Exhibit B
Project Description

Umatilla-Morrow County Connect Project

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Application for Site Certificate

May 2025

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ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CDA	Columbia Development Authority
EFU	Exclusive Farm Use
Hwy 730	Highway 730
kV	Kilovolt
OAR	Oregon Administrative Rule
Project	Umatilla-Morrow County Connect Project
Project Order	Administrative Rules, and Other Requirements Applicable to the Proposed Umatilla-Morrow County Connect Project (First Amended Project Order; April 04, 2024)
ROW	Right-of-Way
Study	Transmission Line Routing Study
UEC	Umatilla Electric Cooperative
UMCC	Umatilla-Morrow County Connect Project

1.0 INTRODUCTION

Exhibit B provides general information for the Umatilla-Morrow County Connect Project (Project) as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(b)(A)(ii) through (v), (B), (C), (D), (E) and (F). Other portions of OAR 345-021(1)(b) are not addressed in this Exhibit B because they are not applicable to transmission lines.

2.0 ANALYSIS

2.1 Proposed Transmission Line; Corridor Selection Assessment

> OAR 345-021-0010(1)(b)(D): If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a transmission line or pipeline that, by itself, is an energy facility under the definition in ORS 469.300, a corridor selection assessment explaining how the applicant selected the corridor(s) for analysis in the application.

Umatilla Electric Cooperative (UEC) prepared a Transmission Line Routing Study (Study) to identify and evaluate alternative transmission line routes for the Umatilla-Morrow County Connect Project (UMCC or Project).

UEC developed and employed a comprehensive, systematic process for identifying, evaluating, and selecting transmission corridors for the Project. Among the factors that UEC considered are engineering and design requirements, system planning, constructability, regulatory requirements, environmental constraints and opportunities, public input, potential easement acquisition, permitting, lands and realty, and cost. During the routing study, more than 97 miles of route alternatives were analyzed in an approximately 38-square-mile Project Study Area to meet the purpose of connecting UEC's Highway 730 (Hwy 730) Switchyard to UEC's Ordnance Switchyard. The routing study process involved: (1) collecting land use and environmental resource data from applicable agencies and other relevant sources; (2) using the data to identify opportunities for and constraints to routing the Project's facilities; (3) identifying a network of transmission line route alternative segments; (4) screening and comparing route alternatives; (5) identifying preliminary alternative routes and including them in initial permitting, (6) consulting with landowners potentially affected by preliminary route alternatives, and (7) finalizing alternative routes to move forward with and include in the Application for Site Certificate.

Based on all decision-making factors listed above, four better-performing alternative route variations (A, B, C, and D) were identified as shown in Figure B-1 (Final Routes). The routes identified minimize impacts within the Project Study Area and provide the most feasible opportunities to meet constructability, permitting, and right-of-way (ROW) considerations, such as having easements already in place for a significant portion of the common corridor, including all of the common corridor that crosses the Columbia Development Authority (CDA) property. The alternatives presented reflect discussions with landowners potentially affected within the corridors.

Considering the reasons for and risks associated with the better performing routes, the Common Corridor minimizes potential property owner impacts while also minimizing effects on the community and environmental resources. UEC intends to pursue the Common Corridor for ROW acquisition, design, permitting, and construction (as identified by the green line in Figure

B-1). All four alternative routes outside the common corridor presented in Figure B-1 were evaluated based on the same risks and opportunities, and each alternative was determined to be feasible.

2.1.1 Constraints and Opportunities (Resource Sensitivity Analysis)

Identifying opportunities for and constraints to routing a transmission line was based on the sensitivity of each resource to the introduction of a new transmission line in the Project Study Area. Resource sensitivity is defined as a measure of the probable adverse response to direct and indirect effects associated with construction, operation, and maintenance of the transmission line. In determining the sensitivity of a resource to the Project, the following factors were considered:

(a) The rarity, high intrinsic worth, singularity, or diversity of a resource in the Project Study Area (i.e., resource value).

(b) Any formal concern expressed for a resource, either through legal protection, by designation of special status, or by law or ordinance (i.e., protective status).

(c) The level of conflict based on policies of land management and/or use, community values, and political opinion (i.e., present and future uses).

(d) The degree to which a resource represents a significant hazard to the Project's construction, operation, or maintenance (i.e., hazards).

2.1.1.2 Constraints

Considering the criteria described above, the resource data were evaluated and assigned a sensitivity level of low, moderate, or high as defined below. The lower the sensitivity of a resource, the more compatible it would be for siting a transmission line in a given area.

(a) **Low Sensitivity:** Areas where resource conflicts identified through the Study process are minimal. These areas of low sensitivity are considered to be of minimal constraint, or high opportunity, for locating a transmission line. In the Study, examples of low sensitivity areas include proposed UEC easements, existing utility facilities (overhead distribution and transmission lines), Interstate buffers (I-82 and I-84), United States highway buffers (Hwy 730), local/residential streets (public roads/streets), pipeline crossings, Special Use Airspace crossings, and Military Training Route crossings.

(b) **Moderate Sensitivity:** Areas of potential environmental effects due to effects on important or valued resources, resources assigned protective status, or some conflict with use. Locations of moderate sensitivity are considered to be moderate constraint areas and less desirable than low sensitivity areas for routing and accommodating a transmission line. In this routing study, examples of moderate sensitivity areas include floodplains, private recreational facilities (shooting range), buildings, State Lands, and areas zoned as Exclusive Farm Use (EFU).

(c) **High Sensitivity:** Areas determined to be less suitable because of unique, highly valued, complex, protected resources and significant potential conflict with use, or areas posing substantial hazards to construction and operation of the transmission line. Locations of high sensitivity are considered to be the least desirable for location of a transmission line. For the purpose of this Study, examples of high sensitivity areas include locations of streams, United States Fish and Wildlife Service Critical Habitat for

Bull Trout, Washington Ground Squirrel Habitat Concentration Areas, water bodies, wetlands, communication towers, extractive/ mining areas, federal lands, irrigation canals, mechanically irrigated agricultural fields, Navy Restricted Airspace, residential structures, existing substations, Interstates (I-82 and I-84), railroads, United States highways (Hwy 730), heliports, and visual impacts within 500 feet of residential areas.

2.1.1.3 Opportunities

Opportunities for routing the Project's facilities include locations that:

» Use existing compatible ROWs, including distribution lines, transmission lines, railroads, highways, and pipelines.

» Parallel existing compatible ROWs.

» Parallel property lines, section lines, or half-section lines.

» Minimize impacts on private property owners.

» Minimize impacts on agricultural uses.

» Maximize the use of existing access and minimize new access road construction.

» Facilitate efficient and cost-effective transmission line design and construction.

2.1.2 Corridor Selection Process

2.1.2.1 Level 1 Comparison Process

In Level 1 screening, links with common endpoints were evaluated and compared in each criteria category as previously listed. When using the evaluation criteria to compare route alternatives to each other, the rationale outlined in Table B-1 was used to determine an overall compatibility score for each alternative route. Compatibility scores were calculated for each alternative route by criteria category. Compatibility scores ranged from **1** to **5**, with **1** being most compatible and **5** being least compatible. After totaling the score for each route link alternative among the eight criteria categories, the alternative routes with the lowest cumulative scores across the criteria categories were deemed the most compatible alternative routes.

TABLE B-1. RATIONALE FOR DETERMINING ROUTE COMPATIBILITY

CRITERIA CATEGORY	RATIONALE FOR ROUTE COMPATIBILITY
Residential and Land Uses	A route with fewer nearby residences, parks, places of worship, and schools nearby has greater compatibility.
Visual	A route with the least number of visual impacts to key observation points has greater compatibility.
Biological / Water Issues	A route with fewer miles crossing sensitive or endangered species habitat, wetlands, or other waterways has greater compatibility.
Geohazards	A route with a lower risk of geohazards has greater compatibility.
Aviation	A route with fewer miles near Federal Aviation Administration-regulated airport/airstrip airspace/sea plane runways has greater compatibility.

CRITERIA CATEGORY	RATIONALE FOR ROUTE COMPATIBILITY
Co-location/ Crossing Facilities	A route following existing transmission/distribution lines has greater compatibility.
Farmland	A route with the least number of Exclusive Farm Use parcels crossed or the least number of miles parallel or adjacent to Exclusive Farm Use has greater compatibility.
Composite Sensitivity	A route with greater mileage of low sensitivity has greater compatibility.

2.1.2.2 Level 2 Comparison Process

Level 2 screening process compared "sub-regional" areas against each other. These are larger areas than those compared in Level 1. Level 2 bridges the gap between comparing small segments with common endpoints to comparing complete end-to-end alternative routes. In Level 2, the following criteria was used to determine the routes that would perform better in the comparison process.

» Number of residences within 100 feet.
» Miles of line within 0 to 500 feet of residences.
» Miles of line within 500 to 750 feet of residences.
» Number of structures within 50 feet of the route.
» Number of communication / water towers within 1.5 times the height of route structures.
» Miles within immediate foreground of residences (500 feet).
» Number of canals crossed.
» Feet of wetland crossed.
» Miles parallel to Interstate Highways (50 to 250 feet).
» Miles parallel to local or residential street.
» Number of Interstate or State Highway crossings.
» Miles parallel to mainline railroad (within 250 feet).
» Miles of distribution rebuild/ undergrounding required.
» Number of 69-kV or higher transmission line crossings.
» Miles of EFU-zoned land crossed.
» Number of center pivot agriculture crossed.
» Miles of center pivot agriculture crossed.
» Number of spans over 600 feet.
» Miles of high sensitivity.
» Miles of moderate sensitivity.
» Miles of low sensitivity.
» Miles of opportunity.
» Engineering angles greater than 30 degrees.

- Miles across federal lands.
- Miles across state lands.
- Number of parcels.
- Miles of CDA easement.

2.1.2.3 Level 3 Comparison Process

Level 3 screening process compared and ranked end-to-end routes against each other. Level 3 bridges the gap between comparing regional areas with common endpoints to comparing complete end-to-end alternative routes. The same criteria as described above were used to help determine the Level 3 routes that would perform better in the comparison process. Level 3 incorporates responses to comments received from the Oregon Department of Energy Public Information Meeting, and UEC's further analysis of potential route alternatives with landowners and stakeholders.

2.1.3 Analysis of Factors from OAR 345-021-0010(1)(b)(D)(i)-(viii)

> OAR 345-021-0010(1)(b)(D): Exhibit B must include a corridor selection assessment explaining how the applicant selected the corridors for analysis in the application. The applicant may select any corridor for the assessment and may seek approval for more than one corridor. If the applicant includes a corridor that was not identified in the NOI or presented for comment at an informational meeting the applicant must explain why the applicant did not present the new corridor for comment at an information meeting. In the assessment, the applicant must discuss the reasons for selecting the corridors, based upon evaluation of the following factors:
>
> (i) Least disturbance to streams, rivers and wetlands during construction.
>
> (ii) Least percentage of the total length of the pipeline or transmission line that would be located within areas of Habitat Category 1, as defined in OAR 635-415-0025(1).
>
> (iii) Greatest percentage of the total length of the transmission line that would be located within or adjacent to public roads and existing transmission line rights-of- way.
>
> (iv) Least percentage of the total length of the pipeline or transmission line that would be located within lands that require zone changes, variances or exceptions.
>
> (v) Least percentage of the total length of the transmission line that would be located in a protected area as described in OAR 345-022-0040.
>
> (vi) Least disturbance to areas where historical, cultural or archaeological resources are likely to exist.
>
> (vii) Greatest percentage of the total length of the transmission line that would be located to avoid seismic, geological and soils hazards.
>
> (viii) Least percentage of the total length of the transmission line that would be located within lands zoned for exclusive farm use.

(i) Least disturbance to streams, rivers and wetlands during construction.

Although there was a greater amount of wetland areas crossed for the alternative corridors considered during the Study, the differences were minor. There are few wetlands in the Project Study Area and all impacts to wetlands will be avoided. Impacts to surface water quality during construction will be minimized through implementation of erosion and sediment control best management practices (BMPs), such as silt fencing, check dams and mulching. BMPs will be installed and maintained in accordance with the Project's Stormwater Pollution Prevention Plan and Erosion and Sediment Control Plan. All water used during construction of the Project would be obtained off-site from commercial or municipal sources. No new water rights or water wells would be required. The primary uses of water during construction will be for dust control and the preparation and installation of concrete foundations for transmission line structures. The Project is not expected to impact surface water availability.

(ii) Least percentage of total length of pipeline or transmission line that would be located within areas of Habitat Category 1, as described by the Oregon Department of Fish and Wildlife.

The Project will avoid all Category 1 habitat, as explained in Exhibit P.

(iii) Greatest percentage of the total length of the transmission line that would be located within or adjacent to public roads, as defined in ORS 368.001 and existing transmission line rights-of-way.

Alternative Routes B and C run parallel with Paterson Ferry Road. Alternative Route A crosses Paterson Ferry Road with a 0.15-mile-long crossing. All four alternative routes parallel I-84. The calculations provided below do not incorporate roads within the boundaries of the CDA property as they are not part of the roadway system that is owned and operated for the general public.

There are no transmission lines between the Hwy 730 Switchyard to the proposed Ordnance Switchyard to parallel.

TABLE B-2. MILES OF PUBLIC ROAD ROW PER ALTERNATIVE ROUTE

ROUTE	PARALLEL LENGTH (MILES)	TOTAL ROUTE LENGTH (MILES)	PERCENTAGE OF ROUTE LENGTH
A	3.65	14.89	25%
B	4.84	14.85	33%
C	1.69	14.80	11%
D	5.40	13.94	39%

(iv) Least percentage of the total length of transmission line would be located within lands that would require zone changes, variances or exceptions.

The transmission line will not be located within lands that would require zone changes, variances, or exceptions. See Exhibit K for description of Project Land Use.

(v) Least percentage of the length of the pipeline or transmission line that would be located in a protected area as described in OAR 345-022-0040.

The Project will not be located in any protected areas as described in OAR 345-022-0040 and Exhibit L.

(vi) Least disturbance to areas where historical, cultural or archaeological resources are likely to exist.

The Project will avoid areas where historical, cultural, or archaeological resources are likely to exist, as explained in Exhibit S.

(vii) Greatest percentage of the total length the transmission line would be located to avoid seismic, geologic and soils hazards.

The Project will avoid seismic, geological, and soils hazards, as explained in Exhibit H. Project construction will not adversely affect slope stability or cause long-term erosion impacts. Further geotechnical evaluation will be conducted once a final alignment is determined.

(viii) Least percentage of the length of the transmission line located within lands zoned as exclusive farm use.

