generating Facility under Appendix A will be updated by Transmission Provider on a quarterly basis, determined in accordance with Section 11.5 of the GIP, by finding the transfer limit of energy commensurate with the analysis for Energy Resource Interconnection Service ("ERIS"). This study shall be performed assuming the system topology represented by the base cases used to calculate Available Flowgate Capability, as described in Attachment C of the Tariff, with dispatch and optimization algorithms posted on the MISO internet site and operation above those limits will be deemed as unauthorized use of the Transmission System and subject to provisions in the Tariff surrounding that use.

#### **Use of interim operating guide**

Implementation of interim operating guide, if applicable, will constitute an interim solution that will permit Interconnection Customer to operate the Generating Facility under conditional Interconnection Service until planned Network Upgrades are constructed. Any interim operating guide will be subject to the approval of Transmission Owner and Transmission Provider. Minimum requirements for an interim operating guide are as indicated below.

- \* Transmission Operator will have control of breaker(s) dedicated to the Generating Facility and will be able to trip the Interconnection Customer's Generating Facility
- \* Protection schemes must be tested and operative
- \* Interconnection Customer will provide continuous communication capability with the Generator Operator
- \* Interconnection Customer and the owner of the existing Generating Facility will enter into an operating agreement or similar agreement which designates, among other things, the responsibilities and authorities of each of the parties and shall be subject to the acceptance of Transmission Provider and Transmission Owner.
- \* A termination date consistent with completion of construction of Network Upgrades will be included as part of all operating guides accepted by Transmission Owner and Transmission Provider.

Interconnection Customer assumes all risks and liabilities with respect to changes, which may impact the Generator Interconnection Agreement including, but not limited to, change in output limits and responsibilities for future Network Upgrade and cost responsibilities that have not yet been identified on the direct connect Transmission System as well as all affected Transmission, Distribution or Generation System(s) including non-Transmission Provider Systems. Such upgrades will be determined pursuant to the Tariff and Policies in effect at the time of the Interconnection Studies.

**Appendix I  
To GIA**

**Requirements Applicable to Net Zero Interconnection Service**

**Not Applicable to This GIA**

Where this GIA provides for Net Zero Interconnection Service, Interconnection Customer acknowledges, agrees to, and will be required to operate under the following conditions:

- 1) The combined Real-Time Offers, including Energy and Operating Reserves, of the Generating Facility and the existing generating facility with which Interconnection Customer has an executed Energy Displacement Agreement must be less than or equal to Interconnection Service limit (MW, MVAR, MVA output) provided in Exhibit I-1 (Monitoring and Consent Agreement) (hereinafter, "Interconnection Service limit"). In the event that the sum of the simultaneous energy output of the Generating Facility and the existing generating facility exceeds such Interconnection Service limit, MISO reserves the right to curtail and/or disconnect the Generating Facility immediately.

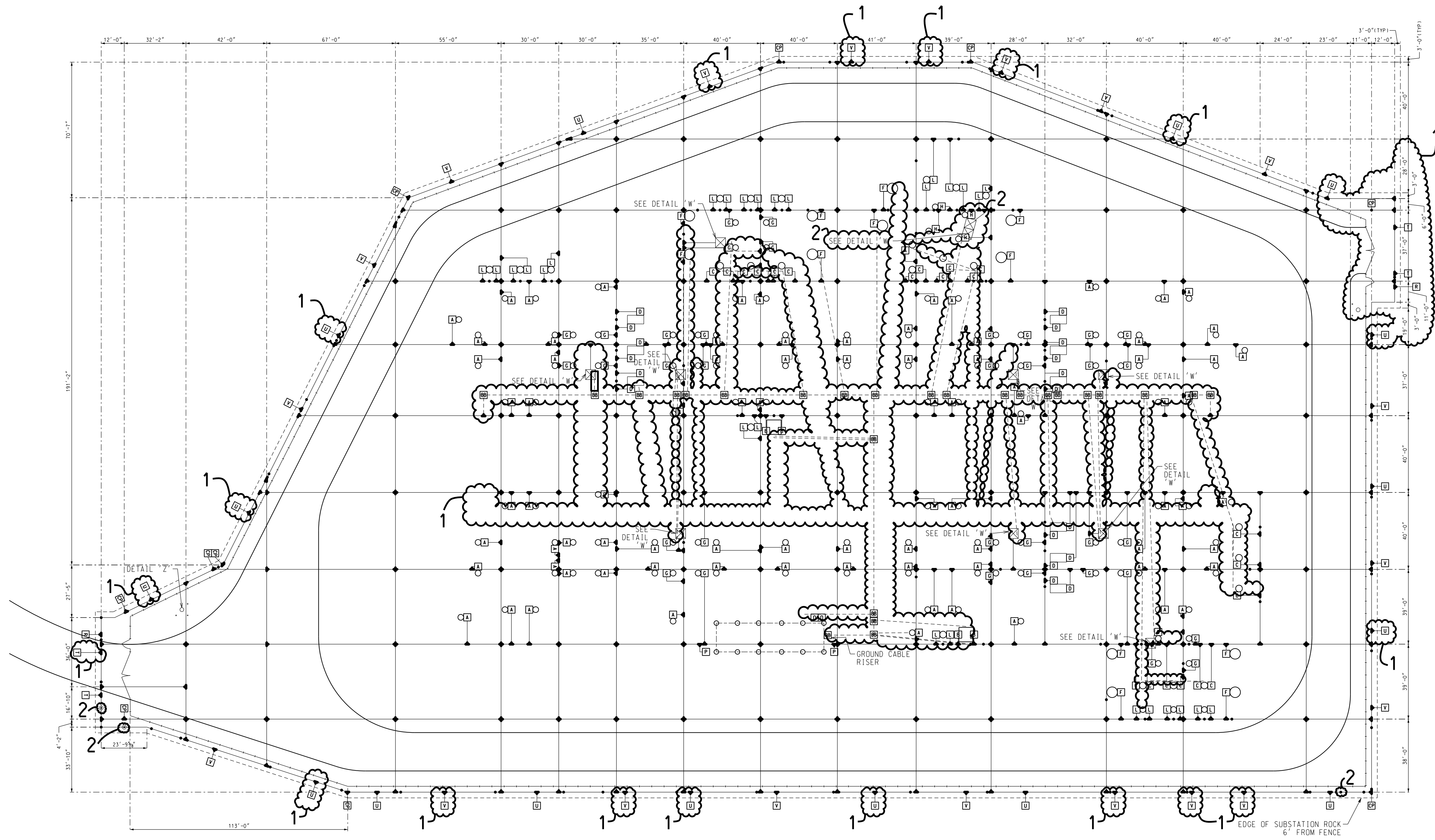
In the event that the sum of the emergency and/or economic maximum offer limits of the Generating Facility and the existing generating facility exceeds the Interconnection Service limit, MISO reserves the right to curtail and/or disconnect the Generating Facility immediately.

- 2) The total MW, MVAR, MVA output at the Point of Interconnection resulting from the combined output of the Generating Facility and the existing generating facility with which Interconnection Customer has an executed Energy Displacement Agreement shall not at any time exceed the Interconnection Service limit.
- 3) The existing generating facility with which Interconnection Customer has an executed Energy Displacement Agreement is not relieved of any applicable requirements under the RAR of the Tariff.
- 4) The Interconnection Customer shall submit to the Transmission Provider a report by the seventh Calendar Day of each month showing the prior month's output, by 15 minute increment, the combined real-time offers and cleared energy injection. The existing generating facility and the Interconnection Customer shall cooperate consistent with other provisions in the Tariff to the extent necessary to ensure accuracy of the report. Transmission Provider shall provide a template for this report.

**Exhibit I-1 (Completed Monitoring and Consent Agreement - Appendix 11 of the GIP)**

**Exhibit I-2 (Completed Energy Displacement Agreement - Appendix 12 of the GIP)**

FILE: \$FILES  
PRINTED BY: \$UNKNOWN\$  
TIME: \$DATE\$ \$TIME\$



GROUNDING PLAN  
SCALE: 1" = 30'

LEGEND:

- A 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'A' (TYP. STR. GROUNDING)
- C 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'C' (345KV C.C.V.T., C.T. OR P.T. GROUNDING)
- D 500 MCM GROUND RISER TO EXTEND 6' ABOVE GROUND  
SEE DETAIL 'D' (345KV BREAKER GROUNDING)
- BL 500 MCM GROUNDING RISER TO EXTEND INTO CABLE VAULT  
AND 10 FT OF COIL SHALL BE PROVIDED FOR CONNECTION  
TO CONTROL BUILDING GROUNDING, SEE NOTE 8.
- E 4/0 GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'BB' (345KV BUS TIE ENCLOSURE GROUNDING)
- F 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'F' (345KV ARBOR GROUNDING)
- G 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'G' (345KV SWITCH STR. GROUNDING)
- H 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'H' (345KV SWITCH STR. W/ GND. BLADES GROUNDING)
- L 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'L' (345KV LIGHTNING ARRESTER GROUNDING)
- P 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'P' (CONTROL ENCLOSURE GROUNDING)
- R 500 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
SEE DETAIL 'R' (ENTRY MANGATE GROUNDING)
- S 500 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
SEE DETAIL 'S' (MANGATE GROUNDING)
- T 500 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
SEE DETAIL 'T' (DRIVE GATE GROUNDING)
- U 500 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
SEE DETAIL 'U' (FENCE FABRIC GROUNDING)
- V 500 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
SEE DETAIL 'V' (FENCE POST GROUNDING)
- CP 350 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
SEE DETAIL 'CP' (CORNER POST GROUNDING)
- X 500 MCM GROUND RISER TO EXTEND 10' ABOVE GROUND  
SEE DETAIL 'X' (YD. LTG./S. SW./XFMR./CABINET GROUNDING)
- FF 500 MCM GROUND RISER TO EXTEND 4' ABOVE GROUND  
SEE DETAIL 'FF' (YARD XFMR. GROUNDING)
- GG-X CADWELD CONNECTION DETAILS  
SEE DETAIL 'GG' (TYPICAL GROUND GRID CONNECTIONS)

- ☒ COPPERWELD GROUND MAT 4' X 4'  
SEE DETAIL 'W'
- COPPERWELD GROUND ROD 5/8" X 8' LONG.  
(SPACED ALONG FENCE PERIMETER AND OTHER  
LOCATIONS AS SHOWN)
- COPPERWELD GROUND ROD 5/8" X 16' LONG.  
(SPACED ALONG FENCE PERIMETER AND OTHER  
LOCATIONS AS SHOWN)
- + CADWELD PLUS PROCESS  
SEE DETAIL 'GG'
- GROUND WIRE, 500 MCM COPPER, UNLESS  
OTHERWISE NOTED
- - - GROUND WIRE, 4/0 COPPER, TO BE PLACED IN CABLE  
TRENCH & PARALLEL TO CONTROL CABLES.
- XX BILL OF MATERIAL ITEM NUMBER, SEE EQ. B/M.

NOTES:

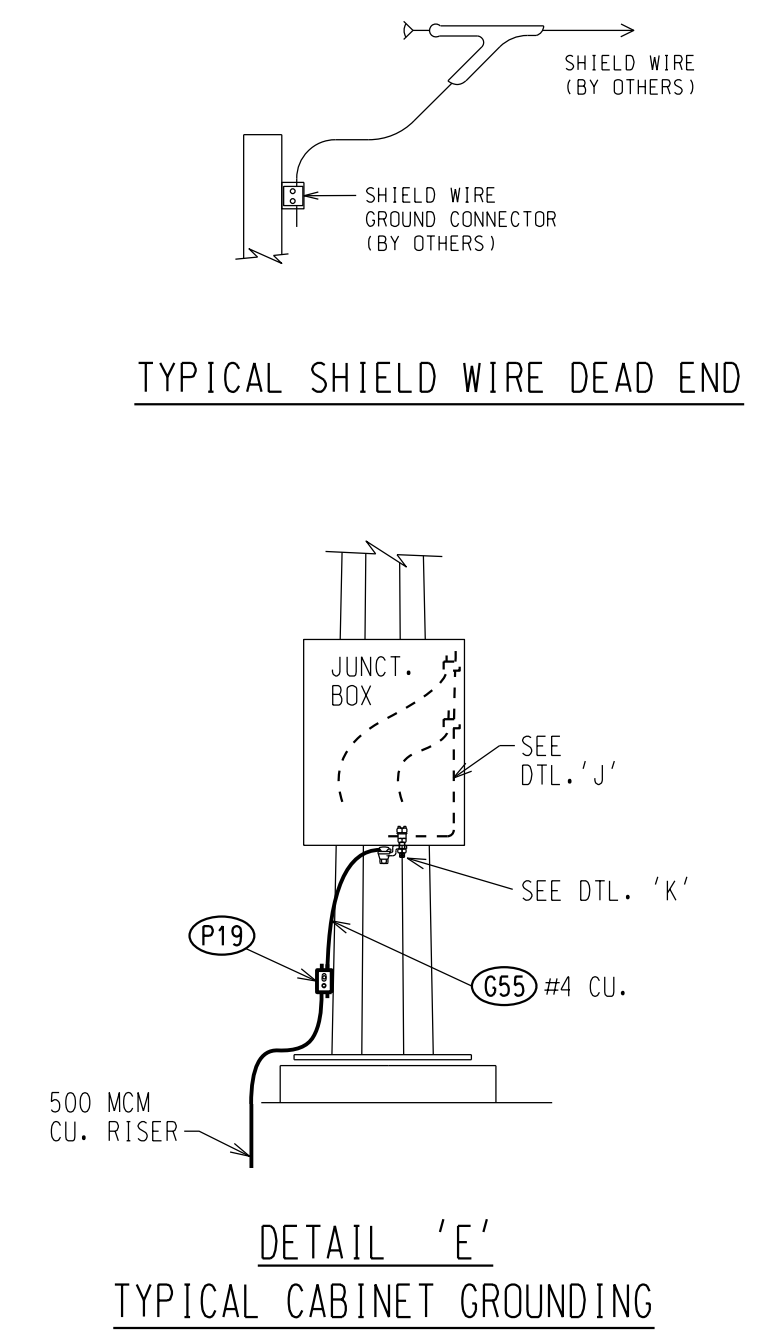
- STRANDED COPPER CABLE BURIED APPROX. 2'-0" UNDER FINISHED  
GRADE STRUCTURAL STEEL GROUND RISERS AND FENCE RISERS SHALL  
BE 500 MCM BARE STRANDED COPPER.
- INSTALL GROUND GRID IN THE APPROX. LOCATION SHOWN ON DWG.
- FENCE POST GROUND RISERS TO BE SPACED APPROX. EVERY 4TH POST.
- ALL UNDERGROUND CONNECTIONS SHALL USE CADWELD PLUS PROCESS.
- PLACE PERIMETER GRID 3'-0" OUTSIDE OF BOTH THE STATION FENCE  
AND THE PERPENDICULAR OPEN GATE DIMENSION.
- GROUND RODS ALONG PERIMETER ARE LOCATED AT EACH CONDUCTOR CROSSING.
- DETAIL 'BB' IS USED FOR MESSENGER CONDUCTOR GROUNDING AND  
TRENCH GROUNDING TO GROUNDING GRID.

REFERENCES:

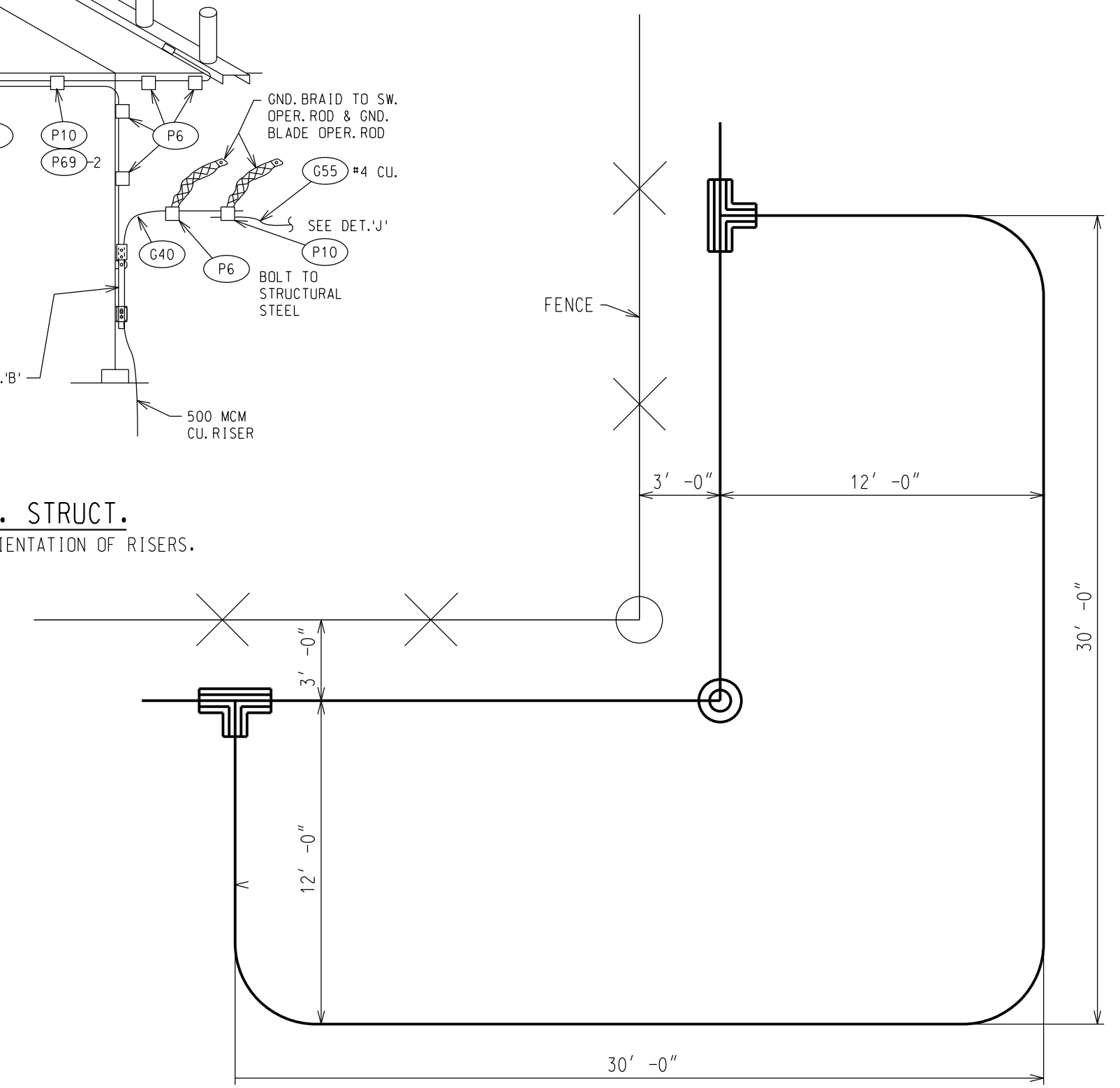
- FOUNDATION LOCATION PLAN ----- E-HUGH-11.1
- GROUNDING DETAILS SHEET 1 ----- E-HUGH-12.2-1
- GROUNDING DETAILS SHEET 2 ----- E-HUGH-12.2-2
- GROUNDING DETAILS SHEET 3 ----- E-HUGH-12.2-3

# Appendix G

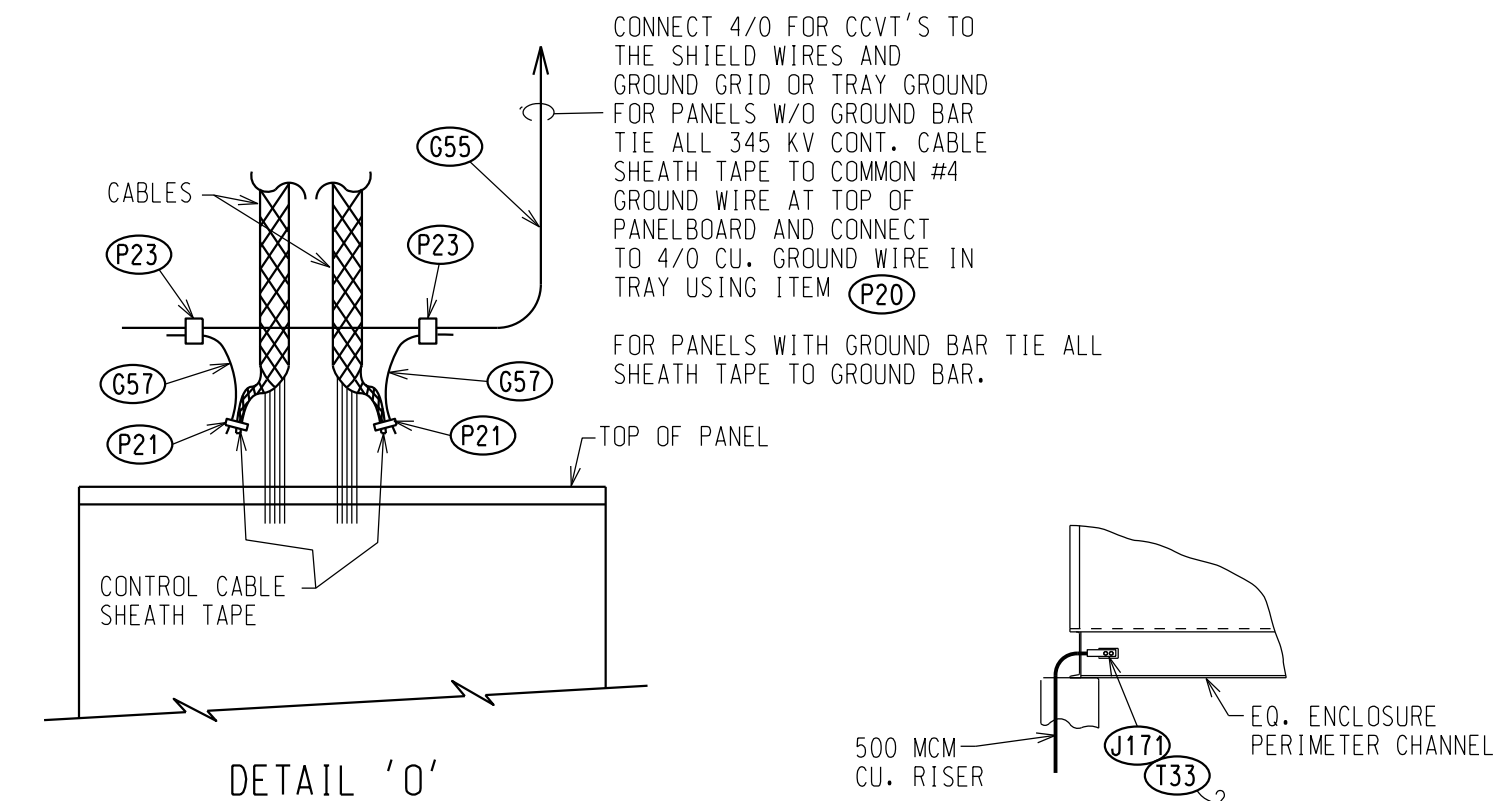
|                                          |          |          |     |     |     |                                                                                                             |
|------------------------------------------|----------|----------|-----|-----|-----|-------------------------------------------------------------------------------------------------------------|
| REV   PROJ ID   DATE   DRWN   RVW   APPD |          |          |     |     |     | 345KV GROUNDING PLAN                                                                                        |
| 2                                        | JS617958 | 09/17/20 | MJS | SG  | CPM |                                                                                                             |
| ISSUED AS-BUILT (B&V)                    |          |          |     |     |     |                                                                                                             |
| 1 JS617958 10/21/19 BGG JBS CPM          |          |          |     |     |     | HUGHES SUBSTATION                                                                                           |
| RE-ISSUED FOR CONSTRUCTION PER ECN       |          |          |     |     |     |                                                                                                             |
|                                          |          |          |     |     |     |                                                                                                             |
|                                          |          |          |     |     |     | E-HUGH-12.1                                                                                                 |
|                                          |          |          |     |     |     |                                                                                                             |
|                                          |          |          |     |     |     |                                                                                                             |
|                                          |          |          |     |     |     | 2                                                                                                           |
|                                          |          |          |     |     |     |                                                                                                             |
|                                          |          |          |     |     |     |                                                                                                             |
| REV   PROJ ID   DATE   DRWN   RVW   APPD |          |          |     |     |     | <div>E-HUGH-12.1</div> |
| 0                                        | JS617958 | 09/20/19 | ALT | GMJ | CPM |                                                                                                             |
| ISSUED FOR CONSTRUCTION                  |          |          |     |     |     |                                                                                                             |



DETAIL 'E'  
TYPICAL CABINET GROUNDING



TYPICAL 345KV DISC. SW. STRUCT.  
SEE PLAN, DWG. E-1PA3-12.1-0 FOR ORIENTATION OF RISERS.



