PSEG LONG ISLAND LLC

On Behalf of and as Agent for the

LONG ISLAND LIGHTING COMPANY d/b/a LIPA

Syosset to Oakwood Project

EXHIBIT E-1

DESCRIPTION OF PROPOSED TRANSMISSION LINE

Exhibit E-1 Description of Proposed Transmission Line

The Project[1] consists of approximately 2.8 miles of new transmission line that will be installed primarily underground and primarily within public ROW. It will have a short overhead segment located at Woodbury Terminal South. The Project's design voltage and voltage of initial operation will be 138kV.

E-1.1 Underground Transmission Facilities

The underground design will be in accordance with all of the Applicant's applicable transmission design criteria and applicable industry standards. Those industry standards are produced by the following organizations:

- ANSI
- ASTM
- ASCE
- AEIC
- IEEE
- ICEA
- IEC
- NEMA
- NFPA

Additionally, design standards shall be in compliance with the Applicant's storm hardening requirements for a National Oceanic and Atmospheric Administration Category III Hurricane. Final design will be described in the EM&CP.

E-1.1.1 Underground Cable Design

The underground cable will utilize a 2,000 mm^2 copper conductor measuring approximately 4.90 inches in diameter. The system will operate as a single circuit with two cables per phase. The conductor will be comprised of annealed bare copper strands. The insulation will be XLPE with a thickness of approximately 870 mils, rated to an operating voltage of 138kV. Metallic shielding will be plain annealed copper wires or equivalent, moisture impervious sheath that is designed for the fault current requirements and will prevent water migration into the cable. The jacket will be black LLDPE including a semi-conducting polyethylene layer.

The underground cable system will be designed for operation at 138kV. Each cable will be installed in a 10-inch SDR 11 HDPE conduit. In addition to these conduits, one, four-inch SDR11 HDPE conduit will be

[1] For clarity and consistency, the Application includes a Glossary that defines terms and acronyms used throughout the Application.

installed for the ground continuity conductor. The three power conduits for each sub-circuit will be arranged in a trefoil (triangular) configuration. Cable splices will be 138kV, 650kV basic insulation level ("BIL"), pre-molded style, and proven to be compatible with the cable construction via a prequalification test performed in accordance with ICEA S-108-720 and IEC 60840. Splices will have sheath insulators and connections for sheath bonding and be suitable for long-term underwater operation to a depth of 10 feet. Splices will be performed at vault locations only and will be tested in accordance with IEEE Standard 404.

Cable terminations will be 138kV, 650kV BIL, outdoor style and proven to be compatible with the cable construction via a prequalification test performed in accordance with ICEA Standard S-108-720 and IEC Standard 60840. Terminations will be ANSI 70 gray, composite polymer type filled with insulating fluid protected by composite polymer isolation insulators to allow testing of the cable jacket. Terminations will be furnished with a connecting stud and a NEMA four-hole pad aerial lug. The aerial lug will be designed to carry the full emergency current without overheating. Terminations will be tested in accordance with IEEE Standard 48.

Sheath bonding will be multiple single-point with a maximum standing sheath voltage of 200 volts at rated steady-state loading. The 6kV sheath voltage limiters ("SVL") will be the zinc oxide type. SVLs will be suitable for continuous operation with an applied voltage under either normal or emergency load and able to withstand over-voltages resulting from both single-phase to ground or three-phase system faults. Figure E-1-1 depicts a typical 138kV substation termination structure.

E-1.1.1.1 Insulation

Underground transmission cable insulation will be an extruded, super clean XLPE solid dielectric compound formulated for high voltage cable applications. The insulation shield will be an extruded semiconducting thermosetting material. Metallic shielding will be plain annealed copper wires or equivalent, moisture impervious sheath that is designed for the fault current requirements and will prevent water migration into the cable. An outer LLDPE jacket will encase the metallic sheath.

E-1.1.2 Impact to Nearby Facilities

Connection of the underground cable into the Oakwood Substation is described in Exhibit E-2 Other Facilities. The west end of the underground cable will transition overhead when it connects into Woodbury Terminal South.

