EVERSOURCE ENERGY

56 Prospect Street,
P.O. Box 270
Hartford, CT 06103

Kathleen M. Shanley
Manager – Transmission Siting
Tel: (860) 728-4527

September 22, 2020

Via Courier and E-mail

Melanie A. Bachman
Acting Executive Director

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **Tower Sharing Request by Connecticut Light & Power (Eversource Energy)**
Premises: 350B Cossaduck Hill Road, North Stonington, Connecticut

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa, the Connecticut Light and Power Company doing business as Eversource Energy ("Eversource") hereby requests an order from the Connecticut Siting Council (the "Council") to approve the proposed shared use of a communications tower and associated compound at 350B Cossaduck Hill Road in the Town of North Stonington (the "North Stonington Facility"). The tower owner is SBA Communications Corp. ("SBA"). Eversource and SBA have agreed to share the use of the North Stonington Facility. See Attachment A, Letter of Authorization.

The North Stonington Facility consists of an approximately 189-foot steel monopole with antennas extending to a total facility height of approximately 192 feet above ground level ("AGL"). The tower and compound are located on an approximately 11.6-acre parcel owned by Paul R. Buehler. See Attachment B, Parcel Map and Property Card. The North Stonington Facility was approved in Docket No. 420 in February 2012.

As depicted on the enclosed plans prepared by Black & Veatch, dated May 1, 2020, Eversource proposes the shared use of the North Stonington Facility to upgrade and reconfigure its communications system throughout the State in order to address communication deficiencies in its system. See Attachment C, Construction Drawings. Eversource will mount one 13.5-foot tall omni-directional antenna at a mounting height of 138 feet AGL and two 7/8-inch diameter coaxial cables on the existing tower and will install a new equipment shelter with a back-up generator and associated 1,000-gallon propane tank within the existing compound.

Connecticut General Statues § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued "if the Council finds that the proposed shared use

of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1)). Shared use of the North Stonington Facility satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

A. **Technical Feasibility**: As detailed in the Structural Analysis prepared by Tower Engineering Solutions dated March 2, 2020, Eversource confirmed that the tower is designed to support the addition of Eversource's antenna and associated cabling. See Attachment D, Structural Analysis. The proposed shared use of the tower is therefore technically feasible.

B. **Legal Feasibility:** Pursuant to C.G.S. § 16-50aa, the Council is authorized to issue an order approving shared use of the existing North Stonington Facility. (C.G.S. § 16-50aa(c)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of the tower would permit Eversource to obtain a building permit for the proposed installation. The Council approved the North Stonington Facility in Docket No. 420 and considered future use of the tower.

C. **Environmental Feasibility:** The proposed shared use would have a minimal environmental effect, for the following reasons:

1. Eversource's proposed installation would have a minimal visual impact and would not cause any significant change or alteration in the physical or environmental characteristics of the facility;

2. Eversource's antenna will not increase the height of the tower;

3. The installation will not increase the noise levels at the site boundaries by six decibels or more;

4. Operation of Eversource's antenna at this site will not exceed the total radio frequency electromagnetic radiation power density level adopted by the Federal Communications Commission and the Connecticut Department of Health. Operation of Eversource's proposed antenna along with the existing equipment is calculated to result in a maximum of 2.53% of the FCC Standards for General Public/Uncontrolled Maximum Permissible Exposure (MPE). See Attachment E, Power Density Report; and,

5. The proposed shared use would not require water or sanitary facilities or discharges into any waterbodies. The installation will not generate traffic other than periodic maintenance visits.

D. **Economic Feasibility:** Eversource and SBA entered into a mutual agreement to share use of the North Stonington Facility on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. **Public Safety:** As stated above and shown in the attachments hereto, the tower is structurally capable of supporting Eversource's installation and emissions are within the maximum permitted by the FCC and the Connecticut Department of Health.

Copies of Eversource's tower share filing request have been sent to Michael A. Urgo, First Selectman for the Town of North Stonington and Juliet Hodge, Planning, Development & Zoning Official for the Town of North Stonington. See Attachment F, Proof of Delivery of Notice.

As explained above, the proposed shared use of the North Stonington Facility satisfies the criteria set forth in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the proliferation of towers in the State of Connecticut. Eversource therefore requests the Council issue an order approving the proposed shared use of the North Stonington Facility. One original copy of this notice is enclosed.

Communications regarding this Tower Share Request should be directed to Kathleen Shanley at (860) 728-4527.

By: _____

Kathleen M. Shanley
Manager – Transmission Siting

cc: Honorable Michael A. Urgo, First Selectman, Town of North Stonington
Juliet Hodge, Planning, Development & Zoning Official, Town of North Stonington
SBA

Attachments

A. Letter of Authorization
B. Parcel Map and Property Card
C. Construction Drawings
D. Structural Analysis
E. Power Density Report
F. Proof of Delivery of Notice

ATTACHMENT A – LETTER OF AUTHORIZATION

SBA Communications Corporation
8051 Congress Avenue
Boca Raton, FL 33487-1307

T + 561.995.7670
F + 561.995.7626

sbasite.com

LETTER OF AUTHORIZATION

SBA Site ID: CT11796-S, North Stonington 3

Property Located at: 350B Cossaduck Hill Road, North Stonington, CT, 06359

THE CITY/COUNTY OF: North Stonington / New London

APPLICATION FOR ZONING/USE/BUILDING PERMIT

This letter authorizes Connecticut Light & Power and its authorized agents to file for all necessary zoning, planning and building permits (local, state and federal) for the purposes of installing, operating and maintaining a telecommunications facility on the existing tower on the property referenced above on behalf of Unknown.

All approval conditions that may be granted to Connecticut Light & Power in connection with above referenced facility relating to this specific application are the sole responsibility of Connecticut Light & Power.

SBA Towers VII, LLC

Jason Silberstein

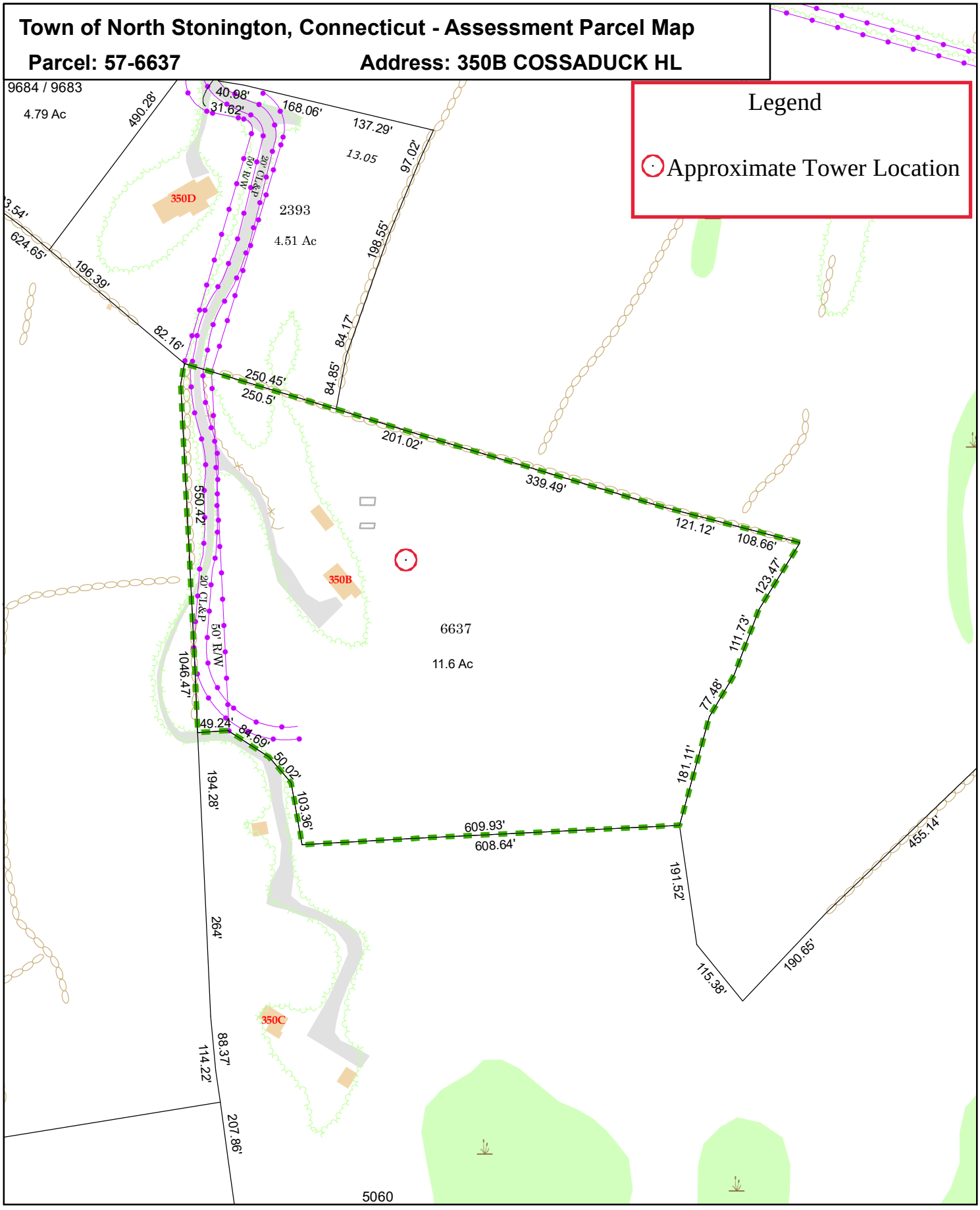
Executive VP, Site Leasing

Date: 4/14/2020

ATTACHMENT B - PARCEL MAP AND PROPERTY CARD

Town of North Stonington, Connecticut - Assessment Parcel Map

Parcel: 57-6637 **Address: 350B COSSADUCK HL**



Approximate Scale: 1:2,400

0 45 90 180 270 360 Feet

Map Produced November 2019

Town of North Stonington, CT

Property Listing Report

Map Block Lot **57-6637** Account **B1909000**

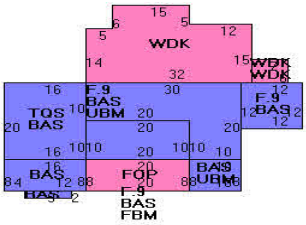
Property Information

Property Location	350B COSSADUCK HL
Owner	BUEHLER PAUL R
Co-Owner	
Mailing Address	350B COSSADUCK HILL NORTH STONINGTON CT 06359
Land Use	0101 SINGLE FAM
Land Class	R
Zoning Code	R80
Census Tract	7071
Sub Lot	

Neighborhood	0500
Acreage	11.66
Utilities	Well,Septic
Lot Setting/Desc	Rural Rolling
Survey Map	
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1979
Stories	1.9
Building Style	Log Home
Building Use	Residential
Building Condition	Average +20
Floors	Hardwood
Total Rooms	7 Rooms

Bedrooms	3 Bedrooms
Full Bathrooms	3
Half Bathrooms	0
Bath Style	Average
Kitchen Style	Average
Roof Style	Gambrel
Roof Cover	Asphalt Shingl

Exterior Walls	Logs
Interior Walls	Drywall/Sheet
Heating Type	Hot Water
Heating Fuel	Oil
AC Type	None
Gross Bldg Area	3828
Total Living Area	2184

Report Created On **2/20/2020**

Town of North Stonington, CT

Property Listing Report | Map Block Lot **57-6637** | Account **B1909000**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	176400	123480
Extras	2400	1680
Outbuildings	24200	16940
Land	225000	157500
Total	428000	299600

Outbuilding and Extra Items

Type	Description
2 STORY CHIM	1.00 UNITS
BARN 2ST/W FIN	640.00 S.F.
ABV-GR POOL ROUND	30.00 DIAMETER
SHED FRAME	96.00 S.F.
WOOD DECK	60.00 S.F.
WOOD DECK	144.00 S.F.
BATHRM, OUTBLD	1.00 UNITS
SHED FRAME	36.00 S.F.
SCREEN HOUSE	100.00 S.F.
SHED FRAME	160.00 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Basement, Finished	200	0
Three Quarter Story	320	224
First Floor	1290	1290
Ninety stry, Fin	744	670
Porch, Open, Finished	160	0
Basement, Unfinished	480	0
Deck, Wood	634	0
Total Area	3828	2184

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BUEHLER PAUL R	64/ 289	8/27/1985	0

Report Created On **2/20/2020**

ATTACHMENT C – CONSTRUCTION DRAWINGS

EVERSOURCE ENERGY

NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

PROJECT SUMMARY

THE GENERAL SCOPE OF WORK CONSISTS OF THE FOLLOWING:

1. INSTALL (1) NEW RADIO SHELTER AT ELEVATION 0'-0"± AGL
2. INSTALL (1) NEW RACK WITH DMR EQUIPMENT IN 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 (1) NEW OMNI/WHIP ANTENNA AT ELEVATION 152'-0"± AGL

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:	NORTH STONINGTON III (CT11796-S)
SITE ID NUMBER:	1198
SITE ADDRESS:	350B COSSADUCK HILL ROAD NORTH STONINGTON, CT 06359
MAP:	57
BLOCK:	6637
ZONE:	R-80
LATITUDE:	41° 29' 57.2" N
LONGITUDE:	71° 53' 22.3" W
ELEVATION:	444'± AMSL
FEMA/FIRM DESIGNATION:	X
ACREAGE:	11.66± AC (BOOK: 64, PAGE: 289)

CONTACT INFORMATION

APPLICANTS:
EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037

PROPERTY OWNER:
PAUL R. BUEHLER
350B COSSADUCK HILL
NORTH STONINGTON CT 06359

EVERSOURCE ENERGY
PROJECT MANAGER:
NIKOLL PRECI
(860) 655-3079

POWER PROVIDER:
EVERSOURCE ENERGY
(800) 286-2000

TELCO PROVIDER:
FRONTIER
(800) 921-8102

CALL BEFORE YOU DIG:
(800) 922-4455

LOCATION MAP

NO SCALE

DESIGN TYPE

SITE UPGRADE
MONOPOLE

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
C-1	SITE PLAN
C-2	TOWER ELEVATION
C-3	ICE BRIDGE DETAILS
S-1	SHELTER FOUNDATION DETAILS
S-2	GENERATOR & PROPANE TANK CONCRETE PAD DETAILS
M-1	GENERATOR & PROPANE TANK EQUIPMENT DETAILS
M-2	GENERATOR & PROPANE TANK EQUIPMENT DETAILS
E-1	UTILITY PLAN & DETAILS
G-1	GROUNDING PLAN
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
G-4	GROUNDING DETAILS
G-5	SHELTER LAYOUT GROUNDING PLAN
G-6	SHELTER INDOOR GROUNDING DETAILS
G-7	SHELTER OUTDOOR GROUNDING DETAILS
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

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:	KCI
CHECKED BY:	JR

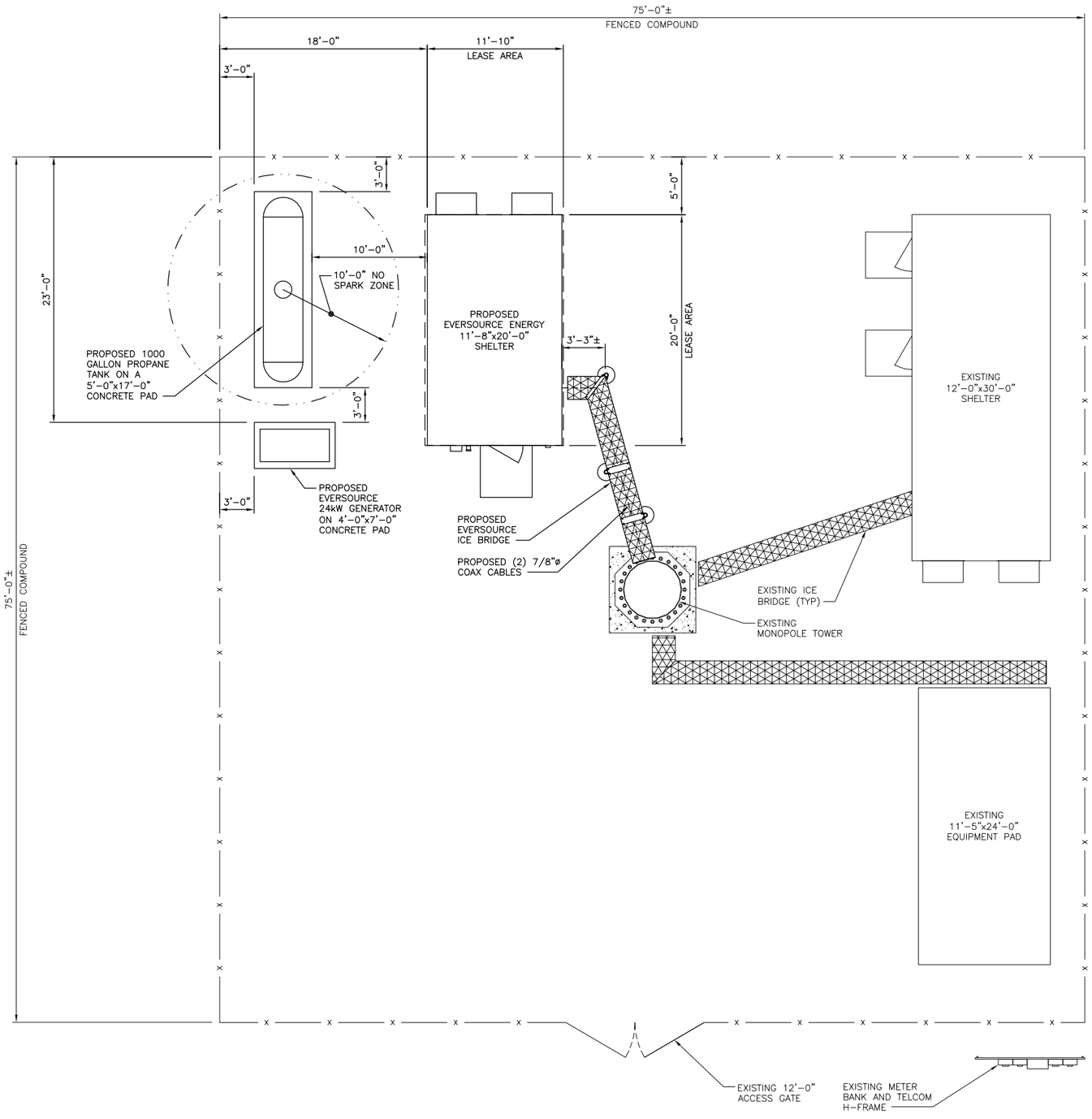
REV	DATE	DESCRIPTION
0	04/30/20	ISSUED FOR FILING

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
05/01/2020

NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



SITE PLAN
NO SCALE

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

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
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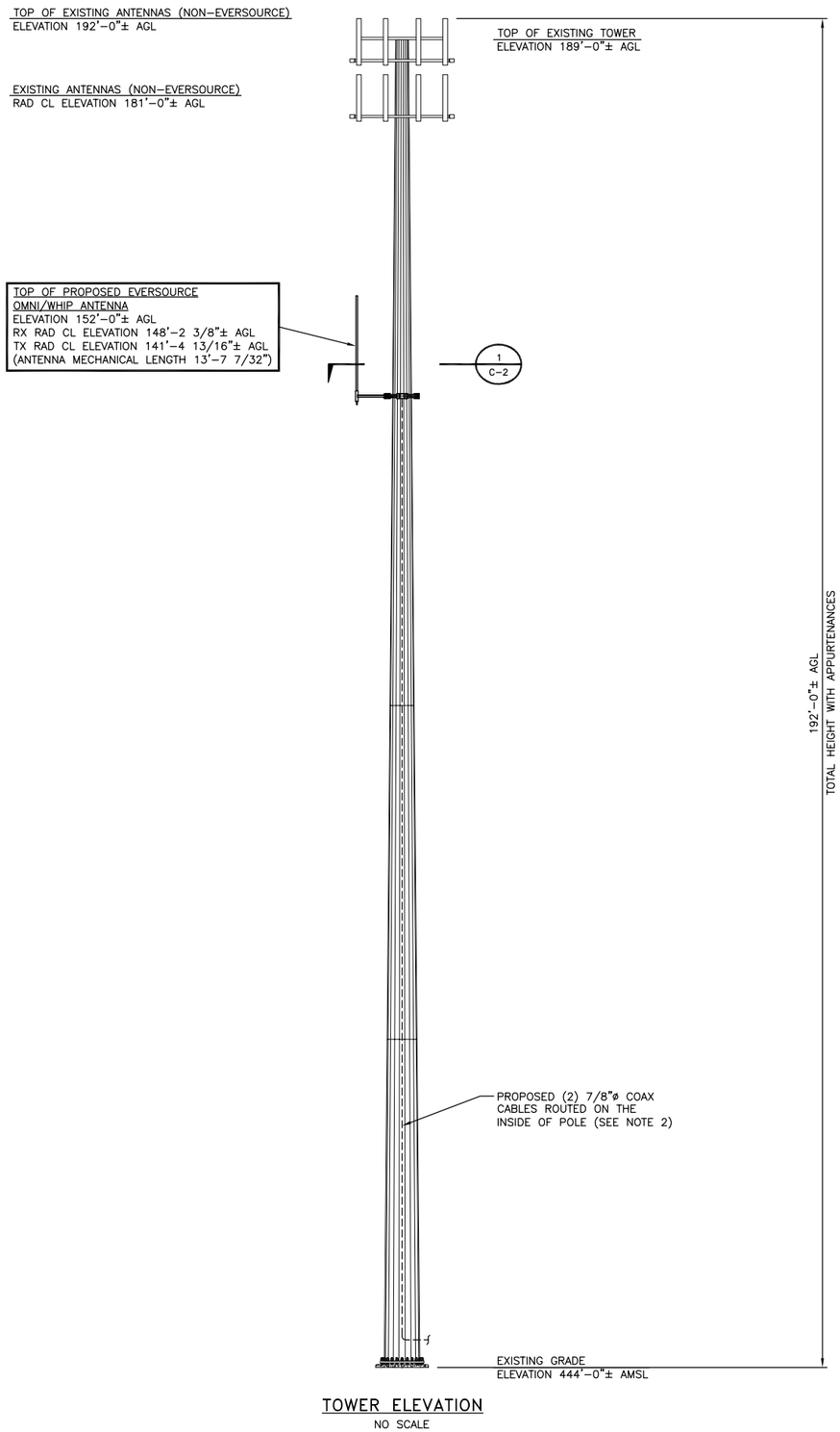
NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
SITE PLAN

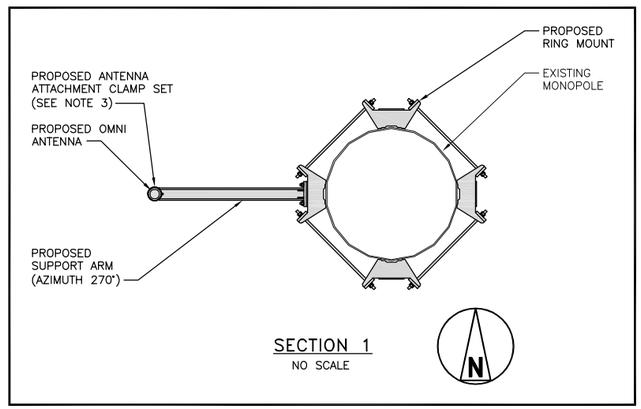
SHEET NUMBER
C-1



TOWER ELEVATION
NO SCALE

NOTES

1. BLACK & VEATCH HAS NOT EVALUATED THE EXISTING STRUCTURE FOR THIS SITE AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO THE STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.
2. COAX CABLES TO BE ROUTED INSIDE POLE PER STRUCTURAL ANALYSIS BY OTHERS.
3. SITE PRO 1 P/N DCP12K CLAMP SET. (3) ANTENNA ATTACHMENT POINTS REQUIRED (TYP, TOTAL OF 2 KITS).



SECTION 1
NO SCALE

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:	KCI
CHECKED BY:	JR

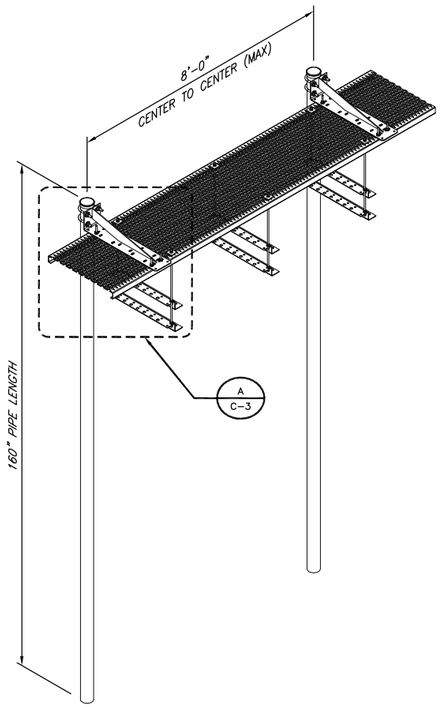
REV	DATE	DESCRIPTION
0	04/30/20	ISSUED FOR FILING

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
05/01/2020

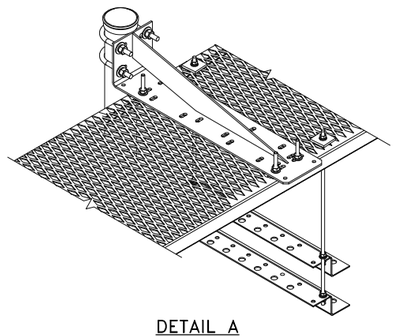
NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
TOWER ELEVATION & ANTENNA EQUIPMENT

SHEET NUMBER
C-2



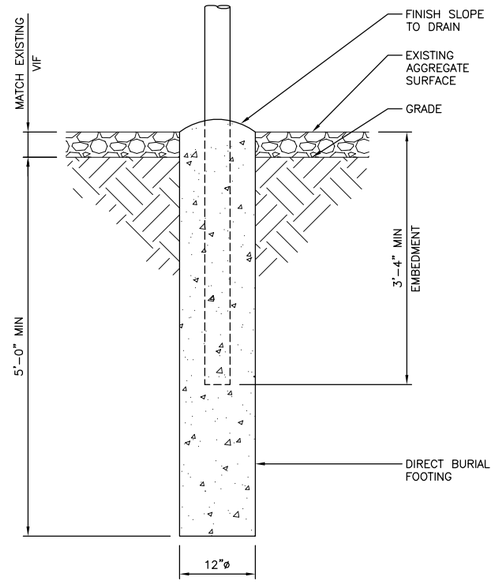
ICE BRIDGE DETAIL
SITE PRO 1 P/N IB24D-V
NO SCALE



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
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:	KCI
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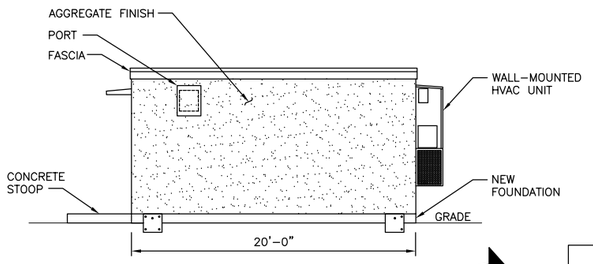
REV	DATE	DESCRIPTION
0	04/30/20	ISSUED FOR FILING

05/01/2020

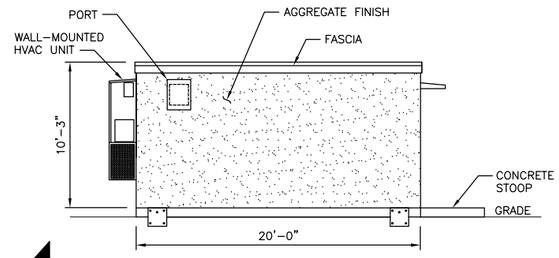
NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
ICE BRIDE DETAILS

SHEET NUMBER
C-3



ELEVATION A
NO SCALE



ELEVATION C
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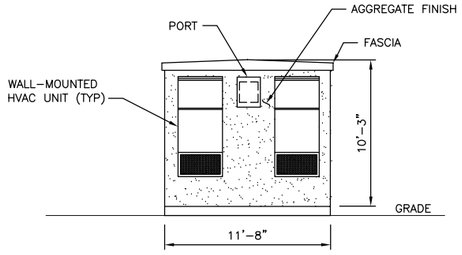
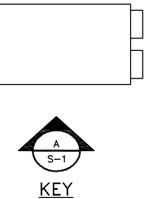


ELEVATION D
NO SCALE



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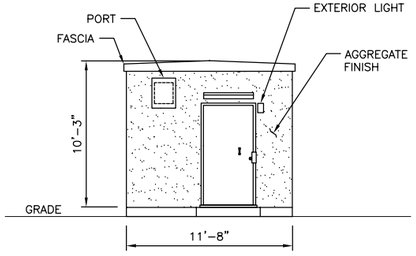
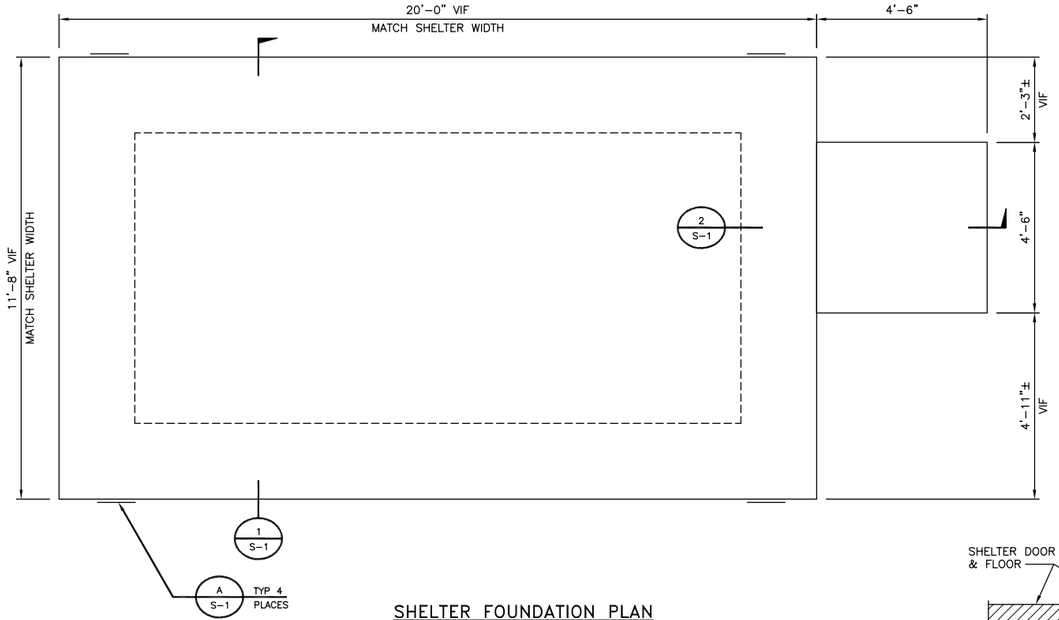


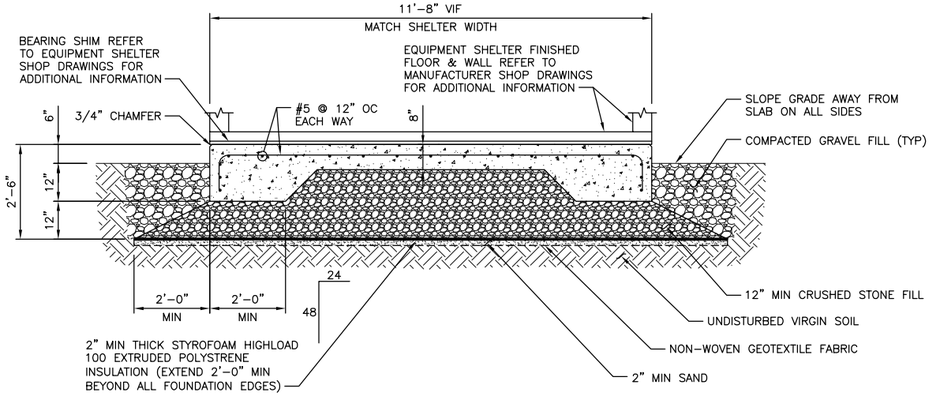
ELEVATION B
NO SCALE

NOTES

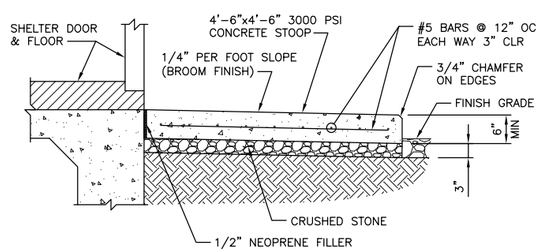
1. SLAB ON GRADE FOUNDATION DESIGN CONFORMS TO THE REQUIREMENTS OF THE 2015 INTERNATIONAL BUILDING CODE AS AMENDED BY THE 2018 CONNECTICUT STATE BUILDING CODE SUPPLEMENT SECTION 1809.5 'FROST PROTECTION' AND SEI/ASCE STANDARD 32-01 SECTION 7.1 'SLAB ON GRADE CONSTRUCTION'.
2. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
3. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
4. BEARING SHIMS, TIE-DOWN PLATES AND ASSOCIATED INSTALLATION ANCHORS PROVIDED WITH EXISTING SHELTER. CONTRACTOR SHALL VERIFY ALL SHIM & TIE DOWN QUANTITIES AND LOCATIONS WITH THE OWNER PRIOR TO PERFORMING FOUNDATION WORK.
5. SLAB TO BE LEVEL 1/4"±.
6. TOP 8" OF FOUNDATION SIDES MUST BE FORMED FLAT TO ACCEPT TIE-DOWN PLATES.
7. CONTRACTOR TO VERIFY FINAL SHELTER DIMENSIONS PRIOR TO CONSTRUCTION OF FOUNDATION.
8. GRADE SHALL SLOPE AWAY FROM THE CONCRETE PAD TO ALLOW FOR PROPER WATER RUN OFF.
9. ANCHOR SHELTER TO FOUNDATION PER SHELTER MANUFACTURER'S RECOMMENDATIONS.



