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State Corporation Commission
of Kansas

BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of NextEra Energy Transmission Southwest, LLC for a Siting Permit for the Construction of a 345 kV Transmission Line in Coffey, Anderson, Allen, Bourbon and Crawford Counties, Kansas	)))))))	Docket No. 23-NETE-___-___

DIRECT TESTIMONY OF DANIEL MAYERS
DIRECTOR, TRANSMISSION AND SUBSTATION ENGINEERING
NEXTERA ENERGY RESOURCES, LLC

ON BEHALF OF

NEXTERA ENERGY TRANSMISSION SOUTHWEST, LLC

Docket No. 23-NETE-___-___

JANUARY 24, 2023

Contents

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Daniel Mayers. My business address is 700 Universe Boulevard, Juno Beach, Florida 33408.

Q. By whom are you employed and in what capacity?

A. I am the Director of Transmission and Substation Engineering within the Engineering & Construction ("E&C") organization at NextEra Energy Resources, LLC ("NEER"), working as a shared service employee on behalf of NextEra Energy Transmission Southwest, LLC ("NEET Southwest" or the "Applicant"). As the Director of Transmission and Substation Engineering, one of my primary roles is to coordinate or provide support for the development of new transmission systems, including right of way ("ROW") identification and selection, land acquisition, permit acquisition, system engineering, specification and standards development, material and services procurement, construction management, commissioning, system integration, compliance, and project close-out in highly regulated, environmentally sensitive, multi-system operational environments.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Applicant in this proceeding, NEET Southwest.

Q. What is your educational and professional background?

A. I have over 39 years of experience in transmission system planning, substation, and transmission line design and engineering, transmission line siting and permitting, project management, and construction at both NEER and its regulated utility affiliate in Florida, Florida Power & Light Company ("FPL"). I hold a Bachelor of Science Degree in Electrical Engineering

from the University of Pittsburgh and a Master of Science Degree in Engineering Management from the University of South Florida.

Q. Has this Direct Testimony been prepared by you or under your direct supervision?

A. Yes, it has.

Q. Have you previously provided testimony before the Kansas Corporation Commission ("Commission") or any other regulatory commission?

A. Yes, I testified before the Commission in the proceeding concerning NEET Southwest's Certificate of Convenience and Necessity ("CCN") in Docket No. 22-NETE-419-COC. I also filed written testimony in support of NEET Southwest's CCN application before the Missouri Public Service Commission ("MPSC") in Docket No. EA-2022-0234. In addition, I have also testified before a number of other state regulatory commissions on behalf of various NextEra Energy Transmission, LLC ("NEET") and NEER subsidiaries:

- I served as a witness before the Ontario Energy Board ("OEB") on behalf of NextBridge Infrastructure LP ("NextBridge") in its Leave to Construct Application for the East-West Tie Transmission Project (Docket No. EB-2017-0182) and in the Hydro One Networks, Inc.'s Leave to Construct Application for the Lake Superior Link (Docket No. EB-2017-0364). I also filed testimony before the OEB in Docket Nos. EB-2017-0194, regarding NextBridge's Leave to Construct, as well as the OEB's Docket No. EB-2021-0276, NextBridge's revenue requirement case.

- I testified before the California Public Utilities Commission ("CPUC") in Docket No. A.15-08-027 on behalf of NEET subsidiary, Horizon West Transmission, LLC ("Horizon West"), in obtaining a certificate of public convenience and necessity for the Suncrest Dynamic Reactive Power Support Project.

- I testified before the South Dakota Public Utility Commission in Docket No. EL17-050 in support of the application of a NEER subsidiary, Crowned Ridge Wind, LLC, for a facility permit to construct a 230 kV transmission line and associated facilities from Codington County to the Big Stone South Substation.

- I filed testimony before the State of New York Public Service Commission ("New York PSC") in Docket Nos. 13-T-0455 and 13-T-0456 related to NextEra Energy

Transmission New York, Inc.'s ("NEETNY") proposals to develop the Marcy to Pleasant Valley transmission project and the Oakdale to Fraser transmission project, as well as in New York PSC Docket No. 18-T-0499 in support of NEETNY's application for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII of the Public Service Law for the Construction of a 20 Mile 345 Kilovolt Transmission Line Located in the Town of Royalton, Niagara County, and the Towns of Alden, Newstead, Lancaster, and Elma in Erie County.

- I testified before the Maine Public Utilities Commission in Docket 2014-00048 in support of NEET subsidiary New Hampshire Transmission, LLC's proposal to develop a transmission solution to address reliability problems in Northern Maine.

- Finally, I filed testimony before the Public Utility Commission of Texas ("PUCT") in Docket Nos. 40020 and 42469, on behalf of NEET subsidiary, Lone Star Transmission, LLC ("Lone Star"), in its two rate cases. I also testified before the PUCT in Docket No. 38230, which related to Lone Star's application for a certificate of convenience and necessity.

Q. Do you sponsor any exhibits in support of NEET Southwest's Application?

A. Yes. I sponsor Exhibit DM-1. I also co-sponsor, along with NEET Southwest witness Jacquelyn Blakley, Exhibit JB-1, which is attached to her Direct Testimony. Both of these exhibits were prepared or assembled by me or under my supervision and direction

Q. What authority is the Applicant seeking to obtain in this proceeding?

A. The Applicant is seeking to obtain line siting approval, pursuant to K.S.A. 66-1,177, *et seq*., for the proposed route for its 345 kV transmission line project that will connect the existing Wolf Creek Substation in Coffey County, Kansas to the existing Blackberry Substation in Jasper County, Missouri (the "Project" or the "Wolf Creek-Blackberry Project"). The Project was identified by the Southwest Power Pool, Inc. ("SPP") as required to address multiple needs identified by SPP, including an economic need to increase the transmission capability from west to east within SPP.

Q. What is the purpose of your Direct Testimony?

A. The purpose of my testimony is to:

- Provide an overview of NEET Southwest and the Project;
- Describe the transmission line design for the Project;
- Describe the project location, proposed route, and points of interconnection;
- Describe NEET Southwest's evaluation of a potential option to co-locate a 25-mile segment of the Project with an existing Evergy 161 kV transmission line (referred to as the "Double Circuit Option");
- Provide an overview of the land acquisition process; and
- Describe the construction process and project schedule.

II. OVERVIEW OF NEET SOUTHWEST AND THE PROJECTION

Q. Please describe NEET Southwest.

A. As explained in more detail by NEET Southwest witness Becky Walding in her Direct Testimony, NEET Southwest is a Delaware limited liability company formed in 2014. NEET Southwest is a direct, wholly-owned subsidiary of NEET, which is an indirect, wholly-owned subsidiary of NextEra Energy, Inc. ("NextEra Energy"). A Fortune 200 company, NextEra Energy is the world's largest electric utility by market capitalization, with revenues in calendar year 2021 of approximately $17 billion and approximately 15,000 employees as of December 31, 2021.

NextEra Energy's principal businesses are FPL, the largest electric utility in the nation as measured by retail electricity produced and sold, which serves more than 5.8 million homes and businesses in Florida, and NEER, the largest generator of renewable energy from the wind and sun in North America. NextEra Energy and its wholly-owned subsidiaries, NEET and NEET Southwest, are headquartered in Juno Beach, Florida.

Q. Will NEET Southwest use the services of its affiliates to engineer and construct the Project?

A. Yes. NEET Southwest currently utilizes support services from various of its NextEra Energy affiliates, including NEET, NEER, FPL, and Lone Star, and NEET Southwest plans to utilize these services to engineer and construct the Project. Doing so allows NEET Southwest to access the significant expertise of the NextEra Energy corporate organization and will enable NEET Southwest to provide service in a cost-efficient manner. With respect to engineering and construction, NEET Southwest plans to utilize the significant expertise in the E&C organization within NEER to engineer, design, and construct the Project. NEET Southwest also plans to utilize the services of NextEra Energy's Integrated Supply Chain ("ISC") for procurement of equipment and services for the Project.

Q. Please describe the Project.

A. At a high level, NEET Southwest's proposed Project will consist of a new, approximately 92-mile, single-circuit 345 kV transmission line between the existing Wolf Creek Substation in Coffey County, Kansas, owned by Evergy Kansas Central, Inc. ("Evergy"), and the existing Blackberry Substation in Jasper County, Missouri, owned by Associated Electric Cooperative, Inc. ("AECI"). NEET Southwest's proposed route ("Proposed Route") is shown on the map in Exhibit BW-1 to Ms. Walding's Direct Testimony, and detailed maps of the Proposed Route are provided in Exhibit DW-2 to the Direct Testimony of Mr. Dusty Werth. The Commission has granted NEET Southwest a CCN to do business as a utility in the State of Kansas and to construct, own, and operate the Project in Docket No. 22-NETE-419-COC.

III. TRANSMISSION LINE DESIGN

Q. What type of transmission conductor does NEET Southwest plan to use for the Project?

A. NEET Southwest's design will consist of a horizontal double-bundled 1590 "Falcon" 42-19 ACSS/TW HS conductor bundle, along with 7#8 Alumoweld shield wire and two 48-fiber stainless steel loose tube ("SSLT") optical ground wires ("OPGW") to facilitate lightning shielding and provide the primary and secondary communication paths for line protection.

Q. Why did NEET Southwest select this conductor for the Project?

A. NEET Southwest selected the 1590 "Falcon" 42-19 ACSS/TW HS conductor bundle because it provides the best value to the ratepayer based on the life cycle cost. This conductor will provide the lowest combined cost of initial capital and life cycle losses of any conductor that NEET Southwest evaluated, offers excellent structural reliability, and exceeds SPP's minimum standards for capacity for the Project. In fact, the SPP Independent Evaluator Panel ("IEP") noted in its recommendation of NEET Southwest's proposal that it included "design and materials not offered by other Respondents, including the use of the highest thermal-rated conductor among any of the proposals."[1]

Q. What type of transmission structures does NEET Southwest propose to use for the Project?

A. NEET Southwest will utilize primarily direct embedded self-supporting spun concrete monopole structures with silicone rubber-braced post insulators. The typical structure height will be approximately 100 to 130 feet tall. When crossing other transmission lines, NEET Southwest will install self-supporting steel monopole structures that may be approximately 160

[1] *See* Exhibit BW-4 (IEP Report) at 46.

feet above ground. NEET Southwest estimates that it will install approximately seven structures per mile with an average span range of 800 to 1,000 feet between structures. NEET Southwest also will utilize self-supporting and direct embedded steel monopoles as needed. The typical self-supported steel monopole structure will have a 10- to 12-foot-diameter drilled pier concrete foundation. The foundations are expected to range from 20 to 30 feet deep, depending on soil conditions. NEET Southwest will primarily utilize guyed angled or dead-end structures at locations where the line direction changes significantly. Angled structures primarily will be guyed concrete monopole structures with either braced post or I-string insulators in a vertical configuration. Dead-end structures primarily will be guyed spun concrete monopoles with strain insulators. Direct embedded steel poles or base plated steel poles placed on drilled shaft foundations will be utilized where necessary due to height requirements or where guying of angle structures is not feasible. On the proposed route, NEET Southwest anticipates the need to install a total of 532 structures of which 57 will be steel structures that are either direct embedded or on foundations, and the balance will be concrete monopoles. Diagrams of the expected structure types are provided as Exhibit DM-1.

Q. Why did NEET Southwest select these transmission structures for the Project?

A. NEET Southwest's engineers, aided by its professional estimators, determined that spun concrete monopoles are the most cost-effective and reliable solution for the Project. NEET Southwest and its affiliates have extensive experience with precast concrete poles. NEET Southwest affiliates have built more than 1,000 circuit miles of the spun concrete-braced post insulator 345 kV lines in Kansas, Missouri, Texas, and Oklahoma since 2009. FPL has utilized prestressed concrete poles since the early 1960s and spun concrete poles since the 1980s and has been a leader in the advancement of spun concrete pole technology.

Based upon this experience, NEET Southwest selected spun concrete monopole structures as the primary transmission structure for the Project because they offer structural reliability, reduce visual impacts, are lower cost, have a shorter fabrication time, have a small footprint, require fewer inspections and less maintenance than steel or lattice towers, and offer a longer life than steel or wood structures (with an estimated useful life of at least 80 years). In addition, NEET Southwest's structure design will utilize avian friendly silicone rubber braced post assembly that provides excellent contamination and lightning performance, while allowing live line maintenance. In our experience, spun concrete monopoles can stand up to extreme environmental and soil conditions and are very resilient to the weather conditions expected to be seen in eastern Kansas.

Q. Will NEET Southwest design its facilities to meet necessary reliability and safety requirements or concerns?

A. Yes. NEET Southwest is designing the Project according to applicable Commission and MPSC requirements, SPP's specifications for the Project, Institute of Electrical and Electronics Engineers guidelines, American National Standards Institute standards, Occupational Safety and Health Administration requirements, NERC standards, the National Electrical Safety Code ("NESC"), and prudent utility practice. Public safety and worker safety are critical considerations in the design, construction, and operation of transmission facilities, and safety and security have been and will continue to be a major focus in the preparation of all specifications and designs. Based on the results of its preliminary engineering studies, NEET Southwest has designed the Project to ensure safe and reliable operation.

Q. Does the design of NEET Southwest's facilities conform to generally accepted practices for a project of this type?

A. Yes. NEET Southwest will utilize experienced design, procurement, and construction personnel to prepare the design specifications, drawings, and scope of work documents. Also, NEET Southwest's construction management team, safety personnel, engineering consultants, and the respective contractors assigned to the Project will complete field verification and validations to ensure the facilities are constructed to the approved design so that the transmission facilities can be operated reliably and safely.

Q. Will the Project comply with the requirements of K.S.A. 66-183 regarding stringing and maintenance of its wires?

A. Yes. NEET Southwest will comply with the requirements of K.S.A. 66-183 to string and maintain its wires to avoid unreasonable injury or interference from or with the wires of other utilities. NEET Southwest expects to submit a wire-stringing application pursuant to K.A.R. 82-12-1, *et seq.*, for the Commission's review and approval after design of the facilities are complete.

Q. What other approvals are required for the Project?

A. As I mentioned above, the Commission has issued NEET Southwest a CCN for the Kansas portion of the Project, in Docket No. 22-NETE-419-COC. In addition, the MPSC has issued NEET Southwest a CCN for the Missouri portion of the Project, in MPSC Docket No. EA-2022-0234.

NEET Southwest also will undertake coordination with, and as necessary, obtain approvals and permits from the following agencies and governmental entities: the U.S. Army Corps of Engineers; the U.S. Fish and Wildlife Service; the Kansas and Missouri State Historic Preservation

Offices; the Kansas Department of Wildlife and Parks; the Missouri Department of Conservation; the Kansas Department of Agriculture – Division of Water Resources; the Kansas Department of Health and Environment; the Missouri Department of Natural Resources; the Missouri Department of Transportation; and the various counties in which the Project will be located.

IV. PROJECT LOCATION, PROPOSED ROUTE, AND INTERCONNECTION

Q. Where will the Project be located?

A. The Project is anticipated to be located across five counties in Kansas (Coffey, Anderson, Allen, Bourbon, and Crawford counties) and two counties in Missouri (Barton and Jasper counties). At a high level, NEET Southwest's proposed route ("Proposed Route") will connect to the Wolf Creek Substation outside of the Wolf Creek Nuclear Generating Station Plant Owner Controlled Area to the east and then continues diagonally to the southeast for approximately 66 miles, approximately 25 miles of which parallels an existing Evergy 161 kV transmission line. The Proposed Route then turns east for about five miles to avoid the Federal Aviation Administration obstruction areas around the Atkinson Municipal Airport on the northwest side of Pittsburg, Kansas, then continues south/southeast for another eight miles, extending into Missouri. The Proposed Route then turns slightly southward for approximately ten miles to connect with the Blackberry Substation, approximately three miles of which parallels an existing 161 kV transmission line. The Proposed Route is described in detail in the Routing Study provided as Exhibit DW-1 to Mr. Werth's testimony, detailed maps of the Proposed Route are provided in Exhibit DW-2, and a legal description of the Proposed Route is provided as Exhibit DW-3.

