APPENDIX A ENG FORM 6082

U.S. Army Corps of Engineers (USACE)

NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION (PCN)

33 CFR 330. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 02-28-2022

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority	Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Program of the Corps of Engineers (Corps); Final Rule 33 CFR 320-332.
Principal Purpose	Information provided on this form will be used in evaluating the nationwide permit pre-construction notification.
Routine Uses	This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of the agency coordination process.
Disclosure	Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

The public reporting burden for this collection of information, 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE EMAIL.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (*see sample drawings and/or instructions*) and be submitted to the district engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*)
First - Lee Middle - Last - Simpkins	First - Erik Middle - Last - Nyquist
Company - NV Energy	Company - POWER Engineers, Inc
Company Title - Environmental Manager	E-mail Address - erik.nyquist@powereng.com
E-mail Address - lee.simpkins@nvenergy.com	
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
Address- 6100 Neil Road	Address- 5 West Mendenhall, Suite 202
City - Reno State - NV Zip - 89511 Country - US	City - Bozeman State - MT Zip - 59715 Country - USA
7. APPLICANT'S PHONE NOs. with AREA CODE	**10. AGENT'S PHONE NOs. with AREA CODE**
a. Residence b. Business 775-834-3528 c. Fax d. Mobile	a. Residence b. Business 208-288-6581 c. Fax d. Mobile 208-659-8403

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Erik Nquist (POWER Engineers) to act in my behalf as my agent in the processing of this nationwide permit pre-construction notification and to furnish, upon request, supplemental information in support of this nationwide permit pre-construction notification.

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)

Greenlink Common Tie Transmission Line Project

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)
Carson River

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
Fort Churchill Rd

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)

Latitude °N	Longitude °W	City:	State:	Zip:
39.2938	-119.3655	Lyon County	NV	89429

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID
015-451-28, 015-511-01, 015-511-03, and 015-551-04

Municipality
Lyon County

Section	Township	Range
04 and 32	16N and 17N	23E and 24E

17. DIRECTIONS TO THE SITE
The Carson River crossings are located along Fort Churchill Rd, approximately 8 miles (west crossings) and 12.5 (east crossing) southwest of Silver Springs, NV.

18. IDENTIFY THE SPECIFIC NATIONWIDE PERMIT(S) YOU PROPOSE TO USE

Nationwide Permit (NWP) 57 – Electric Utility Lines and Telecommunications Activities

19. DESCRIPTION OF PROPOSED NATIONWIDE PERMIT ACTIVITY (*see instructions*)
NV Energy is proposing to construct approximately 131 miles of new 345 kV transmission lines extending from the Walker River Substation (WRS) located approximately 10 miles north of Yerington, Nevada to the existing Comstock Meadows and Mira Loma substations approximately 12 miles northwest of Silver Springs and seven miles southeast of Reno, Nevada, respectively. The proposed Project includes approximately 637 transmission structures within a proposed 160-foot-wide permanent right-of-way, with some areas requiring additional right-of-way to accommodate wire blowout, microwave radio facilities, optical amplifier sites, fiber optic laterals, and associated access roads. A PCN is automatically triggered by the crossing of the Carson River (3 crossing locations), a Section 10 navigable waterway. For the purposes of this PCN, the Project Area includes the Project centerline, the associated 160-foot right-of-way, anticipated access roads (14 to 24-foot width), pulling and tensioning sites (pull sites), material yards, and other structure-related work areas (e.g., guard structures, distribution poles, etc.) necessary for Project completion. Required NWP 57 authorization has been identified for activities within the Carson River Crossings.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)
Temporary impacts will occur at the Carson River west crossing, consisting of 0.42 acre of tree clearing within palustrine, forested wetland on the north side of the crossing. Tree clearing will result in the wetland conversion from palustrine, forested wetland to palustrine, scrub-shrub wetland habitat. In accordance with USACE correspondence, the wetland conversion will not require mitigation.

21. PURPOSE OF NATIONWIDE PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)
The purpose of the proposed Project is to increase available transfer capability, including, but not limited to, areas of potential renewable energy generation; to assist load-serving utilities in meeting the requirements to address energy delivery obligations and meet state renewable portfolio standards; and to alleviate transmission congestion in Nevada, ensuring continued delivery of reliable electric power serviced to the region. The specific purpose of this NWP 57 is to construct three 345 kV transmission lines connecting the Walker River Substation to the existing Mira Loma and Comstock substations.

22. QUANTITY OF WETLANDS, STREAMS, OR OTHER TYPES OF WATERS DIRECTLY AFFECTED BY PROPOSED NATIONWIDE PERMIT ACTIVITY (*see instructions*)

Acres	Linear Feet	Cubic Yards Dredged or Discharged
0.42 (PFO to PSS wetland conversion)		None

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. (*see instructions*)
Not applicable

24. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and requires pre-construction notification, explain how the compensatory mitigation requirement in paragraph (c) of general condition 23 will be satisfied, or explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required for the proposed activity.

Not applicable. Wetland conversion will not result in the permanent loss of wetland.

25. Is any portion of the nationwide permit activity already complete? ☐ Yes ☒ No If Yes, describe the completed work:

No aspects of Project construction has initiated at the time of this submittal.

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (*see instructions*)

Please reference the included PCN report, Section 3.1.18.

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (*see instructions*)

Please reference the included PCN report, Section 3.1.20.

28. For a proposed NWP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

Please reference the included PCN report, Section 3.1.16.

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project? ☐ Yes ☒ No

If "yes", please provide the date your request was submitted to the Corps district:

30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

The included PCN report provides details for Project activities in accordance with NWP 57 (March 15, 2021) required contents for PCNs.

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The pre-construction notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in Block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a

Department of the Army

Nationwide Permit (NWP) Pre-Construction Notification (PCN)

Blocks 1 through 4. To be completed by the Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the preconstruction notification, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant's Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed Nationwide Permit Activity Name or Title. Please provide a name identifying the proposed NWP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the NWP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed NWP activity is located at a site having a street address (not a box number), please enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed NWP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed NWP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed NWP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed NWP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific Nationwide Permit(s) You Propose to Use. List the number(s) of the Nationwide Permit(s) you want to use to authorize the proposed activity (e.g., NWP 29).

Block 19. Description of the Proposed Nationwide Permit Activity. Describe the proposed NWP activity, including the direct and indirect adverse environmental effects the activity would cause. The description of the proposed activity should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide sketches when necessary to show that the proposed NWP activity complies with the terms of the applicable NWP(s). Sketches usually clarify the activity and result in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed NWP activity (e.g.,a conceptual plan), but do not need to be detailed engineering plans.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20. Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed NWP activity. The description of any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or additional mitigation measures.

Block 21. Purpose of Nationwide Permit Activity. Describe the purpose and need for the proposed NWP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed Nationwide Permit Activity. For discharges of dredged or fill material into waters of the United States, provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed NWP activity. For structures or work in navigable waters of the United States subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, or occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed NWP activity.

For multiple NWPs, or for separate and distant crossings of waters of the United States authorized by NWPs 12 or 14, attach an extra sheet of paper marked Block 21 to provide the quantities of wetlands, streams, or other types of waters filled, flooded, excavated, or drained (or dredged or occupied by structures, if in waters subject to Section 10 of the Rivers and Harbors Act of 1899) for each NWP. For NWPs 12 and 14, include the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained for each separate and distant crossing of waters or wetlands. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Identify Any Other Nationwide Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by NWPs 12 or 14 that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

Block 24. Compensatory Mitigation Statement for Losses of Greater Than 1/10-Acre of Wetlands When Pre-Construction Notification is Required. Paragraph (c) of NWP general condition 23 requires compensatory mitigation at a minimum one-for-one replacement ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed NWP activity are no more than minimal without compensatory mitigation, and provides an activity-specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than 1/10 acre, or provide an explanation of why the district engineer should not require wetland compensatory mitigation for the proposed NWP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

Block 25. Is Any Portion of the Nationwide Permit Activity Already Complete? Describe any work that has already been completed for the NWP activity.

Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the Nationwide Permit Activity. If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

Block 27. List Any Historic Properties that Have the Potential to be Affected by the Nationwide Permit Activity. If you are not a Federal agency, and if any historic properties have the potential to be affected by the proposed NWP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the Nationwide Permit Activity Would Occur in such a River. If the proposed NWP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a “study river” under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit http://www.rivers.gov/.

Block 29. Nationwide Permit Activities that also Require Permission from the Corps Under 33 U.S.C. 408. If the proposed NWP activity also requires permission from the Corps under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a Corps federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the Corps district having jurisdiction over that project.

Block 30. Other Information Required For Nationwide Permit Pre-Construction Notifications. The terms of some of the Nationwide Permits include additional information requirements for preconstruction notifications:

* NWP 3, Maintenance –information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
* NWP 31, Maintenance of Existing Flood Control Facilities –a description of the maintenance baseline and the dredged material disposal site.
* NWP 33, Temporary Construction, Access, and Dewatering –a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
* NWP 44, Mining Activities –if reclamation is required by other statutes, then a copy of the final reclamation plan must be submitted with the pre-construction notification.
* NWP 45, Repair of Uplands Damaged by Discrete Events –documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
* NWP 48, Commercial Shellfish Aquaculture Activities –(1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required).
* NWP 49, Coal Remining Activities –a document describing how the overall mining plan will result in a net increase in aquatic resource functions must be submitted to the district engineer and receive written authorization prior to commencing the activity.
* NWP 50, Underground Coal Mining Activities –if reclamation is required by other statutes, then a copy of the reclamation plan must be submitted with the pre-construction notification.

If more space is needed, attach an extra sheet of paper marked Block 30.

Block 31. Signature of Applicant or Agent. The PCN must be signed by the person proposing to undertake the NWP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the NWP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the NWP activity (including compliance with special conditions, mitigation, etc.).

DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 45 day PCN review period will not start until the delineation is submitted or has been completed by the Corps.

DRAWINGS AND ILLUSTRATIONS

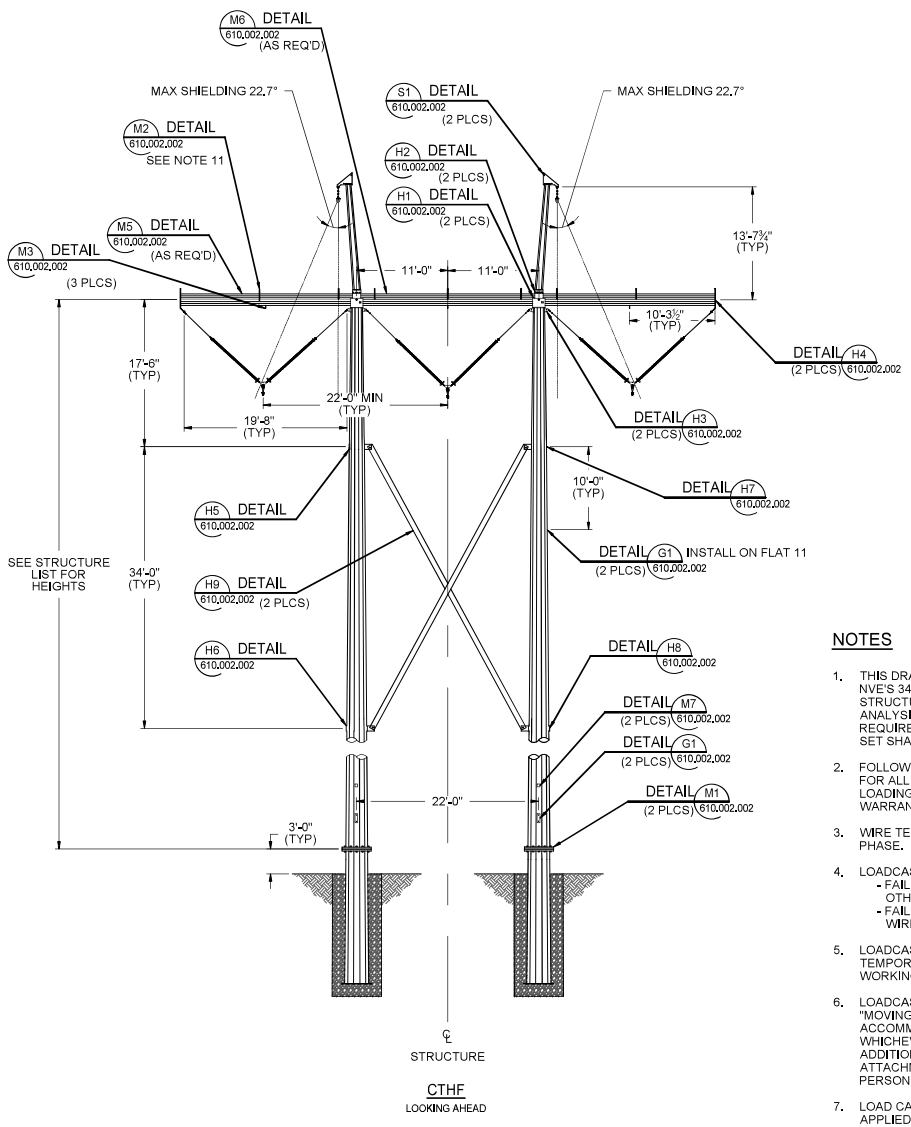
General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one original, or good quality copy, of all drawings on 8½x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

ADDITIONAL INFORMATION AND REQUIREMENTS

For proposed NWP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived (see NWP general condition 25). Some States, Tribes, or EPA have issued water quality certification for one or more NWPs. Please check the appropriate Corps district web site to see if water quality certification has already been issued for the NWP(s) you wish to use. For proposed NWP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur (see NWP general condition 26). Some States have issued Coastal Zone Management Act consistency concurrences for one or more NWPs. Please check the appropriate Corps district web site to see if Coastal Zone Management Act consistency concurrence has already been issued for the NWP(s) you wish to use.