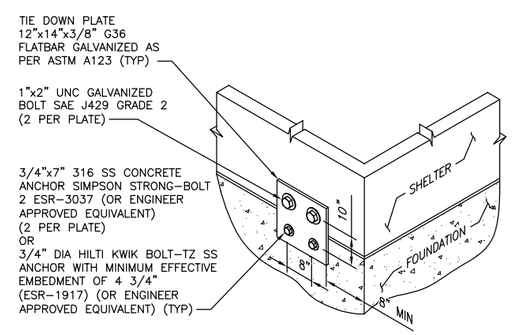
SHELTER FOUNDATION PLAN
NO SCALE



SECTION 1
NO SCALE



SECTION 2
STOOP DETAIL
NO SCALE



DETAIL A
SHELTER FOUNDATION ATTACHMENT
NO SCALE

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:	KCI
CHECKED BY:	JR

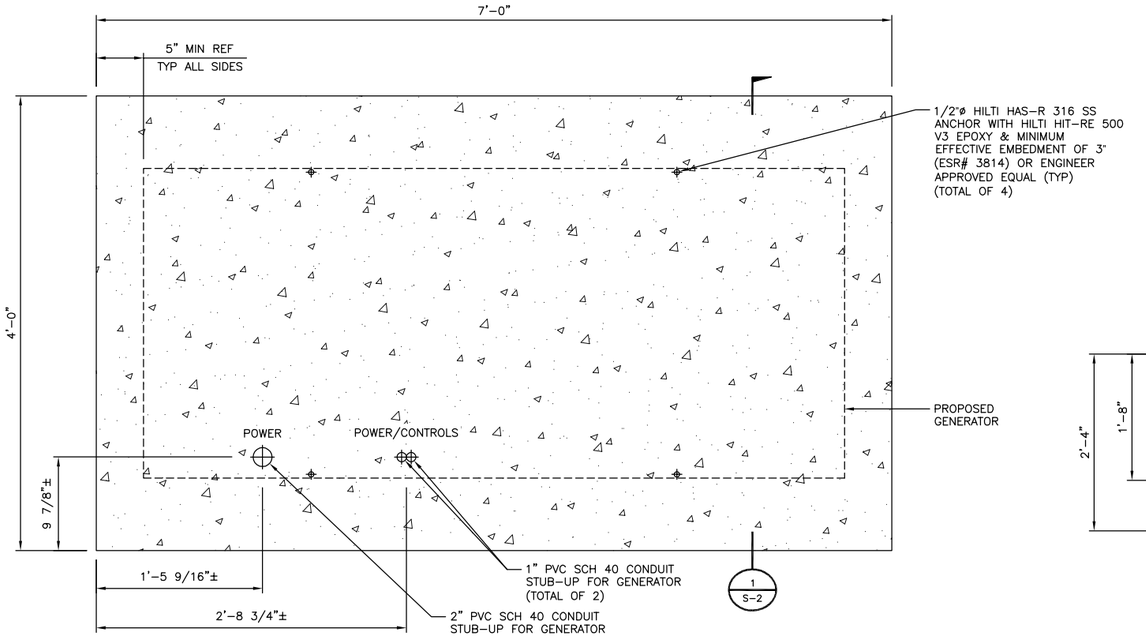
REV	DATE	DESCRIPTION
0	04/30/20	ISSUED FOR FILING

05/01/2020

NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
SHELTER FOUNDATION DETAILS

SHEET NUMBER
S-1

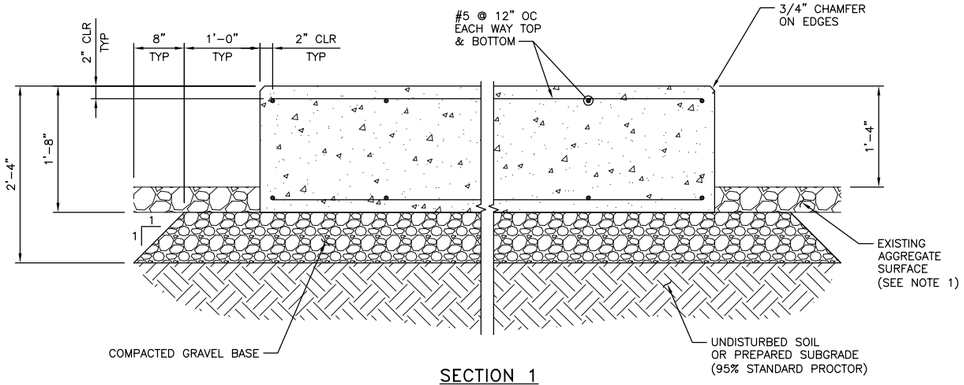


GENERATOR FOUNDATION PLAN

NO SCALE

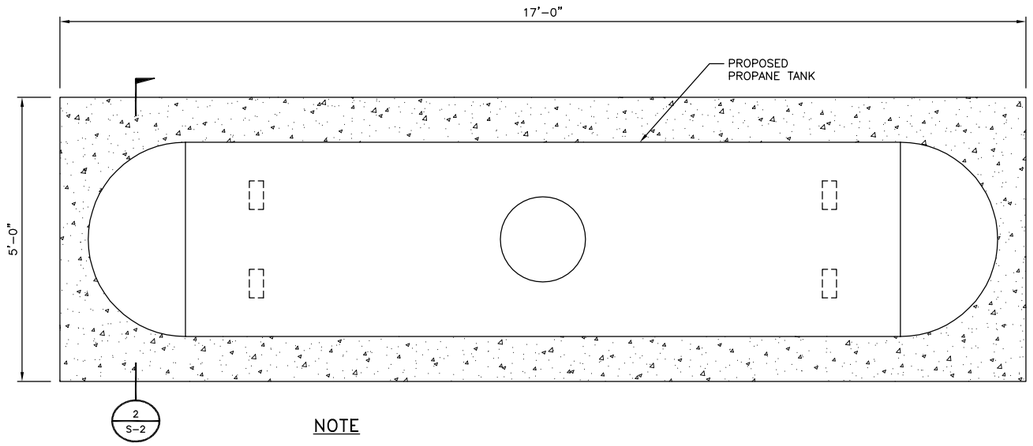
NOTES

1. MATCH THICKNESS OF EXISTING AGGREGATE SURFACE WHEN CONSTRUCTION IS COMPLETE.



SECTION 1
FOUNDATION DETAIL

NO SCALE

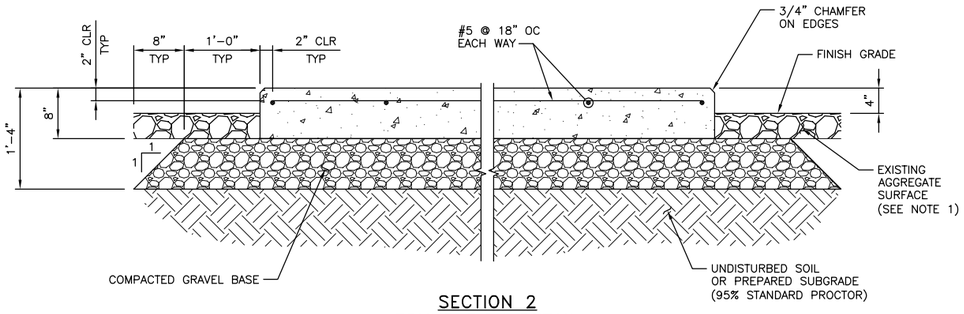


NOTE

1. ANCHORAGE TO BE (1) 5/8"ø 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

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:	KCI
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	04/30/20	ISSUED FOR FILING

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
05/01/2020

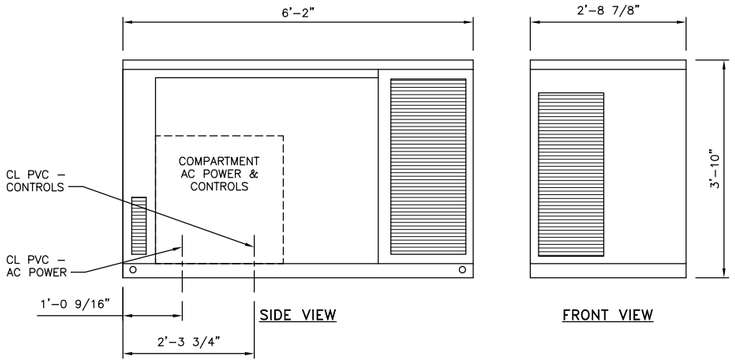
NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE

GENERATOR & PROPANE TANK CONCRETE PAD DETAILS

SHEET NUMBER

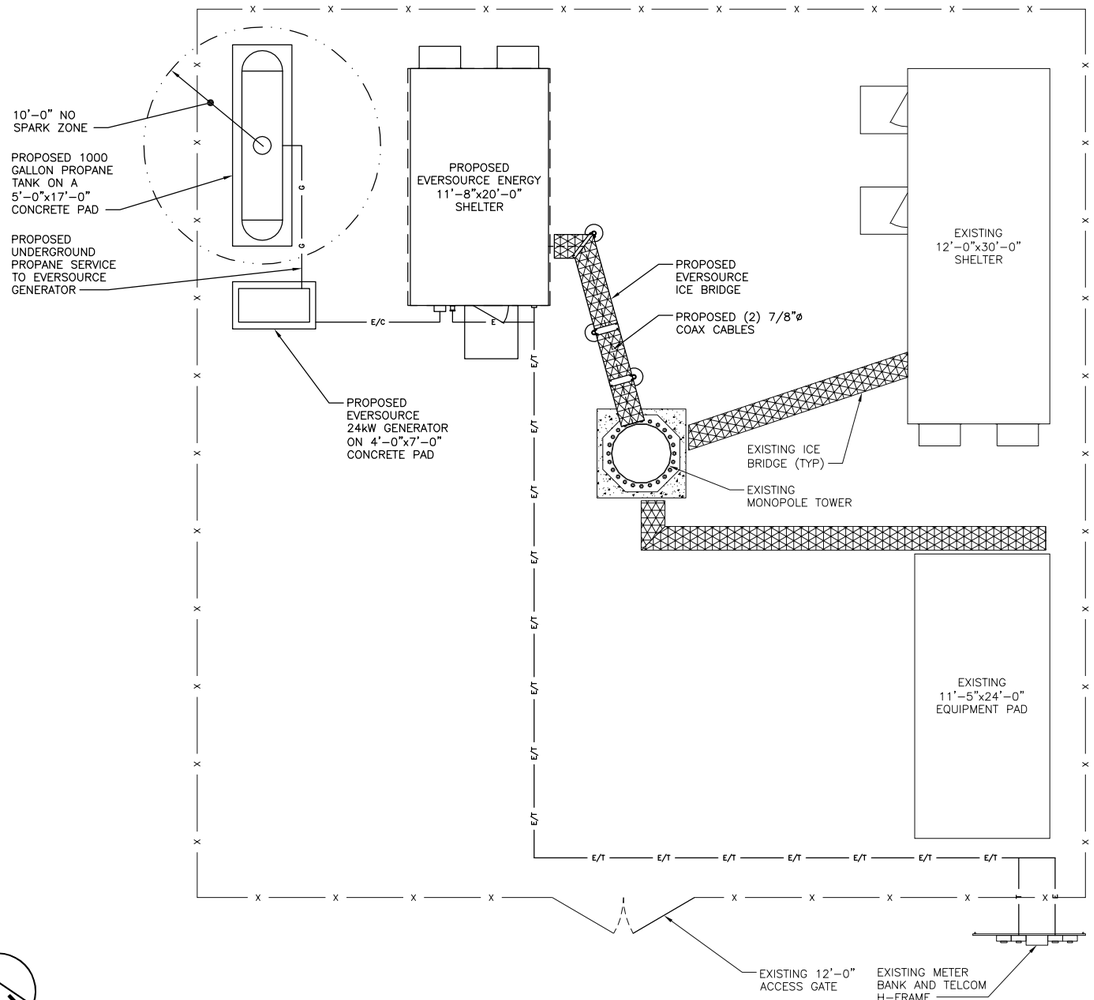
S-2



KOHLER POWER SYSTEMS 24kW
PROPANE-POWERED GENERATOR MODEL
24RCL, 120/240V, 1ø, 60 Hz

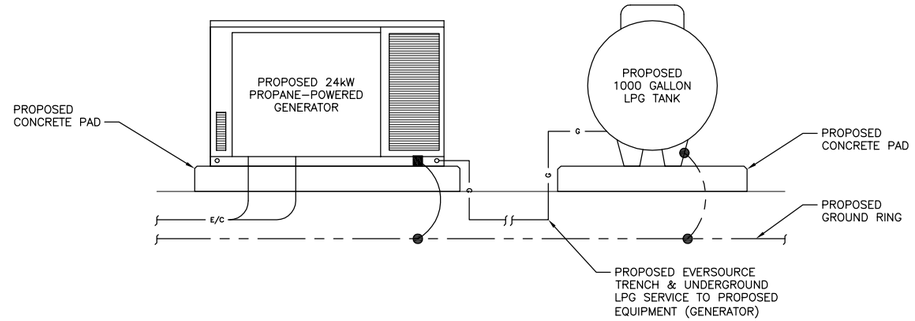
PROPANE GENERATOR SCHEMATICS

NO SCALE



MECHANICAL PLAN

NO SCALE

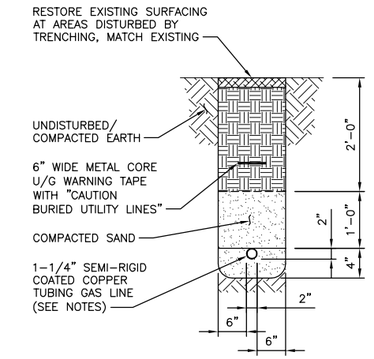


NOTES

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



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 DIAELECTIC UNION INSTALLED ON BOTH SIDES.

PROPANE GAS TRENCH

NO SCALE

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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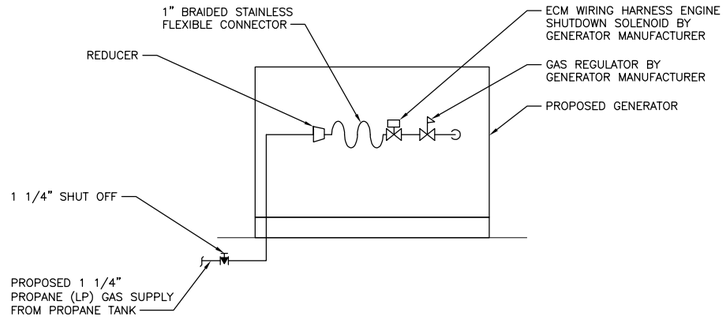
05/01/2020

NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
GENERATOR & PROPANE TANK EQUIPMENT DETAILS

SHEET NUMBER
M-1

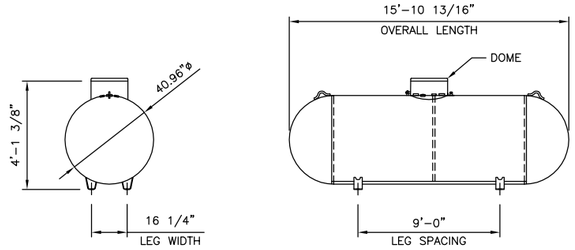


NOTE

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

PROPANE CONNECTION DIAGRAM

NO SCALE



FRONT VIEW

SIDE VIEW

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

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

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
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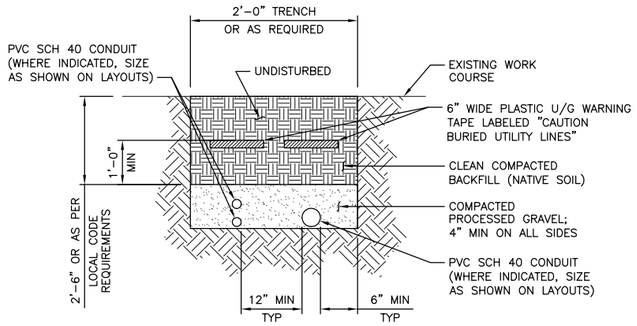
NORTH STONINGTON, CT 06359

SHEET TITLE

GENERATOR & PROPANE TANK EQUIPMENT DETAILS

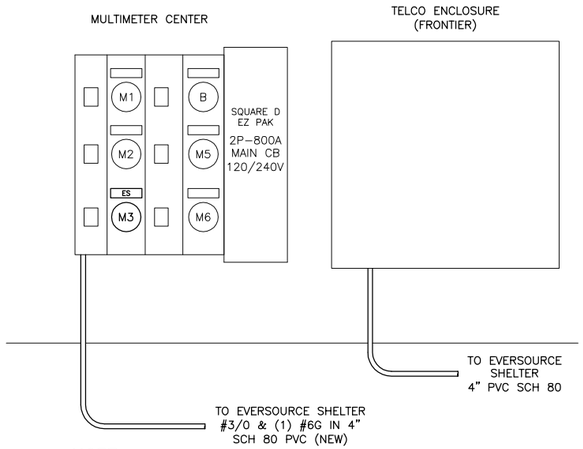
SHEET NUMBER

M-2



GENERATOR TRENCH DETAIL

NO SCALE

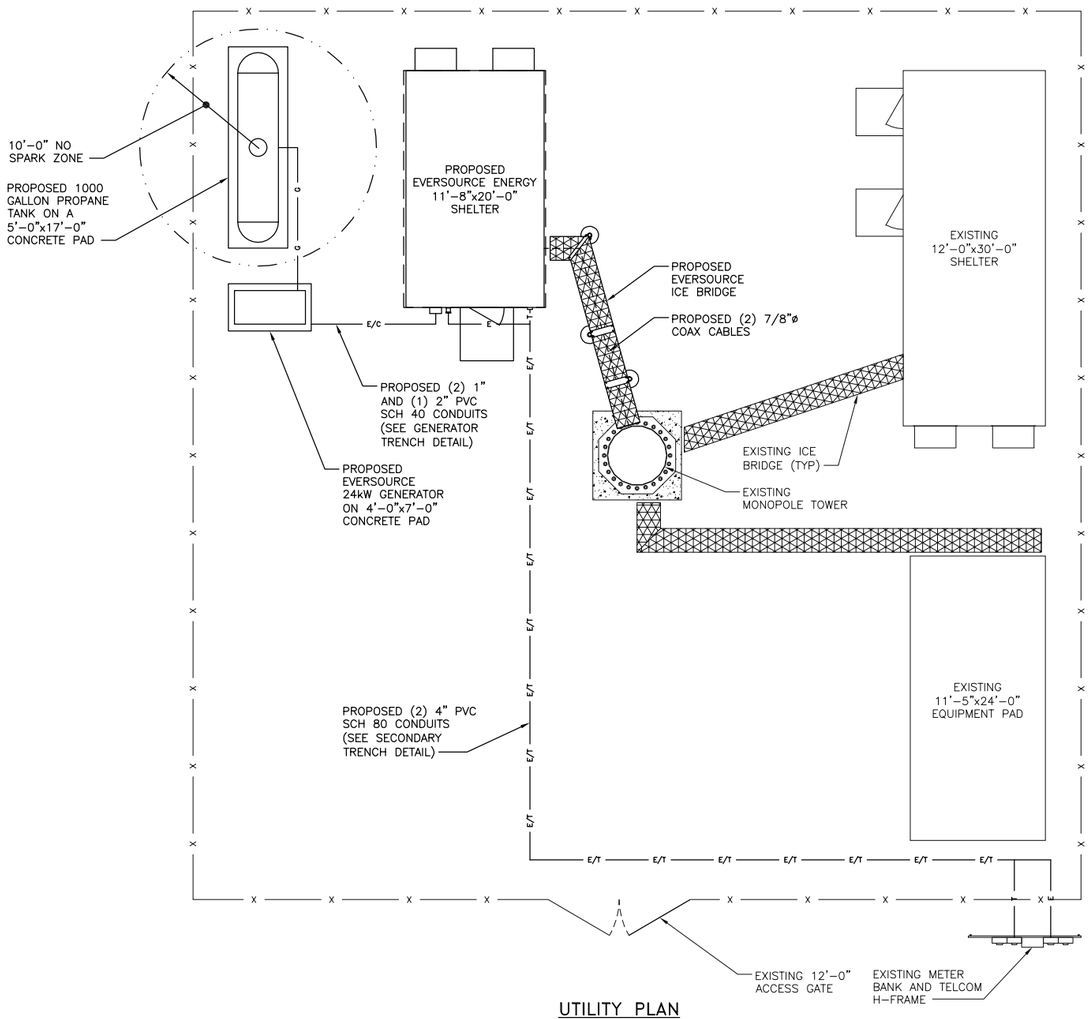


NOTE

1. MAKE ALL CONNECTIONS AS PER UTILITY COMPANY'S REQUIREMENTS. EVERSOURCE: ELECTRICAL SERVICE SUPPORT GROUP 1-888-544-4828.

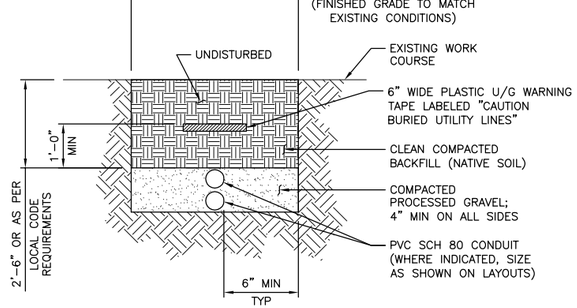
POWER RISER DIAGRAM

NO SCALE



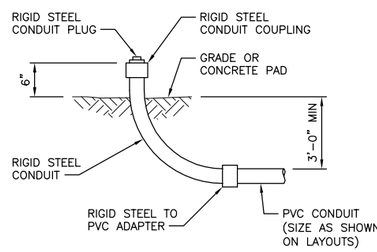
UTILITY PLAN

NO SCALE



SECONDARY TRENCH DETAIL

NO SCALE



STUB-UP CONDUIT DETAIL

NO SCALE

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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NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE

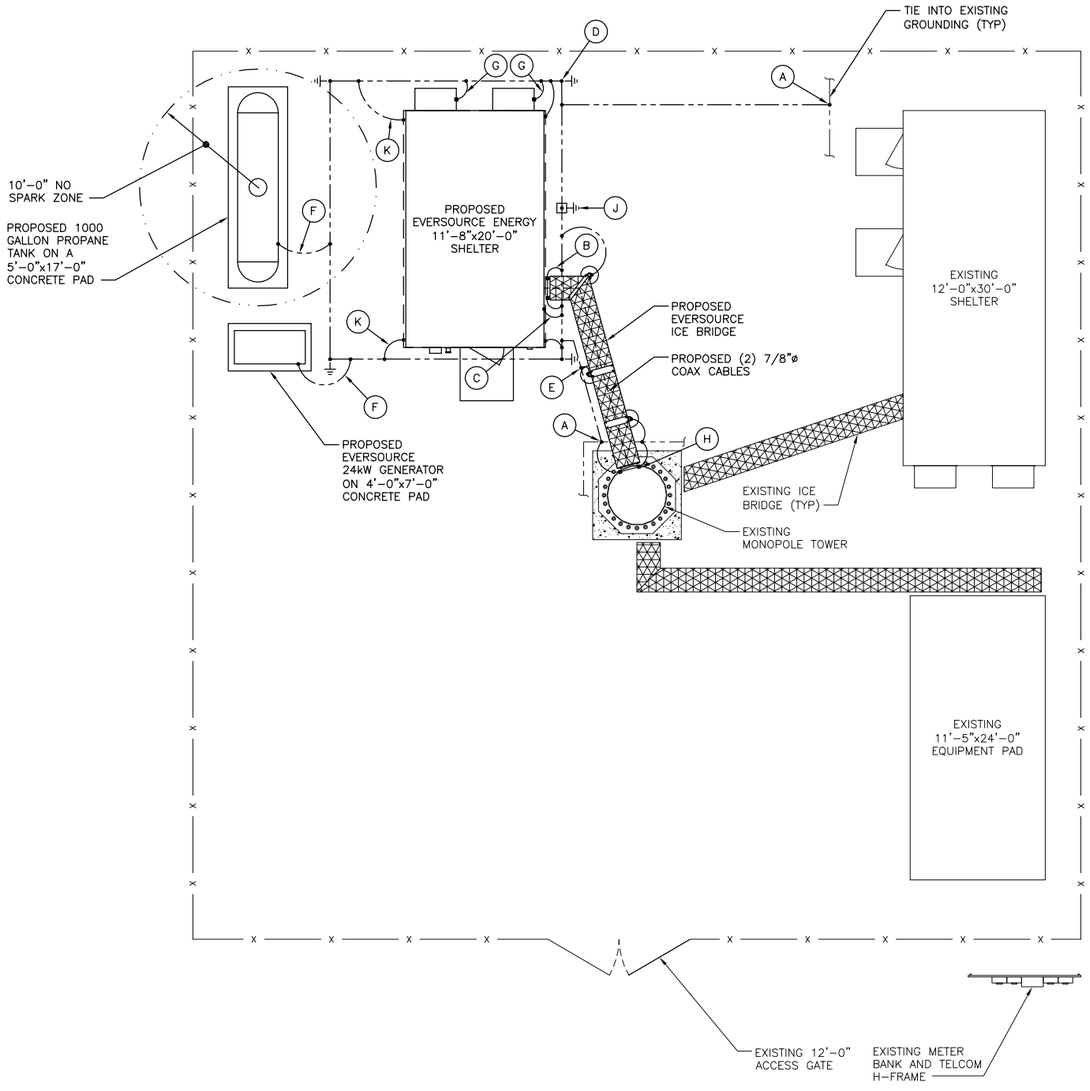
UTILITY PLAN
& DETAILS

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) SYSTEM GROUNDING: #2 TINNED CU WIRE FROM NEW BURIED GROUND RING TO EXISTING GROUND RING AND MAKE AN EXOTHERMIC CONNECTION.

(B) EXTERIOR GROUND BAR: EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE EXTERIOR GROUND BAR AND MAKE A EXOTHERMIC CONNECTION.

(C) GROUNDING OF INTERNAL GROUND RING: EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING THROUGH 1"ø PVC SLEEVE INTO EQUIPMENT SHELTER FOR CONNECTION TO INTERIOR HALO GROUND RING. TYPICAL AT 4 BUILDING CORNERS.

(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) TANK GENERATOR GROUNDING: EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO TANK OR GENERATOR AND EXOTHERMICALLY WELD.

(G) HVAC GROUNDING: EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO THE HVAC UNIT AND MAKE A MECHANICAL CONNECTION.

(H) TOWER GROUND BAR: EXTEND TWO #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A EXOTHERMIC CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH GALVANIZED STEEL MOUNTING MATERIAL.

(J) GROUND ROD WITH INSPECTION SLEEVE: COPPER CLAD STEEL 5/8"ø TEN (10) FEET LONG WITH INSPECTION SLEEVE.

(K) SHELTER FOUNDATION GROUND: – SEE DWG G–7, DETAIL A.

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 #2 AWG 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 SLEEVES J. 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.

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
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CHECKED BY:	JR

REV	DATE	DESCRIPTION
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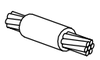
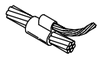
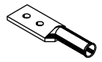
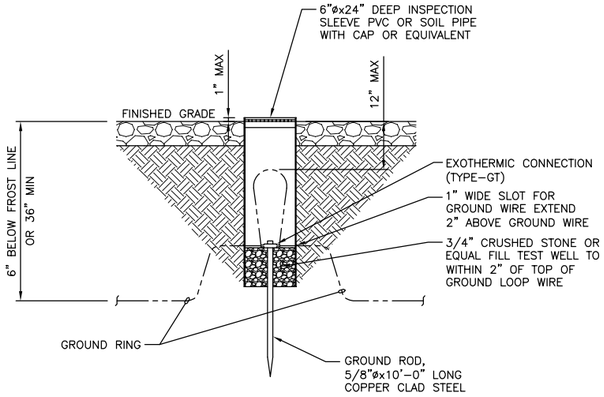
STATE OF CONNECTICUT · MARK P. STILES · 34358 · LICENSED PROFESSIONAL ENGINEER
05/01/2020

NORTH STONINGTON III (CT11796–S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
GROUNDING PLAN

SHEET NUMBER
G-1

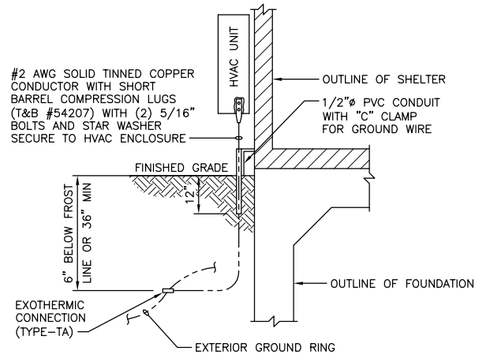
CADWELD CONNECTIONS OR APPROVED EQUAL			BURNDY CONNECTIONS OR APPROVED EQUAL
 HORIZONTAL SPLICE SPLICE OF HORIZONTAL CABLES TYPE SS	 PARALLEL HORIZONTAL CONDUCTORS PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES TYPE PT	 VERTICAL PIPE CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES TYPE VS	 BOND JUMPER 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		



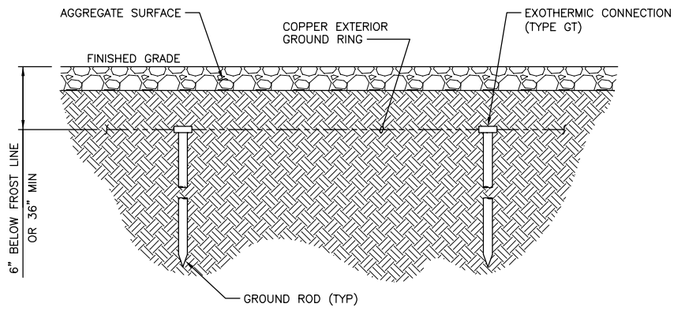
GROUND ROD WITH INSPECTION SLEEVE
NO SCALE

NOTES

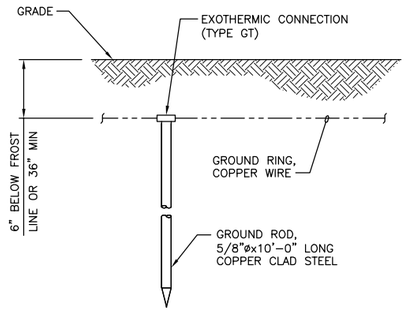
1. REFER TO SHEET G-1 FOR WIRE SIZES.



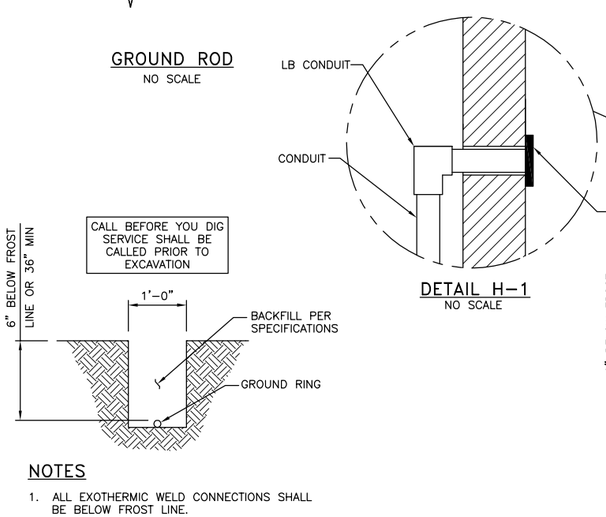
HVAC GROUND DETAIL
NO SCALE



GROUND RING DETAIL
NO SCALE



GROUND ROD
NO SCALE

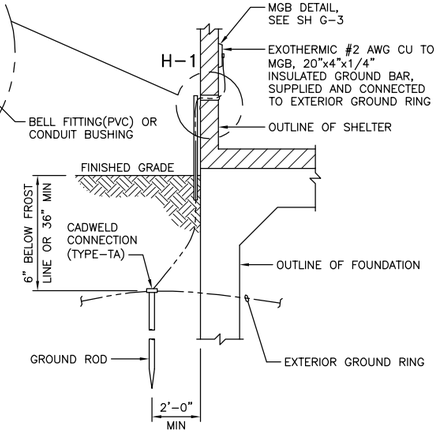


NOTES

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

GROUND RING TRENCH
NO SCALE

DETAIL H-1
NO SCALE



MGB GROUND DETAIL
NO SCALE

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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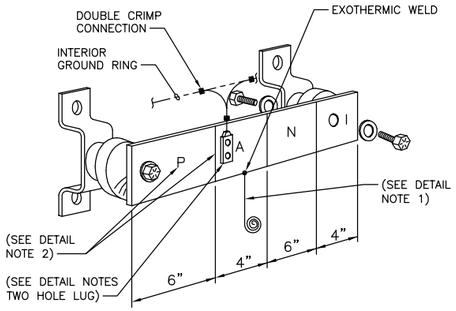
STATE OF CONNECTICUT · MARK P. STILES · 24350 · LICENSED PROFESSIONAL ENGINEER

05/01/2020

NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2



SITEPRO – 1/4"X4"X20"
TINNED GROUND BAR KIT
TINMG420U–K

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

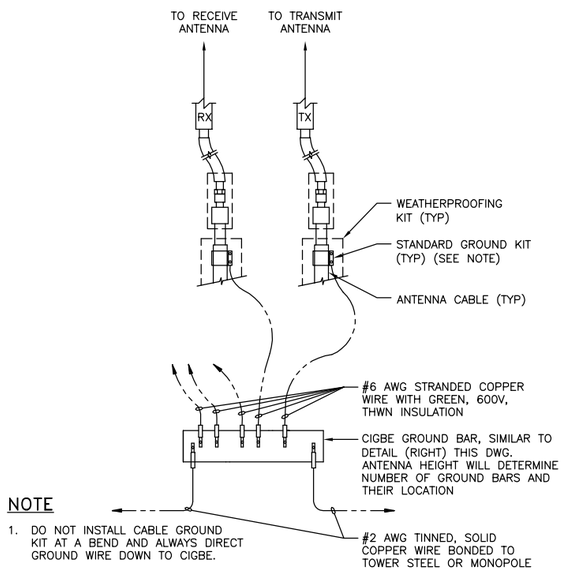
ALL ISOLATED GROUND REFERENCE
GROUND WINDOW BAR

DETAIL NOTES

1. EXOTHERMIC ALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE EXOTHERMIC WELD.
2. 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

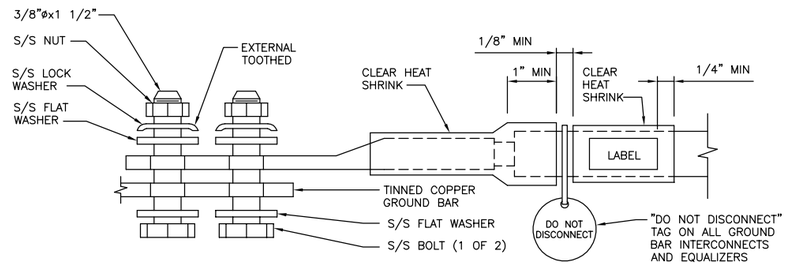
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRE TO EXTERIOR GROUNDING BAR

NO SCALE

NOTES

1. 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".
2. 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.
3. 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.

