



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

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

July 14, 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: 38 Maple Street, Kent, 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 38 Maple Street in the Town of Kent (the “Kent Facility”). The tower owner is American Tower Corporation (“ATC”). Eversource and ATC have agreed to share the use of the Kent Facility. See Attachment A, Letter of Authorization.

The Kent Facility consists of an approximately 149-foot steel monopole with antennas extending to a total facility height of approximately 169 feet above ground level (“AGL”). The tower and compound are located on an approximately 10.19-acre parcel owned by the Town of Kent. See Attachment B, Parcel Map and Property Card. The Kent Facility was approved by the Council in Docket No. 353 in April 2018.

As depicted on the attached plans prepared by Black & Veatch, dated April 16, 2020, Eversource proposes the shared use of the Kent Facility to upgrade and reconfigure its communications system. The proposed installation is part of Eversource’s program to update the current obsolete analog voice radio communications system to a modern digital voice communications system. The new system will enable the highest level of voice communications under all operating conditions, including during critical emergency and storm restoration activities. The new radio system will also provide for remote control of distribution safety equipment. See Attachment C, Construction Drawings. Eversource will mount one (1) 13.5-foot tall omni-directional antenna at 84’ AGL and two (2) 7/8-inch diameter coaxial cables on the existing tower and will install one (1) new equipment shelter and one (1) new back-up generator within the existing compound. The northeastern portion of the compound will be extended by approximately 8 feet by 19 feet to accommodate a new propane storage tank.

Connecticut General Statutes § 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 Kent 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 ATC dated December 9, 2019, 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 Kent 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 Kent Facility in Docket No. 353 and considered future use of the tower in that decision.

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 FCC 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 14.69% of the FCC Standards for General Public/Uncontrolled Maximum Permissible Exposure (MPE). See Attachment E, Power Density Report;
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.

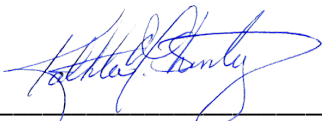
D. **Economic Feasibility:** Eversource and ATC entered into a mutual agreement to share use of the Kent Facility on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. **Public Safety:** As stated above and shown in the attachments hereto, the tower is structurally capable of supporting Eversource's installation and radio frequency 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 Jean C. Speck, First Selectman for the Town of Kent, and Donna Hayes, Land Use Administrator for the Town of Kent. See Attachment F, Proof of Delivery of Notice.

As explained above, the proposed shared use of the Kent 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 Kent Facility.

Communications regarding this proposed shared use of the Kent Facility should be directed to Kathleen Shanley at (860) 728-4527.

By:   
\_\_\_\_\_  
Kathleen M. Shanley  
Manager – Transmission Siting

cc: Honorable Jean C. Speck, First Selectman, Town of Kent  
Donna Hayes, Land Use Administrator, Town of Kent  
ATC

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



**AMERICAN TOWER®**  
CORPORATION

**LETTER OF AUTHORIZATION**

**ATC SITE # / NAME: 413783 / Kent Pcs CT**  
**SITE ADDRESS: 38 MAPLE ST, KENT, CT 06757-1721**  
**APN: KENT-000004-000012-000004**  
**LICENSEE: The Connecticut Light and Power Company, d/b/a Eversource Energy**

I, Margaret Robinson, Senior Counsel for American Tower\*, operator of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize The Connecticut Light and Power Company, d/b/a Eversource Energy, its successors and assigns, and/or its agent, (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

Signature:

Print Name: Margaret Robinson  
Senior Counsel  
American Tower\*

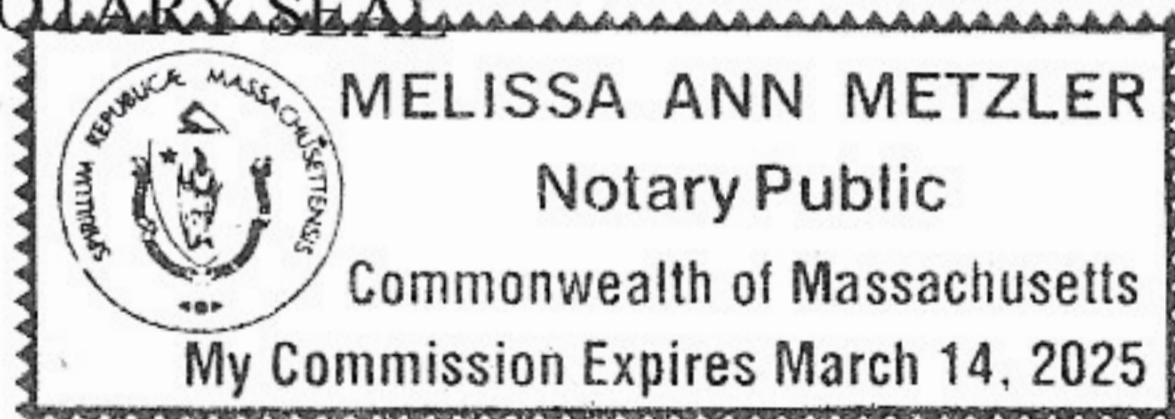
**NOTARY BLOCK**

Commonwealth of MASSACHUSETTS  
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel for American Tower\*, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

WITNESS my hand and official seal, this 19<sup>th</sup> day of March, 2020.

NOTARY SEAL



Notary Public   
My Commission Expires:  
March 14, 2025

\*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

ATTACHMENT B - PARCEL MAP AND PROPERTY CARD

Legend

○ Approximate Tower Location

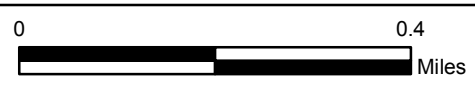
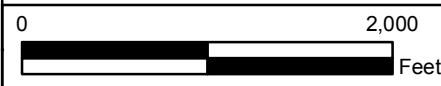
NEW YORK

Subject Parcel

MAP 3

MAP 5

MAP 10



1 inch = 1,037 feet

Map 4



Revised October 1, 2016

For assessment purposes only. Not to be used for conveyance.

2016 Grand List - Parcel Information - Map #4 - Revised October 1, 2016

| MAP | BLK | LOT | ST# | STREET NAME     | ACRES  |
|-----|-----|-----|-----|-----------------|--------|
| 4   | 3   | 1   | 0   | SCHAGHTICOKE RD | 52.00  |
| 4   | 3   | 2   | 0   | SCHAGHTICOKE RD | 267.17 |
| 4   | 3   | 3   | 0   | SCHAGHTICOKE RD | 297.83 |
| 4   | 3   | 4   | 0   | SCHAGHTICOKE RD | 50.00  |
| 4   | 3   | 5   | 50  | SCHAGHTICOKE RD | 80.00  |
| 4   | 10  | 1   | 1   | MACEDONIA RD    | 37.00  |
| 4   | 10  | 2   | 0   | SCHAGHTICOKE RD | 21.50  |
| 4   | 10  | 3   | 0   | SCHAGHTICOKE RD | 4.00   |
| 4   | 10  | 4   | 0   | KENT RD         | 0.34   |
| 4   | 10  | 5   | 0   | KENT RD         | 0.42   |
| 4   | 10  | 6   | 0   | KENT RD         | 0.50   |
| 4   | 12  | 1   | 23  | SOUTH MAIN ST   | 0.25   |
| 4   | 12  | 2   | 25  | SOUTH MAIN ST   | 0.61   |
| 4   | 12  | 3   | 31  | SOUTH MAIN ST   | 0.18   |
| 4   | 12  | 4   | 38  | MAPLE ST        | 10.19  |
| 4   | 12  | 5   | 0   | SOUTH MAIN ST   | 62.17  |
| 4   | 12  | 6   | 46  | MAPLE ST        | 11.52  |
| 4   | 12  | 7   | 0   | MAPLE ST        | 1.50   |
| 4   | 12  | 8   | 0   | MAPLE ST        | 1.40   |
| 4   | 12  | 9   | 64  | MAPLE ST        | 1.35   |
| 4   | 12  | 10  | 70  | MAPLE ST        | 0.98   |
| 4   | 12  | 11  | 76  | MAPLE ST        | 1.41   |
| 4   | 12  | 12  | 0   | SOUTH KENT RD   | 118.08 |
| 4   | 12  | 13  | 73  | SOUTH MAIN ST   | 0.50   |

| MAP | BLK | LOT | ST# | STREET NAME   | ACRES |
|-----|-----|-----|-----|---------------|-------|
| 4   | 12  | 14  | 77  | SOUTH MAIN ST | 0.50  |
| 4   | 12  | 15  | 27  | KENT RD       | 0.52  |
| 4   | 12  | 16  | 39  | KENT RD       | 1.55  |
| 4   | 12  | 17  | 0   | KENT RD       | 25.46 |
| 4   | 12  | 18  | 57  | KENT RD       | 0.70  |
| 4   | 12  | 19  | 0   | SOUTH KENT RD | 30.50 |
| 4   | 12  | 20  | 0   | MAPLE ST      | 4.59  |
| 4   | 12  | 21  | 22  | SOUTH COMMONS | 3.90  |
| 4   | 12  | 22  | 0   | SOUTH MAIN ST | 0.61  |
| 4   | 13  | 1   | 9   | JUDD AVE      | 5.50  |
| 4   | 13  | 2   | 0   | SOUTH MAIN ST | 12.00 |
| 4   | 13  | 5   | 0   | SOUTH MAIN ST | 0.73  |
| 4   | 13  | 6   | 30  | SOUTH MAIN ST | 3.96  |
| 4   | 13  | 7   | 0   | SOUTH MAIN ST | 6.50  |
| 4   | 13  | 23  | 0   | SOUTH MAIN ST | 29.00 |
| 4   | 42  | 1   | 0   | MAPLE ST EXT  | 8.64  |
| 4   | 42  | 2   | 9   | MAPLE ST EXT  | 2.00  |
| 4   | 42  | 4   | 15  | MAPLE ST EXT  | 2.02  |
| 4   | 42  | 5   | 19  | MAPLE ST EXT  | 1.00  |
| 4   | 44  | 1   | 16  | MAPLE ST EXT  | 1.93  |
| 4   | 44  | 2   | 20  | MAPLE ST EXT  | 1.00  |
| 4   | 44  | 3   | 0   | MAPLE ST EXT  | 1.00  |
| 4   | 44  | 4   | 0   | MAPLE ST EXT  | 1.00  |
| 4   | 44  | 5   | 3   | SEGAR MTN RD  | 5.12  |



# 38 MAPLE ST

**Location** 38 MAPLE ST

**Mblu** 4/ 12/ 4/ /

**Acct#** 00129900

**Owner** KENT TOWN OF

**Assessment** \$667,600

**Appraisal** \$953,600

**PID** 246

**Building Count** 1

## Current Value

| Appraisal      |              |           |           |
|----------------|--------------|-----------|-----------|
| Valuation Year | Improvements | Land      | Total     |
| 2018           | \$617,900    | \$335,700 | \$953,600 |

| Assessment     |              |           |           |
|----------------|--------------|-----------|-----------|
| Valuation Year | Improvements | Land      | Total     |
| 2018           | \$432,600    | \$235,000 | \$667,600 |

## Owner of Record

**Owner** KENT TOWN OF  
**Co-Owner** (TOWN GARAGE)

**Sale Price** \$0  
**Certificate**  
**Book & Page** 0061/0346  
**Sale Date** 01/15/1973

## Ownership History

| Ownership History |            |             |             |            |
|-------------------|------------|-------------|-------------|------------|
| Owner             | Sale Price | Certificate | Book & Page | Sale Date  |
| KENT TOWN OF      | \$0        |             | 0061/0346   | 01/15/1973 |

## Building Information

### Building 1 : Section 1

**Year Built:** 1974  
**Living Area:** 6,400  
**Replacement Cost:** \$274,564  
**Replacement Cost  
Less Depreciation:** \$214,200

| Building Attributes |             |
|---------------------|-------------|
| Field               | Description |
| STYLE               | Warehouse   |
| MODEL               | Commercial  |

|                  |                |
|------------------|----------------|
| Grade            | Average        |
| Stories:         | 1              |
| Occupancy        | 1.00           |
| Exterior Wall 1  | Pre-finsh Metl |
| Exterior Wall 2  |                |
| Roof Structure   | Gable/Hip      |
| Roof Cover       | Asph/F Gls/Cmp |
| Interior Wall 1  | Drywall/Sheet  |
| Interior Wall 2  |                |
| Interior Floor 1 | Concr-Finished |
| Interior Floor 2 |                |
| Heating Fuel     | Oil            |
| Heating Type     | Forced Air-Duc |
| AC Type          | None           |
| Struct Class     |                |
| Bldg Use         | Com/Res MDL96  |
| Total Rooms      |                |
| Total Bedrms     | 00             |
| Total Baths      | 0              |
| Usrflid 218      |                |
| Usrflid 219      |                |
| 1st Floor Use:   | 2-1I           |
| Heat/AC          | NONE           |
| Frame Type       | STEEL          |
| Baths/Plumbing   | AVERAGE        |
| Ceiling/Wall     | NONE           |
| Rooms/Prtns      | LIGHT          |
| Wall Height      | 14.00          |
| % Comn Wall      | 0.00           |

## Building Layout



([http://images.vgsi.com/photos/KentCTPhotos//Sketches/246\\_24](http://images.vgsi.com/photos/KentCTPhotos//Sketches/246_24))

| Building Sub-Areas (sq ft) |                              |            | <u>Legend</u> |
|----------------------------|------------------------------|------------|---------------|
| Code                       | Description                  | Gross Area | Living Area   |
| BAS                        | First Floor                  | 6,400      | 6,400         |
| UST                        | Utility, Storage, Unfinished | 800        | 0             |
|                            |                              | 7,200      | 6,400         |

## Extra Features

| Extra Features             |  | <u>Legend</u> |
|----------------------------|--|---------------|
| No Data for Extra Features |  |               |

## Land

### Land Use

|                      |            |
|----------------------|------------|
| <b>Use Code</b>      | 920C       |
| <b>Description</b>   | Town MDL94 |
| <b>Alt Land Appr</b> | No         |

### Land Line Valuation

|                     |       |
|---------------------|-------|
| <b>Size (Acres)</b> | 10.19 |
| <b>Frontage</b>     | 0     |
| <b>Depth</b>        | 0     |

**Category**

**Assessed Value** \$235,000

**Appraised Value** \$335,700

**Outbuildings**

| <b>Outbuildings</b> |                    |                 |                        |              |              | <b>Legend</b> |
|---------------------|--------------------|-----------------|------------------------|--------------|--------------|---------------|
| <b>Code</b>         | <b>Description</b> | <b>Sub Code</b> | <b>Sub Description</b> | <b>Size</b>  | <b>Value</b> | <b>Bldg #</b> |
| SHP5                | WRK SHP W/IMP GD   |                 |                        | 3360.00 S.F. | \$65,500     | 1             |
| TEN                 | TENNIS COURT       |                 |                        | 2.00 UNITS   | \$45,000     | 1             |
| IMP                 | IMPLEMENT SHED     |                 |                        | 800.00 S.F.  | \$3,600      | 1             |
| IMP                 | IMPLEMENT SHED     |                 |                        | 1650.00 S.F. | \$7,400      | 1             |
| SHD1                | SHED FRAME         |                 |                        | 192.00 S.F.  | \$2,900      | 1             |
| CB3                 | PreCastConcCel     |                 |                        | 240.00 S.F.  | \$79,800     | 1             |
| CB3                 | PreCastConcCel     |                 |                        | 240.00 S.F.  | \$79,800     | 1             |
| CB3                 | PreCastConcCel     |                 |                        | 360.00 S.F.  | \$119,700    | 1             |

**Valuation History**

| <b>Appraisal</b>      |                     |             |              |
|-----------------------|---------------------|-------------|--------------|
| <b>Valuation Year</b> | <b>Improvements</b> | <b>Land</b> | <b>Total</b> |
| 2019                  | \$617,900           | \$335,700   | \$953,600    |

| <b>Assessment</b>     |                     |             |              |
|-----------------------|---------------------|-------------|--------------|
| <b>Valuation Year</b> | <b>Improvements</b> | <b>Land</b> | <b>Total</b> |
| 2019                  | \$432,600           | \$235,000   | \$667,600    |

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ATTACHMENT C – CONSTRUCTION DRAWINGS



**EVERSOURCE**  
ENERGY

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



**BLACK & VEATCH**

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

**PROJECT SUMMARY**

- THE GENERAL SCOPE OF WORK CONSISTS OF THE FOLLOWING:
1. INSTALL (1) NEW 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. REMOVE AND INSTALL NEW COMPOUND FENCING TO ALLOW FOR NEW PROPANE TANK AT ELEVATION 0'-0"± AGL
  7. INSTALL (1) NEW OMNI/WHIP ANTENNA AT ELEVATION 97'-0"± AGL

**KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755**

**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: KENT PCS CT  
SITE ID NUMBER: 413783  
SITE ADDRESS: 38 MAPLE STREET  
KENT, CT 06755  
MAP: 4  
BLOCK: 12  
LOT: 4  
LATITUDE: 41° 43' 18.8" N  
LONGITUDE: 73° 28' 30.0" W  
ELEVATION: 394'± AMSL  
FEMA/FIRM DESIGNATION: C  
ACREAGE: 0.176± AC (BOOK: 61, PAGE: 346)

**CONTACT INFORMATION**

**APPLICANTS:**  
EVERSOURCE ENERGY  
107 SELDEN STREET  
BERLIN, CT 06037  
**POWER PROVIDER:**  
EVERSOURCE ENERGY  
(800) 286-2000  
**PROPERTY OWNER:**  
THE TOWN OF KENT  
S. KENT ROAD  
KENT, CT 06757  
**TELCO PROVIDER:**  
FRONTIER  
(800) 921-8102  
**EVERSOURCE ENERGY**  
**PROJECT MANAGER:**  
NIKOLL PRECI  
(860) 655-3079  
**CALL BEFORE YOU DIG:**  
(800) 922-4455

**LOCATION MAP**



NO SCALE

**DESIGN TYPE**

SITE UPGRADE  
MONOPOLE

**DRAWING INDEX**

| SHEET NO: | SHEET TITLE                                   |
|-----------|---|
| T-1       | TITLE SHEET                                   |
| C-1       | WETLAND                                       |
| C-2       | SITE PLAN                                     |
| C-3       | TOWER ELEVATION                               |
| C-4       | ICE BRIDGE DETAILS                            |
| C-5       | CHAINLINK FENCE DETAILS                       |
| C-6       | EARTHWORK 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       | GROUNDING DETAILS                             |
| G-6       | SHELTER LAYOUT GROUNDING PLAN                 |
| G-7       | SHELTER INDOOR GROUNDING DETAILS              |
| G-8       | 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

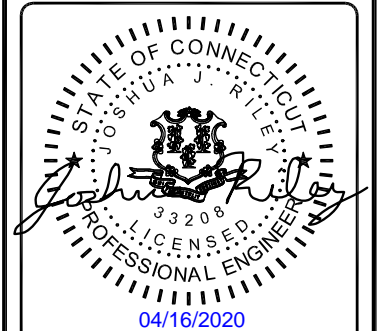


**UNDERGROUND SERVICE ALERT**  
**UTILITIES PROTECTION CENTER, INC.**  
811

48 HOURS BEFORE YOU DIG

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

| REV | DATE     | DESCRIPTION       |
|-----|----------|-------------------|
| 0   | 03/11/20 | ISSUED FOR FILING |

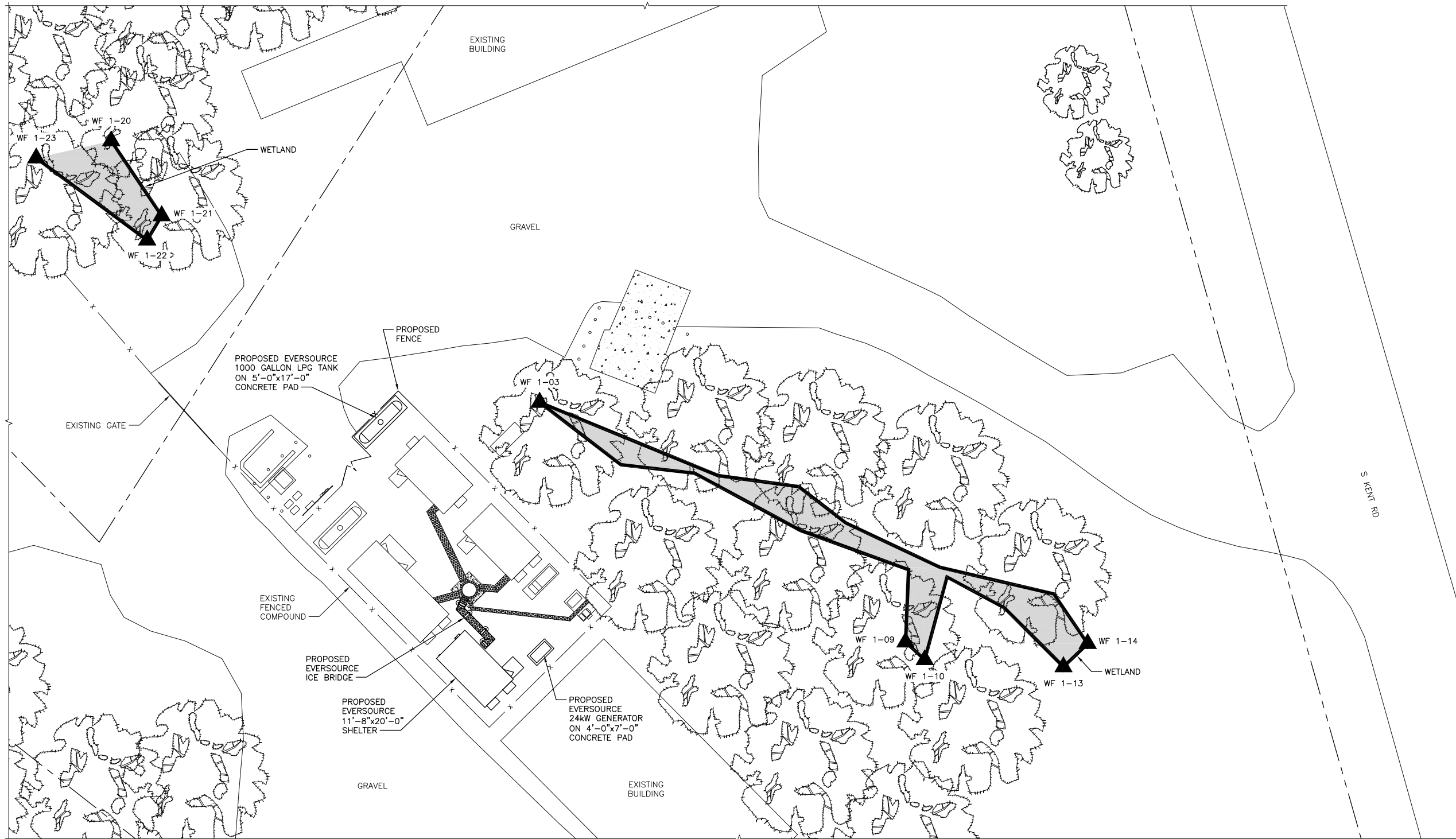


IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

**KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755**

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**



**WETLAND PLAN**  
NO SCALE

**EVERSOURCE**  
ENERGY

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

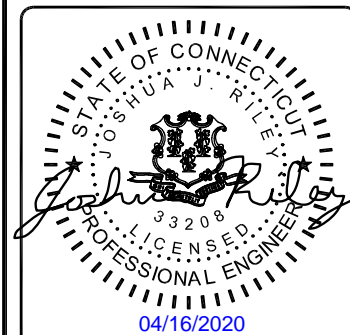


**BLACK & VEATCH**

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

|             |        |
|-------------|--------|
| PROJECT NO: | 403093 |
| DRAWN BY:   | TYW    |
| CHECKED BY: | JR     |

| REV | DATE     | DESCRIPTION       |
|-----|----------|-------------------|
| 0   | 03/11/20 | ISSUED FOR FILING |
|     |          |                   |
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UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
WETLAND