APPENDIX B STRUCTURE DRAWINGS



LOADCASE NO.	WEATHER CASES				OVERLOAD FACTORS			WIRE TENSIONS		
	DESCRIPTION	TEMP (°F)	RADIAL ICE (IN)	WIND (PSF) SW / COND	WIND OLF	TENSION OLF	VERTICAL OLF	1 (LBS)	2 (LBS)	3, 4, & 5 (LBS)
1A	NESC RULE 250B, MEDIUM	15	0.25	4.00	2.50	1.65	1.50	6200	6200	8700
1B	NESC RULE 250B, HEAVY	0	0.50	4.00	2.50	1.65	1.50	8800	8800	11800
2A	NESC RULE 250B, MEDIUM; UPLIFT	15	0.25	4.00	2.50	1.65	1.00	6200	6200	8700
2B	NESC RULE 250B, HEAVY; UPLIFT	0	0.50	4.00	2.50	1.65	1.00	8800	8800	11800
3	NESC 250C EXTREME WIND	60	0.00	20.70	1.00	1.00	1.00	5800	5800	8400
4	NESC 250D CONCURRENT WIND & ICE	15	0.50	2.30	1.00	1.00	1.00	7100	7100	10100
5A	NVE EXTREME ICE 0.5"	30	0.50	0.00	1.00	1.00	1.00	6800	6800	9800
5B	NVE EXTREME ICE 1.0"	30	1.00	0.00	1.00	1.00	1.00	11800	11800	16200
6	NVE FAILURE CONTAINMENT; INTACT WIRES	60	0.00	0.00	1.00	1.00	1.00	3100	3100	5100
	NVE FAILURE CONTAINMENT; BROKEN WIRES							0	0	0
7	MAINTENANCE LOAD	60	0.00	3.00	1.00	1.00	2.00	3400	3400	5800
8	C&M; MOVING	60	0.00	3.00	1.50	2.00	1.00	3400	3400	5800
	C&M; IN PLACE				1.50	1.50	1.00	3400	3400	5800
9	EVERYDAY - OSHA ARM CHECK	60	0.00	0.00	1.00	1.00	1.00	3200	3200	5600
10	UPLIFT (-20°F)	-20	0.00	0.00	1.00	1.00	1.00	3800	3800	6500
11	NESC 250C EXTREME WIND; NO WIRES	60	0.00	20.70	1.00	1.00	1.00	-	-	-

DESIGN PARAMETERS								
WIRE	WIRE TYPE	STRAND (AL/ST)	WEIGHT (LBS/FT)	DIA (IN)	ANGLE (DEG)	RULING SPAN (FT)	WIND SPAN (FT)	MAX WT SPAN (FT)
1	OPGW DNO-12418	-	0.525	0.685	2	1500	1500	1900
2	OPGW DNO-12418	-	0.525	0.685	2	1500	1500	1900
3, 4 & 5	RAIL ACSR (2-BUNDLE)	45/7	1.074	1.165	2	1500	1500	1900

NOTES

1. THIS DRAWING SET INCLUDES DETAILS THAT ARE CONSIDERED 'STANDARD' FOR NVE'S 345 kV TUBULAR FAMILY. THE FABRICATOR SHALL ANALYZE THE STRUCTURE USING THE LOADS PROVIDED ON THIS DRAWING. THIS INCLUDES ANALYSIS OF THE MEMBER SIZES, GEOMETRY, AND DETAILS. ANY DETAILS WHICH REQUIRE MODIFICATION OR ALTERATION FROM THOSE SHOWN IN THIS DRAWING SET SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER.
2. FOLLOWING COMPLETION OF DESIGN, FABRICATOR ASSUMES RESPONSIBILITY FOR ALL STRUCTURE DETAILS, INCLUDING ABILITY TO WITHSTAND MECHANICAL LOADING. THIS INCLUDES APPLICATION OF THE TYPICAL FABRICATOR WARRANTY/GUARANTEE OF PERFORMANCE.
3. WIRE TENSIONS PROVIDED PER SUBCONDUCTOR. VECTOR LOADS PROVIDED PER PHASE.
4. LOADCASE 6 SHALL BE APPLIED UNDER THE FOLLOWING CONDITIONS:
   - FAILURE OF ANY ONE SHIELD WIRE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT
   - FAILURE OF ANY ONE PHASE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT.
5. LOADCASE 7 APPLIES TO ALL WIRE SUPPORT POINTS, MAINTENANCE VANGS, AND TEMPORARY LIFT OR TENSION POINTS. LOADS NEED NOT BE APPLIED TO WORKING VANGS AND PERMANENT WIRE ATTACHMENT POINTS SIMULTANEOUSLY.
6. LOADCASE 8 SHALL BE APPLIED ASSUMING THAT ANY SINGLE WIRE CAN BE "MOVING" AT A GIVEN TIME. THE REMAINING WIRE ATTACHMENTS SHALL ACCOMMODATE ANY COMBINATION OF "IN-PLACE" LOADS OR NO LOAD, WHICHEVER PRODUCES THE MORE CRITICAL EFFECT ON THE STRUCTURE. ADDITIONALLY, A LOAD OF 1,000 LBS HAS BEEN INCLUDED IN THE WIRE ATTACHMENT LOADS TO ACCOMMODATE THE WEIGHT OF EQUIPMENT, TOOLS, AND PERSONNEL DURING WORK.
7. LOAD CASE 11 IS APPLIED ONLY TO THE STRUCTURE. WIND PRESSURE SHOULD BE APPLIED IN WHICHEVER ORIENTATION PRODUCES THE MAXIMUM STRESS ON THE STRUCTURE.
8. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 90% CAPACITY FOR LOAD CASES 3, 4, 5A, 5B, 10 AND 11. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 100% CAPACITY FOR ALL OTHER LOAD CASES.
9. APPLY WIND ON STRUCTURE IN CONJUNCTION WITH THE FORCE COEFFICIENTS AS RECOMMENDED IN ASCE 74 4TH EDITION FOR ALL LOAD CASES.
10. STRUCTURES TO BE WEATHERING STEEL IN ACCORDANCE WITH ASTM A871.
11. LADDER BRACKETS ON THE CROSSARM AND DAVIT ARMS SHALL BE INSTALLED 1'-6" FROM THE POLE FACE, SPACED EQUALLY TO A MAXIMUM OF 10'-0", AND ON THE TIP OF EACH DAVIT ARM.
12. PERCH DETERRENTS, AS SPECIFIED IN DETAIL M5 ON 610.002.002, SHALL BE INSTALLED ON ALL HORIZONTAL SURFACES OF STRUCTURES, AS INDICATED IN THE STRUCTURE LIST. STRUCTURES THAT DO NOT REQUIRE PERCH DETERRENTS SHOULD NOT INCLUDE PROVISIONS FOR THEM.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL	
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610.002.002	LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy

POWER ENGINEERS

NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CTHF - 345 kV TANGENT STEEL POLE H-FRAME STRUCTURE, DIRECT-EMBED

JOB NUMBER 169994 169997

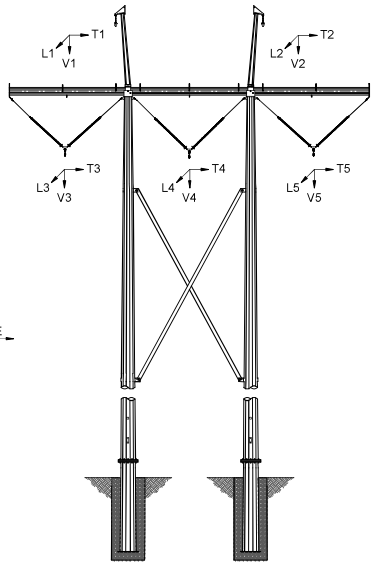
REV C

DRAWING NUMBER 600.002.001

SHEET 1 OF 3

600.002.001.dwg

LOADCASE NO.	LOAD SCHEDULE (KIPS): ALL LOADS INCLUDE OVERLOAD CAPACITY FACTORS																	
	DESCRIPTION	V1	T1	L1	V2	T2	L2	V3	T3	L3	V4	T4	L4	V5	T5	L5	WIND ON STRUCTURE (PSF)
1A	NESC RULE 250B, MEDIUM	2.50	1.90	0.00	2.50	1.90	0.00	9.60	5.20	0.00	9.60	5.20	0.00	9.60	5.20	0.00	10.00
1B	NESC RULE 250B, HEAVY	3.80	2.70	0.00	3.80	2.70	0.00	13.00	6.80	0.00	13.00	6.80	0.00	13.00	6.80	0.00	10.00
2A	NESC RULE 250B, MEDIUM; UPLIFT	1.70	1.90	0.00	1.70	1.90	0.00	6.40	5.20	0.00	6.40	5.20	0.00	6.40	5.20	0.00	10.00
2B	NESC RULE 250B, HEAVY; UPLIFT	2.50	2.70	0.00	2.50	2.70	0.00	8.70	6.80	0.00	8.70	6.80	0.00	8.70	6.80	0.00	10.00
3	NESC 250C EXTREME WIND	1.10	2.00	0.00	1.10	2.00	0.00	4.70	6.70	0.00	4.70	6.70	0.00	4.70	6.70	0.00	20.70
4	NESC 250D CONCURRENT WIND & ICE	2.50	0.80	0.00	2.50	0.80	0.00	8.70	2.00	0.00	8.70	2.00	0.00	8.70	2.00	0.00	2.30
5A	NVE EXTREME ICE 0.5"	2.50	0.30	0.00	2.50	0.30	0.00	8.70	0.70	0.00	8.70	0.70	0.00	8.70	0.70	0.00	0.00
5B	NVE EXTREME ICE 1.0"	5.10	0.50	0.00	5.10	0.50	0.00	15.00	1.20	0.00	15.00	1.20	0.00	15.00	1.20	0.00	0.00
6	NVE FAILURE CONTAINMENT; INTACT WIRES	1.10	0.20	0.00	1.10	0.20	0.00	4.70	0.40	0.00	4.70	0.40	0.00	4.70	0.40	0.00	0.00
	NVE FAILURE CONTAINMENT; BROKEN WIRES	0.60	0.10	3.10	0.60	0.10	3.10	2.70	0.20	10.20	2.70	0.20	10.20	2.70	0.20	10.20	0.00
7	MAINTENANCE LOAD	2.20	0.40	0.00	2.20	0.40	0.00	9.40	1.30	0.00	9.40	1.30	0.00	9.40	1.30	0.00	3.00
8	C&M; MOVING	4.25	0.62	0.00	4.25	0.62	0.00	9.35	2.12	0.00	9.35	2.12	0.00	9.35	2.12	0.00	4.50
	C&M; IN PLACE	3.71	0.56	0.00	3.71	0.56	0.00	8.43	1.92	0.00	8.43	1.92	0.00	8.43	1.92	0.00	4.50
9	EVERYDAY - OSHA ARM CHECK	6.10	0.20	0.00	6.10	0.20	0.00	9.70	0.40	0.00	9.70	0.40	0.00	9.70	0.40	0.00	0.00
10	UPLIFT (-20ºF)	1.10	0.20	0.00	1.10	0.20	0.00	4.70	0.50	0.00	4.70	0.50	0.00	4.70	0.50	0.00	0.00
11	NESC 250C EXTREME WIND; NO WIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.70



WIND ON STRUCTURE

LOAD TREE

+ LONGITUDINAL (TOWARDS BACK SPAN)
+ TRANSVERSE
+ VERTICAL

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW	
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP	
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL		
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG		610.002.002 LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy

POWER ENGINEERS

NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE

CTHF - 345 kV TANGENT STEEL POLE
H-FRAME STRUCTURE, DIRECT-EMBED

JOB NUMBER 169994 169997

REV C

DRAWING NUMBER 600.002.001

SHEET 2 OF 3

600.002.001.dwg

LINE ITEM	STRUCTURE DESCRIPTION	SHAFT	SECTION 1 & 2 APPROX. WEIGHT	SECTION 1					SECTION 2				SECTION 2 PLUS 3 APPROX. WEIGHT	SECTION 3					STEEL POLE UNIT APPROX. WEIGHT	TOTAL STRUCTURE APPROX. WEIGHT
				LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER	SECTION 1 APPROX. WEIGHT	LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER		LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER	SECTION 3 APPROX. WEIGHT		
1-1	60' H-FRAME	L	*	*	*	*	*	*	*	*	*	29"	-	-	-	-	-	-	*	*
1-2		R	*	*	*	*	*	*	*	*	*	29"	-	-	-	-	-	-		
1-3	65' H-FRAME	L	*	*	*	*	*	*	*	*	*	29"	-	-	-	-	-	-	*	*
1-4		R	*	*	*	*	*	*	*	*	*	29"	-	-	-	-	-	-		
1-5	70' H-FRAME	L	5,000 LB	47'-06"	1/4"	16 1/4"	24 29/32"	-	22'-04 1/2"	1/4"	24 29/32"	29"	-	-	-	-	-	-	5,000 LB	15,100 LB
1-6		R	5,000 LB	47'-06"	1/4"	16 1/4"	24 29/32"	-	22'-04 1/2"	1/4"	24 29/32"	29"	-	-	-	-	-	-		
1-7	75' H-FRAME	L	5,300 LB	47'-06"	1/4"	16 1/4"	24 5/16"	-	27'-04 1/2"	1/4"	24 5/16"	29"	-	-	-	-	-	-	5,300 LB	15,700 LB
1-8		R	5,300 LB	47'-06"	1/4"	16 1/4"	24 5/16"	-	27'-04 1/2"	1/4"	24 5/16"	29"	-	-	-	-	-	-		
1-9	80' H-FRAME	L	5,600 LB	47'-06"	1/4"	16 1/4"	23 13/16"	-	32'-04 1/2"	1/4"	23 13/16"	29"	-	-	-	-	-	-	5,600 LB	16,300 LB
1-10		R	5,600 LB	47'-06"	1/4"	16 1/4"	23 13/16"	-	32'-04 1/2"	1/4"	23 13/16"	29"	-	-	-	-	-	-		
1-11	85' H-FRAME	L	5,800 LB	47'-06"	1/4"	16 1/4"	23 3/8"	-	37'-04 1/2"	1/4"	23 3/8"	29"	-	-	-	-	-	-	5,800 LB	16,700 LB
1-12		R	5,800 LB	47'-06"	1/4"	16 1/4"	23 3/8"	-	37'-04 1/2"	1/4"	23 3/8"	29"	-	-	-	-	-	-		
1-13	90' H-FRAME	L	6,200 LB	47'-06"	1/4"	16 1/4"	22 31/32"	-	42'-04 1/2"	1/4"	22 31/32"	29"	-	-	-	-	-	-	6,200 LB	17,500 LB
1-14		R	6,200 LB	47'-06"	1/4"	16 1/4"	22 31/32"	-	42'-04 1/2"	1/4"	22 31/32"	29"	-	-	-	-	-	-		
1-15	95' H-FRAME	L	-	47'-04 1/2"	1/4"	16 1/4"	22 19/32"	3,400 LB	47'-03"	1/4"	22 21/32"	29"	4,000 LB	-	-	-	-	-	7,400 LB	19,900 LB
1-16		R	-	47'-04 1/2"	1/4"	16 1/4"	22 19/32"	3,400 LB	47'-03"	1/4"	22 21/32"	29"	4,000 LB	-	-	-	-	-		
1-17	100' H-FRAME	L	-	47'-04 1/2"	1/4"	16 1/4"	22 9/32"	3,000 LB	28'-04 1/2"	1/4"	22 5/16"	25 15/16"	4,300 LB	23'-10 1/2"	1/4"	25 15/16"	29"	-	7,300 LB	19,700 LB
1-18		R	-	47'-04 1/2"	1/4"	16 1/4"	22 9/32"	3,000 LB	28'-04 1/2"	1/4"	22 5/16"	25 15/16"	4,300 LB	23'-10 1/2"	1/4"	25 15/16"	29"	-		
1-19	105' H-FRAME	L	-	47'-04 1/2"	1/4"	16 1/4"	22"	3,000 LB	28'-04 1/2"	1/4"	22 1/32"	25 15/32"	4,600 LB	28'-10 1/2"	1/4"	25 15/32"	29"	-	7,600 LB	20,300 LB
1-20		R	-	47'-04 1/2"	1/4"	16 1/4"	22"	3,000 LB	28'-04 1/2"	1/4"	22 1/32"	25 15/32"	4,600 LB	28'-10 1/2"	1/4"	25 15/32"	29"	-		
1-21	110' H-FRAME	L	*	*	*	*	*	*	*	*	*	*	*	*	*	*	29"	*	*	*
1-22		R	*	*	*	*	*	*	*	*	*	*	*	*	*	*	29"	*		

FOR STRUCTURES WITH HEIGHTS GREATER THAN 110 FT, THE VENDOR SHALL USE POLE TOP DIAMETER OF 16-1/4 INCHES, POLE BOTTOM DIAMETER OF 29 INCHES, AND STUB DIAMETER OF 29 INCHES CONSISTENT WITH THOSE ABOVE.