Q. How did NEET Southwest select the Proposed Route for the Project?

A. NEET Southwest assembled a cross-functional team of internal and external subject-matter experts ("SME") to develop the Proposed Route, including development, legal/regulatory, land services, environmental, engineering, construction, and operations team members. As part of this team, NEET Southwest retained Burns & McDonnell, Engineering Company, Inc. ("Burns & McDonnell"), an experienced transmission line design and permitting firm with transmission project experience in Kansas and Missouri, to assist with the engineering, environmental, and routing aspects of NEET Southwest's response to the RFP. Burns & McDonnell prepared a preliminary routing analysis, through which NEET Southwest identified a preliminary proposed route for the project, which NEET Southwest presented to SPP in its bid. NEET Southwest has continued to refine the preliminary proposed route, including through its outreach to and coordination with landowners and county officials. Mr. Werth describes the routing process in more detail in his Direct Testimony.

Q. What are the key considerations NEET Southwest evaluated to determine its preliminary route?

A. During our review of potential routes for the Project, NEET Southwest's routing team evaluated the socioeconomic and landowner, environmental, and infrastructure impacts of each of the potential routes. In reviewing the socioeconomic and landowner impacts of the potential routes, it was NEET Southwest's objective to reduce greenfield routing impacts for landowners by paralleling or co-locating with existing transmission lines, roads, and property lines when feasible, maximizing distances from residences and public facilities to the extent possible, and minimizing impacts to public airports, including the Atkinson Municipal Airport in Pittsburg, Kansas.

In reviewing the environmental impacts of the proposed routes, NEET Southwest's team also sought to minimize or avoid impacts to forested wetlands, protected or sensitive species and habitats, known cultural and archeological resources, and federal and state-owned lands and easements, as well as impacts to tribal lands to the maximum extent practicable. Additionally, NEET Southwest analyzed the proximity of the route to existing structures including bridges, culverts, existing oil and gas wells, existing transmission lines, and telecommunications towers.

Q. How did NEET Southwest refine this preliminary route to develop the Proposed Route?

A. Following SPP's selection of NEET Southwest as the designated transmission owner for the Project, NEET Southwest's routing team continued to refine the preliminary route. As described in the Routing Study, the final set of route alternatives consists of individual segments that can be combined in different arrangements to form a continuous path between the Project endpoints. The set of route alternatives for the Project consisted of 53 individual segments, and ultimately, 729 distinct routes were developed using forward-progressing combinations of these 53 segments.[2] NEET Southwest's routing team ultimately identified its preferred route, which is presented as the Proposed Route, as described in more detail by Mr. Werth and in the Routing Study.

In addition, as described by NEET Southwest witness Kara Wry in her Direct Testimony, NEET Southwest undertook a public outreach process that included outreach to local, state, and federal agencies and potentially affected landowners along the preliminary route. NEET Southwest held two virtual open house public meetings on March 22, 2022 to provide information and solicit additional feedback from landowners and held two additional in-person informational

[2] Exhibit DW-1 (Routing Study) at § 3.2.

meetings with counties and landowners on December 12, 2022 and January 10, 2023, respectively. Through this public outreach process, NEET Southwest has considered refinements to its initial route to determine the Proposed Route.

Q. How will the Project be interconnected to the transmission grid?

A. The western end of the Project will interconnect to the SPP transmission grid at Evergy's existing Wolf Creek Substation, which is interconnected to the Wolf Creek Nuclear Generating Station. As I will discuss in more detail below, NEET Southwest and Evergy have agreed that the point of interconnection between Evergy and NEET Southwest will occur at the first structure west of the Wolf Creek Nuclear Generating Station property line, which is approximately 1.5 miles east of the Evergy Wolf Creek substation. The eastern end of the Project will interconnect to AECI's Blackberry Substation. NEET Southwest is in discussions with both Evergy and AECI regarding the Project's interconnections, and transmission interconnection agreements with Evergy and AECI ultimately will be filed with FERC.

Q. Does NEET Southwest or its affiliates have experience with interconnecting to substations connected to nuclear power stations?

A. Yes. NEET Southwest's affiliates have extensive experience owning, operating, and maintaining nuclear facilities, which includes managing and leading the complex dynamics among nuclear generation facilities, substations associated with nuclear facilities, and transmission interconnections into these substations. NEET Southwest will draw upon this experience in order to ensure a successful interconnection to the Wolf Creek Substation.

Q. Will the Project require any transmission upgrades on the interconnecting utilities' systems?

A. Yes. As part of its RFP for the Project, SPP identified that certain upgrades would be required at the Wolf Creek and Blackberry Substations, which upgrades are to be performed by Evergy and AECI. SPP has issued separate Notifications to Construct to Evergy and AECI for their upgrades.

V. CONSTRUCTION PROCESS AND PROJECT SCHEDULE

Q. How much ROW is needed for the Project?

A. NEET Southwest will seek to obtain easements that are typically 150 feet wide, based upon NEET Southwest's Project design, design standards, anticipated structure types, number of structures, span distances, terrain, and soil conditions. This proposed ROW width may vary at some locations to accommodate topographic features and crossing requirements and to provide flexibility in final structure placement. At all times, the width of the ROW will be sufficient to ensure the safe and reliable operation of the Project.

NEET Southwest also anticipates acquiring land rights associated with construction and ongoing access to the Project, as well as material laydown yards. This additional ROW may be required where NEET Southwest cannot access the ROW directly from the road, *e.g.*, due to water bodies or wetlands or other environmentally significant terrain features. In addition, NEET Southwest will be working with local landowners to secure easements for material and equipment laydown areas. These laydown areas will generally require about 25 acres and will be spaced approximately 25 miles apart to allow the contractor to efficiently store and source the materials and equipment to complete the Project construction. These laydown yards are graded, rocked, and fenced but only used temporarily. Upon construction completion, the landowner's property will

be restored to its original use or left as is should the landowner request. Ms. Walding testifies as to NEET Southwest's approach to land acquisition in her Direct Testimony.

Q. Once necessary approvals and permits are obtained, and land is acquired, how does NEET Southwest expect to construct the Project?

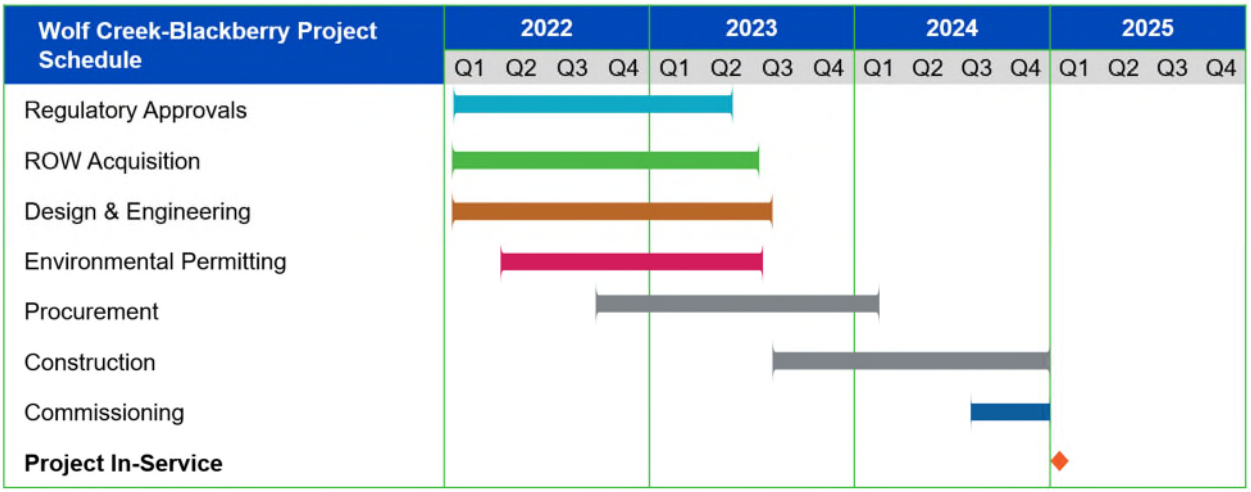
A. NEET Southwest will utilize a combination of highly skilled NextEra Energy E&C personnel, along with experienced third-party contractors to construct the Project. The E&C team that will oversee the Project's construction has over 90 years of construction experience. NEET Southwest has partnered with Brink Constructors, Inc. ("Brink Constructors") to facilitate and assess preliminary construction activities for the Project. NEET Southwest and its construction contractor will establish a local construction management office within the construction site and will staff the Project with a team of experienced professionals.

NEET Southwest will coordinate several design and constructability review meetings with Burns & McDonnell, which will serve as the transmission line Engineer of Record for the Project, along with the transmission line construction contractor. These design reviews will take place at 30 percent design completion, 60 percent design completion, and just prior to issuance for construction (approximately 90 percent design completion), and will encompass all aspects of the Project's design, including the design criteria, structure framing and assembly drawings, conductor, shield wire, and OPGW pulling and staging plans, sag and tensioning charts, foundations, grounding, materials and equipment installation details, bills of material, material and equipment specifications, ROW access, environmental permitting requirements, and construction specifications. NEET Southwest's SMEs will review the design criteria to verify that such criteria are valid, correct, and adequate and meet the SPP Minimum Transmission Design Standards (rev. 2).

Construction of the transmission line will follow a typical sequence of events starting with surveying the boundaries and centerline, determining applicable construction access, storm water pollution prevention mitigation installation, ROW clearing, grubbing and grading, material delivery, installing foundations, assembling and installing insulators followed by the, erecting and setting of structures, pulling in shield wires and conductors, installing ground rods, followed by cleanup and site reclamation.

Q. What is the current in-service date for the Project?

A. NEET Southwest has committed to an in-service date for the Project of January 1, 2025, which is 365 calendar days prior to the in-service date of January 1, 2026 required by SPP's RFP. NEET Southwest's Project schedule is provided below:



Q. Under NEET Southwest's project schedule, when does it anticipate beginning construction of the Project?

A. Subject to receiving all necessary regulatory approvals and permits, and obtaining the necessary ROW, NEET Southwest's project schedule currently anticipates commencing construction in the third quarter of 2023. NEET Southwest plans to begin construction activities at the Blackberry Substation and work north toward the Wolf Creek Substation. NEET Southwest

plans to build the line in four zones and construct each zone as individual line sections. This strategy will allow clearing crews to stay ahead of transmission line construction. In NEET Southwest's project schedule, clearing, transmission structure installation, and stringing operations have been staggered to minimize the overall schedule, maximize the efficiency of each operation, and include enough float to ensure no single operation is impeded by a delay in a preceding operation.

Q. Does NEET Southwest utilize any standards and procedures regarding construction, repair, and maintenance in ROW areas on and around the Project footprint?

A. Yes. Prior to beginning construction of the Project, NEET Southwest will be negotiating and signing road use and maintenance agreements with affected local governments to ensure we can construct, operate, and maintain the Project in an orderly manner. In addition, NEET Southwest will require that its construction contractor adhere to the strict requirements dictated within its contract, which will include construction and maintenance of all temporary and permanent access roads as required for the transmission facilities, inclusive of all required culverts (temporary and permanent), access approaches, pipeline/utility crossings, matting, reclamation, and restoration.

Upon construction completion, the contractor will provide all equipment, labor, and material to restore all temporarily disturbed land to pre-construction conditions. NEET Southwest will require its contractor to de-compact all soils to pre-construction conditions. Unless in farmland, or as otherwise requested by a landowner, the Contractor shall re-vegetate the areas with native species and in accordance with Project permits and reclamation plans. NEET Southwest will require its contractor to reseed per the Project permit and reclamation plans. In highly erodible areas, the contractor shall install temporary and/or permanent stabilization measures to enhance

vegetation re-growth. Prior to NEET Southwest's final acceptance, temporary erosion controls shall be removed by the contractor if and when vegetation reaches 70 percent re-growth in the particular location of the erosion control devices. Upon completion of reseeding and as a provision of final acceptance, NEET Southwest will require its contractor to refurbish all remaining erosion control devices so that they are in compliance with the Stormwater Pollution and Prevention Plan, at which time the maintenance and/or removal of the remaining erosion control devices shall become the responsibility of NEET Southwest. NEET Southwest will respect the landowner property and intends to restore the property to its original condition.

Q. How does NEET Southwest plan to treat trees that must be removed from the ROW?

A. NEET Southwest's construction contractor will install the preliminary access roads and matting if required, and begin removal of trees, clearing and grubbing to ensure that any remaining vegetation meets the NESC standards and that the construction crew will have easy access to the construction site. Some low-growing brush or specific tree species that remain below 14 feet at mature height may be allowed at the outer limits of the easement area. Taller trees within the ROW that might compromise the safe and reliable operation of the transmission line will be removed. In developed areas and to the extent practical, existing low-growing vegetation that will not pose a risk to the transmission line or impede construction or maintenance may remain in the easement area. Trees beyond the easement area that are in danger of falling into the energized transmission line will be removed or trimmed to eliminate the hazard as allowed by the terms in the acquired landowner easement. In special circumstances, tree trimming agreements may be required to minimize tree removal. All materials resulting from clearing will either be chipped on

site and spread on the ROW, stacked in the ROW for use by the property owner, or removed and disposed of as agreed to with the property owner.

Q. Will the construction of the Project remove any agricultural land from cultivation?

A. NEET Southwest has sought through the design of the Project (including through the use of concrete monopoles, which have smaller structure footprints) and will continue to work with landowners to minimize the land removed from future agricultural cultivation. Other than the footprint of the foundations for the transmission structures (which are in general approximately four to five feet in diameter), guys and anchors if required, and any permanent access roads necessary for maintenance and operations, construction generally will not remove agricultural land from future cultivation. If a landowner has a guyed structure with anchors on their property, there will be some additional cultivation limitation in order to maintain a safe work clearance from the transmission line equipment. Cultivation will also be limited adjacent to the pole base to prevent inadvertent damage to farm equipment or to the structure.

Q. How will the Project's construction impact landowners?

A. NEET Southwest will work with landowners to minimize impacts during construction. Construction of the transmission line follows a typical sequence of events, as I will explain later. Various phases of construction occur at different locations throughout the construction process and in many cases at the same time at different locations throughout the project area. This sequencing will minimize landowner impacts and allow the most efficient transmission line construction so NEET Southwest can safely complete the line in a timely manner.

In addition, NEET Southwest will work closely with landowners to minimize impacts on their existing land uses during the construction process. For example, NEET Southwest's affiliates

have worked with farmers and ranchers to accommodate livestock during construction of transmission lines, and NEET Southwest would expect to undertake similar coordination here. NEET Southwest will reimburse landowners for their time required to move livestock from one location to another and, where feasible, may install temporary fences or gates to keep livestock out of the construction area. In addition, NEET Southwest expects to undertake most of its initial construction activities in the late fall after most of the harvesting is complete, thereby reducing impacts to farm production.

Q. Once a transmission line easement or other ROW agreement is executed, who within NEET Southwest is responsible for administering the agreements and responding to any requests for the payment of damages, complaints, or claims related to NEET Southwest's activities pursuant to an easement or agreement?

