

**THE CONNECTICUT LIGHT AND POWER COMPANY
doing business as
EVERSOURCE ENERGY**

**AMENDMENT TO PETITION NO. 1428
PROPOSED MODIFICATIONS TO A TELECOMMUNICATIONS FACILITY AT THE
BRANFORD SUBSTATION
Town of Branford**

On August 21, 2020, The Connecticut Light and Power Company doing business as Eversource Energy (“Eversource”) filed a petition with the Connecticut Siting Council (“Council”) requesting a declaratory ruling that a Certificate of Environmental Compatibility and Public Need was not needed for the proposed installation of an omni-directional antenna on an existing approximately 50-foot tall wood pole and associated radio communications equipment at the Eversource-owned Branford Substation in Branford, because the proposed activities would not result in substantial adverse environmental effects (Petition No. 1428, the “Petition”). On October 23, 2020, the Council issued its declaratory ruling and found that the proposed modifications to the telecommunications facility would not have a substantial adverse environmental effect.

In early February 2021, Eversource contractors were preparing to install the antenna and discovered that the existing wood pole had been damaged, likely due to winds or downed trees from Tropical Storm Isaias and the tornado that struck Branford, and was no longer structurally sufficient to support the installation of the new equipment. Eversource now proposes to replace the wood pole with a steel pole of approximately the same height in approximately the same location as the existing wood pole. The antenna mounting height will

be the same. Accordingly, the proposed modification will not have a substantial adverse environmental effect.

The following attachments are included:

Attachment A – Construction Drawings (revised), dated March 30, 2021;

Attachment B - Structural Analysis (revised), dated March 26, 2021;

Attachment C- Mounting Analysis, dated March 29, 2021; and

Attachment D – Photographic Documentation and Simulations.

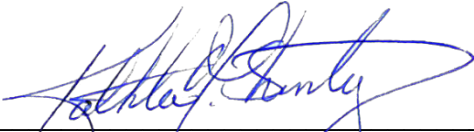
According to the current schedule, construction of modifications described in this amendment is scheduled to commence in April 2021. Project completion, including restoration, is expected by May 2021.

Prior to submitting this Amendment, Eversource representatives briefed the Town of Branford officials concerning the proposed modification. In addition, Eversource provided abutters with written notice of the filing of the Amendment. As stated in in the original Petition, Eversource representatives will continue proactive outreach to impacted property owners throughout the siting, construction, and restoration phases of the Project.

Communications regarding this Petition Amendment should be directed to:

Kathleen M. Shanley
Manager – Transmission Siting
Eversource Energy
P.O. Box 270
Hartford, CT 06141-0270
Telephone: (860) 728-4527

By:



Kathleen M. Shanley
Manager- Transmission Siting

List of Attachments:

Attachment A – Construction Drawings

Attachment B – Structural Analysis

Attachment C – Mounting Analysis

Attachment D – Photographic Documentation and Simulations

Attachment A
Construction Drawings

EVERSOURCE ENERGY

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT SUMMARY

- THE GENERAL SCOPE OF WORK CONSISTS OF THE FOLLOWING:
1. INSTALL (1) NEW 50'-0"± AGL TELECOM STEEL POLE
 2. RELOCATE EXISTING ANTENNAS ON EXISTING 50'-0"± AGL TELECOM WOOD POLE TO PROPOSED MOUNTING SYSTEM AT SAME ELEVATION ON NEW STEEL POLE
 3. REMOVE EXISTING 50'-0"± AGL TELECOM WOOD POLE
 4. INSTALL (1) NEW RACK WITH DMR EQUIPMENT IN EXISTING RADIO SHELTER
 5. INSTALL NEW ICE BRIDGE AT ELEVATION 0'-0"± AGL
 6. INSTALL NEW GENERATOR AT ELEVATION 0'-0"± AGL
 7. INSTALL NEW PROPANE TANK AT ELEVATION 0'-0"± AGL
 8. INSTALL NEW COMPOUND FENCING AT ELEVATION 0'-0"± AGL
 9. INSTALL NEW SILT FENCING AT ELEVATION 0'-0"± AGL
 10. INSTALL (1) NEW OMNI/WHIP ANTENNA AT ELEVATION 72'-0"± AGL

BRANFORD 11J 272 EAST MAIN ST BRANFORD, CT 06405

GOVERNING CODES

2018 CONNECTICUT STATE BUILDING CODE (2015 IBC BASIS)
2017 NATIONAL ELECTRIC CODE
TIA-222-H

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

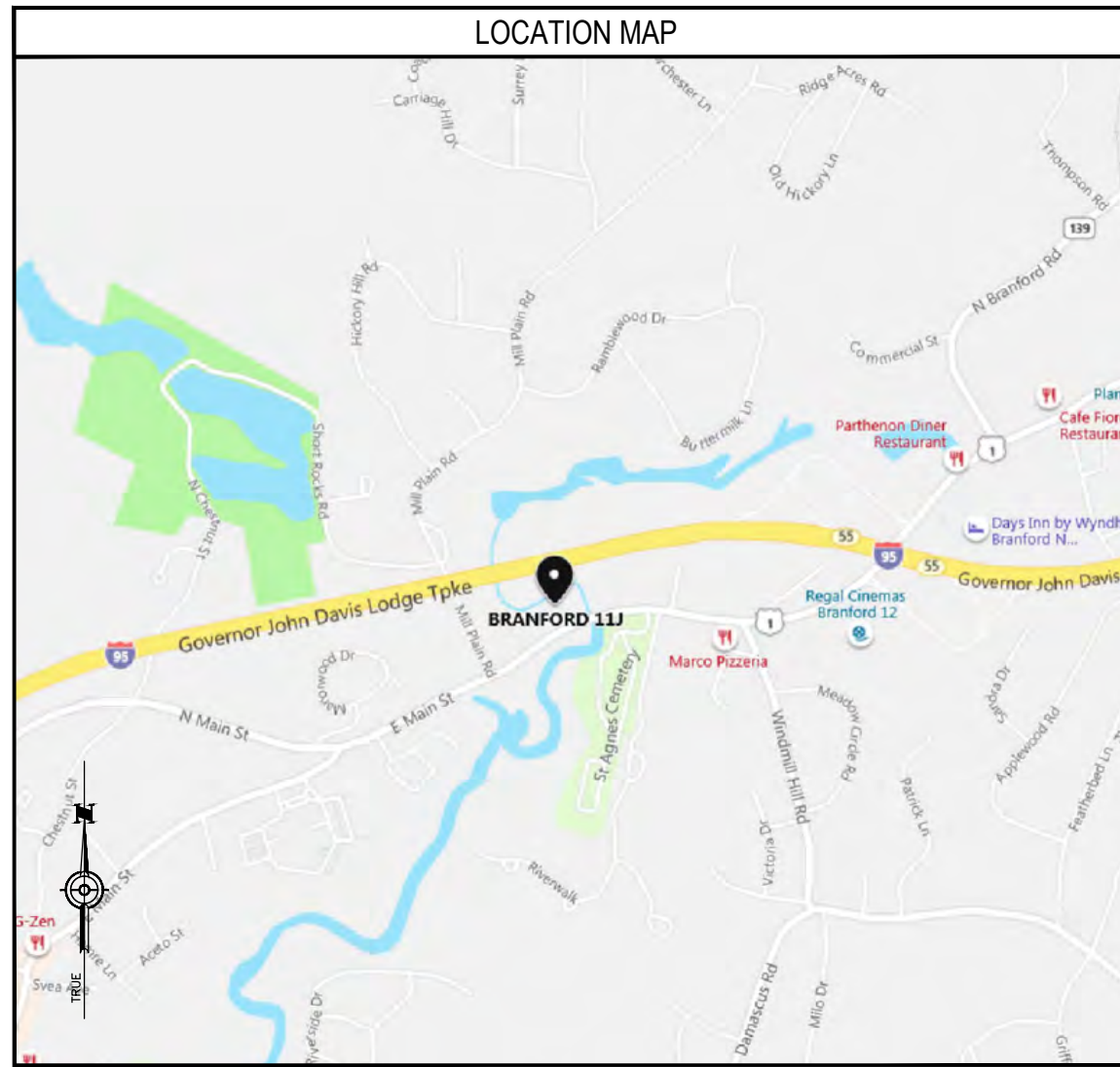
SITE INFORMATION

SITE NAME: BRANFORD 11J
SITE ID NUMBER: #5343
SITE ADDRESS: 272 EAST MAIN ST
BRANFORD, CT 06405
MAP: 5
BLOCK: 4
LOT: 4
ZONE: BL
LATITUDE: 41° 17' 33.11" N
LONGITUDE: 72° 47' 40.68" W
ELEVATION: 8'± AMSL
FEMA/FIRM DESIGNATION: AE
ACREAGE: 3.5± AC (BOOK: 0691, PAGE: 0043)

CONTACT INFORMATION

APPLICANTS:
EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
POWER PROVIDER:
EVERSOURCE ENERGY
(800) 286-2000
PROPERTY OWNER:
EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
TELCO PROVIDER:
FRONTIER
(800) 921-8102
EVERSOURCE ENERGY
PROJECT MANAGER:
NIKOLL PRECI
(860) 655-3079
CALL BEFORE YOU DIG:
(800) 922-4455

LOCATION MAP



NO SCALE

DESIGN TYPE

SITE UPGRADE
NEW STEEL POLE

DRAWING INDEX

SHEET NO:	SHEET TITLE
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C-6	CHAINLINK FENCE DETAILS
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S-1	GENERATOR & PROPANE TANK CONCRETE PAD DETAILS
M-1	GENERATOR & PROPANE TANK EQUIPMENT DETAILS
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E-1	UTILITY PLAN & DETAILS
G-1	GROUNDING PLAN
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N-1	NOTES & SPECIFICATIONS
N-2	NOTES & SPECIFICATIONS
N-3	NOTES & SPECIFICATIONS

DO NOT SCALE DRAWINGS

SUBCONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

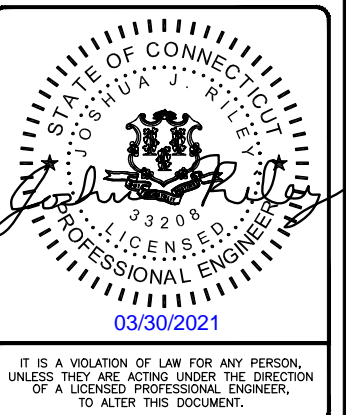


UNDERGROUND SERVICE ALERT
UTILITIES PROTECTION CENTER, INC.
811

48 HOURS BEFORE YOU DIG

PROJECT NO: 403093
DRAWN BY: TYW
CHECKED BY: CAG

REV	DATE	DESCRIPTION
2	03/30/21	ISSUED FOR FILING
1	10/06/20	ISSUED FOR FILING
0	05/21/20	ISSUED FOR FILING



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BRANFORD 11J
272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

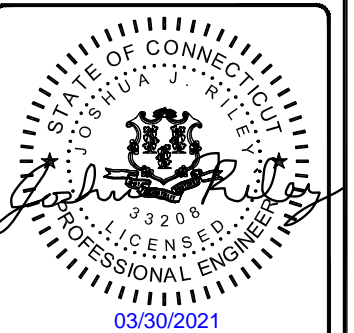


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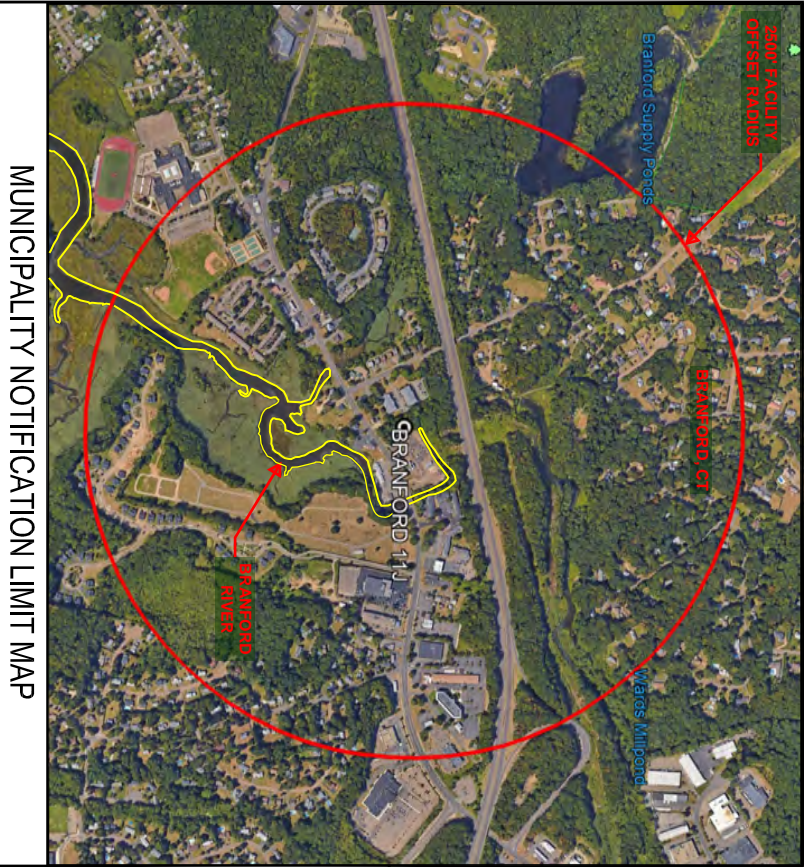
SHEET TITLE
ABUTTERS MAP

SHEET NUMBER
C-1

Town of Branford, Connecticut - Assessment Parcel Map

Parcel: F05-000-004-00004

Address: 272-276 EAST MAIN ST

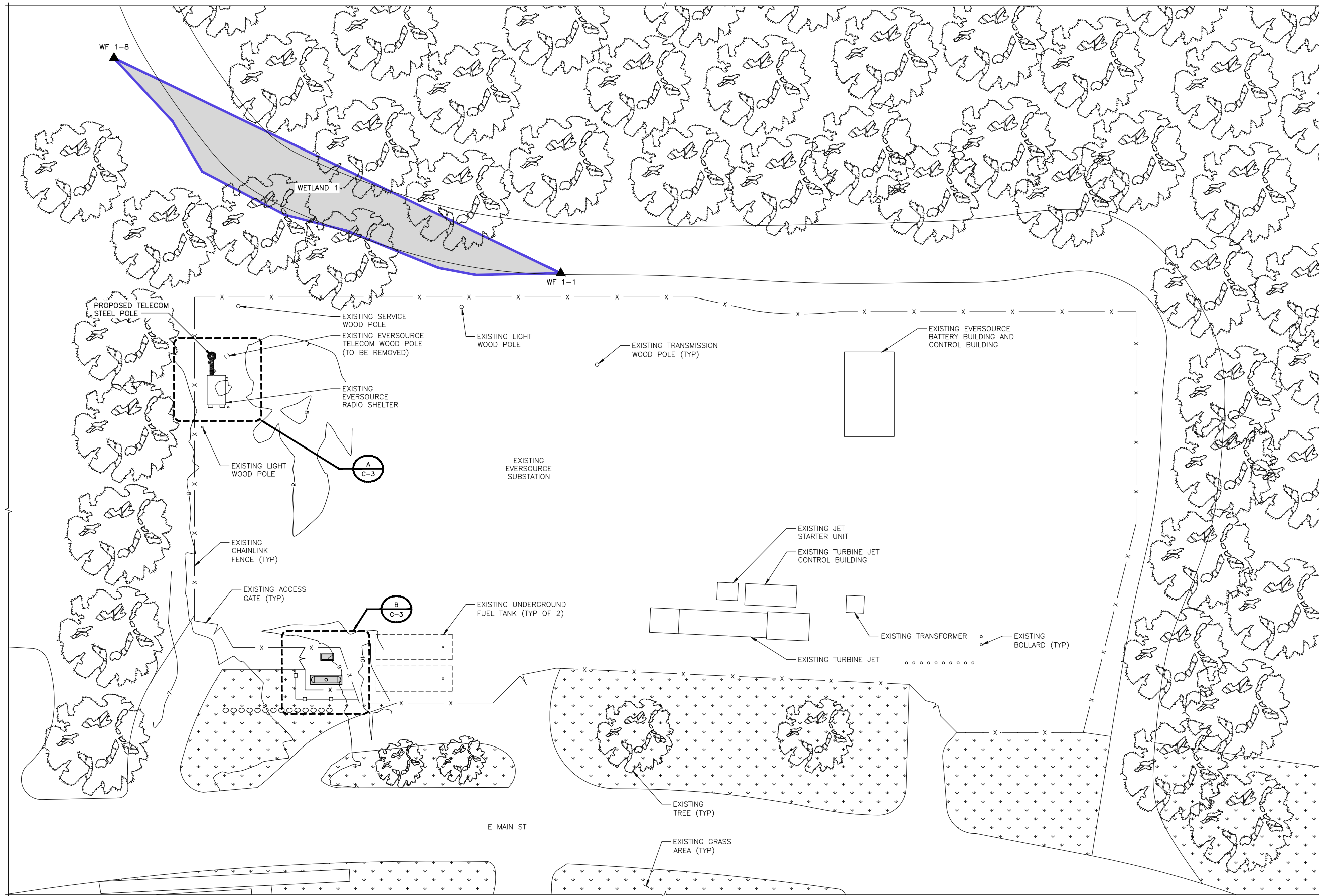


MUNICIPALITY NOTIFICATION LIMIT MAP

Approximate Scale: 1 inch : 100 feet
Grand List Date October 2018



Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user. The Town of Branford and its mapping contractors assume no legal responsibility for the information contained herein.



PARTIAL SITE PLAN
NO SCALE

NOTE
CONTOUR LINES WERE DETERMINED BY
EVERSOURCE ENERGY. BLACK & VEATCH DOES NOT
ASSUME ANY RESPONSIBILITY FOR ITS ACCURACY.

EVERSOURCE
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SHEET TITLE
PARTIAL SITE PLAN

SHEET NUMBER
C-2

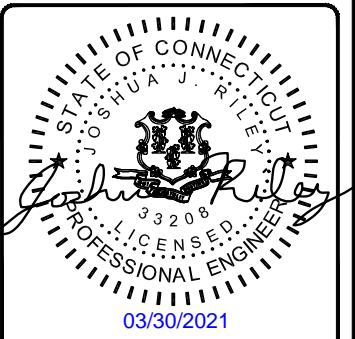


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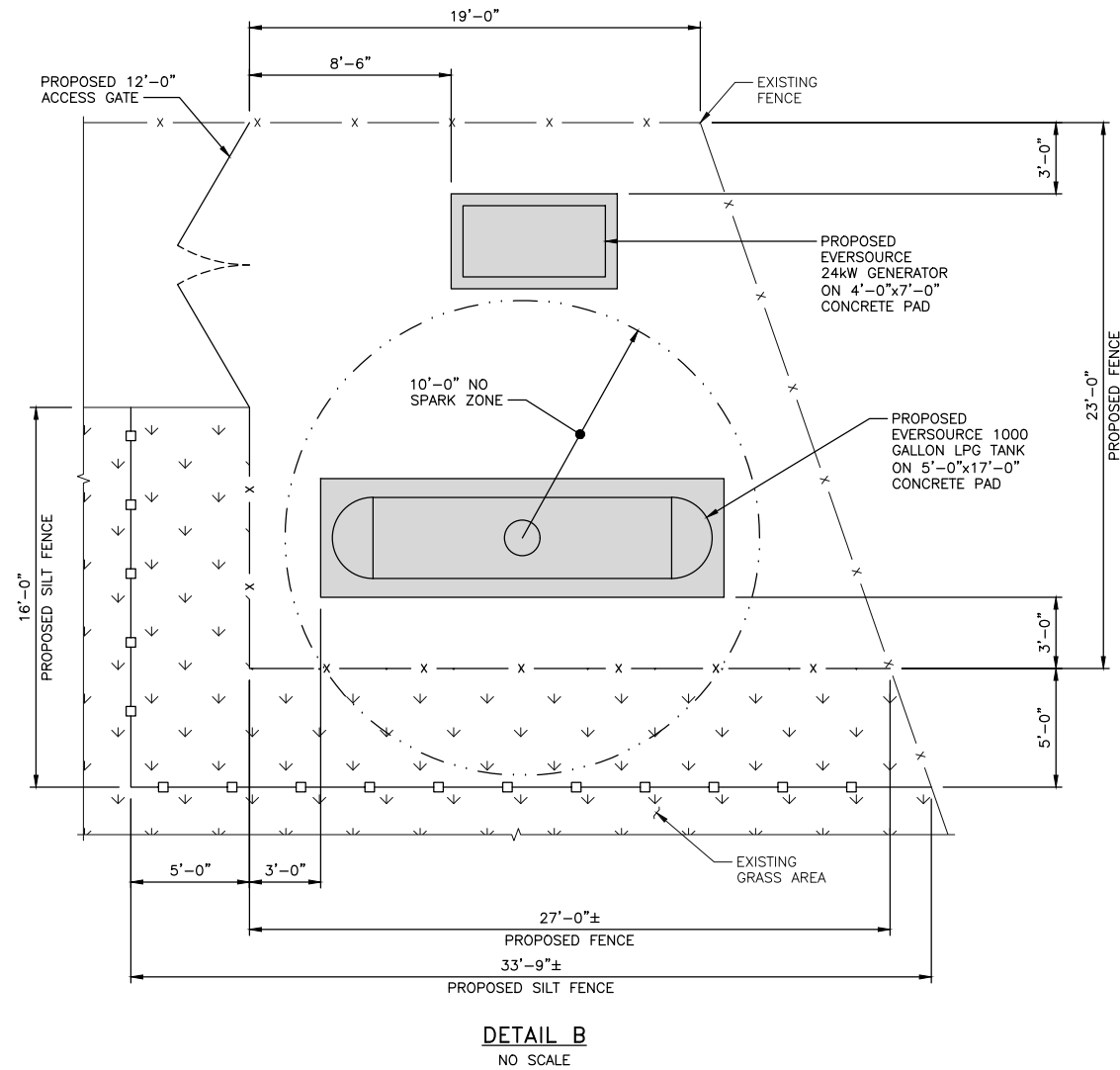
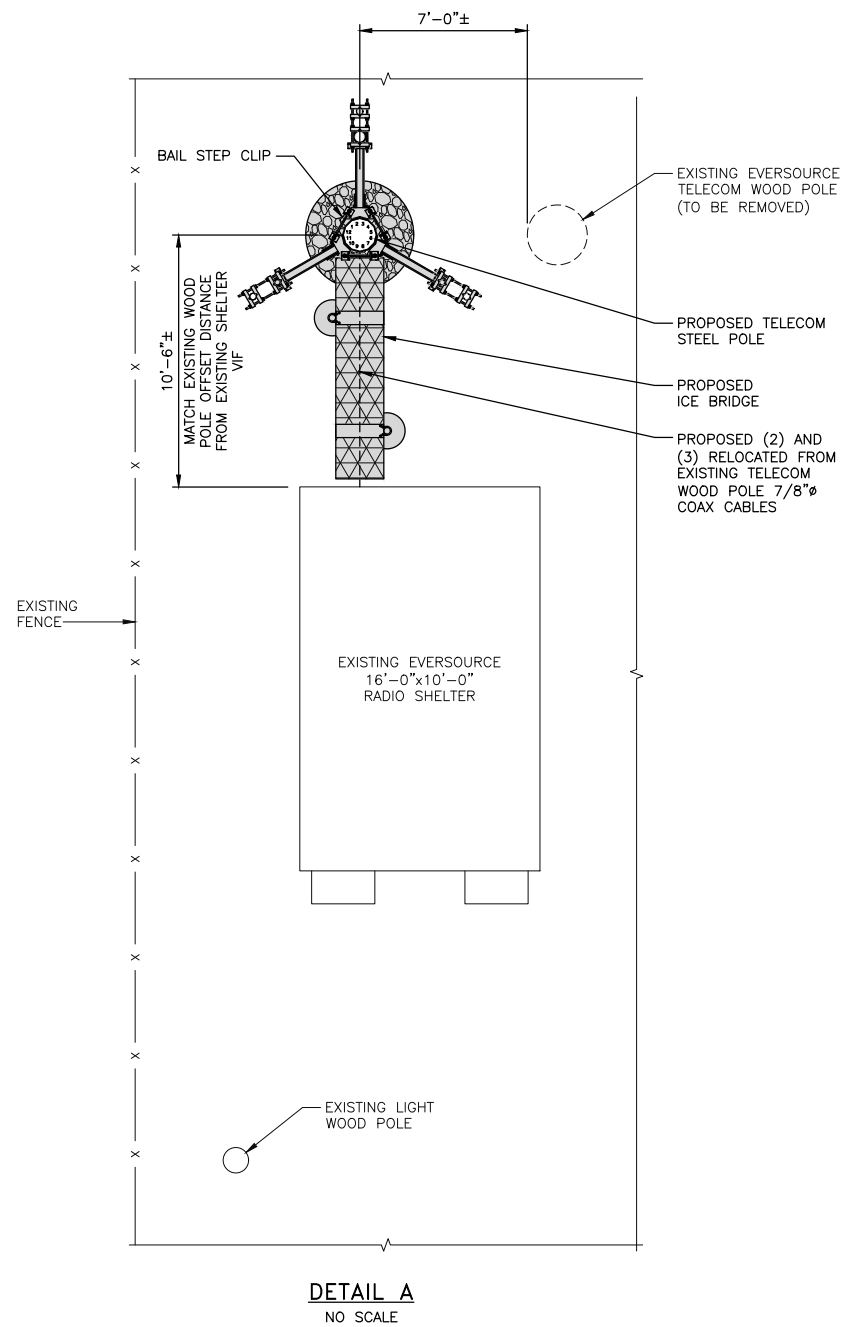


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272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
SITE PLAN

SHEET NUMBER
C-3



SITE PLAN
NO SCALE



TOP OF PROPOSED EVERSOURCE OMNI/WHIP ANTENNA
 ELEVATION 72'-0"± AGL
 RX RAD CL ELEVATION 65'-2 3/4"± AGL
 TX RAD CL ELEVATION 53'-0 15/16"± AGL
 (ANTENNA MECHANICAL LENGTH 24'-3 1/2")

TOP OF EXISTING EVERSOURCE
 RELOCATED OMNI/WHIP ANTENNA
 ELEVATION 61'-0"± AGL

TOP OF EXISTING EVERSOURCE
 RELOCATED OMNI/WHIP ANTENNA
 ELEVATION 57'-0"± AGL

PROVIDE WELDED 1/4"
 THICK CAP AT TOP OF
 PROPOSED TELECOM
 STEEL POLE

EXISTING EVERSOURCE
 RELOCATED OMNI/WHIP ANTENNA
 RAD CL ELEVATION 41'-0"± AGL

TOP OF PROPOSED POLE
 ELEVATION 50'-0"± AGL

63'-0"±
 (SEE NOTES 9 & 10)
 50'-0" AGL

POLE EMBEDMENT DEPTH
 13'-0"± BGL

FINISHED GRADE
 ELEVATION 8'-0"± AMSL

FINISH GRADING
 (SEE NOTE 11)

FINISHED GRADE

DIRECT EMBED CASING
 FOUNDATION (SEE NOTE
 8, 11 AND 12)

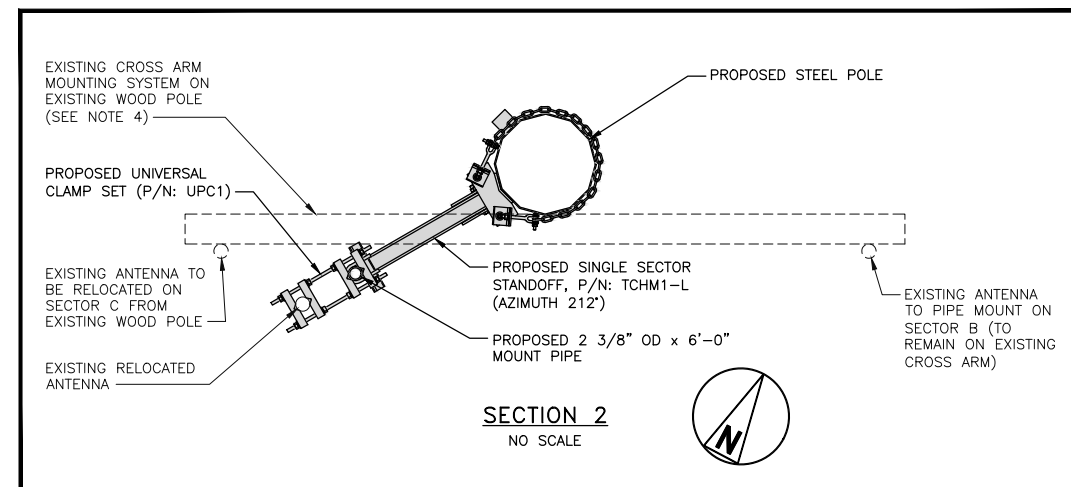
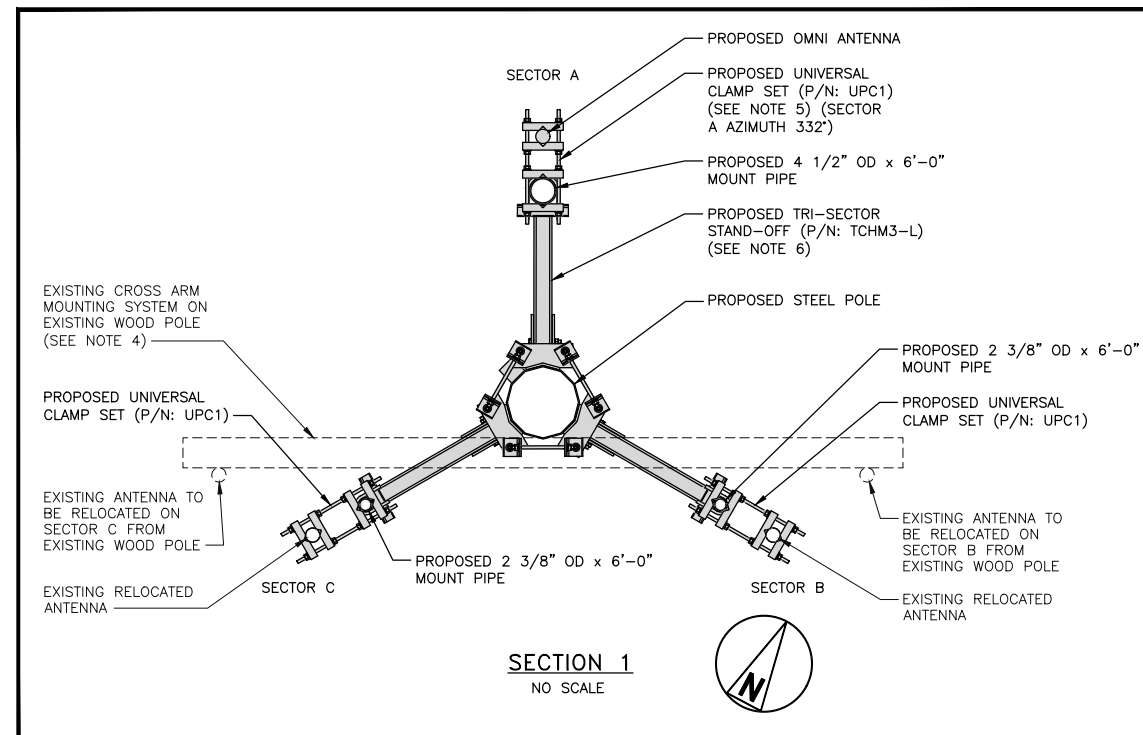
4'-0"±
 STEEL CASING

TOWER ELEVATION
 NO SCALE

72'-0"± AGL
 TOTAL HEIGHT WITH APPURTENANCES

NOTES

- ALL COAXIAL CABLE TO BE SECURED TO THE SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" OC.
- CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING THE INSTALLATION OF COAXIAL CABLES, CONNECTORS AND ANTENNAS.
- DESIGN OF THE FOUNDATION WAS BASED ON SUB012 EVERSOURCE SUBSTATION STANDARDS, SECTION 6.D., FOUNDATION STABILITY AND SOIL BEARING CAPACITY.
- EXISTING ANTENNAS TO BE RELOCATED TO THEIR ORIGINAL CENTER LINE ELEVATION ON THE PROPOSED MOUNTING SYSTEM.
- INSTALL POLE PER MANUFACTURER'S RECOMMENDATIONS. REFER TO SABRE-FWT ERECTION DRAWINGS - 70' H9-LD9 WPE'S.
- BOTH PROPOSED STAND-OFF MOUNTS (P/N: TCHM3-L AND TCHM1-L) SHALL BE INSTALLED WITH A 3'-0" MINIMUM VERTICAL SEPARATION BETWEEN TOP AND BOTTOM POLE CONNECTIONS.
- PROPOSED COAX CABLES TO BE STACKED IN ONE ROW.
- THE GEOTECHNICAL REPORT INDICATED A GROUND WATER TABLE AT 5'.
- THE PROPOSED STEEL POLE COMES 70'-0" LONG. THE TOP 7'-0" OF THE POLE SHALL BE REMOVED MAKING THE NEW POLE LENGTH 63'-0". ALL EXPOSED STRUCTURAL STEEL, INCLUDING FIELD DRILLED HOLES, SHALL BE CLEANED AND TWO (2) COATS ZRC COLD GALVANIZING COMPOUND (OR ENGINEER APPROVED EQUAL) SHALL BE APPLIED BY BRUSH. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION, APPLICATION, DRYING AND CURING TIMES.
- THE FALL PROTECTION VANG WILL BE REMOVED WITH REMOVAL OF THE TOP 7'-0" OF THE POLE. EVERSOURCE SHALL REPLACE THE FALL PROTECTION VANG BY INSTALLING AN EVERSOURCE APPROVED RETROFIT KIT.
- THE DIRECT EMBED CASING FOUNDATION, INCLUDING FINISH GRADING, SHALL BE INSTALLED PER EVERSOURCE DRAWING #09000-60015P001 REV. 4, DATED 02/10/2021 (LOCATED IN THE REFERENCE CUTSHEETS SECTION OF THIS DRAWING PACKAGE), WITH THE EXCEPTION OF THE POLE EMBEDMENT DEPTH AND STEEL CASING DIAMETER, WHICH SHOULD BE INSTALLED PER SHEET C-4.
- NOT ALL EMBED CASING FOUNDATION DETAILS ARE SHOWN, SUCH AS BORE HOLE DIAMETER AND BACKFILL REQUIREMENTS OUTSIDE THE STEEL CASING. THE PURPOSE OF THIS FOUNDATION DETAIL IS TO ONLY CONVEY THE POLE EMBEDMENT DEPTH AND STEEL CASING DIAMETER, REMAINING REQUIRED DETAILS ARE SHOWN IN THE DRAWING REFERENCED IN NOTE 11.



EVSOURCE
 ENERGY

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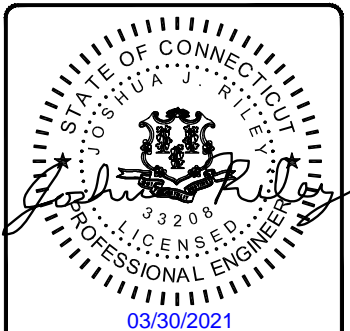


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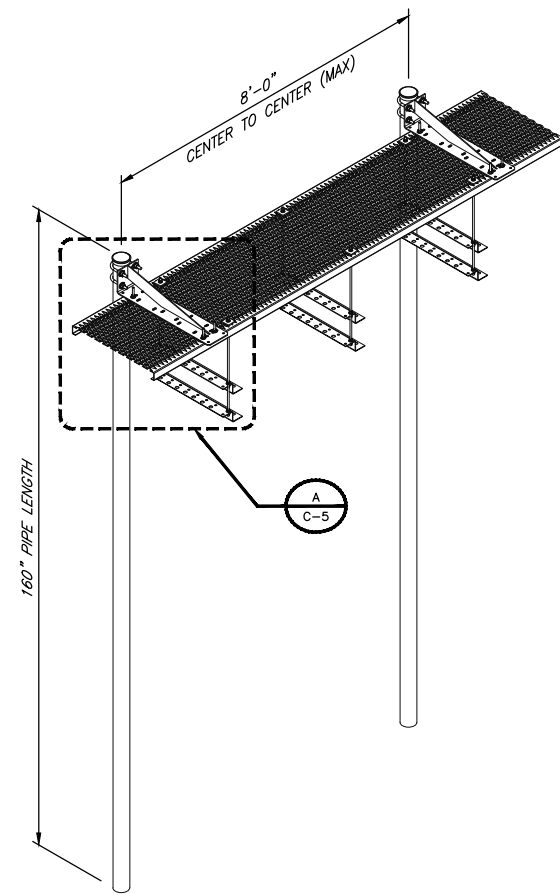


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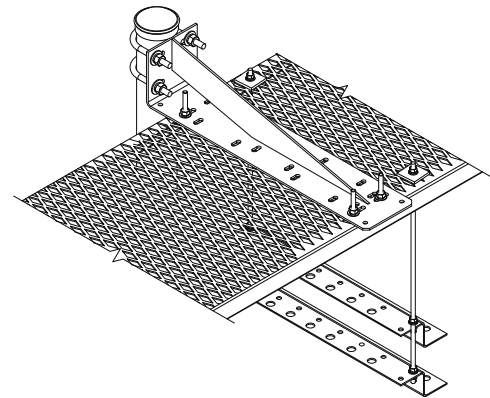
BRANFORD 11J
 272 EAST MAIN ST
 BRANFORD, CT 06405

SHEET TITLE
 TOWER ELEVATION &
 ANTENNA EQUIPMENT

SHEET NUMBER
C-4



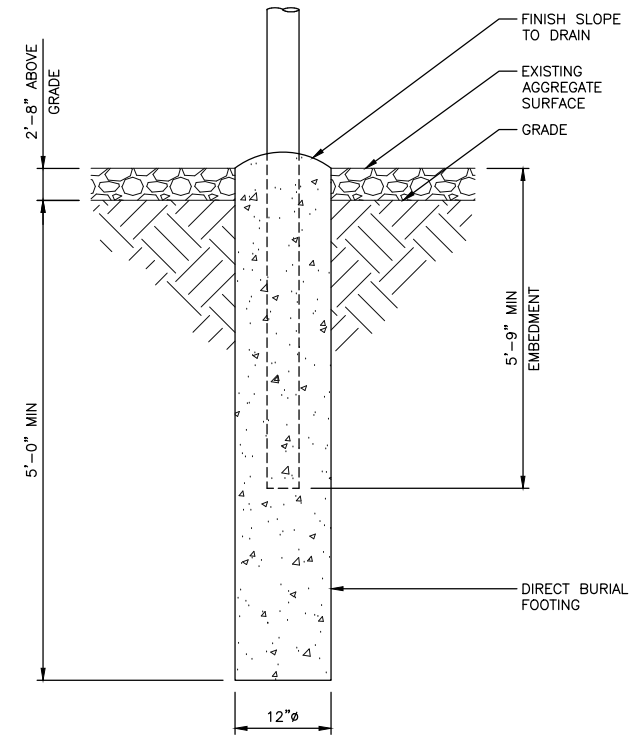
ICE BRIDGE DETAIL
 SITE PRO 1 P/N IB24D-V
 NO SCALE



DETAIL A
 NO SCALE

NOTES

1. THE CLEARANCE BETWEEN THE BOTTOM OF THE FOUNDATION TO THE BOTTOM OF EMBEDDED PIPE SHALL BE A MINIMUM OF 4".



ICE BRIDGE
 FOUNDATION DETAIL
 NO SCALE

EVERSOURCE
 ENERGY

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 BERLIN, CT 06037
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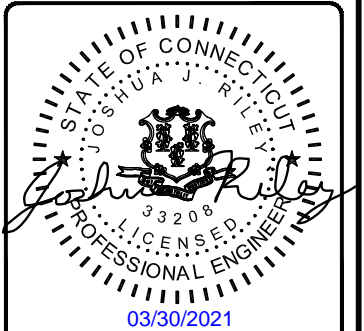


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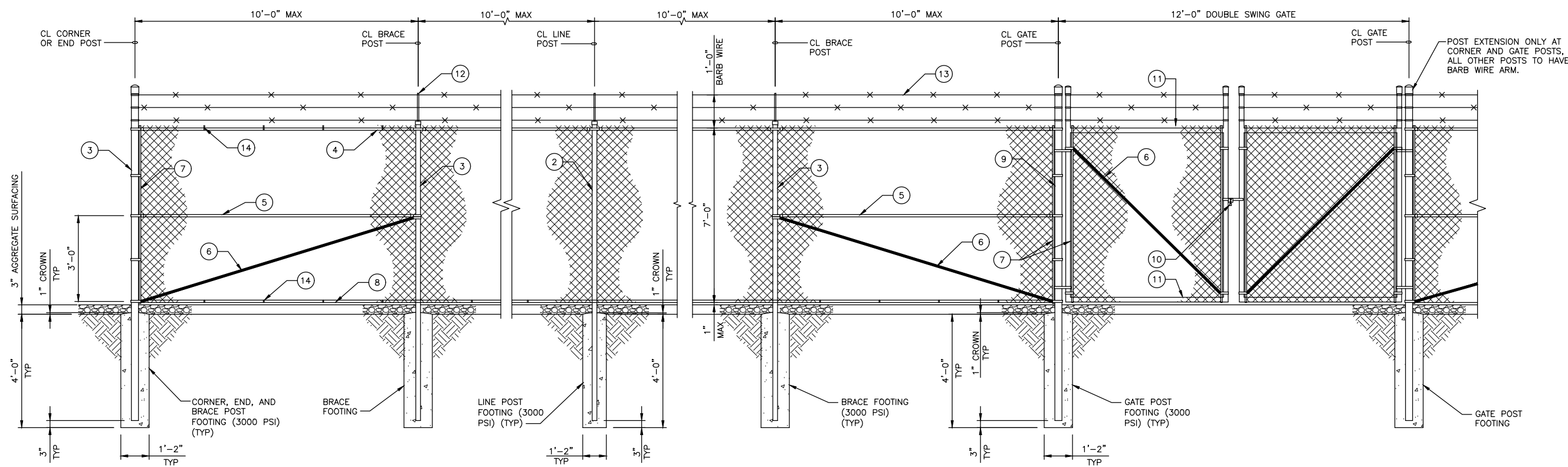


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 272 EAST MAIN ST
 BRANFORD, CT 06405

SHEET TITLE
 ICE BRIDGE
 DETAILS

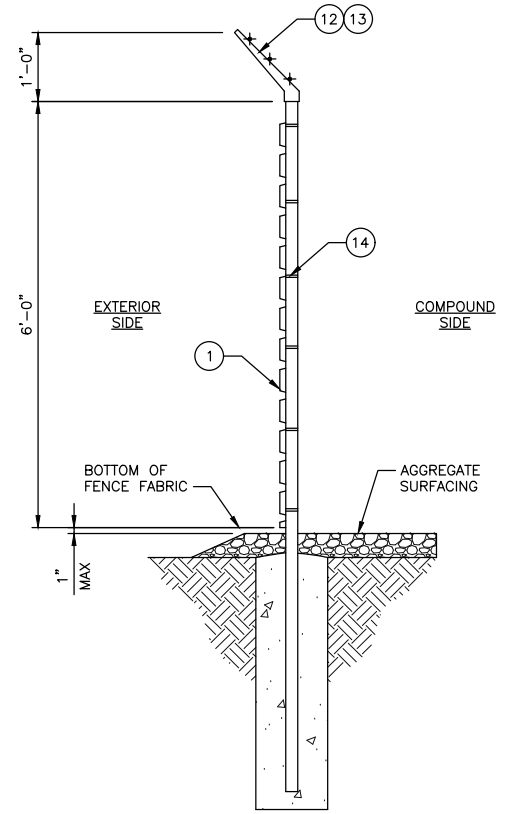
SHEET NUMBER
C-5



TYPICAL FENCE ELEVATION
NO SCALE

MATERIAL DESCRIPTION

- 1 CHAIN LINK FABRIC: 9 AWG, 1 1/4" MESH; ALUMINIZED STEEL, TWISTED SELVAGE ON TOP, KNUCKLED ON BOTTOM PER ASTM-A491.
- 2 LINE POSTS: 2 3/8" OD PIPE, 16 GAUGE (GALVANIZED) PER ASTM-F1083.
- 3 CORNER, END AND BRACE POSTS: 2 7/8" OD PIPE, SCHEDULE 40 (GALVANIZED).
- 4 TOP RAIL: 1.66" OD SCHEDULE 40 (GALVANIZED) PER ASTM-F1083.
- 5 BRACE RAIL: 1 5/8" OD 17 GAUGE PIPE (GALVANIZED).
- 6 DIAGONAL TRUSS ROD: 3/8" GALVANIZED ROD WITH TURNBUCKLE.
- 7 TENSION BAR: 3/16"x3/4" GALVANIZED FLAT BAR.
- 8 BOTTOM TENSION WIRE: GALVANIZED OR ALUMINUM COATED COIL SPRING WIRE, 7 GAUGE.
- 9 GATE POSTS: 4" OD SCHEDULE 40 PIPE (GALVANIZED).
- 10 COMBINATION PADLOCK ACCORDING TO EVERSORUCE REQUIREMENTS.
- 11 GATE FRAMES: 1 7/8" OD SCHEDULE 40 PIPE (GALVANIZED).
- 12 BARBED WIRE SUPPORT ARM: SINGLE ARM TYPE (GALVANIZED). ARM SHALL BE INCLINED OUTWARD AT AN ANGLE OF 45 DEGREES BARBED WIRE SHALL BE SPACED 6"± APART.
- 13 BARBED WIRE: GALVANIZED, ASTM A121 CLASS 3; THREE 14 GAUGE MINIMUM STEEL WIRES WITH 4 POINT ROUND 14 GAUGE BARBS SPACED 4" APART. BARBED WIRE MUST HAVE ENOUGH STRENGTH TO WITHSTAND A WEIGHT OF 250 POUNDS APPLIED AT THE OUTER STRAND OF BARBED WIRE, WITH A DEFLECTION OF LESS THAT 1/4".
- 14 FABRIC TIES: ALUMINUM BANDS OR WIRES. FABRIC SHALL BE ATTACHED TO THE TOP RAIL AND BOTTOM TENSION WIRE AT 24" CENTERS AND TO THE POSTS AT 15" CENTERS, ALL ON THE COMPOUND SIDE OF THE FENCE.
- 15 MISCELLANEOUS:
 - A. RAIL COUPLINGS: SLEEVE TYPE, 6" LONG EXPANSION SPRING EVERY FIFTH COUPLING.
 - B. POST TOPS: PRESSED STEEL, MALLEABLE IRON WITH PRESSED STEEL EXTENSION ARM, OR ONE-PIECE ALUMINUM CASTING; WITH HOLE FOR TOP, ALL DESIGNED TO FIT OVER THE OUTSIDE OF THE POSTS AND TO PREVENT ENTRY OF MOISTURE INTO TUBULAR POSTS.
 - C. LATCHES SHALL BE FORKED TYPE AND SHALL BE ARRANGED FOR PADLOCKING WITH THE PADLOCK ACCESSIBLE FROM BOTH SIDES OF THE GATE.
 - D. KEEPERS SHALL CONSIST OF MECHANICAL DEVICES FOR SECURING AND SUPPORTING THE FREE END OF THE GATES WHEN IN THE FULL OPEN POSITION. KEEPERS SHALL BE MOUNTED ON 2 7/8" O.D. PIPE POSTS FILLED WITH CONCRETE AND SET IN CONCRETE FOUNDATIONS.
 - E. INSTALL FENCING PER ASTM-F567.
 - F. INSTALL SWING GATES PER ASTM-F900.
 - G. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLETED IF REQUIRED.
 - H. USE GALVANIZED HIG-RING WIRE TO MOUNT ALL SIGNS.
 - I. ALL SIGNS MUST BE MOUNTED ON INSIDE OF FENCE.
 - J. ALL POSTS SHALL HAVE "MUSHROOM" SLEEVE EMBEDDED IN CONCRETE.
 - K. BOTTOM TENSION WIRE SHALL BE WEAVED THROUGH THE FENCE FABRIC AND THEN SECURED.
 - L. BOTTOM TENSION WIRE AND THE PIPE RAIL ELEVATION ABOVE THE GRADE LINE SHALL CORRESPOND WITH THE MIDDLE OF THE BOTTOM FABRIC DIAMOND.
 - M. ANY UNGALVANIZED AREAS REMAINING AFTER GATE FABRICATION SHALL BE REPAIRED PER ASTM-A780.



