

**Submission of Indicated New York Transmission  
Owners  
For Authority to Construct and Operate Electric  
Transmission Facilities in Multiple Counties in  
New York**

**Case 13-M-0457**

**Exhibit 5  
Design Drawings**

***Knickerbocker to Pleasant Valley  
345 kV Transmission Line Project  
(KB-PV)***

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**KNICKERBOCKER TO PLEASANT VALLEY  
345 KV TRANSMISSION LINE PROJECT  
(KB-PV)**

**EXHIBIT 5: DESIGN DRAWINGS**

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**Description**

Knickerbocker to Pleasant Valley 345 kV Transmission Line Project

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## **EXHIBIT 5: DESIGN DRAWINGS**

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### **5.0 Design Standards**

The transmission structures and components will be designed in accordance with the Applicant's own standards developed through decades of experience constructing, maintaining, and operating transmission in the region in addition to applicable national and state codes and regulations. One of these is the current National Electrical Safety Code ("NESC"), which specifies both the minimum structural loads for determining the required structural capacity and appropriate clearances to energized parts and wires. Typical clearance requirements defined by the NESC include clearances to ground, adjacent transmission lines, railroads, buildings, and other facilities. The current NESC, as well as other structure criteria from the Applicant, will determine the structural loading of the transmission lines.

The Knickerbocker to Pleasant Valley (KB-PV) Project will use various types of structures. 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.

### **5.1 Design Drawings**

Based on current conceptual design, and as depicted in the attached Figure 5-1, the proposed structure material is galvanized steel. This will be grey in color in areas where new structures will be located adjacent to or replacing existing galvanized or painted structures. Weathered steel, which is brown in color, will be used for new structure locations that are adjacent to or replacing existing wood structures. However, all traditional transmission materials commonly used in the northeast region will continue to be evaluated including natural wood, laminated wood, and steel lattice. The final structure selection is subject to change with final design. Table 5-1 summarizes the typical heights and widths of structures included in the conceptual design as shown on the representative cross sections.

**Table 5-1 Typical Structure Heights and Widths**

<b>Type</b>	<b>Typical Height Range (ft)</b>	<b>Typical Width Range (ft)</b>
115/345 kV Double-Circuit Delta Monopole		
Tangent	70-120	53
Angle	70-120	53-74

Figures 5-4 through 5-5 are representative cross-section diagrams of the transmission line ROW under existing and proposed conditions.

Additional details regarding the individual components and materials for the transmission lines are included in Exhibit E-1, Description of Proposed Transmission Facilities.

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## **EXHIBIT 5: DESIGN DRAWINGS**