Farmland was considered as a criterion for route comparison and ranking. The factors considered included: miles of EFU crossed, number of center pivot agriculture crossed, miles of center pivot agriculture crossed, and number of spans over 600 feet. The middle and southern routes considered in level 3 screening affected more EFU. The miles of EFU crossed in the final routes are provided below in Table B-3.

TABLE B-3. MILES OF EXCLUSIVE FARM USE PER ALTERNATIVE ROUTE

ROUTE	EXCLUSIVE FARM USE (MILES)
A	6.1
B	6.0
C	5.9
D	5.3

2.2 Description of Proposed Facility

OAR 345-021-0010(1)(b)(A) through (C) and (E) require a description of the Project. The following section describes the transmission facilities proposed for this Project. Project components are described in Sections 2.2.1 – 2.5.5 and Table B-1. Detailed maps showing temporary and permanent facility locations are contained in Exhibit C, Figure C-3.

The information herein and in subsequent sections is based on the preliminary design that has been completed. The exact quantity, size, description, distance between, and placement of the structures and components will depend on the final detailed design of the transmission line that will occur within the Project site boundary, which is influenced by the terrain, land use, and engineering factors.

2.2.1 Major Components

OAR 345-021-0010(1)(b)(A)(ii): Major components, structures and systems, including a description of the size, type and configuration of equipment used to generate electricity and useful thermal energy.

The only major components, structures, and systems associated with the Project are the transmission structures described below as part of the Site Plan and General Arrangement. The Project does not include equipment used to generate electricity or useful thermal energy. Therefore, that portion of OAR 345-021-0010(1)(b)(A)(ii) does not apply to the Project.

2.2.2 Site Plan and General Arrangement

OAR 345-021-0010(1)(b)(A)(iii): A site plan and general arrangement of buildings, equipment and structures.

A site plan and general arrangement of facilities is shown in Exhibit C, Figure C-3.

2.2.3.1 Transmission Line System

The purpose of the Project is to provide a connection between the Boardman and Hermiston areas, expand the transmission system to increase reliability, provide a transmission path for renewable energy across the region, and establish an electrical grid capable of meeting the demands of local communities, businesses, and industries within UEC's Service Territory by installing an approximately 14-mile long, 230 kV transmission line constructed of monopole tangents and two-pole running angle and deadends, double-circuit, steel structures that would connect UEC's Hwy 730 Switchyard to UEC's Ordnance Switchyard.

Transmission Structures

Table B-4 describes structure characteristics. The 230 kV transmission line will be supported by steel monopole and two-pole structures. Attachment B-3 illustrates the typical structure configuration.

TABLE B-4. FACILITY DESCRIPTION

STRUCTURE CLASSIFICATION	ROUTE A	ROUTE B	ROUTE C	ROUTE D
Single Pole Deadend	11	10	10	7
Single Pole Tangent	67	70	70	67
Two Pole Deadend (footing count)	30	28	32	24
Two Pole Running Angle (footing count)	16	14	12	12
Total Footings	**124**	**122**	**124**	**110**
Total Poles	101	101	102	92

Right-of-Way Width

The ROW width for the Project will vary between 75 to 150 feet. Exhibit C, Figure C-3 illustrates the ROW width requirements for the proposed and alternative routes. The determination of these widths is based on three criteria:

- Sufficient National Electrical Safety Code clearance must be maintained to the edge of the ROW during a wind event when the conductors displace towards the ROW edge.
- Sufficient room must be provided within the ROW to perform transmission line maintenance.
- Sufficient clearances must be maintained from the transmission line to the edge of the ROW where structures or trees may be located and deemed a hazard or danger to the transmission line.

Structure and Conductor Clearances

Conductor phase-to-phase and phase-to-ground clearance parameters are determined in accordance with UEC design practices and the National Electrical Safety Code and Rural Utilities Service standards. For new line designs, clearance buffers have been identified for vertical, horizontal, and radial clearances. Clearances are noted in Attachment B-1.

Structure Foundations

Transmission line structure foundation types include direct embedded and drilled pier reinforced concrete foundations. Borings, investigative probing, and laboratory testing will be performed at intervals of every 0.5 mile along the centerline. Design will be in accordance with the general criteria stated in Tables B-5, B-6, and B-7 below.

TABLE B-5. FOUNDATIONS DRILLED PIER DESIGN CRITERIA

Factor of Safety Applied to the Maximum Factored Load for any Load Case	1.0
Concrete Strength	Installed Fc' = 4,000 psi at 28 days, Design Fc' = 3,000 psi
Reinforcing Steel	ASTM A615 Grade 60, Fy = 60,000 psi
Frost Line	2 feet (or as recommended by the Geotechnical Investigation)
Allowable Rotation Limits with Factored Ultimate Loads	Allowable Total Rotation: 1.0° Non-Recoverable Rotation: 0.5°
Allowable Deflection Limits with Factored Ultimate Load	Allowable Total Deflection: 4 inches Non-Recoverable Deflection: 2 inches

TABLE B-6. FOUNDATIONS DIRECT EMBED DESIGN CRITERIA

Factor of Safety Applied to the Maximum Factored Load for any Load Case	1.0
Backfill Material	Refer to Table B-7
Frost Line	2 feet (or as recommended by the Geotechnical Investigation)
Allowable Rotation Limits with Factored Ultimate Loads	Allowable Total Rotation: 1.0° Non-Recoverable Rotation: 0.5°
Allowable Deflection Limits with Factored Ultimate Load	Allowable Total Deflection: 4 inches Non-Recoverable Deflection: 2 inches

TABLE B-7. FAD ANNULUS BACKFILL DATA

BACKFILL TYPE	UNIT WEIGHT (PCF)	DEFORMATION MODUS	UNDRAINED SHEAR STRENGTH	FRICTION ANGLE
Engineered	135	3	0	38°
BACKFILL TYPE	**UNIT WEIGHT (PCF)**	**CONCRETE STRENGTH (PSI)**	**DEFORMATION MODULUS (KSI)[1]**	**EFFECTIVE SHEAR STRENGTH (KSF)[2]**
CSLM	140	900	Calculated	108

Notes:
[1]. The deformation modulus is calculated using the concrete strength input; equation from ACI 318 section 19.2.2.1.b.
[2]. Effective shear strength is set to half of the concrete strength.

Conductors

Each phase of the 230 kV three-phase circuit will be composed of two bundled conductors. The proposed conductors for the 230 kV line are 1,272 kcmil 54/19 ACSS-HS285 “Pheasant.” Each conductor will have an overall diameter of 1.381 inches and an average weight of 1.633 pounds per foot.

Other Hardware

Insulators

Project insulator selection shall be based on required voltage and structure configuration and shall have, at a minimum, the physical and electrical characteristics outlined in Table B-8.

TABLE B-8. INSULATION PER 230 KV ASSEMBLIES

INSULATOR ASSEMBLY	LEAKAGE DISTANCE (IN)	60-HZ DRY FLASHOVER (kV)	60-HZ WET FLASHOVER (kV)	CRITICAL IMPULSE POSITIVE (KV)	CRITICAL IMPULSE NEGATIVE (kV)
Sediver 12 Glass Bells Suspension	151.5	960	600	1,500	1,560
Sediver 14 Glass Bells Strain	176.8	1,120	700	1,750	1,820
HPS TAT-2BPW-27600 Braced Post	221	840	705	1,260	1,355
NGK L3-SN581-18U-W Horizontal Post	256.9	870	730	1,405	1,465
NGK L3-SN581-15U-W Vertical Post	256.9	870	730	1,405	1,465

Grounding Systems

All transmission structures shall have a maximum footing resistance of 25 ohms.

Minor Additional Hardware

In addition to the conductors, insulators, and overhead shield wires, other associated hardware will be installed on the tower as part of the insulator assembly to support the conductors and shield wires. This hardware will include clamps, shackles, links, plates, and various other pieces composed of steel and aluminum.

A grounding system will be installed at the base of each transmission structure that will consist of copper or copper-clad ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by a buried copper lead.

Other hardware that is not associated with the transmission of electricity may be installed as part of the Project. This hardware may include aerial marker spheres or aircraft warning lighting if required by Federal Aviation Administration regulations.

2.2.3 Fuel and Chemical Storage Facilities

> OAR 345-021-0010(1)(b)(A)(iv): Fuel and chemical storage facilities, including structures and systems for spill containment.

Accidental spills or leaks of motor fuel, vehicle fluids, or chemicals may also result in small quantities of hazardous waste. Hazardous waste spills will be cleaned up promptly. Spill kits containing items such as absorbent pads will be located on equipment and in each multi-use area containing hazardous materials to ensure a quick response to spills. If hazardous spills in excess of reportable quantities, as identified in OAR 340-142-0050, contact the ground surface, the Oregon Department of Environmental Quality and the Oregon Department of Energy will be notified, and excavation of contaminated soil initiated. Hazardous materials and cleanup equipment will be stored in approved containers until they can be properly transported and disposed of at an approved treatment, storage, and disposal facility. Hazardous waste will be disposed of by a licensed contractor.

Exhibit G details UEC's plans to manage hazardous substances during construction, including measures to prevent and contain spills. UEC does not anticipate that it will need a Spill Prevention, Control, and Countermeasure Plan for any of its Project facilities or activities during operation. However, to the extent required by Oregon Department of Environmental Quality statutes or regulations, UEC will update existing Spill Prevention, Control, and Countermeasure Plan as part of this project.

2.2.4 Equipment and Systems for Fire

> OAR 345-021-0010(1)(b)(A)(v): Equipment and systems for fire prevention and control.

During construction, the risk of fire danger is related to refueling activities, operating vehicles and other equipment off improved roadways, welding activities, and the use of flammable liquids. During operation, the risk of fire is primarily from vehicles and maintenance activities that require welding. Further information regarding fire prevention and control is provided in Exhibit V.

2.3 Major Components; Related and Supporting Facilities; Dimensions

> OAR 345-021-0010(1)(b)(B): A description of major components, structures and systems of each related or supporting facility and;
>
> OAR 345-021-0010(1)(b)(C): The approximate dimensions of major facility structures and visible features.

UEC is not proposing any related or supporting facilities as part of the Project. The Project's major transmission line components related to construction, operation, and maintenance are further detailed below. The Project site boundary, or perimeter area, encompassing all potential permanent and temporary disturbance areas are outlined in Exhibit C, Figure C-3. The final total disturbed area will be significantly less than the area encompassed by the Project site boundary (also see Exhibit C, Table C-3).

2.3.1 Right-of-Way

The transmission line will be located within a ROW of sufficient width to ensure safe construction, electrical performance, and maintenance. Easements for the Project, depending on design requirements, will range between 75 and 150 feet wide and within the parcels shown on Attachment C, Figure C-1. The ROW will consist of permanent easements and public road ROWs. Easements on the CDA tract have been obtained as of August 24, 2023, and a significant portion of all alternative routes cross this property.

2.3.2 Site Preparation

Construction will take place in accordance with UEC's standard construction techniques and BMPs. Construction activities will take place primarily within the ROW along the transmission line alignment. To minimize disturbance, vegetation will be removed, and surface blading or grading will be completed only where needed for safe and efficient operations.

UEC will typically utilize a 50-foot by 50-foot work area around tangent structures and 100 by 400 feet around dead-end structures for conductor pulling activities; however, that full area is not necessarily disturbed. The size of the work area is based on the need to lay down the poles, install the necessary hardware, and frame the structures to full length. Any disturbed areas are restored to previous conditions or better and verified with the property owners.

2.3.3 Transmission Lines and Structures

The 230 kV overhead transmission line from the Hwy 730 Switchyard to the Ordnance Switchyard will be approximately 14 miles in length. The transmission line will be constructed using steel structures approximately 95 to 160 feet high and subject to the requirements of the National Electrical Safety Code and Federal Aviation Administration. The average span between structures will be approximately 600 feet. Three types of structures are proposed to be used as shown in Attachment B, Figure B-2: monopole, two-pole running angle, and two-pole dead-end.

2.3.4 Access Roads

Permanent access roads will not be required where the Project ROW is adjacent to existing roads. In agricultural areas, permanent easements for access roads will be established as necessary, but UEC will not construct permanent roads that would potentially affect agricultural operations or crop production. Existing roads may require minor improvements such as widening; these improvements would be coordinated with the applicable owner or agency managing the road and subject to any permitting requirements (Exhibit C, Figure C-4).

2.3.5 Laydown and Construction Yards

Staging areas for equipment and handling materials will be located at already developed sites (Hwy 730 Switchyard or Ordnance Switchyard) or will be selected by the construction contractor. These sites may also be used as fly yards, if required. Helicopter operations require fly yards for supporting helicopter only and helicopter assisted construction such as stringing. A staging area has been identified on CDA property northwest of the I-82/I-84 interchange. UEC will also use a Port of Morrow-owned yard on Paterson Ferry Road within the Project area. No additional modifications to that property are anticipated. Entrances to each laydown area and construction yard may be stabilized with rock and some brush may be cleared as necessary, but typically would involve “drive-and-crush” of vegetation with vehicle traffic or material laydown and stored materials. Temporary construction fencing may be utilized for security depending on the location and risk factors identified for the specific locations.

During construction, temporary laydown areas within the Hwy 730 Switchyard area will be used to stage construction activities and organize equipment and supplies. Laydown areas will be available for each area of the Project. A temporary construction trailer may be installed onsite, consisting of office space, storage, and breakroom facilities. It is anticipated that this area will be located on a previously disturbed site procured in coordination with a local landowner.

2.3.6 Distribution Rebuild

As currently proposed, existing electric distribution lines that coincide with the proposed alternative route may need to be relocated. Pending final design, existing distribution lines may be transitioned underground.

2.3.7 Operation and Maintenance

Operation and maintenance activities will include patrol and inspection of the line. Vegetation in work areas around all structures will be appropriately managed to allow access to the structures. The height of vegetation within the ROW will be limited to what is required for safety and clearance standards and in accordance with the UEC’s *Wildfire Mitigation Plan*. Access roads will be kept clear of obstruction and maintained as needed and in coordination with landowners.

2.3.8 Approximate Dimensions

Tables B-9 and B-10 describe the dimensions of facility structures and visible features. The final quantity, heights, span lengths, and clearances provided by the structures and ROW widths will depend on the final detailed design of the transmission line.