THE VENDOR WILL DETERMINE THE QUANTITY AND LOCATION OF X-BRACES FOR STRUCTURES WITH HEIGHTS GREATER THAN 110 FT.

CONDUCTOR X-ARM						X-BRACE				STATIC PEAK ARM				
DESCRIPTION	TUBE 1 LENGTH	TUBE 2 LENGTH	THICKNESS	DIAMETER	APPROX. WEIGHT	DESCRIPTION	TUBE LENGTH	THICKNESS	APPROX. WEIGHT (EACH)	DESCRIPTION	THICKNESS	LARGE DIAMETER	SMALL DIAMETER	APPROX. WEIGHT (EACH)
64'-6" X-ARM 8-SIDED	31'-00"	33'-06"	1/4"	16 1/4"	3,400 LB	5X5 SQUARE TUBING (2 EACH)	38'-00 1/8"	3/16"	500 LB	12'-9" ARM 8-SIDED (2 EACH)	1/4"	9 1/2"	5"	350 LB

FAMILY OF STRUCTURES ABOVE IS USED SYSTEM-WIDE. WEIGHTS AND DIMENSIONS SHOWN ABOVE ARE ALREADY IN-USE ON THE SYSTEM. VENDOR TO COMPLETE FIELDS WITH AN * , ENSURING THEY ARE COMPATIBLE WITH THE EXISTING FAMILY OF STRUCTURES AND STUBS. WEIGHT LISTED FOR INDIVIDUAL SECTION INDICATES A BOLTED FLANGED CONNECTION BETWEEN SECTIONS. WEIGHT LISTED FOR COMBINED SECTIONS INDICATES A FACTORY WELDED CONNECTION BETWEEN SECTIONS.

LINE ITEM	STUB LENGTH	EMBEDMENT DEPTH	TUBE LENGTH	THICKNESS	TOP DIA	BOTTOM DIA	APPROX. WEIGHT
3-1	13'-00"	10'-00"	13'-00"	1/4"	29"	29"	1,600 LB
3-2	16'-00"	13'-00"	16'-00"	1/4"	29"	29"	2,100 LB
3-3	17'-00"	14'-00"	17'-00"	1/4"	29"	29"	2,100 LB
3-4	18'-00"	15'-00"	18'-00"	1/4"	29"	29"	2,200 LB
3-5	19'-00"	16'-00"	19'-00"	1/4"	29"	29"	2,300 LB
3-6	20'-00"	17'-00"	20'-00"	1/4"	29"	29"	2,400 LB
3-7	22'-00"	19'-00"	22'-00"	1/4"	29"	29"	2,500 LB

FAMILY OF STRUCTURES ABOVE IS USED SYSTEM-WIDE. WEIGHTS AND DIMENSIONS SHOWN ABOVE ARE ALREADY IN-USE ON THE SYSTEM. VENDOR IS REQUIRED TO USE THESE MEMBER SIZES IN DESIGN.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW	
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP	
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL		
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG		610.002.002 LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy

POWER ENGINEERS

NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CTHF - 345 kV TANGENT STEEL POLE H-FRAME STRUCTURE, DIRECT-EMBED

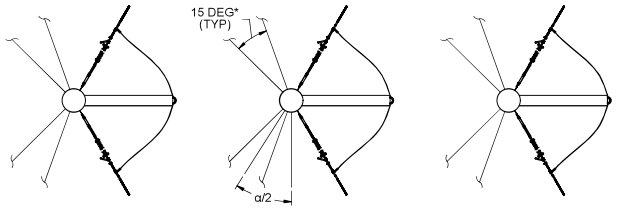
JOB NUMBER 169994 169997

REV C

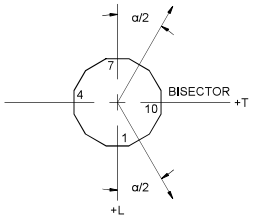
DRAWING NUMBER 600.002.001

SHEET 3 OF 3

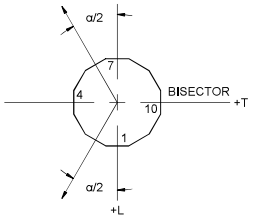
GUY CONFIGURATION



*NOTE: MOST GUYED STRUCTURES WILL HAVE THIS GUYING CONFIGURATION. HOWEVER SOME STRUCTURES WILL HAVE AN ALTERNATE CONFIGURATION. FIND SPECIFIC GUYING INFORMATION ON THE STRUCTURE LIST.

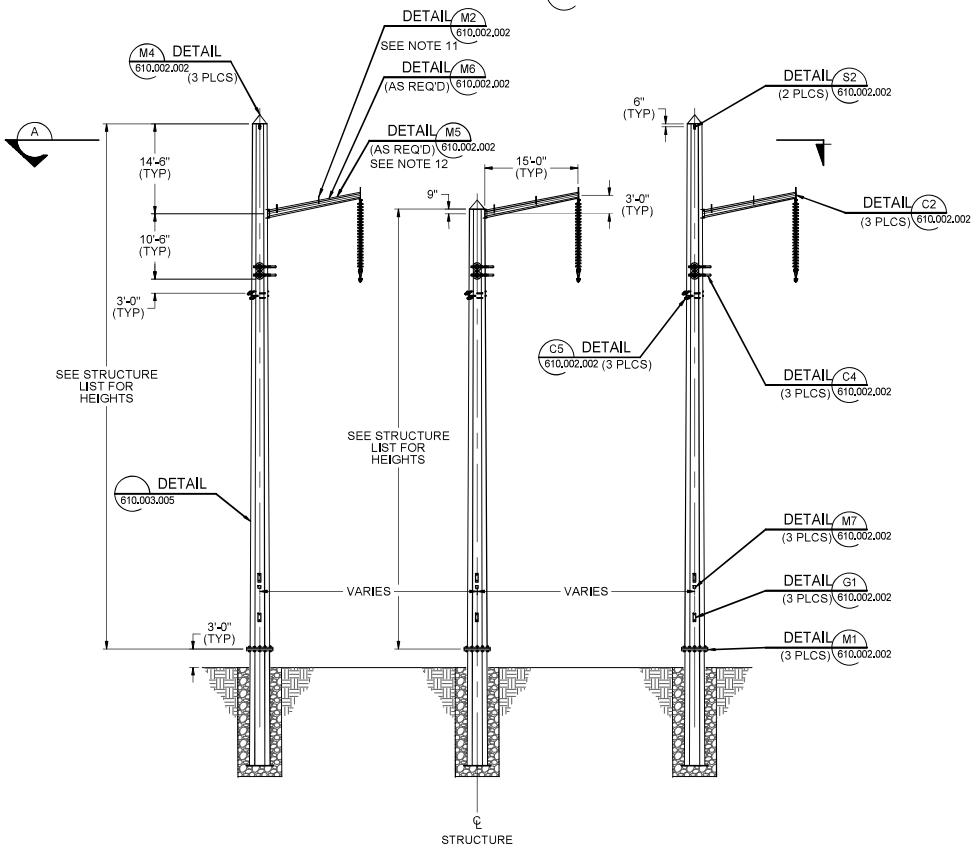


STRUCTURE ORIENTATION
RIGHT ANGLE



STRUCTURE ORIENTATION
LEFT ANGLE

SECTION A



CT3PDE-35
LOOKING AHEAD

NOTES

1. THIS DRAWING SET INCLUDES DETAILS THAT ARE CONSIDERED 'STANDARD' FOR NVE'S 345 kV TUBULAR FAMILY. THE FABRICATOR SHALL ANALYZE THE STRUCTURE USING THE LOADS PROVIDED ON THIS DRAWING. THIS INCLUDES ANALYSIS OF THE MEMBER SIZES, GEOMETRY, AND DETAILS. ANY DETAILS WHICH REQUIRE MODIFICATION OR ALTERATION FROM THOSE SHOWN IN THIS DRAWING SET SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER.
2. FOLLOWING COMPLETION OF DESIGN, FABRICATOR ASSUMES RESPONSIBILITY FOR ALL STRUCTURE DETAILS, INCLUDING ABILITY TO WITHSTAND MECHANICAL LOADING. THIS INCLUDES APPLICATION OF THE TYPICAL FABRICATOR WARRANTY/GUARANTEE OF PERFORMANCE.
3. WIRE TENSIONS PROVIDED PER SUBCONDUCTOR. VECTOR LOADS PROVIDED PER PHASE.
4. LOADCASE 6 SHALL BE APPLIED UNDER THE FOLLOWING CONDITIONS:
   - FAILURE OF ANY ONE SHIELD WIRE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT
   - FAILURE OF ANY ONE PHASE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT.
5. LOADCASE 7 APPLIES TO ALL WIRE SUPPORT POINTS, MAINTENANCE VANGS, AND TEMPORARY LIFT OR TENSION POINTS. LOADS NEED NOT BE APPLIED TO WORKING VANGS AND PERMANENT WIRE ATTACHMENT POINTS SIMULTANEOUSLY.
6. LOADCASE 8 SHALL BE APPLIED ASSUMING THAT ANY SINGLE WIRE CAN BE "MOVING" AT A GIVEN TIME. THE REMAINING WIRE ATTACHMENTS SHALL ACCOMMODATE ANY COMBINATION OF "IN-PLACE" LOADS OR NO LOAD, WHICHEVER PRODUCES THE MORE CRITICAL EFFECT ON THE STRUCTURE. ADDITIONALLY, A LOAD OF 1,000 LBS HAS BEEN INCLUDED IN THE WIRE ATTACHMENT LOADS TO ACCOMMODATE THE WEIGHT OF EQUIPMENT, TOOLS, AND PERSONNEL DURING WORK.
7. LOADCASE 11 IS APPLIED ONLY TO THE STRUCTURE. WIND PRESSURE SHOULD BE APPLIED IN WHICHEVER ORIENTATION PRODUCES THE MAXIMUM STRESS ON THE STRUCTURE.
8. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 90% CAPACITY FOR LOAD CASES 3, 4, 5A, 5B, 10, 11, 13, 14, 15A, AND 15B. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 100% CAPACITY FOR ALL OTHER LOAD CASES.
9. APPLY WIND ON STRUCTURE IN CONJUNCTION WITH THE FORCE COEFFICIENTS AS RECOMMENDED IN ASCE 74 4TH EDITION FOR ALL LOAD CASES.
10. STRUCTURES TO BE WEATHERING STEEL IN ACCORDANCE WITH ASTM A871.
11. LADDER BRACKETS ON DAVIT ARMS SHALL BE INSTALLED 1'-6" FROM THE POLE FACE, SPACED EQUALLY TO A MAXIMUM OF 10'-0", AND ON THE TIP OF EACH DAVIT ARM.
12. PERCH DETERRENTS, AS SPECIFIED IN DETAIL M5 ON 610.002.002, SHALL BE INSTALLED ON ALL HORIZONTAL SURFACES OF STRUCTURES, AS INDICATED IN THE STRUCTURE LIST. STRUCTURES THAT DO NOT REQUIRE PERCH DETERRENTS AND POLE TOPS SHOULD NOT INCLUDE PROVISIONS FOR THEM.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL	
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610.003.005	GROUNDED OPGW SPLICE DOWNLEADS
610.002.002	LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy
POWER ENGINEERS

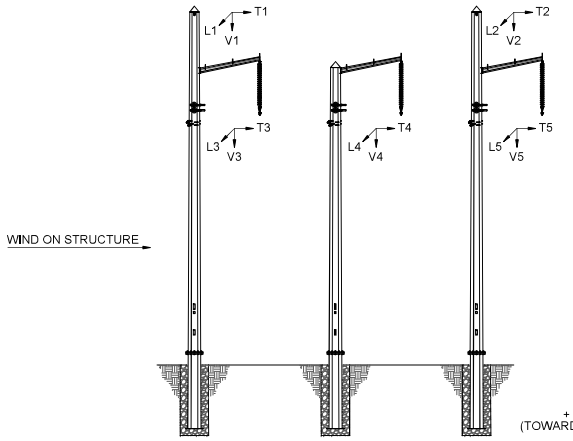
NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CT3PDE-35 - 345 kV MEDIUM ANGLE 0-35° STEEL 3-POLE DEADEND STRUCTURE, GUYED, DIRECT-EMBED