DETAIL 'J-J'  
GROUNDING - CORNER DETAIL

DETAIL 'P'

CONTROL EQ. ENCLOSURE GROUNDING

|                                  |               |
|----------------------------------|---------------|
| GROUNDING PLAN .....             | E-HUGH-12.1   |
| GROUNDING DETAILS - SHT. 2 ..... | E-HUGH-12.2-2 |
| EQ. BILL OF MATERIALS .....      | E-HUGH-29.1   |

[illegible]

345KV GROUNDING DETAILS  
SHEET 1

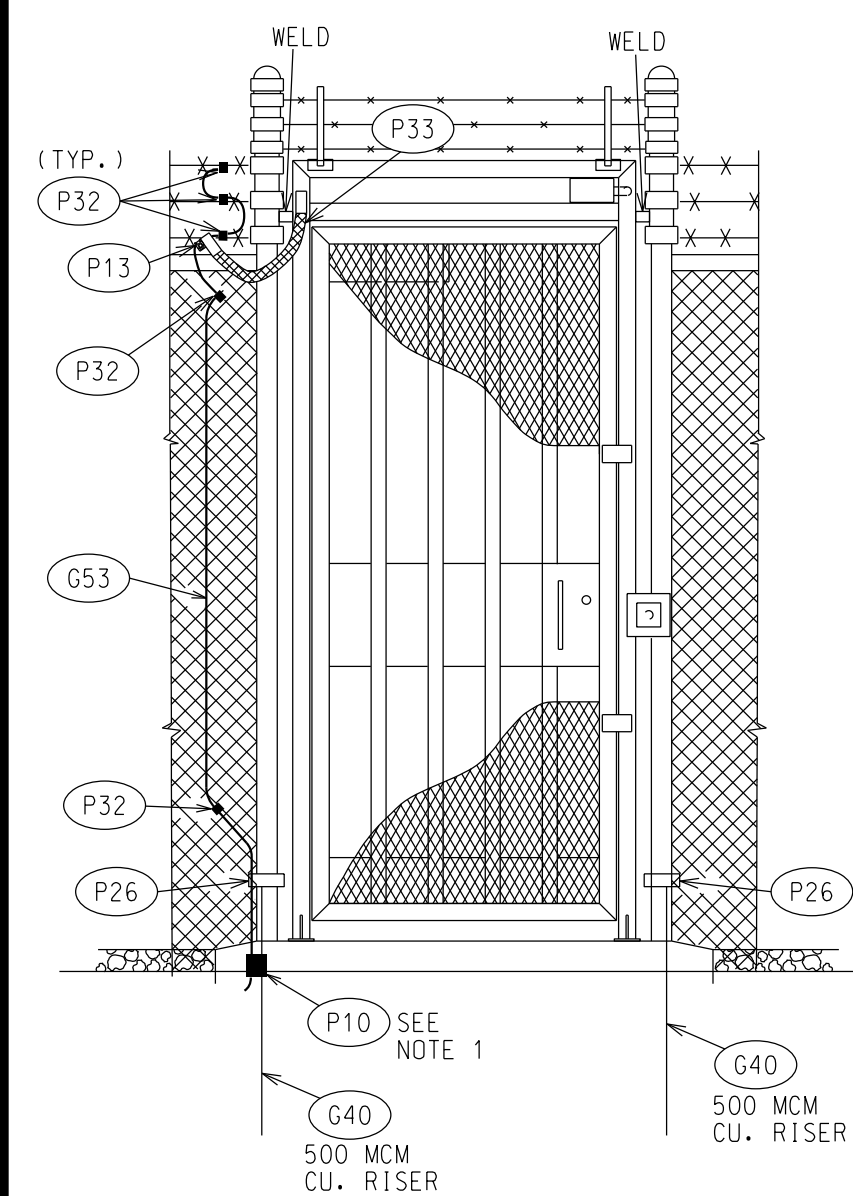
HUGHES SUBSTATION

E-HUGH-12.2-1

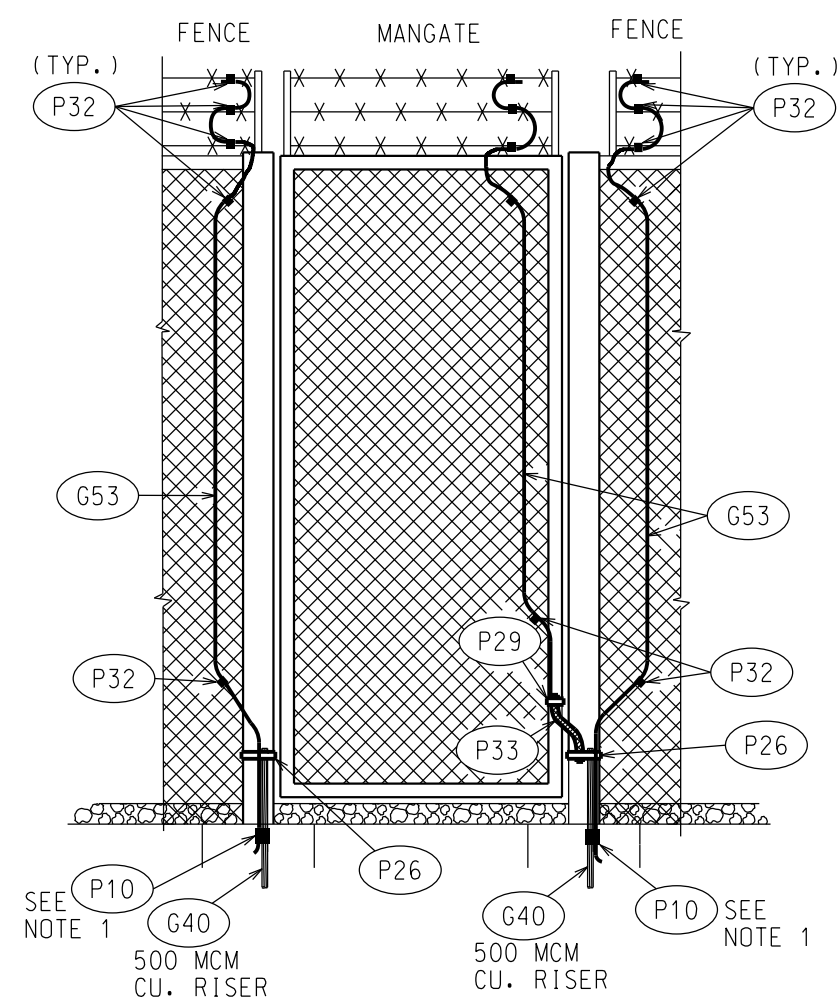
1

SCALE RATIO =

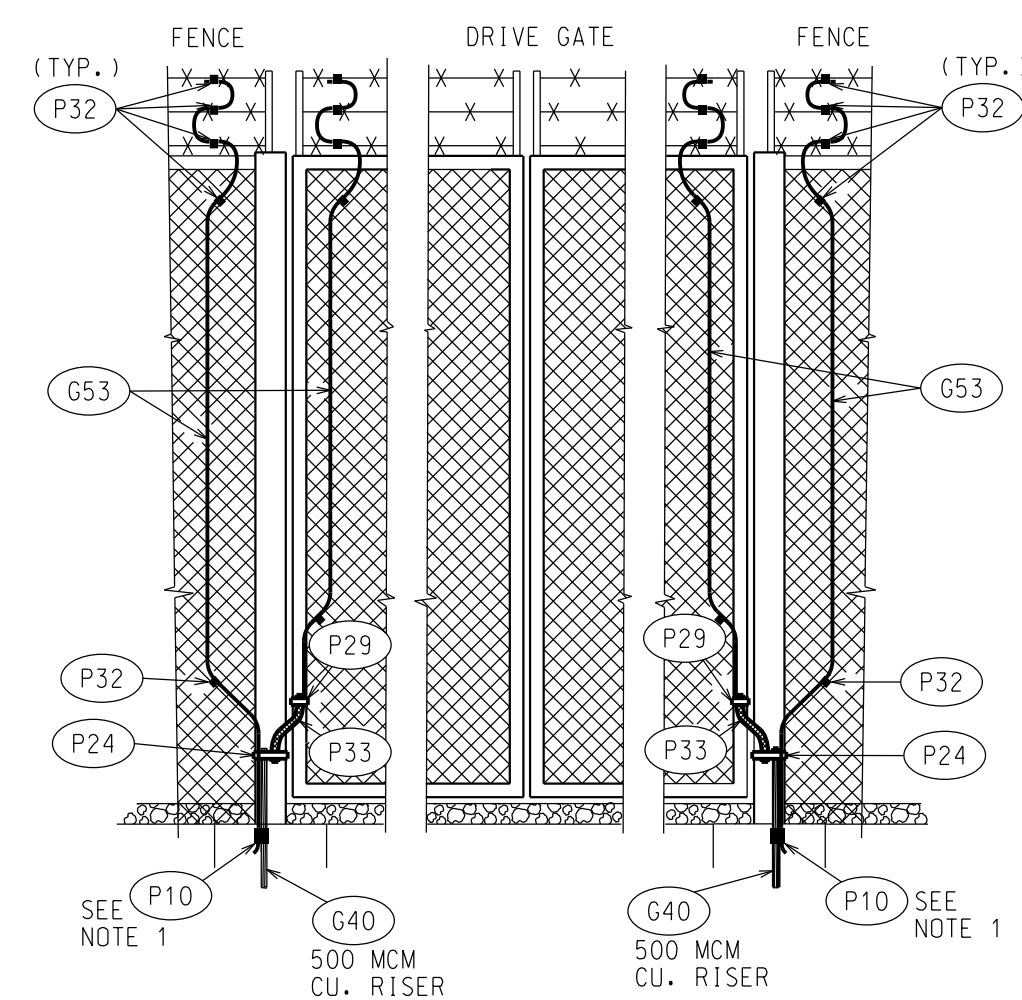
**NOTICE OF LIMITED RESPONSIBILITY**  
THE RESPONSIBILITY OF THE UNDERSIGNED ENGINEER IS LIMITED TO THE DESIGN WORK SHOWN ON PROJECT DRAWINGS AND DOCUMENTS BEARING HIS/HER SEAL SIGNATURE



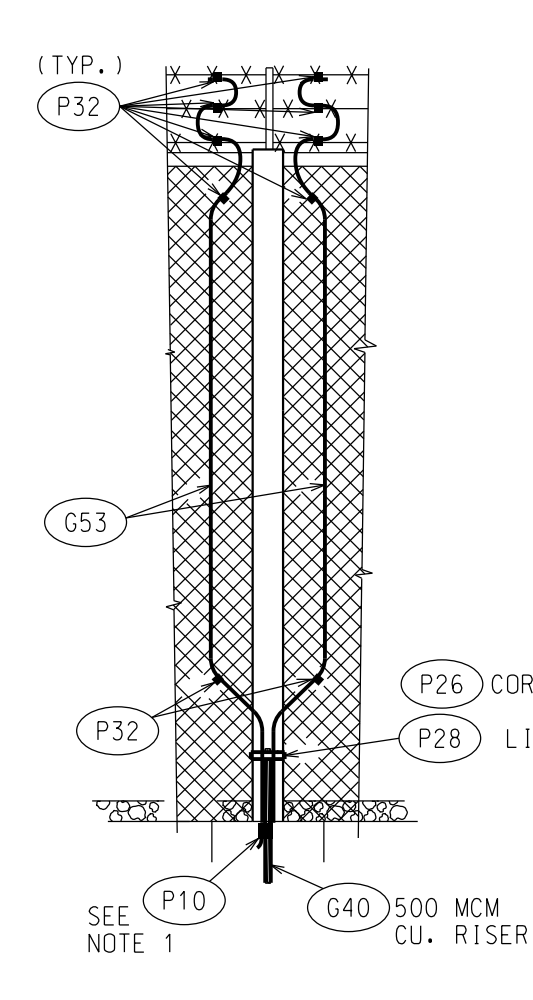
DETAIL 'R'  
ENTRY MANGATE GROUNDING



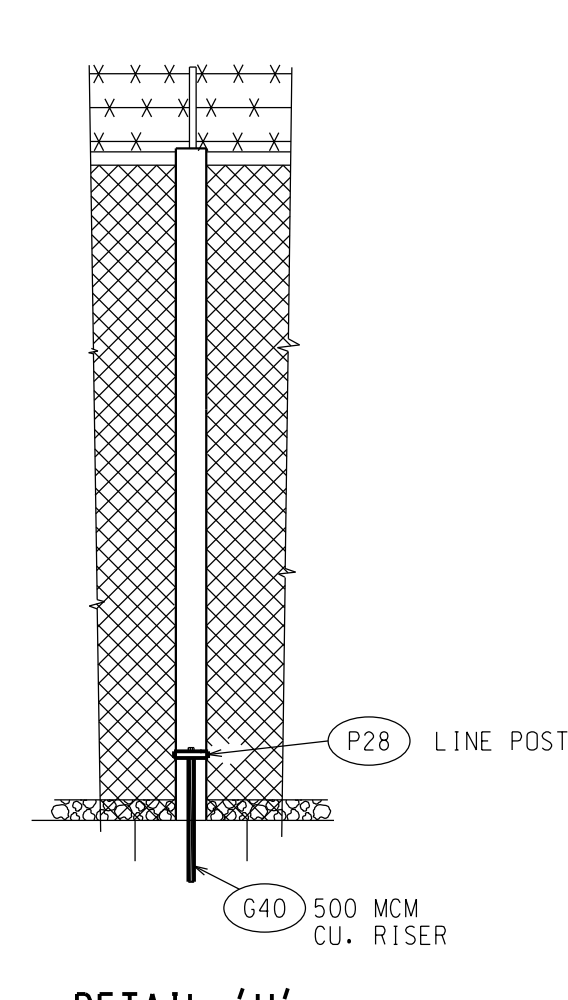
DETAIL 'S'  
MANGATE GROUNDING



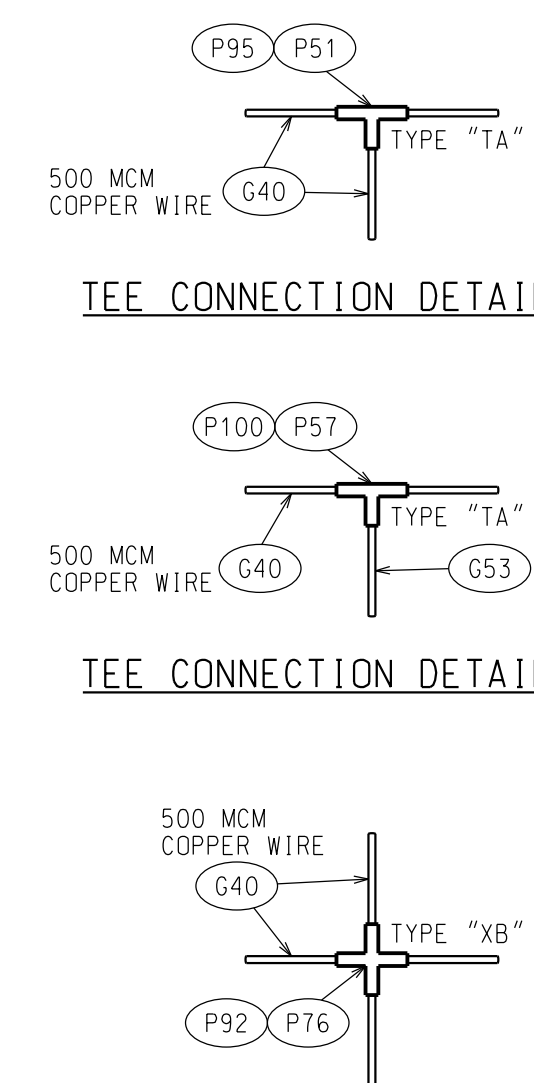
DETAIL 'T'  
DRIVE GATE GROUNDING



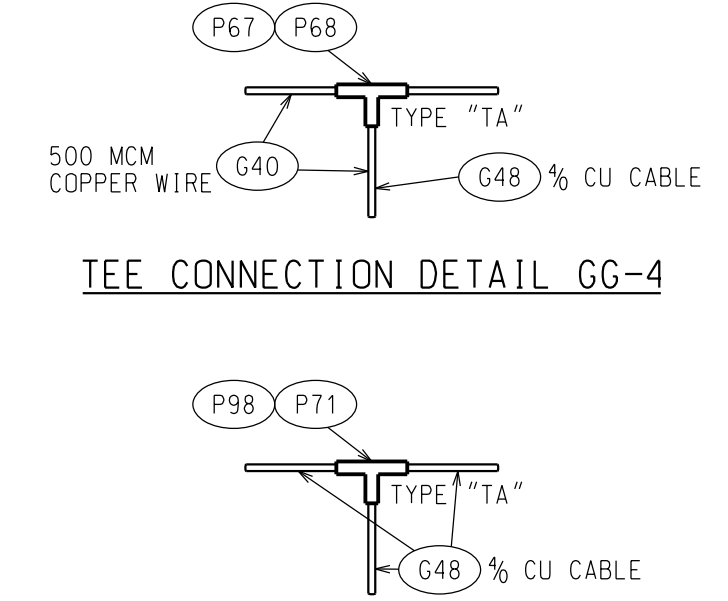
DETAIL 'V' OR 'CP'  
FENCE POST GROUNDING



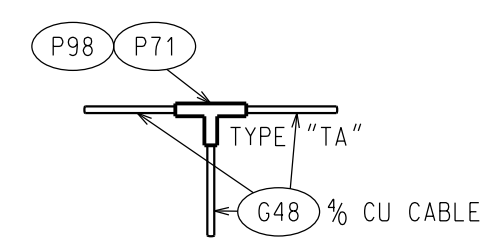
DETAIL 'U'  
FENCE & FENCE  
POST GROUNDING



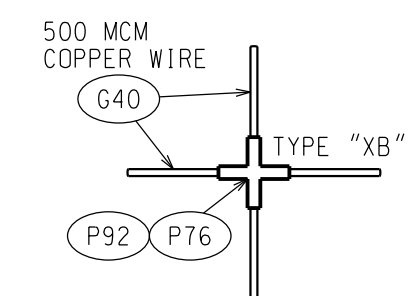
TEE CONNECTION DETAIL GG-3



TEE CONNECTION DETAIL GG-4

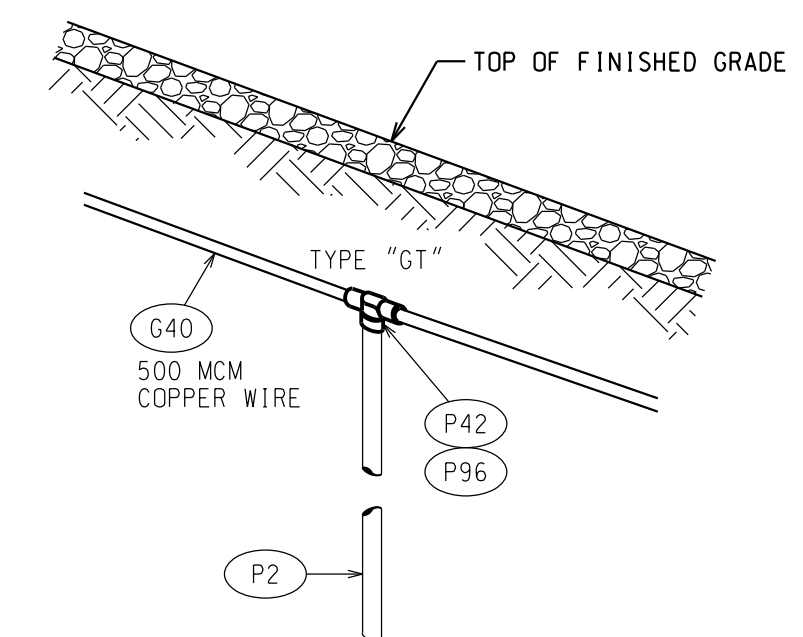


TEE CONNECTION DETAIL GG-5



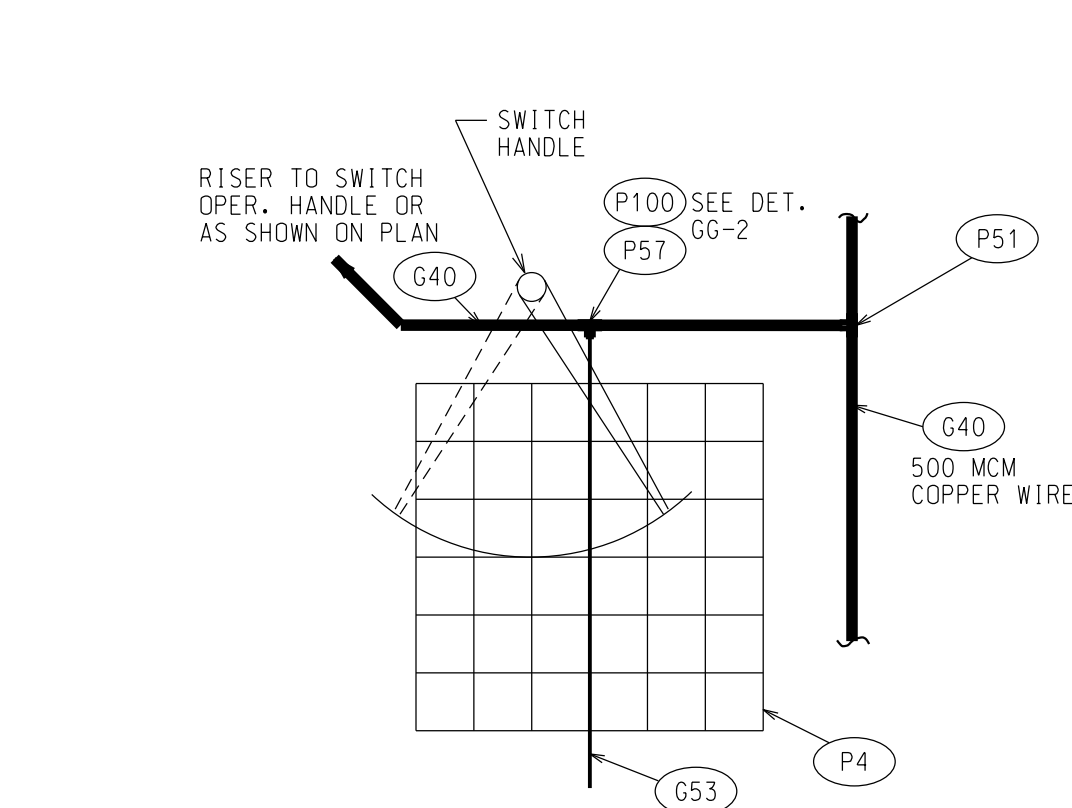
TEE CONNECTION DETAIL GG-2

CROSS CONNECTION DETAIL GG-1



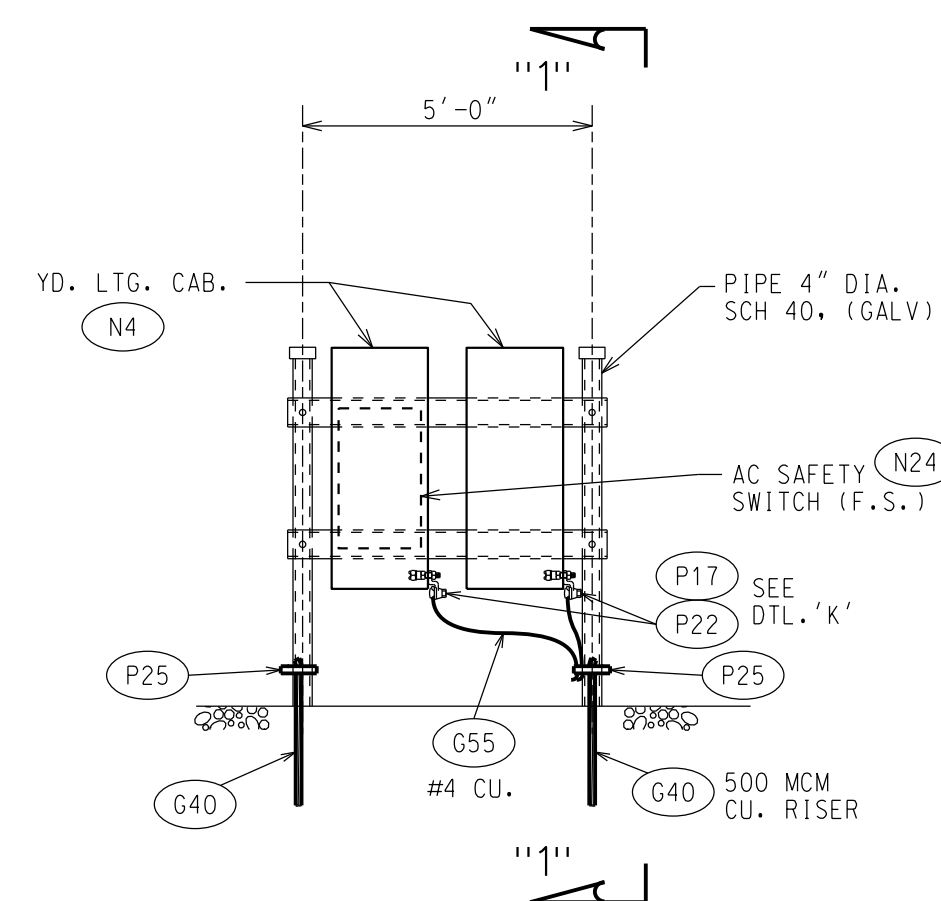
GROUND ROD CONNECTION DETAIL GG-8

DETAIL "GG"  
TYPICAL GROUNDING GRID CONNECTIONS

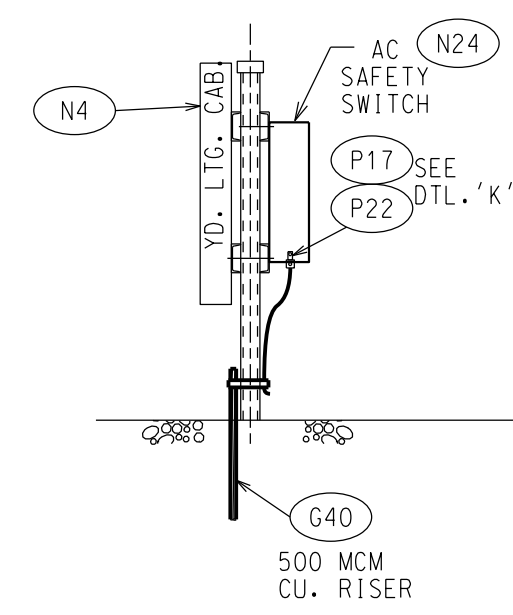


NOTES:  
ONE MAT, CENTERED ON HANDLE, REQUIRED  
AT SINGLE SWITCH LOCATIONS. SEE PLAN  
FOR LOCATIONS. ALL MATS SHALL BE PLACED  
ON EARTH UNDER ROCK.

