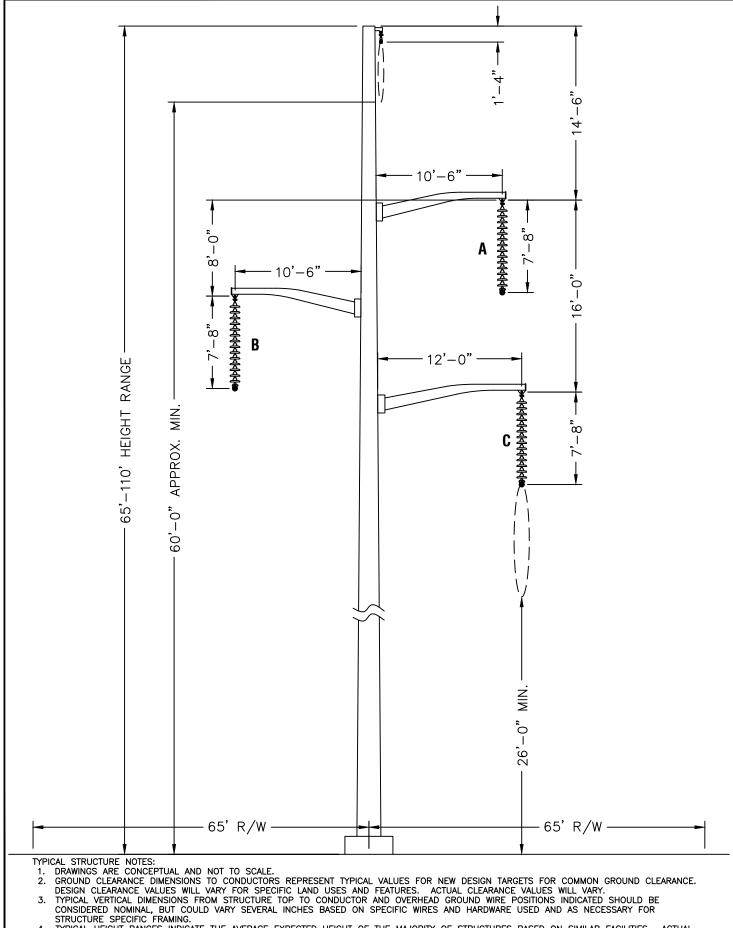
## APPENDIX K

## **TECHNICAL DRAWINGS OF PROPOSED STRUCTURES**

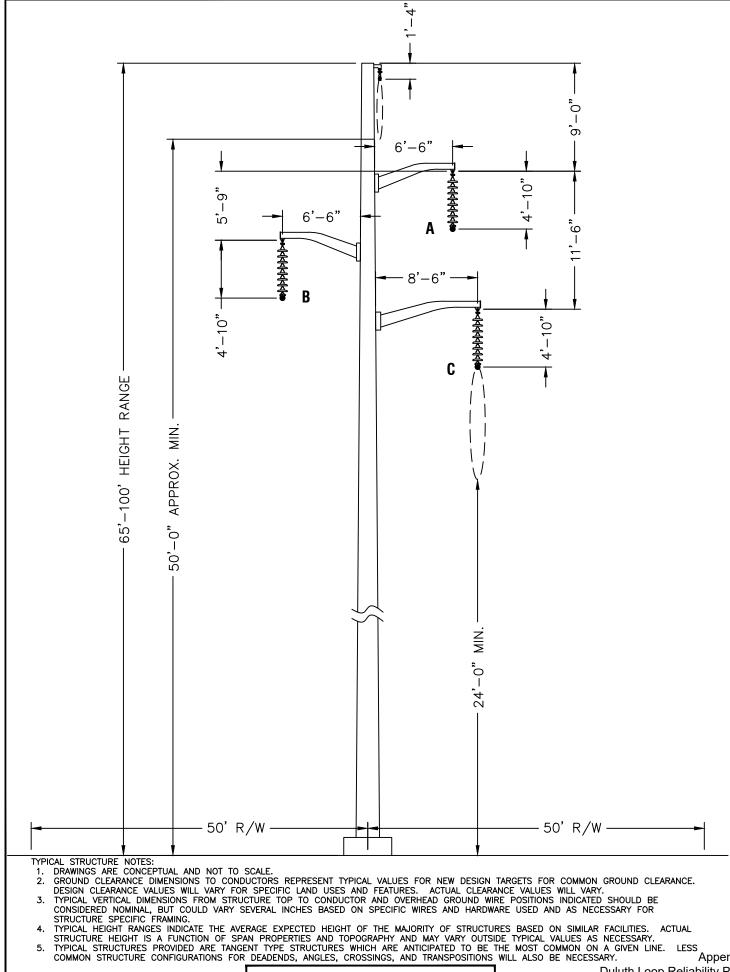


STRUCTURE SPECIFIC FRAMING.
TYPICAL HEIGHT RANGES INDICATE THE AVERAGE EXPECTED HEIGHT OF THE MAJORITY OF STRUCTURES BASED ON SIMILAR FACILITIES. ACTUAL STRUCTURE HEIGHT IS A FUNCTION OF SPAN PROPERTIES AND TOPOGRAPHY AND MAY VARY OUTSIDE TYPICAL VALUES AS NECESSARY.

