

# TWO H-FRAME STRUCTURES GREEN ISLAND, CATALINA, NL

Prepared by:



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Prepared for:



FISHERIES AND OCEANS CANADA (DFO)  
P.O. BOX 5667  
ST. JOHN'S, NL A1C 5X1

DFO Project No.: F6879-167017  
Consultant Project No.: 2015-345

R5 - Issued for Construction Date: October 31, 2016  
R4 - Issued for Review Date: October 26, 2016  
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**GENERAL NOTES:**

1. DO NOT SCALE FROM DRAWINGS.
2. ALL DIMENSIONS IN MILLIMETERS U/N.
3. CONTRACTOR TO VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THIS WORK.
4. ALL WORK TO BE DONE IN A QUALITY SAFE MANNER IN ACCORDANCE WITH ALL FEDERAL, PROVINCIAL AND MUNICIPAL REGULATIONS.
5. CONTRACTOR SHALL DESIGN, INSTALL AND MAINTAIN ADEQUATE TEMPORARY BRACING AND SHORING OF ALL STRUCTURAL COMPONENTS FOR STABILITY AND SAFETY AS REQUIRED DURING CONSTRUCTION.
6. ALL THIRD PARTY PRODUCTS SHALL BE INSTALLED IN STRICT ADHERENCE TO MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO OBTAIN ANY TRAINING REQUIRED BY MANUFACTURER PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL ENSURE ALL SAGS AND TENSIONS TO MEET ESA STANDARDS.
8. CONTRACTOR SHALL STORE AND DISPOSE OF ALL DEMOLISHED MATERIALS.
9. POLES TO BE DIRECTLY EMBEDDED INTO THE EARTH. ALL WATER TO BE REMOVED FROM EXCAVATION PRIOR TO INSTALLATION. AUGURED HOLE SHOULD MAINTAIN IT'S SHAPE WITH MINIMUM CAVE IN. QUALITY BACKFILL THAT IS COMPACTED IN 150mm (6") LAYERS IS TO BE USED DURING BACKFILL PROCESS.
10. WOOD POLES TO BE PAINTED AS PER CANADIAN AVIATION REGULATION STANDARD 621; OBSTRUCTION MARKING AND LIGHTING.
11. CONTRACTOR SHALL INSTALL A TOTAL OF (7) 750mm DIAMETER OBSTRUCTION MARKINGS SPACED EVERY 45.0m AND STAGGERED AMONG BOTH TRANSMISSION LINES AS PER CANADIAN AVIATION REGULATION STANDARD 621; OBSTRUCTION MARKING AND LIGHTING.
12. CONTRACTOR TO GROUND WOODEN H-FRAME AS PER INDUSTRY STANDARDS
13. EXISTING GUY WIRES TO BE EXCAVATED TO 300mm BELOW GRADE AND CUT. GUY WIRES INSTALLED IN ROCK SHALL BE CUT FLUSH WITH ROCK.
14. EXISTING POLE STRUCTURE AND HARDWARE TO BE DISPOSED OF AT CONTRACTORS EXPENSE.

**STEEL NOTES:**

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED, ERECTED AND INSTALLED IN ACCORDANCE WITH CAN/CSA-S16-01 LATEST EDITION, AND THE NATIONAL BUILDING CODE, BY FULLY CERTIFIED CWB COMPANY.
2. ALL FABRICATION SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA W59 BY A FABRICATOR FULLY CERTIFIED UNDER CSA W47.1.
3. ALL STRUCTURAL STEEL SHALL BE CSA-G40.21-350W.
4. PROVIDE ALL NECESSARY MATERIALS FOR CONNECTIONS IN ACCORDANCE WITH CISC STANDARD DETAILS.
5. ALL BOLTS TO BE A325 "BEARING TYPE" U/N.
6. ALL WELDING ELECTRODES TO BE E49XX.
7. FABRICATOR/ERECTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING REQUIRED UNTIL STRUCTURE IS ALIGNED AND PERMANENTLY BRACED.
8. ALL STRUCTURAL STEEL TO BE SHOP PRIMED WITH CISC-CPMA-1-73A - COLOR GREY. STEEL EXPOSED TO WEATHER TO BE HOT DIP GALVANIZED. DO NOT PAINT STEEL ENCASED IN CONCRETE.

**WOOD NOTES:**

1. WOOD WORK TO BE PERFORMED IN ACCORDANCE WITH CSA 086 AND 015 LATEST REQUIREMENTS.
2. WOOD MEMBER SPECIES TO BE EASTERN SPRUCE No. 2 CONSTRUCTION GRADE - MINIMUM, UNLESS NOTED OTHERWISE.
3. PRESERVATIVE TREATED (PT) WOOD TO BE IN ACCORDANCE WITH CSA 080.15.
4. ALL NAILS AND OTHER FASTENERS TO BE GALVANIZED.
5. WOOD POLE MEMBERS TO BE CCA SOUTHERN YELLOW PINE CLASS 1.
6. WOOD POLES (4) TO BE SUPPLIED BY OWNER.
7. OWNER TO DELIVER TWO (2) WOOD POLES TO ISLAND SITE.
8. OWNER TO DELIVER TWO (2) WOOD POLES FOR CATALINA, NL TO A ROAD ACCESSIBLE LOCATION SELECTED BY CONTRACTOR. CONTRACTOR IS RESPONSIBLE TO DELIVER POLES TO FINAL LOCATION.

**ELECTRICAL NOTES:**

1. ALL ELECTRICAL HARDWARE, INSULATORS, AND CONDUCTORS SHALL BE NEW. USE OF RECYCLED COMPONENTS IS NOT PERMITTED.
2. REMOVED ELECTRICAL HARDWARE SHALL BE DISPOSED OF BY THE CONTRACTOR AS PER APPLICABLE REGULATIONS.
3. CONTRACTOR IS RESPONSIBLE TO INFORM OWNER OF ANY PERMIT REQUIREMENTS AND ASSIST IN COORDINATING WITH NL POWER.

**ABBREVIATIONS**

- B/S = BOTH SIDES
- B/W = BOTH WAYS
- BOT = BOTTOM
- CL = CENTERLINE
- C/C = CENTER TO CENTER
- C/W = COMPLETE WITH
- COJ = CONFIRM ON JOB
- COL = COLUMN
- CONT = CONTINUOUS
- DET = DETAIL
- DIM = DIMENSION
- DWG = DRAWING
- EA = EACH
- ELEV = ELEVATION
- E/S = EACH SIDE
- E/W = EACH WAY
- EXIST = EXISTING
- FDN = FOUNDATION
- FTG = FOOTING
- GALV = GALVANIZED
- HDG = HOT DIP GALVANIZED
- HORIZ = HORIZONTAL
- MAX = MAXIMUM
- MIN = MINIMUM
- N/A = NOT APPLICABLE
- NBC = NATIONAL BUILDING CODE
- NIC = NOT IN CONTRACT
- NTS = NOT TO SCALE
- OD = OUTSIDE DIAMETER
- O/F = OUTSIDE FACE
- PT = PRESERVATIVE TREATED
- P/W = PLYWOOD
- REINF = REINFORCING
- REQD = REQUIRED
- SIM = SIMILAR
- SPEC = SPECIFICATION
- STD = STANDARD
- TYP = TYPICAL
- U/N = UNLESS NOTED
- UNO = UNLESS NOTED OTHERWISE
- U/S = UNDERSIDE
- VERT = VERTICAL
- WL = WIND LOAD

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| R1  | ISSUED FOR REVIEW       | 25/11/15 |
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PROJECT  
**TWO H-FRAME STRUCTURES**