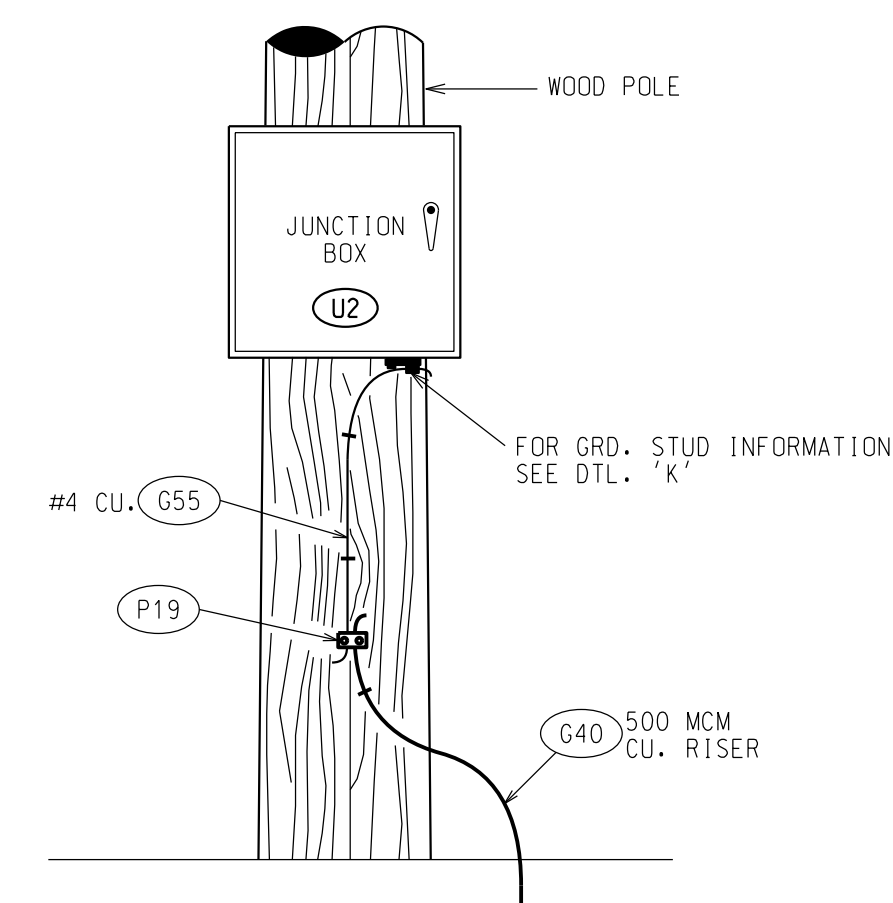
DETAIL 'W'  
GROUND MAT



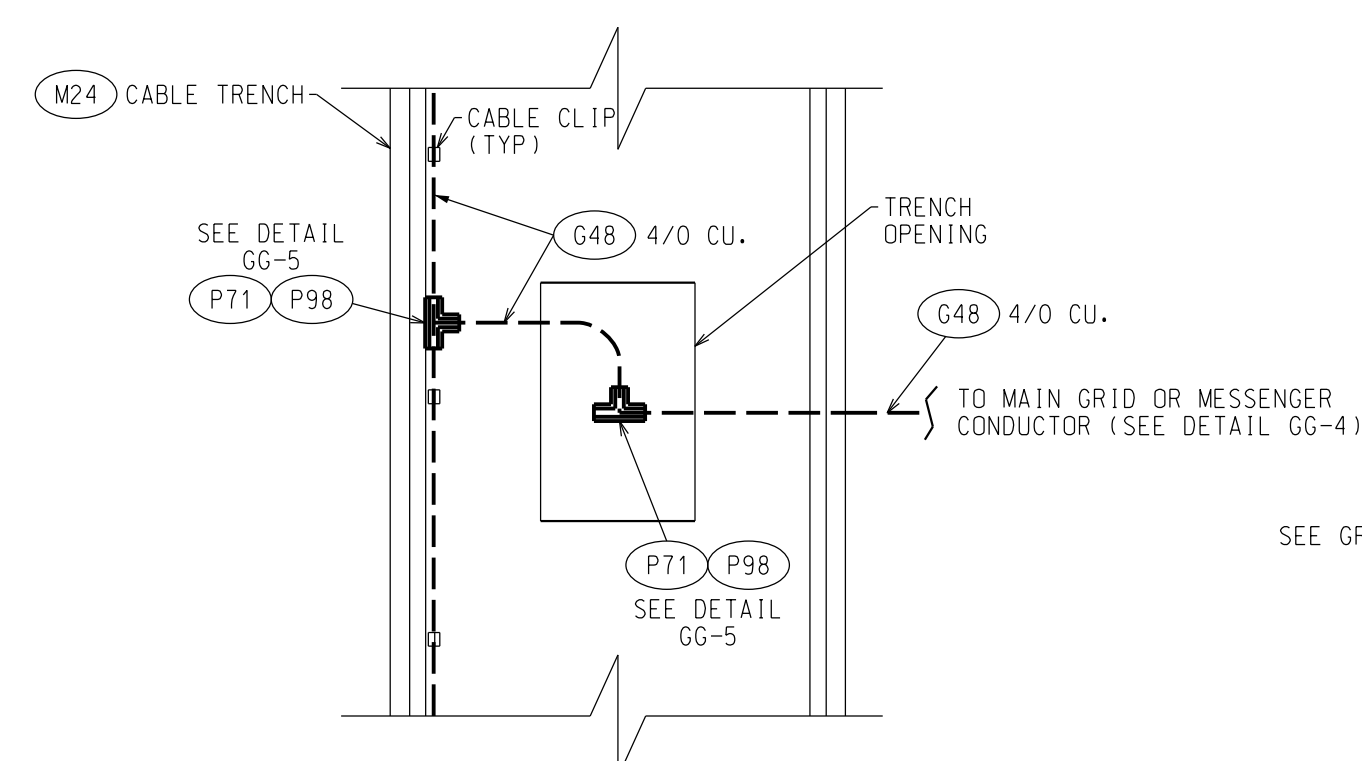
DETAIL 'X'  
YARD LIGHTING CABINET (SHOWN)  
SAFETY SWITCH CABINET (SIMILAR)



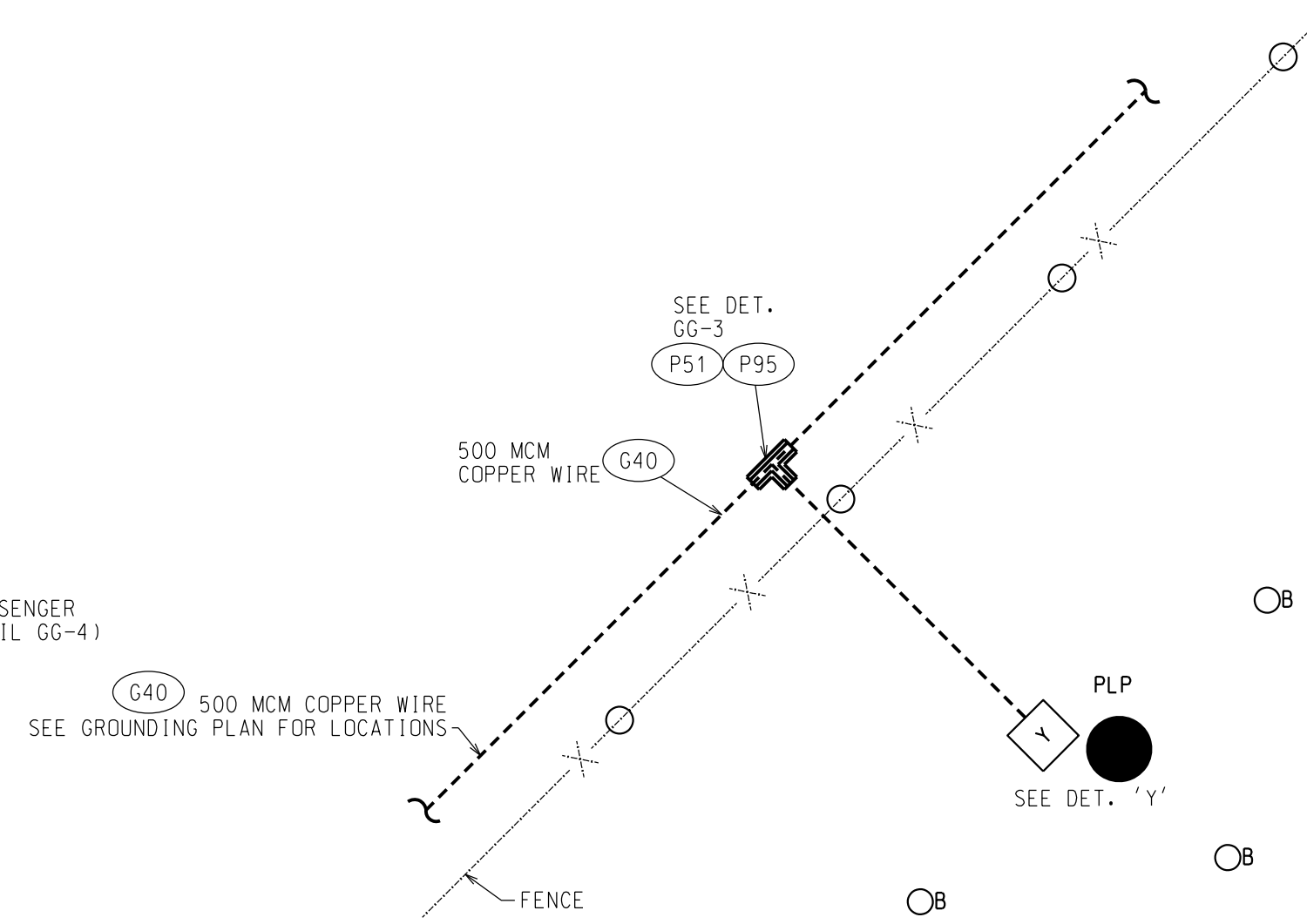
SECTION "1-1"



DETAIL 'Y'  
TYPICAL WOOD (PLP) POLE GROUNDING



DETAIL 'BB'  
CABLE TRENCH GROUNDING



DETAIL 'Z'  
PLP POLE GROUNDING DETAIL

LEGEND:

 500 MCM GROUND RISER TO EXTEND 3' ABOVE GROUND  
 ----- GROUND WIRE, 500 MCM COPPER  
 BOLLARD

GROUNDING NOTES:

1. CONNECTOR BOM ITEM P10 SHALL BE INSTALLED AT OR ABOVE TOP OF ROCK.

REFERENCE DRAWINGS:

|                                 |               |
|---------------------------------|---------------|
| GROUNDING PLAN.....             | E-HUGH-12.1   |
| GROUNDING DETAILS - SHT. 2..... | E-HUGH-12.2-1 |
| EQ. BILL OF MATERIALS.....      | E-HUGH-29.1   |

[illegible]

|                         |
|-------------------------|
| 345KV GROUNDING DETAILS |
| SHEET 2                 |

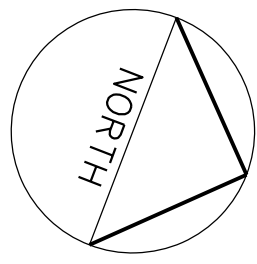
HUGHES SUBSTATION



E-HUGH-12.2-2

1 X36

SCALE RATIO =



LEGEND:

- X-X- SUBSTATION FENCE
- FIBER OPTIC IN 1 1/2" ORANGE CORRUGATED FLEX INNERDUCT - INNERDUCT PLACED IN 4" CONDUIT WERE DIRECT BURIED AND ALONE INSIDE PIPE DUCT.
- CONDUIT ENCASED CABLE
- SECURITY CONDUIT
- CXX CONDUIT NUMBER
- JB C-C, V-T OR PT JCT. BOX LOCATION (CONDUIT DETAIL "N" OR "O")
- YR 120V/240V RECEPTACLE BOX (CONDUIT DETAIL "O")
- FS FIBER OPTIC SPLICER BOX (CONDUIT DETAIL "T")
- B9-VXX MOTOR OPERATOR FOR DISCONNECT SW. (CONDUIT DETAIL "T")
- UX UNDERGROUND SECURITY PULL BOX 30"x48"x36" DEEP (ITEM M61)
- SOS SAFETY DISCONNECT SWITCH (CONDUIT DETAIL "T")
- CABLE TRENCH (ITEM M24)

| CONDUIT NAME | SIZE (") | CONDUIT NAME | SIZE (") | CONDUIT NAME | SIZE (") | CONDUIT NAME | SIZE (") |
|--------------|----------|--------------|----------|--------------|----------|--------------|----------|
| C1           | 3        | C17          | 4        | C33          | 1.5      | C49          | 1.5      |
| C2           | 1.5      | C18          | 3        | C34          | 1.5      | C50          | 1.5      |
| C3           | 1.5      | C19          | 3        | C35          | 1.5      | C51          | 1.5      |
| C4           | 1.5      | C20          | 1.5      | C36          | 1.5      | C52          | 1.5      |
| C5           | 1.5      | C21          | 1.5      | C37          | 3        | C53          | 1.5      |
| C6           | 4        | C22          | 1.5      | C38          | 4        | C54          | 1.5      |
| C7           | 4        | C23          | 3        | C39          | 3        | C55          | 1.5      |
| C8           | 4        | C24          | 1.5      | C40          | 4        | C56          | 1.5      |
| C9           | 3        | C25          | 1.5      | C41          | 3        | C57          | 4        |
| C10          | 1.5      | C26          | 1.5      | C42          | 1.5      | C58          | 4        |
| C11          | 4        | C27          | 1.5      | C43          | 4        | C59          | 4        |
| C12          | 3        | C28          | 4        | C44          | 3        | C60          | 4        |
| C13          | 1.5      | C29          | 4        | C45          | 3        | C61          | 4        |
| C14          | 1.5      | C30          | 4        | C46          | 1.5      | C62          | 4        |
| C15          | 3        | C31          | 3        | C47          | 1.5      | C63          | 1.5      |
| C16          | 4        | C32          | 3        | C48          | 1.5      | C64          | 1.5      |

| CONDUIT NAME | SIZE (") |
|--------------|----------|
| U1           | 4        |
| U2           | 4        |
| U3           | 4        |
| U4           | 4        |
| U5           | 4        |
| U6           | 4        |
| U7           | 4        |
| U8           | 4        |
| U9           | 4        |
| U10          | 4        |
| U11          | 4        |
| U12          | 4        |
| U13          | 4        |
| U14          | 4        |
| U15          | 4        |
| U16          | 4        |

NOTES:

- FOR CONDUIT RISERS AND DETAILS SEE DRAWINGS E-HUGH-13.2-1 AND E-HUGH-13.2-2.
- FOR YARD RECEPTABLES USE 3-WAY AND TYPE USE, STRANDED CU. POWER CABLES OR LOCAL GROUNDING OF RECEPTABLES.
- CONTRACTOR SHALL INSTALL DETACHABLE TAPE ABOVE CONDUIT RUNS AND 9" BELOW FINAL GRADE.
- ENCASE CONDUIT UNDER ROADWAY WITH FLOWABLE FILL.

REFERENCES:

|                          |               |
|--------------------------|---------------|
| FOUNDATION LOCATION PLAN | E-HUGH-13.1   |
| CONDUIT DETAILS SHEET 1  | E-HUGH-13.2-1 |
| CONDUIT DETAILS SHEET 2  | E-HUGH-13.2-2 |
| CONDUIT DETAILS SHEET 3  | E-HUGH-13.2-3 |

CONDUIT PLAN  
SCALE: 1" = 30'

AREA DETAIL 1  
NOT TO SCALE

AREA DETAIL 2  
NOT TO SCALE

345KV CONDUIT PLAN

HUGHES SUBSTATION

E-HUGH-13.1

REV 2

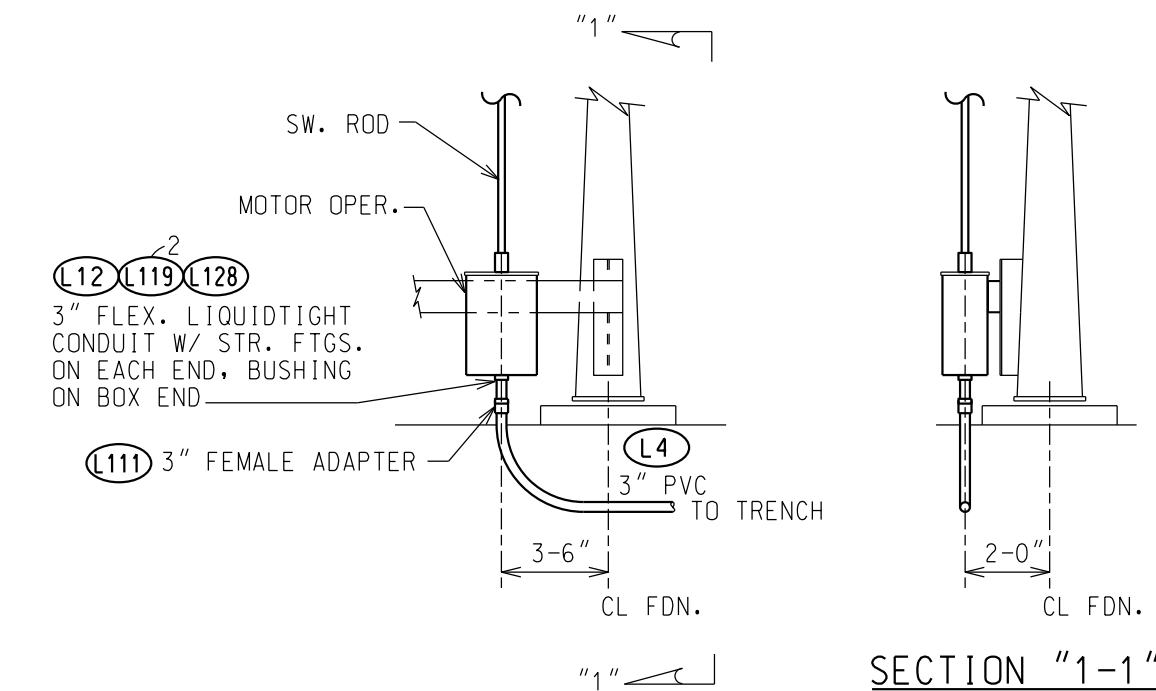
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|-----|----------|----------|------|-----|------|
| 2   | JS617958 | 09/17/20 | MJS  | SG  | CPM  |
| 1   | JS617958 | 10/21/19 | BGG  | GMJ | CPM  |
| 0   | JS617958 | 07/15/19 | VDH  | GMJ | CPM  |

ISSUED AS-BUILT (B&V)

ISSUED FOR CONSTRUCTION PER ECN







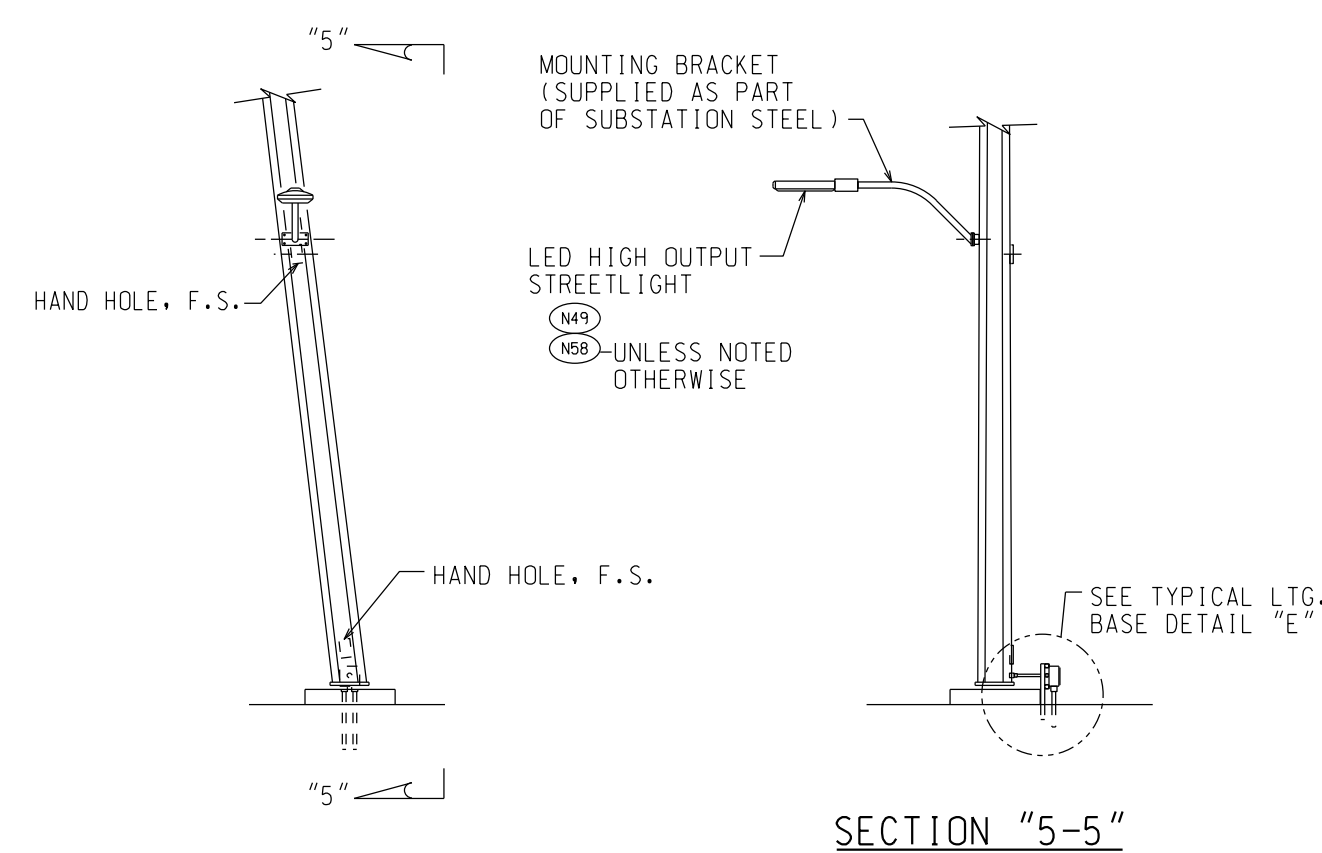
ELEVATION  
345KV C.C.V.T.'S  
DETAIL 'N'

NOTE:  
SEE PLAN FOR QUANTITY AND LOCATION OF TERMINAL BOX AND BELOW GRAD CONDUIT.

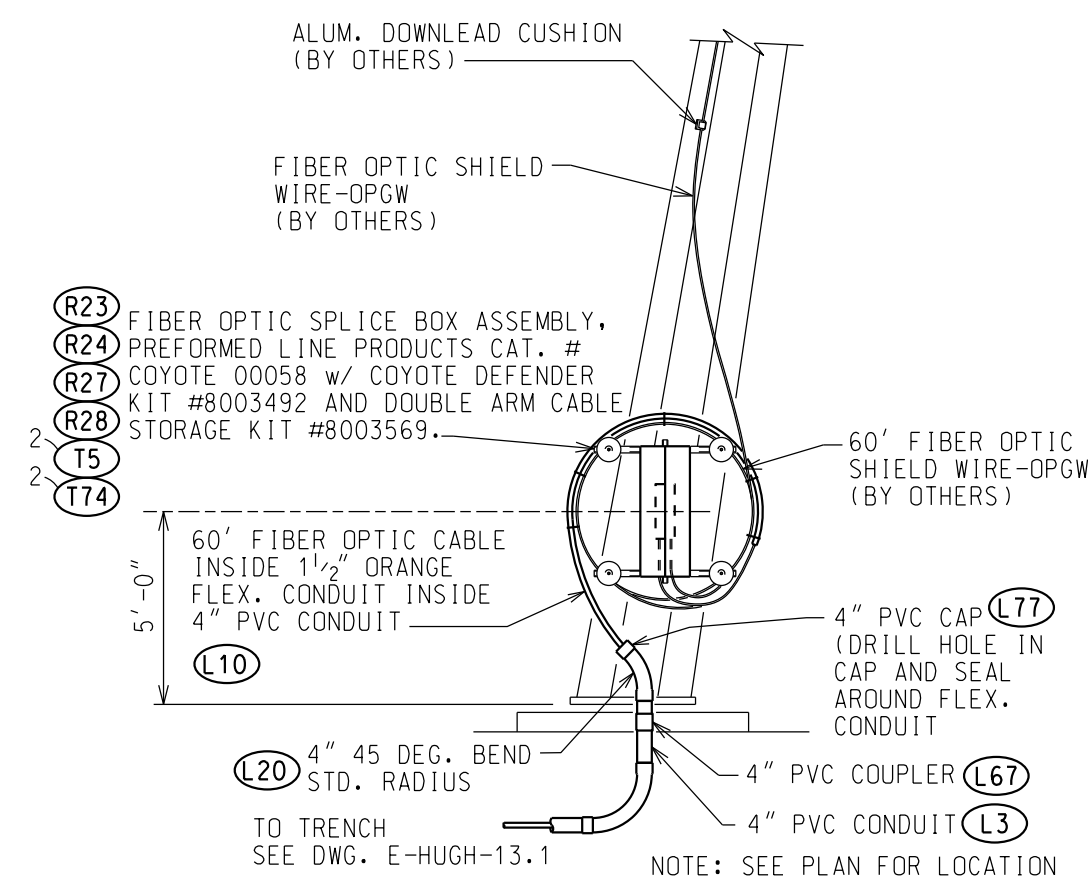
345KV P.T.'S (SHOWN)  
345KV C.T.'S (SIMILAR)  
DETAIL 'O'

NOTE:  
SEE PLAN FOR QUANTITY AND LOCATION OF TERMINAL BOX AND BELOW GRAD CONDUIT.

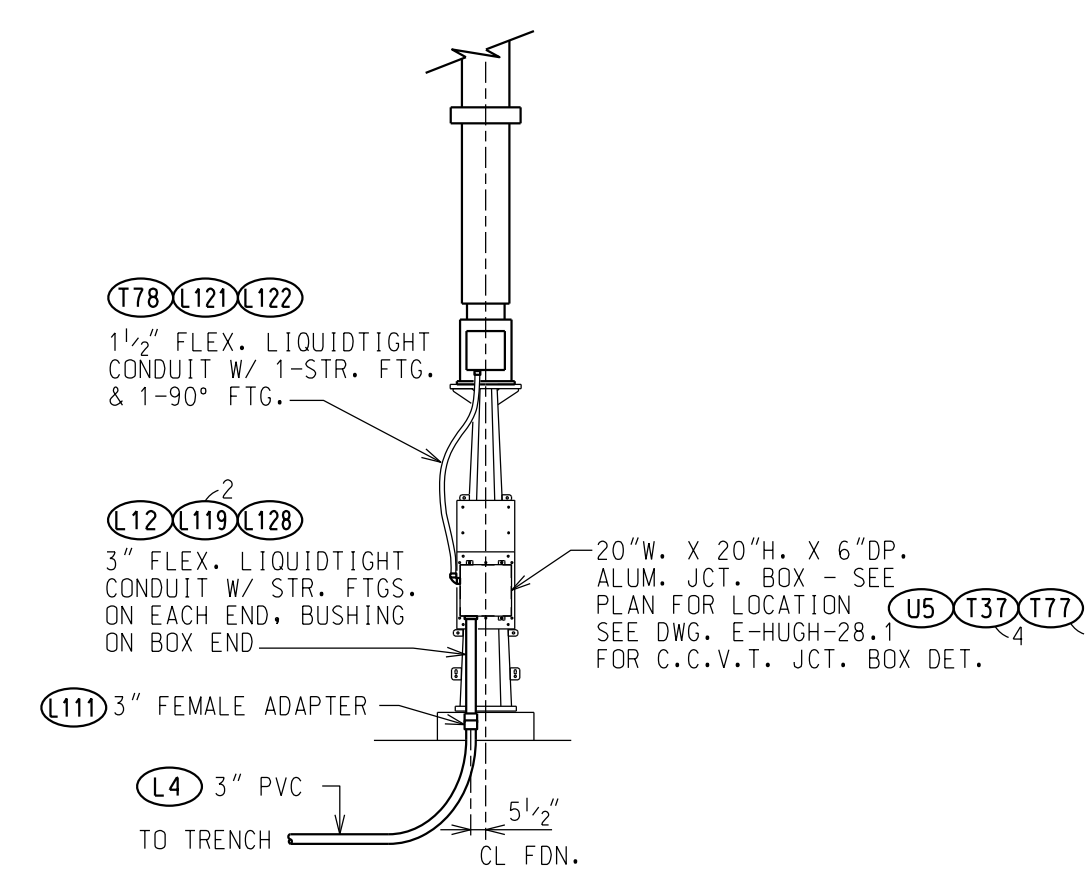
345KV MOTOR OPERATED  
DISCONNECT SWITCH  
DETAIL 'R'



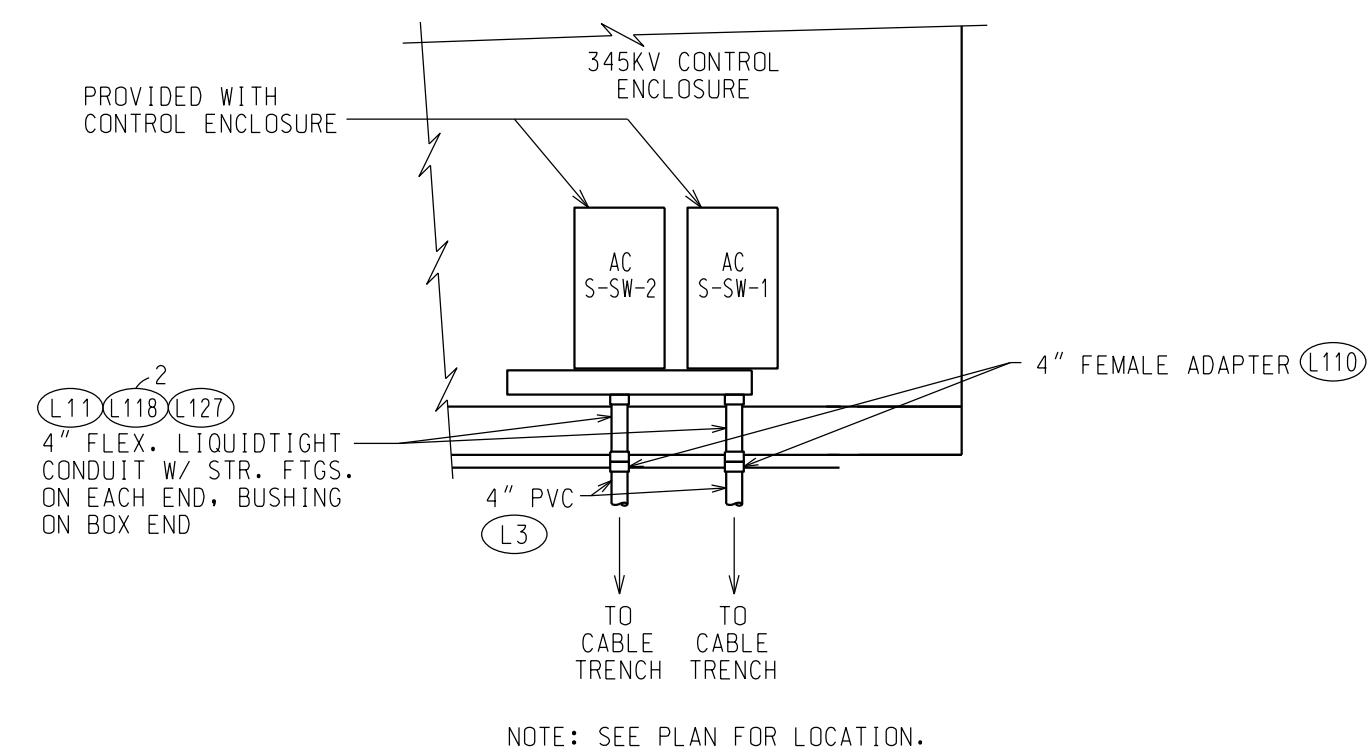
LIGHT FIXTURE INSTALLATION  
ON DEADEND STRUCTS.  
DETAIL 'S'