JOB NUMBER 169994 169997
REV C
DRAWING NUMBER 600.002.003
SHEET 1 OF 3

600.002.003.dwg

LOADCASE NO.	DESCRIPTION	LOAD SCHEDULE (KIPS): ALL LOADS INCLUDE OVERLOAD CAPACITY FACTORS																												WIND ON STRUCTURE (PSF)
		V1A	V1B	T1A	T1B	L1A	L1B	V2A	V2B	T2A	T2B	L2A	L2B	V3A	V3B	T3A	T3B	L3A	L3B	V4A	V4B	T4A	T4B	L4A	L4B	V5A	V5B	T5A	T5B	L5A	L5B	
1A	NESC RULE 250B, MEDIUM	2.58	2.58	4.26	4.26	-10.23	10.23	2.58	2.58	4.26	4.26	-10.23	10.23	9.76	9.76	11.75	11.75	-28.01	28.01	9.76	9.76	11.75	11.75	-28.01	28.01	9.76	9.76	11.75	11.75	-28.01	28.01	10.00
1B	NESC RULE 250B, HEAVY	3.96	3.96	6.14	6.14	-14.79	14.79	3.96	3.96	6.14	6.14	-14.79	14.79	13.42	13.42	15.90	15.90	-38.40	38.40	13.42	13.42	15.90	15.90	-38.40	38.40	13.42	13.42	15.90	15.90	-38.40	38.40	10.00
2A	NESC RULE 250B, MEDIUM; UPLIFT	1.72	1.72	4.26	4.26	-10.23	10.23	1.72	1.72	4.26	4.26	-10.23	10.23	6.51	6.51	11.75	11.75	-28.01	28.01	6.51	6.51	11.75	11.75	-28.01	28.01	6.51	6.51	11.75	11.75	-28.01	28.01	10.00
2B	NESC RULE 250B, HEAVY; UPLIFT	2.64	2.64	6.14	6.14	-14.79	14.79	2.64	2.64	6.14	6.14	-14.79	14.79	8.95	8.95	15.90	15.90	-38.40	38.40	8.95	8.95	15.90	15.90	-38.40	38.40	8.95	8.95	15.90	15.90	-38.40	38.40	10.00
3	NESC 250C EXTREME WIND	1.13	1.13	3.04	3.04	-5.72	5.72	1.13	1.13	3.04	3.04	-5.72	5.72	4.70	4.70	9.39	9.39	-16.40	16.40	4.70	4.70	9.39	9.39	-16.40	16.40	4.70	4.70	9.39	9.39	-16.40	16.40	20.70
4	NESC 250D CONCURRENT WIND & ICE	2.64	2.64	2.59	2.59	-7.15	7.15	2.64	2.64	2.59	2.59	-7.15	7.15	8.95	8.95	7.13	7.13	-19.84	19.84	8.95	8.95	7.13	7.13	-19.84	19.84	8.95	8.95	7.13	7.13	-19.84	19.84	2.30
5A	NVE EXTREME ICE 0.5"	2.64	2.64	2.17	2.17	-6.87	6.87	2.64	2.64	2.17	2.17	-6.87	6.87	8.95	8.95	6.07	6.07	-19.27	19.27	8.95	8.95	6.07	6.07	-19.27	19.27	8.95	8.95	6.07	6.07	-19.27	19.27	0.00
5B	NVE EXTREME ICE 1.0"	5.42	5.42	3.91	3.91	-12.40	12.40	5.42	5.42	3.91	3.91	-12.40	12.40	15.74	15.74	10.28	10.28	-32.62	32.62	15.74	15.74	10.28	10.28	-32.62	32.62	15.74	15.74	10.28	10.28	-32.62	32.62	0.00
6	NVE FAILURE CONTAINMENT; INTACT WIRES	1.13	1.13	0.96	0.96	-3.05	3.05	1.13	1.13	0.96	0.96	-3.05	3.05	4.70	4.70	3.19	3.19	-10.11	10.11	4.70	4.70	3.19	3.19	-10.11	10.11	4.70	4.70	3.19	3.19	-10.11	10.11	0.00
	NVE FAILURE CONTAINMENT; BROKEN WIRES	1.18	0.00	0.96	0.00	-3.05	0.00	1.18	0.00	0.96	0.00	-3.05	0.00	5.00	0.00	3.19	0.00	-10.11	0.00	5.00	0.00	3.19	0.00	-10.11	0.00	5.00	0.00	3.19	0.00	-10.11	0.00	0.00
7	MAINTENANCE LOAD	2.25	2.25	1.20	1.20	-3.24	3.24	2.25	2.25	1.20	1.20	-3.24	3.24	9.41	9.41	4.10	4.10	-11.06	11.06	9.41	9.41	4.10	4.10	-11.06	11.06	9.41	9.41	4.10	4.10	-11.06	11.06	3.00
8	C&M; MOVING	3.78	1.63	2.31	2.31	-6.49	6.49	3.78	1.63	2.31	2.31	-6.49	6.49	8.87	5.20	7.89	7.89	-22.13	22.13	8.87	5.20	7.89	7.89	-22.13	22.13	8.87	5.20	7.89	7.89	-22.13	22.13	4.50
	C&M; IN PLACE	3.24	1.63	1.80	1.80	-4.86	4.86	3.24	1.63	1.80	1.80	-4.86	4.86	7.95	5.20	6.15	6.15	-16.59	16.59	7.95	5.20	6.15	6.15	-16.59	16.59	7.95	5.20	6.15	6.15	-16.59	16.59	4.50
9	EVERYDAY - OSHA ARM CHECK	3.63	3.63	0.99	0.99	-3.15	3.15	3.63	3.63	0.99	0.99	-3.15	3.15	7.20	7.20	3.37	3.37	-10.68	10.68	7.20	7.20	3.37	3.37	-10.68	10.68	7.20	7.20	3.37	3.37	-10.68	10.68	0.00
10	UPLIFT (-20ºF)	1.13	1.13	1.14	1.14	-3.62	3.62	1.13	1.13	1.14	1.14	-3.62	3.62	4.70	4.70	3.91	3.91	-12.40	12.40	4.70	4.70	3.91	3.91	-12.40	12.40	4.70	4.70	3.91	3.91	-12.40	12.40	0.00
11	NESC 250C EXTREME WIND; NO WIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.70
12A	NESC RULE 250B, MEDIUM; DE	2.66	0.00	4.26	0.00	-10.23	0.00	2.66	0.00	4.26	0.00	-10.23	0.00	10.21	0.00	11.75	0.00	-28.01	0.00	10.21	0.00	11.75	0.00	-28.01	0.00	10.21	0.00	11.75	0.00	-28.01	0.00	10.00
12B	NESC RULE 250B, HEAVY; DE	4.03	0.00	6.14	0.00	-14.79	0.00	4.03	0.00	6.14	0.00	-14.79	0.00	13.87	0.00	15.90	0.00	-38.40	0.00	13.87	0.00	15.90	0.00	-38.40	0.00	13.87	0.00	15.90	0.00	-38.40	0.00	10.00
13	NESC 250C EXTREME WIND; DE	1.18	0.00	3.04	0.00	-5.72	0.00	1.18	0.00	3.04	0.00	-5.72	0.00	5.00	0.00	9.39	0.00	-16.40	0.00	5.00	0.00	9.39	0.00	-16.40	0.00	5.00	0.00	9.39	0.00	-16.40	0.00	20.70
14	NESC 250D CONCURRENT WIND & ICE; DE	2.69	0.00	2.59	0.00	-7.15	0.00	2.69	0.00	2.59	0.00	-7.15	0.00	9.25	0.00	7.13	0.00	-19.84	0.00	9.25	0.00	7.13	0.00	-19.84	0.00	9.25	0.00	7.13	0.00	-19.84	0.00	2.30
15A	NVE EXTREME ICE 0.5"; DE	2.69	0.00	2.17	0.00	-6.87	0.00	2.69	0.00	2.17	0.00	-6.87	0.00	9.25	0.00	6.07	0.00	-19.27	0.00	9.25	0.00	6.07	0.00	-19.27	0.00	9.25	0.00	6.07	0.00	-19.27	0.00	0.00
15B	NVE EXTREME ICE 1.0"; DE	5.47	0.00	3.91	0.00	-12.40	0.00	5.47	0.00	3.91	0.00	-12.40	0.00	16.04	0.00	10.28	0.00	-32.62	0.00	16.04	0.00	10.28	0.00	-32.62	0.00	16.04	0.00	10.28	0.00	-32.62	0.00	0.00

DESIGN PARAMETERS								
WIRE	WIRE TYPE	STRAND (AL/ST)	WEIGHT (LBS/FT)	DIA (IN)	ANGLE (DEG)	RULING SPAN (FT)	WIND SPAN (FT)	MAX WT SPAN (FT)
1	OPGW DNO-12418	-	0.525	0.685	35	2100	2100	4100
2	OPGW DNO-12418	-	0.525	0.685	35	2100	2100	4100
3, 4 & 5	RAIL ACSR (2-BUNDLE)	45/7	1.074	1.165	35	2100	2100	4100



LOAD TREE

SIGN CONVENTION FOR LOADS

LOADCASE NO.	WEATHER CASES				OVERLOAD FACTORS			WIRE TENSIONS				
	DESCRIPTION	TEMP (ºF)	RADIAL ICE (IN)	WIND (PSF) SW / COND	WIND OLF	TENSION OLF	VERTICAL OLF	1 (LBS)	2 (LBS)	3 (LBS)	4 (LBS)	5 (LBS)
1A	NESC RULE 250B, MEDIUM	15	0.25	4.00	2.50	1.65	1.50	6500	6500	8900	8900	8900
1B	NESC RULE 250B, HEAVY	0	0.50	4.00	2.50	1.65	1.50	9400	9400	12200	12200	12200
2A	NESC RULE 250B, MEDIUM; UPLIFT	15	0.25	4.00	2.50	1.65	1.00	6500	6500	8900	8900	8900
2B	NESC RULE 250B, HEAVY; UPLIFT	0	0.50	4.00	2.50	1.65	1.00	9400	9400	12200	12200	12200
3	NESC 250C EXTREME WIND	60	0.00	20.70	1.00	1.00	1.00	6000	6000	8600	8600	8600
4	NESC 250D CONCURRENT WIND & ICE	15	0.50	2.30	1.00	1.00	1.00	7500	7500	10400	10400	10400
5A	NVE EXTREME ICE 0.5"	30	0.50	0.00	1.00	1.00	1.00	7200	7200	10100	10100	10100
5B	NVE EXTREME ICE 1.0"	30	1.00	0.00	1.00	1.00	1.00	13000	13000	17100	17100	17100
6	NVE FAILURE CONTAINMENT; INTACT WIRES	60	0.00	0.00	1.00	1.00	1.00	3200	3200	5300	5300	5300
	NVE FAILURE CONTAINMENT; BROKEN WIRES	60	0.00	0.00	1.00	1.00	1.00	3200	3200	5300	5300	5300
7	MAINTENANCE LOAD	60	0.00	3.00	1.00	1.00	2.00	3400	3400	5800	5800	5800
8	C&M; MOVING	60	0.00	3.00	1.50	2.00	1.00	3400	3400	5800	5800	5800
	C&M; IN PLACE	60	0.00	3.00	1.50	1.50	1.00	3400	3400	5800	5800	5800
9	EVERYDAY - OSHA ARM CHECK	60	0.00	0.00	1.00	1.00	1.00	3300	3300	5600	5600	5600
10	UPLIFT (-20ºF)	-20	0.00	0.00	1.00	1.00	1.00	3800	3800	6500	6500	6500
11	NESC 250C EXTREME WIND; NO WIRES	60	0.00	20.70	1.00	1.00	1.00	0	0	0	0	0
12A	NESC RULE 250B, MEDIUM; DE	15	0.25	4.00	2.50	1.65	1.50	6500	6500	8900	8900	8900
12B	NESC RULE 250B, HEAVY; DE	0	0.50	4.00	2.50	1.65	1.50	9400	9400	12200	12200	12200
13	NESC 250C EXTREME WIND; DE	60	0.00	20.70	1.00	1.00	1.00	6000	6000	8600	8600	8600
14	NESC 250D CONCURRENT WIND & ICE; DE	15	0.50	2.30	1.00	1.00	1.00	7500	7500	10400	10400	10400
15A	NVE EXTREME ICE 0.5"; DE	30	0.50	0.00	1.00	1.00	1.00	7200	7200	10100	10100	10100
15B	NVE EXTREME ICE 1.0"; DE	30	1.00	0.00	1.00	1.00	1.00	13000	13000	17100	17100	17100

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL	
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610,003,005	GROUNDED OPGW SPLICE DOWNLEADS
610,002,002	LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy

POWER ENGINEERS

NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CT3PDE-35 - 345 kV MEDIUM ANGLE
0-35° STEEL 3-POLE DEADEND
STRUCTURE, GUYED, DIRECT-EMBED

JOB NUMBER 169994 169997

REV C

DRAWING NUMBER 600,002,003

SHEET 2 OF 3

600,002,003.dwg

LINE ITEM	STRUCTURE DESCRIPTION	SHAFT	SECTION 1 & 2 OR 1,2 &3 APPROX. WEIGHT	SECTION 1					SECTION 2				SECTION 2 PLUS 3 APPROX. WEIGHT	SECTION 3					TOTAL STRUCTURE APPROX. WEIGHT
				LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER	SECTION 1 APPROX. WEIGHT	LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER		LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER	SECTION 3 APPROX. WEIGHT	
2-1	67'-0"/53'-0"/67'-0" 3-POLE DEADEND	L	5,900 LB	35'-00"	1/4"	27 1/4"	29"	-	31'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	*
2-2		M	*	*	*	*	29"	*	*	*	29"	29"	*	-	-	-	-	-	
2-3		R	5,900 LB	35'-00"	1/4"	27 1/4"	29"	-	31'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-4	72'-0"/58'-0"/72'-0" 3-POLE DEADEND	L	6,300 LB	35'-00"	1/4"	27 1/4"	29"	-	36'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	*
2-5		M	*	*	*	*	29"	*	*	*	29"	29"	*	-	-	-	-	-	
2-6		R	6,300 LB	35'-00"	1/4"	27 1/4"	29"	-	36'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-7	77'-0"/63'-0"/77'-0" 3-POLE DEADEND	L	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	41'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	20,050 LB
2-8		M	5,600 LB	38'-00"	1/4"	27 3/32"	29"	-	24'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-9		R	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	41'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-10	82'-0"/68'-0"/82'-0" 3-POLE DEADEND	L	*	35'-00"	1/4"	27 1/4"	29"	-	46'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	*
2-11		M	6,000 LB	38'-00"	1/4"	27 3/32"	29"	-	29'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-12		R	*	35'-00"	1/4"	27 1/4"	29"	-	46'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-13	87'-0"/73'-0"/87'-0" 3-POLE DEADEND	L	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	25'-00"	1/4"	29"	29"	-	26'-10 1/2"	1/4"	29"	29"	-	20,600 LB
2-14		M	6,300 LB	38'-00"	1/4"	27 3/32"	29"	-	34'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-15		R	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	25'-00"	1/4"	29"	29"	-	26'-10 1/2"	1/4"	29"	29"	-	

FOR STRUCTURES WITH HEIGHTS GREATER THAN 87 FT, THE VENDOR SHALL USE LEFT/RIGHT POLE TOP DIAMETER OF 27-1/4 INCHES, MIDDLE POLE TOP DIAMETER OF 27-3/32 INCHES, POLE BOTTOM DIAMETER OF 29 INCHES, AND STUB DIAMETER OF 29 INCHES CONSISTENT WITH THOSE SHOWN ABOVE.