A. During construction of the line, NEET Southwest and its land agent Doyle Land Services ("Doyle") will be responsible for administering the easement agreements along with NEET Southwest's construction project manager, who will work with the construction contractor to ensure the easement agreement is enforced and that any questions, complaints, and or claims are handled to the satisfaction of the landowner and per the underlying agreement. After construction is completed, NEET Southwest's operations lead will be administering the easement agreements and will respond to requests made by the landowner.

VI. CONDITIONS FROM THE COMMISSION'S CCN ORDER

Q. In the settlement agreement entered into in NEET Southwest's CCN proceeding, which was approved by the Commission in the CCN Order, there were certain

conditions related to interconnection of the Project, as well as a potential option to co-locate a portion of the Project with Evergy facilities. Will you please describe these conditions?

A. Yes. As Ms. Walding describes in her Direct Testimony, NEET Southwest entered into a non-unanimous settlement agreement ("CCN Settlement Agreement") with a number of parties to its CCN proceeding. In its CCN Order, the Commission approved the CCN Settlement Agreement and granted NEET Southwest's CCN for the Project. The Commission's CCN Order also included certain conditions that I will discuss in more detail.

First, the Commission directed NEET Southwest to cooperate with Evergy to interconnect the Project to the Wolf Creek Substation, including relocating the point of interconnection ("POI") outside the owner-controlled area of the Wolf Creek Nuclear Generating Station, subject to any necessary SPP reviews or approvals[3] Second, the Commission directed NEET Southwest to consider and address as part of its line siting application an option to construct a 25-mile portion of the Project that parallels an existing Evergy 161 kV transmission line as a double-circuit facility with the Evergy 161 kV line, subject to receiving necessary approvals for a change in project scope from SPP and necessary agreements from Evergy.[4] The Commission directed that NEET Southwest and Evergy work together "expeditiously" and "comprehensively" to evaluate this alternative and specifically to

> consider at least (but not limited to) the following factors in this evaluation:" (1) Detailed cost estimates of the cost to double circuit this portion of the line; (2) Cost sharing arrangements/agreements between NEET Southwest and Evergy pertaining to the upgrade costs and all aspects of operation and maintenance of this double-circuited portion of the line; (3) Easement sharing agreements and operations and maintenance responsibility sharing agreements for the double circuit portion of the line; (4) Any revisions to construction timelines (of either standalone project) necessary to accommodate Evergy or NEET Southwest's construction schedule for

[3] CCN Settlement Agreement at ¶ 10(f)(i); CCN Order at ¶ 9(c).

[4] CCN Settlement Agreement at ¶ 10(d); CCN Order at ¶ 9(d).

this portion of the line; and (5) Any engineering analysis necessary to determine construction standards for this portion of the line.[5]

Q. Has NEET Southwest addressed the first of these conditions in this application, to relocate the point of interconnection with the Wolf Creek Substation to outside of Evergy's owner-controlled area?

A. Yes. As I mentioned above, following the execution of the CCN Settlement Agreement, NEET Southwest and Evergy discussed the location of the POI between the Project and Evergy's facilities at the Wolf Creek Substation, in order to move the POI outside of Evergy's owner-controlled area for the Wolf Creek Nuclear Generating Station. As a result of these discussions, NEET Southwest and Evergy have agreed to locate the POI at the first structure east of the Wolf Creek Nuclear Generating Station property line, which is outside of Evergy's owner-controlled area for Wolf Creek, and which will be reflected in the interconnection agreement with Evergy. The modified POI is shown on the detailed map in Exhibit DW-2.

Q. Has NEET Southwest addressed the second of these conditions, to consider and address the possible co-location of a section of the Project with Evergy's existing 161 kV transmission line?

A. Yes. NEET Southwest has evaluated the condition in the CCN Settlement Agreement to consider and address a potential double circuit option for a 25-mile portion of the Project that parallels an existing Evergy 161 kV transmission line, referred to as the Double Circuit Option. NEET Southwest also has discussed the Double Circuit Option with Evergy and with SPP, as well as providing updates to Commission Staff. Along with Ms. Blakley, I am co-sponsoring Exhibit JB-1, which provides a detailed analysis of the Double Circuit Option.

[5] CCN Order at ¶ 98.

Q. How did NEET Southwest evaluate this option?

A. Ms. Blakley describes this in more detail in her testimony, but at a high level, NEET Southwest and its SMEs and consultants performed a comprehensive evaluation of the potential double circuit options. NEET Southwest engaged its Engineer of Record for the Project, Burns & McDonnell, to perform an engineering analysis of the potential to co-locate the lines, and NEET Southwest's internal engineers and Burns & McDonnell developed conceptual engineering designs for potential double circuit alignments. NEET Southwest then used Burns & McDonnell's engineering analysis to prepare preliminary cost estimates.

In addition, NEET Southwest engaged Doyle to evaluate potential ROW costs, as well as utilized internal and external legal counsel, internal environmental, engineering, regulatory affairs, and operations personnel to evaluate the various aspects of the double circuit options.

Q. What is NEET Southwest's recommendation regarding the Double Circuit Option?

A. NEET Southwest is not proposing the Double Circuit Option as part of its Proposed Route for a number of reasons, which I will discuss below and which Ms. Blakley also discusses in her testimony. Specifically, NEET Southwest believes that the efficiencies and reliability benefits to be gained from the Project would be undermined and delayed by requiring NEET Southwest to co-locate a portion of the Project with Evergy's existing facilities. In particular, depending on which utility's ROW was utilized for the Double Circuit Option, that is expected to delay the Project's in-service date from January 2025 to the first quarter of 2026, at the earliest, to as late as the third quarter of 2028. This delay in the Project's in-service date is expected to reduce the economic benefits associated with the Project's expected 2025 in-service date. In addition,

building the Double Circuit Option would significantly increase the complexity associated with the Project's design, engineering, and construction.

Q. As an initial matter, how did NEET Southwest interpret this condition?

A. My understanding of this condition was that it required NEET Southwest to consider and evaluate whether, for a 25-mile section of the Project that parallels Evergy's existing Marmaton to EDE 161 kV line (the "Evergy 161 kV Line"), it would be feasible to co-locate the 345 kV circuit with Evergy's 161 kV circuit on common transmission structures. As I understand it, Evergy is intending to rebuild or upgrade the Evergy 161 kV Line sometime in the next five to ten years, with Evergy advising NEET Southwest that the timing of the rebuild is still unknown and that, while Evergy currently expects to place the 161 kV Line back into service by December 2030, Evergy's schedule is tentative and could be further delayed depending on the varying needs on the overall Evergy system. This undetermined timing generates additional uncertainty and complexity for NEET Southwest's Project, as well, if Evergy further delayed or ultimately determined not to pursue the rebuild of its 161 kV Line.

Q. Would co-locating the Project with Evergy's facilities have an impact on Project schedule and cost?

A. Yes. NEET Southwest has designed and engineered the Project to be a single-circuit, 345 kV transmission line with a double-bundled 1590 "Falcon" 42-19 ACSS/TW HS conductor bundle conductor on primarily spun-concrete monopoles. To the extent NEET Southwest is required to redesign 25 miles of the Project (or approximately 26 percent of the total Project route), that could have a substantial impact on NEET Southwest's ability to bring the Project in service on time and on budget. As described in the Double Circuit Option Report, and as Ms. Blakley explains in more detail, depending upon whether the Double Circuit Option were

built in NEET Southwest's or Evergy's ROW, and depending on the length of time required for SPP's review of the changes to the Project and for the parties to acquire the necessary ROW, redesign this section of the Project, and enter necessary coordination agreements, NEET Southwest expects the in-service date of the Project would be delayed from its currently projected in-service date of January 1, 2025 to anywhere from the first quarter of 2026 up to the third quarter of 2028.

In addition, my understanding is that NEET Southwest's concrete transmission pole design does not meet Evergy's design standards for its 161 kV Line and thus any agreed-upon design specifications between the two utilities likely would require steel monopoles or significant modifications to NEET Southwest's design criteria for concrete poles. This would have significant impacts on cost and schedule, particularly given current supply chain issues around steel procurement and possible redesign and testing of new concrete pole designs. Many of the benefits of NEET Southwest's proposed Project derive from NEET Southwest's use of concrete poles and changing NEET Southwest's original project design for a significant portion of the Project is likely to reduce or eliminate those benefits.

Q. Please explain the impacts of the Double Circuit Option on cost estimates in more detail.

A. If the Double Circuit Option utilizes Evergy design specifications, that would generally require shifting from the use of concrete monopoles with direct-embedded foundations to steel monopoles with drilled shaft foundations. This structure design increases the cost of the Double Circuit Option above the costs of the base scenario of NEET Southwest and Evergy each building their own individual projects as single-circuit lines (referred to in the report as the "Base Proposal"). Cost estimates for the various design options are provided in the Double Circuit Report in Exhibit JB-1.

Separately, as Ms. Blakley describes, NEET Southwest also evaluated building the Double Circuit Option using NEET Southwest's original design specifications. Evergy has advised NEET Southwest that it would only accept a design that uses concrete monopoles for the 161 kV Line if it meets Evergy's design specifications. In particular, there are certain aspects of NEET Southwest's concrete pole design that Evergy expressed should be modified to meet Evergy's specifications for the 161 kV Line (including use of davit arms and suspension insulators, self-supporting structures at angles and deadends, Evergy criteria for tension limits on the 161 kV circuit, and changes to the shield wire type). NEET Southwest expects that any coordinated design criteria for concrete monopoles would increase the costs of this option significantly. In our experience, certain aspects of the design changes that Evergy has suggested are not industry standard for concrete monopoles. For example, due to the limitations in maximum manufactured height of single piece concrete poles, the requirement to utilize davit arms on the double circuit structure would be expected to shorten the span between poles and therefore increase the number of poles required. Two-piece poles might be utilized, however, also increasing the costs. For these reasons, the costs of utilizing coordinated design specifications for a concrete monopole design would be expected to increase significantly.

Q. Would co-locating the Project minimize impacts to landowners?

A. Even if the Project was co-located with Evergy's facilities, there would still be impacts to landowners along this 25-mile section. In order to co-locate their facilities, NEET Southwest and Evergy would still require additional ROW for the co-located segment, because my understanding is that Evergy's existing ROW for its 161 kV line is only 100 feet wide. This would need to be expanded to 150 feet under NEET Southwest's design standards for the Project. Thus, Evergy and/or NEET Southwest would be required to obtain 50 additional feet along the existing

line, either by Evergy renegotiating its existing easements or NEET Southwest acquiring additional ROW along this segment, in order to expand the ROW to a minimum of 150 feet. This would continue to result in significant impacts to landowners – even those with existing easement agreements with Evergy.

It is important to note that most of the current Proposed Route along this segment contemplates that NEET Southwest's ROW will directly abut Evergy's existing ROW for its 161 kV line. NEET Southwest anticipates that landowners would be able to maintain current uses of the land in and, even where the ROWs do not directly abut, between the ROWs (*e.g.*, grazing livestock). NEET Southwest also anticipates working directly with landowners that have cultivated fields to locate poles in appropriate locations to allow continued farming while minimizing impacts. For these reasons, NEET Southwest expects there will be minimal impact to landowners from the lines paralleling each other.

Q. Does this conclude your testimony?

A. Yes, it does.

VERIFICATION

STATE OF FLORIDA)
) ss.
COUNTY OF PALM BEACH)

I, Daniel Mayers, being duly sworn, on oath state that I am Director of Transmission and Substation Engineering of NextEra Energy Resources, LLC, and that I have read the foregoing testimony and know the contents thereof, and that the facts set forth therein are true and correct to the best of my knowledge and belief.

By: _____
Daniel Mayers

The foregoing pleading was subscribed and sworn to before me this __th day of January, 2023.

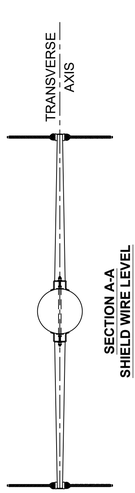
_____
Notary Public

My Commission Expires:
10/27/2023

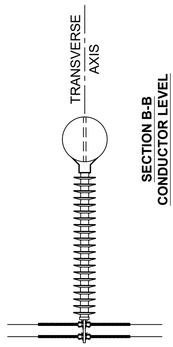
Notary Public State of Florida
Shannon V Bable
My Commission GG 926291
Expires 10/27/2023

EXHIBIT DM-1

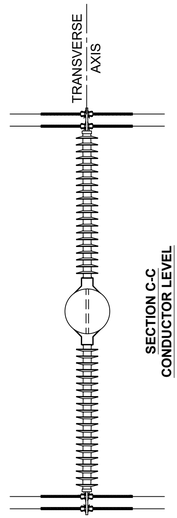
PUBLIC



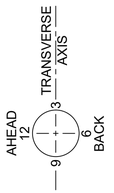
SECTION A-A
SHIELD WIRE LEVEL

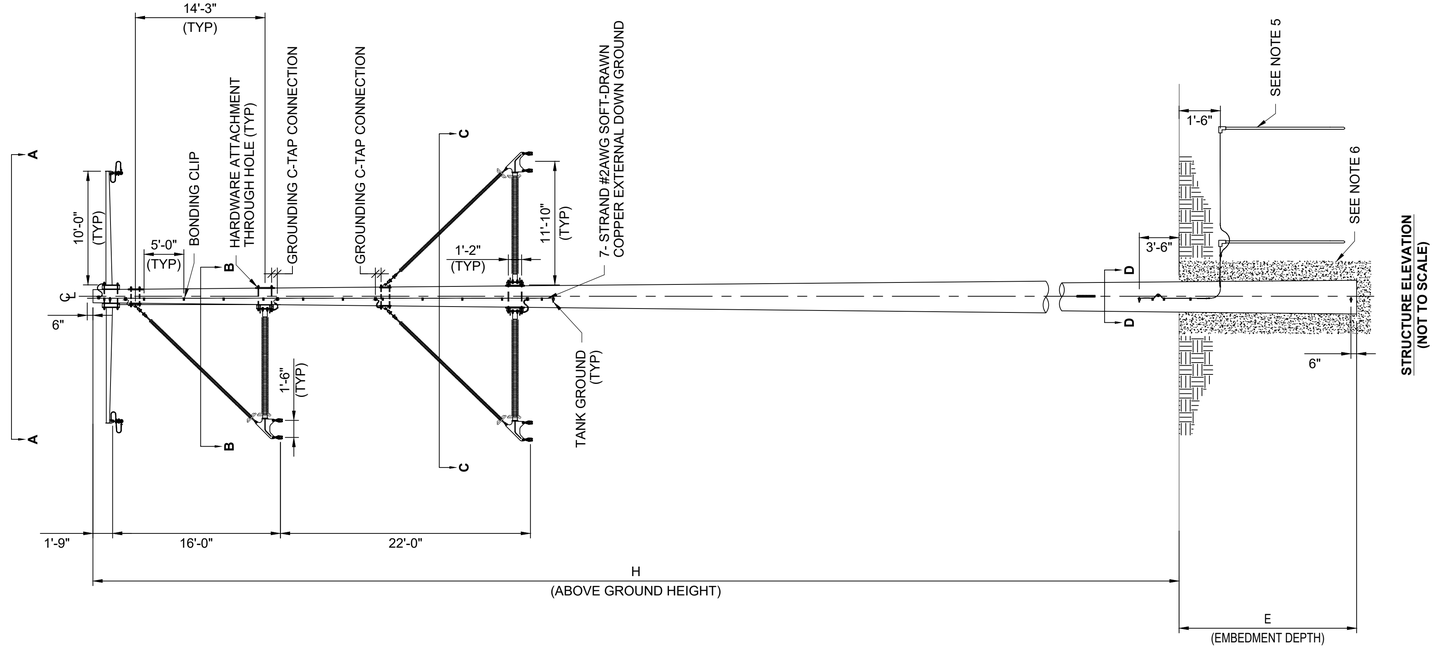


SECTION B-B
CONDUCTOR LEVEL

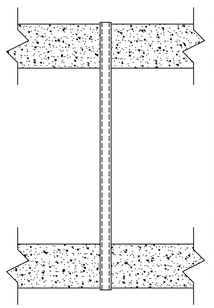


SECTION C-C
CONDUCTOR LEVEL

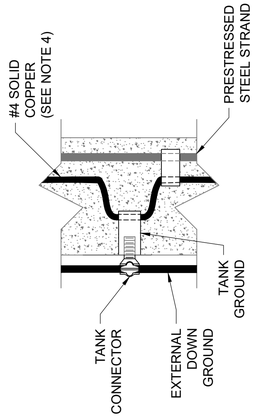




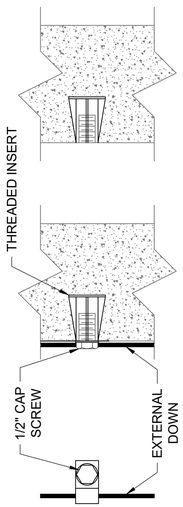
STRUCTURE ELEVATION
(NOT TO SCALE)