ELEVATION  
FIBER OPTIC DEAD END STRUCT.  
DETAIL 'T'



345KV C.C.V.T.  
DETAIL 'Y'



PARTIAL ELEV. OF SW. YARD  
EQ. ENCLOSURE SAFETY SW.  
DETAIL 'Z'

NOTE:

1. APPLY DUCT SEAL TO CONDUITS INSIDE OF JUNCTION BOXES AND ENCLOSURES ONCE CABLE WORK IS COMPLETED TO SEAL CONDUITS.

REFERENCE DRAWINGS:

|                         |               |
|-------------------------|---------------|
| CABLE PLAN              | E-HUGH-13.1   |
| CONDUIT DETAILS SHEET 1 | E-HUGH-13.2-1 |
| CONDUIT DETAILS SHEET 3 | E-HUGH-13.2-3 |
| EQ. BILL OF MATERIALS   | E-HUGH-91.2   |
| EQ. JUNCTION BOXES      | E-HUGH-28.1   |

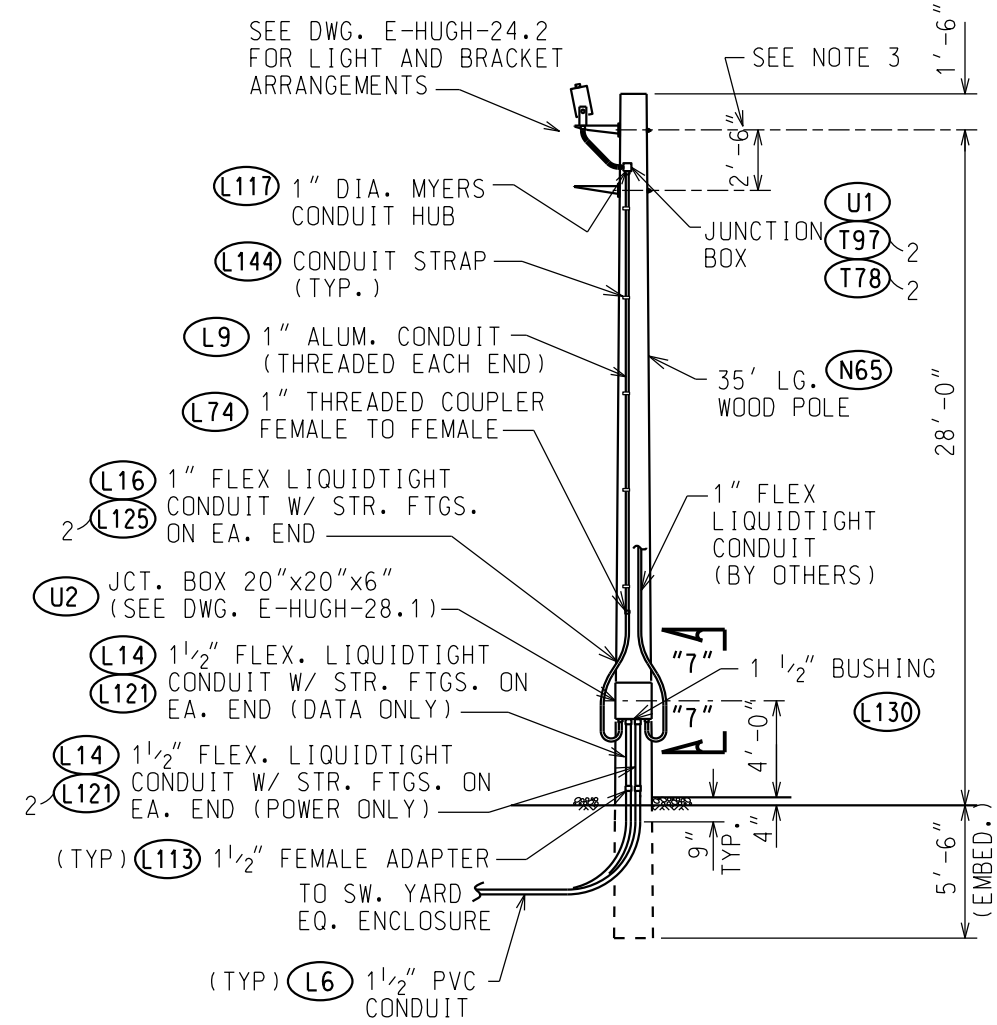
[illegible]

345KV CONDUIT DETAILS  
SHEET 2

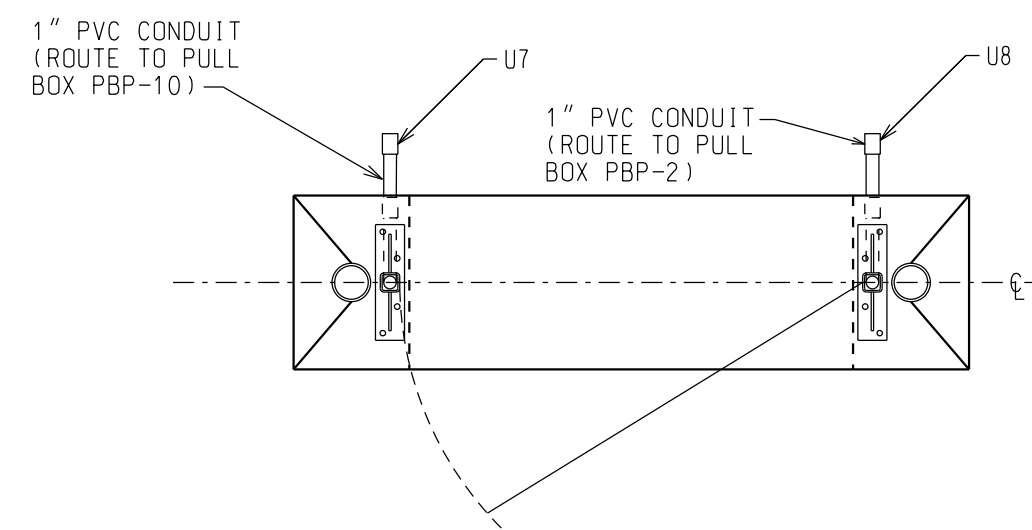
HUGHES SUBSTATION

E-HUGH-13.2-2

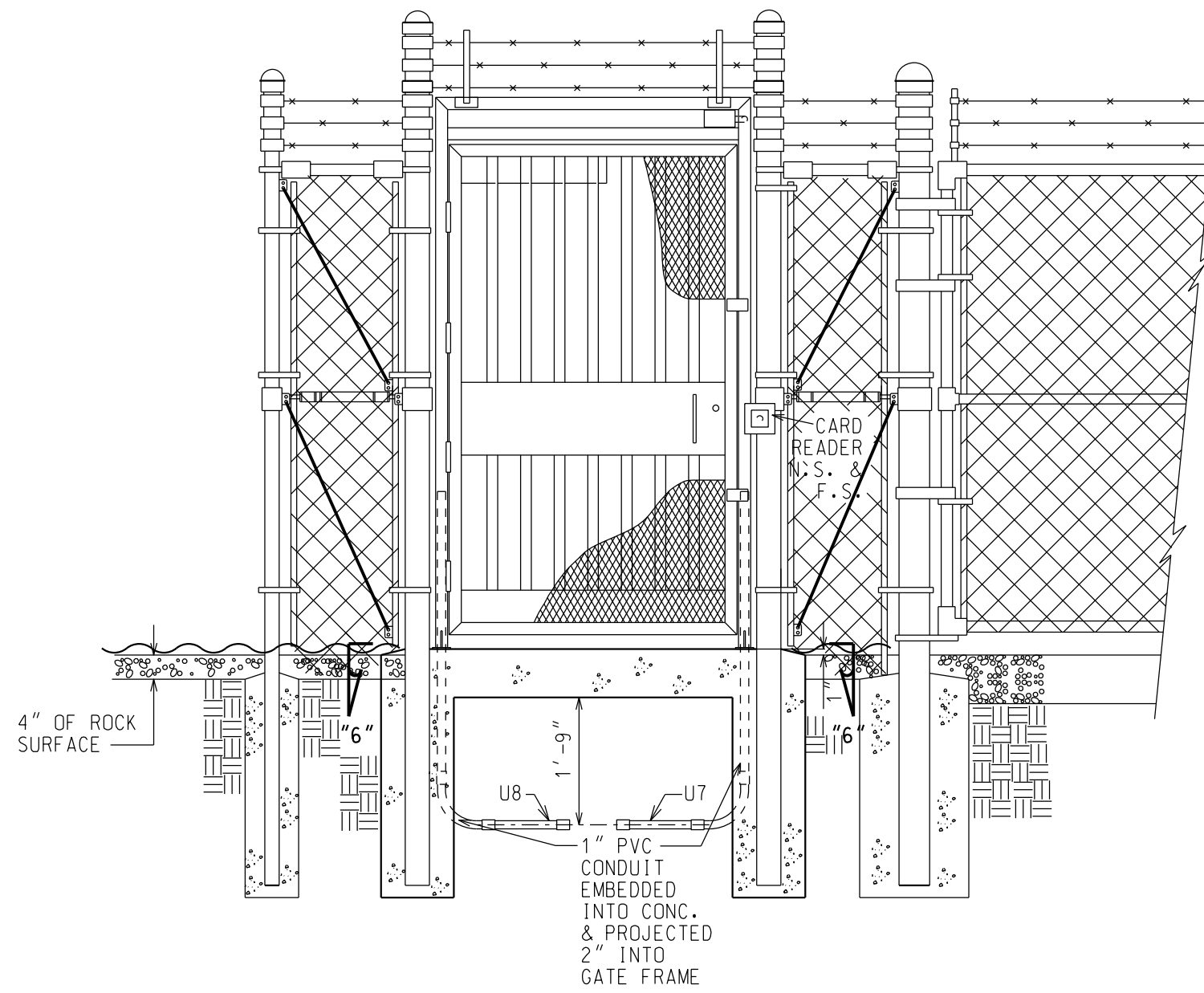
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TIME: \$DATE\$ \$TIME\$



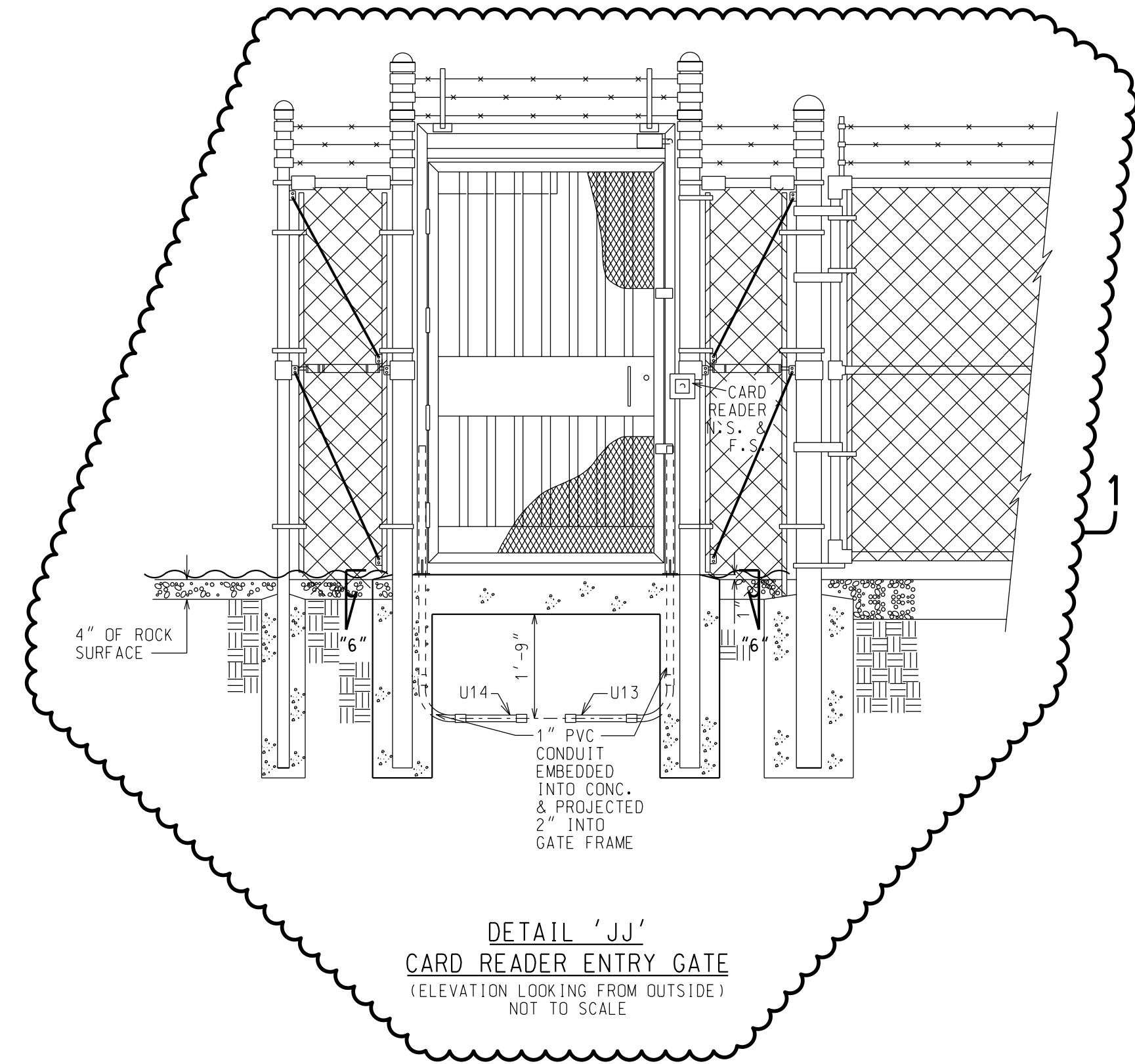
DETAIL 'FF'  
PERIMETER LIGHT POLE (PLP) DETAIL  
(TYPICAL)  
NO SCALE



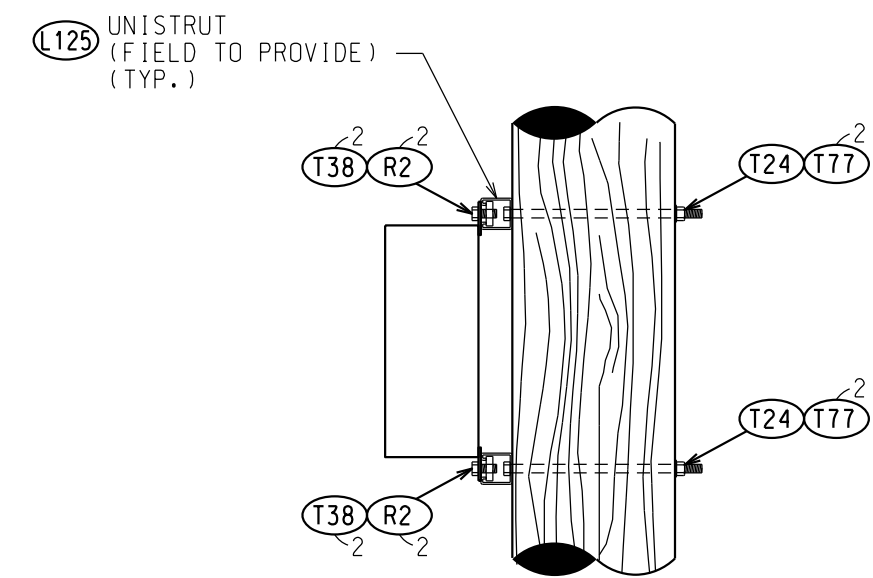
DETAIL '6-6'



DETAIL 'HH'  
CARD READER ENTRY GATE  
(ELEVATION LOOKING FROM OUTSIDE)  
NOT TO SCALE



DETAIL 'JJ'  
CARD READER ENTRY GATE  
(ELEVATION LOOKING FROM OUTSIDE)  
NOT TO SCALE



SECTION '7-7'  
PLP JUNCTION BOX MOUNTING DETAIL  
NO SCALE

#### NOTES:

- IF STEEL IS DRILLED, DAMAGED AREA OF GALVANIZING SHALL BE PAINTED WITH ONE COAT OF SUBOX INC. GALVANOX.
- FIELD BEND CONDUIT TO CLEAR FOUNDATIONS, AS REQUIRED.
- FIELD SHALL VERIFY MOUNTING HEIGHT OF SECOND, LOWER, LIGHT BRACKET, WHERE APPLICABLE. BRACKET SHALL BE MOUNTED SUCH THAT THERE IS NO INTERFERENCE WITH OVERHEAD LIGHTS. CONSTRUCTION CONTRACTOR SHALL NOTIFY DESIGN ENGINEER IF HEIGHT IS CHANGED.
- APPLY DUCT SEAL TO CONDUITS INSIDE OF JUNCTION BOXES AND ENCLOSURES ONCE CABLE WORK IS COMPLETED TO SEAL CONDUITS.

#### REFERENCE DRAWINGS:

|                         |               |
|-------------------------|---------------|
| CONDUIT PLAN            | E-HUGH-13.1   |
| CONDUIT DETAILS SHEET 1 | E-HUGH-13.2-1 |
| CONDUIT DETAILS SHEET 2 | E-HUGH-13.2-2 |
| LIGHTING PLAN           | E-HUGH-24.1   |
| LIGHTING DETAILS        | E-HUGH-24.2   |
| JUNCTION BOXES          | E-HUGH-28.1   |
| BILL OF MATERIAL        | E-HUGH-91.2   |

| REV                                | PROJ ID  | DATE     | DRWN | RW  | APPD |
|------------------------------------|----------|----------|------|-----|------|
| 2                                  | JS617958 | 09/17/20 | MJS  | SG  | CPM  |
| ISSUED AS-BUILT (B&V)              |          |          |      |     |      |
| 1                                  | JS617958 | 10/21/19 | DEJ  | JBS | CPM  |
| RE-ISSUED FOR CONSTRUCTION PER ECN |          |          |      |     |      |

### 345KV CONDUIT DETAILS SHEET 3

#### HUGHES SUBSTATION

| REV                     | PROJ ID  | DATE     | DRWN | RW  | APPD |
|-------------------------|----------|----------|------|-----|------|
| 0                       | JS617958 | 07/15/19 | BGG  | JBS | CPM  |
| ISSUED FOR CONSTRUCTION |          |          |      |     |      |

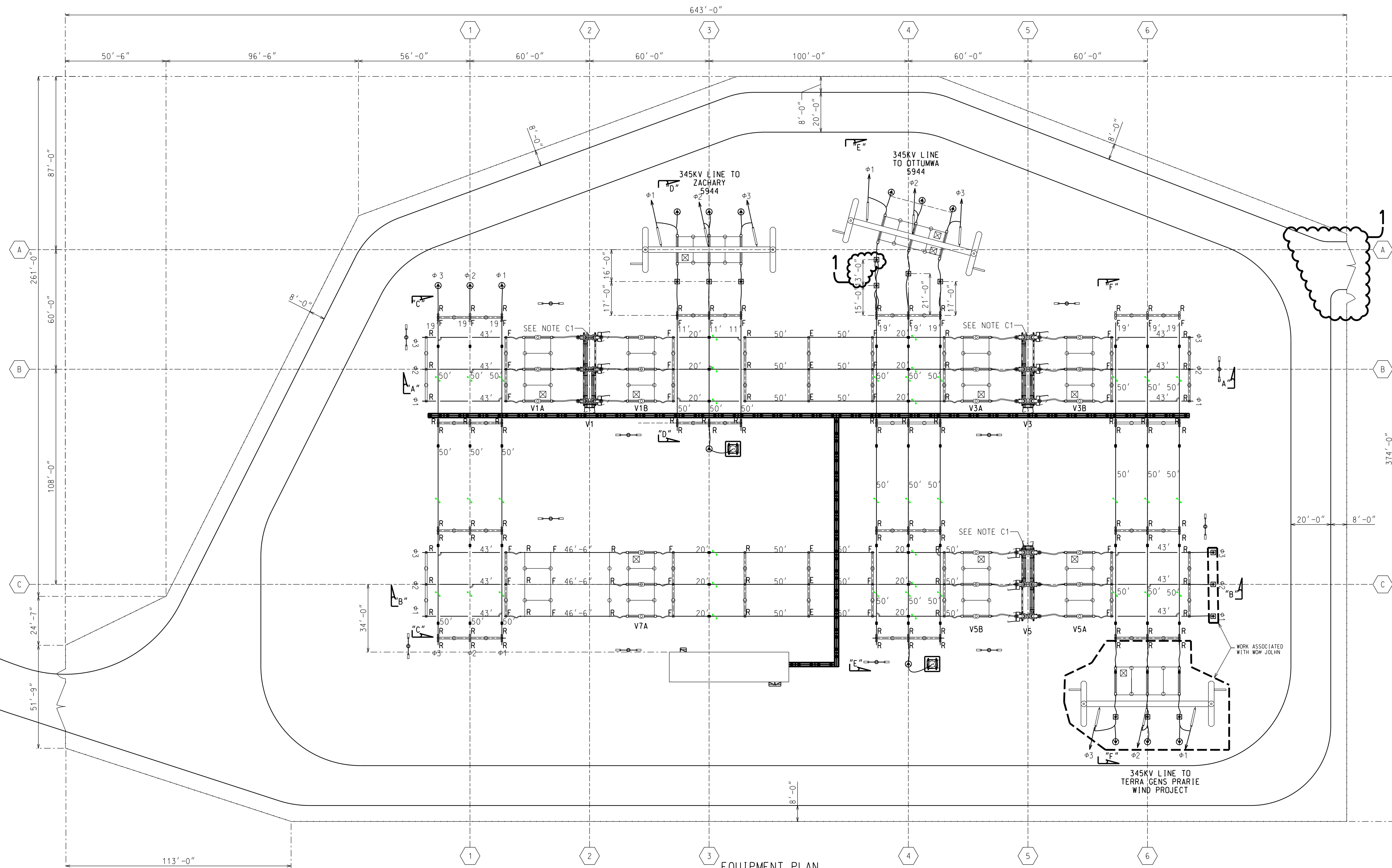
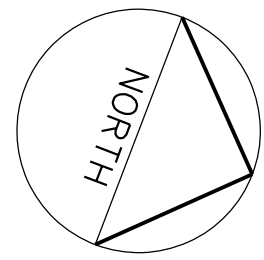


E-HUGH-13.2-3

REV  
2

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SCALE RATIO =



EQUIPMENT PLAN  
SCALE: 1" = 30'

LEGEND:

- SUBSTATION FENCE
- DENOTES MAIN SWITCH OPERATOR ROD
- COUPLING CAPACITOR VOLTAGE TRANSFORMER
- POWER POTENTIAL XFMR
- SURGE ARRESTER
- POTENTIAL XFMR
- LIGHTNING MAST WITH YARD LIGHTS
- LIGHTS MOUNTED ON STRUCTURE
- DENOTES BUS VIBRATION DAMPER
- DENOTES SPLICE COUPLING, ITEM H97 OR H106
- WAVE TRAP
- (XX') DENOTES BUS LENGTH

HIGH BUS CUTTING SCHEDULE  
6" ALUMINUM SCHEDULE 40

| QTY | LENGTH          |
|-----|-----------------|
| 27  | 50'             |
| 12  | 19' 19' 11' 50' |

LOW BUS CUTTING SCHEDULE  
5" ALUMINUM SCHEDULE 40

| QTY | LENGTH           |
|-----|------------------|
| 12  | 50'              |
| 12  | 43' 4' 3' 50'    |
| 3   | 46'-6" 3'-6" 50' |
| 6   | 20' 20' 40'      |

CONSTRUCTION NOTE:

- CONTRACTOR SHALL REFER TO METERING ONE LINE DWG. E-HUGH-51-1.4 FOR BREAKER LOCATION AND ORIENTATION.
- VERTICAL ORIENTED (EAST TO WEST) IS 6" HIGH BUS. HORIZONTAL ORIENTED (NORTH TO SOUTH) IS 5" LOW BUS.