TYPICAL FENCE SECTION
NO SCALE



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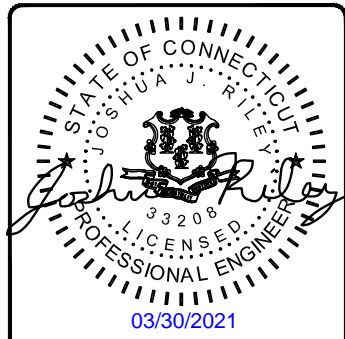


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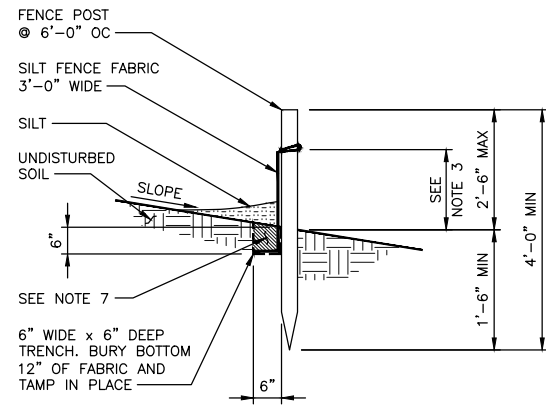


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SHEET TITLE
CHAINLINK FENCE DETAILS

SHEET NUMBER
C-6



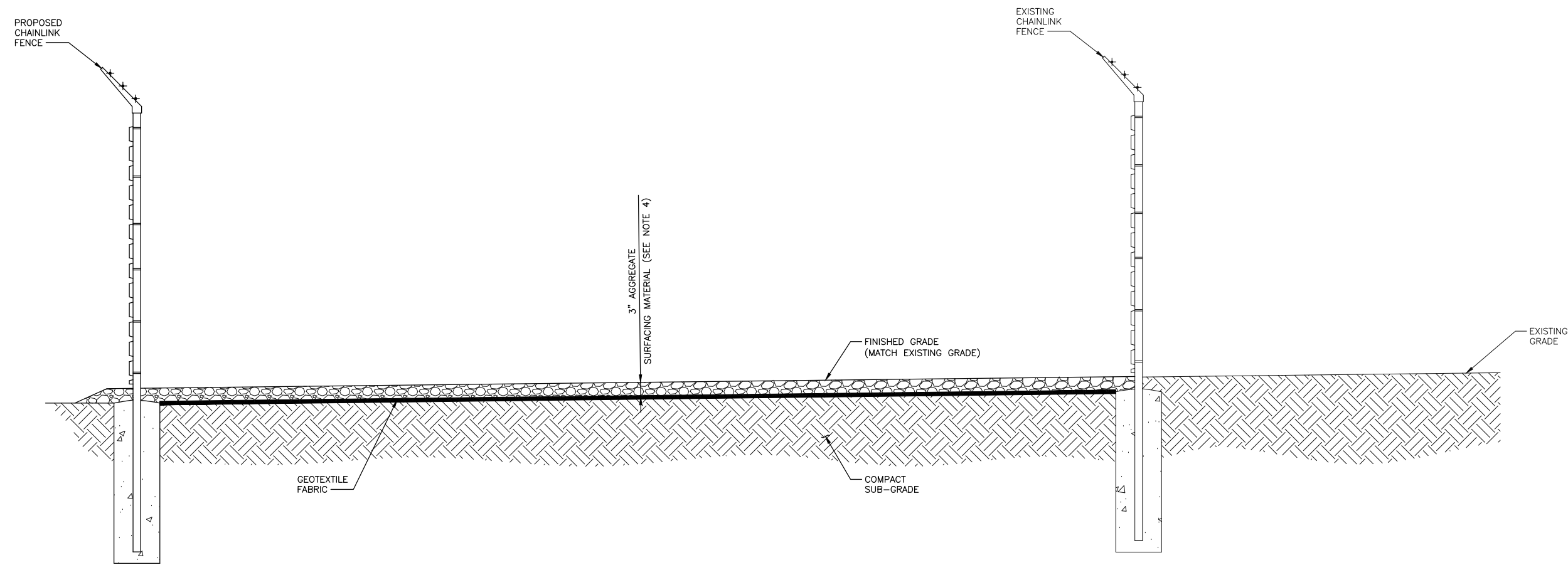
SILT FENCE DETAIL
NO SCALE

NOTES

1. EVERSOURCE TO SEED DISTURBED SOIL AROUND PROPOSED GRAVEL FINISH GRADE.
2. EVERSOURCE TO REPLACE TOP SOIL WITH COMPACTED SUBGRADE AND FINISH TO MATCH EXISTING GRADE.
3. EVERSOURCE TO SLOPE GRADE AWAY FROM SUBSTATION.
4. AGGREGATE SURFACING MATERIAL TO BE FOUR (4) LAYERS OF 3/4 INCH, ANGULAR BASALT TRAP ROCK.
5. AGGREGATE SURFACING MATERIAL SHALL EXTEND A MINIMUM OF THREE (3) FEET OUT FROM THE FENCE LINE WHERE POSSIBLE.

SILT FENCE NOTES

1. INSTALL SILT FENCE WHERE SHOWN PRIOR TO ANY ON SITE GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL.
2. CONSTRUCT THE SILT FENCE OF FABRIC WITH A MINIMUM TENSILE STRENGTH OF 50LB/LINEAR IN.
3. SILT FENCE HEIGHT SHALL BE A MINIMUM OF 15 INCHES ABOVE GROUND HEIGHT, BUT SHALL NOT EXCEED 18".
4. CONSTRUCT SILT FENCE OF A CONTINUOUS ROLL CUT THE LENGTH OF THE BARRIER TO AVOID JOINTS. FABRIC TO BE FASTENED SECURELY TO FENCE POSTS WITH 1 INCH STAPLES OR TIE WIRES.
5. SUPPORT FABRIC WITH WOVEN WIRE MESH 14.5 GAUGE, 6" MAX. MESH OPENING. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH 1 INCH STAPLES OR TIE WIRES.
6. POSTS FOR SILT FENCE SHALL BE 4 INCH DIAMETER PINE, 2 INCH DIAMETER OAK OR 1.33 LB/LINEAR FOOT STEEL.
7. BACKFILL THE TRENCH WITH COMPACTED SOIL OR GRAVEL PLACED OVER THE SILT FENCE FABRIC.
8. DO NOT ATTACH SILT FENCE FABRIC TO EXISTING FENCES, TREES, ETC.
9. IF THE SILT FENCE FABRIC SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED IMMEDIATELY.
10. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER SILT FENCE HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATION.
11. UPON ESTABLISHMENT OF VEGETATION OF ALL DISTURBED AREAS AND UPON COMPLETION OF CONSTRUCTION, SILT FENCE SHALL BE REMOVED FROM SITE.



TYPICAL COMPOUND GRADING
NO SCALE

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

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OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
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SHEET TITLE
EARTHWORK DETAILS

SHEET NUMBER
C-7

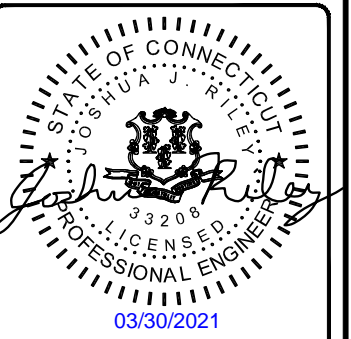


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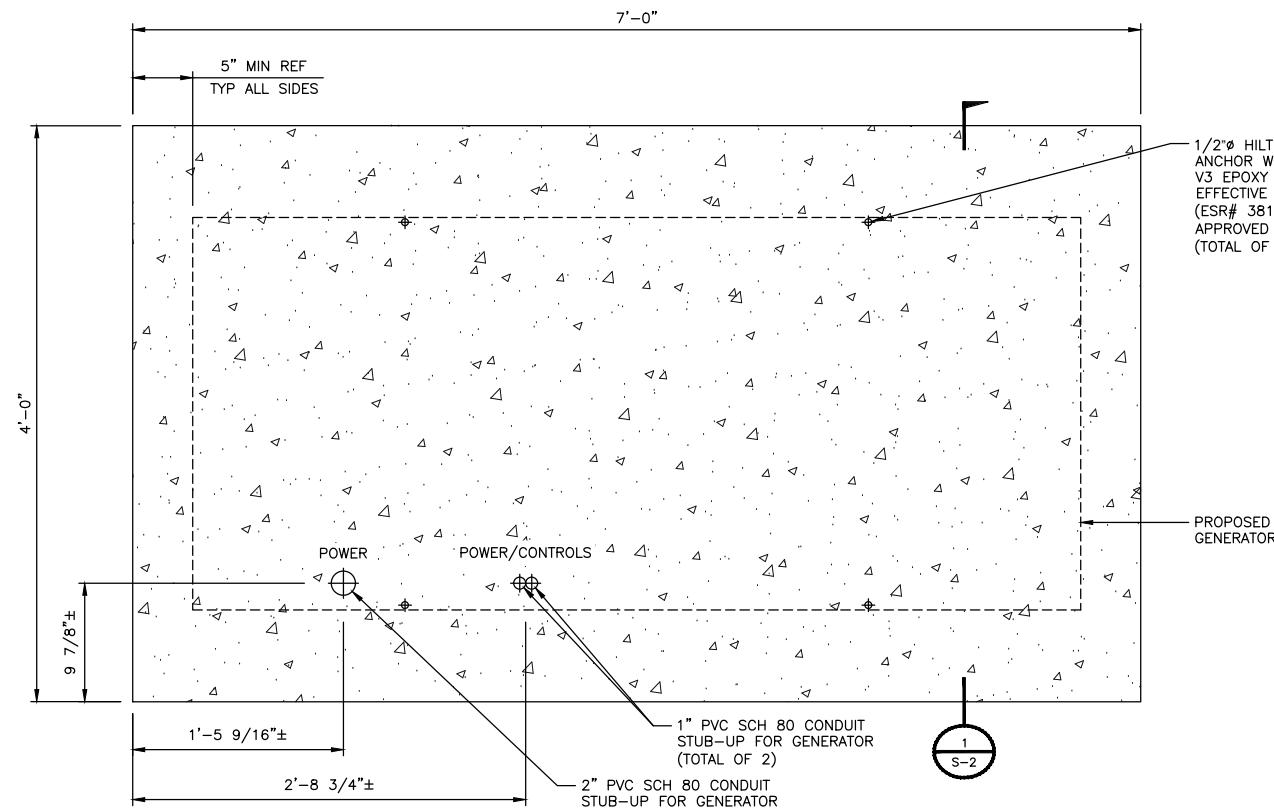
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272 EAST MAIN ST
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SHEET TITLE
GENERATOR & PROPANE TANK
CONCRETE PAD DETAILS

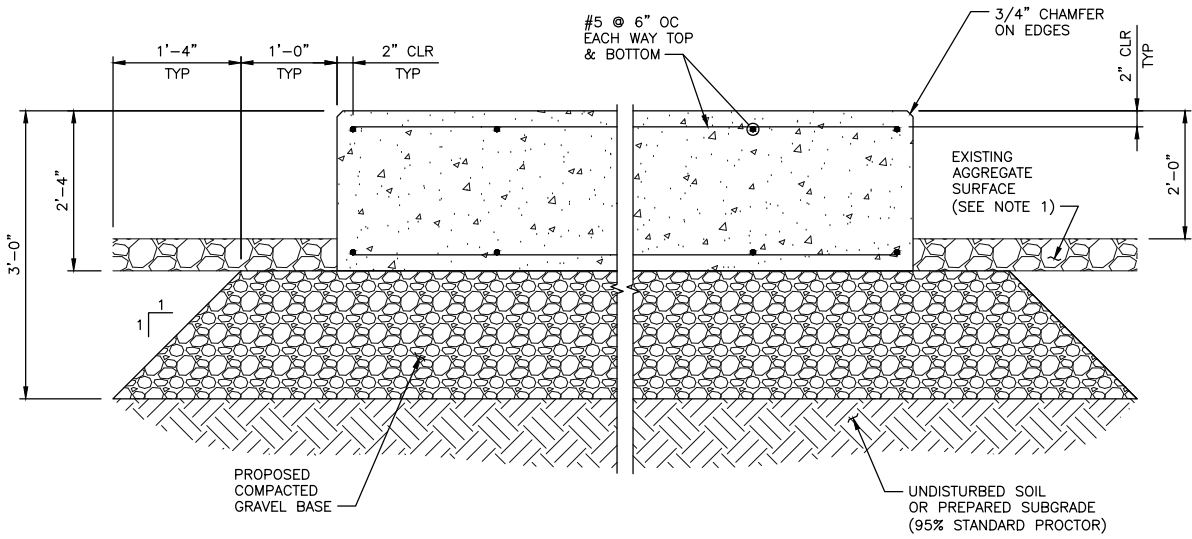
SHEET NUMBER
S-1

NOTES

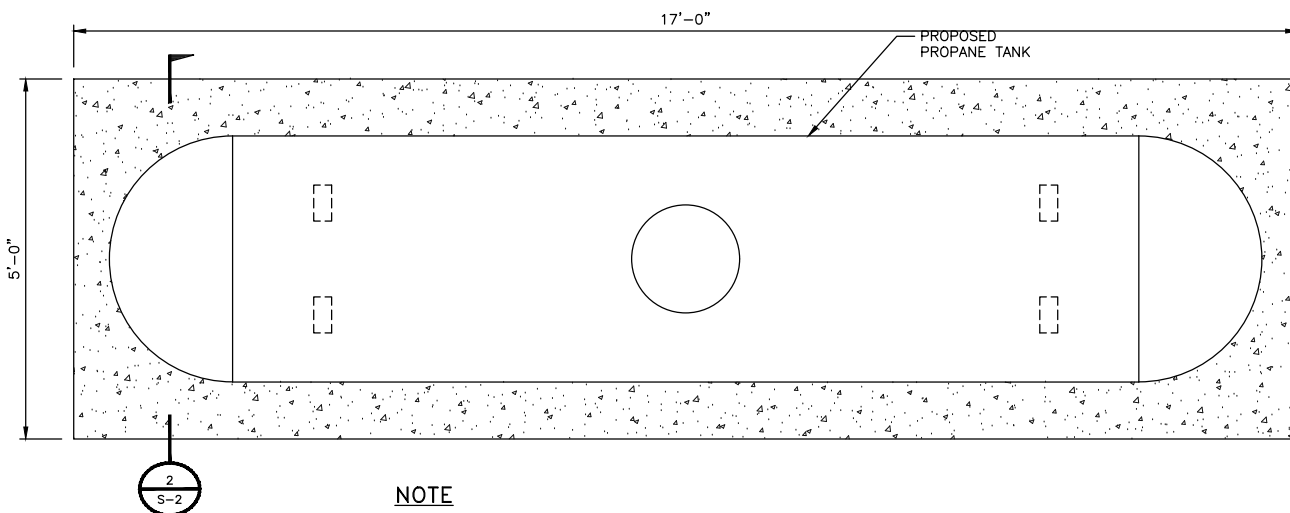
1. MATCH THICKNESS OF EXISTING AGGREGATE SURFACE WHEN CONSTRUCTION IS COMPLETE.
2. CONTRACTOR TO REPLACE TOP SOIL WITH COMPACTED SUBGRADE AND FINISH TO MATCH EXISTING GRADE.



GENERATOR FOUNDATION PLAN
NO SCALE



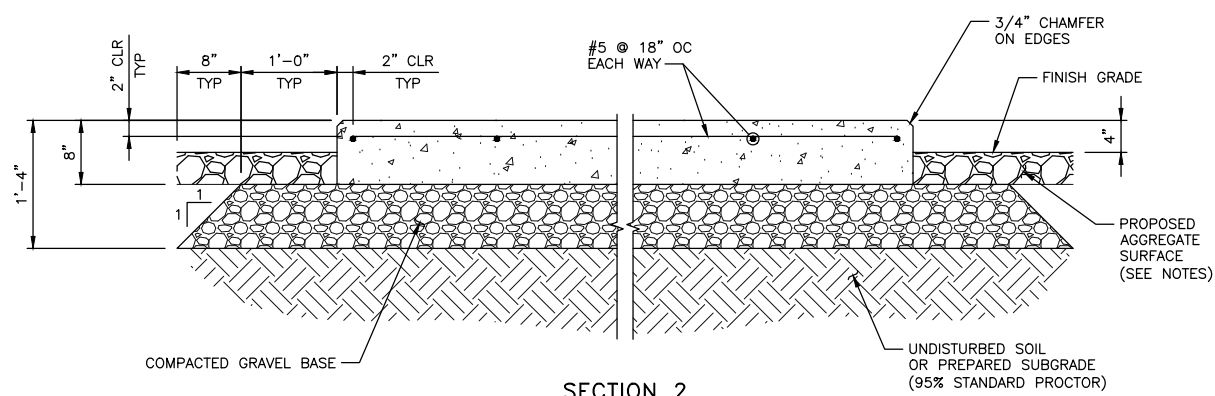
SECTION 1 FOUNDATION DETAIL
NO SCALE



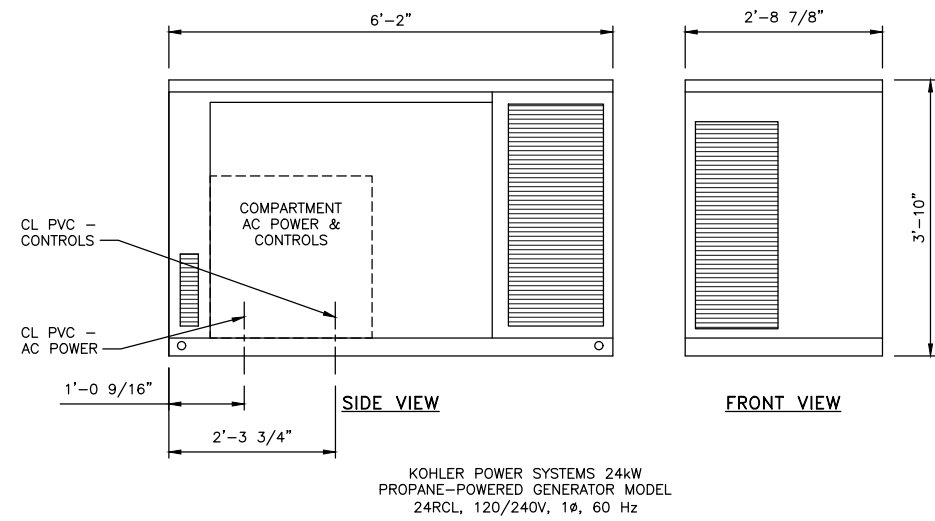
NOTE

1. ANCHORAGE TO BE (1) 5/8" HAS-R 316 SS ANCHOR PER LEG WITH HILTI-RE 500 V3 EPOXY & MINIMUM EFFECTIVE EMBEDMENT OF 5" (ESR# 3814) OR ENGINEER APPROVED EQUAL (TYP) (TOTAL OF 4).

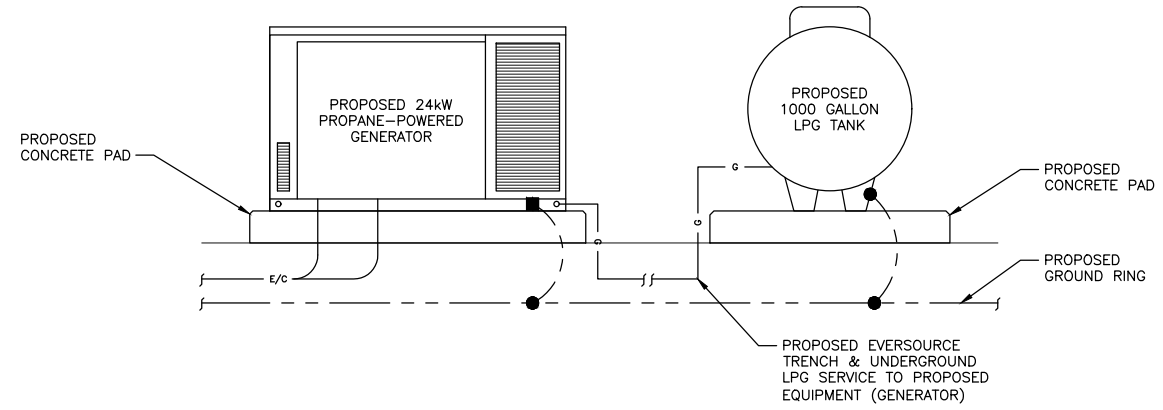
PROPANE TANK FOUNDATION PLAN
NO SCALE



SECTION 2 FOUNDATION DETAIL
NO SCALE



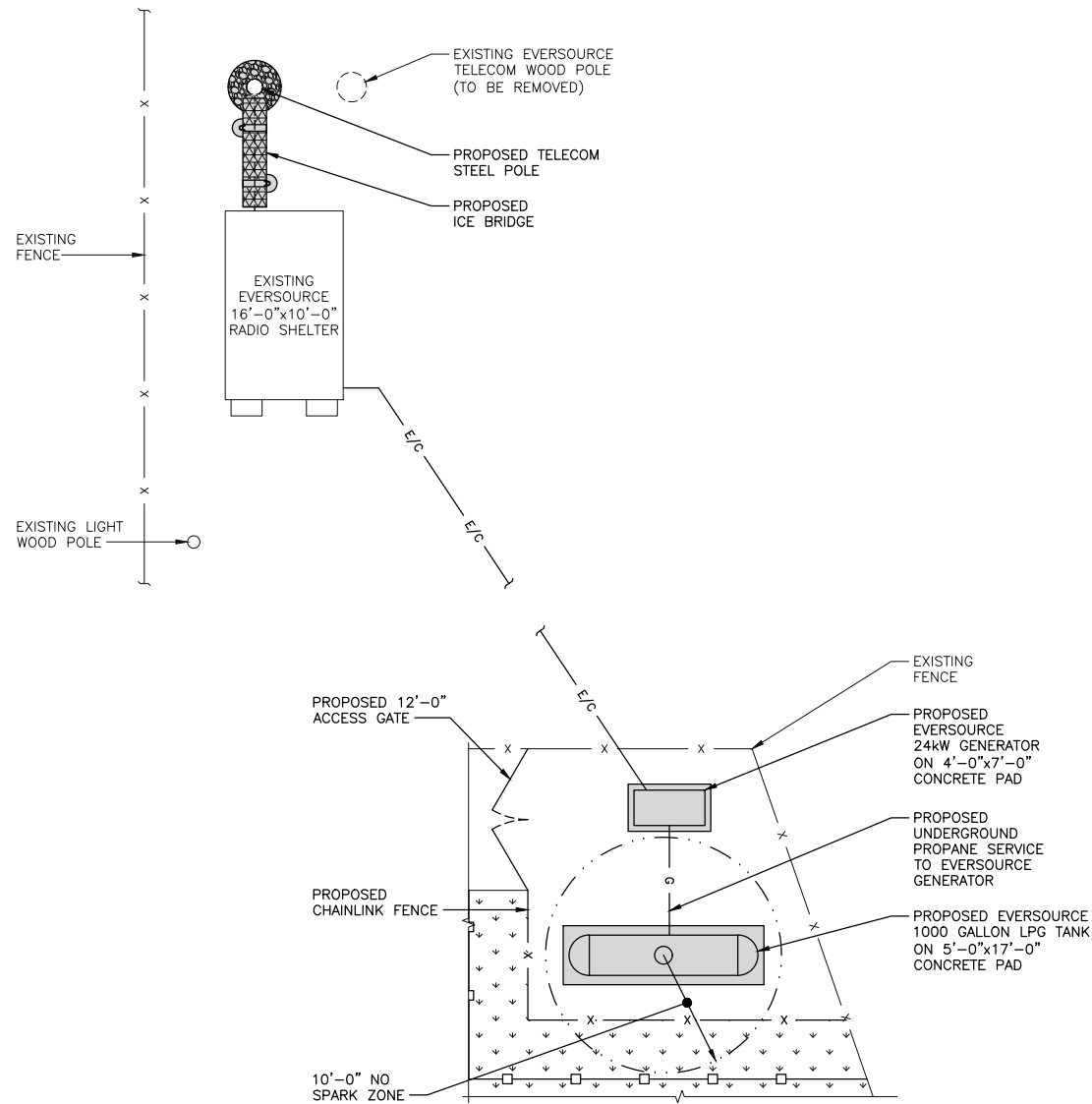
PROPANE GENERATOR SCHEMATICS
NO SCALE



NOTES

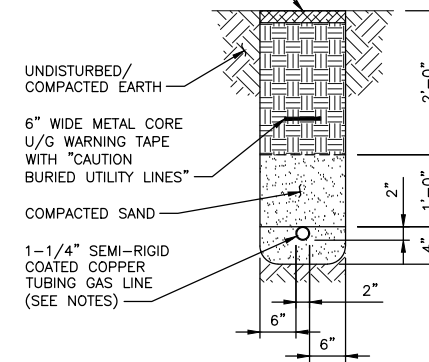
1. ALL VALVES USED IN METALLIC PIPING SYSTEMS MUST HAVE PRESSURE CONTAINING PARTS OF STEEL, DUCTILE (NODULAR) IRON, MALLEABLE IRON OR BRASS.
2. ALL MATERIALS USED, INCLUDING VALVE SEAT DISCS, PACKING, SEALS AND DIAPHRAGMS MUST BE RESISTANT TO THE ACTION OF LP GAS UNDER SERVICE CONDITIONS. MANY VALVES ARE LISTED BY INDEPENDENT TESTING LABORATORIES FOR USE IN LP GAS SERVICE. THESE CAN BE USED AS RECOMMENDED BY THE MANUFACTURER. OTHER VALVES CAN BE USED, BUT MUST COMPLY WITH THE REQUIREMENTS OF NFPA 58 AND SHOULD BE RECOMMENDED BY THE MANUFACTURER FOR LP GAS SERVICE TO BE SURE THAT ALL THE COMPONENT PARTS OF THE VALVE ARE APPROVED FOR LP GAS SERVICE.
3. GROUND GENERATOR AND TANK TO GND RING. REFER TO SHEET G-1 FOR WIRE SIZES.

PROPANE CONNECTION DIAGRAM
NO SCALE



MECHANICAL PLAN
NO SCALE

RESTORE EXISTING SURFACING AT AREAS DISTURBED BY TRENCHING, MATCH EXISTING



NOTES

SEMI-RIGID COATED COPPER TUBING GAS LINE INSTALLED UNDERGROUND SHALL BE INSTALLED IN ACCORDANCE WITH NFPA54. UNDERGROUND PIPING SHALL COMPLY WITH THE FOLLOWING:

1. THE PIPING SHALL BE MADE OF CORROSION RESISTANT MATERIAL THAT IS SUITABLE FOR BURIAL.
2. PIPE SHALL HAVE A FACTORY APPLIED ELECTRICALLY INSULATING COATING. FITTINGS AND JOINTS BETWEEN SECTIONS OF COATED PIPE SHALL BE COATED IN ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS.
3. THE PIPING SHALL HAVE A DIALECTIC UNION INSTALLED ON BOTH SIDES.

PROPANE GAS TRENCH
NO SCALE

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



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OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO: 403093

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BRANFORD, CT 06405

SHEET TITLE
**GENERATOR & PROPANE TANK
EQUIPMENT DETAILS**

SHEET NUMBER
M-1

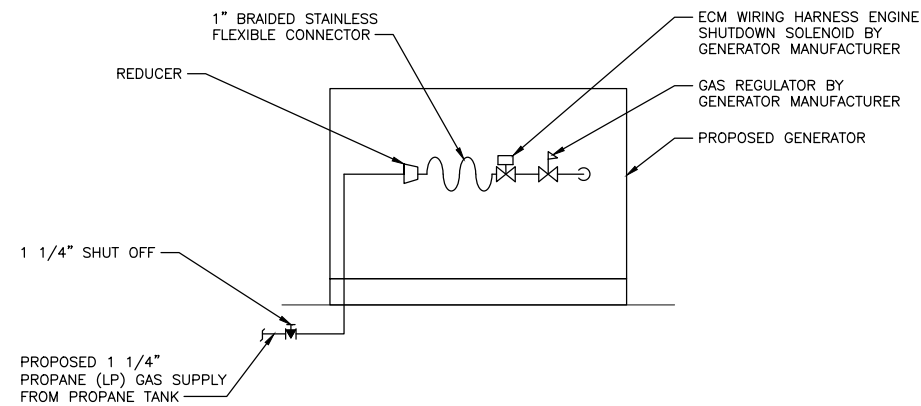


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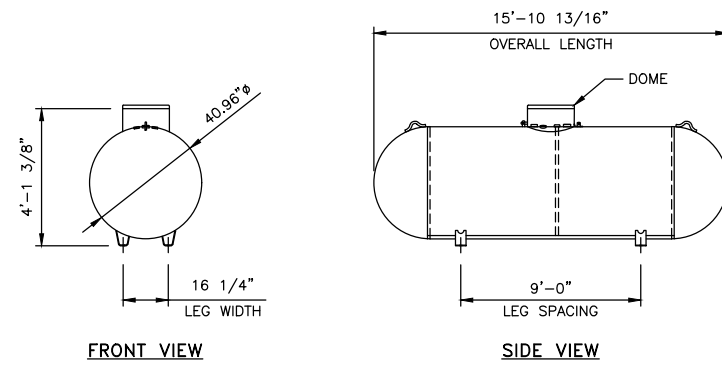
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NOTE

1. INSTALL COMPONENTS IN ACCORDANCE WITH GENERATOR MANUFACTURER'S INSTRUCTIONS.

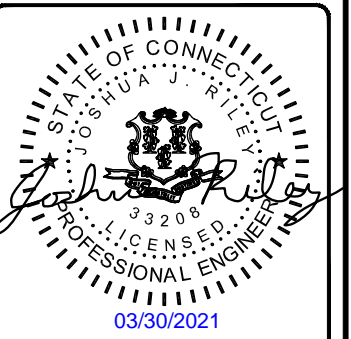
PROPANE CONNECTION DIAGRAM
NO SCALE



NOTES

1. 1000 USWG AMSE VIII, DIV. 1 ABOVE GROUND LPG TANK AS MANUFACTURED BY ARCOSA TANK, LLC:
* WWW.ARCOSATANK.COM
* PH: 1-214-202-9258
* WEIGHT (EMPTY) = 1729 lbs
2. LPG TANK TO BE BOLTED TO CONCRETE SLAB.
3. GROUND TANK STAND (SHEET G-1).
4. PROVIDE TANK MANUFACTURER SHOP DRAWING FOR REVIEW BY ENGINEER OF RECORD PRIOR TO PURCHASE.

PROPANE TANK SCHEMATICS
NO SCALE

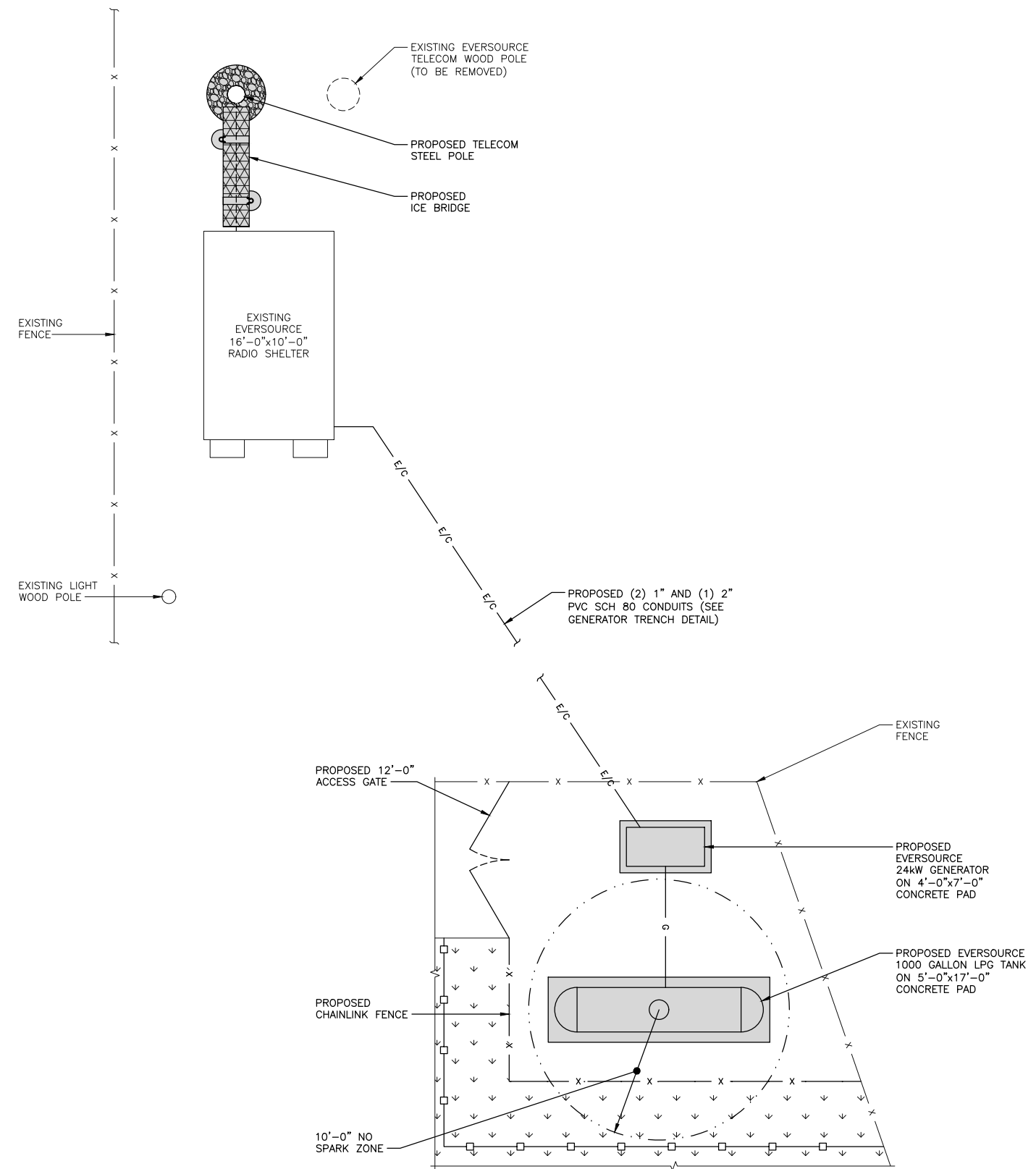


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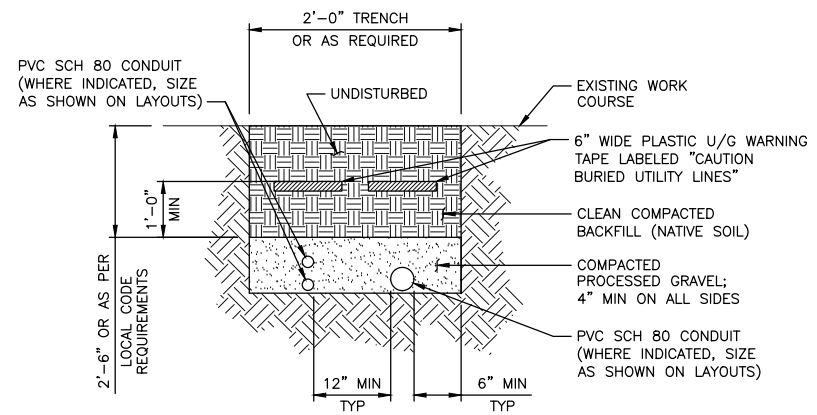
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SHEET TITLE
**GENERATOR & PROPANE TANK
EQUIPMENT DETAILS**

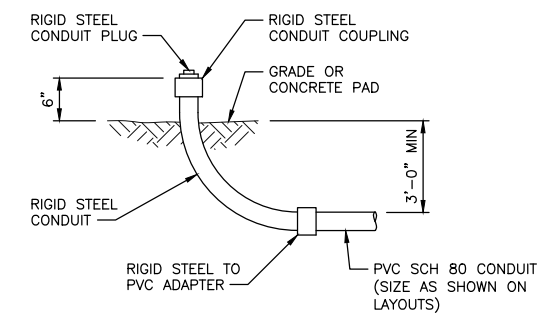
SHEET NUMBER
M-2



UTILITY PLAN
NO SCALE



GENERATOR TRENCH DETAIL
NO SCALE



STUB-UP CONDUIT DETAIL
NO SCALE



EVERSOURCE ENERGY

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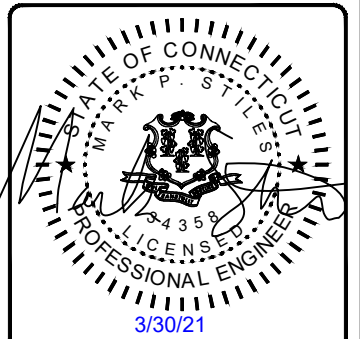


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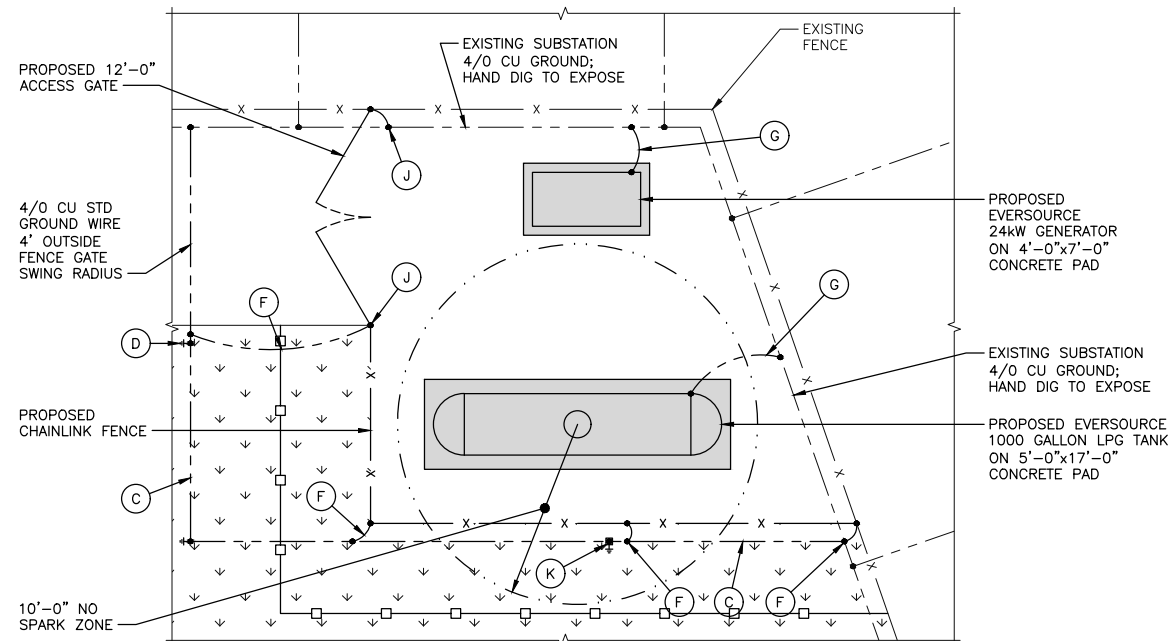
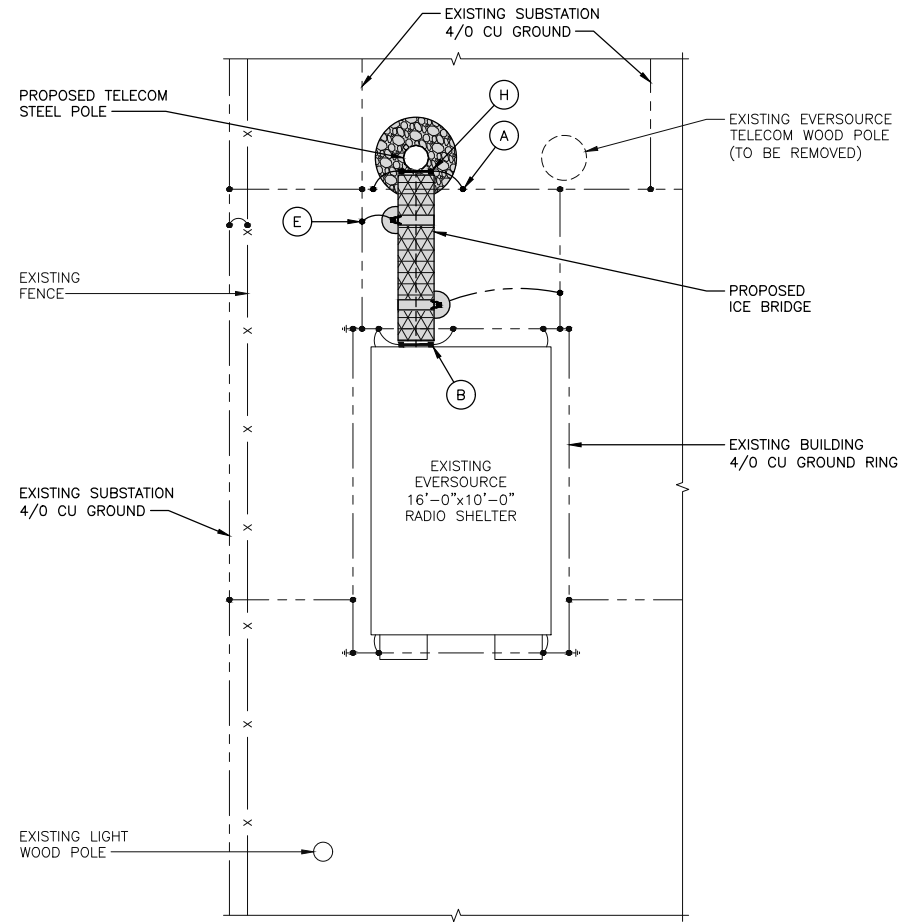
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SHEET TITLE
UTILITY PLAN & DETAILS

SHEET NUMBER
E-1

LEGEND

- EXOTHERMIC (UNLESS NOTED OTHERWISE).
- COMPRESSION CONNECTION (TWO HOLE LUG OR EQUIVALENT).
- ⊕ 5/8"Øx10'-0" COPPER CLAD STEEL GROUND ROD.
- ⊕ 5/8"Øx10'-0" COPPER CLAD STEEL GROUND ROD WITH INSPECTION SLEEVE.
- GROUND WIRE.



GROUNDING PLAN
NO SCALE



KEY NOTES

- (A) **POLE GROUNDING:** #2 TINNED CU WIRE FROM EXISTING GROUND RING TO EXISTING POLE.
- (B) **EXTERIOR GROUND BAR:** EXISTING #2 TINNED CU WIRE FROM BURIED GROUND RING TO THE EXTERIOR GROUND BAR.
- (C) **SITE GROUNDING:** ADD 4/0 CU GROUND WIRE FROM EXISTING SUBSTATION GROUND AROUND FENCED AREAS AND CONNECT EXOTHERMICALLY. PLACE 3'-0" OUT FROM FENCE.
- (D) **GROUND ROD:** COPPER CLAD STEEL 5/8"Ø TEN (10) FEET LONG.
- (E) **ICE BRIDGE SUPPORT POST GROUNDING:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO ALL ICE BRIDGE SUPPORT POSTS AND EXOTHERMICALLY WELD.
- (F) **FENCE GROUNDING:** IF FENCE IS WITHIN 6' OF GROUND RING, EXTEND 4/0 CU WIRE FROM BURIED GROUND RING TO FENCE CORNER POSTS AND EXOTHERMICALLY WELD. BOND INTERMEDIATE POST IF REQUIRED TO MAINTAIN 25' MAX SPACING. REFER TO SHEET G-5.
- (G) **GENERATOR/TANK GROUNDING:** EXTEND 4/0 CU WIRE FROM BURIED GROUND RING TO EACH GENERATOR/TANK AND EXOTHERMICALLY WELD.
- (H) **POLE GROUND BAR:** EXTEND TWO #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND EXOTHERMICALLY WELD.
- (J) **GATE GROUNDING:** EXTEND 4/0 TINNED CU WIRE FROM BURIED GROUND RING TO GATE POSTS AND EXOTHERMICALLY WELD. USE FLEXIBLE BRAID TO CONNECT SWING GATE TO GATE POSTS.
- (K) **GROUND ROD WITH INSPECTION SLEEVE:** COPPER CLAD STEEL 5/8"Ø TEN (10) FEET LONG WITH INSPECTION SLEEVE.