JUMPER ARM				
DESCRIPTION	THICKNESS	LARGE DIAMETER	SMALL DIAMETER	APPROX. WEIGHT (EACH)
14'-6" ARM 8-SIDED (3 EACH)	3/16"	7"	5"	350 LB

FAMILY OF STRUCTURES ABOVE IS USED SYSTEM-WIDE. WEIGHTS AND DIMENSIONS SHOWN ABOVE ARE ALREADY IN-USE ON THE SYSTEM. VENDOR TO COMPLETE FIELDS WITH AN * . ENSURING THEY ARE COMPATIBLE WITH THE EXISTING FAMILY OF STRUCTURES AND STUBS. WEIGHT LISTED FOR INDIVIDUAL SECTION INDICATES A BOLTED FLANGED CONNECTION BETWEEN SECTIONS. WEIGHT LISTED FOR COMBINED SECTIONS INDICATES A FACTORY WELDED CONNECTION BETWEEN SECTIONS.

LINE ITEM	STUB LENGTH	EMBEDMENT DEPTH	TUBE LENGTH	THICKNESS	TOP DIA	BOTTOM DIA	APPROX. WEIGHT
3-1	13'-00"	10'-00"	13'-00"	1/4"	29"	29"	1,600 LB
3-2	16'-00"	13'-00"	16'-00"	1/4"	29"	29"	2,100 LB
3-3	17'-00"	14'-00"	17'-00"	1/4"	29"	29"	2,100 LB
3-4	18'-00"	15'-00"	18'-00"	1/4"	29"	29"	2,200 LB
3-5	19'-00"	16'-00"	19'-00"	1/4"	29"	29"	2,300 LB
3-6	20'-00"	17'-00"	20'-00"	1/4"	29"	29"	2,400 LB
3-7	22'-00"	19'-00"	22'-00"	1/4"	29"	29"	2,500 LB

FAMILY OF STRUCTURES ABOVE IS USED SYSTEM-WIDE. WEIGHTS AND DIMENSIONS SHOWN ABOVE ARE ALREADY IN-USE ON THE SYSTEM. VENDOR IS REQUIRED TO USE THESE MEMBER SIZES IN DESIGN.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL	
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610,003,005	GROUNDED OPGW SPLICE DOWNLEADS
610,002,002	LOAD AND DESIGN STEEL POLE DETAILS

SCALE: NTS

FOR 11" x 17" DWG ONLY

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

NVEnergy

POWER ENGINEERS

NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CT3PDE-35 - 345 kV MEDIUM ANGLE 0-35° STEEL 3-POLE DEADEND STRUCTURE, GUYED, DIRECT-EMBED

JOB NUMBER 169994 169997

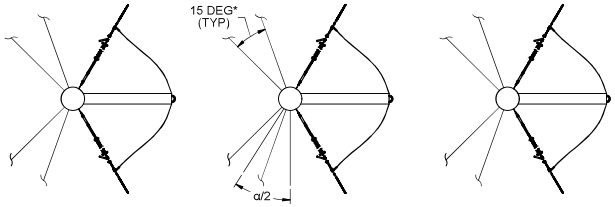
REV C

DRAWING NUMBER 600,002,003

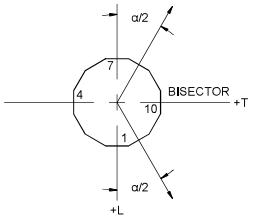
SHEET 3 OF 3

600,002,003.dwg

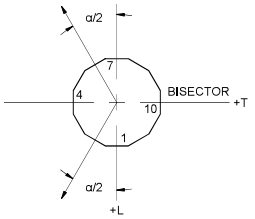
GUY CONFIGURATION



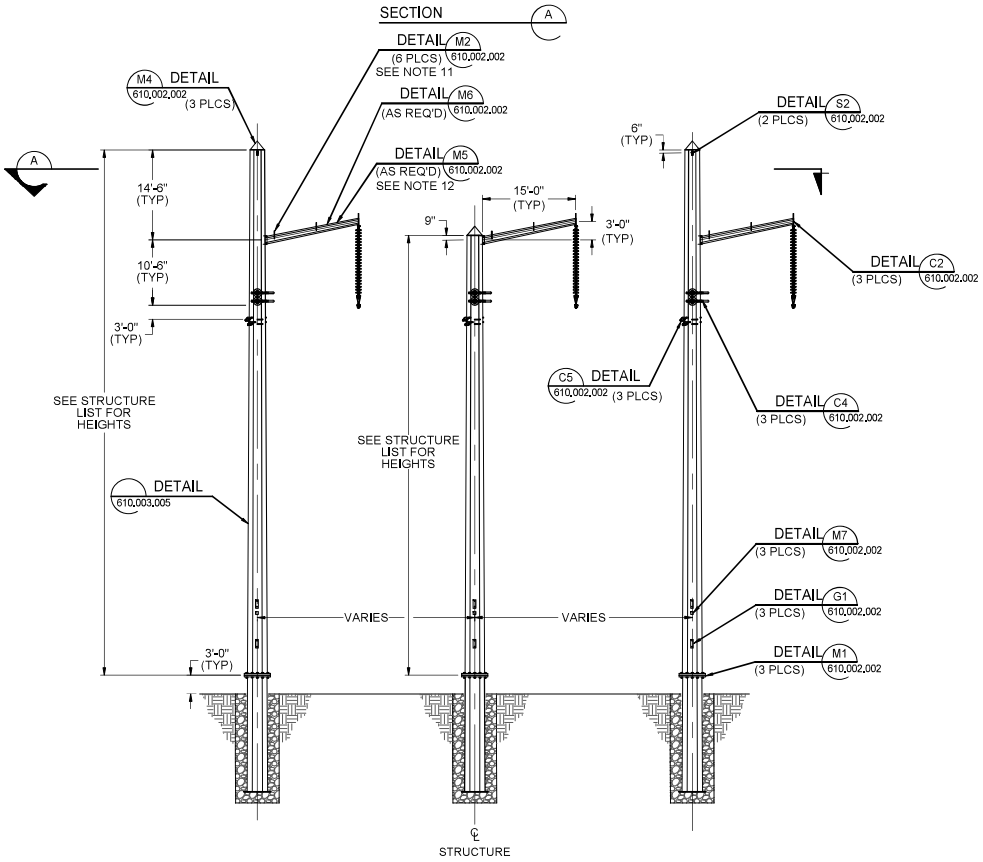
*NOTE: MOST GUYED STRUCTURES WILL HAVE THIS GUYING CONFIGURATION. HOWEVER SOME STRUCTURES WILL HAVE AN ALTERNATE CONFIGURATION. FIND SPECIFIC GUYING INFORMATION ON THE STRUCTURE LIST.



STRUCTURE ORIENTATION
RIGHT ANGLE



STRUCTURE ORIENTATION
LEFT ANGLE



CT3PDE-90
LOOKING AHEAD

NOTES

1. THIS DRAWING SET INCLUDES DETAILS THAT ARE CONSIDERED 'STANDARD' FOR NVE'S 345 kV TUBULAR FAMILY. THE FABRICATOR SHALL ANALYZE THE STRUCTURE USING THE LOADS PROVIDED ON THIS DRAWING. THIS INCLUDES ANALYSIS OF THE MEMBER SIZES, GEOMETRY, AND DETAILS. ANY DETAILS WHICH REQUIRE MODIFICATION OR ALTERATION FROM THOSE SHOWN IN THIS DRAWING SET SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER.
2. FOLLOWING COMPLETION OF DESIGN, FABRICATOR ASSUMES RESPONSIBILITY FOR ALL STRUCTURE DETAILS, INCLUDING ABILITY TO WITHSTAND MECHANICAL LOADING. THIS INCLUDES APPLICATION OF THE TYPICAL FABRICATOR WARRANTY/GUARANTEE OF PERFORMANCE.
3. WIRE TENSIONS PROVIDED PER SUBCONDUCTOR. VECTOR LOADS PROVIDED PER PHASE.
4. LOADCASE 6 SHALL BE APPLIED UNDER THE FOLLOWING CONDITIONS:
   - FAILURE OF ANY ONE SHIELD WIRE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT
   - FAILURE OF ANY ONE PHASE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT.
5. LOADCASE 7 APPLIES TO ALL WIRE SUPPORT POINTS, MAINTENANCE VANGS, AND TEMPORARY LIFT OR TENSION POINTS. LOADS NEED NOT BE APPLIED TO WORKING VANGS AND PERMANENT WIRE ATTACHMENT POINTS SIMULTANEOUSLY.
6. LOADCASE 8 SHALL BE APPLIED ASSUMING THAT ANY SINGLE WIRE CAN BE "MOVING" AT A GIVEN TIME. THE REMAINING WIRE ATTACHMENTS SHALL ACCOMMODATE ANY COMBINATION OF "IN-PLACE" LOADS OR NO LOAD, WHICHEVER PRODUCES THE MORE CRITICAL EFFECT ON THE STRUCTURE. ADDITIONALLY, A LOAD OF 1,000 LBS HAS BEEN INCLUDED IN THE WIRE ATTACHMENT LOADS TO ACCOMMODATE THE WEIGHT OF EQUIPMENT, TOOLS, AND PERSONNEL DURING WORK.
7. LOADCASE 11 IS APPLIED ONLY TO THE STRUCTURE. WIND PRESSURE SHOULD BE APPLIED IN WHICHEVER ORIENTATION PRODUCES THE MAXIMUM STRESS ON THE STRUCTURE.
8. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 90% CAPACITY FOR LOAD CASES 3, 4, 5A, 5B, 10, 11, 13, 14, 15A, AND 15B. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 100% CAPACITY FOR ALL OTHER LOAD CASES.
9. APPLY WIND ON STRUCTURE IN CONJUNCTION WITH THE FORCE COEFFICIENTS AS RECOMMENDED IN ASCE 74 4TH EDITION FOR ALL LOAD CASES.
10. STRUCTURES TO BE WEATHERING STEEL IN ACCORDANCE WITH ASTM A871.
11. LADDER BRACKETS ON DAVIT ARMS SHALL BE INSTALLED 1'-6" FROM THE POLE FACE, SPACED EQUALLY TO A MAXIMUM OF 10'-0", AND ON THE TIP OF EACH DAVIT ARM.
12. PERCH DETERRENTS, AS SPECIFIED IN DETAIL M5 ON 610.002.002, SHALL BE INSTALLED ON ALL HORIZONTAL SURFACES OF STRUCTURES, AS INDICATED IN THE STRUCTURE LIST. STRUCTURES THAT DO NOT REQUIRE PERCH DETERRENTS AND POLE TOPS SHOULD NOT INCLUDE PROVISIONS FOR THEM.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL	
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610.003.005	GROUNDED OPGW SPLICE DOWNLEADS
610.002.002	LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/22
DRN	KPK	06/01/22
CKD	PG	06/01/22

SCALE: NTS
FOR 11"x 17" DWG ONLY

NVEnergy
POWER ENGINEERS

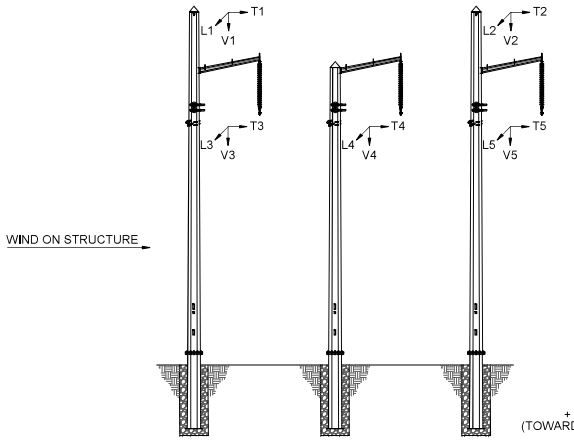
NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CT3PDE-90 - 345 kV HEAVY ANGLE 0-90° STEEL 3-POLE DEADEND STRUCTURE, GUYED, DIRECT-EMBED