REFERENCES:

|                                 |             |
|---------------------------------|-------------|
| FOUNDATION PLAN                 | E-HUGH-11.1 |
| GROUNDING PLAN                  | E-HUGH-12.1 |
| CONDUIT PLAN                    | E-HUGH-13.1 |
| AA & BB EQUIP ASSEMBLY SECTIONS | E-HUGH-21.3 |
| CC & DD EQUIP ASSEMBLY SECTIONS | E-HUGH-21.4 |
| EE & FF EQUIP ASSEMBLY SECTIONS | E-HUGH-21.5 |
| BILL OF MATERIALS               | E-HUGH-91.2 |

NOTES:

- THE LENGTHS OF PIPE BUS ARE APPROXIMATE. LENGTHS SHALL BE VERIFIED IN FIELD.
- BUS VIBRATION DAMPER ITEM J319 SHALL BE USED ON 6" SPS ALUM. SPANS THAT EXCEED 21'-3". LOCATION IS DETERMINED BY DIVIDING THE SPAN BY 3, AND ADDING 2". MEASURE TOTAL DISTANCE FROM EITHER END OF SPAN.
- BUS VIBRATION DAMPER ITEM J268 SHALL BE USED ON 5" SPS ALUM. SPANS THAT EXCEED 21'-3". LOCATION IS DETERMINED BY DIVIDING THE SPAN BY 3, AND ADDING 2". MEASURE TOTAL DISTANCE FROM EITHER END OF SPAN.
- DRILL A 1/4" HOLE IN THE BOTTOM OF EACH PIPE BUS AT THE CENTER OF EACH SPAN FOR WATER DRAINAGE.

| REV                                | PROJ ID  | DATE     | DRWN | RW  | APPD |
|------------------------------------|----------|----------|------|-----|------|
| 2                                  | JS617958 | 09/17/20 | MJS  | SG  | CPM  |
| ISSUED AS-BUILT (B&V)              |          |          |      |     |      |
| 1                                  | JS617958 | 10/21/19 | DEJ  | JBS | CPM  |
| RE-ISSUED FOR CONSTRUCTION PER ECN |          |          |      |     |      |
|                                    |          |          |      |     |      |
|                                    |          |          |      |     |      |
|                                    |          |          |      |     |      |
|                                    |          |          |      |     |      |
|                                    |          |          |      |     |      |
|                                    |          |          |      |     |      |
| REV                                | PROJ ID  | DATE     | DRWN | RW  | APPD |
| 0                                  | JS617958 | 07/15/19 | BGG  | JBS | CPM  |
| ISSUED FOR CONSTRUCTION            |          |          |      |     |      |

345KV EQUIPMENT  
ARRANGEMENT PLAN

HUGHES SUBSTATION



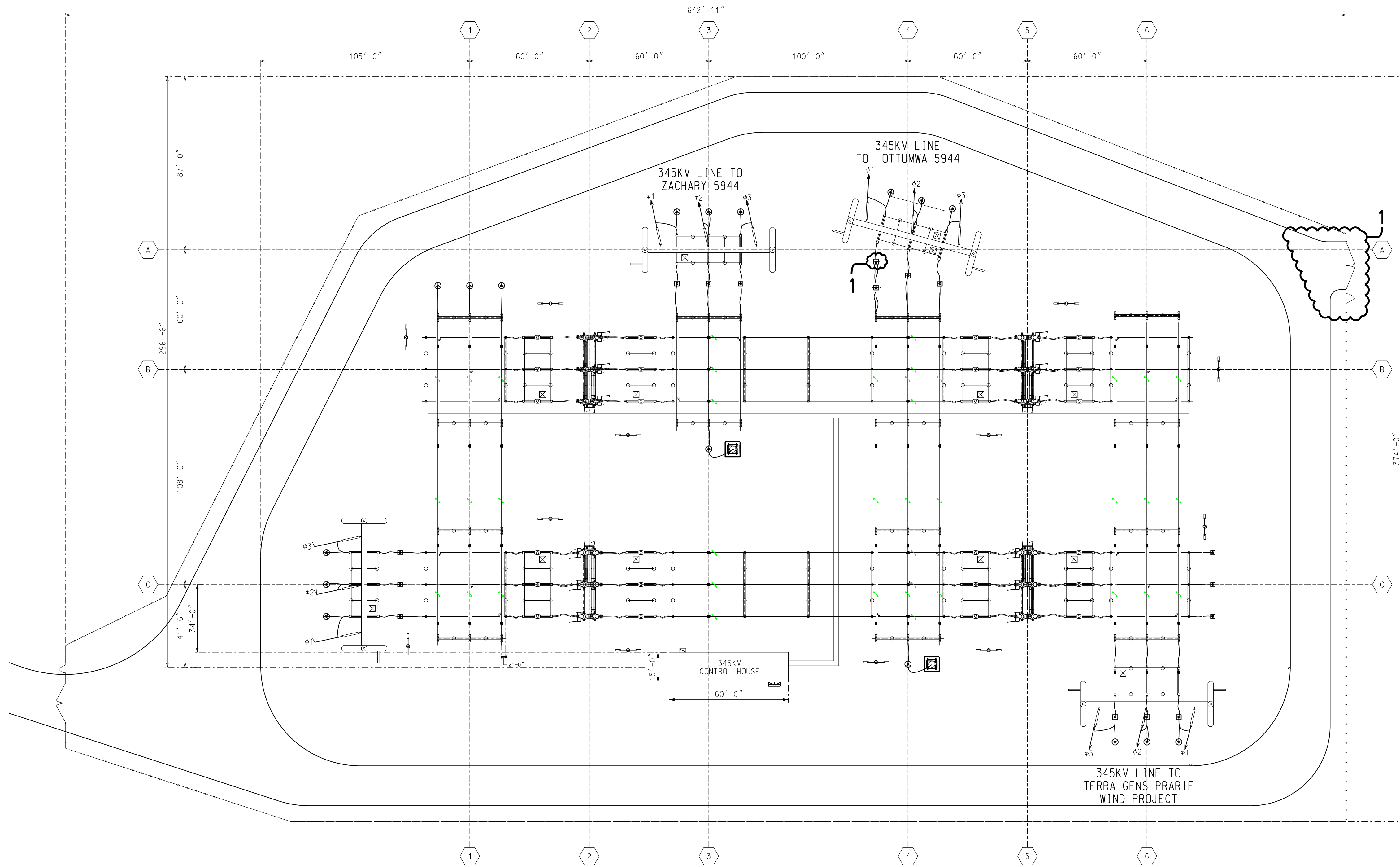
E-HUGH-21.1

REV  
2

SCALE RATIO =

24x36

FILE: \$FILES\$  
PRINTED BY: \$UNKNOWN\$  
TIME: \$DATE\$ \$TIME\$



NOTES:  
1. THIS DRAWING DEPICTS THE FUTURE VISION FOR THIS STATION  
AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION.

REFERENCES:  
FOUNDATION PLAN ..... E-HUGH-11.1  
GROUNDING PLAN ..... E-HUGH-12.1-1  
CONDUIT PLAN ..... E-HUGH-13.1-1  
EQUIPMENT ARRANGEMENT PLAN ..... E-HUGH-21.1-1  
EQUIP ASSEMBLY SECTIONS 'A-A' & 'B-B' ..... E-HUGH-21.2-1  
EQUIP ASSEMBLY SECTIONS 'C-C' & 'D-D' ..... E-HUGH-21.2-2  
EQUIP ASSEMBLY SECTIONS 'E-E' & 'F-F' ..... E-HUGH-21.2-3

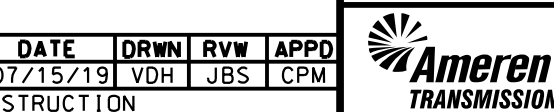
| REV                                | PROJ ID  | DATE     | DRWN | RWN | APPD |
|------------------------------------|----------|----------|------|-----|------|
| 2                                  | JS617958 | 09/17/20 | MJS  | SG  | CPM  |
| ISSUED AS-BUILT (B&V)              |          |          |      |     |      |
| 1                                  | JS617958 | 10/21/19 | DEJ  | JBS | CPM  |
| RE-ISSUED FOR CONSTRUCTION PER ECN |          |          |      |     |      |
| 0                                  | JS617958 | 07/15/19 | VDH  | JBS | CPM  |
| ISSUED FOR CONSTRUCTION            |          |          |      |     |      |

ULTIMATE 345KV  
EQUIPMENT ARRANGEMENT PLAN

HUGHES SUBSTATION

E-HUGH-21.2

REV  
2



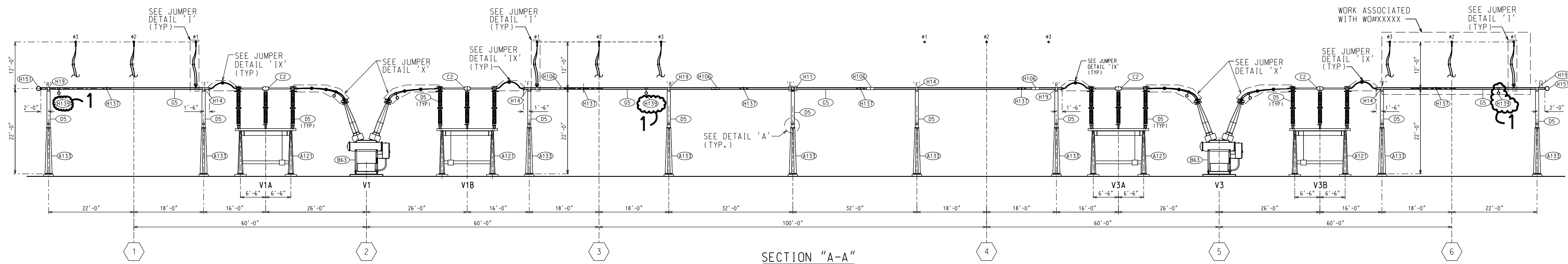
NOTICE OF LIMITED RESPONSIBILITY  
THE RESPONSIBILITY OF THE UNDERSIGNED ENGINEER IS LIMITED TO THE DESIGN AND CONSTRUCTION OF THE PROJECT DESCRIBED HEREIN. THE UNDERSIGNED ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR ANY OTHER WORK OR FOR ANY OTHER DOCUMENTS ASSOCIATED WITH THE PROJECT WHICH DO NOT BEAR HIS/HER SIGNATURE OR SEAL.

SCALE RATIO = 1" = 30'

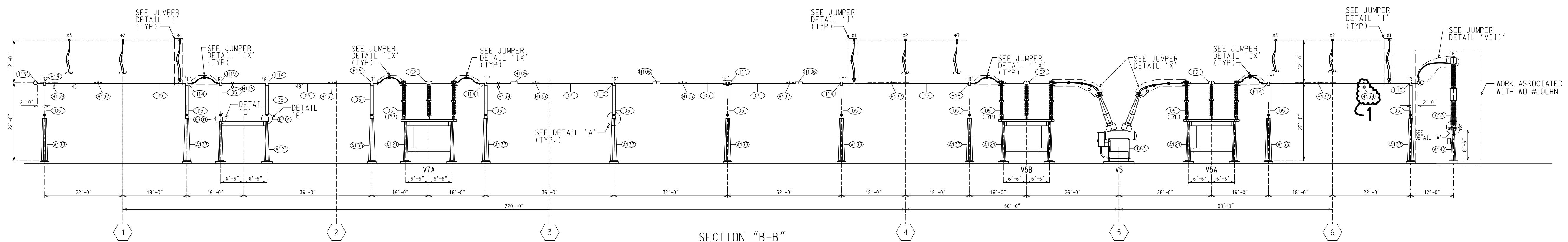
24X36

## LEGEND

'F' - DENOTES RIGID (FIXED) CONNECTION  
'R' - DENOTES ROLLER CONNECTION  
'E' - DENOTES EXPANSION CONNECTION  
XXX - DENOTES BILL OF MATERIAL ITEM  
NUMBER ON E-HUGH-91.2



SECTION "A-A"



SECTION "B-B"

## NOTES:

1. THE LENGTHS OF PIPE BUS ARE APPROXIMATE. LENGTHS SHALL BE VERIFIED IN FIELD.
2. BUS VIBRATION DAMPER ITEM J319 SHALL BE USED ON 6" SPS ALUM. SPANS THAT EXCEED 21'-3". LOCATION IS DETERMINED BY DIVIDING THE SPAN BY 3, AND ADDING 2'. MEASURE TOTAL DISTANCE FROM EITHER END OF SPAN.
3. BUS VIBRATION DAMPER ITEM H137 SHALL BE USED ON 5" SPS ALUM. SPANS THAT EXCEED 21'-3". LOCATION IS DETERMINED BY DIVIDING THE SPAN BY 3, AND ADDING 2'. MEASURE TOTAL DISTANCE FROM EITHER END OF SPAN.
4. DRILL A 1/4" HOLE IN THE BOTTOM OF EACH PIPE BUS AT THE CENTER OF EACH SPAN FOR WATER DRAINAGE.

## REFERENCES:

EQUIPMENT ARRANGEMENT PLAN ----- E-HUGH-21.1  
CC & DD EQUIP ASSEMBLY SECTIONS ----- E-HUGH-21.4  
EE & FF EQUIP ASSEMBLY SECTIONS ----- E-HUGH-21.4  
SECTION DETAILS ----- E-HUGH-21.6  
BILL OF MATERIALS ----- E-HUGH-91.2

| REV                     | PROJ     | ID       | DATE | DRWN | RW  | APPD |
|-------------------------|----------|----------|------|------|-----|------|
| 1                       | JS617958 | 09/17/20 | MJS  | SG   | CPM |      |
| 0                       | JS617958 | 07/15/19 | VDH  | JBS  | CPM |      |
| ISSUED FOR CONSTRUCTION |          |          |      |      |     |      |

345KV EQUIPMENT ASSEMBLY  
SECTIONS "A-A" & "B-B"

HUGHES SUBSTATION

E-HUGH-21.3

REV  
1



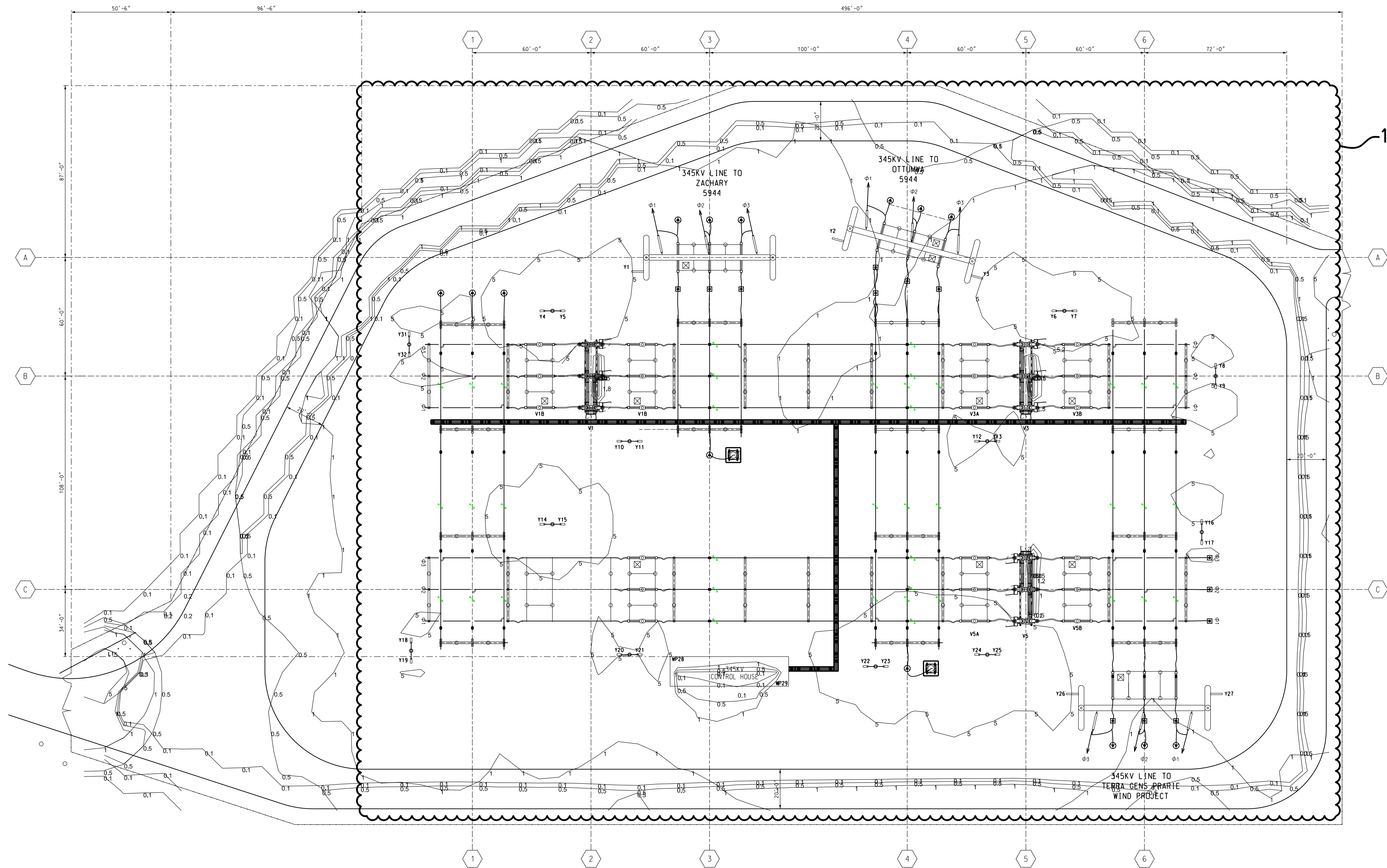
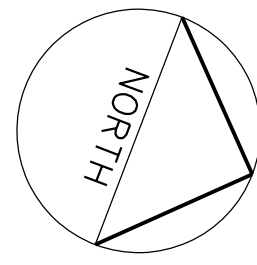
SCALE RATIO = 1/8"=1'-0"

24X36









| LUMINAIRE LOCATIONS |       |          |    |     |    |             |      |  |  |
|---------------------|-------|----------|----|-----|----|-------------|------|--|--|
| NO.                 | LABEL | LOCATION |    |     | MH | ORIENTATION | TILT |  |  |
|                     |       | X        | Y  | Z   |    |             |      |  |  |
| 1                   | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 2                   | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 3                   | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 4                   | Y     | 32       | 32 | 270 |    |             |      |  |  |
| 5                   | Y     | 32       | 32 | 90  |    |             |      |  |  |
| 6                   | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 7                   | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 8                   | Y     | 32       | 32 | 270 |    |             |      |  |  |
| 9                   | Y     | 32       | 32 | 90  |    |             |      |  |  |
| 10                  | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 11                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 12                  | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 13                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 14                  | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 15                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 16                  | Y     | 32       | 32 | 270 |    |             |      |  |  |
| 17                  | Y     | 32       | 32 | 90  |    |             |      |  |  |
| 18                  | Y     | 32       | 32 | 270 |    |             |      |  |  |
| 19                  | Y     | 32       | 32 | 90  |    |             |      |  |  |
| 20                  | Y     | 28       | 28 | 180 |    |             |      |  |  |
| 21                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 22                  | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 23                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 24                  | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 25                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 26                  | Y     | 32       | 32 | 180 |    |             |      |  |  |
| 27                  | Y     | 32       | 32 | 0   |    |             |      |  |  |
| 28                  | WP    | 8        | 8  | 90  |    |             |      |  |  |
| 29                  | WP    | 8        | 8  | 270 |    |             |      |  |  |
| 30                  | L1    | 28       | 28 | 160 |    |             | 60   |  |  |
| 31                  | Y     | 32       | 32 | 270 |    |             |      |  |  |
| 32                  | Y     | 32       | 32 | 90  |    |             |      |  |  |

ILLUMINATION PLAN  
SCALE: 1" = 30'

| SCHEDULE |          |                                      |                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |              |                 |             |
|----------|----------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------|-----------------|-------------|
| LABEL    | QUANTITY | CATALOG NUMBER                       | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                              | LAMP                                                               | NUMBER LAMPS | LUMENS PER LAMP | LLF WATTAGE |
| Y        | 29       | STRLWY3MExx1F-ULA57K                 | LEDway HIGH OUTPUT, SINGLE MODULE, TYPE III MEDIUM, A INPUT POWER DESIGNATOR, 5700K METAL ACCESS DOOR, CAST GRAY PAINTED METAL FORWARD HOUSING PIECE WITH FABRICATED GRAY PAINTED METAL FORWARD INSERT, EXTRUDED DIFFUSE FINNED METAL HEAT SINK, 1 CIRCUIT BOARD WITH 10 LEDS AND MOLDED WHITE PLASTIC TRIM PLATE, 1 CLEAR NON-INTEGRAL PLASTIC LENS BELOW EACH LED, MOLDED WHITE PLASTIC WIREWAY COVER. | TEN WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION. | 10           | 1391.165        | 0.86 137.2  |
| WP       | 2        | OLW 23                               | WALL MOUNTED LED UPDATED OPTICS                                                                                                                                                                                                                                                                                                                                                                          | LED                                                                | 1            | 2612.929        | 0.86 32.98  |
| L1       | 1        | FLD-EDG-40-xx-06-E-UL-BZ-700-40K-Q-R | CREE EDGE AREA FLOOD, TYPE 40 DEGREE OPTIC, 60 LEDS, 700MA, 4000K                                                                                                                                                                                                                                                                                                                                        | XP-G2                                                              | 1            | 13808.06        | 0.86 133.25 |

REV | PROJ ID | DATE | DRWN | RVW | APPD

2 | JS617958 | 09/17/20 | MJS | SG | CPM

ISSUED AS-BUILT (B&V)

REV | PROJ ID | DATE | DRWN | RVW | APPD

1 | JS617958 | 10/21/19 | BGG | JBS | CPM

RE-ISSUED FOR CONSTRUCTION PER ECN

345KV YARD LIGHTING PLAN  
WITH PERIMETER LIGHTS

HUGHES SUBSTATION

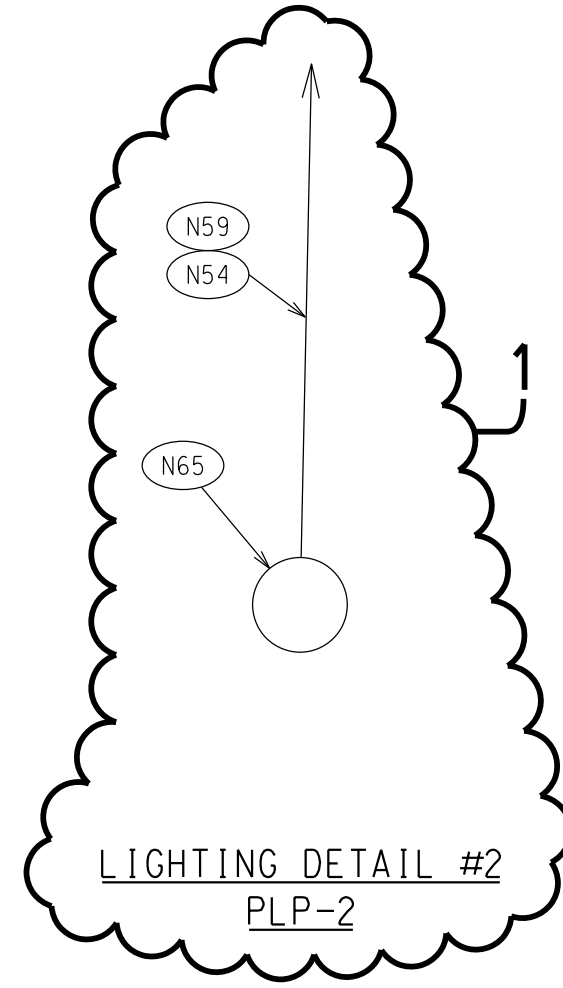
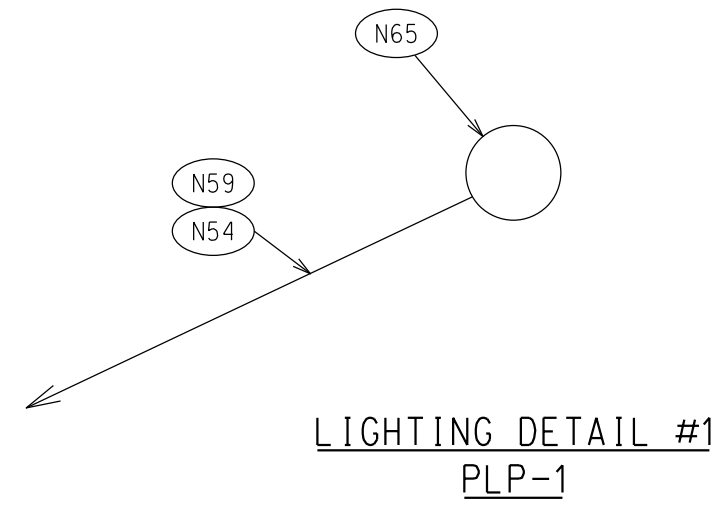
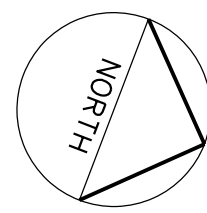
E-HUGH-24.1

REV 2

THE RESPONSIBILITY OF THE ENGINEER DESIGNER IS LIMITED TO THE DESIGN OF THE PROJECT SHOWN AND DOCUMENTED HEREIN. THE ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR THE DESIGN OF THE PROJECT SHOWN AND DOCUMENTED HEREIN. THE ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR THE DESIGN OF THE PROJECT SHOWN AND DOCUMENTED HEREIN.

AMEREN TRANSMISSION

FILE: \$FILES  
PRINTED BY: \$UPDOWN\$  
TIME: \$DATE\$ \$TIME\$

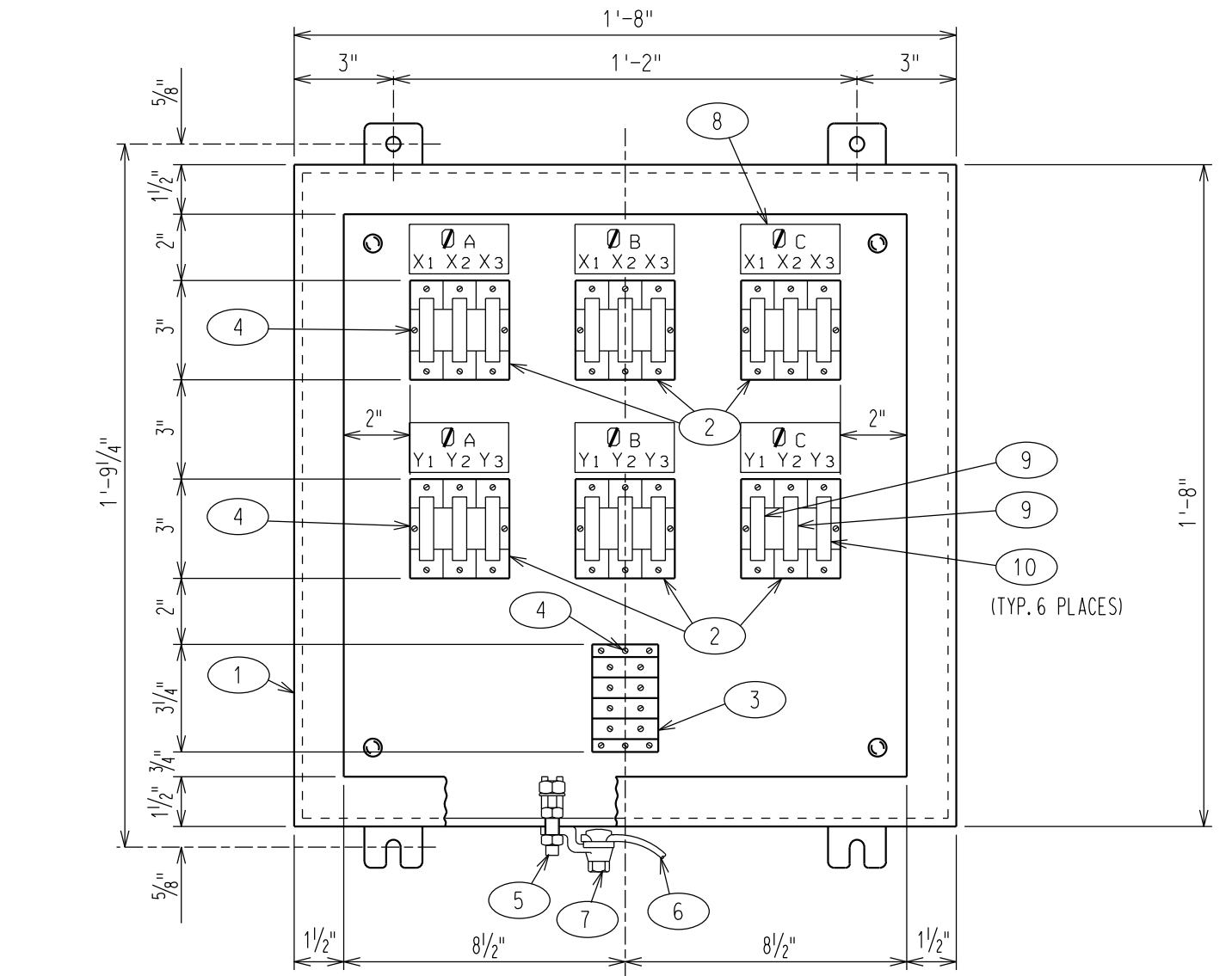


REFERENCE:  
345KV CONDUIT PLAN \_\_\_\_\_E-HUGH-13.1  
345KV CONDUIT DETAILS SHEET 3 \_\_\_\_\_E-HUGH-13.2-3  
345KV EQUIPMENT ARRANGEMENT PLAN \_\_\_\_\_E-HUGH-21.1  
345KV LIGHTING PLAN \_\_\_\_\_E-HUGH-24.1  
EQUIPMENT BILL OF MATERIAL \_\_\_\_\_E-HUGH-91.2

|                                          |          |          |     |     |     |                                                                                       |               |
|------------------------------------------|----------|----------|-----|-----|-----|---------------------------------------------------------------------------------------|---------------|
| REV   PROJ ID   DATE   DRWN   RVW   APPD |          |          |     |     |     | 345KV YARD LIGHTING PLAN<br>WITH PERIMETER<br>LIGHT DETAILS                           |               |
| 2                                        | JS617958 | 09/17/20 | MJS | SG  | CPM |                                                                                       |               |
| ISSUED AS-BUILT (B&V)                    |          |          |     |     |     |                                                                                       |               |
| 1 JS617958   10/21/19   DEJ   JBS   CPM  |          |          |     |     |     | HUGHES SUBSTATION                                                                     |               |
| RE-ISSUED FOR CONSTRUCTION PER ECN       |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     |                                                                                       |               |
| REV   PROJ ID   DATE   DRWN   RVW   APPD |          |          |     |     |     |  | E-HUGH-24.2   |
| 0                                        | JS617958 | 07/15/19 | SLG | JBS | CPM |                                                                                       |               |
| ISSUED FOR CONSTRUCTION                  |          |          |     |     |     |                                                                                       |               |
|                                          |          |          |     |     |     | 24X36                                                                                 | SCALE RATIO = |
|                                          |          |          |     |     |     |                                                                                       |               |

NOTICE OF LIMITED RESPONSIBILITY  
THE INFORMATION ON THE INFORMATION SHEET IS THE PROPERTY OF THE INFORMATION SHEET AND IS NOT TO BE USED FOR ANY OTHER PURPOSE.  
OR ANYTHING ELSE DOES NOT HAVE AUTHORITY OVER THE PROJECT. IN A WHOLE, THE INFORMATION SHEET HAS NO RESPONSIBILITY FOR ANY OTHER INFORMATION.  
INFORMATION AND ANY OTHER INFORMATION ASSOCIATED WITH THE PROJECT AND/OR ANY OTHER INFORMATION OR SERVICE OR WORK.