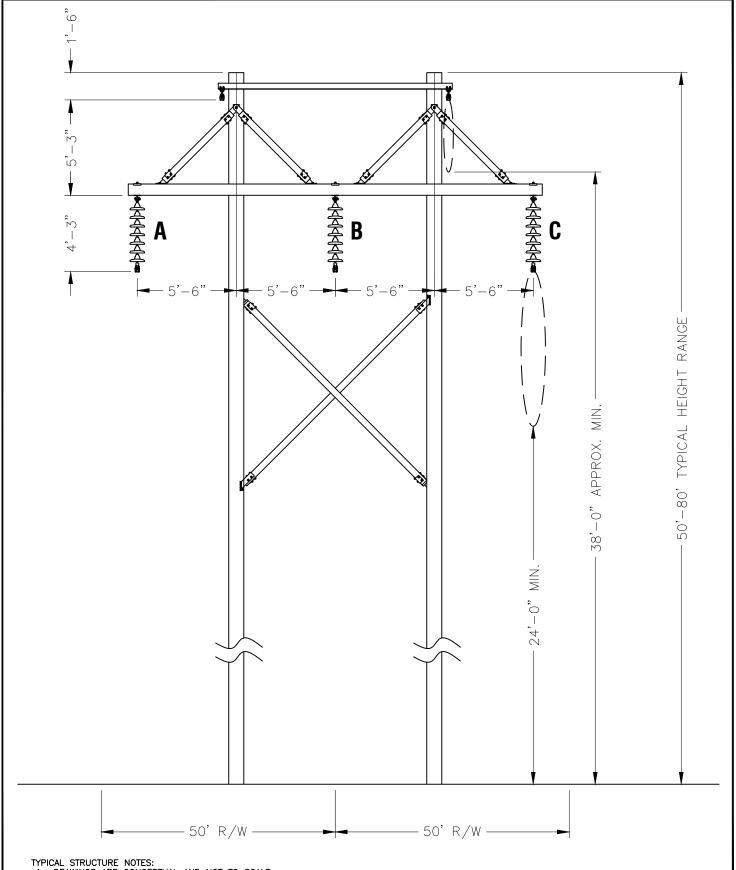
TYPICAL STRUCTURES PROVIDED ARE TANGENT TYPE STRUCTURES WHICH ARE ANTICIPATED TO BE THE MOST COMMON ON A GIVEN LINE. LESS COMMON STRUCTURE CONFIGURATIONS FOR DEADENDS, ANGLES, CROSSINGS, AND TRANSPOSITIONS WILL ALSO BE NECESSARY.

Duluth Loop Reliability Project TYPICAL 230kV SINGLE POLE MPUC Docket No. E015/CN-21-140

Appendix K



Appendix K Duluth Loop Reliability Project MPUC Docket No. E015/CN-21-140 MPUC Docket No. E015/TL-21-141



TYPICAL STRUCTURE NOTES:

1. DRAWINGS ARE CONCEPTUAL AND NOT TO SCALE.

2. GROUND CLEARANCE DIMENSIONS TO CONDUCTORS REPRESENT TYPICAL VALUES FOR NEW DESIGN TARGETS FOR COMMON GROUND CLEARANCE. DESIGN CLEARANCE VALUES WILL VARY FOR SPECIFIC LAND USES AND FEATURES. ACTUAL CLEARANCE VALUES WILL VARY.

3. TYPICAL VERTICAL DIMENSIONS FROM STRUCTURE TOP TO CONDUCTOR AND OVERHEAD GROUND WIRE POSITIONS INDICATED SHOULD BE CONSIDERED NOMINAL, BUT COULD VARY SEVERAL INCHES BASED ON SPECIFIC WIRES AND HARDWARE USED AND AS NECESSARY FOR STRUCTURE SPECIFIC FRAMING.

4. TYPICAL HEIGHT RANGES INDICATE THE AVERAGE EXPECTED HEIGHT OF THE MAJORITY OF STRUCTURES BASED ON SIMILAR FACILITIES. ACTUAL STRUCTURE HEIGHT IS A FUNCTION OF SPAN PROPERTIES AND TOPOGRAPHY AND MAY VARY OUTSIDE TYPICAL VALUES AS NECESSARY.