NOTES

1. ALL GROUNDING SYSTEM CONDUCTORS AND CONNECTIONS BELOW GRADE SHALL BE THERMAL WELDS AT GROUND RODS AND AT A MINIMUM OF 36" BELOW GRADE, OR 6" BELOW FROST LINE, WHICH EVER IS GREATER OF THE TWO DIMENSIONS.
2. ALL INSTALLATIONS SHALL BE FIELD VERIFIED.
3. ALL GROUND WIRE SHALL BE 4/0 STD BARE COPPER TINNED UNLESS NOTED OTHERWISE.
4. ALL GROUND WIRES SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
5. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF GROUND RODS AND GROUND RING WITH FOUNDATION AND UNDERGROUND CONDUIT.
6. EACH EQUIPMENT CABINET SHALL BE CONNECTED WITH #2 AWG INSULATED SOLID TINNED COPPER WIRE TO GROUND BAR. EQUIPMENT CABINETS SHALL EACH HAVE (2) LUG CONNECTIONS.
7. KOPR-SHIELD ANTI-OXIDATION COMPOUND SHALL BE USED ON ALL COMPRESSION GROUNDING CONNECTIONS.
8. ALL EXOTHERMIC CONNECTIONS SHALL BE INSTALLED UTILIZING THE PROPER CONNECTION/MOLD AND MATERIALS FOR THE PARTICULAR APPLICATION.
9. ALL BOLTED GROUNDING CONNECTIONS SHALL BE INSTALLED WITH AN EXTERNAL TOOTHED LOCK WASHER. GROUNDING BUS BARS MAY HAVE PRE PUNCHED HOLES OR TAPPED HOLES. ALL HARDWARE SHALL BE 3/8" STAINLESS STEEL.
10. EXTERNAL GROUNDING CONDUCTOR SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS, CONDUITS, OR SUPPORTS TO PRECLUDE ESTABLISHING A MAGNETIC CHOKE POINT.
11. PLASTIC CLIPS SHALL BE USED TO FASTEN AND SUPPORT GROUNDING CONDUCTORS. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED.
12. STANDARD BUS BARS MGB, GWB, IGB, TELCO GB, FIBER GB, AND POWER GB SHALL BE FURNISHED AND INSTALLED BY THE SUBCONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
13. THE CONTRACTOR SHALL MEASURE GROUND RESISTANCE AT INSPECTION SLEEVE K, AFTER ALL GROUNDING IS COMPLETE. RECORD THE MEASUREMENT IN THE TEST PLAN DOCUMENT AND PROVIDE RESULTS TO THE PROJECT MANAGER FOR REVIEW. THE GROUND SYSTEM RESISTANCE TO EARTH GROUND SHALL NOT EXCEED FIVE (5) OHMS. IF THE GROUND TEST EXCEEDS THE MAXIMUM OF 5 OHMS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL GROUND CONNECTIONS AS REQUIRED TO MEET THE 5 OHMS MAXIMUM.
14. IF COAX ON ICE BRIDGE IS MORE THAT 6' FROM THE GROUND BAR AT THE BASE OF THE TOWER, A SECOND GROUND BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE RUN TO GROUND THE COAX GROUND KIT AND THE IN-LINE SURGE ARRESTORS.
15. CONTRACTOR SHALL REPAIR/PLACE EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

EVERSOURCE ENERGY

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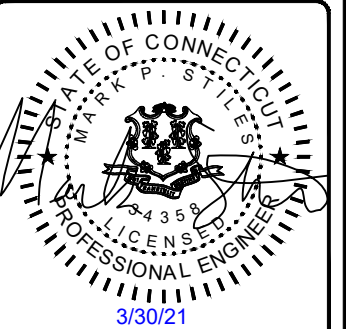


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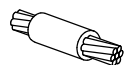
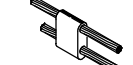


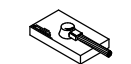
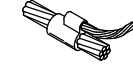

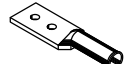




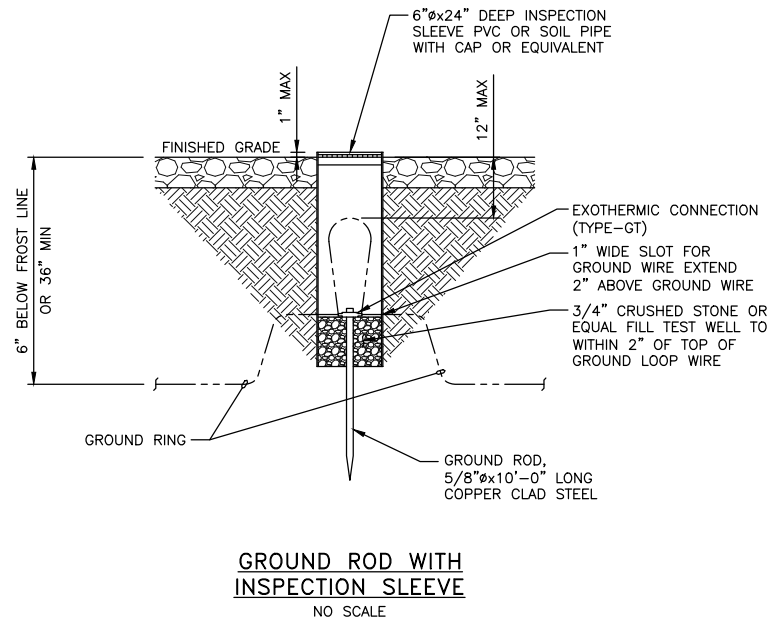
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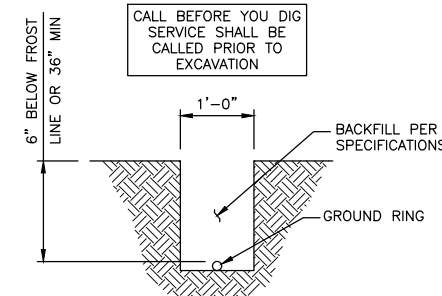
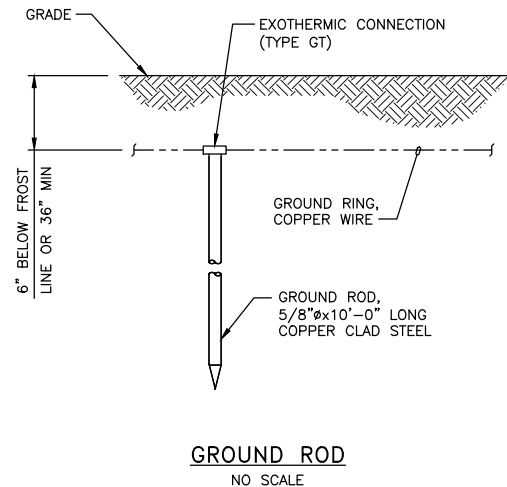
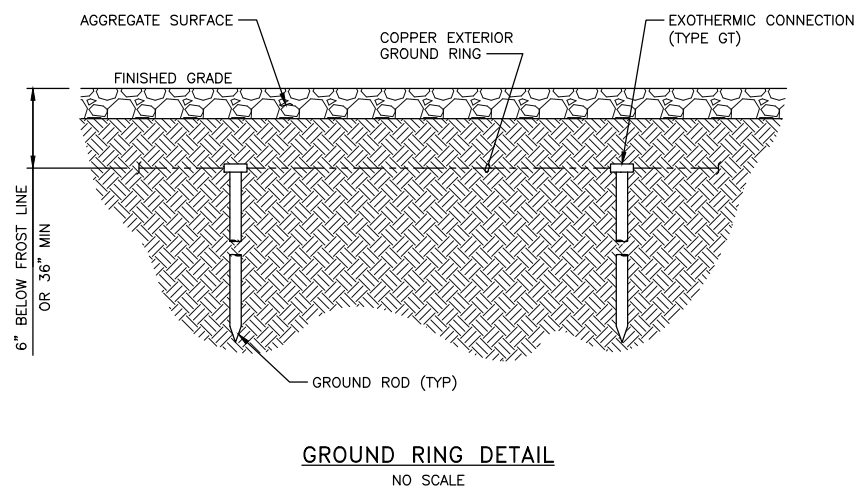
SHEET TITLE
GROUNDING PLAN

SHEET NUMBER
G-1

CADWELD CONNECTIONS OR APPROVED EQUAL		BURNNDY CONNECTIONS OR APPROVED EQUAL	
 HORIZONTAL SPLICE SPLICE OF HORIZONTAL CABLES TYPE SS	 PARALLEL HORIZONTAL CONDUCTORS PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES TYPE PT	 VERTICAL PIPE CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES TYPE VS	 BOND JUMPER FIELD FABRICATED GREEN STRANDED INSULATED TYPE 2-YA-2
 HORIZONTAL STEEL SURFACE TO FLAT STEEL SURFACE OR HORIZONTAL PIPE TYPE HS	 PARALLEL HORIZONTAL CONDUCTORS PARALLEL DEAD END TAP OR HORIZONTAL THRU CONDUCTOR TYPE PC	 VERTICAL STEEL SURFACE CABLE DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE TYPE VS	 COPPER LUGS TWO HOLE - LONG BARREL LENGTH TYPE YA-2
 HORIZONTAL TEE TEE OF HORIZONTAL RUN AND TAP CABLES TYPE TA	 THROUGH CABLE TO GROUND ROD THROUGH CABLE TO TOP OF GROUND ROD TYPE GT		



NOTES
1. REFER TO SHEET G-1 FOR WIRE SIZES.



NOTES
1. ALL EXOTHERMIC WELD CONNECTIONS SHALL BE BELOW FROST LINE.

EVERSOURCE ENERGY

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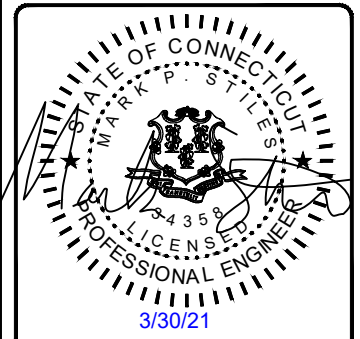


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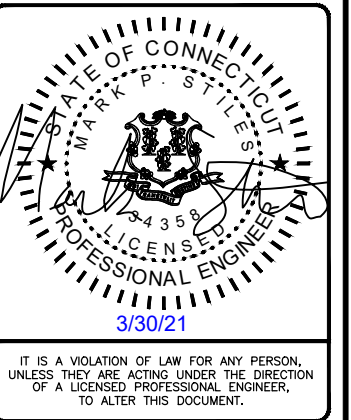
SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2



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SHEET TITLE
GROUNDING
DETAILS

SHEET NUMBER
G-3

NOTES

- ALL LUGS SHALL BE 2-HOLE, LONG BARREL, TINNED SOLID COPPER UNLESS OTHERWISE SPECIFIED, USING THE PROPER U.L. TOOL AND CIRCUMFERENTIAL HEXAGON DIE. LUGS SHALL BE THOMAS AND BETTS SERIES 548##BE, BURNDY, ERICO OR EQUIVALENT. BOLT HOLE DIAMETER AND SPACING ON ALL GROUND LUGS SHALL MATCH HOLE DIAMETER AND SPACING OF THE GROUND BAR. ANGLE LUGS MAY BE USED IF CONSTRUCTION CONDITIONS DICTATE. REFER TO DETAIL "G".
- AN ANTI-OXIDATION COMPOUND SHALL BE APPLIED BETWEEN THE LUG AND GROUND BAR ONLY. DO NOT COVER THE LUG. THE ANTI-OXIDATION COMPOUND SHALL BE THOMAS AND BETTS "KOPR-SHIELD" OR BURNDY PENETROX-E.
- GROUND BARS SHALL BE ATTACHED TO THE ANTENNA SUPPORT STRUCTURES WITH U.L. APPROVED MOUNTING DEVICES. GROUND CLAMPS MAY BE USED TO MOUNT THE GROUND BAR TO AVAILABLE FLANGES, COAX PORT RIMS, ETC. STEEL STRAPS MAY BE USED TO ATTACH GROUND BAR TO A MONOPOLE IF NO CONVENIENT CLAMPING SURFACES ARE PRESENT. ALL CONNECTING SURFACES SHALL BE CLEAN AND FREE OF DIRT, OIL AND CORROSION. GALVANIZED SURFACES SHALL BE POLISHED WITH A STEEL BRUSH. DO NOT DRILL HOLES OR USE EXOTHERMIC WELDS TO CONNECT GROUND LEADS TO A STEEL TOWER EXCEPT ON STEEL TABS OR FLANGES SPECIFICALLY DESIGNED FOR THAT PURPOSE.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" - SURGE PROTECTORS

- CELL REFERENCE GROUND BAR (IF CO-LOCATED)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR (#2)
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#3/0)
- FIBER GROUND BAR (#2)

SECTION "A" - SURGE ABSORBERS

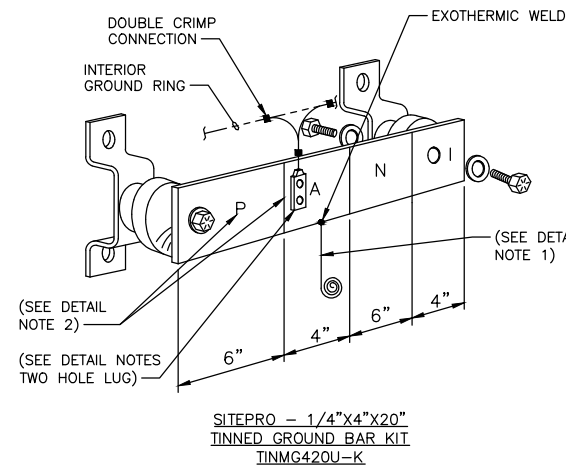
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)

SECTION "N" - NON-ISOLATED GROUND ZONE EQUIPMENT

- MISC NON-ISOLATED GROUND ZONE
- BATTERY RACK

SECTION "I" - ISOLATED GROUND ZONE

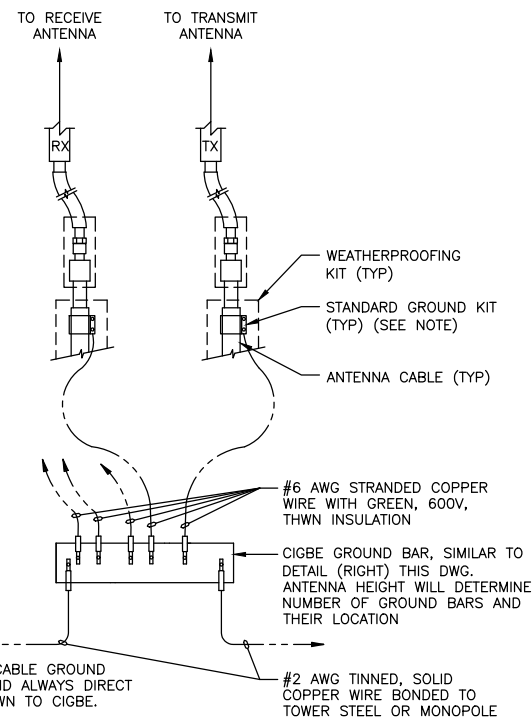
- ALL ISOLATED GROUND REFERENCE
- GROUND WINDOW BAR



DETAIL NOTES

- EXOTHERMIC ALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE EXOTHERMIC WELD.
- EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.

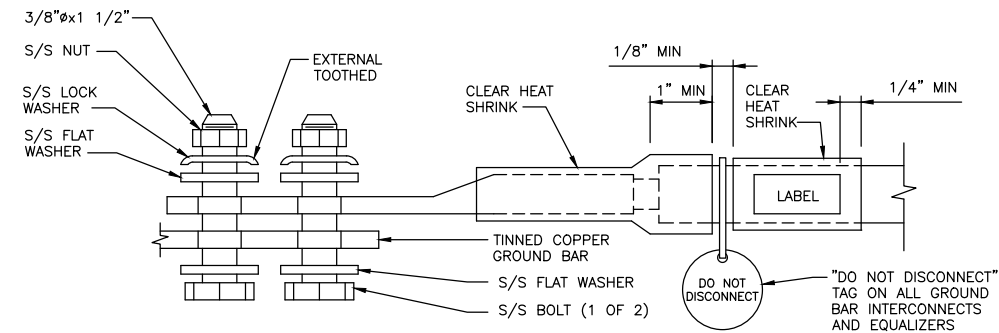
(MGB) REFERENCE GROUND BAR
NO SCALE



NOTE

- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

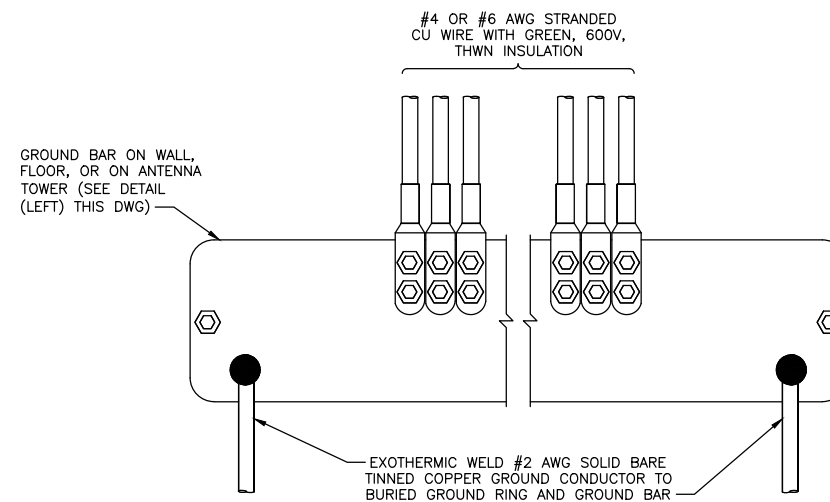
CONNECTION OF GROUND WIRE TO EXTERIOR GROUNDING BAR
NO SCALE



NOTES

- ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
- ALL HARDWARE SHALL BE S/S 3/8 INCH DIAMETER OR LARGER.
- FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.

TWO HOLE LUG
NO SCALE



NOTE

- NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.

INSTALLATION OF GROUND WIRE TO EXTERIOR GROUNDING BAR
NO SCALE

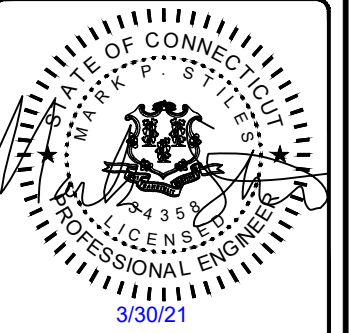


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: CAG

REV	DATE	DESCRIPTION
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1	10/06/20	ISSUED FOR FILING
0	05/21/20	ISSUED FOR FILING

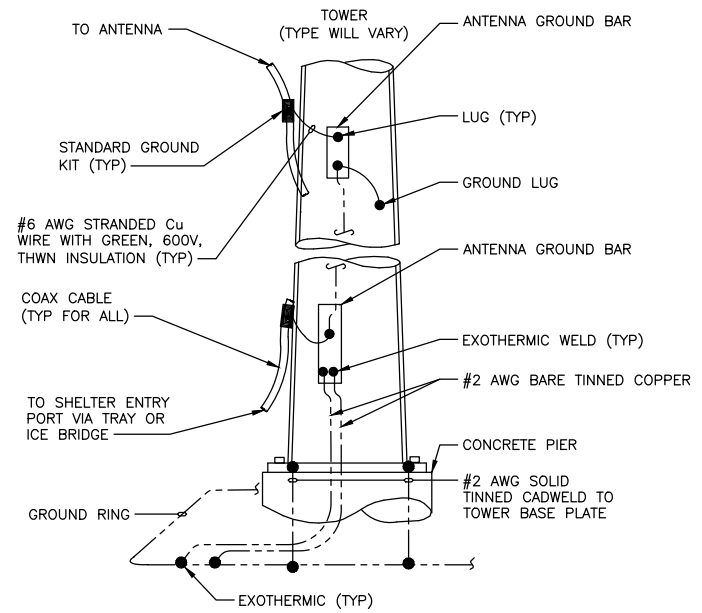


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BRANFORD 11J
272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
**GROUNDING
DETAILS**

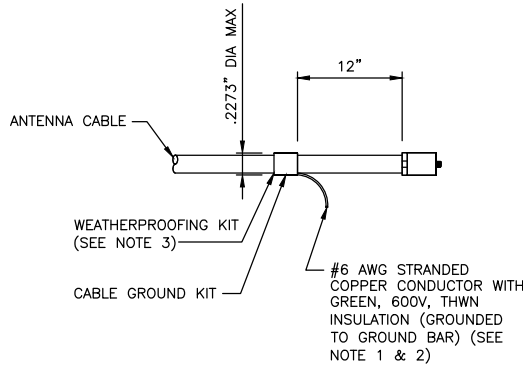
SHEET NUMBER
G-4



NOTE

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

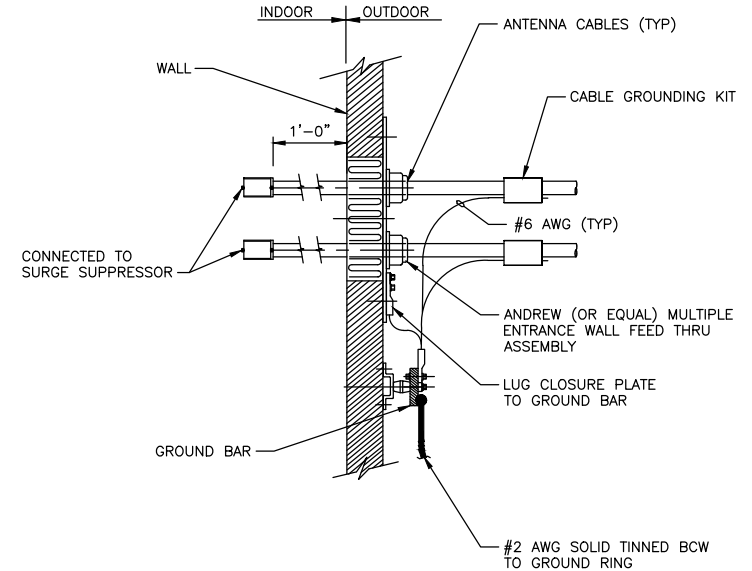
ANTENNA CABLE GROUNDING
NO SCALE



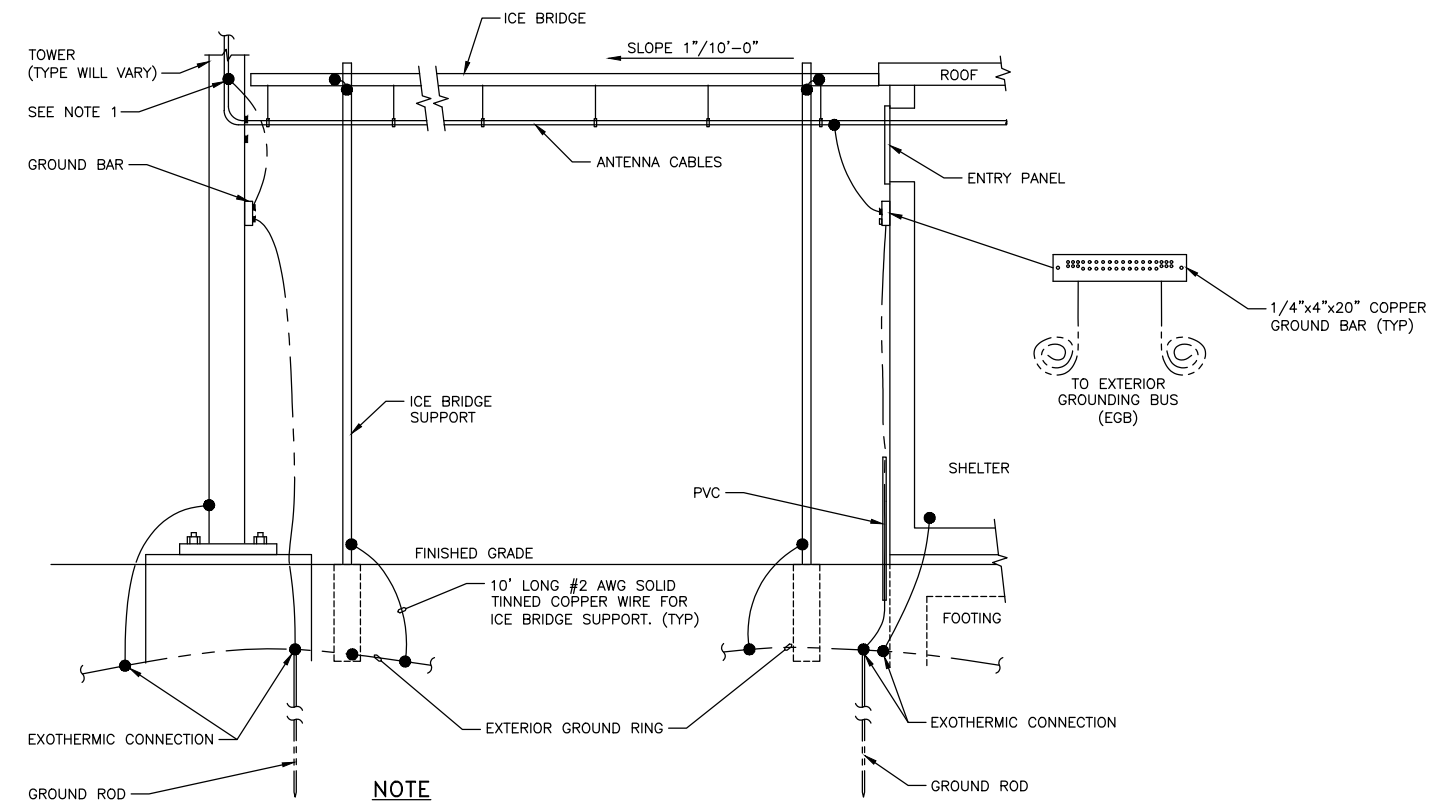
NOTES

- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
- GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
- WEATHER PROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE
NO SCALE



CABLE INSTALLATION WITH WALL FEED THRU ASSEMBLY
NO SCALE



NOTE

1. PROVIDE GROUND KIT 6" BEFORE TURN

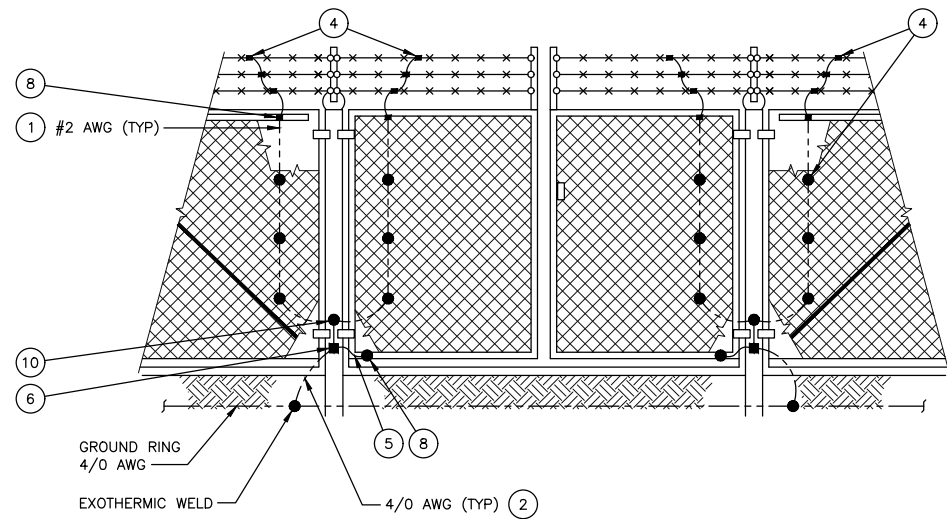
ICE BRIDGE AND ANTENNA CABLE DETAIL
NO SCALE



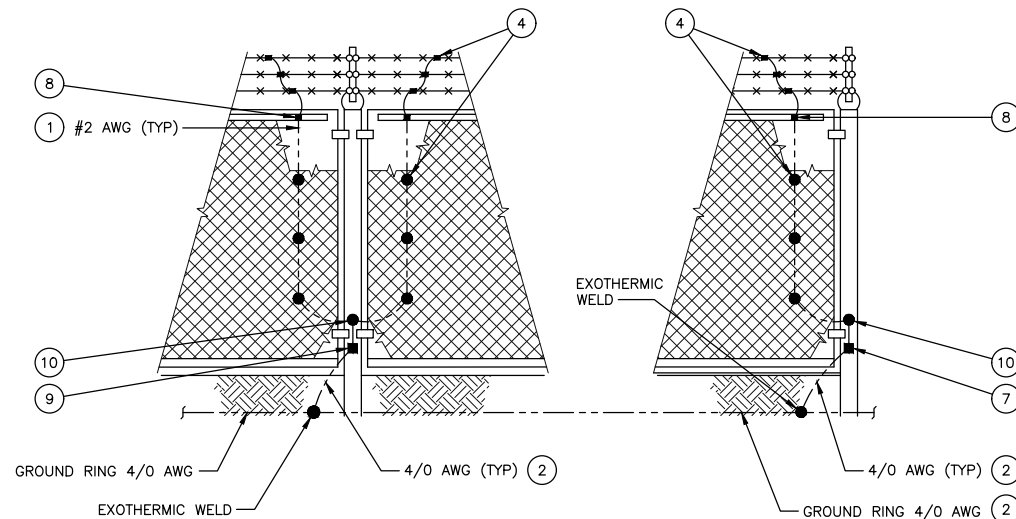
PROJECT NO: 403093

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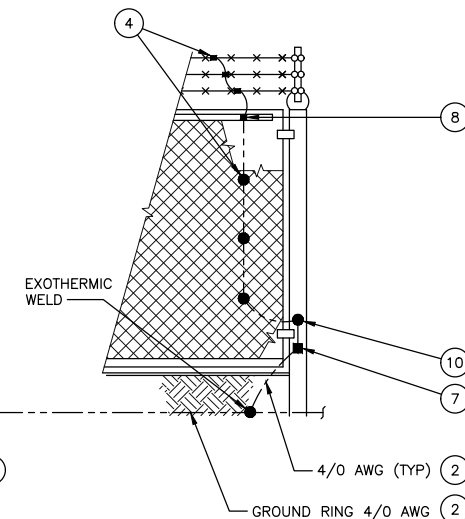
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DETAIL A
12' GATE GROUNDING DETAIL
NO SCALE



DETAIL B
FENCE GROUNDING DETAIL
NO SCALE

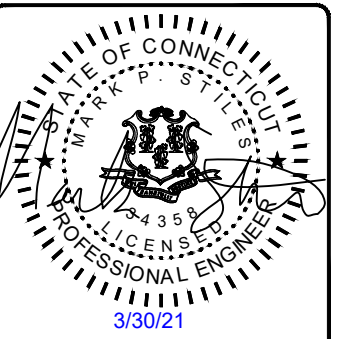


DETAIL C
CORNER DETAIL
NO SCALE

CONNECTER MATERIAL DESCRIPTION

ITEM#	DESCRIPTION	STOCK#
1	CABLE, BARE COPPER, #2 SOLID TINNED FOR BARBED WIRE FABRIC GROUND	533919
2	CABLE, BARE COPPER, 4/0 FOR ATTACHING FENCE TO SUBSTATION GROUND GRID	513367
3	CONNECTER, COMPRESSION, 4/0 GROUND LEAD TO 4/0 GROUND GRID	516765
4	CONNECTER, SPLIT BOLT, TINNED COPPER FOR ATTACHING #8-#2 COPPER CABLE TO FENCE FABRIC AND BARBED WIRE	517632
5	COPPER BRAID, FLEXIBLE, TINNED 1 1/2"	512015
6	CONNECTER, GROUND, 4/0 COPPER CABLE TO GATE POST	501917
7	CONNECTER, GROUND, 4/0 COPPER CABLE TO CORNER POST	517487
8	CONNECTER, GROUND, #2 COPPER CABLE TO TOP RAIL	515108
9	CONNECTER, GROUND, 4/0 COPPER CABLE TO LINE POST	501915
10	CONNECTER, COPPER, PARALLEL GROOVE, #1-4/0 RUN, #6-4/0 TAP	517579

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272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-5

DESIGN BASIS

- GOVERNING CODE: 2018 CONNECTICUT STATE BUILDING CODE (2015 IBC BASIS).

GENERAL CONDITIONS

- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL BUILDING CODES, PERMIT CONDITIONS AND SAFETY CODES DURING CONSTRUCTION.
- THE ENGINEER IS NOT: A GUARANTOR OF THE INSTALLING CONTRACTOR'S WORK; RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE WORK SITE; IN CONTROL OF THE SAFETY OR ADEQUACY OF ANY BUILDING COMPONENT, SCAFFOLDING OR SUPERINTENDING THE WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL PERMITS, INSPECTIONS, TESTING AND CERTIFICATES NEEDED FOR LEGAL OCCUPANCY OF THE FINISHED PROJECT.
- THE CONTRACTOR IS RESPONSIBLE TO REVIEW THIS COMPLETE PLAN SET AND VERIFY THE EXISTING CONDITIONS SHOWN IN THESE PLANS AS THEY RELATE TO THE WORK PRIOR TO SUBMITTING PRICE. SIGNIFICANT DEVIATIONS FROM WHAT IS SHOWN AFFECTING THE WORK SHALL BE REPORTED IMMEDIATELY TO THE CONSTRUCTION MANAGER.
- DETAILS INCLUDED IN THIS PLAN SET ARE TYPICAL AND APPLY TO SIMILAR CONDITIONS.
- EXISTING ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING, AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.
- THE CONTRACTOR SHALL DILIGENTLY PROTECT THE EXISTING BUILDING/SITE CONDITIONS AND THOSE OF ANY ADJOINING BUILDING/SITES AND RESTORE ANY DAMAGE CAUSED BY HIS ACTIVITIES TO THE PRE-CONSTRUCTION CONDITION.
- THE CONTRACTOR SHALL SAFEGUARD AGAINST: CREATING A FIRE HAZARD, AFFECTING TENANT EGRESS OR COMPROMISING BUILDING SITE SECURITY MEASURES.
- THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND CONSTRUCTION WASTE FROM THE SITE EACH DAY. WORK AREAS SHALL BE SWEEPED AND MADE CLEAN AT THE END OF EACH WORK DAY.
- THE CONTRACTOR'S HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY OWNER.
- THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER IF ASBESTOS IS ENCOUNTERED DURING THE EXECUTION OF HIS WORK. THE CONTRACTOR SHALL CEASE ALL ACTIVITIES WHERE THE ASBESTOS MATERIAL IS FOUND UNTIL NOTIFIED BY THE CONSTRUCTION MANAGER TO RESUME OPERATIONS.

THERMAL & MOISTURE PROTECTION

- FIRE-STOP ALL PENETRATIONS FOR ELECTRICAL CONDUITS OR WAVEGUIDE CABLING THROUGH BUILDING WALLS, FLOORS, AND CEILINGS SHALL BE FIRESTOPPED WITH ACCEPTED MATERIALS TO MAINTAIN THE FIRE RATING OF THE EXISTING ASSEMBLY. ALL FILL MATERIAL SHALL BE SHAPED, FITTED, AND PERMANENTLY SECURED IN PLACE. FIRESTOPPING SHALL BE INSTALLED IN ACCORDANCE WITH ASTM E814.
- HILTI CP620 FIRE FOAM OR 3M FIRE BARRIER FILL, VOID OR CAVITY MATERIAL OR ACCEPTED EQUAL SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND ASSOCIATED UNDERWRITERS LABORATORIES (UL) SYSTEM NUMBER.
- FIRESTOPPING SHALL BE APPLIED AS SOON AS PRACTICABLE AFTER PENETRATIONS ARE MADE AND EQUIPMENT INSTALLED.
- FIRESTOPPED PENETRATIONS SHALL BE LEFT EXPOSED AND MADE AVAILABLE FOR INSPECTION BEFORE CONCEALING SUCH PENETRATIONS. FIRESTOPPING MATERIAL CERTIFICATES SHALL BE MADE AVAILABLE AT THE TIME OF INSPECTION.
- ANY BUILDING ROOF PENETRATION AND/OR RESTORATION SHALL BE PERFORMED SO THAT THE ROOF WARRANTY IN PLACE IS NOT COMPROMISED. CONTRACTOR SHALL ARRANGE FOR OWNER'S ROOFING CONTRACTOR TO PERFORM ANY AND ALL ROOFING WORK IF SO REQUIRED BY EXISTING ROOF WARRANTY. OTHERWISE, ROOF SHALL BE MADE WATERTIGHT WITH LIKE CONSTRUCTION AS SOON AS PRACTICABLE AND AT COMPLETION OF CONSTRUCTION.
- ALL PENETRATIONS INTO AND/OR THROUGH BUILDING EXTERIOR WALLS SHALL BE SEALED WITH SILICONE SEALER.
- WHERE CONDUIT AND CABLES PENETRATES FIRE RATED WALLS AND FLOORS, FIRE GROUT ALL PENETRATIONS IN ORDER TO MAINTAIN THE FIRE RATING USING A LISTED FIRE SEALING DEVICE OR GROUT.
- CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

SUBMITTALS

- CONTRACTOR TO SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.
- CONTRACTOR TO NOTIFY ENGINEER FOR INSPECTION PRIOR TO CLOSING PENETRATIONS.
- CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- ALL STEEL MATERIAL EXPOSED TO WEATHER SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS.
- THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS FOR REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

CONCRETE

- ALL CONCRETE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE (ACI) CODES 301 & 318, LATEST REVISION.
- FOUNDATION WORK SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DESIGNS AND SPECIFICATIONS.
- ALL CONCRETE USED SHALL BE 4000 PSI (28 DAY COMPRESSIVE STRENGTH) UNLESS NOTED OTHERWISE. THE CONCRETE MIX DESIGN SHALL USE THE FOLLOWING MATERIALS AND PARAMETERS:

PORTLAND CEMENT:	ASTM C150, TYPE 1
AGGREGATE:	ASTM C33, 1 INCH MIX
WATER:	POTABLE
ADMIXTURE:	NON-CHLORIDE
AIR:	6%*
SLUMP:	4 INCH UNLESS NOTED OTHERWISE

*ALL CONCRETE EXPOSED TO FREEZING WEATHER SHALL CONTAIN ENTRAINED AIR PER ACI 211 TABLE 4.2.1 OF ACI 318-05.
- ALL REINFORCING STEEL SHALL BE ASTM A615, GR 60 (DEFORMED) UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS 'B' AND ALL HOOKS SHALL BE ACI STANDARD UNLESS NOTED OTHERWISE. REINFORCING BARS SHALL BE COLD BENT WHERE REQUIRED AND TIES (NOT WELDED).
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST EARTH =	3 INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 AND LARGER =	2 INCHES
#5 AND SMALLER AND WWF =	1 1/2 INCHES
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:	
SLAB AND WALL =	3/4 INCHES
BEAMS AND COLUMNS =	1 1/2 INCHES
- A 3/4 INCH CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- CONCRETE SHALL BE REPLACED IN A UNIFORM MANNER AND CONSOLIDATED IN PLACE.
- CONCRETE FOOTINGS SHALL BE CAST AGAINST LEVEL, COMPACTED, NON-FROZEN BASE SOIL FREE OF STANDING WATER.

STEEL

- MATERIAL:

WIDE FLANGE:	ASTM A572, GR 50
TUBING:	ASTM A500, GR C
PIPE:	ASTM A53, GR B AND ASTM 572, GR 50
ANGLE:	ASTM A570, GR 50 AND ASTM A36
BOLTS:	ASTM A325
GRATING:	TYPE GW-2 (1"x3/16" BARS)
MISC. MATERIAL:	ASTM A36

ALL STEEL SHAPES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123 WITH A COATING WEIGHT OF 2 OZ/SF.
- DAMAGED GALVANIZED SURFACES SHALL BE CLEANED WITH A WIRE BRUSH AND PAINTED WITH TWO COATS OF COLD ZINC, "GALVANOX", "DRY GALV", "ZINC IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. TOUCH UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT IN SHOP OR FIELD.
- DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC "MANUAL OF STEEL CONSTRUCTION" 13TH EDITION.
- THE STEEL STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.
- ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.
- TOWER MANUFACTURER'S DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS

- CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR AND CONSTRUCTED IN ACCORDANCE WITH THE AISC "MANUAL OF STEEL CONSTRUCTION" 13TH EDITION. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONSTRUCTION UNLESS OTHERWISE DETAILED. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
- DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).
- ALL BUILDING CONNECTION POINTS ARE TO BE CENTERED OVER BEARING WALLS
- CONNECTIONS SHALL BE MADE USING ASTM A325 BOLTS (SNUG TIGHT OR SLIP CRITICAL) OR WELDS. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES.
- NUT LOCKING DEVICES ARE REQUIRED FOR ALL BOLT ASSEMBLIES.
- GRATING SHALL BE ATTACHED USING FOR GRATING CLAMPS OR 1/4 INCH FILLET WELDS. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY BE 5/8" DIAMETER GALVANIZED ASTM A307 BOLTS UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS, AND MISCELLANEOUS HARDWARE EXPOSED TO WEATHER SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE."

- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". UPON COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE ABOVE.
- USE THE LARGER OF 1/4 INCH FILLET WELDS OR MINIMUM SIZE PER AISC REQUIREMENTS WHERE NO WELD SIZE IS SHOWN ON THE DRAWINGS.
- ALL ARC AND GAS WELDING SHALL BE DONE BY LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AMERICAN WELDING SOCIETY.
- ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. UPON THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATINGS SHALL BE REPAIRED.
- USE PRECAUTIONS AND PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED METALS.

SITE GENERAL

- CONTRACTOR SHALL FOLLOW CONDITIONS OF ALL APPLICABLE PERMITS AND WORK IN ACCORDANCE WITH OSHA REGULATIONS.
- THESE PLANS DEPICT KNOWN UNDERGROUND STRUCTURES, CONDUITS, AND/OR PIPELINES. THE LOCATIONS FOR THESE ELEMENTS ARE BASED UPON THE VARIOUS RECORD DRAWINGS AVAILABLE. THE CONTRACTOR IS HEREBY ADVISED THAT THESE DRAWINGS MAY NOT ACCURATELY DEPICT AS-BUILT LOCATIONS AND OTHER UNKNOWN STRUCTURES. THE CONTRACTOR SHALL THEREFORE DETERMINE THE EXACT LOCATION OF EXISTING UNDERGROUND ELEMENTS AND EXCAVATE WITH CARE AFTER CALLING MARKOUT SERVICE AT 1-800-272-4480 48 HOURS BEFORE DIGGING, DRILLING OR BLASTING.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UTILITIES WHERE ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION, SHALL BE RELOCATED AS DIRECTED BY ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL HAND DIG UTILITIES AS NEEDED. CONTRACTOR SHALL PROVIDE, BUT IS NOT LIMITED TO, APPROPRIATE A) FALL PROTECTION, B) CONFINED SPACE ENTRY, C) ELECTRICAL SAFETY, AND D) TRENCHING AND EXCAVATION.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, OR OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE CONSTRUCTION MANAGER.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING STRUCTURES OR UTILITIES DAMAGED DURING CONSTRUCTION.
- CONTRACTOR SHALL PROTECT EXISTING PAVED AND GRAVEL SURFACES, CURBS, LANDSCAPE AND STRUCTURES AND RESTORE SITE OR PRE-CONSTRUCTION CONDITION WITH AS GOOD, OR BETTER, MATERIALS. NEW MATERIALS SHALL MATCH EXISTING THICKNESS AND TYPE.
- THE CONTRACTOR SHALL SHORE ALL TRENCH EXCAVATIONS GREATER THAN 5 FEET IN DEPTH OR LESS WHERE SOIL CONDITIONS ARE DEEMED UNSTABLE. ALL SHEETING AND/OR SHORING METHODS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR MANAGING GROUNDWATER LEVELS IN THE VICINITY OF EXCAVATIONS TO PROTECT ADJACENT PROPERTIES AND NEW WORK. GROUNDWATER SHALL BE DRAINED IN ACCORDANCE WITH LOCAL SEDIMENTATION AND EROSION CONTROL GUIDELINES.

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

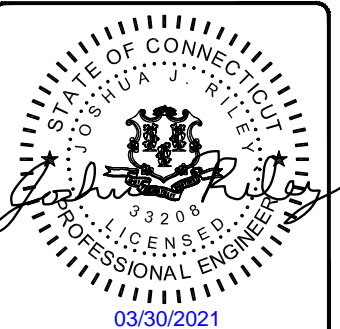
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

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BRANFORD, CT 06405

SHEET TITLE
**NOTES
& SPECIFICATIONS**

SHEET NUMBER

N-1

EXCAVATION

- CONTRACTOR SHALL GRADE ONLY AREAS SHOWN TO BE MODIFIED HEREIN AND ONLY TO THE EXTENT REQUIRED TO SHED OVERLAND WATER FLOW AWAY FROM SITE. SLOPES SHALL NOT BE STEEPER THAN 3:1 (HORIZONTAL:VERTICAL), UNLESS NOTED OTHERWISE. SEDIMENTATION AND EROSION CONTROLS SHOWN AND SPECIFIED SHALL BE ESTABLISHED BEFORE STRIPPING EXISTING VEGETATION.
- ORGANIC MATERIAL AND DEBRIS SHALL BE STRIPPED AND STOCKPILED BEFORE ADDING FILL MATERIAL.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- ALL FILL SHALL BE PLACED IN ONE FOOT LIFTS AND COMPACTED IN PLACE. STRUCTURAL FILL SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DRY UNIT WEIGHT TESTED IN ACCORDANCE WITH ASTM D1557.
- EXCAVATIONS FOR FOOTINGS SHALL BE CUT LEVEL TO THE REQUIRED DEPTH AND TO UNDISTURBED SOIL. REPORT UNSUITABLE SOIL CONDITIONS TO THE CONSTRUCTION MANAGER.
- TRENCH EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH DAY.
- SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE.
- TOWER FOUNDATION EXCAVATION, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH THE TOWER MANUFACTURER'S DESIGNS AND SPECIFICATIONS.

MATERIAL

- NATIVE GENERAL MATERIAL MAY BE USED FOR TRENCH BACKFILL WHERE SELECT MATERIAL IS NOT SPECIFIED. GRAVEL MATERIAL FOR CONDUIT TRENCH BACKFILL SHALL NOT CONTAIN ROCK GREATER THAN 2 INCHES IN DIAMETER.
- BANK OR CRUSHED GRAVEL SHALL CONSIST OF TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE OF SOFT, THIN, ELONGATED OR LAMINATED PIECES AND MEET THE GRADATION REQUIREMENTS.
- PROCESSED AGGREGATE BASE SHALL CONSIST OF COURSE AND FINE AGGREGATES COMBINED AND MIXED SO THAT THE RESULTING MATERIAL CONFORMS TO THE GRADATION REQUIREMENTS. COURSE AGGREGATE SHALL BE EITHER GRAVEL OR BROKEN STONE AND FINE AGGREGATE SHALL CONSIST OF SAND.

SQUARE MESH SIEVES	PERCENT PASSING BY WEIGHT		
	BANK FILL	GRAVEL BASE	GRAVEL PROCESSED AGG BASE
PASS 5"	100	100	90-100
PASS 3 1/2"	100	100	
PASS 2 1/4"	95-100	100	
PASS 2"	55-100		
PASS 1 1/2"			
PASS 1"			
PASS 3/4"			
PASS 1/4"	25-60	25-60	50-75
PASS #10	15-45	15-45	25-45
PASS #40	2-25	5-25	5-20
PASS #100	0-10	0-10	2-12
PASS #200	0-5	0-5	

- FILL MATERIAL SHALL BE FREE OR ORGANIC MATERIAL, ICE, TRASH AND DEBRIS.
- REFER TO MOST CURRENT GEOTECHNICAL ENGINEERING REPORT FOR ALL FILL MATERIAL REQUIREMENTS.

ELECTRICAL

- CONTRACTOR SHALL VERIFY EXISTING ELECTRIC SERVICE TYPE AND CAPACITY AND ORDER NEW ELECTRIC SERVICE FROM LOCAL ELECTRIC UTILITY, WHERE APPLICABLE.
- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES, AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION. WHERE A CONFLICT EXISTS BETWEEN CODES, PLAN AND SPECIFICATIONS, OR AUTHORITIES HAVING JURISDICTION, THE MORE STRINGENT AUTHORITIES SHALL APPLY.
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC, FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.
- ALL ELECTRICAL CONDUCTORS SHALL BE 100% COPPER AND SHALL HAVE TYPE THHN INSULATION UNLESS INDICATED OTHERWISE.
- CONDUIT SHALL BE THREADED RIGID GALVANIZED STEEL OR EMT WITH ONLY COMPRESSION TYPE COUPLINGS AND CONNECTORS, ALL MADE UP WRENCH TIGHT.
- ALL BURIED CONDUIT SHALL BE MINIMUM SCH 40 PVC UNLESS NOTED OTHERWISE, OR AS PER LOCAL CODE REQUIREMENTS.
- PROVIDE FLEXIBLE STEEL CONDUIT OR LIQUID TIGHT FLEXIBLE STEEL CONDUIT TO ALL VIBRATING EQUIPMENT, INCLUDING HVAC UNITS, TRANSFORMERS, MOTORS, ETC, OR WHERE EQUIPMENT IS PLACED UPON A SLAB ON GRADE.
- ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR BONDED TO ALL ENCLOSURES, PULLBOXES, ETC.
- CONDUIT AND CABLE WITHIN CORRIDORS SHALL BE CONCEALED AND EXPOSED ELSEWHERE, UNLESS NOTED OTHERWISE.
- ELECTRICAL MATERIALS INSTALLED ON ROOFTOP SHALL BE LISTED FOR NEMA 3R USE. -AND ALL WIRING WITHIN A VENTILATION DUCT SHALL BE LISTED FOR SUCH USE. IN GENERAL WIRING METHODS WITHIN A DUCT SHALL BE AN MC CABLE WITH SMOOTH OR CORRUGATED METAL JACKET AND HAVE NO OUTER COVERING OVER THE METAL JACKET. INTERLOCKED ARMOR TYPE OF MC CABLE IS NOT ACCEPTABLE FOR THIS APPLICATION. CONTRACTOR CAN ALSO USE TYPE MI CABLE IN THE VENTILATION DUCT PROVIDED IT DOES NOT HAVE ANY OUTER COVERINGS OVER THE METAL EXTERIOR.
- WIRING DEVICES SHALL BE SPECIFICATION GRADE, AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED.