SCALE RATIO =

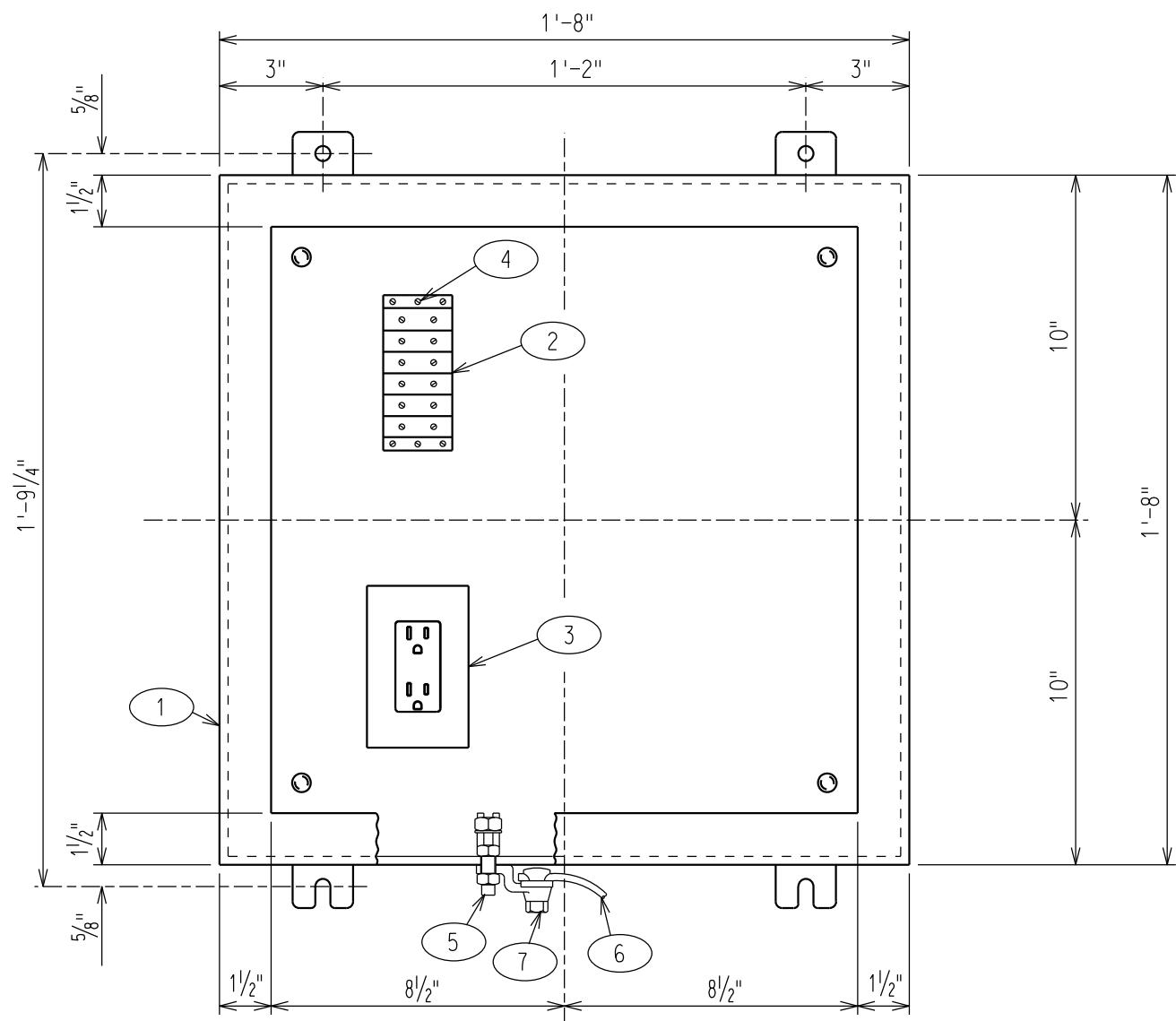


| ITEM NO. | NO. REQ'D. | DESCRIPTION                                              | AMEREN STOCK NO. | MANUF. CAT. NO.    |
|----------|------------|----------------------------------------------------------|------------------|--------------------|
| 1        | 1 EA.      | JT. BOX, 20x20x6, AL. w/ BACK PANEL                      | -                | -                  |
| 2        | 6 EA.      | BLOCK, FUSE, 250V, 1-30A 3 POLE, CART FUSE TYPE STD DUTY | 20-56-307        | BUSSMANN H25030-3S |
| 3        | 1 EA.      | TERMINAL BLOCK, HEAVY DUTY, 4 POLE, STD CONNECTOR, 600V  | 40-07-006        | GE# EB-25-1-04B    |
| 4        | 14 EA.     | SCREW, SHEET METAL, #10-32 x 1/2" PAN HEAD               | 21-72-287        | DORMAN 360-103     |
| 5        | 1 EA.      | CONDUCTOR, SERVIT POST, TYPE K2C FOR 2 WIRE, 3/8" STUD   | 17-64-210        | BURNDY K2C22B1N    |
| 6        | 6 FT.      | #4 SD BARE SOLID CU. (0.136 LBS/FT)                      | 18-52-020        | -                  |
| 7        | 1 EA.      | GROUNDING CLAMP, #8 SOL. TO #2 STR. TO SINGLE HOLE FLAT  | -                | BURNDY #EA2C       |
| 8        | 6 EA.      | NAME PLATE, 1 1/2" x 3", LABELED AS NOTED                | -                | -                  |
| 9        | 12 EA.     | FUSE CARTRIDGE, 10 AMP                                   | -                | BUSSMANN NON10     |
| 10       | 6 EA.      | FUSE CARTRIDGE, SLUG                                     | -                | BUSSMANN NTN-R-30  |

345KV 3Ø C.C.V.T. JUNCTION BOX

ITEM NO. U5

QTY = 2

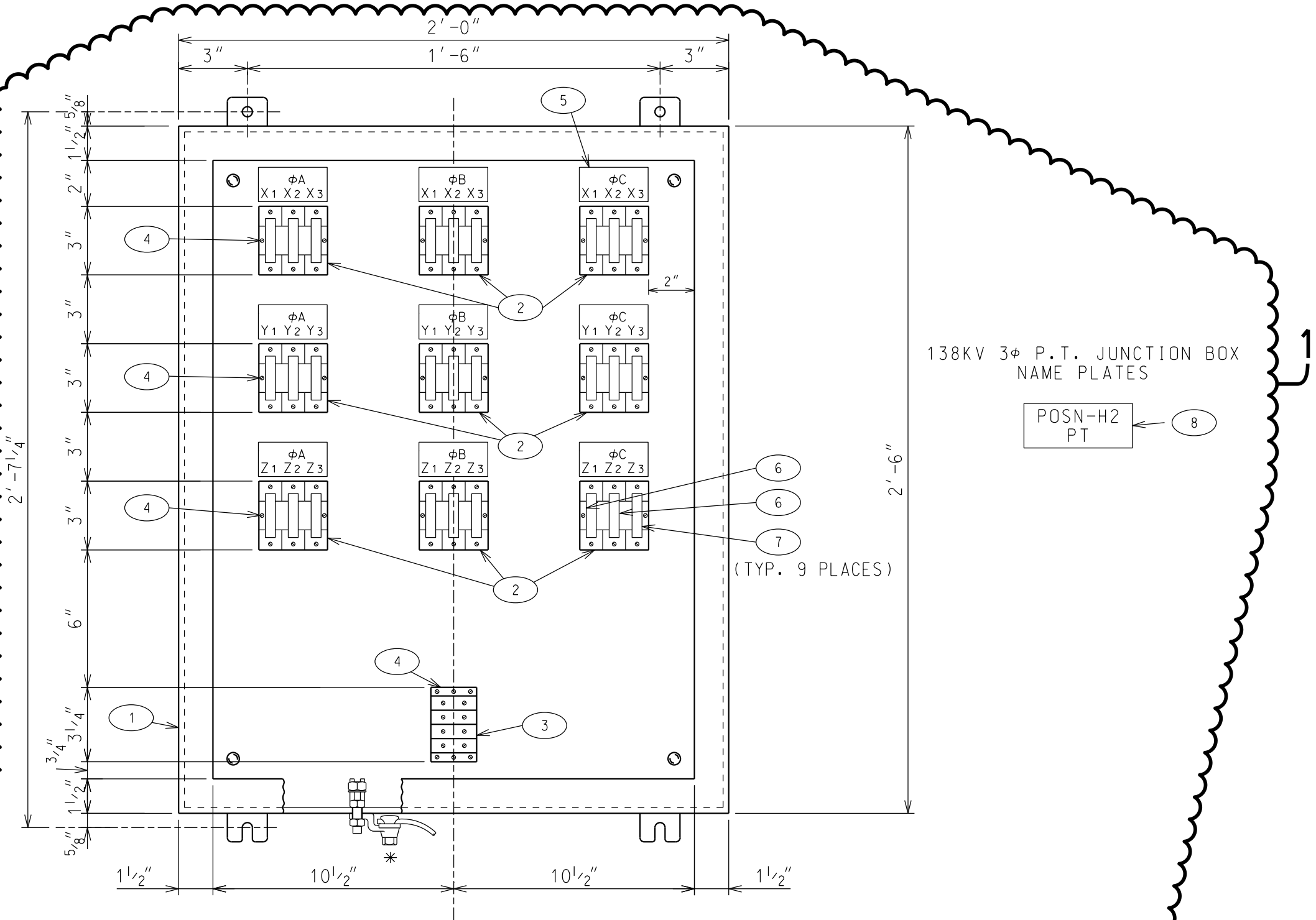


| ITEM NO. | NO. REQ'D. | DESCRIPTION                                             | AMEREN STOCK NO. | MANUF. CAT. NO. |
|----------|------------|---------------------------------------------------------|------------------|-----------------|
| 1        | 1 EA.      | JT. BOX, 20x20x6, AL. w/ BACK PANEL                     | -                | -               |
| 2        | 1 EA.      | TERMINAL BLOCK, HEAVY DUTY, 6 POLE, STD CONNECTOR, 600V | -                | GE# EB25B06     |
| 3        | 1 EA.      | 120V, 20A, NON-GFCI RECEPTACLE W/ BOX                   | -                | -               |
| 4        | 2 EA.      | SCREW, SHEET METAL, #10-32 x 1/2" PAN HEAD              | 21-72-287        | DORMAN 360-103  |
| 5        | 1 EA.      | CONDUCTOR, SERVIT POST, TYPE K2C FOR 2 WIRE, 3/8" STUD  | 17-64-210        | BURNDY K2C22B1N |
| 6        | 6 FT.      | #4 SD BARE SOLID CU. (0.136 LBS/FT)                     | 18-52-020        | -               |
| 7        | 1 EA.      | GROUNDING CLAMP, #8 SOL. TO #2 STR. TO SINGLE HOLE FLAT | -                | BURNDY #EA2C    |

PLP JUNCTION BOX

ITEM NO. U2

QTY = 2



| ITEM NO. | NO. REQ'D. | DESCRIPTION                                              | AMEREN STOCK NO. | MANUF. CAT. NO.      |
|----------|------------|----------------------------------------------------------|------------------|----------------------|
| 1        | 1 EA.      | JT. BOX, 30x24x8, AL. w/ BACK PANEL                      | -                | HOFFMAN A30H2408ALLP |
| 2        | 9 EA.      | BLOCK, FUSE, 250V, 1-30A 3 POLE, CART FUSE TYPE STD DUTY | 20-56-307        | BUSSMANN H25030-3S   |
| 3        | 1 EA.      | TERMINAL BLOCK, HEAVY DUTY, 4 POLE, STD CONNECTOR, 600V  | 40-07-006        | GE# EB-25-1-04B      |
| 4        | 20 EA.     | SCREW, SHEET METAL, #10-32 x 1/2" PAN HEAD               | 21-72-287        | DORMAN 360-103       |
| 5        | 9 EA.      | NAME PLATE, 1 1/2" x 3", LABELED AS NOTED                | -                | -                    |
| 6        | 18 EA.     | FUSE CARTRIDGE, 30 AMP (P.T. ONLY)                       | -                | BUSSMANN NON30       |
| 7        | 9 EA.      | FUSE CARTRIDGE, SLUG                                     | -                | BUSSMANN NTN-R-30    |
| 8        | 1 EA.      | NAME PLATE, 3" x 9", LABELED AS NOTED                    | -                | -                    |

\* INSTALL SERVIC POST NEAR REAR OF CABINET. SEE NOTE 2.

345KV 3Ø P.T. JUNCTION BOX

ITEM NO. U8

QTY = 1

REFERENCE DRAWINGS:

CONDUIT DETAILS SHEET 1 ----- E-HUGH-13.1-1  
CONDUIT DETAILS SHEET 2 ----- E-HUGH-13.1-2  
CONDUIT DETAILS SHEET 3 ----- E-HUGH-13.1-3  
CABLE PLAN 345KV SWITCH YARD ----- E-HUGH-13.2-1

| REV                                | PROJ ID  | DATE     | DRWN | RWN | APPD |
|------------------------------------|----------|----------|------|-----|------|
| 2                                  | JS617958 | 09/17/20 | MJS  | SG  | CPM  |
| ISSUED AS-BUILT (B&V)              |          |          |      |     |      |
| 1                                  | JS617958 | 10/21/19 | DEJ  | JBS | CPM  |
| RE-ISSUED FOR CONSTRUCTION PER ECN |          |          |      |     |      |

345KV EQUIPMENT JUNCTION BOXES

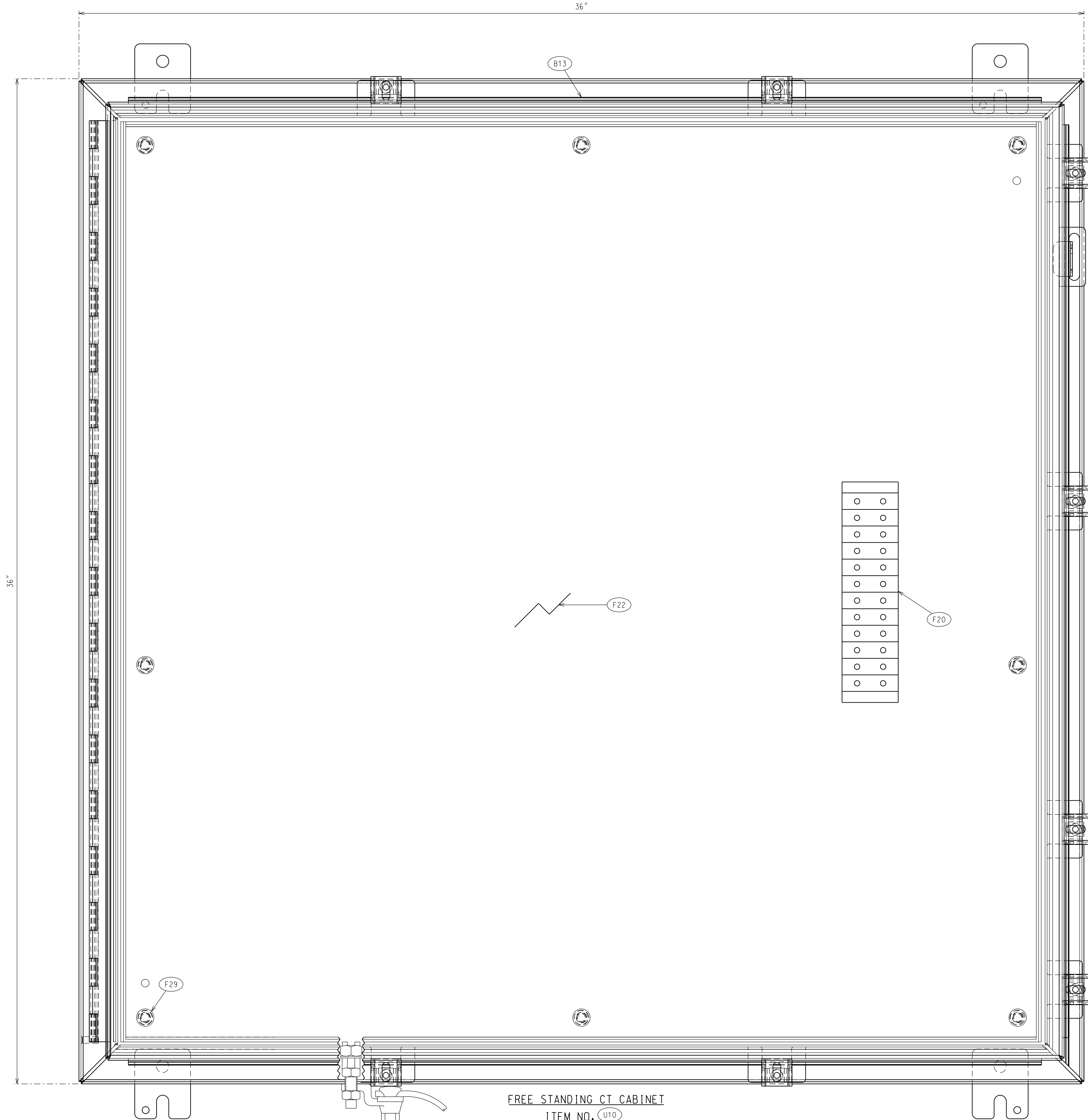
HUGHES SUBSTATION



E-HUGH-28.1

REV 2

FILE: \$FILES  
PRINTED BY: SUPKROWNS  
TIME: \$DATE\$ \$TIME\$



FREE STANDING CT CABINET  
ITEM NO. U10  
QTY = 1  
N.T.S.

\*INSTALL SERVIT POST NEAR REAR OF CABINET. SEE NOTE 1

| MATERIAL LIST |           |                                                               |                          |
|---------------|-----------|---------------------------------------------------------------|--------------------------|
| ITEM NO.      | NO. REQ'D | DESCRIPTION                                                   | MANUF. CAT. NO.          |
| B13           | 1         | ENCLOSURE, NEMA 4X, 304 SS, 36" X 36" X 12"                   | HOFFMAN #A36H3612SSLP3PT |
| F1            | -         | SPARE                                                         |                          |
| F8            | -         | SPARE                                                         |                          |
| F9            | -         | SPARE                                                         |                          |
| F12           | -         | SPARE                                                         |                          |
| F19           | -         | SPARE                                                         |                          |
| F20           | 1         | 12 PT STRAIGHT TYPE TERMINAL BLOCK                            | STATES #CSM25112         |
| F22           | 1         | PLYWOOD, 33" X 33" X 2-LAMINATED 1/2" (15/16" TOTAL), TREATED |                          |
| F23           | 1         | KIT, DOOR STOP, 316 SS, SEE NOTE 3                            | HOFFMAN #ADSTOPKSS6      |
| F24           | -         | SPARE                                                         |                          |
| F25           | -         | SPARE                                                         |                          |
| F26           | -         | SPARE                                                         |                          |
| F27           | -         | SPARE                                                         |                          |
| F28           | -         | SPARE                                                         |                          |
| F29           | 8         | WASHER, FLAT, STAINLESS STEEL, SIZE TO FIT                    |                          |
| F30           | -         | SPARE                                                         |                          |
| F31           | 3         | BLOCK, FUSE, HEAVY DUTY, 2 POLE, 250V, 1-30A                  | BUSSMAN #HM25010-2SR     |
| F32           | -         | SPARE                                                         |                          |

- NOTES:
- SEE DETAIL "U" ON DWG E-HUGH-12.2-2 FOR GROUNDING DETAILS.
  - SEE DRAWING E-HUGH-52.1 FOR INTERIOR NAMEPLATES.
  - CONTRACTOR SHALL INSTALL DOOR STOP SECURELY IN THE LOWER LEFT OF THE CABINET.

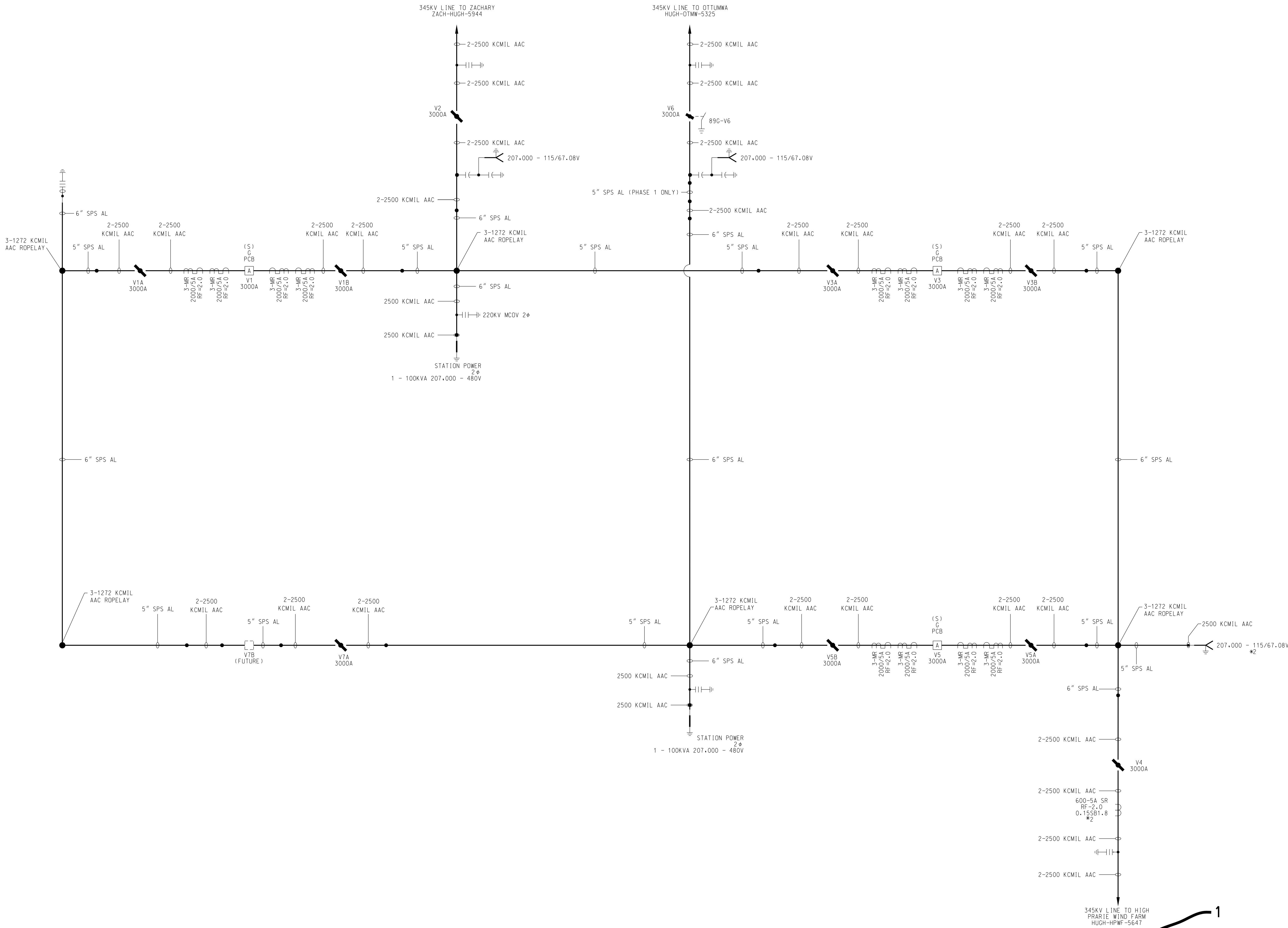
- REFERENCE DRAWINGS:
- |                                 |       |               |
|---------------------------------|-------|---------------|
| 345KV GROUNDING PLAN            | ----- | E-HUGH-12.1   |
| 345KV GROUNDING DETAILS SHEET 1 | ----- | E-HUGH-12.2-1 |
| 345KV GROUNDING DETAILS SHEET 2 | ----- | E-HUGH-12.2-2 |
| 345KV CONDUIT PLAN              | ----- | E-HUGH-13.1   |
| 345KV CONDUIT DETAILS SHEET 1   | ----- | E-HUGH-13.2-1 |
| 345KV CONDUIT DETAILS SHEET 2   | ----- | E-HUGH-13.2-2 |
| 345KV CONDUIT DETAILS SHEET 3   | ----- | E-HUGH-13.2-3 |
| EQUIPMENT BILL OF MATERIAL      | ----- | E-HUGH-91.2   |

|                                                                                                                  |  |  |  |  |  |                                  |  |
|------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|----------------------------------|--|
| REV   PROJ ID   DATE   DRWN   RVW   APPD<br>1   JS617958   09/17/20   MJS   SG   CPM<br>ISSUED AS-BUILT (B&V)    |  |  |  |  |  | 345KV METERING<br>CABINET LAYOUT |  |
| REV   PROJ ID   DATE   DRWN   RVW   APPD<br>0   JS617958   07/15/19   SLG   JBS   CPM<br>ISSUED FOR CONSTRUCTION |  |  |  |  |  | HUGHES SUBSTATION                |  |
| REV   PROJ ID   DATE   DRWN   RVW   APPD<br>0   JS617958   07/15/19   SLG   JBS   CPM<br>ISSUED FOR CONSTRUCTION |  |  |  |  |  | E-HUGH-28.2                      |  |
|                                                                                                                  |  |  |  |  |  | REV 1                            |  |

NOTICE OF LIMITED RESPONSIBILITY  
THE RESPONSIBILITY OF THE UNDERSIGNED ENGINEER IS LIMITED TO THE DESIGN OF THE PROJECT DESCRIBED AND DOCUMENTED HEREIN. THE UNDERSIGNED ENGINEER DOES NOT HAVE AUTHORITY OVER THE PROJECT AS A WHOLE. THE UNDERSIGNED ENGINEER ASSUMES NO RESPONSIBILITY FOR WORK DONE OR NOT DONE SUBSEQUENT TO THE DATE OF THIS DRAWING. THE UNDERSIGNED ENGINEER ASSUMES NO RESPONSIBILITY FOR WORK DONE OR NOT DONE SUBSEQUENT TO THE DATE OF THIS DRAWING.