SHEET NUMBER  
**C-1**

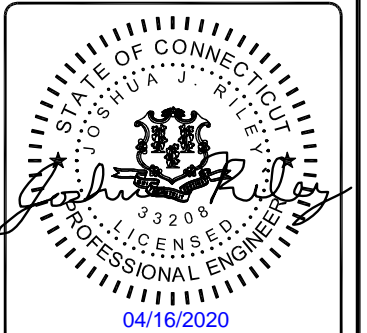


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

| REV | DATE     | DESCRIPTION       |
|-----|----------|-------------------|
| 0   | 03/11/20 | ISSUED FOR FILING |

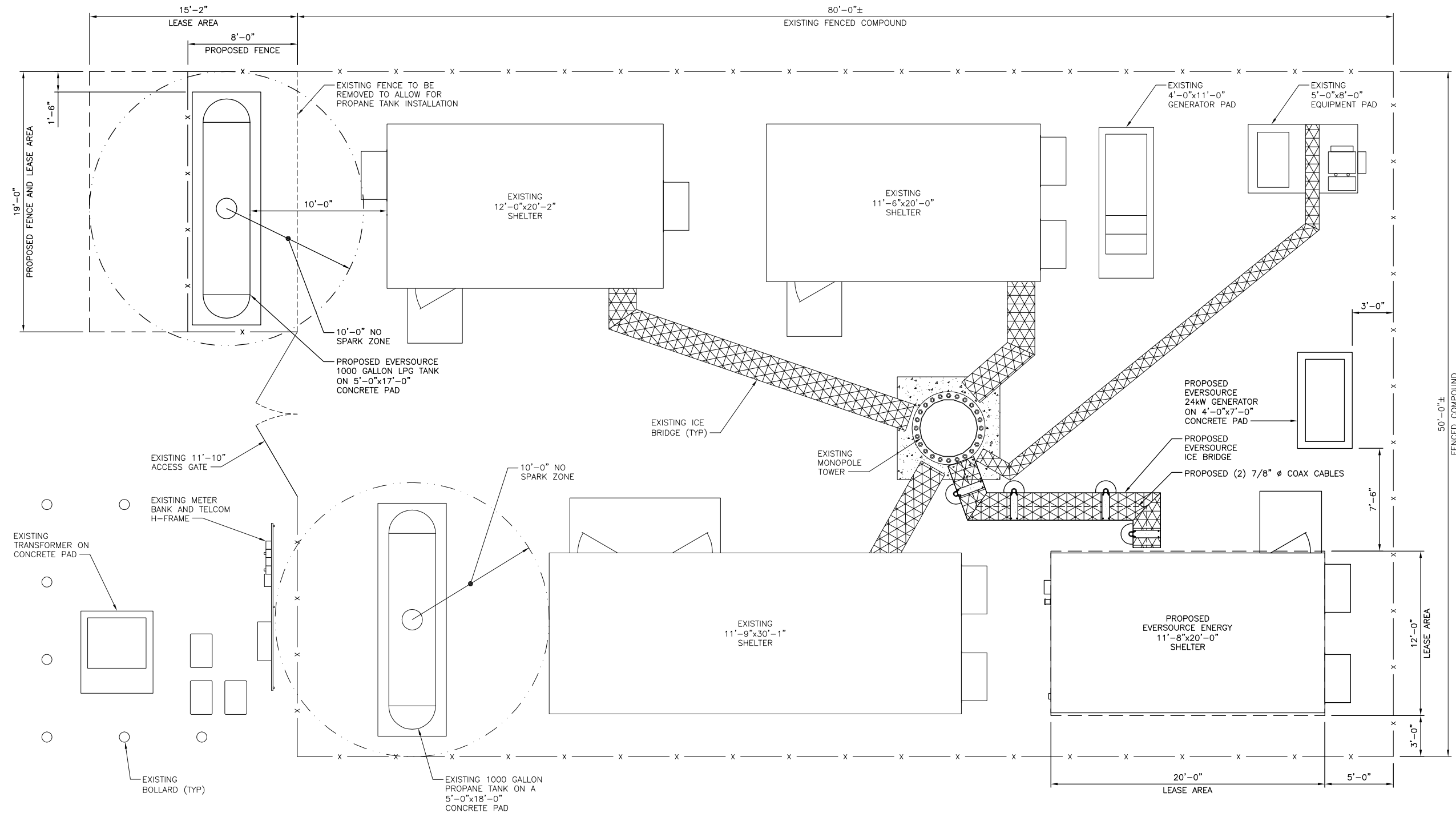


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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
SITE PLAN

SHEET NUMBER  
**C-2**



**SITE PLAN**  
NO SCALE



TOP OF EXISTING ANTENNAS (NON-EVERSOURCE)  
ELEVATION 169'-0"± AGL

TOP OF EXISTING ANTENNAS (NON-EVERSOURCE)  
ELEVATION 153'-0"± AGL

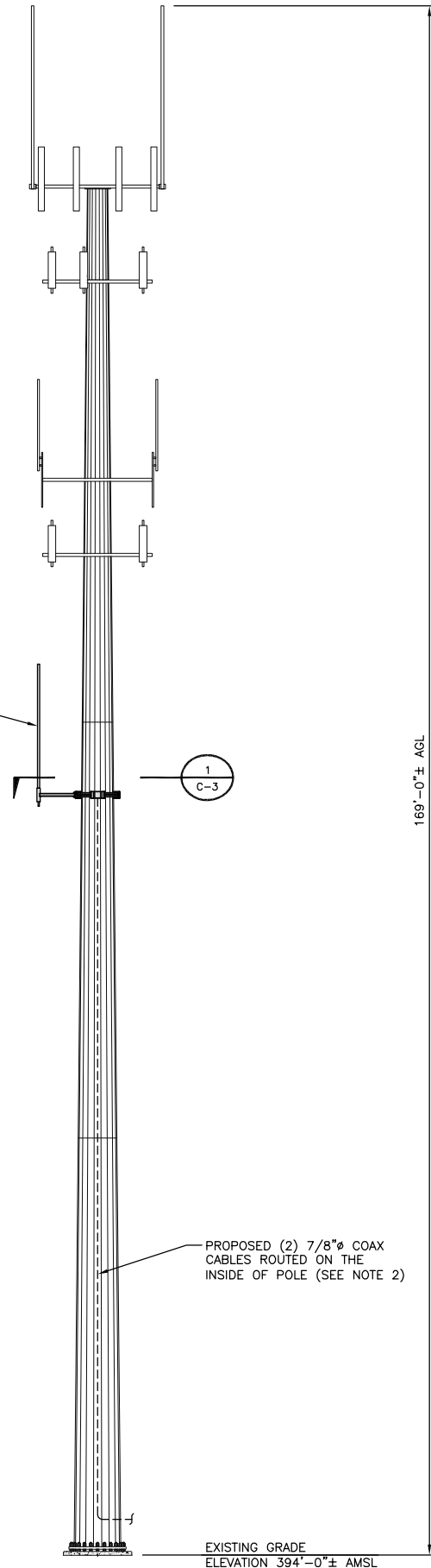
TOP OF EXISTING TOWER  
ELEVATION 149'-0"± AGL

EXISTING ANTENNAS (NON-EVERSOURCE)  
RAD CL ELEVATION 140'-0"± AGL

EXISTING ANTENNAS (NON-EVERSOURCE)  
RAD CL ELEVATION 123'-0"± AGL

EXISTING ANTENNAS (NON-EVERSOURCE)  
RAD CL ELEVATION 110'-0"± AGL

TOP OF PROPOSED EVERSOURCE  
OMNI/WHIP ANTENNA  
ELEVATION 97'-0"± AGL  
RX RAD CL ELEVATION 93'-2 3/8"± AGL  
TX RAD CL ELEVATION 86'-4 13/16"± AGL  
(ANTENNA MECHANICAL LENGTH 13'-7 7/32")



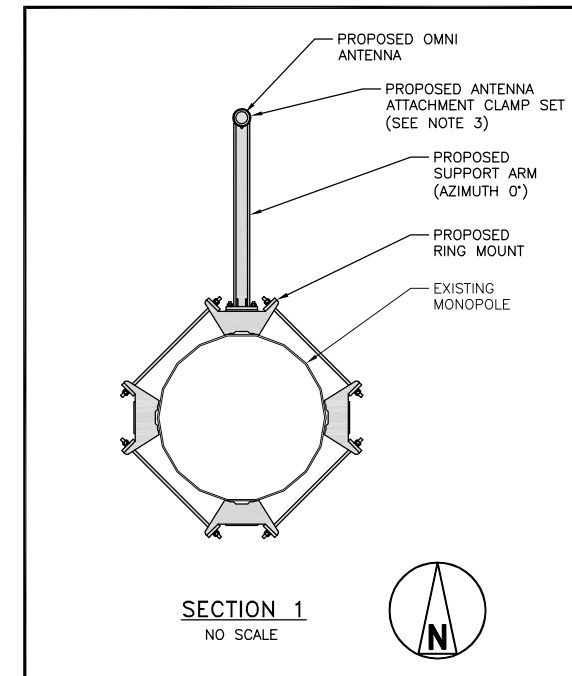
TOWER ELEVATION  
NO SCALE

1  
C-3

PROPOSED (2) 7/8"Ø COAX  
CABLES ROUTED ON THE  
INSIDE OF POLE (SEE NOTE 2)

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. SITEPRO 1 P/N DCP12K CLAMP SET. (3) ANTENNA ATTACHMENT POINTS REQUIRED (TYP, TOTAL OF 2 KITS).



**EVERSOURCE**  
ENERGY

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

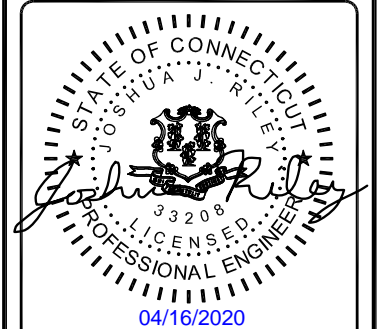


**BLACK & VEATCH**

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

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| PROJECT NO: | 403093 |
| DRAWN BY:   | TYW    |
| CHECKED BY: | JR     |

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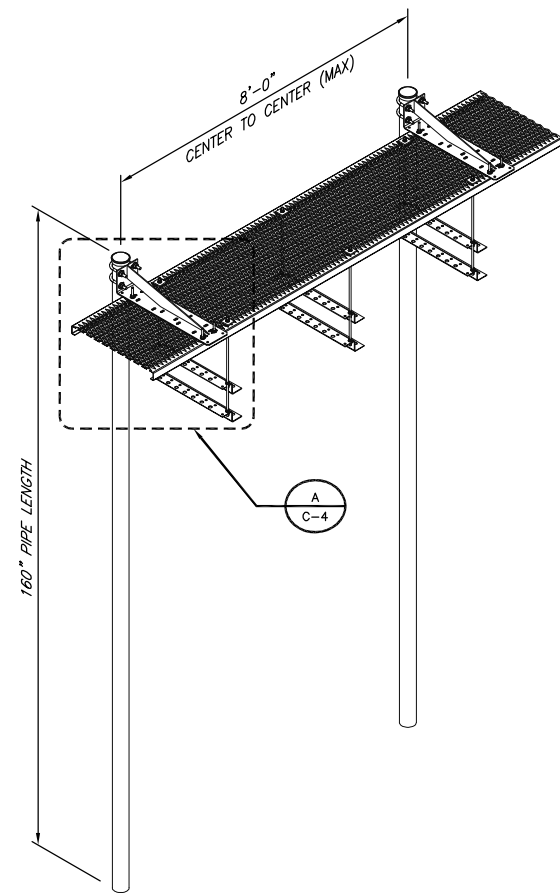
KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
TOWER ELEVATION &  
ANTENNA EQUIPMENT

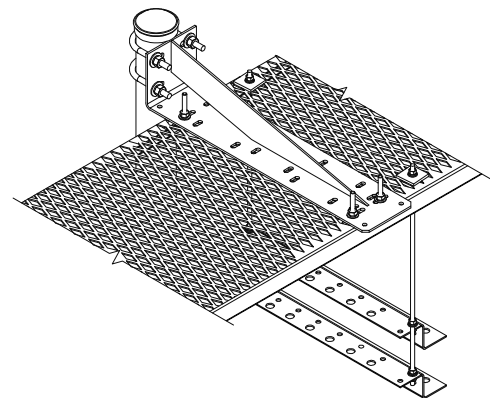
SHEET NUMBER

**C-3**





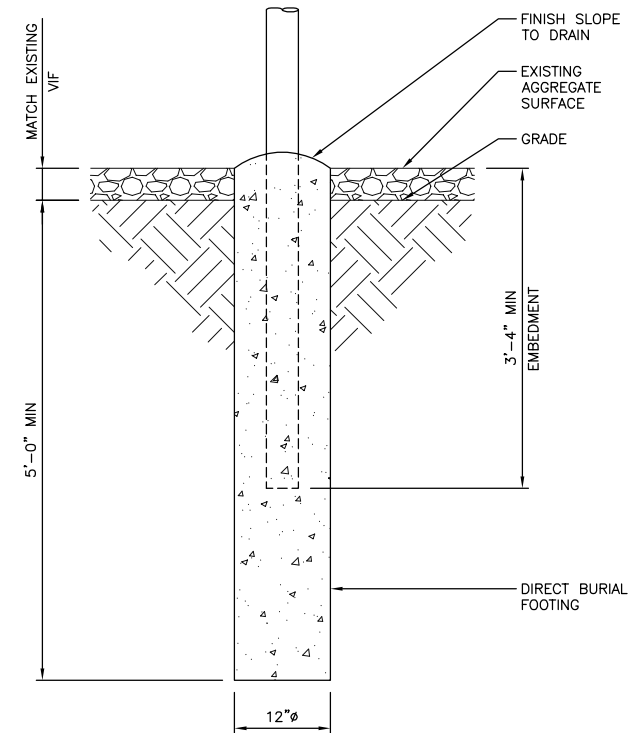
ICE BRIDGE DETAIL  
SITEPRO 1 P/N IB24D-V  
NO SCALE



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

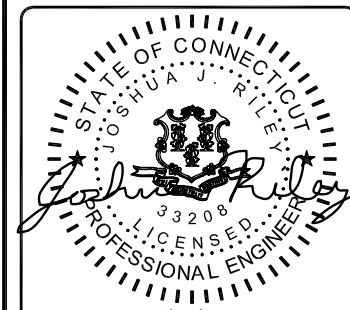


**BLACK & VEATCH**

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

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| PROJECT NO: | 403093 |
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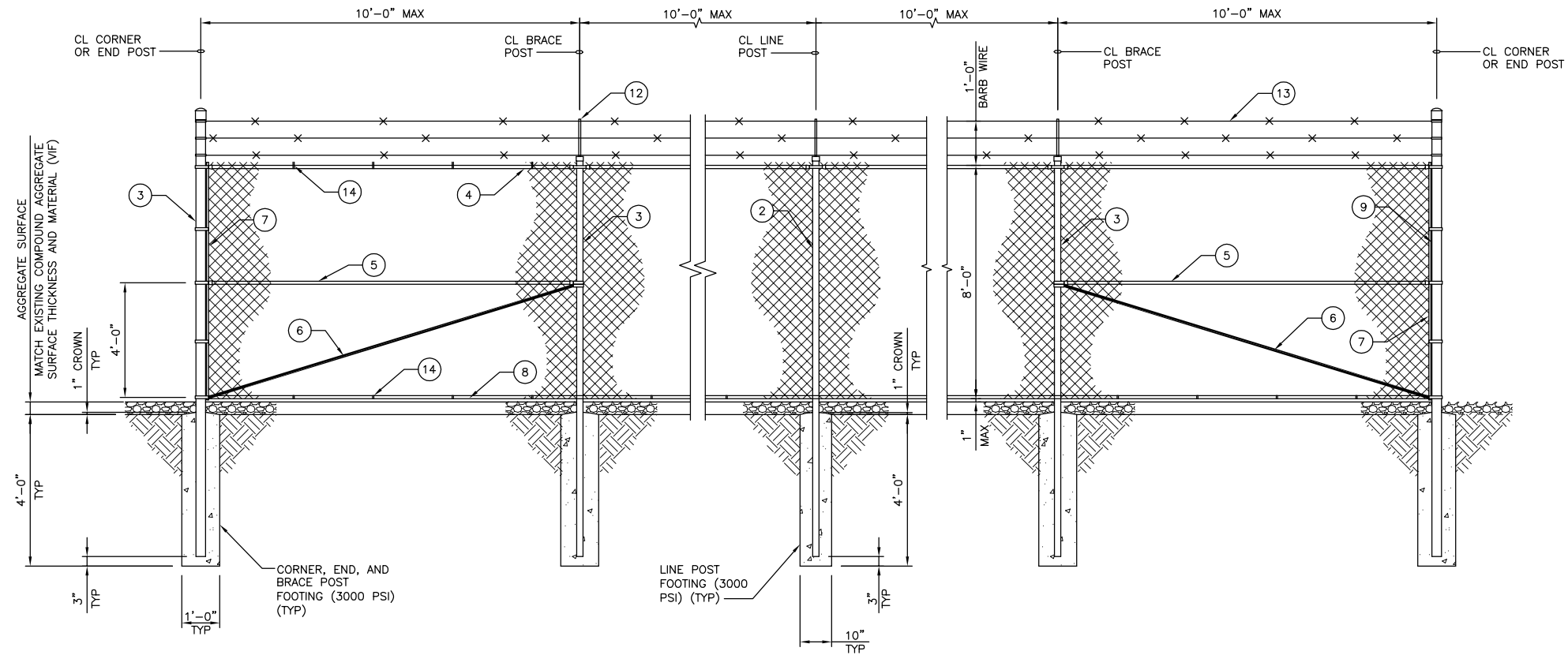


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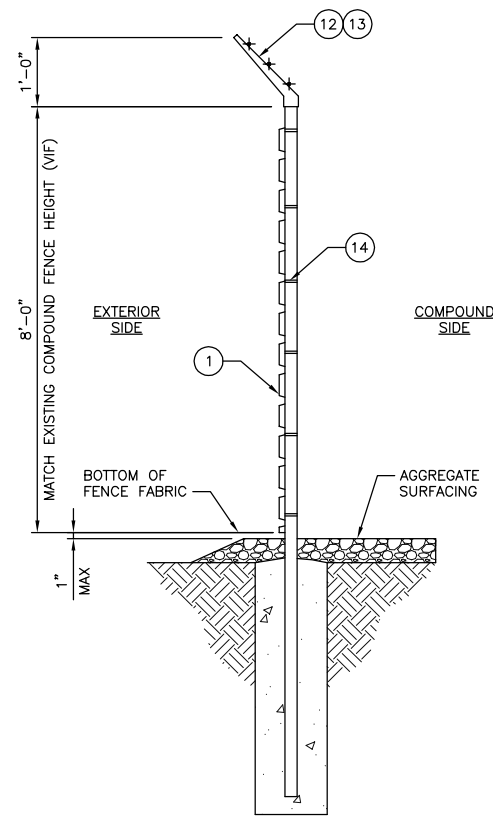
KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
ICE BRIDGE DETAILS

SHEET NUMBER  
**C-4**



TYPICAL FENCE ELEVATION  
NO SCALE



TYPICAL FENCE SECTION  
NO SCALE

**MATERIAL DESCRIPTION**

- ① CHAIN LINK RESIDENTIAL FABRIC: 11-1/2 GAUGE, 2 1/4" MESH; GALVANIZED ASTM-A392, CLASS 2; TWISTED SELVAGE ON TOP, KNUCKLED ON BOTTOM.
- ② LINE POSTS: 2 1/2" OD PIPE, 16 GAUGE (GALVANIZED) PER ASTM-F1083.
- ③ CORNER, END AND BRACE POSTS: 2 7/8" OD PIPE, SCHEDULE 40 (GALVANIZED).
- ④ TOP RAIL: 1 5/8" OD 17 GAUGE PIPE (GALVANIZED) PER ASTM-F1083.
- ⑤ BRACE RAIL: 1 5/8" OD 17 GAUGE PIPE (GALVANIZED).
- ⑥ DIAGONAL TRUSS ROD: 3/8" GALVANIZED ROD WITH TURNBUCKLE.
- ⑦ TENSION BAR: 3/16" X 3/4" GALVANIZED FLAT BAR.
- ⑧ BOTTOM TENSION WIRE: GALVANIZED OR ALUMINUM COATED COIL SPRING WIRE, 7 GAUGE.
- ⑨ BARBED WIRE SUPPORT ARM: SINGLE ARM TYPE (GALVANIZED). ARM SHALL BE INCLINED OUTWARD AT AN ANGLE OF 45 DEGREES.
- ⑩ BARBED WIRE: GALVANIZED, ASTM A121 CLASS 3; THREE 14 GAUGE MINIMUM STEEL WIRES WITH 4 POINT ROUND 14 GAUGE BARBS SPACED 4" APART.
- ⑪ FABRIC TIES: ALUMINUM BANDS OR WIRES. FABRIC SHALL BE ATTACHED TO THE TOP RAIL AND BOTTOM TENSION WIRE AT 24" CENTERS AND TO THE POSTS AT 15" CENTERS, ALL ON THE COMPOUND SIDE OF THE FENCE.
- ⑫ MISCELLANEOUS:
  - A. RAIL COUPLINGS: SLEEVE TYPE, 6" LONG EXPANSION SPRING EVERY FIFTH COUPLING.
  - B. POST TOPS: PRESSED STEEL, MALLEABLE IRON WITH PRESSED STEEL EXTENSION ARM, OR ONE-PIECE ALUMINUM CASTING; WITH HOLE FOR TOP, ALL DESIGNED TO FIT OVER THE OUTSIDE OF THE POSTS AND TO PREVENT ENTRY OF MOISTURE INTO TUBULAR POSTS.
  - C. INSTALL FENCING PER ASTM-F567.
  - D. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLETED IF REQUIRED.
  - E. USE GALVANIZED HIG-RING WIRE TO MOUNT ALL SIGNS.
  - F. ALL SIGNS MUST BE MOUNTED ON INSIDE OF FENCE.
  - G. ALL POSTS SHALL HAVE "MUSHROOM" SLEEVE EMBEDDED IN CONCRETE.

**EVERSOURCE**  
ENERGY

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

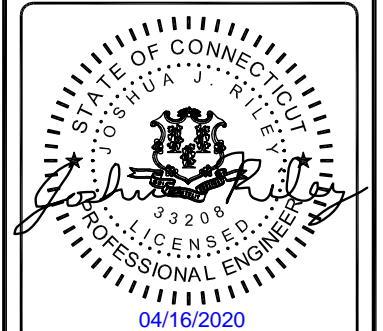


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KENT, CT 06755

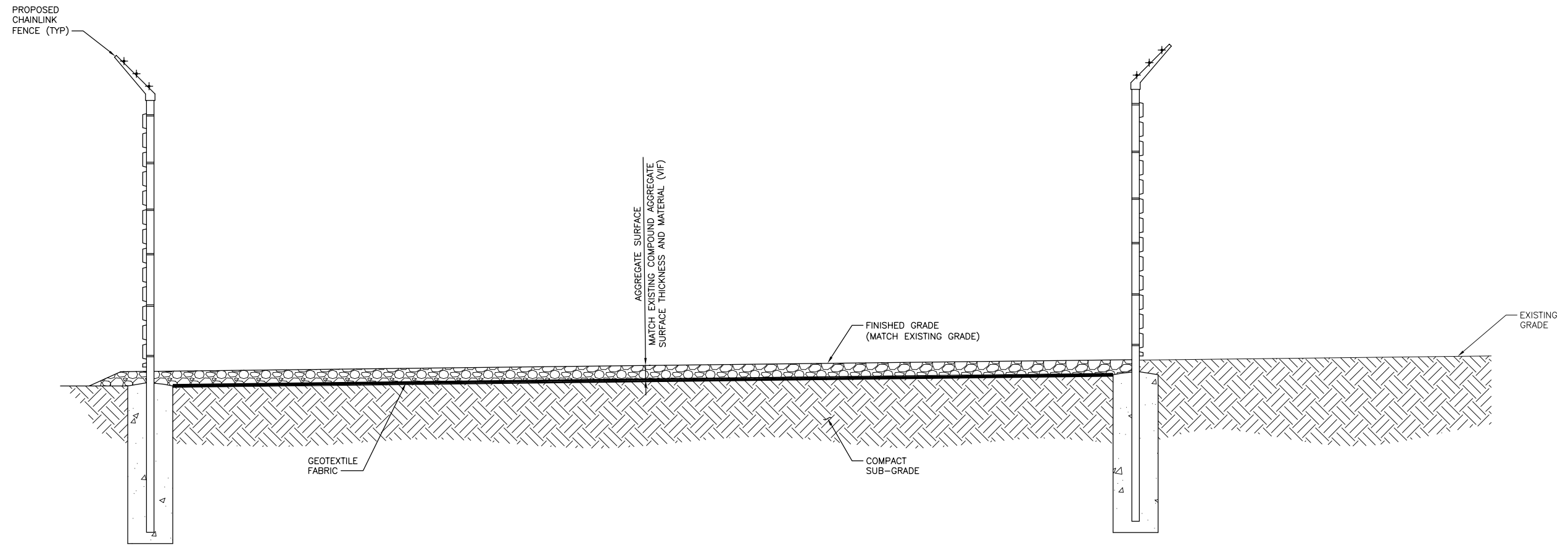
SHEET TITLE  
CHAINLINK FENCE  
DETAILS

SHEET NUMBER

**C-5**

**NOTES**

1. CONTRACTOR TO SEED DISTURBED SOIL AROUND PROPOSED GRAVEL FINISH GRADE.
2. CONTRACTOR TO REPLACE TOP SOIL WITH COMPACTED SUBGRADE AND FINISH TO MATCH EXISTING GRADE.
3. CONTRACTOR TO SLOPE GRADE AWAY FROM EXISTING COMPOUND.