### ***KNICKERBOCKER TO PLEASANT VALLEY***

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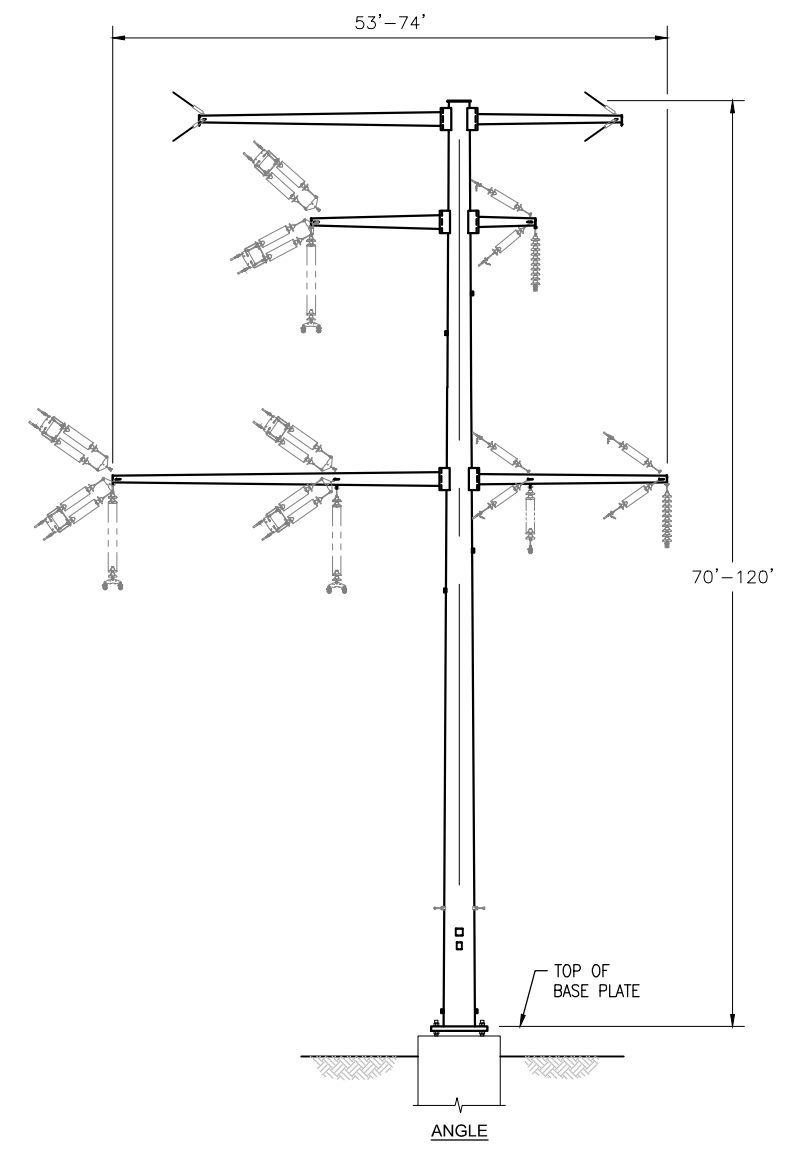
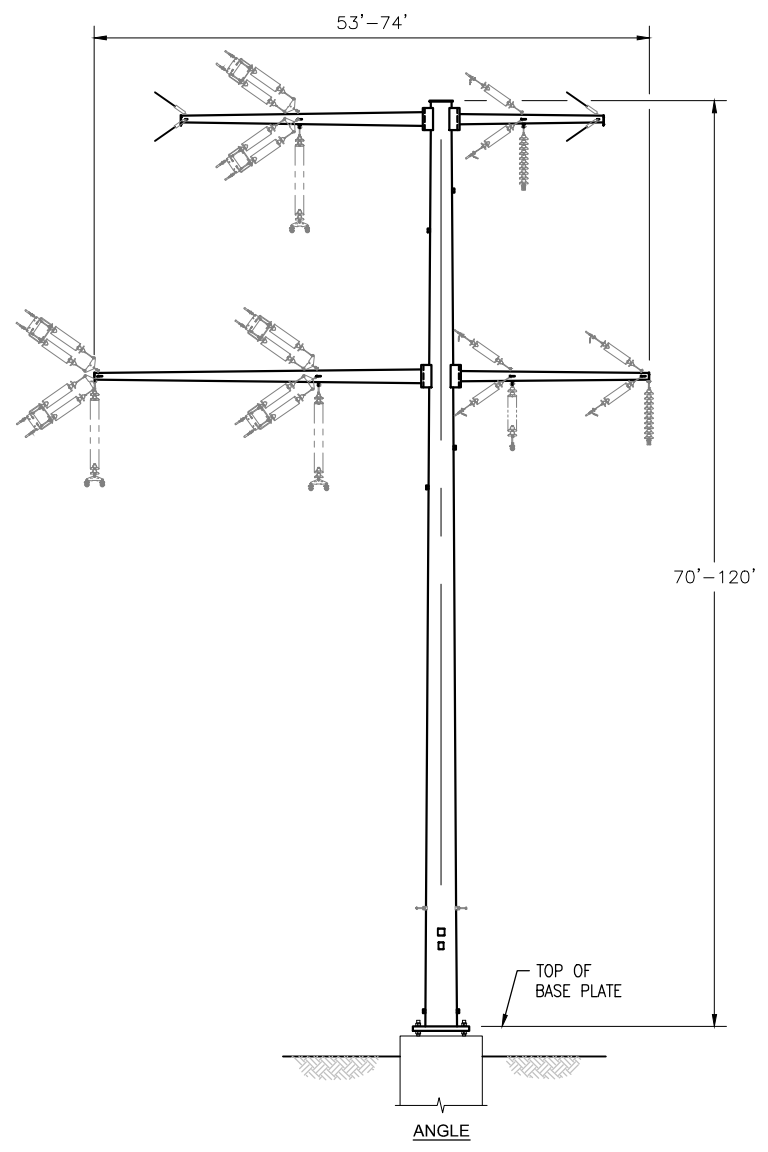
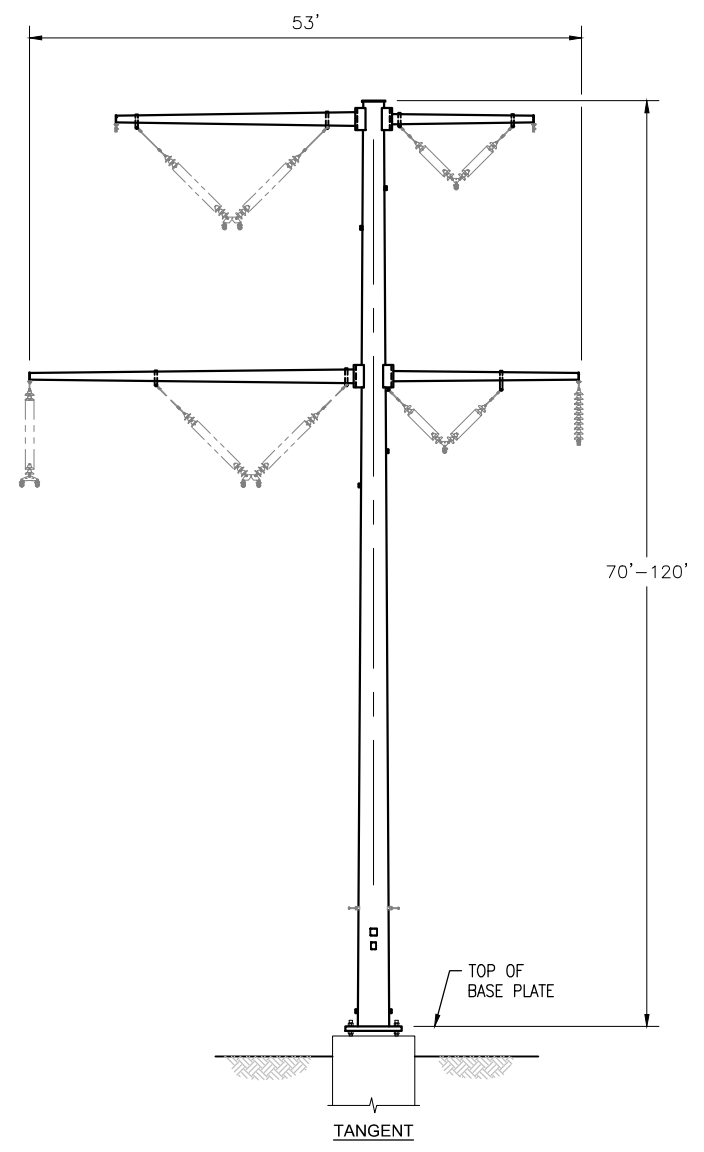