SCALE RATIO =

- LEGEND**
- 3  $\phi$  CIRCUIT BREAKER
  - COUPLING CAPACITOR VOLTAGE TRANSFORMER
  - SURGE ARRESTER
  - CURRENT BREAK MOTOR OPERATED DISCONNECT SWITCH WITH GROUND BLADES
  - CURRENT TRANSFORMER-BUSHING TYPE, MULTI RATIO
  - CURRENT TRANSFORMER-BUSHING TYPE, SINGLE RATIO
  - SINGLE VOLTAGE TRANSFORMER PHASE TO GROUND
  - VOLTAGE TRANSFORMER (PHASE TO GROUND)
  - FUTURE CONDUCTOR/EQUIPMENT
  - CONNECTION POINT BETWEEN DIFFERENT CONDUCTOR TYPES
  - (S) SCADA CONTROL
  - PCB POWER CIRCUIT BREAKER
  - G SF6 GAS
  - A AUTOMATIC TRIP-AUTOMATIC RECLOSING
  - RF THERMAL RATING FACTOR
  - LINE TRAP



- NOTES:**
1. UNLESS OTHERWISE SPECIFIED, ALL DEVICES ARE IN THREE PHASES OF A CIRCUIT.
  2. REVENUE CLASS.

**REFERENCES:**

EQUIPMENT ARRANGEMENT PLAN,-----E-HUGH-21.1  
RELAYING & METERING DIAGRAM,-----E-HUGH-51.1-5

| REV                       | PROJ     | ID       | DATE | DRWN | RW  | APPD |
|---------------------------|----------|----------|------|------|-----|------|
| 1                         | J5617958 | 08/19/20 | BGG  | SG   | CPM |      |
| ISSUED AS INSTALLED (B&V) |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |
|                           |          |          |      |      |     |      |

|                                                    |  |
|----------------------------------------------------|--|
| 345KV ONE LINE DIAGRAM<br>MAXIMUM EQUIPMENT RATING |  |
| HUGHES SUBSTATION                                  |  |
| E-HUGH-51.0-5                                      |  |
| REV 1                                              |  |

FILE: \$FILES

PRINTED BY: \$USERNAME

TIME: \$DATE \$TIME

| REV NO | DESCRIPTION                                 |
|--------|---------------------------------------------|
| 1141   | MULTIFUNCTION RELAY - PRI                   |
| 1142   | MULTIFUNCTION RELAY - SEC                   |
| 1143   | MULTIFUNCTION RELAY - POWER CIRCUIT BREAKER |
| 1144   | POWER CIRCUIT BREAKER                       |
| 89     | MOTOR OPER DISCONNECT SW                    |
| CS1    | STATION SERVICE VOLTAGE TRANSFORMER         |
| POT    | POTENTIAL TRANSFORMER                       |
| SS1    | STATION SERVICE VOLTAGE TRANSFORMER         |
| WM     | MULTIFUNCTION METER                         |
| WM2    | REVENUE METER                               |
| IND    | LOCKOUT RELAY - BREAKER FAILURE             |
| IND2   | LOCKOUT RELAY - BREAKER FAILURE             |

LIST OF DEVICES

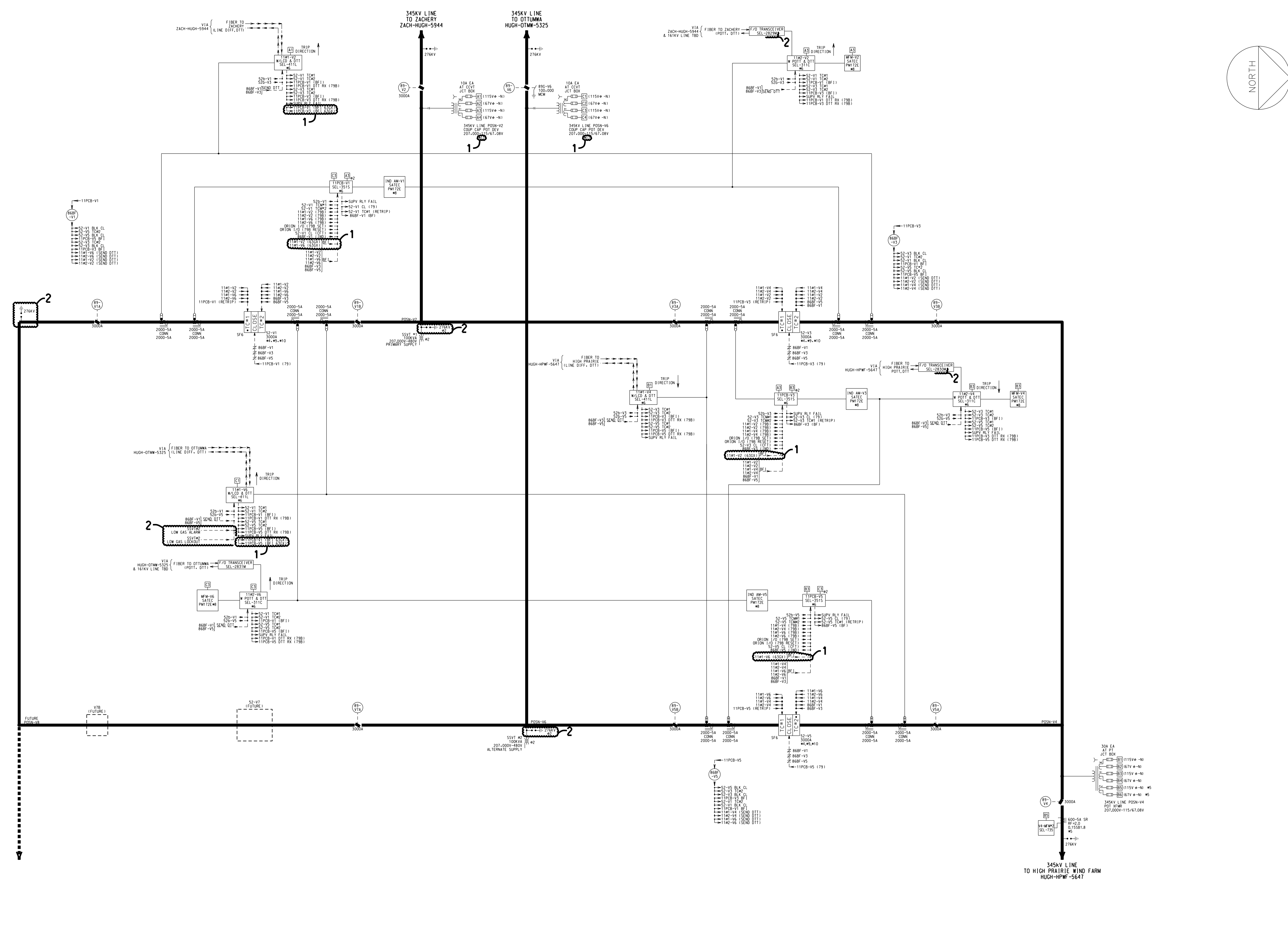
| REV | PROJ ID  | DATE     | DRWN | RW  | APPD |
|-----|----------|----------|------|-----|------|
| 2   | JS617958 | 09/17/20 | MSA  | KAK | CPM  |
| 1   | JS617958 | 12/20/19 | VDH  | JBS | CPM  |
| 0   | JS617958 | 08/08/19 | VDH  | IMA | CPM  |

345KV ONE LINE DIAGRAM  
METERING AND RELAYING

HUGHES SUBSTATION

E-HUGH-51.1-5

REV 2



- NOTES:
1. DEVICE SYMBOLS ARE IN ACCORDANCE WITH ELECTRICAL ENGINEERING STANDARD #24.
  2. UNLESS OTHERWISE SPECIFIED, ALL DEVICES ARE IN THREE PHASES OF A CIRCUIT.
  3. ALL RELAYS CONNECTED TO A COMMUNICATIONS PROCESSOR.
  4. DOT INDICATES BUSHING #1 AT PCB.
  5. REVENUE CLASS.
  6. DATA SENT TO ORION RTU VIA RS485 LOOP.
  7. METERING AND FAULT DATA PULLED VIA DNP ON RS485 LOOP TO SCADA.
  8. METERS ARE FOR LOCAL INDICATION ONLY.
  9. REMOTE CONTROL VIA RTU.
  10. BREAKER TRIPS AND AUTO ISOLATES FOR LOW OPG.

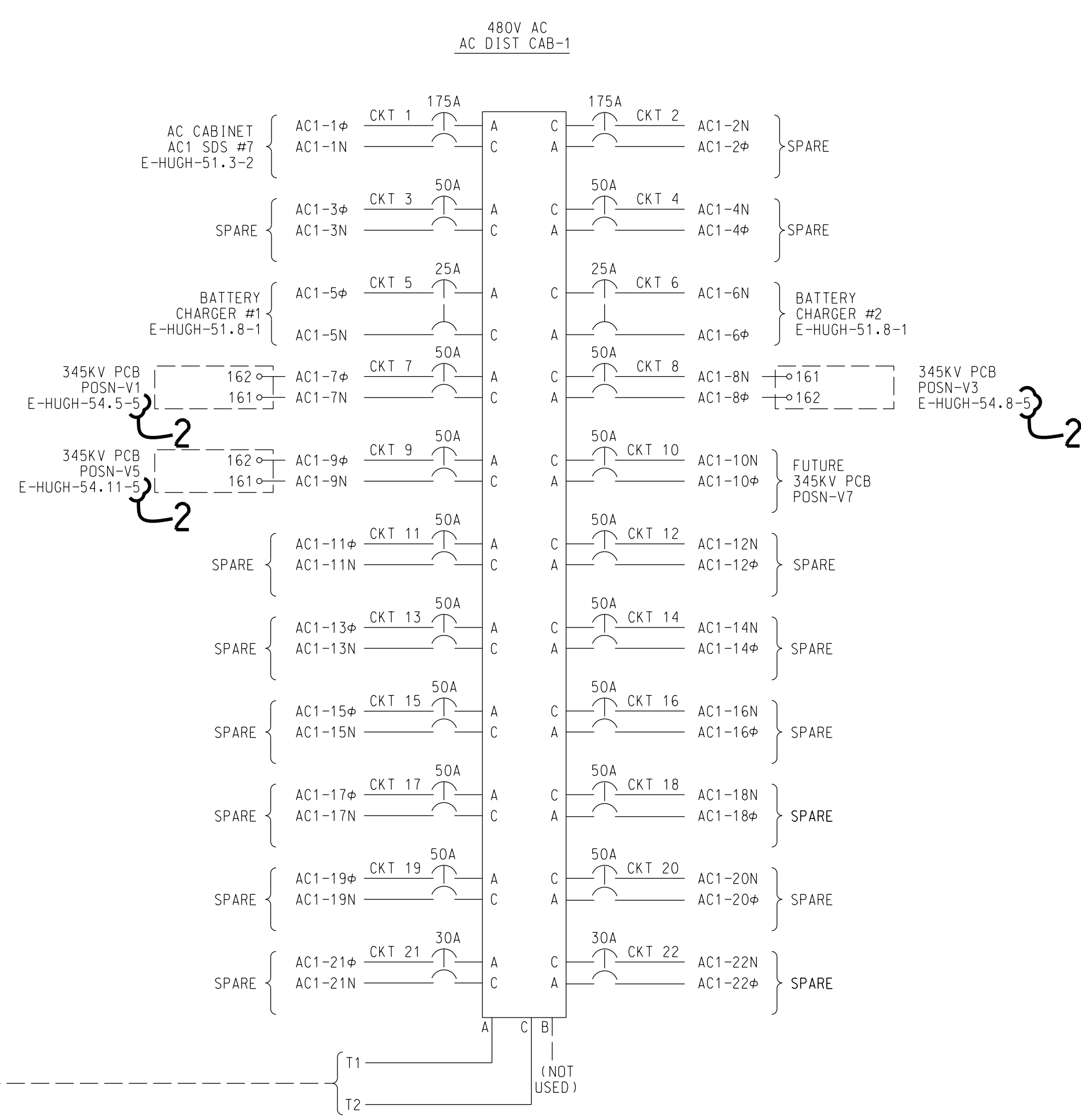
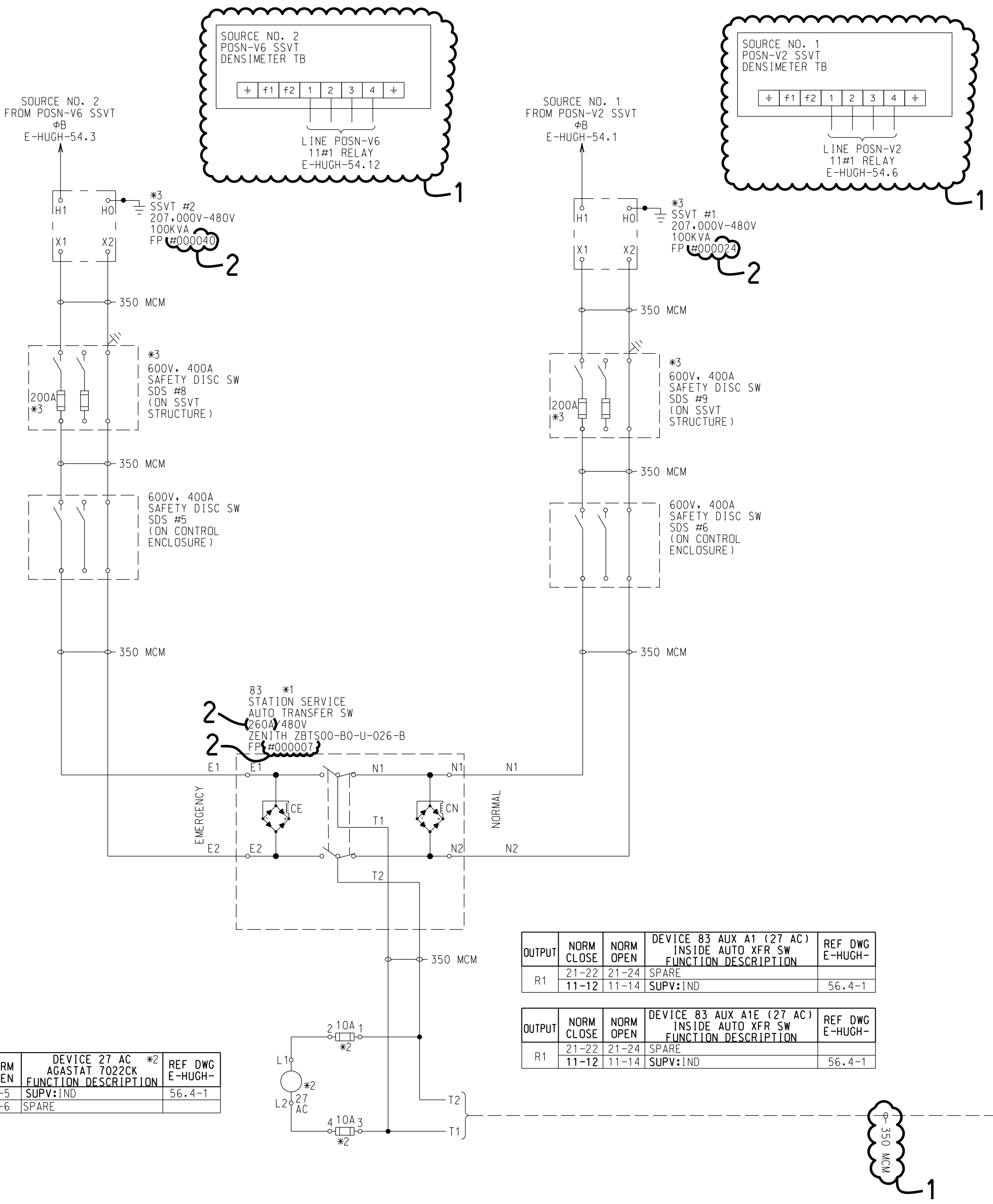
FILE: \$FILES\$  
PRINTED BY: \$UNKNOWN\$  
TIME: \$DATE\$ \$TIME\$

| LIST OF DEVICES |                                                   |
|-----------------|---------------------------------------------------|
| DEV. NO.        | DESCRIPTION                                       |
| 27 AC           | LOSS OF VOLTAGE ALARM RELAY (TIME DELAY DROP-OUT) |
| 83              | AC STA SERVICE AUTO TRANSFER SWITCH               |
| 83 AUX          | LOSS OF VOLTAGE ALARMS                            |

| NORM<br>CLOSE | NORM<br>OPEN | DEVICE 27 AC<br>AGASTAT 7022CK<br>FUNCTION DESCRIPTION | REF DWG<br>E-HUGH- |
|---------------|--------------|--------------------------------------------------------|--------------------|
| 1-5           | 3-5          | SUPV:IND                                               | 56.4-1             |
| 2-6           | 4-6          | SPARE                                                  |                    |

| OUTPUT | NORM<br>CLOSE | NORM<br>OPEN | DEVICE 83 AUX A1 (27 AC)<br>INSIDE AUTO XFR SW<br>FUNCTION DESCRIPTION | REF DWG<br>E-HUGH- |
|--------|---------------|--------------|------------------------------------------------------------------------|--------------------|
| R1     | 21-22         | 21-24        | SPARE                                                                  |                    |
|        | 11-12         | 11-14        | SUPV:IND                                                               | 56.4-1             |

| OUTPUT | NORM<br>CLOSE | NORM<br>OPEN | DEVICE 83 AUX A1E (27 AC)<br>INSIDE AUTO XFR SW<br>FUNCTION DESCRIPTION | REF DWG<br>E-HUGH- |
|--------|---------------|--------------|-------------------------------------------------------------------------|--------------------|
| R1     | 21-22         | 21-24        | SPARE                                                                   |                    |
|        | 11-12         | 11-14        | SUPV:IND                                                                | 56.4-1             |



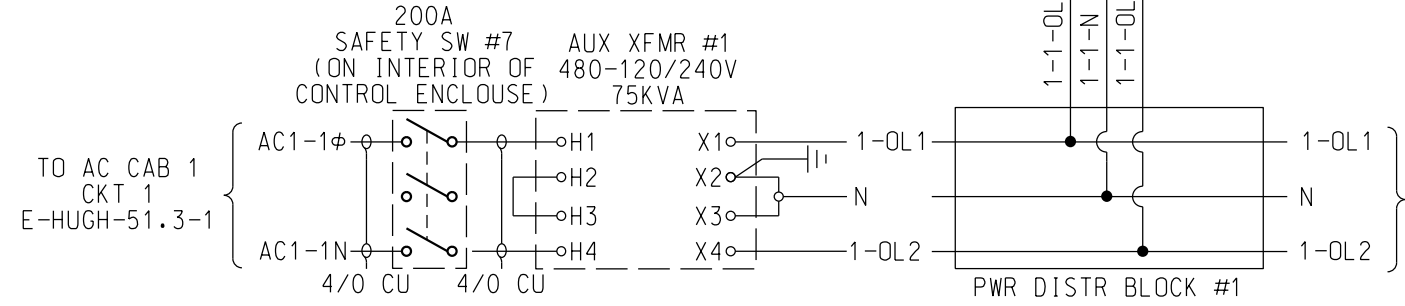
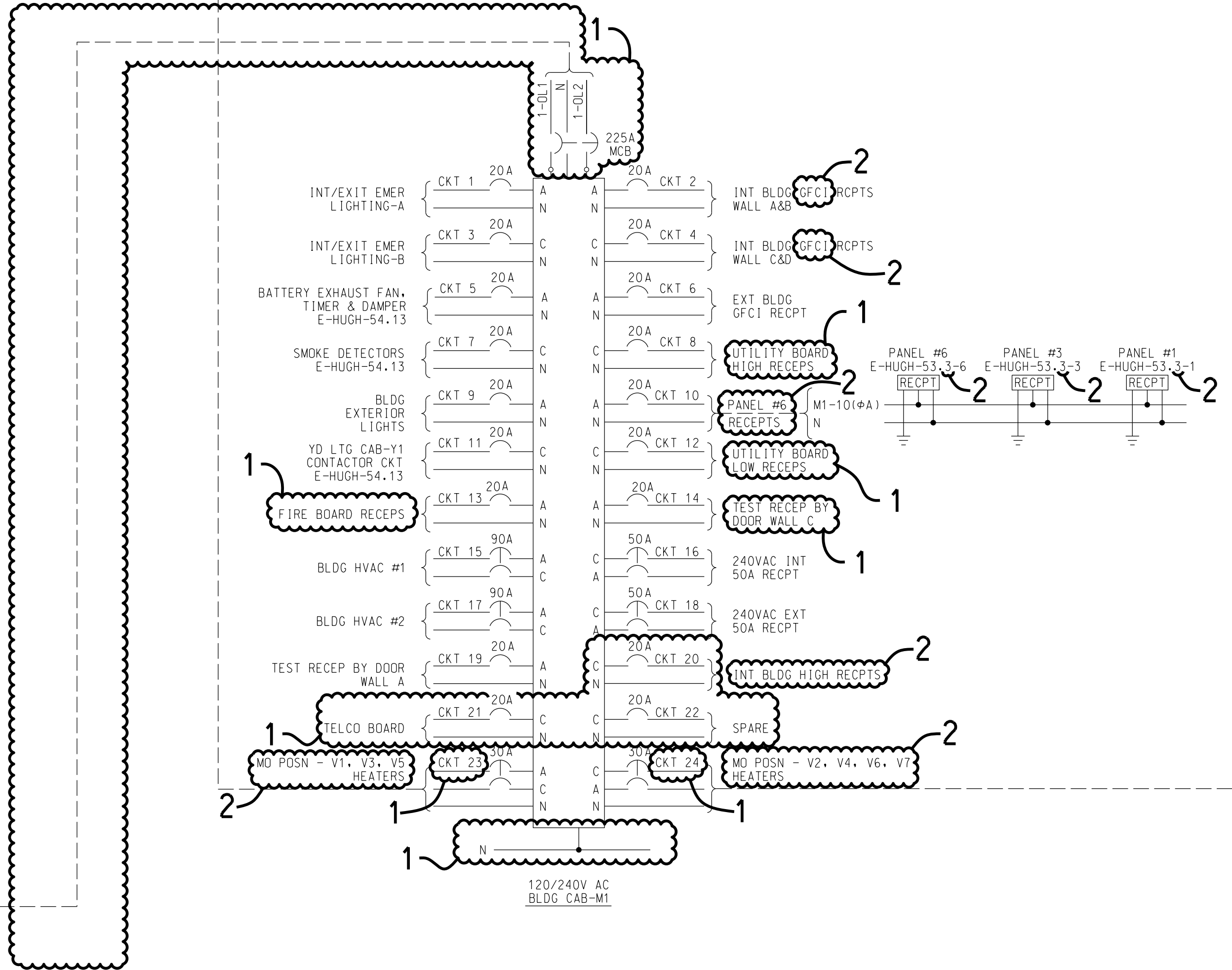
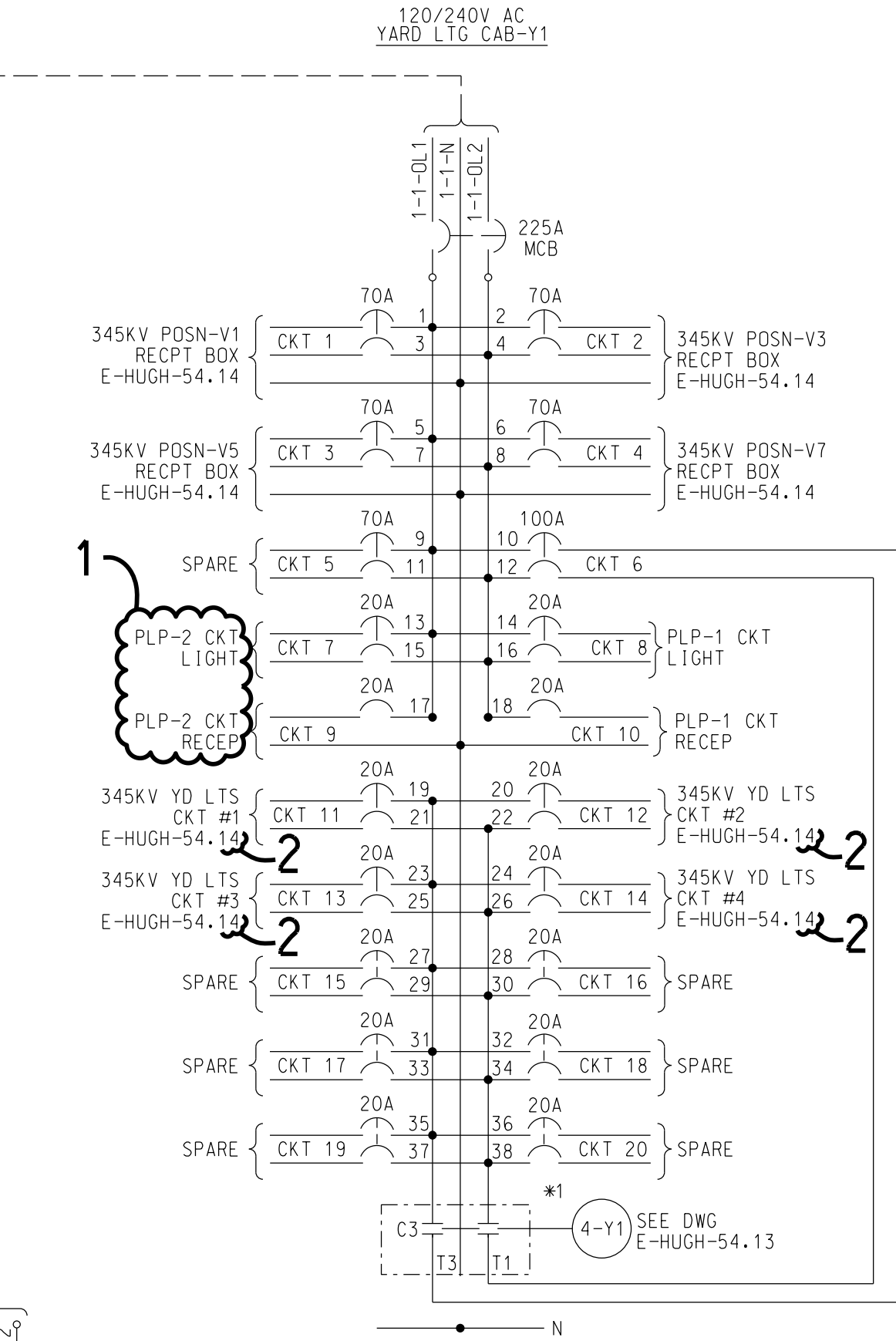
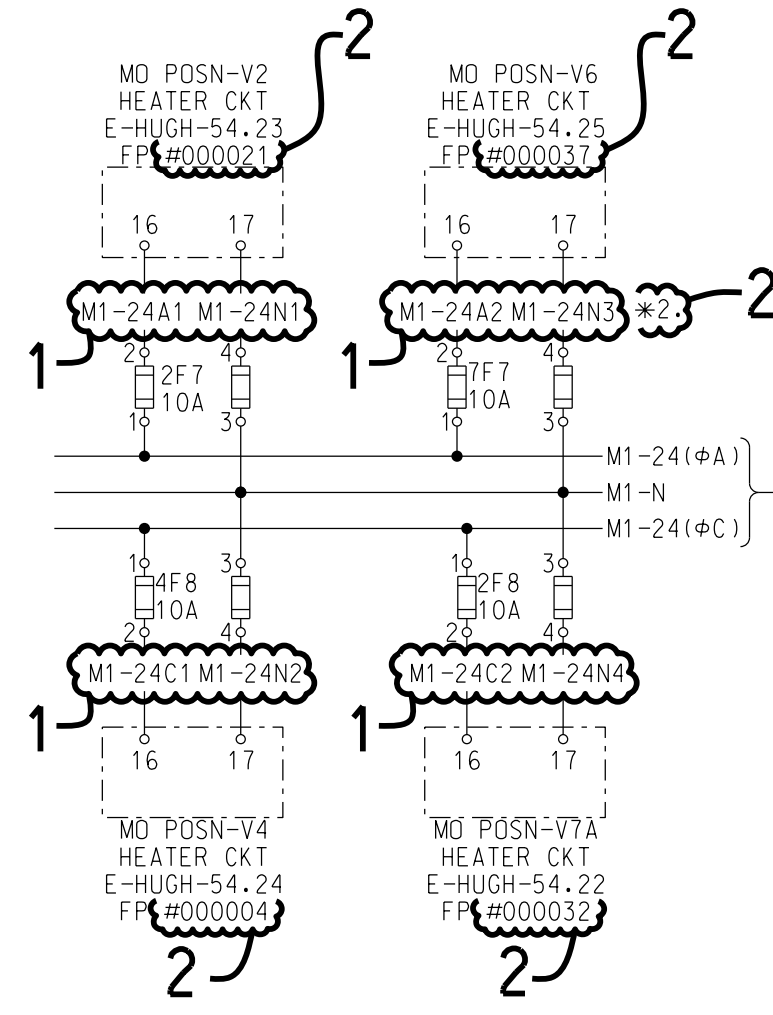
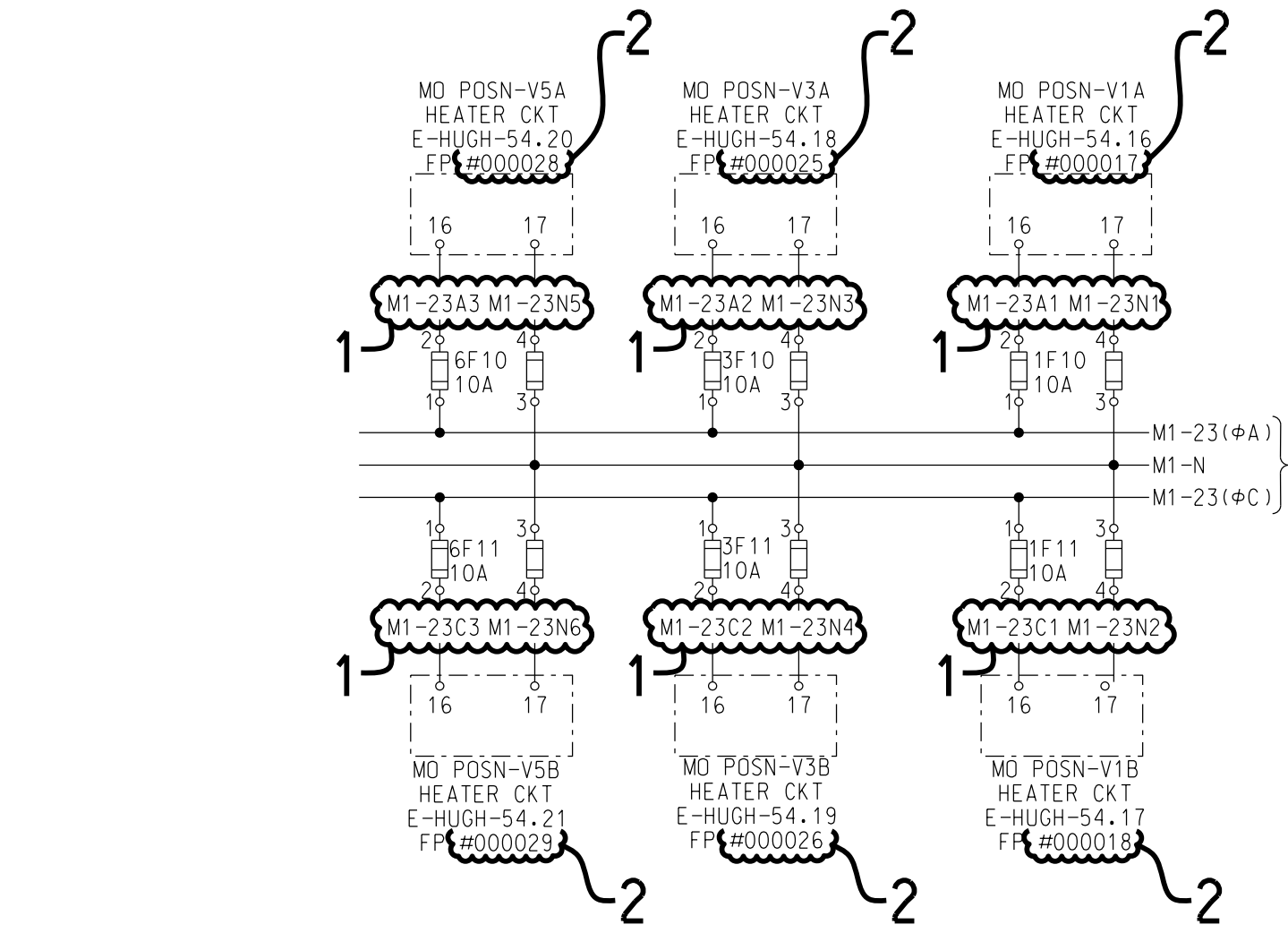
NOTES:  
\*1. AUTOMATIC TRANSFER SWITCH IS MECHANICALLY HELD IN EITHER POSITION & INTERLOCKED TO PREVENT BOTH CONTACTS FROM BEING CLOSED AT THE SAME TIME.  
\*2. EQUIPMENT MOUNTED ON DOOR OF STA SERV AUTO XFMR SW CAB.  
\*3. EQUIPMENT LOCATED IN SUBSTATION YARD.