**TYPICAL COMPOUND GRADING**  
NO SCALE



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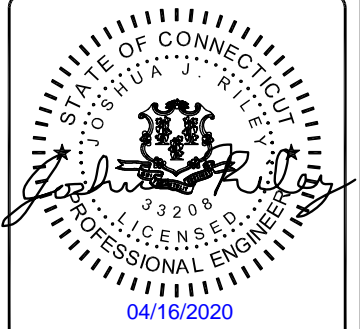


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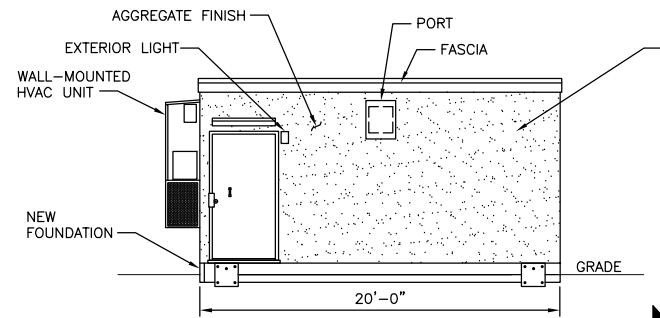


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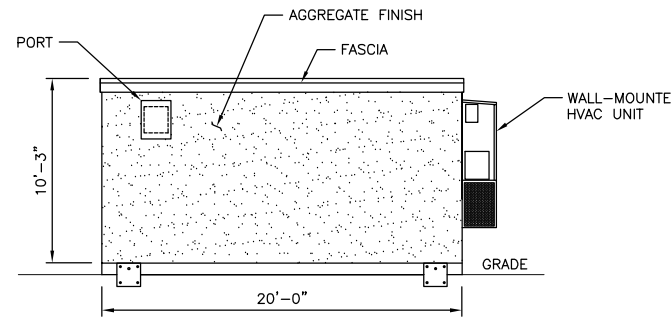
KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**EARTHWORK  
DETAILS**

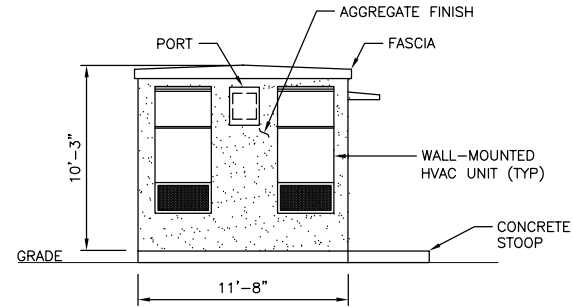
SHEET NUMBER  
**C-6**



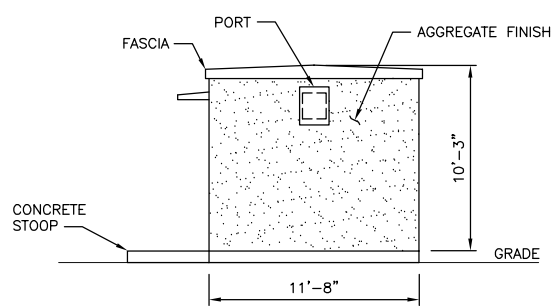
**ELEVATION A**  
NO SCALE



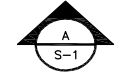
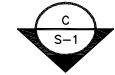
**ELEVATION C**  
NO SCALE



**ELEVATION B**  
NO SCALE



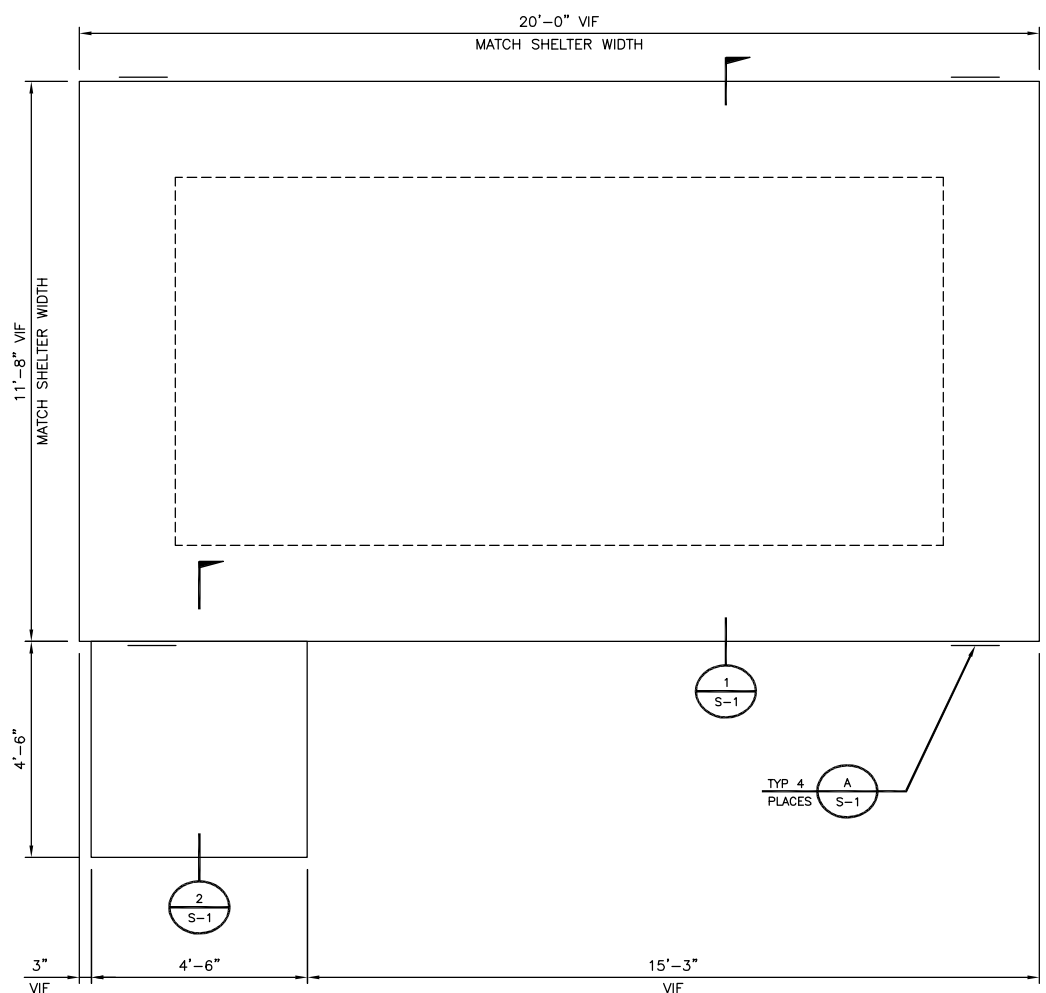
**ELEVATION D**  
NO SCALE



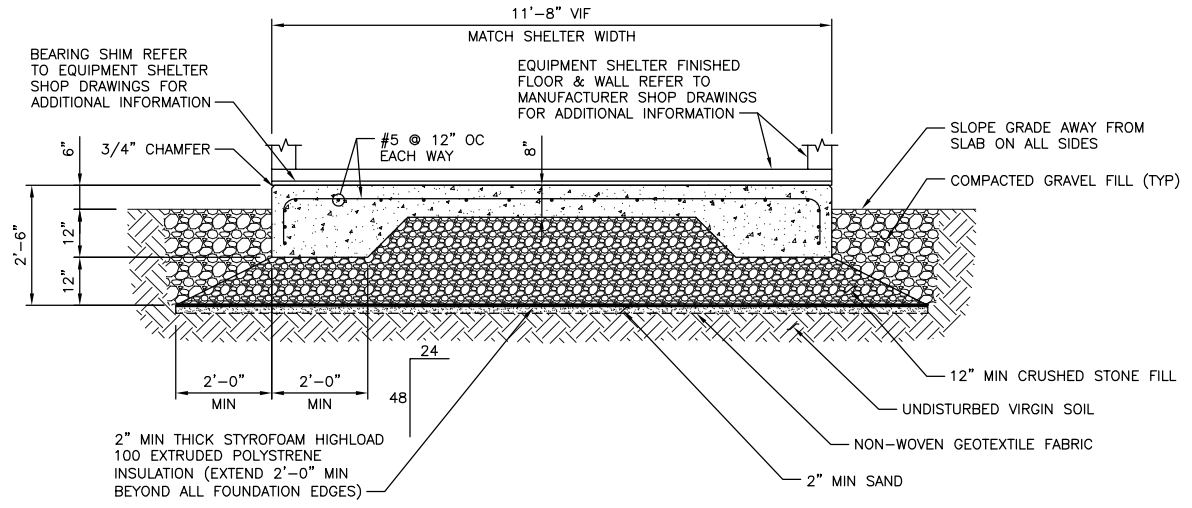
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**NOTES**

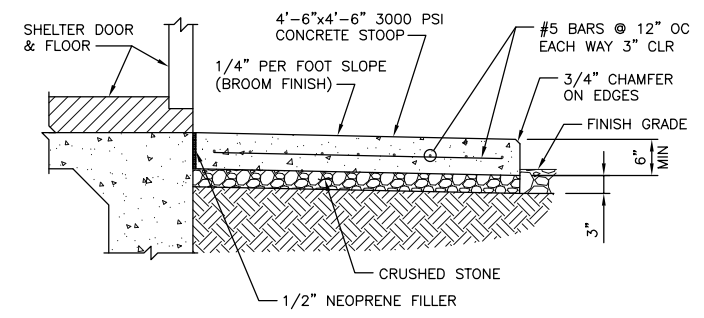
1. SLAB ON GRADE FOUNDATION DESIGN CONFORMS TO THE REQUIREMENTS OF THE 2015 INTERNATIONAL BUILDING CODE AS AMENDED BY THE 2018 CONNECTICUT STATE BUILDING CODE SUPPLEMENT SECTION 1809.5 'FROST PROTECTION' AND SEI/ASCE STANDARD 32-01 SECTION 7.1 'SLAB ON GRADE CONSTRUCTION'.
2. FOUNDATION AREA SHALL BE 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.



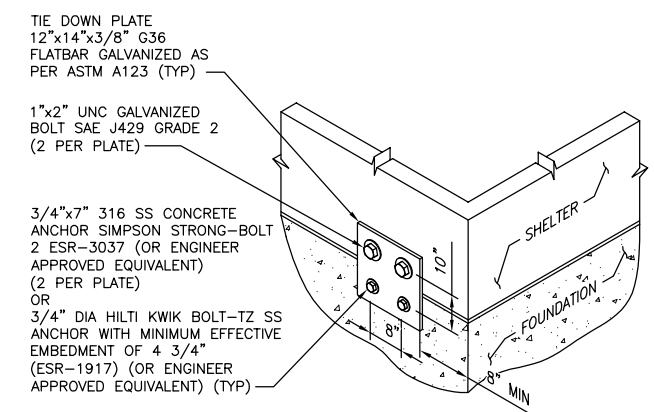
**SHELTER FOUNDATION PLAN**  
NO SCALE



**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

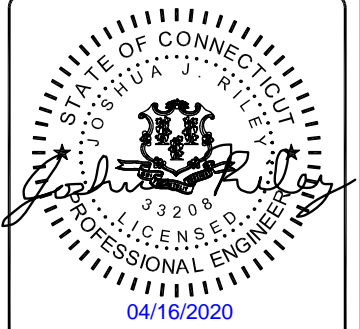


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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**SHELTER FOUNDATION**  
DETAILS

SHEET NUMBER  
**S-1**



|             |        |
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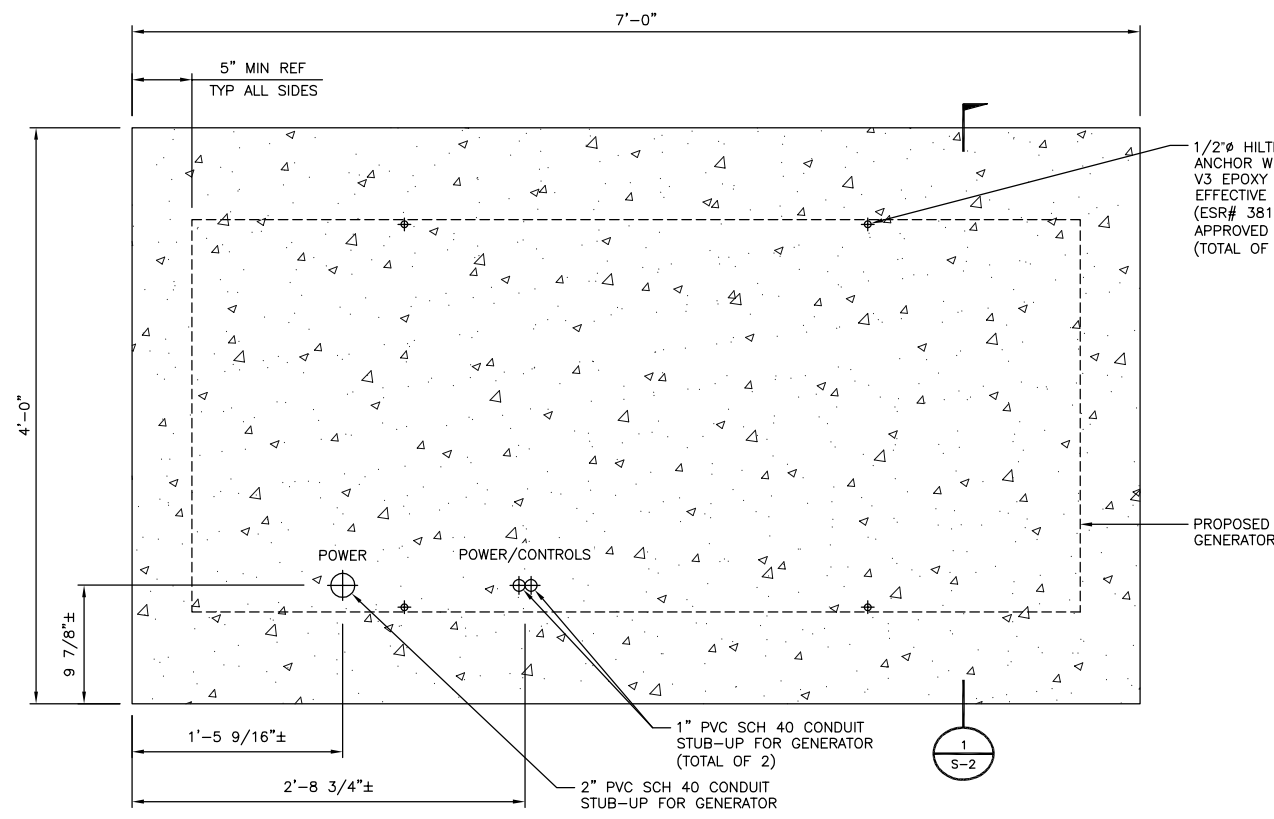
KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
GENERATOR & PROPANE TANK  
CONCRETE PAD DETAILS

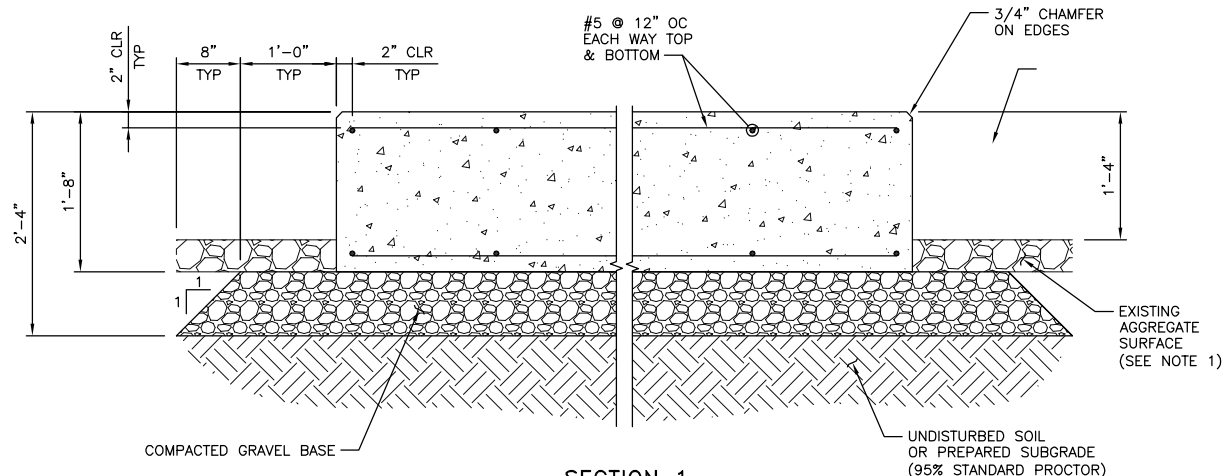
SHEET NUMBER  
**S-2**

**NOTES**

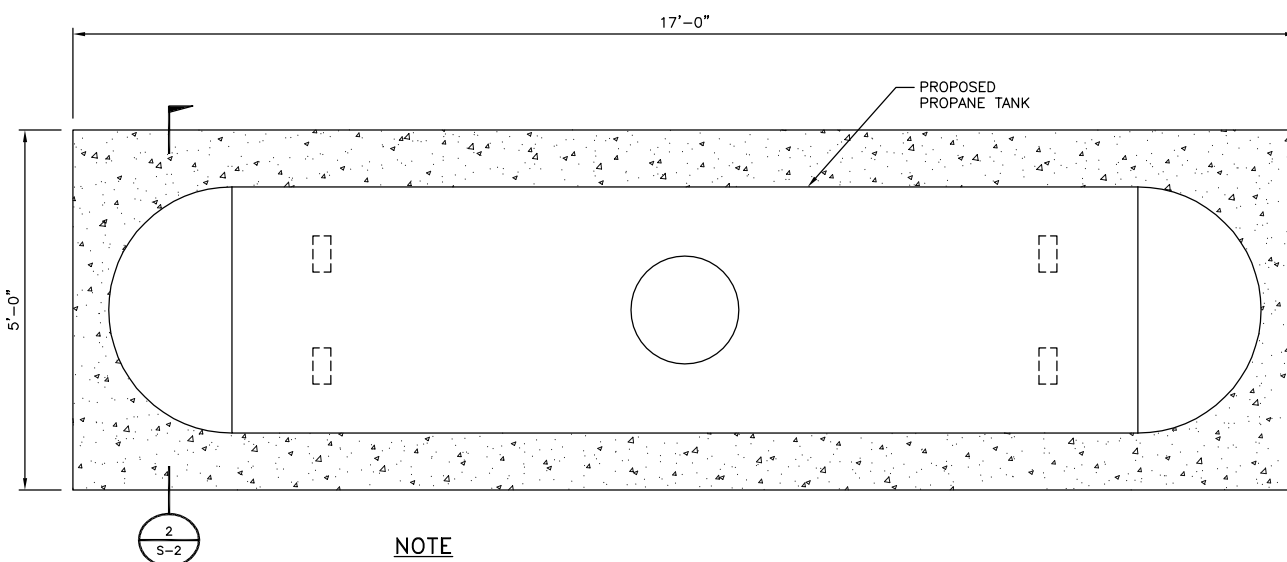
1. MATCH THICKNESS OF EXISTING AGGREGATE SURFACE WHEN CONSTRUCTION IS COMPLETE.
2. CONTRACTOR TO SEED DISTURBED SOIL AROUND PROPOSED GRAVEL FINISH GRADE.
3. CONTRACTOR TO REPLACE TOP SOIL WITH COMPACTED AND FINISH TO MATCH EXISTING GRADE.



**GENERATOR FOUNDATION PLAN**  
NO SCALE



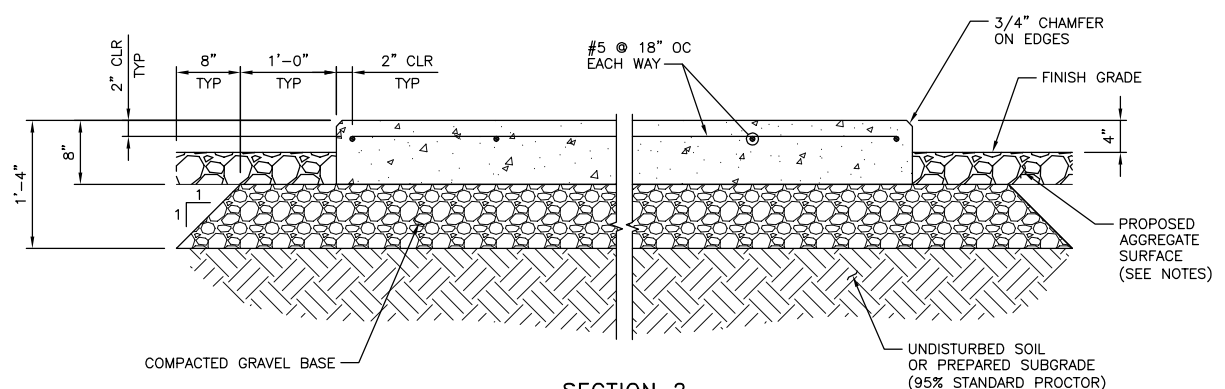
**SECTION 1  
FOUNDATION DETAIL**  
NO SCALE



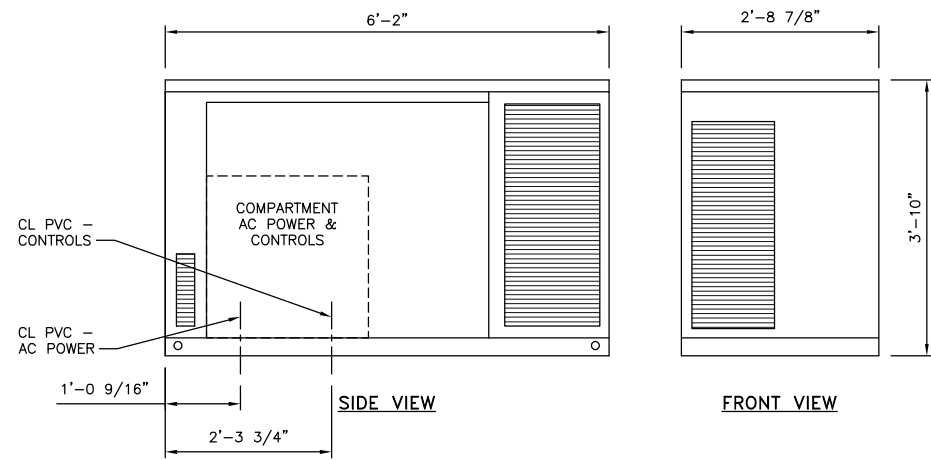
**NOTE**

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

**PROPANE TANK FOUNDATION PLAN**  
NO SCALE

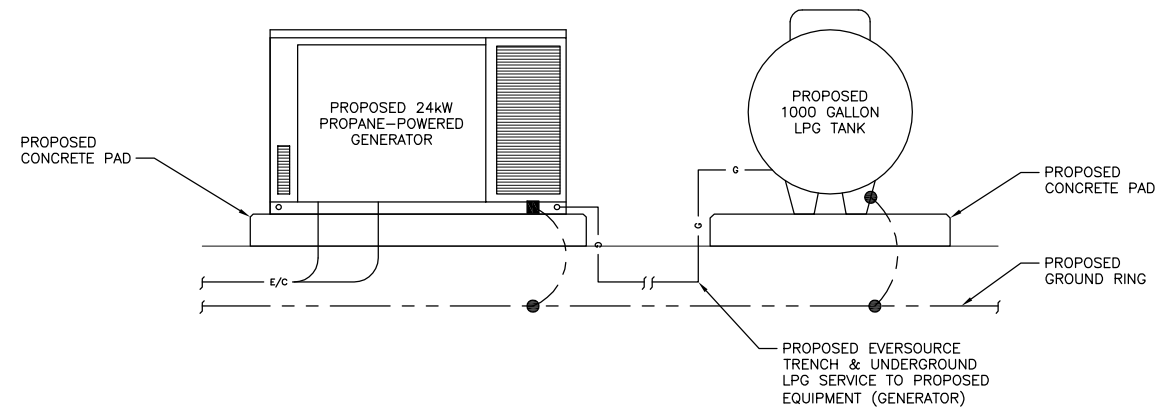


**SECTION 2  
FOUNDATION DETAIL**  
NO SCALE



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

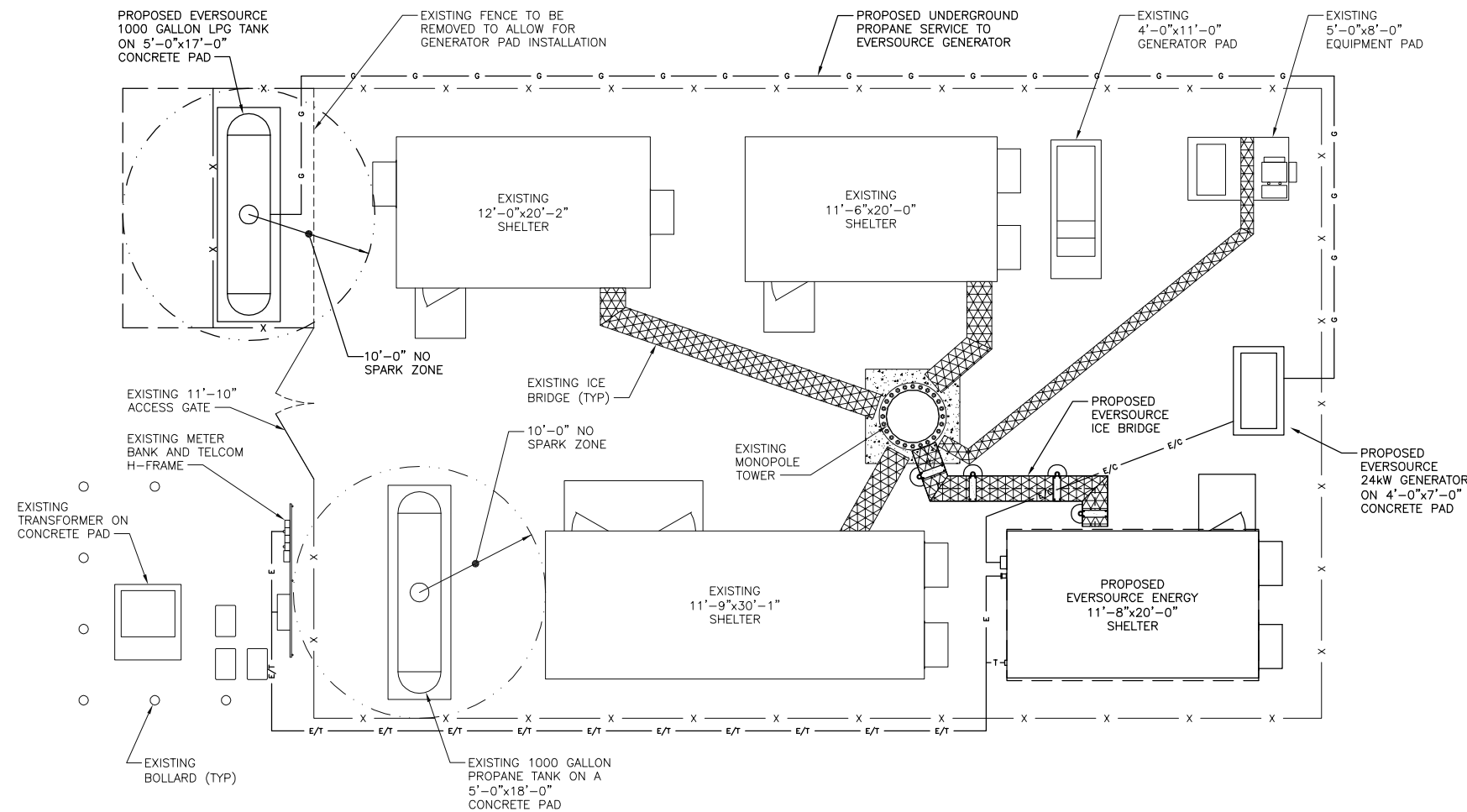
**PROPANE GENERATOR SCHEMATICS**  
NO SCALE



**NOTES**

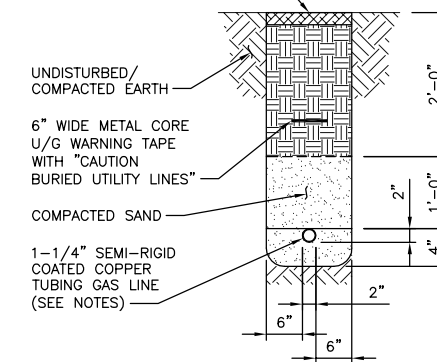
1. ALL VALVES USED IN METALLIC PIPING SYSTEMS MUST HAVE PRESSURE CONTAINING PARTS OF STEEL, DUCTILE (NODULAR) IRON, MALLEABLE IRON OR BRASS.
2. ALL MATERIALS USED, INCLUDING VALVE SEAT DISCS, PACKING, SEALS AND DIAPHRAGMS MUST BE RESISTANT TO THE ACTION OF LP GAS UNDER SERVICE CONDITIONS. MANY VALVES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

