PSEG LONG ISLAND LLC

On Behalf of and as Agent for the

LONG ISLAND LIGHTING COMPANY d/b/a LIPA

Southampton to Deerfield Transmission Project

EXHIBIT 5 — DESIGN DRAWINGS

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EXHIBIT 5: DESIGN DRAWINGS

5.1 Design Standards

The transmission structures and components will be designed in accordance with PSEG Long Island's "138 kV[1] Pothead Structure Erection and Shop Details Construction Standard." This Construction Standard was developed through decades of experience constructing, maintaining, and operating transmission in the region in addition to applicable industry standards.

The industry standards are produced by the following organizations:

- American Concrete Institute ("ACI")
- American Institute of Steel Construction ("AISC")
- American National Standards Institute ("ANSI")
- American Society for Testing and Materials ("ASTM")
- American Society of Civil Engineers ("ASCE")
- Association of Edison Illuminating Companies ("AEIC")
- Institute of Electrical and Electronic Engineers ("IEEE")
- Insulated Cable Engineers Association ("ICEA")
- International Building Code – New York State ("IBC")
- International Electrotechnical Commission ("IEC")
- National Electric Manufacturer's Association ("NEMA")
- National Fire Protection Association ("NFPA")

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

5.2 Design Drawings

The attached drawings identify the typical structure types and dimensions that are anticipated to be used for the Project. Additional structure designs may be added to the portfolio as the Project progresses from conceptual to final design.

5.2.1 Structures

Figure 5-1 shows a typical 138 kV substation cable termination structure. One such structure will be installed at the Southampton Substation and another at the Deerfield Substation. Each will serve to terminate the 138 kV solid dielectric cable and tie into the existing substation facilities. Each of these two structures is used to secure the 138 kV solid dielectric cable, mount cable grounding equipment and support the 138 kV cable terminations. The structures will be made of grey steel and unpainted unless otherwise determined in the EM&CP. The structures will be approximately 14 feet wide and approximately 14 feet and 6 inches tall. The 138 kV cable terminations, a part of the cable facilities, will extend approximately 6 feet and 6 inches above the steel portion of the structures. The 138 kV termination structures will be supported by foundations below grade.

5.2.2 Profile

Figure 5-2 shows the profile of the proposed ROW centerline with an exaggerated vertical scale. The Southampton Substation and Deerfield Substation are labeled. Additionally, preliminary splice vault locations are shown approximately every 2,000 to 2,500 feet.

5.2.3 Typical Duct Bank Cross-Section

The circuit will consist of three 10-inch SDR11 HDPE conduits in trefoil configuration to house the 138 kV underground transmission cables and two 4-inch SDR11 HDPE conduits to house the fiber optic communications and a jacketed copper grounding cable. Figure 5-3 depicts a typical duct bank cross-section.

5.2.4 Typical Splice Vaults

The circuit will include splice vaults at approximate intervals of 2,000 to 2,500 feet along the duct bank. The splice vaults will consist of precast concrete designed for a highway standard (“HS”) load rating of HS-20. The conduit splice vault will contain power cable splices, cable racking, and grounding accessories. For construction flexibility, both one-piece and two-piece splice vaults are described below:

One-Piece Precast Concrete Splice Vault

The one-piece precast concrete splice vault interior dimensions will be 16’-0” length x 8’-0” width x 8’-6” height. Two circular openings in the splice vault roof will be used to access the interior. The openings will be covered by 38-inch cast iron lids. Figure 5-4 depicts a typical one-piece splice vault layout and sections.