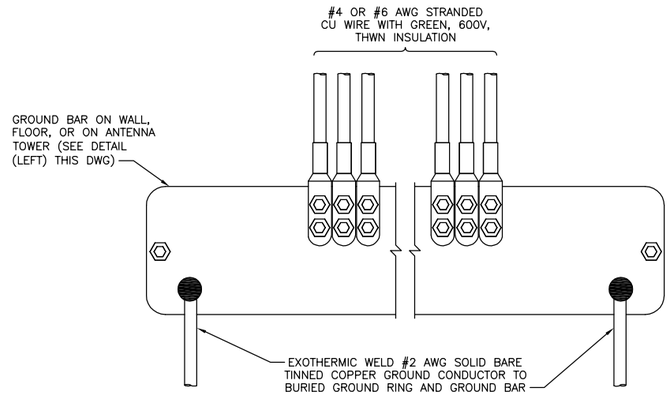


NOTES

1. ALL HARDWARE 18–8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI–OXIDANT COMPOUND BEFORE MATING.
2. ALL HARDWARE SHALL BE S/S 3/8 INCH DIAMETER OR LARGER.
3. 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

1. 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

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:	KCI
CHECKED BY:	JR

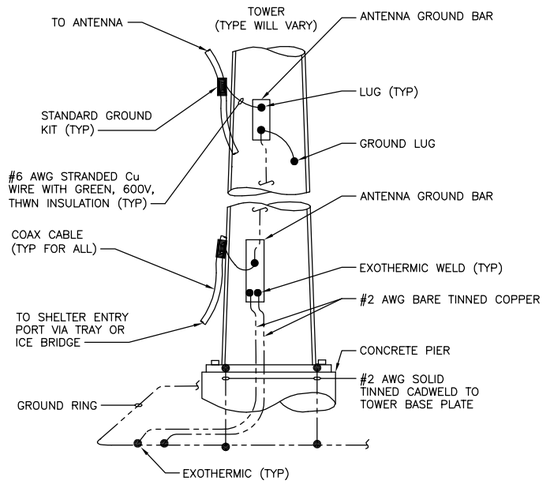
REV	DATE	DESCRIPTION
0	04/30/20	ISSUED FOR FILING

STATE OF CONNECTICUT · MARK P. STILES · 24358 · LICENSED PROFESSIONAL ENGINEER
05/01/2020

NORTH STONINGTON III (CT11796–S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
GROUNDING DETAILS

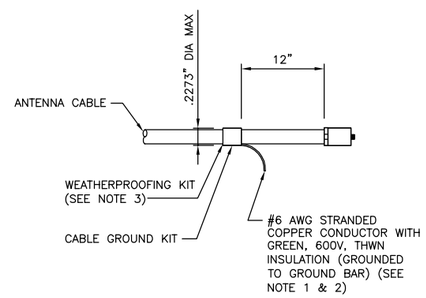
SHEET NUMBER
G-3



NOTE

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

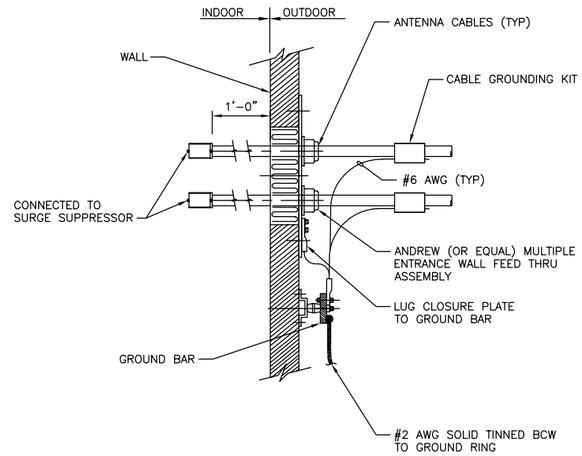
ANTENNA CABLE GROUNDING
NO SCALE



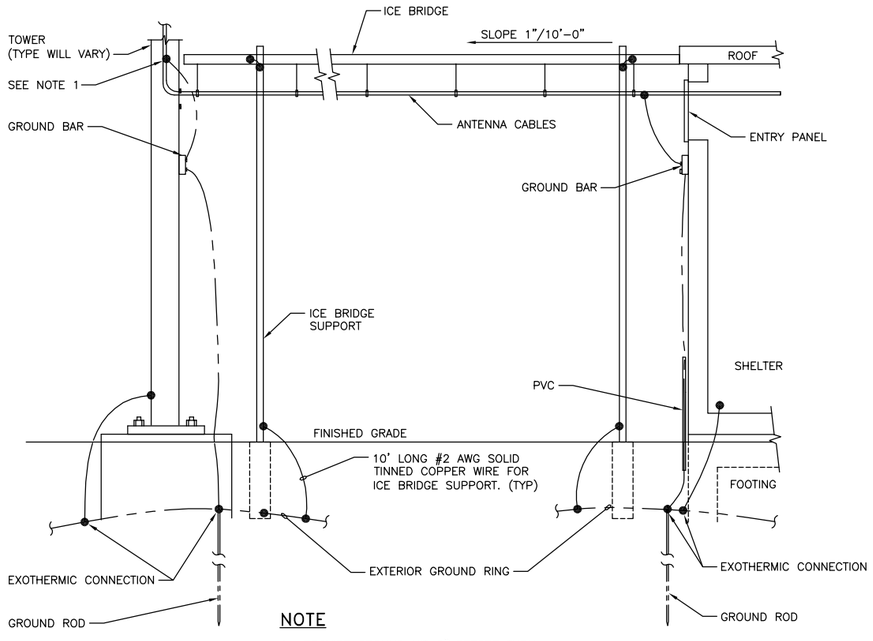
NOTES

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. 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



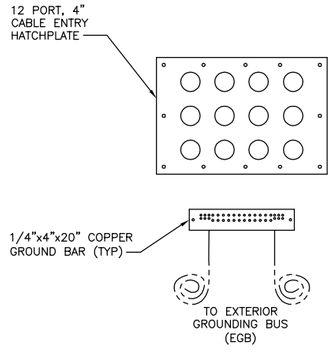
CABLE INSTALLATION WITH WALL FEED THRU ASSEMBLY
NO SCALE



NOTE

1. PROVIDE GROUND KIT 6" BEFORE TURN

ICE BRIDGE AND ANTENNA CABLE DETAIL
NO SCALE



HATCH PLATE GROUNDING AT SHELTER
NO SCALE

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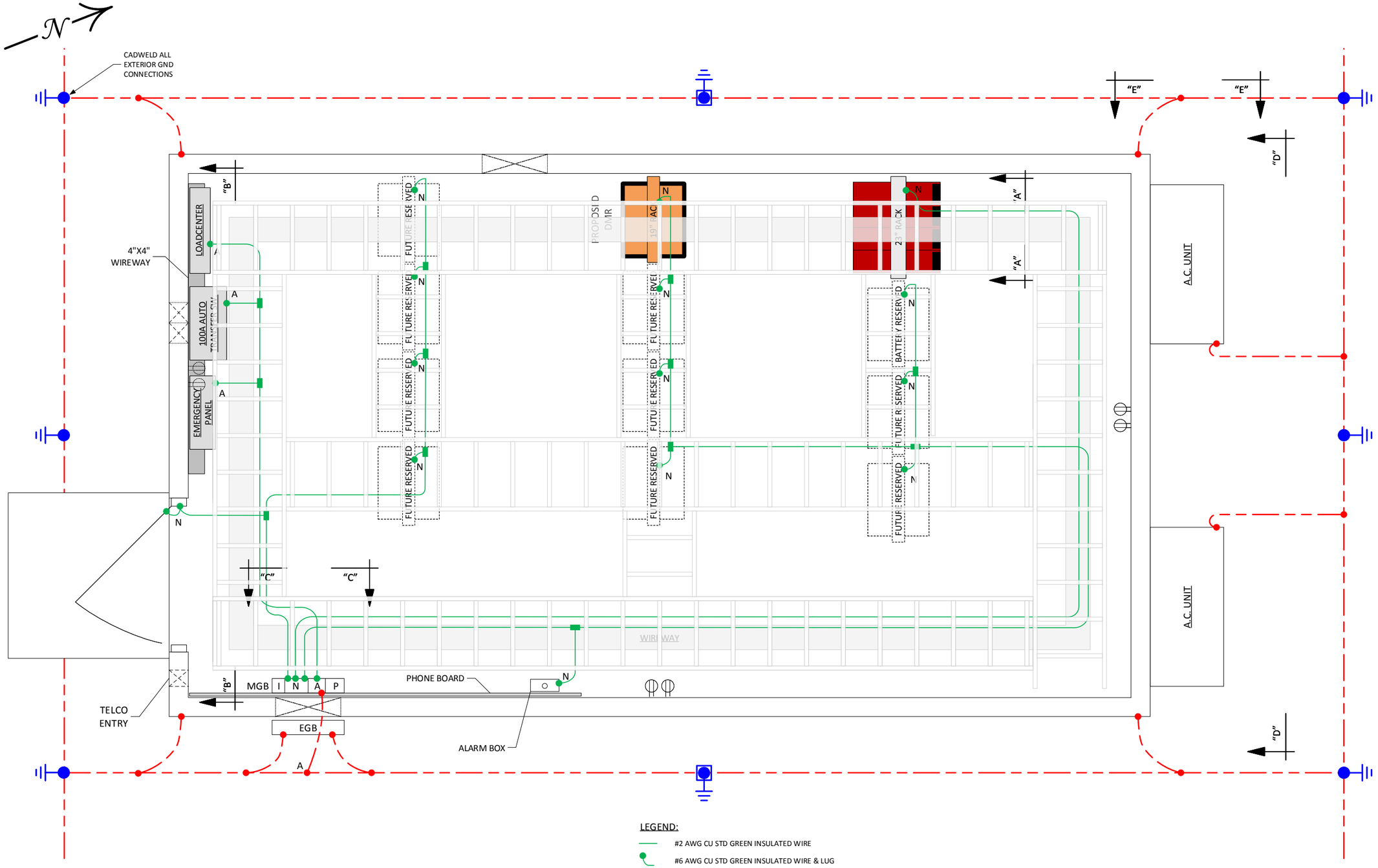
NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-4



LEGEND:

- #2 AWG CU STD GREEN INSULATED WIRE
- #6 AWG CU STD GREEN INSULATED WIRE & LUG
- IRREVERSABLE CRIMP
- EXOTHERMIC WELD CONNECTION
- COMPRESSION CONNECTION (TWO-HOLE LUG OR EQUIVALENT)
- EXTERIOR #2 AWG SOL NON-INSULATED WIRE
- GND ROD, EXOTHERMIC WELD CONNECTION
- GND ROD, EXOTHERMIC WELD CONNECTION WITH INSPECTION SLEEVE

ALL GROUNDING TO FOLLOW MOTOROLA R56 GUIDELINES
SEPARATE AND MARK GNDS USING "PANI" METHOD

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BERLIN, CT 06037

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PROJECT NO:	403093
DRAWN BY:	QDI
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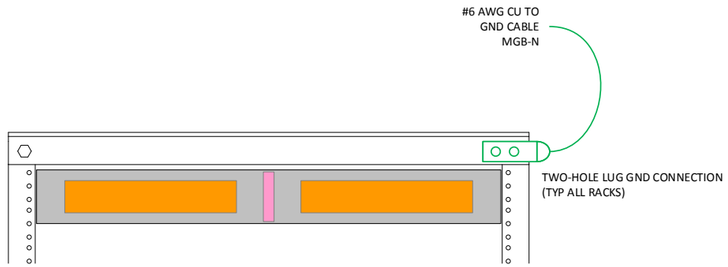
SITE NAME
ES-025 NORTH STONINGTON
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

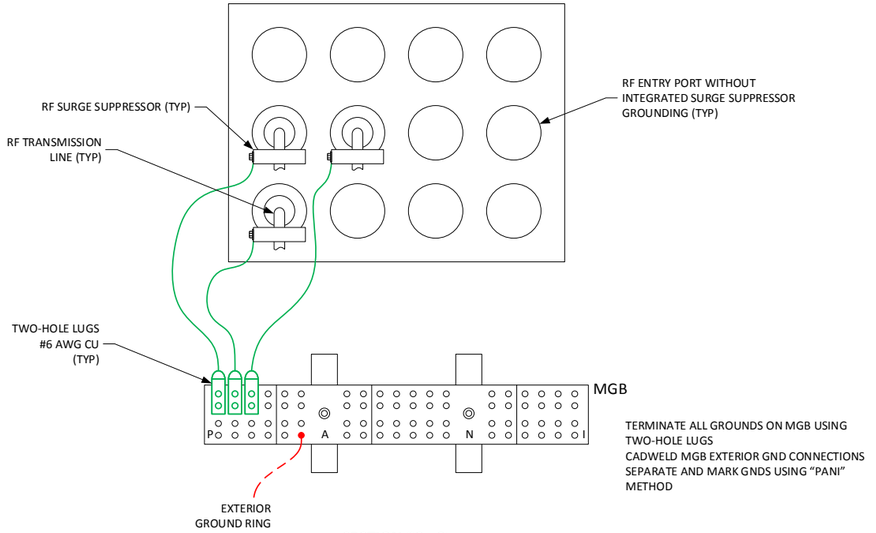
DRAWING TITLE
GROUNDING DESIGN DETAILS

DRAWING NUMBER
G- 5

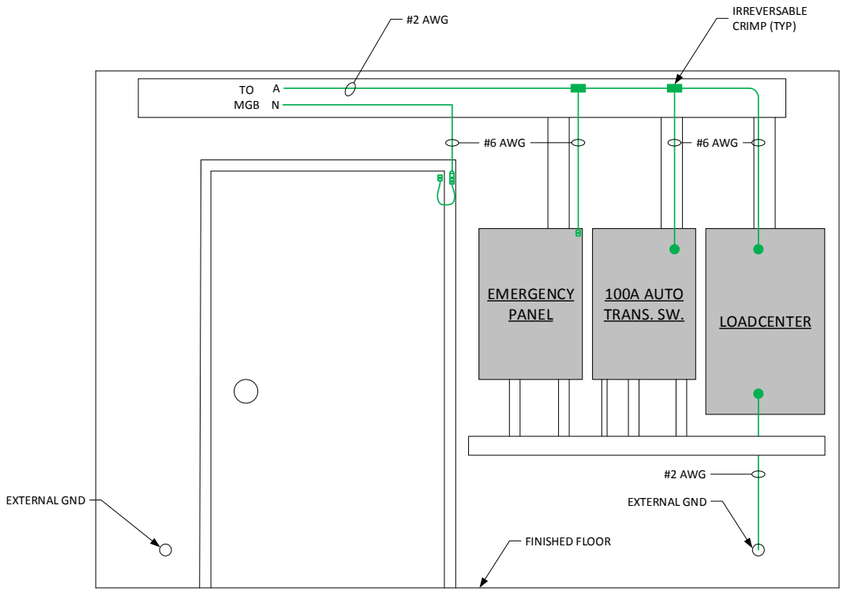
SHELTER INDOOR GROUNDING DETAILS



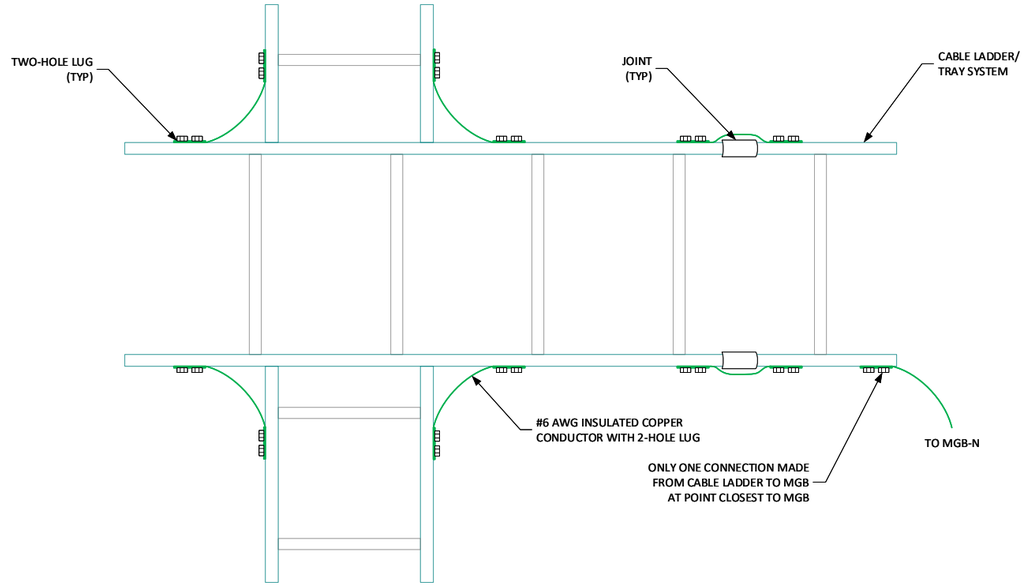
SECTION "A - A"
TYPICAL RACK GROUNDING DETAIL
DWG G-5
(NTS)



SECTION "C - C"
TYPICAL ENTRY PORT/GROUND BAR GROUNDING DETAILS
DWG G-5
NTS



SECTION "B - B"
TYPICAL EQUIPMENT GROUNDING DETAILS
DWG G-5
(NTS)



TYPICAL CABLE LADDER
GROUNDING DETAIL
(NTS)

LEGEND:

- #2 AWG CU STD GREEN INSULATED WIRE
- #6 AWG CU STD GREEN INSULATED WIRE & LUG
- IRREVERSABLE CRIMP
- EXTERIOR #2 STD AWG NON-INSULATED WIRE

NOTES:

1. PROVIDE FOR GROUNDING FOR ALL METAL WITHIN SITE. THIS INCLUDES GROUNDING TO ALL METALLIC CABINETS FOR AC, JUNCTION BOXES, RAILINGS, SHELTER FRAMES, CONDUIT,; SIMILAR TO DETAIL "A".

2. ALL LUG CONNECTIONS REQUIRE CLEAN, BARE METALLIC SURFACES, USING ANTIOXIDANT COMPOUND BETWEEN CONNECTIONS. DOUBLE LUG CONNECTIONS ARE NOT ACCEPTABLE. APPLY LOCKNUT OR STARED WASHERS TO APPROPRIATE BOLTED CONNECTIONS.

3. ALL GROUNDING TO FOLLOW MOTOROLA R56 GUIDELINES.

EVERSOURCE ENERGY
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PHONE: (913) 458-3595

PROJECT NO:	403093
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STATE OF CONNECTICUT
MARK P. STILES
24358
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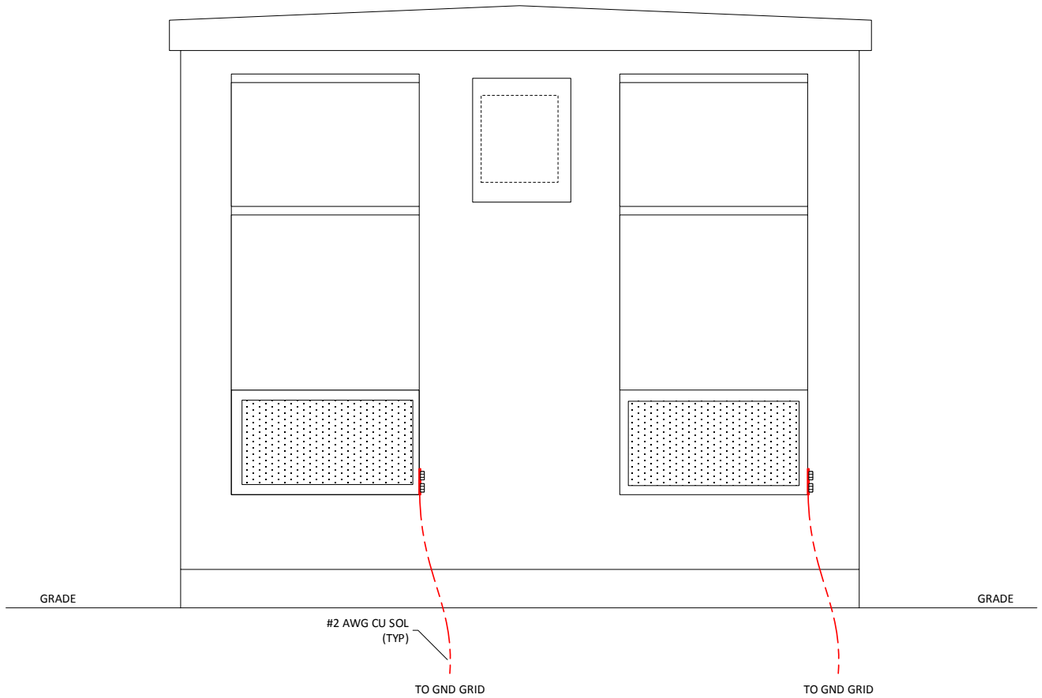
SITE NAME
ES-025 NORTH STONINGTON
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

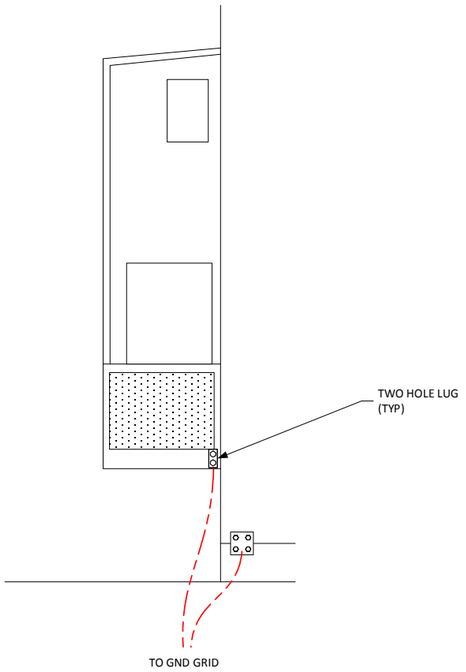
DRAWING TITLE
GROUNDING DESIGN DETAILS

DRAWING NUMBER
G- 6

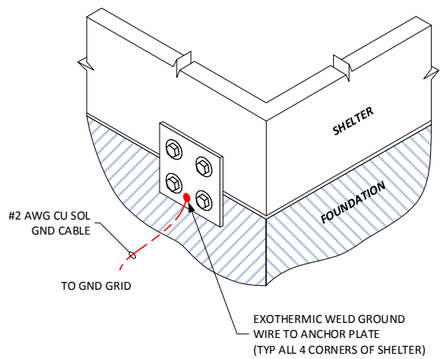
SHELTER OUTDOOR GROUNDING DETAILS



SECTION "D - D"
DWG G-5
(NTS)



SECTION "E - E"
DWG G-5
(NTS)



DETAIL A
SHELTER FOUNDATION ATTACHEMENT
(NTS)

LEGEND:

———— EXTERIOR #2 AWG SOL NON-INSULATED WIRE

NOTES:

1. PROVIDE FOR GROUNDING FOR ALL METAL WITHIN SITE. THIS INCLUDES GROUNDING TO ALL METALLIC CABINETS FOR AC, JUNCTION BOXES, RAILINGS, SHELTER FRAMES, CONDUIT.

2. ALL LUG CONNECTIONS REQUIRE CLEAN, BARE METALLIC SURFACES, USING ANTIOXIDANT COMPOUND BETWEEN CONNECTIONS. DOUBLE LUG CONNECTIONS ARE NOT ACCEPTABLE. APPLY LOCKNUT OR STARED WASHERS TO APPROPRIATE BOLTED CONNECTIONS.

3. ALL GROUNDING TO FOLLOW MOTOROLA R56 GUIDELINES.

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037

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6800 W 115TH ST, SUITE 2292
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STATE OF CONNECTICUT
MARK P. STILES
24358
LICENSED
PROFESSIONAL ENGINEER

05/01/2020

SITE NAME

ES-025 NORTH STONINGTON
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

DRAWING TITLE

GROUNDING DESIGN DETAILS

DRAWING NUMBER

G- 7

DESIGN BASIS

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

GENERAL CONDITIONS

1. 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.

2. 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.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL PERMITS, INSPECTIONS, TESTING AND CERTIFICATES NEEDED FOR LEGAL OCCUPANCY OF THE FINISHED PROJECT.

4. 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.

5. DETAILS INCLUDED IN THIS PLAN SET ARE TYPICAL AND APPLY TO SIMILAR CONDITIONS.

6. 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.

7. 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.

8. THE CONTRACTOR SHALL SAFEGUARD AGAINST: CREATING A FIRE HAZARD, AFFECTING TENANT EGRESS OR COMPROMISING BUILDING SITE SECURITY MEASURES.

9. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND CONSTRUCTION WASTE FROM THE SITE EACH DAY. WORK AREAS SHALL BE SWEPT AND MADE CLEAN AT THE END OF EACH WORK DAY.

10. THE CONTRACTOR'S HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY OWNER.

11. 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

1. 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.

2. 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.

3. FIRESTOPPING SHALL BE APPLIED AS SOON AS PRACTICABLE AFTER PENETRATIONS ARE MADE AND EQUIPMENT INSTALLED.

4. 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.

5. 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.

6. ALL PENETRATIONS INTO AND/OR THROUGH BUILDING EXTERIOR WALLS SHALL BE SEALED WITH SILICONE SEALER.

7. 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.

8. CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

SUBMITTALS

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.

2. CONTRACTOR TO NOTIFY ENGINEER FOR INSPECTION PRIOR TO CLOSING PENETRATIONS.

3. 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.

4. 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.

5. 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

1. ALL CONCRETE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE (ACI) CODES 301 & 318, LATEST REVISION.

2. FOUNDATION WORK SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DESIGNS AND SPECIFICATIONS.

3. 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.

4. 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).

5. 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

6. 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.

7. CONCRETE SHALL REPLACED IN A UNIFORM MANNER AND CONSOLIDATED IN PLACE.

8. CONCRETE FOOTINGS SHALL BE CAST AGAINST LEVEL, COMPACTED, NON-FROZEN BASE SOIL FREE OF STANDING WATER.

STEEL

1. 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.

2. 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.

3. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC "MANUAL OF STEEL CONSTRUCTION" 13TH EDITION.

4. 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.

5. ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

6. TOWER MANUFACTURER'S DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS

1. 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.

2. DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MIN).

3. ALL BUILDING CONNECTION POINTS ARE TO BE CENTERED OVER BEARING WALLS

4. 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.

5. NUT LOCKING DEVICES ARE REQUIRED FOR ALL BOLT ASSEMBLIES.

6. 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.

7. 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."

8. 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.

9. USE THE LARGER OF 1/4 INCH FILLET WELDS OR MINIMUM SIZE PER AISC REQUIREMENTS WHERE NO WELD SIZE IS SHOWN ON THE DRAWINGS.

10. ALL ARC AND GAS WELDING SHALL BE DONE BY LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AMERICAN WELDING SOCIETY.

11. 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 REPAIRED.

12. USE PRECAUTIONS AND PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED METALS.

SITE GENERAL

1. CONTRACTOR SHALL FOLLOW CONDITIONS OF ALL APPLICABLE PERMITS AND WORK IN ACCORDANCE WITH OSHA REGULATIONS.

2. 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.

3. 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.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. 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.

6. CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING STRUCTURES OR UTILITIES DAMAGED DURING CONSTRUCTION.

7. 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.

8. 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.

9. 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.

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STATE OF CONNECTICUT · JOSHUA J. RILEY · 33208 · LICENSED PROFESSIONAL ENGINEER
05/01/2020

NORTH STONINGTON III (CT11796-S)
350B COSSADUCK HILL ROAD
NORTH STONINGTON, CT 06359

SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
N-1

EXCAVATION

1. 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:VERITICAL), UNLESS NOTED OTHERWISE. SEDIMENTATION AND EROSION CONTROLS SHOWN AND SPECIFIED SHALL BE ESTABLISHED BEFORE STRIPPING EXISTING VEGETATION.
2. ORGANIC MATERIAL AND DEBRIS SHALL BE STRIPPED AND STOCKPILED BEFORE ADDING FILL MATERIAL.
3. 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.
4. 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.
5. EXCAVATIONS FOR FOOTINGS SHALL BE CUT LEVEL TO THE REQUIRED DEPTH AND TO UNDISTURBED SOIL. REPORT UNSUITABLE SOIL CONDITIONS TO THE CONSTRUCTION MANAGER.
6. TRENCH EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH DAY.
7. SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE.
8. TOWER FOUNDATION EXCAVATION, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH THE TOWER MANUFACTURER'S DESIGNS AND SPECIFICATIONS.

MATERIAL

1. 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.
2. 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.
3. 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.

	PERCENT PASSING BY WEIGHT		
SQUARE	BANK GRAVEL	BANK GRAVEL	PROCESSED
MESH	FILL	BASE	AGG BASE
SIEVES		100	
PASS 5"		100	90–100
PASS 3 1/2"		100	
PASS 2 1/4"		95–100	
PASS 2"		55–100	
PASS 1 1/2"			
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	

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

ELECTRICAL

1. CONTRACTOR SHALL VERIFY EXISTING ELECTRIC SERVICE TYPE AND CAPACITY AND ORDER NEW ELECTRIC SERVICE FROM LOCAL ELECTRIC UTILITY, WHERE APPLICABLE.
2. 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.
3. 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.
4. ALL ELECTRICAL CONDUCTORS SHALL BE 100% COPPER AND SHALL HAVE TYPE THHN INSULATION UNLESS INDICATED OTHERWISE.
5. CONDUIT SHALL BE THREADED RIGID GALVANIZED STEEL OR EMT WITH ONLY COMPRESSION TYPE COUPLINGS AND CONNECTORS, ALL MADE UP WRENCH TIGHT.
6. ALL BURIED CONDUIT SHALL BE MINIMUM SCH 40 PVC UNLESS NOTED OTHERWISE, OR AS PER LOCAL CODE REQUIREMENTS.
7. 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.
8. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR BONDED TO ALL ENCLOSURES, PULLBOXES, ETC.
9. CONDUIT AND CABLE WITHIN CORRIDORS SHALL BE CONCEALED AND EXPOSED ELSEWHERE, UNLESS NOTED OTHERWISE.
10. 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.
11. WIRING DEVICES SHALL BE SPECIFICATION GRADE, AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED.
12. 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.
13. 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.
14. THE CONTRACTOR SHALL BE REQUIRED TO VISIT THE SITE PRIOR TO SUBMITTING BID IN ORDER TO DETERMINE THE EXTENT OF THE EXISTING CONDITIONS.
15. ALL CONDUCTOR ENDS SHALL BE TAGGED AND ELECTRICAL EQUIPMENT LABELED WITH ENGRAVED IDENTIFICATION PLATES.
16. CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING AND ALARM TIE–INS.

GROUNDING

1. #6 THWN SHALL BE STRANDED #6 COPPER WITH GREEN THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
2. #2 THWN SHALL BE STRANDED #2 COPPER WITH THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
3. #2 BARE TINNED SHALL BE SOLID COPPER TINNED. ALL BURIED WIRE SHALL MEET THIS CRITERIA.
4. 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).
5. 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.
6. 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–BELEVILE WASHER–NUT.
7. 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.
8. THE MINIMUM BEND RADIUS SHALL BE 8 INCHES FOR #6 WIRE AND SMALLER AND 12 INCHES FOR WIRE LARGER THAN #6.
9. ALL CONNECTIONS TO THE GROUND RING SHALL BE EXOTHERMIC WELD.
10. BOND THE FENCE TO THE GROUND RING AT EACH CORNER, AND AT EACH GATE POST WITH #2 SOLID TINNED WIRE. EXOTHERMIC WELD BOTH ENDS.
11. GROUND KITS SHALL BE SOLID COPPER STRAP WITH #6 WIRE 2–HOLE COMPRESSION CRIMPED LUGS AND SHALL BE SEALED ACCORDING TO MANUFACTURER INSTRUCTIONS.
12. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL BE USED.
13. 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.
14. MGB GROUND CONNECTION SHALL BE EXOTHERMIC WELDED TO THE GROUND SYSTEM.
15. ALL CABLE TRAY AND/OR PLATFORM STEEL SHALL BE BONDED TOGETHER WITH JUMPERS (#6 IN EQUIPMENT ROOM, #2 ELSEWHERE AND HOMERUN).

CABLE TRAY

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

ANTENNA & CABLE NOTES

1. 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.
2. 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.
3. 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.
4. 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.
5. MINIMUM BENDING RADIUS FOR COAXIAL CABLES:
   – 7/8 INCH, RMIN = 15 INCHES
   – 1 5/8 INCH, RMIN = 25 INCHES
6. 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.
7. ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WATERPROOF SPLICING KIT.
8. CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.
9. CABLE SHALL BE FURNISHED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

TYPICAL WOVEN WIRE FENCING NOTES

1. INSTALL FENCING PER ASTM F567, SWING GATES PER ASTM F900.
2. 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.
3. LINE POST: 2 INCH DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
4. GATE FRAME: 1 1/2 INCH DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
5. TOP RAIL AND BRACE RAIL: 1 1/2 DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
6. FABRIC: 12 GA CORE WIRE SIZE 2 INCH MESH, CONFORMING TO ASTM A392.
7. 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.
8. TENSION WIRE: 7 GA GALVANIZED STEEL.
9. 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.
10. GATE LATCH: DROP DOWN LOCKABLE FORK LATCH AND LOCK, KEYED ALIKE FOR ALL SITES.
11. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED IF REQUIRED.
12. HEIGHT = 6 FEET VERTICAL + 1 FOOT BARBED WIRE VERTICAL DIMENSION.