**Figure 5-1**  
**115/345 kV Double-Circuit Delta Monopole**

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STRUCTURE DATA		
MATERIAL	STEEL	
COLOR	GREY	BROWN
FINISH	GALVANIZED	WEATHERED

**CONCEPTUAL - NOT FOR CONSTRUCTION**

INCHES ON ORIGINAL

**NEW YORK ENERGY SOLUTION**  
**115/345 kV DOUBLE CIRCUIT DELTA MONOPOLE**

PREPARED BY	EEB	01/19/15
REVIEWED BY	PAW	01/19/15
APPROVED BY	JDL	01/19/15
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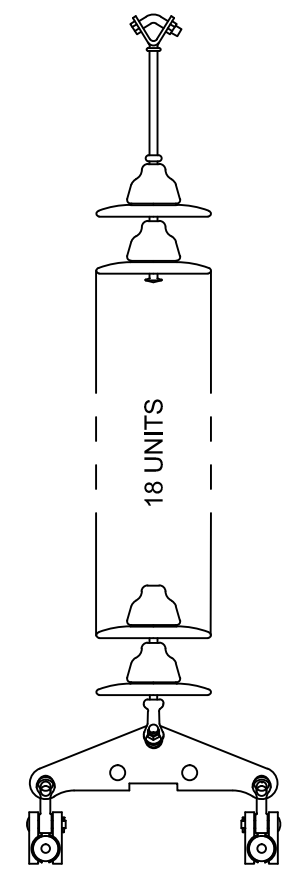
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**Figure 5-2**  
**Typical 345 kV Bundled Assemblies**