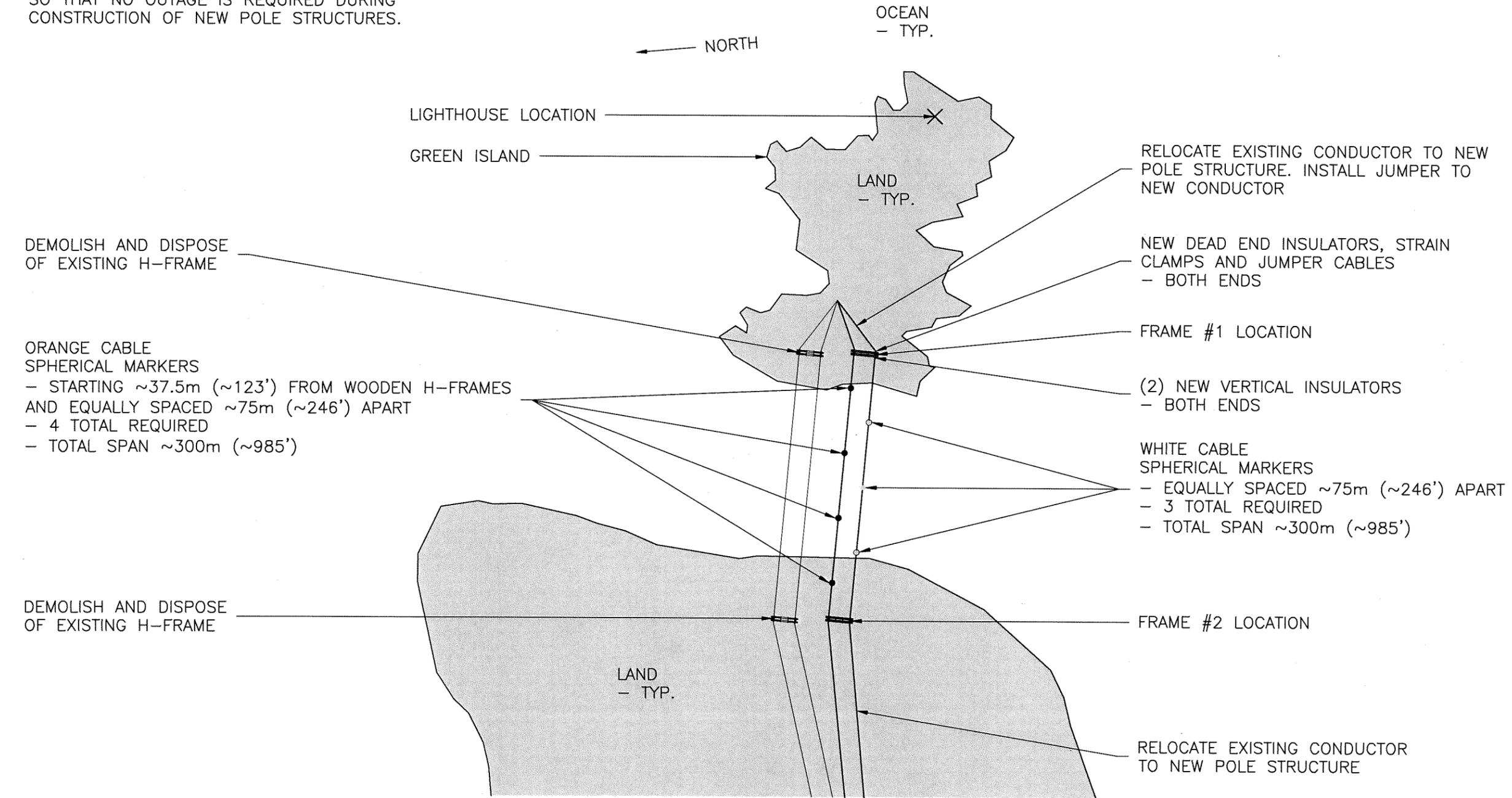
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| DRAWN               | J.D.                 | CHECKED  | J.W.     |
| SCALE               | AS SHOWN             | DATED    | 20/10/15 |
| DFO PROJECT NO.     | DRAWING NO.          |          |          |
| <b>F6879-167017</b> | <b>02C1103A028E1</b> |          |          |

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**NOTE:**

1. TWO WOODEN H-FRAMES TO BE INSTALLED. ONE WOODEN H-FRAME TO BE INSTALLED ON GREEN ISLAND. OTHER WOODEN H-FRAME TO BE INSTALLED ACROSS THE TICKLE ON CATALINA.
2. LOCATIONS ARE APPROXIMATE. CONTRACTOR TO SELECT NEW STRUCTURE LOCATIONS AND SEEK OWNER APPROVAL.
3. NEW STRUCTURES TO BE DISTANCED FROM EXISTING SO THAT NO OUTAGE IS REQUIRED DURING CONSTRUCTION OF NEW POLE STRUCTURES.



**GENERAL SITE LAYOUT**

N.T.S.

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 JONATHAN E. WALSH  
 SIGNATURE  
 Oct. 31/16  
 DATE  
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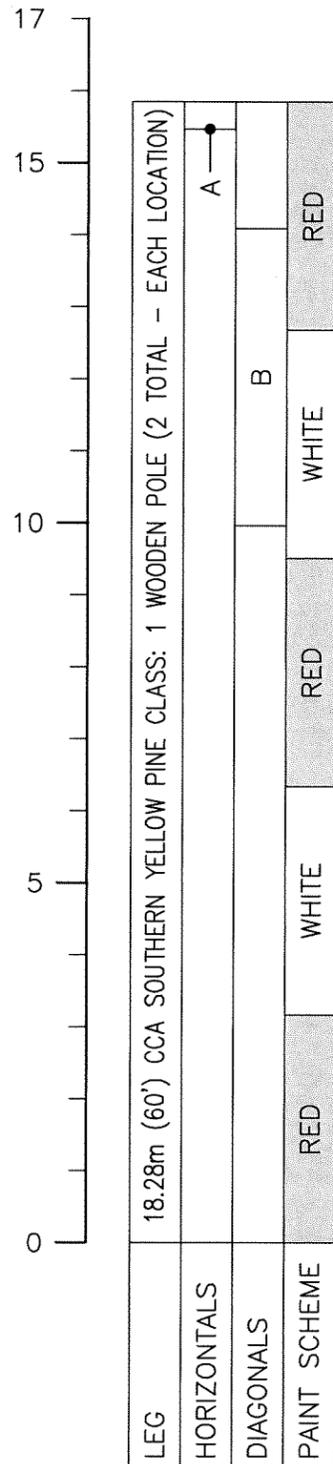
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PROJECT  
 TWO H-FRAME STRUCTURES

TITLE  
 GENERAL SITE LAYOUT

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ELEVATION 15.850m± (52'±)  
TOP OF WOODEN POLE