- GROUNDING SYSTEM RESISTANCE SHALL BE MEASURED, RECORDED, AND DATED USING MEGGER DET14 OR SIMILAR INSTRUMENT. GROUND RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION.
- COORDINATE WITH BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK INVOLVING EXISTING SYSTEMS OR EQUIPMENT IN ORDER TO DETERMINE THE EFFECT, IF ANY, ON OTHER TENANTS WITHIN THE BUILDING, AND TO DETERMINE THE APPROPRIATE TIME FOR PERFORMING THIS WORK.
- THE CONTRACTOR SHALL BE REQUIRED TO VISIT THE SITE PRIOR TO SUBMITTING BID IN ORDER TO DETERMINE THE EXTENT OF THE EXISTING CONDITIONS.
- ALL CONDUCTOR ENDS SHALL BE TAGGED AND ELECTRICAL EQUIPMENT LABELED WITH ENGRAVED IDENTIFICATION PLATES.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING AND ALARM TIE-INS.

GROUNDING

- #6 THWN SHALL BE STRANDED #6 COPPER WITH GREEN THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
- #2 THWN SHALL BE STRANDED #2 COPPER WITH THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
- #2 BARE TINNED SHALL BE SOLID COPPER TINNED. ALL BURIED WIRE SHALL MEET THIS CRITERIA.
- ALL LUGS SHALL BE 2-HOLE, LONG BARREL, TINNED SOLID COPPER UNLESS OTHERWISE SPECIFIED, LUGS SHALL BE THOMAS AND BETTS SERIES 548##BE OR EQUIVALENT (IE #2 THWN - 54856BE, #2 SOLID - 54856BE, AND #6 THWN - 54852BE).
- ALL HARDWARE, BOLTS, NUTS, AND WASHERS SHALL BE 18-8 STAINLESS STEEL. EVERY CONNECTION SHALL BE BOLT-FLAT WASHER-BUSS-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT IN THAT EXACT ORDER. BACK-TO-BACK LUGGING, BOLT-FLAT WASHER-LUG-BUSS-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT, IN THAT EXACT ORDER, IS ACCEPTED WHERE NECESSARY TO CONNECT MANY LUGS TO A BUSS BAR. STACKING OF LUGS, BUSS-LUG-LUG, IS NOT ACCEPTABLE.
- WHERE CONNECTIONS ARE MADE TO STEEL OR DISSIMILAR METALS, A THOMAS AND BETTS DRAGON TOOTH WASHER MODEL DTWXXX SHALL BE USED BETWEEN THE LUG AND THE STEEL, BOLT-FLAT WASHER-STEEL-DRAGON TOOTH WASHER-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT.
- ALL CONNECTIONS, INTERIOR AND EXTERIOR, SHALL BE MADE WITH THOMAS AND BETTS KPOR-SHIELD. COAT ALL WIRES BEFORE LUGGING AND COAT ALL SURFACES BEFORE CONNECTING.
- THE MINIMUM BEND RADIUS SHALL BE 8 INCHES FOR #6 WIRE AND SMALLER AND 12 INCHES FOR WIRE LARGER THAN #6.
- ALL CONNECTIONS TO THE GROUND RING SHALL BE EXOTHERMIC WELD.
- BOND THE FENCE TO THE GROUND RING AT EACH CORNER, AND AT EACH GATE POST WITH #2 SOLID TINNED WIRE. EXOTHERMIC WELD BOTH ENDS.
- GROUND KITS SHALL BE SOLID COPPER STRAP WITH #6 WIRE 2-HOLE COMPRESSION CRIMPED LUGS AND SHALL BE SEALED ACCORDING TO MANUFACTURER INSTRUCTIONS.
- FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL BE USED.
- GROUND BARS SHALL BE FURNISHED AND INSTALLED WITH PRE-DRILLED HOLE DIAMETERS AND SPACINGS. GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED. GROUND LUGS SHALL MATCH THE SPACING ON THE BAR. HARDWARE DIAMETER SHALL BE MINIMUM 3.8 INCH.
- MGB GROUND CONNECTION SHALL BE EXOTHERMIC WELDED TO THE GROUND SYSTEM.
- ALL CABLE TRAY AND/OR PLATFORM STEEL SHALL BE BONDED TOGETHER WITH JUMPERS (#6 IN EQUIPMENT ROOM, #2 ELSEWHERE AND HOMERUN).

CABLE TRAY

- CABLE TRAY SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.
- CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.
- CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORD WITH NEC AND NEMA 11-15-84.
- CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC OR EQUAL.
- CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

ANTENNA & CABLE NOTES

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNTS AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER COORDINATE LENGTH OF JUMP CABLES WITH EVERSOURCE. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH EVERSOURCE PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.
- AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM/SWEEP TESTED FOR PROPER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR TO OBTAIN LATEST TESTING PROCEDURES FROM EVERSOURCE PRIOR TO BIDDING.
- ANTENNA CABLES SHALL BE COLOR CODED AT THE FOLLOWING LOCATIONS:
 - AT THE ANTENNAS.
 - AT THE WAVEGUIDE ENTRY PLATE ON BOTH SIDES OF THE EQUIPMENT SHELTER WALL.
 - JUMPER CABLES AT THE EQUIPMENT ENTER.
- SYSTEM INSTALLATION:
 - THE CONTRACTOR SHALL INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURER'S SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROCUREMENT AND INSTALLATION OF THE FOLLOWING:
 - ALL CONNECTORS, ASSOCIATED CABLE MOUNTING, AND GROUNDING HARDWARE.
 - WALL MOUNTS, STANDOFFS, AND ASSOCIATED HARDWARE.
 - 1/2 INCH HELIAX ANTENNA JUMPERS OF APPROPRIATE LENGTHS.
 - MINIMUM BENDING RADIUS FOR COAXIAL CABLES:
 - 7/8 INCH, RMIN = 15 INCHES
 - 1 5/8 INCH, RMIN = 25 INCHES
 - CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.
 - ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WATERPROOF SPLICING KIT.
 - CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.
 - CABLE SHALL BE FURNISHED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

TYPICAL WOVEN WIRE FENCING NOTES

- INSTALL FENCING PER ASTM F567, SWING GATES PER ASTM F900.
- GATE POST, CORNER, TERMINAL OR PULL POST 2 1/2 INCH DIAMETER SCHEDULE 40 FOR GATE WIDTHS UP THROUGH 6 FEET OR 12 FEET DOUBLE SWING GATE PER ASTM F1083.
- LINE POST: 2 INCH DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
- GATE FRAME: 1 1/2 INCH DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
- TOP RAIL AND BRACE RAIL: 1 1/2 DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
- FABRIC: 12 GA CORE WIRE SIZE 2 INCH MESH, CONFORMING TO ASTM A392.
- TIE WIRE: MINIMUM 11 GA GALVANIZED STEEL POSTS AND RAILS. A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAX 24 INCH INTERVALS.
- TENSION WIRE: 7 GA GALVANIZED STEEL.
- BARBED WIRE: DOUBLE STRAND 12 - 1/2 INCH OUTSIDE DIAMETER TWISTED WIRE TO MATCH WITH FABRIC 12 GA, 4 POINT BARBS SPACED ON APPROXIMATELY 5 INCH CENTERS.
- GATE LATCH: DROP DOWN LOCKABLE FORK LATCH AND LOCK, KEYED ALIKE FOR ALL SITES.
- LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED IF REQUIRED.
- HEIGHT = 6 FEET VERTICAL + 1 FOOT BARBED WIRE VERTICAL DIMENSION.



107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	CAG

REV	DATE	DESCRIPTION
2	03/30/21	ISSUED FOR FILING
1	10/06/20	ISSUED FOR FILING
0	05/21/20	ISSUED FOR FILING

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BRANFORD 11J
272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
**NOTES
& SPECIFICATIONS**

SHEET NUMBER
N-2

SYMBOLS

●	EXOTHERMIC CONNECTION
■	COMPRESSION CONNECTION
⊕	5/8"Øx10--0" COPPER CLAD STEEL GROUND ROD.
⊕	TEST GROUND ROD WITH INSPECTION SLEEVE
---	GROUNDING CONDUCTOR
Ⓐ	KEY NOTES
— X — X — X — X — X —	CHAINLINK FENCE
— □ — □ — □ — □ — □ —	WOOD FENCE
---	LEASE AREA
▨	ICE BRIDGE
▧	CABLE TRAY
— G — G — G — G — G —	GAS LINE
— E/T — E/T — E/T — E/T —	UNDERGROUND ELECTRICAL/TELCO
— E/C — E/C — E/C — E/C —	UNDERGROUND ELECTRICAL/CONTROL
— E — E — E — E — E —	UNDERGROUND ELECTRICAL
— T — T — T — T — T —	UNDERGROUND TELCO
---	PROPERTY LINE (PL)

ABBREVIATIONS

AC	ALTERNATING CURRENT	MGB	MASTER GROUNDING BAR
AIC	AMPERAGE INTERRUPTION CAPACITY	MIN	MINIMUM
ANI	AUXILIARY NETWORK INTERFACE	MW	MICROWAVE
ATM	ASYNCHRONOUS TRANSFER MODE	MTS	MANUAL TRANSFER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	OC	ON CENTER
AWS	ADVANCED WIRELESS SERVICES	PP	POLARIZING PRESERVING
BATT	BATTERY	PCU	PRIMARY CONTROL UNIT
BBU	BASEBAND UNIT	PDU	PROTOCOL DATA UNIT
BTC	BARE TINNED COPPER CONDUCTOR	PWR	POWER
BTS	BASE TRANSCEIVER STATION	RECT	RECTIFIER
CCU	CLIMATE CONTROL UNIT	RET	REMOTE ELECTRICAL TILT
CDMA	CODE DIVISION MULTIPLE ACCESS	RMC	RIGID METALLIC CONDUIT
CHG	CHARGING	RF	RADIO FREQUENCY
CLU	CLIMATE UNIT	RUC	RACK USER COMMISSIONING
COMM	COMMON	RRH	REMOTE RADIO HEAD
DC	DIRECT CURRENT	RRU	REMOTE RADIO UNIT
DIA	DIAMETER	RWY	RACEWAY
DWG	DRAWING	SFP	SMALL FORM-FACTOR PLUGGABLE
EC	ELECTRICAL CONDUCTOR	SIAD	SMART INTEGRATED ACCESS DEVICE
EMT	ELECTRICAL METALLIC TUBING	SSC	SITE SOLUTIONS CABINET
FIF	FACILITY INTERFACE FRAME	T1	1544KBPS DIGITAL LINE
GEN	GENERATOR	TDMA	TIME-DIVISION MULTIPLE ACCESS
GPS	GLOBAL POSITIONING SYSTEM	TMA	TOWER MOUNT AMPLIFIER
GSM	GLOBAL SYSTEM FOR MOBILE	TVSS	TRANSIENT VOLTAGE SUPPRESSION SYSTEM
HVAC	HEAT/VENTILATION/AIR CONDITIONING	TYP	TYPICAL
ICF	INTERCONNECTION FRAME	UMTS	UNIVERSAL MOBILE TELECOMMUNICATION SYSTEM
IGR	INTERIOR GROUNDING RING (HALO)	UPS	UNINTERRUPTIBLE POWER SUPPLY (DC POWER PLANT)
LTE	LONG TERM EVOLUTION		



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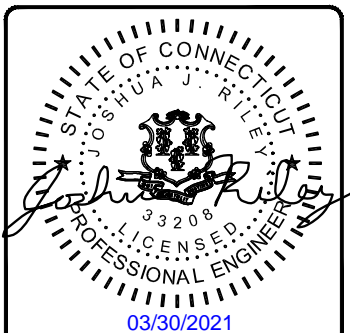


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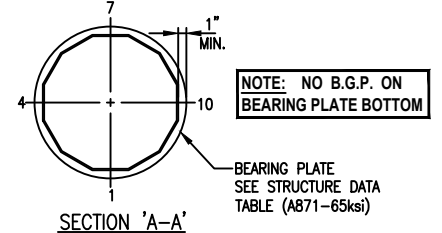
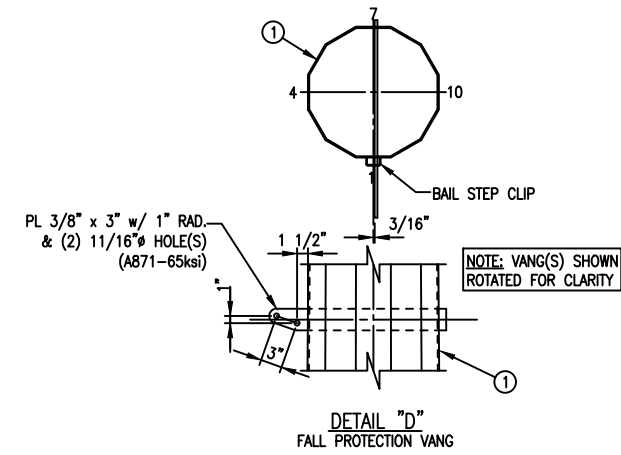
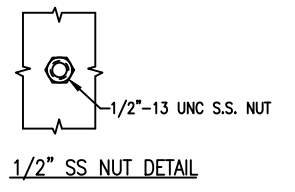
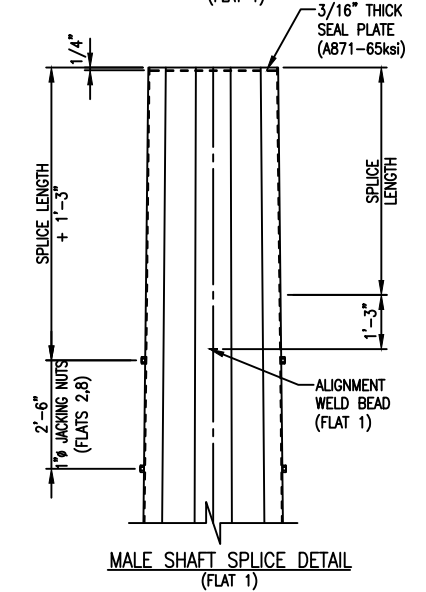
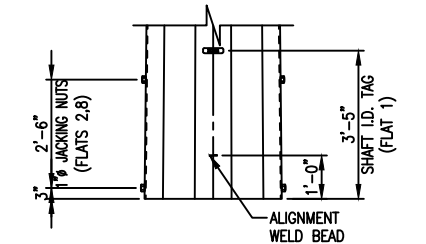
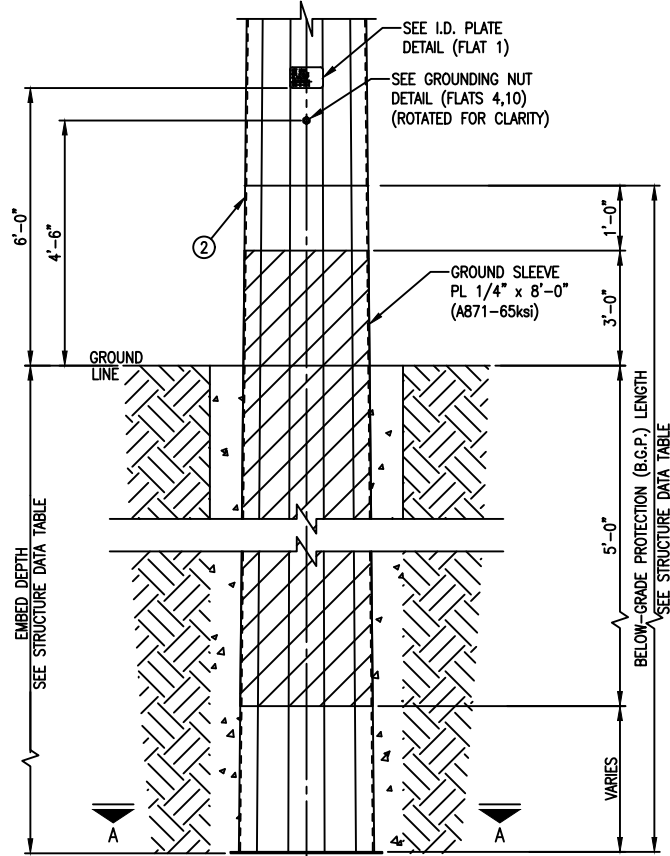
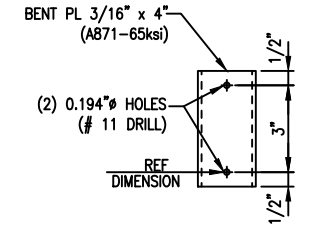
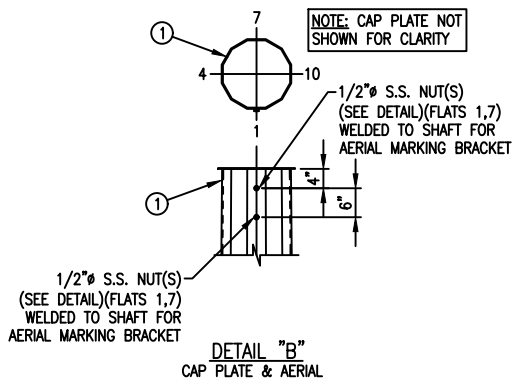
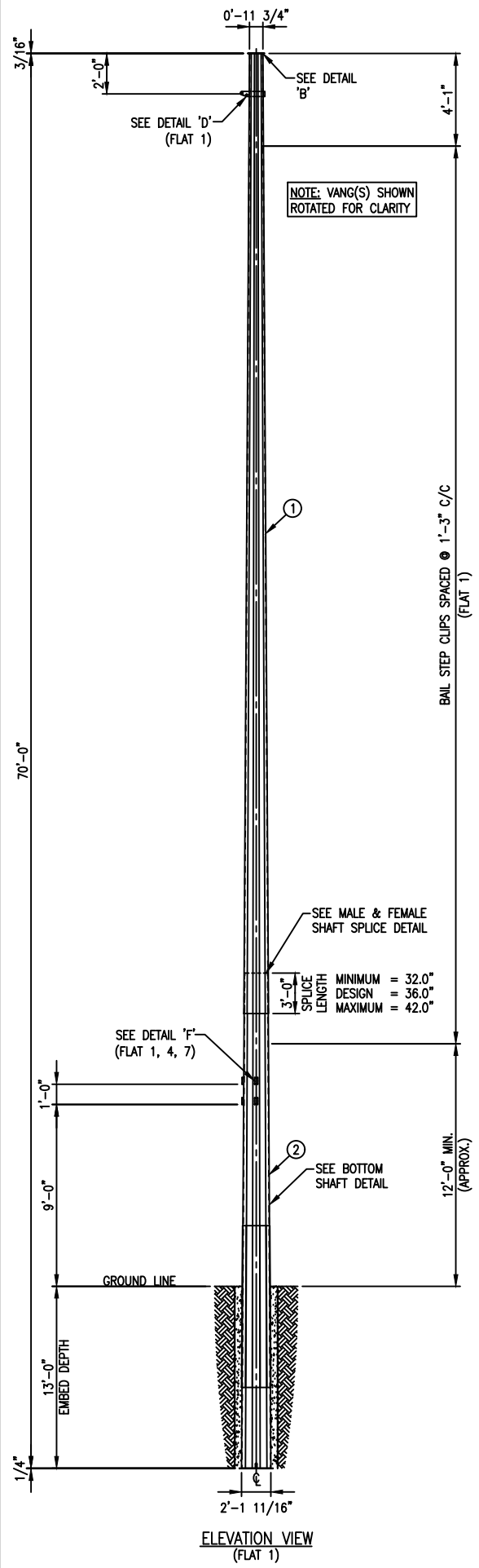
BRANFORD 11J
272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
N-3

REFERENCE CUTSHEETS

Note: The top 7'-0" of pole will be cut and removed making the total pole height = 63'-0". With a 13' pole embedment, the pole height above grade is 50'-0".



WEATHERING STEEL

SSPC-SP6 SAND BLASTING IS REQUIRED

* STRUCTURE NO.: SEE CHART

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<p>Sabre-FWT</p> <p>5750 EAST I-20 FORT WORTH, TEXAS 76119 USA (817) 255-3060</p>		<p>CLIENT: Eversource Energy WPE - Release WPEs</p> <p>DATE: _____ SHEET NO.: 1 of 2</p> <p>TITLE: ERECTION DRAWING - 70' H9-LD9 WPE's DRAWING NO.: E145</p>	

Structure Data Table										
QT #	STR. #	STR LINE & RELEASE (*)	O.A.L.	CLASS	CENTER OF GRAVITY (WELD BEADS ON FLATS 1,4,7,10)		EMBEDMENT			
					DISTANCE FROM TOP OF SHAFT 1	DISTANCE FROM TOP OF SHAFT 2	EMBEDMENT DEPTH (FEET)	BGP DEPTH (FEET)	BEARING PLATE (THICK)	BEARING PLATE (DIAM)
145			70'-0"	H9-LD9	26'-0"	13'-7"	13'-0"	17'-0"	1/4"	28"φ

LINE ITEM: *		BILL OF MATERIAL			STR #: SEE STR. DATA TABLE	
ITEM	ASSY#	QTY.	DESCRIPTION		*Fy*	WEIGHT/lbs
1	3169-1	1	PL 1/4" x 11.750" x 21.559" x 47'-6" (12 SIDED)		65 ksi	2146
2	3170-2	1	PL 1/4" x 20.439" x 25.705" x 25'-6" (12 SIDED)		65 ksi	2153
TOTAL BLACK WEIGHT/lbs						4299

QUANTITIES IN BILL OF MATERIAL FOR (1) ASSEMBLY ONLY, () REQUIRED.

SHIP LOOSE ITEMS			
ITEM	PART NO	QTY	DESCRIPTION
1	PT99970		POLY-COTE PC 110 TOUCH UP "BLACK" PINT KIT

PROJECT NOTES:

- POLE SECTIONS SHALL BE FABRICATED FROM WEATHERING STEEL.
- THE TOP OF MID AND/OR BOTTOM SHAFTS TO BE SEALED WITH A 3/16" THICK A871 (65 ksi) PLATE.

ERECTION NOTES:

- AS A MINIMUM, ALL NUTS SHOULD BE INSTALLED SNUG TIGHT. "SNUG TIGHT" IS DEFINED AS THE TIGHTNESS ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH.
- ALL POLE SECTIONS WILL HAVE ORIENTATION AND SECTION IDENTIFICATION MARKS TO BE USED FOR PROPER ORIENTATION OF POLE SECTIONS PRIOR TO ENGAGING SPLICES.
- PLEASE REFER TO DRAWING "FWT002" SUPPLIED WITH FINAL DRAWING PACKET FOR FWT RECOMMENDATIONS.

MATERIAL NOTES:

- STEEL SPECIFICATIONS: ALL STEEL PER ASTM A871, GR 65 (UNLESS NOTED OTHERWISE)
 PLATE (ie POLE SHAFT): 65 ksi A871 GRADE 65
 PLATE (ie BASE PLATE/BEARING PLATE): 65 ksi A871 GRADE 65
- HIGH STRENGTH PLATES TO HAVE A CHARPY V-NOTCH IMPACT VALUE OF 15FT-LBS. MINIMUM AT -20° F PER HEAT LOT TEST. (UNLESS NOTED OTHERWISE)

WELDING NOTES:

- ALL WELDS SHALL MEET THE REQUIREMENTS OF LATEST REVISION OF AWS D1.1.
- LONGITUDINAL WELDS SHALL BE 80% MINIMUM PENETRATION WITH 100% FUSION TO THAT DEPTH (TYPICAL), UNLESS NOTED. 100% FULL PENETRATION LONGITUDINAL SEAM WELDS WILL BE +6" LONG AT SHAFT ENDS AND SPLICE LENGTH +24" LONG AT FEMALE LAP SPLICE.
- FILLET WELDS SHALL BE 100% FUSION THROUGH THEIR ENTIRE CROSS SECTION. FIELD WELDING WILL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL OF BUYER

GENERAL NOTES:

- EACH STRUCTURE WILL BE MARKED WITH AN IDENTIFICATION PLATE (3/4" HIGH NUMBERS STAMPED IN 1/4" A871-65ksi PLATE MATERIAL) WELDED TO THE BASE SECTION. SEE BELOW:

STS
 CLASS#: H9-LD9
 HT: 70'-0"
 PO:
 STR.#: H9-70-*
 ASSY#: 3170-2
 * SEQ#

ID PLATE DETAIL
 BASE TAG

STR.#: H9-70-*
 ASSY#: 3169-1
 * SEQ#

ID PLATE DETAIL
 TOP TAG

- ALL OTHER PARTS AND WELDMENTS SHIPPED WITH STRUCTURE WILL BE MARKED WITH THEIR RESPECTIVE MARK NUMBER.

"STRUCTURES SHALL BE WEATHERING STEEL"
 "STRUCTURES SHALL HAVE BELOW GRADE PROTECTION"
 "BGP" AT TOP SHALL BE "FEATHERED"
 (NO "HARD LIP" IS ALLOWED)

(BGP COATING MINIMUM DRY THICKNESS OF 16 MILS)

TOLERANCE NOTES:

- POLE SECTION LENGTH: ±1"
- ALL OTHERS PER AISC

SHIPPING NOTES:


- HARDWARE IN BOM(S) EXACT QTY TO ASSEMBLE STRUCTURE(S). 5% EXTRA TO BE SHIPPED PER PROJECT
 JOB REQUIRES "GO & NO-GO GAGE" TO BE USED

**"BUY AMERICA"
 DOMESTIC STEEL ONLY**

WEATHERING STEEL

SSPC-SP6 SAND BLASTING IS REQUIRED

* STRUCTURE NO.: SEE CHART

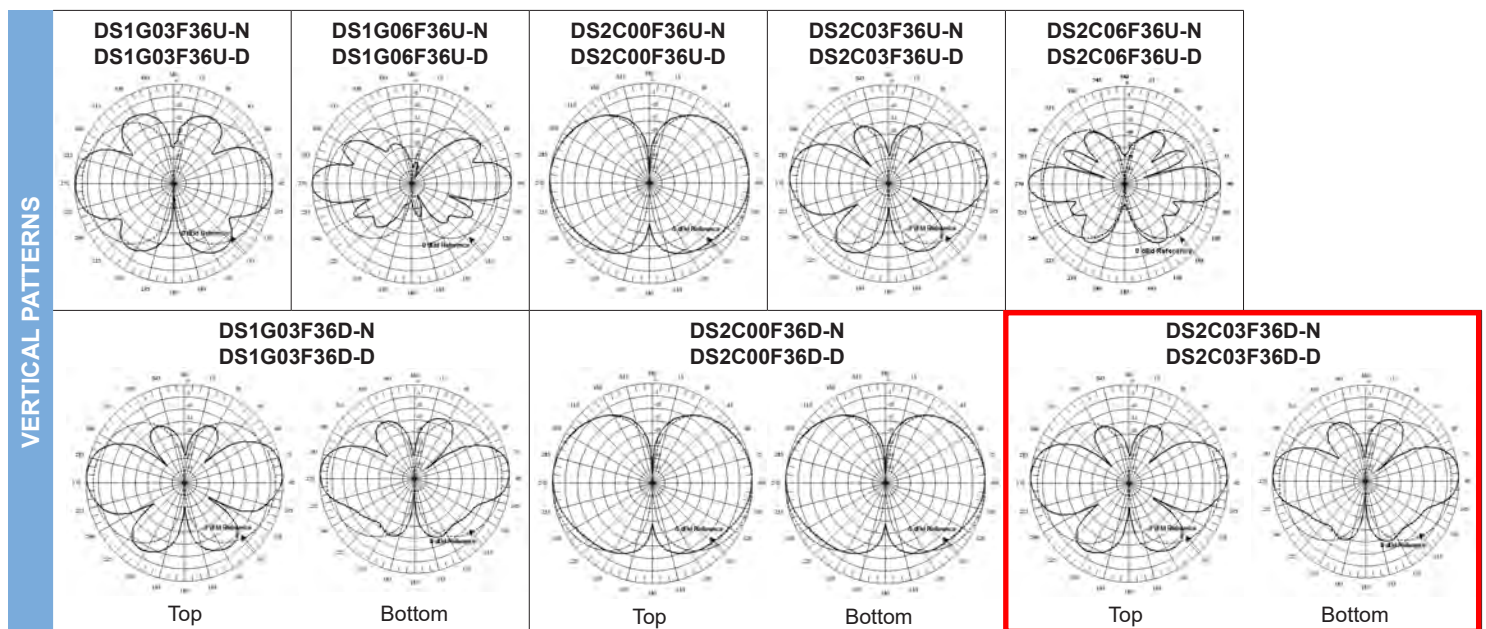
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VHF Omni Antennas (160-222 MHz)

		160-174 MHz						217-222 MHz									
Model Number		DS1G03F36U-N	DS1G03F36U-D	DS1G06F36U-N	DS1G06F36U-D	DS1G03F36D-N	DS1G03F36D-D	DS2C00F36U-N	DS2C00F36U-D	DS2C03F36U-N	DS2C03F36U-D	DS2C06F36U-N	DS2C06F36U-D	DS2C00F36D-N	DS2C00F36D-D	DS2C03F36D-N	DS2C03F36D-D
Input Connector		N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN
Type		Single		Single		Dual		Single		Single		Single		Dual		Dual	
ELECTRICAL	Bandwidth, MHz	14		14		14		5		5		5		5		5	
	Power, Watts	500		500		350		500		500		500		350		350	
	Gain, dBd	3		6		3		0		3		6		0		3	
	Horizontal Beamwidth, degrees	360		360		360		360		360		360		360		360	
	Vertical Beamwidth, degrees	30		16		30		60		30		16		60		30	
	Beam Tilt, degrees	0		0		0		0		0		0		0		0	
	Isolation (minimum), dB	N/A		N/A		30		N/A		N/A		N/A		30		30	
	Number of Connectors	1		1		2		1		1		1		2		2	
MECHANICAL	Flat Plate Area, ft ² (m ²)	2.53 (0.24)		4.38 (0.41)		4.5 (0.42)		1.9 (0.18)		1.9 (0.18)		2.58 (0.24)		2.4 (0.22)		4.1 (0.38)	
	Lateral Windload Thrust, lbf(N)	95 (423)		164 (730)		169 (752)		53 (236)		69 (307)		108 (480)		90 (400)		169 (752)	
	Survival Wind Speed without ice, mph(kph)	110 (177)		75 (121)		75 (121)		222 (357)		172 (277)		110 (177)		130 (209)		75 (121)	
	with 0.5" radial ice, mph(kph)	93 (150)		60 (97)		65 (105)		193 (311)		150 (241)		96 (154)		115 (185)		65 (105)	
	Mounting Hardware included	DSH3V3R		DSH3V3N		DSH3V3N		DSH2V3R		DSH2V3R		DSH3V3N		DSH3V3R		DSH3V3N	
DIMENSIONS	Length, ft(m)	12.7 (3.9)		21.9 (6.7)		22.3 (6.8)		7.7 (2.3)		9.9 (3)		18.1 (5.5)		13.6 (4.1)		24.3 (7.4)	
	Radome O.D., in(cm)	3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)	
	Mast O.D., in(cm)	2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)	
	Net Weight w/o bracket, lb(kg)	37 (16.8)		60 (27.2)		63 (28.6)		19 (8.6)		26 (11.8)		47 (21.3)		40 (18.1)		70 (31.8)	
	Shipping Weight, lb(kg)	67 (30.4)		90 (40.8)		93 (42.2)		39 (17.7)		56 (25.4)		77 (34.9)		70 (31.8)		100 (45.4)	



DS2C03F36D-D

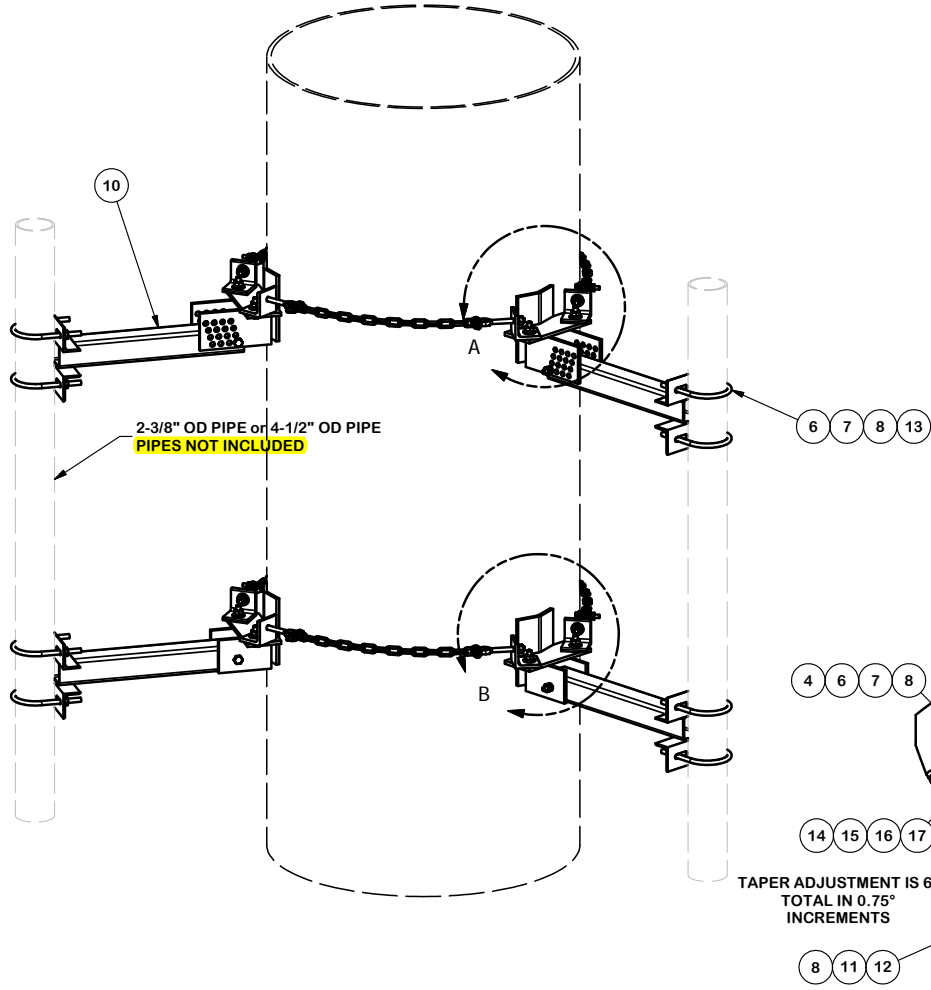


TOWER/MAST SIZE AT PROPOSED ANTENNA ATTACHMENT = 8.5"± DIAMETER FOR UPPER LEVEL AND 10"± DIAMETER FOR LOWER LEVEL.

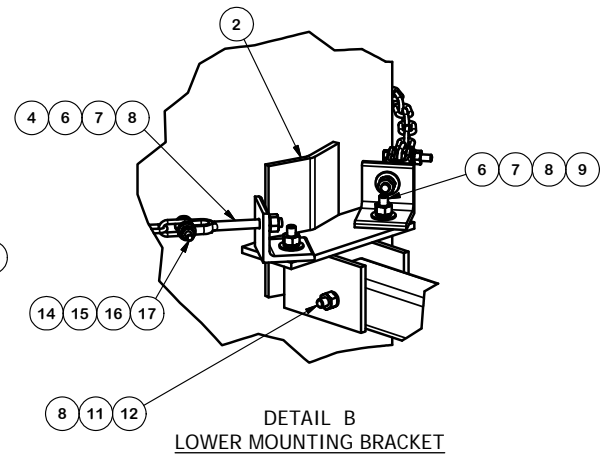
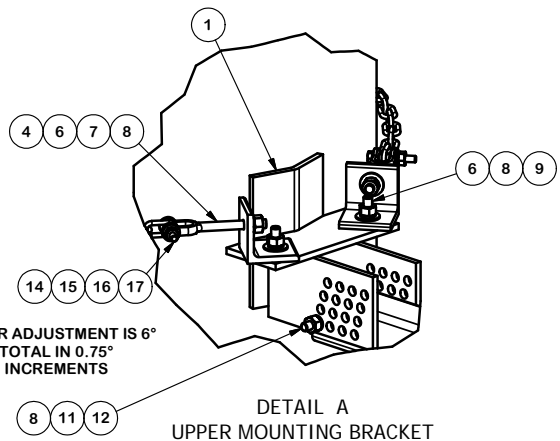
PROPOSED CHAIN MOUNT FITS POLYGON OR ROUND POLES 5"-36" IN DIAMETER.

NOTE: (1) 4" (4.5" OD) SCH 40 x 6'-0" AND (3) 2" (2.375" OD) SCH 40 x 6'-0" MOUNT PIPES ARE REQUIRED.

MOUNT FOR UPPER LEVEL



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	48.50
2	3	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	42.41
3	12	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	22.09
4	12	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	6.11
5	6	GC40317	1/4" x GR40 GALV. CHAIN 3.17'		0.91	5.46
6	48	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	3.44
7	48	G12FW	1/2" HDG USS FLATWASHER		0.03	1.64
8	54	G12LW	1/2" HDG LOCKWASHER		0.01	0.75
9	12	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	2.11
10	6	X-UAPM22	UNIVERSAL ANGLE TUBE 22"		16.76	100.58
11	6	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.43
12	6	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	2.06
13	12	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	11.66
13	12	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	7.88
14	12	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	1.23
15	12	G38FW	3/8" HDG USS FLATWASHER		0.01	0.14
16	12	G38LW	3/8" HDG LOCKWASHER		0.01	0.08
17	12	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.41
					TOTAL WT. #	267.00



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
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DESCRIPTION
 2'-0" STAND-OFF, TRIPLE SECTOR,
 TAPER ADJUSTABLE CHAIN MOUNT,
 SITE PRO 1

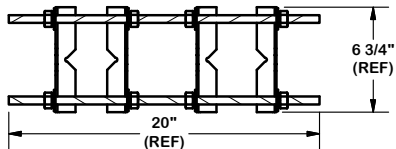
SITE PRO 1
 A valmont COMPANY
 Engineering Support Team:
 1-888-753-7446
 Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REVISED DETAILS	RCH		3/09/2010
REVISION HISTORY				

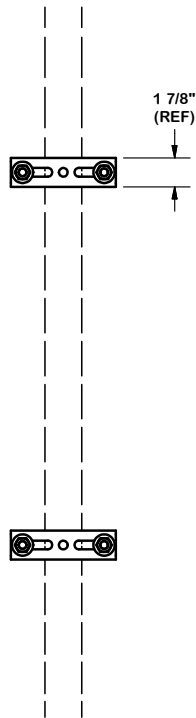
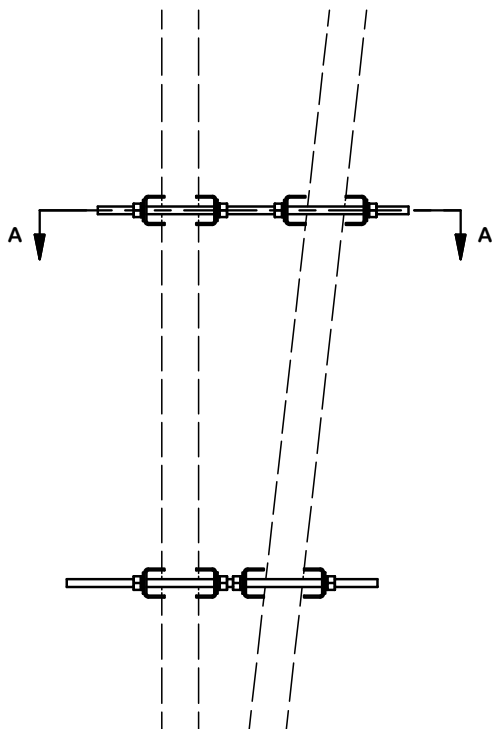
CPD NO.	DRAWN BY	ENG. APPROVAL
	RH18	3/9/2010
CLASS	DRAWING USAGE	CHECKED BY
81	CUSTOMER	BMC 3/15/2010

PART NO.	TCHM3-L
DWG. NO.	TCHM3-L

MOUNT-PIPE-TO-ANTENNA CLAMPS (TOTAL OF 5 KITS REQUIRED).
 SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS.



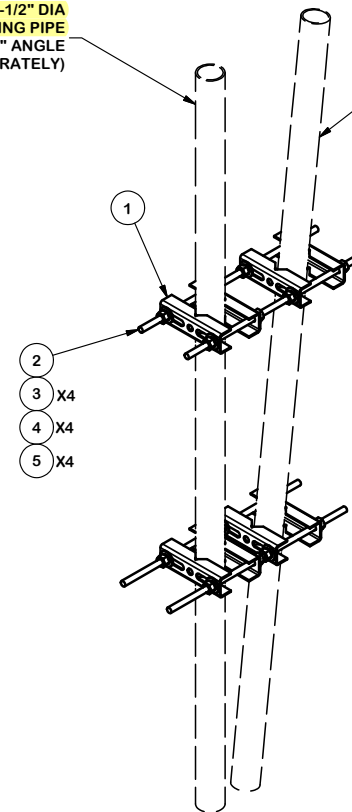
SECTION A-A



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	X-UPC1	SMALL PIPE TO PIPE BRACKET		0.85	6.79
2	4	G12R-20	1/2" x 20" THREADED ROD (HDG.)	20 in	3.23	12.91
3	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.14
4	16	G12LW	1/2" HDG LOCKWASHER		0.01	0.22
5	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.54
TOTAL WT. #						13.45

1-1/4" TO 4-1/2" DIA
 ANTENNA MOUNTING PIPE
 OR 1-1/2" TO 3" ANGLE
 (ORDERED SEPARATELY)

1-1/4" TO 4-1/2" DIA
 TOWER LEG
 OR 1-1/2" TO 3" ANGLE
 (REF)



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
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 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

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DESCRIPTION
 UNIVERSAL PIPE-TO-PIPE
 CLAMP SET
 FOR SMALL PIPES (1-1/4" TO 4-1/2")



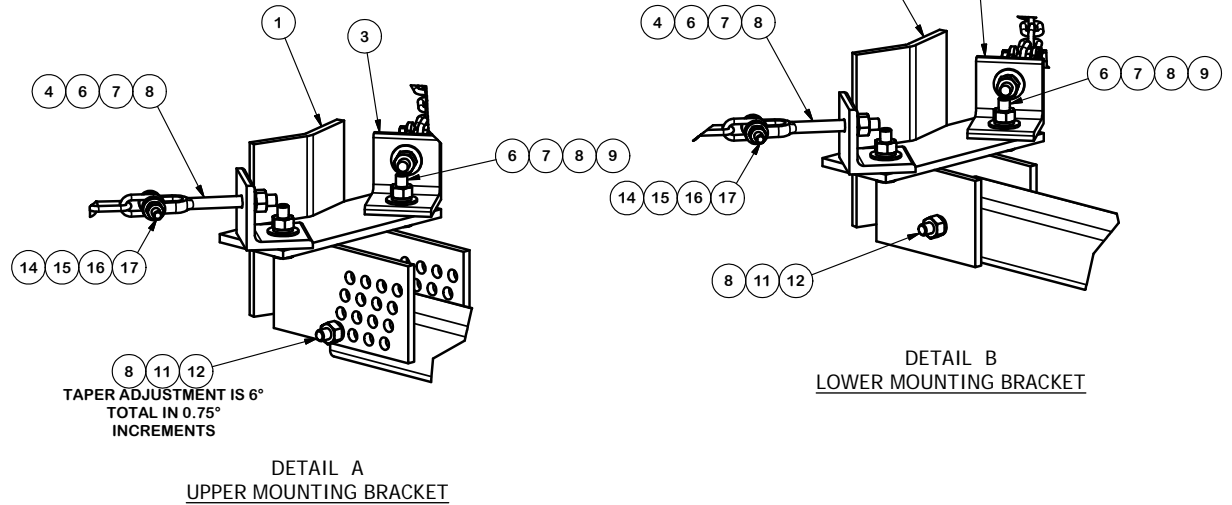
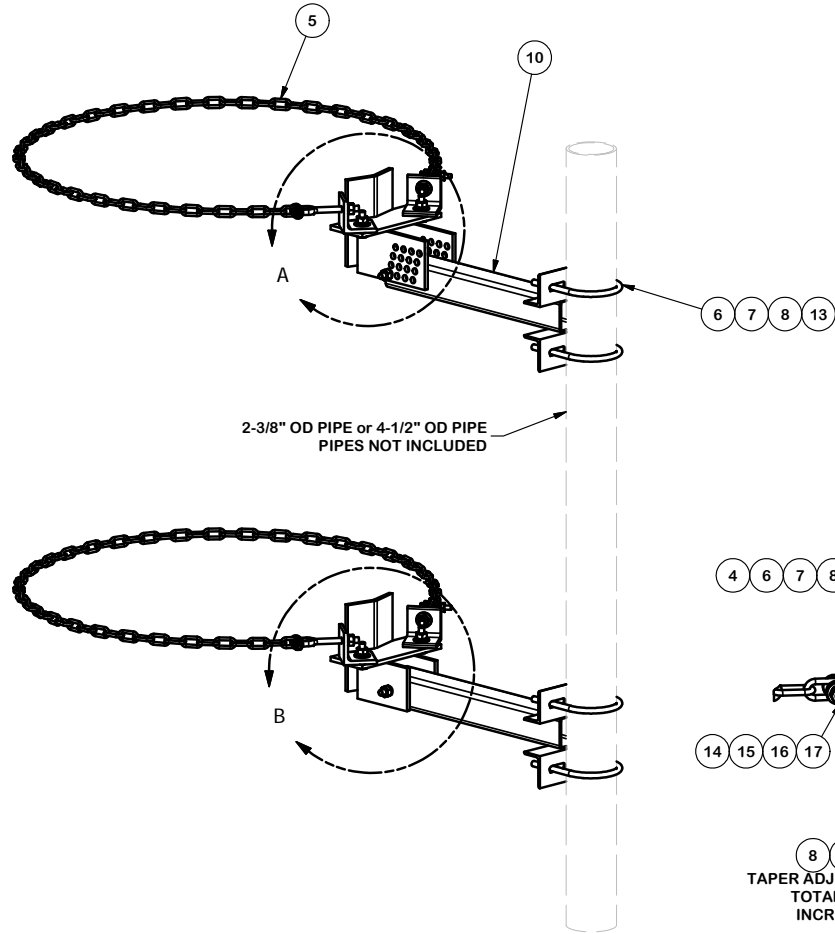
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX
 Engineering Support Team:
 1-888-753-7446

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REDRAWN IN INV. UPDATED VIEWS & TABLE		KC8	8/20/2012

CPD NO. 4448	DRAWN BY CEK 3/13/2009	ENG. APPROVAL
CLASS 81	SUB 01	DRAWING USAGE CUSTOMER
CHECKED BY CEK 2/18/2013		

PART NO. UPC1	DWG. NO. UPC1
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MOUNT FOR LOWER LEVEL



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	16.17
2	1	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	14.14
3	4	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	7.36
4	4	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	2.04
5	2	GC4095	1/4" x GR40 GALV. CHAIN 9.5'		4.07	8.14
6	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.15
7	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.55
8	18	G12LW	1/2" HDG LOCKWASHER		0.01	0.25
9	4	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	0.70
10	2	X-UAPM22	UNIVERSAL ANGLE TUBE 22"		16.76	33.53
11	2	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.14
12	2	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	0.69
13	4	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	3.89
13	4	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	2.63
14	4	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	0.41
15	4	G38FW	3/8" HDG USS FLATWASHER		0.01	0.05
16	4	G38LW	3/8" HDG LOCKWASHER		0.01	0.03
17	4	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.14
					TOTAL WT. #	95.80

TOLERANCE NOTES
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PROPRIETARY NOTE:
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DESCRIPTION
 2'-0" STANDOFF, SINGLE SECTOR,
 TAPER ADJUSTABLE CHAIN MOUNT,
 SITE PRO 1

CPD NO.	DRAWN BY	ENG. APPROVAL
	RH18 3/12/2010	
CLASS	DRAWING USAGE	CHECKED BY
81	CUSTOMER	BMC 3/15/2010

 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX		
	Engineering Support Team: 1-888-753-7446		
PART NO.	TCHM1-L	PAGE	1 OF 1
DWG. NO.	TCHM1-L		



The Kohler® Advantage

- **High Quality Power**
Kohler home generators provide advanced voltage and frequency regulation along with ultra-low levels of harmonic distortion for excellent generator power quality to protect your valuable electronics.
- **Extraordinary Reliability**
Kohler is known for extraordinary reliability and performance and backs that up with a premium five-year or 2000 hour limited warranty.
- **All-Aluminum Sound Enclosure**
- **Quiet Operation**
Kohler home generators provide quiet, neighborhood-friendly performance.