**PROPANE CONNECTION DIAGRAM**  
NO SCALE



**MECHANICAL PLAN**  
NO SCALE

RESTORE EXISTING SURFACING AT AREAS DISTURBED BY TRENCHING, MATCH EXISTING



**NOTES**

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

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

**PROPANE GAS TRENCH**  
NO SCALE

**EVERSOURCE ENERGY**

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

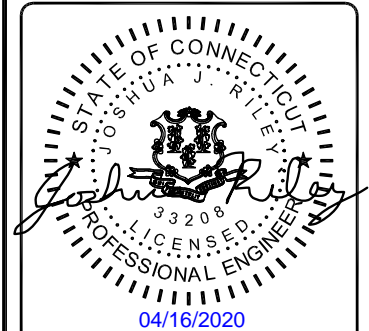


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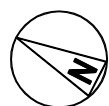


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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

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

SHEET NUMBER  
**M-1**



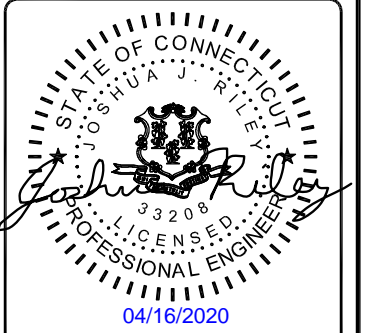


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

| REV | DATE     | DESCRIPTION       |
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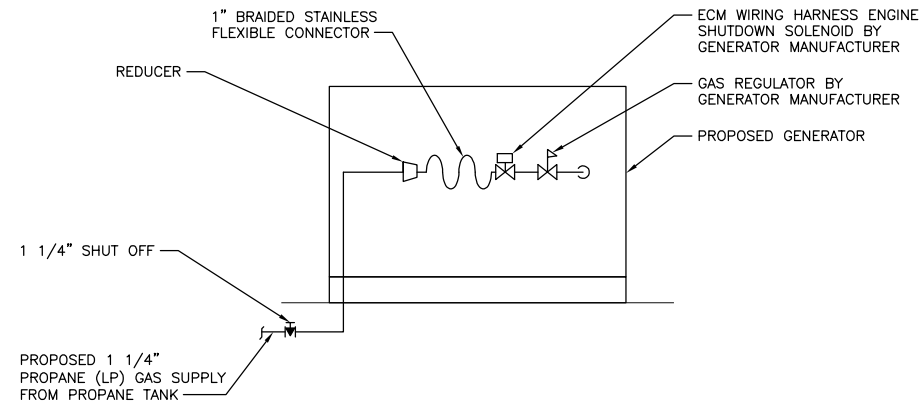


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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
GENERATOR & PROPANE TANK  
EQUIPMENT DETAILS

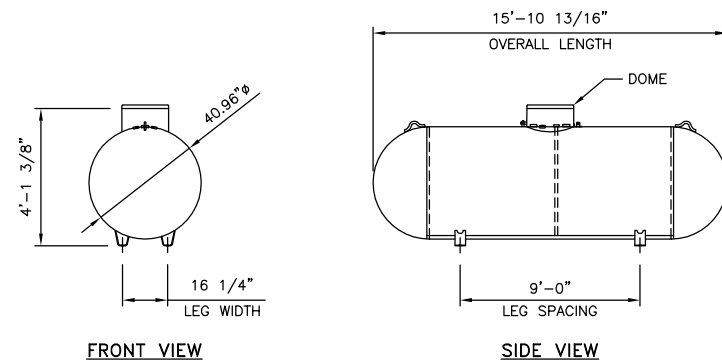
SHEET NUMBER  
**M-2**



**NOTE**

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

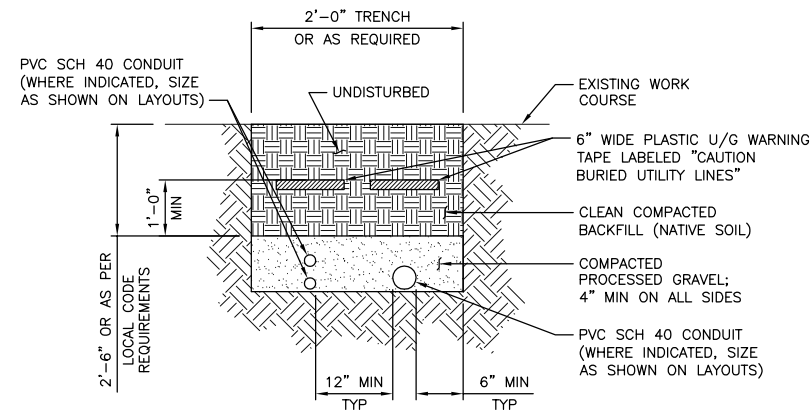
**PROPANE CONNECTION DIAGRAM**  
NO SCALE



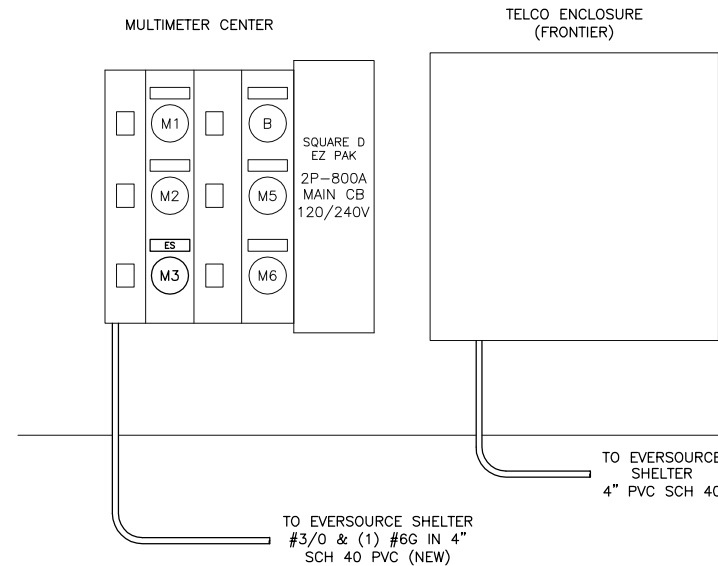
**NOTES**

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

**PROPANE TANK SCHEMATICS**  
NO SCALE



**GENERATOR TRENCH DETAIL**  
NO SCALE

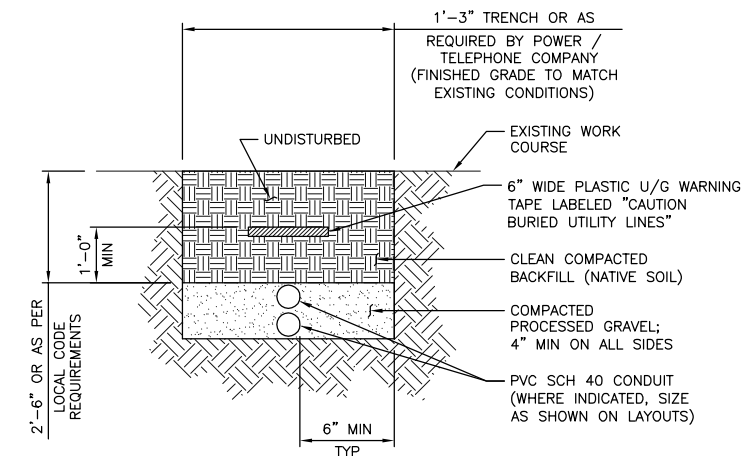


**NOTE**

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

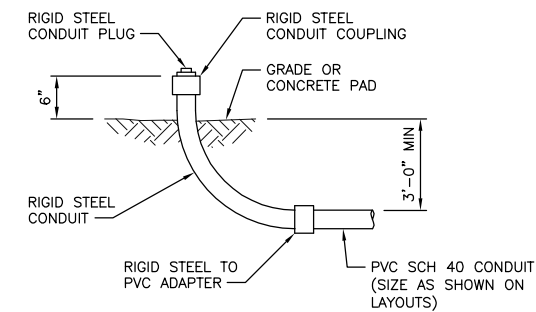
**POWER RISER DIAGRAM**

NO SCALE



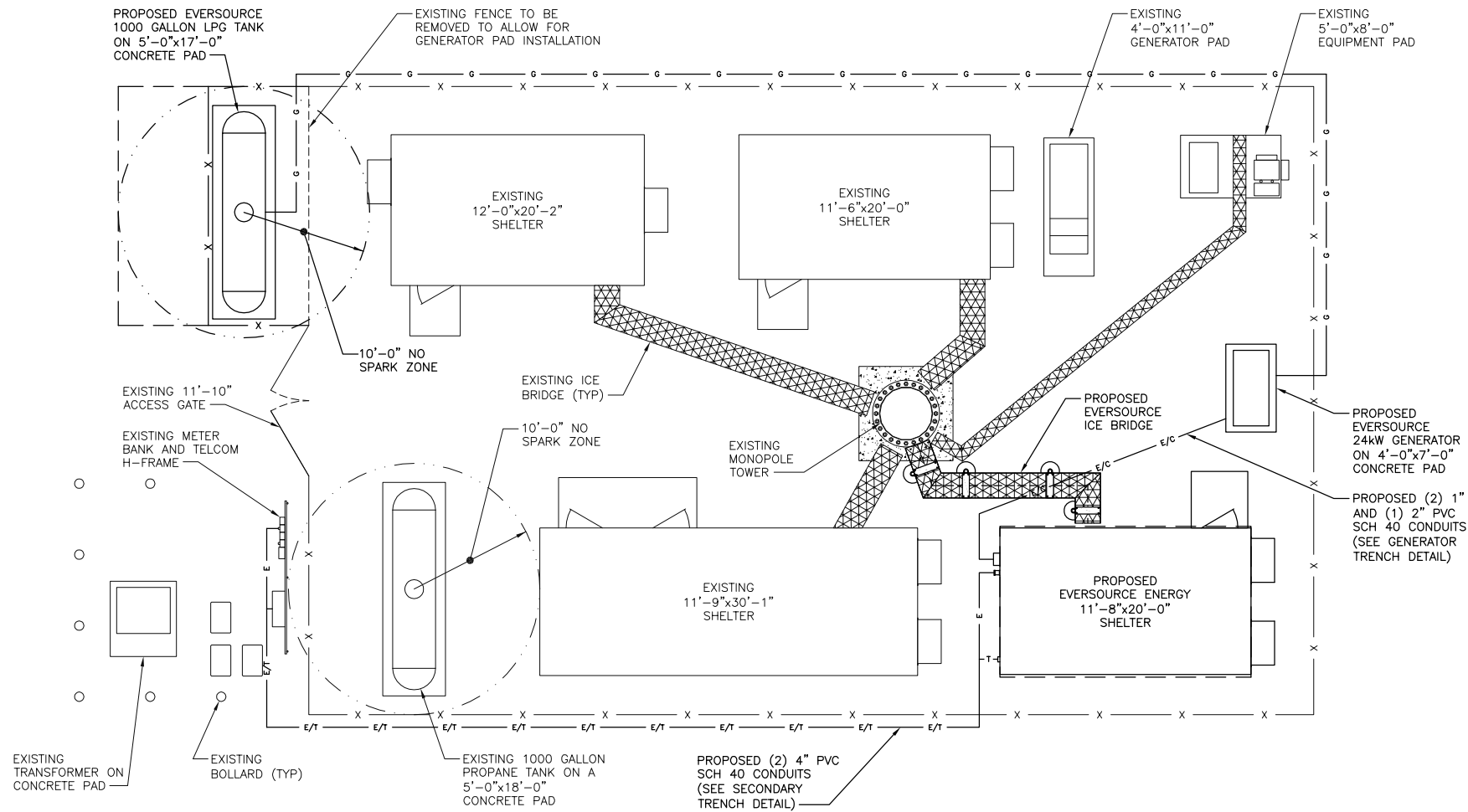
**SECONDARY TRENCH DETAIL**

NO SCALE



**STUB-UP CONDUIT DETAIL**

NO SCALE



**UTILITY 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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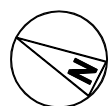
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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**UTILITY PLAN & DETAILS**

SHEET NUMBER

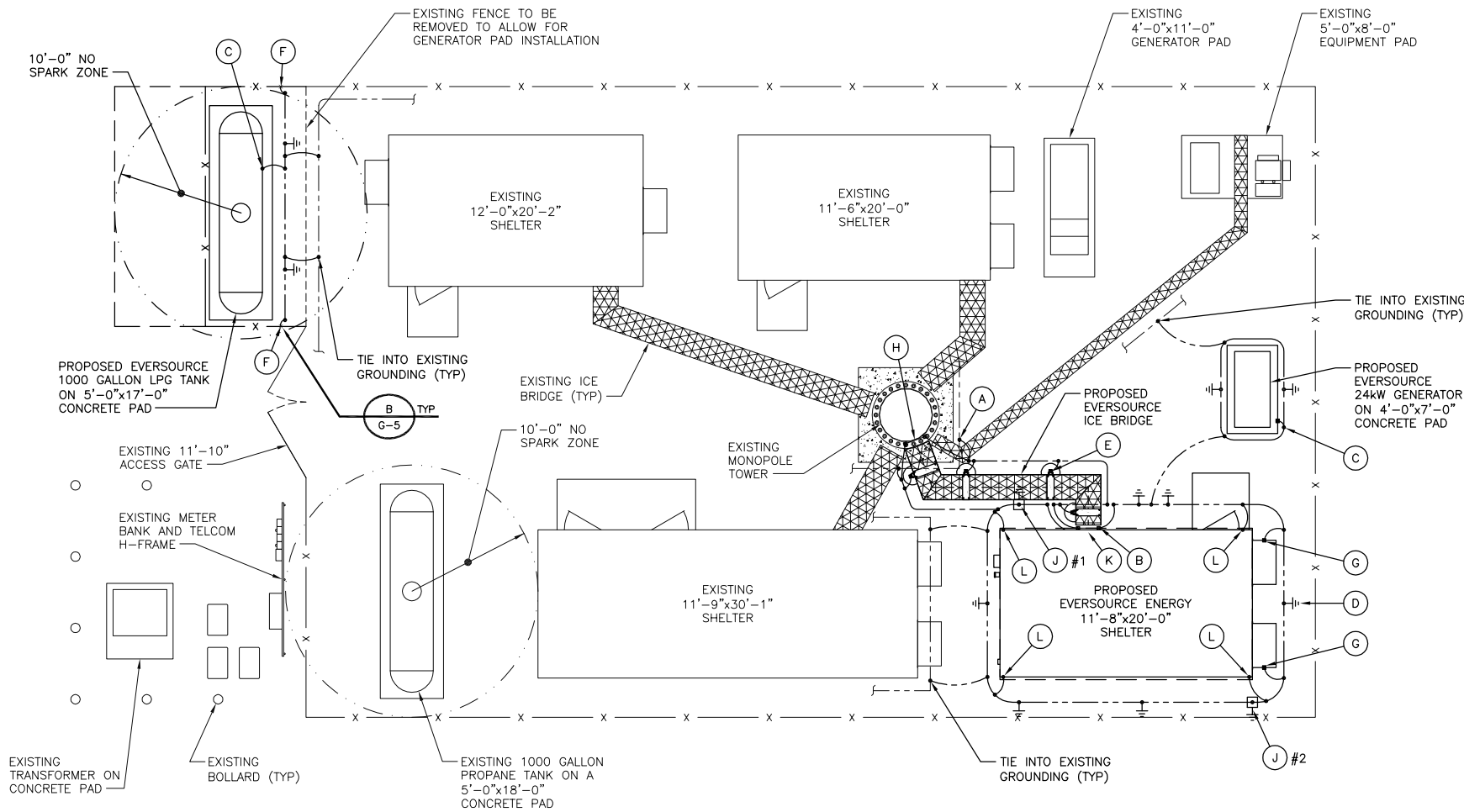
**E-1**





**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) **TOWER GROUNDING:** #2 TINNED CU WIRE FROM NEW BURIED GROUND RING TO EXISTING TOWER 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 GENERATOR/TANK:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO GENERATOR OR TANK AND EXOTHERMICALLY WELD.
- (D) **GROUND ROD:** COPPER CLAD STEEL 5/8"Ø TEN (10) FEET LONG.
- (E) **ICE BRIDGE SUPPORT POST GROUNDING:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO ALL ICE BRIDGE SUPPORT POSTS AND EXOTHERMICALLY WELD.
- (F) **FENCE GROUNDING:** IF FENCE IS WITHIN 6' OF GROUND RING, EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO FENCE CORNER POSTS AND EXOTHERMICALLY WELD. BOND INTERMEDIATE POST IF REQUIRED TO MAINTAIN 25' MAX SPACING.
- (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) **MASTER GROUND BAR:** EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO MASTER GROUND BAR & MAKE A EXOTHERMIC CONNECTION.
- (L) **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#1 AND J#2. 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

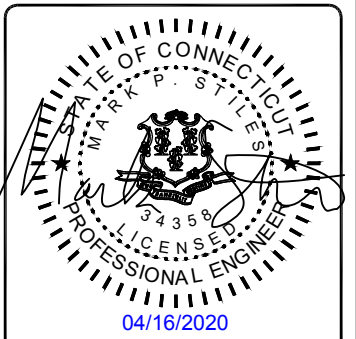


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OVERLAND PARK, KS 66211  
PHONE: (913) 458-3595

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| DRAWN BY:   | TYW    |
| CHECKED BY: | JR     |

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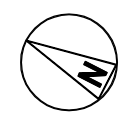


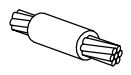
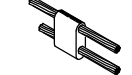


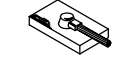
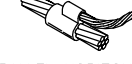


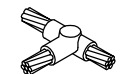
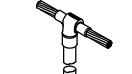
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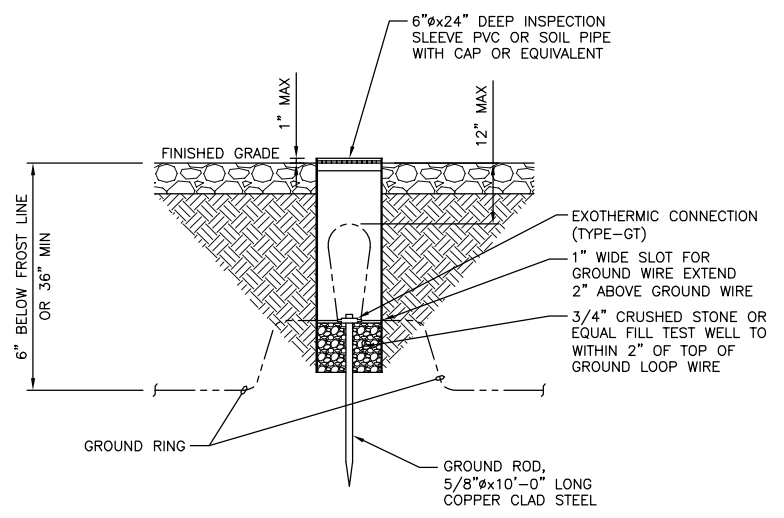
KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**GROUNDING PLAN**

SHEET NUMBER  
**G-1**



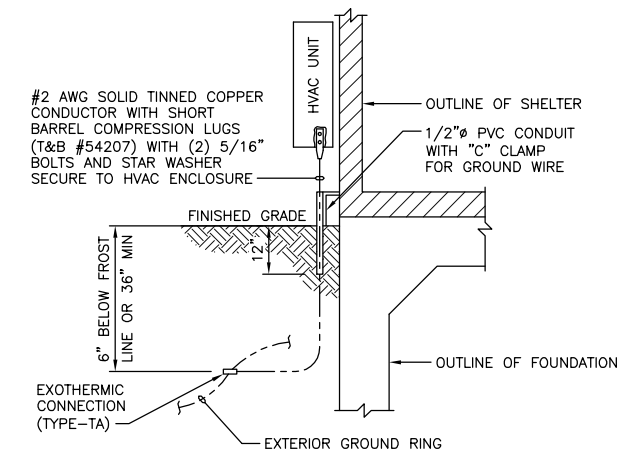
| CADWELD CONNECTIONS<br>OR APPROVED EQUAL  |  | BURNDY CONNECTIONS<br>OR APPROVED EQUAL   |  |
|---|--|---|--|
| <br>HORIZONTAL SPLICE<br>SPLICE OF<br>HORIZONTAL CABLES<br>TYPE SS                     | <br>PARALLEL HORIZONTAL<br>CONDUCTORS<br>PARALLEL THROUGH CONNECTION<br>OF HORIZONTAL CABLES<br>TYPE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



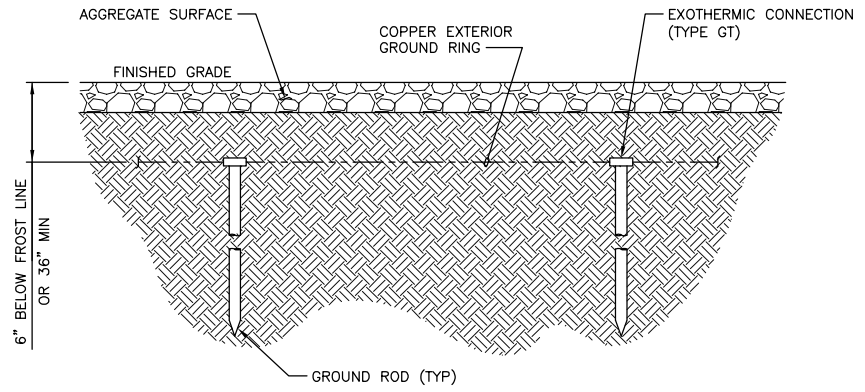
**GROUND ROD WITH INSPECTION SLEEVE**  
NO SCALE

**NOTES**

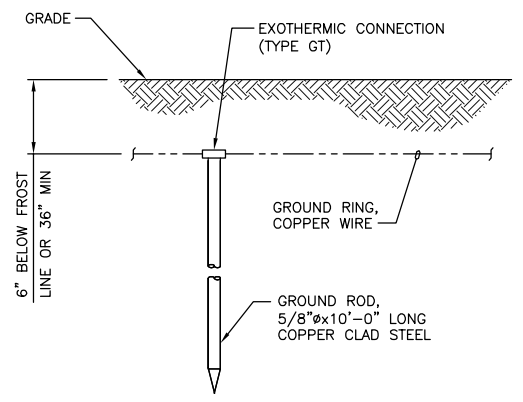
1. REFER TO SHEET G-1 FOR WIRE SIZES.