HARDWARE ATTACHMENT THROUGH HOLE
(TYPICAL, 10 PLACES)
SEE NOTE 2

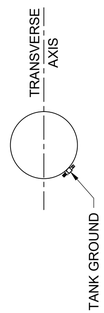


TANK GROUND
(TYPICAL, 4 PLACES)
SEE NOTE 3



THREADED INSERT
INSTALLED BY POLE MANUFACTURER
SEE NOTE 3

BONDING CLIP
(TYPICAL, QTY VARIES BY POLE HEIGHT)
INSTALLED BY POLE MANUFACTURER
SEE NOTE 3



SECTION D-D
STRUCTURE GROUNDING LEVEL

NOTES:

1. STRUCTURES SHALL BE PRESTRESSED, SPUN CONCRETE, PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1.
2. ALL ATTACHMENT HOLES DISPLAYED ON THE DRAWING SHALL BE THROUGH HOLES, FABRICATED PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1. THROUGH HOLES SHALL BE FABRICATED USING PVC PIPE.
3. MANUFACTURER TO PROVIDE TANK GROUNDS, THREADED CONCRETE INSERTS AND BONDING CLIPS PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1, AS INDICATED. INSERTS SHALL BE THREADED FOR 1/2" - 13 UNC BOLTS.
4. INTERNAL #4 SOLID COPPER GROUND WIRE SHALL BE INSTALLED BY MANUFACTURER TO EXTEND THE ENTIRE LENGTH OF THE POLE AND TERMINATE 6" FROM EACH END.
5. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
6. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
7. SNUBBING SHALL NOT BE PERMITTED ON SHIELDWIRE ARMS OR BRACED POST.

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT.

no.	date	by	ckd	description
A	10/9/20	ARL	JFC	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

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BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
10/09/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
BRACED POST TANGENT - DELTA CONCRETE
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01001** rev. **B**

sheet 1 of 2 sheets
file STR-01001SH01.DWG

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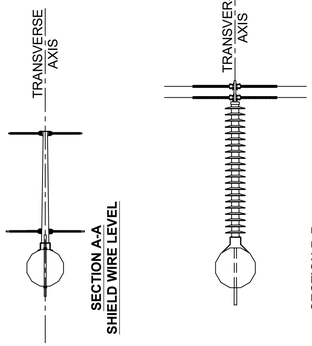
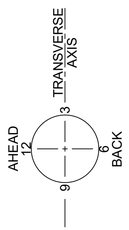
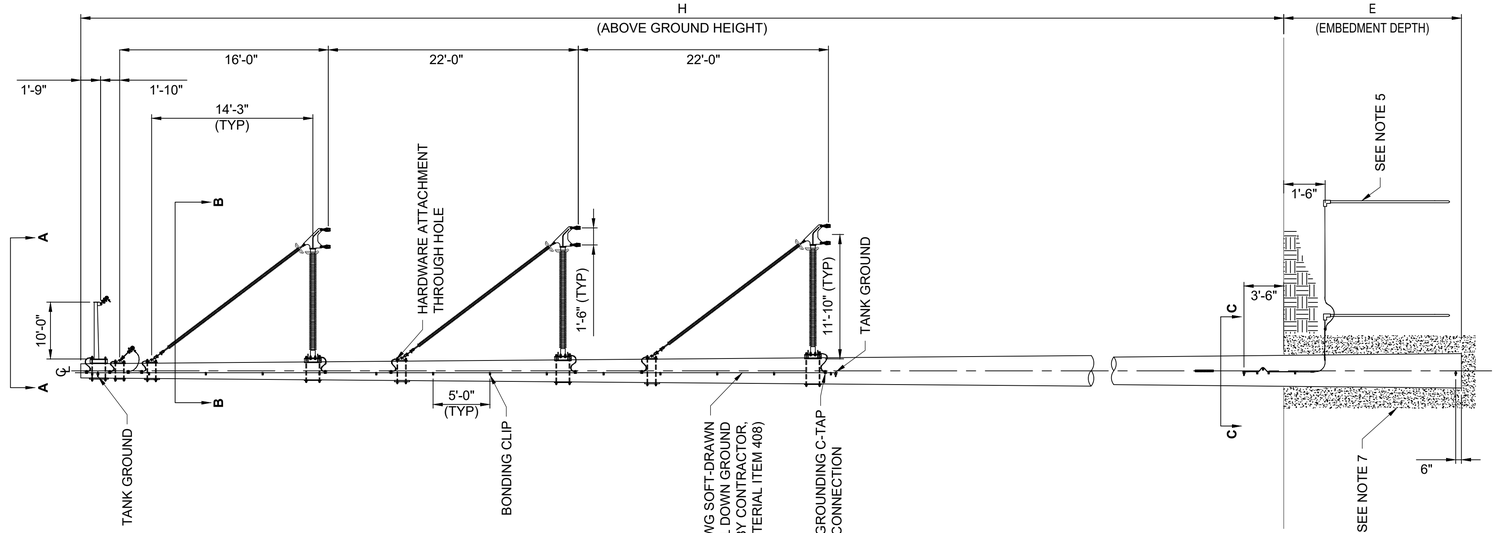


SECTION A-A
SHIELD WIRE LEVEL

SECTION B-B
CONDUCTOR LEVEL





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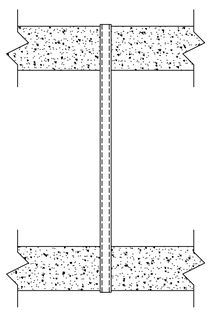

HARDWARE ATTACHMENT THROUGH HOLE
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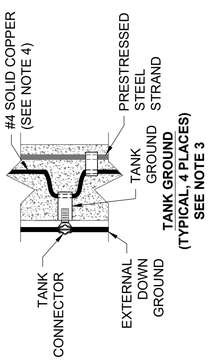
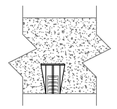
SEE NOTE 2



TANK GROUND
(TYPICAL, 4 PLACES)
SEE NOTE 3



THREADED INSERT
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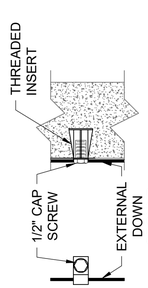
SEE NOTE 3



BONDING CLIP
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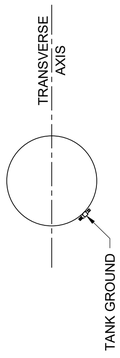
SEE NOTE 3



SECTION C-C
STRUCTURE GROUNDING LEVEL

NOTES:

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2. ALL ATTACHMENT HOLES DISPLAYED ON THE DRAWING SHALL BE THROUGH HOLES, FABRICATED PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1. THROUGH HOLES SHALL BE FABRICATED USING STEEL PIPE.
3. MANUFACTURER TO PROVIDE, TANK GROUNDS, THREADED CONCRETE INSERTS AND BONDING CLIPS PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1, AS INDICATED. INSERTS SHALL BE THREADED FOR 1/2" - 13 UNC BOLTS.
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PROJECT SITE ADDRESS
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2X 1590 "FALCON" ACSS HS TW
BRACED POST TANGENT - VERTICAL CONCRETE
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01003** – rev. **B**

sheet 1 of 2 sheets

file STR-01003SH01.DWG

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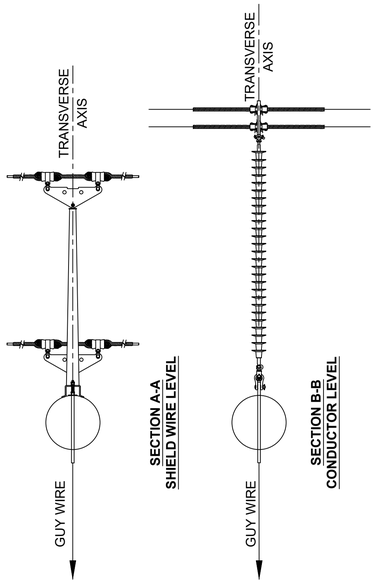
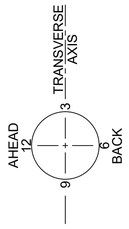
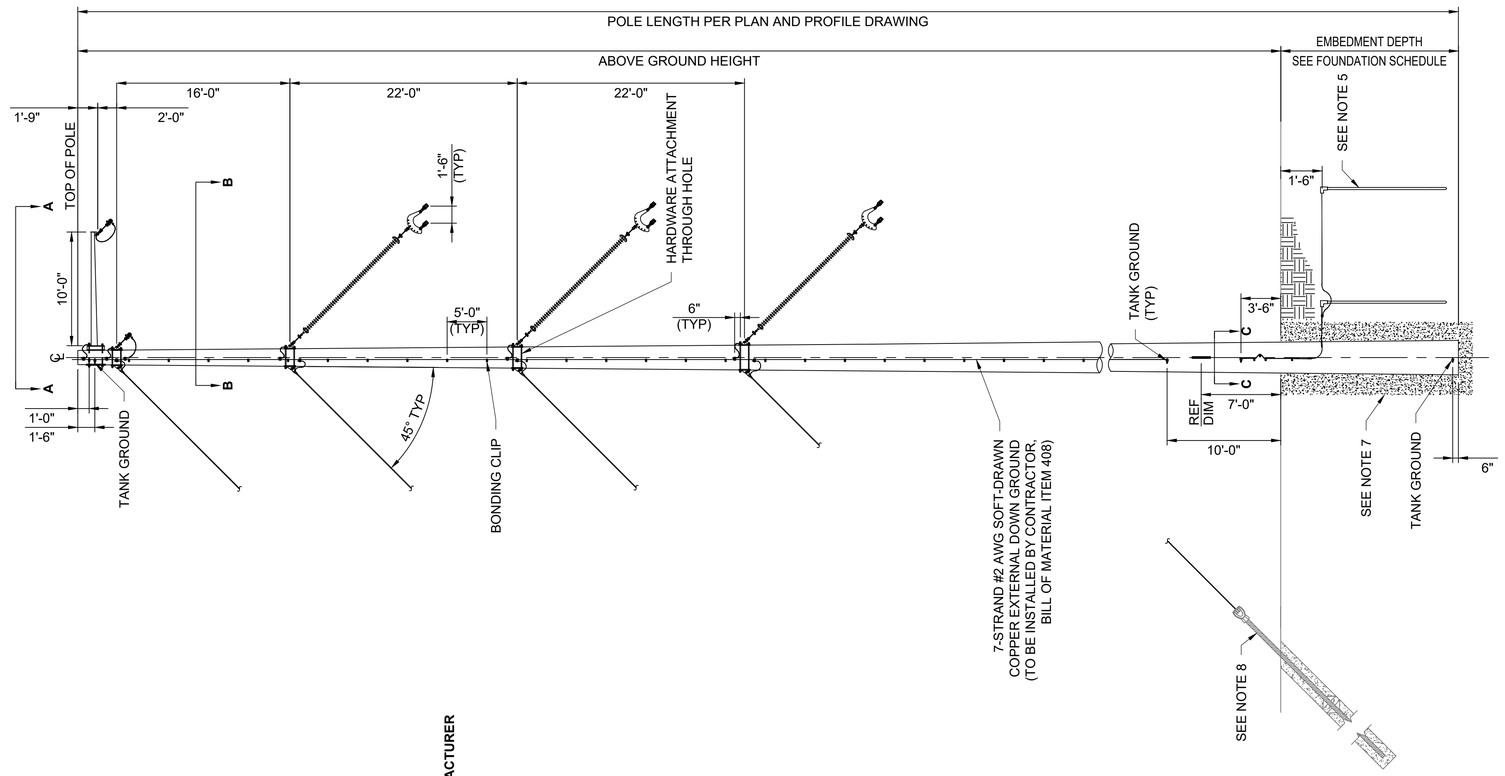


SECTION A-A
SHIELD WIRE LEVEL

SECTION B-B
CONDUCTOR LEVEL





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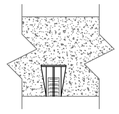

THREADED INSERT
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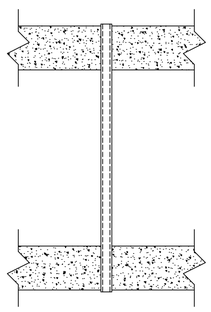
SEE NOTE 3



HARDWARE ATTACHMENT THROUGH HOLE
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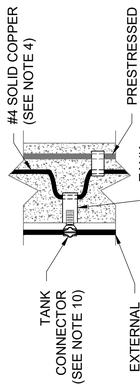

TANK GROUND
(TYPICAL, 4 PLACES)
SEE NOTE 3

BONDING CLIP
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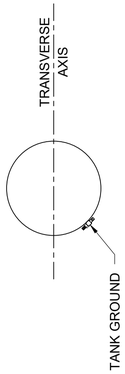

SECTION C-C
STRUCTURE GROUNDING LEVEL

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7. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
8. REFERENCE STRUCTURE ANCHOR DRAWINGS FOR GUY ANCHOR DETAILS.
9. SEE PLAN AND PROFILE DRAWINGS FOR LOCATIONS WHERE OPGW SPLICING SHALL OCCUR. REFERENCE OPGW SPLICING DETAILS FOR MODIFICATIONS TO OPGW HARDWARE ASSEMBLIES.
10. TANK CONNECTOR (ITEM 448) INCLUDED IN STRUCTURE BILL OF MATERIAL.
11. SNUBBING SHALL NOT BE PERMITTED ON SHIELDWIRE ARMS.