Two-Piece Precast Concrete Splice Vault

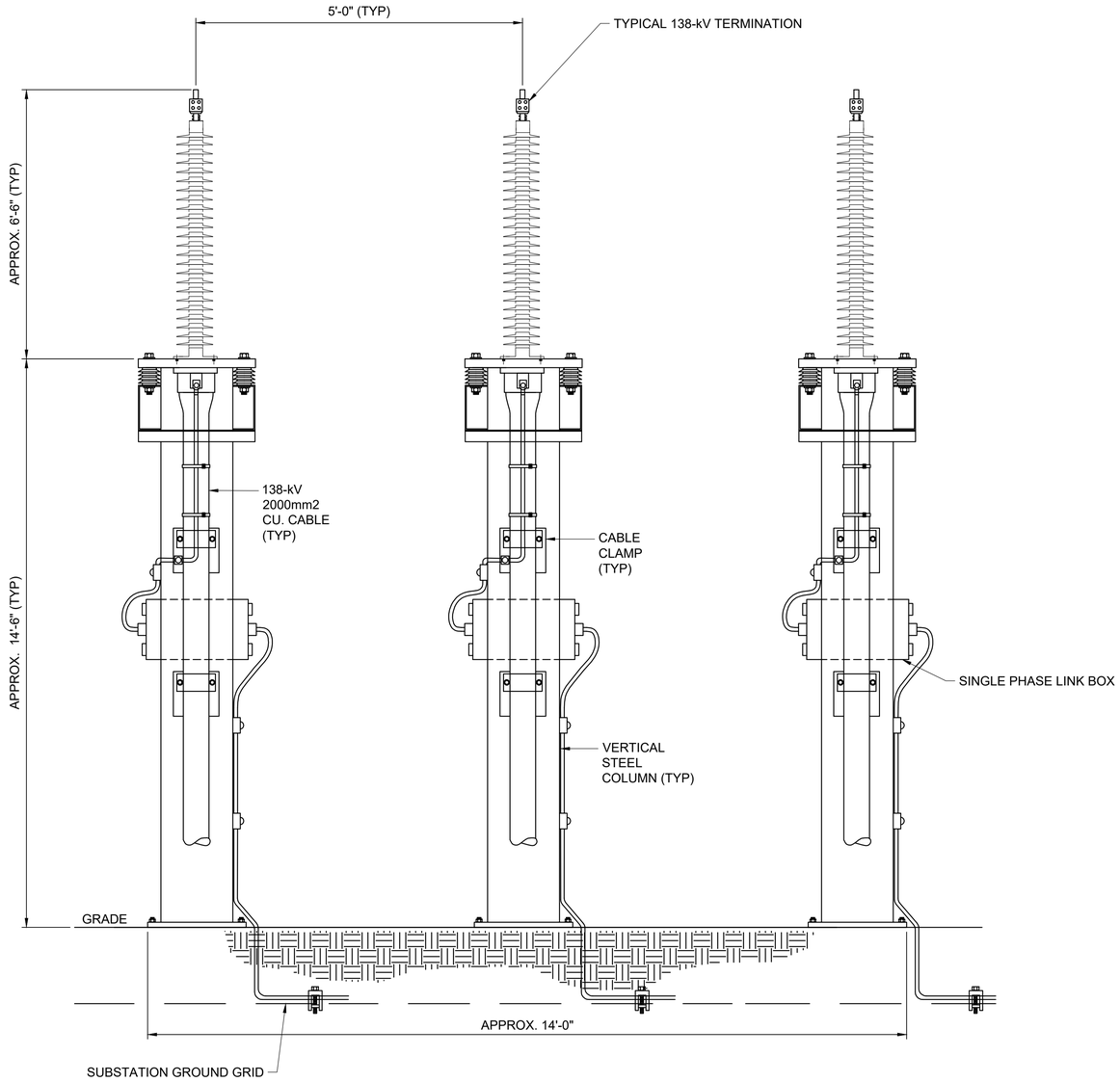
The two-piece precast concrete splice vault interior dimensions will be 16’-0” length x 8’-0” width x 8’-11” height. Two circular openings in the splice vault roof will be used to access the interior. The openings will be covered by 38-inch cast iron lids. Figure 5-5 depicts a typical two-piece splice vault layout and sections.

Fiber Optic Handholes

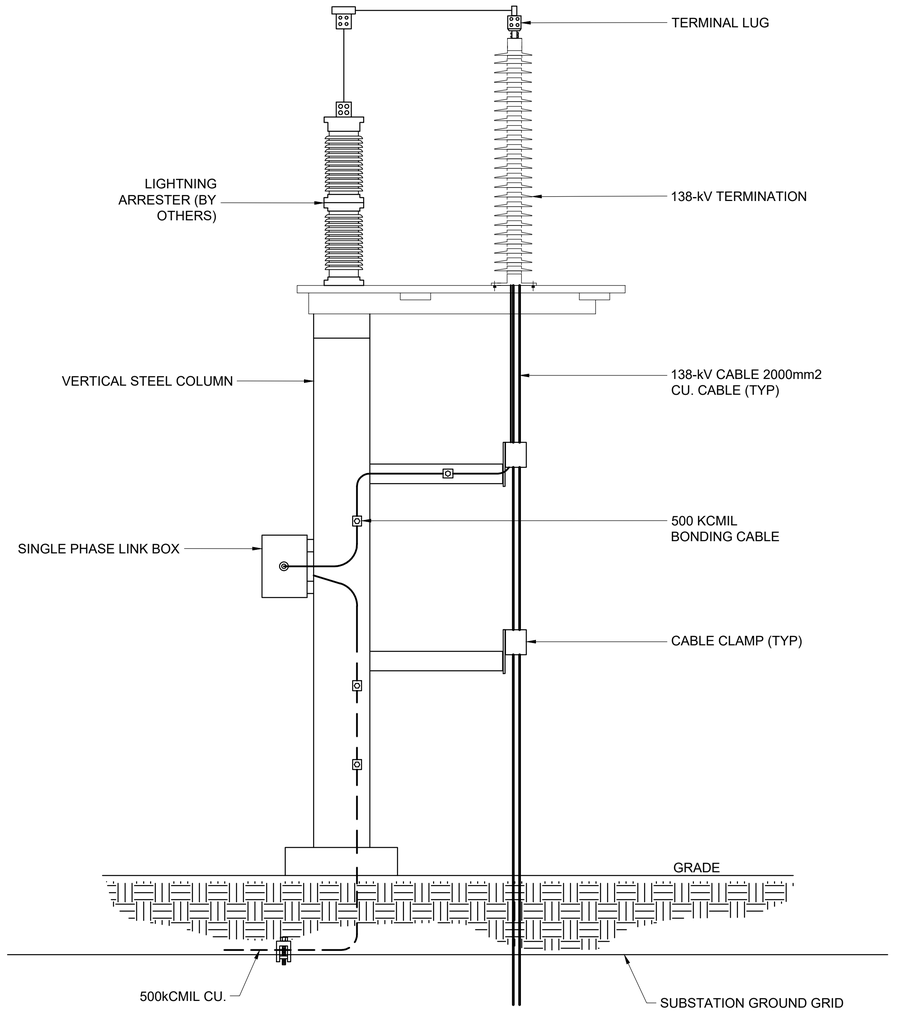
Handholes shall be pre-cast measuring approximately 4’-6” length x 3’-6” width x 4’-0” height (inside dimensions) with approximate wall thickness of 6 inches and will be used to splice fiber optic communication cables. Cross sections of a typical handhole are shown in Figure 5-6.

