

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. RELOCATE EXISTING ANTENNAS MOUNTED AT ELEVATION 47'-0"± TO PROPOSED MOUNTING SYSTEM AT SAME ELEVATION
 2. INSTALL (1) NEW RACK WITH DMR EQUIPMENT IN EXISTING RADIO SHELTER
 3. INSTALL NEW ICE BRIDGE AT ELEVATION 0'-0"± AGL
 4. INSTALL NEW GENERATOR AT ELEVATION 0'-0"± AGL
 5. INSTALL NEW PROPANE TANK AT ELEVATION 0'-0"± AGL
 6. INSTALL NEW COMPOUND FENCING AT ELEVATION 0'-0"± AGL
 7. INSTALL NEW SILT FENCING AT ELEVATION 0'-0"± AGL
 8. 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.

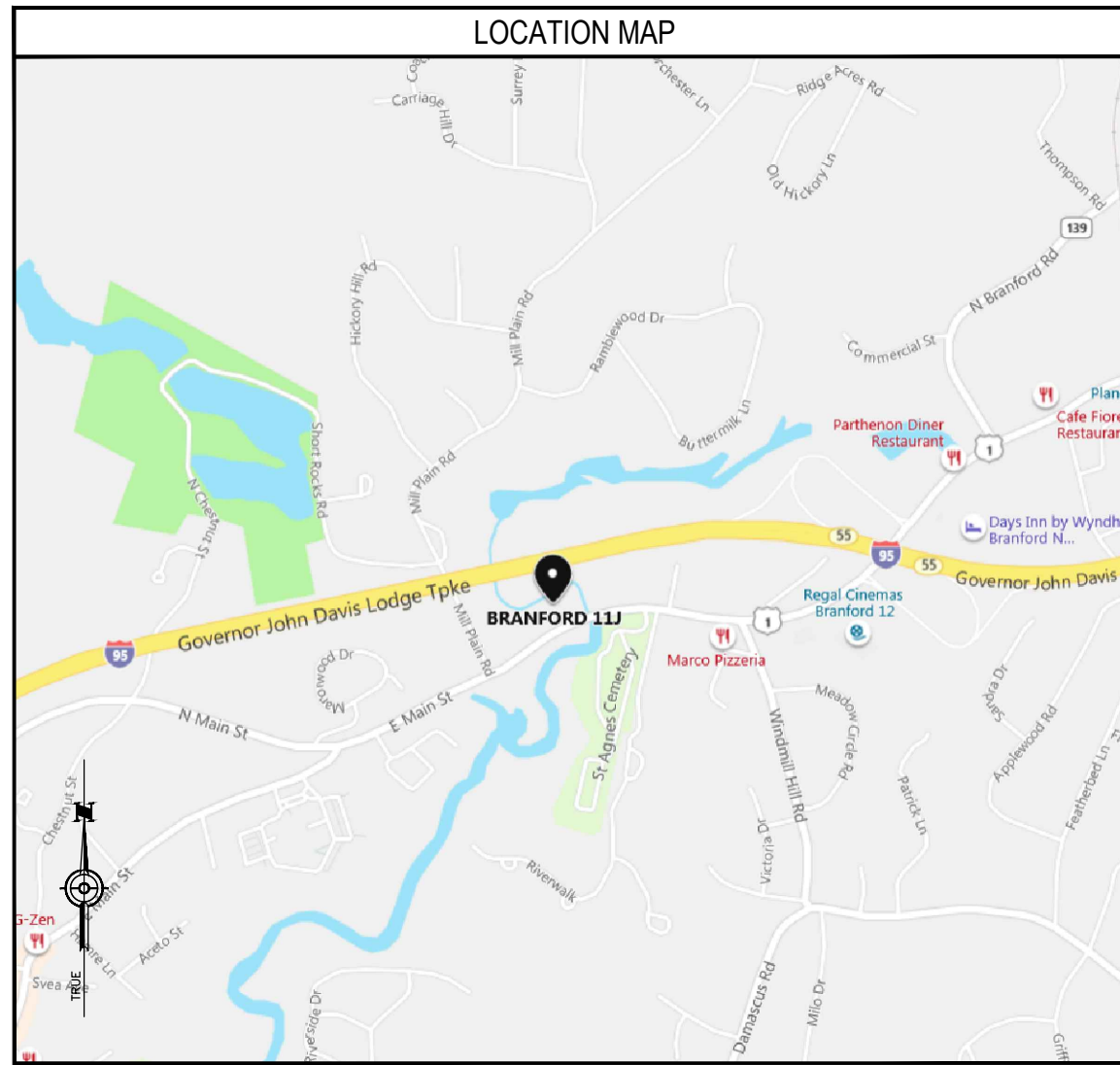
SITE INFORMATION

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' 33.13" N
LONGITUDE: 72° 47' 40.62" W
ELEVATION: 9'± 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



DESIGN TYPE

SITE UPGRADE
WOOD POLE

DRAWING INDEX

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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

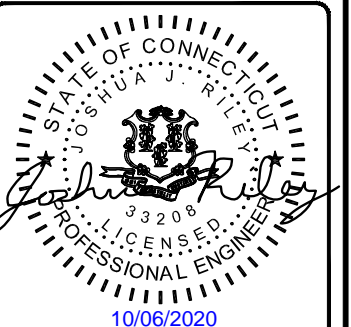


UNDERGROUND SERVICE ALERT
UTILITIES PROTECTION CENTER, INC.
811

48 HOURS BEFORE YOU DIG

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

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



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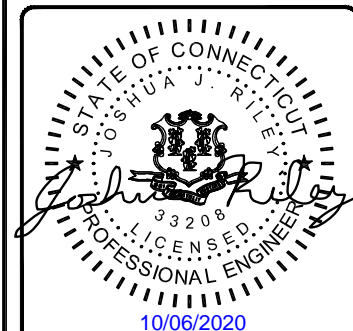
SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



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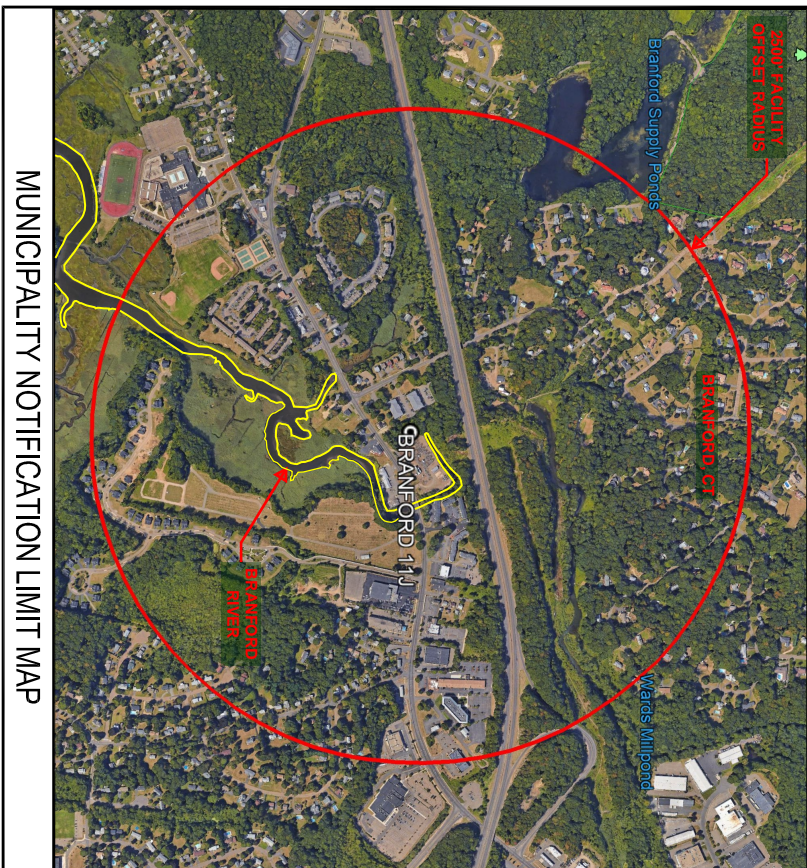
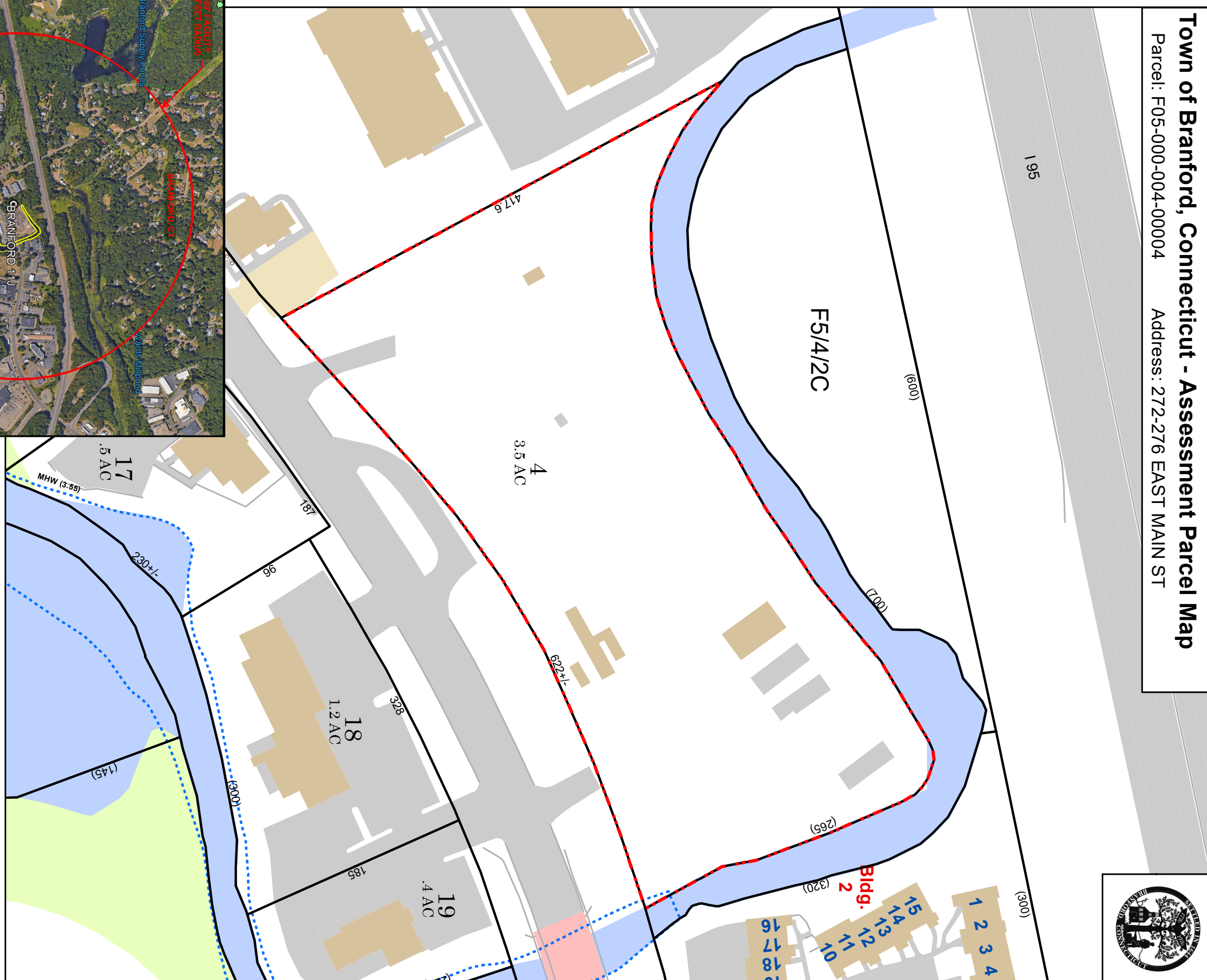
SHEET TITLE
ABUTTERS MAP

SHEET NUMBER
C-1

Town of Branford, Connecticut - Assessment Parcel Map

Parcel: F05-000-004-00004

Address: 272-276 EAST MAIN ST

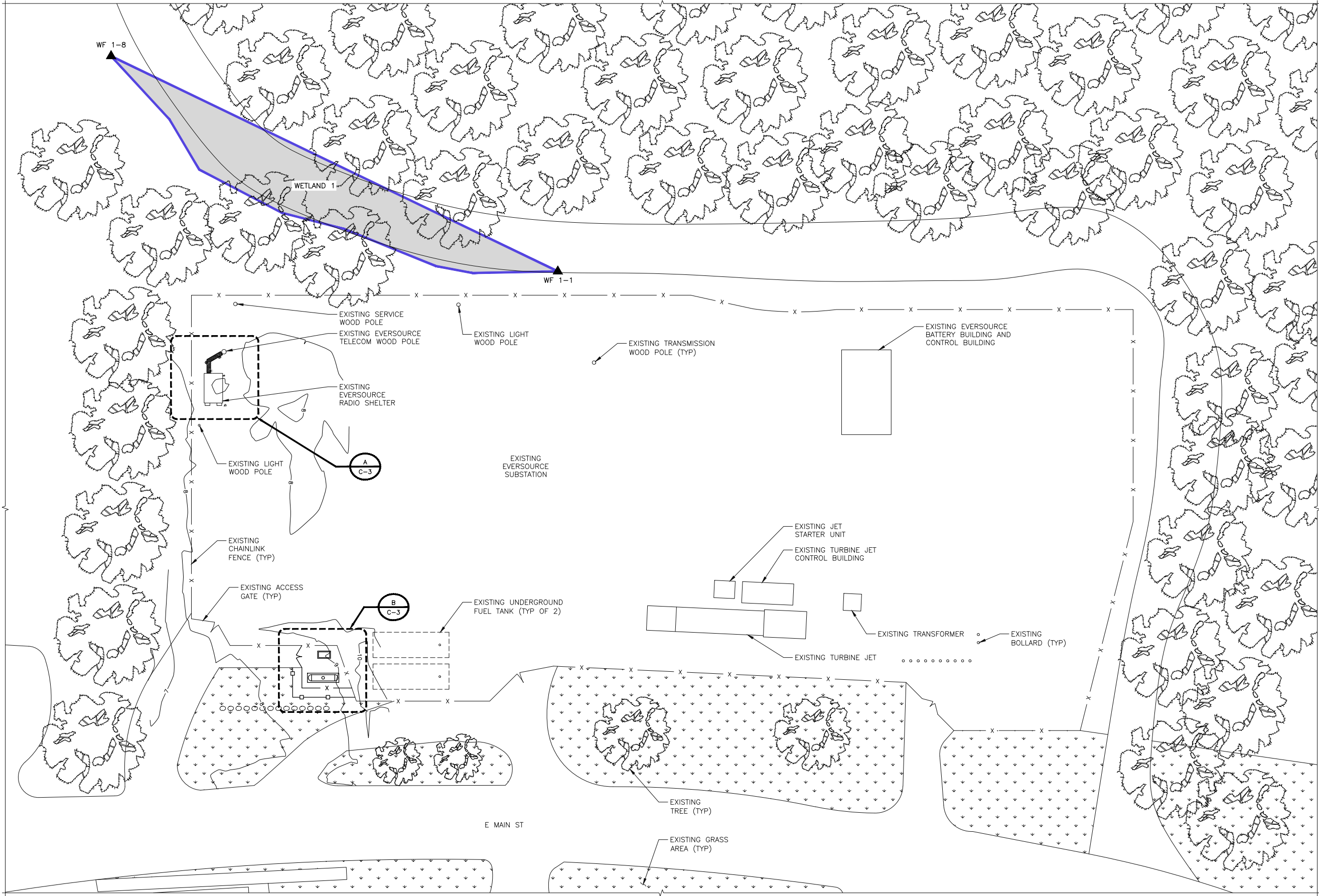


MUNICIPALITY NOTIFICATION LIMIT MAP

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.