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no.	date	by	ckd	description
A	4/10/20	ARL	-	ISSUED FOR REVIEW
B	4/16/20	ARL	-	ISSUED FOR REVIEW
C	4/30/20	ARL	-	ISSUED FOR REVIEW
D	2/12/21	ARL	JFC	ISSUED FOR REVIEW

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BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
04/10/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
GUYED MEDIUM RUNNING ANGLE CONCRETE STRUCTURE FRAMING

project	contract
120451	2000326584

drawing **STR-01004 – D** rev.

sheet 1 of 1 sheets

file STR-01004SH01.DWG

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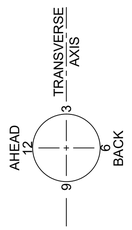
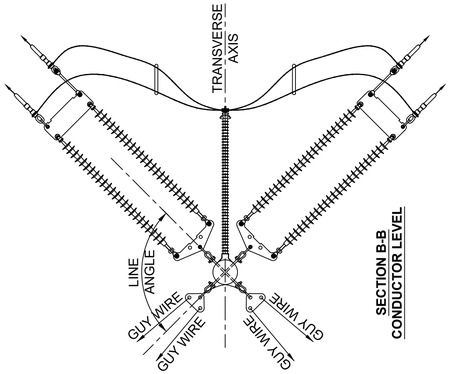
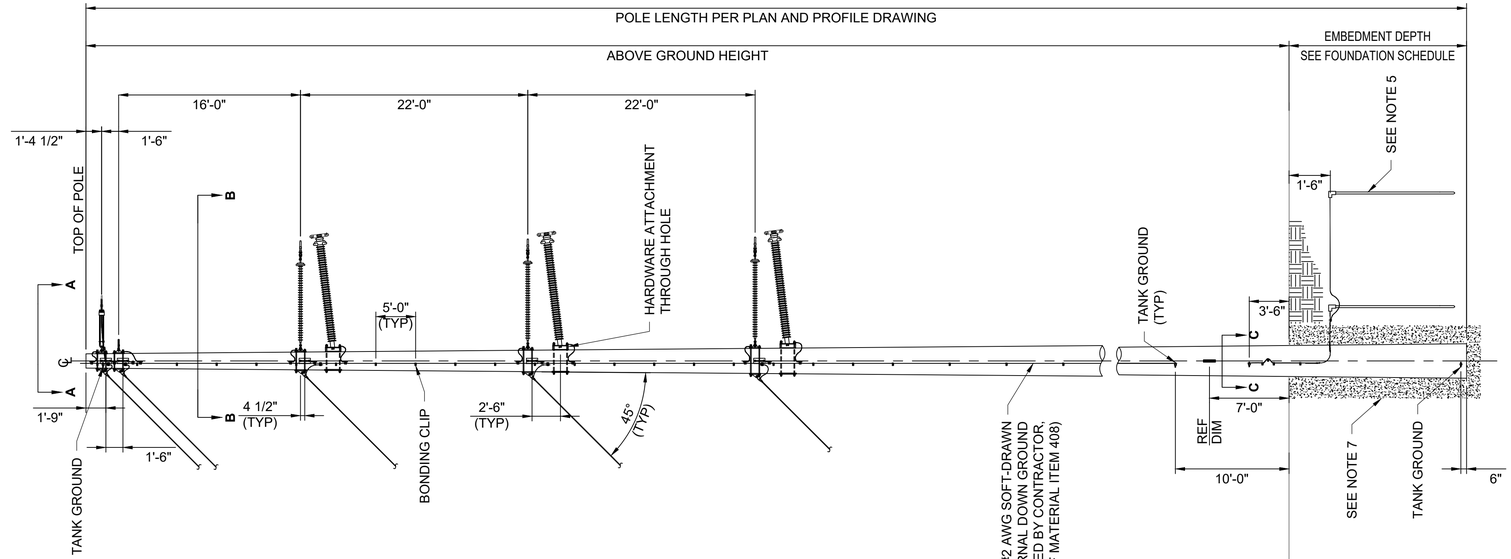
A	4/10/20	ARL	-	ISSUED FOR REVIEW
B	4/16/20	ARL	-	ISSUED FOR REVIEW
C	4/30/20	ARL	-	ISSUED FOR REVIEW
D	2/12/21	ARL	JFC	ISSUED FOR REVIEW



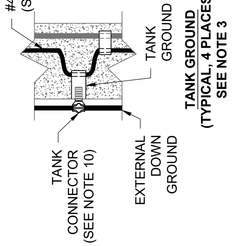
SECTION B-B
CONDUCTOR LEVEL



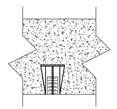
SECTION A-A
SHIELD WIRE LEVEL



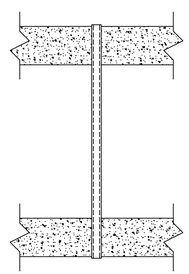
STRUCTURE ELEVATION
(NOT TO SCALE)



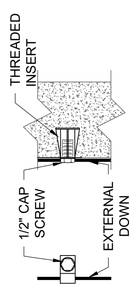
TANK GROUND
(TYPICAL, 4 PLACES)
SEE NOTE 3



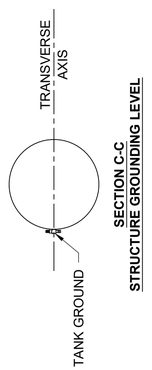
THREADED INSERT
INSTALLED BY POLE MANUFACTURER
SEE NOTE 3



HARDWARE ATTACHMENT THROUGH HOLE
SEE NOTE 2
(TYPICAL, 26 PLACES)



BONDING CLIP
(TYPICAL, QTY. VARIES WITH POLE HEIGHT)
INSTALLED BY POLE MANUFACTURER
SEE NOTE 3



SECTION C-C
STRUCTURE GROUNDING LEVEL

NOTES:

1. STRUCTURES SHALL BE PRESTRESSED, SPUN CONCRETE, PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1.
2. ALL ATTACHMENT HOLES DISPLAYED ON THE DRAWING SHALL BE THROUGH HOLES, FABRICATED PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1. THROUGH HOLES SHALL BE MANUFACTURED USING STEEL PIPE.
3. MANUFACTURER TO PROVIDE THREADED CONCRETE INSERTS AND BONDING CLIPS PER NEXTERA CONCRETE POLE SPECIFICATION, REVISION 1, AS INDICATED. INSERTS SHALL BE THREADED FOR 1/2" - 13 UNC BOLTS.
4. INTERNAL #4 SOLID COPPER GROUND WIRE SHALL BE INSTALLED BY MANUFACTURER TO EXTEND THE ENTIRE LENGTH OF THE POLE AND TERMINATE 6" FROM EACH END.
5. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
6. THE HOLLOW POLE BASE SHALL BE COMPLETELY PLUGGED WITH CONCRETE, USING A MINIMUM PLUG THICKNESS OF 1'-0".
7. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
8. REFERENCE STRUCTURE ANCHOR DRAWING FOR GUY ANCHOR DETAILS.
9. SEE PLAN AND PROFILE DRAWINGS FOR LOCATIONS WHERE OPGW SPLICING SHALL OCCUR. REFERENCE OPGW SPLICING DETAILS FOR MODIFICATIONS TO OPGW HARDWARE ASSEMBLIES.
10. TANK CONNECTOR (ITEM 448) INCLUDED IN STRUCTURE BILL OF MATERIAL.

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT.

PRELIMINARY-
NOT FOR CONSTRUCTION

BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
04/10/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
GUYED DEADEND
CONCRETE
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01005 – D** rev.

sheet 1 of 1 sheets

file STR-01005SH01.DWG

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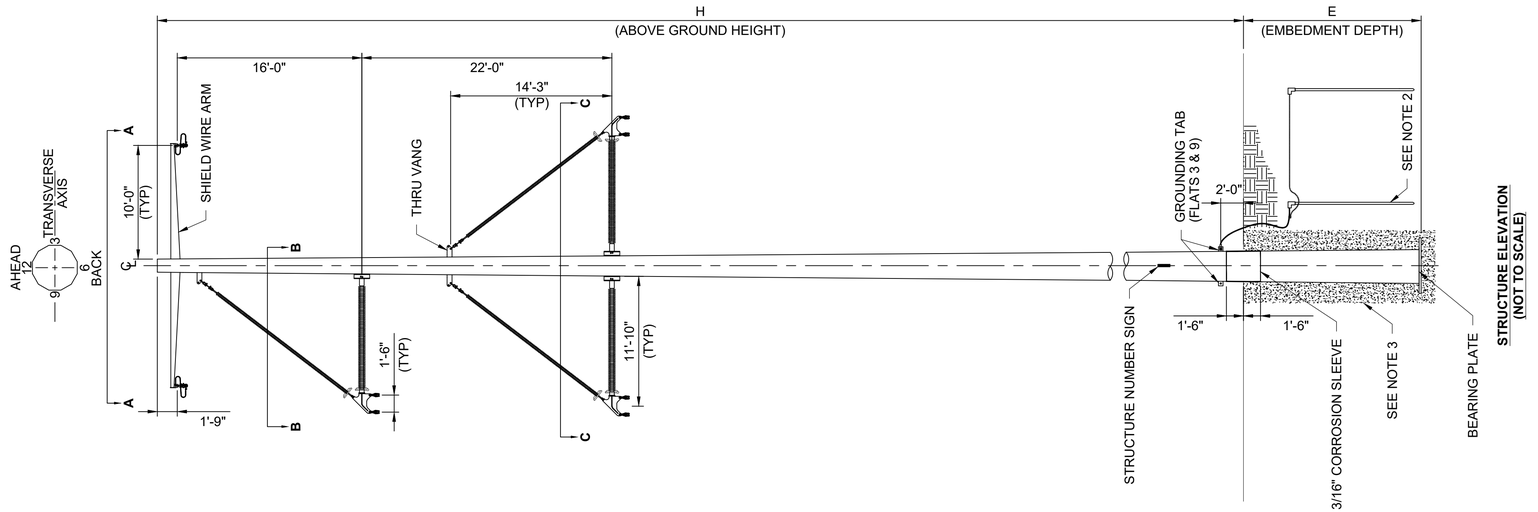
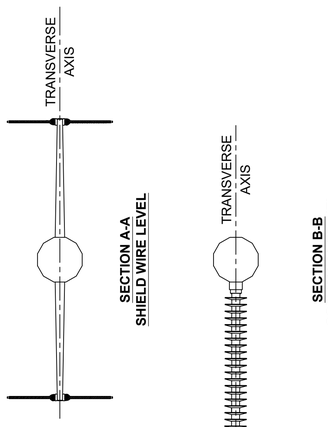
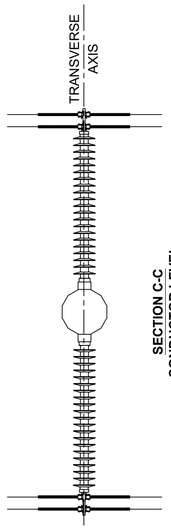


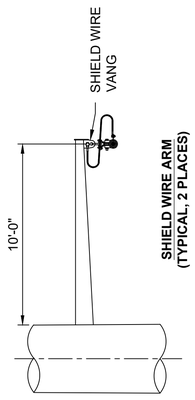


SECTION A-A
SHIELD WIRE LEVEL

SECTION B-B
CONDUCTOR LEVEL



SECTION C-C
CONDUCTOR LEVEL



SHIELD WIRE ARM
(TYPICAL, 2 PLACES)

NOTES:

1. STRUCTURES SHALL BE STEEL POLES.
2. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
3. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
4. SNUBBING SHALL NOT BE PERMITTED ON SHIELD WIRE ARMS OR BRACED POSTS.

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no.	date	by	ckd	description
A	10/9/20	ARL	JFC	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

**PRELIMINARY-
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BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
10/09/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
BRACED POST TANGENT - DELTA
STEEL
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01101 – B** rev.

sheet 1 of 2 sheets

file STR-01101SH01.DWG

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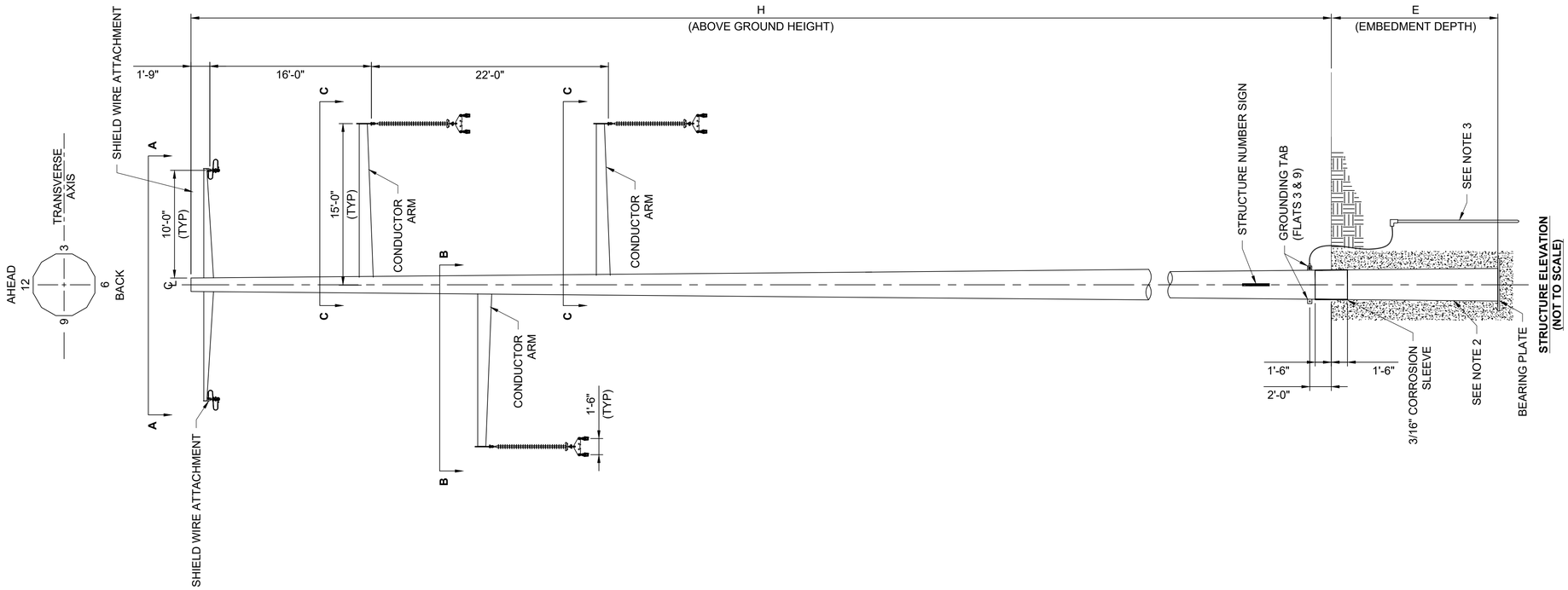

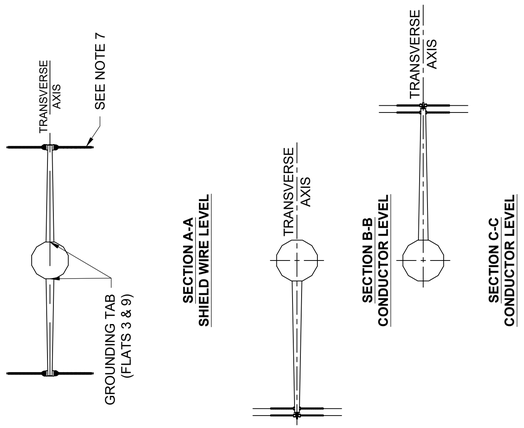

NOTES:
1. STRUCTURES SHALL BE STEEL POLES.
2. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBEDED POLE DETAILS.
3. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
4. SNUBBING SHALL NOT BE PERMITTED ON STRUCTURE.