FIGURE 5-1

Typical 138 kV Substation Cable Termination Structure



138-kV TERMINATION
STRUCTURE FRONT VIEW



138-kV TERMINATION
STRUCTURE SIDE VIEW

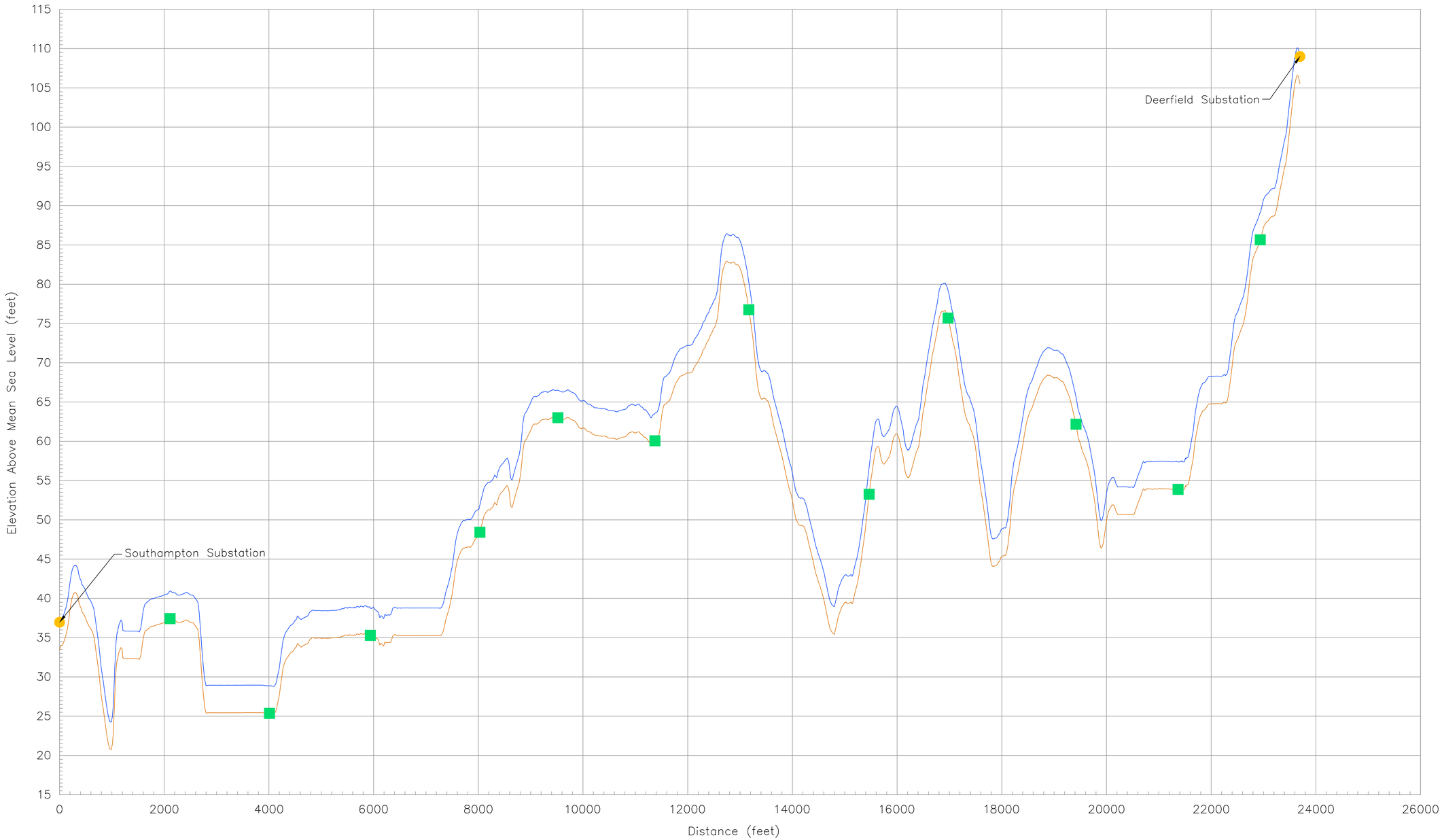
Long Island Power Authority
SOUTHAMPTON – DEERFIELD
138-kV TRANSMISSION LINE
SOUTHAMPTON TO DEERFIELD
FIGURE 5-1
TYP 138-kV SUBSTATION CABLE TERMINATION STRUCTURE
PSEG LONG ISLAND
175 East Old Country Road Hicksville, New York