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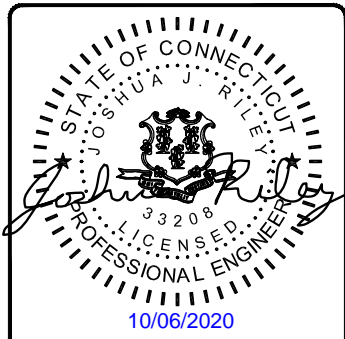


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SHEET TITLE
PARTIAL SITE PLAN

SHEET NUMBER
C-2



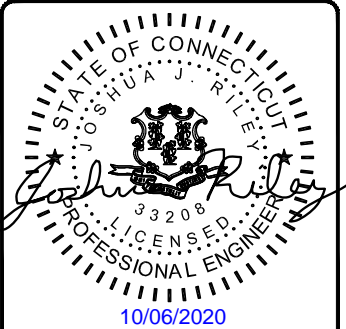


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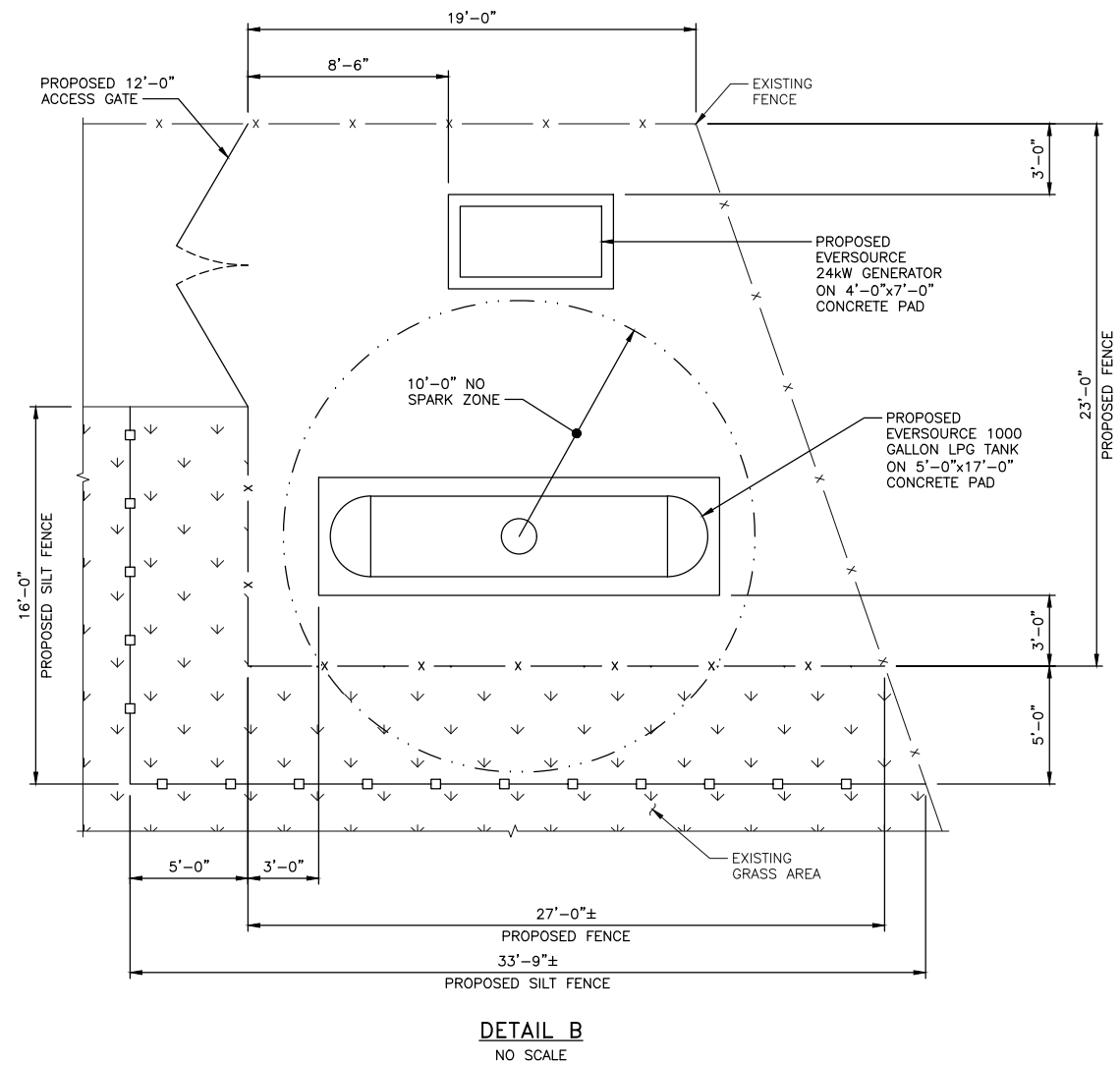
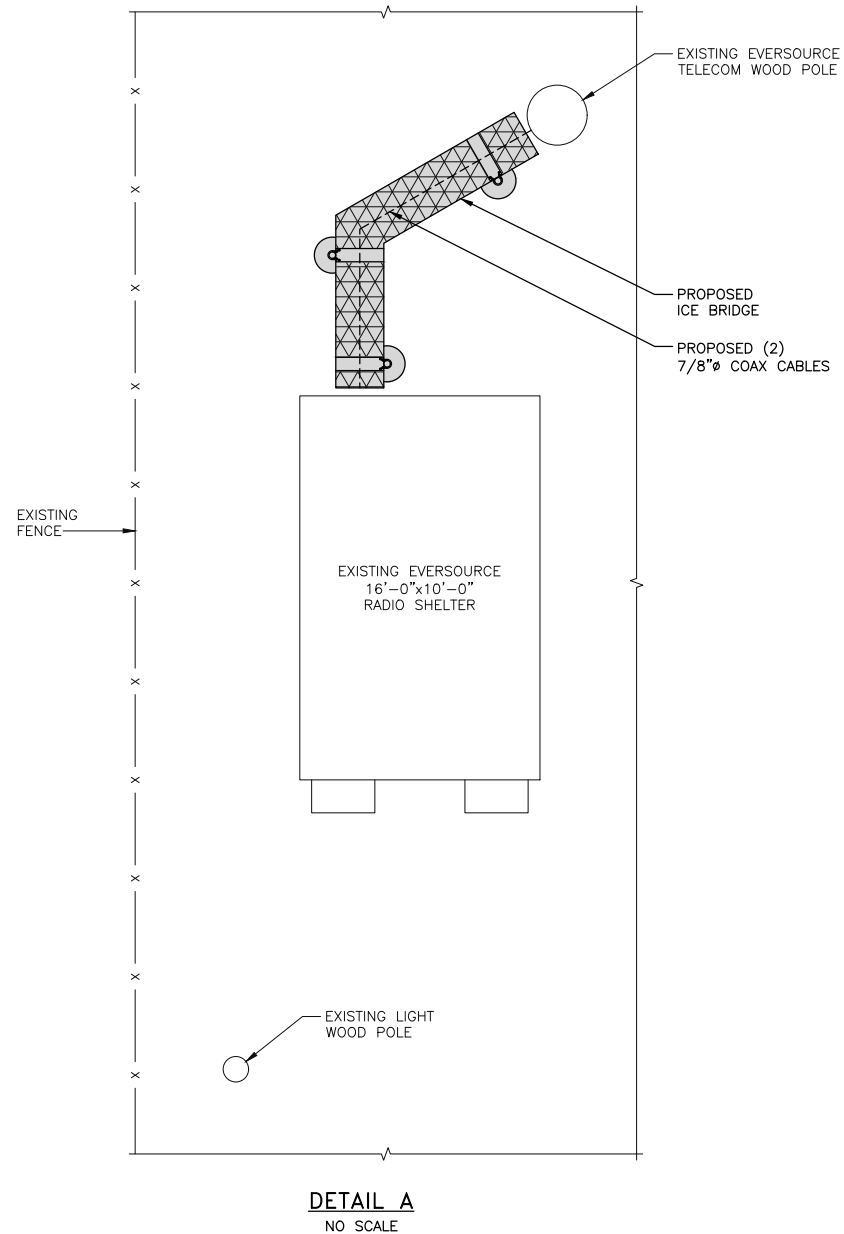


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SHEET TITLE
SITE PLAN

SHEET NUMBER
C-3



SITE PLAN
NO SCALE



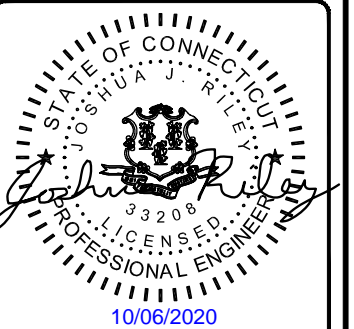


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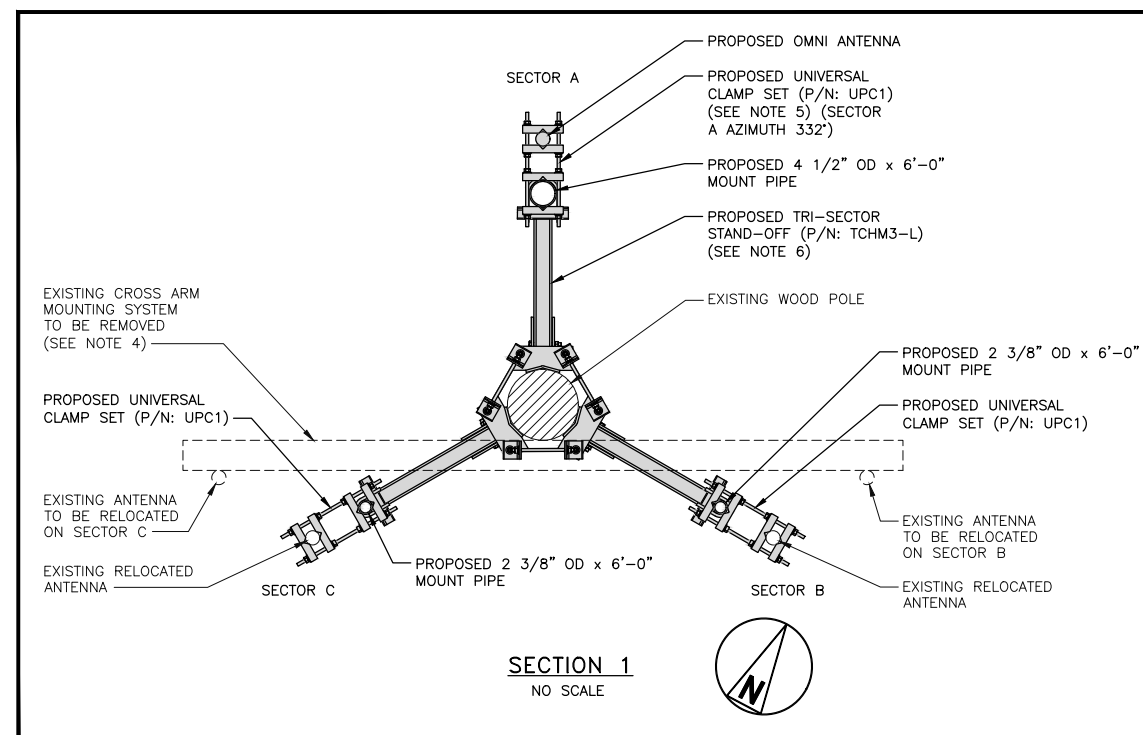
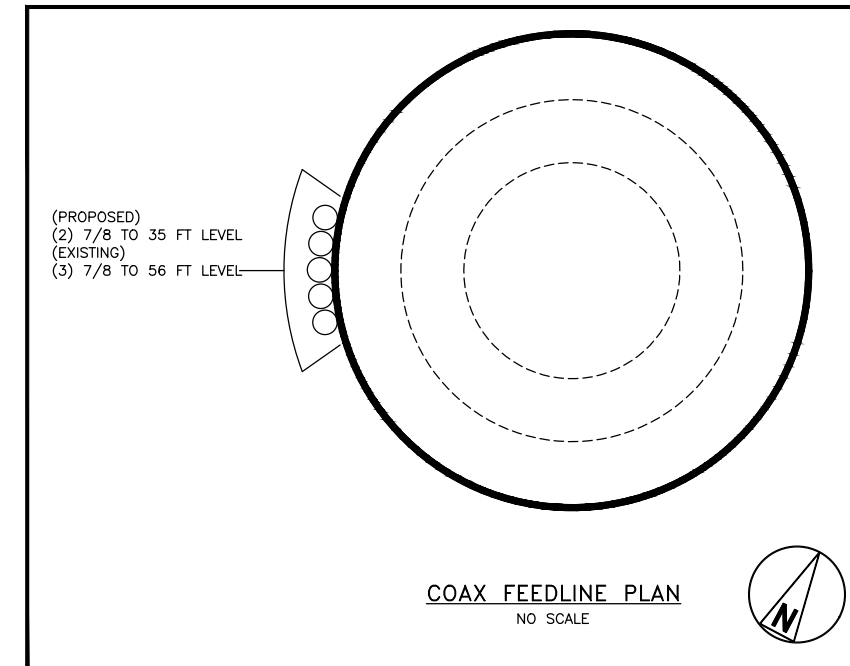
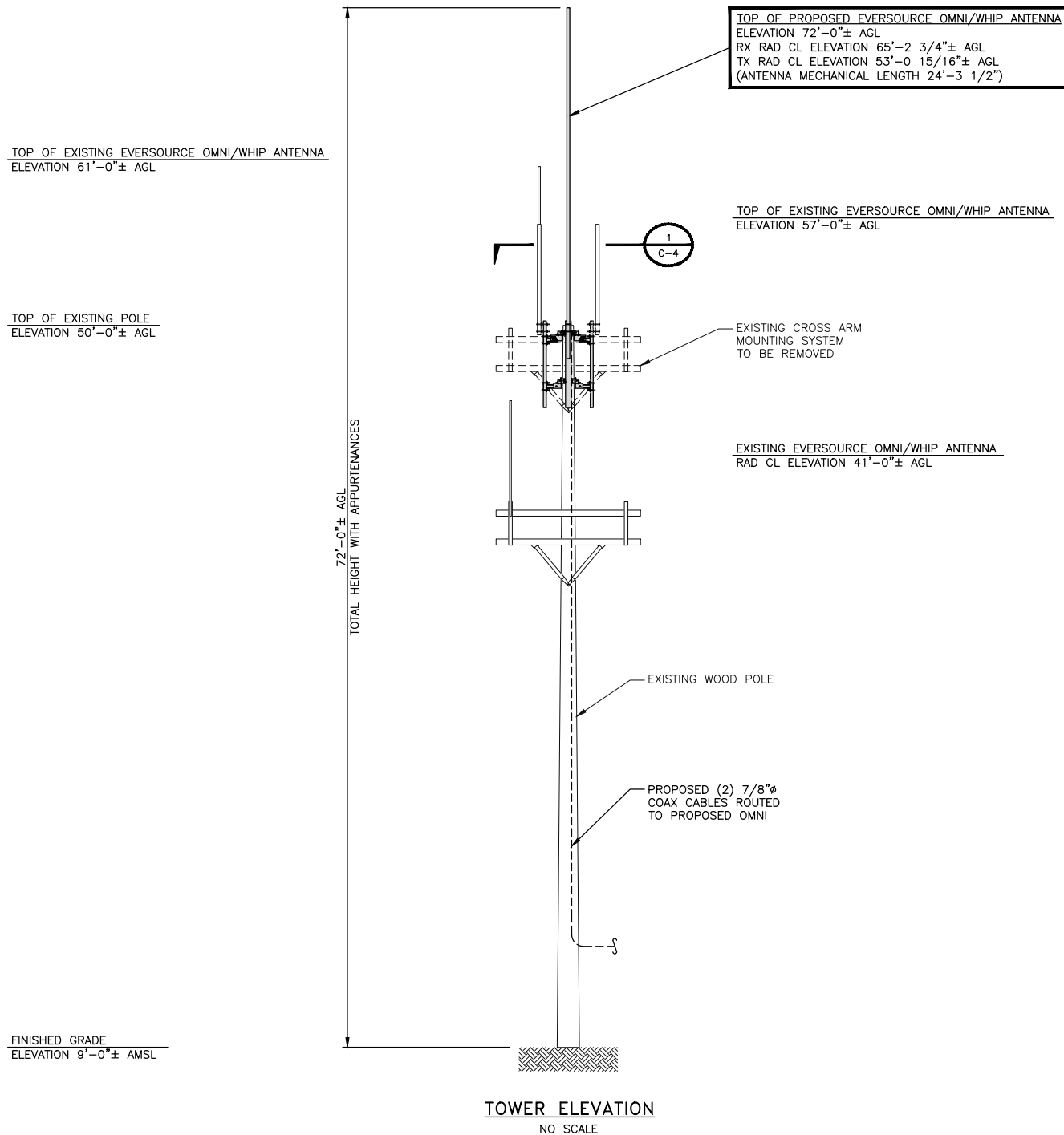
SHEET TITLE
**TOWER ELEVATION &
ANTENNA EQUIPMENT**