TABLE B-9. PROJECT STRUCTURES AND VISIBLE FEATURE DIMENSIONS

FACILITY	DESCRIPTION
Single-Circuit 230 kV Transmission Line	• Proposed structure type: Self-supporting Steel Monopole and 2-pole Self-Supporting Steel. • Structure heights: varies between 95 to 160 feet. • Structure diameter: approximately 54 inches (tangent monopole) to 10 feet (monopole double-circuit dead end) in diameter at their base. • Average span distance between structures: 600 feet. • ROW width: 100 feet. • Conductors: x2 bundled 1,272 kcmil 54/19 ACSS-HS285 "Pheasant." • Overhead shield wire with a diameter of approx. 0.435 inch (OHGW) and 0.726 inch (OPGW). • Minimum ground clearance: 22.4 ft (NESC min.) + 2.5 ft buffer = 24.9 feet • The final quantity, heights, span lengths, and clearances provided by the structures and ROW widths will depend on the final detailed design of the transmission line.

TABLE B-10. PROJECT DESIGN CHARACTERISTICS

FEATURE	DESIGN CHARACTERISTICS
Typical Structures	Self-Supporting Steel Monopole and 2-pole Self-Supporting Steel
Structure Height	95 to 160 feet
Average Span Length	600 feet
ROW Width	100 feet
Structure/Pole foundations	Steel Reinforced Concrete/Direct Embed
Land Disturbed (approximate):	
Temporary	
Structure Work Area	100 by 100 feet (10,000 square feet)
Pulling and Tensioning Sites	100 by 400 feet (40,000 square feet) mid-Span 100 by 500 feet (50,000 square feet) heavy angle
Construction Yard/Staging Areas (existing disturbed areas)	Variable; previously disturbed areas
Drive and Crush	Minimum 14 feet wide
Permanent	
Structure Footprint (Base)	
Monopole (Tangent)	54-inch diameter (15.9 square feet)
Two-Pole (Running Angle)	Two 7.0-foot-diameter bases (77 square feet total)
Two-Pole (Deadend)	Two 9.0-foot-diameter bases (127 square feet total)

FEATURE	DESIGN CHARACTERISTICS
Monopole Double-Circuit (Deadend)	One 10.0-foot-diameter base (79 square feet total)
New Access Roads	Minimum 14 feet wide
Improvement of Existing Access Roads	Additional 4-foot travel surface maximum, most access roads required for this Project will not require the full 4-foot surface improvement.

2.4 Information Required for Transmission Line Projects

The following information is required if the proposed energy facility is a pipeline or transmission line or has, as a related or supporting facility, a transmission line or pipeline of any size.

2.4.1 Transmission Line Length

OAR 345-021-0010(1)(b)(E)(i): The length of the pipeline or transmission line.

The Project is an approximately 14-mile-long transmission line between UEC's existing Hwy 730 Switchyard and UEC's Ordnance Switchyard. Alternative Route A has a total length of 14.89 miles, Alternative Route B has a total length of 14.85 miles, Alternative Route C has a total length of 14.80 miles, and Alternative Route D has a total length of 13.94 miles.

2.4.2 Proposed ROW Width

OAR 345-021-0010(1)(b)(E)(ii): The proposed right-of-way width of the pipeline or transmission line, including to what extent new right-of-way will be required or existing right-of-way will be widened.

The proposed ROW width is between 75 and 150 feet wide. The ROW will consist of permanent easements, public road ROWs, and temporary easements for the construction and operation of the Project.

2.4.3 Where Following Public ROW

OAR 345-021-0010(1)(b)(E)(iii): If the proposed transmission line or pipeline corridor follows or includes public right-of-way, a description of where the transmission line or pipeline would be located within the public right-of-way, to the extent known. If the applicant proposes to locate all or part of a transmission line or pipeline adjacent to but not within the public right-of-way, describe the reasons for locating the transmission line or pipeline outside the public right-of-way. The applicant must include a set of clear and objective criteria and a description of the type of evidence that would support locating the transmission line or pipeline outside the public right-of-way, based on those criteria.

The proposed transmission line will cross public road ROWs along Paterson Ferry Road The proposed transmission line is predominately located outside public ROW to avoid additional restrictions. Projects located within public ROW pose issues with obtaining access and maintenance requirements as well as strict revegetation policies.

2.4.4 Rated Voltage, Load Carrying Capacity, Current and Structures

OAR 345-021-0010(1)(b)(E)(v): For transmission lines, the rated voltage, load carrying capacity, and type of current and a description of transmission line structures and dimensions.

Rated voltage – 230 kV.

Load carrying capacity –1,958 megavolt amperes.

Type of Current – AC.

2.5 Construction Schedule

OAR 345-021-0010(1)(b)(F): A construction schedule including the date by which the applicant proposes to begin construction and the date by which the applicant proposes to complete construction. Construction is defined in OAR 345-001-0010. The applicant shall describe in this exhibit all work on the site that the applicant intends to begin before the Council issues a site certificate. The applicant shall include an estimate of the cost of that work. For the purpose of this exhibit, "work on the site" means any work within a site or corridor, other than surveying, exploration or other activities to define or characterize the site or corridor, that the applicant anticipates or has performed as of the time of submitting the application.

Project construction will commence shortly after the receipt of the Site Certificate and will last approximately 9 to 12 months. No work on-site will be conducted before the Council issues a site certificate. A detailed construction schedule is provided in Attachment B-2.

3.0 CONCLUSION

Exhibit B provides a detailed description of the Project as required by OAR 345-021-0010(1)(b)(A)(ii) through (v), (B), (C), (D), (E) and (F). The Exhibit provides information about the proposed facility, construction schedule, and temporary and permanent disturbances of the site as well as all provisions applicable to transmission lines, including the corridor assessment required under OAR 345-021-0010(1)(b)(D).

4.0 COMPLIANCE CROSS-REFERENCES

Table B-11 identifies the location within the application for site certificate of the information responsive to the application submittal requirements in OAR 345-021-0010(1)(b)(A)(ii) through (v), (B), (C), (D), (E), and (F).

TABLE B-11. COMPLIANCE REQUIREMENTS AND RELEVANT CROSS-REFERENCES

REQUIREMENT	LOCATION
OAR 345-021-0010(1)(b)	

REQUIREMENT	LOCATION
(b) Exhibit B. Information about the proposed facility, construction schedule and temporary disturbances of the sire, including:	All sections
(A) A description of the proposed energy facility, including as applicable:	Exhibit B, Section 2.2
(ii) Major components, structures and systems, including a description of the size, type and configuration of equipment used to generate electricity and useful thermal energy.	Exhibit B, Section 2.2.1
(iii) A site plan and general arrangement of buildings, equipment and structures.	Exhibit B, Section 2.2.2
(iv) Fuel and chemical storage facilities, including structures and systems for spill containment.	Exhibit B, Section 2.2.3
(v) Equipment and systems for fire prevention and control.	Exhibit B, Section 2.2.4
(B) A description of major components, structures and systems of each related or supporting facility.	Exhibit B, Section 2.3
(C) The approximate dimensions of major facility structures and visible features.	Exhibit B, Section 2.3, Table B-7
(D) If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a transmission line or pipeline that, by itself, is an energy facility under the definition in ORS 469.300, a corridor selection assessment explaining how the applicant selected the corridor(s) for analysis in the application. In the assessment, the applicant shall evaluate the corridor adjustments the Department has described in the project order, if any. The applicant may select any corridor for analysis in the application and may select more than one corridor. However, if the applicant selects a new corridor, then the applicant must explain why the applicant did not present the new corridor for comment at an informational meeting under OAR 345-015-0130. In the assessment, the applicant shall discuss the reasons for selecting the corridor(s), based upon evaluation of the following factors:	Exhibit B, Section 2.1
(i) Least disturbance to streams, rivers and wetlands during construction;	Exhibit B, Section 2.1.3
(ii) Least percentage of the total length of the pipeline or transmission line that would be located within areas of Habitat Category 1, as described by the Oregon Department of Fish and Wildlife;	Exhibit B, Section 2.1.3
(iii) Greatest percentage of the total length of the pipeline or transmission line that would be located within or adjacent to public roads and existing pipeline or transmission line rights-of- way (ROWs);	Exhibit B, Section 2.1.3
(iv) Least percentage of the total length of the pipeline or transmission line that would be located within lands that require zone changes, variances, or exceptions;	Exhibit B, Section 2.1.3
(v) Least percentage of the total length of the pipeline or transmission line that would be located in a protected area as described in OAR 345-022- 0040;	Exhibit B, Section 2.1.3
(vi) Least disturbance to areas where historical, cultural or archaeological resources are likely to exist;	Exhibit B, Section 2.1.3
(vii) Greatest percentage of the total length of the pipeline or transmission line that would be located to avoid seismic, geological and soils hazards;	Exhibit B, Section 2.1.3
(viii) Least percentage of the total length of the pipeline or transmission line that would be located within lands zoned for exclusive farm use;	Exhibit B, Section 2.1.3
(E) If the proposed energy facility is a pipeline or transmission line or has, as a related or supporting facility, a transmission line or pipeline of any size:	Exhibit B, Section 2.5

REQUIREMENT	LOCATION
(i) The length of the pipeline or transmission line.	Exhibit B, Section 2.5.1
(ii) The proposed ROW width of the pipeline or transmission line, including to what extent new ROW will be required or existing ROW will be widened.	Exhibit B, Section 2.5.2
(iii) If the proposed corridor follows or includes public ROW, a description of where the facility would be located within the public ROW, to the extent known. If the applicant proposes to locate all or part of a pipeline or transmission line adjacent to but not within the public ROW, describe the reasons for locating the facility outside the public ROW. The applicant must include a set of clear and objective criteria and a description of the type of evidence that would support locating the facility outside the public ROW, based on those criteria.	Exhibit B, Section 2.5.3
(iv) For pipelines, the operating pressure and delivery capacity in thousand cubic feet per day and the diameter and location, above or below ground, of each pipeline.	Exhibit B, Section 2.5.4
(v) For transmission lines, the rated voltage, load carrying capacity, and type of current and a description of transmission line structures and their dimensions	Exhibit B, Section 2.5.5
(F) A construction schedule including the date by which the applicant proposes to begin construction and the date by which the applicant proposes to complete construction. Construction is defined in OAR 345- 001-0010. The applicant shall describe in this exhibit all work on the site that the applicant intends to begin before the Council issues a site certificate. The applicant shall include an estimate of the cost of that work. For the purpose of this exhibit, “work on the site” means any work within a site or corridor, other than surveying, exploration or other activities to define or characterize the site or corridor that the applicant anticipates or has performed as of the time of submitting the application.	Exhibit B, Section 2.6, Attachment B-2

FIGURE B-1 FINAL ROUTES

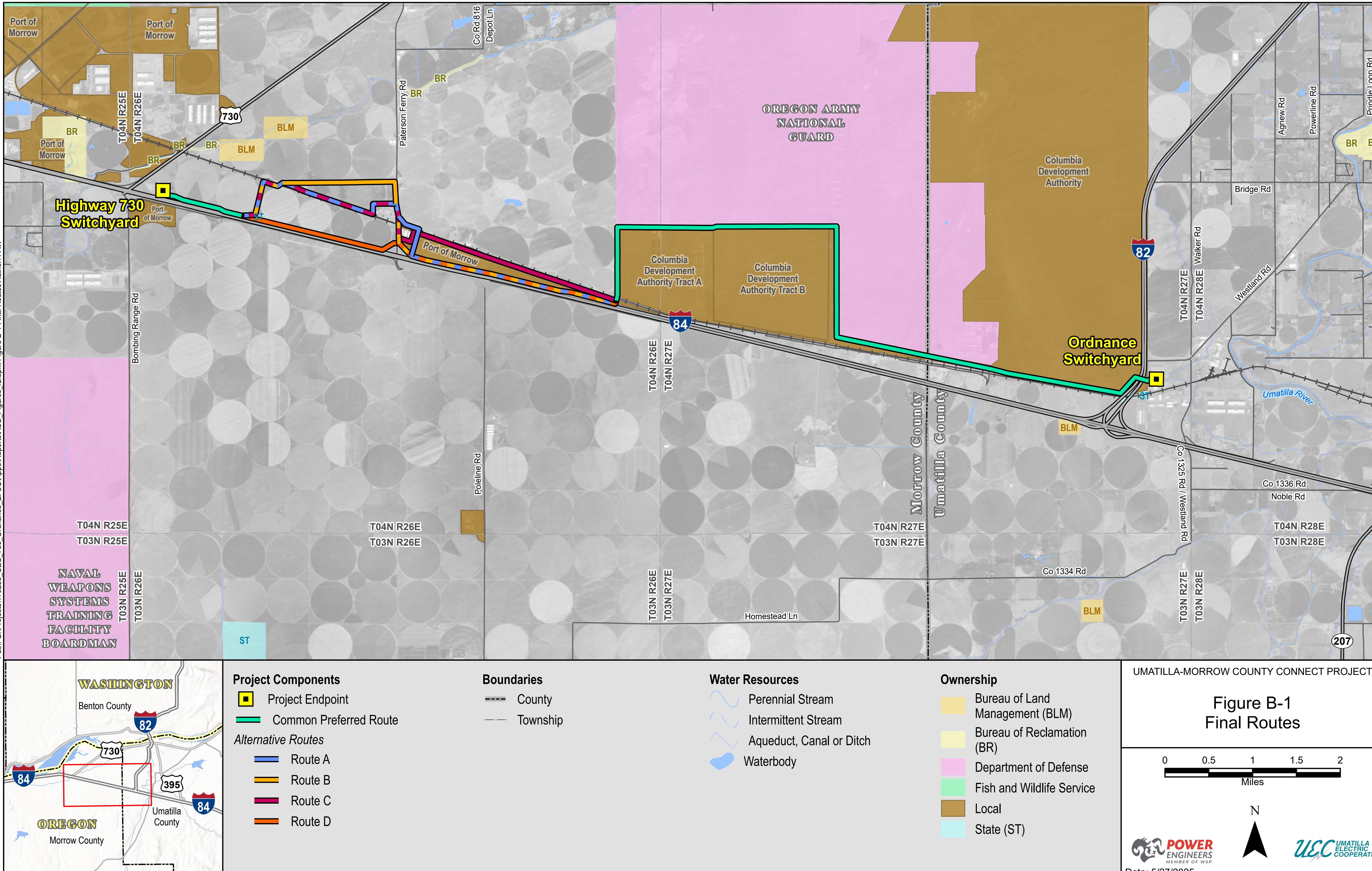


Figure B-1
Final Routes

ATTACHMENT B-1 RURAL UTILITIES SERVICE CLEARANCES

TABLE 4-1
RECOMMENDED DESIGN VERTICAL CLEARANCES OF CONDUCTORS ABOVE GROUND, ROADWAYS, RAILS, OR WATER SURFACE (in feet) (See Notes A, F & G)
(Applicable NESC Rules 232A, 232B, and Table 232-1)