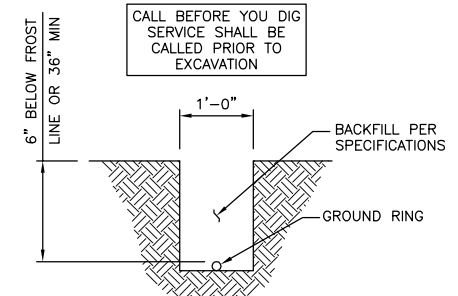
**HVAC GROUND DETAIL**  
NO SCALE



**GROUND RING DETAIL**  
NO SCALE

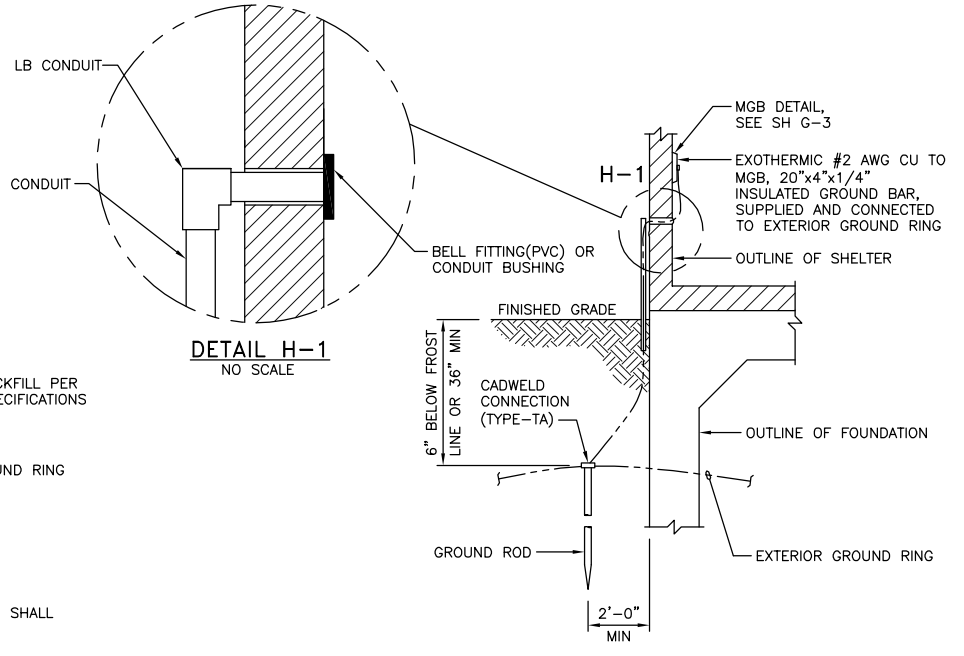


**GROUND ROD**  
NO SCALE



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

**GROUND RING TRENCH**  
NO SCALE



**MGB GROUND DETAIL**  
NO SCALE

**EVERSOURCE ENERGY**

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



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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G-2**



|             |        |
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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**GROUNDING**  
DETAILS

SHEET NUMBER  
**G-3**

**NOTES**

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

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

**SECTION "P" - SURGE PROTECTORS**

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

**SECTION "A" - SURGE ABSORBERS**

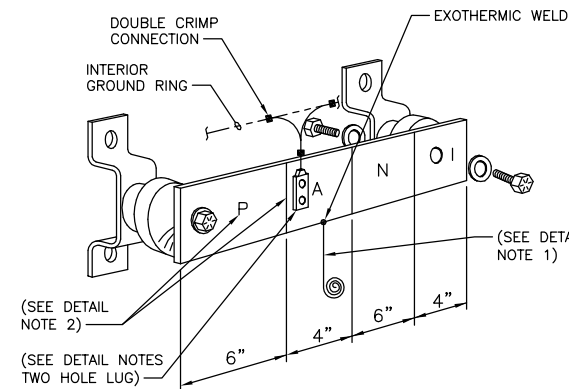
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)

**SECTION "N" - NON-ISOLATED GROUND ZONE EQUIPMENT**

- MISC NON-ISOLATED GROUND ZONE
- BATTERY RACK

**SECTION "I" - ISOLATED GROUND ZONE**

- ALL ISOLATED GROUND REFERENCE
- GROUND WINDOW BAR

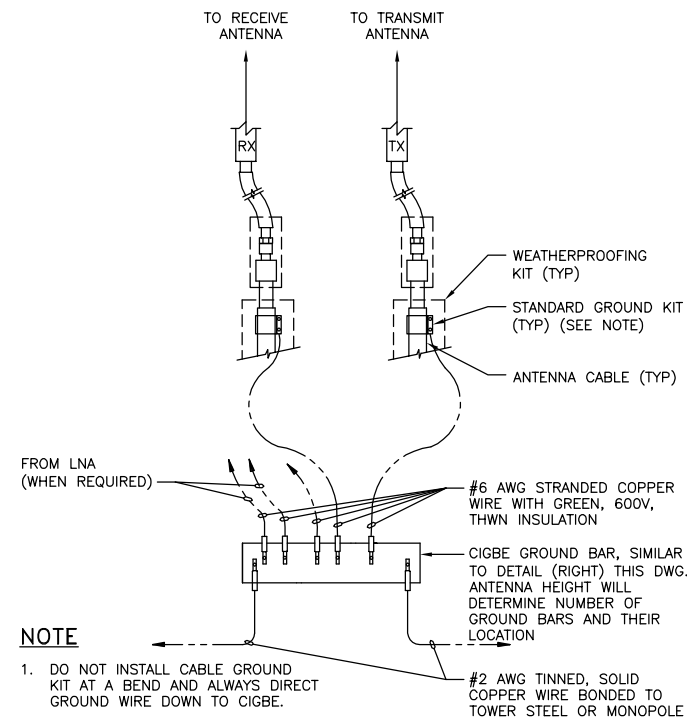


SITEPRO - 1/4"x4"x20"  
TINNED GROUND BAR KIT  
TINMG420U-K

**DETAIL NOTES**

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

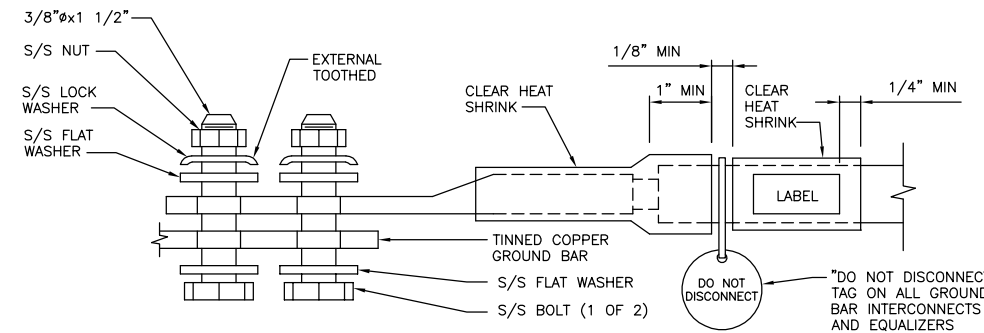
**(MGB) REFERENCE GROUND BAR**  
NO SCALE



**NOTE**

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

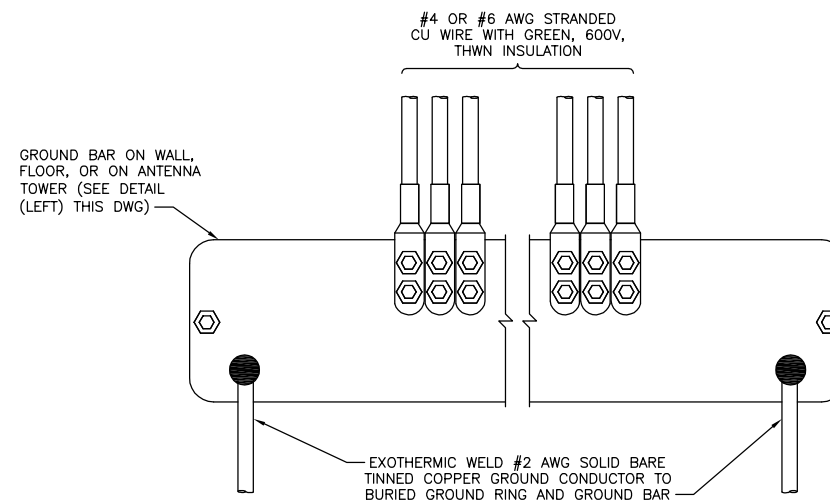
**CONNECTION OF GROUND WIRE TO EXTERIOR GROUNDING BAR**  
NO SCALE



**NOTES**

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

**TWO HOLE LUG**  
NO SCALE



**NOTE**

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

**INSTALLATION OF GROUND WIRE TO EXTERIOR GROUNDING BAR**  
NO SCALE



|             |        |
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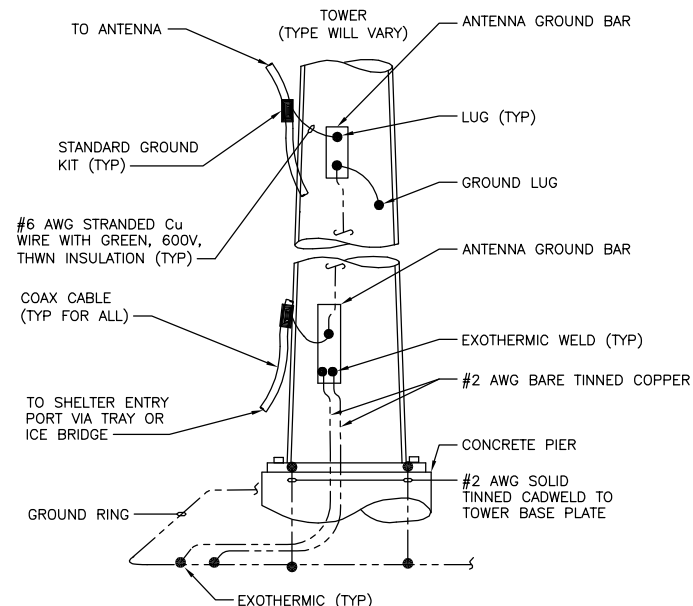


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KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**GROUNDING  
DETAILS**

SHEET NUMBER  
**G-4**

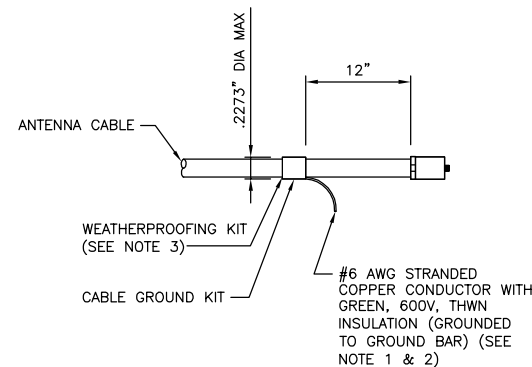


**NOTE**

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

**ANTENNA CABLE GROUNDING**

NO SCALE

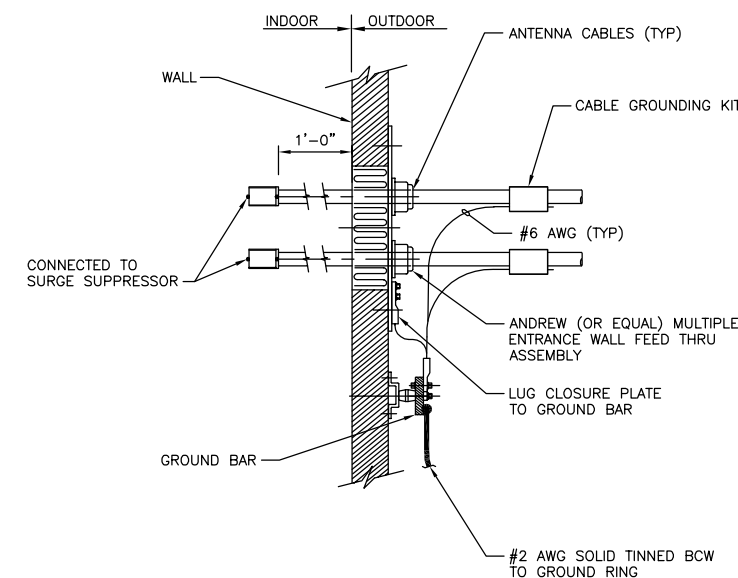


**NOTES**

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

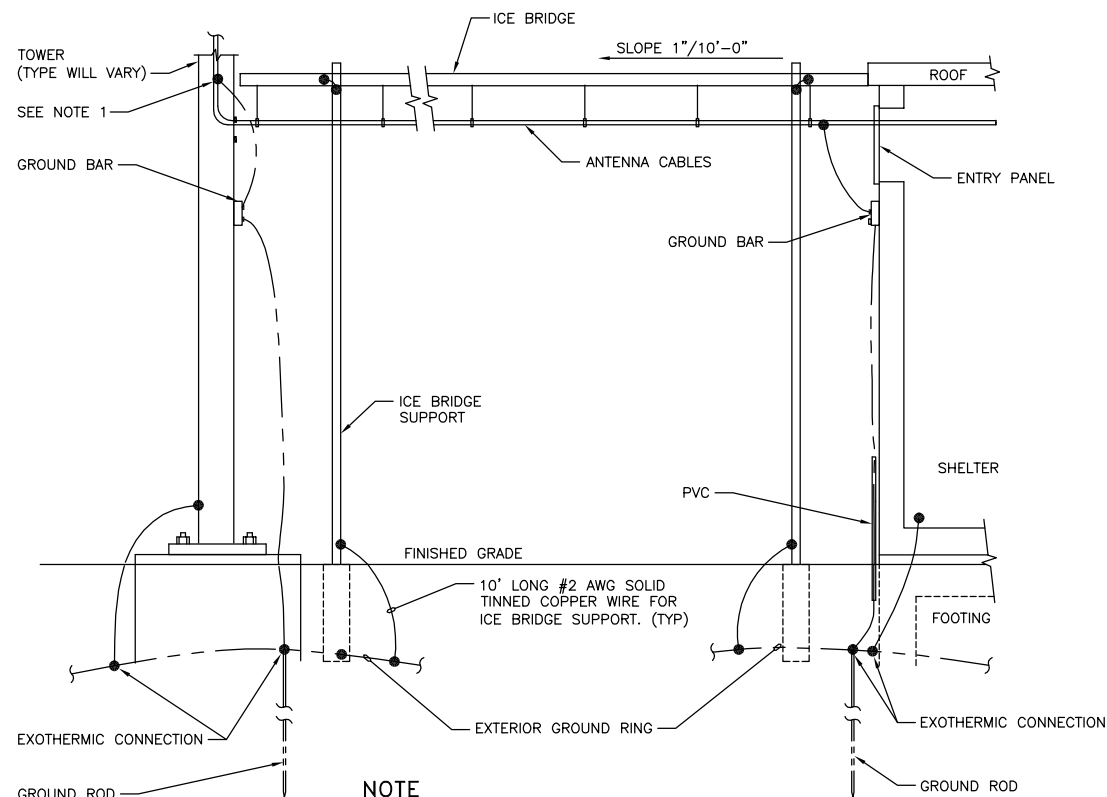
**CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE**

NO SCALE



**CABLE INSTALLATION WITH WALL FEED THRU ASSEMBLY**

NO SCALE

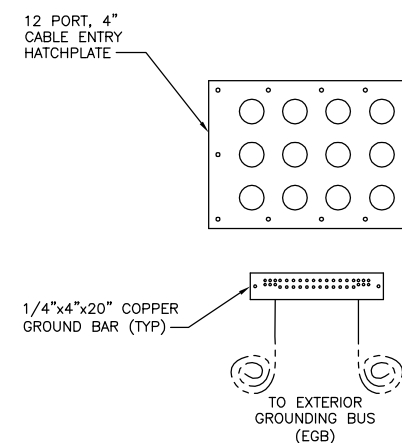


**NOTE**

1. PROVIDE GROUND KIT 6" BEFORE TURN

**ICE BRIDGE AND ANTENNA CABLE DETAIL**

NO SCALE



**HATCH PLATE GROUNDING AT SHELTER**

NO SCALE

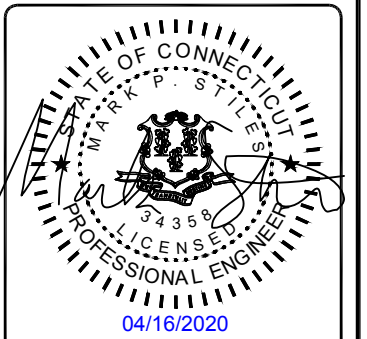


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

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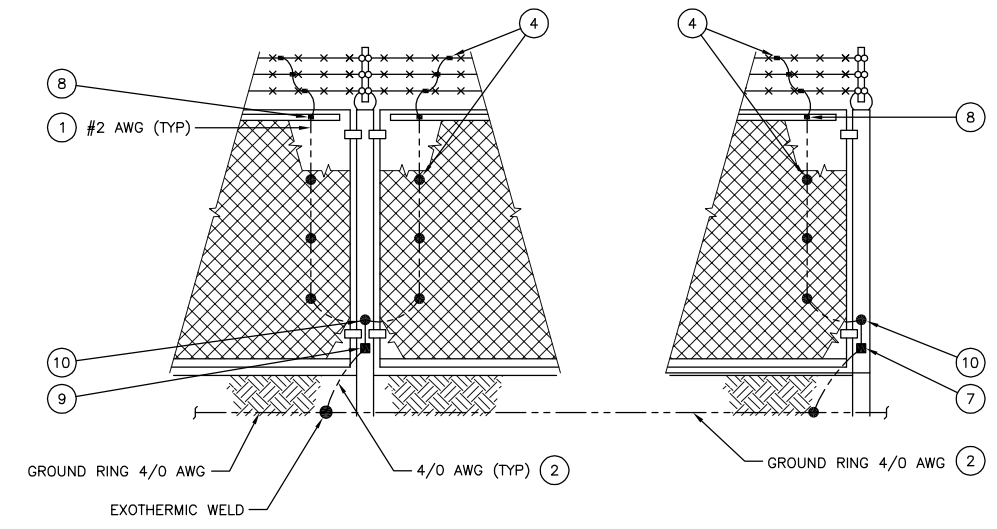


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TO ALTER THIS DOCUMENT.

KENT PCS CT (413783)  
38 MAPLE STREET  
KENT, CT 06755

SHEET TITLE  
**GROUNDING  
DETAILS**

SHEET NUMBER  
**G-5**



**DETAIL B**  
**FENCE GROUNDING DETAIL**  
NO SCALE

**DETAIL C**  
**CORNER DETAIL**  
NO SCALE

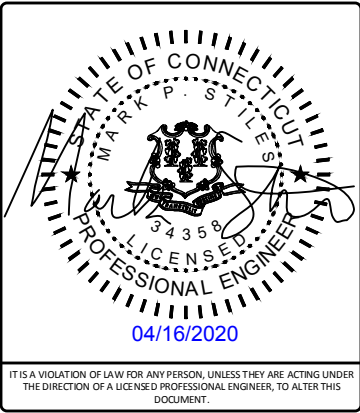
**CONNECTOER MATERIAL DESCRIPTION**

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



PROJECT NO: 403093  
DRAWN BY: QDI  
CHECKED BY: SB

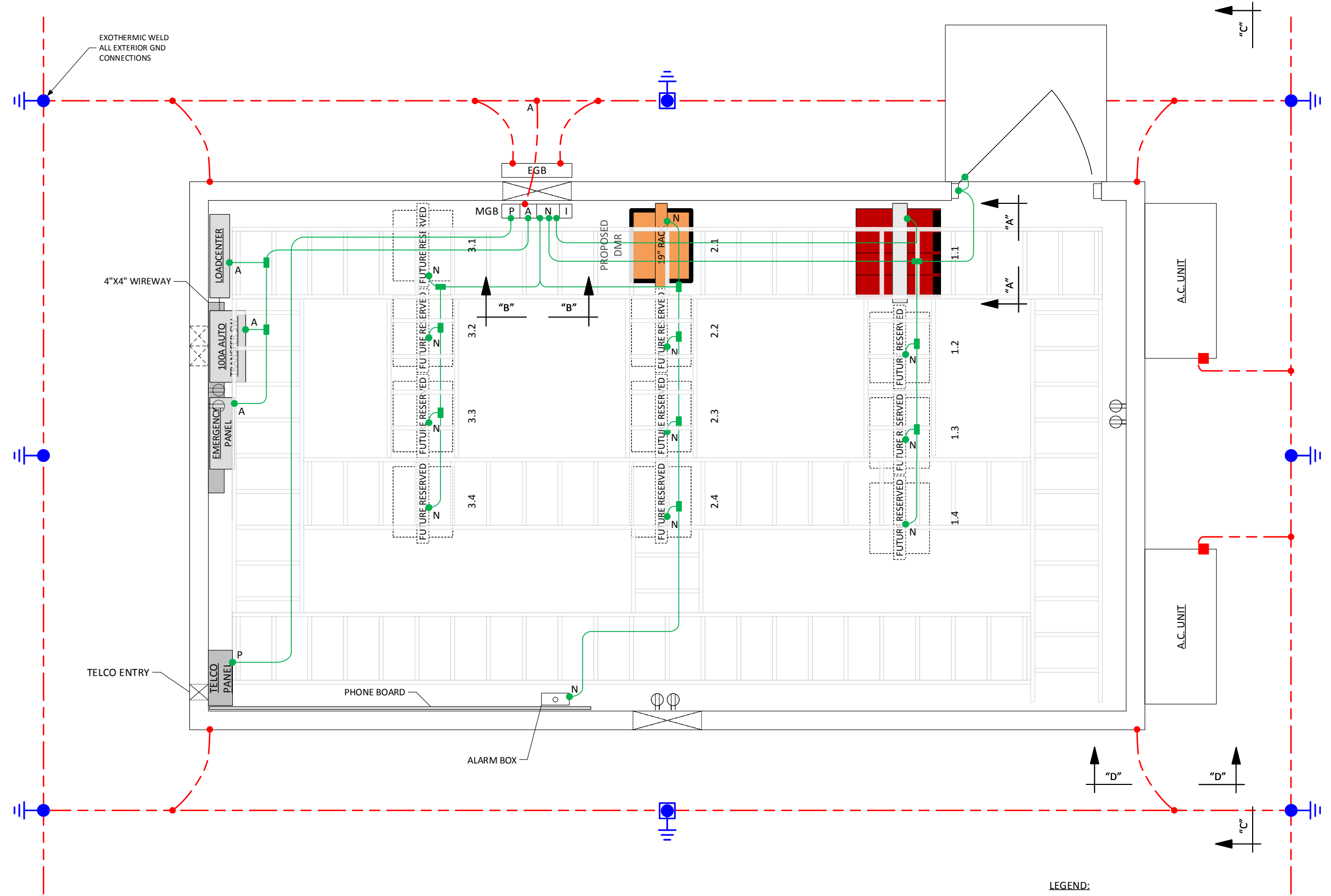
| REV | DATE     | DESCRIPTION       |
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**SITE NAME**  
ES-278 KENT  
S KENT RD  
KENT, CT 06755

**DRAWING TITLE**  
**SHELTER LAYOUT  
GROUNDING PLAN**

**DRAWING NUMBER**  
**G-6**



- 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*

EXOTHERMIC WELD  
ALL EXTERIOR GND  
CONNECTIONS

4"X4" WIREWAY

TELCO ENTRY

PHONE BOARD

ALARM BOX

LOADCENTER  
EMERGENCY  
PANEL  
TELCO  
PANEL

MGB  
EGB  
PANI

PROPOSED  
DMR  
19" RAC

A.C. UNIT  
A.C. UNIT

FUTURE RESERVED  
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"C"

"A"

"A"

"B"

"B"

"D"

"D"

"C"



|             |        |
|-------------|--------|
| PROJECT NO: | 403093 |
| DRAWN BY:   | QDI    |
| CHECKED BY: | SB     |

| REV | DATE     | DESCRIPTION       |
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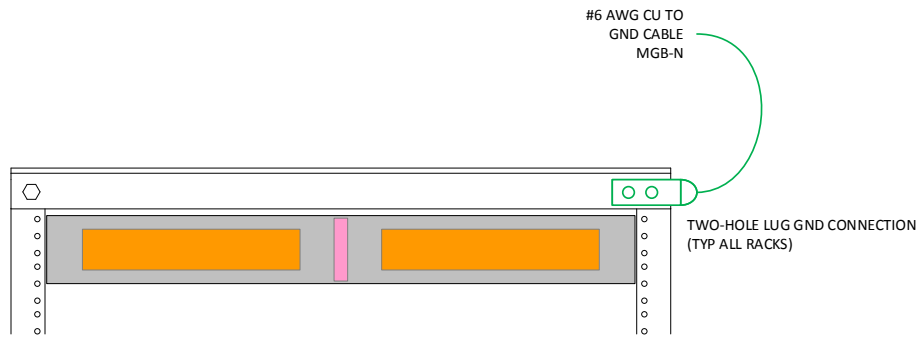