E-1.2 Overhead Transmission Facilities

The overhead portion of the Project will be 0.06 miles in length. The overhead design will be in accordance with all of the Applicant's applicable transmission design criteria and applicable industry standards. Design standards shall be in compliance with the Applicant's storm hardening requirements for a National Oceanic and Atmospheric Administration Category III Hurricane.

E-1.2.1 Overhead Wire Design

The proposed conductor type for the overhead portion of the Project is a single 2300 kcmil (61W) all-aluminum conductor ("AAC") "Pigweed" conductor per phase for three phases. The summer short-term emergency ("STE") rating for the Project will be 2501 amps and the winter STE rating will be 2894 amps. All conductors are proposed to have a non-specular finish. The proposed aerial ground wire type is a 7#6 7-strand Alumoweld.

Pole grounding will be accomplished using driven ground rods set a minimum of three feet from the exterior face of the foundation and bonded to a grounding plate located near the base of the structure. Grounding will be supplemented with a ground rod, as needed. The target grounding resistance will be 25 ohms. This grounding method, and others, will be detailed in the EM&CP.

Dead-end structures will primarily utilize polymer suspension insulators and polymer post insulators for jumpers.

E-1.2.2 Structure Design

The only structure type used on this Project will be single circuit galvanized or Natina Rustic Brown finish steel monopole structures. Dead-end structures will utilize polymer insulators in a vertical configuration.

The structure design will be consistent with applicable national and state codes, including the most current edition of the NESC, as well as any more stringent criteria imposed by the Applicant. The NESC specifies both the minimum structural load criteria to determine the required structural capacity and clearances for energized hardware and wires. Typical clearance requirements defined by the NESC include clearances to ground, adjacent transmission lines, railroads, buildings, and other facilities. The minimum structure load required by NESC or the Applicant is as follows:

- NESC Heavy Loading (250B): ½-inch radial ice at 0° F with a 40 mph wind;
- NESC Extreme Wind Loading (250C): no radial ice at 60°F with a 120 mph wind;
- NESC Extreme Ice with Concurrent Wind Loading (250D): 0.75 inch radial ice at 15°F with a 50 mph wind; and
- PSEG Long Island Extreme Wind Loading: no radial ice at 60°F with a 130 mph wind.