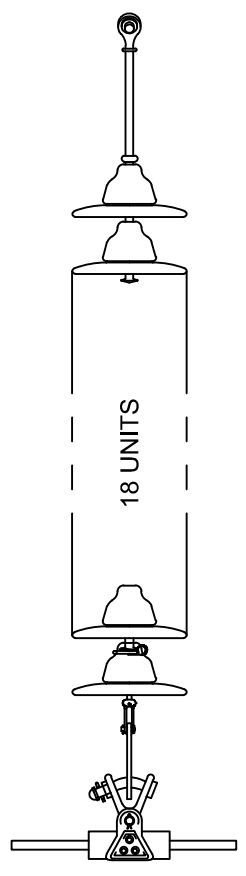
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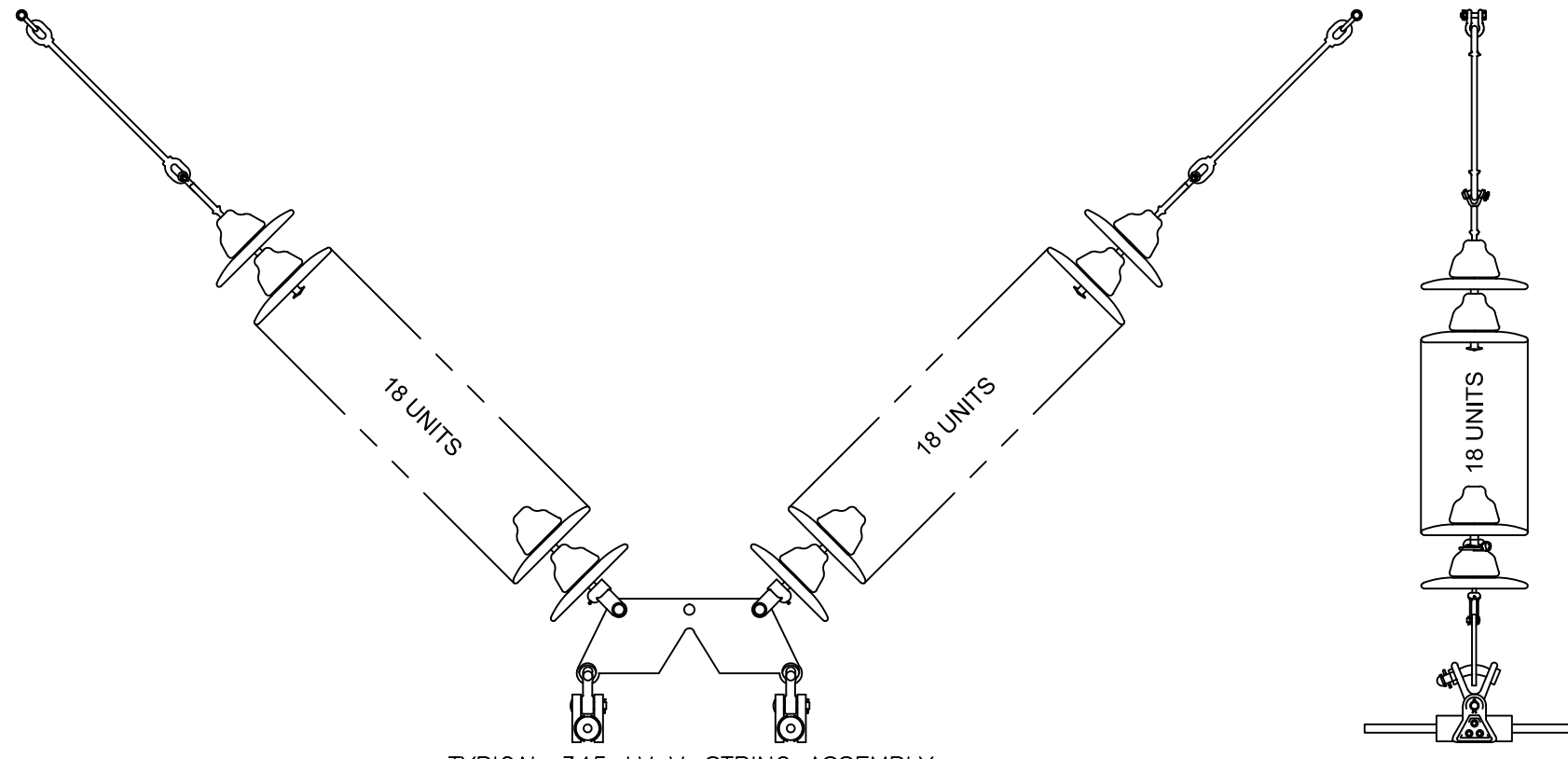
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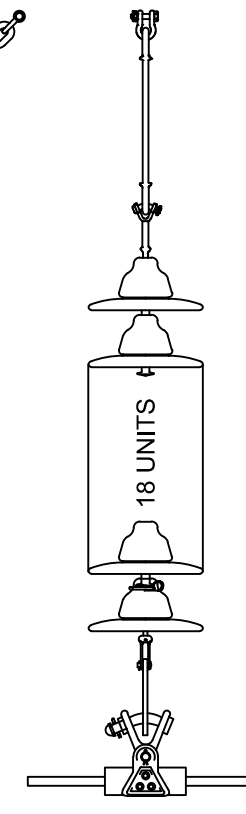
TYPICAL 345 kV TANGENT SUSPENSION ASSEMBLY