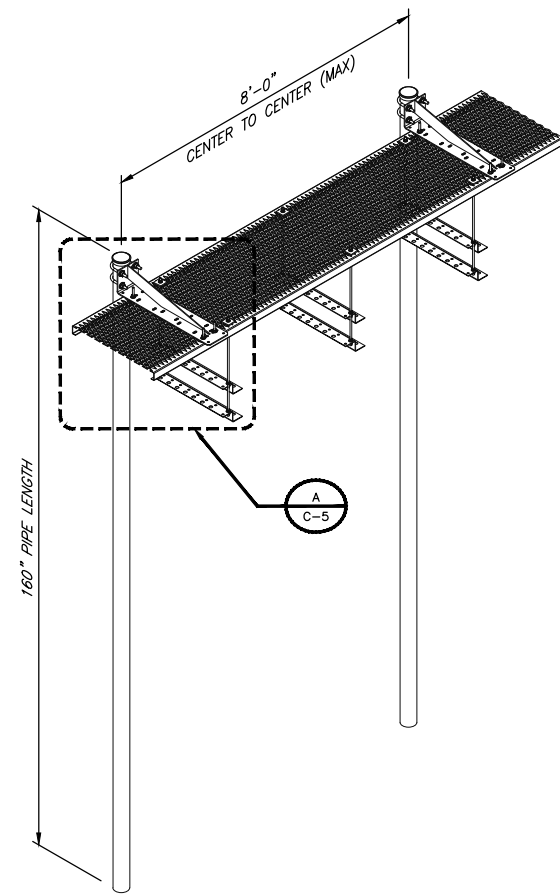
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C-4

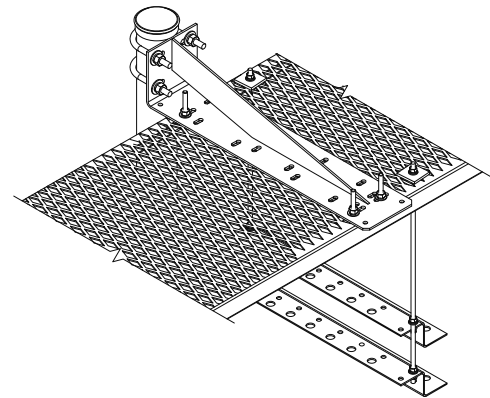
NOTES

1. ALL COAXIAL CABLE TO BE SECURED TO THE SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" OC.
2. CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING THE INSTALLATION OF COAXIAL CABLES, CONNECTORS AND ANTENNAS.
3. TREAT ALL FIELD DRILLED HOLES AND CUTS WITH PRESERVATIVE FLUID BEFORE INSTALLING HARDWARE. ALL OPEN HOLES SHALL BE PLUGGED.
4. EXISTING ANTENNAS TO BE RELOCATED AT THEIR ORIGINAL CENTER LINE ELEVATION ON THE PROPOSED MOUNTING SYSTEM.
5. PROPOSED OMNI/WHIP ANTENNA SHALL BE INSTALLED USING PROPOSED CLAMP SET SITE PRO 1 P/N: UPC1. SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS, (3) ATTACHMENT POINTS (CLAMPS) REQUIRED (TOTAL OF 2 CLAMP SETS ON SECTOR A).
6. PROPOSED TRI-SECTOR STAND-OFF (P/N: TCHM3-L) MOUNT SHALL BE INSTALLED WITH A 3'-0" MINIMUM VERTICAL SEPARATION BETWEEN TOP AND BOTTOM POLE CONNECTIONS.





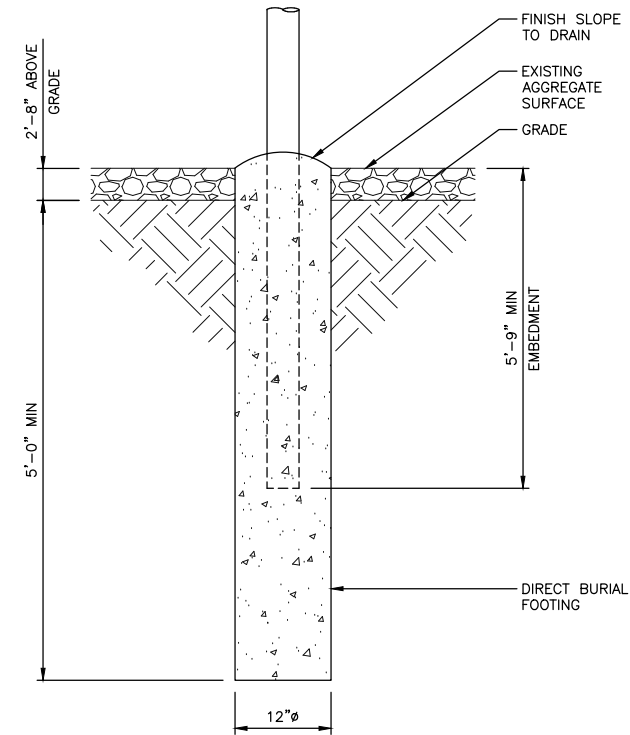
ICE BRIDGE DETAIL
 SITE PRO 1 P/N IB24D-V
 NO SCALE



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

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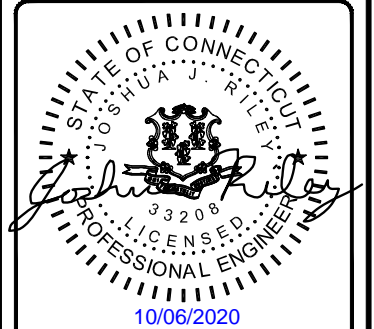


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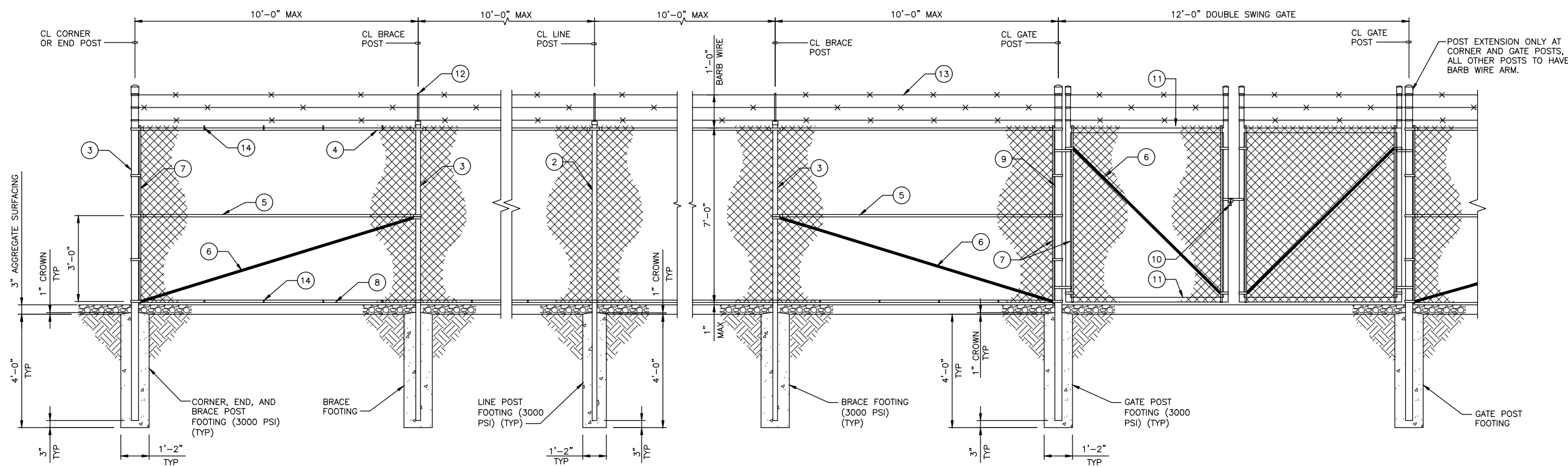


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SHEET TITLE
 ICE BRIDGE
 DETAILS

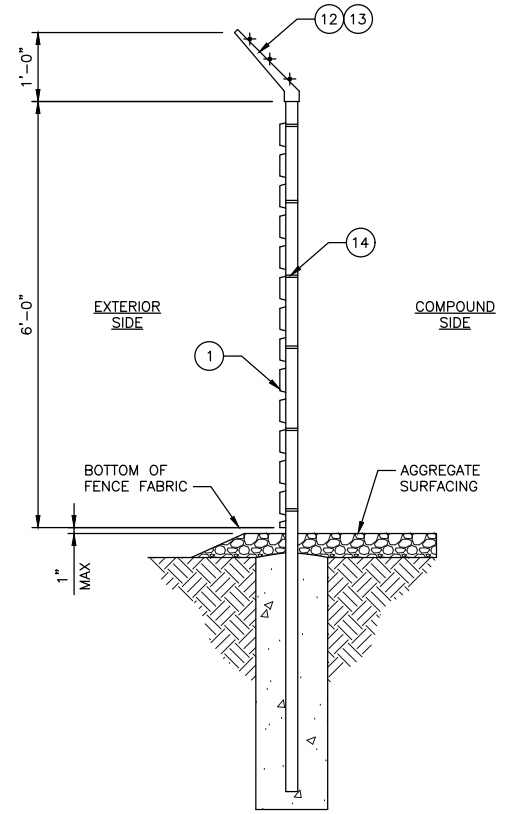
SHEET NUMBER
C-5



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

EVERSOURCE ENERGY

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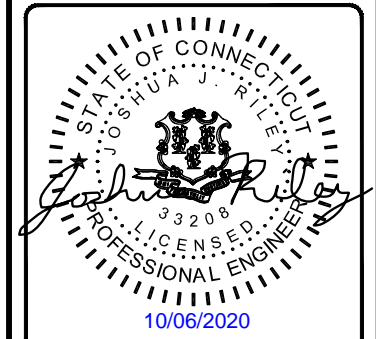


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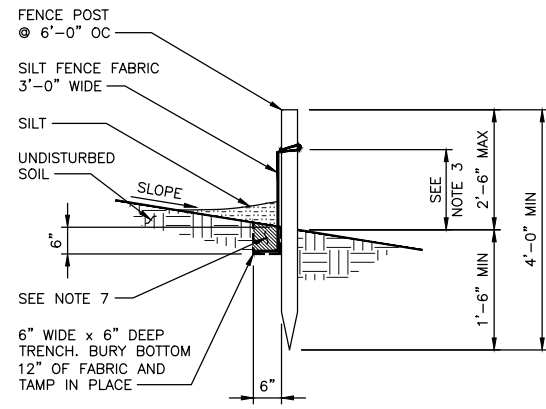


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SHEET TITLE
CHAINLINK FENCE DETAILS

SHEET NUMBER
C-6



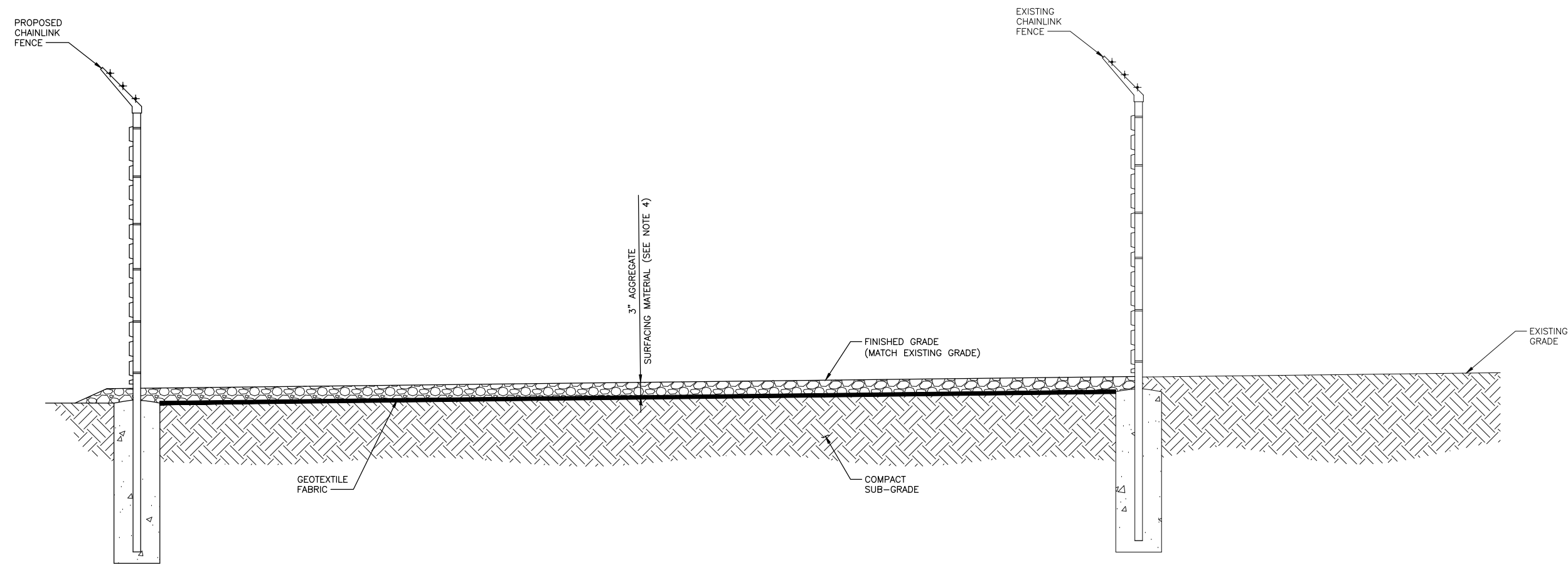
SILT FENCE DETAIL
NO SCALE

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



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SHEET TITLE
**EARTHWORK
DETAILS**

SHEET NUMBER
C-7

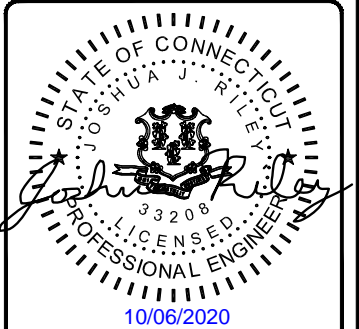


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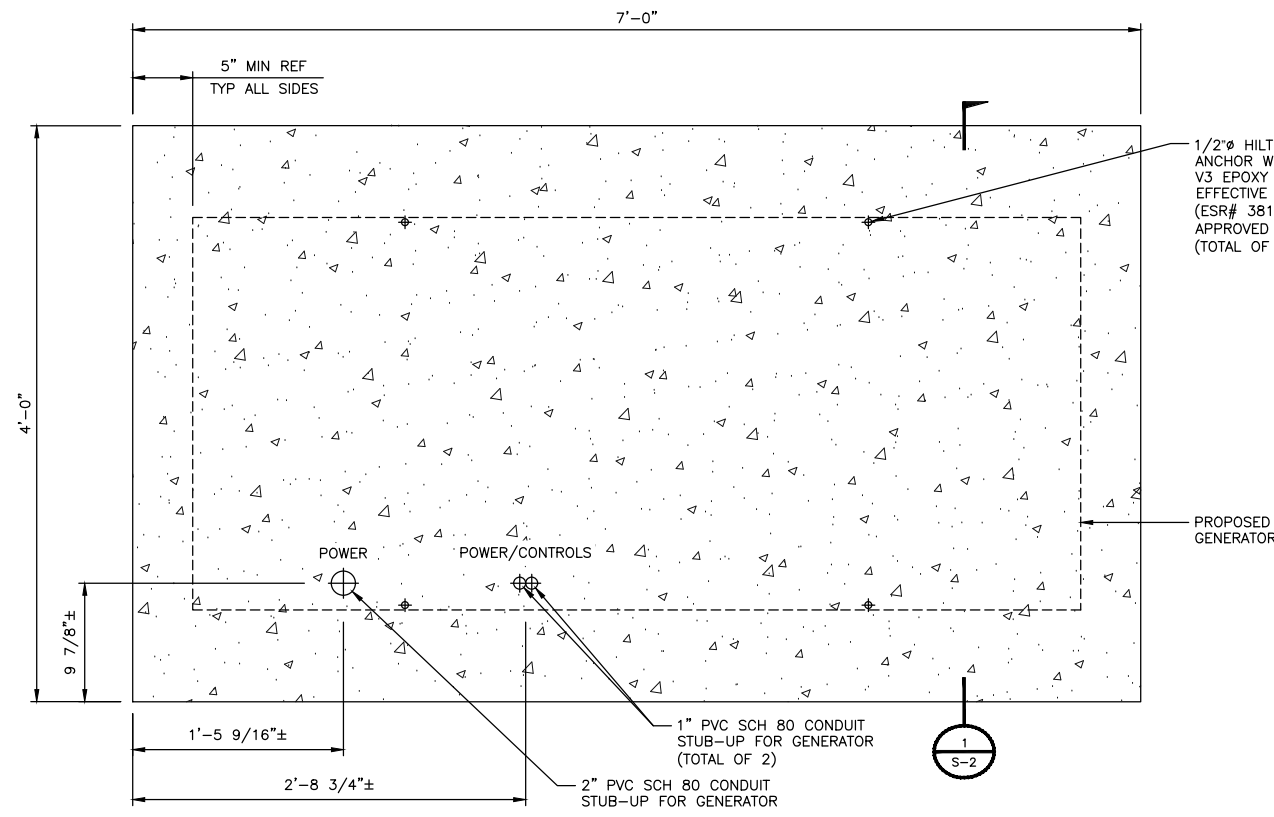
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SHEET TITLE
GENERATOR & PROPANE TANK
CONCRETE PAD DETAILS