**LEGEND**

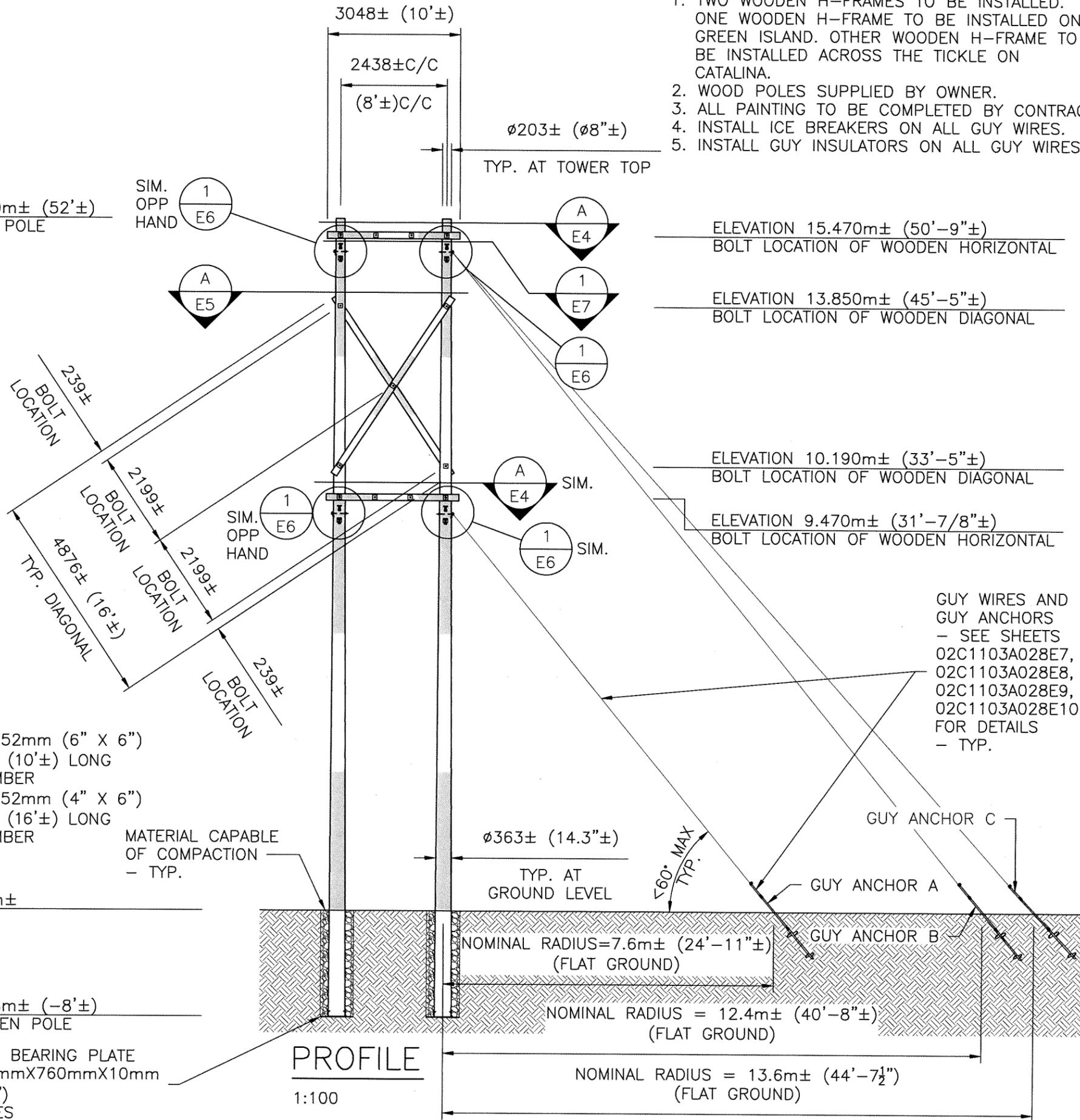
- A: PT 152mmX152mm (6" X 6")  
X 3048mm± (10'±) LONG  
WOODEN MEMBER
- B: PT 102mmX152mm (4" X 6")  
X 4876mm± (16'±) LONG  
WOODEN MEMBER

MATERIAL CAPABLE  
OF COMPACTION  
- TYP.

ELEVATION 0.000m±  
TOP OF GROUND

ELEVATION -2.438m± (-8'±)  
BOTTOM OF WOODEN POLE

GALVANIZED STEEL BEARING PLATE  
TO BE USED 760mmX760mmX10mm  
THICK (30"X30"X $\frac{3}{8}$ ")  
- TYP BOTH POLES



**PROFILE**  
1:100

**NOTE:**

1. TWO WOODEN H-FRAMES TO BE INSTALLED. ONE WOODEN H-FRAME TO BE INSTALLED ON GREEN ISLAND. OTHER WOODEN H-FRAME TO BE INSTALLED ACROSS THE TICKLE ON CATALINA.
2. WOOD POLES SUPPLIED BY OWNER.
3. ALL PAINTING TO BE COMPLETED BY CONTRACTOR.
4. INSTALL ICE BREAKERS ON ALL GUY WIRES.
5. INSTALL GUY INSULATORS ON ALL GUY WIRES

GUY WIRES AND  
GUY ANCHORS  
- SEE SHEETS  
02C1103A028E7,  
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02C1103A028E9,  
02C1103A028E10  
FOR DETAILS  
- TYP.

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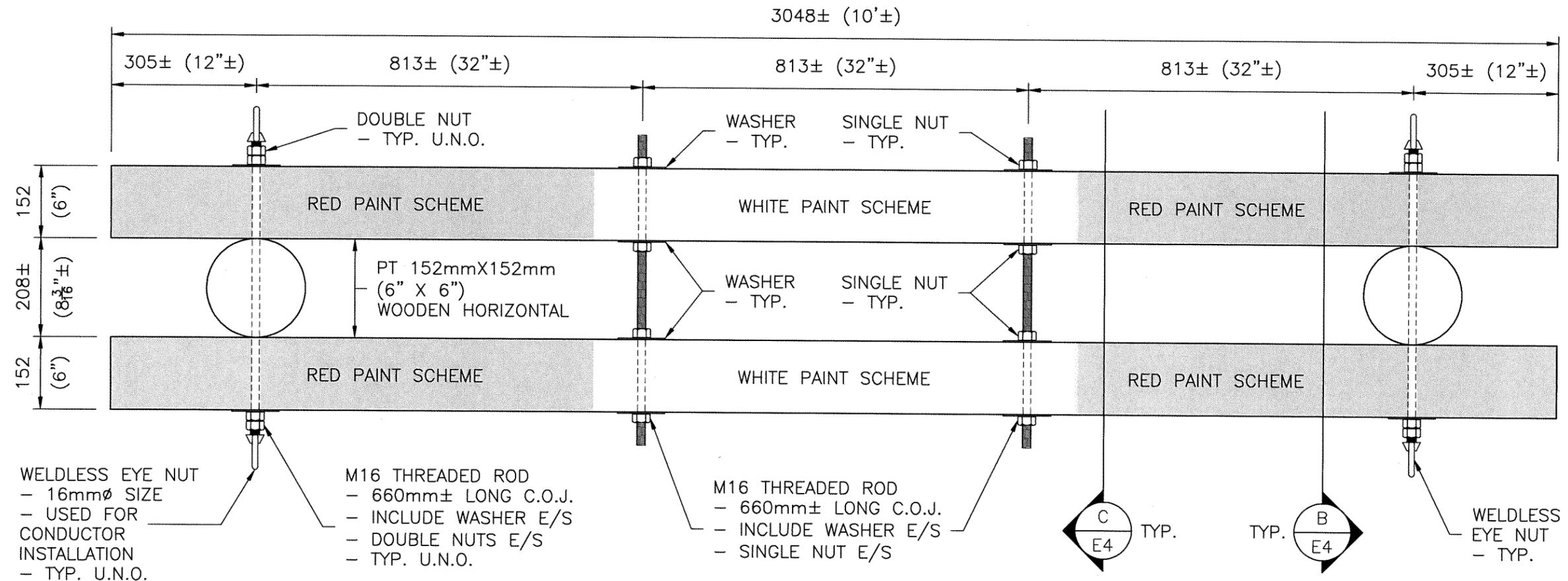
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PROJECT  
TWO H-FRAME  
STRUCTURES