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The generator set accepts rated load in one step.
- A standard five-year or 2000 hour limited warranty covers all systems and components.
- Quick-ship (QS) models with selected features are available. See your Kohler distributor for details.
- Meets 291 kph (181 mph) wind load rating.
- RDC2 Controller
 - One digital controller manages both the generator set and transfer switch functions (with optional Model RXT transfer switch).
 - Designed for today's most sophisticated electronics.
 - Electronic speed control responds quickly to varying household demand.
 - Digital voltage regulation protects your valuable electronics from harmonic distortion and unstable power quality.
 - Two-line, backlit LCD screen is easy to read in all lighting conditions, including direct sunlight and low light.
- Engine Features
 - Powerful and reliable 2.2 L liquid-cooled engine
 - Electronic engine management system.
 - Simple field conversion between natural gas and LPG fuels while maintaining emission certification.
- Innovative Cooling System
 - Electronically controlled fan speeds minimize generator set sound signature.
- Certifications
 - The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA) to conform to the New Source Performance Standard (NSPS) for stationary spark-ignited emissions.
 - UL 2200/cUL listing is available (60 Hz only).
 - CSA certification is available (60 Hz only).
 - Accepted by the Massachusetts Board of Registration of Plumbers and Gas Fitters.
- Approved for stationary standby applications in locations served by a reliable utility source.

Generator Set Ratings

Alternator	Voltage	Ph	Hz	Standby Ratings			
				Natural Gas		LPG	
				kW/kVA	Amps	kW/kVA	Amps
4E5.0	120/240	1	60	21/21	87	24/24	100
	120/208	3	60	21/26	73	23/28	80
	127/220	3	60	21/26	69	23/28	75
	120/240	3	60	21/26	63	23/28	69
4D5.0	277/480	3	60	21/26	32	23/28	35
	220/380*	3	50	16/20	30	17/22	33
	230/400	3	50	16/21	30	18/23	33
	240/416*	3	50	16/21	29	18/23	32

* 50 Hz models are factory-connected as 230/400 volts. Field-adjustable to 220/380 or 240/416 volts by an authorized service technician.

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. Due to manufacturing variations, the ratings tolerance is ±5%. **Standby Ratings:** Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads with an average load factor of 80% for the duration of a power outage. No overload capacity is specified for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. **GENERAL GUIDELINES FOR DERATING:** *Altitude:* Derate 1.3% per 100 m (328 ft.) elevation above 200 m (656 ft.). *Temperature:* Derate 3.0% per 10°C (18°F) temperature above 25°C (77°F). Availability is subject to change without notice. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler generator distributor for availability.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating Field
Exciter type	Brushless, Wound-Field
Leads: quantity, type	
4E5.0	4, 120/240
4D5.0	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Voltage regulation, no-load to full-load	±1.0% Maximum
Unbalanced load capability	100% of Rated Standby Current
One-step load acceptance	100% of Rating
Peak motor starting kVA:	(35% dip for voltages below)
240 V	4E5.0 (4 lead) 37 (60 Hz)
480 V, 400 V	4D5.0 (12 lead) 59 (60 Hz) 44 (50 Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and drip-proof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Total harmonic distortion (THD) from no load to full load with a linear load is less than 5%.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Kohler	
Engine: model, type	Residential Powertrain KG2204, 2.2 L, 4-Cycle Natural Aspiration	
Cylinder arrangement	In-line 4	
Displacement, L (cu. in.)	2.2 (134.25)	
Bore and stroke, mm (in.)	91 x 86 (3.5 x 3.4)	
Compression ratio	10.5:1	
Piston speed, m/min. (ft./min.)	310 (1016)	258 (847)
Main bearings: quantity, type	5, plain alloy steel	
Rated rpm	1800	1500
Max. power at rated rpm, kW (HP)		
LPG	30 (40)	NA
Natural Gas	27 (36)	NA
Cylinder head material	Cast Iron	
Piston type and material	High Silicon Aluminum	
Crankshaft material	Nodular Iron	
Valve (exhaust) material	Forged Steel	
Governor type	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±1.0%	
Frequency	Fixed	
Air cleaner type	Dry	

Engine Electrical

Engine Electrical System	
Ignition system	Electronic
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	14
Ampere rating	90
Starter motor rated voltage (DC)	12
Battery, recommended rating for -18°C (0°F):	
Qty., cold cranking amps (CCA)	One, 630
Battery voltage (DC)	12
Battery group size	24

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Exhaust temperature at rated kW, dry exhaust, °C (°F)	633 (1171)	
Maximum allowable back pressure, kPa (in. Hg)	7.5 (2.2)	

Fuel

Fuel System	
Fuel type	Natural Gas or LPG
Fuel supply line inlet	1 in. NPT
Natural gas fuel supply pressure, kPa (in. H ₂ O)	1.24-2.74 (5-11) <i>-0.18 psi</i>
LPG vapor withdrawal fuel supply pressure, kPa (in. H ₂ O)	1.24-2.74 (5-11) <i>0.4 psi</i>

Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	—
Ethane, % by volume	4.0 max.	—
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C ₄ and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m ³ (Btu/ft ³), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.)	4.2 (4.4)
Oil added during oil change (on average), L (qt.)	3.3 (3.5)
Oil filter: quantity, type	1, Cartridge

Application Data

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	45 (113)	
Engine jacket water capacity, L (gal.)	2.65 (0.7)	
Radiator system capacity, including engine, L (gal.)	13.2 (3.5)	
Water pump type	Centrifugal	
Fan diameter, mm (in.)	qty. 3 @ 406 (16)	
Fan power requirements (powered by engine battery charging alternator)	12VDC, 18 amps each	

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m ³ /min. (scfm)†	51 (1800)	51 (1800)
Combustion air, m ³ /min. (cfm)	1.4 (49)	1.2 (42)
Air over engine, m ³ /min. (cfm)	25 (900)	25 (900)

† Air density = 1.20 kg/m³ (0.075 lbm/ft³)

Fuel Consumption‡

Natural Gas, m ³ /hr. (cfh) at % load	60 Hz	50 Hz
100%	8.5 (301)	7.8 (275)
75%	6.3 (223)	6.4 (225)
50%	5.6 (199)	5.4 (192)
25%	4.0 (140)	3.3 (116)
Exercise	2.8 (97)	2.9 (103)

LP Gas, m ³ /hr. (cfh) at % load	60 Hz	50 Hz
100%	3.2 (113)	2.7 (96)
75%	2.8 (97)	2.3 (81)
50%	2.4 (84)	2.0 (72)
25%	1.8 (63)	1.7 (60)
Exercise	1.4 (51)	1.4 (48)

‡ Nominal Fuel Rating: Natural gas, 37 MJ/m³ (1000 Btu/ft³)
LP Vapor, 93 MJ/m³ (2500 Btu/ft³)

LP vapor conversion factors:
8.58 ft.³ = 1 lb.
0.535 m³ = 1 kg.
36.39 ft.³ = 1 gal.

Sound Enclosure Features

- Sound-attenuating enclosure uses acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.
- Internally mounted critical silencer.
- Skid-mounted, aluminum construction with two removable access panels.
- Fade-, scratch-, and corrosion-resistant Kohler® cashmere powder-baked finish.

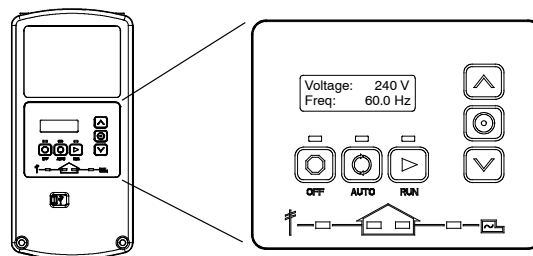
Sound Data

Model 24RCL 8 point logarithmic average sound levels are 54 dB(A) during weekly engine exercise and 61 dB(A) during full-speed generator diagnostics and normal operation. For comparison to competitor ratings, the lowest point sound levels are 52 dB(A) and 60 dB(A) respectively.*

All sound levels are measured at 7 meters with no load.

* Lowest of 8 points measured around the generator. Sound levels at other points around generator may vary depending on installation parameters.

RDC2 Controller



The RDC2 controller provides integrated control for the generator set, Kohler® Model RXT transfer switch, programmable interface module (PIM), and load management.

The RDC2 controller's 2-line LCD screen displays status messages and system settings that are clear and easy to read, even in direct sunlight or low light.

RDC2 Controller Features

- Membrane keypad
 - OFF, AUTO, and RUN push buttons
 - Select and arrow buttons for access to system configuration and adjustment menus
- LED indicators for OFF, AUTO, and RUN modes
- LED indicators for utility power and generator set source availability and ATS position (Model RXT transfer switch required)
- LCD screen
 - Two lines x 16 characters per line
 - Backlit display with adjustable contrast for excellent visibility in all lighting conditions
- Scrolling system status display
 - Generator set status
 - Voltage and frequency
 - Engine temperature
 - Oil pressure
 - Battery voltage
 - Engine runtime hours
- Date and time displays
- Smart engine cooldown senses engine temperature
- Digital isochronous governor to maintain steady-state speed at all loads
- Digital voltage regulation: ± 1.0% RMS no-load to full-load
- Automatic start with programmed cranking cycle
- Programmable exerciser can be set to start automatically on any future day and time, and to run every week or every two weeks
- Exercise modes
 - Unloaded exercise with complete system diagnostics
 - Unloaded full-speed exercise
 - Loaded full-speed exercise (Model RXT ATS required)
- Front-access mini USB connector for SiteTech™ connection
- Integral Ethernet connector for Kohler® OnCue® Plus
- Built-in 2.5 amp battery charger
- Remote two-wire start/stop capability for optional connection of a Model RDT transfer switch

See additional controller features on the next page.

Additional RDC2 Controller Features

- Diagnostic messages
 - Displays diagnostic messages for the engine, generator, Model RXT transfer switch, programmable interface module (PIM), and load management device
 - Over 70 diagnostic messages can be displayed
- Maintenance reminders
- System settings
 - System voltage, frequency, and phase
 - Voltage adjustment
 - Measurement system, English or metric
- ATS status (Model RXT ATS required)
 - Source availability
 - ATS position (normal/utility or emergency/generator)
 - Source voltage and frequency
- ATS control (Model RXT ATS required)
 - Source voltage and frequency settings
 - Engine start time delay
 - Transfer time delays
 - Fixed pickup and dropout settings
 - Voltage calibration
- Programmable interface module (PIM) status displays
 - Input status (active/inactive)
 - Output status (active/inactive)
- Load control menus
 - Load status
 - Test function

Generator Set Standard Features

- Aluminum sound enclosure with enclosed silencer
- Battery rack and cables
- Electronic, isochronous governor
- Flexible fuel line
- Gas fuel system (includes fuel mixer, electronic secondary gas regulator, two gas solenoid valves, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral vibration isolation
- Line circuit breaker
- Oil drain extension
- OnCue® Plus Generator Management System
- Operation and installation literature
- RDC2 controller with built-in battery charger
- Standard five-year or 2000 hour limited warranty

Available Options

Approvals and Listings

- UL 2200/cUL Listing (60 Hz only)
- CSA Approval (60 Hz only)

Controller Accessories

- Lockable Emergency Stop (lockout/tagout)
- Programmable Interface Module (PIM) (provides 2 digital inputs and 6 relay outputs)

Electrical System

- Battery
- Battery Heater

Available Options, Continued

Starting Aids

- Oil Pan Heater, 120 V, 1 Ph
- Oil Pan Heater, 240 V, 1 Ph

Recommended for ambient temperatures below 0°C (32°F).

Automatic Transfer Switches and Accessories

- Model RDT Automatic Transfer Switch
- Model RXT Automatic Transfer Switch
- Model RXT Automatic Transfer Switch with Combined Interface/Load Management Board
- Load Shed Kit for RDT or RXT
- Power Relay Modules (use up to 4 relay modules for each load management device)

Miscellaneous

- Rated Power Factor Testing

Literature

- General Maintenance Literature Kit
- Overhaul Literature Kit
- Production Literature Kit

Warranty

- Extended 5-Year/2000 Hour Comprehensive Limited Warranty

Other Options

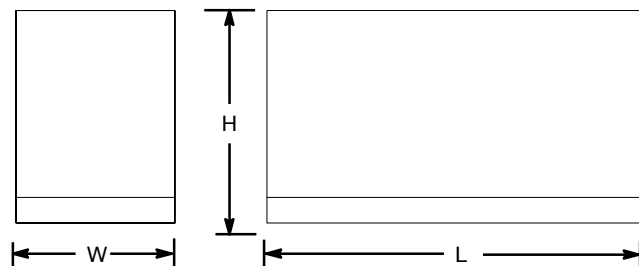
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Dimensions and Weights

Overall Size, L x W x H, mm (in.): 1880 x 836 x 1169
(74 x 32.9 x 46.0)

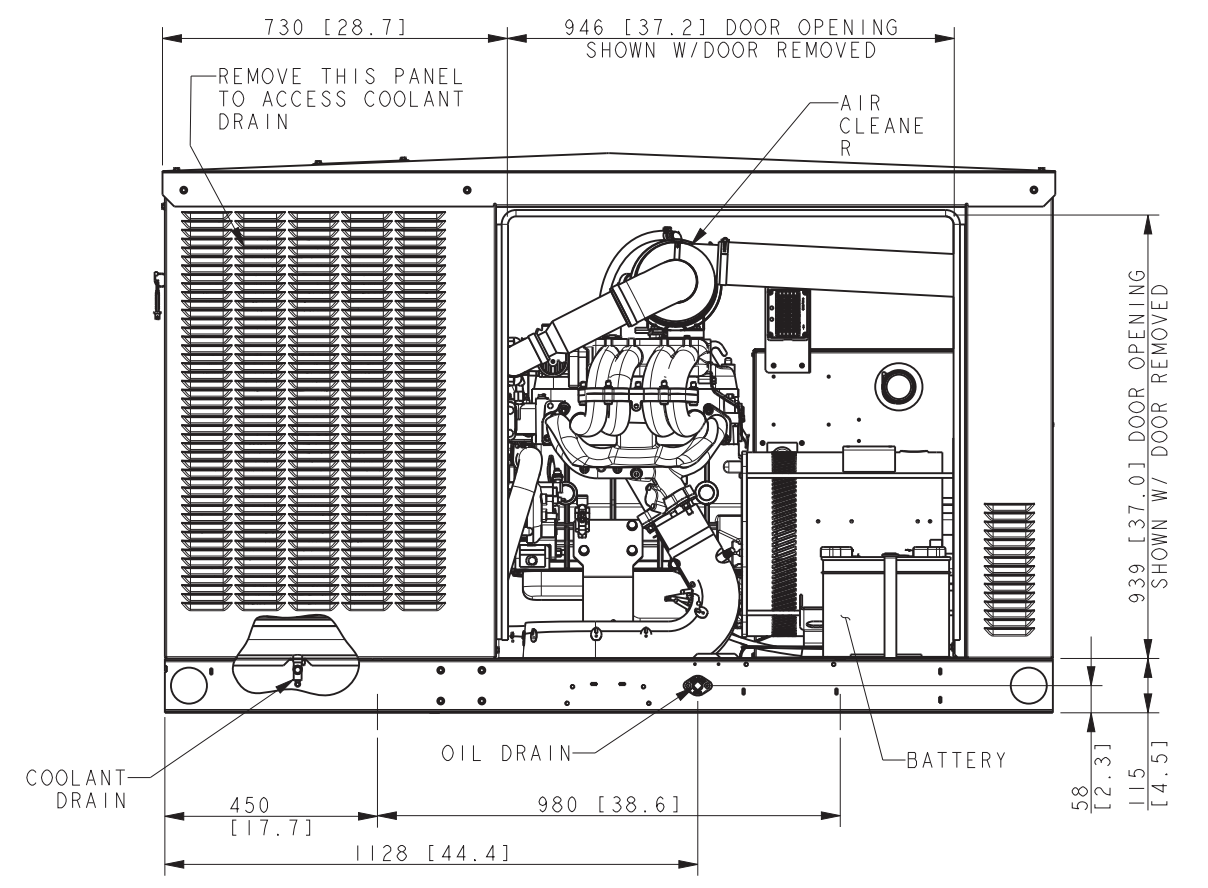
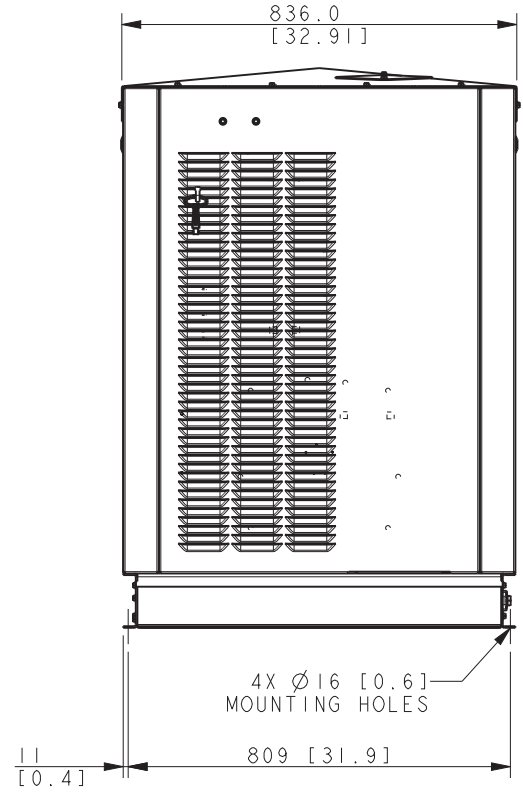
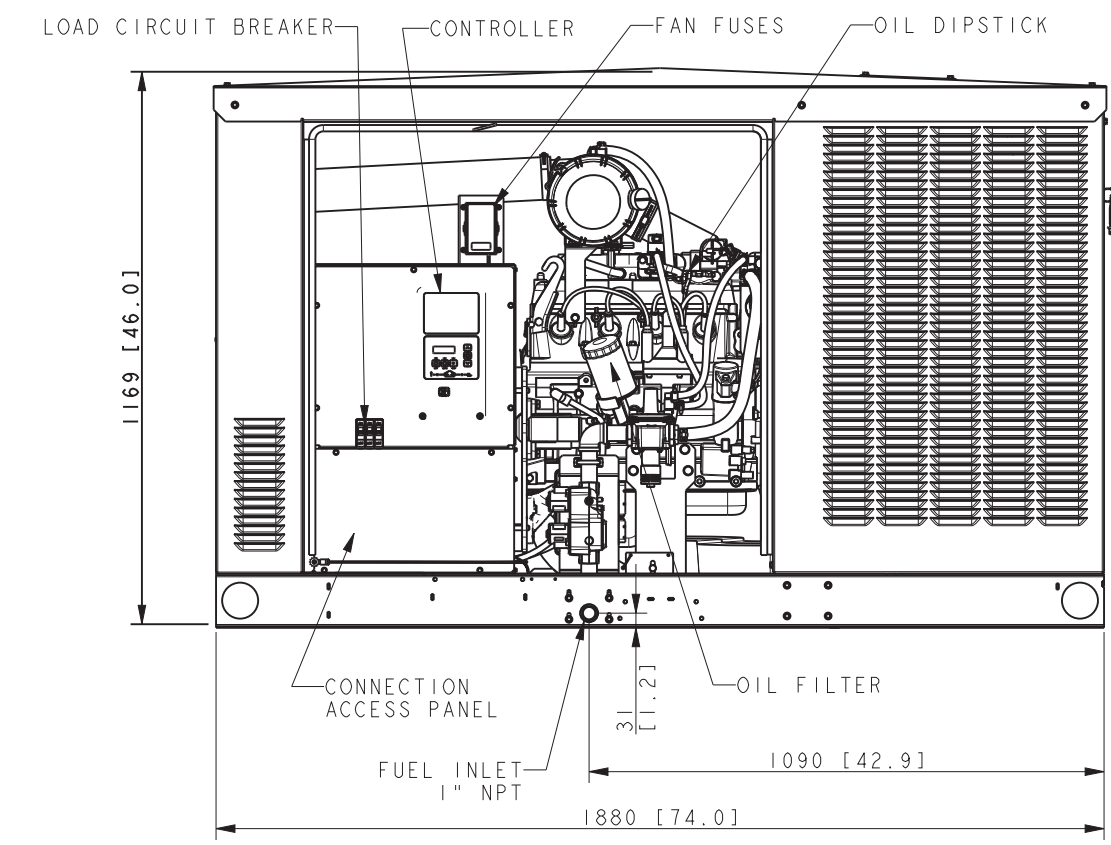
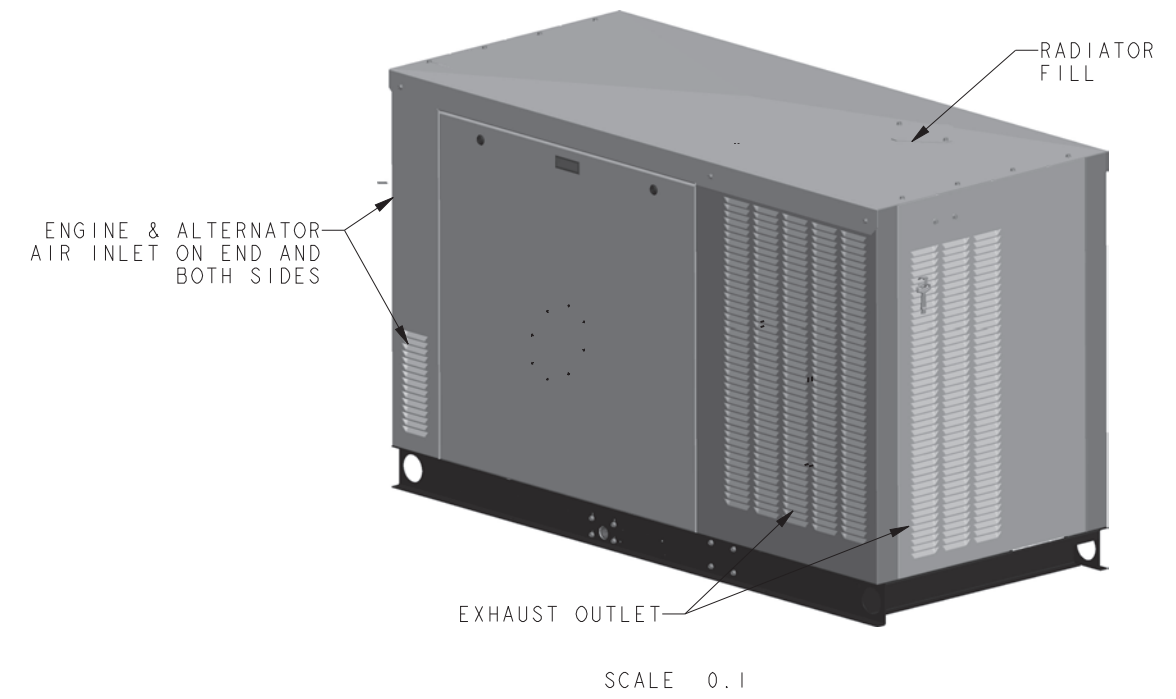
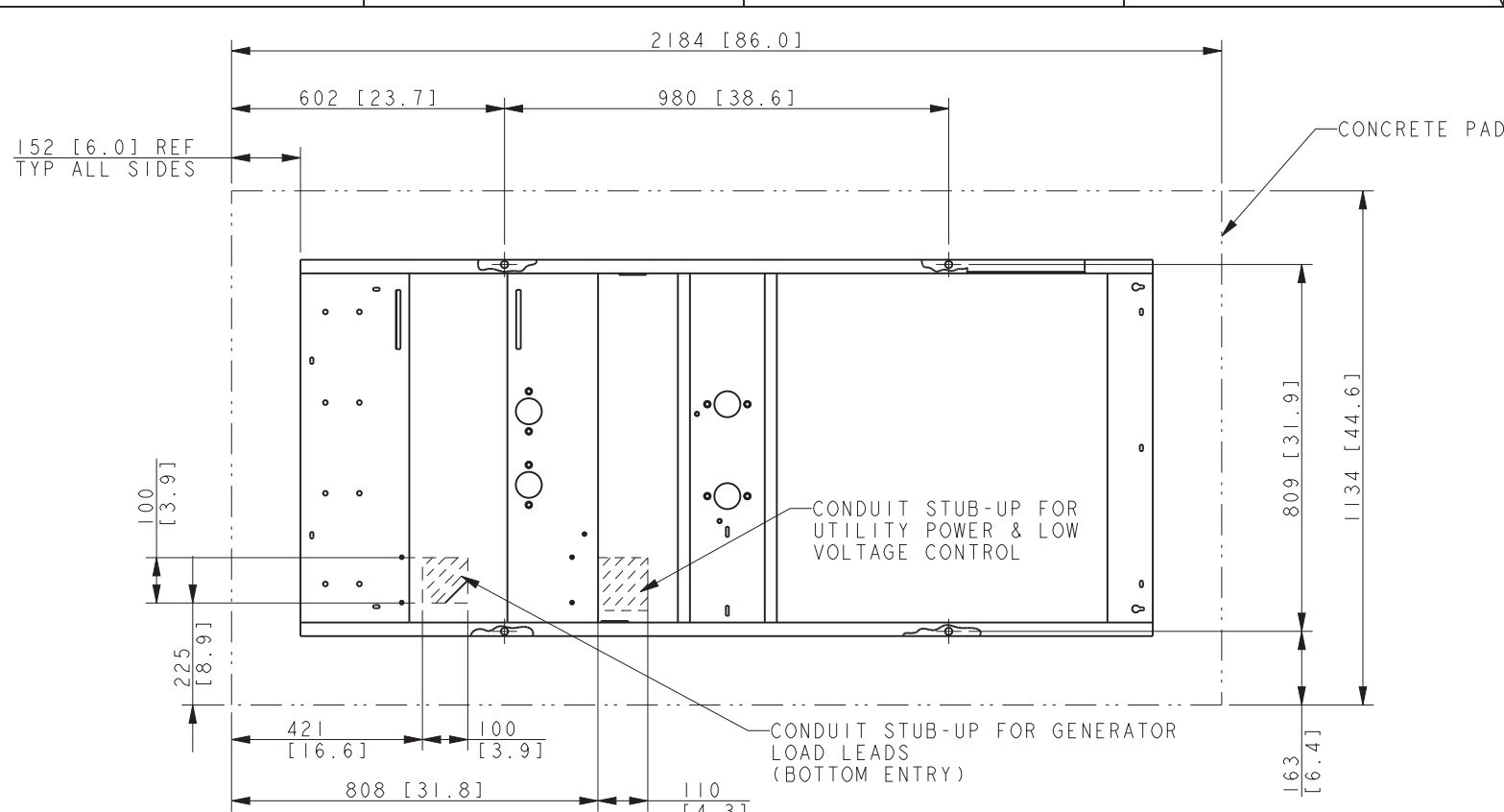
Shipping Weight, wet, kg (lb.): 572 (1260)

Weight includes generator set with engine fluids, sound enclosure, silencer, and packaging.



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:



NOTE: DIMENSIONS IN [] ARE ENGLISH STANDARD EQUIVALENTS.

24RCL

REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	UNLESS OTHERWISE SPECIFIED - 1) DIMENSIONS ARE IN MILLIMETERS 2) TOLERANCES ARE:	APPROVALS	DATE
-	10-31-13	NEW DRAWING [CT79277]	DRA	X.XX ± 0.25 X.X ± 1.0 X ± 1.5 ANGLES ± 0° 30'		10-31-13
A	6-3-14	(C-8) 225 WAS 211, 100 WAS 123, (C-7) 421 WAS 392, 100 WAS 216 [CT83066]	DRA	SURFACE FINISH MAX.		10-31-13
B	6-10-15	UPDATED VIEWS TO SHOW CROSS BENT, PITCHED ROOF [CT115573]	BGP	THIRD ANGLE PROJECTION		10-31-13
C	2-25-19	SEE SHEET 2 [CT193814]	HM			10-31-13

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

DIMENSION PRINT
SCALE 0.13 CAD NO. SHEET 1 of 2
ADV-8641 D

Attachment B
Structural Analysis

Date: **March 26, 2021**



Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-2522

Subject: **Structural Analysis Report**

Eversource Designation: **Site Number:** ES-106
Site Name: Branford11J

Engineering Firm Designation: **Black & Veatch Corp. Project Number:** 405025

Site Data: **272 East Main St, Branford, New Haven County, CT 06405**
Latitude: 41° 17' 33.11", Longitude: -72° 47' 40.68"
50 Foot – Proposed Monopole Tower

Black & Veatch Corp. is pleased to submit this **“Structural Analysis Report”** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Proposed Equipment Configuration **Sufficient Capacity – 53.2%**

This analysis utilizes an ultimate 3-second gust wind speed of 140 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Joshua Riley / Chris Giannotti

Respectfully submitted by:

Joshua Riley, P.E.
Professional Engineer

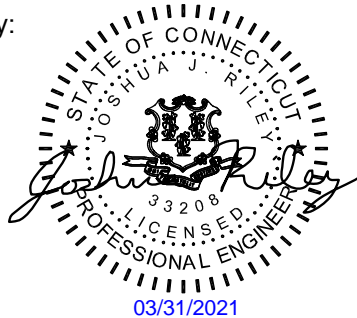


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tnxTower Output

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7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a proposed 50 ft Monopole tower manufactured by Sabre-FWT.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
 Risk Category: III
 Wind Speed: 140 mph ultimate
 Exposure Category: C
 Topographic Factor: 1
 Ice Thickness: 1.5 in
 Wind Speed with Ice: 50 mph
 Seismic S_s: 0.179
 Seismic S₁: 0.061
 Service Wind Speed: 60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
47.0	60.0	1	db spectra	DS2C03F36D-D	2	7/8	-
	47.0	1	site pro 1	2' Stand-off Triple Sector Chain Mount (P/N: TCHM3-L)			
		1	generic	Mount Pipe 4" Sch 40 (4.5 OD) x 6'-0"			
		2	generic	Mount Pipe 2" Sch 40 (2.4 OD) x 6'-0"			
		3	site pro 1	Universal Clamp Set (P/N: UPC1)			
36.0	36.0	1	site pro 1	2' Stand-off Single Sector Chain Mount (P/N: TCHM1-L)	-	-	-
		1	generic	Mount Pipe 2" Sch 40 (2.4 OD) x 6'-0"			
		1	site pro 1	Universal Clamp Set (P/N: UPC1)			

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
47.0	55.0	1	kreco	CO-41A	2	7/8	1
	53.0	1	generic	8.5' x 2.5" Dia. Omni			
36.0	41.0	1	generic	8.5' x 2.5" Dia. Omni	1	7/8	

Notes:

- Existing Equipment Relocated From Existing Wood Pole To Proposed Steel Pole

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
TOWER MANUFACTURER DRAWINGS	Sabre-FWT Erection Drawing 70' H9-LD2 WPE's	-	Eversource
GEOTECHNICAL REPORT	Clarence Welti Assoc., Inc. Dated 3/11/2016	-	Eversource
OTRM 260	Processed Trap Rock Minimum Geotechnical Values	-	Eversource
09000-60015p001	Standard Direct Embed Foundation Details	-	Eversource

3.1) Analysis Method

tnxTower (version 8.0.7.4), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures to be installed and maintained in accordance with the manufacturer's specifications.
- 2) Tower is in plumb condition.
- 3) All coax cables routed as specified in Appendix B of this report.
- 4) All members are assumed to be as specified in the original tower design documents.
- 5) All member protective coatings are in good condition.
- 6) All tower members were properly design, fabricated, installed and have been properly maintained since erection.
- 7) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 8) Soil parameters provided by Eversource. Black & Veatch does not assume any responsibility for its accuracy.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	50 - 9.5	Pole	TP21.559x10.304x0.25	1	-2.68	964.23	19.5	Pass
L2	9.5 - 0	Pole	TP23.02x20.2253x0.25	2	-3.81	1072.30	25.6	Pass
							Summary	
						Pole (L2)	25.6	Pass
						Rating =	25.6	Pass

Table 4 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation Soil Interaction	0	53.2	Pass
	Base Foundation		27.3	Pass
Structure Rating (max from all components) =				53.2%

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The proposed tower must conform to the following specifications:

- Pole Type: Sabre-FWT 70' H9
- Embedment Depth: 13 ft
- Foundation: 3.0-4.0 ft Diameter Processed Trap Rock meeting OTRM 260 minimums (design meets SUB 090 8.A.2 requirements). A steel casing shall be used.

After proper installation, the tower and its foundation will have sufficient capacity to carry the proposed load configuration.

Maximum Tower Deflections - Service Wind

<i>Section No.</i>	<i>Elevation</i> <i>ft</i>	<i>Horz. Deflection</i> <i>in</i>	<i>Gov. Load</i> <i>Comb.</i>	<i>Tilt</i> <i>°</i>	<i>Twist</i> <i>°</i>	<i>Check*</i>
L1	50 - 9.5	1.296	50	0.2186	0.0022	OK
L2	12.5 - 0	0.093	50	0.0633	0.0003	OK

*Limit State Deformation (TIA-222-H Section 2.8.2)

- 1) Maximum Rotation = 4 Degrees
- 2) Maximum Deflection = 0.03 * Tower Height = 18 in.

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation</i> <i>ft</i>	<i>Horz. Deflection</i> <i>in</i>	<i>Gov. Load</i> <i>Comb.</i>	<i>Tilt</i> <i>°</i>	<i>Twist</i> <i>°</i>	<i>Combined Max</i>	<i>Check*</i>
L1	50 - 9.5	4.227	50	0.7094	0.0072	0.709	OK**
L2	12.5 - 0	0.304	50	0.2074	0.0011	0.207	OK

*Up to 0.5 degree is considered acceptable per SUB090 Section 7

** Deflection approved by Eversource Energy

APPENDIX A
TNXTOWER OUTPUT

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Side Arm Mount [SO 203-3]	47	2.5" Dia 8.5' Omni	47
DS2C03F36D-D	47	Side Arm Mount [SO 203-1]	36
CO-41A	47	2.5" Dia 8.5' Omni	36

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 140 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 25.6%

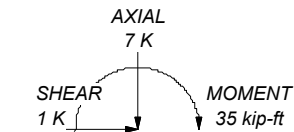
Section	1																		
Length (ft)	40.50																		
Number of Sides	12																		
Thickness (in)	0.2500																		
Socket Length (ft)	3.00																		
Top Dia (in)	10.3040																		
Bot Dia (in)	21.5590																		
Grade	A572-65																		
Weight (K)	1.7																		

50.0 ft

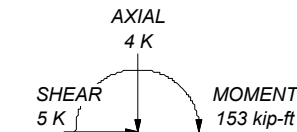
9.5 ft

0.0 ft

ALL REACTIONS
ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 1 kip-ft
REACTIONS - 140 mph WIND

BLACK & VEATCH Building a world of difference.®	Black & Veatch Corp. 6800 W. 115th St., Suite 2292 Overland Park, KS 66211 Phone: (913) 458-2984 FAX: (913) 458-8136		Job: Branford11J Project: 405025		
	Client: Eversource Code: TIA-222-H Path:	Drawn by: Josh Riley Date: 03/08/21	App'd: Scale: NTS Dwg No. E-1		

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- 1) Tower is located in New Haven County, Connecticut.
- 2) Tower base elevation above sea level: 8.00 ft.
- 3) Basic wind speed of 140 mph.
- 4) Risk Category III.
- 5) Exposure Category C.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.00 ft.
- 9) Nominal ice thickness of 1.5000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) A non-linear (P-delta) analysis was used.
- 16) Pressures are calculated at each section.
- 17) Stress ratio used in pole design is 1.
- 18) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
--	---	---

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	50.00-9.50	40.50	3.00	12	10.3040	21.5590	0.2500	1.0000	A572-65 (65 ksi)
L2	9.50-0.00	12.50		12	20.2253	23.0200	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	10.5793	8.0935	104.4236	3.5993	5.3375	19.5642	211.5904	3.9834	2.0915	8.366
	22.2313	17.1537	994.1938	7.6286	11.1676	89.0251	2014.5061	8.4426	5.1078	20.431
L2	21.5450	16.0801	818.9578	7.1512	10.4767	78.1694	1659.4305	7.9141	4.7504	19.002
	23.7439	18.3299	1213.0283	8.1517	11.9244	101.7269	2457.9241	9.0214	5.4994	21.997

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 50.00-9.50				1	1	1			
L2 9.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r	Perimeter r	Weight plf
7/8	A	No	Surface Ar (CaAa)	47.00 - 36.00	4	3	-0.500 0.300	1.1100		0.54
7/8	A	No	Surface Ar (CaAa)	36.00 - 5.00	5	3	-0.500 0.300	1.1100		0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	50.00-9.50	A	0.000	0.000	12.488	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	9.50-0.00	A	0.000	0.000	1.498	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	50.00-9.50	A	1.697	0.000	0.000	31.523	0.000	0.48
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	9.50-0.00	A	1.419	0.000	0.000	3.783	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	50.00-9.50	-1.5962	-0.5186	-2.0955	-0.6809
L2	9.50-0.00	-0.9083	-0.2951	-1.3919	-0.4522

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	3	7/8	36.00 - 47.00	1.0000	1.0000
L1	4	7/8	9.50 - 36.00	1.0000	1.0000
L2	4	7/8	5.00 - 9.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement ft	C _A A _A Front	C _A A _A Side	Weight K
			ft ft ft	°		ft ²	ft ²	
Side Arm Mount [SO 203-3]	C	None		0.0000	47.00	No Ice	6.68	0.38
						1/2" Ice	8.05	0.46
						Ice	9.55	0.57
						1" Ice	12.80	0.87
						2" Ice		
DS2C03F36D-D	A	From Leg	2.00 0.00 13.00	0.0000	47.00	No Ice	5.58	0.07
						1/2" Ice	7.47	0.11
						Ice	9.38	0.16
						1" Ice	13.25	0.30
						2" Ice		
CO-41A	B	From Leg	2.00 0.00 8.00	0.0000	47.00	No Ice	3.15	0.01
						1/2" Ice	4.38	0.04
						Ice	5.63	0.07
						1" Ice	7.77	0.15
						2" Ice		
2.5" Dia 8.5' Omni	C	From Leg	2.00 0.00 6.00	0.0000	47.00	No Ice	2.50	0.01
						1/2" Ice	3.53	0.03
						Ice	4.58	0.05
						1" Ice	5.98	0.12
						2" Ice		
*** Side Arm Mount [SO 203-1]	C	From Leg	1.00 0.00 0.00	0.0000	36.00	No Ice	1.78	0.13
						1/2" Ice	2.24	0.15
						Ice	2.75	0.19
						1" Ice	3.89	0.29
						2" Ice		
2.5" Dia 8.5' Omni	C	From Leg	2.00 0.00 5.00	0.0000	36.00	No Ice	2.50	0.01
						1/2" Ice	3.53	0.03
						Ice	4.58	0.05
						1" Ice	5.98	0.12
						2" Ice		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
****Reserved***					2" Ice			

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	50 - 9.5	Pole	Max Tension	30	0.00	0.00	-0.00
			Max. Compression	26	-5.57	0.91	0.22
			Max. Mx	20	-2.68	91.70	1.19
			Max. My	2	-2.68	1.41	95.91
			Max. Vy	20	-3.71	91.70	1.19
			Max. Vx	2	-3.94	1.41	95.91
L2	9.5 - 0	Pole	Max. Torque	2			0.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.39	0.99	0.26
			Max. Mx	20	-3.81	144.14	1.78
			Max. My	2	-3.81	2.01	151.49
			Max. Vy	20	-4.69	144.14	1.78
			Max. Vx	2	-4.94	2.01	151.49
			Max. Torque	2			0.51

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	7.39	0.00	0.00
	Max. H _x	21	2.86	4.69	0.05
	Max. H _z	2	3.81	0.05	4.94
	Max. M _x	2	151.49	0.05	4.94
	Max. M _z	8	143.49	-4.69	-0.05
	Max. Torsion	2	0.51	0.05	4.94
	Min. Vert	9	2.86	-4.69	-0.05
	Min. H _x	8	3.81	-4.69	-0.05
	Min. H _z	14	3.81	-0.05	-4.94
	Min. M _x	14	-151.30	-0.05	-4.94
	Min. M _z	20	-144.14	4.69	0.05
	Min. Torsion	14	-0.51	-0.05	-4.94

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	3.18	0.00	0.00	-0.08	0.27	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	3.81	-0.05	-4.94	-151.49	2.01	-0.51
0.9 Dead+1.0 Wind 0 deg - No Ice	2.86	-0.05	-4.94	-151.23	1.93	-0.51
1.2 Dead+1.0 Wind 30 deg - No Ice	3.81	2.40	-4.25	-130.36	-72.94	-0.47
0.9 Dead+1.0 Wind 30 deg - No Ice	2.86	2.40	-4.25	-130.14	-72.91	-0.47
1.2 Dead+1.0 Wind 60 deg - No Ice	3.81	4.21	-2.43	-74.33	-128.25	-0.31
0.9 Dead+1.0 Wind 60 deg - No Ice	2.86	4.21	-2.43	-74.19	-128.14	-0.31
1.2 Dead+1.0 Wind 90 deg - No Ice	3.81	4.69	0.05	1.59	-143.49	-0.07
0.9 Dead+1.0 Wind 90 deg - No Ice	2.86	4.69	0.05	1.61	-143.35	-0.07
1.2 Dead+1.0 Wind 120 deg - No Ice	3.81	4.08	2.41	74.24	-125.06	0.19

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 120 deg - No Ice	2.86	4.08	2.41	74.16	-124.95	0.19
1.2 Dead+1.0 Wind 150 deg - No Ice	3.81	2.48	4.30	131.86	-75.86	0.40
0.9 Dead+1.0 Wind 150 deg - No Ice	2.86	2.48	4.30	131.68	-75.82	0.40
1.2 Dead+1.0 Wind 180 deg - No Ice	3.81	0.05	4.94	151.30	-1.36	0.51
0.9 Dead+1.0 Wind 180 deg - No Ice	2.86	0.05	4.94	151.09	-1.44	0.51
1.2 Dead+1.0 Wind 210 deg - No Ice	3.81	-2.40	4.25	130.17	73.59	0.47
0.9 Dead+1.0 Wind 210 deg - No Ice	2.86	-2.40	4.25	130.00	73.40	0.47
1.2 Dead+1.0 Wind 240 deg - No Ice	3.81	-4.21	2.43	74.14	128.91	0.31
0.9 Dead+1.0 Wind 240 deg - No Ice	2.86	-4.21	2.43	74.05	128.63	0.31
1.2 Dead+1.0 Wind 270 deg - No Ice	3.81	-4.69	-0.05	-1.78	144.14	0.07
0.9 Dead+1.0 Wind 270 deg - No Ice	2.86	-4.69	-0.05	-1.75	143.84	0.07
1.2 Dead+1.0 Wind 300 deg - No Ice	3.81	-4.08	-2.41	-74.44	125.71	-0.19
0.9 Dead+1.0 Wind 300 deg - No Ice	2.86	-4.08	-2.41	-74.30	125.44	-0.19
1.2 Dead+1.0 Wind 330 deg - No Ice	3.81	-2.48	-4.30	-132.05	76.51	-0.40
0.9 Dead+1.0 Wind 330 deg - No Ice	2.86	-2.48	-4.30	-131.82	76.31	-0.40
1.2 Dead+1.0 Ice+1.0 Temp	7.39	0.00	0.00	-0.26	0.99	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	7.39	-0.01	-1.01	-33.87	1.29	-0.12
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	7.39	0.49	-0.87	-29.22	-15.38	-0.12
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	7.39	0.86	-0.50	-16.81	-27.66	-0.09
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	7.39	1.00	0.01	0.03	-32.27	-0.03
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	7.39	0.87	0.51	16.80	-27.96	0.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	7.39	0.51	0.88	28.99	-15.90	0.09
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	7.39	0.01	1.01	33.34	0.69	0.12
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	7.39	-0.49	0.87	28.69	17.36	0.12
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	7.39	-0.86	0.50	16.28	29.65	0.09
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	7.39	-1.00	-0.01	-0.57	34.25	0.03
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	7.39	-0.87	-0.51	-17.33	29.95	-0.04
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	7.39	-0.51	-0.88	-29.52	17.88	-0.09
Dead+Wind 0 deg - Service	3.18	-0.01	-0.81	-24.94	0.55	-0.08
Dead+Wind 30 deg - Service	3.18	0.39	-0.70	-21.47	-11.76	-0.08
Dead+Wind 60 deg - Service	3.18	0.69	-0.40	-12.27	-20.84	-0.05
Dead+Wind 90 deg - Service	3.18	0.77	0.01	0.20	-23.34	-0.01
Dead+Wind 120 deg - Service	3.18	0.67	0.40	12.13	-20.31	0.03
Dead+Wind 150 deg - Service	3.18	0.41	0.71	21.59	-12.24	0.07
Dead+Wind 180 deg - Service	3.18	0.01	0.81	24.78	-0.00	0.08
Dead+Wind 210 deg - Service	3.18	-0.39	0.70	21.31	12.30	0.08
Dead+Wind 240 deg - Service	3.18	-0.69	0.40	12.11	21.38	0.05

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 270 deg - Service	3.18	-0.77	-0.01	-0.36	23.88	0.01
Dead+Wind 300 deg - Service	3.18	-0.67	-0.40	-12.28	20.86	-0.03
Dead+Wind 330 deg - Service	3.18	-0.41	-0.71	-21.74	12.78	-0.07