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SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
N-2

SYMBOLS

●	EXOTHERMIC CONNECTION
■	COMPRESSION CONNECTION
	5/8"ø x 10'-0" COPPER CLAD STEEL GROUND ROD.
	TEST GROUND ROD WITH INSPECTION SLEEVE
	GROUNDING CONDUCTOR
(A)	KEY NOTES
CHAINLINK FENCE	X X X X X
WOOD FENCE	
LEASE AREA	
ICE BRIDGE	
CABLE TRAY	
GAS LINE	G G G G G
UNDERGROUND ELECTRICAL/TELCO	E/T E/T E/T E/T
UNDERGROUND ELECTRICAL/CONTROL	E/C E/C E/C E/C
UNDERGROUND ELECTRICAL	E E E E E
UNDERGROUND TELCO	T T T T T
PROPERTY LINE (PL)	

ABBREVIATIONS

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

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SHEET TITLE

NOTES
& SPECIFICATIONS

SHEET NUMBER

N-3

REFERENCE CUTSHEETS

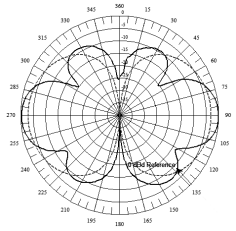
VHF Omni Antennas (160-222 MHz)

		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	
ELECTRICAL	**Power**, Watts	500		500		350		500		500		500		350		350	
ELECTRICAL	**Gain**, dBd	3		6		3		0		3		6		0		3	
ELECTRICAL	**Horizontal Beamwidth**, degrees	360		360		360		360		360		360		360		360	
ELECTRICAL	**Vertical Beamwidth**, degrees	30		16		30		60		30		16		60		30	
ELECTRICAL	**Beam Tilt**, degrees	0		0		0		0		0		0		0		0	
ELECTRICAL	**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	
MECHANICAL	**Flat Plate Area**, ft²(m²)	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)	
MECHANICAL	**Lateral Windload Thrust**, lbf(N)	95 (423)		164 (730)		169 (752)		53 (236)		69 (307)		108 (480)		90 (400)		169 (752)	
MECHANICAL	**Survival Wind Speed**																
MECHANICAL	**without ice**, mph(kph)	110 (177)		75 (121)		75 (121)		222 (357)		172 (277)		110 (177)		130 (209)		75 (121)	
MECHANICAL	**with 0.5" radial ice**, mph(kph)	93 (150)		60 (97)		65 (105)		193 (311)		150 (241)		96 (154)		115 (185)		65 (105)	
MECHANICAL	**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)	
DIMENSIONS	**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)	
DIMENSIONS	**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)	
DIMENSIONS	**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)	
DIMENSIONS	**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)	

DS2C00F36D-D

VERTICAL PATTERNS

DS1G03F36U-N
DS1G03F36U-D



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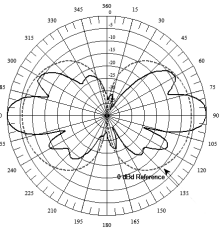

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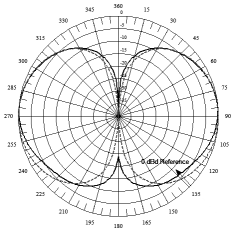
DS2C00F36U-D



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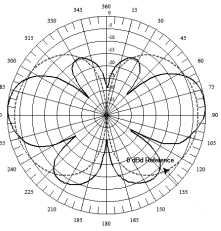

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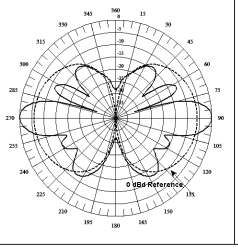

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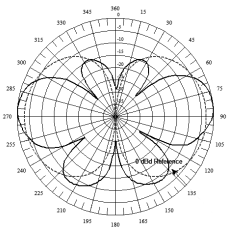

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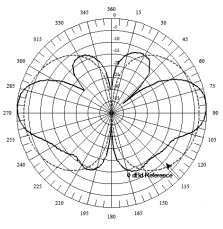

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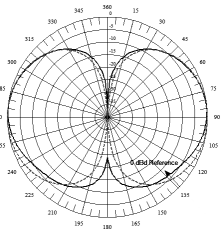

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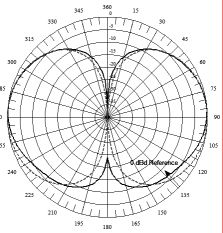

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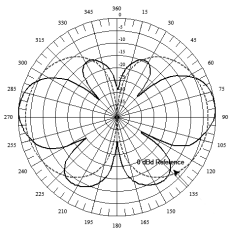

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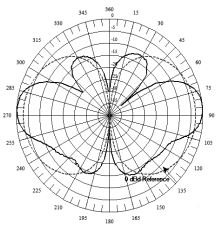
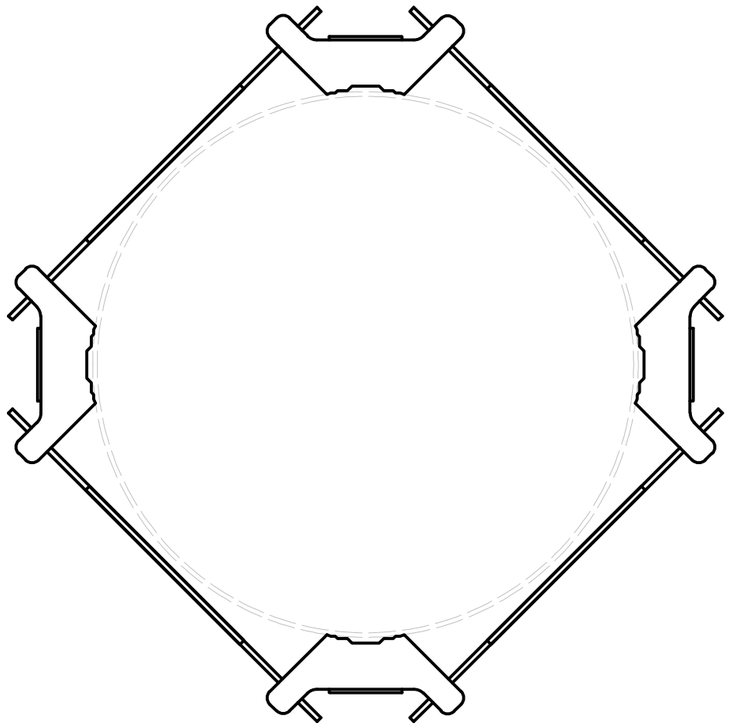
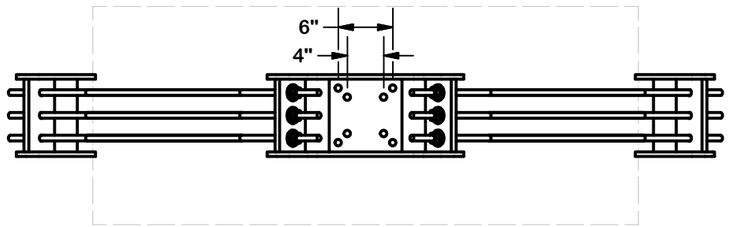


Bottom

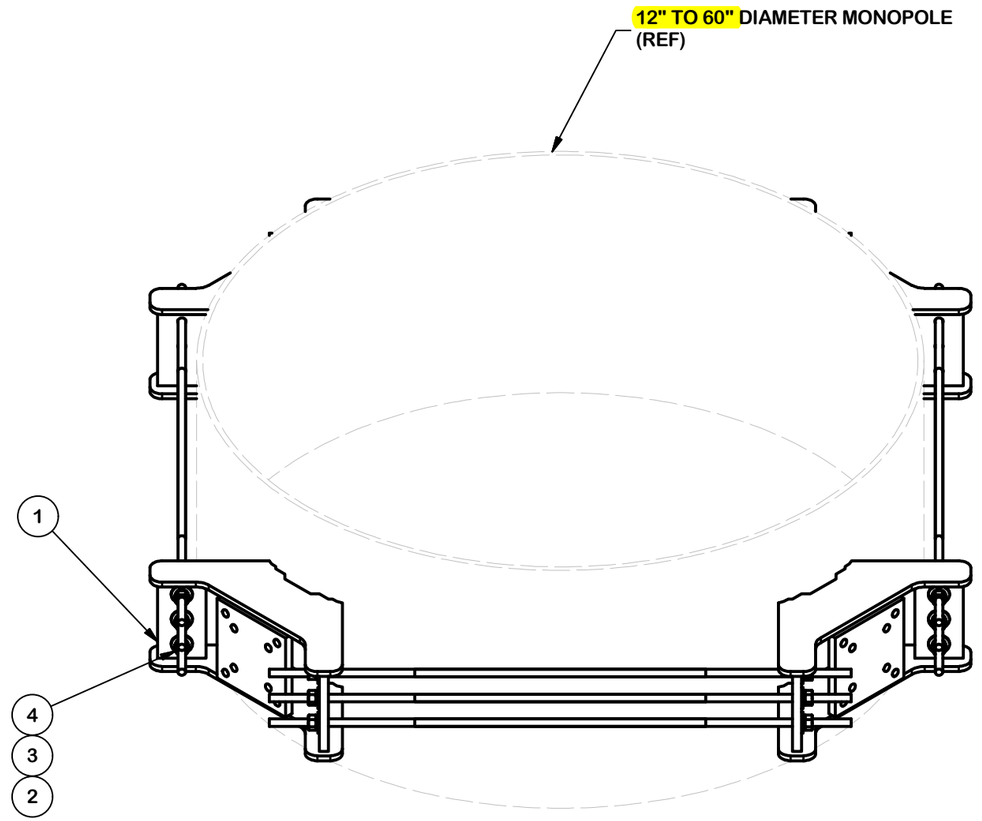
TOWER/MAST SIZE AT PROPOSED ANTENNA ATTACHMENT = 41 1/2" ± DIAMETER.





PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	4	X-UQB4	QUAD BRACKET WELDMENT		61.57	246.27
2	24	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.69
3	24	G58LW	5/8" HDG LOCKWASHER		0.03	0.63
4	24	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.12
5	12	G58R-48	5/8" X 48" THREADED ROD (HDG.)		4.43	53.19
6	12	G58R-24	5/8" X 24" THREADED ROD (HDG.)		2.22	26.60
					TOTAL WT. #	351.38



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	UQB4 revised to meet modern loading	4863	JET	6/3/2019

REVISION HISTORY

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")

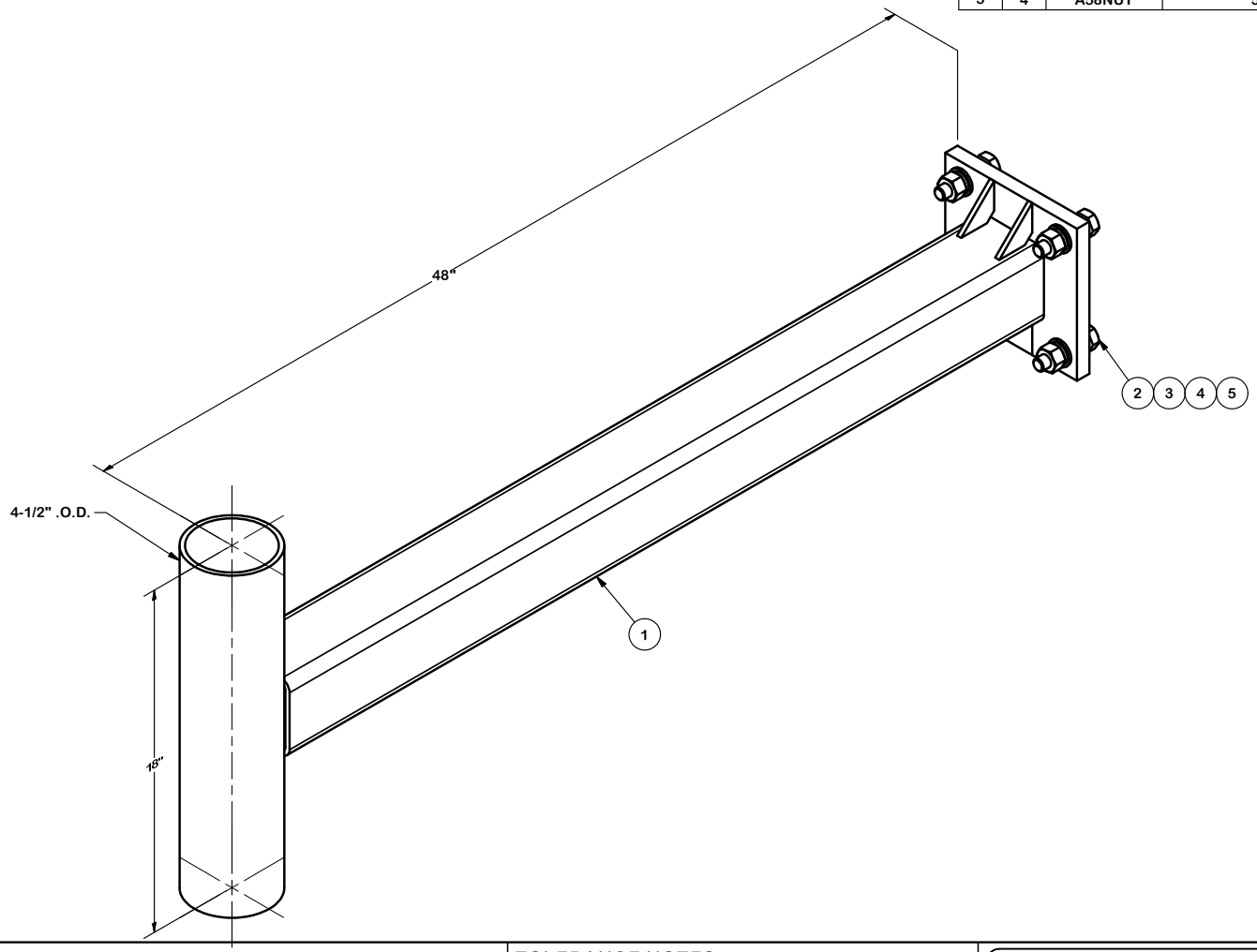
DESCRIPTION
QUAD UNIVERSAL RING MOUNT
FOR POLES 12" TO 60"
(UQB4)

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	PART NO.	PAGE
4893	CEK 9/20/2010		UQB4	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 9/20/2010	UQB4

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-SV197-48	SUPPORT ARM WELDMENT - 36"		76.32	76.32
2	4	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT		0.36	1.42
3	4	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.14
4	4	G58LW	5/8" HDG LOCKWASHER		0.03	0.10
5	4	A58NUT	5/8" HDG A325 HEX NUT		0.13	0.52
					TOTAL WT. #	78.50



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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")*

DESCRIPTION: 48" SUPPORT ARM

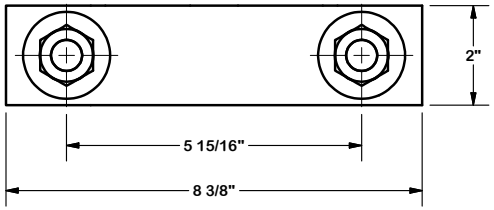
SITE PRO 1 — A valmont COMPANY

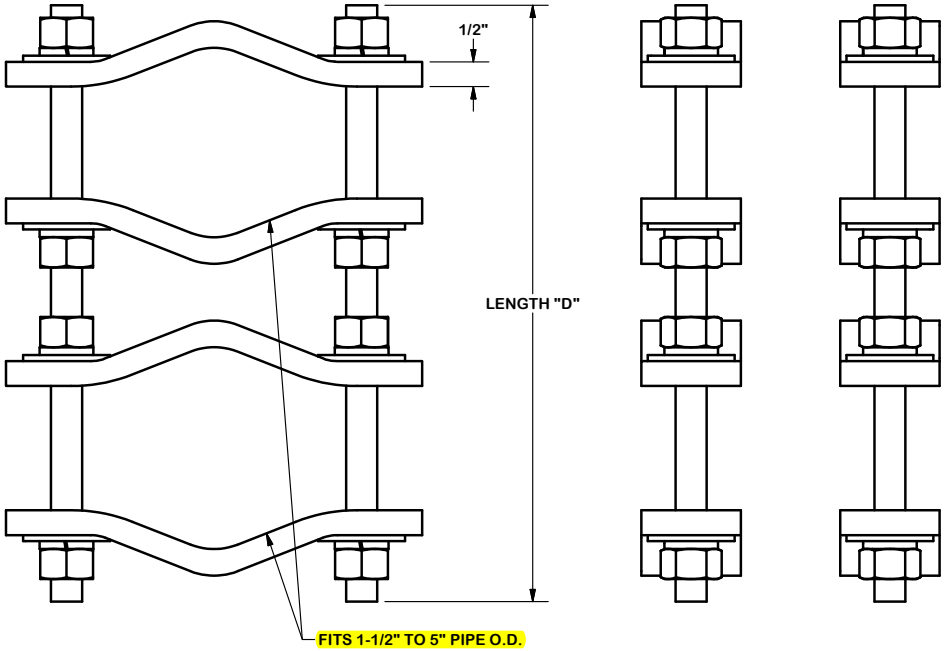
Engineering Support Team: 1-888-753-7446

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
4470	CEK 4/14/2011		SV197-48	1 OF 1

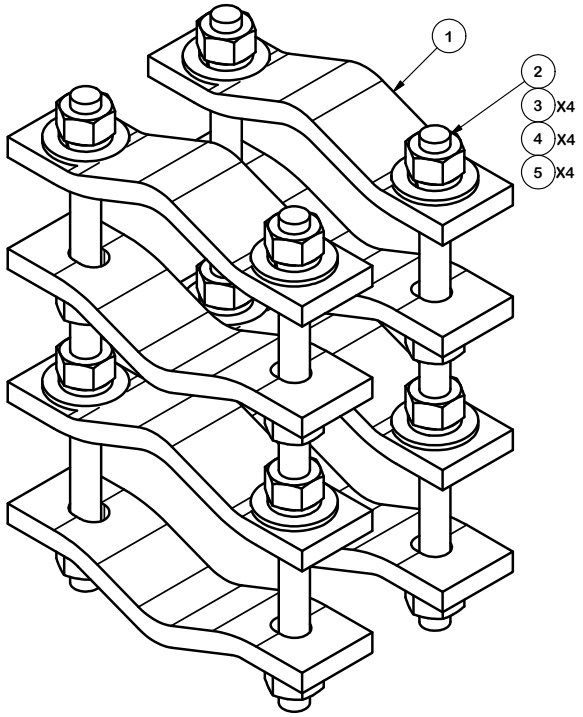
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 4/14/2011	SV197-48





PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	DCP	CLAMP HALF, 1/2" THICK, 8-3/8"		2.40	19.20
2	B	C	5/8" THREADED ROD	D	E	F
3	16	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	2.08
4	16	G58LW	5/8" HDG LOCKWASHER		0.03	0.42
5	16	G58FW	5/8" HDG USS FLATWASHER		0.07	1.13

VARIABLE PARTS TABLE						
ASSEMBLY "A"	QTY "B"	PART "C"	LENGTH "D"	UNIT WT. "E"	NET WT. "F"	TOTAL WEIGHT
DCP12K	4	G58R-12	12"	1.05	4.18	27.01
DCP18K	4	G58R-18	18"	1.57	6.27	29.10



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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")*

DESCRIPTION
PIPE TO PIPE CLAMP SET
1-1/2" TO 5" PIPE
1/2" THICK CLAMP

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	PART NO.	PAGE
	KC8 8/21/2012		SEE ASSEMBLY "A"	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	CEK 1/22/2013	DCPxxK

KOHLER®

Model: 24RCL

Multi-Fuel
Natural Gas/LPG

ISO 9001 KOHLER® NATIONALLY REGISTERED

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

				Standby Ratings			
				Natural Gas		LPG	
Alternator	Voltage	Ph	Hz	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_2O)	1.24–2.74 (5-11) ~0.18 psi 0.4 psi
LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24–2.74 (5-11)

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/m^3 (0.075 lbm/ft^3)

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/m^3 (1000 Btu/ft^3)
LP Vapor, 93 MJ/m^3 (2500 Btu/ft^3)

LP vapor conversion factors:
8.58 $ft.^3$ = 1 lb.
0.535 m^3 = 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.

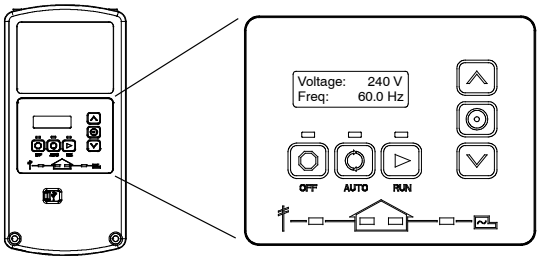
Sound Data

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.

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

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

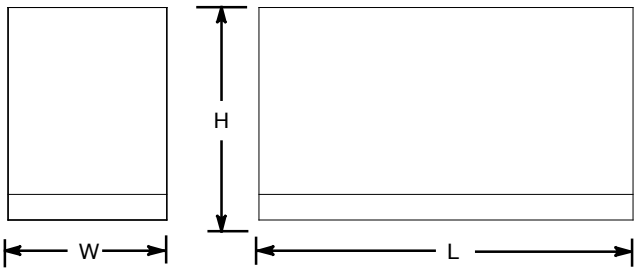
Other Options

❑ _____
❑ _____

Dimensions and Weights

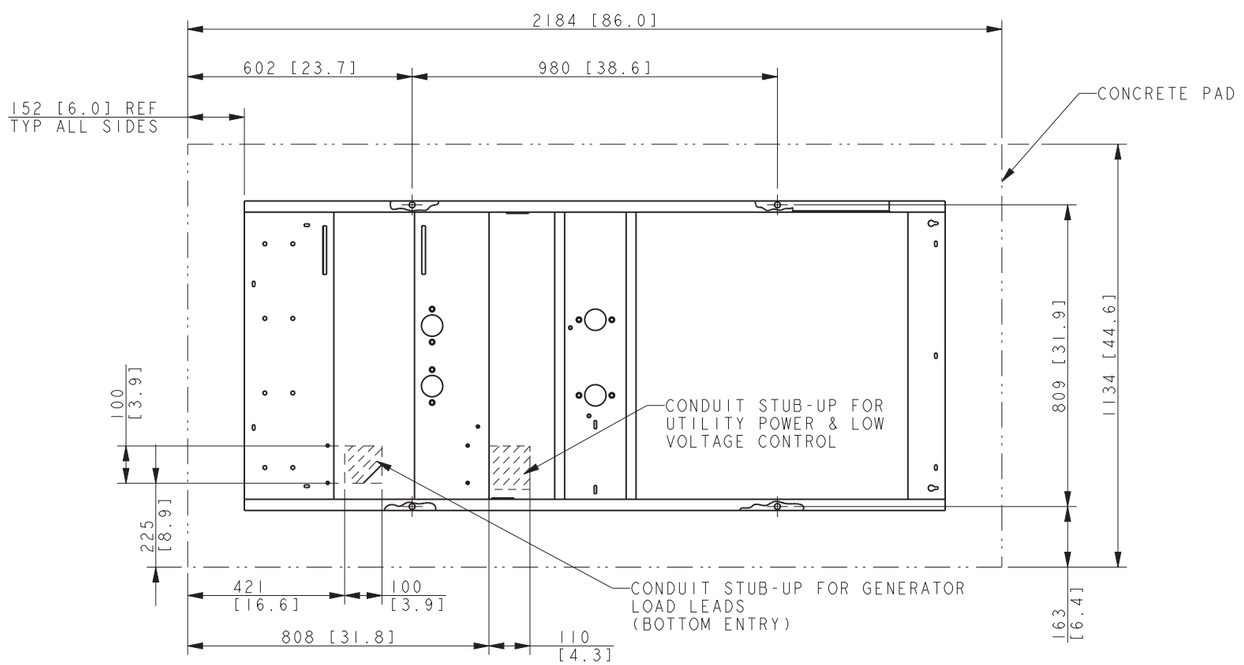
Overall Size, L x W x H, mm (in.):	1880 x 836 x 1169 (74 x 32.9 x 46.0)
Shipping Weight, wet, kg (lb.):	572 (1260)

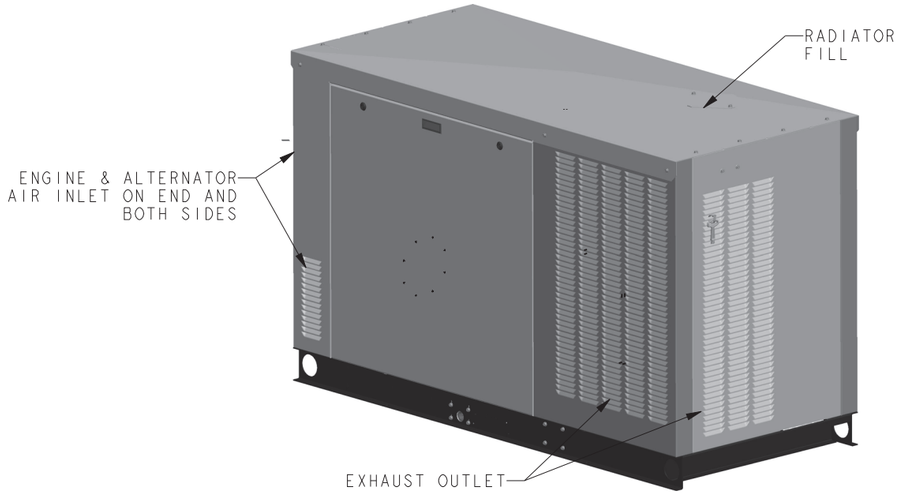
Weight includes generator set with engine fluids, sound enclosure, silencer, and packaging.



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:





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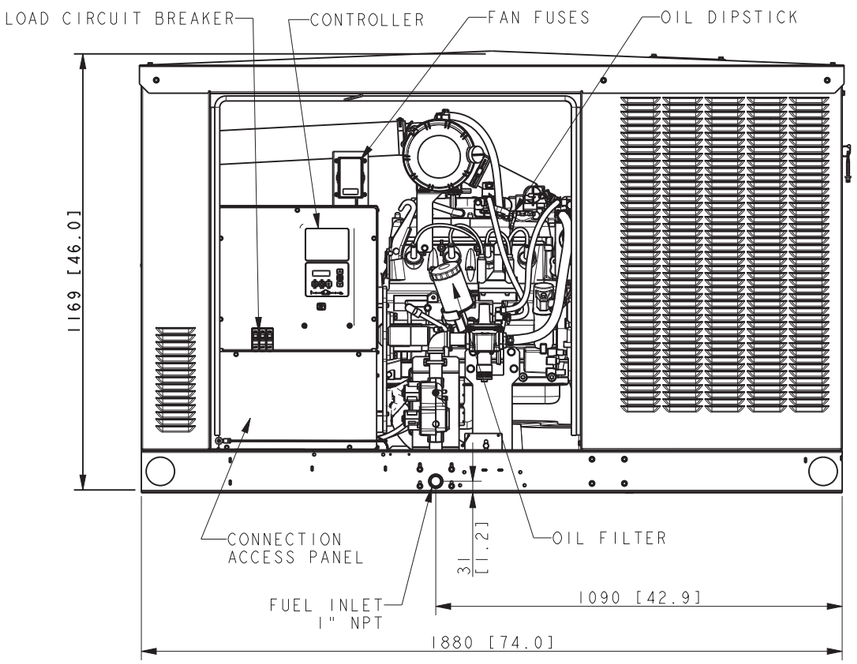
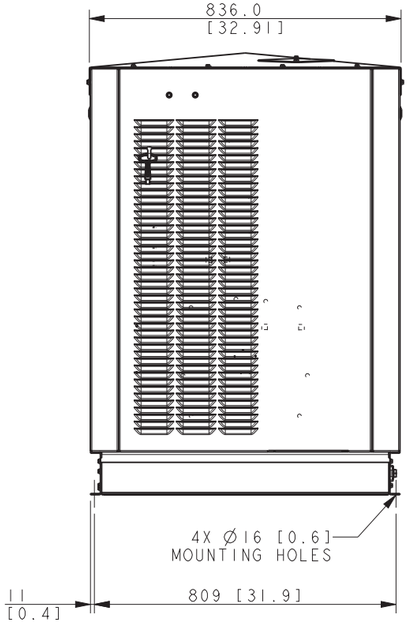
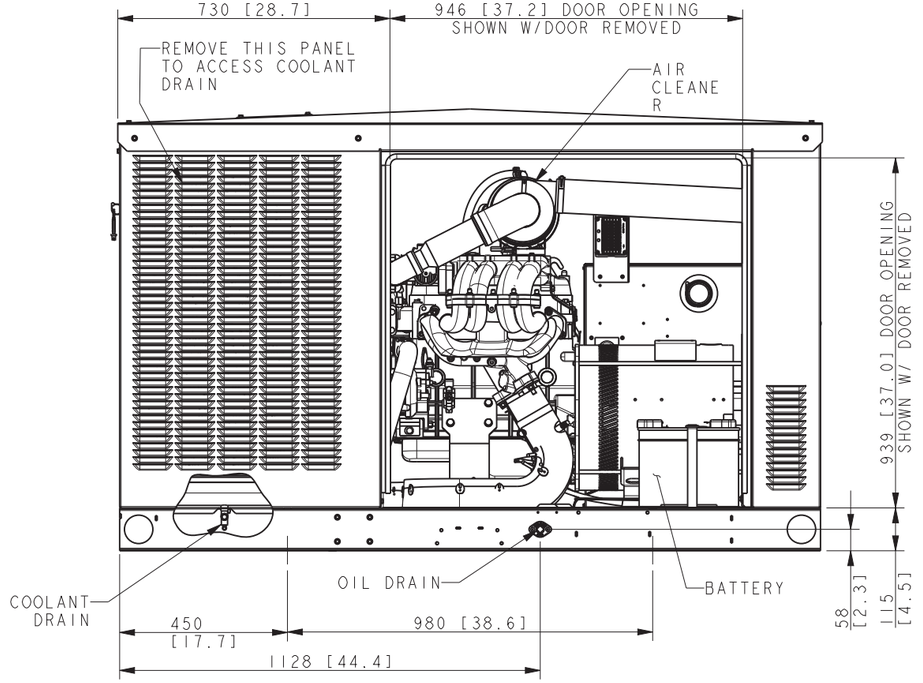






NOTE: DIMENSIONS IN [ ] ARE ENGLISH STANDARD EQUIVALENTS.

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	10-31-13	NEW DRAWING [CT79277]	DRA
A	6-3-14	(C-8) 225 WAS 211, 100 WAS 123, (C-7) 421 WAS 392, 100 WAS 216 [CT83066]	DRA
B	6-10-15	UPDATED VIEWS TO SHOW CROSS BENT, PITCHED ROOF [CT115573]	BGP
C	2-25-19	SEE SHEET 2 [CT193814]	HM

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN DRA	10-31-13
CHECKED GFR	10-31-13
APPROVED JJR	10-31-13

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
DIMENSION PRINT

SCALE 0.13 | CAD NO. | SHEET 1 of 2
DWG NO. ADV-8641 | D

24RCL

ATTACHMENT D – STRUCTURAL ANALYSIS

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 189 ft. Sabre Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT11796-S

Customer Site Name: North Stonington 3

Carrier Name: Connecticut Light & Power (App#: 106328 V5)

Carrier Site ID / Name: ES-025 / N Stonington III

Site Location: 350B Cossaduck Hill Road

North Stonington, Connecticut

New London County

Latitude: 41.499233

Longitude: -71.889522

Analysis Result:

Max Structural Usage: 68.2% [Pass]

Max Foundation Usage: 55.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Billy Davis

Introduction

The purpose of this report is to summarize the analysis results on the 189 ft. Sabre Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Sabre Industries (Job No. 57617), dated March 26, 2012
Foundation Drawing	Sabre Industries (Job No. 57617), dated March 26, 2012
Geotechnical Report	Tower Engineering Professionals (Project No. 121203.10), dated March 9, 2012
Modification Drawings	Previous SA: FDH Engineering, Inc. (Job # 1466LL1400), dated 06/04/2014

Analysis Criteria

The comprehensive analysis was performed in accordance with the requirements and stipulations of the TIA-222-H**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	126.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Service Load Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-H / 2018 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	S_S = 0.188, S_1 = 0.053

This structural analysis is based upon the tower being classified as a Risk Category II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	186.0	12	Cci HPA-65R-BUU-H8 - Panel	Platform w/ Hand Rail	(8) 3/8" DC (3) 3/8" RET (2) 5/8" fiber	AT&T
2		9	Ericsson RRUS-11			
3		3	Ericsson RRUS-E2			
4		3	Ericsson RRUS-32			
5		6	Ericsson RRUS-12			
6		6	Ericsson A2			
7		4	Raycap DC6-48-60-18-8F			
8	178.0	6	Antel BXA-70063-6CF - Panel	Low Profile Platform	(2) 1 5/8"	Verizon
9		6	Antel BXA171063-12CF - Panel			
10		6	ALU RRH2x40-07-U			
11		3	ALU RRH2x40-AWS			
12		1	RFS DB-T1-6ZX-8AB-0Z			

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
13	145.0	1	dbSpectra DS2C00-F-36-B	(1) Site Pro SV197-48 (Side Arm) @ 138' (1) Site Pro UQB4 (Universal Ring Mount) @ 138'	(2) 7/8" Coax	Connecticut Light & Power

See the attached coax layout for the line placement considered in the analysis.