TITLE  
PROFILE

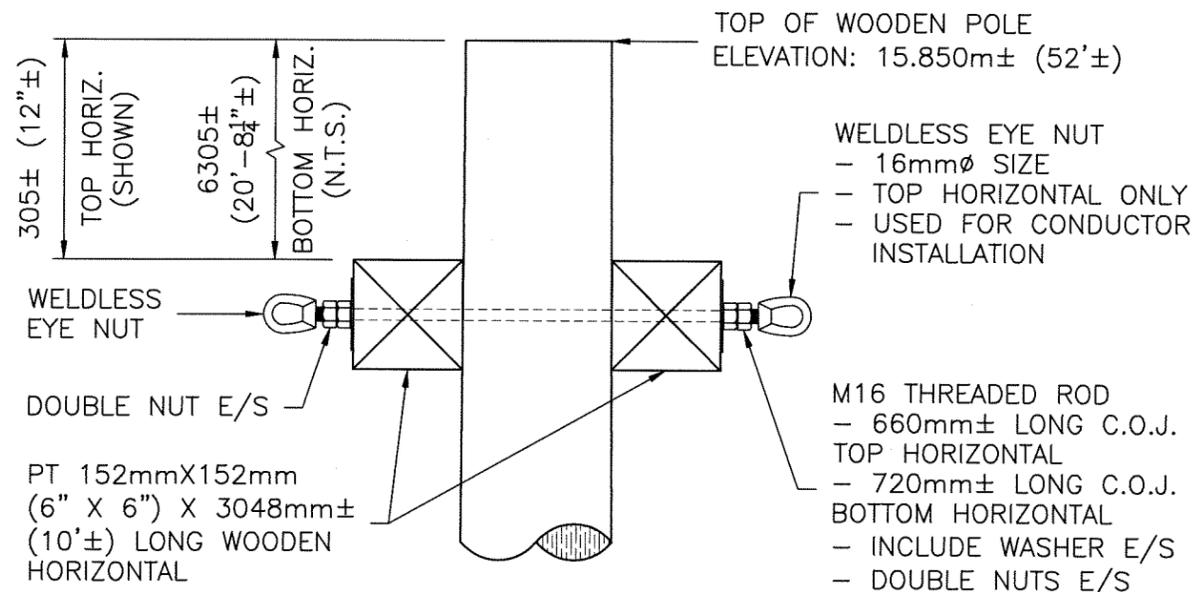
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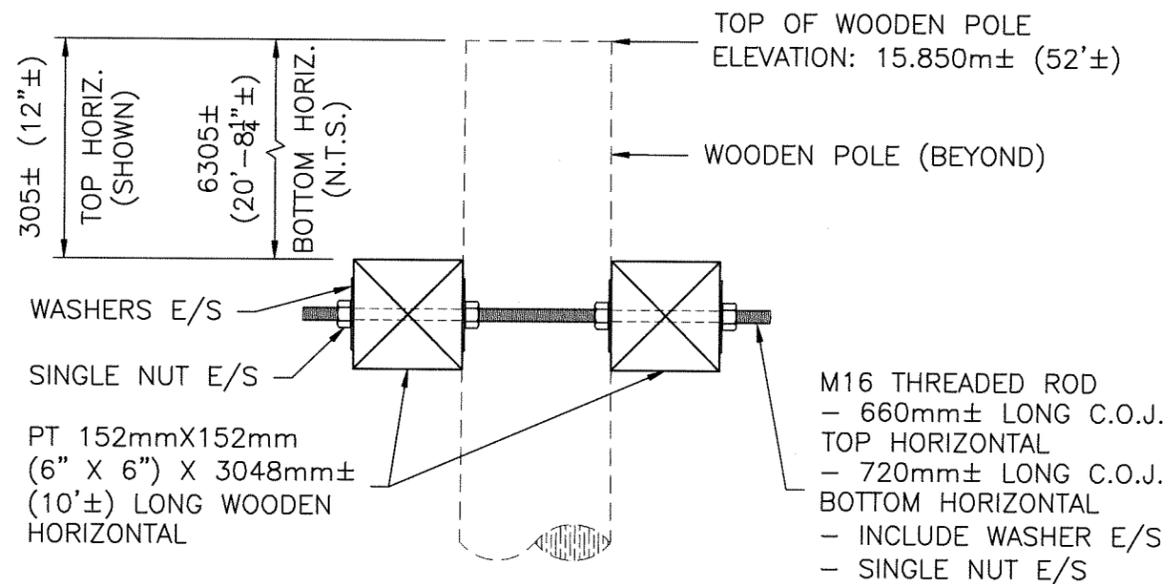
**SECTION - WOODEN HORIZONTAL CONNECTION**

1:10



**SECTION B**

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**SECTION C**

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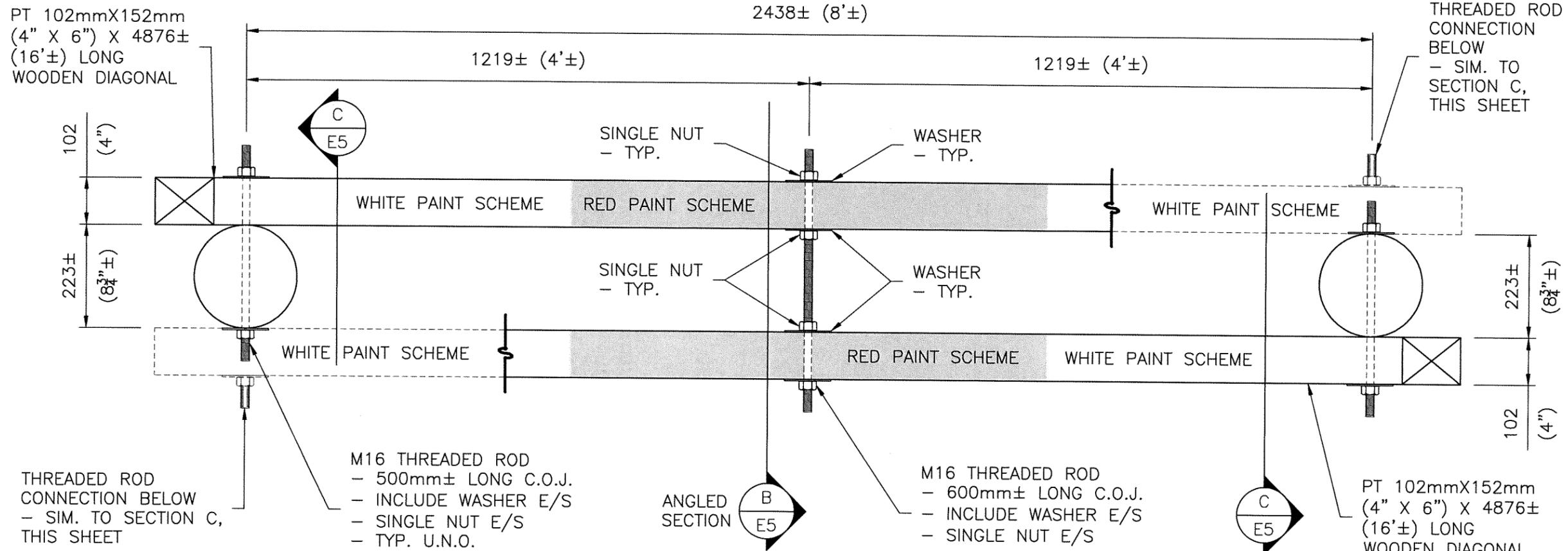
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PROJECT  
**TWO H-FRAME STRUCTURES**

TITLE  
**SECTIONS (HORIZONTAL CONNECTIONS)**

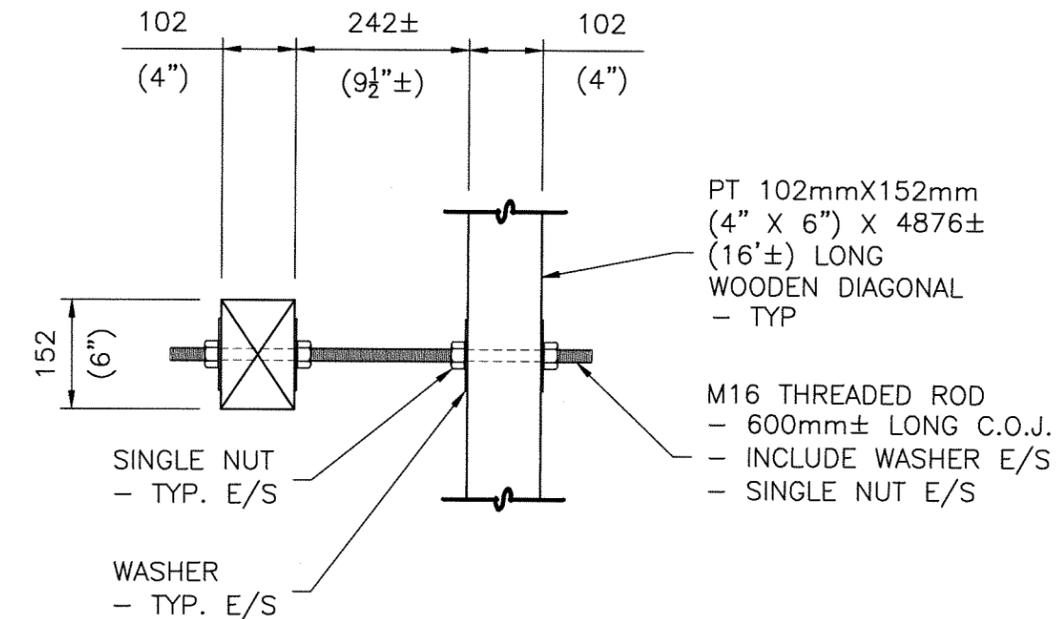
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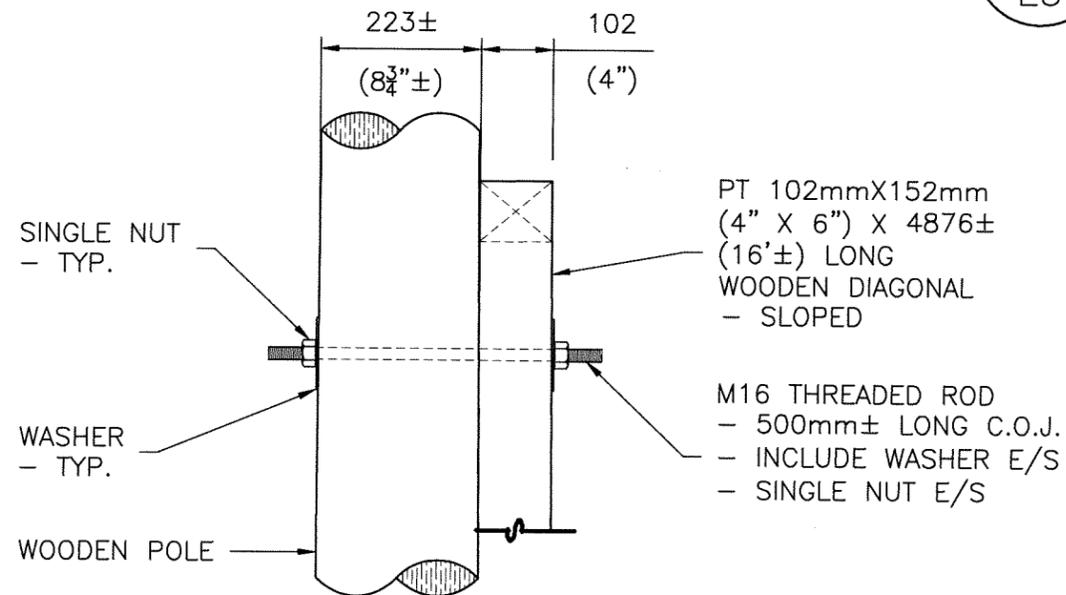
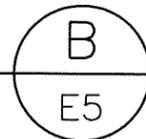
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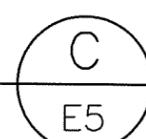
**SECTION**