JOB NUMBER 169993 169997
REV C
DRAWING NUMBER 600.002.004
SHEET 1 OF 3

600.002.004.dwg

LOADCASE NO.	LOAD SCHEDULE (KIPS): ALL LOADS INCLUDE OVERLOAD CAPACITY FACTORS																														WIND ON STRUCTURE (PSF)
	DESCRIPTION	V1A	V1B	T1A	T1B	L1A	L1B	V2A	V2B	T2A	T2B	L2A	L2B	V3A	V3B	T3A	T3B	L3A	L3B	V4A	V4B	T4A	T4B	L4A	L4B	V5A	V5B	T5A	T5B	L5A	L5B	
1A	NESC RULE 250B, MEDIUM	2.58	2.58	8.62	8.62	-7.58	7.58	2.58	2.58	8.62	8.62	-7.58	7.58	9.76	9.76	23.68	23.68	-20.77	20.77	9.76	9.76	23.68	23.68	-20.77	20.77	9.76	9.76	23.68	23.68	-20.77	20.77	10.00
1B	NESC RULE 250B, HEAVY	3.96	3.96	12.44	12.44	-10.97	10.97	3.96	3.96	12.44	12.44	-10.97	10.97	13.42	13.42	32.26	32.26	-28.47	28.47	13.42	13.42	32.26	32.26	-28.47	28.47	13.42	13.42	32.26	32.26	-28.47	28.47	10.00
2A	NESC RULE 250B, MEDIUM; UPLIFT	1.72	1.72	8.62	8.62	-7.58	7.58	1.72	1.72	8.62	8.62	-7.58	7.58	6.51	6.51	23.68	23.68	-20.77	20.77	6.51	6.51	23.68	23.68	-20.77	20.77	6.51	6.51	23.68	23.68	-20.77	20.77	10.00
2B	NESC RULE 250B, HEAVY; UPLIFT	2.64	2.64	12.44	12.44	-10.97	10.97	2.64	2.64	12.44	12.44	-10.97	10.97	8.95	8.95	32.26	32.26	-28.47	28.47	8.95	8.95	32.26	32.26	-28.47	28.47	8.95	8.95	32.26	32.26	-28.47	28.47	10.00
3	NESC 250C EXTREME WIND	1.13	1.13	5.48	5.48	-4.24	4.24	1.13	1.13	5.48	5.48	-4.24	4.24	4.70	4.70	16.38	16.38	-12.16	12.16	4.70	4.70	16.38	16.38	-12.16	12.16	4.70	4.70	16.38	16.38	-12.16	12.16	20.70
4	NESC 250D CONCURRENT WIND & ICE	2.64	2.64	5.64	5.64	-5.30	5.30	2.64	2.64	5.64	5.64	-5.30	5.30	8.95	8.95	15.58	15.58	-14.71	14.71	8.95	8.95	15.58	15.58	-14.71	14.71	8.95	8.95	15.58	15.58	-14.71	14.71	2.30
5A	NVE EXTREME ICE 0.5"	2.64	2.64	5.09	5.09	-5.09	5.09	2.64	2.64	5.09	5.09	-5.09	5.09	8.95	8.95	14.28	14.28	-14.28	14.28	8.95	8.95	14.28	14.28	-14.28	14.28	8.95	8.95	14.28	14.28	-14.28	14.28	0.00
5B	NVE EXTREME ICE 1.0"	5.42	5.42	9.19	9.19	-9.19	9.19	5.42	5.42	9.19	9.19	-9.19	9.19	15.74	15.74	24.18	24.18	-24.18	24.18	15.74	15.74	24.18	24.18	-24.18	24.18	15.74	15.74	24.18	24.18	-24.18	24.18	0.00
6	NVE FAILURE CONTAINMENT; INTACT WIRES	1.13	1.13	2.26	2.26	-2.26	2.26	1.13	1.13	2.26	2.26	-2.26	2.26	4.70	4.70	7.50	7.50	-7.50	7.50	4.70	4.70	7.50	7.50	-7.50	7.50	4.70	4.70	7.50	7.50	-7.50	7.50	0.00
	NVE FAILURE CONTAINMENT; BROKEN WIRES	1.18	0.00	2.26	0.00	-2.26	0.00	1.18	0.00	2.26	0.00	-2.26	0.00	5.00	0.00	7.50	0.00	-7.50	0.00	5.00	0.00	7.50	0.00	-7.50	0.00	5.00	0.00	7.50	0.00	-7.50	0.00	0.00
7	MAINTENANCE LOAD	2.25	2.25	2.58	2.58	-2.40	2.40	2.25	2.25	2.58	2.58	-2.40	2.40	9.41	9.41	8.81	8.81	-8.20	8.20	9.41	9.41	8.81	8.81	-8.20	8.20	9.41	9.41	8.81	8.81	-8.20	8.20	3.00
8	C&M; MOVING	3.78	1.63	5.08	5.08	-4.81	4.81	3.78	1.63	5.08	5.08	-4.81	4.81	8.87	5.20	17.32	17.32	-16.40	16.40	8.87	5.20	17.32	17.32	-16.40	16.40	8.87	5.20	17.32	17.32	-16.40	16.40	4.50
	C&M; IN PLACE	3.24	1.63	3.88	3.88	-3.61	3.61	3.24	1.63	3.88	3.88	-3.61	3.61	7.95	5.20	13.22	13.22	-12.30	12.30	7.95	5.20	13.22	13.22	-12.30	12.30	7.95	5.20	13.22	13.22	-12.30	12.30	4.50
9	EVERYDAY - OSHA ARM CHECK	3.63	3.63	2.33	2.33	-2.33	2.33	3.63	3.63	2.33	2.33	-2.33	2.33	7.20	7.20	7.92	7.92	-7.92	7.92	7.20	7.20	7.92	7.92	-7.92	7.92	7.20	7.20	7.92	7.92	-7.92	7.92	0.00
10	UPLIFT (-20°F)	1.13	1.13	2.69	2.69	-2.69	2.69	1.13	1.13	2.69	2.69	-2.69	2.69	4.70	4.70	9.19	9.19	-9.19	9.19	4.70	4.70	9.19	9.19	-9.19	9.19	4.70	4.70	9.19	9.19	-9.19	9.19	0.00
11	NESC 250C EXTREME WIND; NO WIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.70
12A	NESC RULE 250B, MEDIUM; DE	2.66	0.00	8.62	0.00	-7.58	0.00	2.66	0.00	8.62	0.00	-7.58	0.00	10.21	0.00	23.68	0.00	-20.77	0.00	10.21	0.00	23.68	0.00	-20.77	0.00	10.21	0.00	23.68	0.00	-20.77	0.00	10.00
12B	NESC RULE 250B, HEAVY; DE	4.03	0.00	12.44	0.00	-10.97	0.00	4.03	0.00	12.44	0.00	-10.97	0.00	13.87	0.00	32.26	0.00	-28.47	0.00	13.87	0.00	32.26	0.00	-28.47	0.00	13.87	0.00	32.26	0.00	-28.47	0.00	10.00
13	NESC 250C EXTREME WIND; DE	1.18	0.00	5.48	0.00	-4.24	0.00	1.18	0.00	5.48	0.00	-4.24	0.00	5.00	0.00	16.38	0.00	-12.16	0.00	5.00	0.00	16.38	0.00	-12.16	0.00	5.00	0.00	16.38	0.00	-12.16	0.00	20.70
14	NESC 250D CONCURRENT WIND & ICE: DE	2.69	0.00	5.64	0.00	-5.30	0.00	2.69	0.00	5.64	0.00	-5.30	0.00	9.25	0.00	15.58	0.00	-14.71	0.00	9.25	0.00	15.58	0.00	-14.71	0.00	9.25	0.00	15.58	0.00	-14.71	0.00	2.30
15A	NVE EXTREME ICE 0.5"; DE	2.69	0.00	5.09	0.00	-5.09	0.00	2.69	0.00	5.09	0.00	-5.09	0.00	9.25	0.00	14.28	0.00	-14.28	0.00	9.25	0.00	14.28	0.00	-14.28	0.00	9.25	0.00	14.28	0.00	-14.28	0.00	0.00
15B	NVE EXTREME ICE 1.0"; DE	5.47	0.00	9.19	0.00	-9.19	0.00	5.47	0.00	9.19	0.00	-9.19	0.00	16.04	0.00	24.18	0.00	-24.18	0.00	16.04	0.00	24.18	0.00	-24.18	0.00	16.04	0.00	24.18	0.00	-24.18	0.00	0.00

DESIGN PARAMETERS								
WIRE	WIRE TYPE	STRAND (AL/ST)	WEIGHT (LBS/FT)	DIA (IN)	ANGLE (DEG)	RULING SPAN (FT)	WIND SPAN (FT)	MAX WT SPAN (FT)
1	OPGW DNO-12418	-	0.5250	0.685	90	2100	2100	4100
2	OPGW DNO-12418	-	0.5250	0.685	90	2100	2100	4100
3, 4 & 5	RAIL ACSR (2-BUNDLE)	45/7	1.0740	1.1650	90	2100	2100	4100



LOAD TREE

SIGN CONVENTION FOR LOADS

LOADCASE NO.	WEATHER CASES				OVERLOAD FACTORS			WIRE TENSIONS				
	DESCRIPTION	TEMP (°F)	RADIAL ICE (IN)	WIND (PSF) SW / COND	WIND OLF	TENSION OLF	VERTICAL OLF	1 (LBS)	2 (LBS)	3 (LBS)	4 (LBS)	5 (LBS)
1A	NESC RULE 250B, MEDIUM	15	0.25	4.00	2.50	1.65	1.50	6500	6500	8900	8900	8900
1B	NESC RULE 250B, HEAVY	0	0.50	4.00	2.50	1.65	1.50	9400	9400	12200	12200	12200
2A	NESC RULE 250B, MEDIUM; UPLIFT	15	0.25	4.00	2.50	1.65	1.00	6500	6500	8900	8900	8900
2B	NESC RULE 250B, HEAVY; UPLIFT	0	0.50	4.00	2.50	1.65	1.00	9400	9400	12200	12200	12200
3	NESC 250C EXTREME WIND	60	0.00	20.70	1.00	1.00	1.00	6000	6000	8600	8600	8600
4	NESC 250D CONCURRENT WIND & ICE	15	0.50	2.30	1.00	1.00	1.00	7500	7500	10400	10400	10400
5A	NVE EXTREME ICE 0.5"	30	0.50	0.00	1.00	1.00	1.00	7200	7200	10100	10100	10100
5B	NVE EXTREME ICE 1.0"	30	1.00	0.00	1.00	1.00	1.00	13000	13000	17100	17100	17100
6	NVE FAILURE CONTAINMENT; INTACT WIRES	60	0.00	0.00	1.00	1.00	1.00	3200	3200	5300	5300	5300
	NVE FAILURE CONTAINMENT; BROKEN WIRES	60	0.00	0.00	1.00	1.00	1.00	3200	3200	5300	5300	5300
7	MAINTENANCE LOAD	60	0.00	3.00	1.00	1.00	2.00	3400	3400	5800	5800	5800
8	C&M; MOVING	60	0.00	3.00	1.50	2.00	1.00	3400	3400	5800	5800	5800
	C&M; IN PLACE	60	0.00	3.00	1.50	1.50	1.00	3400	3400	5800	5800	5800
9	EVERYDAY - OSHA ARM CHECK	60	0.00	0.00	1.00	1.00	1.00	3300	3300	5600	5600	5600
10	UPLIFT (-20°F)	-20	0.00	0.00	1.00	1.00	1.00	3800	3800	6500	6500	6500
11	NESC 250C EXTREME WIND; NO WIRES	60	0.00	20.70	1.00	1.00	1.00	0	0	0	0	0
12A	NESC RULE 250B, MEDIUM; DE	15	0.25	4.00	2.50	1.65	1.50	6500	6500	8900	8900	8900
12B	NESC RULE 250B, HEAVY; DE	0	0.50	4.00	2.50	1.65	1.50	9400	9400	12200	12200	12200
13	NESC 250C EXTREME WIND; DE	60	0.00	20.70	1.00	1.00	1.00	6000	6000	8600	8600	8600
14	NESC 250D CONCURRENT WIND & ICE: DE	15	0.50	2.30	1.00	1.00	1.00	7500	7500	10400	10400	10400
15A	NVE EXTREME ICE 0.5"; DE	30	0.50	0.00	1.00	1.00	1.00	7200	7200	10100	10100	10100
15B	NVE EXTREME ICE 1.0"; DE	30	1.00	0.00	1.00	1.00	1.00	13000	13000	17100	17100	17100

600.002.004.dwg

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A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610,003,005	GROUNDED OPGW SPLICE DOWNLEADS
610,002,002	LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/22
DRN	KPK	06/01/22
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SCALE: NTS

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POWER ENGINEERS

NV ENERGY
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345 kV TRANSMISSION LINE
CT3PDE-90 - 345 kV HEAVY ANGLE
0-90° STEEL 3-POLE DEADEND
STRUCTURE, GUYED, DIRECT-EMBED

JOB NUMBER 169993 169997

REV C

DRAWING NUMBER 600.002.004

SHEET 2 OF 3

LINE ITEM	STRUCTURE DESCRIPTION	SHAFT	SECTION 1 & 2 OR 1,2 &3 APPROX. WEIGHT	SECTION 1					SECTION 2				SECTION 2 PLUS 3 APPROX. WEIGHT	SECTION 3					TOTAL STRUCTURE APPROX. WEIGHT
				LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER	SECTION 1 APPROX. WEIGHT	LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER		LENGTH	THICKNESS	TOP DIAMETER	BOTTOM DIAMETER	SECTION 3 APPROX. WEIGHT	
2-1	67'-0"/53'-0"/67'-0" 3-POLE DEADEND	L	5,900 LB	35'-00"	1/4"	27 1/4"	29"	-	31'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	*
2-2		M	*	*	*	*	29"	*	*	*	29"	29"	*	-	-	-	-	-	
2-3		R	5,900 LB	35'-00"	1/4"	27 1/4"	29"	-	31'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-4	72'-0"/58'-0"/72'-0" 3-POLE DEADEND	L	6,300 LB	35'-00"	1/4"	27 1/4"	29"	-	36'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	*
2-5		M	*	*	*	*	29"	*	*	*	29"	29"	*	-	-	-	-	-	
2-6		R	6,300 LB	35'-00"	1/4"	27 1/4"	29"	-	36'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-7	77'-0"/63'-0"/77'-0" 3-POLE DEADEND	L	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	41'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	20,050 LB
2-8		M	5,600 LB	38'-00"	1/4"	27 3/32"	29"	-	24'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-9		R	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	41'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-10	82'-0"/68'-0"/82'-0" 3-POLE DEADEND	L	*	35'-00"	1/4"	27 1/4"	29"	-	46'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	*
2-11		M	6,000 LB	38'-00"	1/4"	27 3/32"	29"	-	29'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-12		R	*	35'-00"	1/4"	27 1/4"	29"	-	46'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-13	87'-0"/73'-0"/87'-0" 3-POLE DEADEND	L	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	25'-00"	1/4"	29"	29"	-	26'-10 1/2"	1/4"	29"	29"	-	20,600 LB
2-14		M	6,300 LB	38'-00"	1/4"	27 3/32"	29"	-	34'-10 1/2"	1/4"	29"	29"	-	-	-	-	-	-	
2-15		R	6,700 LB	35'-00"	1/4"	27 1/4"	29"	-	25'-00"	1/4"	29"	29"	-	26'-10 1/2"	1/4"	29"	29"	-	

FOR STRUCTURES WITH HEIGHTS GREATER THAN 87 FT, THE VENDOR SHALL USE LEFT/RIGHT POLE TOP DIAMETER OF 27-1/4 INCHES, MIDDLE POLE TOP DIAMETER OF 27-3/32 INCHES, POLE BOTTOM DIAMETER OF 29 INCHES, AND STUB DIAMETER OF 29 INCHES CONSISTENT WITH THOSE SHOWN ABOVE.