REFERENCES:  
SD STATION SERVICE 120/240V AC PORT \_\_\_\_\_ E-HUGH-51.3-2  
SD STATION SERVICE DC PORT \_\_\_\_\_ E-HUGH-51.8-1

|                                    |          |          |      |     |      |                                                         |
|------------------------------------|----------|----------|------|-----|------|---------------------------------------------------------|
| REV                                | PROJ ID  | DATE     | DRWN | RWV | APPD | SCHEMATIC DIAGRAM<br>STATION SERVICE<br>480V AC PORTION |
| 2                                  | JS617958 | 09/17/20 | MSA  | KAK | CPM  |                                                         |
| CHANGED AS INSTALLED (B&V)         |          |          |      |     |      |                                                         |
| 1                                  | JS617958 | 12/20/19 | VDH  | JBS | CPM  | HUGHES SUBSTATION<br><br>E-HUGH-51.3-1                  |
| RE-ISSUED FOR CONSTRUCTION PER ECN |          |          |      |     |      |                                                         |
| AS-BUILTS                          |          |          |      |     |      |                                                         |
| REV                                | PROJ ID  | DATE     | DRWN | RWV | APPD | E-HUGH-51.3-1                                           |
| 0                                  | JS617958 | 08/08/19 | VDH  | MWK | CPM  |                                                         |
| ISSUED FOR CONSTRUCTION            |          |          |      |     |      |                                                         |

24X36

SCALE RATIO =



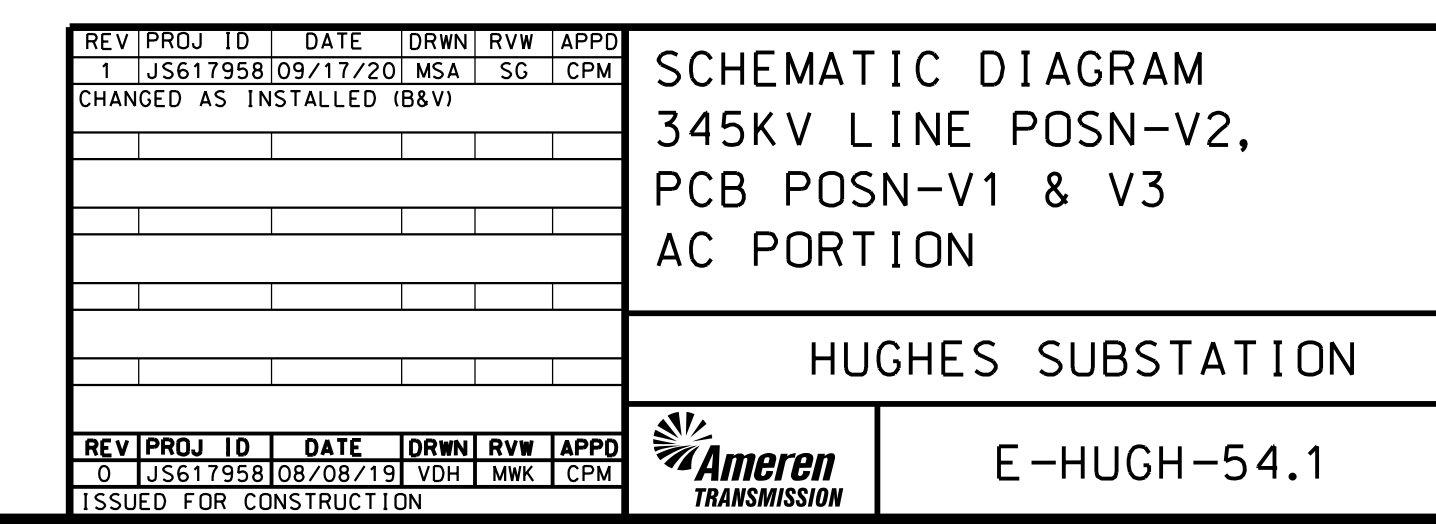
NOTES:  
\* 1. CONTACTOR IS ELECTRICALLY HELD WITH TWO WIRE CONTROL.  
\* 2. FUSES ARE LOCATED AT PANEL.  
REFERENCES:  
SD STATION SERVICE 480V AC PORT \_\_\_\_\_ E-HUGH-51.3-1

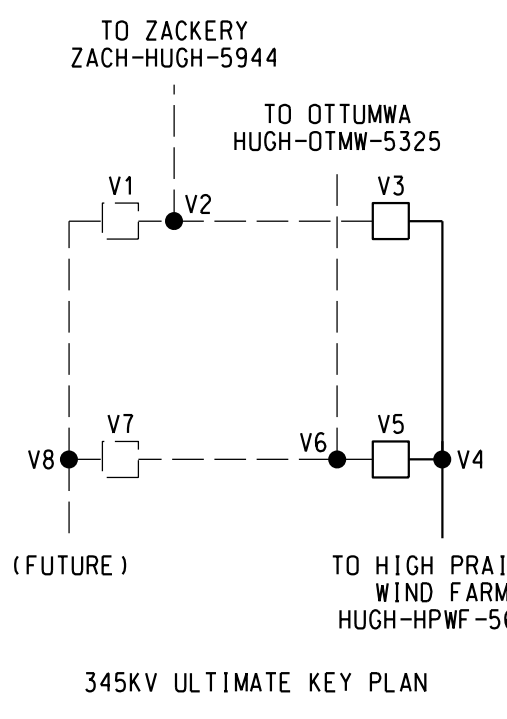
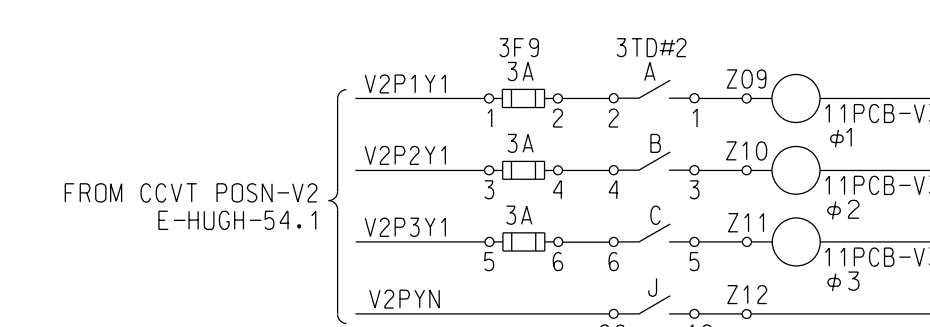
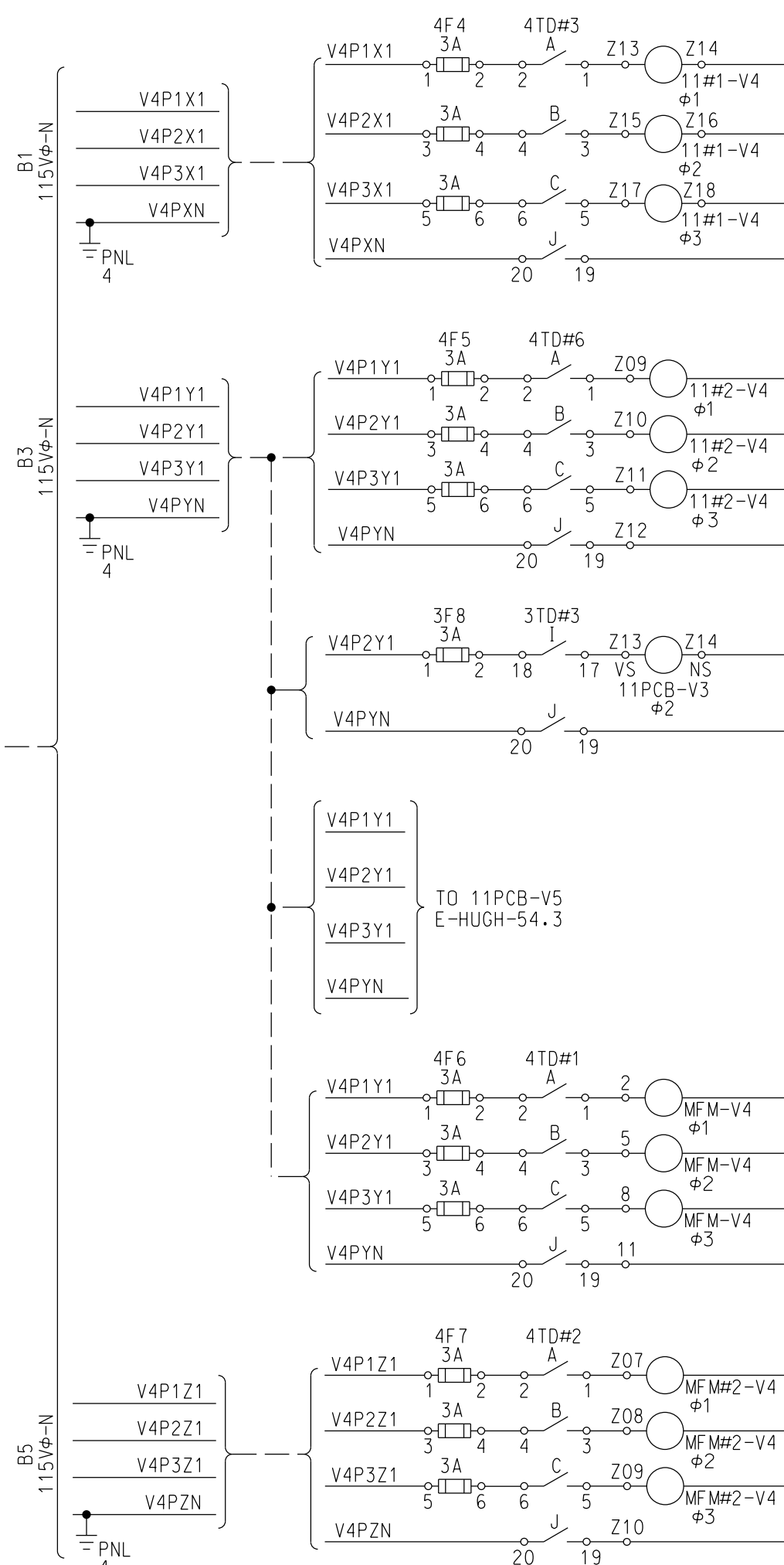
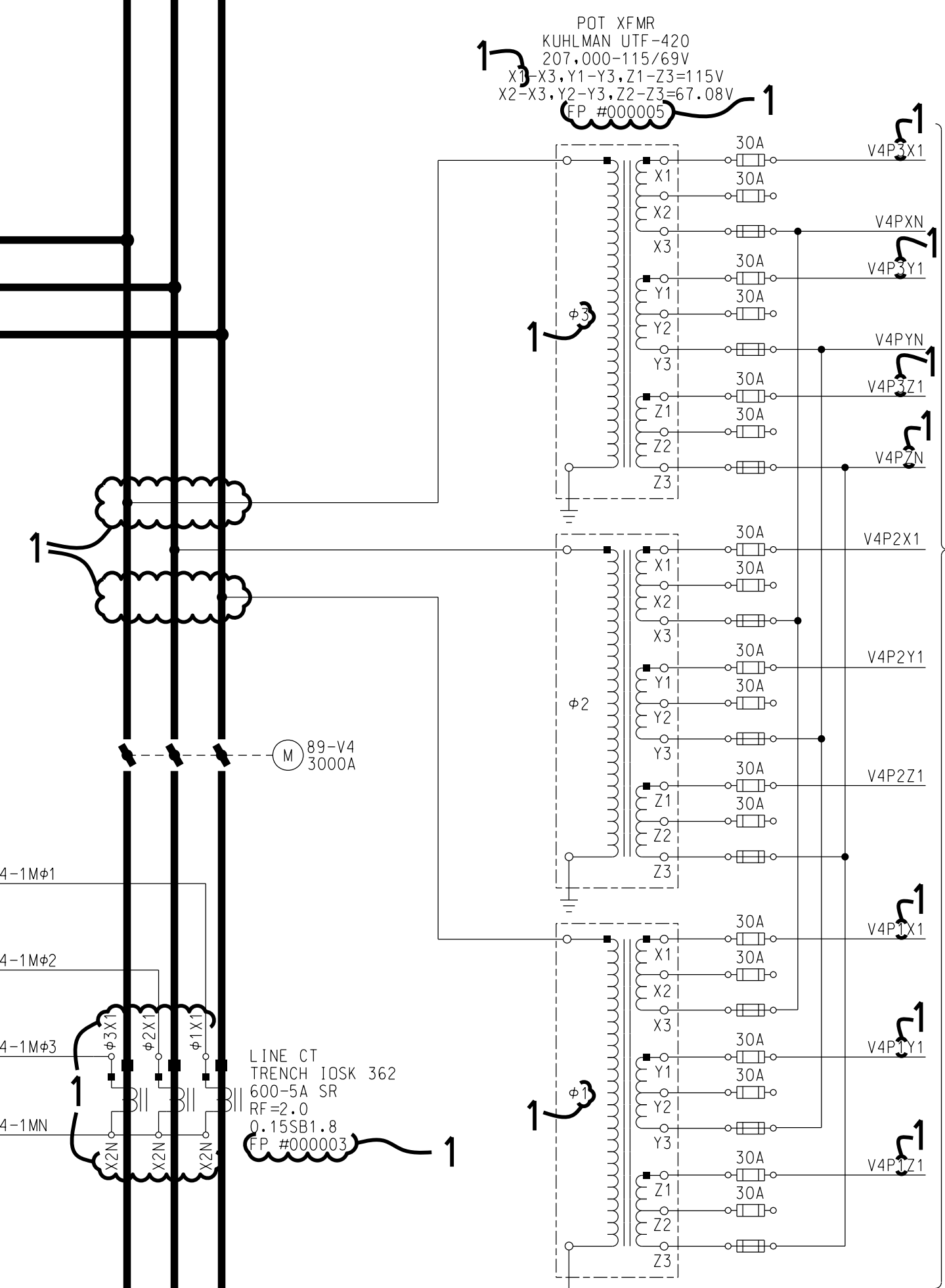
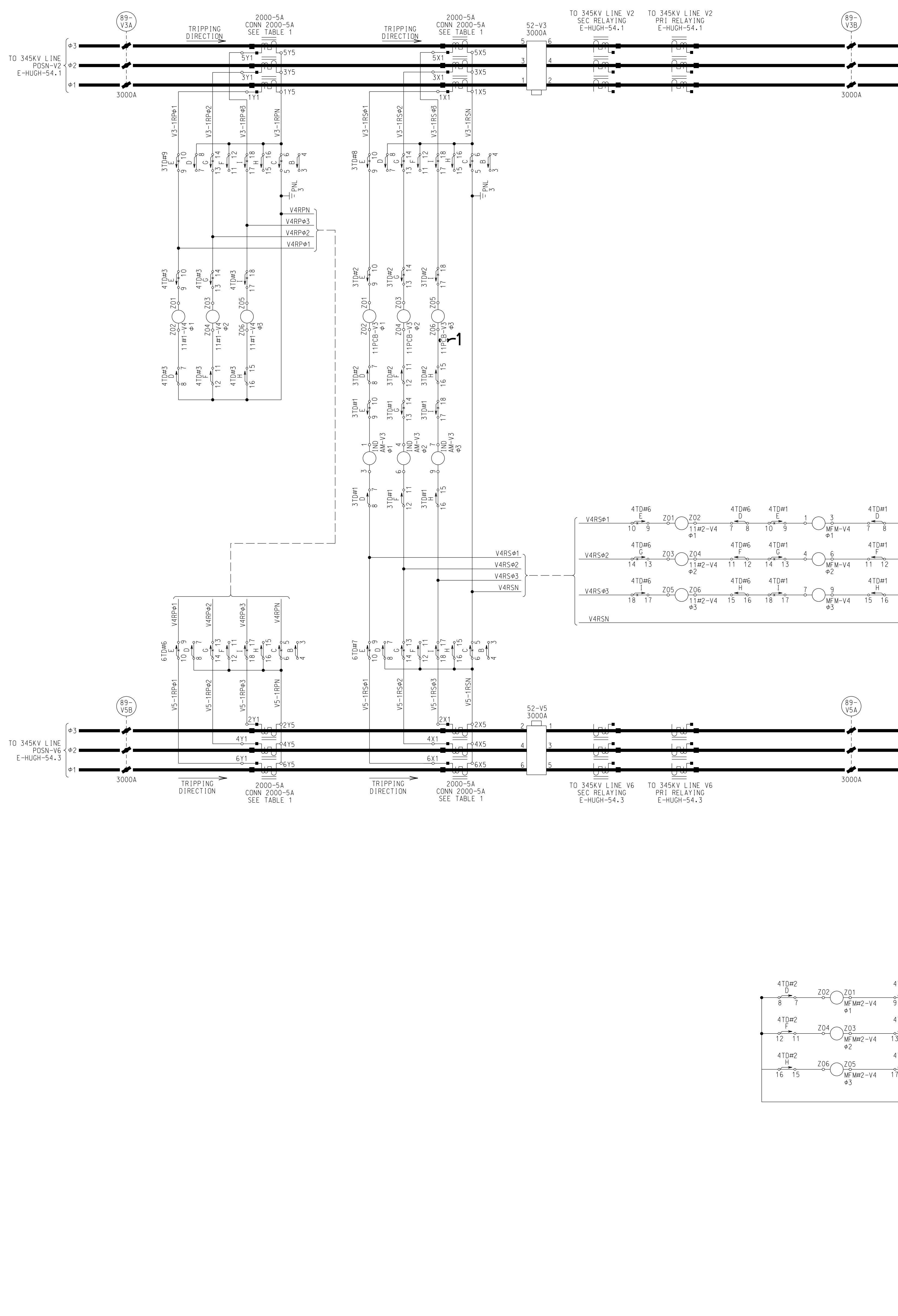
| REV                                                         | PROJ ID  | DATE     | DRWN | RWV | APPD | MSA | SG | CPM |
|-------------------------------------------------------------|----------|----------|------|-----|------|-----|----|-----|
| 2                                                           | JS617958 | 09/17/20 | MSA  | SG  | CPM  |     |    |     |
| 1                                                           | JS617958 | 12/20/19 | VDH  | JBS | CPM  |     |    |     |
| 0                                                           | JS617958 | 08/08/19 | VDH  | MWK | CPM  |     |    |     |
| ISSUED FOR CONSTRUCTION                                     |          |          |      |     |      |     |    |     |
| SCHEMATIC DIAGRAM<br>STATION SERVICE<br>120/240V AC PORTION |          |          |      |     |      |     |    |     |
| HUGHES SUBSTATION                                           |          |          |      |     |      |     |    |     |
| E-HUGH-51.3-2                                               |          |          |      |     |      |     |    |     |
| 2                                                           |          |          |      |     |      |     |    |     |

24X36

SCALE RATIO =



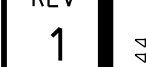




| RATIO         | TAPS  |
|---------------|-------|
| 300-5A X3-X4  | V3-V4 |
| 400-5A X1-X2  | V1-V2 |
| 500-5A X4-X5  | V4-V5 |
| 600-5A X2-X3  | V2-V3 |
| 1100-5A X2-X4 | V2-V4 |
| 1200-5A X1-X3 | V1-V3 |
| 1500-5A X1-X4 | V1-V4 |
| 1600-5A X2-X5 | V2-V5 |
| 2000-5A X1-X5 | V1-V5 |

NOTES:  
1. (4TOM) 4 INDICATES PANEL, TO INDICATES TEST DEVICE AND  
# INDICATES THE NUMBER OF TEST DEVICES.  
REFERENCE:  
ONE LINE MTR & RLY ----- E-HUGH-51.1-5  
SD PCB POSN-V3 DC ----- E-HUGH-54.1  
SD LINE POSN-V4 DC ----- E-HUGH-54.9  
SD PCB POSN-V5 DC ----- E-HUGH-54.10  
SD 345 LINE POSN-V2 AC ----- E-HUGH-54.1  
SD 345 LINE POSN-V6 AC ----- E-HUGH-54.3

| REV                                                                        | PROJ               | TO  | DATE | DRWN | RW | APPR |
|----------------------------------------------------------------------------|--------------------|-----|------|------|----|------|
| 1                                                                          | US617958109/217201 | MSA | SG   | CPM  |    |      |
| CHANGED AS INSTALLED (REV)                                                 |                    |     |      |      |    |      |
| SCHEMATIC DIAGRAM<br>345KV LINE POSN-V4,<br>PCB POSN-V3 & V5<br>AC PORTION |                    |     |      |      |    |      |
| HUGHES SUBSTATION                                                          |                    |     |      |      |    |      |
| E-HUGH-54.2                                                                |                    |     |      |      |    |      |
| 1                                                                          |                    |     |      |      |    |      |



**STATE OF MISSOURI**

**OFFICE OF THE PUBLIC SERVICE COMMISSION**

**I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.**

**WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 15<sup>th</sup> day of December, 2020.**



  
**Morris L. Woodruff**  
**Secretary**

**MISSOURI PUBLIC SERVICE COMMISSION**

**December 15, 2020**

**File/Case No. EA-2021-0167**

**Missouri Public Service  
Commission**

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Schuyler County Courthouse  
Lancaster, MO 63548  
schuyler@sos.mo.gov

**Enclosed find a certified copy of an Order or Notice issued in the above-referenced matter(s).**

**Sincerely,**



**Morris L. Woodruff  
Secretary**

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Recipients listed above with a valid e-mail address will receive electronic service. Recipients without a valid e-mail address will receive paper service.