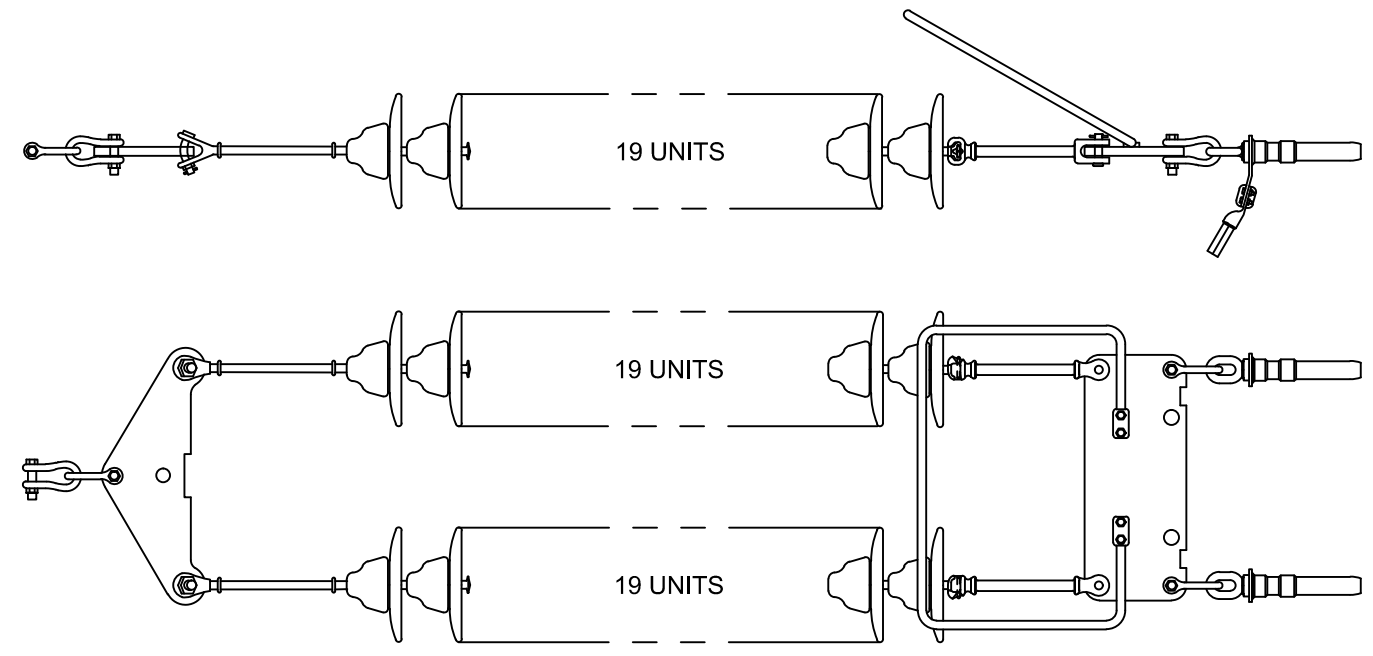
SIDE VIEW



TYPICAL 345 kV V-STRING ASSEMBLY



SIDE VIEW



TYPICAL 345 kV DEADEND ASSEMBLY

NOTES:

1. DESIGN IS PRELIMINARY AND SUBJECT TO CHANGE WITH FINAL DESIGN.
2. INDIVIDUAL INSULATOR ASSEMBLIES MAY BE ADJUSTED TO ACCOMMODATE APPLIED LOADS.

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NEW YORK ENERGY SOLUTION  
 CONDUCTOR HARDWARE DETAILS  
 TYPICAL 345 kV BUNDLED ASSEMBLIES

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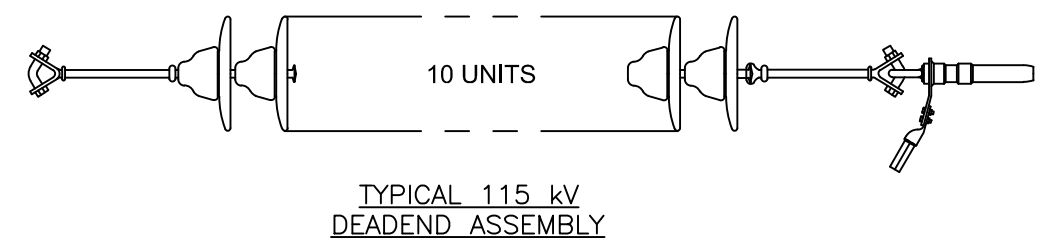