JUMPER ARM				
DESCRIPTION	THICKNESS	LARGE DIAMETER	SMALL DIAMETER	APPROX. WEIGHT (EACH)
14'-6" ARM 8-SIDED (3 EACH)	3/16"	7"	5"	350 LB

FAMILY OF STRUCTURES ABOVE IS USED SYSTEM-WIDE. WEIGHTS AND DIMENSIONS SHOWN ABOVE ARE ALREADY IN-USE ON THE SYSTEM. VENDOR TO COMPLETE FIELDS WITH AN * , ENSURING THEY ARE COMPATIBLE WITH THE EXISTING FAMILY OF STRUCTURES AND STUBS. WEIGHT LISTED FOR INDIVIDUAL SECTION INDICATES A BOLTED FLANGED CONNECTION BETWEEN SECTIONS. WEIGHT LISTED FOR COMBINED SECTIONS INDICATES A FACTORY WELDED CONNECTION BETWEEN SECTIONS.

LINE ITEM	STUB LENGTH	EMBEDMENT DEPTH	TUBE LENGTH	THICKNESS	TOP DIA	BOTTOM DIA	APPROX. WEIGHT
3-1	13'-00"	10'-00"	13'-00"	1/4"	29"	29"	1,600 LB
3-2	16'-00"	13'-00"	16'-00"	1/4"	29"	29"	2,100 LB
3-3	17'-00"	14'-00"	17'-00"	1/4"	29"	29"	2,100 LB
3-4	18'-00"	15'-00"	18'-00"	1/4"	29"	29"	2,200 LB
3-5	19'-00"	16'-00"	19'-00"	1/4"	29"	29"	2,300 LB
3-6	20'-00"	17'-00"	20'-00"	1/4"	29"	29"	2,400 LB
3-7	22'-00"	19'-00"	22'-00"	1/4"	29"	29"	2,500 LB

FAMILY OF STRUCTURES ABOVE IS USED SYSTEM-WIDE. WEIGHTS AND DIMENSIONS SHOWN ABOVE ARE ALREADY IN-USE ON THE SYSTEM. VENDOR IS REQUIRED TO USE THESE MEMBER SIZES IN DESIGN.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL	
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG	

REFERENCE DRAWINGS	
610,003,005	GROUNDED OPGW SPLICE DOWNLEADS
610,002,002	LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/22
DRN	KPK	06/01/22
CKD	PG	06/01/22

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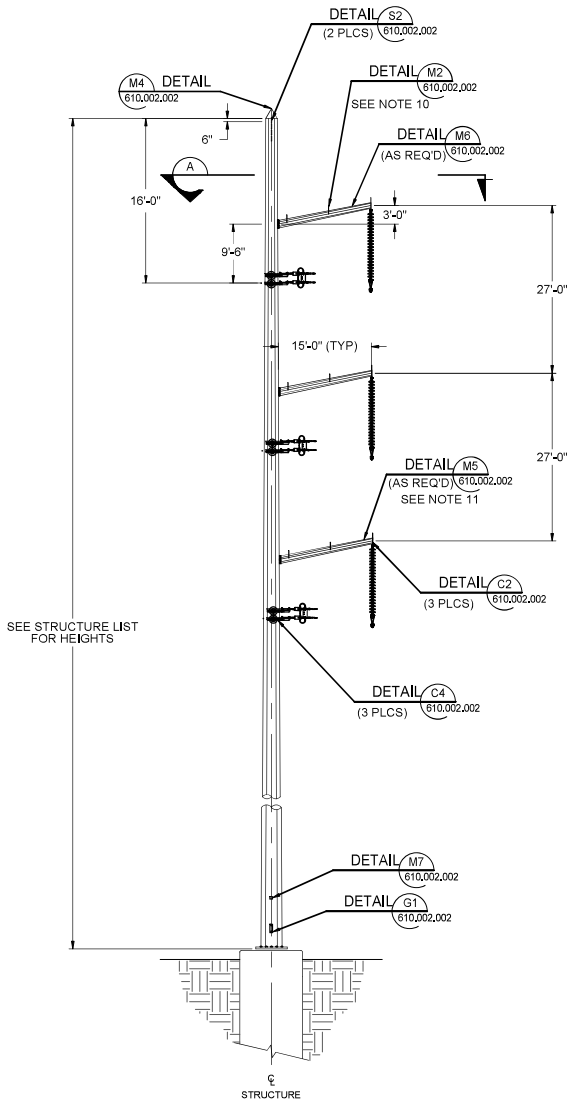
JOB NUMBER 169993 169997

REV C

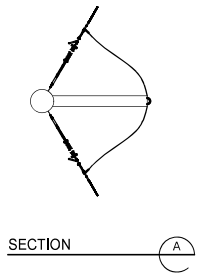
DRAWING NUMBER 600.002.004

SHEET 3 OF 3



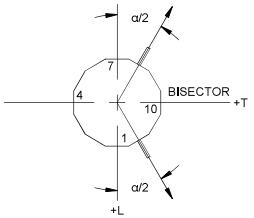
CT1PDE-90

LOOKING AHEAD



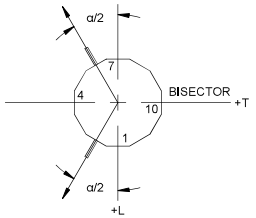
LOADCASE NO.	WEATHER CASES				OVERLOAD FACTORS			WIRE TENSIONS				
	DESCRIPTION	TEMP (°F)	RADIAL ICE (IN)	WIND (PSF) SW / COND	WIND OLF	TENSION OLF	VERTICAL OLF	1 (LBS)	2 (LBS)	3 (LBS)	4 (LBS)	5 (LBS)
1A	NESC RULE 250B, MEDIUM	15	0.25	4.00	2.50	1.65	1.50	5600	5600	8200	8200	8200
1B	NESC RULE 250B, HEAVY	0	0.50	4.00	2.50	1.65	1.50	7600	7600	10900	10900	10900
2A	NESC RULE 250B, MEDIUM; UPLIFT	15	0.25	4.00	2.50	1.65	1.00	5600	5600	8200	8200	8200
2B	NESC RULE 250B, HEAVY; UPLIFT	0	0.50	4.00	2.50	1.65	1.00	7600	7600	10900	10900	10900
3	NESC 250C EXTREME WIND	60	0.00	20.70	1.00	1.00	1.00	5100	5100	7800	7800	7800
4	NESC 250D CONCURRENT WIND & ICE	15	0.50	2.30	1.00	1.00	1.00	6200	6200	9400	9400	9400
5A	NVE EXTREME ICE 0.5"	30	0.50	0.00	1.00	1.00	1.00	5900	5900	8900	8900	8900
5B	NVE EXTREME ICE 1.0"	30	1.00	0.00	1.00	1.00	1.00	9700	9700	13900	13900	13900
6	NVE FAILURE CONTAINMENT; INTACT WIRES NVE FAILURE CONTAINMENT; BROKEN WIRES	60	0.00	0.00	1.00	1.00	1.00	2900	2900	4800	4800	4800
7	MAINTENANCE LOAD	60	0.00	3.00	1.00	1.00	2.00	3200	3200	5800	5800	5800
8	C&M; MOVING C&M; IN PLACE	60	0.00	3.00	1.50	2.00 1.50	1.00	3200	3200	5800	5800	5800
9	EVERYDAY - OSHA ARM CHECK	60	0.00	0.00	1.00	1.00	1.00	3100	3100	5600	5600	5600
10	UPLIFT (-20ºF)	-20	0.00	0.00	1.00	1.00	1.00	3800	3800	6500	6500	6500
11	NESC 250C EXTREME WIND; NO WIRES	60	0.00	20.70	1.00	1.00	1.00	0	0	0	0	0
12A	NESC RULE 250B, MEDIUM; DE	15	0.25	4.00	2.50	1.65	1.50	5600	5600	8200	8200	8200
12B	NESC RULE 250B, HEAVY; DE	0	0.50	4.00	2.50	1.65	1.50	7600	7600	10900	10900	10900
13	NESC 250C EXTREME WIND; DE	60	0.00	20.70	1.00	1.00	1.00	5100	5100	7800	7800	7800
14	NESC 250D CONCURRENT WIND & ICE: DE	15	0.50	2.30	1.00	1.00	1.00	6200	6200	9400	9400	9400
15A	NVE EXTREME ICE 0.5"; DE	30	0.50	0.00	1.00	1.00	1.00	5900	5900	8900	8900	8900
15B	NVE EXTREME ICE 1.0"; DE	30	1.00	0.00	1.00	1.00	1.00	9700	9700	13900	13900	13900

DESIGN PARAMETERS							
WIRE	WIRE TYPE	STRAND (AL/ST)	APPROX. WEIGHT (LBS/FT)	DIA (IN)	ANGLE (DEG)	RULING SPAN (FT)	WIND SPAN (FT)	APPROX. MAX WT SPAN (FT)
1	OPGW DNO-12418	-	0.525	0.685	90	800	800	2600
2	OPGW DNO-12418	-	0.525	0.685	90	800	800	2600
3, 4 & 5	RAIL ACSR (2-BUNDLE)	45/7	1.074	1.165	90	800	800	2600



STRUCTURE ORIENTATION

RIGHT ANGLE



STRUCTURE ORIENTATION

LEFT ANGLE

600.002.005.dwg

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW	
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP	
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL		
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG		610.002.002 LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy

POWER ENGINEERS

NV ENERGY

GREENLINK NEVADA

345 kV TRANSMISSION LINE

CT1PDE-90 - 345 kV HEAVY ANGLE 0-90° STEEL MONOPOLE DEADEND STRUCTURE, SELF-SUPPORTING

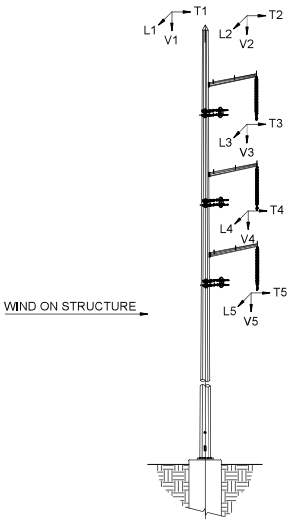
JOB NUMBER 169994 169997

REV C

DRAWING NUMBER 600.002.005

SHEET 1 OF 2

LOADCASE NO.	DESCRIPTION	LOAD SCHEDULE (KIPS): ALL LOADS INCLUDE OVERLOAD CAPACITY FACTORS																													WIND ON STRUCTURE (PSF)
		V1A	V1B	T1A	T1B	L1A	L1B	V2A	V2B	T2A	T2B	L2A	L2B	V3A	V3B	T3A	T3B	L3A	L3B	V4A	V4B	T4A	T4B	L4A	L4B	V5A	V5B	T5A	T5B	L5A	L5B	
1A	NESC RULE 250B, MEDIUM	1.67	1.67	6.93	6.93	-6.53	6.53	1.67	1.67	6.93	6.93	-6.53	6.53	6.35	6.35	20.24	20.24	-19.13	19.13	6.35	6.35	20.24	20.24	-19.13	19.13	6.35	6.35	20.24	20.24	-19.13	19.13	10.00
1B	NESC RULE 250B, HEAVY	2.54	2.54	9.43	9.43	-8.87	-8.87	2.54	2.54	9.43	9.43	-8.87	-887	8.68	8.68	26.88	26.88	-25.43	25.43	8.68	8.68	26.88	26.88	-25.43	25.43	8.68	8.68	26.88	26.88	-25.43	25.43	10.00
2A	NESC RULE 250B, MEDIUM; UPLIFT	1.11	1.11	6.93	6.93	-6.53	6.53	1.11	1.11	6.93	6.93	-6.53	6.53	4.24	4.24	20.24	20.24	-19.13	19.13	4.24	4.24	20.24	20.24	-19.13	19.13	4.24	4.24	20.24	20.24	-19.13	19.13	10.00
2B	NESC RULE 250B, HEAVY; UPLIFT	1.69	1.69	9.43	9.43	-8.87	-8.87	1.69	1.69	9.43	9.43	-8.87	-8.87	5.78	5.78	26.88	26.88	-25.43	25.43	5.78	5.78	26.88	26.88	-25.43	25.43	5.78	5.78	26.88	26.88	-25.43	25.43	10.00
3	NESC 250C EXTREME WIND	0.73	0.73	4.08	4.08	-3.61	3.61	0.73	0.73	4.08	4.08	-3.61	3.61	3.09	3.09	12.64	12.64	-11.03	11.03	3.09	3.09	12.64	12.64	-11.03	11.03	3.09	3.09	12.64	12.64	-11.03	11.03	20.70
4	NESC 250D CONCURRENT WIND & ICE	1.69	1.69	4.51	4.51	-4.38	4.38	1.69	1.69	4.51	4.51	-4.38	4.38	5.78	5.78	13.63	13.63	-13.29	13.29	5.78	5.78	13.63	13.63	-13.29	13.29	5.78	5.78	13.63	13.63	-13.29	13.29	2.30
5A	NVE EXTREME ICE 0.5"	1.69	1.69	4.17	4.17	-4.17	4.17	1.69	1.69	4.17	4.17	-4.17	4.17	5.78	5.78	12.59	12.59	-12.59	12.59	5.78	5.78	12.59	12.59	-12.59	12.59	5.78	5.78	12.59	12.59	-12.59	12.59	0.00
5B	NVE EXTREME ICE 1.0"	3.46	3.46	6.86	6.86	-6.86	6.86	3.46	3.46	6.86	6.86	-6.86	6.86	10.09	10.09	19.66	19.66	-19.66	19.66	10.09	10.09	19.66	19.66	-19.66	19.66	10.09	10.09	19.66	19.66	-19.66	19.66	0.00
6	NVE FAILURE CONTAINMENT; INTACT WIRES	0.73	0.73	2.05	2.05	-2.05	2.05	0.73	0.73	2.05	2.05	-2.05	2.05	3.09	3.09	6.79	6.79	-6.79	6.79	3.09	3.09	6.79	6.79	-6.79	6.79	3.09	3.09	6.79	6.79	-6.79	6.79	0.00
	NVE FAILURE CONTAINMENT; BROKEN WIRES	0.78	0.00	2.05	0.00	-2.05	0.00	0.78	0.00	2.05	0.00	-2.05	0.00	3.39	0.00	6.79	0.00	-6.79	0.00	3.39	0.00	6.79	0.00	-6.79	0.00	3.39	0.00	6.79	0.00	-6.79	0.00	0.00
7	MAINTENANCE LOAD	1.47	1.47	2.33	2.33	-2.26	2.26	1.47	1.47	2.33	2.33	-2.26	2.26	6.18	6.18	8.44	8.44	-8.20	8.20	6.18	6.18	8.44	8.44	-8.20	8.20	6.18	6.18	8.44	8.44	-8.20	8.20	3.00
8	C&M; MOVING	3.26	1.23	4.63	4.63	-4.53	4.53	3.26	1.23	4.63	4.63	-4.53	4.53	7.26	3.59	16.75	16.75	-16.40	16.40	7.26	3.59	16.75	16.75	-16.40	16.40	7.26	3.59	16.75	16.75	-16.40	16.40	4.50
	C&M; IN PLACE	2.75	1.23	3.50	3.50	-3.39	3.39	2.75	123	3.50	3.50	-3.39	3.39	6.34	3.59	12.65	12.65	-12.30	12.30	6.34	3.59	12.65	12.65	-12.30	12.30	6.34	3.59	12.65	12.65	-12.30	12.30	4.50
9	EVERYDAY - OSHA ARM CHECK	3.23	3.23	2.19	2.19	-2.19	2.19	3.23	3.23	2.19	2.19	-2.19	2.19	5.59	5.59	7.92	7.92	-7.92	7.92	5.59	5.59	7.92	7.92	-7.92	7.92	5.59	5.59	7.92	7.92	-7.92	7.92	0.00
10	UPLIFT (-20ºF)	0.73	0.73	2.69	2.69	-2.69	2.69	0.73	0.73	2.69	2.69	-2.69	2.69	3.09	3.09	9.19	9.19	-9.19	9.19	3.09	3.09	9.19	9.19	-9.19	9.19	3.09	3.09	9.19	9.19	-9.19	9.19	0.00
11	NESC 250C EXTREME WIND; NO WIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.70
12A	NESC RULE 250B, MEDIUM; DE	1.74	0.00	6.93	0.00	-6.53	0.00	1.74	0.00	6.93	0.00	-6.53	0.00	6.80	0.00	20.24	0.00	-19.13	0.00	6.80	0.00	20.24	0.00	-19.13	0.00	6.80	0.00	20.24	0.00	-19.13	0.00	10.00
12B	NESC RULE 250B, HEAVY; DE	2.61	0.00	9.43	0.00	-8.87	0.00	2.61	0.00	9.43	0.00	-8.87	0.00	9.13	0.00	26.88	0.00	-25.43	0.00	9.13	0.00	26.88	0.00	-25.43	0.00	9.13	0.00	26.88	0.00	-25.43	0.00	10.00
13	NESC 250C EXTREME WIND; DE	0.78	0.00	4.08	0.00	-3.61	0.00	0.78	0.00	4.08	0.00	-3.61	0.00	3.39	0.00	12.64	0.00	-11.03	0.00	3.39	0.00	12.64	0.00	-11.03	0.00	3.39	0.00	12.64	0.00	-11.03	0.00	20.70
14	NESC 250D CONCURRENT WIND & ICE: DE	1.74	0.00	4.51	0.00	-4.38	0.00	1.74	0.00	4.51	0.00	-4.38	0.00	6.08	0.00	13.63	0.00	-13.29	0.00	6.08	0.00	13.63	0.00	-13.29	0.00	6.08	0.00	13.63	0.00	-13.29	0.00	2.30
15A	NVE EXTREME ICE 0.5"; DE	1.74	0.00	4.17	0.00	-4.17	0.00	1.74	0.00	4.17	0.00	-4.17	0.00	6.08	0.00	12.59	0.00	-12.59	0.00	6.08	0.00	12.59	0.00	-12.59	0.00	6.08	0.00	12.59	0.00	-12.59	0.00	0.00
15B	NVE EXTREME ICE 1.0"; DE	3.51	0.00	6.86	0.00	-6.86	0.00	3.51	0.00	6.86	0.00	-6.86	0.00	10.39	0.00	19.66	0.00	-19.66	0.00	10.39	0.00	19.66	0.00	-19.66	0.00	10.39	0.00	19.66	0.00	-19.66	0.00	0.00