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no.	date	by	ckd	description
A	10/9/20	ARL	JFC	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

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BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
10/09/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
SUSPENSION TANGENT - DELTA
STEEL
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01102 – B** rev.

sheet 1 of 2 sheets

file STR-01102SH01.DWG

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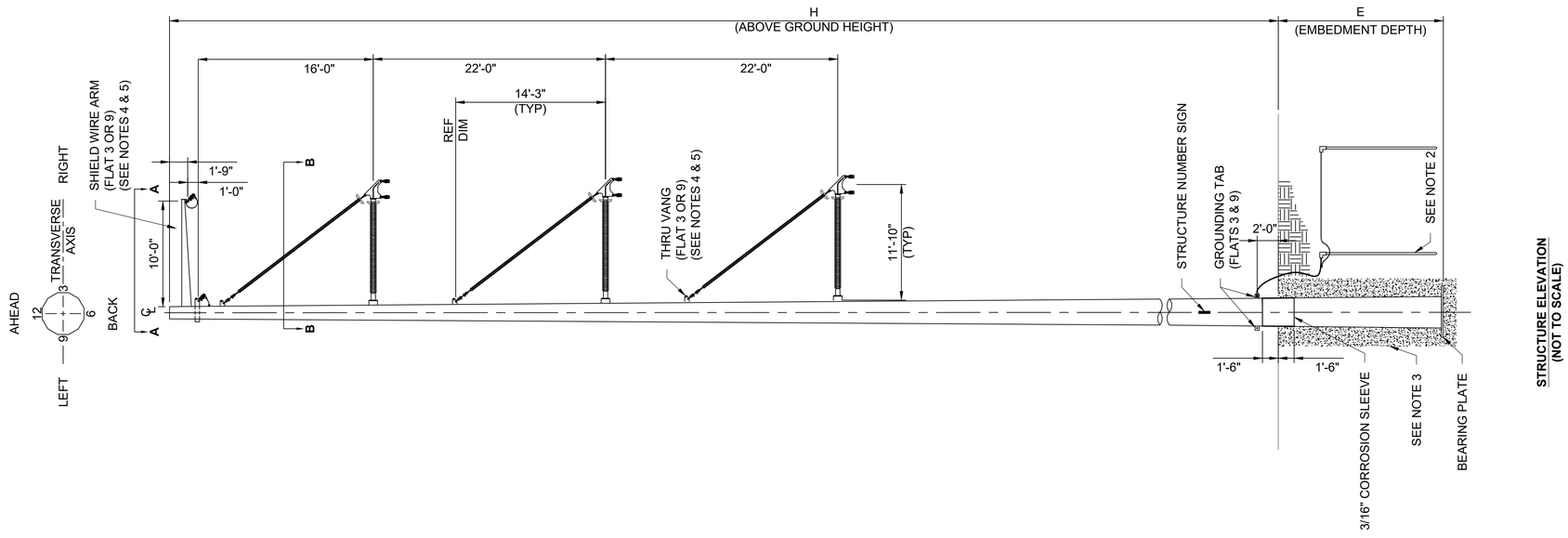
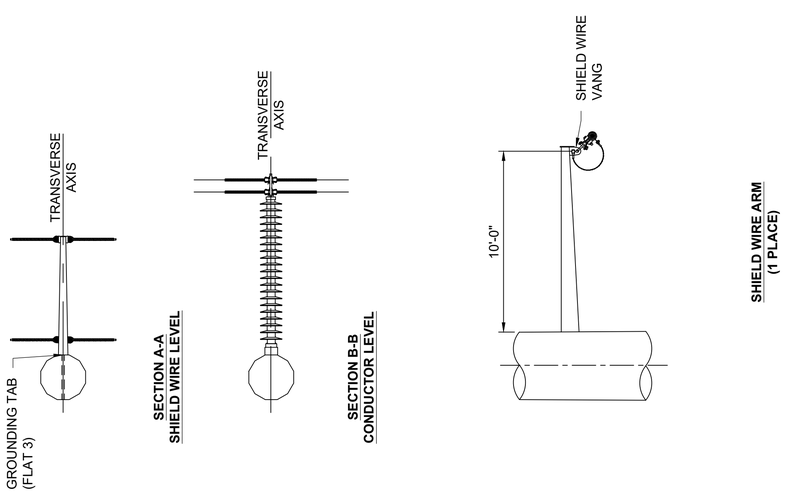


STRUCTURE ELEVATION
(NOT TO SCALE)



SECTION A-A
SHIELD WIRE LEVEL

SECTION B-B
CONDUCTOR LEVEL

SHIELD WIRE ARM
(1 PLACE)

NOTES:

1. STRUCTURES SHALL BE STEEL POLES.
2. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
3. REFERENCE STRUCTURE FOUNDATION DRAWING AND FOUNDATION SCHEDULE FOR DIRECT EMBED POLE FOUNDATION DETAILS.
4. REFER TO PHASING DRAWING AND POLE BOM FOR ORIENTATION PER STRUCTURE LOCATION.
5. BRACED POST BRACKET, ARMS AND VANG FLAT VARIES BASED ON ORIENTATION OF STRUCTURE. FOR LEFT TANGENT, BRACED POST BRACKET ARMS AND VANGS SHALL BE INSTALLED ON FLAT 9. FOR RIGHT TANGENT, BRACED POST BRACKET, ARMS AND VANGS SHALL BE INSTALLED ON FLAT 3.
6. SNUBBING SHALL NOT BE PERMITTED ON THIS STRUCTURE.

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no.	date	by	ckd	description
A	10/9/20	ARL	JFC	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

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9400 WARD PARKWAY
KANSAS CITY, MO 64114

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designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
BRACED POST TANGENT - VERTICAL
STEEL
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01103 – B** rev.

sheet 1 of 2 sheets

file STR-01103SH01.DWG

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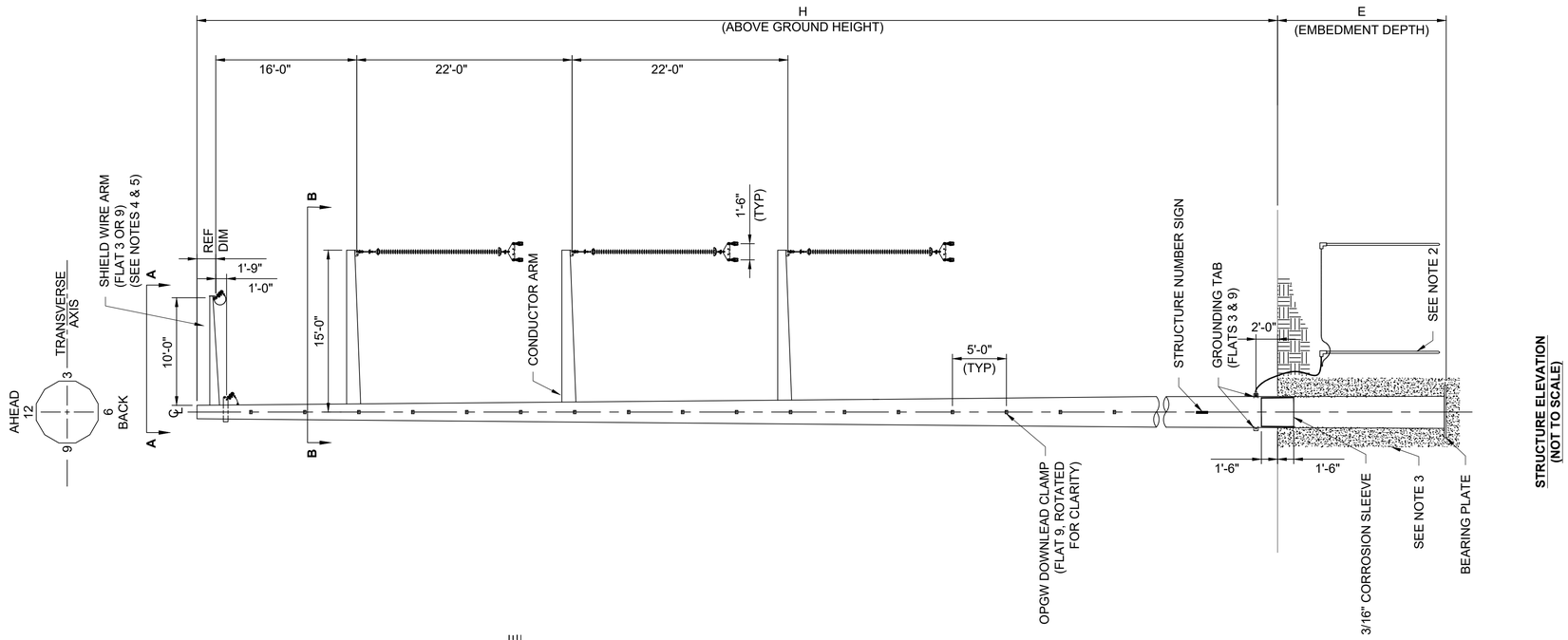

STRUCTURE ELEVATION
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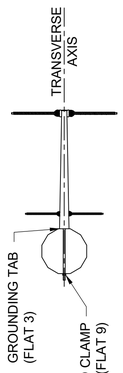
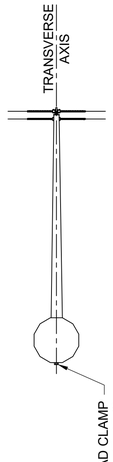


SECTION A-A
SHIELD WIRE LEVEL



SECTION B-B
CONDUCTOR LEVEL

NOTES:
1. STRUCTURES SHALL BE STEEL POLES.
2. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
3. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DRILLED SHAFT DETAILS.
4. SNUBBING SHALL NOT BE PERMITTED ON STRUCTURE.

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no.	date	by	ckd	description
A	10/9/20	ARL	JFC	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

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BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114
SD CERT OF AUTH NO. C-379

date	detailed
10/09/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
SUSPENSION TANGENT - VERTICAL
STEEL
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01104 – B** rev.

sheet 1 of 2 sheets
file STR-01104SH01.DWG

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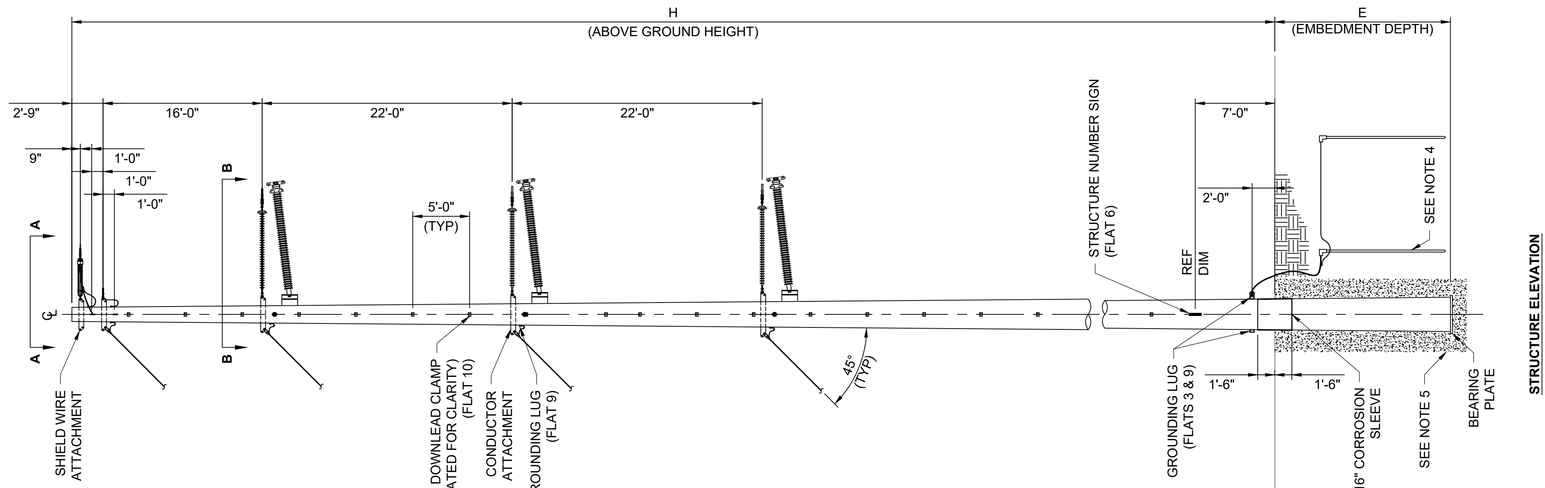
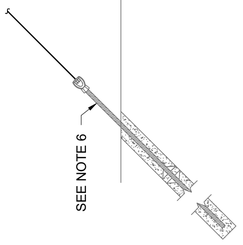
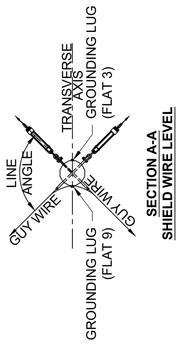
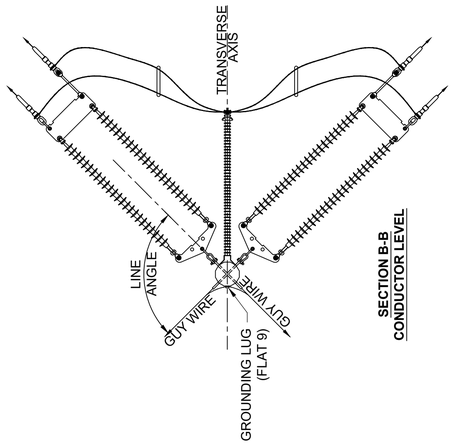


STRUCTURE ELEVATION

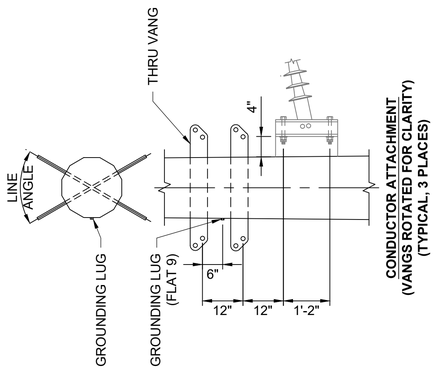




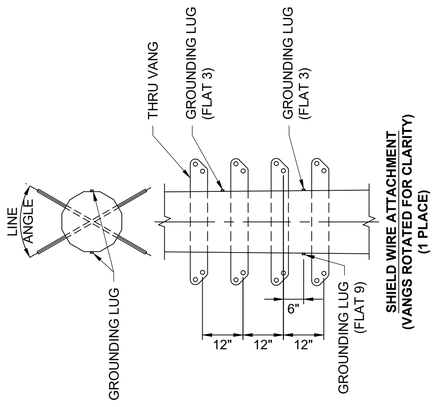
SECTION A-A
SHIELD WIRE LEVEL



SECTION B-B
CONDUCTOR LEVEL



CONDUCTOR ATTACHMENT
(VANGS ROTATED FOR CLARITY)
(TYPICAL, 3 PLACES)



SHIELD WIRE ATTACHMENT
(VANGS ROTATED FOR CLARITY)
(1 PLACE)

NOTES:

1. STRUCTURES SHALL BE STEEL POLES.
2. PLATE THICKNESS TO BE DETERMINED BY POLE MANUFACTURER. MAXIMUM PLATE THICKNESS SHALL BE 3/4" TO ALLOW HARDWARE FIT-UP. IF LARGER THICKNESS IS REQUIRED FOR STRENGTH PURPOSES, CONSULT ENGINEER.
3. VANG AND VANG CONNECTION TO POLE SHALL BE DESIGNED TO WITHSTAND THE RESULTANT LOAD 10 DEGREES TO EITHER SIDE OF INDICATED LINE ANGLES.
4. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
5. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
6. REFERENCE STRUCTURE ANCHOR DRAWINGS FOR GUY ANCHOR DETAILS.
7. OPGW DOWNLEAD CLAMP BRACKET SHALL START AT 3 FEET BELOW TOP OF POLE AND CONTINUE DOWN POLE AT 5 FOOT INTERVALS TO OPGW SPLICE CASE, ENDING ATTACHMENTS NOT MORE THAN 15 FEET ABOVE GROUND LINE.
8. SEE PLAN AND PROFILE DRAWINGS FOR LOCATIONS WHERE OPGW SPLICING SHALL OCCUR. REFERENCE OPGW SPLICING DETAILS FOR MODIFICATIONS TO OPGW HARDWARE ASSEMBLIES.
9. IF OPGW DOWNLEAD CLAMP FLAT LOCATIONS INTERFERES WITH VANG LOCATION DUE TO LINE ANGLE, OPGW DOWNLEAD CLAMPS TO BE RELOCATED TO NEAREST OPEN FLAT.