FIGURE 5-2

ROW Centerline Profile

ROW Centerline Profile

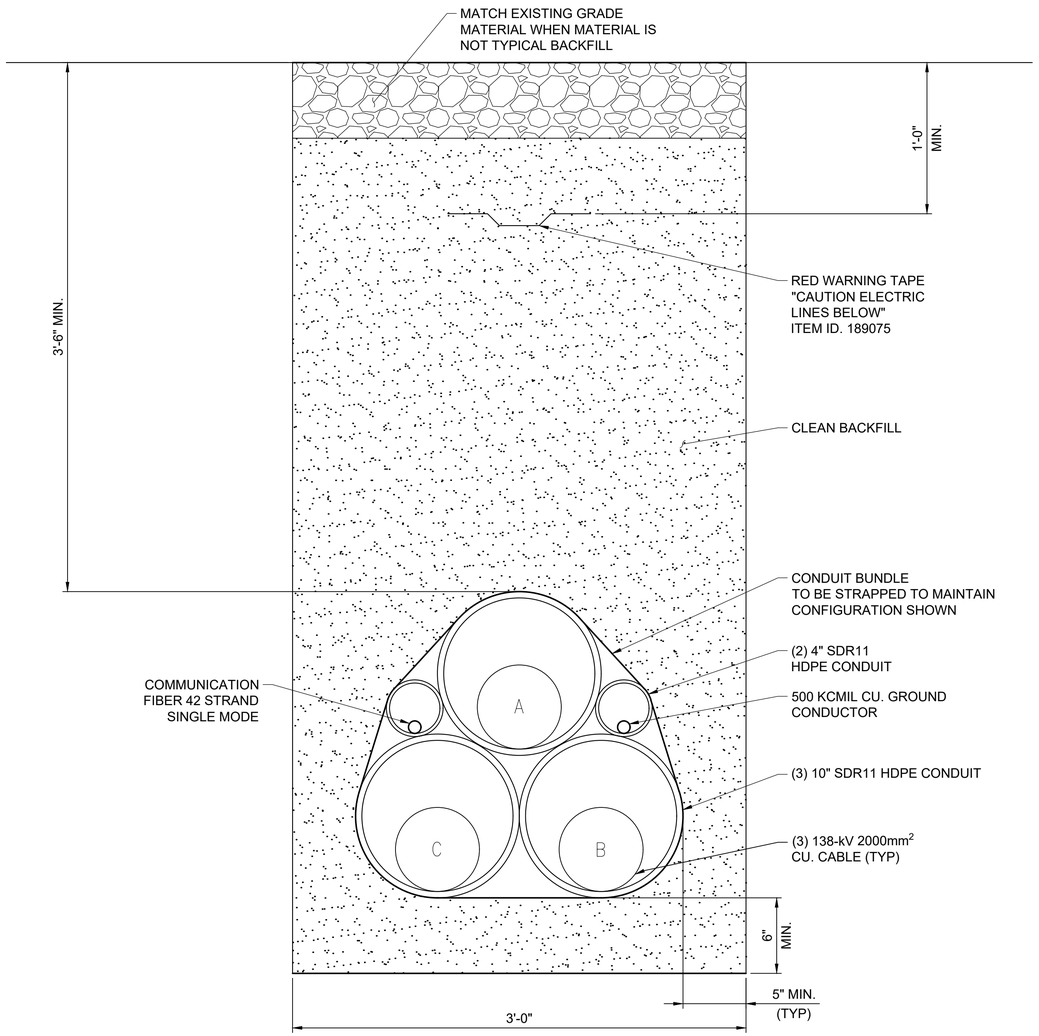
Ground Elevation | Splice Vaults | Substation | Cable



Long Island Power Authority SOUTHAMPTON – DEERFIELD 138-kV TRANSMISSION LINE
SOUTHAMPTON TO DEERFIELD FIGURE 5-2 ROW CENTERLINE PROFILE
PSEG LONG ISLAND 175 East Old Country Road Hicksville, New York