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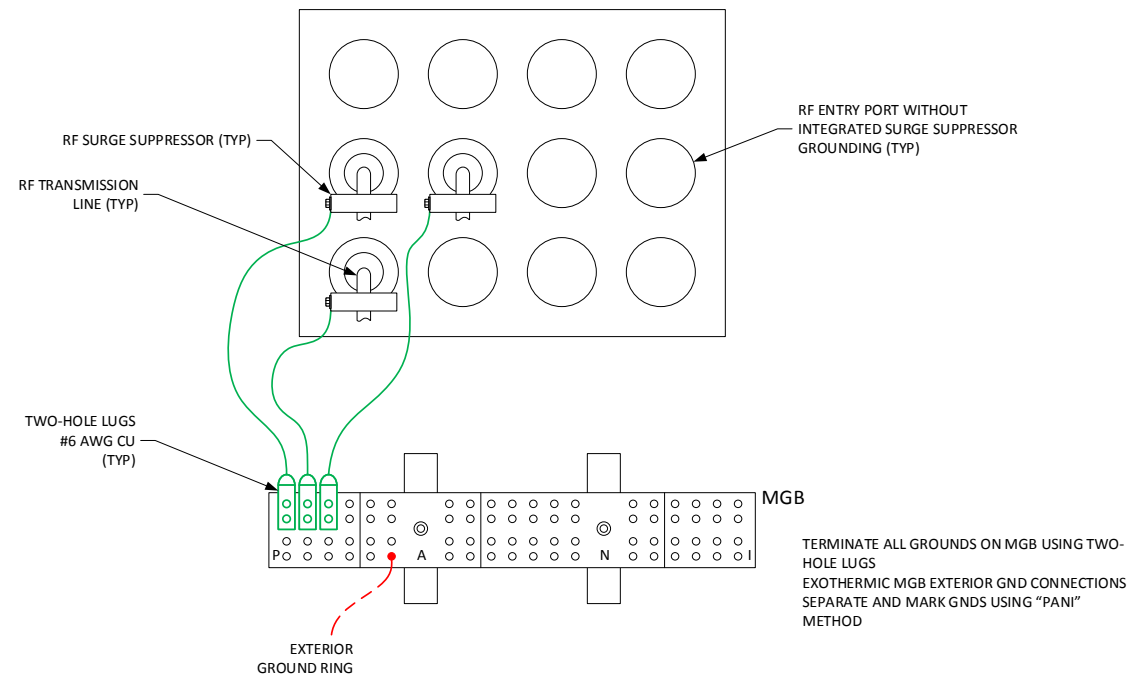
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| <b>SITE NAME</b>                           |
| ES-278 KENT<br>S KENT RD<br>KENT, CT 06755 |

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|---|
| <b>DRAWING TITLE</b>                        |
| <b>SHELTER INDOOR<br/>GROUNDING DETAILS</b> |

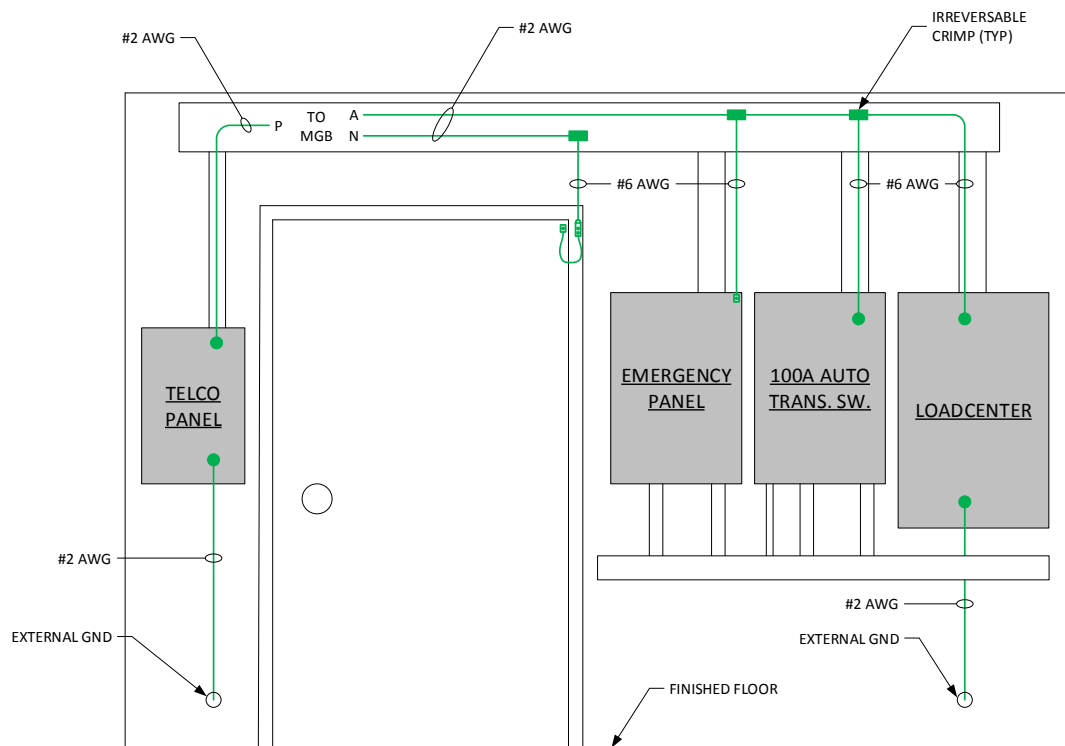
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|-----------------------|
| <b>DRAWING NUMBER</b> |
| <b>G-7</b>            |



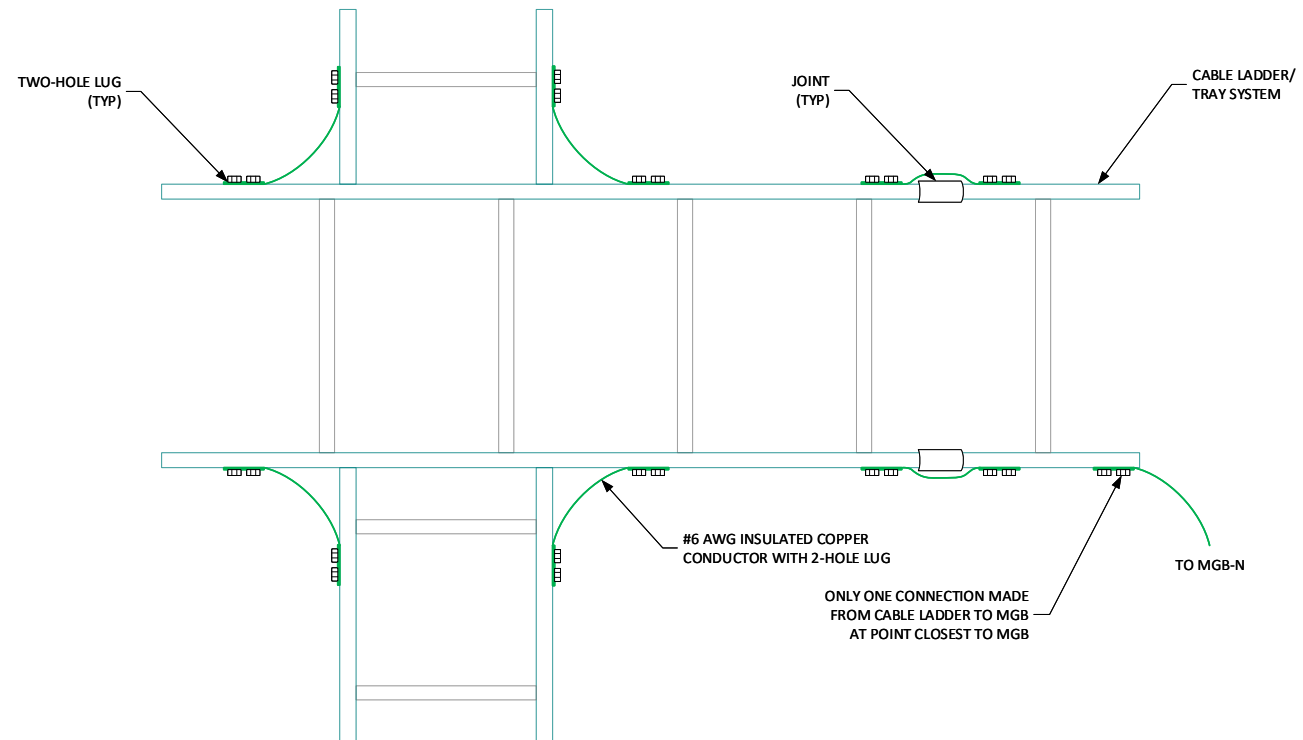
**SECTION "A - A"**  
**TYPICAL RACK GROUNDING DETAIL**  
DWG G-6  
(NTS)



**SECTION "B - B"**  
**TYPICAL ENTRY PORT/GROUND BAR GROUNDING DETAILS**  
DWG G-6  
(NTS)



**TYPICAL EQUIPMENT GROUNDING DETAILS**  
DWG G-6  
(NTS)



**TYPICAL CABLE LADDER  
GROUNDING DETAIL**  
(NTS)

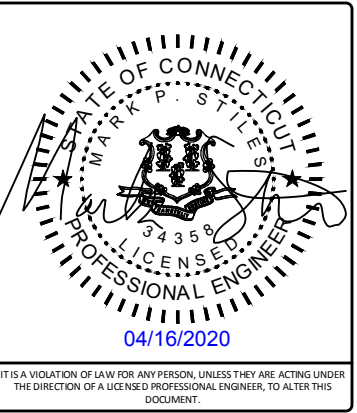
- LEGEND:**
- #2 AWG CU STD GREEN INSULATED WIRE
  - #6 AWG CU STD GREEN INSULATED WIRE & LUG
  - IRREVERSABLE CRIMP
  - EXTERIOR #2 STD AWG NON-INSULATED WIRE

- 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.



|             |        |
|-------------|--------|
| PROJECT NO: | 403093 |
| DRAWN BY:   | QDI    |
| CHECKED BY: | SB     |

| REV | DATE     | DESCRIPTION       |
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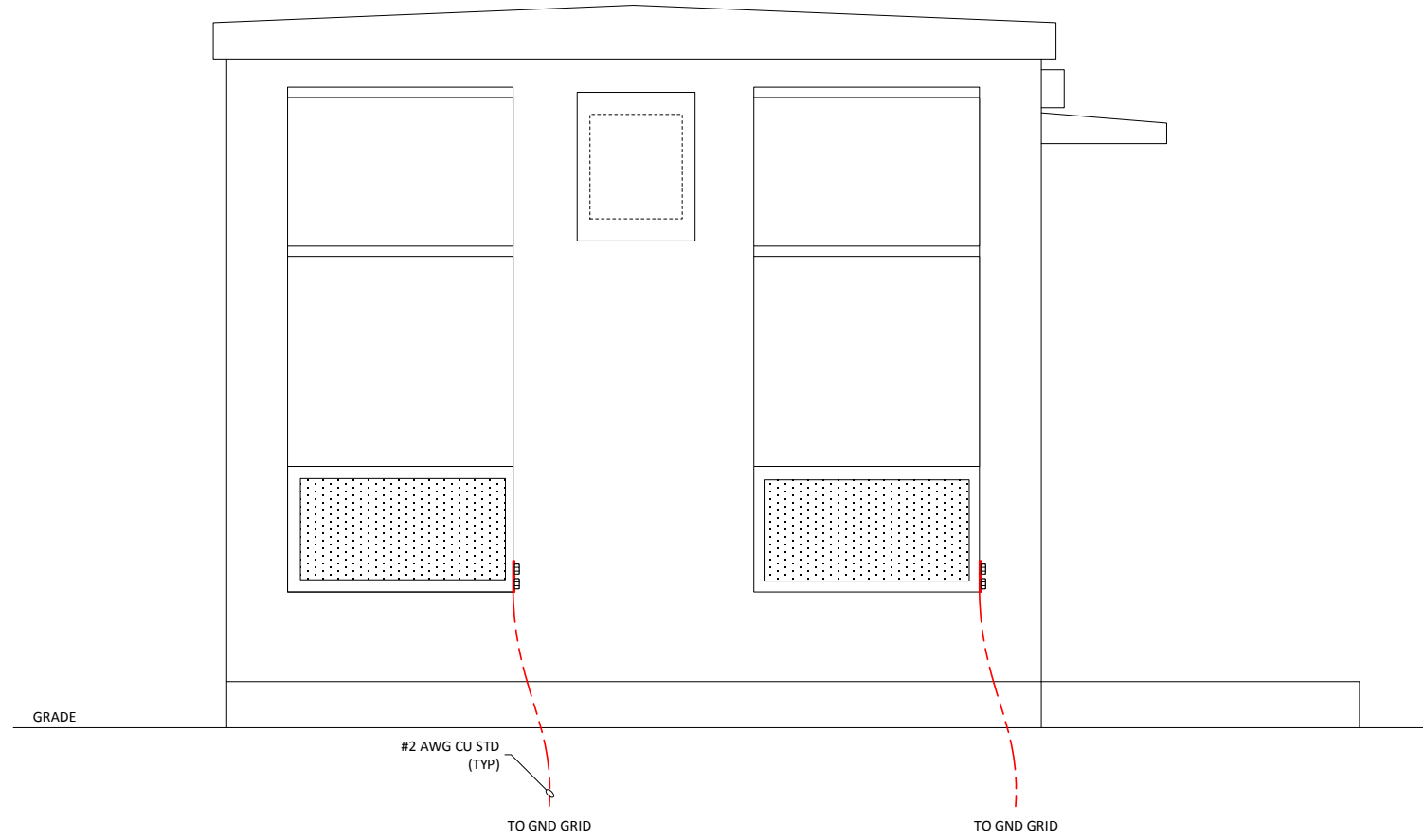


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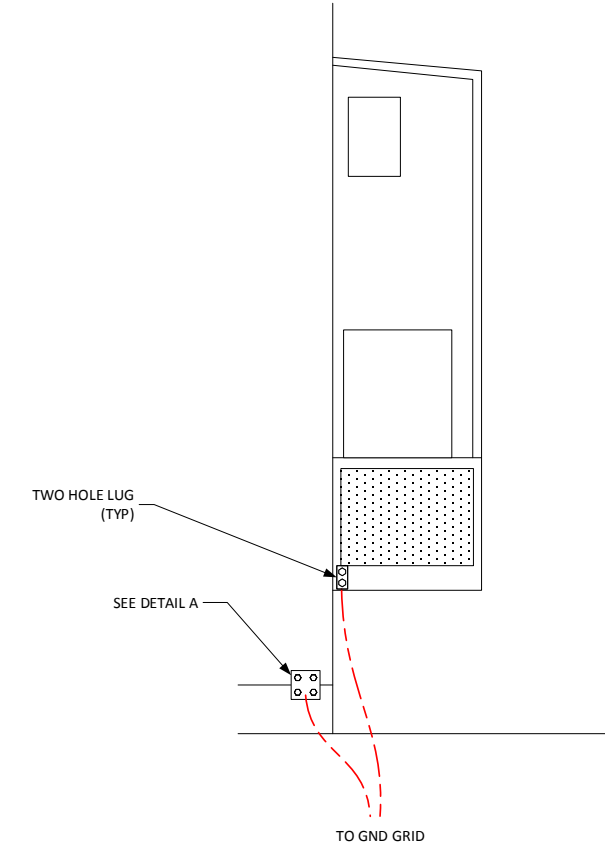
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| <b>SITE NAME</b>                           |
| ES-278 KENT<br>S KENT RD<br>KENT, CT 06755 |

|                                      |
|--------------------------------------|
| <b>DRAWING TITLE</b>                 |
| SHELTER OUTDOOR<br>GROUNDING DETAILS |

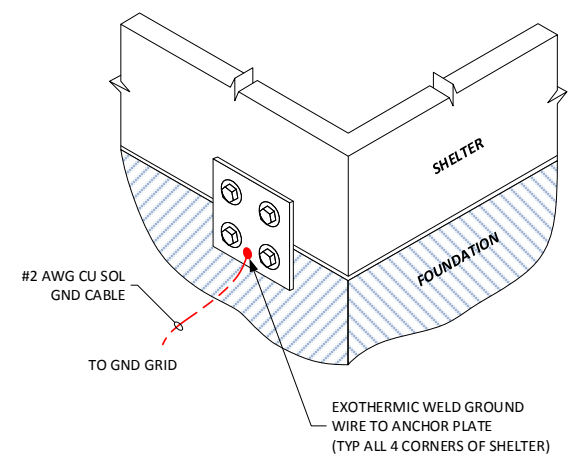
|                       |
|-----------------------|
| <b>DRAWING NUMBER</b> |
| <b>G- 8</b>           |



**SECTION "C - C"**  
**DWG G-6**  
**(NTS)**



**SECTION "D - D"**  
**DWG G-6**  
**(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.



DESIGN BASIS

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

GENERAL CONDITIONS

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

THERMAL & MOISTURE PROTECTION

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

SUBMITTALS

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

CONCRETE

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

|                  |                               |
|------------------|-------------------------------|
| PORTLAND CEMENT: | ASTM C150, TYPE 1             |
| AGGREGATE:       | ASTM C33, 1 INCH MIX          |
| WATER:           | POTABLE                       |
| ADMIXTURE:       | NON-CHLORIDE                  |
| AIR:             | 6%*                           |
| SLUMP:           | 4 INCH UNLESS NOTED OTHERWISE |
- \*ALL CONCRETE EXPOSED TO FREEZING WEATHER SHALL CONTAIN ENTRAINED AIR PER ACI 211 TABLE 4.2.1 OF ACI 318-05.
- ALL REINFORCING STEEL SHALL BE ASTM A615, GR 60 (DEFORMED) UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS 'B' AND ALL HOOKS SHALL BE ACI STANDARD UNLESS NOTED OTHERWISE. REINFORCING BARS SHALL BE COLD BENT WHERE REQUIRED AND TIES (NOT WELDED).
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
 

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

STEEL

- MATERIAL:
 

|                 |                                    |
|-----------------|------------------------------------|
| WIDE FLANGE:    | ASTM A572, GR 50                   |
| TUBING:         | ASTM A500, GR C                    |
| PIPE:           | ASTM A53, GR B AND ASTM 572, GR 50 |
| ANGLE:          | ASTM A570, GR 50 AND ASTM A36      |
| BOLTS:          | ASTM A325                          |
| GRATING:        | TYPE GW-2 (1"x3/16" BARS)          |
| MISC. MATERIAL: | ASTM A36                           |
- ALL STEEL SHAPES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123 WITH A COATING WEIGHT OF 2 OZ/SF.
- DAMAGED GALVANIZED SURFACES SHALL BE CLEANED WITH A WIRE BRUSH AND PAINTED WITH TWO COATS OF COLD ZINC, "GALVANOX", "DRY GALV", "ZINC IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. TOUCH UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT IN SHOP OR FIELD.
- DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC "MANUAL OF STEEL CONSTRUCTION" 13TH EDITION.
- THE STEEL STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.
- ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.
- TOWER MANUFACTURER'S DESIGNS SHALL PREVAIL FOR TOWER.

CONNECTIONS

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

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

SITE GENERAL

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



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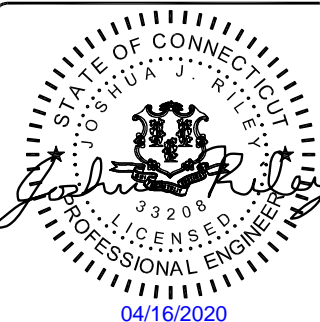


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SHEET TITLE  
**NOTES  
& SPECIFICATIONS**

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:VERTICAL), 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.

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

- 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-BELLEVILLE 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.



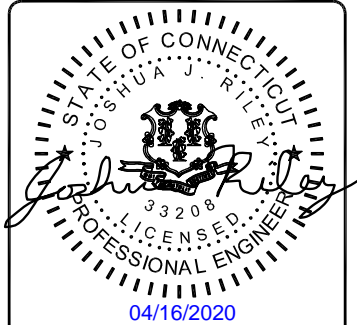
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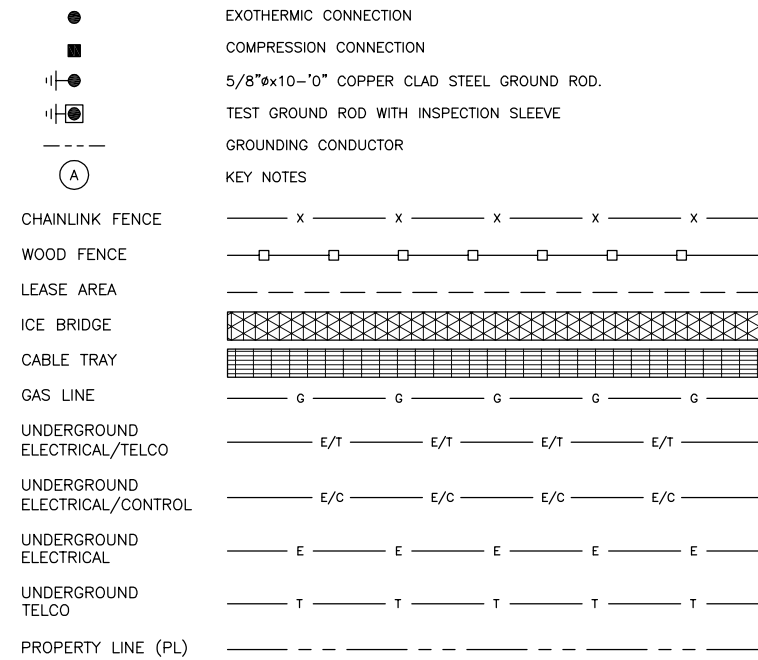
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**DEMOLITION SPECIFICATIONS AND NOTES**

- REMOVE AND LEGALLY DISPOSE OF ITEMS EXCEPT THOSE INDICATED TO BE REINSTALLED, SALVAGED, OR TO REMAIN THE OWNER'S PROPERTY.
- PROTECT CONSTRUCTION INDICATED TO REMAIN AGAINST DAMAGE AND SOILING DURING DEMOLITION. WHEN PERMITTED, ITEMS MAY BE REMOVED TO A SUITABLE, PROTECTED STORAGE AREA DURING DEMOLITION AND THEN CLEANED AND REINSTALLED IN THEIR ORIGINAL LOCATIONS.
- DEMOLISHED MATERIALS SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE SITE WITH FURTHER DISPOSITION AT THE CONTRACTOR'S OPTION.
- COMPLY WITH GOVERNING LOCAL, STATE AND FEDERAL NOTIFICATION REGULATIONS BEFORE STARTING DEMOLITION.
- BUILDING COMPONENTS TO BE DEMOLISHED SHALL BE VACATED AND THEIR USE DISCONTINUED BEFORE START OF DEMOLITION.
- STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE WILL NOT BE PERMITTED.
- ARRANGE DEMOLITION ACTIVITIES SO AS NOT TO INTERFERE WITH THE OWNER'S ON-SITE OPERATIONS. OTHERWISE LIMIT CONSTRUCTION AND DEMOLITION WORK TO WITHIN THE NORMAL HOURS OF 8AM TO 6PM.
- VERIFY THAT ALL UTILITIES HAVE BEEN DISCONNECTED AND CAPPED.
- PERFORM INSPECTIONS AS THE DEMOLITION PROGRESSES TO DETECT HAZARDS RESULTING FROM SAID ACTIVITIES.
- MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING DEMOLITION OPERATIONS.
- DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED AREAS WITHOUT PERMISSION FROM OWNER. IF REQUIRED, PROVIDE FOR ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS.
- CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT AREAS, BUILDINGS, AND/OR FACILITIES TO REMAIN. ENSURE SAFE PASSAGE OF PEOPLE AROUND DEMOLITION AREAS.
- PROVIDE AND MAINTAIN INTERIOR AND EXTERIOR SHORING, BRACING, OR STRUCTURAL SUPPORT TO PRESERVE STABILITY AND PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF PERIPHERAL STRUCTURES AND/OR AREAS.
- USE WATER MIST, TEMPORARY ENCLOSURES, AND OTHER SUITABLE METHODS TO LIMIT THE SPREAD OF DUST AND DIRT. COMPLY WITH GOVERNING ENVIRONMENTAL PROTECTION REGULATIONS.
- DO NOT CREATE HAZARDOUS OR OBJECTIONABLE CONDITIONS, SUCH AS ICE, FLOODING, AND POLLUTION, WHEN USING WATER.
- REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.
- CLEAN ADJACENT AREAS AND IMPROVEMENTS OF DUST, DIRT AND DEBRIS CAUSED BY DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO ORIGINAL CONDITION AFTER COMPLETION OF DEMOLITION ACTIVITIES.
- USE METHODS REQUIRED TO COMPLETE DEMOLITION WITHIN LIMITATIONS OF GOVERNING REGULATIONS.
- DISPERSE DEMOLITION EQUIPMENT THROUGHOUT THE BUILDING AND REMOVE DEBRIS AND MATERIALS SO AS NOT TO IMPOSE EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.
- REMOVE AIR-CONDITIONING EQUIPMENT WITHOUT RELEASING REFRIGERANTS.
- BREAKUP AND REMOVE CONCRETE SLABS ON GRADE, UNLESS OTHERWISE NOTED.
- REMOVE BELOW-GRADE CONSTRUCTION, INCLUDING FOUNDATION WALLS, TO AT LEAST 24 INCHES BELOW GRADE.
- BREAK UP BELOW-GRADE CONCRETE SLABS IN SECTIONS NO LARGER THAN 24 INCHES SQUARE. PROMPTLY REPAIR DAMAGES TO ADJACENT FACILITIES CAUSED BY DEMOLITION.
- PATCH TO PRODUCE SUITABLE SURFACES FOR NEW MATERIALS WHEN REPAIRING EXISTING SURFACES.
- EXTEND RESTORED, EXPOSED FINISHES OF PATCH SURFACES INTO ADJOINING CONSTRUCTION IN A MANNER THAT ELIMINATES EVIDENCE OF PATCHING AND RESURFACING.
- DO NOT BURN DEMOLISHED MATERIALS.
- PROMPTLY SUBMIT A WRITTEN REPORT TO THE ENGINEER SHOULD UNANTICIPATED STRUCTURAL, ELECTRICAL, OR MECHANICAL CONDITIONS BE ENCOUNTERED. THE SUBMITTED REPORT SHALL INCLUDE SUFFICIENT DETAIL REGARDING THE EXTENT AND NATURE OF THE CONDITION.
- MAINTAIN BUILDING SECURITY TO ADJACENT AND COMMON AREAS DURING DEMOLITION ACTIVITIES TO PREVENT UNAUTHORIZED PERSON FROM ENTERING THE SITE.
- DUE CARE SHALL BE TAKEN SO THAT THE EQUIPMENT AND ITS INSTALLATION ARE HANDLED IN A MANNER THAT WILL NOT AFFECT FIRE SAFETY OR CREATE A FIRE HAZARD.