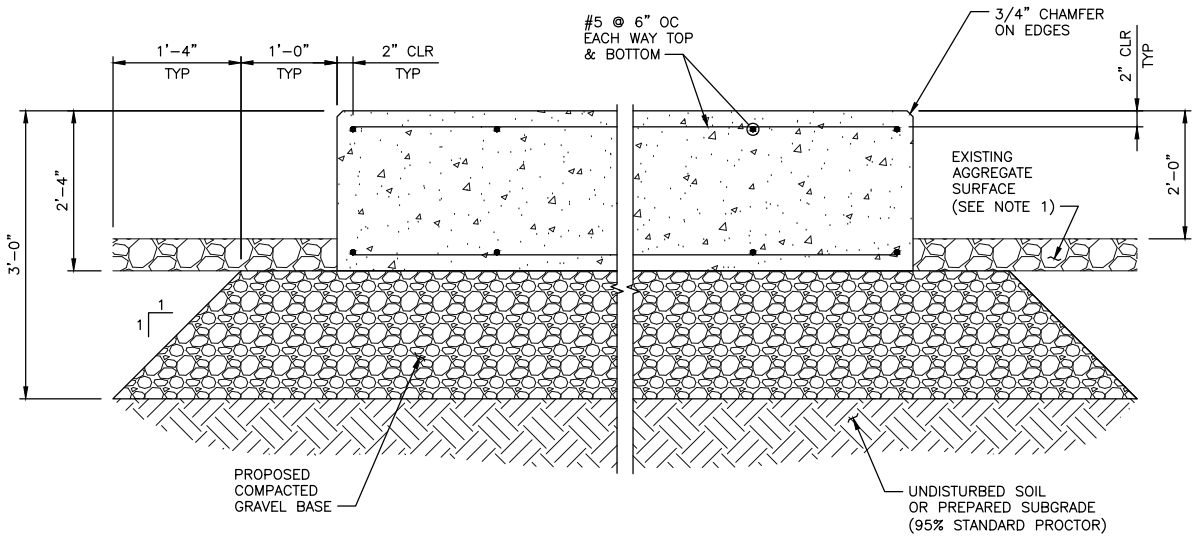
SHEET NUMBER
S-1

NOTES

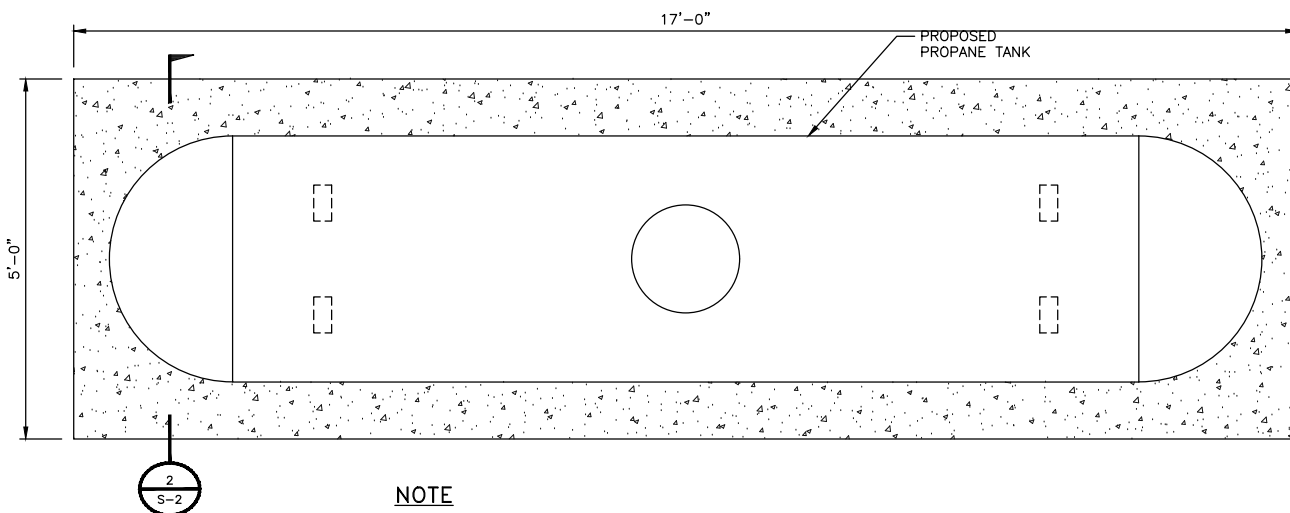
1. MATCH THICKNESS OF EXISTING AGGREGATE SURFACE WHEN CONSTRUCTION IS COMPLETE.
2. CONTRACTOR TO REPLACE TOP SOIL WITH COMPACTED SUBGRADE AND FINISH TO MATCH EXISTING GRADE.



GENERATOR FOUNDATION PLAN
NO SCALE



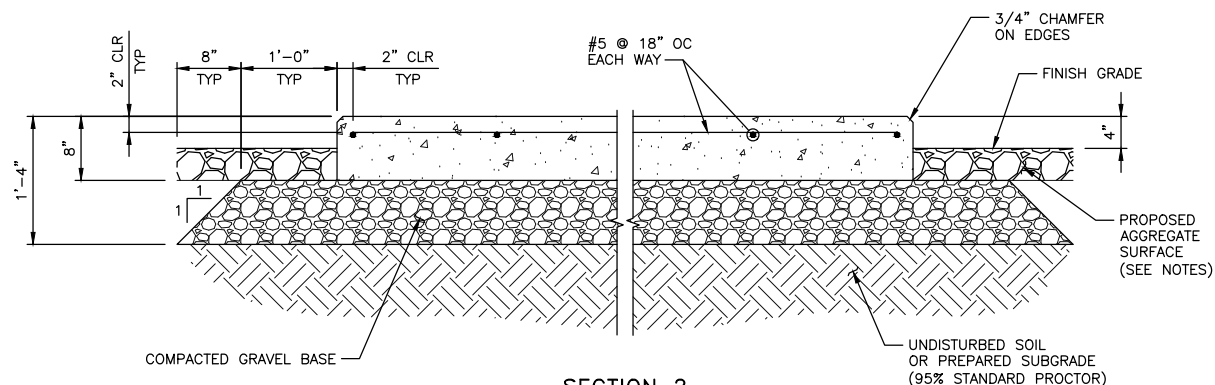
**SECTION 1
FOUNDATION DETAIL**
NO SCALE



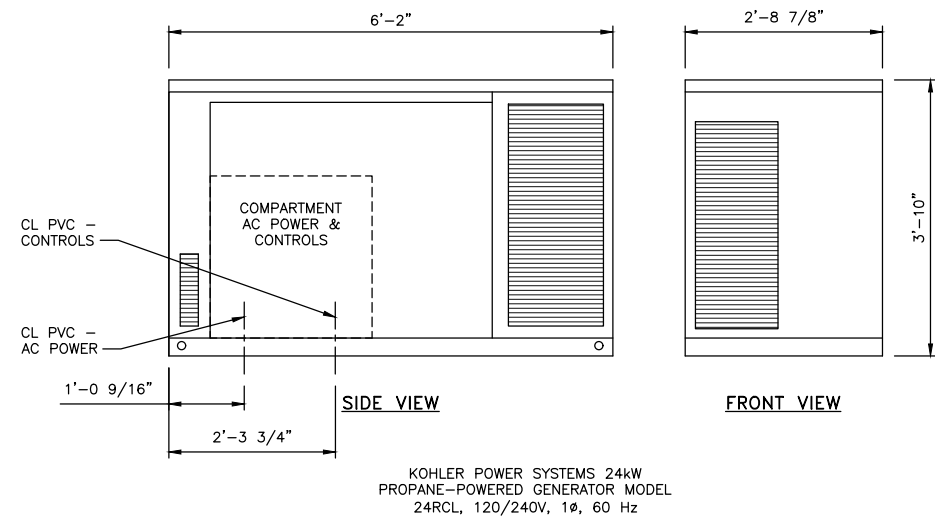
NOTE

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).

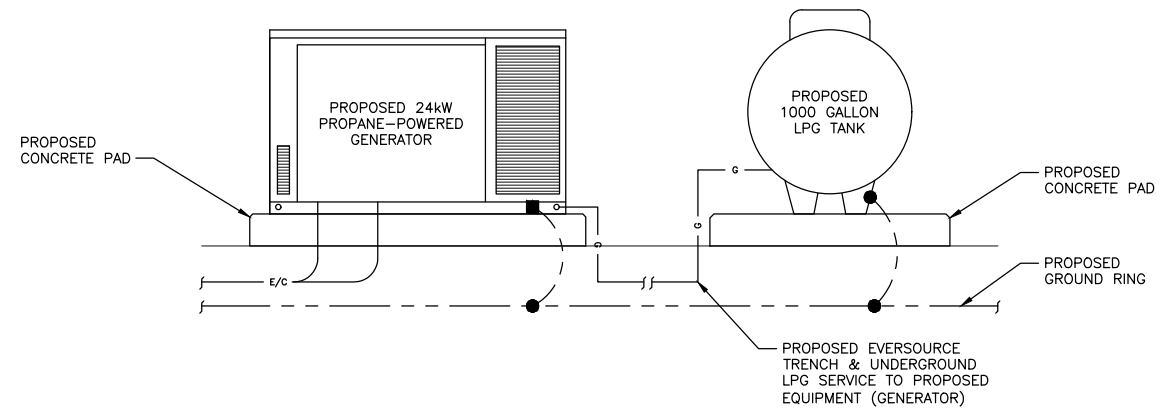
PROPANE TANK FOUNDATION PLAN
NO SCALE



**SECTION 2
FOUNDATION DETAIL**
NO SCALE



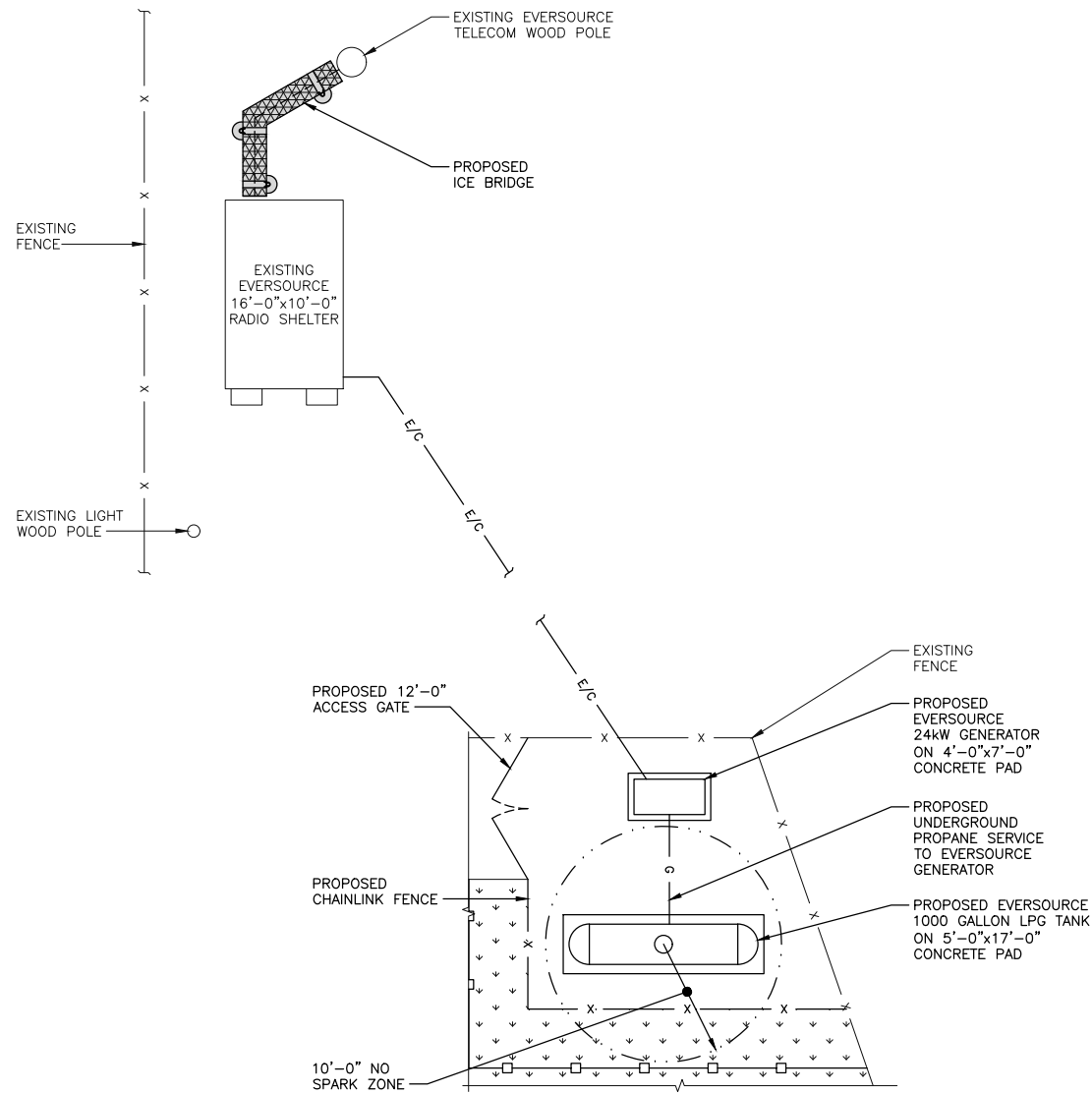
PROPANE GENERATOR SCHEMATICS
NO SCALE



NOTES

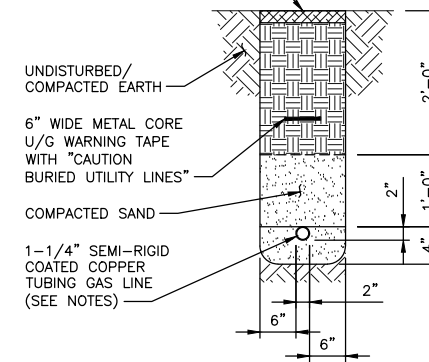
- ALL VALVES USED IN METALLIC PIPING SYSTEMS MUST HAVE PRESSURE CONTAINING PARTS OF STEEL, DUCTILE (NODULAR) IRON, MALLEABLE IRON OR BRASS.
- ALL MATERIALS USED, INCLUDING VALVE SEAT DISCS, PACKING, SEALS AND DIAPHRAGMS MUST BE RESISTANT TO THE ACTION OF LP GAS UNDER SERVICE CONDITIONS. MANY VALVES ARE 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.
- 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:

- THE PIPING SHALL BE MADE OF CORROSION RESISTANT MATERIAL THAT IS SUITABLE FOR BURIAL.
- 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.
- 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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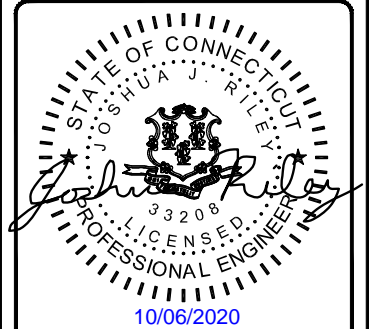
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO: 403093

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272 EAST MAIN ST
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SHEET TITLE
**GENERATOR & PROPANE TANK
EQUIPMENT DETAILS**