LOAD TREE

SIGN CONVENTION FOR LOADS

NOTES

1. FOLLOWING COMPLETION OF DESIGN, FABRICATOR ASSUMES RESPONSIBILITY FOR ALL STRUCTURE DETAILS, INCLUDING ABILITY TO WITHSTAND MECHANICAL LOADING. THIS INCLUDES APPLICATION OF THE TYPICAL FABRICATOR WARRANTY/GUARANTEE OF PERFORMANCE.
2. WIRE TENSIONS PROVIDED PER SUBCONDUCTOR. VECTOR LOADS PROVIDED PER PHASE.
3. LOADCASE 6 SHALL BE APPLIED UNDER THE FOLLOWING CONDITIONS:- FAILURE OF ANY ONE SHIELD WIRE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT- FAILURE OF ANY ONE PHASE (AHEAD OR BACK DIRECTION) WITH ALL OTHER WIRES INTACT.
4. LOADCASE 7 APPLIES TO ALL WIRE SUPPORT POINTS, MAINTENANCE VANGS, AND TEMPORARY LIFT OR TENSION POINTS. LOADS NEED NOT BE APPLIED TO WORKING VANGS AND PERMANENT WIRE ATTACHMENT POINTS SIMULTANEOUSLY.
5. LOADCASE 8 SHALL BE APPLIED ASSUMING THAT ANY SINGLE WIRE CAN BE "MOVING" AT A GIVEN TIME. THE REMAINING WIRE ATTACHMENTS SHALL ACCOMMODATE ANY COMBINATION OF "IN-PLACE" LOADS OR NO LOAD, WHICHEVER PRODUCES THE MORE CRITICAL EFFECT ON THE STRUCTURE. ADDITIONALLY, A LOAD OF 1,000 LBS HAS BEEN INCLUDED IN THE WIRE ATTACHMENT LOADS TO ACCOMMODATE THE WEIGHT OF EQUIPMENT, TOOLS, AND PERSONNEL DURING WORK.
6. LOAD CASE 11 IS APPLIED ONLY TO THE STRUCTURE. WIND PRESSURE SHOULD BE APPLIED IN WHICHEVER ORIENTATION PRODUCES THE MAXIMUM STRESS ON THE STRUCTURE.
7. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 90% CAPACITY FOR LOAD CASES 3, 4, 5A, 5B, 10, 11, 13, 14, 15A, AND 15B. ELEMENTS OF THE STRUCTURE SHALL BE DESIGNED FOR 100% CAPACITY FOR ALL OTHER LOAD CASES.
8. APPLY WIND ON STRUCTURE IN CONJUNCTION WITH THE FORCE COEFFICIENTS AS RECOMMENDED IN ASCE 74 4TH EDITION FOR ALL LOAD CASES.
9. STRUCTURES TO BE WEATHERING STEEL IN ACCORDANCE WITH ASTM A871.
10. LADDER BRACKETS ON DAVIT ARMS SHALL BE INSTALLED 1'-6" FROM THE POLE FACE, SPACED EQUALLY TO A MAXIMUM OF 10'-0", AND ON THE TIP OF EACH DAVIT ARM.
11. PERCH DETERRENTS, AS SPECIFIED IN DETAIL M5 ON 610.002.002, SHALL BE INSTALLED ON ALL HORIZONTAL SURFACES OF STRUCTURES, AS INDICATED IN THE STRUCTURE LIST. STRUCTURES THAT DO NOT REQUIRE PERCH DETERRENTS AND POLE TOPS SHOULD NOT INCLUDE PROVISIONS FOR THEM.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
C	ISSUED FOR PROCUREMENT	11/22/2024	AMM	AMM	RSP	KMW	
B	REVISED FOR RFP	02/24/2023	RWP	EN	KS	RSP	
A	ISSUED FOR RFP	01/12/2023	DO	JIS	DAL		
A	ISSUED FOR BID	06/01/2022	KPK	KW	PG		610.002.002 LOAD AND DESIGN STEEL POLE DETAILS

DSGN	KW	06/01/2022
DRN	KPK	06/01/2022
CKD	PG	06/01/2022

SCALE: NTS

FOR 11" x 17" DWG ONLY

NVEnergy

POWER ENGINEERS

NV ENERGY
GREENLINK NEVADA
345 kV TRANSMISSION LINE
CT1PDE-90 - 345 kV HEAVY ANGLE
0-90° STEEL MONOPOLE DEADEND
STRUCTURE, SELF-SUPPORTING

JOB NUMBER 169994 169997

REV C

DRAWING NUMBER 600.002.005

SHEET 2 OF 2

600.002.005.dwg

POWER ENGINEERS, INC.
7600B N CAPITAL OF TEXAS HWY, SUITE 320, AUSTIN, TX 78731 USA | 512-735-1800

MEMORANDUM

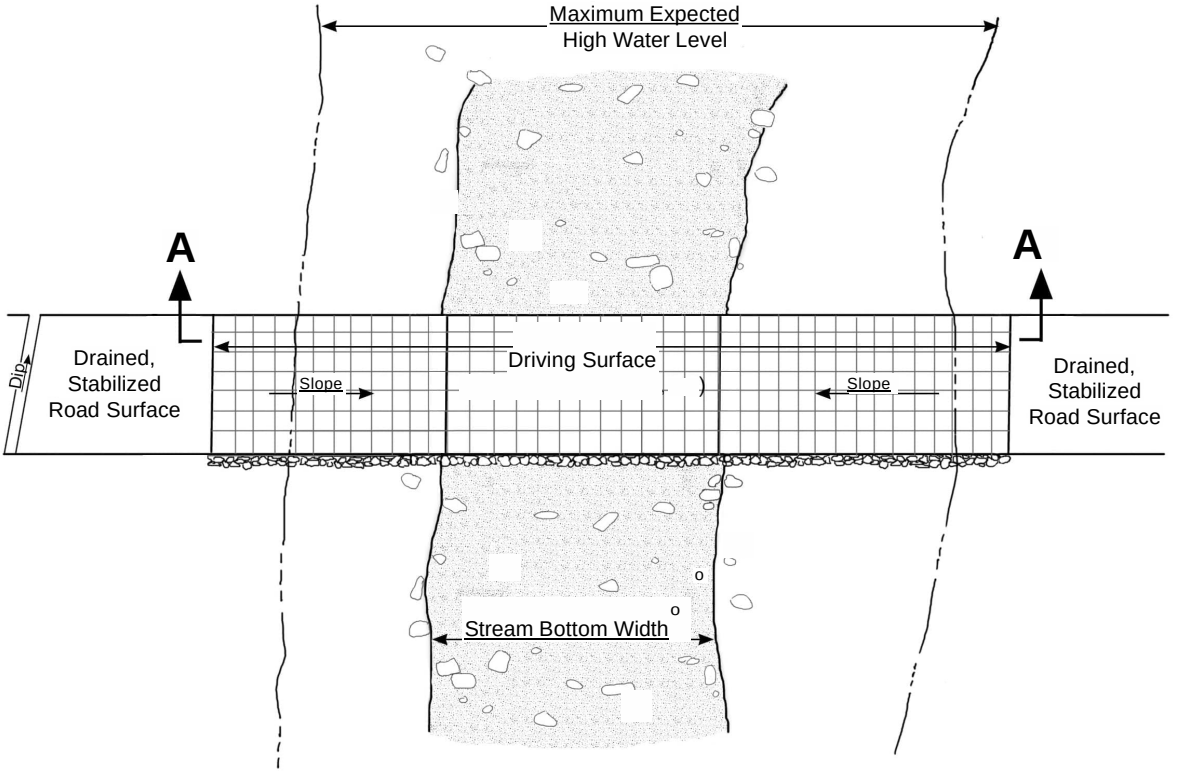
DATE	June 5, 2025
TO	Zack Carter, NDEP
C	
FROM	Tyler Thomas
SUBJECT	Water Crossing Methodology

WATER CROSSING METHODOLOGY

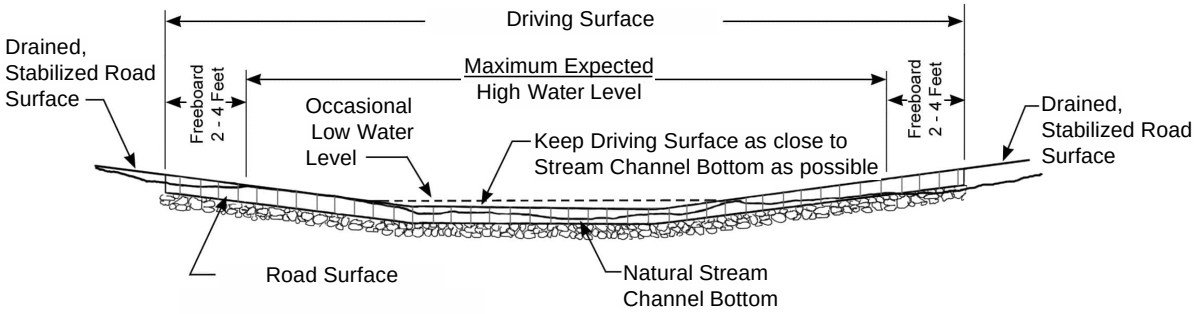
Waterway crossings will be evaluated on an individual waterway basis as bank steepness at each crossing will determine if ground disturbance will be required for equipment crossings.

- If bank slope is determined not adequate for overland travel (greater than 3:1 slopes), banks will be laid back outside of the ordinary high-water mark (OHWM).
- Ground material outside OHWM will be contoured to reduce approach, and exit, bank slope angle safe for construction equipment travel.
- Construction of crossings and subsequent overland travel will occur during periods of low, to no flow, to the greatest extent practicable, as to minimize unwanted sediment from entering the waterway.
- No fill material will be placed within the OHWM.

See attachment for typical low-water crossing diagram.


Maximum Expected
High Water Level
A
A
Drained,
Stabilized
Road Surface
Dip
Slope
Driving Surface
Slope
Drained,
Stabilized
Road Surface
Stream Bottom Width

PLAN VIEW


Driving Surface
Drained,
Stabilized Road
Surface
Freeboard
2 - 4 Feet
Maximum Expected
High Water Level
Freeboard
2 - 4 Feet
Occasional
Low Water
Level
Keep Driving Surface as close to
Stream Channel Bottom as possible
Drained,
Stabilized Road
Surface
Road Surface
Natural Stream
Channel Bottom