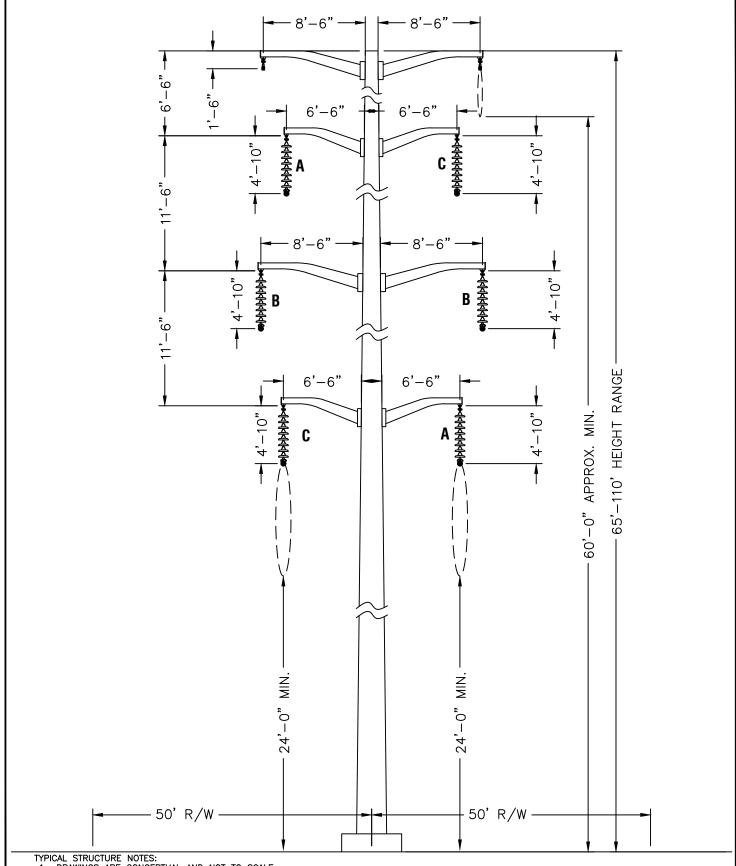
5. TYPICAL STRUCTURES PROVIDED ARE TANGENT TYPE STRUCTURES WHICH ARE ANTICIPATED TO BE THE MOST COMMON ON A GIVEN LINE. LESS COMMON STRUCTURE CONFIGURATIONS FOR DEADENDS, ANGLES, CROSSINGS, AND TRANSPOSITIONS WILL ALSO BE NECESSARY.

Appendix K

Dulluth Loop Reliability Project

TYPICAL 115kV H-FRAME

Duluth Loop Reliability Project MPUC Docket No. E015/CN-21-140 MPUC Docket No. E015/TL-21-141



TYPICAL STRUCTURE NOTES:

1. DRAWINGS ARE CONCEPTUAL AND NOT TO SCALE.

2. GROUND CLEARANCE DIMENSIONS TO CONDUCTORS REPRESENT TYPICAL VALUES FOR NEW DESIGN TARGETS FOR COMMON GROUND CLEARANCE. DESIGN CLEARANCE VALUES WILL VARY FOR SPECIFIC LAND USES AND FEATURES. ACTUAL CLEARANCE VALUES WILL VARY.

3. TYPICAL VERTICAL DIMENSIONS FROM STRUCTURE TOP TO CONDUCTOR AND OVERHEAD GROUND WIRE POSITIONS INDICATED SHOULD BE CONSIDERED NOMINAL, BUT COULD VARY SEVERAL INCHES BASED ON SPECIFIC WIRES AND HARDWARE USED AND AS NECESSARY FOR STRUCTURE SPECIFIC FRAMING.

4. TYPICAL HEIGHT RANGES INDICATE THE AVERAGE EXPECTED HEIGHT OF THE MAJORITY OF STRUCTURES BASED ON SIMILAR FACILITIES. ACTUAL STRUCTURE HEIGHT IS A FUNCTION OF SPAN PROPERTIES AND TOPOGRAPHY AND MAY VARY OUTSIDE TYPICAL VALUES AS NECESSARY.

5. TYPICAL STRUCTURES PROVIDED ARE TANGENT TYPE STRUCTURES WHICH ARE ANTICIPATED TO BE THE MOST COMMON ON A GIVEN LINE. LESS COMMON STRUCTURE CONFIGURATIONS FOR DEADENDS, ANGLES, CROSSINGS, AND TRANSPOSITIONS WILL ALSO BE NECESSARY.

Duluth Loop Reliability Project TYPICAL 115/115kV SINGLE POLE DOUBLE CIRCUITMPUC Docket No. E015/CN-21-140 MPUC Docket No. E015/TL-21-141