SHEET NUMBER
M-1

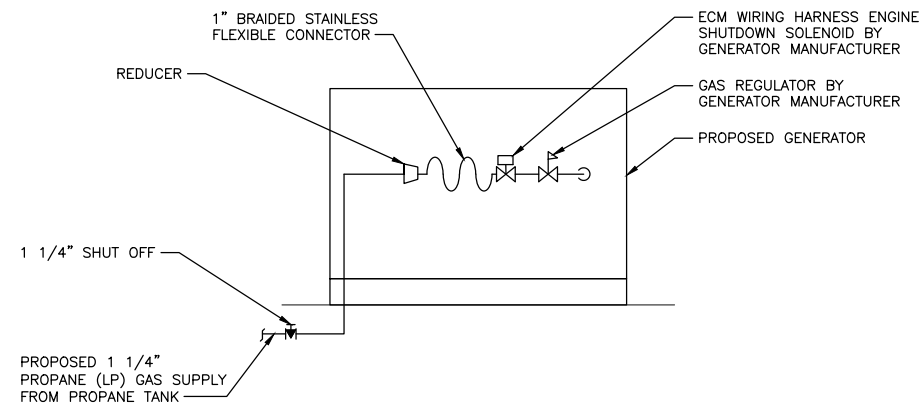


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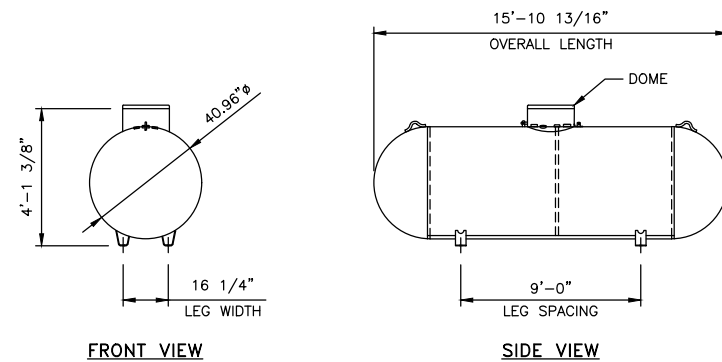
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NOTE

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

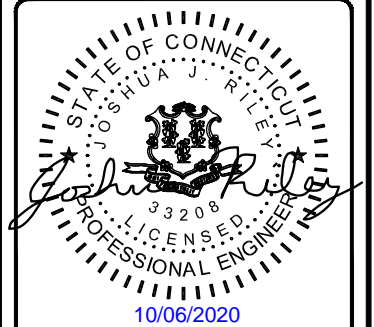
PROPANE CONNECTION DIAGRAM
NO SCALE



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

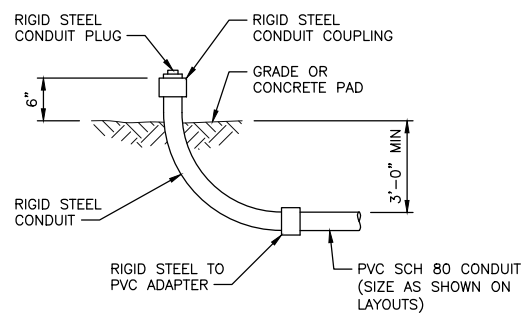
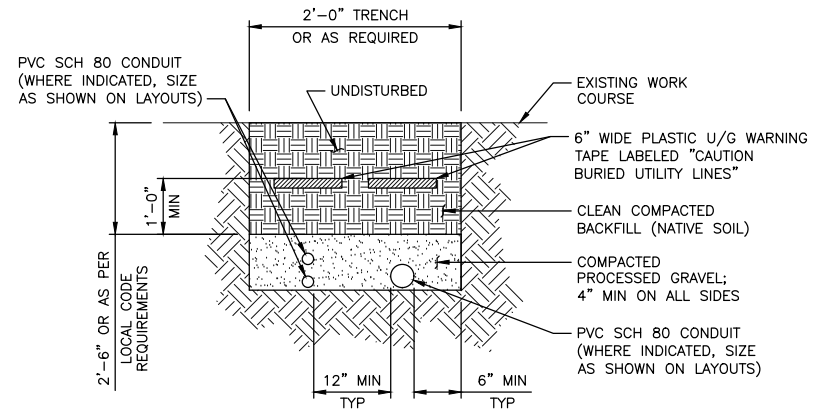
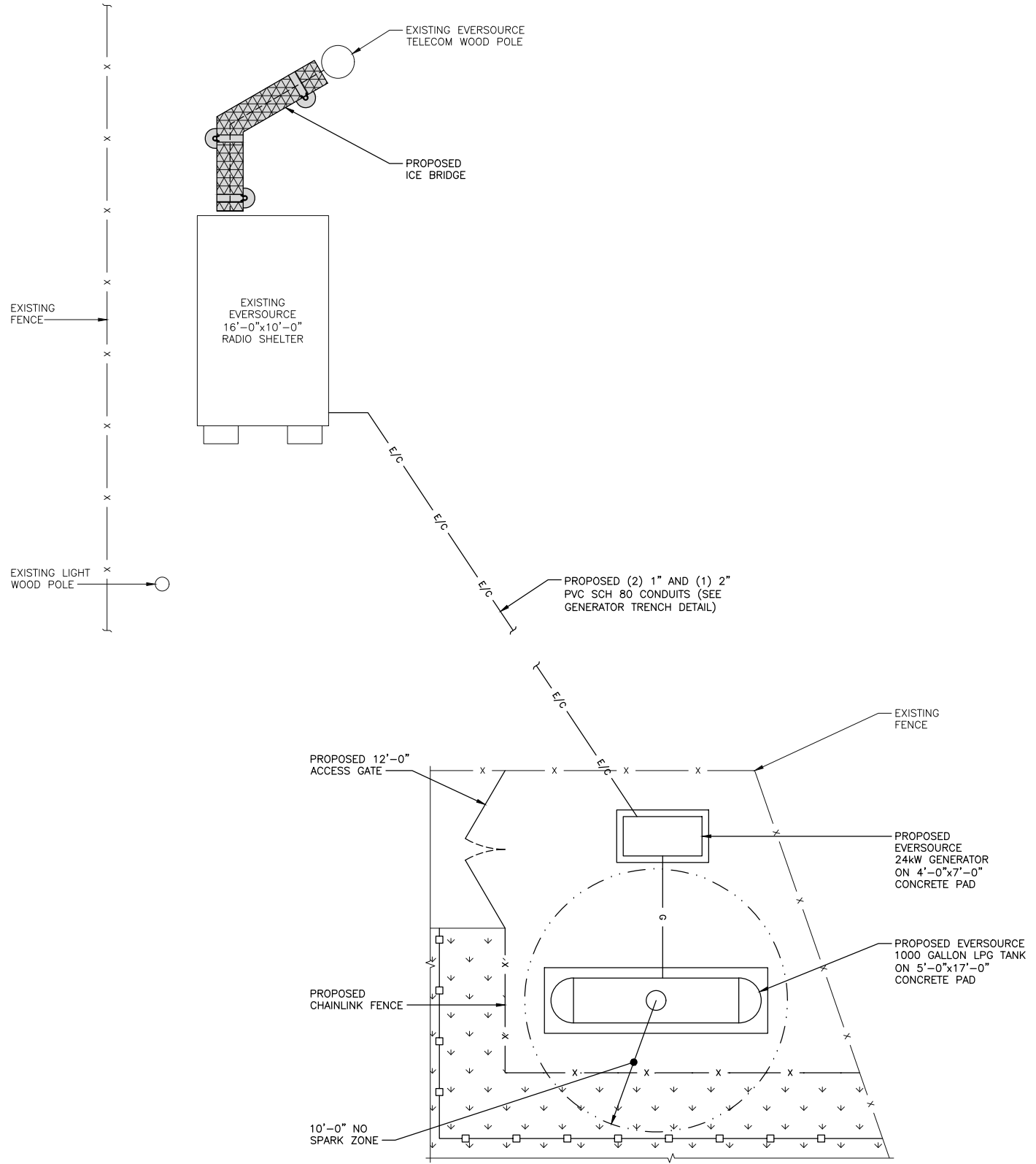


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SHEET TITLE
**GENERATOR & PROPANE TANK
EQUIPMENT DETAILS**

SHEET NUMBER
M-2



EVERSOURCE ENERGY

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

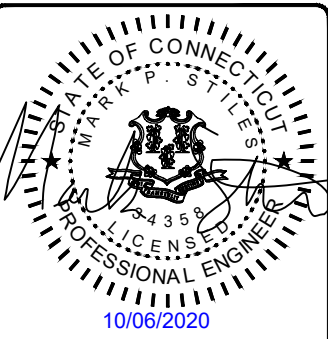


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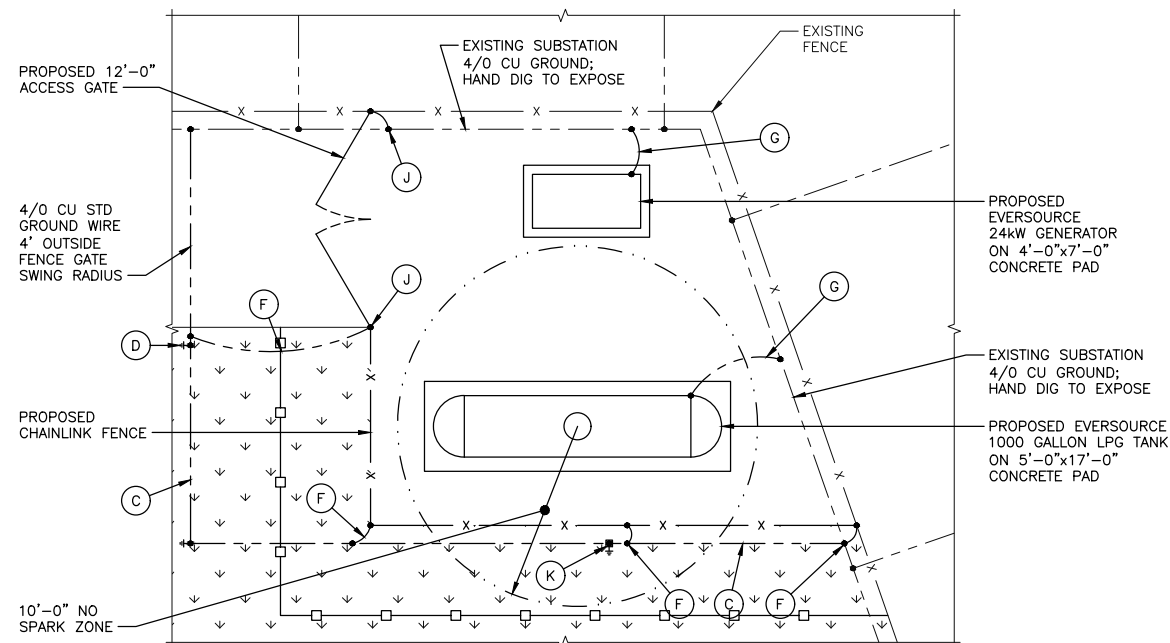
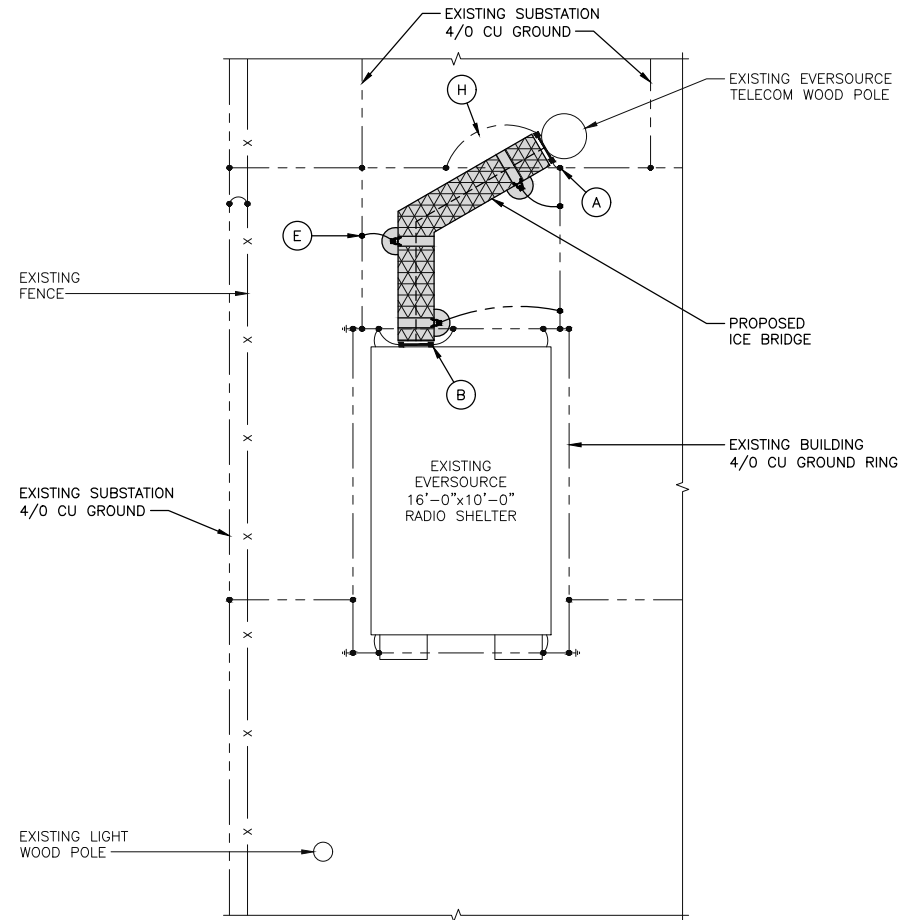
SHEET TITLE
UTILITY PLAN
& DETAILS

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. USE A CLAMP-ON METER AND TEST 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.



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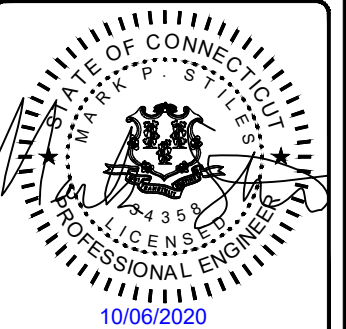
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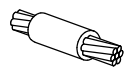
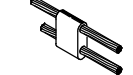


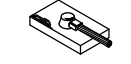
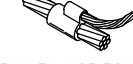


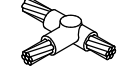
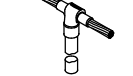


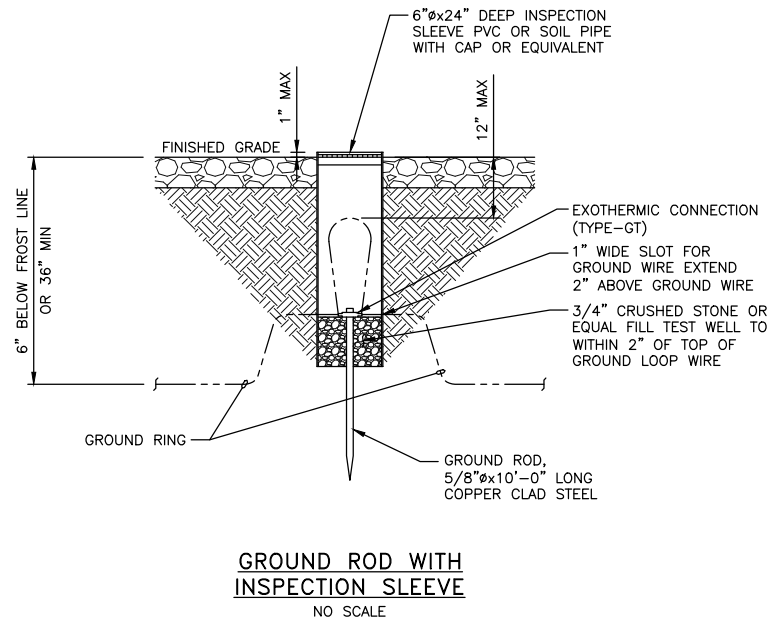
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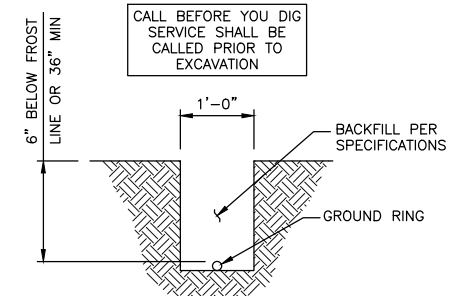
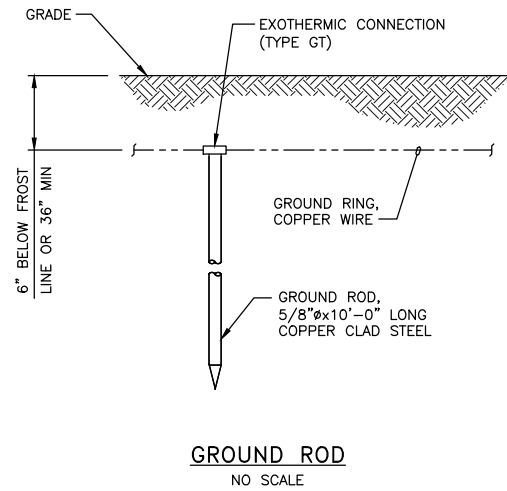
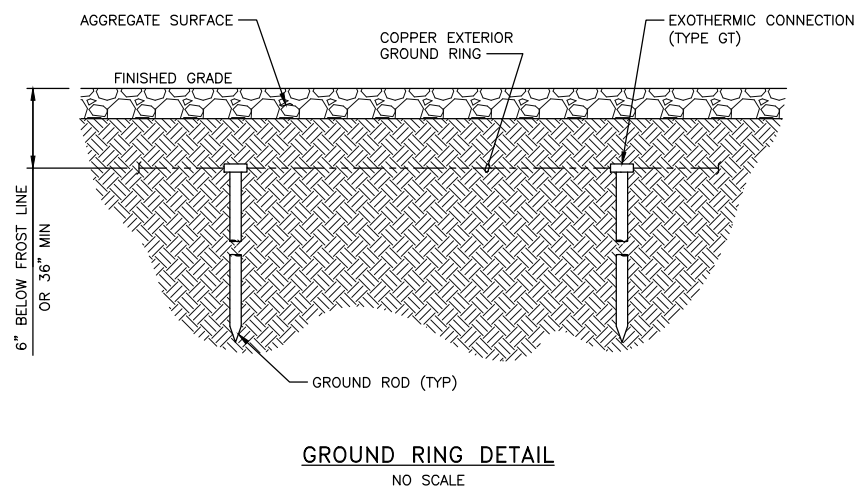
SHEET TITLE
GROUNDING PLAN