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-3.18	0.00	0.00	3.18	0.00	0.000%
2	-0.05	-3.81	-4.94	0.05	3.81	4.94	0.000%
3	-0.05	-2.86	-4.94	0.05	2.86	4.94	0.000%
4	2.40	-3.81	-4.25	-2.40	3.81	4.25	0.000%
5	2.40	-2.86	-4.25	-2.40	2.86	4.25	0.000%
6	4.21	-3.81	-2.43	-4.21	3.81	2.43	0.000%
7	4.21	-2.86	-2.43	-4.21	2.86	2.43	0.000%
8	4.69	-3.81	0.05	-4.69	3.81	-0.05	0.000%
9	4.69	-2.86	0.05	-4.69	2.86	-0.05	0.000%
10	4.08	-3.81	2.41	-4.08	3.81	-2.41	0.000%
11	4.08	-2.86	2.41	-4.08	2.86	-2.41	0.000%
12	2.48	-3.81	4.30	-2.48	3.81	-4.30	0.000%
13	2.48	-2.86	4.30	-2.48	2.86	-4.30	0.000%
14	0.05	-3.81	4.94	-0.05	3.81	-4.94	0.000%
15	0.05	-2.86	4.94	-0.05	2.86	-4.94	0.000%
16	-2.40	-3.81	4.25	2.40	3.81	-4.25	0.000%
17	-2.40	-2.86	4.25	2.40	2.86	-4.25	0.000%
18	-4.21	-3.81	2.43	4.21	3.81	-2.43	0.000%
19	-4.21	-2.86	2.43	4.21	2.86	-2.43	0.000%
20	-4.69	-3.81	-0.05	4.69	3.81	0.05	0.000%
21	-4.69	-2.86	-0.05	4.69	2.86	0.05	0.000%
22	-4.08	-3.81	-2.41	4.08	3.81	2.41	0.000%
23	-4.08	-2.86	-2.41	4.08	2.86	2.41	0.000%
24	-2.48	-3.81	-4.30	2.48	3.81	4.30	0.000%
25	-2.48	-2.86	-4.30	2.48	2.86	4.30	0.000%
26	0.00	-7.39	0.00	0.00	7.39	0.00	0.000%
27	-0.01	-7.39	-1.01	0.01	7.39	1.01	0.000%
28	0.49	-7.39	-0.87	-0.49	7.39	0.87	0.000%
29	0.86	-7.39	-0.50	-0.86	7.39	0.50	0.000%
30	1.00	-7.39	0.01	-1.00	7.39	-0.01	0.000%
31	0.87	-7.39	0.51	-0.87	7.39	-0.51	0.000%
32	0.51	-7.39	0.88	-0.51	7.39	-0.88	0.000%
33	0.01	-7.39	1.01	-0.01	7.39	-1.01	0.000%
34	-0.49	-7.39	0.87	0.49	7.39	-0.87	0.000%
35	-0.86	-7.39	0.50	0.86	7.39	-0.50	0.000%
36	-1.00	-7.39	-0.01	1.00	7.39	0.01	0.000%
37	-0.87	-7.39	-0.51	0.87	7.39	0.51	0.000%
38	-0.51	-7.39	-0.88	0.51	7.39	0.88	0.000%
39	-0.01	-3.18	-0.81	0.01	3.18	0.81	0.000%
40	0.39	-3.18	-0.70	-0.39	3.18	0.70	0.000%
41	0.69	-3.18	-0.40	-0.69	3.18	0.40	0.000%
42	0.77	-3.18	0.01	-0.77	3.18	-0.01	0.000%
43	0.67	-3.18	0.40	-0.67	3.18	-0.40	0.000%
44	0.41	-3.18	0.71	-0.41	3.18	-0.71	0.000%
45	0.01	-3.18	0.81	-0.01	3.18	-0.81	0.000%
46	-0.39	-3.18	0.70	0.39	3.18	-0.70	0.000%
47	-0.69	-3.18	0.40	0.69	3.18	-0.40	0.000%
48	-0.77	-3.18	-0.01	0.77	3.18	0.01	0.000%
49	-0.67	-3.18	-0.40	0.67	3.18	0.40	0.000%
50	-0.41	-3.18	-0.71	0.41	3.18	0.71	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.0000001
3	Yes	4	0.0000001	0.0000001
4	Yes	4	0.0000001	0.0000001
5	Yes	4	0.0000001	0.0000001
6	Yes	4	0.0000001	0.0000001
7	Yes	4	0.0000001	0.0000001
8	Yes	4	0.0000001	0.0000001
9	Yes	4	0.0000001	0.0000001
10	Yes	4	0.0000001	0.0000001
11	Yes	4	0.0000001	0.0000001
12	Yes	4	0.0000001	0.0000001
13	Yes	4	0.0000001	0.0000001
14	Yes	4	0.0000001	0.0000001
15	Yes	4	0.0000001	0.0000001
16	Yes	4	0.0000001	0.0000001
17	Yes	4	0.0000001	0.0000001
18	Yes	4	0.0000001	0.0000001
19	Yes	4	0.0000001	0.0000001
20	Yes	4	0.0000001	0.0000001
21	Yes	4	0.0000001	0.0000001
22	Yes	4	0.0000001	0.0000001
23	Yes	4	0.0000001	0.0000001
24	Yes	4	0.0000001	0.0000001
25	Yes	4	0.0000001	0.0000001
26	Yes	4	0.0000001	0.0000001
27	Yes	4	0.0000001	0.0000001
28	Yes	4	0.0000001	0.0000001
29	Yes	4	0.0000001	0.0000001
30	Yes	4	0.0000001	0.0000001
31	Yes	4	0.0000001	0.0000001
32	Yes	4	0.0000001	0.0000001
33	Yes	4	0.0000001	0.0000001
34	Yes	4	0.0000001	0.0000001
35	Yes	4	0.0000001	0.0000001
36	Yes	4	0.0000001	0.0000001
37	Yes	4	0.0000001	0.0000001
38	Yes	4	0.0000001	0.0000001
39	Yes	4	0.0000001	0.0000001
40	Yes	4	0.0000001	0.0000001
41	Yes	4	0.0000001	0.0000001
42	Yes	4	0.0000001	0.0000001
43	Yes	4	0.0000001	0.0000001
44	Yes	4	0.0000001	0.0000001
45	Yes	4	0.0000001	0.0000001
46	Yes	4	0.0000001	0.0000001
47	Yes	4	0.0000001	0.0000001
48	Yes	4	0.0000001	0.0000001
49	Yes	4	0.0000001	0.0000001
50	Yes	4	0.0000001	0.0000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	50 - 9.5	1.296	50	0.2186	0.0022
L2	12.5 - 0	0.093	50	0.0633	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
47.00	Side Arm Mount [SO 203-3]	50	1.172	0.2072	0.0020	60796
36.00	Side Arm Mount [SO 203-1]	50	0.735	0.1648	0.0013	21713

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	50 - 9.5	7.789	24	1.3063	0.0133
L2	12.5 - 0	0.560	24	0.3824	0.0020

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
47.00	Side Arm Mount [SO 203-3]	24	7.045	1.2390	0.0121	10141
36.00	Side Arm Mount [SO 203-1]	24	4.421	0.9883	0.0082	3622

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	50 - 9.5 (1)	TP21.559x10.304x0.25	40.50	0.00	0.0	16.482 6	-2.68	964.23	0.003
L2	9.5 - 0 (2)	TP23.02x20.2253x0.25	12.50	0.00	0.0	18.329 8	-3.81	1072.30	0.004

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	50 - 9.5 (1)	TP21.559x10.304x0.25	96.69	504.65	0.192	0.00	504.65	0.000
L2	9.5 - 0 (2)	TP23.02x20.2253x0.25	152.61	604.73	0.252	0.00	604.73	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	50 - 9.5 (1)	TP21.559x10.304x0.25	3.97	289.27	0.014	0.40	521.00	0.001
L2	9.5 - 0 (2)	TP23.02x20.2253x0.25	4.97	321.69	0.015	0.40	644.32	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	50 - 9.5 (1)	0.003	0.192	0.000	0.014	0.001	0.195	1.000	4.8.2
L2	9.5 - 0 (2)	0.004	0.252	0.000	0.015	0.001	0.256	1.000	4.8.2

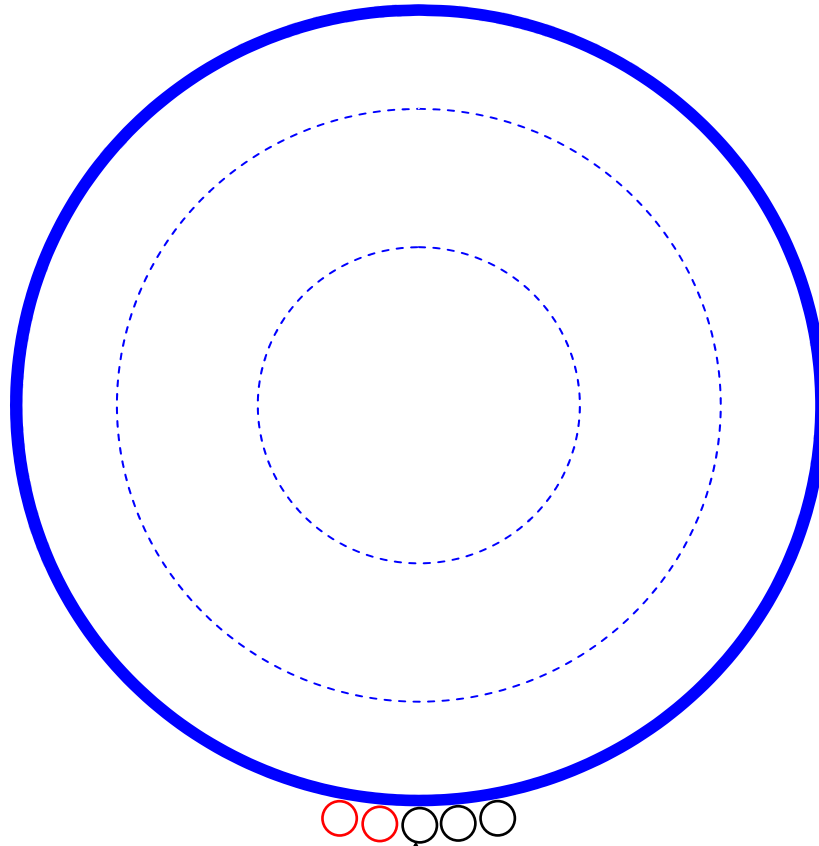
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	50 - 9.5	Pole	TP21.559x10.304x0.25	1	-2.68	964.23	19.5	Pass
L2	9.5 - 0	Pole	TP23.02x20.2253x0.25	2	-3.81	1072.30	25.6	Pass
Summary								
Pole (L2)							25.6	Pass
RATING =							25.6	Pass

APPENDIX B
BASE LEVEL DRAWING



BASE LEVEL DRAWING



(2) PROPOSED AND (2) EXISTING/RELOCATED 7/8 TO 47 FT LEVEL
(2) EXISTING/RELOCATED 7/8 TO 36 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Black & Veatch

 * CAISSON - Pier Foundations Analysis and Design - Copyright Power Line Systems, Inc. 1993-2016 *
 *

Project Title: Branford11J
 Project Notes: Foundation

Calculation Method: Full 8CD

***** I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
3.00	0.00		

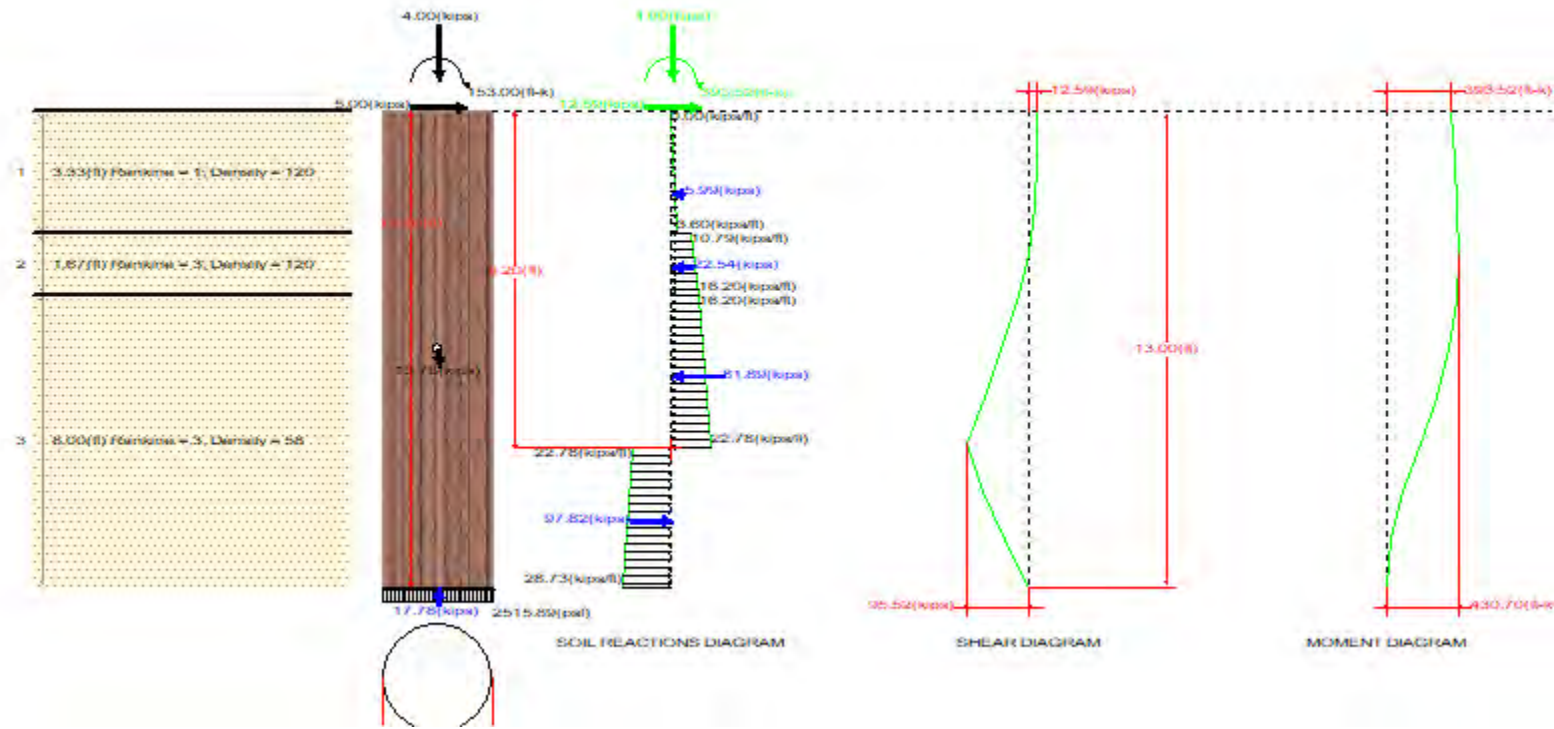
Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Sand	3.33	0.00	120.0		1.000	
2	Sand	1.67	3.33	120.0		3.000	30.00
3	Sand	8.00	5.00	58.0		3.000	30.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
153.0	4.0	5.00	2.50

***** RESULTS



Calculated Pier Properties

Length (ft)	Weight (kips)	Pressure Due To Axial Load (psf)	Pressure Due To Weight (psf)	Total End-Bearing Pressure (psf)
13.000	13.784	565.9	1950.0	2515.9

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft ³)	CU (psf)	KP	Force (kips)	Arm (ft)
Sand	0.00	3.33	120.0		1.000	5.99	2.22

Sand	3.33	1.67	120.0	3.000	22.54	4.22
Sand	5.00	4.20	58.0	3.000	81.89	7.22
Sand	9.20	3.80	58.0	3.000	-97.82	11.17

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	12.6	393.5	5.0	157.4
1.30	11.7	409.5	4.7	163.8
2.60	8.9	423.1	3.6	169.2
3.90	-0.1	430.7	-0.0	172.3
5.20	-19.2	418.7	-7.7	167.5
6.50	-42.0	379.2	-16.8	151.7
7.80	-67.4	308.4	-27.0	123.4
9.10	-95.5	202.8	-38.2	81.1
10.40	-69.4	92.5	-27.8	37.0
11.70	-36.0	23.7	-14.4	9.5
13.00	0.0	0.0	0.0	0.0

Embedded Pole

This sheet calculates the capacity of an embedded pole according to either EIA/TIA-222-F, TIA-222-G, or TIA-222-H.

Branford11J
Eversource

TIA Revision: H

Reactions:		
Tower Weight, P_u :	4	kip
Moment, M_u :	153.0	kip-ft

Embedded Shaft Properties:		
Shaft Filled & Encased with Concrete?	N	Y/N
Yield Stress, F_y :	65	ksi
# of Sides:	12	"0" if round
Thickness of Pole, t :	0.25	in
Dia. at Top of Pole Section:	20.2253	in
Dia. at Bot. of Pole Section:	25.705	in
Length of Pole Section:	25.5	ft
Diameter at Max Moment, D :	23.75	in

Pier Properties		
Diameter of Pier, D_p :	3.0	ft
Depth of Foundation, L :	13	ft
Processed Trap Rock Density, ρ_c :	90	pcf

Soil Properties		
Soil Unit Weight, γ :	58	pcf
Ultimate Gross Bearing, B_c :	8	ksf

Caisson Analysis		
Depth to Zero Shear	3.90	ft
Max Moment	172.30	kip-ft
Overturning FOS:	2.5	

Depth		Shear		Moment	
2.6	ft	3.6	kips	169.2	kip-ft
3.9	ft	0	kips	172.3	kip-ft
5.2	ft	-7.7	kips	167.5	kip-ft

Design Checks				
	Capacity/Availability	Demand/Limits	Rating	Check
Steel Axial Capacity (k):	1334.94	4.00	0.30%	Pass
Steel Moment Capacity (k -ft):	637.38	172.30	27.03%	Pass
Combined Ratio:	1.00	0.273	27.33%	Pass
Soil Moment Capacity (FOS):	2.50	1.33	53.20%	Pass
Bearing Pressure (ksf):	6.00	1.74	28.93%	Pass

Soil Rating:	53.2%
Structural Rating:	27.3%

REFERENCES

Branford11J

Exposure Category C

Legend

Branford Supply Ponds

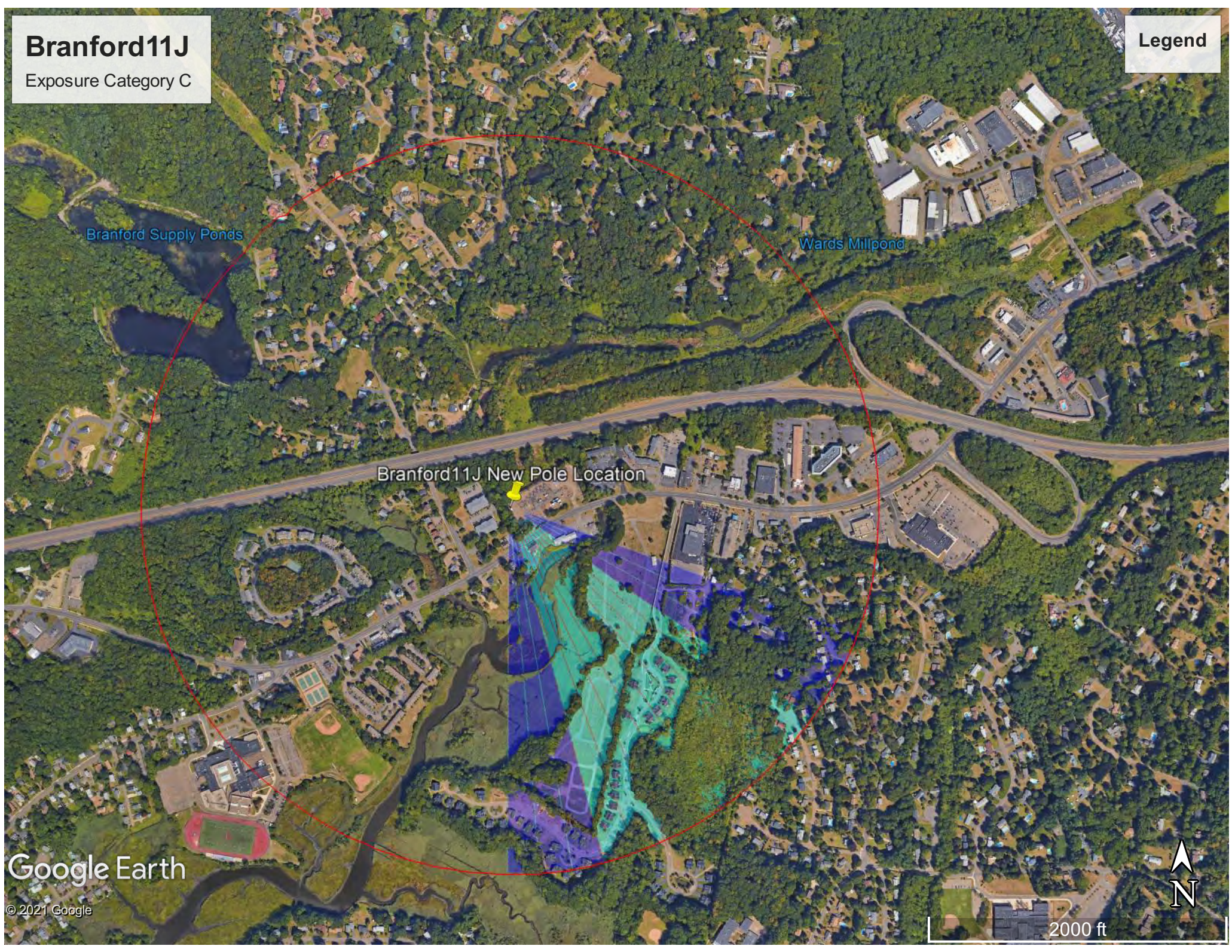
Wards Millpond

Branford11J New Pole Location

Google Earth

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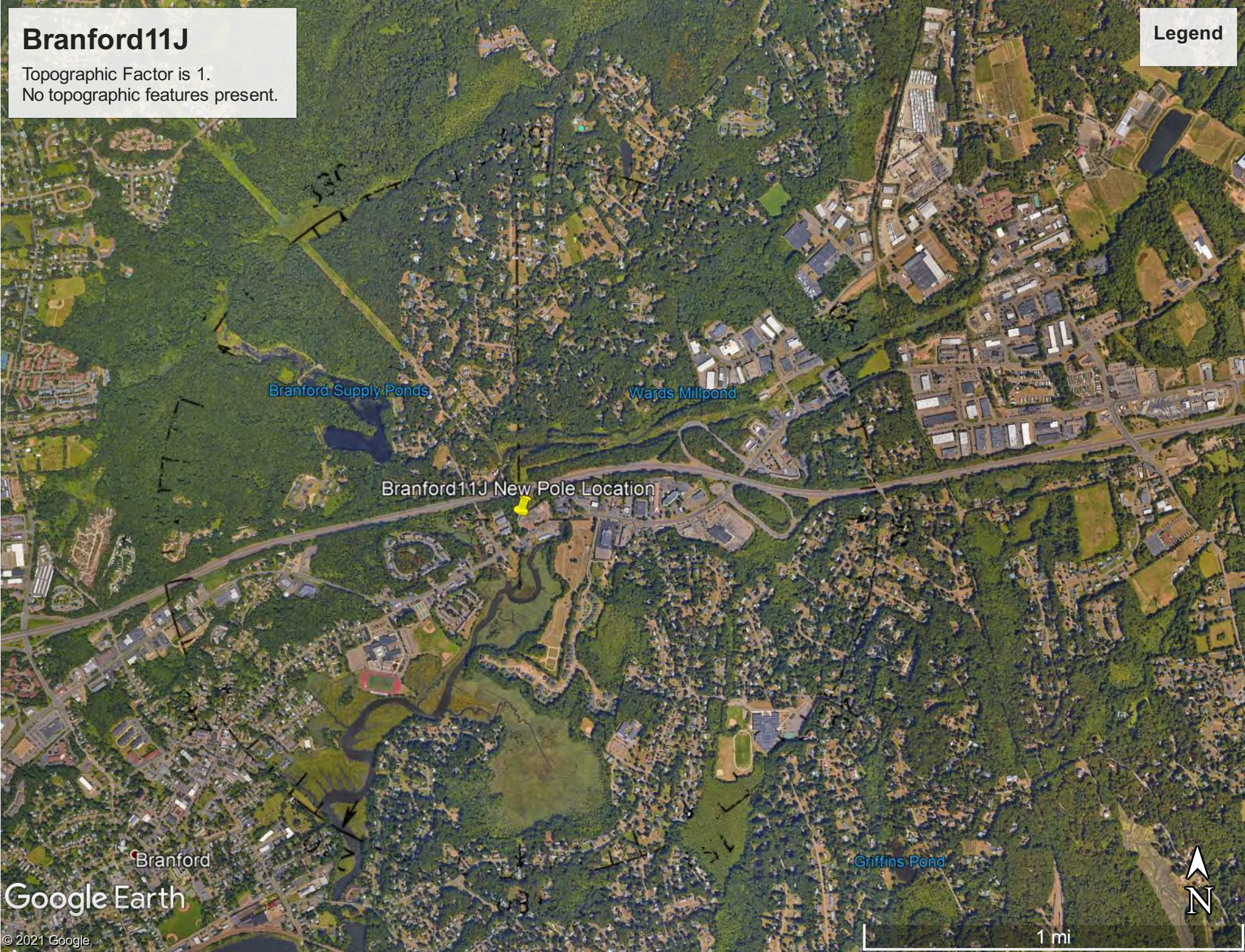
2000 ft



Branford11J

Topographic Factor is 1.
No topographic features present.

Legend

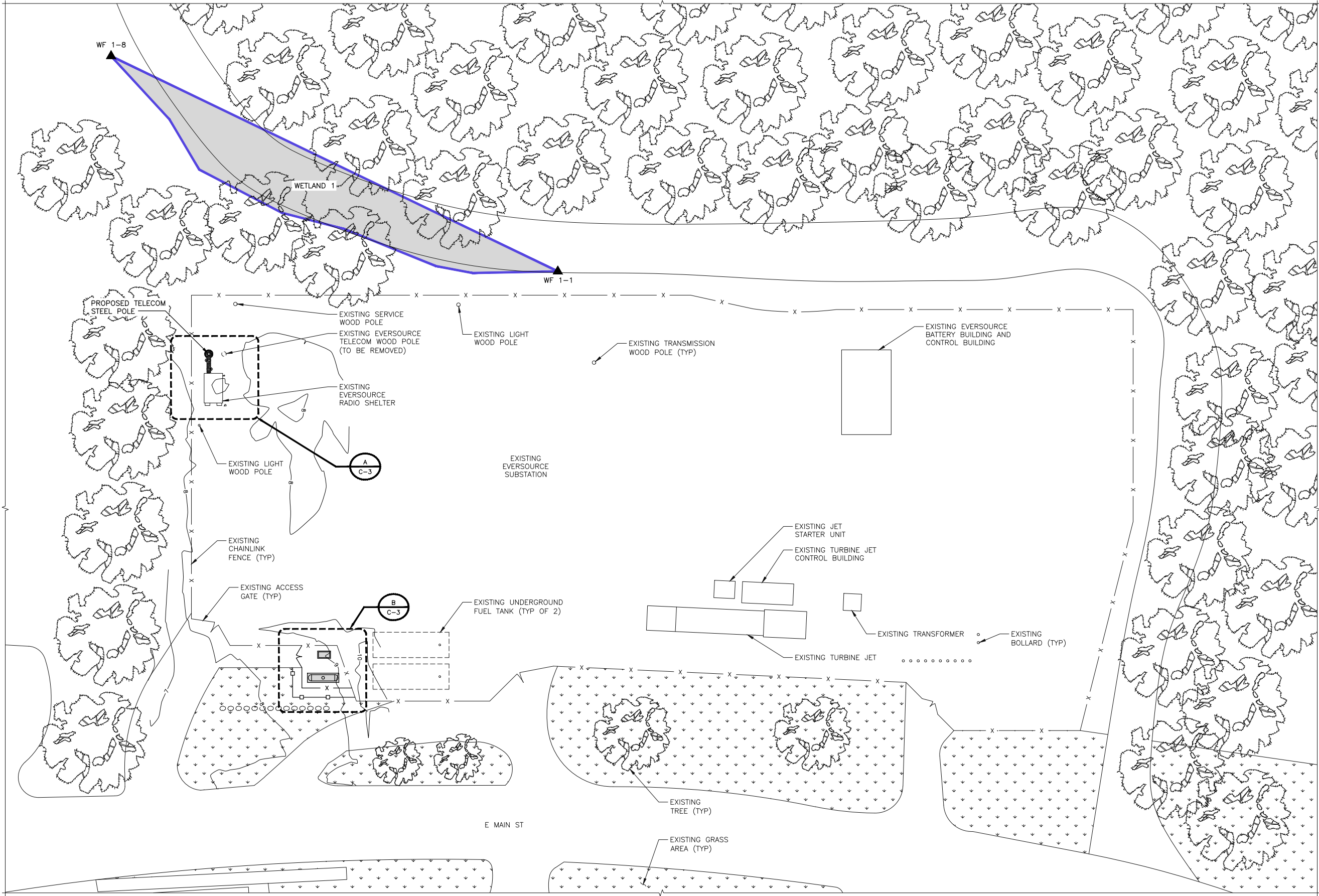


Google Earth

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1 mi





PARTIAL SITE PLAN
NO SCALE

NOTE
CONTOUR LINES WERE DETERMINED BY
EVERSOURCE ENERGY. BLACK & VEATCH DOES NOT
ASSUME ANY RESPONSIBILITY FOR ITS ACCURACY.

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO: 403093
DRAWN BY: TYW
CHECKED BY: CAG

REV	DATE	DESCRIPTION
G	03/26/21	ISSUED FOR REVIEW
F	03/03/21	ISSUED FOR REVIEW
E	05/01/20	ISSUED FOR REVIEW
D	04/15/20	ISSUED FOR REVIEW
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B	03/11/20	ISSUED FOR REVIEW
A	12/17/19	ISSUED FOR REVIEW

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SHEET TITLE
PARTIAL SITE PLAN

SHEET NUMBER
C-2



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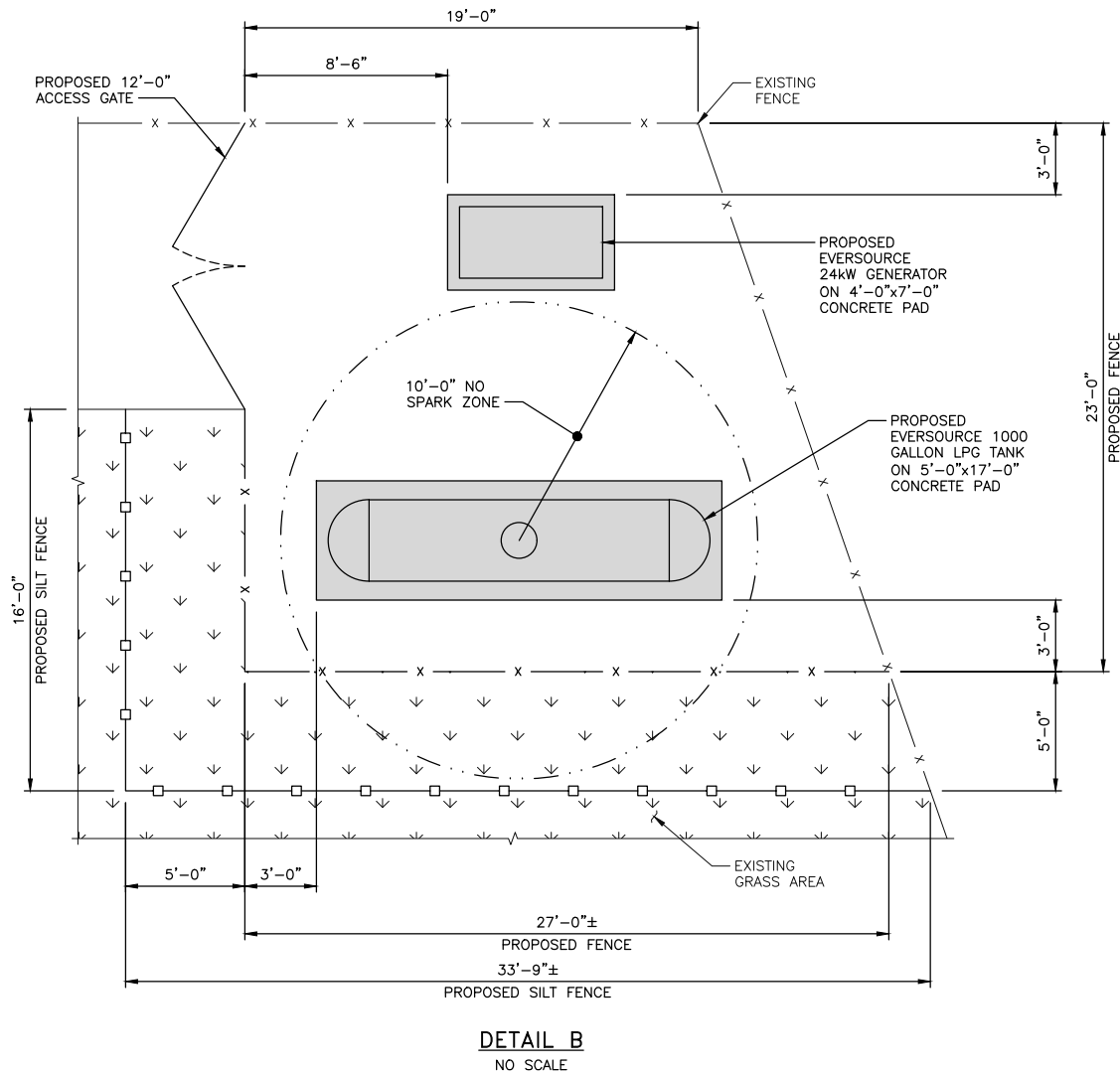
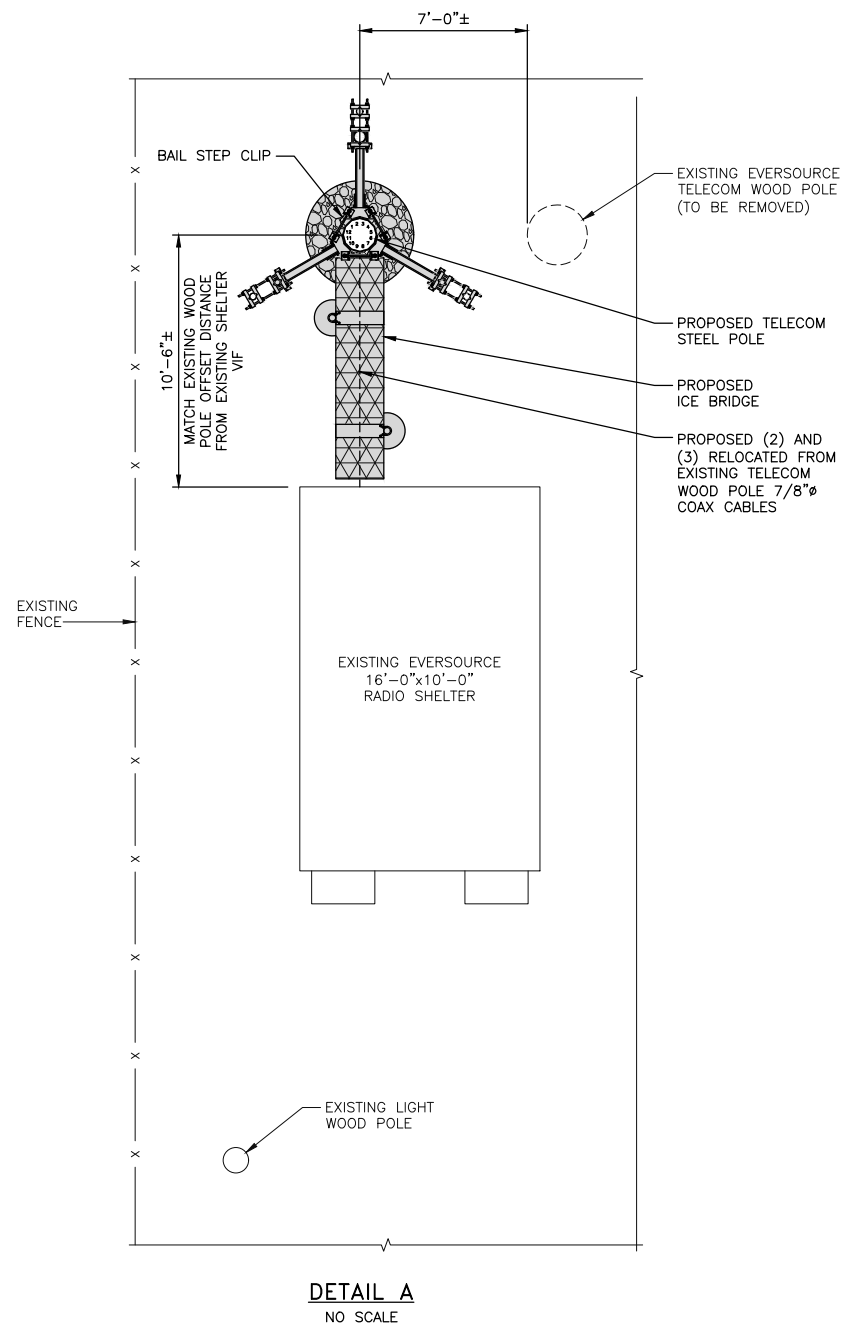
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272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
SITE PLAN

SHEET NUMBER
C-3



SITE PLAN
NO SCALE



TOP OF PROPOSED EVERSOURCE OMNI/WHIP ANTENNA
 ELEVATION 72'-0"± AGL
 RX RAD CL ELEVATION 65'-2 3/4"± AGL
 TX RAD CL ELEVATION 53'-0 15/16"± AGL
 (ANTENNA MECHANICAL LENGTH 24'-3 1/2")

TOP OF EXISTING EVERSOURCE
 RELOCATED OMNI/WHIP ANTENNA
 ELEVATION 61'-0"± AGL

TOP OF EXISTING EVERSOURCE
 RELOCATED OMNI/WHIP ANTENNA
 ELEVATION 57'-0"± AGL

PROVIDE WELDED 1/4"
 THICK CAP AT TOP OF
 PROPOSED TELECOM
 STEEL POLE

TOP OF PROPOSED POLE
 ELEVATION 50'-0"± AGL

EXISTING EVERSOURCE
 RELOCATED OMNI/WHIP ANTENNA
 RAD CL ELEVATION 41'-0"± AGL

PROPOSED SABRE-FWT
 70' H9 STEEL POLE
 (SEE NOTE 5 & 7)

PROPOSED (2) AND (3)
 RELOCATED FROM EXISTING
 TELECOM WOOD POLE 7/8"Ø
 COAX CABLES TO BE BANDED
 TO EXTERIOR OF POLE
 (SEE NOTES 1 & 8)

FINISH GRADING
 (SEE NOTE 11)

FINISHED GRADE
 ELEVATION 8'-0"± AMSL

FINISHED GRADE

DIRECT EMBED CASING
 FOUNDATION (SEE NOTE
 8, 11 AND 12)

63'-0"±
 (SEE NOTES 9 & 10)

50'-0" AGL

13'-0"± BGL
 POLE EMBEDMENT DEPTH

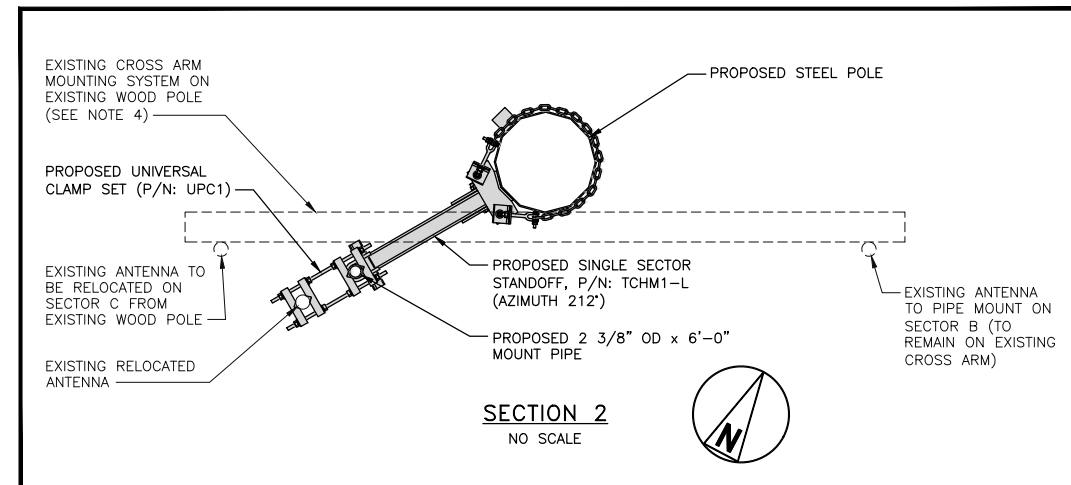
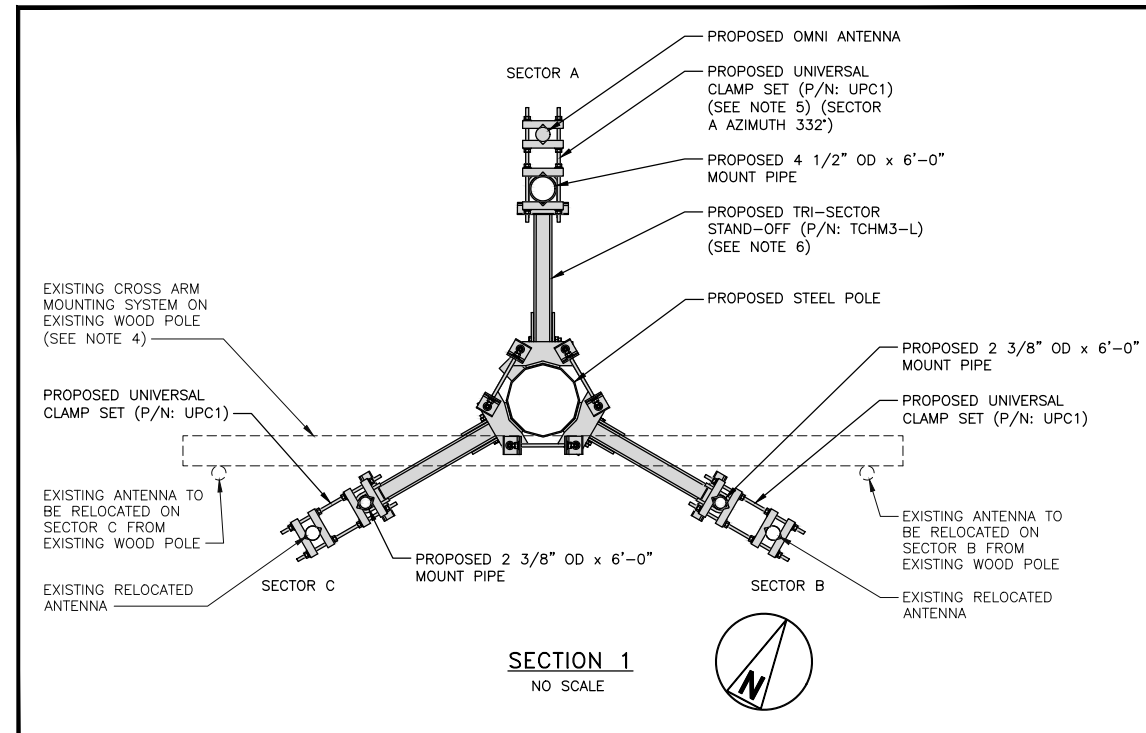
4'-0"±
 STEEL CASING

TOWER ELEVATION
 NO SCALE

72'-0"± AGL
 TOTAL HEIGHT WITH APPURTENANCES

NOTES

- ALL COAXIAL CABLE TO BE SECURED TO THE SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" OC.
- CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING THE INSTALLATION OF COAXIAL CABLES, CONNECTORS AND ANTENNAS.
- DESIGN OF THE FOUNDATION WAS BASED ON SUB012 EVERSOURCE SUBSTATION STANDARDS, SECTION 6.D., FOUNDATION STABILITY AND SOIL BEARING CAPACITY.
- EXISTING ANTENNAS TO BE RELOCATED TO THEIR ORIGINAL CENTER LINE ELEVATION ON THE PROPOSED MOUNTING SYSTEM.
- INSTALL POLE PER MANUFACTURER'S RECOMMENDATIONS. REFER TO SABRE-FWT ERECTION DRAWINGS - 70' H9-LD9 WPE'S.
- BOTH PROPOSED STAND-OFF MOUNTS (P/N: TCHM3-L AND TCHM1-L) SHALL BE INSTALLED WITH A 3'-0" MINIMUM VERTICAL SEPARATION BETWEEN TOP AND BOTTOM POLE CONNECTIONS.
- PROPOSED COAX CABLES TO BE STACKED IN ONE ROW.
- THE GEOTECHNICAL REPORT INDICATED A GROUND WATER TABLE AT 5'.
- THE PROPOSED STEEL POLE COMES 70'-0" LONG. THE TOP 7'-0" OF THE POLE SHALL BE REMOVED MAKING THE NEW POLE LENGTH 63'-0". ALL EXPOSED STRUCTURAL STEEL, INCLUDING FIELD DRILLED HOLES, SHALL BE CLEANED AND TWO (2) COATS ZRC COLD GALVANIZING COMPOUND (OR ENGINEER APPROVED EQUAL) SHALL BE APPLIED BY BRUSH. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION, APPLICATION, DRYING AND CURING TIMES.
- THE FALL PROTECTION VANG WILL BE REMOVED WITH REMOVAL OF THE TOP 7'-0" OF THE POLE. EVERSOURCE SHALL REPLACE THE FALL PROTECTION VANG BY INSTALLING AN EVERSOURCE APPROVED RETROFIT KIT.
- THE DIRECT EMBED CASING FOUNDATION, INCLUDING FINISH GRADING, SHALL BE INSTALLED PER EVERSOURCE DRAWING #09000-60015P001 REV. 4, DATED 02/10/2021 (LOCATED IN THE REFERENCE CUTSHEETS SECTION OF THIS DRAWING PACKAGE), WITH THE EXCEPTION OF THE POLE EMBEDMENT DEPTH AND STEEL CASING DIAMETER, WHICH SHOULD BE INSTALLED PER SHEET C-4.
- NOT ALL EMBED CASING FOUNDATION DETAILS ARE SHOWN, SUCH AS BORE HOLE DIAMETER AND BACKFILL REQUIREMENTS OUTSIDE THE STEEL CASING. THE PURPOSE OF THIS FOUNDATION DETAIL IS TO ONLY CONVEY THE POLE EMBEDMENT DEPTH AND STEEL CASING DIAMETER, REMAINING REQUIRED DETAILS ARE SHOWN IN THE DRAWING REFERENCED IN NOTE 11.