Line conditions under which the NESC states vertical clearances shall be met (Calculations are based on Maximum Operating Voltage):

- 32°F, no wind, with radial thickness of ice, if any, specified in Rule 250B of the NESC for the loading district concerned.
- Maximum conductor temperature for which the line is designed to operate, with no horizontal displacement

Nominal Voltage, Phase to Phase (kV_{LL})		**34.5 & 46**	**69**	**115**	**138**	**161**	**230**
Max. Operating Voltage, Phase to Phase	(kV_{LL})	----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground	(kV_{LG})	----	41.8	69.7	83.7	97.6	139.4
	NESC Basic Clear.(Note F)	Clearances in feet					
1.0 Track rails	26.5	29.2	29.7	30.6	31.1	31.5	32.9
2.0 Roads, streets, etc., subject to truck traffic	18.5	21.2	21.7	22.6	23.1	23.5	24.9
3.0 Driveways, parking lots, and alleys	18.5	21.2	21.7	22.6	23.1	23.5	24.9
4.0 Other lands cultivated etc., traversed by vehicles, industrial and commercial areas (Note B)	18.5	21.2	21.7	22.6	23.1	23.5	24.9
5.0 Spaces and ways accessible to pedestrians only (Note C)	14.5	17.2	17.7	18.6	19.1	19.5	20.9
6.0 Water areas – no sail boating	17.0	19.7	20.2	21.1	21.6	22.0	23.4
7.0 Water areas – sail boating suitable (Notes D & E)							
Less than 20 acres	20.5	23.2	23.7	24.6	25.1	25.5	26.9
20 to 200 acres	28.5	31.2	31.7	32.6	33.1	33.5	34.9
200 to 2000 acres	34.5	37.2	37.7	38.6	39.1	39.5	40.9
Over 2000 acres	40.5	43.2	43.7	44.6	45.1	45.5	46.9
8.0 Public or private land and water areas posted for rigging or launching sailboats (Note E)							
Less than 20 acres	25.5	28.2	28.7	29.6	30.1	30.5	31.9
20 to 200 acres	33.5	36.2	36.7	37.6	38.1	38.5	39.9
200 to 2000 acres	39.5	42.2	42.7	43.6	44.1	44.5	45.9
Over 2000 acres	45.5	48.2	48.7	49.6	50.1	50.5	51.9
ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE:							
Additional feet of clearance per 1000 feet of altitude above 3300 feet		.00	.02	.05	.07	.08	.12

TABLE 4-1
(continued from previous page)
RECOMMENDED DESIGN VERTICAL CLEARANCE OF CONDUCTORS ABOVE GROUND, ROADWAYS, RAILS, OR WATER SURFACE (in feet) (See Notes A, F & G)
(Applicable NESC Rules 232A, 232B, and Table 232-1

Notes:

(A) For voltages exceeding 98 kV alternating current to ground, or 139 kV direct current to ground, the NESC states that either the clearance shall be increased or the electric field, or the effects thereof, shall be reduced by other means, as required, to limit the current due to electrostatic effects to 5.0 milliampere (mA), rms, if the largest anticipated truck, vehicle or equipment under the line were short circuited to ground. The size of the anticipated truck, vehicle, or equipment used to determine these clearances may be less than but need not be greater than that limited by Federal, State, or local regulations governing the area under the line. For this determination, the conductors shall be at final unloaded sag at 120° F.

Fences and large permanent metallic structures in the vicinity of the line will be grounded in accordance with the owner's grounding units for the structure concerned to meet the 5.0 milliampere requirement. There should be adequate ground clearance at crossings and along the right-of-way to meet the minimum requirement of 5 mA due to the electrostatic field effects on the anticipated vehicles under the transmission line.

Consideration should be given to using the 5.0 mA rule to the conductor under maximum sag condition of the conductor.

(B) These clearances are for land traversed by vehicles and equipment whose overall operating height is less than 14 feet.

(C) Areas accessible to pedestrians only are areas where riders on horses or other large animals, vehicles or other mobile units exceeding 8 feet in height are prohibited by regulation or permanent terrain configurations or are not normally encountered nor reasonably anticipated. Land subject to highway right-of-way maintenance equipment is not to be considered as being accessible to pedestrians only.

(D) The NESC states that "for uncontrolled water flow areas, the surface area shall be that enclosed by its annual high-water mark. Clearances shall be based on the normal flood level; if available, the 10 year flood level may be assumed as the normal flood level. The clearance over rivers, streams, and canals shall be based upon the largest surface area of any one mile-long segment which includes the crossing. The clearance over a canal, river, or stream normally used to provide access for sailboats to a larger body of water shall be the same as that required for the larger body of water."

(E) Where the U.S. Army Corps of Engineers or the state, has issued a crossing permit, the clearances of that permit shall govern.

(F) The NESC basic clearance is defined as the reference height plus the electrical component for open supply conductors up to 22 kV_{L-G}.

(G) An additional 2.5 feet of clearance is added to the NESC clearance to obtain the recommended design clearances. Greater values should be used where survey methods to develop the ground profile are subject to greater unknowns. See Chapter 10, paragraph 10.c of this bulletin.

TABLE 4-2
RECOMMENDED DESIGN VERTICAL CLEARANCES FROM OTHER SUPPORTING STRUCTURES (See Note B), BUILDINGS AND OTHER INSTALLATIONS (in feet)
(Applicable NESC Rules: 234A, 234B, 234C, 234D, 234E, 234F, 234I, Tables 234-1, 234-2, 234-3)

Line conditions under which the NESC vertical clearances shall be met (Calculations are based on Maximum Operating Voltage.):

- 32°F, no wind, with radial thickness of ice, if any, specified in Rule 250B of the NESC for the loading district concerned.
- Maximum conductor temperature for which the line is designed to operate, with no horizontal displacement

Nominal Voltage, Phase to Phase (kV_{LL})		**34.5 & 46**	**69**	**115**	**138**	**161**	**230 (E)**
Max. Operating Voltage, Phase to Phase	(kV_{LL})	----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground	(kV_{LG})	----	41.8	69.7	83.7	97.6	139.4
	NESC Basic Clear.(Note D)	Clearances in feet					
1.0 From a lighting support, traffic signal support, or supporting structure of a second line	5.5	7.5	7.5	8.2	8.6	9.1	10.8
2.0 From buildings not accessible to pedestrians	12.5	14.7	15.2	16.1	16.6	17.0	18.4
3.0 From buildings – accessible to pedestrians and vehicles but not truck traffic	13.5	15.7	16.2	17.1	17.6	18.0	19.4
4.0 From buildings – over roofs, ramps, and loading docks accessible to truck traffic	18.5	20.7	21.2	22.1	22.6	23.0	24.4
5.0 From signs, chimneys, billboards, radio & TV antennas, flagpoles, banners, tanks & other installations **not accessible to personnel**.	8.0	10.2	10.7	11.6	12.1	12.5	13.9
6.0 From bridges – not attached (Note C)	12.5	14.7	15.2	16.1	16.6	17.0	18.4
7.0 From grain bins probe ports	18.0	20.2	20.7	21.6	22.1	22.5	23.9
8.0 Clearance in any direction from swimming pool edge and diving platform base **(Clearance A, Figure 4-4)**	25.0	27.2	27.7	28.6	29.1	29.5	30.9
Clearance in any direction from diving structures **(Clearance B, Figure 4-4)**	17.0	19.2	19.7	20.6	21.1	21.5	22.9
ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE							
Additional feet of clearance per 1000 feet of altitude above 3300 feet		.00	.02	.05	.07	.08	.12

Notes:

(A) An additional 2.0 feet of clearance is added to NESC clearance to obtain the recommended design clearances. Greater values should be used where the survey method used to develop the ground profile is subject to greater unknowns.
(B) Other supporting structures include lighting supports, traffic signal supports, a supporting structure of another line, or intermediate poles in skip span construction.
(C) If the line crosses a roadway, then Table 4-1, line 2.0 clearances are required.
(D) The NESC basic clearance is defined as the reference height plus the electrical component for open supply conductors up to 22 kV_{LG} except row '1.0' where voltage reference is 50 kV_{LG}
(E) For 230 kV, clearances may be required to be higher if switching surges are greater than 2.0 per unit. See NESC Tables 234-4 and 234-5.

TABLE 4-3
RECOMMENDED DESIGN VERTICAL CLEARANCES IN FEET
BETWEEN CONDUCTORS WHERE THE CONDUCTORS OF ONE LINE
CROSS OVER THE CONDUCTORS OF ANOTHER AND WHERE THE UPPER AND
LOWER CONDUCTORS HAVE GROUND FAULT RELAYING

Voltage between circuits = Voltage line to ground Top Circuit + Voltage line to ground Bottom Circuit (Calculations are based on the maximum operating voltage.)

The NESC requires that clearances not be less than that required by application of a clearance envelope developed under NESC Rules 233A1 & 233A2. Structure deflection shall also be taken into account. Agency recommended values in this table are to be adders applied for the movement of the conductor and deflection of structures, if any.

			UPPER LEVEL CONDUCTOR (Note F)					
Nominal Voltage, Phase to Phase kV $_{L-L}$			**34.5 & 46**	**69**	**115**	**138**	**161**	**230**
Max. Operating Voltage, Phase to Phase		(kV_{LL})	----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground		(kV_{LG})	----	41.8	69.7	83.7	97.6	139.4
	NESC Basic Clear. (Note H)	(kV_{LG})	Clearances in feet					
LOWER LEVEL CONDUCTOR								
1. Communication	5.0		6.7	7.2	8.1	8.6	9.0	10.4
2. OHGW (Note G)	2.0		3.7	4.2	5.1	5.6	6.0	7.4
3. Distribution conductors	2.0		3.7	4.2	5.1	5.6	6.0	7.4
4. Transmission conductors of lines that have ground fault relaying. Nominal line – to – line voltage in kV. (Note F)								
230 kV	2.0	139.4						11.3
161 kV	2.0	97.6					8.5	9.9
138 kV	2.0	83.7				7.6	8.1	9.5
115 kV	2.0	69.7			6.7	7.1	7.6	9.0
69 kV	2.0	41.8		4.8	5.6	6.2	6.7	8.1
46 kV and below	2.0	26.4	3.8	4.3	5.2	5.7	6.2	7.6

Notes:

(A) The conductors on other supports are assumed to be from different circuits

(B) **This table applies to lines with ground fault relaying.**

(C) The NESC requires that the clearance shall be not less than that required by application of a clearance envelope developed under NESC Rule 233A2 to the positions on or within conductor movement envelopes developed under Rule 233A1 at which the two wires, conductors or cables would be closest together. For purposes of this determination, the relevant positions of the wires, conductors, or cables on or within their respective conductor movement envelopes are those which can occur when (1) both are simultaneously subjected to the same ambient air temperature and wind loading conditions and (2) each is subjected individually to the full range of its icing conditions and applicable design electrical loading.

TABLE 4-3 (continued)
RECOMMENDED DESIGN VERTICAL CLEARANCES IN FEET
BETWEEN CONDUCTORS WHERE THE CONDUCTORS OF ONE LINE
CROSS OVER THE CONDUCTORS OF ANOTHER AND WHERE THE UPPER AND
LOWER CONDUCTORS HAVE GROUND FAULT RELAYING

(D) An additional 1.5 feet of clearance is added to NESC clearance to obtain the recommended design clearances. Greater values should be used where the survey method used to develop the ground profile is subject to greater unknowns.

(E) ***ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE***

Total altitude correction factor = Correction for upper conductors + Correction for lower conductors

For upper conductors use correction factor from Table 4-1 of this bulletin.
For lower conductors:
Categories 1, 2, 3 above use no correction factors
Category 4 uses correction factors from Table 4-1 of this bulletin

(F) **The higher voltage line should cross over the lower voltage line**

(G) If the line on the lower level has overhead ground wire(s), this clearance will usually be the limiting factor at crossings.

(H) The NESC basic clearance is defined as the reference height plus the electrical component for open supply conductors up to 22 kV_{L-G}.

TABLE 5-1
RECOMMENDED DESIGN HORIZONTAL CLEARANCES (in feet) FROM CONDUCTORS AT REST AND DISPLACED BY 6 PSF WIND TO OTHER SUPPORTING STRUCTURES, BUILDINGS AND OTHER INSTALLATIONS
(NESC Rules 234B, 234C, 234D, 234E, 234F, 234I, Tables 234-1, 234-2, 234-3)

Conditions under which clearances apply:

No wind: When the conductor is at rest the clearances apply at the following conditions: (a) 120°F, final sag, (b) the maximum operating temperature the line is designed to operate, final sag, (c) 32°F, final sag with radial thickness of ice for the loading district (1/4 in. for Medium or 1/2 in. Heavy).

Displaced by Wind: Horizontal clearances are to be applied with the conductor displaced from rest by a 6 psf wind at final sag at 60°F. The displacement of the conductor is to include deflection of suspension insulators and deflection of flexible structures.

The clearances shown are for the displaced conductors and do not provide for the horizontal distance required to account for blowout of the conductor and the insulator string. This distance is to be added to the required clearance. See Equation 5-1.

Clearances are based on the Maximum Operating Voltage

Nominal voltage, Phase to Phase, kV_{L-L}		**34.5 & 46**	**69**	**115**	**138**	**161**	**230**
Max. Operating Voltage, Phase to Phase, kV_{L-L}		----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground, kV_{L-G}		----	41.8	69.7	83.7	97.6	139.4
Horizontal Clearances - (Notes 1,2,3)	NESC Basic Clear	Clearances in feet					
1.0 From a lighting support, traffic signal support or supporting structure of another line							
At rest (NESC Rule 234B1a)	5.0	6.5	6.5	7.2	7.6	8.1	9.5
Displaced by wind (NESC Rule 234B1b)	4.5	6.2	6.7	7.6	8.1	8.5	9.9
2.0 From buildings, walls, projections, guarded windows, windows not designed to open, balconies, and areas accessible to pedestrians							
At rest (NESC Rule 234C1a)	7.5	9.2	9.7	10.6	11.1	11.5	12.9
Displaced by wind (NESC Rule 234C1b)	4.5	6.2	6.7	7.6	8.1	8.5	9.9
3.0 From signs, chimneys, billboards, radio, & TV antennas, tanks & other installations not classified as buildings							
At rest (NESC Rule 234C1a)	7.5	9.2	9.7	10.6	11.1	11.5	12.9
Displaced by wind (NESC Rule 234C1b)	4.5	6.2	6.7	7.6	8.1	8.5	9.9
4.0 From portions of bridges which are readily accessible and supporting structures are not attached							
At rest (NESC Rule 234D1a)	7.5	9.2	9.7	10.6	11.1	11.5	12.9
Displaced by wind (NESC Rule 234D1b)	4.5	6.2	6.7	7.6	8.1	8.5	9.9
5.0 From portions of bridges which are ordinarily inaccessible and supporting structures are not attached							
At rest (NESC Rule 234D1a)	6.5	8.2	8.7	9.6	10.1	10.5	11.9
Displaced by wind (NESC Rule 234D1b)	4.5	6.2	6.7	7.6	8.1	8.5	9.9

TABLE 5-1 (continued)
RECOMMENDED DESIGN HORIZONTAL CLEARANCES (in feet) FROM CONDUCTORS AT REST AND DISPLACED BY 6 PSF WIND TO OTHER SUPPORTING STRUCTURES, BUILDINGS AND OTHER INSTALLATIONS
(NESC Rules 234B, 234C, 234D, 234E, 234F, 234I, Tables 234-1, 234-2, 234-3)

Conditions under which clearances apply:

No wind: When the conductor is at rest the clearances apply at the following conditions: (a) 120°F, final sag, (b) the maximum operating temperature the line is designed to operate, final sag, (c) 32°F, final sag with radial thickness of ice for the loading district (1/4 in. for Medium or 1/2 in. Heavy).