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

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

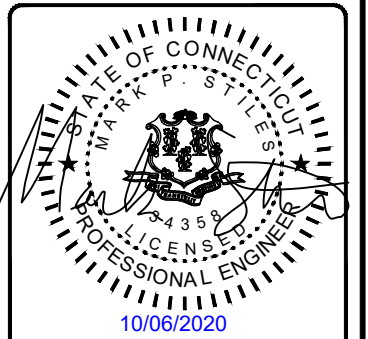


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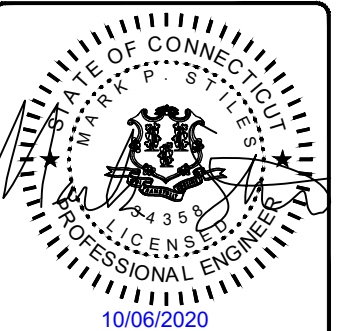
SHEET TITLE
GROUNDING
DETAILS

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

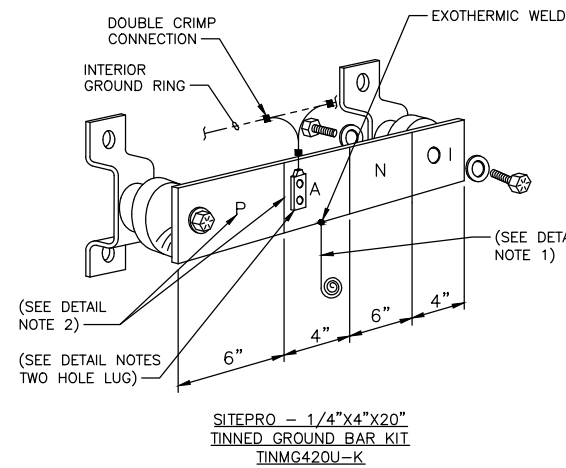
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)

SECTION "N" - NON-ISOLATED GROUND ZONE EQUIPMENT

- MISC NON-ISOLATED GROUND ZONE
- BATTERY RACK

SECTION "I" - ISOLATED GROUND ZONE

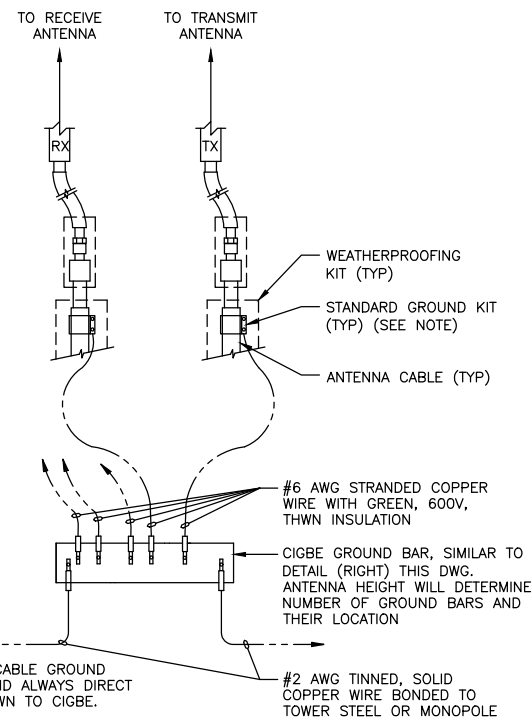
- ALL ISOLATED GROUND REFERENCE
- GROUND WINDOW BAR



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.

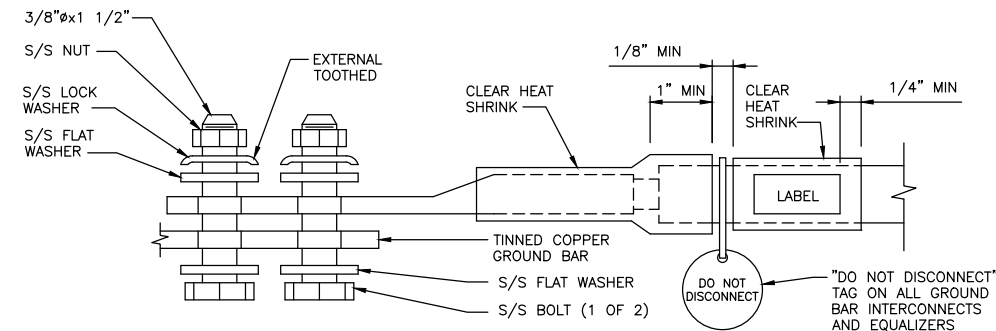
(MGB) REFERENCE GROUND BAR
NO SCALE



NOTE

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

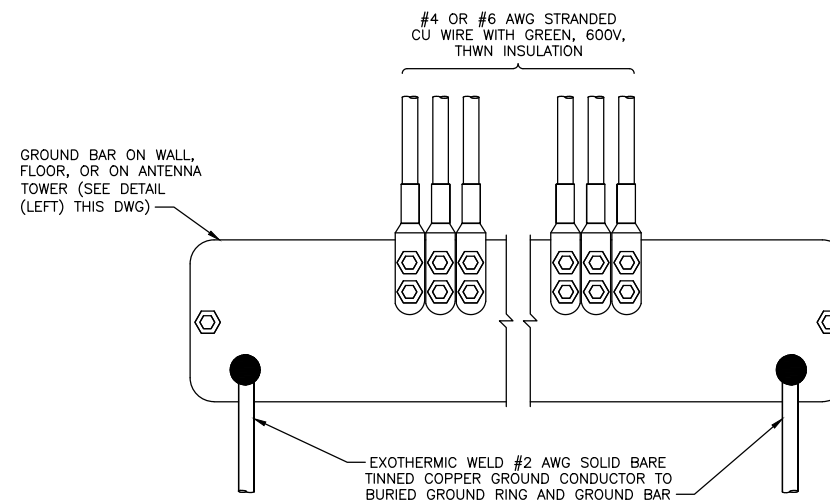
CONNECTION OF GROUND WIRE TO EXTERIOR GROUNDING BAR
NO SCALE



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

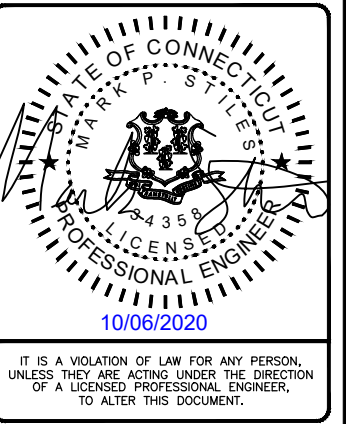


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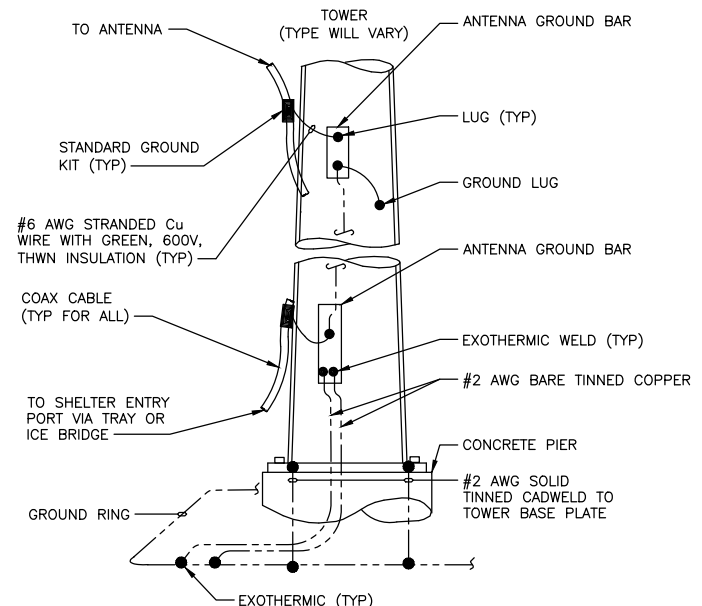


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SHEET TITLE
**GROUNDING
DETAILS**

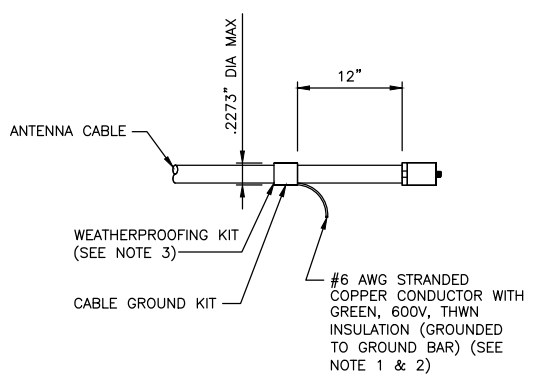
SHEET NUMBER
G-4



NOTE

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

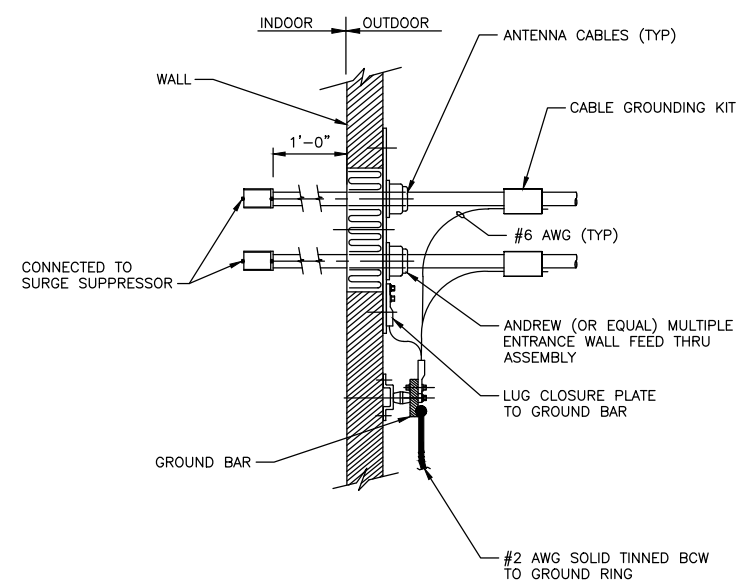
ANTENNA CABLE GROUNDING
NO SCALE



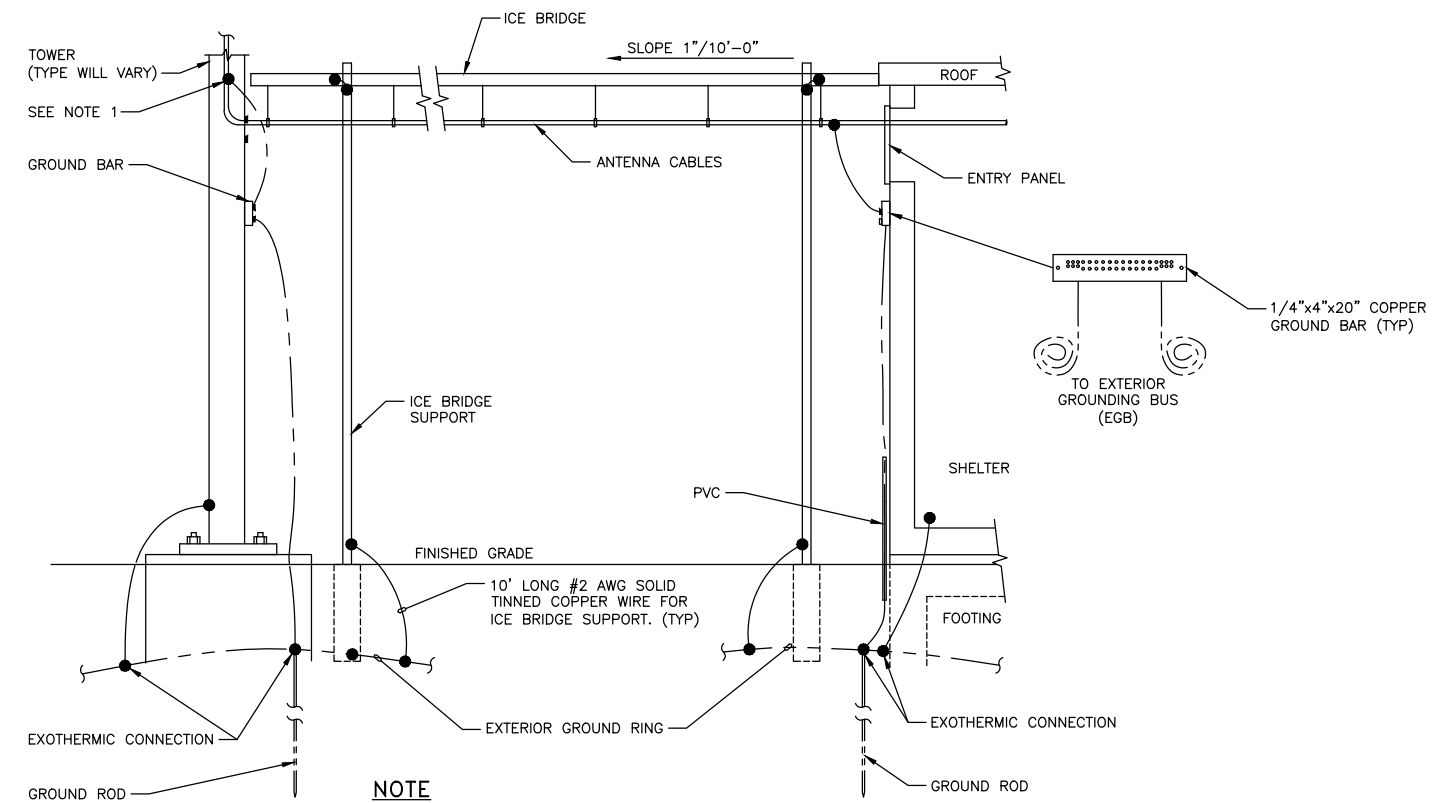
NOTES

- 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

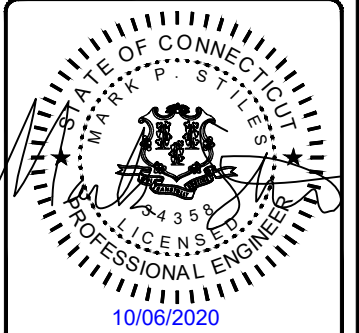


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: CAG

REV	DATE	DESCRIPTION
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0	05/21/20	ISSUED FOR FILING