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PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	CAG

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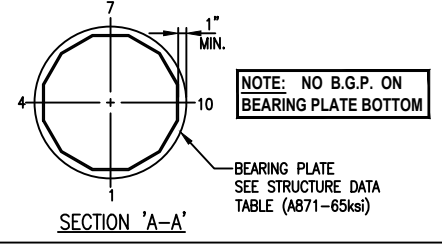
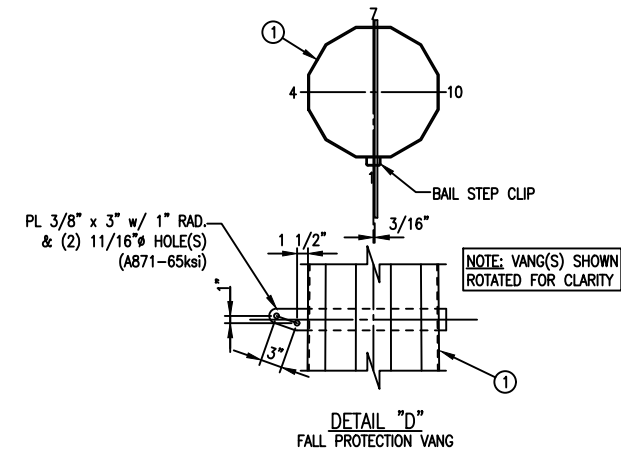
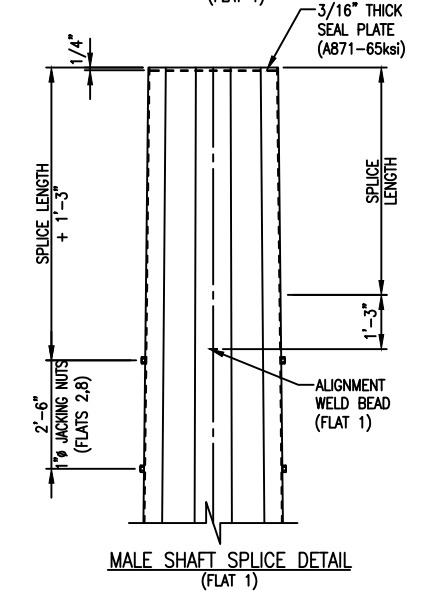
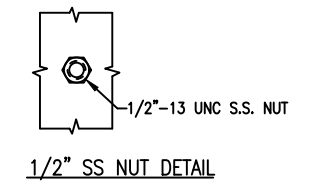
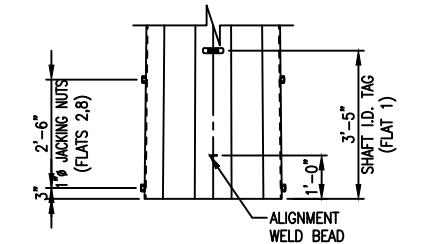
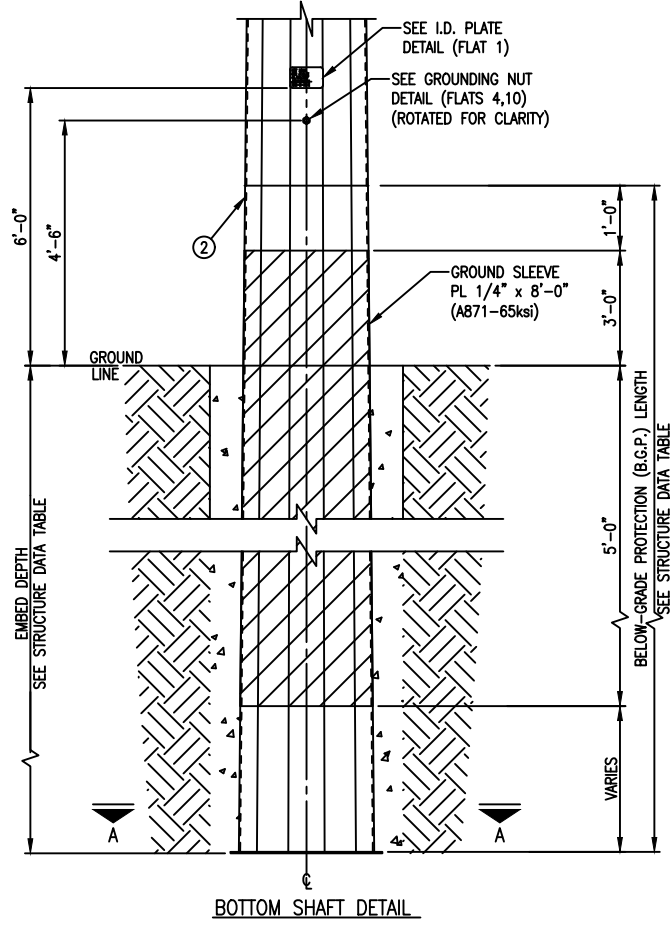
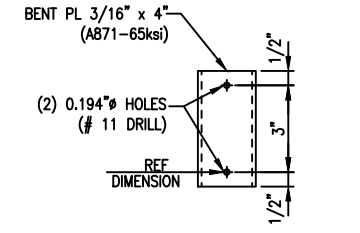
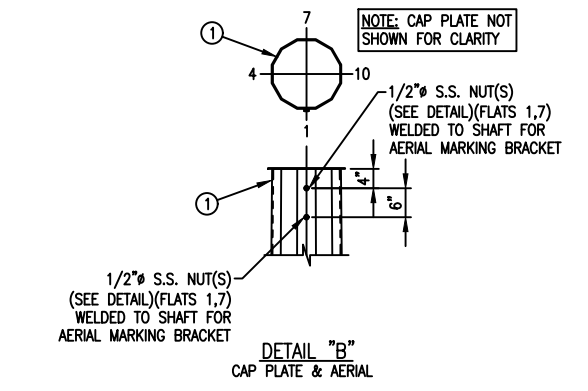
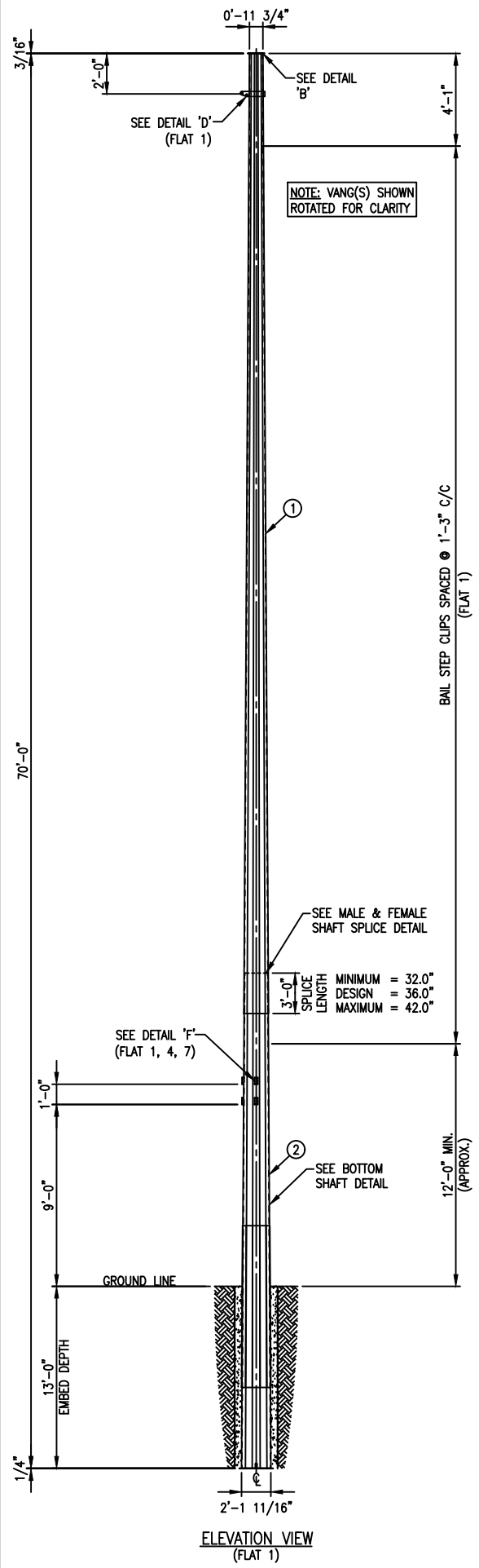
BRANFORD 11J
 272 EAST MAIN ST
 BRANFORD, CT 06405

SHEET TITLE
 TOWER ELEVATION &
 ANTENNA EQUIPMENT

SHEET NUMBER

C-4

Note: The top 7'-0" of pole will be cut and removed making the total pole height = 63'-0". With a 13' pole embedment, the pole height above grade is 50'-0".



WEATHERING STEEL

SSPC-SP6 SAND BLASTING IS REQUIRED

* STRUCTURE NO.: SEE CHART

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 5750 EAST I-20 FORT WORTH, TEXAS 76119 USA
 (817) 255-3060

DATE: _____	REV: _____	RELEAS: RELEASED FOR FABRICATION	REV: 0
BY: _____	CHK'D: _____	FILE: _____	SCALE: NTS
CLIENT: Eversource Energy	DATE: _____	SHEET NO: 1 of 2	
JOB NO: PO - Release WPEs	DATE: _____	DRAWING NO: E145	
TITLE: ERECTION DRAWING - 70' H9-LD9 WPE's			

Structure Data Table										
QT #	STR. #	STR LINE & RELEASE (*)	O.A.L.	CLASS	CENTER OF GRAVITY (WELD BEADS ON FLATS 1,4,7,10)		EMBEDMENT			
					DISTANCE FROM TOP OF SHAFT 1	DISTANCE FROM TOP OF SHAFT 2	EMBEDMENT DEPTH (FEET)	BGP DEPTH (FEET)	BEARING PLATE (THICK)	BEARING PLATE (DIAM)
145			70'-0"	H9-LD9	26'-0"	13'-7"	13'-0"	17'-0"	1/4"	28"φ

LINE ITEM: *		BILL OF MATERIAL			STR #: SEE STR. DATA TABLE	
ITEM	ASSY#	QTY.	DESCRIPTION		*Fy*	WEIGHT/lbs
1	3169-1	1	PL 1/4" x 11.750" x 21.559" x 47'-6" (12 SIDED)		65 ksi	2146
2	3170-2	1	PL 1/4" x 20.439" x 25.705" x 25'-6" (12 SIDED)		65 ksi	2153
TOTAL BLACK WEIGHT/lbs						4299

QUANTITIES IN BILL OF MATERIAL FOR (1) ASSEMBLY ONLY, () REQUIRED.

SHIP LOOSE ITEMS			
ITEM	PART NO	QTY	DESCRIPTION
1	PT99970		POLY-COTE PC 110 TOUCH UP "BLACK" PINT KIT

PROJECT NOTES:

- POLE SECTIONS SHALL BE FABRICATED FROM WEATHERING STEEL.
- THE TOP OF MID AND/OR BOTTOM SHAFTS TO BE SEALED WITH A 3/16" THICK A871 (65 ksi) PLATE.

ERECTION NOTES:

- AS A MINIMUM, ALL NUTS SHOULD BE INSTALLED SNUG TIGHT. "SNUG TIGHT" IS DEFINED AS THE TIGHTNESS ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH.
- ALL POLE SECTIONS WILL HAVE ORIENTATION AND SECTION IDENTIFICATION MARKS TO BE USED FOR PROPER ORIENTATION OF POLE SECTIONS PRIOR TO ENGAGING SPLICES.
- PLEASE REFER TO DRAWING "FWT002" SUPPLIED WITH FINAL DRAWING PACKET FOR FWT RECOMMENDATIONS.

MATERIAL NOTES:

- STEEL SPECIFICATIONS: ALL STEEL PER ASTM A871, GR 65 (UNLESS NOTED OTHERWISE)
 PLATE (ie POLE SHAFT): 65 ksi A871 GRADE 65
 PLATE (ie BASE PLATE/BEARING PLATE): 65 ksi A871 GRADE 65
- HIGH STRENGTH PLATES TO HAVE A CHARPY V-NOTCH IMPACT VALUE OF 15FT-LBS. MINIMUM AT -20° F PER HEAT LOT TEST. (UNLESS NOTED OTHERWISE)

WELDING NOTES:

- ALL WELDS SHALL MEET THE REQUIREMENTS OF LATEST REVISION OF AWS D1.1.
- LONGITUDINAL WELDS SHALL BE 80% MINIMUM PENETRATION WITH 100% FUSION TO THAT DEPTH (TYPICAL), UNLESS NOTED. 100% FULL PENETRATION LONGITUDINAL SEAM WELDS WILL BE +6" LONG AT SHAFT ENDS AND SPLICE LENGTH +24" LONG AT FEMALE LAP SPLICE.
- FILLET WELDS SHALL BE 100% FUSION THROUGH THEIR ENTIRE CROSS SECTION. FIELD WELDING WILL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL OF BUYER

GENERAL NOTES:

- EACH STRUCTURE WILL BE MARKED WITH AN IDENTIFICATION PLATE (3/4" HIGH NUMBERS STAMPED IN 1/4" A871-65KSI PLATE MATERIAL) WELDED TO THE BASE SECTION. SEE BELOW:

STS
 CLASS#: H9-LD9
 HT: 70'-0"
 PO:
 STR. #: H9-70-*
 ASSY#: 3170-2
 * SEQ#

ID PLATE DETAIL
 BASE TAG

STR. #: H9-70-*
 ASSY#: 3169-1
 * SEQ#

ID PLATE DETAIL
 TOP TAG

- ALL OTHER PARTS AND WELDMENTS SHIPPED WITH STRUCTURE WILL BE MARKED WITH THEIR RESPECTIVE MARK NUMBER.

"STRUCTURES SHALL BE WEATHERING STEEL"

"STRUCTURES SHALL HAVE BELOW GRADE PROTECTION"

"BGP" AT TOP SHALL BE "FEATHERED"

(NO "HARD LIP" IS ALLOWED)

(BGP COATING MINIMUM DRY THICKNESS OF 16 MILS)

TOLERANCE NOTES:

- POLE SECTION LENGTH: ±1"
- ALL OTHERS PER AISC

SHIPPING NOTES:


- HARDWARE IN BOM(S) EXACT QTY TO ASSEMBLE STRUCTURE(S). 5% EXTRA TO BE SHIPPED PER PROJECT
 JOB REQUIRES "GO & NO-GO GAGE" TO BE USED

**"BUY AMERICA"
 DOMESTIC STEEL ONLY**

WEATHERING STEEL

SSPC-SP6 SAND BLASTING IS REQUIRED

* STRUCTURE NO.: SEE CHART

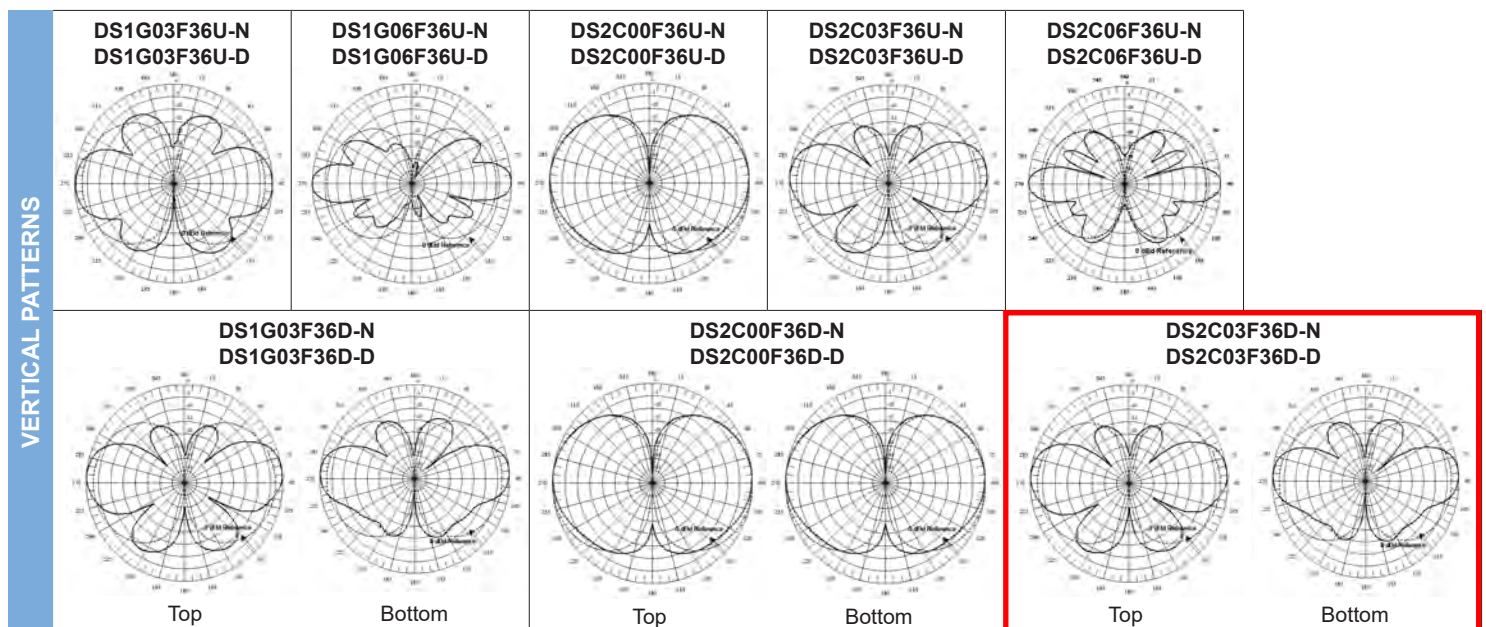
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Erection Drawing -70' H9-LD9 WPE's				JOB NO.: _____ DRAWING NO.: E145					

VHF Omni Antennas (160-222 MHz)

		160-174 MHz						217-222 MHz									
Model Number		DS1G03F36U-N	DS1G03F36U-D	DS1G06F36U-N	DS1G06F36U-D	DS1G03F36D-N	DS1G03F36D-D	DS2C00F36U-N	DS2C00F36U-D	DS2C03F36U-N	DS2C03F36U-D	DS2C06F36U-N	DS2C06F36U-D	DS2C00F36D-N	DS2C00F36D-D	DS2C03F36D-N	DS2C03F36D-D
Input Connector		N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN
Type		Single		Single		Dual		Single		Single		Single		Dual		Dual	
ELECTRICAL	Bandwidth, MHz	14		14		14		5		5		5		5		5	
	Power, Watts	500		500		350		500		500		500		350		350	
	Gain, dBd	3		6		3		0		3		6		0		3	
	Horizontal Beamwidth, degrees	360		360		360		360		360		360		360		360	
	Vertical Beamwidth, degrees	30		16		30		60		30		16		60		30	
	Beam Tilt, degrees	0		0		0		0		0		0		0		0	
	Isolation (minimum), dB	N/A		N/A		30		N/A		N/A		N/A		30		30	
	Number of Connectors	1		1		2		1		1		1		2		2	
MECHANICAL	Flat Plate Area, ft ² (m ²)	2.53 (0.24)		4.38 (0.41)		4.5 (0.42)		1.9 (0.18)		1.9 (0.18)		2.58 (0.24)		2.4 (0.22)		4.1 (0.38)	
	Lateral Windload Thrust, lbf(N)	95 (423)		164 (730)		169 (752)		53 (236)		69 (307)		108 (480)		90 (400)		169 (752)	
	Survival Wind Speed without ice, mph(kph)	110 (177)		75 (121)		75 (121)		222 (357)		172 (277)		110 (177)		130 (209)		75 (121)	
	with 0.5" radial ice, mph(kph)	93 (150)		60 (97)		65 (105)		193 (311)		150 (241)		96 (154)		115 (185)		65 (105)	
	Mounting Hardware included	DSH3V3R		DSH3V3N		DSH3V3N		DSH2V3R		DSH2V3R		DSH3V3N		DSH3V3R		DSH3V3N	
DIMENSIONS	Length, ft(m)	12.7 (3.9)		21.9 (6.7)		22.3 (6.8)		7.7 (2.3)		9.9 (3)		18.1 (5.5)		13.6 (4.1)		24.3 (7.4)	
	Radome O.D., in(cm)	3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)	
	Mast O.D., in(cm)	2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)	
	Net Weight w/o bracket, lb(kg)	37 (16.8)		60 (27.2)		63 (28.6)		19 (8.6)		26 (11.8)		47 (21.3)		40 (18.1)		70 (31.8)	
	Shipping Weight, lb(kg)	67 (30.4)		90 (40.8)		93 (42.2)		39 (17.7)		56 (25.4)		77 (34.9)		70 (31.8)		100 (45.4)	



DS2C03F36D-D

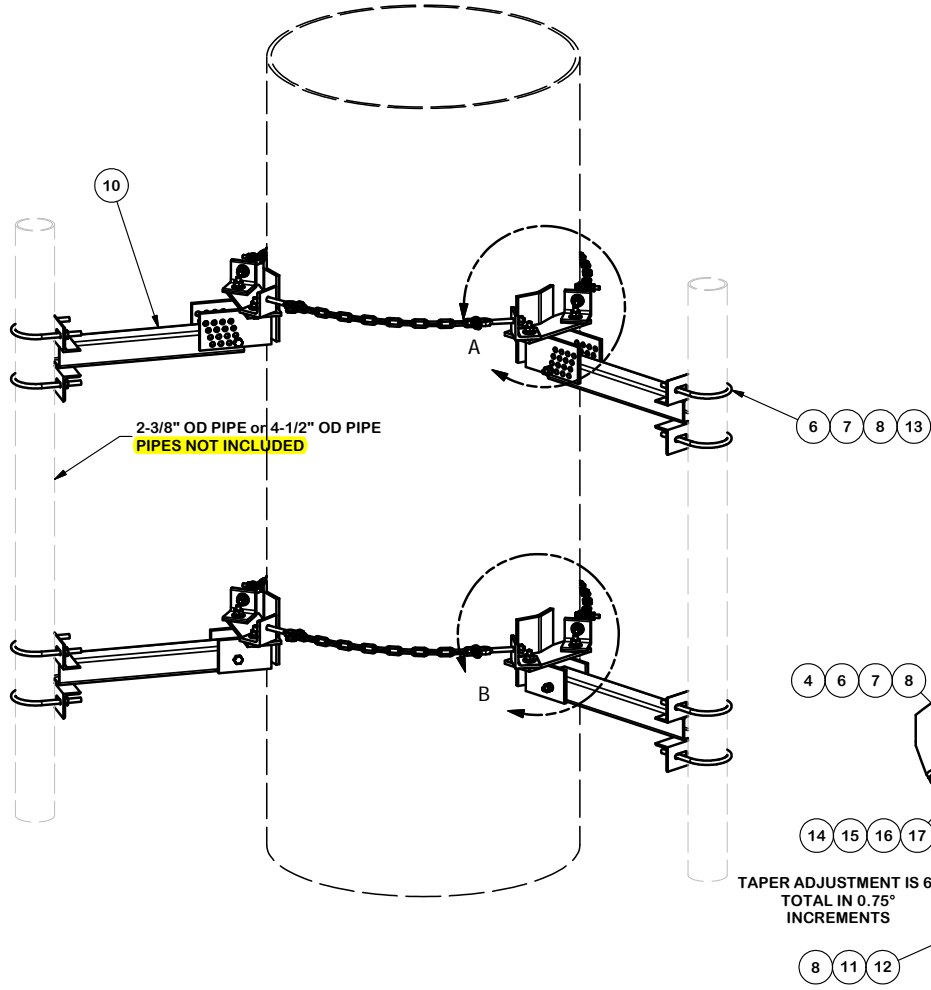


TOWER/MAST SIZE AT PROPOSED ANTENNA ATTACHMENT = 8.5"± DIAMETER FOR UPPER LEVEL AND 10"± DIAMETER FOR LOWER LEVEL.

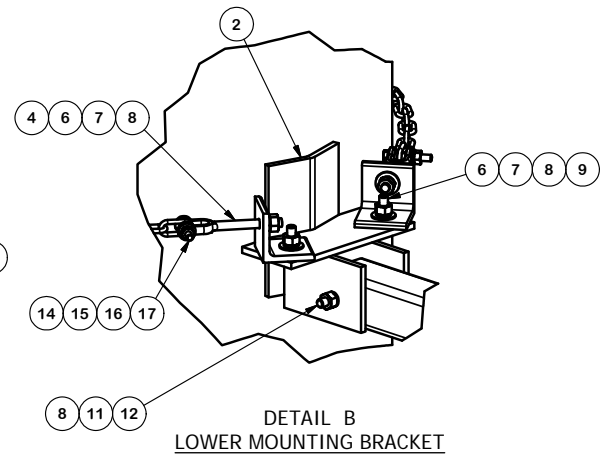
PROPOSED CHAIN MOUNT FITS POLYGON OR ROUND POLES 5"-36" IN DIAMETER.

NOTE: (1) 4" (4.5" OD) SCH 40 x 6'-0" AND (3) 2" (2.375" OD) SCH 40 x 6'-0" MOUNT PIPES ARE REQUIRED.

MOUNT FOR UPPER LEVEL



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	48.50
2	3	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	42.41
3	12	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	22.09
4	12	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	6.11
5	6	GC40317	1/4" x GR40 GALV. CHAIN 3.17'		0.91	5.46
6	48	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	3.44
7	48	G12FW	1/2" HDG USS FLATWASHER		0.03	1.64
8	54	G12LW	1/2" HDG LOCKWASHER		0.01	0.75
9	12	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	2.11
10	6	X-UAPM22	UNIVERSAL ANGLE TUBE 22"		16.76	100.58
11	6	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.43
12	6	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	2.06
13	12	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	11.66
13	12	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	7.88
14	12	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	1.23
15	12	G38FW	3/8" HDG USS FLATWASHER		0.01	0.14
16	12	G38LW	3/8" HDG LOCKWASHER		0.01	0.08
17	12	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.41
					TOTAL WT. #	267.00



TAPER ADJUSTMENT IS 6° TOTAL IN 0.75° INCREMENTS

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 2'-0" STAND-OFF, TRIPLE SECTOR,
 TAPER ADJUSTABLE CHAIN MOUNT,
 SITE PRO 1

SITE PRO 1
 Engineering Support Team:
 1-888-753-7446

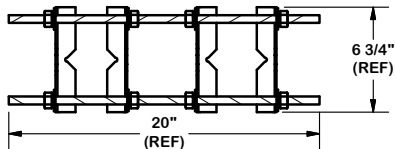
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL
	RH18 3/9/2010	
CLASS	DRAWING USAGE	CHECKED BY
81	CUSTOMER	BMC 3/15/2010

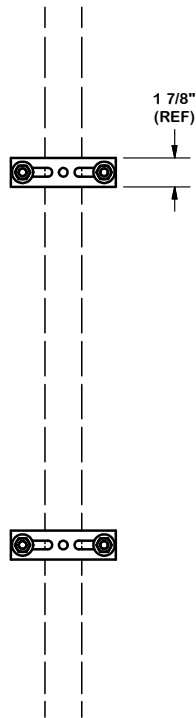
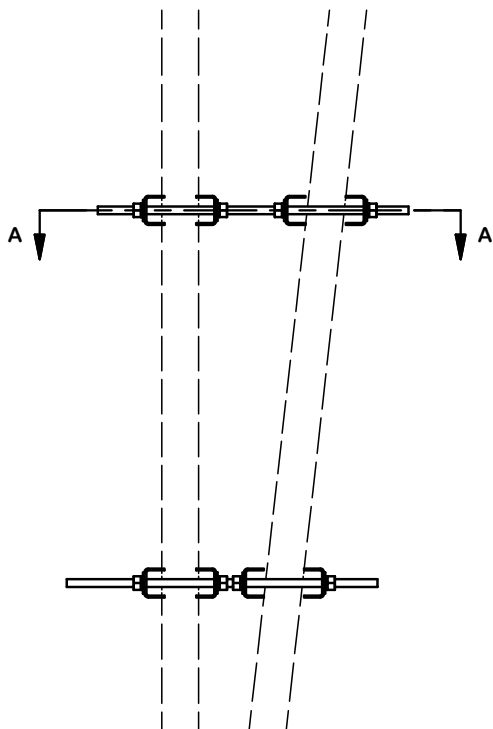
PART NO.	TCHM3-L
DWG. NO.	TCHM3-L

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REVISED DETAILS		RCH	3/09/2010
REVISION HISTORY				

MOUNT-PIPE-TO-ANTENNA CLAMPS (TOTAL OF 5 KITS REQUIRED).
 SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS.



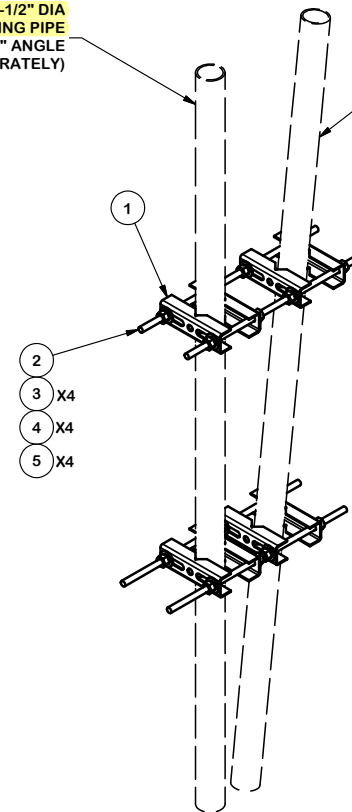
SECTION A-A



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	X-UPC1	SMALL PIPE TO PIPE BRACKET		0.85	6.79
2	4	G12R-20	1/2" x 20" THREADED ROD (HDG.)	20 in	3.23	12.91
3	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.14
4	16	G12LW	1/2" HDG LOCKWASHER		0.01	0.22
5	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.54
TOTAL WT. #						13.45

1-1/4" TO 4-1/2" DIA
 ANTENNA MOUNTING PIPE
 OR 1-1/2" TO 3" ANGLE
 (ORDERED SEPARATELY)

1-1/4" TO 4-1/2" DIA
 TOWER LEG
 OR 1-1/2" TO 3" ANGLE
 (REF)



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

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 INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF
 VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 UNIVERSAL PIPE-TO-PIPE
 CLAMP SET
 FOR SMALL PIPES (1-1/4" TO 4-1/2")



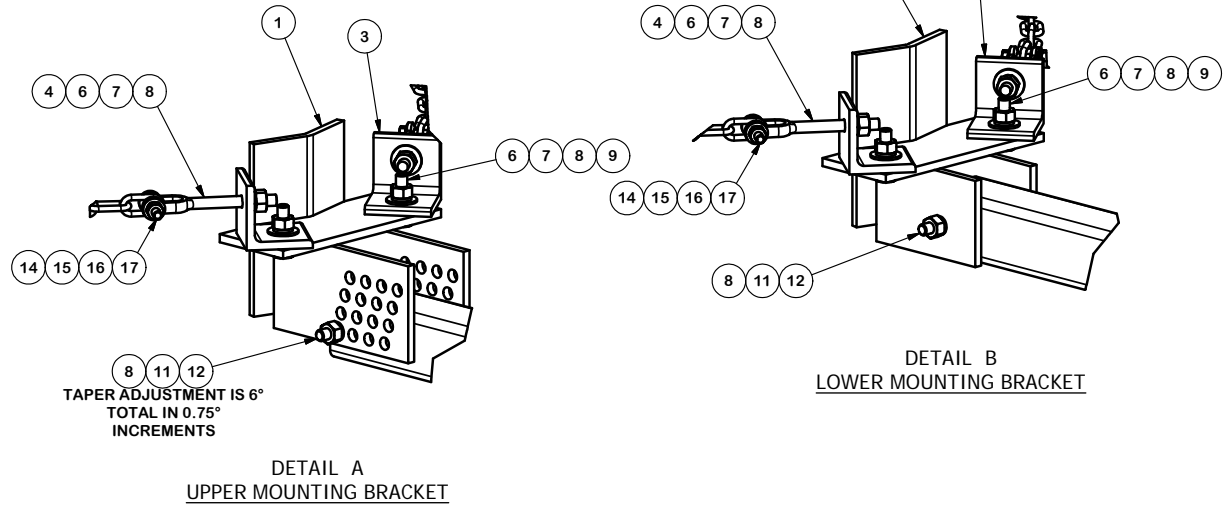
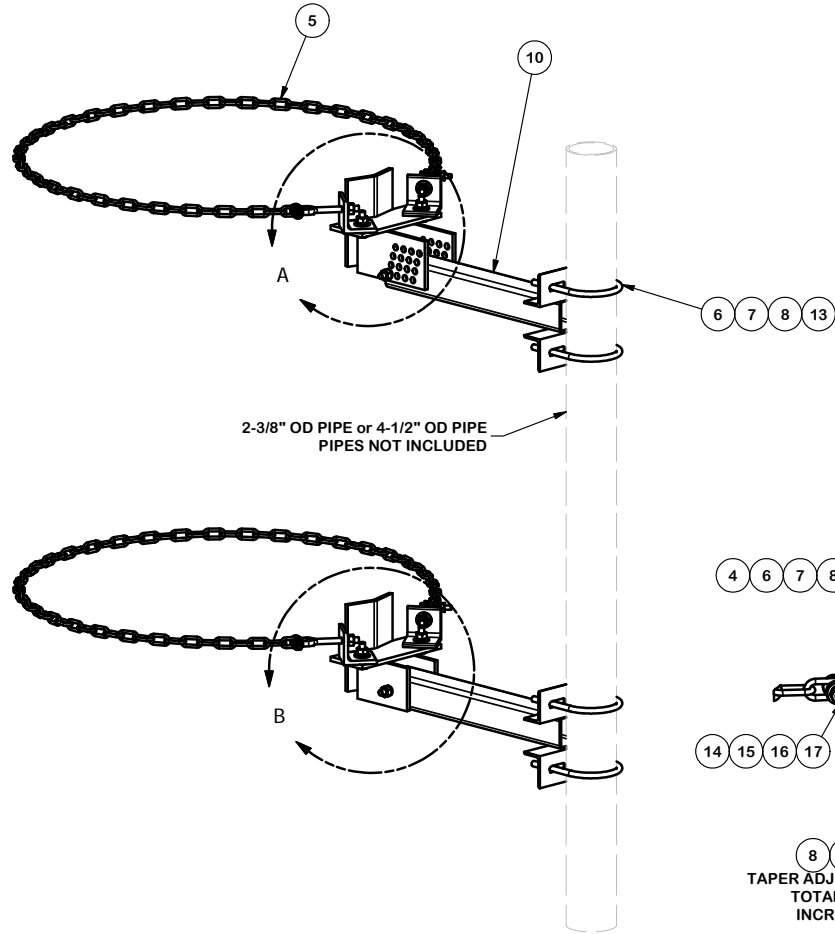
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX
 Engineering
 Support Team:
 1-888-753-7446

CPD NO. 4448	DRAWN BY CEK 3/13/2009	ENG. APPROVAL
CLASS 81	SUB 01	DRAWING USAGE CUSTOMER
CHECKED BY CEK 2/18/2013		

PART NO. UPC1	
DWG. NO. UPC1	

A	REDRAWN IN INV. UPDATED VIEWS & TABLE	KC8	8/20/2012
REV	DESCRIPTION OF REVISIONS	CPD	BY DATE
REVISION HISTORY			

MOUNT FOR LOWER LEVEL



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	16.17
2	1	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	14.14
3	4	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	7.36
4	4	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	2.04
5	2	GC4095	1/4" x GR40 GALV. CHAIN 9.5'		4.07	8.14
6	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.15
7	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.55
8	18	G12LW	1/2" HDG LOCKWASHER		0.01	0.25
9	4	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	0.70
10	2	X-UAPM22	UNIVERSAL ANGLE TUBE 22"		16.76	33.53
11	2	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.14
12	2	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	0.69
13	4	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	3.89
13	4	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	2.63
14	4	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	0.41
15	4	G38FW	3/8" HDG USS FLATWASHER		0.01	0.05
16	4	G38LW	3/8" HDG LOCKWASHER		0.01	0.03
17	4	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.14
					TOTAL WT. #	95.80

TOLERANCE NOTES
 TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
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 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
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 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
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DESCRIPTION
 2'-0" STANDOFF, SINGLE SECTOR,
 TAPER ADJUSTABLE CHAIN MOUNT,
 SITE PRO 1

CPD NO.	DRAWN BY	ENG. APPROVAL
	RH18 3/12/2010	
CLASS	DRAWING USAGE	CHECKED BY
81	CUSTOMER	BMC 3/15/2010

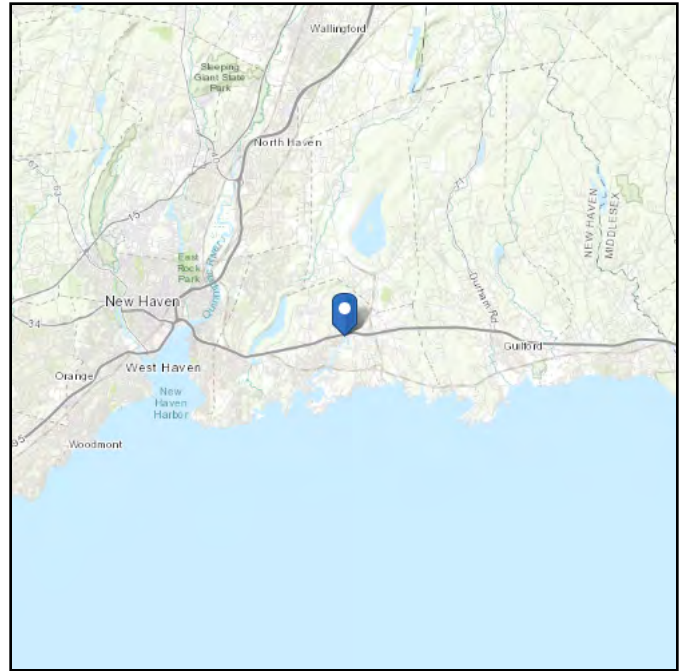
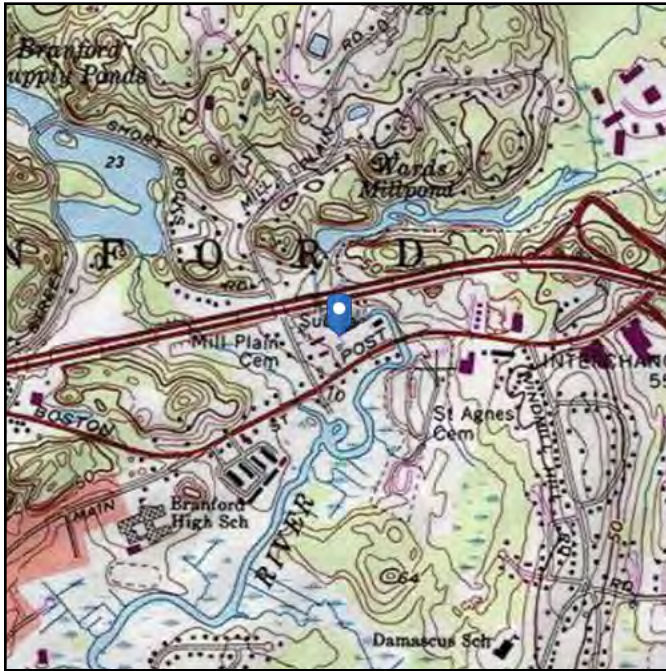
 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX		
	Engineering Support Team: 1-888-753-7446		
PART NO.	TCHM1-L	PAGE	1 OF 1
DWG. NO.	TCHM1-L		

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: III
Soil Class: D - Stiff Soil

Elevation: 6.13 ft (NAVD 88)
Latitude: 41.292531
Longitude: -72.794633



Wind

Results:

Wind Speed:	138 Vmph	Wind Speed is 140 mph per 2018 Connecticut State Building Code
10-year MRI	78 Vmph	
25-year MRI	88 Vmph	
50-year MRI	95 Vmph	
100-year MRI	103 Vmph	

Data Source: ASCE/SEI 7-10, Fig. 26.5-1B and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

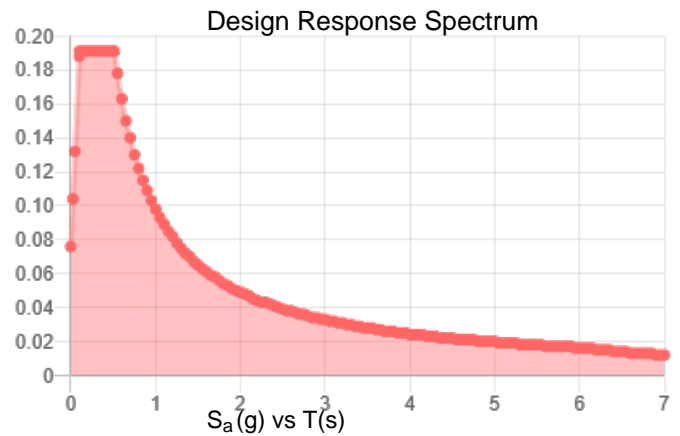
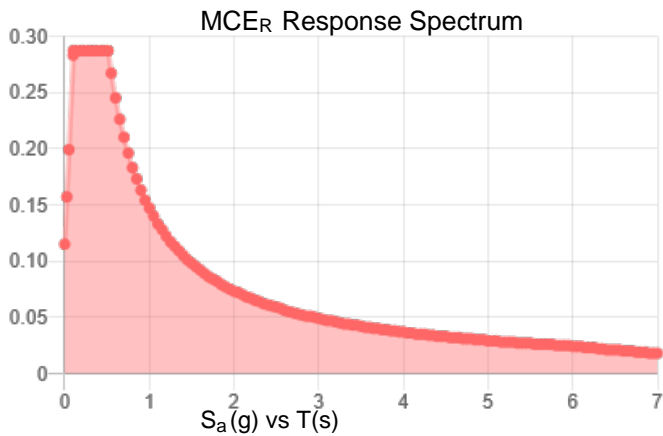
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.179	S_{DS} :	0.191
S_1 :	0.061	S_{D1} :	0.098
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.287	PGA _M :	0.148
S_{M1} :	0.147	F _{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B



Data Accessed:

Tue Mar 09 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Mar 09 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Attachment C
Mounting Analysis

March 29, 2021

MOUNT EVALUATION LETTER

Site Number: ES-106
Site Name: BRANFORD11J
Site Data: 272 East Main St.
 Branford, CT 06405
Latitude: 41° 17' 33.11"
Longitude: -72° 47' 40.68"

Black & Veatch Corporation is pleased to submit this "Mount Evaluation Letter" to determine the structural integrity of antenna mounting system on the above-mentioned site. The purpose of this evaluation is to determine the capacity of the system in supporting the final loading in the attached "Loading Summary".

Based on our evaluation we have determined the antenna mounting system to be:

SUFFICIENT

Structure Rating (max from all components) =	68.9%
---	--------------

The proposed mounting system will be capable of supporting the existing and proposed equipment, under the assumptions described in Section 4 of the report and the following conditions:

- Contractor shall be responsible for the means and methods of construction.
- Contractor shall inspect the condition of all existing and proposed structural members, all relevant members and connections and report any deficiencies to the engineer prior to installation of any new antennas and other equipment.

The scope of this evaluation pertains only to the existing antenna mounting system and does not include examination of the loads imparted by the antenna mounting system to the existing tower and its structural components. This document was prepared based on information provided to Black & Veatch. If existing conditions do not reflect those represented, this analysis is no longer valid.

Please contact Josh Riley in our Overland Park Office at 913-458-2522 if you have any questions or comments.

Sincerely,
 Black & Veatch Corporation

Prepared By: JooHwan Jung
 Submitted By: Josh Riley, P.E.



03/29/2021



TABLE OF CONTENTS

1. LOADING SUMMARY
2. ANALYSIS CRITERIA SUMMARY
3. REFERENCES
4. ASSUMPTIONS
5. RESULTS SUMMARY

APPENDICES

APPENDIX 1: MOUNT ANALYSIS REPORT

APPENDIX 2: RISA PRINTOUTS

APPENDIX 3: ATTACHMENTS



1. LOADING SUMMARY

Appurtenance								
Carrier	Position	Sector	Antenna RAD Center (ft)	Mount Centerline (ft)	Qty	Type	Manufacturer	Model
Eversource	-	-	60	47	1	Omni	dbSpectra	DS2C03F36D-D
Eversource	-	-	55	47	1	Omni	Kreco	CO-41A
Eversource	-	-	53	47	1	Omni	-	Generic Omni
Eversource	-	-	41	36	1	Omni	-	Generic Omni

This analysis analyzes the worst-case scenario for the proposed omni stand-off frame. All levels are deemed sufficient.



2. ANALYSIS CRITERIA SUMMARY

ANALYSIS CRITERIA	
STANDARD	TIA-222-H
WIND SPEED	Ultimate of 140 mph
WIND SPEED WITH ICE	50 mph with 1.5" radial ice thickness
EXPOSURE CATEGORY	C
RISK CATEGORY	III
TOPO CATEGORY	Flat
CREST HEIGHT	N/A
SPECTRAL RESPONSE FACTORS, S _s & S ₁	0.179 g & 0.061 g

3. REFERENCES

- American Institute of Steel Construction, AISC 15th Edition
- Telecommunications Industry Association Standard, TIA-222-H & 2018 Connecticut State Building Code
- Mount Assembly Drawing (Model: TCHM3-L) by SitePro 1, dated 03/15/2010
- Mount Assembly Drawing (Model: TCHM1-L) by SitePro 1, dated 03/15/2010

4. ASSUMPTIONS

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch should be notified to determine the effect on the structural integrity of the antenna mounting system.