FIGURE 5-3

Typical Duct Bank Cross-Section



TYPICAL DIRECT BURIED CONDUITS IN
TREFOIL CONFIGURATION

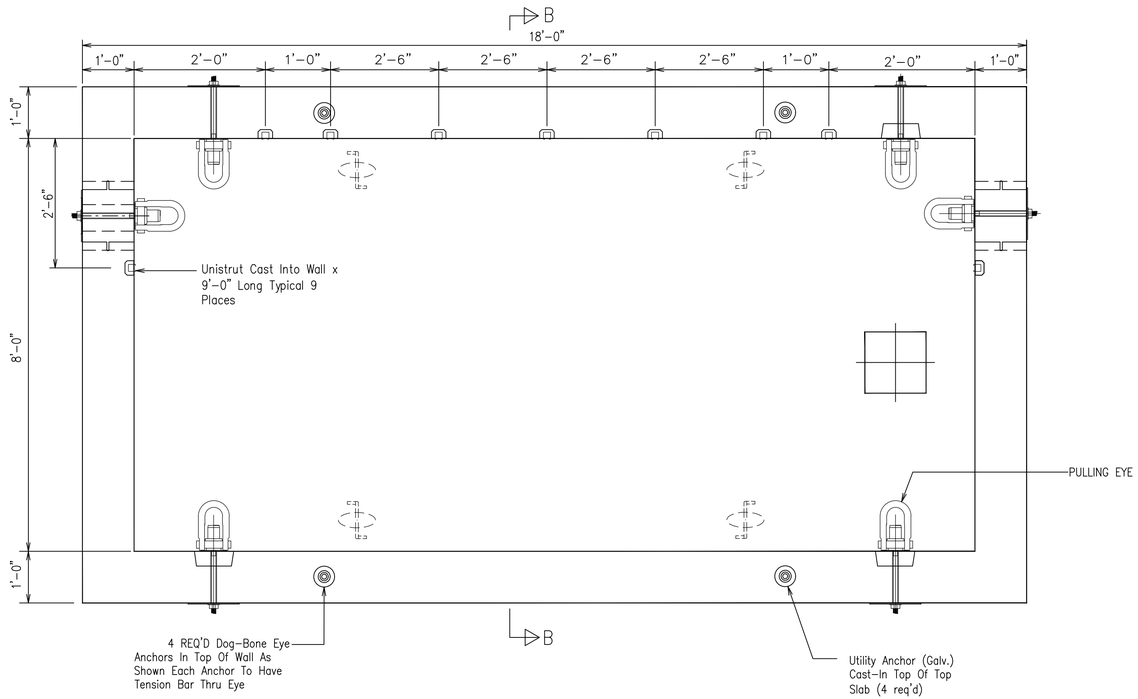
Long Island Power Authority
SOUTHAMPTON – DEERFIELD
138–kV TRANSMISSION LINE

SOUTHAMPTON TO DEERFIELD
FIGURE 5–3
TYPICAL DUCT BANK CROSS SECTION

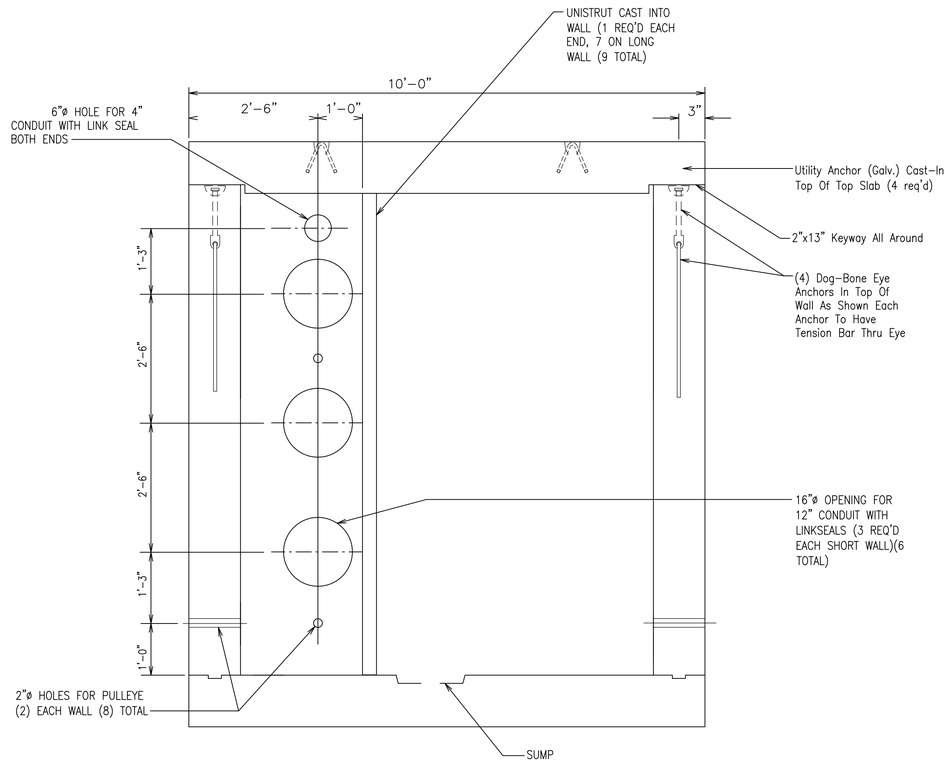
PSEG LONG ISLAND
175 East Old Country Road
Hicksville, New York