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no.	date	by	ckd	description
A	4/10/20	ARL	-	ISSUED FOR REVIEW
B	4/16/20	ARL	-	ISSUED FOR REVIEW
C	2/12/21	ARL	JFC	ISSUED FOR REVIEW

PRELIMINARY-
NOT FOR CONSTRUCTION

BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
04/10/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
GUYED DEADEND
STEEL
STRUCTURE FRAMING

project	contract
120451	2000326584

drawing **STR-01105 – C** rev.

sheet 1 of 2 sheets

file STR-01105SH01.DWG

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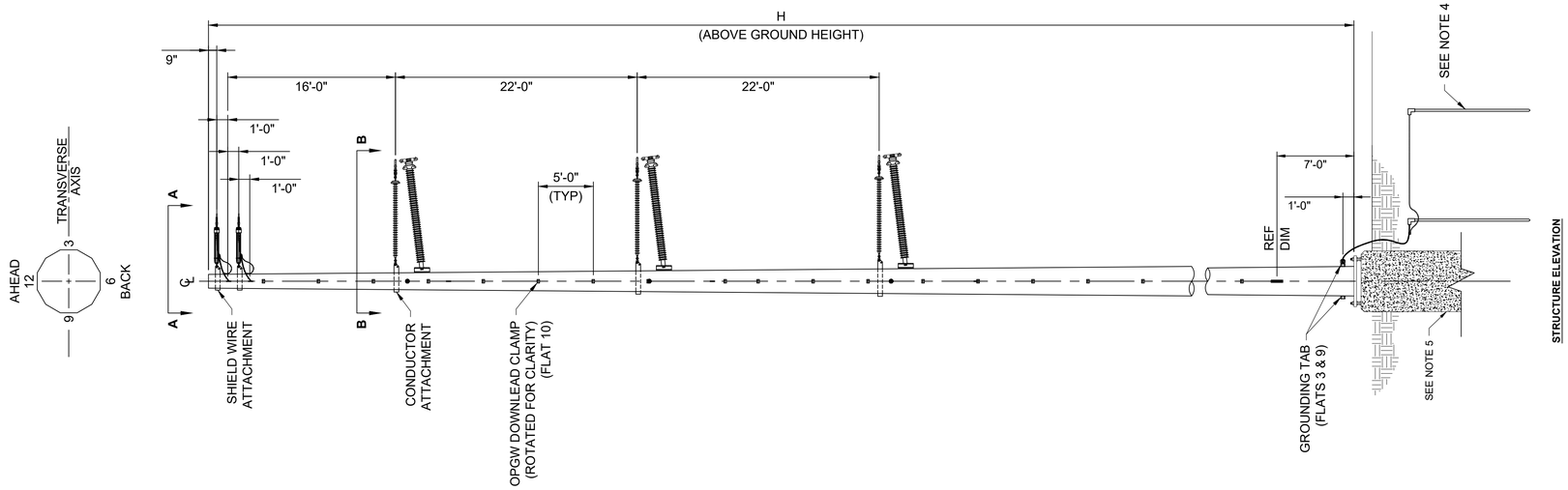
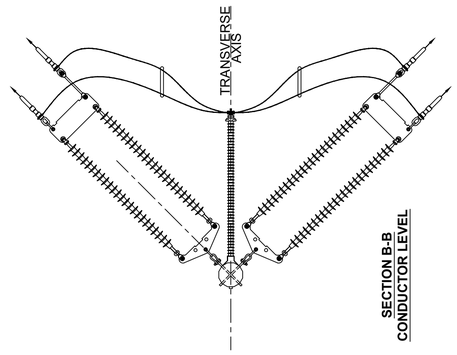
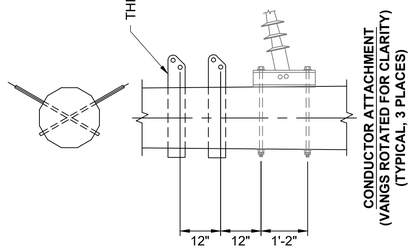


STRUCTURE ELEVATION

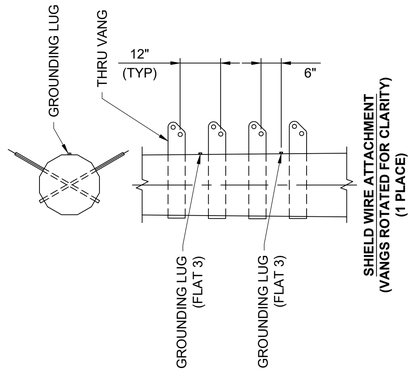
SECTION A-A SHIELD WIRE LEVEL



SECTION B-B CONDUCTOR LEVEL



CONDUCTOR ATTACHMENT (VANGS ROTATED FOR CLARITY) (TYPICAL, 3 PLACES)



SHIELD WIRE ATTACHMENT (VANGS ROTATED FOR CLARITY) (1 PLACE)

NOTES:

1. STRUCTURES SHALL BE STEEL POLES.
2. PLATE THICKNESS TO BE DETERMINED BY POLE MANUFACTURER. MAXIMUM PLATE THICKNESS SHALL BE 3/4" TO ALLOW HARDWARE FIT-UP. IF LARGER THICKNESS IS REQUIRED FOR STRENGTH PURPOSES, CONSULT ENGINEER.
3. VANG AND VANG CONNECTION TO POLE SHALL BE DESIGNED TO WITHSTAND THE RESULTANT LOAD 10 DEGREES TO EITHER SIDE OF INDICATED LINE ANGLES.
4. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
5. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DRILLED SHAFT FOUNDATION DETAILS.
6. OPGW DOWNLEAD CLAMP BRACKET SHALL START AT 3 FEET BELOW TOP OF POLE AND CONTINUE DOWN POLE AT 5 FOOT INTERVALS TO OPGW SPLICE CASE, ENDING ATTACHMENTS NOT MORE THAN 15 FEET ABOVE GROUND LINE.
7. SEE PLAN AND PROFILE DRAWINGS FOR LOCATIONS WHERE OPGW SPLICING SHALL OCCUR. REFERENCE OPGW SPLICING DETAILS FOR MODIFICATIONS TO OPGW HARDWARE ASSEMBLIES.
8. IF OPGW DOWNLEAD CLAMP FLAT LOCATIONS INTERFERES WITH VANG LOCATION DUE TO LINE ANGLE, OPGW DOWNLEAD CLAMPS TO BE RELOCATED TO NEAREST OPEN FLAT.

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no.	date	by	ckd	description
A	12/17/20	ARL	-	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

PRELIMINARY- NOT FOR CONSTRUCTION

BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
04/10/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
SELF SUPPORT DEADEND
STEEL
STRUCTURE FRAMING

project	contract
120451	2000326584

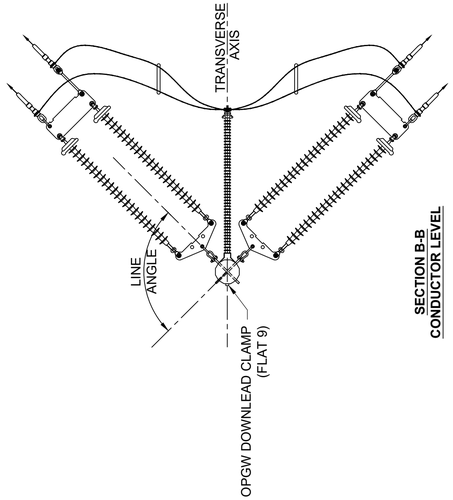
drawing **STR-01106 – B** rev.

sheet 1 of 2 sheets

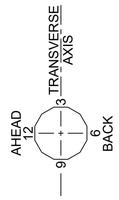
file STR-01106SH01.DWG

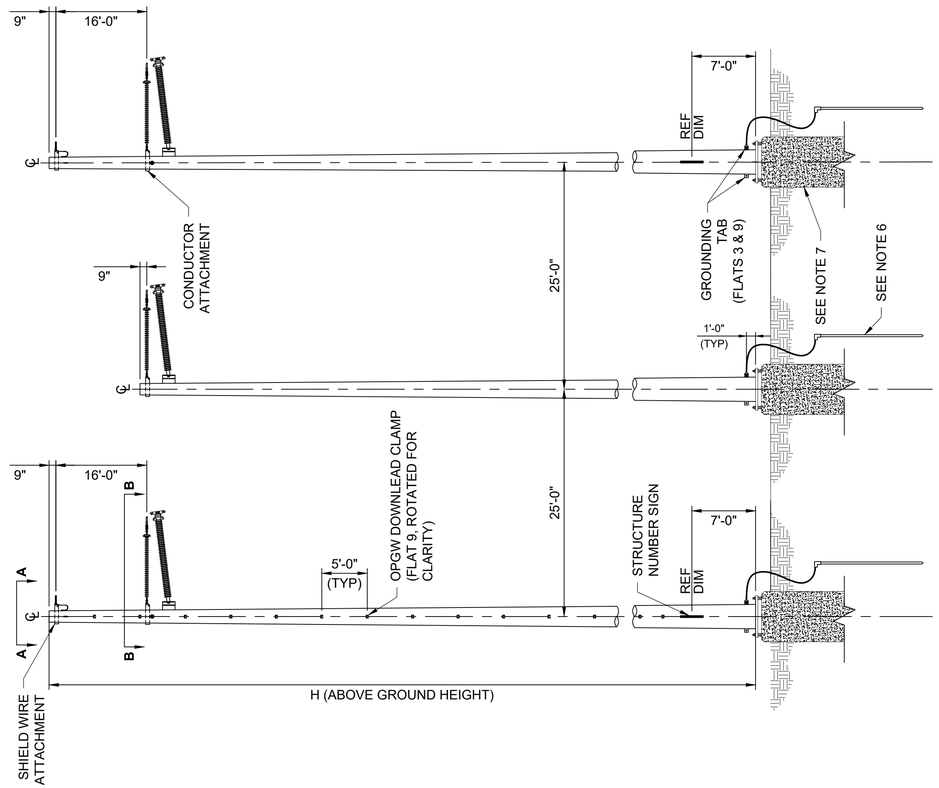
PUBLIC

SECTION A-A
SHIELD WIRE LEVEL

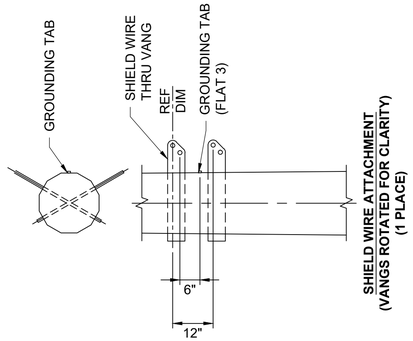


SECTION B-B
CONDUCTOR LEVEL

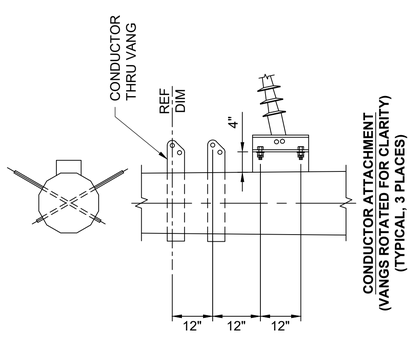




STRUCTURE ELEVATION



SHIELD WIRE ATTACHMENT
(VANGS ROTATED FOR CLARITY)
(1 PLACE)



CONDUCTOR ATTACHMENT
(VANGS ROTATED FOR CLARITY)
(TYPICAL, 3 PLACES)

NOTES:
1. STRUCTURES SHALL BE STEEL POLES.
2. VANG AND VANG CONNECTION TO POLE SHALL BE DESIGNED TO WITHSTAND THE RESULTANT LOAD 10 DEGREES TO EITHER SIDE OF INDICATED LINE ANGLES.
3. OPGW DOWNLEAD CLAMP BRACKET SHALL START AT 3 FEET BELOW TOP OF POLE AND CONTINUE DOWN POLE AT 5 FOOT INTERVALS TO OPGW SPLICE CASE, ENDING ATTACHMENTS NOT MORE THAN 15 FEET ABOVE GROUND LINE.
4. SEE PLAN AND PROFILE DRAWINGS FOR LOCATIONS WHERE OPGW SPLICING SHALL OCCUR. REFERENCE OPGW SPLICING DETAILS FOR MODIFICATIONS TO OPGW HARDWARE ASSEMBLIES.
5. PLATE THICKNESS TO BE DETERMINED BY POLE MANUFACTURER. MAXIMUM PLATE THICKNESS SHALL BE 3/4" TO ALLOW HARDWARE FIT-UP. IF LARGER THICKNESS IS REQUIRED FOR STRENGTH PURPOSES, CONSULT ENGINEER.
6. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
7. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DRILLED SHAFT POLE DETAILS.

no.	date	by	ckd	description
A	12/17/20	ARL	-	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114
SD CERT OF AUTH NO. C-379

date	detailed
12/17/2020	M. LOOS
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
SELF SUPPORT 3-POLE DEADEND
STEEL
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01107** rev. **B**

sheet 1 of 2 sheets

file STR-01107SH01.DWG

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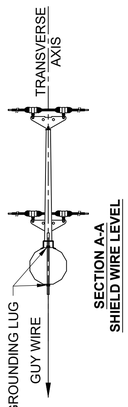
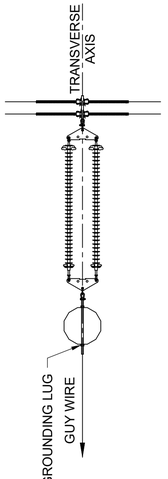
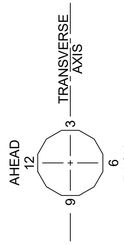
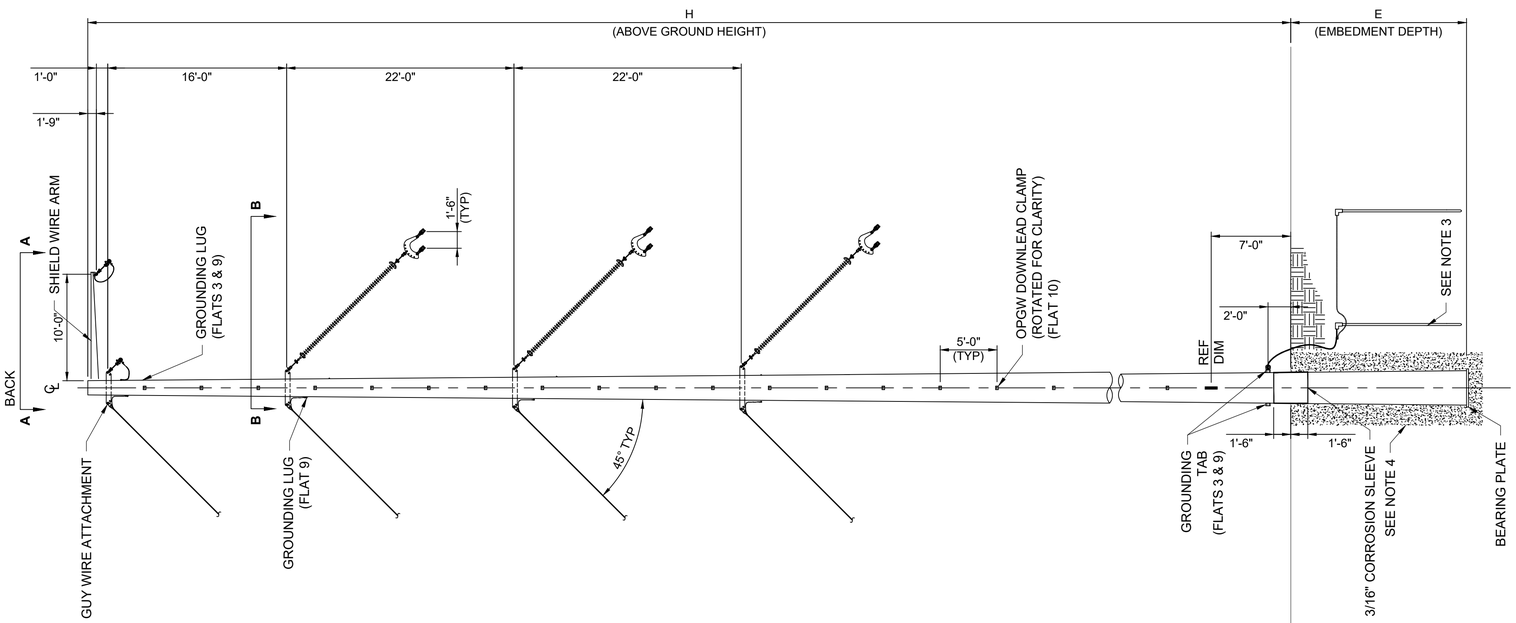