- The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- The configuration of antennas, mounts, and other appurtenances are as specified in the Loading Summary and the referenced drawings.
- All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- Sector frame center line: located equidistant between top & bottom boom; Platform center line: located at the base perimeter of platform, unless otherwise specified.
- Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR B-35)
Connection Bolts	ASTM A325



5. RESULTS SUMMARY

Name	Bending Stress Ratio		Shear Stress Ratio	
Arm: HSS3X3X3/16	68.9%	Pass	36.2%	Pass
Mount Pipe: Pipe 4.0 Std	36.9%	Pass	27.3%	Pass

*Von Mises SR = (Max Von Mises Value From RISA-3D)/(0.9*Fy)

**Capacity rating per TIA-222-H Section 15.5.



BLACK & VEATCH

March 16, 2021

BRANFORD11J

**APPENDIX 1:
MOUNT ANALYSIS REPORT**



BLACK & VEATCH

Client: Eversource
Site Name: BRANFORD11J (ES-106)

Computed By: Joohwan Jung

Date: 3/16/2021

Verified By: JW

Title: MOUNT ANALYSIS REPORT

Date: 3/16/2021

Dead and Live Loads

Maintenance Live Load: $L_V = 250$ lb

Installation Live Load: $L_M = 0$ lb

Appurtenance Dead Loads	
Name	Weight (lb)
DS2C03F36D-D	70



Client: Eversource
 Site Name: BRANFORD11J (ES-106)

Computed By: Joochan Jung

Date: 3/16/2021

Verified By: JW

BLACK & VEATCH

Title: MOUNT ANALYSIS REPORT

Date: 3/16/2021

Member Wind Loading

Exposure Category = C
 Risk Category = III
 Topographic Category = 1
 Basic Wind Speed, V = 140 mph
 Height Above Ground, z = 86 ft
 Crest Height, H = N/A ft
 Velocity Pressure Coefficient, K_z = 1.23
 Topographic Factor, K_{zt} = 1.00
 Wind Directionality Factor, K_d = 0.95
 Shielding Factor, K_a = 0.90
 Ground Elevation Factor, K_e = 1.000
 Wind Velocity Pressure, q_z = 58.43 psf
 Gust Effect Factor, G_h = 1.00

Equations

$K_z = 2.01 (z / z_g)^{2/\alpha}$
 $K_h = e^{(f \cdot z / H)}$
 $K_{zt} = [1 + K_c K_t / K_h]^2$
 $K_e = e^{-0.0005z^2}$
 $q_z = 0.00256 K_z K_{zt} K_e K_d V^2$
 $F_A = q_z G_h (EPA)$
 $F_M = q_z G_h C_f D_p$

TIA-222-H
 2.6.5.2
 2.6.6.2.1
 2.6.6.2.1
 2.6.8
 2.6.11.6
 2.6.11.2
 2.6.11.2

Member Wind Loads					
Name	Depth (ft)	Width (ft)	C_f	D_p (ft)	F_M (lb)
Arm: HSS3X3X3/16	0.25	0.25	2	0.25	29.22
Mount Pipe: Pipe 4.0 Std	0.38		1.2	0.38	26.29



Client: Eversource
 Site Name: BRANFORD11J (ES-106)

Computed By: JooHwan Jung

Date: 3/16/2021

Verified By: JW

BLACK & VEATCH

Title: MOUNT ANALYSIS REPORT

Date: 3/16/2021

Appurtenance Ice Dead Loading

Exposure Category = C
 Risk Category = III
 Topographic Category = 1
 Height Above Ground, z = 86 ft
 Crest Height, H = N/A ft
 Design Ice Thickness, T_i = 1.50 in
 Importance Factor, I = 1.15
 Topographic Factor, K_{zt} = 1.00
 Height Escalation Factor, K_{iz} = 1.10
 Factored Ice Thickness, T_{iz} = 1.90 in
 Grating Ice Dead Load, D_{Gice} = 8.86 psf

Equations

$$K_h = e^{(f \cdot z / H)}$$

$$K_{zt} = [1 + K_c K_t / K_h]^2$$

$$K_{iz} = (z/33)^{u \cdot 10}$$

$$T_{iz} = T_i I K_{iz} (K_{zt})^{u \cdot 30}$$

$$DL_{ice} = [(H_{ice} * D_{ice} * W_{ice}) - (H * W * D)] * 56pcf$$

TIA-222-H

2.6.6.2.1

2.6.6.2.1

2.6.10

2.6.10

Appurtenance Ice Dead Loads

Name	Height w/ ice (ft)	Width w/ice (ft)	Depth w/ ice (ft)	V _{ice} (ft ³)	DL _{ice} (lb)
DS2C03F36D-D	24.62	0.57	0.57	6.38	357.19



BLACK & VEATCH

Client: Eversource
 Site Name: BRANFORD11J (ES-106)

Computed By: JooHwan Jung

Date: 3/16/2021

Verified By: JW

Title: MOUNT ANALYSIS REPORT

Date: 3/16/2021

Member Ice Dead Loading

Exposure Category = C
 Risk Category = III
 Topographic Category = 1
 Height Above Ground, z = 86 ft
 Crest Height, H = N/A ft
 Design Ice Thickness, T_i = 1.50 in
 Importance Factor, I = 1.15
 Topographic Factor, K_{zt} = 1.00
 Height Escalation Factor, K_{iz} = 1.10
 Factored Ice Thickness, T_{iz} = 1.90 in
 Grating Ice Dead Load, D_{Gice} = 8.86 psf

Equations

$$K_h = e^{(f \cdot z / H)}$$

$$K_{zt} = [1 + K_c K_t / K_h]^2$$

$$K_{iz} = (z/33)^{0.10}$$

$$T_{iz} = T_i I K_{iz} (K_{zt})^{0.35}$$

$$A_{iz} = \pi i T_{iz} (D_c + T_{iz})$$

$$DL_{ice} = A_{iz} \cdot 56 \text{pcf}$$

TIA-222-H

2.6.6.2.1

2.6.6.2.1

2.6.10

2.6.10

2.6.10

Member Ice Dead Loads					
Name	Depth w/ ice (ft)	Width w/ ice (ft)	Dc (ft)	Aiz (ft ²)	DL _{ice} (lb/ft)
Arm: HSS3X3X3/16	0.57	0.57	0.35	0.25	14.24
Mount Pipe: Pipe 4.0 Std	0.69		0.38	0.27	14.84



Client: Eversource
 Site Name: BRANFORD11J (ES-106)

Computed By: Joochan Jung

Date: 3/16/2021

Verified By: JW

BLACK & VEATCH

Title: MOUNT ANALYSIS REPORT

Date: 3/16/2021

Member Ice Wind Loading

Exposure Category = C
 Risk Category = III
 Topographic Category = 1
 Ice Wind Speed, V_{ice} = 50 mph
 Height Above Ground, z = 86 ft
 Crest Height, H = N/A ft
 Velocity Pressure Coefficient, K_z = 1.23 psf
 Topographic Factor, K_{zt} = 1.00
 Wind Directionality Factor, K_d = 0.95
 Shielding Factor, K_a = 0.90
 Ground Elevation Factory, K_e = 1.000
 Ice Wind Velocity Pressure, $q_{z(ice)}$ = 7.453
 Factored Ice Thickness, T_{iz} = 1.90 in
 Gust Effect Factor, G_h = 1

Equations

$K_z = 2.01 (z / z_g)^{2/\alpha}$
 $K_h = e^{(f \cdot z / H)}$
 $K_{zt} = [1 + K_c K_t / K_h]^2$
 $K_e = e^{-0.00053z^{-2.5}}$
 $q_z = 0.00256 K_z K_{zt} K_e K_d V^2$
 $F_{A(ice)} = q_{z(ice)} G_h (EPA)_{A(ice)}$
 $F_{M(ice)} = q_{z(ice)} G_h C_f D_{p(ice)}$

TIA-222-H

2.6.5.2
 2.6.6.2.1
 2.6.6.2.1
 2.6.8
 2.6.11.6
 2.6.11.2
 2.6.11.2

Member Ice Wind Loads					
Name	Depth w/ Ice (ft)	Width w/ Ice (ft)	C_f	$D_{p(ice)}$ (ft)	$F_{M(ice)}$ (lb/ft)
Arm: HSS3X3X3/16	0.57	0.57	2	0.57	8.44
Mount Pipe: Pipe 4.0 Std	0.69		1.2	0.69	6.18



BLACK & VEATCH

Client: Eversource
 Site Name: BRANFORD11J (ES-106)

Computed By: JooHwan Jung

Date: 3/16/2021

Verified By: JW

Title: MOUNT ANALYSIS REPORT

Date: 3/16/2021

Seismic Loading

Equations

TIA-222-H

Site Class = D
 Spectral Response, $S_s = 0.171$ g
 Max Spectral Response, $S_1 = 0.062$ g
 Accel. Site Coefficient, $F_a = 1.60$
 Vel. Site Coefficient, $F_v = 2.40$
 Design Spec. Response (1 sec), $S_{D1} = 0.099$
 Design Spec. Response, $S_{DS} = 0.182$
 Importance Factor, $I = 1.25$
 Seismic Response Coefficient, $C_s = 0.114$
 Amplification Factor, $A_s = 3$

$S_{D1} = 2/3 F_v S_1$
 $S_{DS} = 2/3 F_a S_s \geq S_{D1}$
 $C_s = 1/2 S_{DS} I \geq 0.03$
 $E_H = A_s C_s W$
 $E_V = A_s 0.2 S_{DS} W$

2.7.5
 2.7.5
 2.7.7.1.1
 2.7.7
 2.7.6

Appurtenance Seismic Loads			
Name	Weight (lb)	E_H (lb)	E_V (lb)
DS2C03F36D-D	70	23.94	7.66

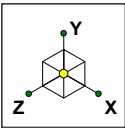


BLACK & VEATCH

March 16, 2021

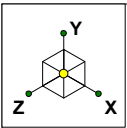
BRANFORD11J

**APPENDIX 2:
RISA PRINTOUTS**



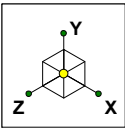
Envelope Only Solution

Black & Veatch Corp.	BRANFORD11J Risa Model	SK - 1
Joochan Jung		Mar 16, 2021 at 1:21 PM
405025.2021.2200		BRANFORD11J Risa Model.r3d

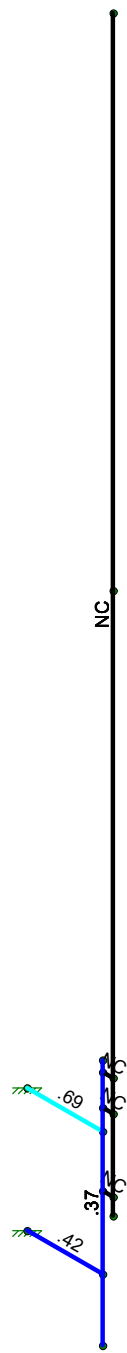


Envelope Only Solution

Black & Veatch Corp.	BRANFORD11J Risa Model	SK - 2
Joochan Jung		Mar 16, 2021 at 1:21 PM
405025.2021.2200		BRANFORD11J Risa Model.r3d

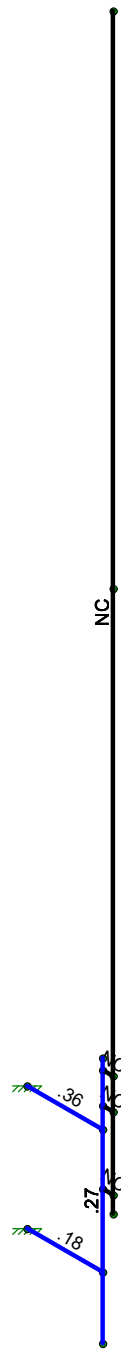
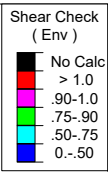
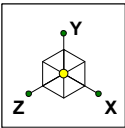


Code Check (Env)	
Black	No Calc
Red	> 1.0
Pink	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0.-.50



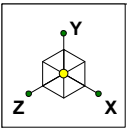
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Black & Veatch Corp.	BRANFORD11J Risa Model	SK - 3
Joochan Jung		Mar 16, 2021 at 1:21 PM
405025.2021.2200		BRANFORD11J Risa Model.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Black & Veatch Corp.	BRANFORD11J Risa Model	SK - 4
Joochan Jung		Mar 16, 2021 at 1:21 PM
405025.2021.2200		BRANFORD11J Risa Model.r3d



Loads: BLC 1, DL
Envelope Only Solution

Black & Veatch Corp.	BRANFORD11J Risa Model	SK - 5
JooHwan Jung		Mar 16, 2021 at 1:21 PM
405025.2021.2200		BRANFORD11J Risa Model.r3d



(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISACONNECTION CODE	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



(Global) Model Settings, Continued

Seismic Code	None
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Arm	HSS3X3X3	Beam	None	A53 Gr.B	Typical	1.89	2.46	2.46	4.03
2	Mount Pipe	PIPE 4.0	Column	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6

General Material Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]
1	gen Conc3NW	3155	1372	.15	.6	.145
2	gen_Conc4NW	3644	1584	.15	.6	.145
3	gen_Conc3LW	2085	906	.15	.6	.11
4	gen_Conc4LW	2408	1047	.15	.6	.11
5	gen Alum	10600	4077	.3	1.29	.173
6	gen_Steel	29000	11154	.3	.65	.49
7	RIGID	1e+6		.3	0	0

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Arm	Beam	None	A53 Gr.B	Typical
2	M2	N3	N4			Mount Pipe	Column	None	A53 Gr.B	Typical
3	M3	N10	N7			RIGID	None	None	RIGID	Typical
4	M4	N9	N6			RIGID	None	None	RIGID	Typical
5	M5	N8	N5			RIGID	None	None	RIGID	Typical
6	M6	N11	N12			Arm	Beam	None	A53 Gr.B	Typical
7	M7	N13	N14			RIGID	None	None	RIGID	Typical



Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat..	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Arm	1.833									Lateral
2	M2	Mount Pipe	6									Lateral
3	M6	Arm	1.833									Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	DL	DL		-1		1			
2	Maintenance LL - LV	LL				1			
3	Installation LL - LM	LL				1			
4	Wind - 0 Deg (X)	WL				1		3	
5	Wind - 30 Deg (X)	WL				1		3	
6	Wind - 60 Deg (X)	WL				1		3	
7	Wind - 90 Deg (X)	WL				1		3	
8	Wind - 120 Deg (X)	WL				1		3	
9	Wind - 150 Deg (X)	WL				1		3	
10	Wind - 180 Deg (X)	WL				1		3	
11	Wind - 210 Deg (X)	WL				1		3	
12	Wind - 240 Deg (X)	WL				1		3	
13	Wind - 270 Deg (X)	WL				1		3	
14	Wind - 300 Deg (X)	WL				1		3	
15	Wind - 330 Deg (X)	WL				1		3	
16	Wind - 0 Deg (Z)	WL				1		3	
17	Wind - 30 Deg (Z)	WL				1		3	
18	Wind - 60 Deg (Z)	WL				1		3	
19	Wind - 90 Deg (Z)	WL				1		3	
20	Wind - 120 Deg (Z)	WL				1		3	
21	Wind - 150 Deg (Z)	WL				1		3	
22	Wind - 180 Deg (Z)	WL				1		3	
23	Wind - 210 Deg (Z)	WL				1		3	
24	Wind - 240 Deg (Z)	WL				1		3	
25	Wind - 270 Deg (Z)	WL				1		3	
26	Wind - 300 Deg (Z)	WL				1		3	
27	Wind - 330 Deg (Z)	WL				1		3	
28	Ice DL	DL				1		3	
29	Ice Wind - 0 Deg (X)	WL				1		3	
30	Ice Wind - 30 Deg (X)	WL				1		3	
31	Ice Wind - 60 Deg (X)	WL				1		3	
32	Ice Wind - 90 Deg (X)	WL				1		3	
33	Ice Wind - 120 Deg (X)	WL				1		3	
34	Ice Wind - 150 Deg (X)	WL				1		3	
35	Ice Wind - 180 Deg (X)	WL				1		3	
36	Ice Wind - 210 Deg (X)	WL				1		3	
37	Ice Wind - 240 Deg (X)	WL				1		3	



Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
38	Ice Wind - 270 Deg (X)	WL				1		3	
39	Ice Wind - 300 Deg (X)	WL				1		3	
40	Ice Wind - 330 Deg (X)	WL				1		3	
41	Ice Wind - 0 Deg (Z)	WL				1		3	
42	Ice Wind - 30 Deg (Z)	WL				1		3	
43	Ice Wind - 60 Deg (Z)	WL				1		3	
44	Ice Wind - 90 Deg (Z)	WL				1		3	
45	Ice Wind - 120 Deg (Z)	WL				1		3	
46	Ice Wind - 150 Deg (Z)	WL				1		3	
47	Ice Wind - 180 Deg (Z)	WL				1		3	
48	Ice Wind - 210 Deg (Z)	WL				1		3	
49	Ice Wind - 240 Deg (Z)	WL				1		3	
50	Ice Wind - 270 Deg (Z)	WL				1		3	
51	Ice Wind - 300 Deg (Z)	WL				1		3	
52	Ice Wind - 330 Deg (Z)	WL				1		3	
53	Lateral Seismic - Eh (...)	ELX	.342			1			
54	Lateral Seismic - Eh (Z)	ELZ			.342	1			
55	Vertical Seismic - Ev (...)	ELY		-.109		1			

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	
1	WIND LOAD COMBOS (140 MPH)																				
2	1.2DL + WL (0 DEG)	Yes	Y	1	1.2	4	1	16	1												
3	1.2DL + WL (30 DEG)	Yes	Y	1	1.2	5	1	17	1												
4	1.2DL + WL (60 DEG)	Yes	Y	1	1.2	6	1	18	1												
5	1.2DL + WL (90 DEG)	Yes	Y	1	1.2	7	1	19	1												
6	1.2DL + WL (120 DEG)	Yes	Y	1	1.2	8	1	20	1												
7	1.2DL + WL (150 DEG)	Yes	Y	1	1.2	9	1	21	1												
8	1.2DL + WL (180 DEG)	Yes	Y	1	1.2	10	1	22	1												
9	1.2DL + WL (210 DEG)	Yes	Y	1	1.2	11	1	23	1												
10	1.2DL + WL (240 DEG)	Yes	Y	1	1.2	12	1	24	1												
11	1.2DL + WL (270 DEG)	Yes	Y	1	1.2	13	1	25	1												
12	1.2DL + WL (300 DEG)	Yes	Y	1	1.2	14	1	26	1												
13	1.2DL + WL (330 DEG)	Yes	Y	1	1.2	15	1	27	1												
14																					
15	MOUNT LOAD COMBOS (30 MP...																				
16	1.4DL	Yes	Y	1	1.4																
17	1.2DL + 1.5LV	Yes	Y	1	1.2	2	1.5														
18	1.2DL + 1.5LM + WL (0 DEG)	Yes	Y	1	1.2	3	1.5	4	.046	16	.046										
19	1.2DL + 1.5LM + WL (30 DEG)	Yes	Y	1	1.2	3	1.5	5	.046	17	.046										
20	1.2DL + 1.5LM + WL (60 DEG)	Yes	Y	1	1.2	3	1.5	6	.046	18	.046										
21	1.2DL + 1.5LM + WL (90 DEG)	Yes	Y	1	1.2	3	1.5	7	.046	19	.046										
22	1.2DL + 1.5LM + WL (120 DEG)	Yes	Y	1	1.2	3	1.5	8	.046	20	.046										
23	1.2DL + 1.5LM + WL (150 DEG)	Yes	Y	1	1.2	3	1.5	9	.046	21	.046										
24	1.2DL + 1.5LM + WL (180 DEG)	Yes	Y	1	1.2	3	1.5	10	.046	22	.046										
25	1.2DL + 1.5LM + WL (210 DEG)	Yes	Y	1	1.2	3	1.5	11	.046	23	.046										
26	1.2DL + 1.5LM + WL (240 DEG)	Yes	Y	1	1.2	3	1.5	12	.046	24	.046										
27	1.2DL + 1.5LM + WL (270 DEG)	Yes	Y	1	1.2	3	1.5	13	.046	25	.046										
28	1.2DL + 1.5LM + WL (300 DEG)	Yes	Y	1	1.2	3	1.5	14	.046	26	.046										
29	1.2DL + 1.5LM + WL (330 DEG)	Yes	Y	1	1.2	3	1.5	15	.046	27	.046										
30																					
31	ICE LOAD COMBOS (1.5", 50 M...																				
32	1.2DL + Ice DL + Ice WL (0 DEG)	Yes	Y	1	1.2	28	1	29	1	41	1										
33	1.2DL + Ice DL + Ice WL (30 DEG)	Yes	Y	1	1.2	28	1	30	1	42	1										
34	1.2DL + Ice DL + Ice WL (60 DEG)	Yes	Y	1	1.2	28	1	31	1	43	1										



Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
35	1.2DL + Ice DL + Ice WL (90 DEG)	Yes	Y		1	1.2	28	1	32	1	44	1												
36	1.2DL + Ice DL + Ice WL (120 DE...	Yes	Y		1	1.2	28	1	33	1	45	1												
37	1.2DL + Ice DL + Ice WL (150 DE...	Yes	Y		1	1.2	28	1	34	1	46	1												
38	1.2DL + Ice DL + Ice WL (180 DE...	Yes	Y		1	1.2	28	1	35	1	47	1												
39	1.2DL + Ice DL + Ice WL (210 DE...	Yes	Y		1	1.2	28	1	36	1	48	1												
40	1.2DL + Ice DL + Ice WL (240 DE...	Yes	Y		1	1.2	28	1	37	1	49	1												
41	1.2DL + Ice DL + Ice WL (270 DE...	Yes	Y		1	1.2	28	1	38	1	50	1												
42	1.2DL + Ice DL + Ice WL (300 DE...	Yes	Y		1	1.2	28	1	39	1	51	1												
43	1.2DL + Ice DL + Ice WL (330 DE...	Yes	Y		1	1.2	28	1	40	1	52	1												
44																								
45	SEISMIC LOAD COMBOS																							
46	1.2DL + Ev (Y) + Eh (X)	Yes	Y		1	1.2	55	1	53	1														
47	1.2DL - Ev (Y) + Eh (X)	Yes	Y		1	1.2	55	-1	53	1														
48	1.2DL + Ev (Y) - Eh (X)	Yes	Y		1	1.2	55	1	53	-1														
49	1.2DL - Ev (Y) - Eh (X)	Yes	Y		1	1.2	55	-1	53	-1														
50	1.2DL + Ev (Y) + Eh (Z)	Yes	Y		1	1.2	55	1	54	1														
51	1.2DL - Ev (Y) + Eh (Z)	Yes	Y		1	1.2	55	-1	54	1														
52	1.2DL + Ev (Y) - Eh (Z)	Yes	Y		1	1.2	55	1	54	-1														
53	1.2DL - Ev (Y) - Eh (Z)	Yes	Y		1	1.2	55	-1	54	-1														
54																								

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
1	N1	max	3161.879	2	732.703	2	2863.876	5	9.786	5	41.668	11	5.276	2
2		min	-3270.203	8	-538.645	8	-2863.876	11	-9.786	11	-41.668	5	-3.156	8
3	N11	max	2366.394	8	723.463	8	1960.058	11	3.118	5	21.052	5	5.388	8
4		min	-2258.069	2	-547.885	2	-1960.058	5	-3.118	11	-21.052	11	-3.397	2
5	Totals:	max	903.809	2	683.261	38	903.818	5						
6		min	-903.809	8	167.963	49	-903.818	11						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

Member	Shape	Code Check	Loc[ft]	LC	Shear	Loc[ft]	Dir	LC	phi*Pnc	phi*Pnt	phi*Mn y	phi*Mn z	Cb	Eqn
1	M1	HSS3X3X3	.689	0	11	.362	0	z	11	58412.63	59535	62.055	62.055	2...H1-1b
2	M2	PIPE 4.0	.369	2.75	11	.273	2.75		11	83097.9...	93240	127.575	127.575	1...H1-1b
3	M6	HSS3X3X3	.417	1.833	10	.183	1.833	z	11	58412.63	59535	62.055	62.055	2...H1-1b

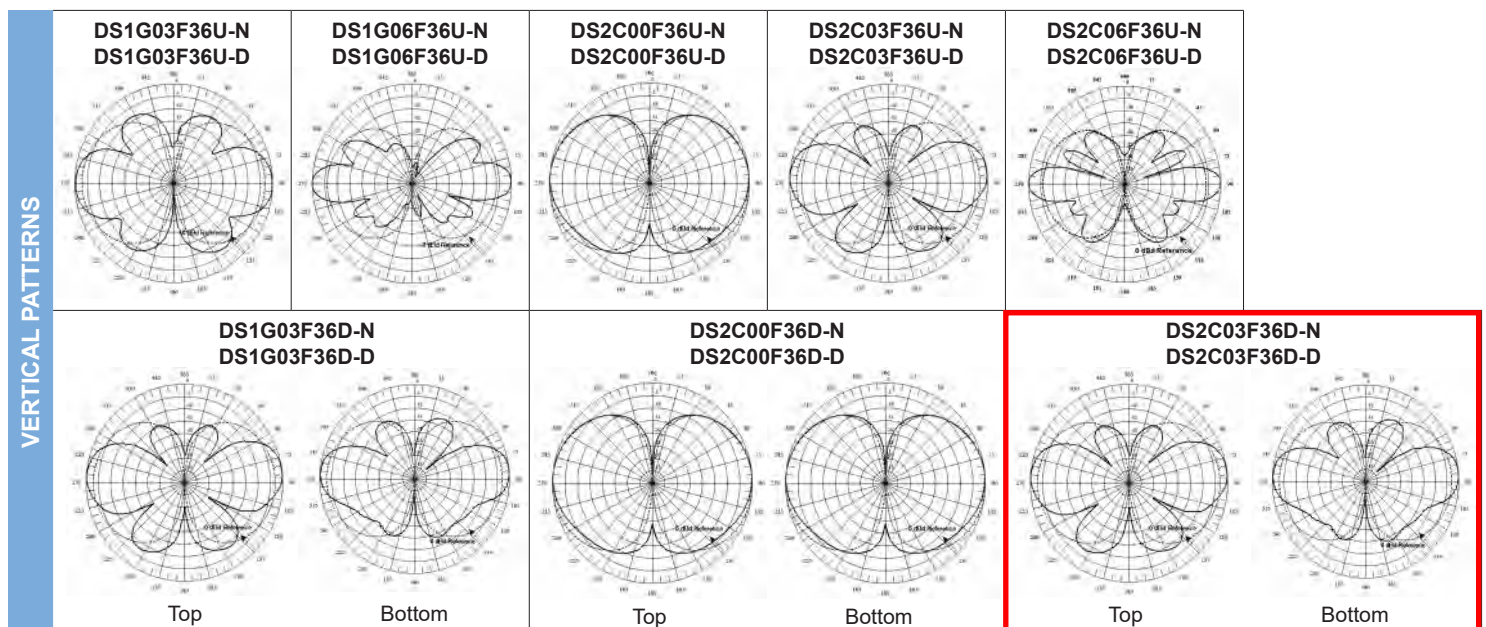
**APPENDIX 3:
ATTACHMENTS**

VHF Omni Antennas (160-222 MHz)



DS2C03F36D-D

		160-174 MHz						217-222 MHz									
Model Number		DS1G03F36U-N	DS1G03F36U-D	DS1G06F36U-N	DS1G06F36U-D	DS1G03F36D-N	DS1G03F36D-D	DS2C00F36U-N	DS2C00F36U-D	DS2C03F36U-N	DS2C03F36U-D	DS2C06F36U-N	DS2C06F36U-D	DS2C00F36D-N	DS2C00F36D-D	DS2C03F36D-N	DS2C03F36D-D
Input Connector		N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN	N(F)	7/16 DIN
Type		Single		Single		Dual		Single		Single		Single		Dual		Dual	
ELECTRICAL	Bandwidth, MHz	14		14		14		5		5		5		5		5	
	Power, Watts	500		500		350		500		500		500		350		350	
	Gain, dBd	3		6		3		0		3		6		0		3	
	Horizontal Beamwidth, degrees	360		360		360		360		360		360		360		360	
	Vertical Beamwidth, degrees	30		16		30		60		30		16		60		30	
	Beam Tilt, degrees	0		0		0		0		0		0		0		0	
	Isolation (minimum), dB	N/A		N/A		30		N/A		N/A		N/A		30		30	
	Number of Connectors	1		1		2		1		1		1		2		2	
MECHANICAL	Flat Plate Area, ft ² (m ²)	2.53 (0.24)		4.38 (0.41)		4.5 (0.42)		1.9 (0.18)		1.9 (0.18)		2.58 (0.24)		2.4 (0.22)		4.1 (0.38)	
	Lateral Windload Thrust, lbf(N)	95 (423)		164 (730)		169 (752)		53 (236)		69 (307)		108 (480)		90 (400)		169 (752)	
	Survival Wind Speed without ice, mph(kph)	110 (177)		75 (121)		75 (121)		222 (357)		172 (277)		110 (177)		130 (209)		75 (121)	
	with 0.5" radial ice, mph(kph)	93 (150)		60 (97)		65 (105)		193 (311)		150 (241)		96 (154)		115 (185)		65 (105)	
	Mounting Hardware included	DSH3V3R		DSH3V3N		DSH3V3N		DSH2V3R		DSH2V3R		DSH3V3N		DSH3V3R		DSH3V3N	
DIMENSIONS	Length, ft(m)	12.7 (3.9)		21.9 (6.7)		22.3 (6.8)		7.7 (2.3)		9.9 (3)		18.1 (5.5)		13.6 (4.1)		24.3 (7.4)	
	Radome O.D., in(cm)	3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)	
	Mast O.D., in(cm)	2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)	
	Net Weight w/o bracket, lb(kg)	37 (16.8)		60 (27.2)		63 (28.6)		19 (8.6)		26 (11.8)		47 (21.3)		40 (18.1)		70 (31.8)	
	Shipping Weight, lb(kg)	67 (30.4)		90 (40.8)		93 (42.2)		39 (17.7)		56 (25.4)		77 (34.9)		70 (31.8)		100 (45.4)	

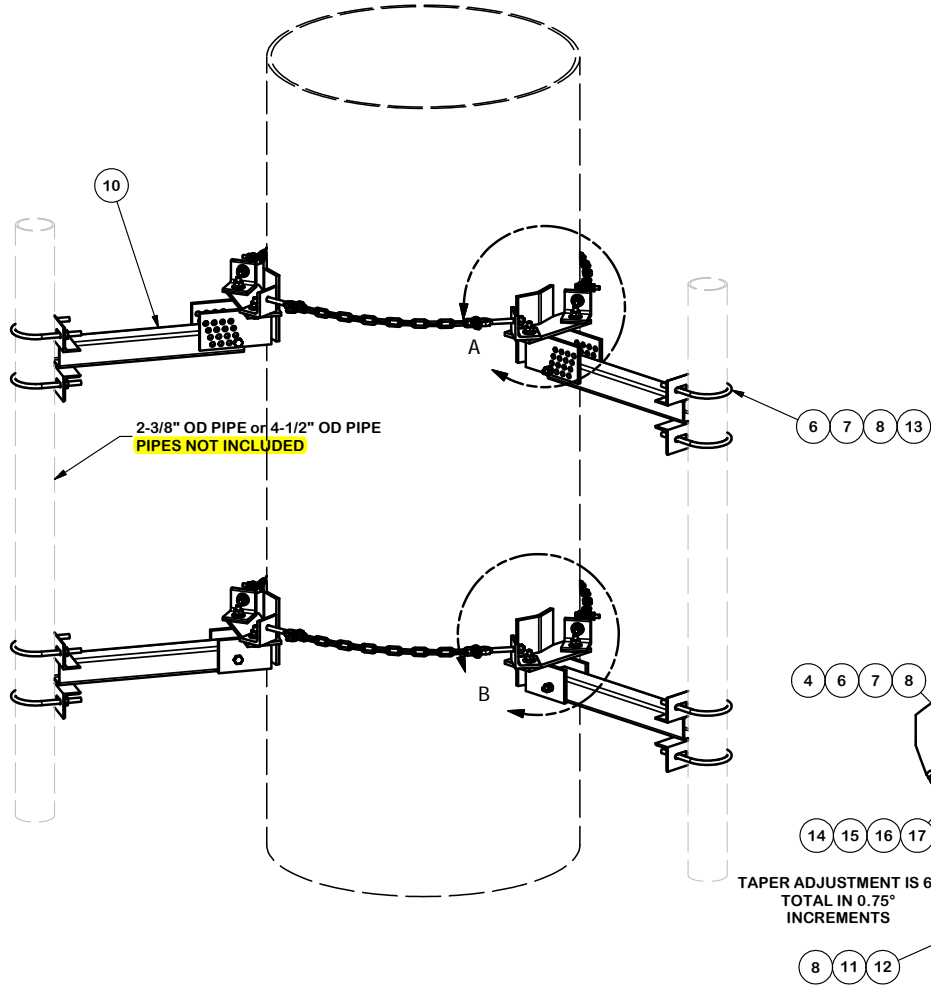


TOWER/MAST SIZE AT PROPOSED ANTENNA ATTACHMENT = 8.5"± DIAMETER FOR UPPER LEVEL AND 10"± DIAMETER FOR LOWER LEVEL.

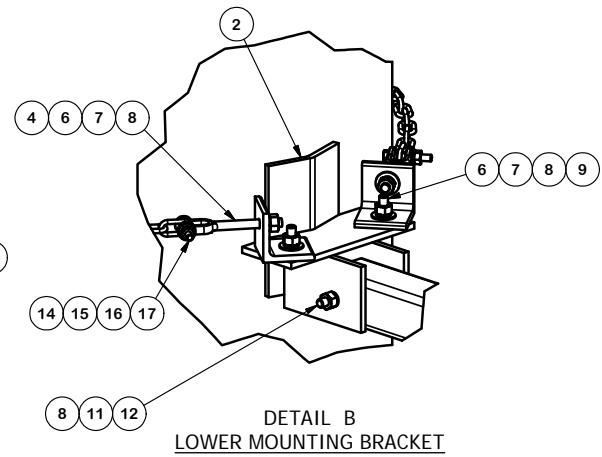
PROPOSED CHAIN MOUNT FITS POLYGON OR ROUND POLES 5"-36" IN DIAMETER.

NOTE: (1) 4" (4.5" OD) SCH 40 x 6'-0" AND (3) 2" (2.375" OD) SCH 40 x 6'-0" MOUNT PIPES ARE REQUIRED.

MOUNT FOR UPPER LEVEL



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	48.50
2	3	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	42.41
3	12	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	22.09
4	12	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	6.11
5	6	GC40317	1/4" x GR40 GALV. CHAIN 3.17'		0.91	5.46
6	48	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	3.44
7	48	G12FW	1/2" HDG USS FLATWASHER		0.03	1.64
8	54	G12LW	1/2" HDG LOCKWASHER		0.01	0.75
9	12	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	2.11
10	6	X-UAPM22	UNIVERSAL ANGLE TUBE 22"		16.76	100.58
11	6	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.43
12	6	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	2.06
13	12	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	11.66
13	12	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	7.88
14	12	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	1.23
15	12	G38FW	3/8" HDG USS FLATWASHER		0.01	0.14
16	12	G38LW	3/8" HDG LOCKWASHER		0.01	0.08
17	12	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.41
					TOTAL WT. #	267.00



TAPER ADJUSTMENT IS 6° TOTAL IN 0.75" INCREMENTS

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 2'-0" STAND-OFF, TRIPLE SECTOR,
 TAPER ADJUSTABLE CHAIN MOUNT,
 SITE PRO 1

SITE PRO 1
 Engineering Support Team:
 1-888-753-7446

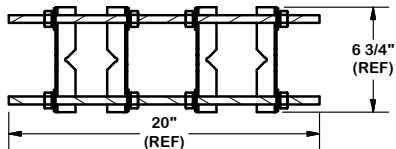
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL
	RH18	3/9/2010
CLASS	DRAWING USAGE	CHECKED BY
81	CUSTOMER	BMC 3/15/2010

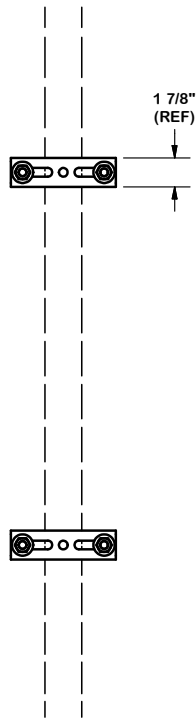
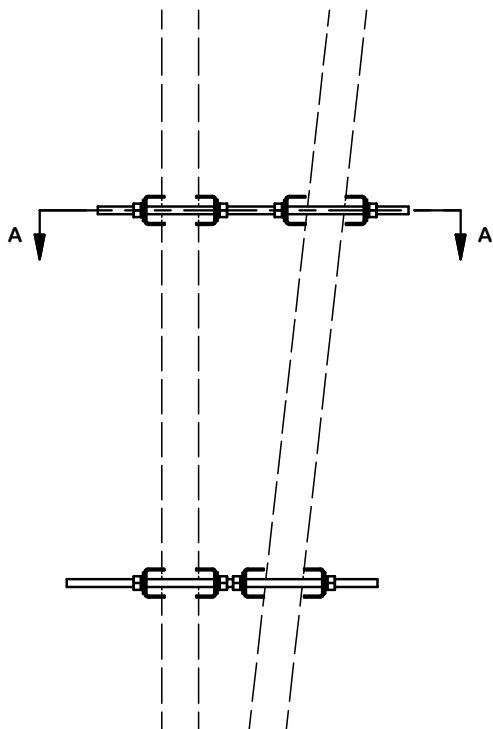
PART NO.	TCHM3-L
DWG. NO.	TCHM3-L

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REVISED DETAILS		RCH	3/09/2010

MOUNT-PIPE-TO-ANTENNA CLAMPS (TOTAL OF 5 KITS REQUIRED).
 SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS.



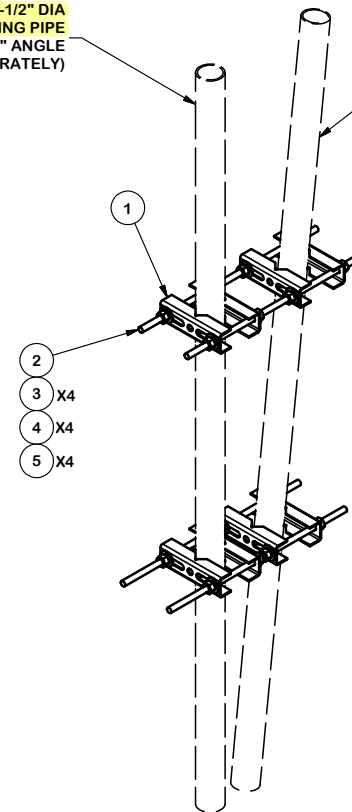
SECTION A-A



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	X-UPC1	SMALL PIPE TO PIPE BRACKET		0.85	6.79
2	4	G12R-20	1/2" x 20" THREADED ROD (HDG.)	20 in	3.23	12.91
3	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.14
4	16	G12LW	1/2" HDG LOCKWASHER		0.01	0.22
5	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.54
TOTAL WT. #						13.45

1-1/4" TO 4-1/2" DIA
 ANTENNA MOUNTING PIPE
 OR 1-1/2" TO 3" ANGLE
 (ORDERED SEPARATELY)

1-1/4" TO 4-1/2" DIA
 TOWER LEG
 OR 1-1/2" TO 3" ANGLE
 (REF)



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT
 INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF
 VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 UNIVERSAL PIPE-TO-PIPE
 CLAMP SET
 FOR SMALL PIPES (1-1/4" TO 4-1/2")



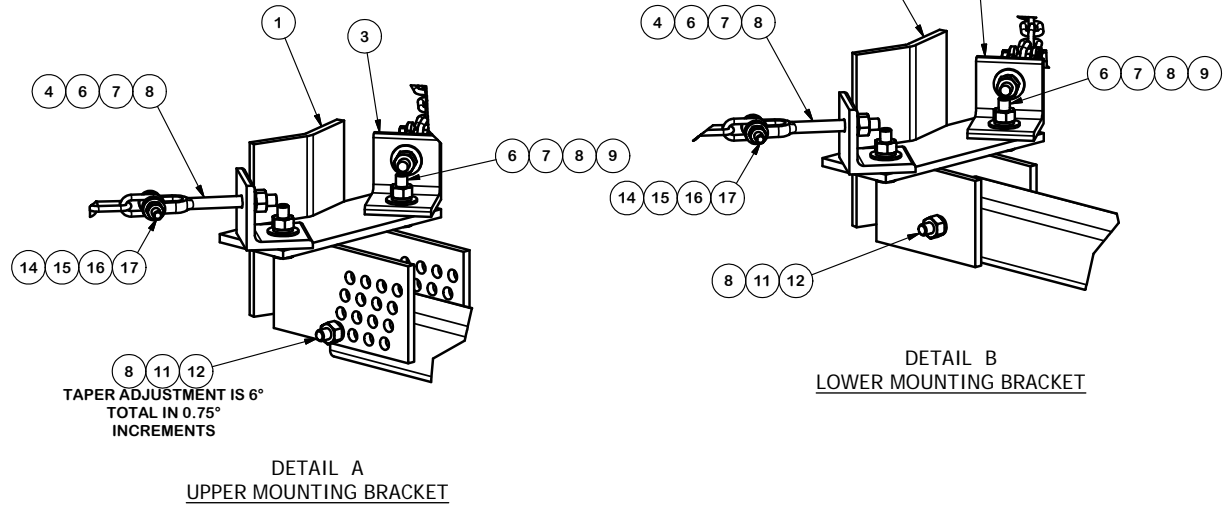
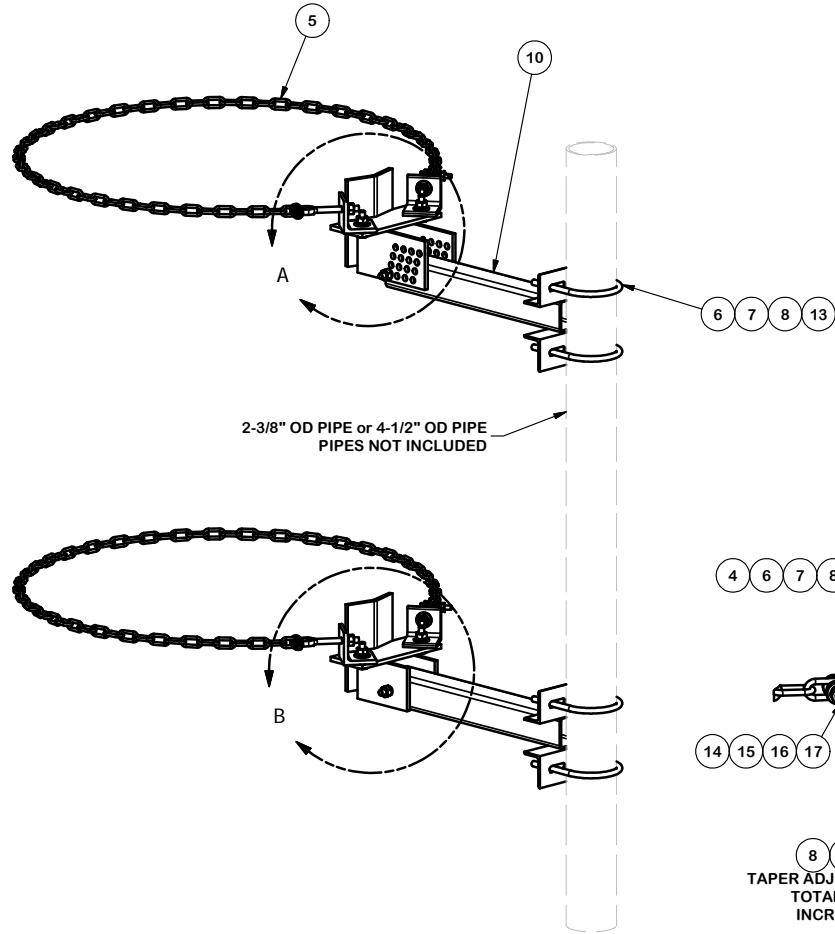
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX
 Engineering
 Support Team:
 1-888-753-7446

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REDRAWN IN INV. UPDATED VIEWS & TABLE		KC8	8/20/2012

CPD NO. 4448	DRAWN BY CEK 3/13/2009	ENG. APPROVAL
CLASS 81	SUB 01	DRAWING USAGE CUSTOMER
CHECKED BY CEK 2/18/2013		

PART NO. UPC1	DWG. NO. UPC1
------------------	------------------

MOUNT FOR LOWER LEVEL



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	16.17
2	1	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	14.14
3	4	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	7.36
4	4	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	2.04
5	2	GC4095	1/4" x GR40 GALV. CHAIN 9.5'		4.07	8.14
6	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.15
7	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.55
8	18	G12LW	1/2" HDG LOCKWASHER		0.01	0.25
9	4	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	0.70
10	2	X-UAPM22	UNIVERSAL ANGLE TUBE 22"		16.76	33.53
11	2	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.14
12	2	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	0.69
13	4	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	3.89
13	4	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	2.63
14	4	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	0.41
15	4	G38FW	3/8" HDG USS FLATWASHER		0.01	0.05
16	4	G38LW	3/8" HDG LOCKWASHER		0.01	0.03
17	4	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.14
					TOTAL WT. #	95.80

TOLERANCE NOTES
 TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
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DESCRIPTION
 2'-0" STANDOFF, SINGLE SECTOR,
 TAPER ADJUSTABLE CHAIN MOUNT,
 SITE PRO 1

CPD NO.	DRAWN BY	ENG. APPROVAL
	RH18 3/12/2010	
CLASS	DRAWING USAGE	CHECKED BY
81	CUSTOMER	BMC 3/15/2010

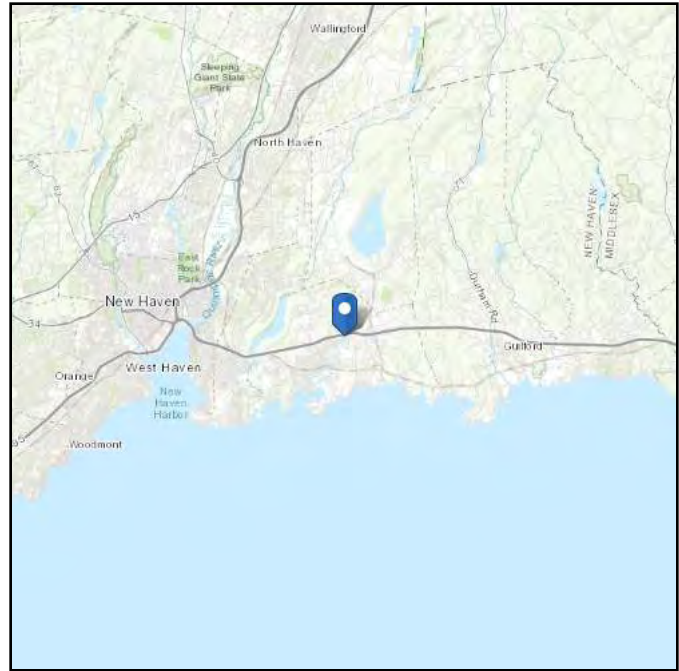
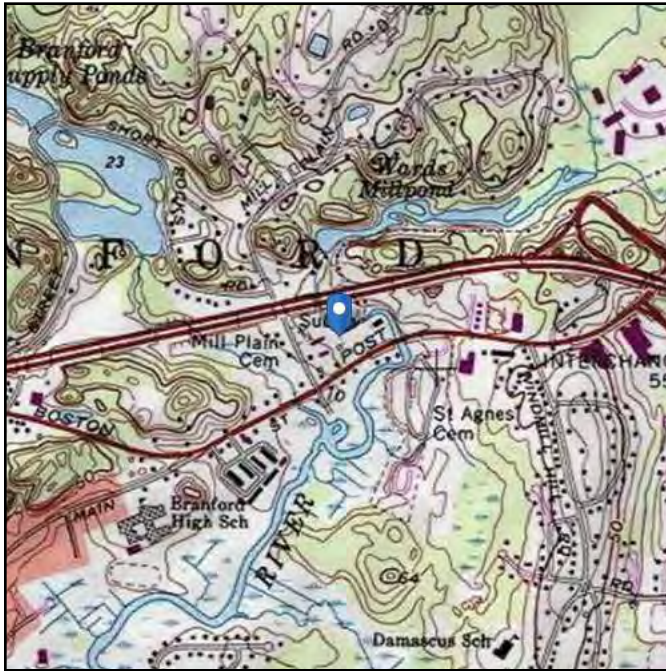
 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	Engineering Support Team: 1-888-753-7446
PART NO.	TCHM1-L
DWG. NO.	TCHM1-L

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: III
Soil Class: D - Stiff Soil

Elevation: 6.13 ft (NAVD 88)
Latitude: 41.292531
Longitude: -72.794633



Wind

Results:

Wind Speed:	138 Vmph	Wind Speed is 140 mph per 2018 Connecticut State Building Code
10-year MRI	78 Vmph	
25-year MRI	88 Vmph	
50-year MRI	95 Vmph	
100-year MRI	103 Vmph	

Data Source: ASCE/SEI 7-10, Fig. 26.5-1B and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

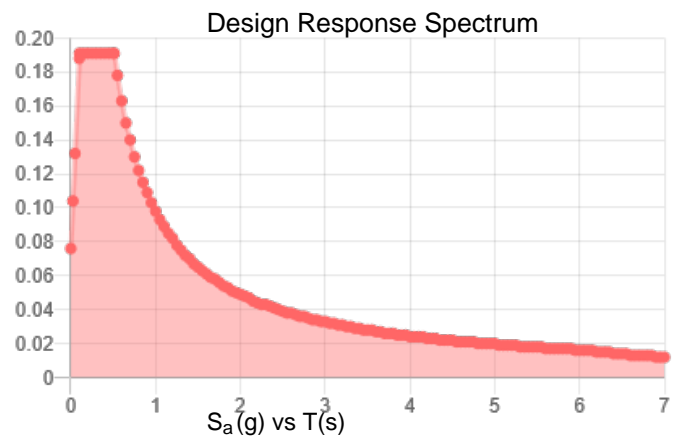
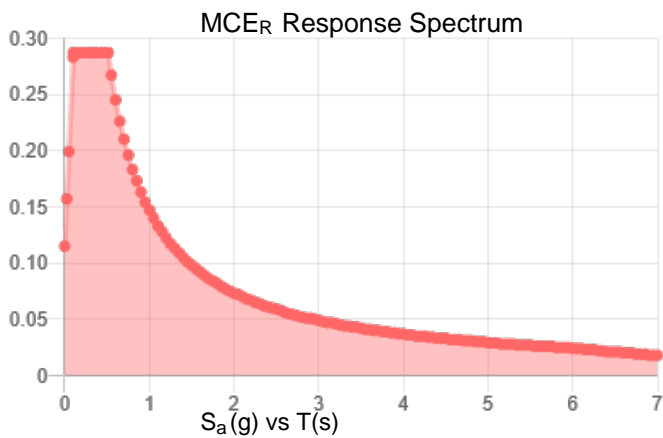
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.061	S_{D1} :	0.098
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.287	PGA _M :	0.148
S_{M1} :	0.147	F _{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B



Data Accessed:

Tue Mar 09 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Mar 09 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Attachment D
Photographic Documentation and Simulations

Photographic Documentation & Simulations

BRANFORD 11J
272 EAST MAIN STREET
BRANFORD, CT 06405

Prepared in April 2021 by:
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385

Prepared for Eversource Energy

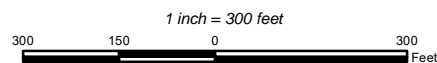




PHOTO LOG

Legend

- Site
- Year-Round
- Not Visible





EXISTING

PHOTO

1

LOCATION

EAST MAIN STREET

ORIENTATION

WEST

DISTANCE TO SITE

+/- 0.17 MILE

VISIBILITY

NOT VISIBLE



EXISTING

PHOTO

2

LOCATION

EAST MAIN STREET

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/-360 FEET

VISIBILITY

VISIBLE



PROPOSED

PHOTO

2

LOCATION

EAST MAIN STREET

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/-360 FEET

VISIBILITY

VISIBLE



EXISTING

PHOTO

3

LOCATION

HOST PROPERTY

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/-245 FEET

VISIBILITY

VISIBLE



PROPOSED

PHOTO

3

LOCATION

HOST PROPERTY

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/-245 FEET

VISIBILITY

VISIBLE



EXISTING

PHOTO

4

LOCATION

EAST MAIN STREET

ORIENTATION

NORTH

DISTANCE TO SITE

+/- 267 FEET

VISIBILITY

NOT VISIBLE



EXISTING

PHOTO

5

LOCATION

EAST MAIN STREET AT MILL PLAIN ROAD

ORIENTATION

NORTHEAST

DISTANCE TO SITE

+/- 0.11 MILE

VISIBILITY

NOT VISIBLE



EXISTING

PHOTO

6

LOCATION

EAST MAIN STREET AT NORTH MAIN STREET

ORIENTATION

NORTHEAST

DISTANCE TO SITE

+/- 0.38 MILE

VISIBILITY

NOT VISIBLE



EXISTING

PHOTO

7

LOCATION

MILL PLAIN ROAD

ORIENTATION

SOUTHEAST

DISTANCE TO SITE

+/- 0.22 MILE

VISIBILITY

NOT VISIBLE