FIGURE 5-4

Typical 138 kV One-Piece Splice Vault



SPICE VAULT PLAN VIEW



SPLICE VAULT FRONT VIEW

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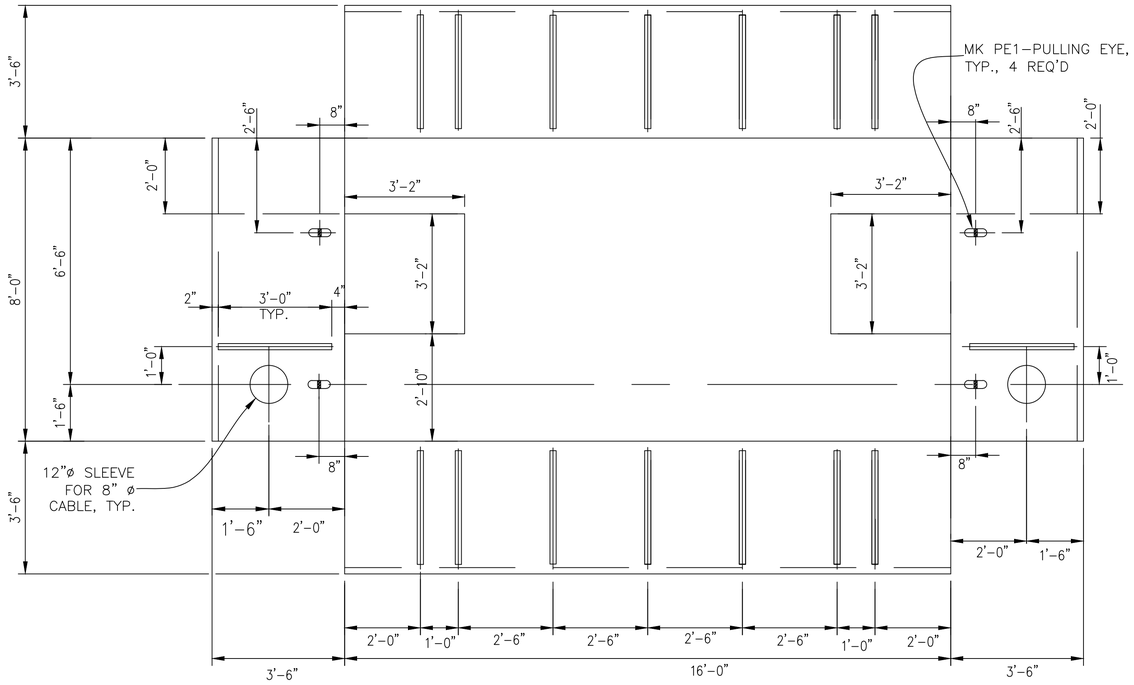
SOUTHAMPTON – DEERFIELD
138-kV TRANSMISSION LINE

SOUTHAMPTON TO DEERFIELD
FIGURE 5-4
TYPICAL 138-KV ONE-PIECE SPLICE VAULT

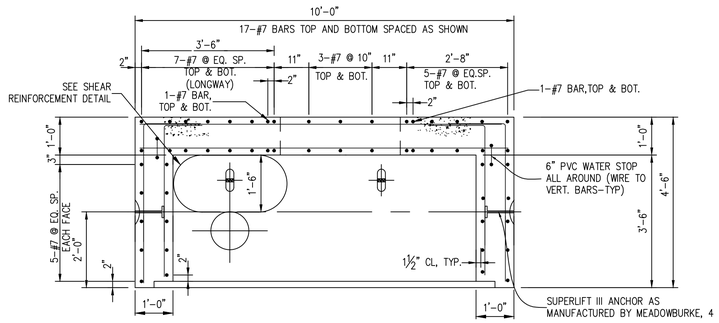
PSEG LONG ISLAND
175 East Old Country Road
Hicksville, New York