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**SECTION**

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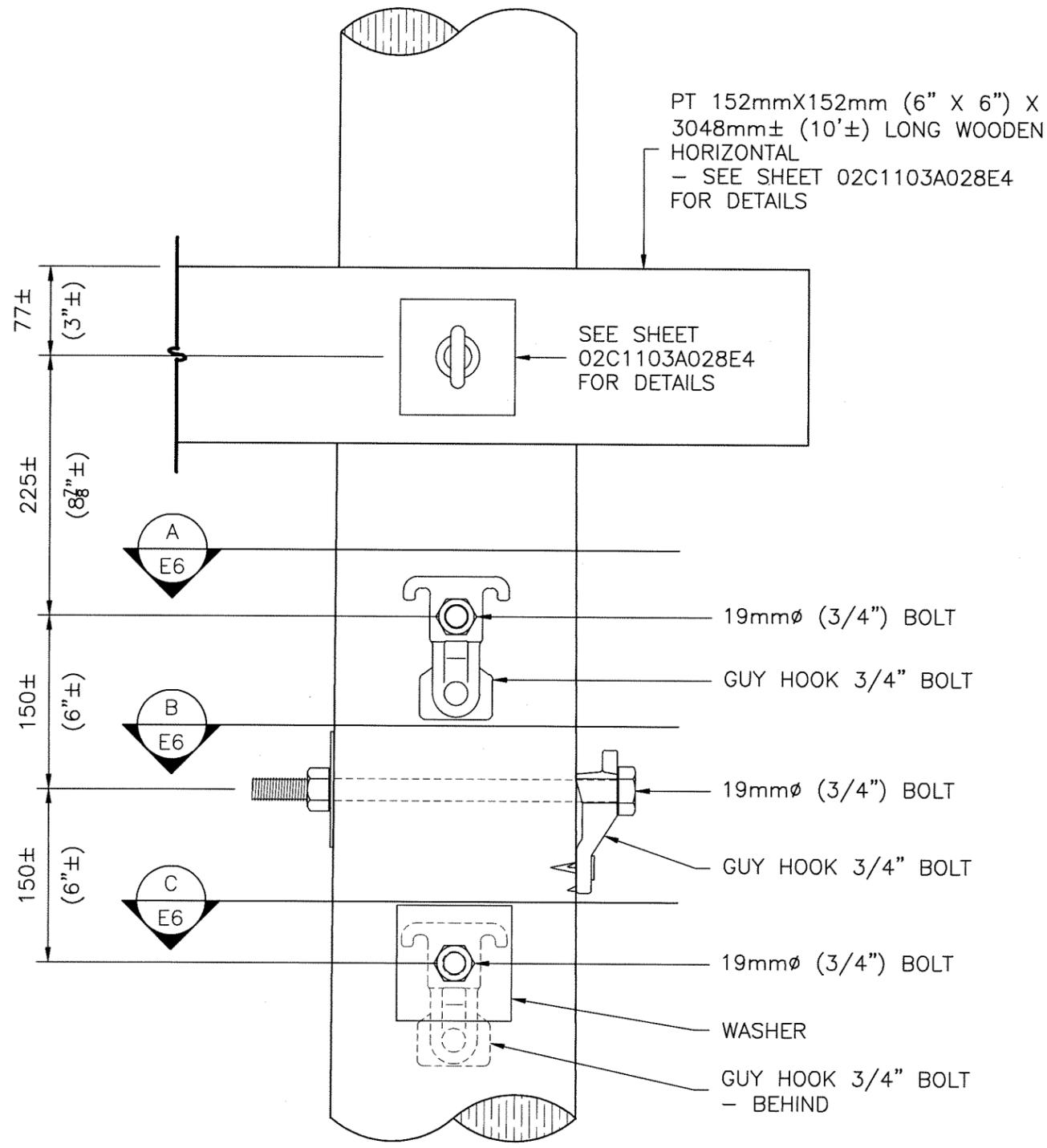
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PROJECT  
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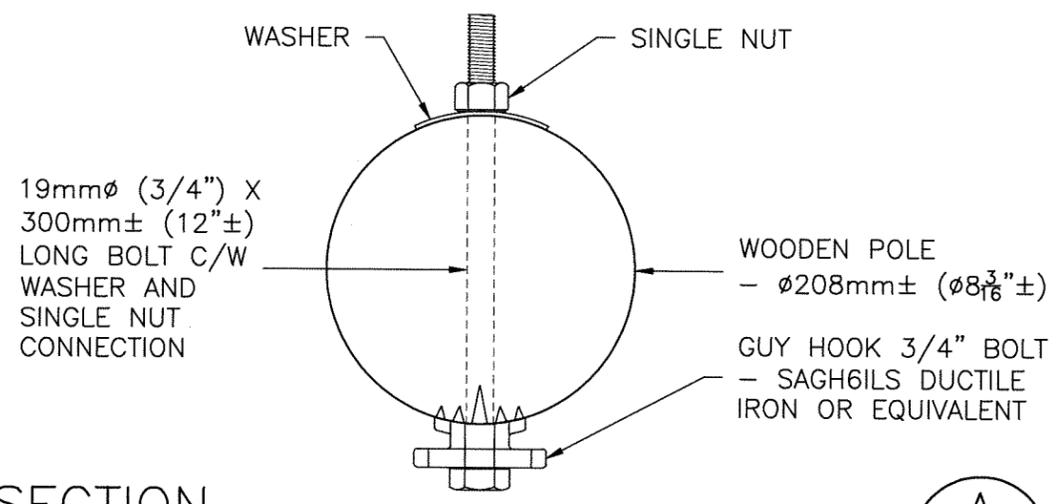
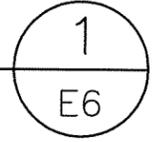
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**SECTIONS (DIAGONAL CONNECTIONS)**