**SYMBOLS**



**ABBREVIATIONS**

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



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SHEET NUMBER  
**N-3**

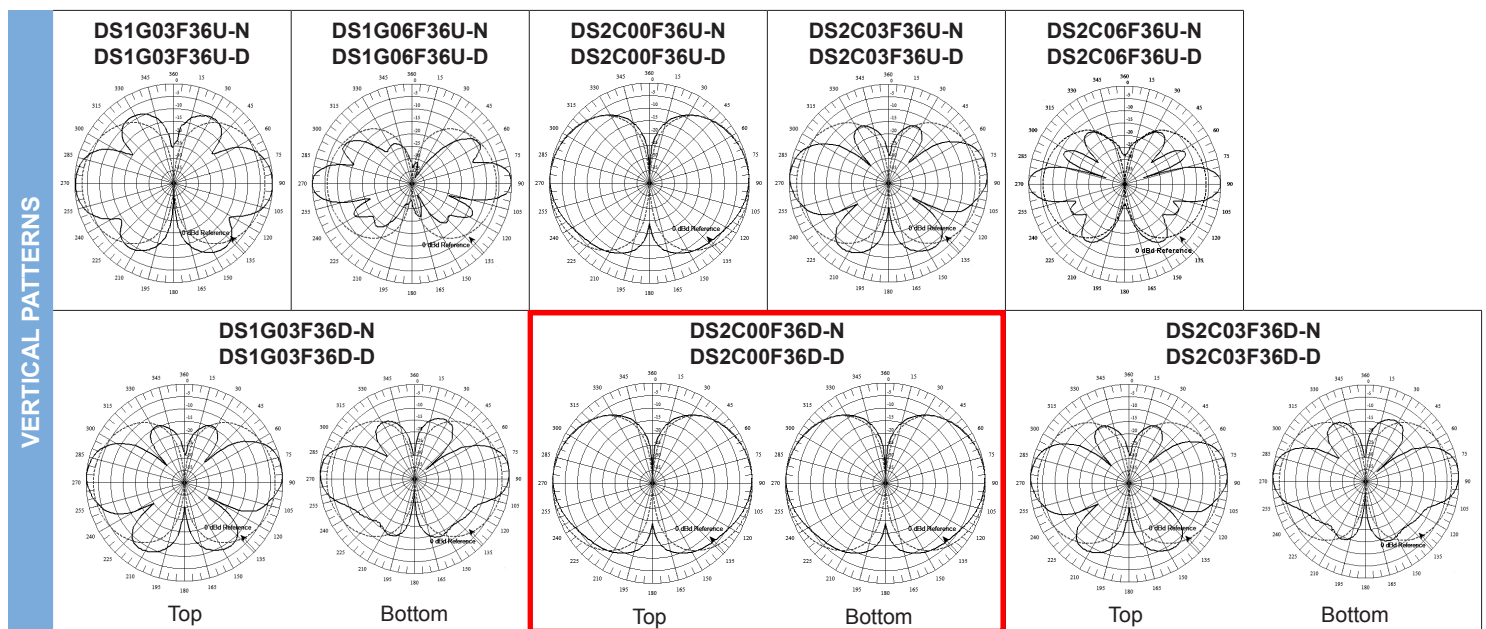
# REFERENCE CUTSHEETS

# VHF Omni Antennas (160-222 MHz)

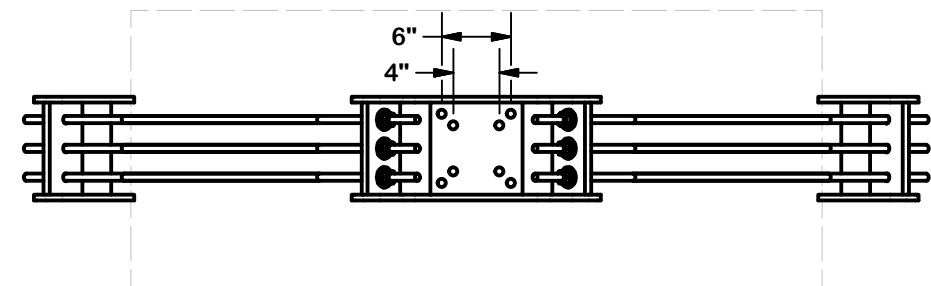
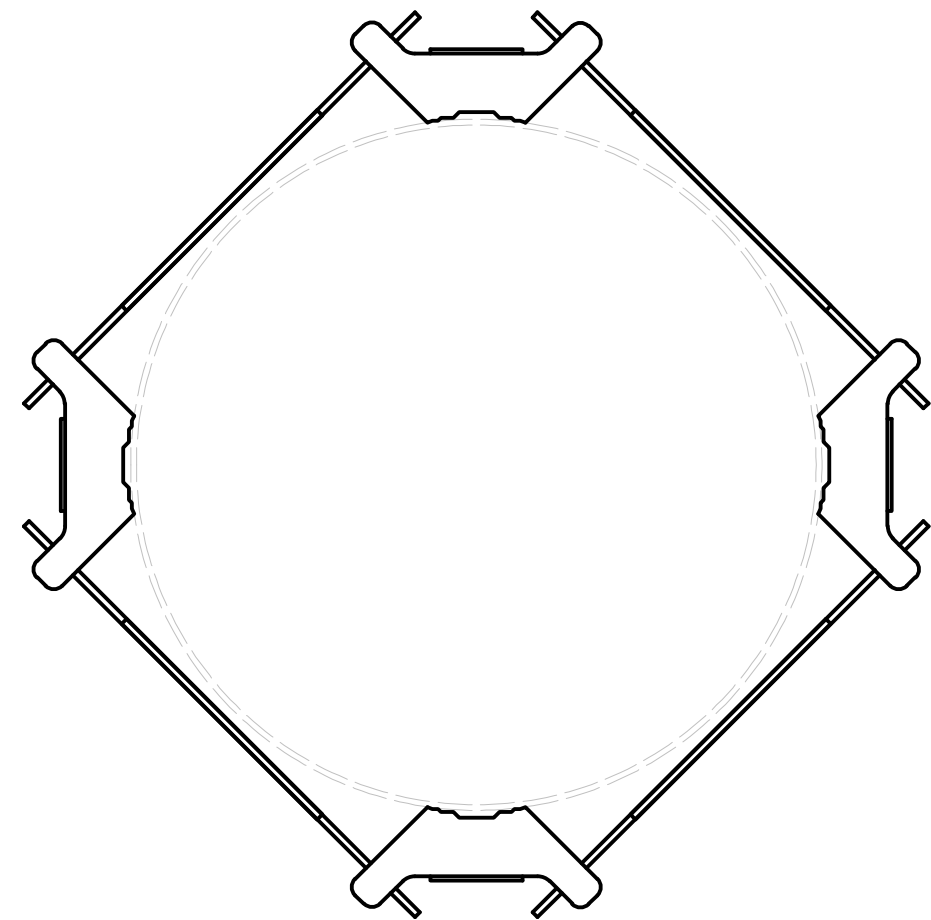


DS2C00F36D-D

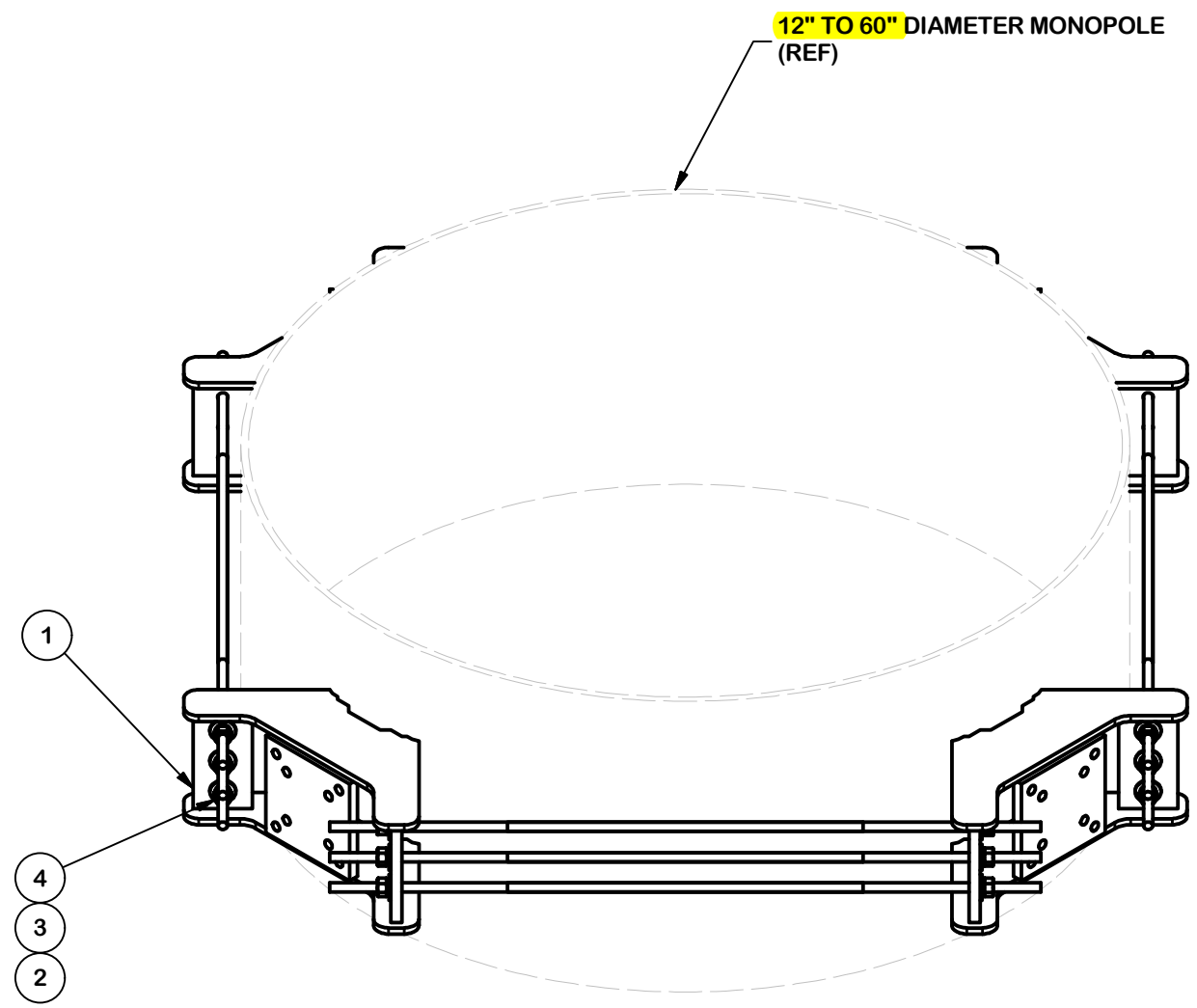
|                 |  | 160-174 MHz           |              |                     |              |                      |              | 217-222 MHz            |              |                        |              |                       |              |                        |              |     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



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



| PARTS LIST  |     |          |                                |        |          |         |
|-------------|-----|----------|--------------------------------|--------|----------|---------|
| ITEM        | QTY | PART NO. | PART DESCRIPTION               | LENGTH | UNIT WT. | NET WT. |
| 1           | 4   | X-UQB4   | QUAD BRACKET WELDMNT           |        | 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  |



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

PROPRIETARY NOTE:  
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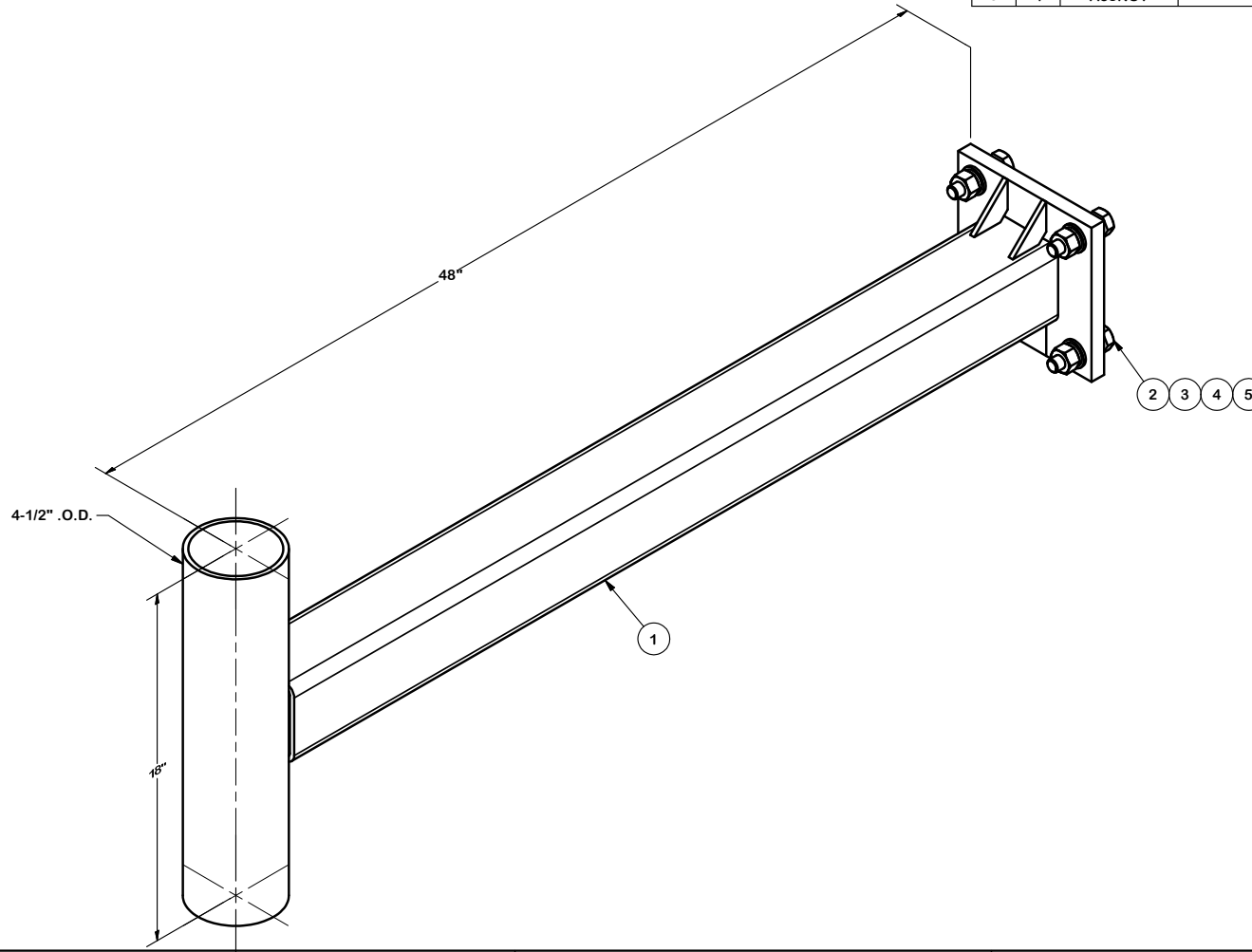
|  |                           |                           |                             |
|--|---------------------------|---------------------------|-----------------------------|
| DESCRIPTION<br>QUAD UNIVERSAL RING MOUNT<br>FOR POLES 12" TO 60"<br>(UQB4) |                           |                           |                             |
| CPD NO.<br>4893  | DRAWN BY<br>CEK 9/20/2010 | ENG. APPROVAL             |                             |
| CLASS<br>81  | SUB<br>01                 | DRAWING USAGE<br>CUSTOMER | CHECKED BY<br>BMC 9/20/2010 |

|                       |   |   |
|-----------------------|---|---|
| <br>A valmont COMPANY | Engineering Support Team:<br>1-888-753-7446 | Locations:<br>New York, NY<br>Atlanta, GA<br>Los Angeles, CA<br>Plymouth, IN<br>Salem, OR<br>Dallas, TX |
|                       | PART NO.<br><b>UQB4</b>                     | DWG. NO.<br><b>UQB4</b>   |

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

REVISION HISTORY

| 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   |



**TOLERANCE NOTES**

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 DRILLED AND GAS CUT HOLES ( $\pm 0.030"$ ) - NO CONING OF HOLES  
 LASER CUT EDGES AND HOLES ( $\pm 0.010"$ ) - NO CONING OF HOLES  
 BENDS ARE  $\pm 1/2$  DEGREE  
 ALL OTHER MACHINING ( $\pm 0.030"$ )  
 ALL OTHER ASSEMBLY ( $\pm 0.060"$ )

PROPRIETARY NOTE:  
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DESCRIPTION  
 48"  
 SUPPORT  
 ARM

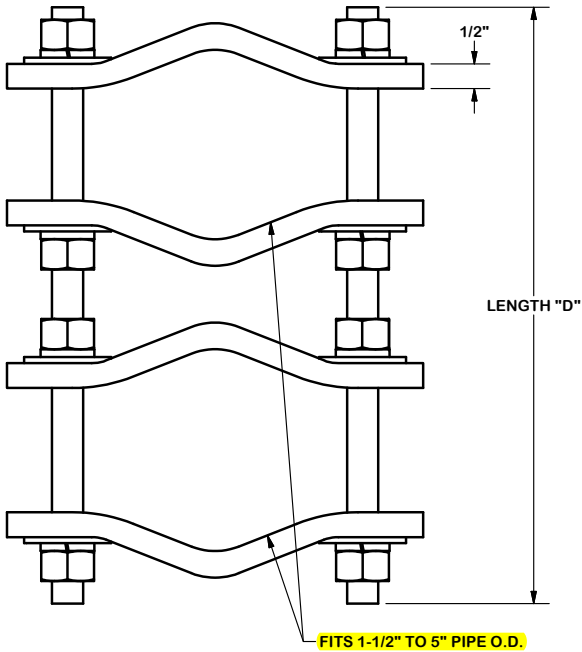
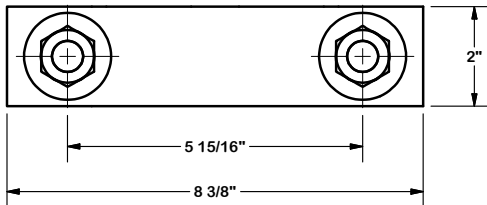
|                             |                           |                           |
|-----------------------------|---------------------------|---------------------------|
| CPD NO.<br>4470             | DRAWN BY<br>CEK 4/14/2011 | ENG. APPROVAL             |
| CLASS<br>81                 | SUB<br>01                 | DRAWING USAGE<br>CUSTOMER |
| CHECKED BY<br>BMC 4/14/2011 |                           |                           |



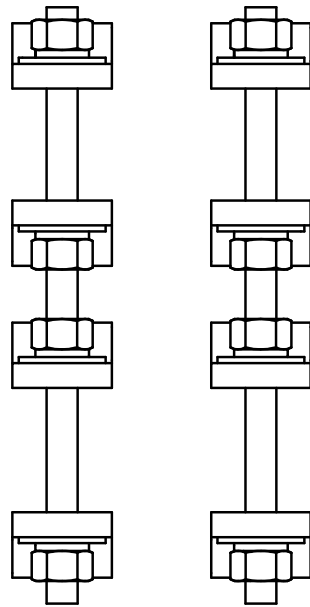
Engineering  
 Support Team:  
 1-888-753-7446

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

|                      |                |
|----------------------|----------------|
| PART NO.<br>SV197-48 | PAGE<br>1 OF 1 |
| DWG. NO.<br>SV197-48 |                |

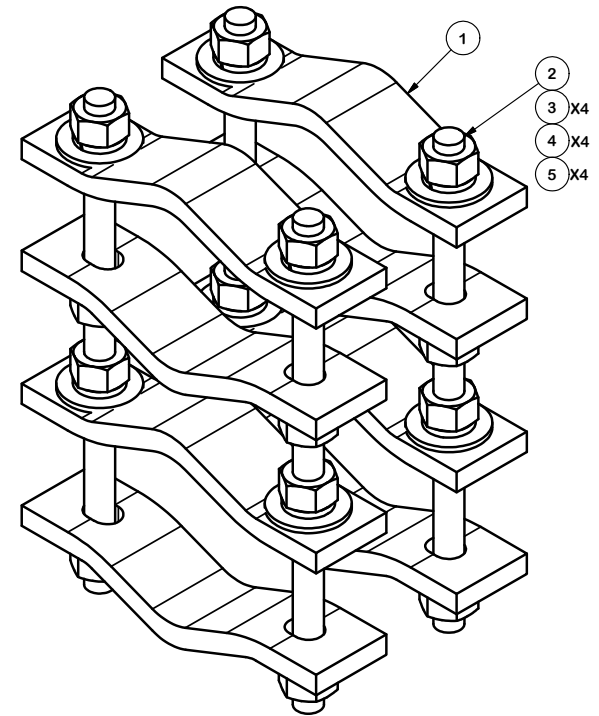


FITS 1-1/2" TO 5" PIPE O.D.



| 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        |



**TOLERANCE NOTES**

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 DRILLED AND GAS CUT HOLES ( $\pm 0.030"$ ) - NO CONING OF HOLES  
 LASER CUT EDGES AND HOLES ( $\pm 0.010"$ ) - NO CONING OF HOLES  
 BENDS ARE  $\pm 1/2$  DEGREE  
 ALL OTHER MACHINING ( $\pm 0.030"$ )  
 ALL OTHER ASSEMBLY ( $\pm 0.060"$ )

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

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

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

|         |               |               |
|---------|---------------|---------------|
| CPD NO. | DRAWN BY      | ENG. APPROVAL |
| CLASS   | DRAWING USAGE | CHECKED BY    |
| 81      | 01            | CEK 1/22/2013 |
|         | CUSTOMER      |               |

|          |                  |
|----------|------------------|
| PART NO. | SEE ASSEMBLY "A" |
| DWG. NO. | DCPxxK           |





### The Kohler® Advantage

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

### Standard Features

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

### Generator Set Ratings

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

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

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

# Alternator Specifications

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

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

## Application Data

### Engine

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

### Engine Electrical

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

### Exhaust

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

### Fuel

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

| Fuel Composition Limits *   | Nat. Gas   | LP Gas      |
|---|------------|-------------|
| Methane, % by volume  | 90 min.    | —           |
| Ethane, % by volume   | 4.0 max.   | —           |
| Propane, % by volume  | 1.0 max.   | 85 min.     |
| Propene, % by volume  | 0.1 max.   | 5.0 max.    |
| C <sub>4</sub> and higher, % by volume                              | 0.3 max.   | 2.5 max.    |
| Sulfur, ppm mass  | 25 max.    |             |
| Lower heating value, MJ/m <sup>3</sup> (Btu/ft <sup>3</sup> ), 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 <sup>3</sup> /min. (scfm)† | 51 (1800) | 51 (1800) |
| Combustion air, m <sup>3</sup> /min. (cfm)                | 1.4 (49)  | 1.2 (42)  |
| Air over engine, m <sup>3</sup> /min. (cfm)               | 25 (900)  | 25 (900)  |

† Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>)

## Fuel Consumption‡

| Natural Gas, m <sup>3</sup> /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 <sup>3</sup> /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<sup>3</sup> (1000 Btu/ft<sup>3</sup>)  
LP Vapor, 93 MJ/m<sup>3</sup> (2500 Btu/ft<sup>3</sup>)

LP vapor conversion factors:  
8.58 ft.<sup>3</sup> = 1 lb.  
0.535 m<sup>3</sup> = 1 kg.  
36.39 ft.<sup>3</sup> = 1 gal.

## Sound Enclosure Features

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

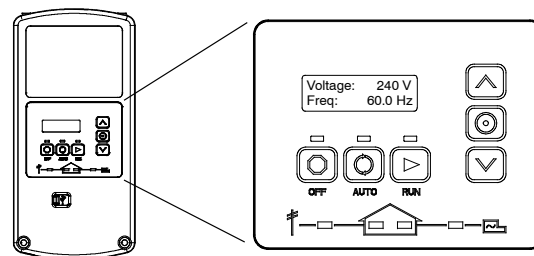
## Sound Data

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

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

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

## RDC2 Controller



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

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

## RDC2 Controller Features

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

See additional controller features on the next page.

## Additional RDC2 Controller Features

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

## Generator Set Standard Features

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

## Available Options

### Approvals and Listings

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

### Controller Accessories

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

### Electrical System

- Battery
- Battery Heater

## Available Options, Continued

### Starting Aids

- Oil Pan Heater, 120 V, 1 Ph
  - Oil Pan Heater, 240 V, 1 Ph
- Recommended for ambient temperatures below 0°C (32°F).