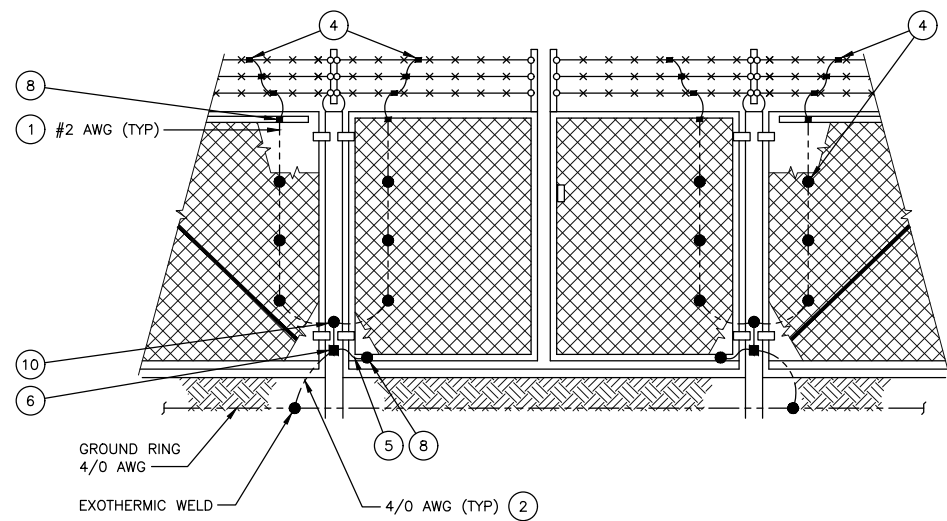


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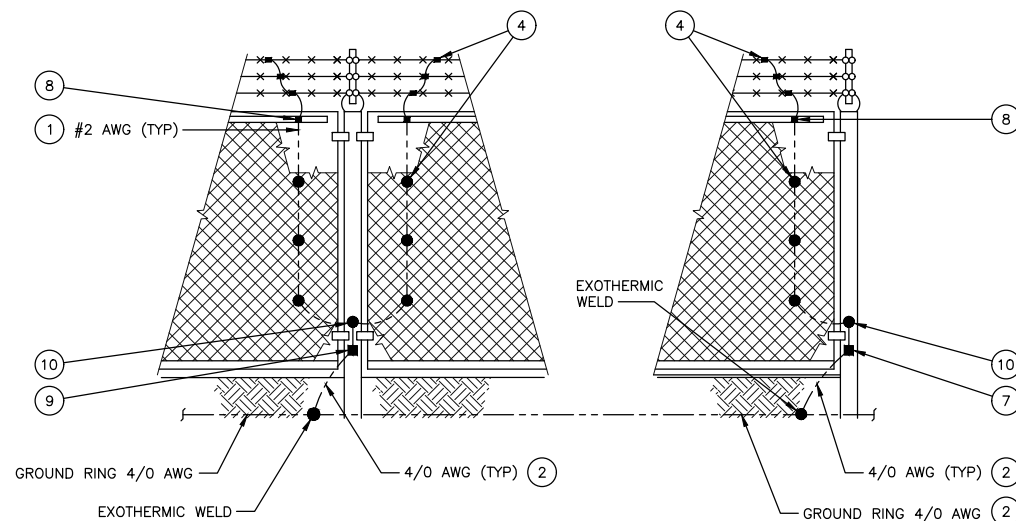
BRANFORD 11J
272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
**GROUNDING
DETAILS**

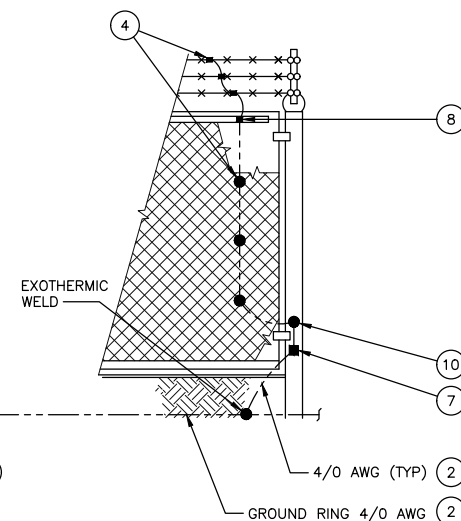
SHEET NUMBER
G-5



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

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

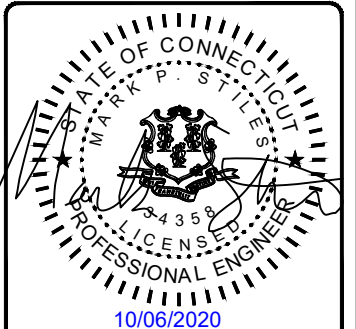
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: CAG

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1	10/06/20	ISSUED FOR FILING
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BRANFORD 11J
272 EAST MAIN ST
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	90-100
PASS 3 1/2"		100	
PASS 2 1/4"		100	
PASS 2"		95-100	
PASS 1 1/2"		55-100	
PASS 1"			
PASS 3/4"			50-75
PASS 1/4"	25-60	25-60	25-45
PASS #10	15-45	15-45	
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
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		

EVERSOURCE ENERGY

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

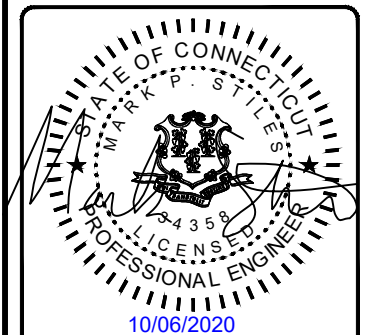


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6800 W 115TH ST, SUITE 2292
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REV	DATE	DESCRIPTION
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BRANFORD 11J
272 EAST MAIN ST
BRANFORD, CT 06405

SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
N-3

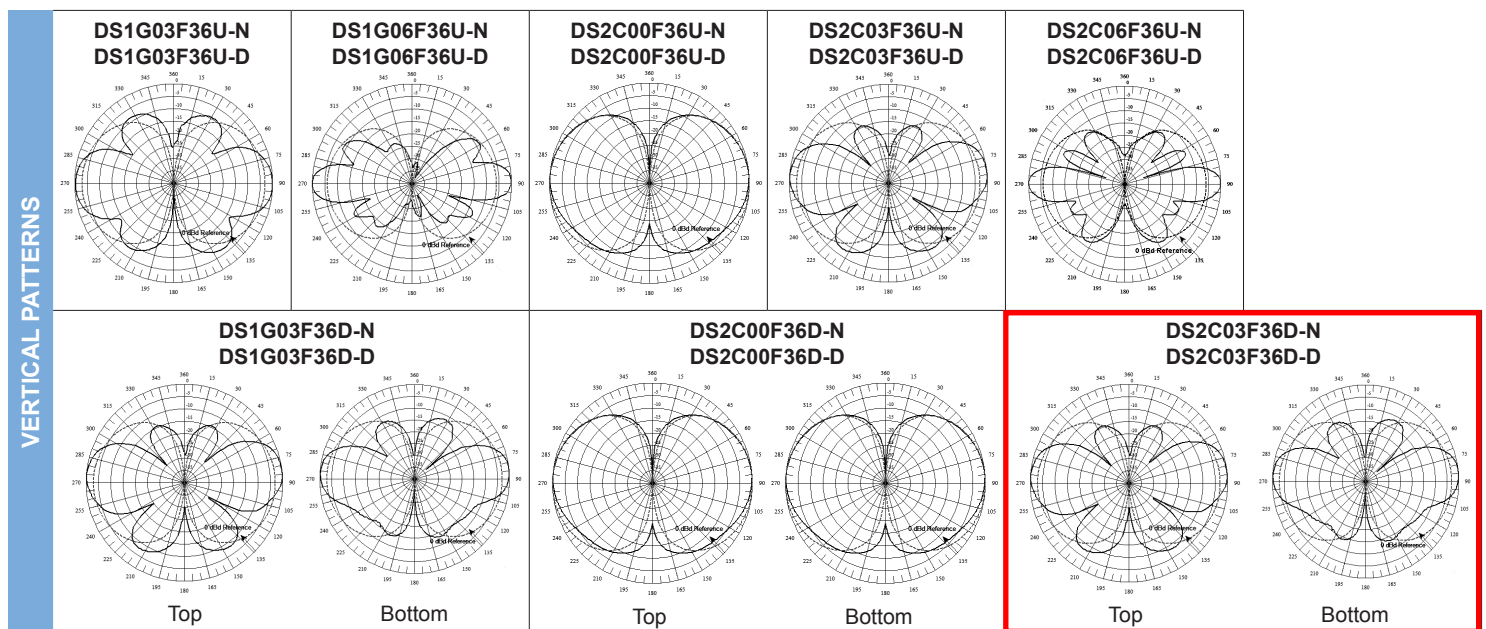
REFERENCE CUTSHEETS

VHF Omni Antennas (160-222 MHz)

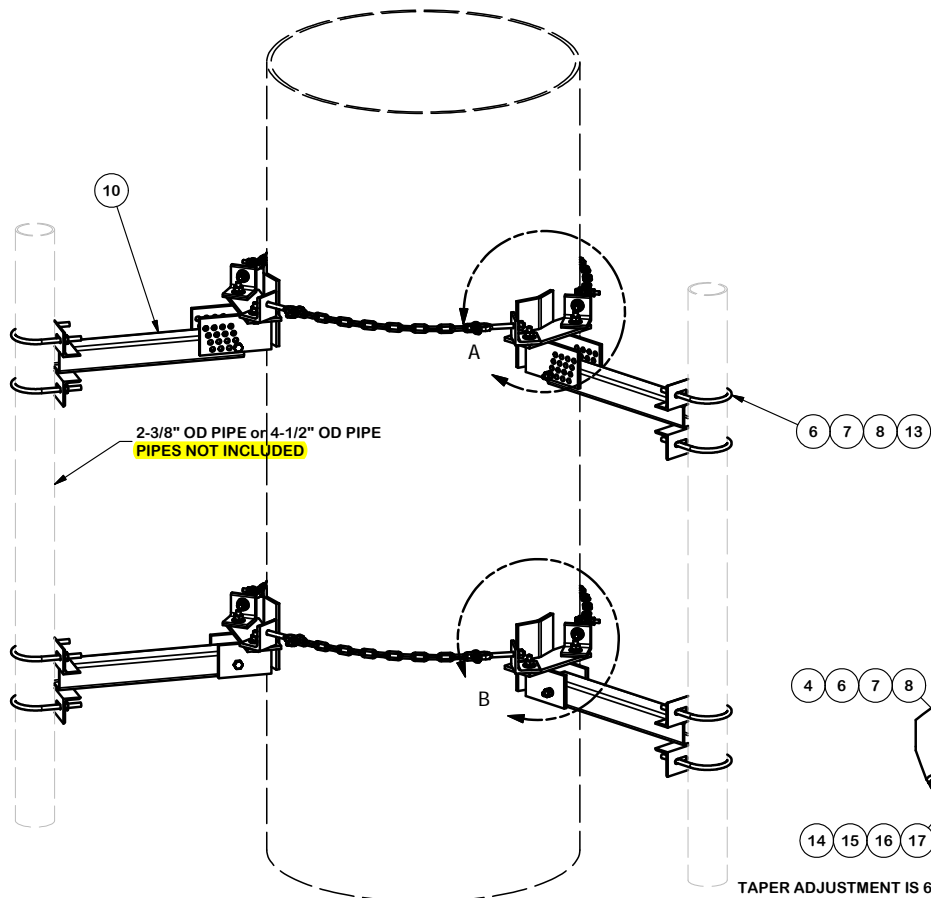


DS2C03F36D-D

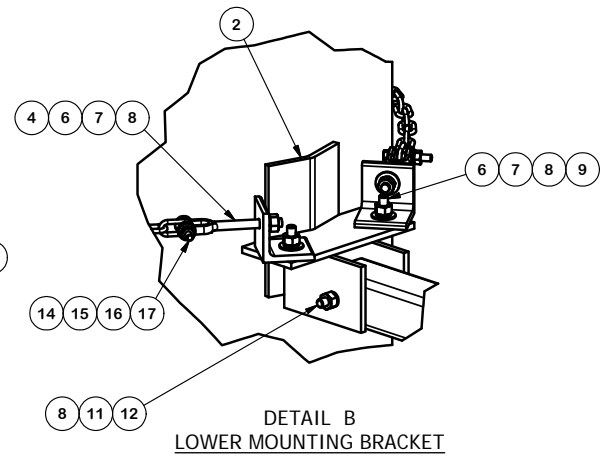
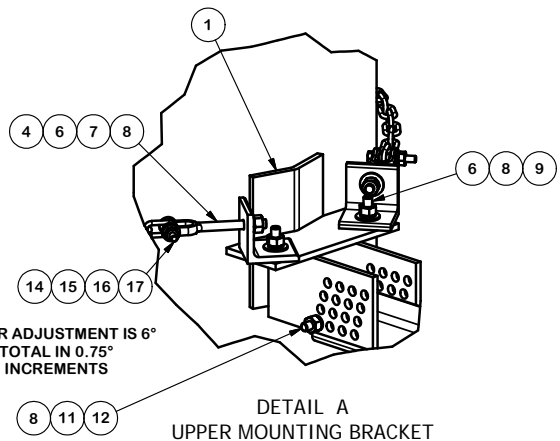
		160-174 MHz						217-222 MHz									
Model Number		DS1G03F36U-N	DS1G03F36U-D	DS1G06F36U-N	DS1G06F36U-D	DS1G03F36D-N	DS1G03F36D-D	DS2C00F36U-N	DS2C00F36U-D	DS2C03F36U-N	DS2C03F36U-D	DS2C06F36U-N	DS2C06F36U-D	DS2C00F36D-N	DS2C00F36D-D	DS2C03F36D-N	DS2C03F36D-D
Input Connector		N(F)	7/16 DIN	N(F)	7/16 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	
MECHANICAL	Number of Connectors	1		1		2		1		1		1		2		2	
	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) with 0.5" radial ice, mph(kph)	110 (177) 93 (150)		75 (121) 60 (97)		75 (121) 65 (105)		222 (357) 193 (311)		172 (277) 150 (241)		110 (177) 96 (154)		130 (209) 115 (185)		75 (121) 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 1/2" ± DIAMETER.
 PROPOSED CHAIN MOUNT FITS POLYGON OR ROUND POLES 5"-36" IN DIAMETER.
 NOTE: (1) 4" (4.5" OD) SCH 40 x 6'-0" AND (2) 2" (2.375" OD) SCH 40 x 6'-0" MOUNT PIPES ARE REQUIRED.



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 (± 0.030")
 DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
 BENDS ARE ± 1/2 DEGREE
 ALL OTHER MACHINING (± 0.030")
 ALL OTHER ASSEMBLY (± 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
 A valmont COMPANY

Engineering Support Team:
 1-888-753-7446

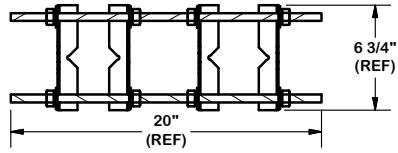
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

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

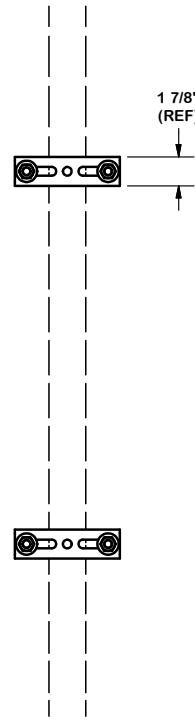
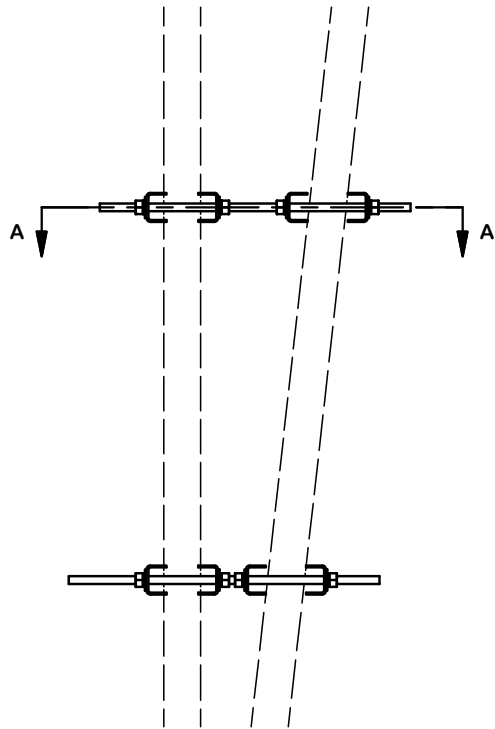
PART NO.	TCHM3-L
DWG. NO.	TCHM3-L

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

MOUNT-PIPE-TO-ANTENNA CLAMPS (TOTAL OF 2 KITS).
 3 ANTENNA ATTACHMENT POINTS REQUIRED.
 SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS.