A**nalysis Results**

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**68.2%**	**63.4%**	**66.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	5112.7	39.1	71.4

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Service Load Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-H for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.3807 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-H Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 68.20% at 142.5ft

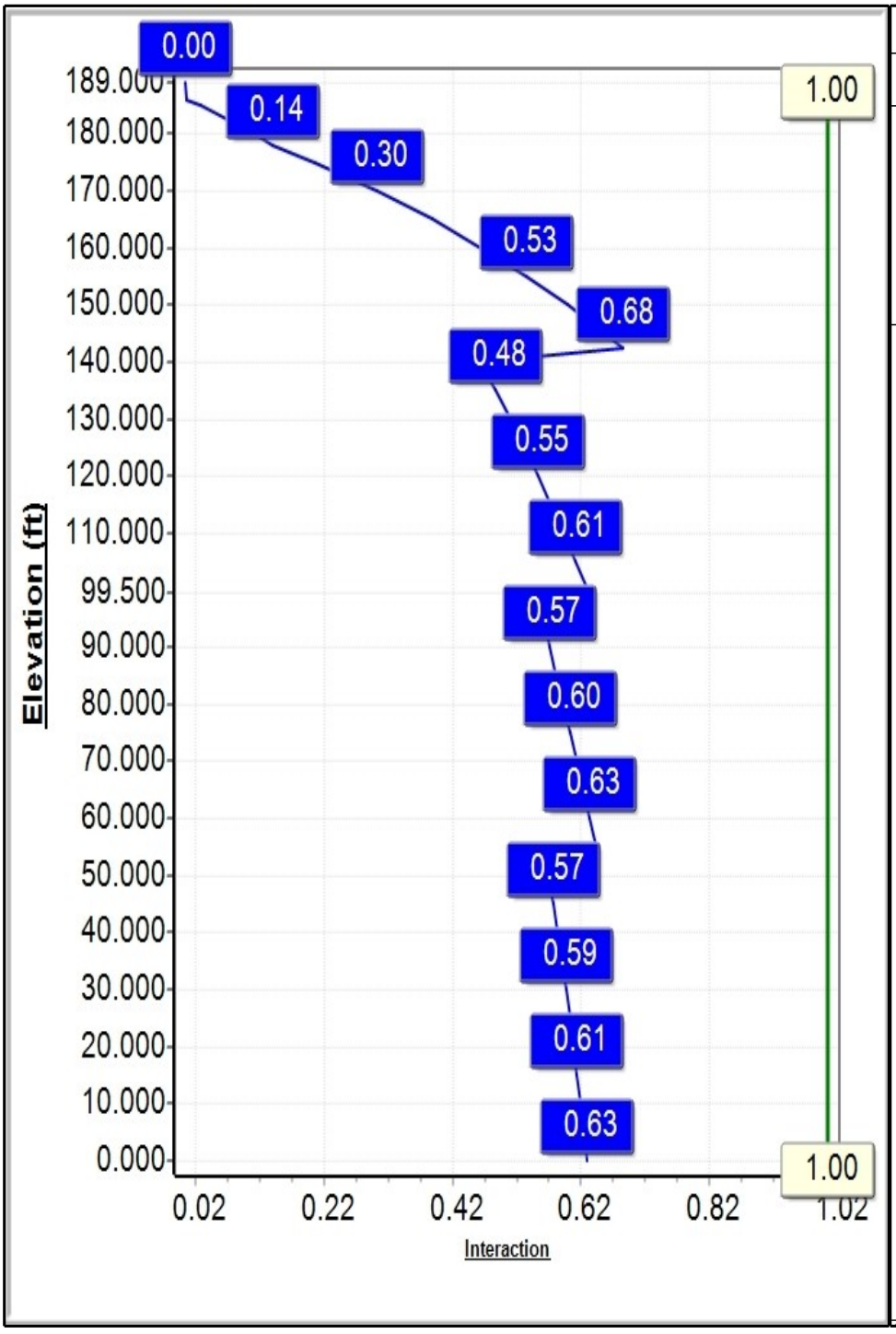
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3	**Exposure:**	C	
Height:	189.00 (ft)	**Gh:**	1.1	
Base Elev:	1.000 (ft)			Page: 1

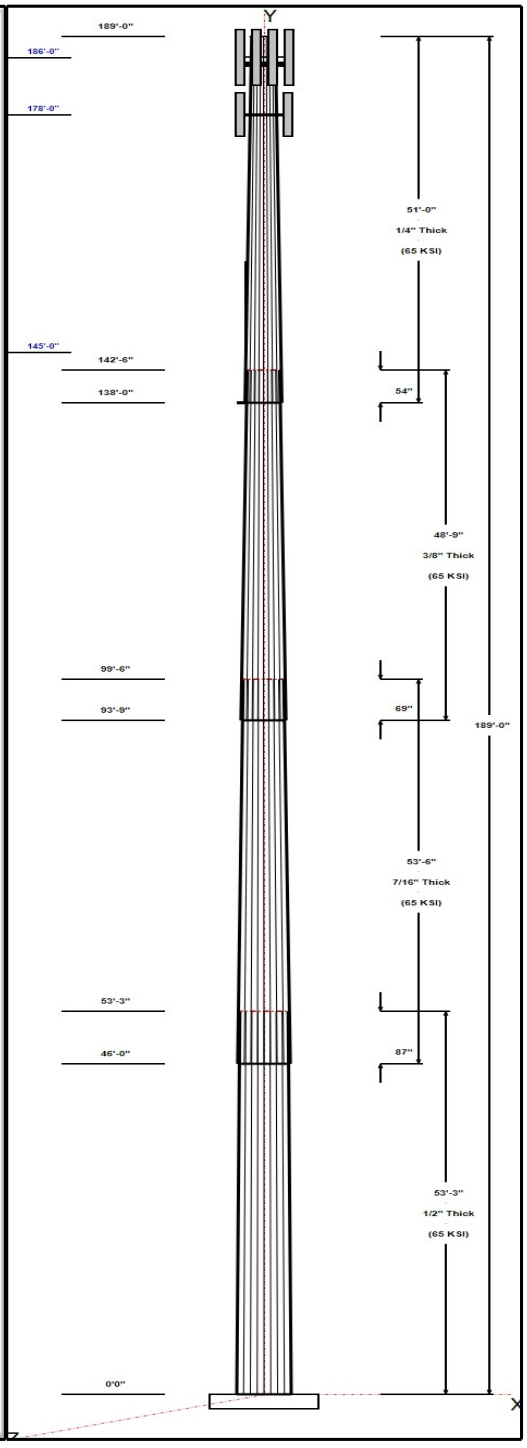
TES Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.00

Load Case : 1.2D + 1.0W 126 mph Wind

Iterations: 26





Structure: CT11796-S-SBA

Type: Tapered
Site Name: North Stonington 3
Height: 189.00 (ft)
Base Elev: 1.00 (ft)

Base Shape: 18 Sided
Taper: 0.21770

3/2/2020

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	49.08	60.67	0.500		0.21770	65
2	53.50	39.88	51.53	0.438	Slip	0.21770	65
3	48.75	31.27	41.89	0.375	Slip	0.21770	65
4	51.00	21.65	32.75	0.250	Slip	0.21770	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
186.00	186.00	6	Ericcson RRUS-12	AT&T
186.00	186.00	12	Cci HPA-65R-BUU-H8	AT&T
186.00	186.00	9	Ericsson RRUS-11	AT&T
186.00	186.00	3	Ericsson RRUS-E2	AT&T
186.00	186.00	3	Ericcson RRUS-32	AT&T
186.00	186.00	6	Ericsson A2	AT&T
186.00	186.00	4	Raycap DC6-48-60-18-8F	AT&T
186.00	186.00	1	Platform w/ Hand Rail	AT&T
178.00	178.00	6	Antel BXA-70063-6CF	Verizon
178.00	178.00	6	Antel BXA171063-12CF	Verizon
178.00	178.00	6	ALU RRH2x40-07-U	Verizon
178.00	178.00	3	ALU RRH2x40-AWS	Verizon
178.00	178.00	1	RFS DB-T1-6ZX-8AB-0Z	Verizon
178.00	178.00	1	Low Profile Platform	Verizon
145.00	151.30	1	DS2C00-F-36-B	Connecticut Light &
138.00	138.00	1	Side Arm (SV197-48)	Connecticut Light &
138.00	138.00	1	Ring Mount	Connecticut Light &

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	186.00	Inside	3/8" DC	AT&T
0.00	186.00	Inside	3/8" RET	AT&T
0.00	186.00	Inside	5/8" fiber	AT&T
0.00	178.00	Inside	1 5/8" Coax	Verizon
0.00	145.00	Inside	7/8" Coax	Connecticut Light &

Anchor Bolts

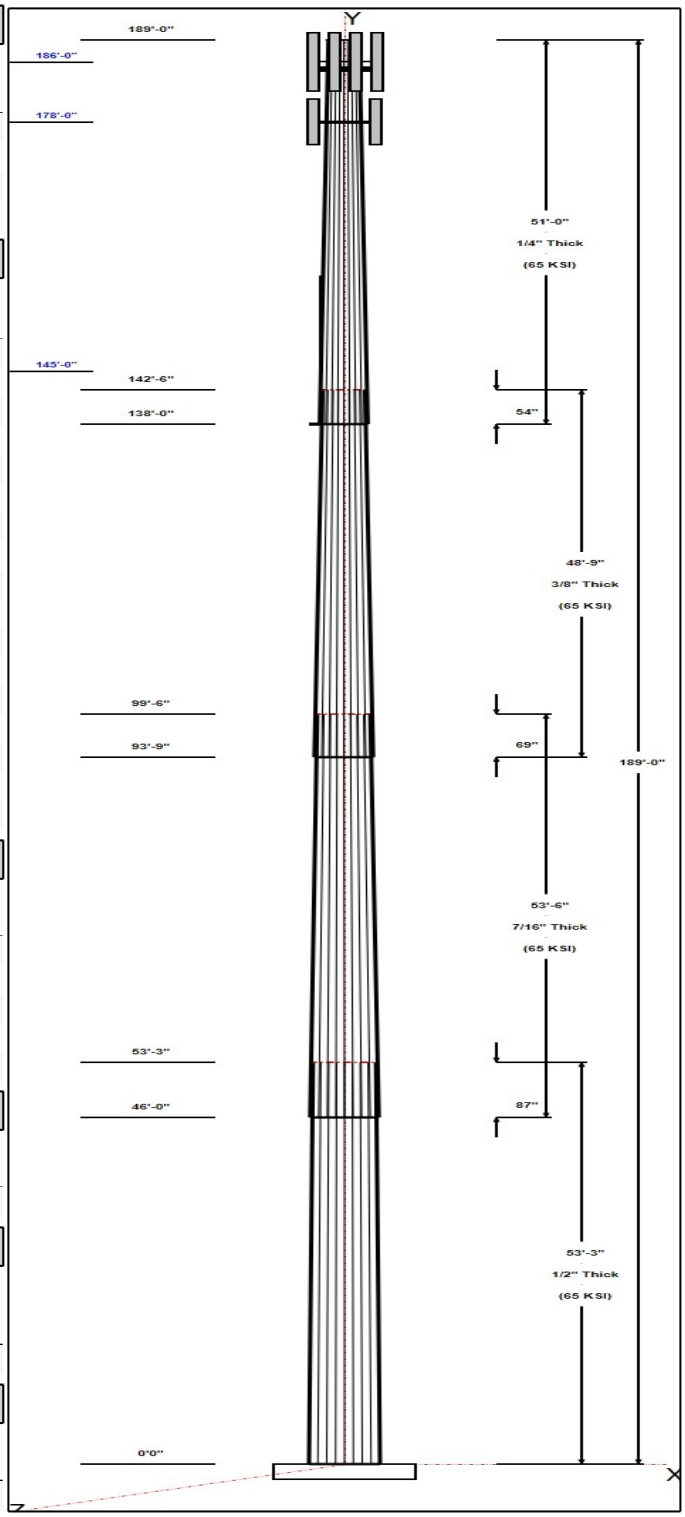
Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	69.8	50.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.0W 126 mph Wind	5112.7	39.1	54.2
0.9D + 1.0W 126 mph Wind	5059.3	39.0	40.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1216.0	9.5	71.4
1.2D + 1.0Ev + 1.0Eh	470.2	4.0	54.3
0.9D + 1.0Ev + 1.0Eh	465.2	4.0	40.7
1.0D + 1.0W 60 mph Wind	1153.7	8.9	45.2

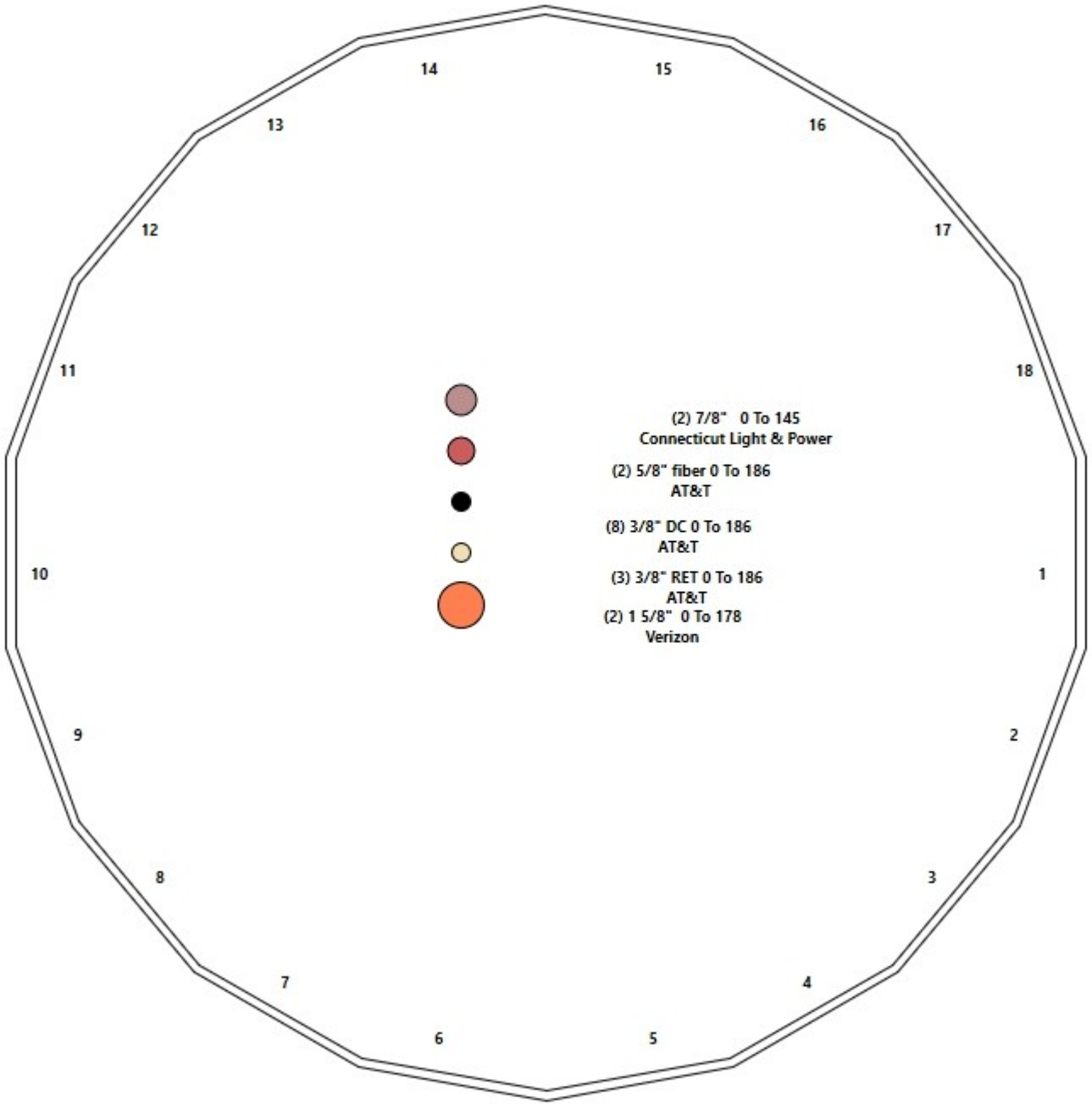


Structure: CT11796-S-SBA - Coax Line Placement

Type: Monopole
Site Name: North Stonington 3
Height: 189.00 (ft)

3/2/2020

Tower Engineering Solutions



Shaft Properties

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.5000	65		0.00	15,635
2	18	53.500	0.4375	65	Slip	87.00	11,444
3	18	48.750	0.3750	65	Slip	69.00	7,148
4	18	51.000	0.2500	65	Slip	54.00	3,711
					Total Shaft Weight:		**37,938**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	60.67	0.00	95.49	43677.82	19.99	121.34	49.08	53.25	77.09	22984.0	15.90	98.16	0.217700
2	51.53	46.00	70.95	23400.33	19.36	117.79	39.88	99.50	54.77	10768.4	14.66	91.16	0.217700
3	41.89	93.75	49.41	10756.30	18.28	111.70	31.27	142.50	36.78	4435.77	13.29	83.39	0.217700
4	32.75	138.0	25.79	3442.25	21.69	131.01	21.65	189.00	16.98	982.48	13.86	86.60	0.217700

Load Summary

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

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Discrete Appurtenances

				No Ice			Ice				
No.	**Elev (ft)**	**Description**	**Qty**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Hor. Ecc. (ft)**	**Vert Ecc (ft)**
1	186.00	Ericcson RRUS-12	6	80.00	2.70	0.67	147.52	3.434	0.67	0.00	0.00
2	186.00	Cci HPA-65R-BUU-H8	12	68.00	12.98	0.79	256.03	14.058	0.79	0.00	0.00
3	186.00	Ericsson RRUS-11	9	50.70	2.52	0.67	107.21	2.952	0.67	0.00	0.00
4	186.00	Ericsson RRUS-E2	3	58.00	3.15	0.67	118.53	3.622	0.67	0.00	0.00
5	186.00	Ericcson RRUS-32	3	77.00	3.87	0.67	149.40	3.841	0.67	0.00	0.00
6	186.00	Ericsson A2	6	21.20	1.86	0.67	45.81	2.524	0.67	0.00	0.00
7	186.00	Raycap DC6-48-60-18-8F	4	31.80	0.92	1.00	73.94	1.218	1.00	0.00	0.00
8	186.00	Platform w/ Hand Rail	1	1600.00	32.00	1.00	3031.10	51.031	1.00	0.00	0.00
9	178.00	Antel BXA-70063-6CF	6	17.00	7.57	0.73	127.16	8.404	0.73	0.00	0.00
10	178.00	Antel BXA171063-12CF	6	15.00	4.74	0.84	79.42	6.334	0.84	0.00	0.00
11	178.00	ALU RRH2x40-07-U	6	50.70	1.93	0.67	90.59	2.554	0.67	0.00	0.00
12	178.00	ALU RRH2x40-AWS	3	44.00	2.16	0.67	85.21	2.871	0.67	0.00	0.00
13	178.00	RFS DB-T1-6ZX-8AB-0Z	1	18.90	4.80	0.67	110.93	5.380	0.67	0.00	0.00
14	178.00	Low Profile Platform	1	1500.00	22.00	1.00	2388.17	33.984	1.00	0.00	0.00
15	145.00	DS2C00-F-36-B	1	40.00	5.78	0.00	108.60	10.370	0.00	0.00	6.30
16	138.00	Side Arm (SV197-48)	1	120.00	4.50	1.00	189.28	7.971	1.00	0.00	0.00
17	138.00	Ring Mount	1	220.00	2.50	1.00	423.22	4.232	1.00	0.00	0.00
		Totals:	**70**	**6,538.80**			**14,586.76**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	186.00	(8) 3/8" DC	0.00	Inside
0.00	186.00	(3) 3/8" RET	0.00	Inside
0.00	186.00	(2) 5/8" fiber	0.00	Inside
0.00	178.00	(2) 1 5/8" Coax	0.00	Inside
0.00	145.00	(2) 7/8" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	60.670	95.487	43677.8	19.99	121.34	77.9	1418.	0.0
5.00		0.5000	59.582	93.759	41350.0	19.60	119.16	78.3	1366.	1609.9
10.00		0.5000	58.493	92.032	39106.4	19.22	116.99	78.8	1316.	1580.5
15.00		0.5000	57.405	90.305	36945.5	18.83	114.81	79.2	1267.	1551.1
20.00		0.5000	56.316	88.577	34865.6	18.45	112.63	79.7	1219.	1521.7
25.00		0.5000	55.228	86.850	32865.4	18.07	110.46	80.2	1172.	1492.3
30.00		0.5000	54.139	85.123	30943.1	17.68	108.28	80.6	1125.	1463.0
35.00		0.5000	53.051	83.395	29097.3	17.30	106.10	81.1	1080.	1433.6
40.00		0.5000	51.962	81.668	27326.4	16.91	103.92	81.5	1035.	1404.2
45.00		0.5000	50.874	79.940	25628.8	16.53	101.75	82.0	992.2	1374.8
46.00	Bot - Section 2	0.5000	50.656	79.595	25298.0	16.45	101.31	82.0	983.6	271.4
50.00		0.5000	49.785	78.213	24003.1	16.15	99.57	82.4	949.6	2031.4
53.25	Top - Section 1	0.4375	49.953	68.756	21298.1	18.72	114.18	0.0	0.0	1624.6
55.00		0.4375	49.572	68.227	20810.2	18.57	113.31	79.6	826.8	407.9
60.00		0.4375	48.483	66.715	19457.6	18.13	110.82	80.1	790.5	1147.9
65.00		0.4375	47.395	65.204	18164.8	17.69	108.33	80.6	754.9	1122.2
70.00		0.4375	46.306	63.692	16930.7	17.25	105.84	81.1	720.1	1096.5
75.00		0.4375	45.218	62.181	15753.7	16.81	103.35	81.6	686.2	1070.8
80.00		0.4375	44.129	60.669	14632.6	16.37	100.87	82.1	653.1	1045.1
85.00		0.4375	43.041	59.158	13566.0	15.94	98.38	82.5	620.8	1019.4
90.00		0.4375	41.952	57.646	12552.5	15.50	95.89	82.5	589.3	993.6
93.75	Bot - Section 3	0.4375	41.136	56.513	11826.5	15.17	94.02	82.5	566.3	728.4
95.00		0.4375	40.864	56.135	11590.8	15.06	93.40	82.5	558.7	449.0
99.50	Top - Section 2	0.3750	40.634	47.917	9812.3	17.70	108.36	0.0	0.0	1591.8
100.00		0.3750	40.525	47.787	9732.9	17.64	108.07	80.6	473.0	81.4
105.00		0.3750	39.437	46.492	8962.6	17.13	105.16	81.2	447.6	802.0
110.00		0.3750	38.348	45.196	8234.0	16.62	102.26	81.9	422.9	780.0
115.00		0.3750	37.260	43.901	7546.0	16.11	99.36	82.5	398.9	757.9
120.00		0.3750	36.171	42.605	6897.5	15.60	96.46	82.5	375.6	735.9
125.00		0.3750	35.083	41.309	6287.2	15.09	93.55	82.5	353.0	713.9
130.00		0.3750	33.994	40.014	5714.0	14.57	90.65	82.5	331.1	691.8
135.00		0.3750	32.906	38.718	5176.8	14.06	87.75	82.5	309.9	669.8
138.00	Bot - Section 4	0.3750	32.253	37.941	4871.2	13.75	86.01	82.5	297.5	391.3
140.00		0.3750	31.817	37.423	4674.3	13.55	84.85	82.5	289.4	430.8
142.50	Top - Section 3	0.2500	31.773	25.013	3140.3	21.00	127.09	0.0	0.0	530.2
145.00		0.2500	31.229	24.581	2980.4	20.62	124.92	77.2	188.0	210.9
150.00		0.2500	30.140	23.717	2677.2	19.85	120.56	78.1	174.9	410.9
155.00		0.2500	29.052	22.853	2395.2	19.08	116.21	79.0	162.4	396.2
160.00		0.2500	27.963	21.990	2133.8	18.31	111.85	79.9	150.3	381.5
165.00		0.2500	26.875	21.126	1892.1	17.54	107.50	80.8	138.7	366.8
170.00		0.2500	25.786	20.262	1669.4	16.78	103.15	81.7	127.5	352.1
175.00		0.2500	24.698	19.399	1464.9	16.01	98.79	82.5	116.8	337.4
178.00		0.2500	24.045	18.880	1350.6	15.55	96.18	82.5	110.6	195.4
180.00		0.2500	23.609	18.535	1277.8	15.24	94.44	82.5	106.6	127.3
185.00		0.2500	22.521	17.671	1107.4	14.47	90.08	82.5	96.8	308.0
186.00		0.2500	22.303	17.499	1075.2	14.32	89.21	82.5	95.0	59.8
189.00		0.2500	21.650	16.980	982.5	13.86	86.60	82.5	89.4	176.0
										37938.4

Wind Loading - Shaft

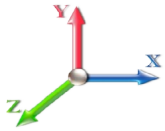
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 126 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	32.297	35.53	591.62	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	32.297	35.53	581.00	0.730	0.000	5.00	25.439	18.57	659.7	0.0	1931.9
10.00		1.00	0.85	32.297	35.53	570.39	0.730	0.000	5.00	24.978	18.23	647.8	0.0	1896.6
15.00		1.00	0.86	32.696	35.97	563.22	0.730	0.000	5.00	24.518	17.90	643.7	0.0	1861.4
20.00		1.00	0.91	34.622	38.08	568.59	0.730	0.000	5.00	24.057	17.56	668.8	0.0	1826.1
25.00		1.00	0.95	36.214	39.84	570.27	0.730	0.000	5.00	23.597	17.23	686.2	0.0	1790.8
30.00		1.00	0.99	37.580	41.34	569.48	0.730	0.000	5.00	23.136	16.89	698.2	0.0	1755.6
35.00		1.00	1.02	38.782	42.66	566.88	0.730	0.000	5.00	22.676	16.55	706.2	0.0	1720.3
40.00		1.00	1.05	39.859	43.84	562.91	0.730	0.000	5.00	22.215	16.22	711.0	0.0	1685.0
45.00		1.00	1.07	40.836	44.92	557.83	0.730	0.000	5.00	21.755	15.88	713.4	0.0	1649.7
46.00	Bot - Section 2	1.00	1.08	41.022	45.12	556.70	0.730	0.000	1.00	4.296	3.14	141.5	0.0	325.7
50.00		1.00	1.10	41.733	45.91	551.86	0.730	0.000	4.00	17.295	12.63	579.6	0.0	2437.7
53.25	Top - Section 1	1.00	1.11	42.279	46.51	547.56	0.730	0.000	3.25	13.835	10.10	469.7	0.0	1949.5
55.00		1.00	1.12	42.563	46.82	554.93	0.730	0.000	1.75	7.369	5.38	251.9	0.0	489.4
60.00		1.00	1.14	43.336	47.67	547.65	0.730	0.000	5.00	20.743	15.14	721.8	0.0	1377.5
65.00		1.00	1.16	44.061	48.47	539.81	0.730	0.000	5.00	20.283	14.81	717.6	0.0	1346.7
70.00		1.00	1.18	44.743	49.22	531.48	0.730	0.000	5.00	19.822	14.47	712.2	0.0	1315.8
75.00		1.00	1.19	45.389	49.93	522.72	0.730	0.000	5.00	19.362	14.13	705.7	0.0	1285.0
80.00		1.00	1.21	46.002	50.60	513.57	0.730	0.000	5.00	18.901	13.80	698.2	0.0	1254.1
85.00		1.00	1.23	46.586	51.24	504.07	0.730	0.000	5.00	18.441	13.46	689.8	0.0	1223.2
90.00		1.00	1.24	47.143	51.86	494.26	0.730	0.000	5.00	17.980	13.13	680.7	0.0	1192.4
93.75	Bot - Section 3	1.00	1.25	47.546	52.30	486.70	0.730	0.000	3.75	13.183	9.62	503.3	0.0	874.0
95.00		1.00	1.25	47.677	52.44	484.15	0.730	0.000	1.25	4.416	3.22	169.1	0.0	538.8
99.50	Top - Section 2	1.00	1.27	48.139	52.95	474.83	0.730	0.000	4.50	15.659	11.43	605.3	0.0	1910.2
100.00		1.00	1.27	48.190	53.01	482.71	0.730	0.000	0.50	1.717	1.25	66.4	0.0	97.7
105.00		1.00	1.28	48.682	53.55	472.14	0.730	0.000	5.00	16.916	12.35	661.3	0.0	962.4
110.00		1.00	1.29	49.157	54.07	461.34	0.730	0.000	5.00	16.455	12.01	649.5	0.0	936.0
115.00		1.00	1.31	49.615	54.58	450.33	0.730	0.000	5.00	15.995	11.68	637.2	0.0	909.5
120.00		1.00	1.32	50.058	55.06	439.12	0.730	0.000	5.00	15.534	11.34	624.4	0.0	883.1
125.00		1.00	1.33	50.486	55.54	427.73	0.730	0.000	5.00	15.074	11.00	611.1	0.0	856.6
130.00		1.00	1.34	50.902	55.99	416.16	0.730	0.000	5.00	14.613	10.67	597.3	0.0	830.2
135.00		1.00	1.35	51.305	56.44	404.42	0.730	0.000	5.00	14.153	10.33	583.1	0.0	803.7
138.00	Bot - Section 4	1.00	1.36	51.541	56.69	397.31	0.730	0.000	3.00	8.270	6.04	342.3	0.0	469.5
140.00		1.00	1.36	51.696	56.87	392.53	0.730	0.000	2.00	5.506	4.02	228.6	0.0	516.9
142.50	Top - Section 3	1.00	1.37	51.888	57.08	386.53	0.730	0.000	2.50	6.779	4.95	282.5	0.0	636.3
145.00	Appurtenance(s)	1.00	1.37	52.077	57.28	386.69	0.730	0.000	2.50	6.664	4.86	278.7	0.0	253.1
150.00		1.00	1.38	52.447	57.69	374.54	0.730	0.000	5.00	12.982	9.48	546.8	0.0	493.0
155.00		1.00	1.39	52.808	58.09	362.25	0.730	0.000	5.00	12.522	9.14	531.0	0.0	475.4
160.00		1.00	1.40	53.160	58.48	349.84	0.730	0.000	5.00	12.061	8.80	514.9	0.0	457.8
165.00		1.00	1.41	53.504	58.85	337.30	0.730	0.000	5.00	11.601	8.47	498.4	0.0	440.1
170.00		1.00	1.42	53.839	59.22	324.66	0.730	0.000	5.00	11.140	8.13	481.6	0.0	422.5
175.00		1.00	1.43	54.166	59.58	311.90	0.730	0.000	5.00	10.680	7.80	464.5	0.0	404.9
178.00	Appurtenance(s)	1.00	1.43	54.360	59.80	304.19	0.730	0.000	3.00	6.187	4.52	270.1	0.0	234.5
180.00		1.00	1.43	54.487	59.94	299.03	0.730	0.000	2.00	4.032	2.94	176.4	0.0	152.8
185.00		1.00	1.44	54.800	60.28	286.06	0.730	0.000	5.00	9.759	7.12	429.4	0.0	369.6
186.00	Appurtenance(s)	1.00	1.44	54.862	60.35	283.46	0.730	0.000	1.00	1.896	1.38	83.5	0.0	71.8
189.00		1.00	1.45	55.046	60.55	275.62	0.730	0.000	3.00	5.579	4.07	246.6	0.0	211.2

Wind Loading - Shaft

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Totals:	**189.00**	**23,587.0**	**45,526.1**

Discrete Appurtenance Forces

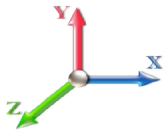
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 126 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	186.00	Ericcson RRUS-12	6	54.862	60.348	0.50	0.75	8.14	576.00	0.000	0.000	491.27	0.00	0.00
2	186.00	Platform w/ Hand Rail	1	54.862	60.348	1.00	1.00	32.00	1920.00	0.000	0.000	1931.15	0.00	0.00
3	186.00	Raycap DC6-48-60-18-8F	4	54.862	60.348	1.00	1.00	3.68	152.64	0.000	0.000	222.08	0.00	0.00
4	186.00	Ericsson A2	6	54.862	60.348	0.50	0.75	5.61	152.64	0.000	0.000	338.43	0.00	0.00
5	186.00	Ericcson RRUS-32	3	54.862	60.348	0.50	0.75	5.83	277.20	0.000	0.000	352.07	0.00	0.00
6	186.00	Ericsson RRUS-E2	3	54.862	60.348	0.50	0.75	4.75	208.80	0.000	0.000	286.57	0.00	0.00
7	186.00	Ericsson RRUS-11	9	54.862	60.348	0.50	0.75	11.40	547.56	0.000	0.000	687.77	0.00	0.00
8	186.00	Cci HPA-65R-BUU-H8	12	54.862	60.348	0.59	0.75	92.29	979.20	0.000	0.000	5569.43	0.00	0.00
9	178.00	Low Profile Platform	1	54.360	59.796	1.00	1.00	22.00	1800.00	0.000	0.000	1315.50	0.00	0.00
10	178.00	RFS DB-T1-6ZX-8AB-0Z	1	54.360	59.796	0.54	0.80	2.57	22.68	0.000	0.000	153.84	0.00	0.00
11	178.00	ALU RRH2x40-AWS	3	54.360	59.796	0.54	0.80	3.47	158.40	0.000	0.000	207.69	0.00	0.00
12	178.00	ALU RRH2x40-07-U	6	54.360	59.796	0.54	0.80	6.21	365.04	0.000	0.000	371.14	0.00	0.00
13	178.00	Antel BXA171063-12CF	6	54.360	59.796	0.67	0.80	19.11	108.00	0.000	0.000	1142.79	0.00	0.00
14	178.00	Antel BXA-70063-6CF	6	54.360	59.796	0.58	0.80	26.53	122.40	0.000	0.000	1586.09	0.00	0.00
15	145.00	DS2C00-F-36-B	1	52.542	57.796	0.00	1.00	5.78	48.00	0.000	6.300	334.06	0.00	2104.59
16	138.00	Ring Mount	1	51.541	56.695	1.00	1.00	2.50	264.00	0.000	0.000	141.74	0.00	0.00
17	138.00	Side Arm (SV197-48)	1	51.541	56.695	1.00	1.00	4.50	144.00	0.000	0.000	255.13	0.00	0.00
							Totals:		**7,846.56**			**15,386.76**		

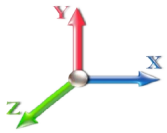
Total Applied Force Summary

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Load Case: 1.2D + 1.0W 126 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		659.74	1957.69	0.00	0.00
10.00		647.80	1922.42	0.00	0.00
15.00		643.71	1887.15	0.00	0.00
20.00		668.83	1851.89	0.00	0.00
25.00		686.20	1816.62	0.00	0.00
30.00		698.19	1781.35	0.00	0.00
35.00		706.17	1746.08	0.00	0.00
40.00		711.03	1710.82	0.00	0.00
45.00		713.37	1675.55	0.00	0.00
46.00		141.50	330.88	0.00	0.00
50.00		579.57	2458.33	0.00	0.00
53.25		469.70	1966.23	0.00	0.00
55.00		251.86	498.46	0.00	0.00
60.00		721.84	1403.33	0.00	0.00
65.00		717.62	1372.47	0.00	0.00
70.00		712.19	1341.61	0.00	0.00
75.00		705.68	1310.75	0.00	0.00
80.00		698.20	1279.90	0.00	0.00
85.00		689.83	1249.04	0.00	0.00
90.00		680.66	1218.18	0.00	0.00
93.75		503.31	893.38	0.00	0.00
95.00		169.07	545.29	0.00	0.00
99.50		605.33	1933.38	0.00	0.00
100.00		66.44	100.28	0.00	0.00
105.00		661.27	988.23	0.00	0.00
110.00		649.54	961.78	0.00	0.00
115.00		637.24	935.33	0.00	0.00
120.00		624.42	908.88	0.00	0.00
125.00		611.09	882.43	0.00	0.00
130.00		597.30	855.98	0.00	0.00
135.00		583.05	829.53	0.00	0.00
138.00	(2) attachments	739.16	893.02	0.00	0.00
140.00		228.57	527.26	0.00	0.00
142.50		282.46	649.16	0.00	0.00
145.00	(1) attachments	612.73	314.03	0.00	2104.59
150.00		546.76	512.60	0.00	0.00
155.00		530.99	494.97	0.00	0.00
160.00		514.87	477.33	0.00	0.00
165.00		498.41	459.70	0.00	0.00
170.00		481.62	442.07	0.00	0.00
175.00		464.52	424.43	0.00	0.00
178.00	(23) attachments	5047.12	2822.72	0.00	0.00
180.00		176.43	155.61	0.00	0.00
185.00		429.43	376.68	0.00	0.00
186.00	(44) attachments	9962.32	4887.26	0.00	0.00
189.00		246.60	211.18	0.00	0.00