SECTION A-A
SHIELD WIRE LEVEL

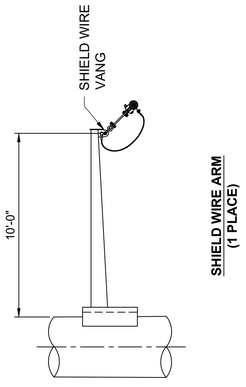


SECTION B-B
CONDUCTOR LEVEL

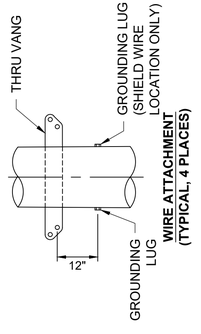




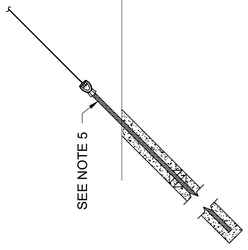
STRUCTURE ELEVATION



SHIELD WIRE ARM
(1 PLACE)



WIRE ATTACHMENT
(TYPICAL, 4 PLACES)



NOTES:

1. STRUCTURES SHALL BE STEEL POLES.
2. PLATE THICKNESS TO BE DETERMINED BY POLE MANUFACTURER. MAXIMUM PLATE THICKNESS SHALL BE 3/4" TO ALLOW HARDWARE FIT-UP. IF LARGER THICKNESS IS REQUIRED FOR STRENGTH PURPOSES, CONSULT ENGINEER.
3. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
4. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
5. REFERENCE STRUCTURE ANCHOR DRAWINGS FOR GUY ANCHOR DETAILS.
6. OPGW DOWNLEAD CLAMP BRACKET SHALL START AT 3 FEET BELOW TOP OF POLE AND CONTINUE DOWN POLE AT 5 FOOT INTERVALS TO OPGW SPLICE CASE, ENDING ATTACHMENTS NOT MORE THAN 15 FEET ABOVE GROUND LINE.
7. SEE PLAN AND PROFILE DRAWINGS FOR LOCATIONS WHERE OPGW SPLICING SHALL OCCUR. REFERENCE OPGW SPLICING DETAILS FOR MODIFICATIONS TO OPGW HARDWARE ASSEMBLIES.
8. VANGS AND VANG CONNECTION TO POLE SHALL BE DESIGNED TO WITHSTAND GUYS PULLING OFF 10° ON EITHER SIDE OF THE BISECTOR.

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no.	date	by	ckd	description
A	12/17/20	ARL	-	ISSUED FOR REVIEW
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PRELIMINARY-
NOT FOR CONSTRUCTION

BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
04/10/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
GUYED MEDIUM RUNNING ANGLE STEEL
STRUCTURE FRAMING

project	contract
120451	2000326584

drawing **STR-01108** rev. **B**

sheet 1 of 2 sheets

file STR-01108SH01.DWG

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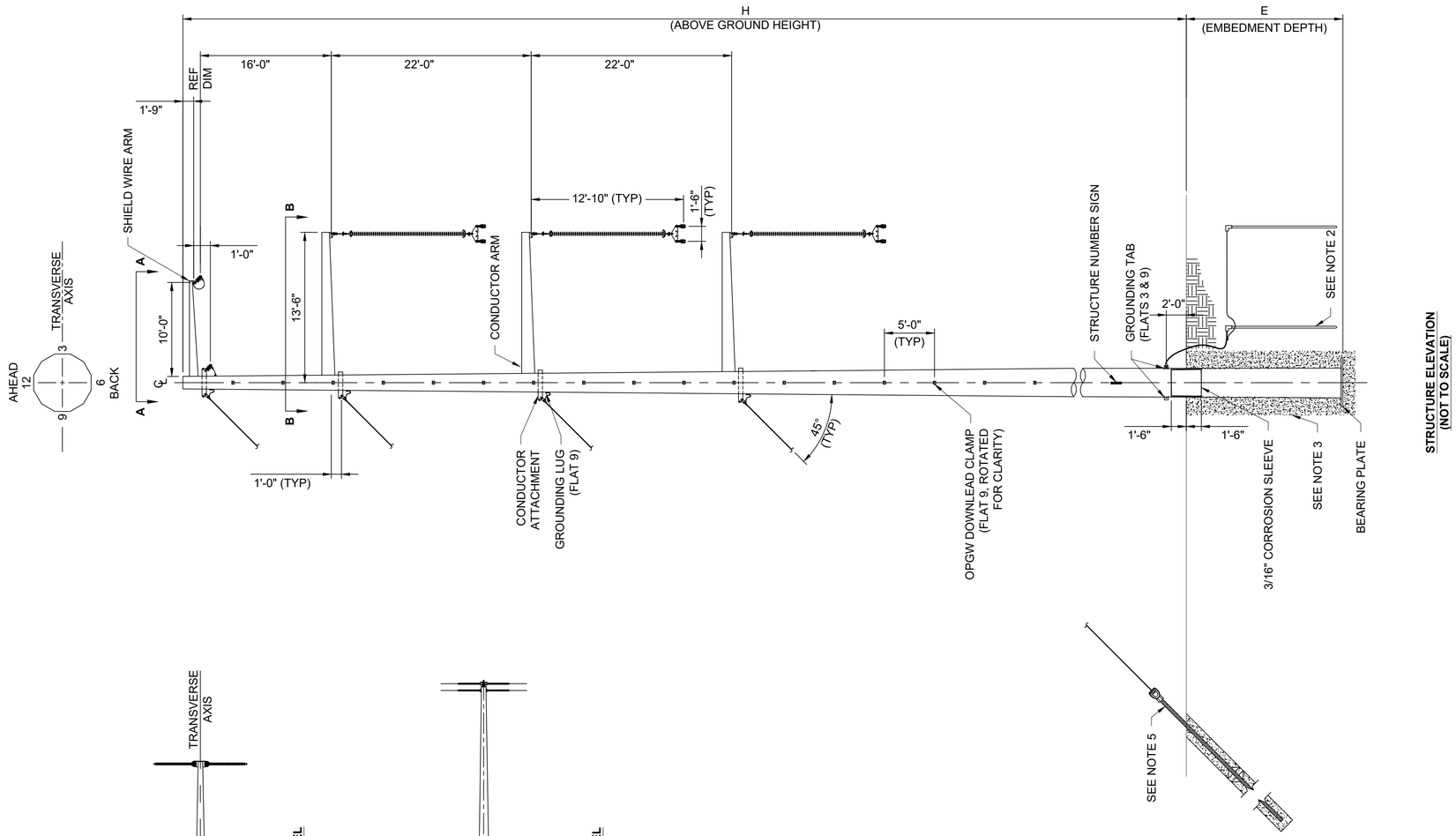
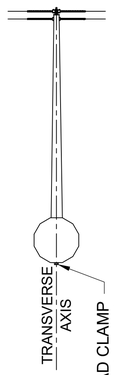


SECTION A-A
SHIELD WIRE LEVEL



SECTION B-B
CONDUCTOR LEVEL

NOTES:
1. STRUCTURES SHALL BE STEEL POLES.
2. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
3. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED DETAILS.
4. SNUBBING SHALL NOT BE PERMITTED ON STRUCTURE.
5. REFERENCE STRUCTURE ANCHOR DRAWINGS FOR GUY ANCHOR DETAILS.

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NOT FOR CONSTRUCTION

BURNS McDONNELL
BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114
SD CERT OF AUTH NO. C-379

date	detailed
12/17/2020	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
GUYED LIGHT ANGLE - VERTICAL
STEEL
STRUCTURE FRAMING

project	contract
120451	-

drawing **STR-01109 – B** rev.

sheet 1 of 2 sheets
file STR-01109SH01.DWG

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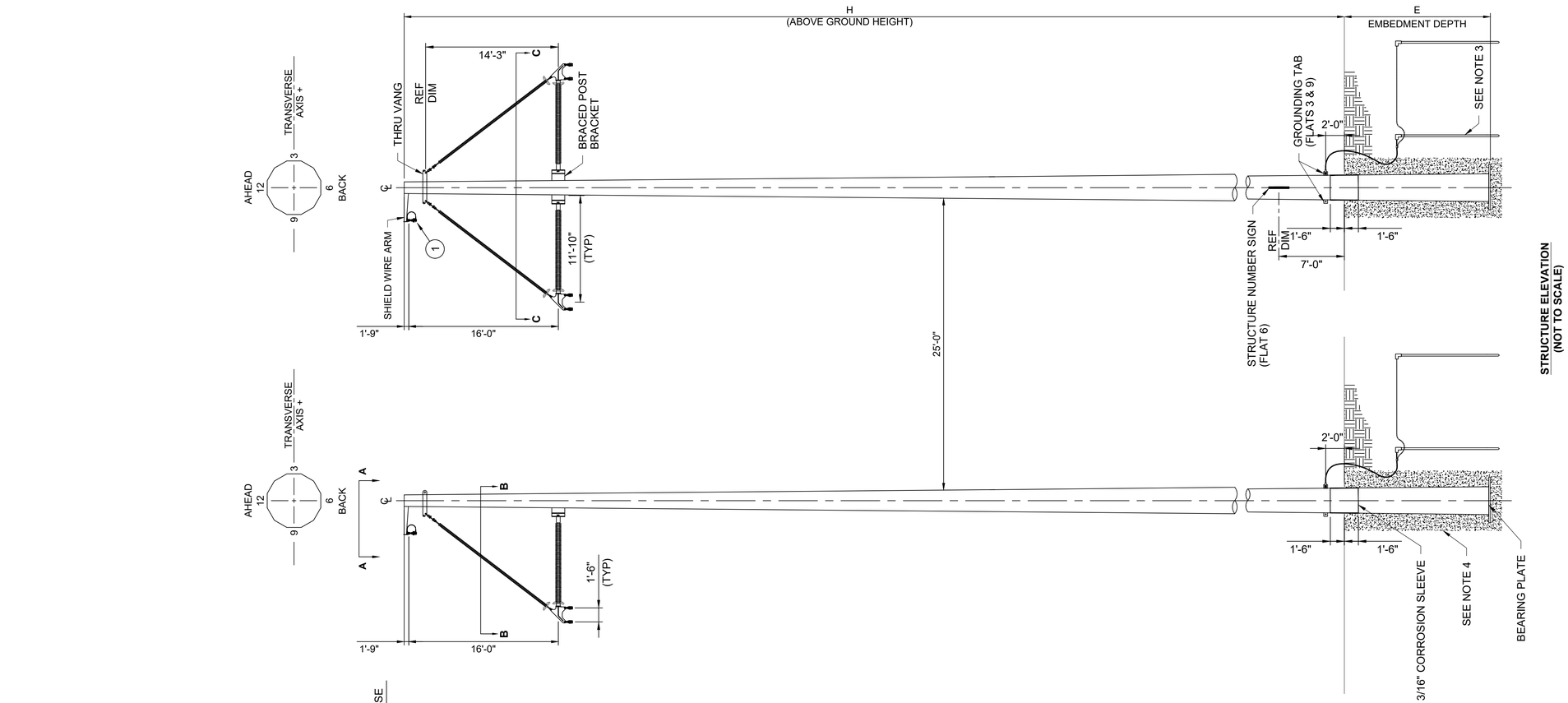
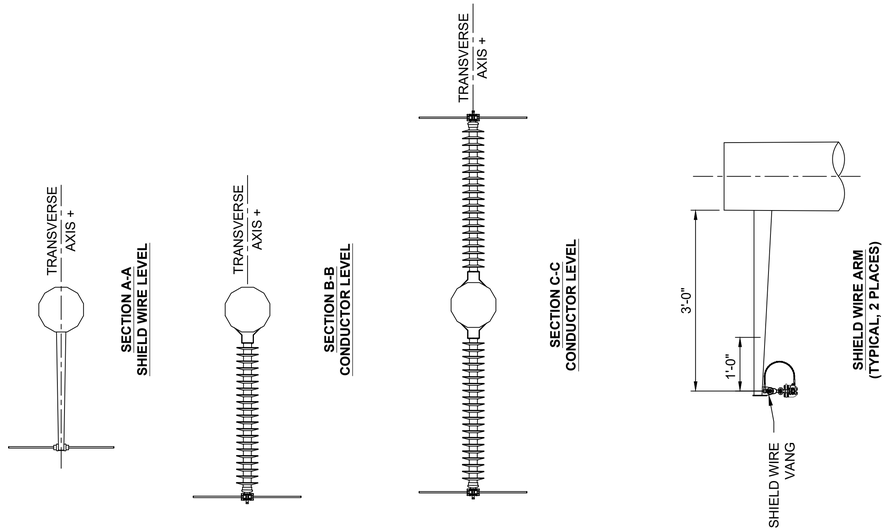


STRUCTURE ELEVATION
(NOT TO SCALE)



NOTES:

1. STRUCTURES SHALL BE STEEL POLES.
2. PLATE THICKNESS TO BE DETERMINED BY POLE MANUFACTURER. MAXIMUM PLATE THICKNESS SHALL BE 3/4" TO ALLOW HARDWARE FIT-UP. IF LARGER THICKNESS IS REQUIRED FOR STRENGTH PURPOSES, CONSULT ENGINEER.
3. REFERENCE STRUCTURE GROUNDING DETAILS FOR GROUNDING INSTALLATION PROCEDURES.
4. REFERENCE STRUCTURE FOUNDATION DRAWING FOR DIRECT EMBED POLE DETAILS.
5. SNUBBING SHALL NOT BE PERMITTED ON BRACED POST OR STRUCTURE.
6. ATTACHMENT HOLES FOR BRACED POST THROUGH BOLTS SHALL BE PRE-DRILLED BY MANUFACTURER PRIOR TO STRUCTURE DELIVERY. ALL HOLES SHALL BE 15/16" DIAMETER, UNLESS OTHERWISE NOTED.

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no.	date	by	ckd	description
A	12/17/20	ARL	-	ISSUED FOR REVIEW
B	2/12/21	ARL	JFC	ISSUED FOR REVIEW

PRELIMINARY-
NOT FOR CONSTRUCTION

BURNS & McDONNELL ENGINEERING COMPANY, INC.
9400 WARD PARKWAY
KANSAS CITY, MO 64114

date	detailed
12/17/20	A. OWEN
designed	checked
A. LEE	-

NEXTera ENERGY TRANSMISSION SOUTHWEST

PROJECT SITE ADDRESS
TBD
TBD

2X 1590 "FALCON" ACSS HS TW
BRACED POST 2-POLE TANGENT
STEEL
STRUCTURE FRAMING

project	contract
120451	

drawing **STR-01110 – B** rev.

sheet 1 of 2 sheets

file STR-01110SH01.DWG

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