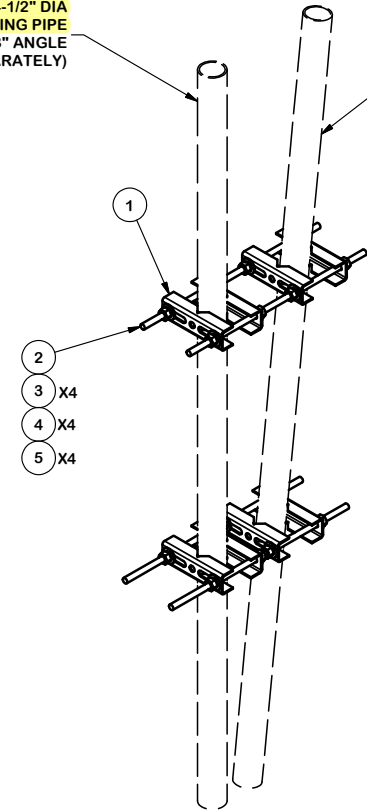
SECTION A-A



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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 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
------------------	------------------



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.

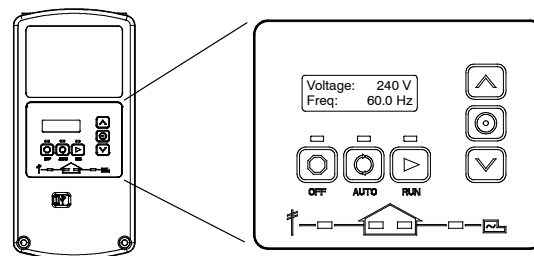
Sound Data

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

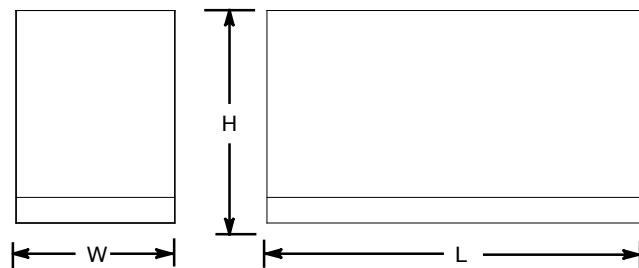
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Dimensions and Weights

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

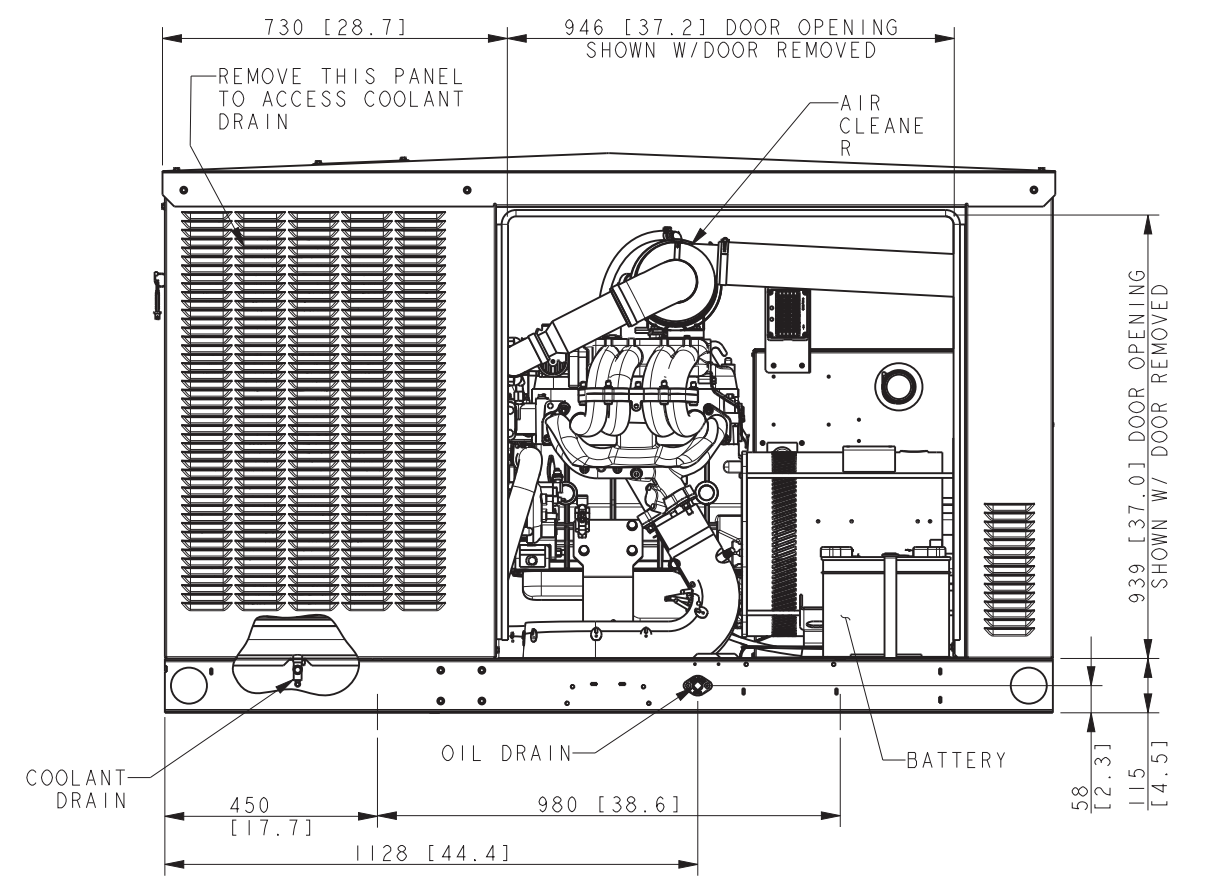
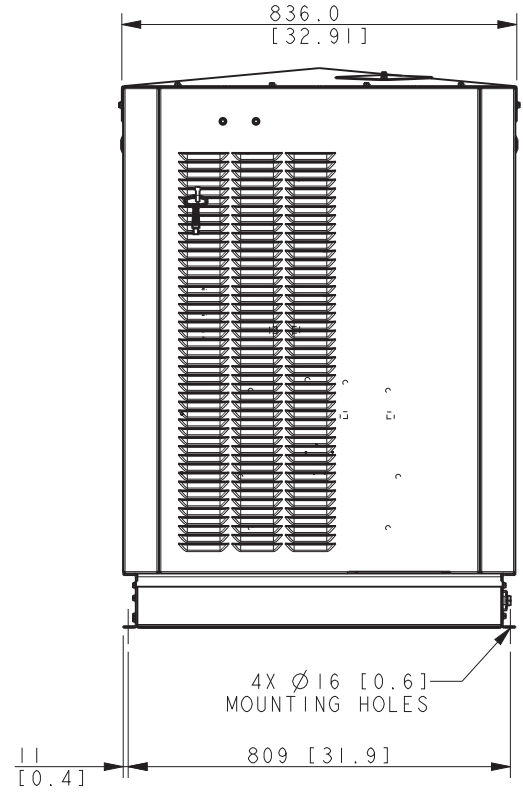
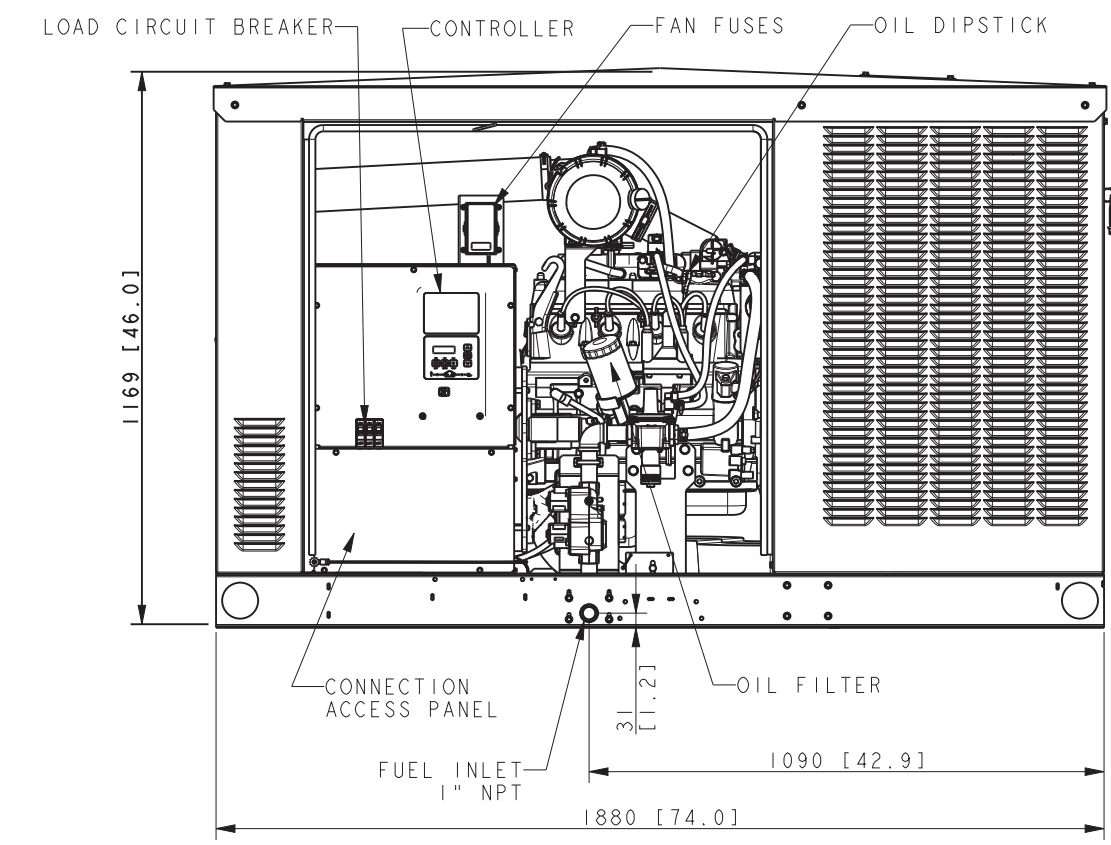
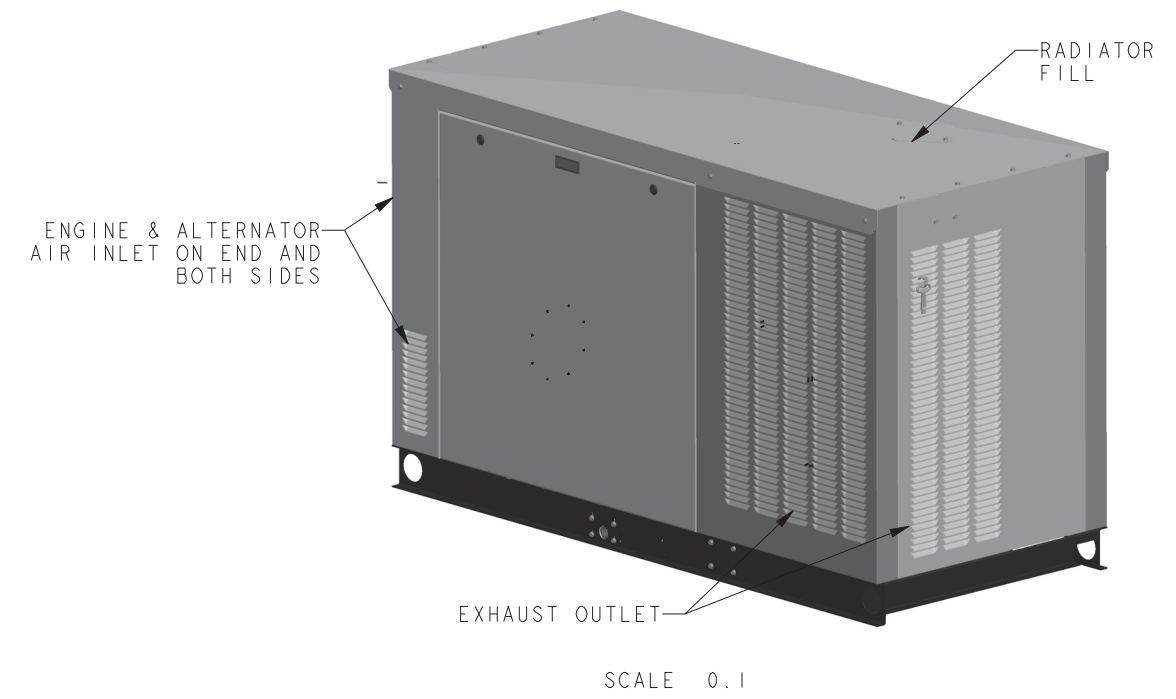
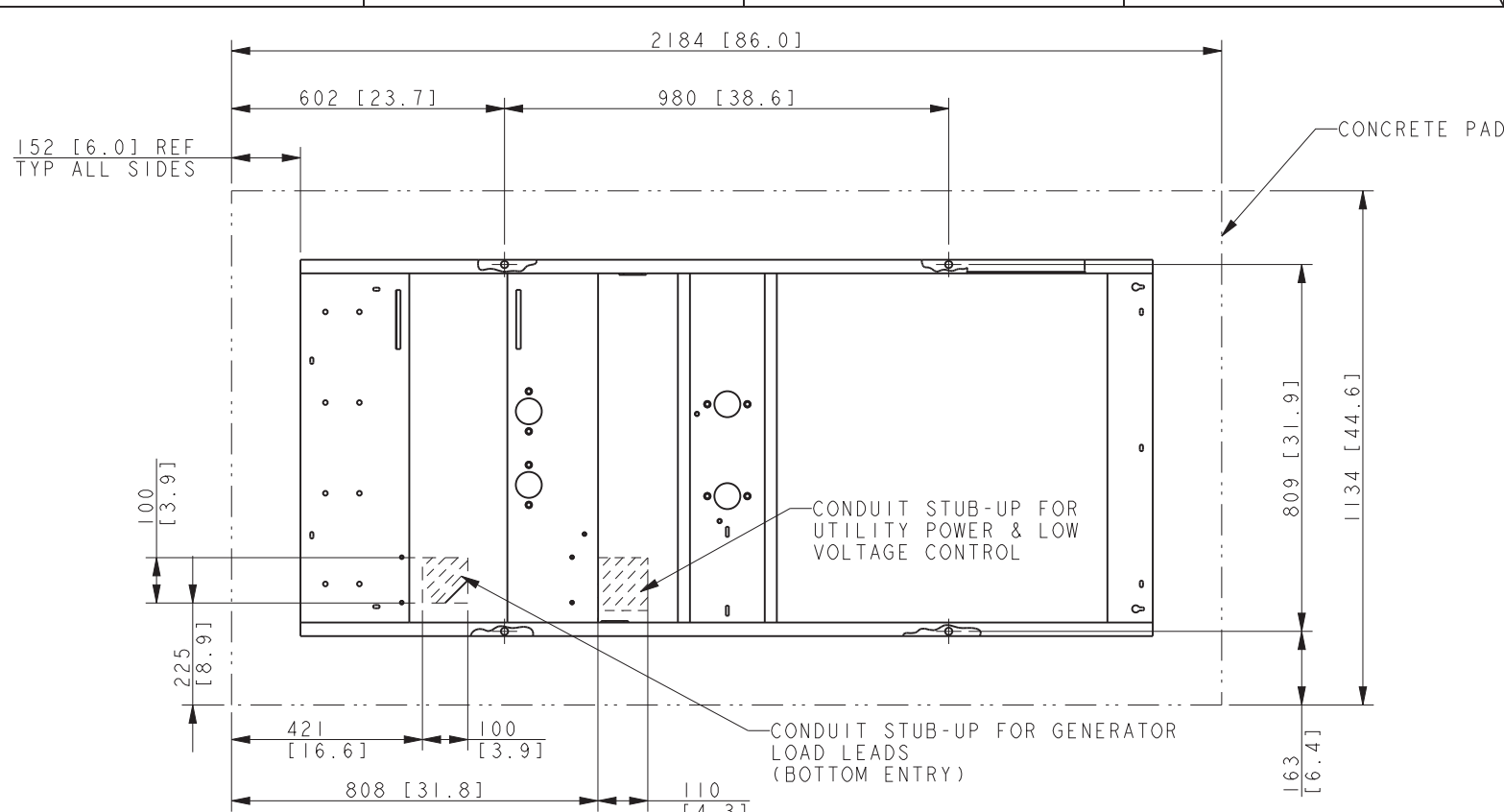
Shipping Weight, wet, kg (lb.): 572 (1260)

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.

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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

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