Total Applied Force Summary

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

Tower Engineering Solutions

Totals:	**38,973.75**	**54,261.26**	**0.00**	**2,104.59**

Calculated Forces

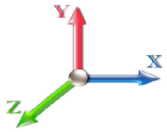
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 126 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-54.20	-39.05	0.00	-5112.6	0.00	5112.66	6694.12	1675.79	8365.99	8283.91	0.00	0.000	0.000	0.626
5.00	-52.14	-38.54	0.00	-4917.4	0.00	4917.40	6611.12	1645.48	8066.04	8031.98	0.09	-0.163	0.000	0.621
10.00	-50.11	-38.03	0.00	-4724.7	0.00	4724.71	6526.72	1615.16	7771.57	7782.12	0.35	-0.329	0.000	0.615
15.00	-48.11	-37.52	0.00	-4534.5	0.00	4534.56	6440.91	1584.85	7482.57	7534.42	0.78	-0.498	0.000	0.610
20.00	-46.16	-36.97	0.00	-4346.9	0.00	4346.99	6353.70	1554.53	7199.05	7289.00	1.40	-0.669	0.000	0.604
25.00	-44.24	-36.39	0.00	-4162.1	0.00	4162.16	6265.08	1524.22	6921.00	7045.93	2.19	-0.842	0.000	0.598
30.00	-42.36	-35.80	0.00	-3980.2	0.00	3980.21	6175.06	1493.90	6648.43	6805.31	3.17	-1.018	0.000	0.592
35.00	-40.52	-35.18	0.00	-3801.2	0.00	3801.23	6083.64	1463.58	6381.34	6567.25	4.33	-1.197	0.000	0.586
40.00	-38.71	-34.56	0.00	-3625.3	0.00	3625.32	5990.81	1433.27	6119.72	6331.82	5.68	-1.379	0.000	0.580
45.00	-36.99	-33.87	0.00	-3452.5	0.00	3452.53	5896.58	1402.95	5863.57	6099.14	7.22	-1.563	0.000	0.573
46.00	-36.61	-33.78	0.00	-3418.6	0.00	3418.66	5877.56	1396.89	5813.00	6052.94	7.55	-1.601	0.000	0.572
50.00	-34.09	-33.21	0.00	-3283.5	0.00	3283.53	5800.94	1372.64	5612.91	5869.29	8.96	-1.752	0.000	0.566
53.25	-32.08	-32.74	0.00	-3175.5	0.00	3175.59	4912.05	1206.66	4957.23	4999.60	10.20	-1.876	0.000	0.642
55.00	-31.51	-32.54	0.00	-3118.3	0.00	3118.30	4885.35	1197.38	4881.24	4933.82	10.90	-1.944	0.000	0.639
60.00	-30.02	-31.88	0.00	-2955.5	0.00	2955.58	4808.10	1170.85	4667.37	4747.29	13.04	-2.152	0.000	0.630
65.00	-28.56	-31.22	0.00	-2796.1	0.00	2796.18	4729.45	1144.33	4458.28	4562.89	15.41	-2.362	0.000	0.620
70.00	-27.14	-30.55	0.00	-2640.0	0.00	2640.09	4649.40	1117.80	4253.98	4380.71	18.00	-2.575	0.000	0.609
75.00	-25.75	-29.88	0.00	-2487.3	0.00	2487.35	4567.94	1091.27	4054.48	4200.86	20.81	-2.791	0.000	0.598
80.00	-24.40	-29.21	0.00	-2337.9	0.00	2337.95	4485.08	1064.75	3859.77	4023.43	23.85	-3.008	0.000	0.587
85.00	-23.08	-28.54	0.00	-2191.9	0.00	2191.90	4395.13	1038.22	3669.84	3843.54	27.11	-3.229	0.000	0.576
90.00	-21.80	-27.87	0.00	-2049.1	0.00	2049.18	4282.84	1011.69	3484.71	3648.68	30.61	-3.451	0.000	0.567
93.75	-20.89	-27.35	0.00	-1944.6	0.00	1944.68	4198.62	991.80	3349.01	3505.85	33.39	-3.621	0.000	0.560
95.00	-20.29	-27.20	0.00	-1910.4	0.00	1910.49	4170.55	985.17	3304.37	3458.88	34.35	-3.679	0.000	0.558
99.50	-18.35	-26.50	0.00	-1788.1	0.00	1788.11	3475.33	840.94	2808.95	2874.66	37.91	-3.883	0.000	0.628
100.00	-18.19	-26.47	0.00	-1774.8	0.00	1774.86	3468.52	838.66	2793.78	2861.20	38.32	-3.906	0.000	0.627
105.00	-17.14	-25.82	0.00	-1642.5	0.00	1642.51	3399.67	815.93	2644.35	2727.68	42.54	-4.156	0.000	0.608
110.00	-16.12	-25.17	0.00	-1513.4	0.00	1513.42	3329.42	793.19	2499.03	2596.17	47.02	-4.407	0.000	0.589
115.00	-15.13	-24.53	0.00	-1387.5	0.00	1387.58	3257.77	770.45	2357.81	2466.77	51.77	-4.657	0.000	0.568
120.00	-14.17	-23.89	0.00	-1264.9	0.00	1264.96	3165.34	747.72	2220.70	2325.34	56.77	-4.907	0.000	0.549
125.00	-13.25	-23.26	0.00	-1145.5	0.00	1145.52	3069.09	724.98	2087.70	2185.36	62.04	-5.156	0.000	0.530
130.00	-12.35	-22.64	0.00	-1029.2	0.00	1029.22	2972.83	702.24	1958.81	2049.72	67.57	-5.402	0.000	0.507
135.00	-11.51	-22.02	0.00	-916.02	0.00	916.02	2876.58	679.51	1834.02	1918.44	73.34	-5.644	0.000	0.483
138.00	-10.65	-21.22	0.00	-849.96	0.00	849.96	2818.83	665.87	1761.12	1841.75	76.93	-5.790	0.000	0.466
140.00	-10.11	-20.95	0.00	-807.53	0.00	807.53	2780.33	656.77	1713.34	1791.49	79.37	-5.886	0.000	0.455
142.50	-9.45	-20.63	0.00	-755.15	0.00	755.15	1726.66	438.97	1148.10	1119.85	82.48	-6.005	0.000	0.682
145.00	-9.13	-20.02	0.00	-701.48	0.00	701.48	1706.84	431.39	1108.80	1087.73	85.65	-6.122	0.000	0.652
150.00	-8.58	-19.46	0.00	-601.39	0.00	601.39	1666.14	416.24	1032.25	1024.19	92.22	-6.433	0.000	0.595
155.00	-8.05	-18.92	0.00	-504.07	0.00	504.07	1624.04	401.08	958.43	961.65	99.11	-6.727	0.000	0.531
160.00	-7.56	-18.39	0.00	-409.47	0.00	409.47	1580.53	385.92	887.36	900.21	106.28	-6.998	0.000	0.462
165.00	-7.09	-17.86	0.00	-317.54	0.00	317.54	1535.62	370.76	819.02	839.97	113.73	-7.240	0.000	0.385
170.00	-6.66	-17.35	0.00	-228.23	0.00	228.23	1489.31	355.60	753.42	781.02	121.41	-7.446	0.000	0.299
175.00	-6.27	-16.85	0.00	-141.49	0.00	141.49	1441.22	340.45	690.56	723.28	129.27	-7.603	0.000	0.202
178.00	-4.13	-11.47	0.00	-90.95	0.00	90.95	1402.72	331.35	654.16	684.96	134.06	-7.671	0.000	0.137
180.00	-3.99	-11.28	0.00	-68.01	0.00	68.01	1377.05	325.29	630.44	659.99	137.27	-7.704	0.000	0.107
185.00	-3.67	-10.80	0.00	-11.62	0.00	11.62	1312.89	310.13	573.05	599.61	145.35	-7.749	0.000	0.023
186.00	-0.18	-0.27	0.00	-0.82	0.00	0.82	1300.05	307.10	561.90	587.88	146.97	-7.750	0.000	0.002
189.00	0.00	-0.25	0.00	0.00	0.00	0.00	1261.55	298.00	529.12	553.39	151.82	-7.751	0.000	0.000

Calculated Forces

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Wind Loading - Shaft

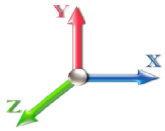
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 126 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	32.297	35.53	591.62	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	32.297	35.53	581.00	0.730	0.000	5.00	25.439	18.57	659.7	0.0	1448.9
10.00		1.00	0.85	32.297	35.53	570.39	0.730	0.000	5.00	24.978	18.23	647.8	0.0	1422.5
15.00		1.00	0.86	32.696	35.97	563.22	0.730	0.000	5.00	24.518	17.90	643.7	0.0	1396.0
20.00		1.00	0.91	34.622	38.08	568.59	0.730	0.000	5.00	24.057	17.56	668.8	0.0	1369.6
25.00		1.00	0.95	36.214	39.84	570.27	0.730	0.000	5.00	23.597	17.23	686.2	0.0	1343.1
30.00		1.00	0.99	37.580	41.34	569.48	0.730	0.000	5.00	23.136	16.89	698.2	0.0	1316.7
35.00		1.00	1.02	38.782	42.66	566.88	0.730	0.000	5.00	22.676	16.55	706.2	0.0	1290.2
40.00		1.00	1.05	39.859	43.84	562.91	0.730	0.000	5.00	22.215	16.22	711.0	0.0	1263.8
45.00		1.00	1.07	40.836	44.92	557.83	0.730	0.000	5.00	21.755	15.88	713.4	0.0	1237.3
46.00	Bot - Section 2	1.00	1.08	41.022	45.12	556.70	0.730	0.000	1.00	4.296	3.14	141.5	0.0	244.3
50.00		1.00	1.10	41.733	45.91	551.86	0.730	0.000	4.00	17.295	12.63	579.6	0.0	1828.3
53.25	Top - Section 1	1.00	1.11	42.279	46.51	547.56	0.730	0.000	3.25	13.835	10.10	469.7	0.0	1462.1
55.00		1.00	1.12	42.563	46.82	554.93	0.730	0.000	1.75	7.369	5.38	251.9	0.0	367.1
60.00		1.00	1.14	43.336	47.67	547.65	0.730	0.000	5.00	20.743	15.14	721.8	0.0	1033.1
65.00		1.00	1.16	44.061	48.47	539.81	0.730	0.000	5.00	20.283	14.81	717.6	0.0	1010.0
70.00		1.00	1.18	44.743	49.22	531.48	0.730	0.000	5.00	19.822	14.47	712.2	0.0	986.9
75.00		1.00	1.19	45.389	49.93	522.72	0.730	0.000	5.00	19.362	14.13	705.7	0.0	963.7
80.00		1.00	1.21	46.002	50.60	513.57	0.730	0.000	5.00	18.901	13.80	698.2	0.0	940.6
85.00		1.00	1.23	46.586	51.24	504.07	0.730	0.000	5.00	18.441	13.46	689.8	0.0	917.4
90.00		1.00	1.24	47.143	51.86	494.26	0.730	0.000	5.00	17.980	13.13	680.7	0.0	894.3
93.75	Bot - Section 3	1.00	1.25	47.546	52.30	486.70	0.730	0.000	3.75	13.183	9.62	503.3	0.0	655.5
95.00		1.00	1.25	47.677	52.44	484.15	0.730	0.000	1.25	4.416	3.22	169.1	0.0	404.1
99.50	Top - Section 2	1.00	1.27	48.139	52.95	474.83	0.730	0.000	4.50	15.659	11.43	605.3	0.0	1432.6
100.00		1.00	1.27	48.190	53.01	482.71	0.730	0.000	0.50	1.717	1.25	66.4	0.0	73.3
105.00		1.00	1.28	48.682	53.55	472.14	0.730	0.000	5.00	16.916	12.35	661.3	0.0	721.8
110.00		1.00	1.29	49.157	54.07	461.34	0.730	0.000	5.00	16.455	12.01	649.5	0.0	702.0
115.00		1.00	1.31	49.615	54.58	450.33	0.730	0.000	5.00	15.995	11.68	637.2	0.0	682.1
120.00		1.00	1.32	50.058	55.06	439.12	0.730	0.000	5.00	15.534	11.34	624.4	0.0	662.3
125.00		1.00	1.33	50.486	55.54	427.73	0.730	0.000	5.00	15.074	11.00	611.1	0.0	642.5
130.00		1.00	1.34	50.902	55.99	416.16	0.730	0.000	5.00	14.613	10.67	597.3	0.0	622.6
135.00		1.00	1.35	51.305	56.44	404.42	0.730	0.000	5.00	14.153	10.33	583.1	0.0	602.8
138.00	Bot - Section 4	1.00	1.36	51.541	56.69	397.31	0.730	0.000	3.00	8.270	6.04	342.3	0.0	352.2
140.00		1.00	1.36	51.696	56.87	392.53	0.730	0.000	2.00	5.506	4.02	228.6	0.0	387.7
142.50	Top - Section 3	1.00	1.37	51.888	57.08	386.53	0.730	0.000	2.50	6.779	4.95	282.5	0.0	477.2
145.00	Appurtenance(s)	1.00	1.37	52.077	57.28	386.69	0.730	0.000	2.50	6.664	4.86	278.7	0.0	189.8
150.00		1.00	1.38	52.447	57.69	374.54	0.730	0.000	5.00	12.982	9.48	546.8	0.0	369.8
155.00		1.00	1.39	52.808	58.09	362.25	0.730	0.000	5.00	12.522	9.14	531.0	0.0	356.6
160.00		1.00	1.40	53.160	58.48	349.84	0.730	0.000	5.00	12.061	8.80	514.9	0.0	343.3
165.00		1.00	1.41	53.504	58.85	337.30	0.730	0.000	5.00	11.601	8.47	498.4	0.0	330.1
170.00		1.00	1.42	53.839	59.22	324.66	0.730	0.000	5.00	11.140	8.13	481.6	0.0	316.9
175.00		1.00	1.43	54.166	59.58	311.90	0.730	0.000	5.00	10.680	7.80	464.5	0.0	303.7
178.00	Appurtenance(s)	1.00	1.43	54.360	59.80	304.19	0.730	0.000	3.00	6.187	4.52	270.1	0.0	175.8
180.00		1.00	1.43	54.487	59.94	299.03	0.730	0.000	2.00	4.032	2.94	176.4	0.0	114.6
185.00		1.00	1.44	54.800	60.28	286.06	0.730	0.000	5.00	9.759	7.12	429.4	0.0	277.2
186.00	Appurtenance(s)	1.00	1.44	54.862	60.35	283.46	0.730	0.000	1.00	1.896	1.38	83.5	0.0	53.9
189.00		1.00	1.45	55.046	60.55	275.62	0.730	0.000	3.00	5.579	4.07	246.6	0.0	158.4

Wind Loading - Shaft

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Totals:	**189.00**	**23,587.0**	**34,144.6**

Discrete Appurtenance Forces

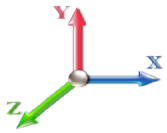
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 126 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 26

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	186.00	Ericcson RRUS-12	6	54.862	60.348	0.50	0.75	8.14	432.00	0.000	0.000	491.27	0.00	0.00
2	186.00	Platform w/ Hand Rail	1	54.862	60.348	1.00	1.00	32.00	1440.00	0.000	0.000	1931.15	0.00	0.00
3	186.00	Raycap DC6-48-60-18-8F	4	54.862	60.348	1.00	1.00	3.68	114.48	0.000	0.000	222.08	0.00	0.00
4	186.00	Ericsson A2	6	54.862	60.348	0.50	0.75	5.61	114.48	0.000	0.000	338.43	0.00	0.00
5	186.00	Ericcson RRUS-32	3	54.862	60.348	0.50	0.75	5.83	207.90	0.000	0.000	352.07	0.00	0.00
6	186.00	Ericsson RRUS-E2	3	54.862	60.348	0.50	0.75	4.75	156.60	0.000	0.000	286.57	0.00	0.00
7	186.00	Ericsson RRUS-11	9	54.862	60.348	0.50	0.75	11.40	410.67	0.000	0.000	687.77	0.00	0.00
8	186.00	Cci HPA-65R-BUU-H8	12	54.862	60.348	0.59	0.75	92.29	734.40	0.000	0.000	5569.43	0.00	0.00
9	178.00	Low Profile Platform	1	54.360	59.796	1.00	1.00	22.00	1350.00	0.000	0.000	1315.50	0.00	0.00
10	178.00	RFS DB-T1-6ZX-8AB-0Z	1	54.360	59.796	0.54	0.80	2.57	17.01	0.000	0.000	153.84	0.00	0.00
11	178.00	ALU RRH2x40-AWS	3	54.360	59.796	0.54	0.80	3.47	118.80	0.000	0.000	207.69	0.00	0.00
12	178.00	ALU RRH2x40-07-U	6	54.360	59.796	0.54	0.80	6.21	273.78	0.000	0.000	371.14	0.00	0.00
13	178.00	Antel BXA171063-12CF	6	54.360	59.796	0.67	0.80	19.11	81.00	0.000	0.000	1142.79	0.00	0.00
14	178.00	Antel BXA-70063-6CF	6	54.360	59.796	0.58	0.80	26.53	91.80	0.000	0.000	1586.09	0.00	0.00
15	145.00	DS2C00-F-36-B	1	52.542	57.796	0.00	1.00	5.78	36.00	0.000	6.300	334.06	0.00	2104.59
16	138.00	Ring Mount	1	51.541	56.695	1.00	1.00	2.50	198.00	0.000	0.000	141.74	0.00	0.00
17	138.00	Side Arm (SV197-48)	1	51.541	56.695	1.00	1.00	4.50	108.00	0.000	0.000	255.13	0.00	0.00
							Totals:		**5,884.92**			**15,386.76**		

Total Applied Force Summary

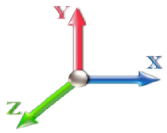
Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 17

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 126 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		659.74	1468.27	0.00	0.00
10.00		647.80	1441.82	0.00	0.00
15.00		643.71	1415.37	0.00	0.00
20.00		668.83	1388.91	0.00	0.00
25.00		686.20	1362.46	0.00	0.00
30.00		698.19	1336.01	0.00	0.00
35.00		706.17	1309.56	0.00	0.00
40.00		711.03	1283.11	0.00	0.00
45.00		713.37	1256.66	0.00	0.00
46.00		141.50	248.16	0.00	0.00
50.00		579.57	1843.75	0.00	0.00
53.25		469.70	1474.68	0.00	0.00
55.00		251.86	373.84	0.00	0.00
60.00		721.84	1052.50	0.00	0.00
65.00		717.62	1029.35	0.00	0.00
70.00		712.19	1006.21	0.00	0.00
75.00		705.68	983.07	0.00	0.00
80.00		698.20	959.92	0.00	0.00
85.00		689.83	936.78	0.00	0.00
90.00		680.66	913.63	0.00	0.00
93.75		503.31	670.04	0.00	0.00
95.00		169.07	408.97	0.00	0.00
99.50		605.33	1450.04	0.00	0.00
100.00		66.44	75.21	0.00	0.00
105.00		661.27	741.17	0.00	0.00
110.00		649.54	721.33	0.00	0.00
115.00		637.24	701.50	0.00	0.00
120.00		624.42	681.66	0.00	0.00
125.00		611.09	661.82	0.00	0.00
130.00		597.30	641.98	0.00	0.00
135.00		583.05	622.14	0.00	0.00
138.00	(2) attachments	739.16	669.76	0.00	0.00
140.00		228.57	395.45	0.00	0.00
142.50		282.46	486.87	0.00	0.00
145.00	(1) attachments	612.73	235.52	0.00	2104.59
150.00		546.76	384.45	0.00	0.00
155.00		530.99	371.23	0.00	0.00
160.00		514.87	358.00	0.00	0.00
165.00		498.41	344.77	0.00	0.00
170.00		481.62	331.55	0.00	0.00
175.00		464.52	318.32	0.00	0.00
178.00	(23) attachments	5047.12	2117.04	0.00	0.00
180.00		176.43	116.71	0.00	0.00
185.00		429.43	282.51	0.00	0.00
186.00	(44) attachments	9962.32	3665.45	0.00	0.00
189.00		246.60	158.39	0.00	0.00

Total Applied Force Summary

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Totals:	**38,973.75**	**40,695.95**	**0.00**	**2,104.59**

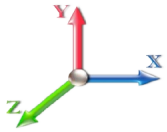
Calculated Forces

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Load Case: 0.9D + 1.0W 126 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.64	-39.03	0.00	-5059.3	0.00	5059.31	6694.12	1675.79	8365.99	8283.91	0.00	0.000	0.000	0.617
5.00	-39.06	-38.48	0.00	-4864.1	0.00	4864.16	6611.12	1645.48	8066.04	8031.98	0.09	-0.162	0.000	0.612
10.00	-37.51	-37.94	0.00	-4671.7	0.00	4671.75	6526.72	1615.16	7771.57	7782.12	0.34	-0.326	0.000	0.607
15.00	-35.99	-37.39	0.00	-4482.0	0.00	4482.08	6440.91	1584.85	7482.57	7534.42	0.77	-0.492	0.000	0.601
20.00	-34.50	-36.81	0.00	-4295.1	0.00	4295.14	6353.70	1554.53	7199.05	7289.00	1.38	-0.661	0.000	0.595
25.00	-33.04	-36.20	0.00	-4111.1	0.00	4111.11	6265.08	1524.22	6921.00	7045.93	2.17	-0.833	0.000	0.589
30.00	-31.61	-35.58	0.00	-3930.1	0.00	3930.10	6175.06	1493.90	6648.43	6805.31	3.13	-1.007	0.000	0.583
35.00	-30.20	-34.94	0.00	-3752.2	0.00	3752.20	6083.64	1463.58	6381.34	6567.25	4.28	-1.183	0.000	0.577
40.00	-28.83	-34.29	0.00	-3577.4	0.00	3577.49	5990.81	1433.27	6119.72	6331.82	5.61	-1.362	0.000	0.570
45.00	-27.53	-33.60	0.00	-3406.0	0.00	3406.01	5896.58	1402.95	5863.57	6099.14	7.14	-1.544	0.000	0.564
46.00	-27.23	-33.50	0.00	-3372.4	0.00	3372.41	5877.56	1396.89	5813.00	6052.94	7.47	-1.582	0.000	0.562
50.00	-25.32	-32.93	0.00	-3238.4	0.00	3238.42	5800.94	1372.64	5612.91	5869.29	8.86	-1.730	0.000	0.557
53.25	-23.81	-32.45	0.00	-3131.4	0.00	3131.41	4912.05	1206.66	4957.23	4999.60	10.08	-1.853	0.000	0.632
55.00	-23.37	-32.24	0.00	-3074.6	0.00	3074.63	4885.35	1197.38	4881.24	4933.82	10.77	-1.920	0.000	0.629
60.00	-22.23	-31.56	0.00	-2913.4	0.00	2913.42	4808.10	1170.85	4667.37	4747.29	12.89	-2.125	0.000	0.619
65.00	-21.12	-30.88	0.00	-2755.6	0.00	2755.61	4729.45	1144.33	4458.28	4562.89	15.23	-2.332	0.000	0.609
70.00	-20.03	-30.20	0.00	-2601.2	0.00	2601.20	4649.40	1117.80	4253.98	4380.71	17.78	-2.542	0.000	0.599
75.00	-18.97	-29.52	0.00	-2450.1	0.00	2450.19	4567.94	1091.27	4054.48	4200.86	20.55	-2.754	0.000	0.588
80.00	-17.94	-28.85	0.00	-2302.5	0.00	2302.57	4485.08	1064.75	3859.77	4023.43	23.55	-2.969	0.000	0.577
85.00	-16.93	-28.17	0.00	-2158.3	0.00	2158.35	4395.13	1038.22	3669.84	3843.54	26.78	-3.186	0.000	0.566
90.00	-15.97	-27.49	0.00	-2017.5	0.00	2017.50	4282.84	1011.69	3484.71	3648.68	30.23	-3.405	0.000	0.557
93.75	-15.28	-26.98	0.00	-1914.4	0.00	1914.40	4198.62	991.80	3349.01	3505.85	32.97	-3.572	0.000	0.550
95.00	-14.82	-26.82	0.00	-1880.6	0.00	1880.68	4170.55	985.17	3304.37	3458.88	33.91	-3.629	0.000	0.548
99.50	-13.36	-26.15	0.00	-1759.9	0.00	1759.99	3475.33	840.94	2808.95	2874.66	37.43	-3.830	0.000	0.617
100.00	-13.23	-26.11	0.00	-1746.9	0.00	1746.92	3468.52	838.66	2793.78	2861.20	37.83	-3.853	0.000	0.615
105.00	-12.43	-25.45	0.00	-1616.3	0.00	1616.39	3399.67	815.93	2644.35	2727.68	41.99	-4.099	0.000	0.597
110.00	-11.65	-24.80	0.00	-1489.1	0.00	1489.15	3329.42	793.19	2499.03	2596.17	46.41	-4.345	0.000	0.578
115.00	-10.89	-24.16	0.00	-1365.1	0.00	1365.16	3257.77	770.45	2357.81	2466.77	51.09	-4.592	0.000	0.558
120.00	-10.16	-23.52	0.00	-1244.3	0.00	1244.39	3165.34	747.72	2220.70	2325.34	56.03	-4.838	0.000	0.539
125.00	-9.46	-22.89	0.00	-1126.7	0.00	1126.78	3069.09	724.98	2087.70	2185.36	61.22	-5.082	0.000	0.520
130.00	-8.78	-22.28	0.00	-1012.3	0.00	1012.31	2972.83	702.24	1958.81	2049.72	66.67	-5.324	0.000	0.498
135.00	-8.15	-21.67	0.00	-900.92	0.00	900.92	2876.58	679.51	1834.02	1918.44	72.36	-5.562	0.000	0.473
138.00	-7.51	-20.88	0.00	-835.92	0.00	835.92	2818.83	665.87	1761.12	1841.75	75.90	-5.706	0.000	0.458
140.00	-7.10	-20.63	0.00	-794.16	0.00	794.16	2780.33	656.77	1713.34	1791.49	78.30	-5.801	0.000	0.447
142.50	-6.60	-20.31	0.00	-742.59	0.00	742.59	1726.66	438.97	1148.10	1119.85	81.37	-5.918	0.000	0.669
145.00	-6.36	-19.70	0.00	-689.71	0.00	689.71	1706.84	431.39	1108.80	1087.73	84.49	-6.033	0.000	0.640
150.00	-5.94	-19.15	0.00	-591.21	0.00	591.21	1666.14	416.24	1032.25	1024.19	90.97	-6.338	0.000	0.583
155.00	-5.54	-18.60	0.00	-495.48	0.00	495.48	1624.04	401.08	958.43	961.65	97.75	-6.627	0.000	0.521
160.00	-5.16	-18.07	0.00	-402.47	0.00	402.47	1580.53	385.92	887.36	900.21	104.82	-6.894	0.000	0.453
165.00	-4.82	-17.55	0.00	-312.10	0.00	312.10	1535.62	370.76	819.02	839.97	112.15	-7.132	0.000	0.377
170.00	-4.49	-17.05	0.00	-224.33	0.00	224.33	1489.31	355.60	753.42	781.02	119.72	-7.334	0.000	0.293
175.00	-4.21	-16.56	0.00	-139.09	0.00	139.09	1441.22	340.45	690.56	723.28	127.46	-7.488	0.000	0.198
178.00	-2.76	-11.28	0.00	-89.42	0.00	89.42	1402.72	331.35	654.16	684.96	132.18	-7.555	0.000	0.134
180.00	-2.66	-11.09	0.00	-66.87	0.00	66.87	1377.05	325.29	630.44	659.99	135.34	-7.588	0.000	0.104
185.00	-2.43	-10.63	0.00	-11.42	0.00	11.42	1312.89	310.13	573.05	599.61	143.30	-7.631	0.000	0.022
186.00	-0.12	-0.27	0.00	-0.80	0.00	0.80	1300.05	307.10	561.90	587.88	144.89	-7.633	0.000	0.001
189.00	0.00	-0.25	0.00	0.00	0.00	0.00	1261.55	298.00	529.12	553.39	149.67	-7.633	0.000	0.000

Calculated Forces

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

Wind Loading - Shaft

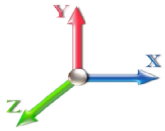
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.086	5.59	0.00	1.200	0.705	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.086	5.59	0.00	1.200	0.843	5.00	26.142	31.37	175.5	319.2	2251.1
10.00		1.00	0.85	5.086	5.59	0.00	1.200	0.896	5.00	25.725	30.87	172.7	333.4	2230.0
15.00		1.00	0.86	5.149	5.66	0.00	1.200	0.930	5.00	25.293	30.35	171.9	340.0	2201.3
20.00		1.00	0.91	5.452	6.00	0.00	1.200	0.956	5.00	24.854	29.82	178.9	343.0	2169.0
25.00		1.00	0.95	5.703	6.27	0.00	1.200	0.976	5.00	24.411	29.29	183.8	343.8	2134.6
30.00		1.00	0.99	5.918	6.51	0.00	1.200	0.994	5.00	23.964	28.76	187.2	343.3	2098.8
35.00		1.00	1.02	6.107	6.72	0.00	1.200	1.009	5.00	23.516	28.22	189.6	341.6	2061.9
40.00		1.00	1.05	6.277	6.90	0.00	1.200	1.022	5.00	23.067	27.68	191.1	339.2	2024.2
45.00		1.00	1.07	6.430	7.07	0.00	1.200	1.034	5.00	22.616	27.14	192.0	336.2	1985.9
46.00	Bot - Section 2	1.00	1.08	6.460	7.11	0.00	1.200	1.036	1.00	4.468	5.36	38.1	67.1	392.8
50.00		1.00	1.10	6.572	7.23	0.00	1.200	1.044	4.00	17.991	21.59	156.1	270.7	2708.4
53.25	Top - Section 1	1.00	1.11	6.658	7.32	0.00	1.200	1.051	3.25	14.404	17.28	126.6	218.3	2167.7
55.00		1.00	1.12	6.702	7.37	0.00	1.200	1.054	1.75	7.676	9.21	67.9	117.0	606.5
60.00		1.00	1.14	6.824	7.51	0.00	1.200	1.063	5.00	21.629	25.96	194.8	330.1	1707.6
65.00		1.00	1.16	6.938	7.63	0.00	1.200	1.072	5.00	21.176	25.41	193.9	325.4	1672.1
70.00		1.00	1.18	7.046	7.75	0.00	1.200	1.080	5.00	20.722	24.87	192.7	320.5	1636.3
75.00		1.00	1.19	7.147	7.86	0.00	1.200	1.087	5.00	20.268	24.32	191.2	315.3	1600.3
80.00		1.00	1.21	7.244	7.97	0.00	1.200	1.094	5.00	19.813	23.78	189.5	309.9	1564.0
85.00		1.00	1.23	7.336	8.07	0.00	1.200	1.101	5.00	19.358	23.23	187.4	304.3	1527.5
90.00		1.00	1.24	7.424	8.17	0.00	1.200	1.107	5.00	18.902	22.68	185.2	298.5	1490.9
93.75	Bot - Section 3	1.00	1.25	7.487	8.24	0.00	1.200	1.111	3.75	13.877	16.65	137.1	220.6	1094.6
95.00		1.00	1.25	7.508	8.26	0.00	1.200	1.113	1.25	4.648	5.58	46.1	74.5	613.3
99.50	Top - Section 2	1.00	1.27	7.581	8.34	0.00	1.200	1.118	4.50	16.498	19.80	165.1	263.1	2173.3
100.00		1.00	1.27	7.588	8.35	0.00	1.200	1.118	0.50	1.810	2.17	18.1	29.2	126.9
105.00		1.00	1.28	7.666	8.43	0.00	1.200	1.124	5.00	17.852	21.42	180.6	285.5	1247.9
110.00		1.00	1.29	7.741	8.51	0.00	1.200	1.129	5.00	17.396	20.88	177.7	279.2	1215.2
115.00		1.00	1.31	7.813	8.59	0.00	1.200	1.134	5.00	16.940	20.33	174.7	272.7	1182.2
120.00		1.00	1.32	7.883	8.67	0.00	1.200	1.139	5.00	16.483	19.78	171.5	266.1	1149.2
125.00		1.00	1.33	7.950	8.75	0.00	1.200	1.143	5.00	16.026	19.23	168.2	259.4	1116.1
130.00		1.00	1.34	8.016	8.82	0.00	1.200	1.148	5.00	15.570	18.68	164.7	252.7	1082.8
135.00		1.00	1.35	8.079	8.89	0.00	1.200	1.152	5.00	15.113	18.14	161.2	245.8	1049.5
138.00	Bot - Section 4	1.00	1.36	8.116	8.93	0.00	1.200	1.155	3.00	8.848	10.62	94.8	145.0	614.5
140.00		1.00	1.36	8.141	8.95	0.00	1.200	1.156	2.00	5.892	7.07	63.3	97.0	613.9
142.50	Top - Section 3	1.00	1.37	8.171	8.99	0.00	1.200	1.158	2.50	7.262	8.71	78.3	119.5	755.7
145.00	Appurtenance(s)	1.00	1.37	8.201	9.02	0.00	1.200	1.160	2.50	7.147	8.58	77.4	117.7	370.8
150.00		1.00	1.38	8.259	9.08	0.00	1.200	1.164	5.00	13.953	16.74	152.1	228.3	721.3
155.00		1.00	1.39	8.316	9.15	0.00	1.200	1.168	5.00	13.495	16.19	148.1	221.1	696.5
160.00		1.00	1.40	8.371	9.21	0.00	1.200	1.172	5.00	13.038	15.65	144.1	213.8	671.6
165.00		1.00	1.41	8.425	9.27	0.00	1.200	1.175	5.00	12.580	15.10	139.9	206.5	646.6
170.00		1.00	1.42	8.478	9.33	0.00	1.200	1.179	5.00	12.123	14.55	135.7	199.1	621.6
175.00		1.00	1.43	8.530	9.38	0.00	1.200	1.182	5.00	11.665	14.00	131.3	191.6	596.5
178.00	Appurtenance(s)	1.00	1.43	8.560	9.42	0.00	1.200	1.184	3.00	6.779	8.13	76.6	112.3	346.7
180.00		1.00	1.43	8.580	9.44	0.00	1.200	1.186	2.00	4.428	5.31	50.1	73.6	226.4
185.00		1.00	1.44	8.629	9.49	0.00	1.200	1.189	5.00	10.749	12.90	122.4	176.5	546.1
186.00	Appurtenance(s)	1.00	1.44	8.639	9.50	0.00	1.200	1.189	1.00	2.095	2.51	23.9	35.0	106.8
189.00		1.00	1.45	8.668	9.53	0.00	1.200	1.191	3.00	6.175	7.41	70.6	102.2	313.4

Wind Loading - Shaft

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Totals:	**189.00**	**6,439.9**	**56,130.4**