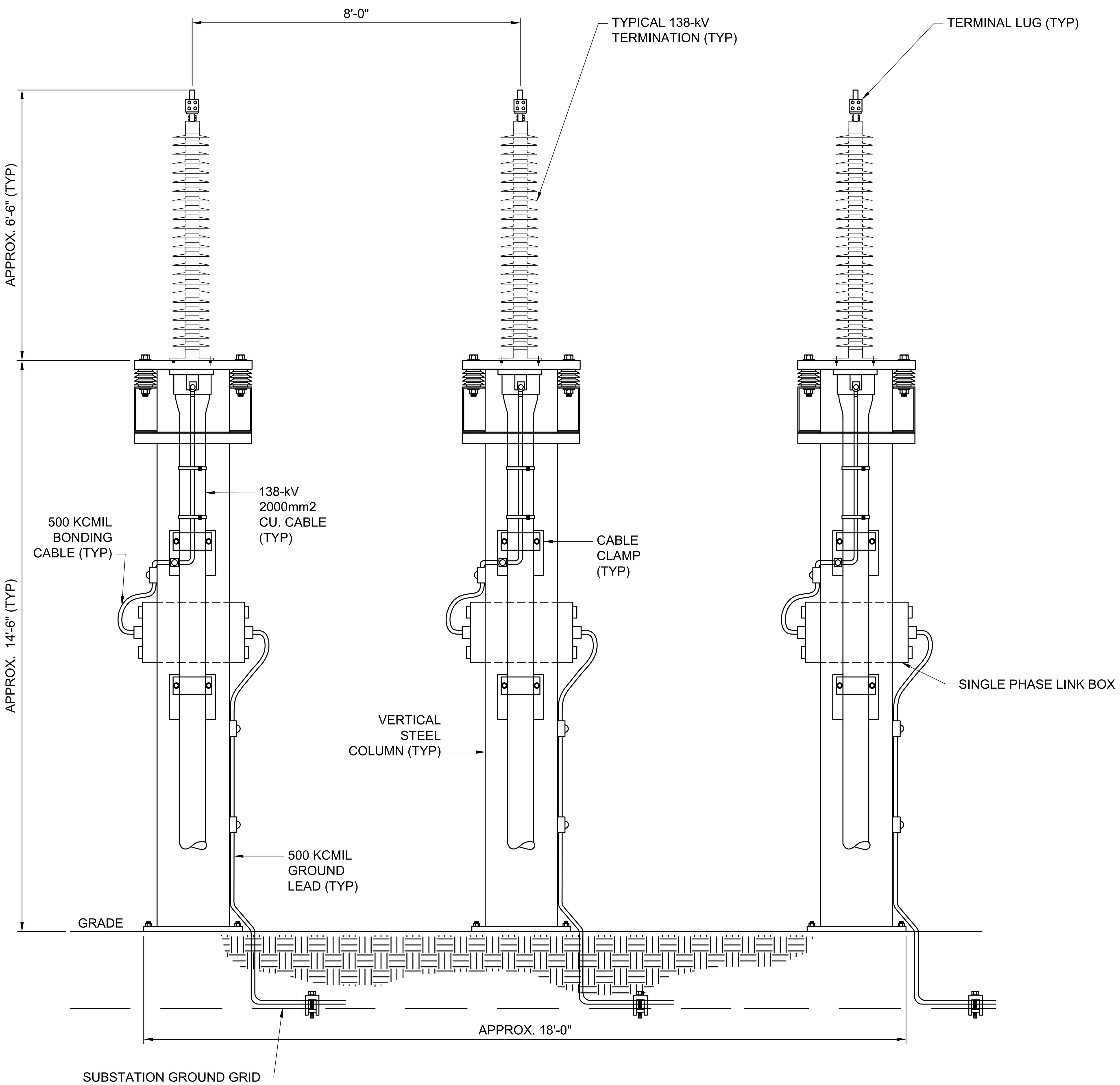
In addition to the NESC, there are several published standards that will be followed, depending on the type of structure and material used. Some of the common standards include:

- United States Department of Agriculture Rural Utilities Service Bulletin 1724E-200 "Design Manual for High Voltage Transmission Lines," December 2015;
- American Society of Civil Engineers Manual and Reports on Engineering Practice 74: Guidelines for Electrical Transmission Line Structural Loading, 4th Edition, 2020;
- American Concrete Institute 318 – Building Code Requirements for Structural Concrete and Commentary, 2019; and
- American Concrete Institute 336.3R – Design and Construction of Drilled Piers, 2014.