Displaced by Wind: Horizontal clearances are to be applied with the conductor displaced from rest by a 6 psf wind at final sag at 60°Funder extreme wind conditions (such as the 50 or 100-year mean wind) at final sag at 60°F. The displacement of the conductor is to include deflection of suspension insulators and deflection of flexible structures.

The clearances shown are for the displaced conductors and do not provide for the horizontal distance required to account for blowout of the conductor and the insulator string. This distance is to be added to the required clearance. See Equation 5-1.

Clearances are based on the Maximum Operating Voltage

Nominal voltage, Phase to Phase, kV_{L-L}	**34.5 & 46**	**69**	**115**	**138**	**161**	**230**
Max. Operating Voltage, Phase to Phase, kV_{L-L}	----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground, kV_{L-G}	----	41.8	69.7	83.7	97.6	139.4

Horizontal Clearances - (Notes 1,2,3)	NESC Basic Clear	Clearances in feet					
6.0 Swimming pools – see section 4.d.(4) of Chapter 4 and item 8 of Table 4–2. (NESC Rule 234E)							
Clearance in any direction from swimming pool edge (Clearance A, Figure 4-4 of this bulletin)	25.0	27.2	27.7	28.6	29.1	29.5	30.9
Clearance in any direction from diving structures (Clearance B, Figure 4-4 of this bulletin)	17.0	19.2	19.7	20.6	21.1	21.5	22.9
7.0 From grain bins loaded with permanently attached conveyor							
At rest (NESC Rule 234F1b)	15.0	17.2	17.7	18.6	19.1	19.5	20.9
Displaced by wind (NESC Rule 234C1b)	4.5	6.7	7.2	8.1	8.6	9.0	10.4
8.0 From grain bins loaded with a portable conveyor. Height 'B' of highest filling or probing port on bin must be added to clearance shown. Clearances for 'at rest' and not displaced by the wind. See NESC Figure 234-4 for other requirements. **Horizontal clearance envelope (includes area of sloped clearance per NESC Figure 234-4b)**		H_t = (24+B) + 1.5B (See Note 3 and Fig. 5-7)					
9.0 From rail cars (Applies only to lines parallel to tracks) See Figure 234-5 and section 234I (Eye) of the NESC							
Clearance measured to the nearest rail		14.1	14.1	15.1	15.6	16.0	17.5
ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE							
Additional feet of clearance per 1000 feet of altitude above 3300 feet		.02	.02	.05	.07	.08	.12

Notes:
1. Clearances for categories 1-5 in the table are approximately 1.5 feet greater than NESC clearances.
2. Clearances for categories 6 to 9 in the table are approximately 2.0 feet greater than NESC clearances.
3. "B" is the height of the highest filling or probing port on a grain bin. Horizontal clearance is for the highest voltage of 230 kV.

TABLE 5-2
RADIAL OPERATING CLEARANCES (in feet) FROM IEEE 516 FOR USE IN DETERMINING CLEARANCES TO VEGETATION FROM CONDUCTORS
(NERC Standard FAC-003.2 Transmission Vegetation Management Program, IEEE 516, Guideline For Maintenance Methods Of Energized Power Lines)

Conditions under which clearances apply:

Displaced by Wind: Radial operating clearances are to be applied at all rated operating conditions. The designer should determine applicable conductor temperature and wind conditions for all rated operating conditions. The displacement of the conductor is to include deflection of suspension insulators and deflection of flexible structures.

The operating clearances shown are for the displaced conductors and do not provide for the horizontal distance required to account for blowout of the conductor and the insulator string. This distance is to be added to the required clearance. See Equation 5-1.

Clearances are based on the Maximum Operating Voltage.

Nominal voltage, Phase to Phase, kV_{L-L}	**34.5 & 46**[1]	**69**[1]	**115**[1]	**138**[1]	**161**[1]	**230**[1,2]
Max. Operating Voltage, Phase to Phase, kV_{L-L}	----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground, kV_{L-G}	----	41.8	69.7	83.7	97.6	139.4
<u>Radial Table 5 IEEE Standard 516 Operating Clearances</u>	Clearances in feet					
Operating clearance at all rated operating conditions	1.8	1.8	1.9	2.3	2.5	2.7
Design adder for survey and installation tolerance	1.5 feet for all voltages					
Design adder for vegetation	Determined by designer (see Note 3 below)					
<u>ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE</u>						
Additional feet of clearance per 1000 feet of altitude above 3300 feet	.02	.02	.05	.07	.08	.12

Notes:

1. These clearances apply to all transmission lines operated at 200 kV phase-to-phase and above and to any lower voltage lines designated as critical (refer to NERC FAC 003).
2. The 230 kV clearance is based on 3.0 Per Unit switching surge.
3. The design adder for vegetation, applied to conductors displaced by wind, should account for reasonably anticipated tree movement, species types and growth rates, species failure characteristics, and local climate and rainfall patterns. The design adder for vegetation, applied to conductors at rest, should account for worker approach distances in addition to the aforementioned factors.

TABLE 6-1
RECOMMENDED VERTICAL SEPARATION IN FEET BETWEEN PHASES OF THE SAME OR DIFFERENT CIRCUITS ATTACHED TO THE SAME RUS STANDARD STRUCTURE
(For separations less than those shown, see Sections 6.b.(2), 6.b.(3), and 6.b.(4) to calculate horizontal separation) (See Notes E & F)

Nominal voltage, Line-to-Line Voltage in kV	**34.5 & 46**	**69**	**115**	**138**	**161**	**230**
Max. Operating Voltage, Phase to Phase, kV	----	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground, kV	----	41.8	69.7	83.7	97.6	139.4
Vertical Separation	Separation in feet					
Minimum Vertical Separation at Support						
1. Phases of the same circuit (Note A) (Based on NESC Table 235-5)	3.2	4.0	5.6	6.4	7.2	9.6
2. Phases of different circuits (Notes B & D) (Based on NESC Table 235-5,footnote 7 criteria for different utilities)	5.4	6.3	8.2	9.1	10.1	12.8
3. Phase conductors and overhead ground wires (Based on NESC 235C and 233C3)	2.5	2.9	3.9	4.3	4.8	6.4
Minimum Vertical Separation in Span						
4. Phases of the same circuit (Notes A & G) (Based on NESC Table 235-5 and NESC 235C2b(1)), H ≥ 1.0 ft., Figure 6-4	2.5*	3.3	4.9	5.7	6.5	9.0
	*75% of corresponding value in Line 1.					
5. Phases of different circuits (Notes C, D & G) (Based on NESC Table 235-5, footnote 7 **criteria for different utilities** NESC Rule 235C2b.), H ≥ 1.0 ft., Figure 6-4	4.2	5.2	7.0	7.9	8.9	11.7
6. Phase conductors and overhead ground wires (H ≥ 1.0 ft., Figure 6-4), Notes D & G	1.9**	2.2**	3.2	3.7	4.1	5.6
	**75% of corresponding values in Line 3.					

ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE
Clearance values in table above shall be increased 3% for each 1,000 ft. in excess of 3,300 ft. above mean sea level.

Notes:

(A) There are no NESC values specified for vertical separation of conductors of the same circuit for voltages above 50 kV line-to-line.

(B) Assumes both circuits have the same nominal voltage. If they do not, the vertical separation can be determined using Equation 6-2 below.

$$V = \frac{40}{12} + \frac{.4}{12}\left(kV_{LG1} + kV_{LG2} - 8.7\right) + \frac{6}{12}\left(NoteD\right) \qquad \text{Eq. 6-2}$$

where:
kV_{LG1} = Line to ground voltage circuit one, kilovolts.
kV_{LG2} = Line to ground voltage circuit two, kilovolts.

TABLE 6-1 (continued)
RECOMMENDED VERTICAL SEPARATION IN FEET BETWEEN PHASES
OF THE SAME OR DIFFERENT CIRCUITS ATTACHED TO THE SAME STRUCTURE
(For separations less than those shown, Equation 6-1 applies) (See Notes E & F)

(C) Assumes both circuits have the same nominal voltage. If they do not, the vertical separation can be determined using Equation 6-2a below.

$$V = .75\left[\frac{40}{12} + \frac{.4}{12}(50 - 8.7)\right] + \frac{.4}{12}\left(kV_{LG1} + kV_{LG2} - 50\right) + \frac{6}{12}\left(NoteD\right) \quad \text{Eq. 6-2a}$$

(D) An additional 0.5 feet of clearance is added to the NESC clearance to obtain the recommended design clearances.

(E) The values in this table are not recommended as minimum vertical separations at the structure for non-standard agency structures. They are intended only to be used on standard agency structures to determine whether or not horizontal separation calculations are required.

(F) The upper conductor is at final sag at the maximum operating temperature and the lower conductor is at final sag at the same ambient conditions as the upper conductor without electrical loading and without ice loading; **or**, the upper conductor is at final sag at 32º with radial ice from either the medium loading district or the heavy loading district and the lower conductor is at final sag at 32ºF.

(G) In areas subjected to icing, an additional 2.0 feet of clearance should be added to the above clearances when conductors or wires are directly over one another or have less than a one foot horizontal offset. See section 6.c of this bulletin.

(3) Additional Horizontal Separation Equation. Equation 6-3 below, commonly known as the Percy Thomas formula, may be used in addition to (but not instead of) equation 6-1 for determining the horizontal separation between the phases at the structure. Equation 6-3 takes into account the weight, diameter, sag, and span length of the conductor.

$$H = (.025)kV + \frac{(E_c)(d_c)(S_p)}{w_c} + \frac{\ell_i}{2} \quad \text{Eq. 6-3}$$

where:
d_c = conductor diameter in inches
w_c = weight of conductor in lb/ft
E_c = an experience factor. It is generally recommended that Ec be larger than 1.25
S_p = sag of conductor at 60°F, expressed as a percent of span length

All other symbols as previously defined.

By using the Thomas formula to determine values of Ec, the spacing of conductors on lines which have operated successfully in a locality can be examined. These values of Ec may be helpful in determining other safe spacings.

(4) Maximum Span Based on Horizontal Separation at the Structure. Equation 6-1 can be rewritten and combined with Equation 10-1 (Chapter 10) to yield the maximum allowable span, given the horizontal separation

TABLE 7-1
RECOMMENDED MINIMUM CLEARANCES IN INCHES AT CONDUCTOR TO SURFACE OF STRUCTURE OR GUY WIRES

Nominal voltage, Phase to Phase, kV	**34.5**	**46**	**69**	**115**	**138**	**161**	**230**
Standard Number of 5-3/4"x10" Insulators on Tangent Structures	**3**	**3**	**4**	**7**	**8**	**10**	**12**
Max. Operating Voltage, Phase to Phase, kV	34.5	46	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground, kV	19.9	26.6	41.8	69.7	83.7	97.6	139.4
	Clearance in inches						
No Wind Clearance (Not NESC)							
Min. clearance to structure or guy at no wind in inches Notes A, B	19	19	25	42	48	60	71
Moderate Wind Clearance (NESC Table 235-6)							
Min. clear. to structure at 6 psf of wind in inches. Notes C, D	9	11	16	26	30	35	50
Min. clear. to jointly used structures and a 6 psf of wind in inches. Notes C, D	11	13	18	28	32	37	52
Min. clearance to anchor guys at 6 psf in inches Notes C, D	13	16	22	34	40	46	64
High Wind Clearance (Not NESC)							
Min. clearance to structure or guy at high wind in inches	3	3	5	10	12	14	20

Notes:

(A) If insulators in excess of the standard number for tangent structures are used, the no wind clearance value shown should be increased by 6 in. for each additional bell. If the excess insulators are needed for contamination purposes, this additional clearance is not necessary. For non-ceramic suspension insulators, the no wind clearance should be, at minimum, the length of the insulator plus 2".

(B) For post insulators, the no wind clearance to structure or guy is the length of the post insulator.

(C) A higher wind may be assumed if deemed necessary.

(D) The following values should be added as appropriate where the altitude exceeds 3300 feet

Additional inches of clearance per 1000 feet of altitude above 3300 feet

Voltage, kV	34.5	46	69	115	138	161	230
Clearance to structure	0	0	.14	.43	.57	.72	1.15
Clearance to anchor guy	0	0	.17	.54	.72	.90	1.44

TABLE 14-2
RECOMMENDED MINIMUM CLEARANCES IN INCHES
FROM CONDUCTOR TO SURFACE OF STRUCTURE OR TO GUY WIRES (Note A)

Nominal Voltage, Phase to Phase, kV	**34.5**	**46**	**69**	**115**	**138**	**161**	**230**
Standard Number of 5-3/4"x10" Insulators on Tangent Structures	**3**	**3**	**4**	**7**	**8**	**10**	**12**
Max. Operating Voltage, Phase to Phase, kV	34.5	46	72.5	120.8	144.9	169.1	241.5
Max. Operating Voltage, Phase to Ground, kV	19.9	26.6	41.8	69.7	83.7	97.6	139.4
Wind Condition	**Clearance, in.**						
NO WIND CLEARANCE							
Min. clearance to guy at no wind (Notes A, B)	19	19	25	42	48	60	71
MODERATE WIND CLEARANCE (based on NESC Rule 235E, Table 235-6)							
Min. clear. to structure at 6 psf of wind (Notes C, D)	9	11	16	26	30	35	50
Min. clear. to jointly used structures and a 6 psf of wind (Notes C, D)	11	13	18	28	32	37	52
Min. clearance to anchor guys at 6 psf (Notes C, D)	13	16	22	34	40	46	64
HIGH WIND CLEARANCE							
Min. clearance to guys at high wind	3	3	5	10	12	14	20

Notes:

(A) If insulators in excess of the standard number for tangent structures are used, the no-wind clearance value given should be increased by 6 in. for each additional bell. For instance, extra insulation in the form of additional insulator bells may be used on steel structures where grounding is a problem or the structures are located in high isokeraunic areas. In these instances, the no wind clearances should be increased. If excess insulators are needed for contamination purposes only, the additional clearance is not necessary

(B) For post insulators, the no-wind clearance to structure or guy is the length of the post insulator.