FIGURE 5-5

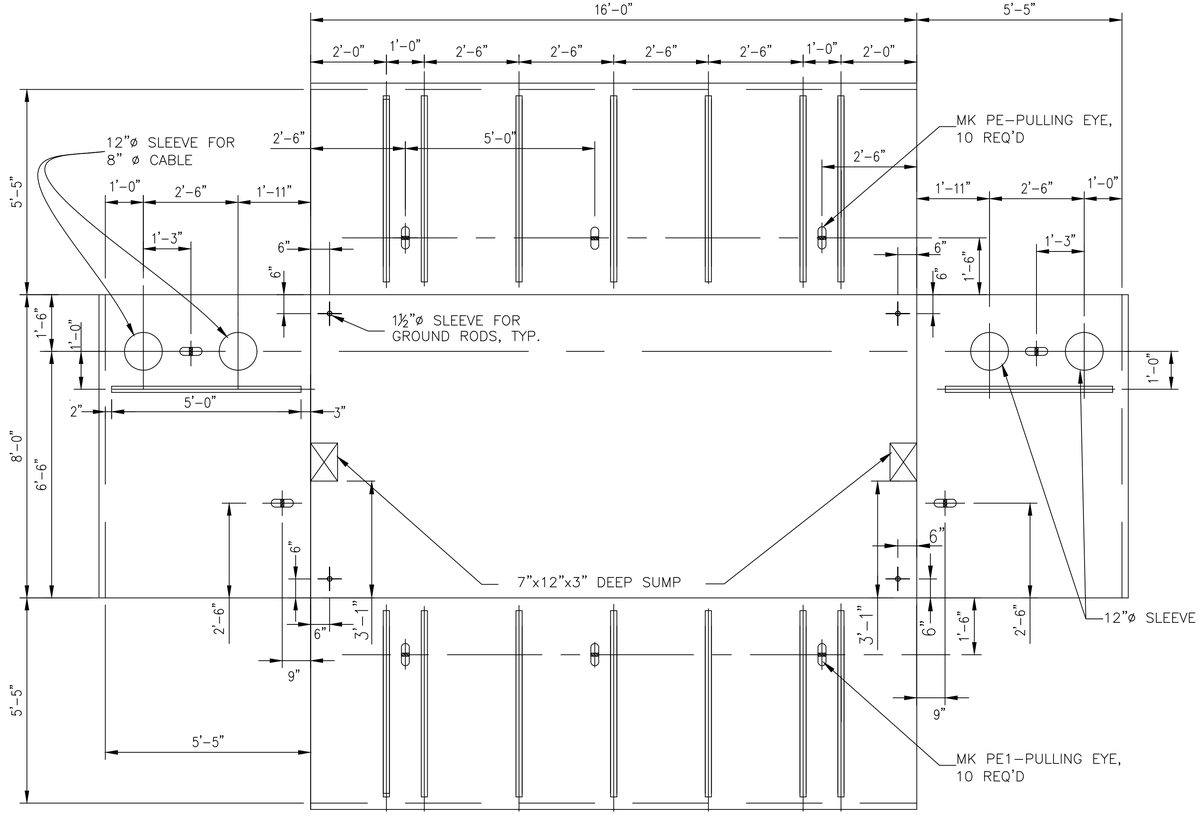
Typical 138 kV Two-Piece Splice Vault



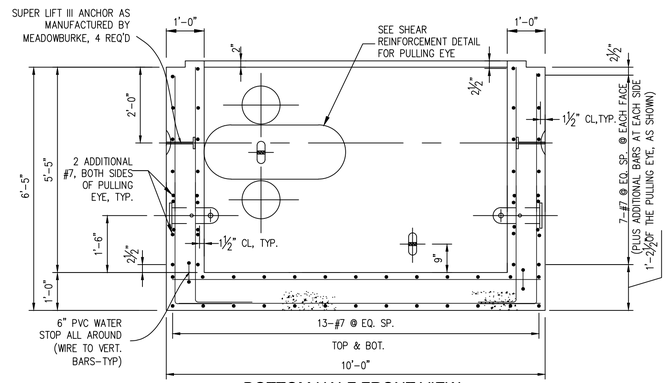
SPLICE VAULT TOP HALF



TOP HALF FRONT VIEW



SPLICE VAULT BOTTOM HALF



BOTTOM HALF FRONT VIEW

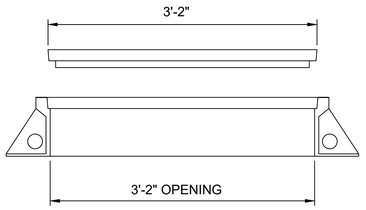
Long Island Power Authority
SOUTHAMPTON – DEERFIELD
138–kV TRANSMISSION LINE

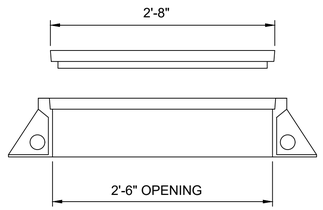
SOUTHAMPTON TO DEERFIELD
FIGURE 5–5
TYPICAL 138–KV TWO–PIECE SPLICE VAULT

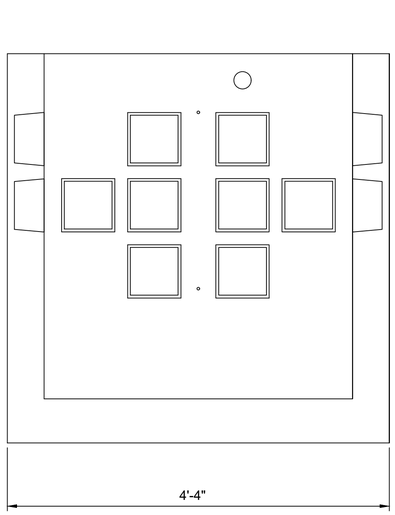
PSEG LONG ISLAND
175 East Old Country Road
Hicksville, New York