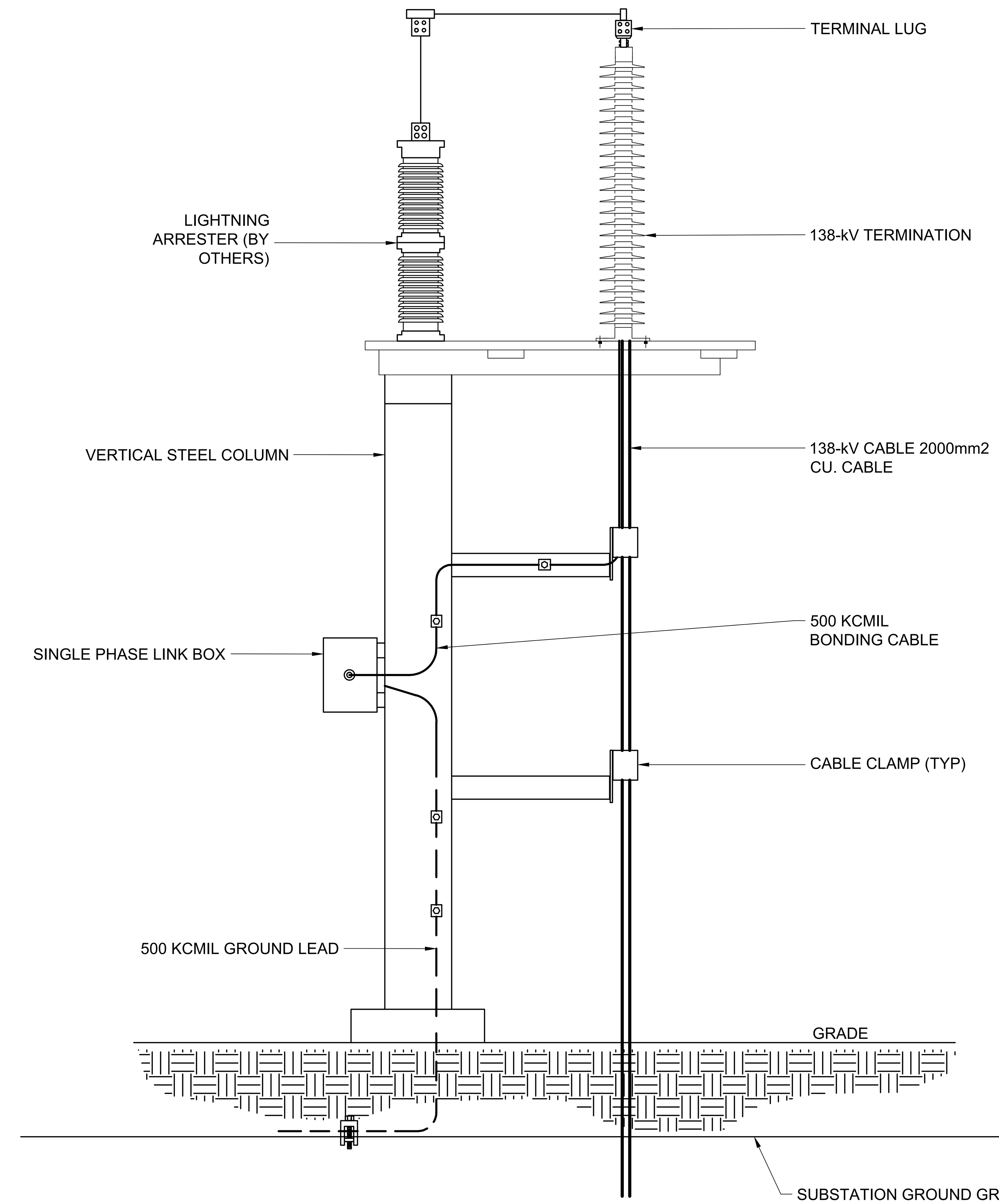
The Applicant proposes employing self-supporting structures set on reinforced concrete caissons or direct embedded foundation for the Project's transmission line structures. These foundations may range from five to eight feet in diameter and set to a depth of 15 to 40 feet depending upon structure loading and soil conditions. However, should existing soil conditions, structure loading, and costs dictate the need, alternate foundation types, such as vibratory caisson will be used. This will be detailed in the EM&CP.

Figure E-1-1

Typical 138kV Substation Cable Termination



TYPICAL 138-kV
TERMINATION STRUCTURE
FRONT VIEW



TYPICAL 138-kV
TERMINATION STRUCTURE
SIDE VIEW

REV	DATE	DESCRIPTION	DRAWN	REVIEW	APPR
A	03/17/2025	ARTICLE VII	JCB	JAC	DAG

BURNS McDONNELL
Burns & McDonnell EGS
PROJ. NO. 178873

NO.	DATE	W.O.	DESCRIPTION	DWN BY	CKD BY	REVIEWED	APPD
0	11/01/2023	L####	ORIGINAL ISSUE	KJL	JAS	D. GOGOL P.E.	P.E.

ISSUE

Long Island Power Authority
SYOSSET TO OAKWOOD ARTICLE VII
138-kV TRANSMISSION LINE

OAKWOOD SUBSTATION
138-kV TRANSMISSION LINE
TYP 138-kV SUBSTATION CABLE TERMINATION STRUCTURE

PSEG LONG ISLAND
175 East Old Country Road
Hicksville, New York

SCALE: NONE
VENDOR DWG. NO.
DRAWING NO. F441511
SMART NO. BWAxx-FU-xxxxxxx
REVISION 000
SYSTEM GRID NUMBER
CABINET NO.
FOLDER NO.