(C) A higher wind may be assumed if deemed necessary.

(D) The following values should be added as appropriate where the altitude exceeds 3300 feet

Additional inches of clearance per 1000 feet of altitude above 3300 feet:

Nominal Voltage, KV	34.5	46	69	115	138	161	230
Clearance to structure	0	0	0.14	0.43	0.57	0.72	1.15
Clearance to guy	0	0	017	0.53	0.72	0.90	1.44

TABLE 16-1
RECOMMENDED MINIMUM VERTICAL CLEARANCES TO DISTRIBUTION OR COMMUNICATION UNDERBUILD ON TRANSMISSION LINES IN FEET
(Circuits may be of the same or different utilities)
(Based on NESC Rule 235 and Table 235-5)

Transmission Nominal voltage, Phase to Phase	kV_{L-L}	***34.5***	***46***	***69***	***115***	***138***	***161***	***230***
Max. Operating Voltage, Phase to Phase	kV_{L-L}	*36.2*	*48.3*	*72.5*	*120.8*	*144.9*	*169.1*	*241.5*
Max. Operating Voltage, Phase to Ground	kV_{L-G}	*20.2*	*27.9*	*41.8*	*69.7*	*83.7*	*97.6*	*139.4*
Vertical Clearances Between Transmission and Distribution Conductors		***Clearances in Feet***						
***1**. Clearance at the support from point of suspension of transmission conductor to point of suspension of underbuild distribution or communication conductor. Nominal underbuild voltage in kV line-to-line: (Note A)*								
a. 25 kV and below (including communications conductors)		*4.7*	*5*	*5.4*	*6.4*	*6.8*	*7.3*	*8.7*
b. 34.5 kV		*4.9*	*5.2*	*5.6*	*6.5*	*7.0*	*7.5*	*8.9*
***2.** Clearance at any point in span from transmission conductor to underbuild conductor. Nominal underbuild voltage in kV line-to-line (Note A):*								
a. 25 kV and below (including communications conductors)		*3.7*	*3.8*	*4.2*	*5.2*	*5.6*	*6.1*	*7.5*
b. 34.5 kV		*3.8*	*4.0*	*4.3*	*5.4*	*5.8*	*6.3*	*7.7*
Vertical Clearances Between Transmission Conductors and Distribution Structures		***(See Table 4-2)***						
ALTITUDE CORRECTION TO BE ADDED TO VALUES ABOVE *Additional feet of clearance per 1000 feet of altitude above 3300 feet*			*0.02*	*0.02*	*0.05*	*0.06*	*0.08*	*0.12*

Note:
(A) An additional 0.5 feet of clearance is added to the NESC clearance to obtain the recommended design clearances.
(B) Values for lines 1.a and b are based on Equation 6.2:

$$V = \frac{40}{12} + \frac{.4}{12}\left(kV_{LG1} + kV_{LG2} - 8.7\right) + \frac{6}{12}\left(NoteA\right)$$

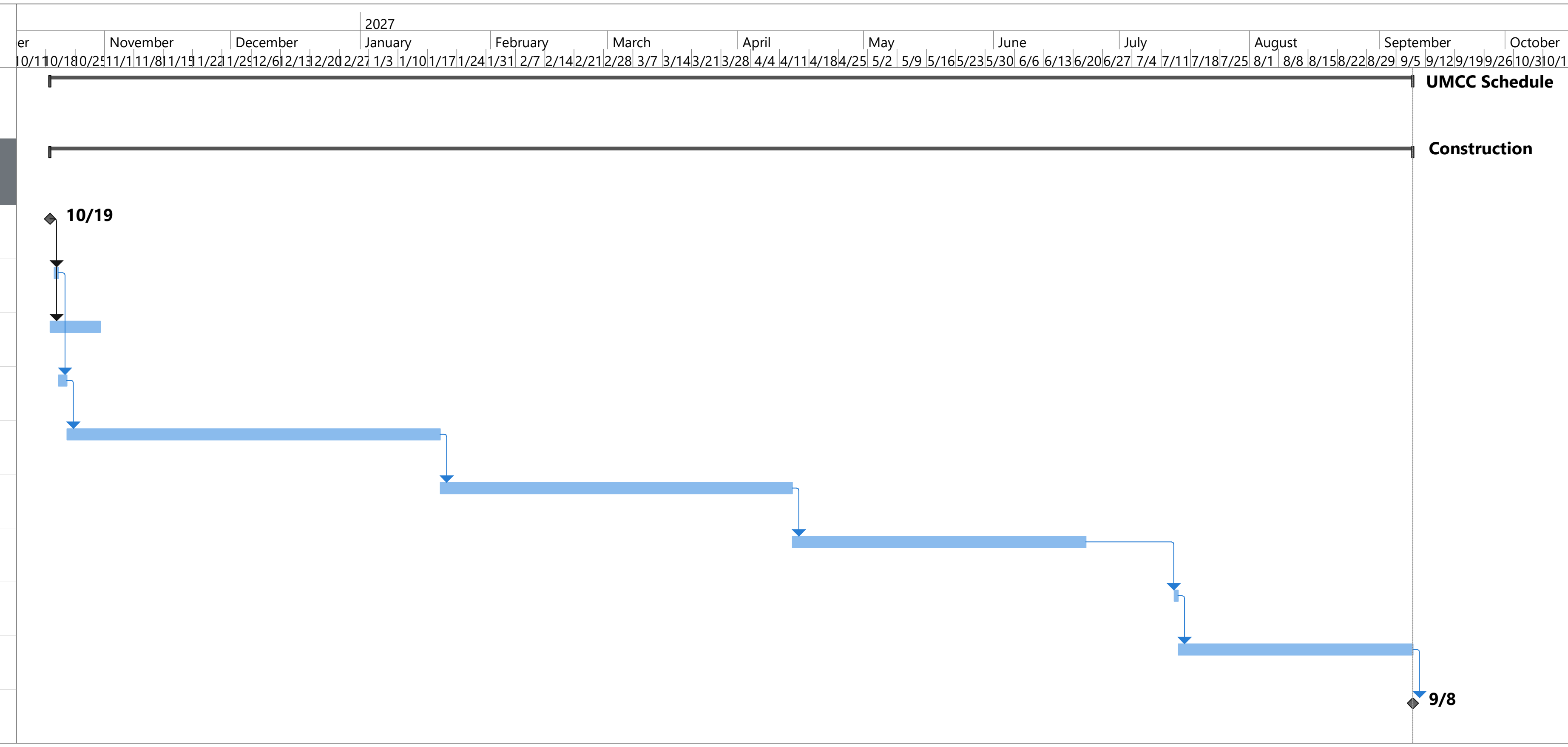
where:
kV_{LG1} = *Line to ground voltage circuit one, kilovolts.*
kV_{LG2} = *Line to ground voltage circuit two, kilovolts.*

(C) Values for Lines 2.a and b are based on Equation 6.2a:

$$V = .75\left[\frac{40}{12} + \frac{.4}{12}(50 - 8.7)\right] + \frac{.4}{12}\left(kV_{LG1} + kV_{LG2} - 50\right) + \frac{6}{12}\left(NoteA\right)$$

ATTACHMENT B-2 DETAILED CONSTRUCTION SCHEDULE

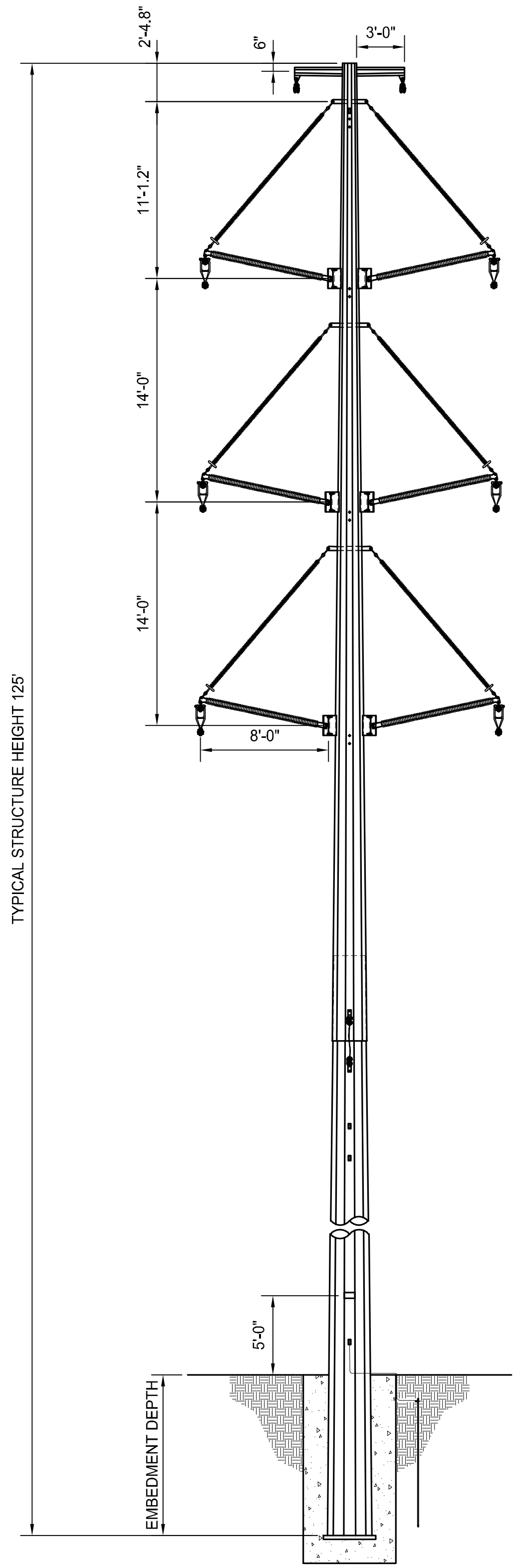
ID	Task Name	Duration	Start	Finish
1	**Umatilla-Morrow County Connect Project**	**230 days**	**Mon 10/19/26**	**Wed 9/8/27**
2	**Construction Schedule**	**230 days**	**Mon 10/19/26**	**Wed 9/8/27**
3	Construction Start / Mobilization	0 days	Mon 10/19/26	Mon 10/19/26
4	Pre-Construction Meeting	1 day	Tue 10/20/26	Tue 10/20/26
5	Construction Staking	2 wks	Mon 10/19/26	Fri 10/30/26
6	Clearing / Site Prep	2 days	Wed 10/21/26	Thu 10/22/26
7	Embedment / Found. Drilling	12 wks	Fri 10/23/26	Tue 1/19/27
8	Pole Set / Framed	12 wks	Wed 1/20/27	Tue 4/13/27
9	Stringing	10 wks	Wed 4/14/27	Tue 6/22/27
10	In-Service	1 day	Wed 7/14/27	Wed 7/14/27
11	Restoration	40 days	Thu 7/15/27	Wed 9/8/27
12	Complete	0 days	Wed 9/8/27	Wed 9/8/27



ATTACHMENT B-3 PROPOSED 230 KV STRUCTURES

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

A	ISSUED FOR APPLICATION	05/03/2024	SDA	SP	HMD	HMD
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD



TVBPS-230DC

REFERENCE DRAWINGS	

DSGN	SP	05/01/2024
DRN	SDA	05/01/2024
CKD	HMD	05/01/2024
SCALE:	NONE	
FOR 8.5x11 DWG ONLY		

UEC UMATILLA ELECTRIC COOPERATIVE

POWER ENGINEERS

UMATILLA ELECTRIC COOPERATIVE

UMCC/HWY 730 - ORDNANCE
230kV TRANSMISSION LINE

230kV STEEL MONOPOLE
TANGENT (0-3°)
STRUCTURE EXHIBIT

JOB NUMBER: 179233

REV: A

DRAWING NUMBER: 020.001

179233.020.001.dwg

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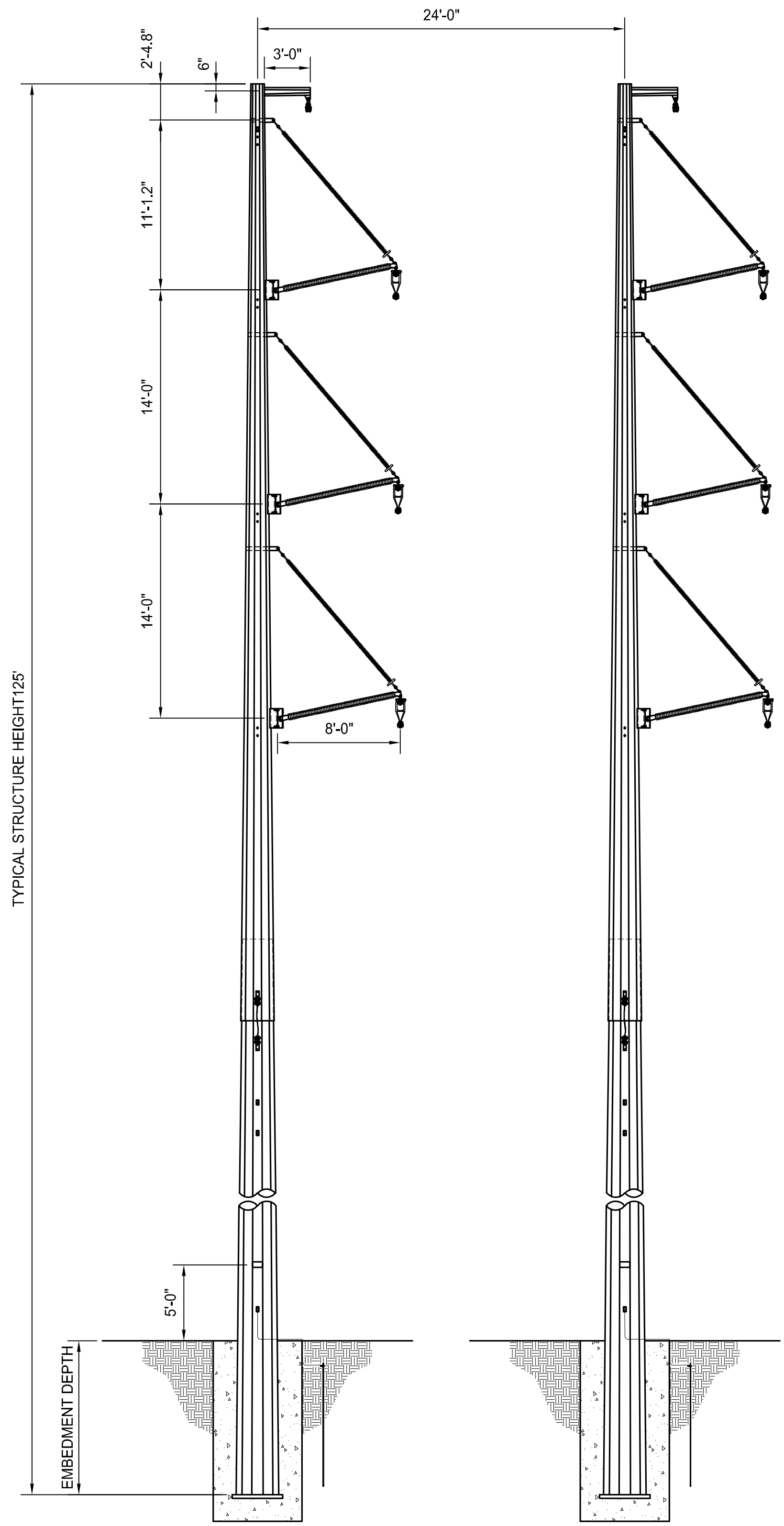
A	ISSUED FOR APPLICATION	05/03/2024	SDA	SP	HMD	HMD
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD



T2VBPS-230DC-SA

		DSGN	SP	05/01/2024	UEC UMATILLA ELECTRIC COOPERATIVE	UMATILLA ELECTRIC COOPERATIVE	JOB NUMBER	REV
		DRN	SDA	05/01/2024		UMCC/HWY 730 - ORDNANCE 230kV TRANSMISSION LINE	179233	A
		CKD	HMD	05/01/2024				
		SCALE:	NONE		POWER ENGINEERS	230kV STEEL TWO POLE SMALL RUNNING ANGLE (3-10°) STRUCTURE EXHIBIT	DRAWING NUMBER	
							020.002	
REFERENCE DRAWINGS		FOR 8.5x11 DWG ONLY						

179233.020.002.dwg

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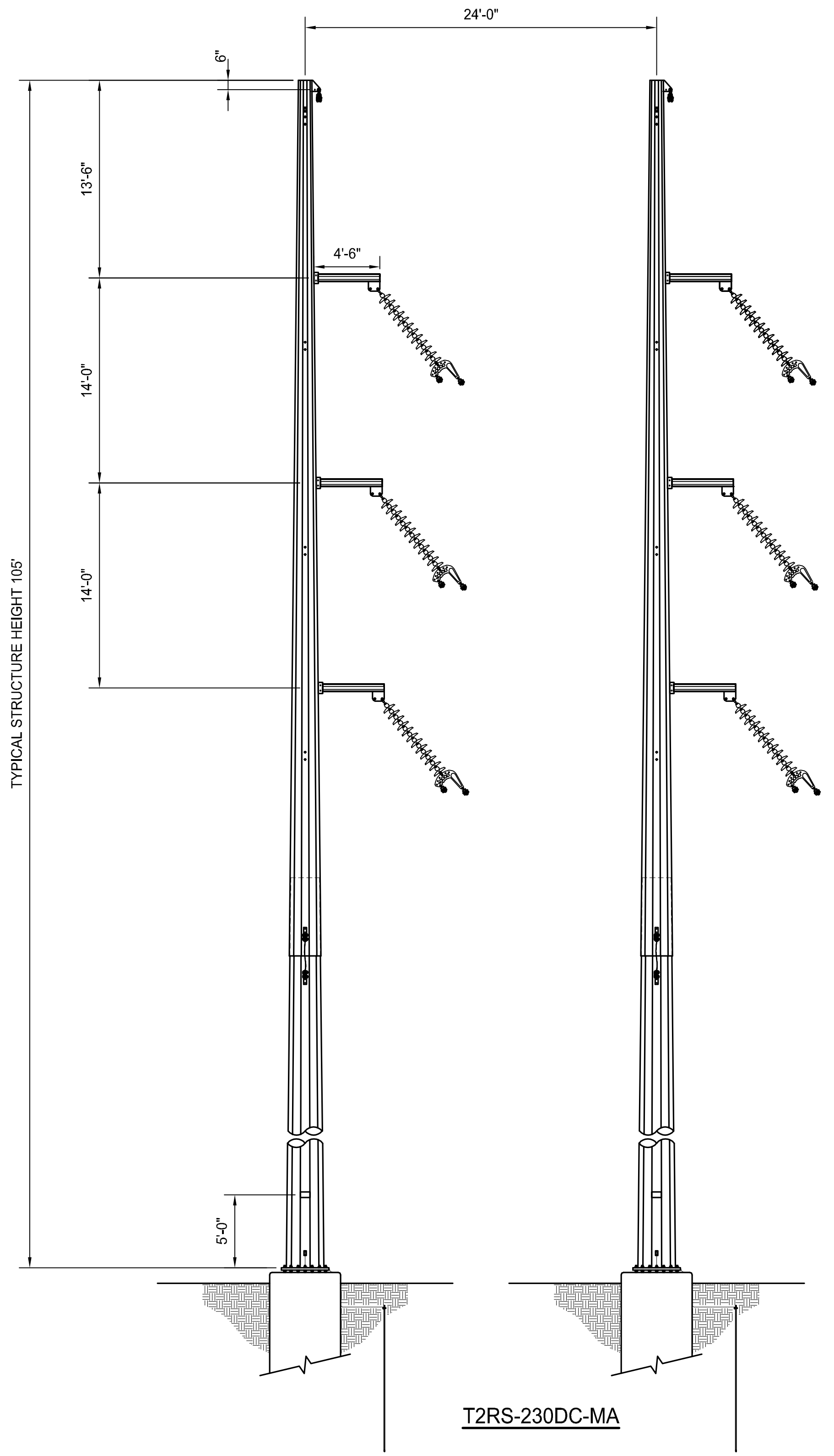
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
A	ISSUED FOR APPLICATION	05/03/2024	SDA	SP	HMD	HMD



T2RS-230DC-MA

179233.020.003.dwg

REFERENCE DRAWINGS	

DSGN	SP	05/01/2024
DRN	SDA	05/01/2024
CKD	HMD	05/01/2024
SCALE:	NONE	
FOR 8.5x11 DWG ONLY		

UEC UMATILLA ELECTRIC COOPERATIVE

POWER ENGINEERS

UMATILLA ELECTRIC COOPERATIVE

UMCC/HWY 730 - ORDNANCE
230kV TRANSMISSION LINE

230kV STEEL TWO POLE
MEDIUM RUNNING ANGLE (10-17.5°)
STRUCTURE EXHIBIT

JOB NUMBER: 179233

REV: A

DRAWING NUMBER: 020.003

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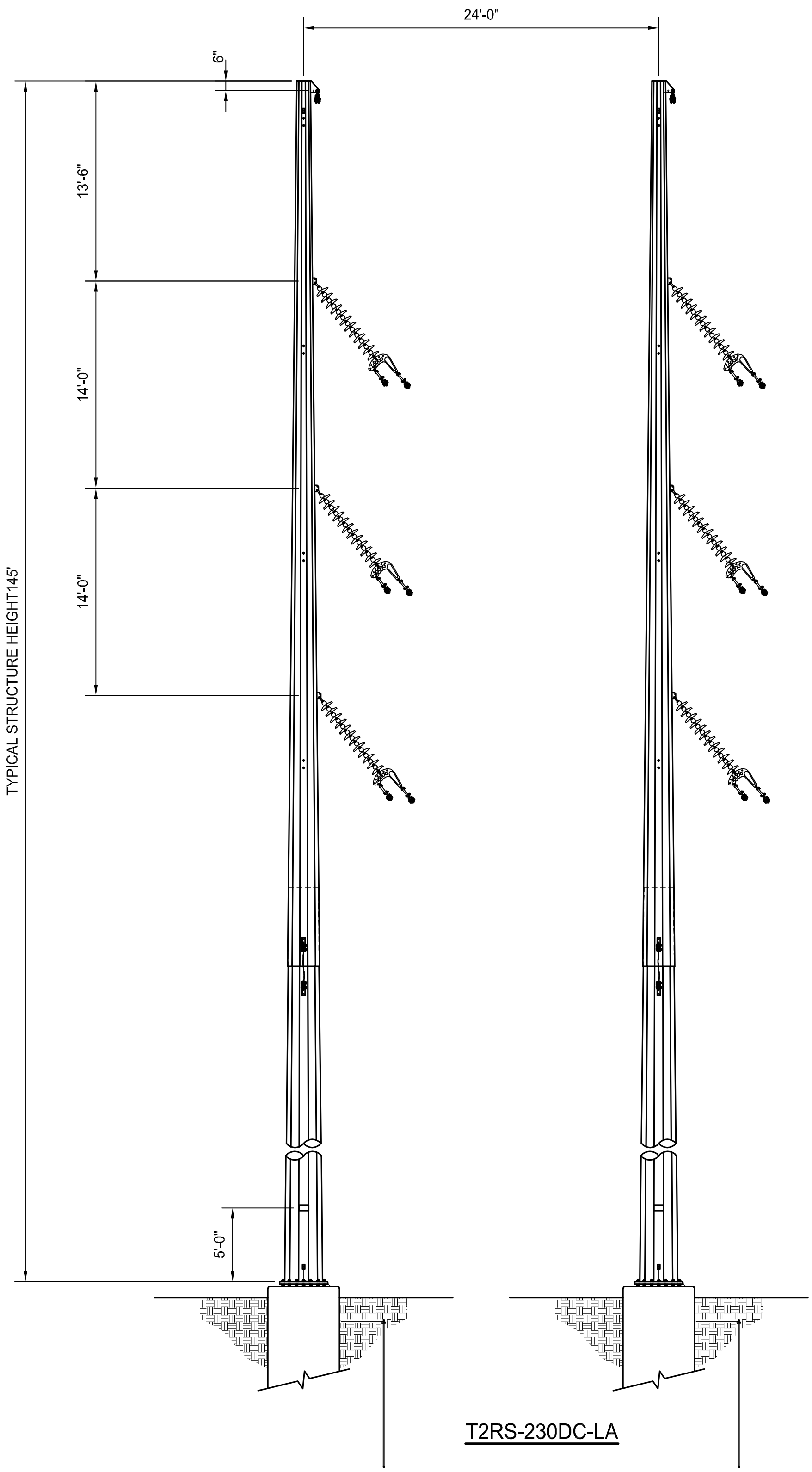
A	ISSUED FOR APPLICATION	05/03/2024	SDA	SP	HMD	HMD
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD



T2RS-230DC-LA

179233.020.004.dwg

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	DRN	SDA	05/01/2024	
	CKD	HMD	05/01/2024	
	SCALE:	NONE		
REFERENCE DRAWINGS	FOR 8.5x11 DWG ONLY			

UEC UMATILLA ELECTRIC COOPERATIVE

POWER ENGINEERS

UMATILLA ELECTRIC COOPERATIVE

UMCC/HWY 730 - ORDNANCE
230kV TRANSMISSION LINE

230kV STEEL TWO POLE
LARGE RUNNING ANGLE (17.5-35°)
STRUCTURE EXHIBIT

JOB NUMBER	REV
179233	A
DRAWING NUMBER	
020.004	

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
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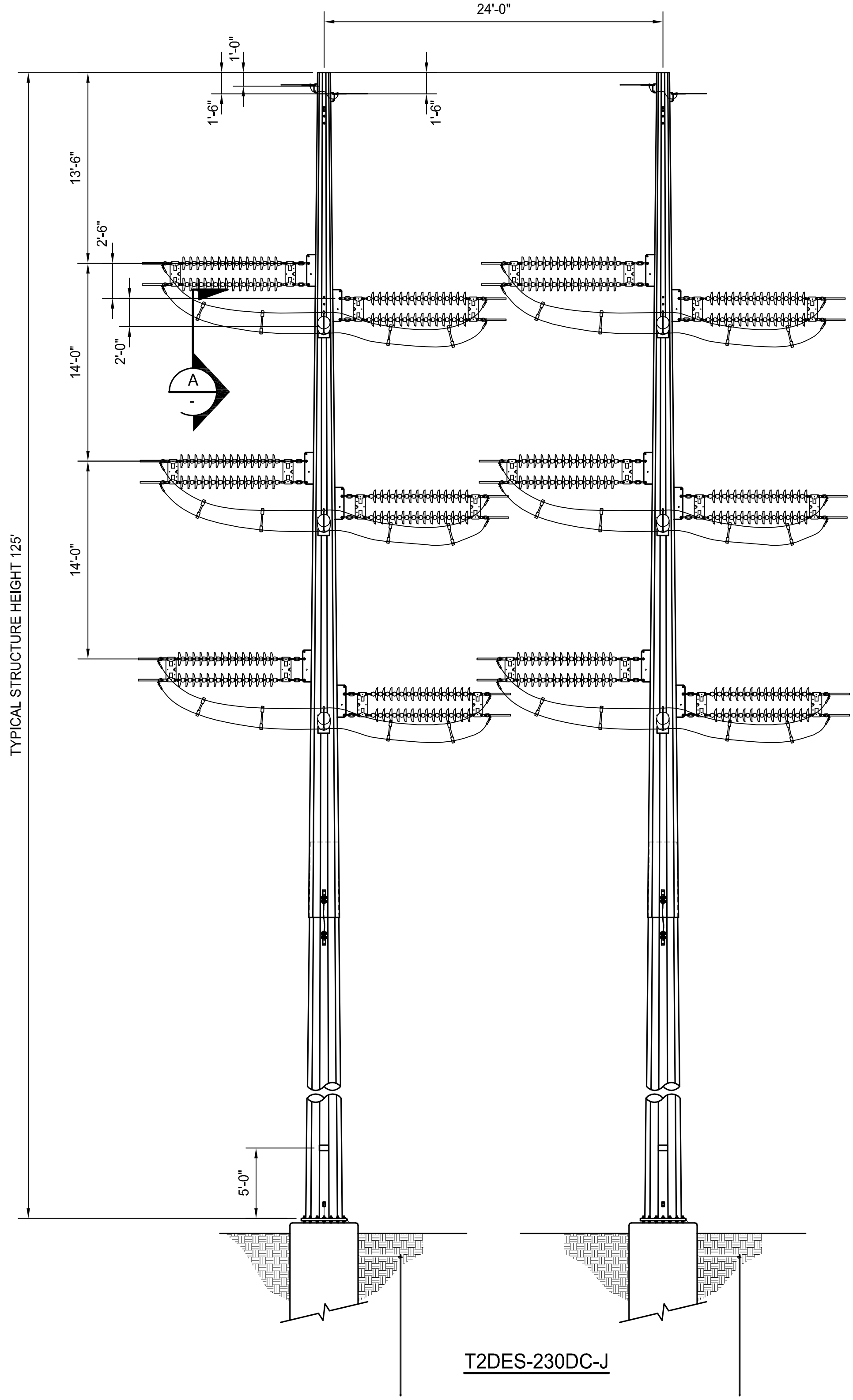
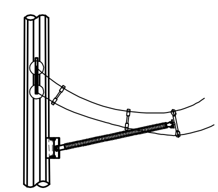