**Figure 5-3**  
**Typical 115 kV Single Assemblies**

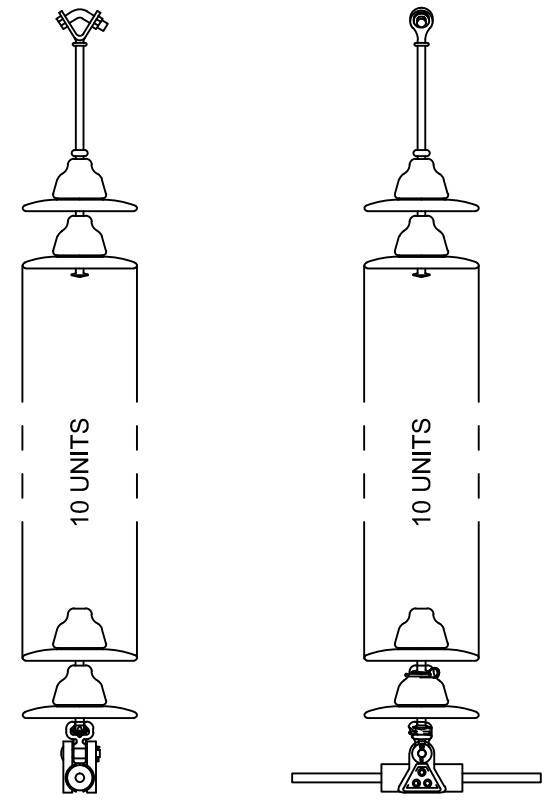
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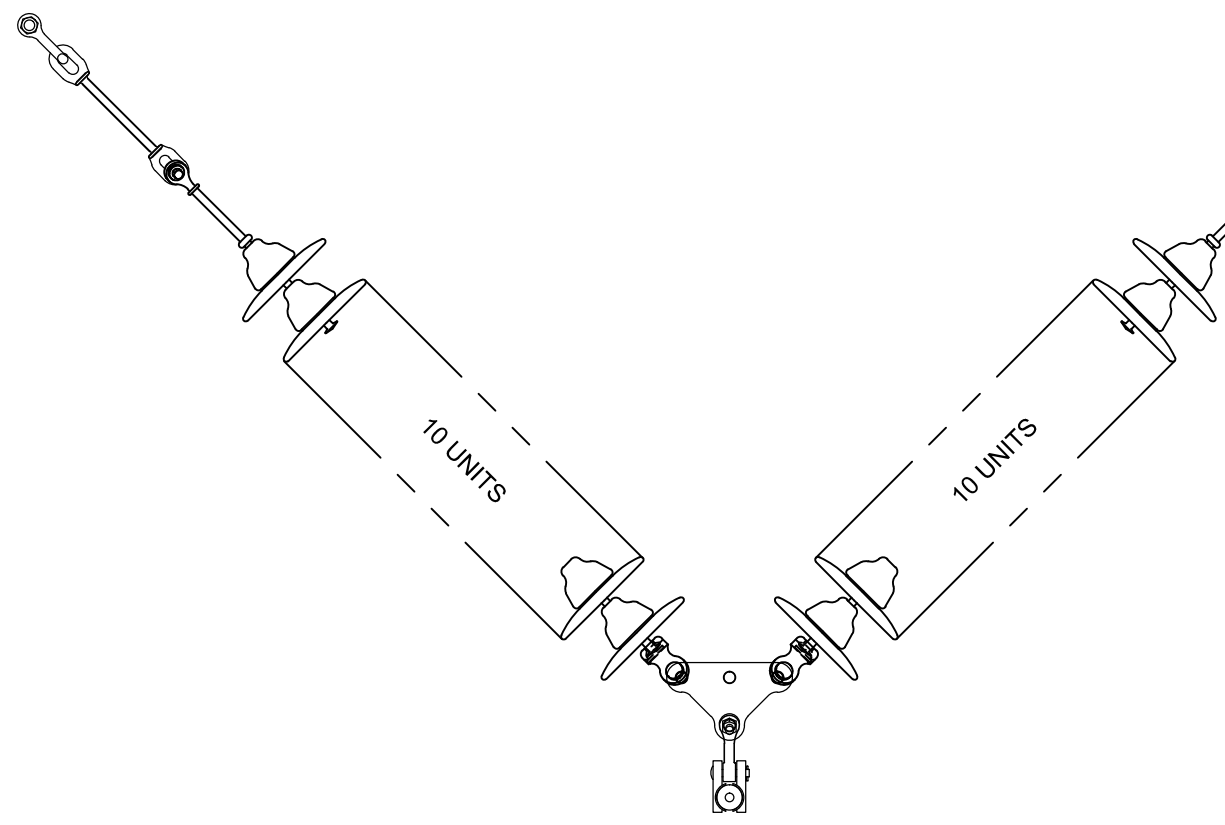


TYPICAL 115 kV DEADEND ASSEMBLY

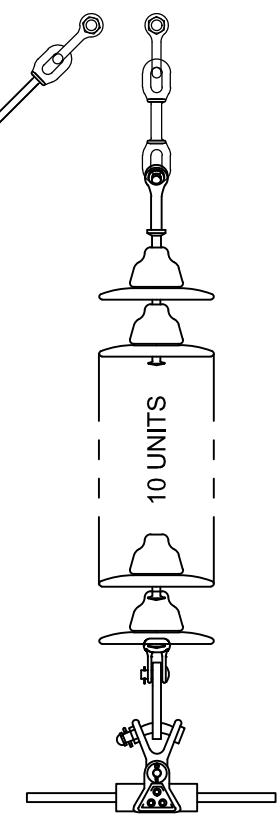


TYPICAL 115 kV TANGENT SUSPENSION ASSEMBLY

SIDE VIEW



TYPICAL 115 kV V-STRING ASSEMBLY



SIDE VIEW

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NEW YORK ENERGY SOLUTION  
 CONDUCTOR HARDWARE DETAILS  
 TYPICAL 115kV SINGLE ASSEMBLIES

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**Figure 5-4**  
**Cross Section Drawings**  
**(KB-CT XS-1 through KB-CT XS-3)**

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**Figure 5-5**  
**Cross Section Drawings**  
**(CT-PV XS-1 through CT-PV XS-7)**

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