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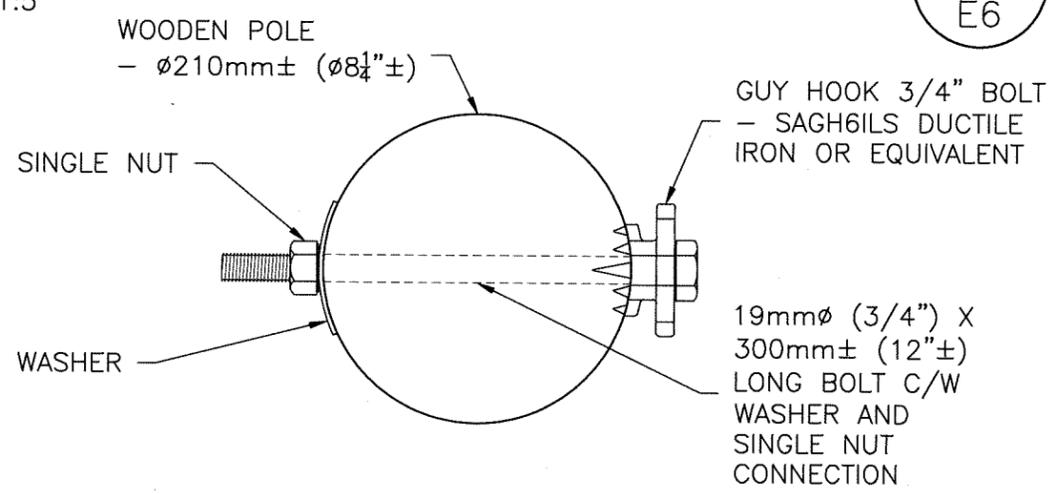
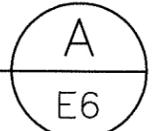
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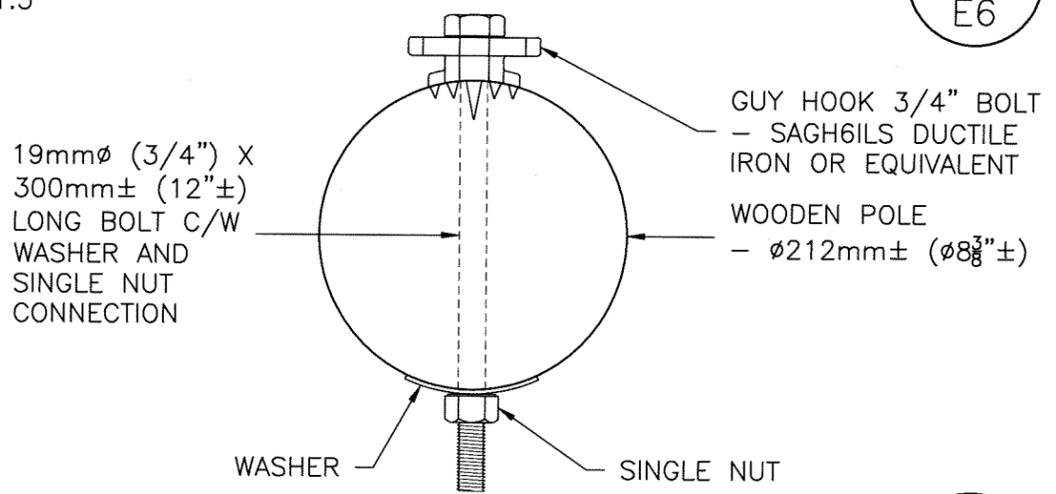
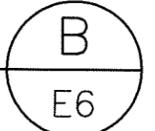
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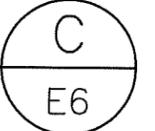
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SECTION

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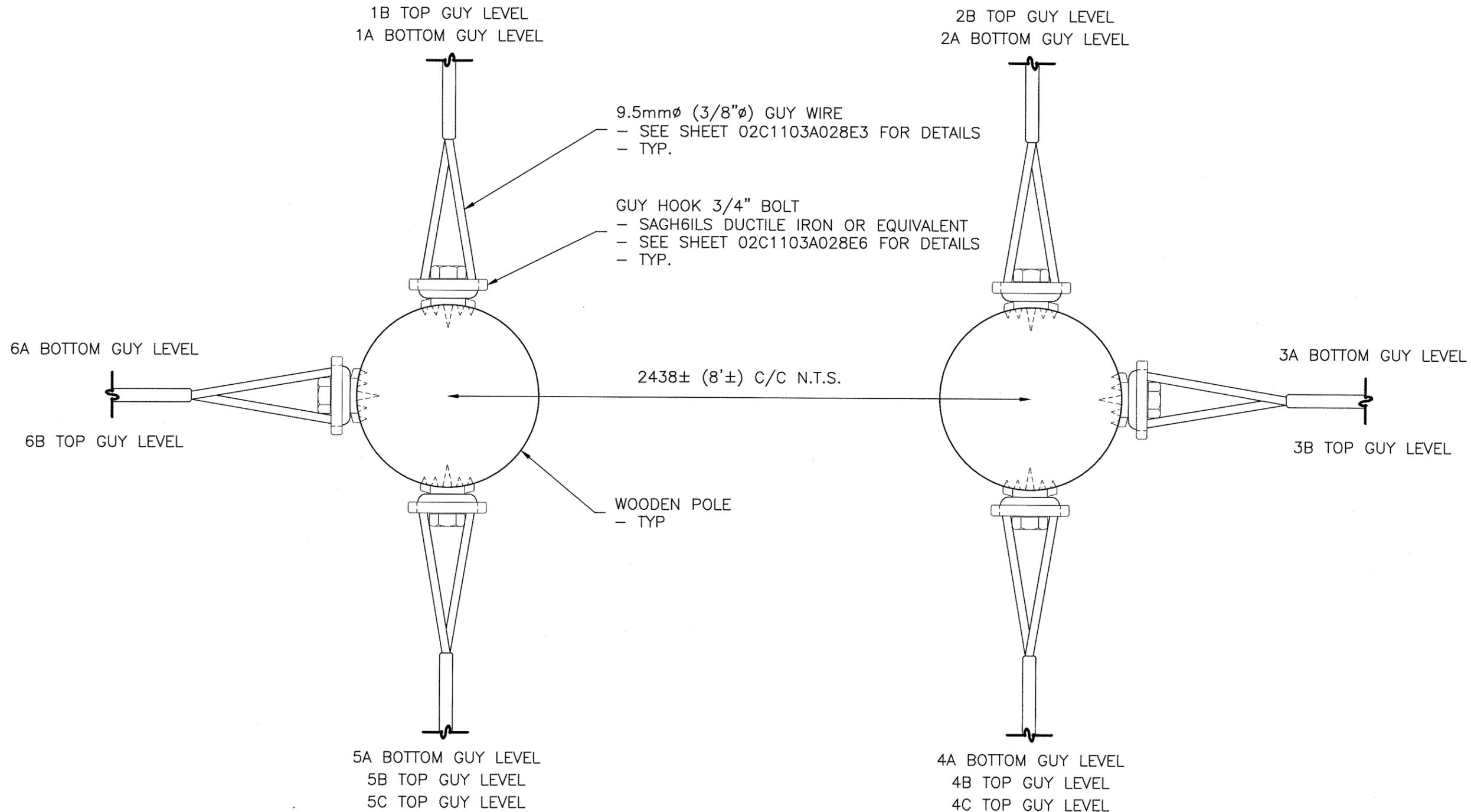
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TWO H-FRAME STRUCTURES

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|                 |              |             |               |
|-----------------|--------------|-------------|---------------|
| DESIGNED        | J.E.         | APPROVED    | J.W.          |
| DRAWN           | J.D.         | CHECKED     | J.W.          |
| SCALE           | AS SHOWN     | DATED       | 20/10/15      |
| DFO PROJECT NO. | F6879-167017 | DRAWING NO. | 02C1103A028E6 |

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NOTES

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| R1  | ISSUED FOR REVIEW       | 24/11/15 |
| R0  | ISSUED FOR REVIEW       | 30/10/15 |

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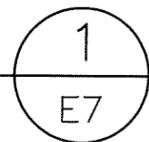
PROJECT  
 TWO H-FRAME STRUCTURES