Discrete Appurtenance Forces

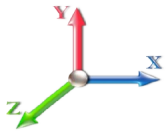
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	186.00	Ericcson RRUS-12	6	8.639	9.503	0.50	0.75	10.35	973.92	0.000	0.000	98.38	0.00	0.00
2	186.00	Platform w/ Hand Rail	1	8.639	9.503	1.00	1.00	51.03	2751.10	0.000	0.000	484.95	0.00	0.00
3	186.00	Raycap DC6-48-60-18-8F	4	8.639	9.503	1.00	1.00	4.87	250.38	0.000	0.000	46.32	0.00	0.00
4	186.00	Ericsson A2	6	8.639	9.503	0.50	0.75	7.61	239.10	0.000	0.000	72.31	0.00	0.00
5	186.00	Ericcson RRUS-32	3	8.639	9.503	0.50	0.75	5.79	494.39	0.000	0.000	55.03	0.00	0.00
6	186.00	Ericsson RRUS-E2	3	8.639	9.503	0.50	0.75	5.46	390.39	0.000	0.000	51.89	0.00	0.00
7	186.00	Ericsson RRUS-11	9	8.639	9.503	0.50	0.75	13.35	1056.19	0.000	0.000	126.85	0.00	0.00
8	186.00	Cci HPA-65R-BUU-H8	12	8.639	9.503	0.59	0.75	99.95	3235.58	0.000	0.000	949.86	0.00	0.00
9	178.00	Low Profile Platform	1	8.560	9.416	1.00	1.00	33.98	2388.17	0.000	0.000	320.00	0.00	0.00
10	178.00	RFS DB-T1-6ZX-8AB-0Z	1	8.560	9.416	0.54	0.80	2.88	114.71	0.000	0.000	27.15	0.00	0.00
11	178.00	ALU RRH2x40-AWS	3	8.560	9.416	0.54	0.80	4.62	229.82	0.000	0.000	43.47	0.00	0.00
12	178.00	ALU RRH2x40-07-U	6	8.560	9.416	0.54	0.80	8.21	503.58	0.000	0.000	77.32	0.00	0.00
13	178.00	Antel BXA171063-12CF	6	8.560	9.416	0.67	0.80	25.54	331.30	0.000	0.000	240.48	0.00	0.00
14	178.00	Antel BXA-70063-6CF	6	8.560	9.416	0.58	0.80	29.45	783.38	0.000	0.000	277.27	0.00	0.00
15	145.00	DS2C00-F-36-B	1	8.274	9.101	0.00	1.00	10.37	92.30	0.000	6.300	94.38	0.00	594.60
16	138.00	Ring Mount	1	8.116	8.928	1.00	1.00	4.23	370.22	0.000	0.000	37.78	0.00	0.00
17	138.00	Side Arm (SV197-48)	1	8.116	8.928	1.00	1.00	7.97	183.28	0.000	0.000	71.16	0.00	0.00
							Totals:		**14,387.82**			**3,074.60**		

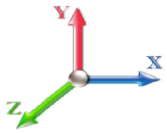
Total Applied Force Summary

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 24

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		175.50	2276.93	0.00	0.00
10.00		172.70	2255.80	0.00	0.00
15.00		171.90	2227.11	0.00	0.00
20.00		178.86	2194.84	0.00	0.00
25.00		183.75	2160.44	0.00	0.00
30.00		187.20	2124.60	0.00	0.00
35.00		189.57	2087.72	0.00	0.00
40.00		191.11	2050.04	0.00	0.00
45.00		191.97	2011.72	0.00	0.00
46.00		38.10	397.98	0.00	0.00
50.00		156.07	2729.00	0.00	0.00
53.25		126.59	2184.51	0.00	0.00
55.00		67.91	615.49	0.00	0.00
60.00		194.84	1733.39	0.00	0.00
65.00		193.94	1697.89	0.00	0.00
70.00		192.72	1662.10	0.00	0.00
75.00		191.22	1626.06	0.00	0.00
80.00		189.45	1589.80	0.00	0.00
85.00		187.45	1553.35	0.00	0.00
90.00		185.23	1516.70	0.00	0.00
93.75		137.15	1113.94	0.00	0.00
95.00		46.06	619.74	0.00	0.00
99.50		165.08	2196.50	0.00	0.00
100.00		18.13	129.45	0.00	0.00
105.00		180.65	1273.75	0.00	0.00
110.00		177.75	1240.95	0.00	0.00
115.00		174.70	1208.03	0.00	0.00
120.00		171.51	1175.00	0.00	0.00
125.00		168.18	1141.87	0.00	0.00
130.00		164.73	1108.63	0.00	0.00
135.00		161.16	1075.30	0.00	0.00
138.00	(2) attachments	203.73	1183.48	0.00	0.00
140.00		63.31	624.23	0.00	0.00
142.50		78.32	768.62	0.00	0.00
145.00	(1) attachments	171.75	476.03	0.00	594.60
150.00		152.11	740.87	0.00	0.00
155.00		148.13	716.04	0.00	0.00
160.00		144.07	691.14	0.00	0.00
165.00		139.91	666.17	0.00	0.00
170.00		135.66	641.13	0.00	0.00
175.00		131.34	616.03	0.00	0.00
178.00	(23) attachments	1062.29	4709.41	0.00	0.00
180.00		50.15	229.24	0.00	0.00
185.00		122.44	553.18	0.00	0.00
186.00	(44) attachments	1909.47	9499.28	0.00	0.00
189.00		70.65	313.41	0.00	0.00

Total Applied Force Summary

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 25

Tower Engineering Solutions

Totals:	**9,514.51**	**71,406.89**	**0.00**	**594.60**

Calculated Forces

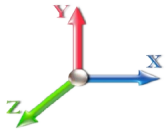
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-71.40	-9.54	0.00	-1216.0	0.00	1216.01	6694.12	1675.79	8365.99	8283.91	0.00	0.000	0.000	0.157
5.00	-69.12	-9.41	0.00	-1168.3	0.00	1168.32	6611.12	1645.48	8066.04	8031.98	0.02	-0.039	0.000	0.156
10.00	-66.86	-9.28	0.00	-1121.2	0.00	1121.27	6526.72	1615.16	7771.57	7782.12	0.08	-0.078	0.000	0.154
15.00	-64.63	-9.15	0.00	-1074.8	0.00	1074.87	6440.91	1584.85	7482.57	7534.42	0.19	-0.118	0.000	0.153
20.00	-62.42	-9.01	0.00	-1029.1	0.00	1029.12	6353.70	1554.53	7199.05	7289.00	0.33	-0.159	0.000	0.151
25.00	-60.26	-8.86	0.00	-984.07	0.00	984.07	6265.08	1524.22	6921.00	7045.93	0.52	-0.200	0.000	0.149
30.00	-58.13	-8.71	0.00	-939.75	0.00	939.75	6175.06	1493.90	6648.43	6805.31	0.75	-0.241	0.000	0.148
35.00	-56.03	-8.55	0.00	-896.20	0.00	896.20	6083.64	1463.58	6381.34	6567.25	1.03	-0.284	0.000	0.146
40.00	-53.98	-8.39	0.00	-853.43	0.00	853.43	5990.81	1433.27	6119.72	6331.82	1.35	-0.326	0.000	0.144
45.00	-51.97	-8.21	0.00	-811.47	0.00	811.47	5896.58	1402.95	5863.57	6099.14	1.71	-0.370	0.000	0.142
46.00	-51.56	-8.19	0.00	-803.26	0.00	803.26	5877.56	1396.89	5813.00	6052.94	1.79	-0.379	0.000	0.142
50.00	-48.83	-8.04	0.00	-770.50	0.00	770.50	5800.94	1372.64	5612.91	5869.29	2.12	-0.414	0.000	0.140
53.25	-46.65	-7.92	0.00	-744.36	0.00	744.36	4912.05	1206.66	4957.23	4999.60	2.41	-0.443	0.000	0.158
55.00	-46.03	-7.87	0.00	-730.51	0.00	730.51	4885.35	1197.38	4881.24	4933.82	2.58	-0.459	0.000	0.158
60.00	-44.29	-7.70	0.00	-691.15	0.00	691.15	4808.10	1170.85	4667.37	4747.29	3.09	-0.508	0.000	0.155
65.00	-42.59	-7.53	0.00	-652.65	0.00	652.65	4729.45	1144.33	4458.28	4562.89	3.65	-0.557	0.000	0.152
70.00	-40.92	-7.35	0.00	-615.02	0.00	615.02	4649.40	1117.80	4253.98	4380.71	4.26	-0.607	0.000	0.149
75.00	-39.29	-7.18	0.00	-578.25	0.00	578.25	4567.94	1091.27	4054.48	4200.86	4.92	-0.657	0.000	0.146
80.00	-37.69	-7.00	0.00	-542.36	0.00	542.36	4485.08	1064.75	3859.77	4023.43	5.63	-0.707	0.000	0.143
85.00	-36.14	-6.83	0.00	-507.34	0.00	507.34	4395.13	1038.22	3669.84	3843.54	6.40	-0.758	0.000	0.140
90.00	-34.62	-6.65	0.00	-473.20	0.00	473.20	4282.84	1011.69	3484.71	3648.68	7.22	-0.810	0.000	0.138
93.75	-33.50	-6.51	0.00	-448.26	0.00	448.26	4198.62	991.80	3349.01	3505.85	7.87	-0.849	0.000	0.136
95.00	-32.88	-6.47	0.00	-440.13	0.00	440.13	4170.55	985.17	3304.37	3458.88	8.10	-0.862	0.000	0.135
99.50	-30.68	-6.29	0.00	-410.99	0.00	410.99	3475.33	840.94	2808.95	2874.66	8.93	-0.909	0.000	0.152
100.00	-30.55	-6.29	0.00	-407.85	0.00	407.85	3468.52	838.66	2793.78	2861.20	9.03	-0.915	0.000	0.151
105.00	-29.28	-6.11	0.00	-376.42	0.00	376.42	3399.67	815.93	2644.35	2727.68	10.02	-0.972	0.000	0.147
110.00	-28.03	-5.94	0.00	-345.85	0.00	345.85	3329.42	793.19	2499.03	2596.17	11.07	-1.029	0.000	0.142
115.00	-26.82	-5.77	0.00	-316.15	0.00	316.15	3257.77	770.45	2357.81	2466.77	12.17	-1.086	0.000	0.136
120.00	-25.64	-5.60	0.00	-287.29	0.00	287.29	3165.34	747.72	2220.70	2325.34	13.34	-1.143	0.000	0.132
125.00	-24.50	-5.44	0.00	-259.27	0.00	259.27	3069.09	724.98	2087.70	2185.36	14.57	-1.200	0.000	0.127
130.00	-23.39	-5.27	0.00	-232.10	0.00	232.10	2972.83	702.24	1958.81	2049.72	15.86	-1.255	0.000	0.121
135.00	-22.32	-5.10	0.00	-205.75	0.00	205.75	2876.58	679.51	1834.02	1918.44	17.20	-1.310	0.000	0.115
138.00	-21.14	-4.88	0.00	-190.45	0.00	190.45	2818.83	665.87	1761.12	1841.75	18.03	-1.342	0.000	0.111
140.00	-20.51	-4.81	0.00	-180.69	0.00	180.69	2780.33	656.77	1713.34	1791.49	18.60	-1.364	0.000	0.108
142.50	-19.74	-4.72	0.00	-168.67	0.00	168.67	1726.66	438.97	1148.10	1119.85	19.32	-1.391	0.000	0.162
145.00	-19.27	-4.56	0.00	-156.26	0.00	156.26	1706.84	431.39	1108.80	1087.73	20.06	-1.417	0.000	0.155
150.00	-18.52	-4.41	0.00	-133.49	0.00	133.49	1666.14	416.24	1032.25	1024.19	21.58	-1.486	0.000	0.142
155.00	-17.81	-4.26	0.00	-111.45	0.00	111.45	1624.04	401.08	958.43	961.65	23.17	-1.551	0.000	0.127
160.00	-17.12	-4.11	0.00	-90.16	0.00	90.16	1580.53	385.92	887.36	900.21	24.83	-1.611	0.000	0.111
165.00	-16.45	-3.97	0.00	-69.59	0.00	69.59	1535.62	370.76	819.02	839.97	26.55	-1.664	0.000	0.094
170.00	-15.81	-3.82	0.00	-49.75	0.00	49.75	1489.31	355.60	753.42	781.02	28.31	-1.709	0.000	0.074
175.00	-15.20	-3.68	0.00	-30.63	0.00	30.63	1441.22	340.45	690.56	723.28	30.12	-1.743	0.000	0.053
178.00	-10.52	-2.48	0.00	-19.59	0.00	19.59	1402.72	331.35	654.16	684.96	31.22	-1.758	0.000	0.036
180.00	-10.30	-2.42	0.00	-14.63	0.00	14.63	1377.05	325.29	630.44	659.99	31.96	-1.765	0.000	0.030
185.00	-9.75	-2.28	0.00	-2.52	0.00	2.52	1312.89	310.13	573.05	599.61	33.82	-1.775	0.000	0.012
186.00	-0.31	-0.08	0.00	-0.24	0.00	0.24	1300.05	307.10	561.90	587.88	34.19	-1.775	0.000	0.001
189.00	0.00	-0.07	0.00	0.00	0.00	0.00	1261.55	298.00	529.12	553.39	35.30	-1.775	0.000	0.000

Calculated Forces

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 27

Seismic Segment Forces (Factored)

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case:	1.2D + 1.0Ev + 1.0Eh					**Iterations**	24
Gust Response Factor	1.10			**Sds**	0.20	**Ss**	0.19
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.08	**S1**	0.05
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.01	0.00	0.00	
5.00		1609.9	0.00	0.03	0.02	100.08	
10.00		1580.5	0.01	0.05	0.03	110.85	
15.00		1551.1	0.01	0.06	0.03	115.50	
20.00		1521.7	0.02	0.07	0.04	117.03	
25.00		1492.3	0.04	0.07	0.04	116.93	
30.00		1462.9	0.05	0.07	0.04	116.04	
35.00		1433.5	0.07	0.07	0.04	114.83	
40.00		1404.1	0.09	0.07	0.04	113.55	
45.00		1374.7	0.11	0.07	0.04	112.30	
46.00	Bot - Section 2	271.43	0.12	0.07	0.04	22.22	
50.00		2031.4	0.14	0.07	0.03	167.60	
53.25	Top - Section 1	1624.5	0.15	0.07	0.03	134.82	
55.00		407.86	0.16	0.07	0.03	33.94	
60.00		1147.9	0.19	0.06	0.02	95.92	
65.00		1122.2	0.23	0.06	0.02	93.39	
70.00		1096.5	0.26	0.05	0.02	89.63	
75.00		1070.8	0.30	0.04	0.01	84.11	
80.00		1045.0	0.34	0.03	0.01	76.29	
85.00		1019.3	0.39	0.02	0.01	65.81	
90.00		993.65	0.43	0.01	0.01	52.80	
93.75	Bot - Section 3	728.36	0.47	-0.01	0.01	31.32	
95.00		449.03	0.48	-0.01	0.01	17.71	
99.50	Top - Section 2	1591.8	0.53	-0.03	0.01	42.13	
100.00		81.41	0.53	-0.03	0.01	2.04	
105.00		802.02	0.59	-0.05	0.01	9.58	
110.00		779.98	0.65	-0.07	0.02	1.29	
115.00		757.94	0.70	-0.09	0.03	-3.82	
120.00		735.90	0.77	-0.10	0.04	-5.86	
125.00		713.86	0.83	-0.12	0.06	-5.18	
130.00		691.81	0.90	-0.12	0.09	-2.14	
135.00		669.77	0.97	-0.12	0.12	2.90	
138.00	Bot - Section 4	731.28	1.01	-0.11	0.14	7.55	
140.00		430.79	1.04	-0.10	0.15	6.44	
142.50	Top - Section 3	530.22	1.08	-0.08	0.17	11.36	
145.00	Appurtenance(s)	250.94	1.12	-0.06	0.20	7.20	
150.00		410.87	1.19	0.00	0.25	18.73	
155.00		396.17	1.27	0.09	0.31	26.00	
160.00		381.48	1.36	0.21	0.39	33.90	
165.00		366.78	1.44	0.37	0.48	42.32	
170.00		352.09	1.53	0.58	0.58	51.14	
175.00		337.39	1.62	0.85	0.70	60.23	
178.00	Appurtenance(s)	2342.4	1.68	1.04	0.78	468.83	
180.00		127.32	1.72	1.18	0.84	27.41	
185.00		308.00	1.81	1.59	1.00	78.71	
186.00	Appurtenance(s)	4071.5	1.83	1.68	1.03	1075.10	

Seismic Segment Forces (Factored)

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

189.00			175.99	1.89	1.98	1.14	51.11		
		Totals:	**44,477.2**				**3,989.6**	**Total Wind:**	**38,973.7**

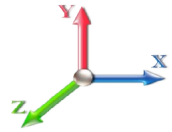
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh



Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	24		
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.08	**Ss**	0.19		
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**S1**	0.05	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-54.26	-4.01	0.00	-470.17	0.00	470.17	6694.12	1675.79	8365.99	8283.91		0.00	0.00	0.065
5.00	-52.30	-3.93	0.00	-450.10	0.00	450.10	6611.12	1645.48	8066.04	8031.98		0.01	-0.01	0.064
10.00	-50.38	-3.83	0.00	-430.47	0.00	430.47	6526.72	1615.16	7771.57	7782.12		0.03	-0.03	0.063
15.00	-48.49	-3.72	0.00	-411.33	0.00	411.33	6440.91	1584.85	7482.57	7534.42		0.07	-0.05	0.062
20.00	-46.64	-3.62	0.00	-392.71	0.00	392.71	6353.70	1554.53	7199.05	7289.00		0.13	-0.06	0.061
25.00	-44.82	-3.51	0.00	-374.61	0.00	374.61	6265.08	1524.22	6921.00	7045.93		0.20	-0.08	0.060
30.00	-43.04	-3.41	0.00	-357.06	0.00	357.06	6175.06	1493.90	6648.43	6805.31		0.29	-0.09	0.059
35.00	-41.29	-3.30	0.00	-340.03	0.00	340.03	6083.64	1463.58	6381.34	6567.25		0.39	-0.11	0.059
40.00	-39.58	-3.19	0.00	-323.54	0.00	323.54	5990.81	1433.27	6119.72	6331.82		0.52	-0.12	0.058
45.00	-37.90	-3.08	0.00	-307.57	0.00	307.57	5896.58	1402.95	5863.57	6099.14		0.66	-0.14	0.057
46.00	-37.57	-3.07	0.00	-304.49	0.00	304.49	5877.56	1396.89	5813.00	6052.94		0.69	-0.14	0.057
50.00	-35.11	-2.90	0.00	-292.23	0.00	292.23	5800.94	1372.64	5612.91	5869.29		0.81	-0.16	0.056
53.25	-33.15	-2.76	0.00	-282.80	0.00	282.80	4912.05	1206.66	4957.23	4999.60		0.92	-0.17	0.063
55.00	-32.65	-2.74	0.00	-277.97	0.00	277.97	4885.35	1197.38	4881.24	4933.82		0.99	-0.18	0.063
60.00	-31.25	-2.65	0.00	-264.29	0.00	264.29	4808.10	1170.85	4667.37	4747.29		1.18	-0.19	0.062
65.00	-29.87	-2.56	0.00	-251.07	0.00	251.07	4729.45	1144.33	4458.28	4562.89		1.39	-0.21	0.061
70.00	-28.53	-2.47	0.00	-238.28	0.00	238.28	4649.40	1117.80	4253.98	4380.71		1.63	-0.23	0.061
75.00	-27.22	-2.39	0.00	-225.92	0.00	225.92	4567.94	1091.27	4054.48	4200.86		1.88	-0.25	0.060
80.00	-25.94	-2.32	0.00	-213.97	0.00	213.97	4485.08	1064.75	3859.77	4023.43		2.15	-0.27	0.059
85.00	-24.69	-2.26	0.00	-202.38	0.00	202.38	4395.13	1038.22	3669.84	3843.54		2.45	-0.29	0.058
90.00	-23.47	-2.20	0.00	-191.10	0.00	191.10	4282.84	1011.69	3484.71	3648.68		2.76	-0.31	0.058
93.75	-22.58	-2.17	0.00	-182.84	0.00	182.84	4198.62	991.80	3349.01	3505.85		3.01	-0.33	0.058
95.00	-22.03	-2.16	0.00	-180.13	0.00	180.13	4170.55	985.17	3304.37	3458.88		3.10	-0.33	0.057
99.50	-20.10	-2.11	0.00	-170.43	0.00	170.43	3475.33	840.94	2808.95	2874.66		3.42	-0.35	0.065
100.00	-20.00	-2.11	0.00	-169.37	0.00	169.37	3468.52	838.66	2793.78	2861.20		3.46	-0.35	0.065
105.00	-19.01	-2.10	0.00	-158.84	0.00	158.84	3399.67	815.93	2644.35	2727.68		3.85	-0.38	0.064
110.00	-18.05	-2.10	0.00	-148.34	0.00	148.34	3329.42	793.19	2499.03	2596.17		4.26	-0.40	0.063
115.00	-17.11	-2.10	0.00	-137.84	0.00	137.84	3257.77	770.45	2357.81	2466.77		4.69	-0.43	0.061
120.00	-16.20	-2.10	0.00	-127.35	0.00	127.35	3165.34	747.72	2220.70	2325.34		5.15	-0.45	0.060
125.00	-15.32	-2.10	0.00	-116.84	0.00	116.84	3069.09	724.98	2087.70	2185.36		5.64	-0.48	0.058
130.00	-14.46	-2.10	0.00	-106.35	0.00	106.35	2972.83	702.24	1958.81	2049.72		6.15	-0.50	0.057
135.00	-13.63	-2.09	0.00	-95.85	0.00	95.85	2876.58	679.51	1834.02	1918.44		6.69	-0.53	0.055
138.00	-12.74	-2.08	0.00	-89.57	0.00	89.57	2818.83	665.87	1761.12	1841.75		7.03	-0.54	0.053
140.00	-12.21	-2.07	0.00	-85.41	0.00	85.41	2780.33	656.77	1713.34	1791.49		7.26	-0.55	0.052
142.50	-11.56	-2.06	0.00	-80.24	0.00	80.24	1726.66	438.97	1148.10	1119.85		7.56	-0.57	0.078
145.00	-11.24	-2.05	0.00	-75.10	0.00	75.10	1706.84	431.39	1108.80	1087.73		7.86	-0.58	0.076
150.00	-10.73	-2.03	0.00	-64.85	0.00	64.85	1666.14	416.24	1032.25	1024.19		8.48	-0.61	0.070
155.00	-10.23	-2.01	0.00	-54.68	0.00	54.68	1624.04	401.08	958.43	961.65		9.14	-0.64	0.063
160.00	-9.76	-1.97	0.00	-44.65	0.00	44.65	1580.53	385.92	887.36	900.21		9.83	-0.67	0.056
165.00	-9.30	-1.93	0.00	-34.79	0.00	34.79	1535.62	370.76	819.02	839.97		10.55	-0.70	0.048
170.00	-8.85	-1.87	0.00	-25.15	0.00	25.15	1489.31	355.60	753.42	781.02		11.30	-0.72	0.038
175.00	-8.43	-1.81	0.00	-15.78	0.00	15.78	1441.22	340.45	690.56	723.28		12.06	-0.74	0.028
178.00	-5.61	-1.31	0.00	-10.35	0.00	10.35	1402.72	331.35	654.16	684.96		12.53	-0.75	0.019
180.00	-5.46	-1.28	0.00	-7.74	0.00	7.74	1377.05	325.29	630.44	659.99		12.84	-0.75	0.016
185.00	-5.08	-1.19	0.00	-1.35	0.00	1.35	1312.89	310.13	573.05	599.61		13.63	-0.76	0.006
186.00	-0.21	-0.05	0.00	-0.16	0.00	0.16	1300.05	307.10	561.90	587.88		13.79	-0.76	0.000
189.00	0.00	-0.05	0.00	0.00	0.00	0.00	1261.55	298.00	529.12	553.39		14.27	-0.76	0.000

Calculated Forces

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 31

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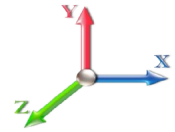
Seismic Segment Forces (Factored)

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh



Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	24
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.08	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03	**S1**	0.05
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.01	0.00	0.00	
5.00		1609.9	0.00	0.03	0.02	100.08	
10.00		1580.5	0.01	0.05	0.03	110.85	
15.00		1551.1	0.01	0.06	0.03	115.50	
20.00		1521.7	0.02	0.07	0.04	117.03	
25.00		1492.3	0.04	0.07	0.04	116.93	
30.00		1462.9	0.05	0.07	0.04	116.04	
35.00		1433.5	0.07	0.07	0.04	114.83	
40.00		1404.1	0.09	0.07	0.04	113.55	
45.00		1374.7	0.11	0.07	0.04	112.30	
46.00	Bot - Section 2	271.43	0.12	0.07	0.04	22.22	
50.00		2031.4	0.14	0.07	0.03	167.60	
53.25	Top - Section 1	1624.5	0.15	0.07	0.03	134.82	
55.00		407.86	0.16	0.07	0.03	33.94	
60.00		1147.9	0.19	0.06	0.02	95.92	
65.00		1122.2	0.23	0.06	0.02	93.39	
70.00		1096.5	0.26	0.05	0.02	89.63	
75.00		1070.8	0.30	0.04	0.01	84.11	
80.00		1045.0	0.34	0.03	0.01	76.29	
85.00		1019.3	0.39	0.02	0.01	65.81	
90.00		993.65	0.43	0.01	0.01	52.80	
93.75	Bot - Section 3	728.36	0.47	-0.01	0.01	31.32	
95.00		449.03	0.48	-0.01	0.01	17.71	
99.50	Top - Section 2	1591.8	0.53	-0.03	0.01	42.13	
100.00		81.41	0.53	-0.03	0.01	2.04	
105.00		802.02	0.59	-0.05	0.01	9.58	
110.00		779.98	0.65	-0.07	0.02	1.29	
115.00		757.94	0.70	-0.09	0.03	-3.82	
120.00		735.90	0.77	-0.10	0.04	-5.86	
125.00		713.86	0.83	-0.12	0.06	-5.18	
130.00		691.81	0.90	-0.12	0.09	-2.14	
135.00		669.77	0.97	-0.12	0.12	2.90	
138.00	Bot - Section 4	731.28	1.01	-0.11	0.14	7.55	
140.00		430.79	1.04	-0.10	0.15	6.44	
142.50	Top - Section 3	530.22	1.08	-0.08	0.17	11.36	
145.00	Appurtenance(s)	250.94	1.12	-0.06	0.20	7.20	
150.00		410.87	1.19	0.00	0.25	18.73	
155.00		396.17	1.27	0.09	0.31	26.00	
160.00		381.48	1.36	0.21	0.39	33.90	
165.00		366.78	1.44	0.37	0.48	42.32	
170.00		352.09	1.53	0.58	0.58	51.14	
175.00		337.39	1.62	0.85	0.70	60.23	
178.00	Appurtenance(s)	2342.4	1.68	1.04	0.78	468.83	
180.00		127.32	1.72	1.18	0.84	27.41	
185.00		308.00	1.81	1.59	1.00	78.71	
186.00	Appurtenance(s)	4071.5	1.83	1.68	1.03	1075.10	

Seismic Segment Forces (Factored)

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

189.00		175.99	1.89	1.98	1.14	51.11		
	Totals:	**44,477.2**				**3,989.6**	**Total Wind:**	**38,973.7**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.20			**Iterations**	24
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.08			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.32	**SA**	0.03			**S1**	0.05
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.70	-4.01	0.00	-465.21	0.00	465.21	6694.12	1675.79	8365.99	8283.91		0.00	0.00	0.062
5.00	-39.23	-3.92	0.00	-445.15	0.00	445.15	6611.12	1645.48	8066.04	8031.98		0.01	-0.01	0.061
10.00	-37.78	-3.82	0.00	-425.55	0.00	425.55	6526.72	1615.16	7771.57	7782.12		0.03	-0.03	0.060
15.00	-36.37	-3.71	0.00	-406.45	0.00	406.45	6440.91	1584.85	7482.57	7534.42		0.07	-0.04	0.060
20.00	-34.98	-3.60	0.00	-387.89	0.00	387.89	6353.70	1554.53	7199.05	7289.00		0.13	-0.06	0.059
25.00	-33.61	-3.49	0.00	-369.87	0.00	369.87	6265.08	1524.22	6921.00	7045.93		0.20	-0.08	0.058
30.00	-32.28	-3.39	0.00	-352.39	0.00	352.39	6175.06	1493.90	6648.43	6805.31		0.29	-0.09	0.057
35.00	-30.97	-3.28	0.00	-335.47	0.00	335.47	6083.64	1463.58	6381.34	6567.25		0.39	-0.11	0.056
40.00	-29.68	-3.17	0.00	-319.08	0.00	319.08	5990.81	1433.27	6119.72	6331.82		0.51	-0.12	0.055
45.00	-28.43	-3.06	0.00	-303.23	0.00	303.23	5896.58	1402.95	5863.57	6099.14		0.65	-0.14	0.055
46.00	-28.18	-3.04	0.00	-300.18	0.00	300.18	5877.56	1396.89	5813.00	6052.94		0.68	-0.14	0.054
50.00	-26.33	-2.87	0.00	-288.02	0.00	288.02	5800.94	1372.64	5612.91	5869.29		0.80	-0.16	0.054
53.25	-24.86	-2.74	0.00	-278.68	0.00	278.68	4912.05	1206.66	4957.23	4999.60		0.91	-0.17	0.061
55.00	-24.48	-2.71	0.00	-273.89	0.00	273.89	4885.35	1197.38	4881.24	4933.82		0.97	-0.17	0.061
60.00	-23.43	-2.62	0.00	-260.35	0.00	260.35	4808.10	1170.85	4667.37	4747.29		1.17	-0.19	0.060
65.00	-22.40	-2.53	0.00	-247.26	0.00	247.26	4729.45	1144.33	4458.28	4562.89		1.38	-0.21	0.059
70.00	-21.40	-2.44	0.00	-234.63	0.00	234.63	4649.40	1117.80	4253.98	4380.71		1.61	-0.23	0.058
75.00	-20.41	-2.36	0.00	-222.43	0.00	222.43	4567.94	1091.27	4054.48	4200.86		1.85	-0.25	0.057
80.00	-19.45	-2.29	0.00	-210.63	0.00	210.63	4485.08	1064.75	3859.77	4023.43		2.12	-0.27	0.057
85.00	-18.51	-2.22	0.00	-199.21	0.00	199.21	4395.13	1038.22	3669.84	3843.54		2.42	-0.29	0.056
90.00	-17.60	-2.17	0.00	-188.10	0.00	188.10	4282.84	1011.69	3484.71	3648.68		2.73	-0.31	0.056
93.75	-16.93	-2.14	0.00	-179.97	0.00	179.97	4198.62	991.80	3349.01	3505.85		2.97	-0.32	0.055
95.00	-16.52	-2.12	0.00	-177.30	0.00	177.30	4170.55	985.17	3304.37	3458.88		3.06	-0.33	0.055
99.50	-15.07	-2.07	0.00	-167.75	0.00	167.75	3475.33	840.94	2808.95	2874.66		3.38	-0.35	0.063
100.00	-14.99	-2.07	0.00	-166.72	0.00	166.72	3468.52	838.66	2793.78	2861.20		3.42	-0.35	0.063
105.00	-14.25	-2.07	0.00	-156.35	0.00	156.35	3399.67	815.93	2644.35	2727.68		3.79	-0.37	0.062
110.00	-13.53	-2.07	0.00	-146.02	0.00	146.02	3329.42	793.19	2499.03	2596.17		4.20	-0.40	0.060
115.00	-12.83	-2.07	0.00	-135.69	0.00	135.69	3257.77	770.45	2357.81	2466.77		4.63	-0.42	0.059
120.00	-12.15	-2.07	0.00	-125.36	0.00	125.36	3165.34	747.72	2220.70	2325.34		5.08	-0.45	0.058
125.00	-11.48	-2.07	0.00	-115.04	0.00	115.04	3069.09	724.98	2087.70	2185.36		5.56	-0.47	0.056
130.00	-10.84	-2.06	0.00	-104.71	0.00	104.71	2972.83	702.24	1958.81	2049.72		6.07	-0.50	0.055
135.00	-10.22	-2.06	0.00	-94.39	0.00	94.39	2876.58	679.51	1834.02	1918.44		6.60	-0.52	0.053
138.00	-9.55	-2.05	0.00	-88.21	0.00	88.21	2818.83	665.87	1761.12	1841.75		6.93	-0.54	0.051
140.00	-9.15	-2.04	0.00	-84.11	0.00	84.11	2780.33	656.77	1713.34	1791.49		7.16	-0.55	0.050
142.50	-8.66	-2.03	0.00	-79.01	0.00	79.01	1726.66	438.97	1148.10	1119.85		7.45	-0.56	0.076
145.00	-8.43	-2.02	0.00	-73.95	0.00	73.95	1706.84	431.39	1108.80	1087.73		7.75	-0.57	0.073
150.00	-8.04	-2.00	0.00	-63.85	0.00	63.85	1666.14	416.24	1032.25	1024.19		8.36	-0.60	0.067
155.00	-7.67	-1.98	0.00	-53.84	0.00	53.84	1624.04	401.08	958.43	961.65		9.01	-0.63	0.061
160.00	-7.31	-1.94	0.00	-43.96	0.00	43.96	1580.53	385.92	887.36	900.21		9.69	-0.66	0.053
165.00	-6.97	-1.90	0.00	-34.26	0.00	34.26	1535.62	370.76	819.02	839.97		10.40	-0.69	0.045
170.00	-6.64	-1.84	0.00	-24.77	0.00	24.77	1489.31	355.60	753.42	781.02		11.14	-0.71	0.036
175.00	-6.32	-1.78	0.00	-15.54	0.00	15.54	1441.22	340.45	690.56	723.28		11.89	-0.73	0.026
178.00	-4.21	-1.29	0.00	-10.20	0.00	10.20	1402.72	331.35	654.16	684.96		12.35	-0.74	0.018
180.00	-4.09	-1.26	0.00	-7.63	0.00	7.63	1377.05	325.29	630.44	659.99		12.66	-0.74	0.015
185.00	-3.81	-1.18	0.00	-1.34	0.00	1.34	1312.89	310.13	573.05	599.61		13.44	-0.75	0.005
186.00	-0.16	-0.05	0.00	-0.16	0.00	0.16	1300.05	307.10	561.90	587.88		13.60	-0.75	0.000
189.00	0.00	-0.05	0.00	0.00	0.00	0.00	1261.55	298.00	529.12	553.39		14.06	-0.75	0.000