T2DES-230DC-J



SECTION (A/-)
SCALE NTS

179233.020.005.dwg

	REFERENCE DRAWINGS

DSGN	SP	05/01/2024
DRN	SDA	05/01/2024
CKD	HMD	05/01/2024
SCALE:	NONE	

FOR 8.5x11 DWG ONLY

UEC UMATILLA ELECTRIC COOPERATIVE

POWER ENGINEERS

UMATILLA ELECTRIC COOPERATIVE
UMCC/HWY 730 - ORDNANCE
230kV TRANSMISSION LINE
230kV STEEL TWO POLE
DEADEND (0-70°)
STRUCTURE EXHIBIT

JOB NUMBER: 179233
REV: A
DRAWING NUMBER: 020.005

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
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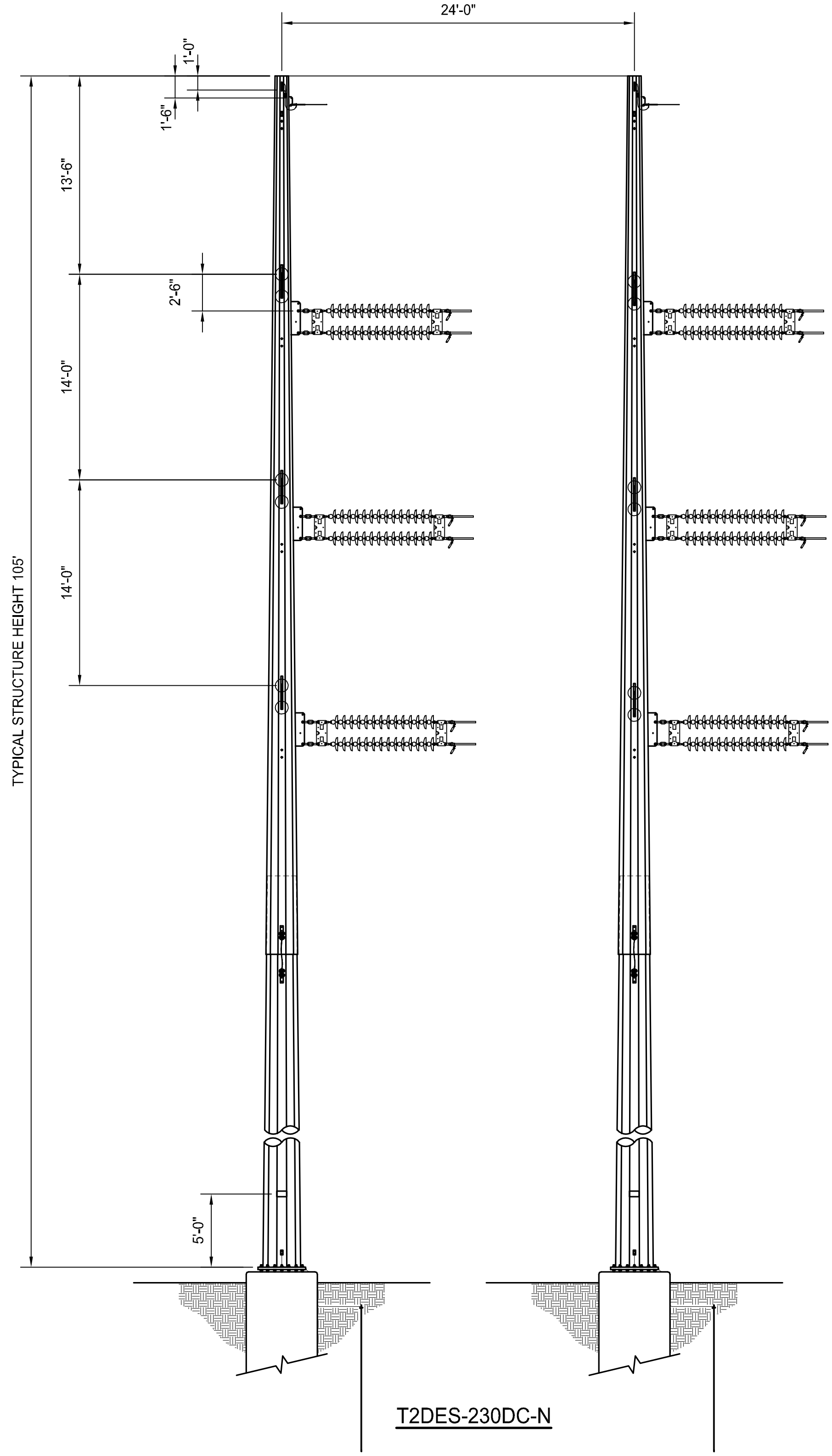


T2DES-230DC-N

DSGN	SP	05/01/2024
DRN	SDA	05/01/2024
CKD	HMD	05/01/2024
SCALE:	NONE	

REFERENCE DRAWINGS

FOR 8.5x11 DWG ONLY

UMATILLA ELECTRIC COOPERATIVE

UMCC/HWY 730 - ORDNANCE
230kV TRANSMISSION LINE

230kV STEEL TWO POLE
DEADEND (70-90°)
STRUCTURE EXHIBIT

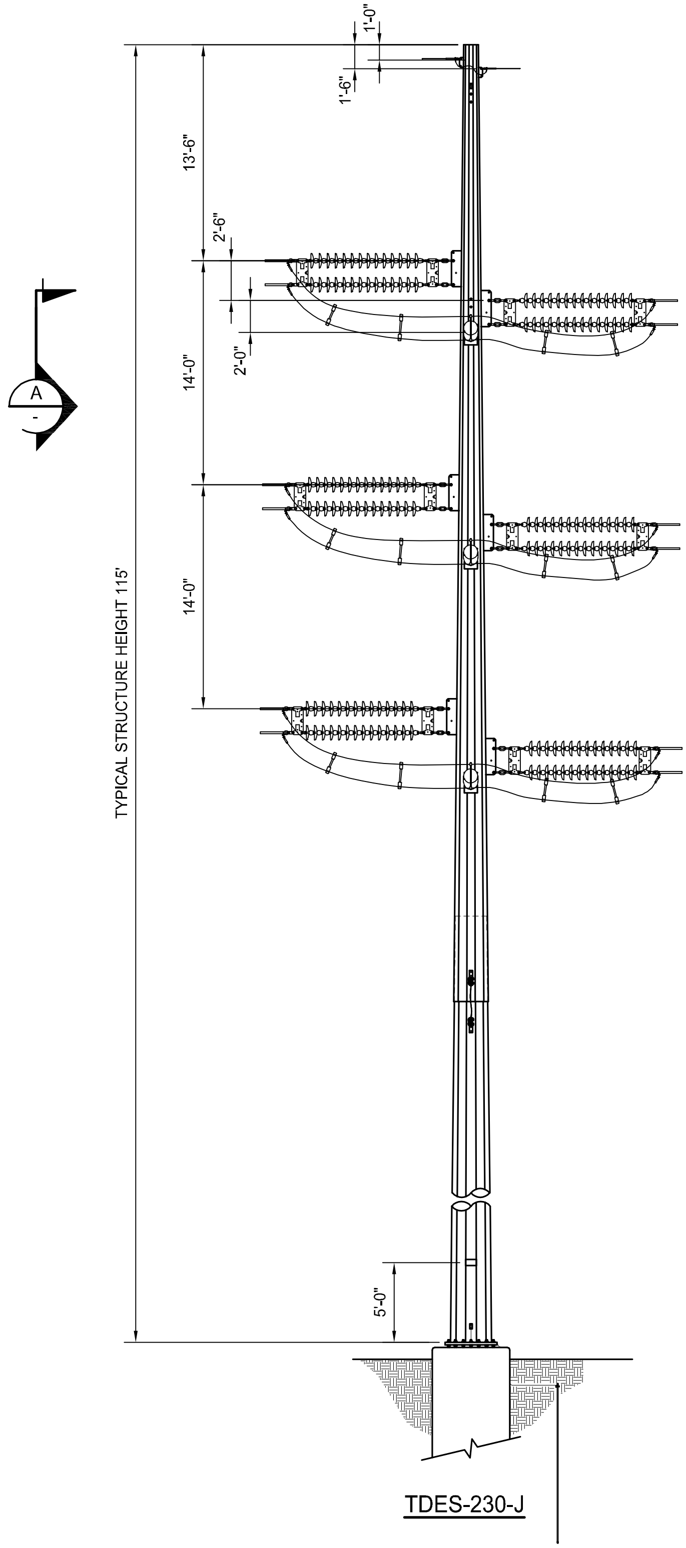
JOB NUMBER: 179233

REV: A

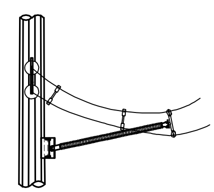
DRAWING NUMBER: 020.006

179233.020.006.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
A	ISSUED FOR APPLICATION	05/03/2024	SDA	SP	HMD	HMD



TDES-230-J



SECTION
SCALE NTS
A
-

179233.020.007.dwg

DSGN	SP	05/01/2024	
DRN	SDA	05/01/2024	
CKD	HMD	05/01/2024	
SCALE:	NONE		
FOR 8.5x11 DWG ONLY			

REFERENCE DRAWINGS

UEC UMATILLA ELECTRIC COOPERATIVE

POWER ENGINEERS

UMATILLA ELECTRIC COOPERATIVE

UMCC/HWY 730 - ORDNANCE
230kV TRANSMISSION LINE

230kV STEEL MONOPOLE
DEADEND (0-70°)
STRUCTURE EXHIBIT

JOB NUMBER: 179233

REV: A

DRAWING NUMBER: 020.007

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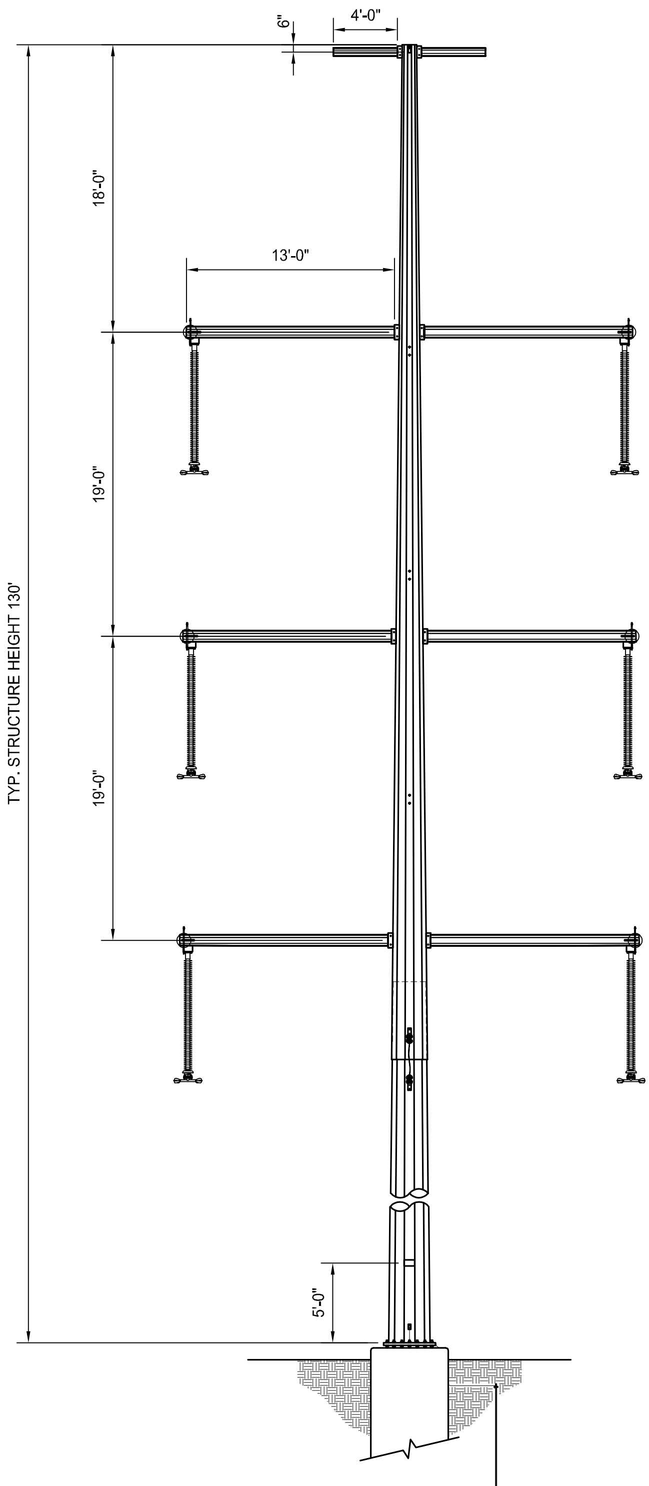
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
A	ISSUED FOR APPLICATION	05/03/24	SDA	SP	HMD	HMD



TUDES-230DC-J

REFERENCE DRAWINGS				
	DSGN	TJT	03/17/2023	
	DRN	SDA	03/17/2023	
	CKD	JAS	03/17/2023	
	SCALE:	NONE		
	FOR 8.5x11 DWG ONLY			

UMATILLA ELECTRIC COOPERATIVE

POWER ENGINEERS

UMATILLA ELECTRIC COOPERATIVE

UMCC / HWY 730 - ORDNANCE
230kV TRANSMISSION LINE

230kV STEEL MONOPOLE
DAVIT ARM DEADEND
STRUCTURE EXHIBIT

JOB NUMBER: 179233

REV: A

DRAWING NUMBER: 020.008

179233.020.008.dwg