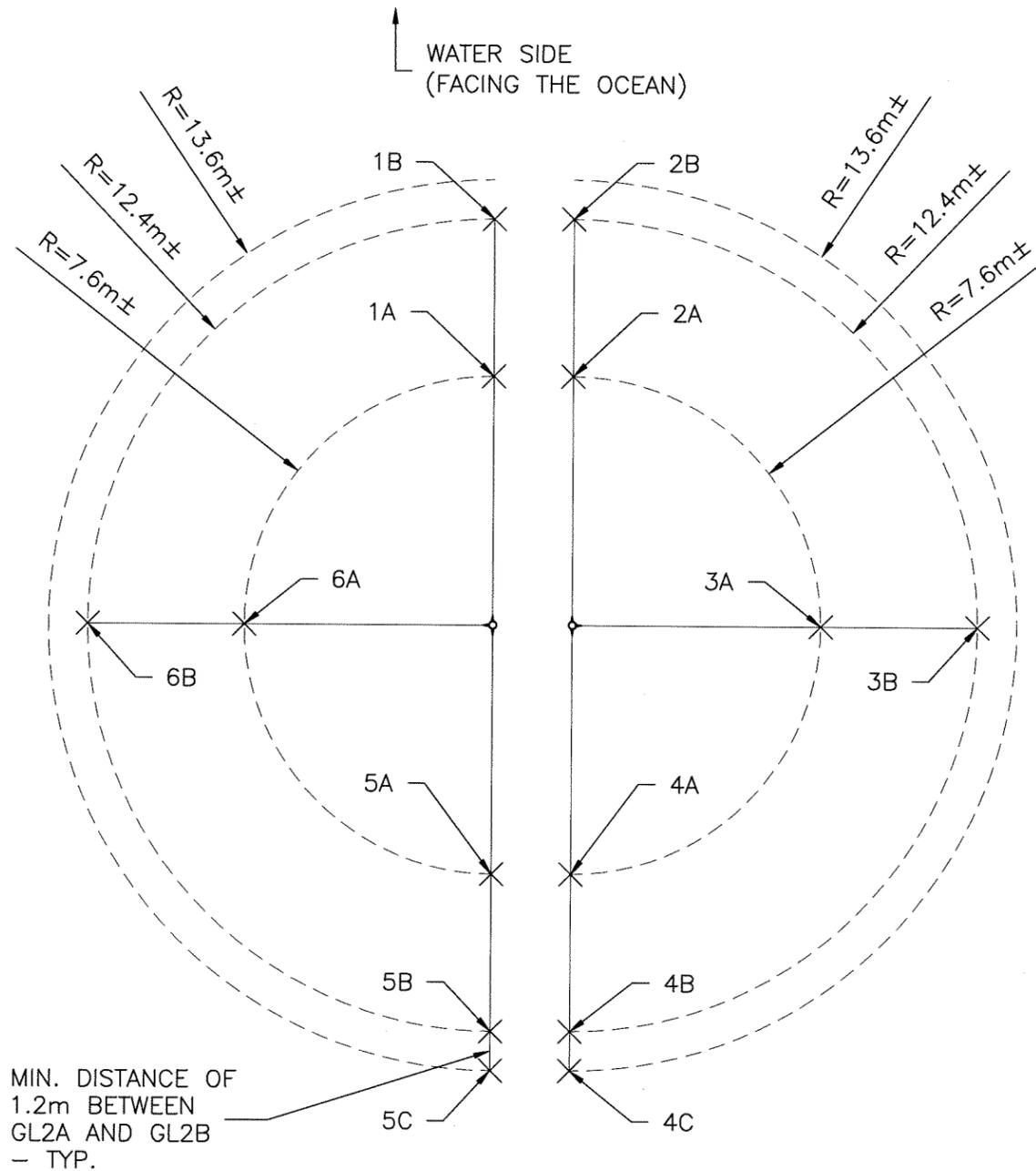
TITLE  
 SECTION (GUY WIRE CONNECTIONS)

|                              |                           |
|------------------------------|---------------------------|
| DESIGNED J.E.                | APPROVED J.W.             |
| DRAWN J.D.                   | CHECKED J.W.              |
| SCALE AS SHOWN               | DATED 20/10/15            |
| DFO PROJECT NO. F6879-167017 | DRAWING NO. 02C1103A028E7 |

SECTION - GUY WIRE CONNECTIONS

1:5  
 NOTE: GUY WIRE CONNECTIONS LOCATED AT TWO ELEVATIONS TOTAL ON EACH WOODEN H-FRAME





# PLAN - GUY ANCHOR ARRANGEMENT

1:200

NOTE: TYPICAL BOTH SIDES

1  
E8

**NOTE:**

- CONTRACTOR TO SELECT EXACT LOCATION OF NEW H-FRAMES WITH DUE CONSIDERATION TO ANCHOR TYPES, GROUND CONDITIONS, AND TERRAIN.

**NOTES**

  
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**REGISTERED PROFESSIONAL ENGINEER**  
**PEG**  
 Newfoundland and Labrador  
**JONATHAN E. WALSH**  
*Jonathan E. Walsh*  
 SIGNATURE  
 Oct. 31/16  
 DATE  
**NEWFOUNDLAND & LABRADOR**

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PROJECT  
**TWO H-FRAME STRUCTURES**

TITLE  
**GUY ANCHOR ARRANGEMENT**

|                 |              |             |               |
|-----------------|--------------|-------------|---------------|
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| DRAWN           | J.D.         | CHECKED     | J.W.          |
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**GUY WIRES**

- (14) TOTAL AROUND STRUCTURE
- 9.5mm $\phi$  (3/8"  $\phi$ ) G.S.
- ULT. CAP.=60.1kN - I.T.=6.01kN
- GUY TERMINATION AT WOODEN POLE AND ANCHOR IS PREFORM (INSTALL 3/8" THIMBLE TO EACH END OF EACH GUY WIRE).
- CONNECT (1) GUY WIRE TO WOODEN POLE WITH (1) GUY HOOK 3/4" BOLT U/N (SAGH6ILS DUCTILE IRON OR EQUIVALENT) AS SHOWN ON SHEET 02C1103A028E6
- GUY MARKERS TO BE INSTALLED ON ALL GUY WIRES