Calculated Forces

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 35

Tower Engineering Solutions

Wind Loading - Shaft

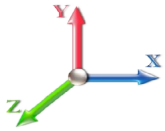
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 36	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.324	8.06	281.72	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.324	8.06	276.67	0.730	0.000	5.00	25.439	18.57	149.6	0.0	1609.9
10.00		1.00	0.85	7.324	8.06	271.61	0.730	0.000	5.00	24.978	18.23	146.9	0.0	1580.5
15.00		1.00	0.86	7.414	8.16	268.20	0.730	0.000	5.00	24.518	17.90	146.0	0.0	1551.1
20.00		1.00	0.91	7.851	8.64	270.76	0.730	0.000	5.00	24.057	17.56	151.7	0.0	1521.7
25.00		1.00	0.95	8.212	9.03	271.56	0.730	0.000	5.00	23.597	17.23	155.6	0.0	1492.3
30.00		1.00	0.99	8.522	9.37	271.18	0.730	0.000	5.00	23.136	16.89	158.3	0.0	1463.0
35.00		1.00	1.02	8.794	9.67	269.94	0.730	0.000	5.00	22.676	16.55	160.1	0.0	1433.6
40.00		1.00	1.05	9.038	9.94	268.05	0.730	0.000	5.00	22.215	16.22	161.2	0.0	1404.2
45.00		1.00	1.07	9.260	10.19	265.63	0.730	0.000	5.00	21.755	15.88	161.8	0.0	1374.8
46.00	Bot - Section 2	1.00	1.08	9.302	10.23	265.10	0.730	0.000	1.00	4.296	3.14	32.1	0.0	271.4
50.00		1.00	1.10	9.463	10.41	262.79	0.730	0.000	4.00	17.295	12.63	131.4	0.0	2031.4
53.25	Top - Section 1	1.00	1.11	9.587	10.55	260.74	0.730	0.000	3.25	13.835	10.10	106.5	0.0	1624.6
55.00		1.00	1.12	9.651	10.62	264.25	0.730	0.000	1.75	7.369	5.38	57.1	0.0	407.9
60.00		1.00	1.14	9.827	10.81	260.79	0.730	0.000	5.00	20.743	15.14	163.7	0.0	1147.9
65.00		1.00	1.16	9.991	10.99	257.05	0.730	0.000	5.00	20.283	14.81	162.7	0.0	1122.2
70.00		1.00	1.18	10.146	11.16	253.09	0.730	0.000	5.00	19.822	14.47	161.5	0.0	1096.5
75.00		1.00	1.19	10.292	11.32	248.92	0.730	0.000	5.00	19.362	14.13	160.0	0.0	1070.8
80.00		1.00	1.21	10.431	11.47	244.56	0.730	0.000	5.00	18.901	13.80	158.3	0.0	1045.1
85.00		1.00	1.23	10.564	11.62	240.03	0.730	0.000	5.00	18.441	13.46	156.4	0.0	1019.4
90.00		1.00	1.24	10.690	11.76	235.36	0.730	0.000	5.00	17.980	13.13	154.3	0.0	993.6
93.75	Bot - Section 3	1.00	1.25	10.781	11.86	231.76	0.730	0.000	3.75	13.183	9.62	114.1	0.0	728.4
95.00		1.00	1.25	10.811	11.89	230.55	0.730	0.000	1.25	4.416	3.22	38.3	0.0	449.0
99.50	Top - Section 2	1.00	1.27	10.916	12.01	226.11	0.730	0.000	4.50	15.659	11.43	137.3	0.0	1591.8
100.00		1.00	1.27	10.927	12.02	229.86	0.730	0.000	0.50	1.717	1.25	15.1	0.0	81.4
105.00		1.00	1.28	11.039	12.14	224.83	0.730	0.000	5.00	16.916	12.35	149.9	0.0	802.0
110.00		1.00	1.29	11.147	12.26	219.69	0.730	0.000	5.00	16.455	12.01	147.3	0.0	780.0
115.00		1.00	1.31	11.251	12.38	214.44	0.730	0.000	5.00	15.995	11.68	144.5	0.0	757.9
120.00		1.00	1.32	11.351	12.49	209.11	0.730	0.000	5.00	15.534	11.34	141.6	0.0	735.9
125.00		1.00	1.33	11.448	12.59	203.68	0.730	0.000	5.00	15.074	11.00	138.6	0.0	713.9
130.00		1.00	1.34	11.542	12.70	198.17	0.730	0.000	5.00	14.613	10.67	135.4	0.0	691.8
135.00		1.00	1.35	11.634	12.80	192.58	0.730	0.000	5.00	14.153	10.33	132.2	0.0	669.8
138.00	Bot - Section 4	1.00	1.36	11.687	12.86	189.19	0.730	0.000	3.00	8.270	6.04	77.6	0.0	391.3
140.00		1.00	1.36	11.722	12.89	186.92	0.730	0.000	2.00	5.506	4.02	51.8	0.0	430.8
142.50	Top - Section 3	1.00	1.37	11.766	12.94	184.06	0.730	0.000	2.50	6.779	4.95	64.0	0.0	530.2
145.00	Appurtenance(s)	1.00	1.37	11.809	12.99	184.14	0.730	0.000	2.50	6.664	4.86	63.2	0.0	210.9
150.00		1.00	1.38	11.893	13.08	178.35	0.730	0.000	5.00	12.982	9.48	124.0	0.0	410.9
155.00		1.00	1.39	11.975	13.17	172.50	0.730	0.000	5.00	12.522	9.14	120.4	0.0	396.2
160.00		1.00	1.40	12.054	13.26	166.59	0.730	0.000	5.00	12.061	8.80	116.8	0.0	381.5
165.00		1.00	1.41	12.132	13.35	160.62	0.730	0.000	5.00	11.601	8.47	113.0	0.0	366.8
170.00		1.00	1.42	12.208	13.43	154.60	0.730	0.000	5.00	11.140	8.13	109.2	0.0	352.1
175.00		1.00	1.43	12.283	13.51	148.52	0.730	0.000	5.00	10.680	7.80	105.3	0.0	337.4
178.00	Appurtenance(s)	1.00	1.43	12.326	13.56	144.85	0.730	0.000	3.00	6.187	4.52	61.2	0.0	195.4
180.00		1.00	1.43	12.355	13.59	142.40	0.730	0.000	2.00	4.032	2.94	40.0	0.0	127.3
185.00		1.00	1.44	12.426	13.67	136.22	0.730	0.000	5.00	9.759	7.12	97.4	0.0	308.0
186.00	Appurtenance(s)	1.00	1.44	12.440	13.68	134.98	0.730	0.000	1.00	1.896	1.38	18.9	0.0	59.8
189.00		1.00	1.45	12.482	13.73	131.25	0.730	0.000	3.00	5.579	4.07	55.9	0.0	176.0

Wind Loading - Shaft

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 37	

Totals:	**189.00**	**5,348.5**	**37,938.4**

Discrete Appurtenance Forces

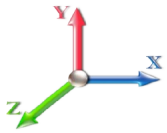
Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 38	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	186.00	Ericcson RRUS-12	6	12.440	13.684	0.50	0.75	8.14	480.00	0.000	0.000	111.40	0.00	0.00
2	186.00	Platform w/ Hand Rail	1	12.440	13.684	1.00	1.00	32.00	1600.00	0.000	0.000	437.90	0.00	0.00
3	186.00	Raycap DC6-48-60-18-8F	4	12.440	13.684	1.00	1.00	3.68	127.20	0.000	0.000	50.36	0.00	0.00
4	186.00	Ericsson A2	6	12.440	13.684	0.50	0.75	5.61	127.20	0.000	0.000	76.74	0.00	0.00
5	186.00	Ericcson RRUS-32	3	12.440	13.684	0.50	0.75	5.83	231.00	0.000	0.000	79.84	0.00	0.00
6	186.00	Ericsson RRUS-E2	3	12.440	13.684	0.50	0.75	4.75	174.00	0.000	0.000	64.98	0.00	0.00
7	186.00	Ericsson RRUS-11	9	12.440	13.684	0.50	0.75	11.40	456.30	0.000	0.000	155.96	0.00	0.00
8	186.00	Cci HPA-65R-BUU-H8	12	12.440	13.684	0.59	0.75	92.29	816.00	0.000	0.000	1262.91	0.00	0.00
9	178.00	Low Profile Platform	1	12.326	13.559	1.00	1.00	22.00	1500.00	0.000	0.000	298.30	0.00	0.00
10	178.00	RFS DB-T1-6ZX-8AB-0Z	1	12.326	13.559	0.54	0.80	2.57	18.90	0.000	0.000	34.88	0.00	0.00
11	178.00	ALU RRH2x40-AWS	3	12.326	13.559	0.54	0.80	3.47	132.00	0.000	0.000	47.09	0.00	0.00
12	178.00	ALU RRH2x40-07-U	6	12.326	13.559	0.54	0.80	6.21	304.20	0.000	0.000	84.16	0.00	0.00
13	178.00	Antel BXA171063-12CF	6	12.326	13.559	0.67	0.80	19.11	90.00	0.000	0.000	259.14	0.00	0.00
14	178.00	Antel BXA-70063-6CF	6	12.326	13.559	0.58	0.80	26.53	102.00	0.000	0.000	359.66	0.00	0.00
15	145.00	DS2C00-F-36-B	1	11.914	13.106	0.00	1.00	5.78	40.00	0.000	6.300	75.75	0.00	477.23
16	138.00	Ring Mount	1	11.687	12.856	1.00	1.00	2.50	220.00	0.000	0.000	32.14	0.00	0.00
17	138.00	Side Arm (SV197-48)	1	11.687	12.856	1.00	1.00	4.50	120.00	0.000	0.000	57.85	0.00	0.00
							Totals:		**6,538.80**			**3,489.06**		

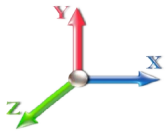
Total Applied Force Summary

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 39

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		149.60	1631.41	0.00	0.00
10.00		146.89	1602.02	0.00	0.00
15.00		145.97	1572.63	0.00	0.00
20.00		151.66	1543.24	0.00	0.00
25.00		155.60	1513.85	0.00	0.00
30.00		158.32	1484.46	0.00	0.00
35.00		160.13	1455.07	0.00	0.00
40.00		161.23	1425.68	0.00	0.00
45.00		161.76	1396.29	0.00	0.00
46.00		32.09	275.73	0.00	0.00
50.00		131.42	2048.61	0.00	0.00
53.25		106.51	1638.53	0.00	0.00
55.00		57.11	415.38	0.00	0.00
60.00		163.68	1169.44	0.00	0.00
65.00		162.73	1143.73	0.00	0.00
70.00		161.49	1118.01	0.00	0.00
75.00		160.02	1092.30	0.00	0.00
80.00		158.32	1066.58	0.00	0.00
85.00		156.42	1040.86	0.00	0.00
90.00		154.34	1015.15	0.00	0.00
93.75		114.13	744.48	0.00	0.00
95.00		38.34	454.41	0.00	0.00
99.50		137.26	1611.15	0.00	0.00
100.00		15.07	83.56	0.00	0.00
105.00		149.95	823.52	0.00	0.00
110.00		147.29	801.48	0.00	0.00
115.00		144.50	779.44	0.00	0.00
120.00		141.59	757.40	0.00	0.00
125.00		138.57	735.36	0.00	0.00
130.00		135.44	713.31	0.00	0.00
135.00		132.21	691.27	0.00	0.00
138.00	(2) attachments	167.61	744.18	0.00	0.00
140.00		51.83	439.39	0.00	0.00
142.50		64.05	540.97	0.00	0.00
145.00	(1) attachments	138.94	261.69	0.00	477.23
150.00		123.98	427.17	0.00	0.00
155.00		120.41	412.47	0.00	0.00
160.00		116.75	397.78	0.00	0.00
165.00		113.02	383.08	0.00	0.00
170.00		109.21	368.39	0.00	0.00
175.00		105.33	353.69	0.00	0.00
178.00	(23) attachments	1144.47	2352.26	0.00	0.00
180.00		40.01	129.68	0.00	0.00
185.00		97.38	313.90	0.00	0.00
186.00	(44) attachments	2259.03	4072.72	0.00	0.00
189.00		55.92	175.99	0.00	0.00

Total Applied Force Summary

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 40

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Totals:	**8,837.58**	**45,217.72**	**0.00**	**477.23**

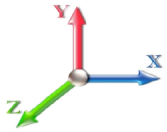
Calculated Forces

Structure:	CT11796-S-SBA	**Code:**	EIA/TIA-222-H	3/2/2020	
Site Name:	North Stonington 3	**Exposure:**	C		
Height:	189.00 (ft)	**Crest Height:**	0.00		
Base Elev:	1.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 41	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.21	-8.85	0.00	-1153.6	0.00	1153.67	6694.12	1675.79	8365.99	8283.91	0.00	0.000	0.000	0.146
5.00	-43.58	-8.73	0.00	-1109.4	0.00	1109.41	6611.12	1645.48	8066.04	8031.98	0.02	-0.037	0.000	0.145
10.00	-41.97	-8.61	0.00	-1065.7	0.00	1065.76	6526.72	1615.16	7771.57	7782.12	0.08	-0.074	0.000	0.143
15.00	-40.39	-8.49	0.00	-1022.7	0.00	1022.71	6440.91	1584.85	7482.57	7534.42	0.18	-0.112	0.000	0.142
20.00	-38.84	-8.36	0.00	-980.28	0.00	980.28	6353.70	1554.53	7199.05	7289.00	0.31	-0.151	0.000	0.141
25.00	-37.32	-8.22	0.00	-938.48	0.00	938.48	6265.08	1524.22	6921.00	7045.93	0.49	-0.190	0.000	0.139
30.00	-35.84	-8.09	0.00	-897.36	0.00	897.36	6175.06	1493.90	6648.43	6805.31	0.71	-0.230	0.000	0.138
35.00	-34.38	-7.94	0.00	-856.93	0.00	856.93	6083.64	1463.58	6381.34	6567.25	0.98	-0.270	0.000	0.136
40.00	-32.94	-7.80	0.00	-817.22	0.00	817.22	5990.81	1433.27	6119.72	6331.82	1.28	-0.311	0.000	0.135
45.00	-31.55	-7.64	0.00	-778.22	0.00	778.22	5896.58	1402.95	5863.57	6099.14	1.63	-0.352	0.000	0.133
46.00	-31.27	-7.62	0.00	-770.58	0.00	770.58	5877.56	1396.89	5813.00	6052.94	1.70	-0.361	0.000	0.133
50.00	-29.22	-7.49	0.00	-740.10	0.00	740.10	5800.94	1372.64	5612.91	5869.29	2.02	-0.395	0.000	0.131
53.25	-27.58	-7.38	0.00	-715.75	0.00	715.75	4912.05	1206.66	4957.23	4999.60	2.30	-0.423	0.000	0.149
55.00	-27.16	-7.34	0.00	-702.83	0.00	702.83	4885.35	1197.38	4881.24	4933.82	2.46	-0.438	0.000	0.148
60.00	-25.98	-7.19	0.00	-666.14	0.00	666.14	4808.10	1170.85	4667.37	4747.29	2.94	-0.485	0.000	0.146
65.00	-24.83	-7.03	0.00	-630.21	0.00	630.21	4729.45	1144.33	4458.28	4562.89	3.48	-0.533	0.000	0.143
70.00	-23.71	-6.88	0.00	-595.04	0.00	595.04	4649.40	1117.80	4253.98	4380.71	4.06	-0.581	0.000	0.141
75.00	-22.62	-6.73	0.00	-560.63	0.00	560.63	4567.94	1091.27	4054.48	4200.86	4.69	-0.629	0.000	0.138
80.00	-21.55	-6.58	0.00	-526.98	0.00	526.98	4485.08	1064.75	3859.77	4023.43	5.38	-0.678	0.000	0.136
85.00	-20.50	-6.43	0.00	-494.10	0.00	494.10	4395.13	1038.22	3669.84	3843.54	6.12	-0.728	0.000	0.133
90.00	-19.48	-6.27	0.00	-461.97	0.00	461.97	4282.84	1011.69	3484.71	3648.68	6.90	-0.778	0.000	0.131
93.75	-18.74	-6.16	0.00	-438.44	0.00	438.44	4198.62	991.80	3349.01	3505.85	7.53	-0.816	0.000	0.130
95.00	-18.28	-6.12	0.00	-430.74	0.00	430.74	4170.55	985.17	3304.37	3458.88	7.75	-0.829	0.000	0.129
99.50	-16.67	-5.97	0.00	-403.19	0.00	403.19	3475.33	840.94	2808.95	2874.66	8.55	-0.875	0.000	0.145
100.00	-16.58	-5.96	0.00	-400.21	0.00	400.21	3468.52	838.66	2793.78	2861.20	8.64	-0.881	0.000	0.145
105.00	-15.76	-5.81	0.00	-370.40	0.00	370.40	3399.67	815.93	2644.35	2727.68	9.60	-0.937	0.000	0.140
110.00	-14.95	-5.67	0.00	-341.34	0.00	341.34	3329.42	793.19	2499.03	2596.17	10.61	-0.993	0.000	0.136
115.00	-14.17	-5.52	0.00	-313.00	0.00	313.00	3257.77	770.45	2357.81	2466.77	11.68	-1.050	0.000	0.131
120.00	-13.41	-5.38	0.00	-285.38	0.00	285.38	3165.34	747.72	2220.70	2325.34	12.81	-1.106	0.000	0.127
125.00	-12.67	-5.24	0.00	-258.48	0.00	258.48	3069.09	724.98	2087.70	2185.36	14.00	-1.163	0.000	0.122
130.00	-11.96	-5.10	0.00	-232.28	0.00	232.28	2972.83	702.24	1958.81	2049.72	15.24	-1.218	0.000	0.117
135.00	-11.26	-4.96	0.00	-206.78	0.00	206.78	2876.58	679.51	1834.02	1918.44	16.55	-1.273	0.000	0.112
138.00	-10.52	-4.78	0.00	-191.89	0.00	191.89	2818.83	665.87	1761.12	1841.75	17.36	-1.306	0.000	0.108
140.00	-10.08	-4.73	0.00	-182.33	0.00	182.33	2780.33	656.77	1713.34	1791.49	17.91	-1.327	0.000	0.105
142.50	-9.54	-4.65	0.00	-170.51	0.00	170.51	1726.66	438.97	1148.10	1119.85	18.61	-1.354	0.000	0.158
145.00	-9.28	-4.52	0.00	-158.40	0.00	158.40	1706.84	431.39	1108.80	1087.73	19.33	-1.381	0.000	0.151
150.00	-8.85	-4.39	0.00	-135.82	0.00	135.82	1666.14	416.24	1032.25	1024.19	20.81	-1.451	0.000	0.138
155.00	-8.44	-4.27	0.00	-113.86	0.00	113.86	1624.04	401.08	958.43	961.65	22.37	-1.517	0.000	0.124
160.00	-8.04	-4.15	0.00	-92.51	0.00	92.51	1580.53	385.92	887.36	900.21	23.99	-1.578	0.000	0.108
165.00	-7.65	-4.03	0.00	-71.75	0.00	71.75	1535.62	370.76	819.02	839.97	25.68	-1.633	0.000	0.091
170.00	-7.29	-3.92	0.00	-51.58	0.00	51.58	1489.31	355.60	753.42	781.02	27.41	-1.680	0.000	0.071
175.00	-6.93	-3.81	0.00	-31.98	0.00	31.98	1441.22	340.45	690.56	723.28	29.19	-1.715	0.000	0.049
178.00	-4.62	-2.59	0.00	-20.56	0.00	20.56	1402.72	331.35	654.16	684.96	30.27	-1.731	0.000	0.033
180.00	-4.49	-2.55	0.00	-15.38	0.00	15.38	1377.05	325.29	630.44	659.99	31.00	-1.738	0.000	0.027
185.00	-4.18	-2.44	0.00	-2.63	0.00	2.63	1312.89	310.13	573.05	599.61	32.83	-1.748	0.000	0.008
186.00	-0.17	-0.06	0.00	-0.18	0.00	0.18	1300.05	307.10	561.90	587.88	33.19	-1.748	0.000	0.000
189.00	0.00	-0.06	0.00	0.00	0.00	0.00	1261.55	298.00	529.12	553.39	34.29	-1.749	0.000	0.000

Calculated Forces

Structure:	CT11796-S-SBA		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 42

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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.0W 126 mph Wind	39.1	0.00	54.20	0.00	0.00	5112.66
0.9D + 1.0W 126 mph Wind	39.0	0.00	40.64	0.00	0.00	5059.31
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.5	0.00	71.40	0.00	0.00	1216.01
1.2D + 1.0Ev + 1.0Eh	4.0	0.00	54.26	0.00	0.00	470.17
0.9D + 1.0Ev + 1.0Eh	4.0	0.00	40.70	0.00	0.00	465.21
1.0D + 1.0W 60 mph Wind	8.9	0.00	45.21	0.00	0.00	1153.67

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.0W 126 mph Wind	-9.45	-20.63	0.00	-755.15	0.00	-755.15	1726.66	438.97	1148.10	1119.85	142.50	0.682
0.9D + 1.0W 126 mph Wind	-6.60	-20.31	0.00	-742.59	0.00	-742.59	1726.66	438.97	1148.10	1119.85	142.50	0.669
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-19.74	-4.72	0.00	-168.67	0.00	-168.67	1726.66	438.97	1148.10	1119.85	142.50	0.162
1.2D + 1.0Ev + 1.0Eh	-11.56	-2.06	0.00	-80.24	0.00	-80.24	1726.66	438.97	1148.10	1119.85	142.50	0.078
0.9D + 1.0Ev + 1.0Eh	-8.66	-2.03	0.00	-79.01	0.00	-79.01	1726.66	438.97	1148.10	1119.85	142.50	0.076
1.0D + 1.0W 60 mph Wind	-9.54	-4.65	0.00	-170.51	0.00	-170.51	1726.66	438.97	1148.10	1119.85	142.50	0.158

Base Plate Summary

Structure:	CT11796-S-SB		**Code:**	EIA/TIA-222-H	3/2/2020
Site Name:	North Stonington 3		**Exposure:**	C	
Height:	189.00 (ft)		**Crest Height:**	0.00	
Base Elev:	1.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 44

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Reactions	
Original Design	
Moment (kip-ft):	7779.17
Axial (kip):	78.74
Shear (kip):	60.41
Analysis	
Moment (kip-ft):	5112.66
Axial (kip):	71.40
Shear (kip):	39.05
Moment Design %:	65.72

Base Plate	
Yield (ksi):	50.00
Width (in):	69.75
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	15.00
Effective Len (in):	7.80
Moment (kip-in):	527.46
Allow Stress (ksi):	67.50
Applied Stress (ksi):	0.00
Stress Ratio:	0.67

Anchor Bolts	
Bolt Circle:	67.50
Number Bolts:	24.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00
Compression	
Force (kip):	154.46
Allowable (kip):	243.75
Ratio:	0.63
Tension	
Force (kip):	148.51
Allowable (kip):	243.75
Ratio:	0.61

Last revised on 3/19/2018

Monopole Mat Foundation Design

			Date
			3/2/2020
Customer Name:	Connecticut Light & Power	**EIA/TIA Standard:**	EIA-222-H
Site Name:	North Stonington 3, CT	**Structure Height (Ft.):**	189
Site Number:	CT11796-S-SBA	**Engineer Name:**	B. Davis
Engr. Number:	92320	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

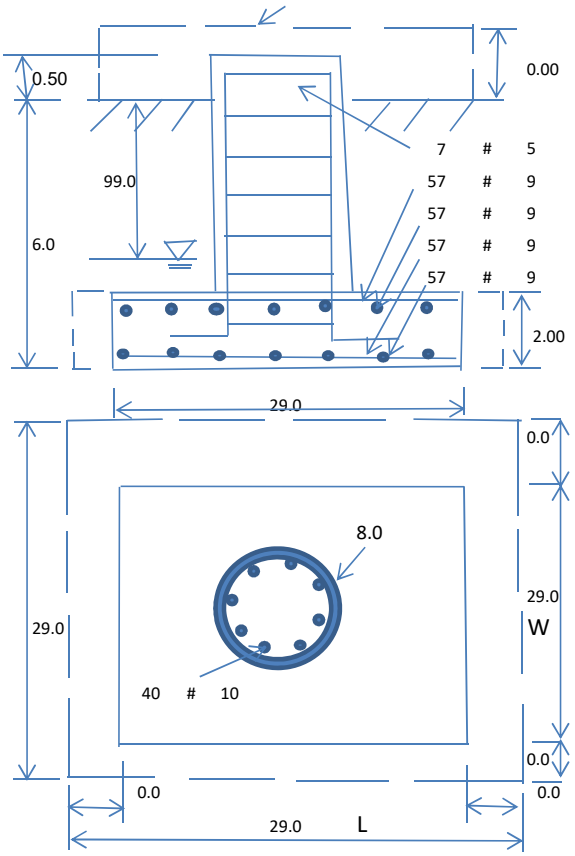
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	71.4	Shear Force (Kips):	39.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5112.7
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	29	Width of Pad (ft.):	29
Final Length of pad (ft)	29.0	Final width of pad (ft):	29.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	40	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	57	Qty. of Rebar in Pad (W):	57	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	57	Qty. of Rebar in Pad (W):	57	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	116.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	34700	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	3162.94	Total Dry Soil Weight (Kips):	366.90
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	366.90	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1908.19	Total Dry Concrete Weight (Kips):	286.23
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	286.23	Total Vertical Load on Base (Kips):	724.53

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2363	<	Allowable Factored Soil Bearing (psf):	26025	0.09	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9558.6	>	Design Factored Momont (kips-ft):	5242	0.55	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.82	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
(1) Concrete Pier:					Capacity	
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	9673.7	>	Design Factored Moment (Mu, Kips-Ft	5288.7	0.55	OK!
Calculated Shear Capacity (Kips):	924.8	>	Design Factored Shear (Kips):	39.1	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	2743.2	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	12707.4	>	Design Factored Axial Load (Pu Kips):	71.4	0.01	OK!
Moment & Axial Strength Combination:	0.55	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.007		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	674.7	>	One-Way Factored Shear (L-D. Kips):	309.1	0.46	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	674.7	>	One-Way Factored Shear (W-D., Kips):	309.1	0.46	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	688.8	>	One-Way Factored Shear (C-C, Kips):	315.1	0.46	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0080	OK!	Lower Steel Pad Reinf. Ratio (W-Direct	0.0080		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	4871.5	>	Moment at Bottom (L-Dir. K-Ft):	1776.4	0.36	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	4871.5	>	Moment at Bottom (W-Dir. K-Ft):	1776.4	0.36	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	6762.3	>	Moment at Bottom (C-C Dir. K-Ft):	2512.2	0.37	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0080	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0080		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	4871.5	>	Moment at the top (L-Dir K-Ft):	803.8	0.17	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	4871.5	>	Moment at the top (W-Dir K-Ft):	803.8	0.17	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	6762.3	>	Moment at the top (C-C Dir. K-Ft):	753.7	0.11	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	2045.1	k-ft.	Max. factored shear stress v_{u_CD}:		2.1	Psi
Max. factored shear stress v_{u_AB}:	18.3	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	18.3	Psi	Check Usage of Punching Shear Capacity:		0.10	OK!

ATTACHMENT E - POWER DENSITY REPORT

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
603-644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

EVERSOURCE ENERGY

ES-025

350B Cossaduck Hill Road

North Stonington, CT 06359

April 6, 2020

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Eversource installation to be located at 350B Cossaduck Hill Road in North Stonington, CT.

Eversource is proposing to install one omnidirectional antenna as part of its 220 MHz communications system.

This report considers the planned antenna configuration as provided by Eversource along with power density information of the existing antennas to calculate the overall % MPE (Maximum Permissible Exposure) of the proposed facility at ground level.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached “FCC Limits for Maximum Permissible Exposure (MPE)” in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. Power Density Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power = 1.64 x ERP

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and full power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the calculated power density and corresponding % MPE levels reported below are much higher than the actual levels will be from the final installation.

4. Calculated % MPE Results

Table 1 below outlines the power density information for the site. The Eversource omnidirectional antenna has a vertical beamwidth of 60°; therefore, the majority of the RF power is focused out towards the horizon. Please refer to Attachment C for the vertical pattern of the proposed Eversource antenna. Likewise, the other transmit antennas exhibit similar directionality of varying vertical beamwidths. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the facility. The calculated results in Table 1 include a nominal 10 dB off-beam pattern loss for the panel antennas to account for the lower relative gain below the antennas. Any inactive or receive-only antennas are not listed in the table, as they are irrelevant in terms of the % MPE calculations.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
AT&T	186	1900	2	500	0.0011	1.0000	0.11%
AT&T	186	850	2	500	0.0011	0.5667	0.20%
AT&T	186	700	2	500	0.0011	0.4667	0.24%
AT&T	186	850	1	500	0.0006	0.5667	0.10%
AT&T	186	1900	1	500	0.0006	1.0000	0.06%
AT&T	186	2100	1	500	0.0006	1.0000	0.06%
AT&T	186	2300	1	500	0.0006	1.0000	0.06%
Verizon	178	1970	11	223	0.0030	1.0000	0.30%
Verizon	178	869	9	239	0.0026	0.5793	0.45%
Verizon	178	2145	1	1750	0.0021	1.0000	0.21%
Verizon	178	698	1	1050	0.0013	0.4653	0.27%
Eversource	141.6	217	4	124	0.0010	0.2000	0.49%
						Total	**2.53%**

Table 1: Proposed Tower % MPE [1] [2]

[1] The power density information for carriers other than Eversource was taken directly from the CSC database dated 12/13/2019. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

[2] The proposed Eversource antenna consists of two internally stacked antennas – the upper antenna is intended for receive-only, whereas the lower internal antenna is for transmit. The transmit antenna height listed in the table has been adjusted accordingly based on the overall physical antenna centerline listed in the Tower Engineering Solutions Structural Analysis Report dated March 2, 2020.

5. Conclusion

The above analysis concludes that RF exposure at ground level with the proposed antenna installation will be below the maximum power density limits as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods discussed herein, the highest expected percent of Maximum Permissible Exposure at ground level with the proposed installation is **2.53 of the FCC General Population/Uncontrolled limit**.

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual levels will be from the finished installation.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, IEEE Std. C95.1, and IEEE Std. C95.3.

Sokol Andoni — April 6, 2020

Report Prepared By: Sokol Andoni
RF Engineer
C Squared Systems, LLC — Date

Keith Vellante — April 6, 2020

Reviewed/Approved By: Keith Vellante
Director of RF Services
C Squared Systems, LLC — Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[3] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[4] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

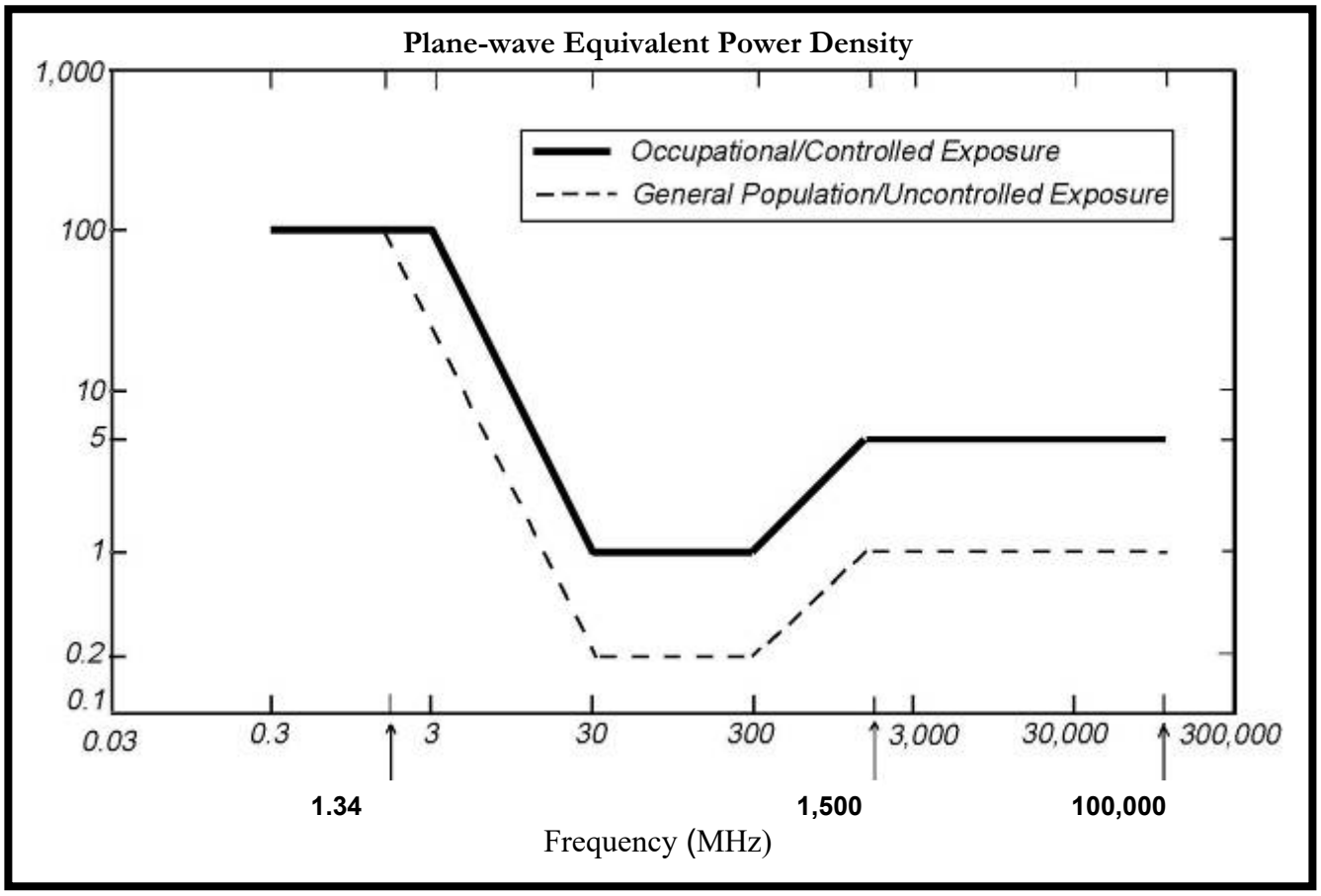
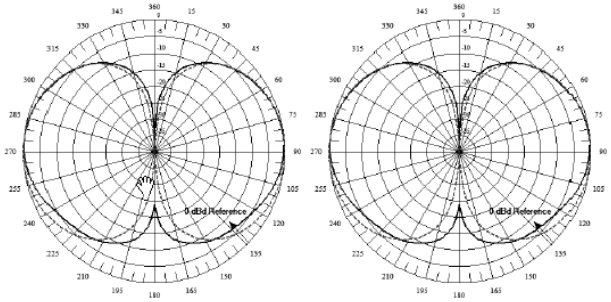


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Eversource Antenna Data Sheets and Electrical Patterns

217 MHz	
Manufacturer:	dbSpectra
Model #:	DS2C00F36D
Frequency Band:	217-222 MHz
Gain:	3.0 dBd
Vertical Beamwidth:	60°
Horizontal Beamwidth:	360°
Polarization:	Vertical
Length:	13.6’

DS2C00F36D-N
DS2C00F36D-D



Top Bottom

ATTACHMENT F – PROOF OF DELIVERY OF NOTICE

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