FIGURE 5-6

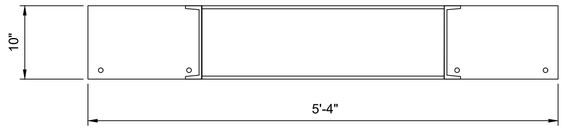
Typical Fiber Handhole

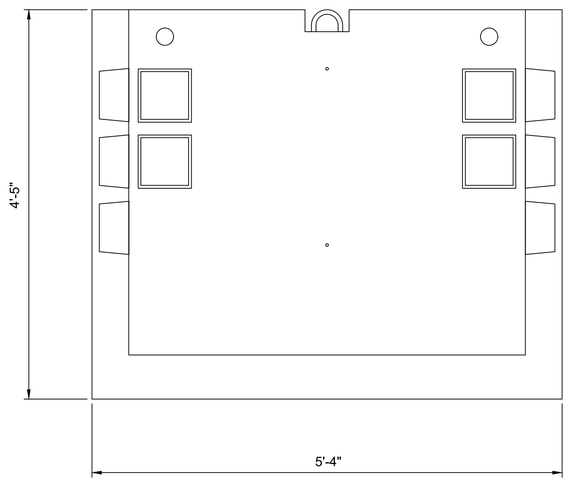




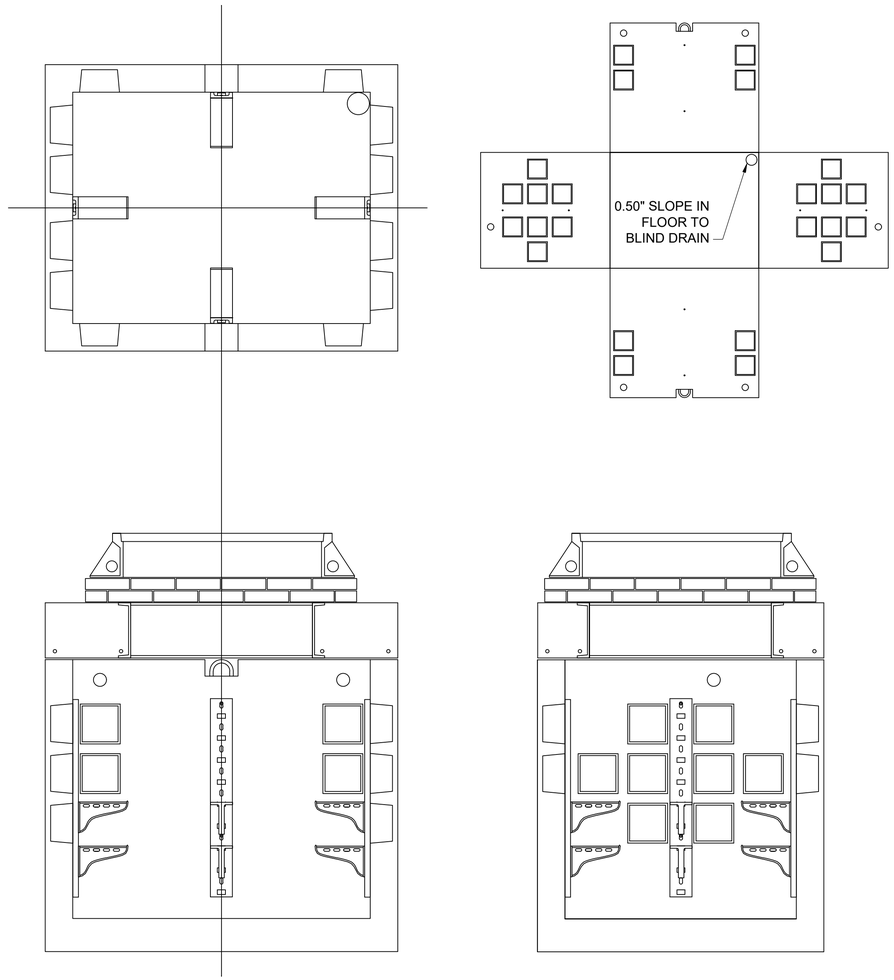


HANDHOLE SECTION END VIEW





HANDHOLE SECTION SIDE VIEW



HANDHOLE HALF EXPLODED PLAN VIEW

Long Island Power Authority SOUTHAMPTON – DEERFIELD 138–kV TRANSMISSION LINE
SOUTHAMPTON TO DEERFIELD FIGURE 5–6 TYPICAL FIBER HANDHOLE
PSEG LONG ISLAND 175 East Old Country Road Hicksville, New York