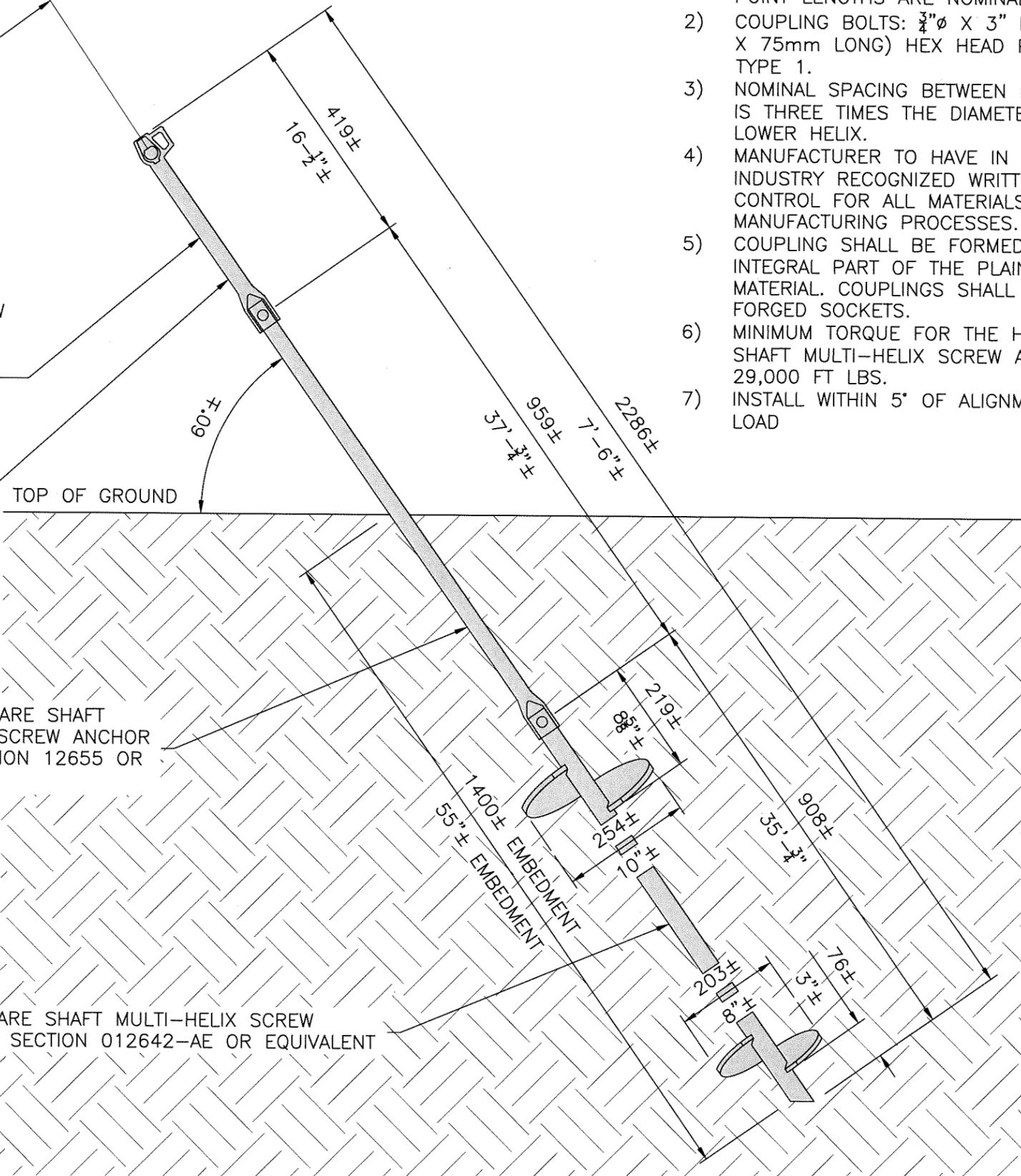
**GUY ANCHORS**

- (14) TOTAL AROUND STRUCTURE
- USE HUBBELL SQUARE SHAFT MULTI-HELIX SCREW ANCHOR AS NOTED / SHOWN OR EQUIVALENT EARTH ANCHOR WHERE APPLICABLE. ENSURE PROPER ANCHORAGE DEPTH OF 1400mm $\pm$  (55"  $\pm$ )
- USE HUBBELL WEDGE STYLE ANCHOR R153L OR EQUIVALENT WEDGE STYLE ANCHOR WHERE APPLICABLE. ENSURE MINIMUM DEPTH OF 305mm $\pm$  (12") INTO SOLID ROCK. SEE SHEET 02C1103A028E10 FOR DETAILS

HUBBELL SQUARE SHAFT MULTI-HELIX SCREW ANCHOR GUY ADAPTER TWINEYE WITH PULLING EYE C102-0024 OR EQUIVALENT

HUBBELL SQUARE SHAFT MULTI-HELIX SCREW ANCHOR PLAIN EXTENSION 12655 OR EQUIVALENT

HUBBELL SQUARE SHAFT MULTI-HELIX SCREW ANCHOR LEAD SECTION 012642-AE OR EQUIVALENT



**NOTES:**

- 1) LEAD AND EXTENSION SECTION AND PILOT POINT LENGTHS ARE NOMINAL.
- 2) COUPLING BOLTS: 3/4"  $\phi$  X 3" LONG (19mm $\phi$  X 75mm LONG) HEX HEAD PER ASTM A325 TYPE 1.
- 3) NOMINAL SPACING BETWEEN HELICAL PLATES IS THREE TIMES THE DIAMETER OF THE LOWER HELIX.
- 4) MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
- 5) COUPLING SHALL BE FORMED AS AN INTEGRAL PART OF THE PLAIN EXTENSION MATERIAL. COUPLINGS SHALL BE HOT UPSET FORGED SOCKETS.
- 6) MINIMUM TORQUE FOR THE HUBBELL SQUARE SHAFT MULTI-HELIX SCREW ANCHOR IS 29,000 FT LBS.
- 7) INSTALL WITHIN 5° OF ALIGNMENT WITH GUY LOAD

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SIGNATURE  
Oct-31/16  
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PROJECT  
TWO H-FRAME STRUCTURES

TITLE  
DETAIL  
(MULTI-HELIX SCREW GUY WIRE ANCHORS)

|                 |              |             |               |
|-----------------|--------------|-------------|---------------|
| DESIGNED        | J.E.         | APPROVED    | J.W.          |
| DRAWN           | J.D.         | CHECKED     | J.W.          |
| SCALE           | AS SHOWN     | DATED       | 20/10/15      |
| DFO PROJECT NO. | F6879-167017 | DRAWING NO. | 02C1103A028E9 |

**DETAIL - ELEVATION VIEW - MULTI-HELIX SCREW GUY ANCHOR**

1:10

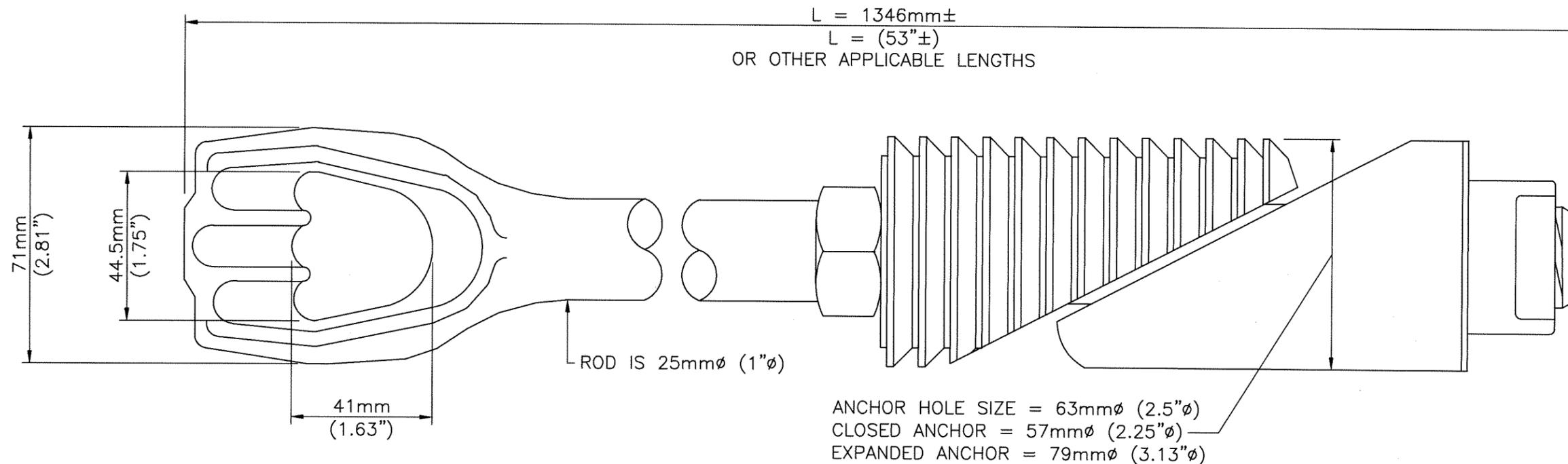
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| HUBBELL CATALOG NO. | " L "        |
|---------------------|--------------|
| R130L               | 762mm (30")  |
| R153L               | 1346mm (53") |
| R172L               | 1829mm (72") |
| R196L               | 2438mm (92") |

**NOTES:**

- 1) INSTALL WEDGE STYLE ANCHORS ACCORDING TO MANUFACTURER SPECIFICATIONS.
- 2) MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
- 3) RECOMMENDED MINIMUM INSTALLATION DEPTH IS 305mm (12") IN SOLID ROCK.
- 4) INSTALL WITHIN 5° OF ALIGNMENT WITH GUY LOAD.
- 5) 1" ROD MINIMUM ULTIMATE STRENGTH = 36,000 LBS.
- 6) ALL WEDGE STYLE ANCHORS TO BE GROUTED IN PLACE.



**DETAIL — TYPICAL WEDGE STYLE GUY ANCHOR**

N.T.S.

1  
E10

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PROJECT  
 TWO H-FRAME  
 STRUCTURES

TITLE  
 DETAIL  
 (WEDGE STYLE GUY  
 WIRE ANCHOR)

|                                 |                               |
|---------------------------------|-------------------------------|
| DESIGNED J.E.                   | APPROVED J.W.                 |
| DRAWN J.D.                      | CHECKED J.W.                  |
| SCALE AS SHOWN                  | DATED 14/10/16                |
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