### Automatic Transfer Switches and Accessories

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

### Miscellaneous

- Rated Power Factor Testing

### Literature

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

### Warranty

- Extended 5-Year/2000 Hour Comprehensive Limited Warranty

### Other Options

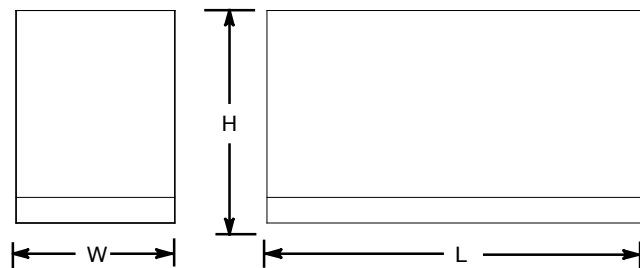
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## Dimensions and Weights

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

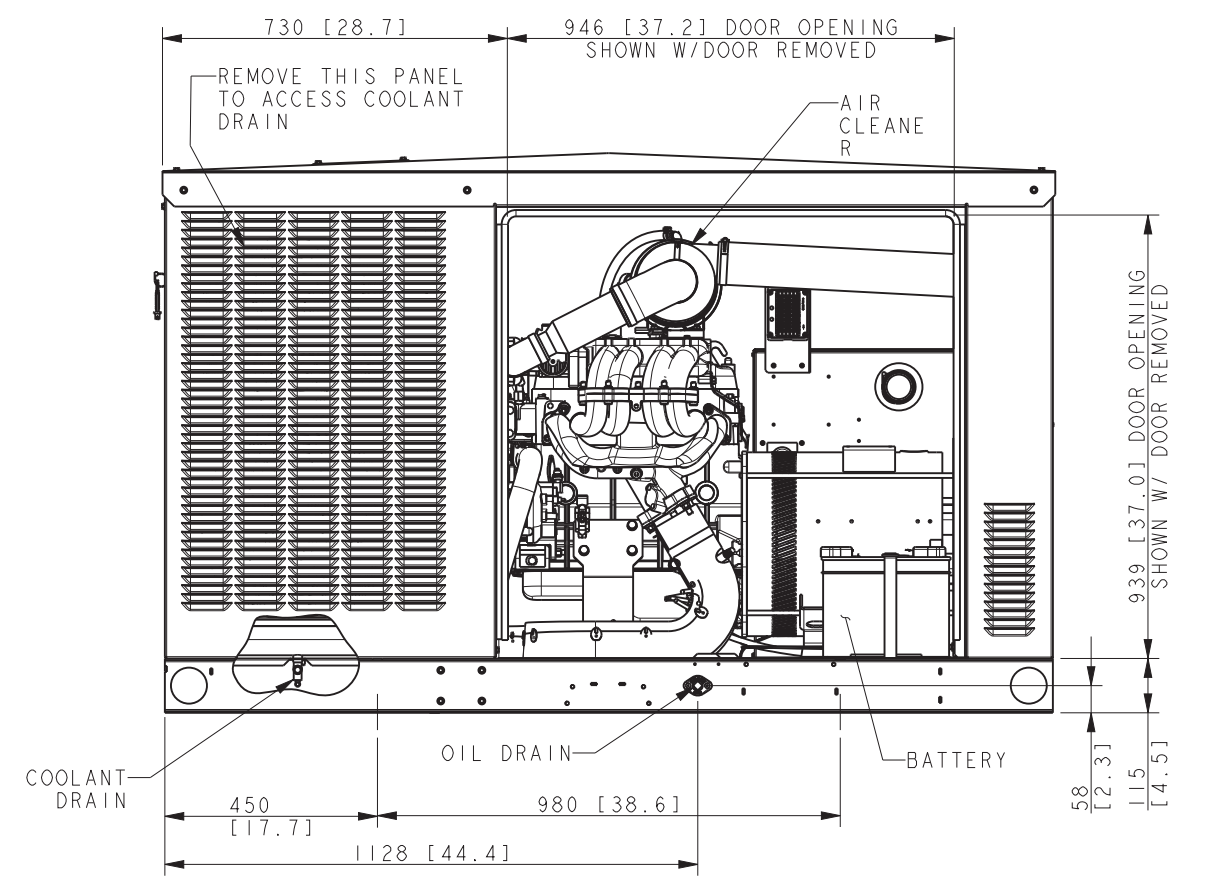
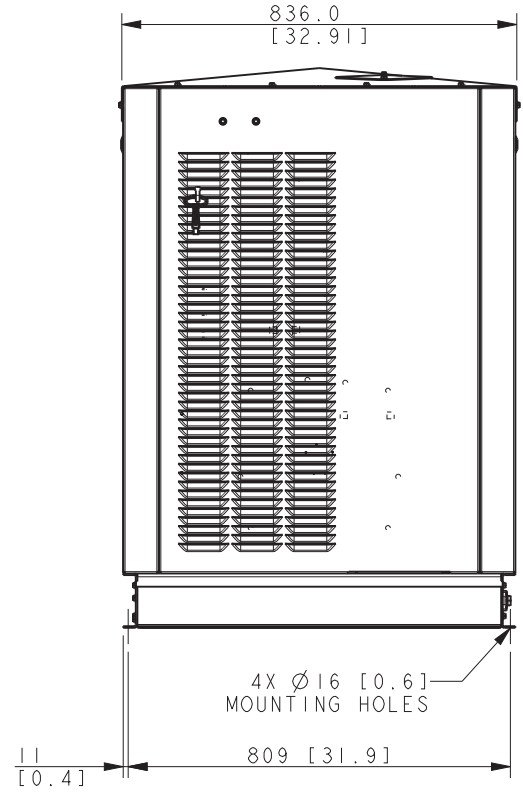
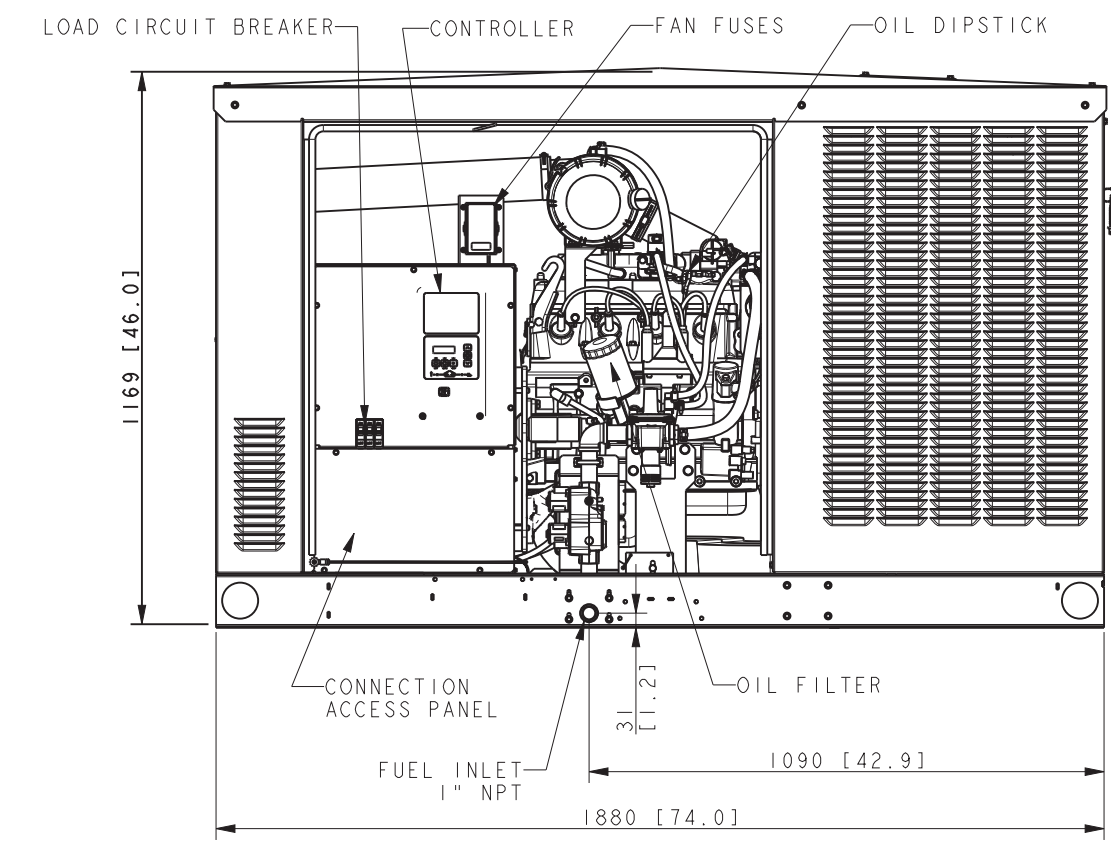
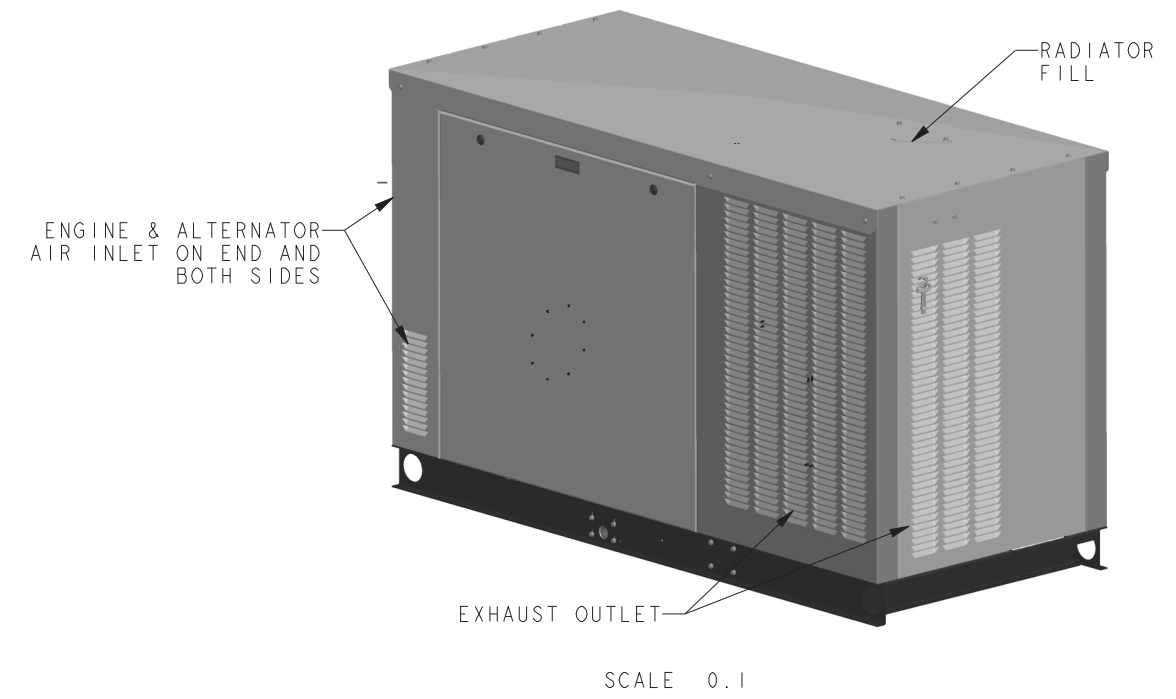
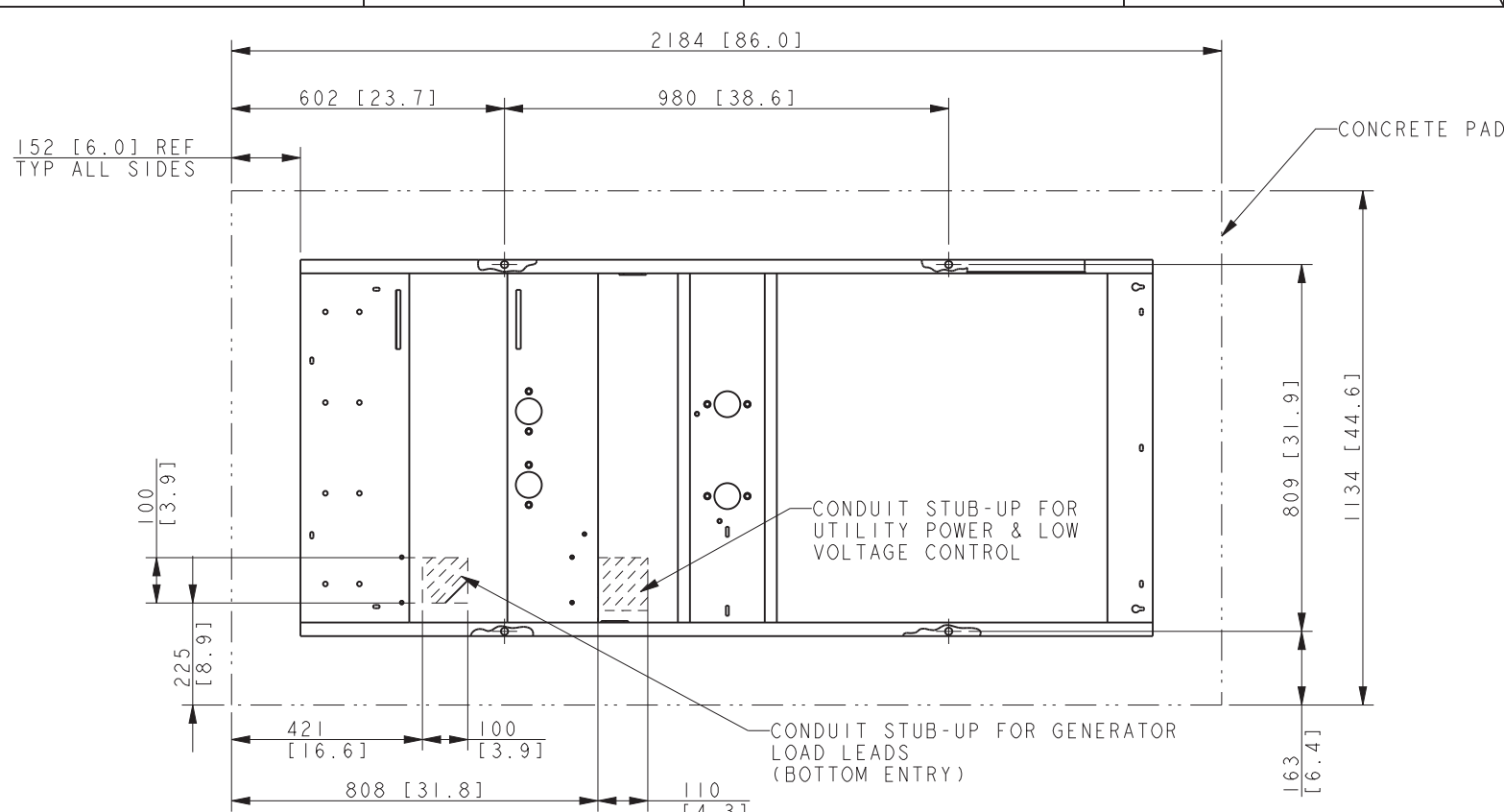
Shipping Weight, wet, kg (lb.): 572 (1260)

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



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

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NOTE: DIMENSIONS IN [ ] ARE ENGLISH STANDARD EQUIVALENTS.

24RCL

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

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**TITLE: DIMENSION PRINT**  
 SCALE 0.13 CAD NO. SHEET 1 of 2  
 DWG NO. **ADV-8641**

ATTACHMENT D – STRUCTURAL ANALYSIS



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 149 ft Monopole  
**ATC Site Name** : Kent Pcs CT, CT  
**ATC Asset Number** : 413783  
**Engineering Number** : OAA745078\_C3\_06  
**Proposed Carrier** : EVERSOURCE ENERGY  
**Carrier Site Name** : Kent  
**Carrier Site Number** : ES-278  
**Site Location** : S KENT RD  
Kent, CT 06757-1709  
41.721900,-73.475000  
**County** : Litchfield  
**Date** : December 9, 2019  
**Max Usage** : 79%  
**Result** : Pass



Prepared By:  
Lucas Tait  
Structural Engineer

Reviewed By:

**COA: PEC.0001553**



**Table of Contents**

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| Standard Conditions .....            | 4        |
| Calculations .....                   | Attached |





## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft monopole to reflect the change in loading by EVERSOURCE ENERGY.

## Supporting Documents

|                            |  |
|----------------------------|--|
| <b>Tower Drawings</b>      | EEI Project #15320, dated March 18, 2008                 |
| <b>Foundation Drawing</b>  | EEI Project #15320, dated March 14, 2008                 |
| <b>Geotechnical Report</b> | Dr. Clarence Welti Report #15320, dated January 22, 2007 |

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

|                                      |  |
|--------------------------------------|--|
| <b>Basic Wind Speed:</b>             | 114 mph (3-Second Gust)  |
| <b>Basic Wind Speed w/ Ice:</b>      | 40 mph (3-Second Gust) w/ 1" radial ice concurrent               |
| <b>Code:</b>                         | ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code |
| <b>Exposure Category:</b>            | C  |
| <b>Risk Category:</b>                | II   |
| <b>Topographic Factor Procedure:</b> | Method 1   |
| <b>Topographic Category:</b>         | 1  |
| <b>Crest Height (H):</b>             | 0 ft   |
| <b>Spectral Response:</b>            | $S_s = 0.18, S_1 = 0.05$   |
| <b>Site Class:</b>                   | D - Stiff Soil   |

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

| Elev. <sup>1</sup> (ft) | Qty | Antenna                               | Mount Type           | Lines   | Carrier               |  |               |
|-------------------------|-----|---------------------------------------|----------------------|---|-----------------------|--|---------------|
| 154.0                   | 2   | RFS Celwave PD220                     | Low Profile Platform | (3) 7/8" Coax<br>(12) 1 5/8" Coax<br>(2) 1 5/8" Hybriflex | OTHER                 |  |               |
|                         | 1   | Generic 3' Yagi                       |                      |   | OTHER                 |  |               |
| 152.0                   | 1   | Raycap RVZDC-6627-PF-48               |                      |   | VERIZON WIRELESS      |  |               |
|                         | 3   | Samsung PCS/AWS Dual Band RRH         |                      |   |                       |  |               |
|                         | 3   | Samsung 700+850MHZ Dual Band RRH      |                      |   |                       |  |               |
|                         | 1   | VZW Unused Reserve (17440.19 sqin)    |                      |   |                       |  |               |
|                         | 6   | Antel LPA-80080/6CF                   |                      |   |                       |  |               |
|                         | 6   | Commscope NHH-65B-R2B                 |                      |   |                       |  |               |
| 140.0                   | 2   | Andrew SBNHH-1D65A (33.5 lbs)         |                      |   | Platfrom w/ Handrails | (2) 0.39" (10mm) Fiber Trunk<br>(4) 0.78" (19.7mm) 8 AWG 6<br>(12) 1 5/8" Coax<br>(1) 2" conduit | AT&T MOBILITY |
|                         | 3   | Powerwave Allgon P90-15-XLH-RR        |                      |   |                       |  |               |
|                         | 3   | CCI DMP65R-BU4D                       |                      |   |                       |  |               |
|                         | 1   | CCI HPA-65R-BUU-H6                    |                      |   |                       |  |               |
|                         | 3   | Ericsson RRUS 32 B2                   |                      |   |                       |  |               |
|                         | 3   | Ericsson RRUS 4478 B14                |                      |   |                       |  |               |
|                         | 3   | Ericsson RRUS 4449 B5, B12            |                      |   |                       |  |               |
|                         | 3   | Ericsson RRUS A2 Module               |                      |   |                       |  |               |
|                         | 1   | Raycap DC6-48-60-18-8F (23.5" Height) |                      |   |                       |  |               |
|                         | 3   | Powerwave Allgon TT08-19DB111-001     |                      |   |                       |  |               |
|                         | 6   | Powerwave Allgon TT19-08BP111-001     |                      |   |                       |  |               |
|                         | 1   | Andrew ABT-DFDM-ADB                   |                      |   |                       |  |               |
|                         | 1   | Raycap DC6-48-60-18-8C                |                      |   |                       |  |               |
| 124.0                   | 2   | Decibel DB222                         | Stand-Off            | (3) 7/8" Coax   | OTHER                 |  |               |
| 122.0                   | 1   | Generic 3' Yagi                       |                      |   |                       |  |               |
| 110.0                   | 1   | Symmetricon 58532A                    | T-Arm                | (2) 1 5/8" (1.63"-41.3mm) Fiber<br>(1) 1/2" Coax          | T-MOBILE              |  |               |
|                         | 3   | Ericsson RRUS 11 B4                   |                      |   |                       |  |               |
|                         | 3   | Ericsson RRUS 11 B12                  |                      |   |                       |  |               |
|                         | 3   | Ericsson RRUS 11 B2                   |                      |   |                       |  |               |
|                         | 3   | RFS APX16DWV-16DWVS-E-A20             |                      |   |                       |  |               |
|                         | 3   | Commscope LNX-6515DS-A1M (50.3 lb)    |                      |   |                       |  |               |

**Equipment to be Removed**

| Elev. <sup>1</sup> (ft)  | Qty | Antenna | Mount Type | Lines | Carrier |
|--|-----|---------|------------|-------|---------|
| No loading was considered as removed as part of this analysis. |     |         |            |       |         |

**Proposed Equipment**

| Elev. <sup>1</sup> (ft) | Qty | Antenna              | Mount Type | Lines         | Carrier           |
|-------------------------|-----|----------------------|------------|---------------|-------------------|
| 90.0                    | 1   | dbSpectra DS2C00F36D | Side Arm   | (2) 7/8" Coax | EVERSOURCE ENERGY |

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax inside the pole shaft.



**Structure Usages**

| Structural Component | Controlling Usage | Pass/Fail |
|----------------------|-------------------|-----------|
| Anchor Bolts         | 40%               | Pass      |
| Shaft                | 63%               | Pass      |
| Base Plate           | 29%               | Pass      |

**Foundations**

| Reaction Component | Original Design Reactions | Analysis Reactions | % of Design |
|--------------------|---------------------------|--------------------|-------------|
| Moment (Kips-Ft)   | 4,897.9                   | 3,451.7            | 70%         |
| Shear (Kips)       | 39.5                      | 31.2               | 79%         |

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

| Antenna Elevation (ft) | Antenna              | Carrier           | Deflection (ft) | Sway (Rotation) (°) |
|------------------------|----------------------|-------------------|-----------------|---------------------|
| 90.0                   | dbSpectra DS2C00F36D | EVERSOURCE ENERGY | 0.541           | 0.693               |

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



## Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

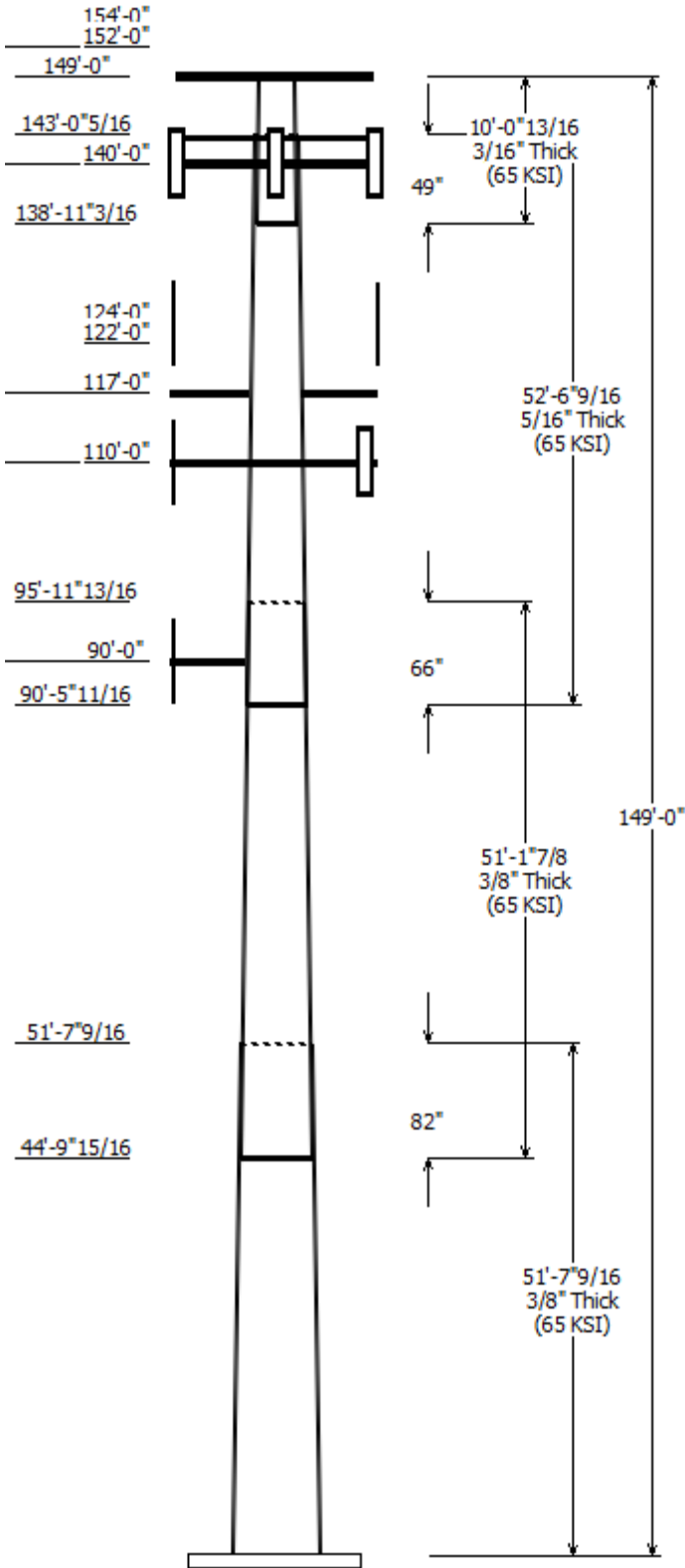
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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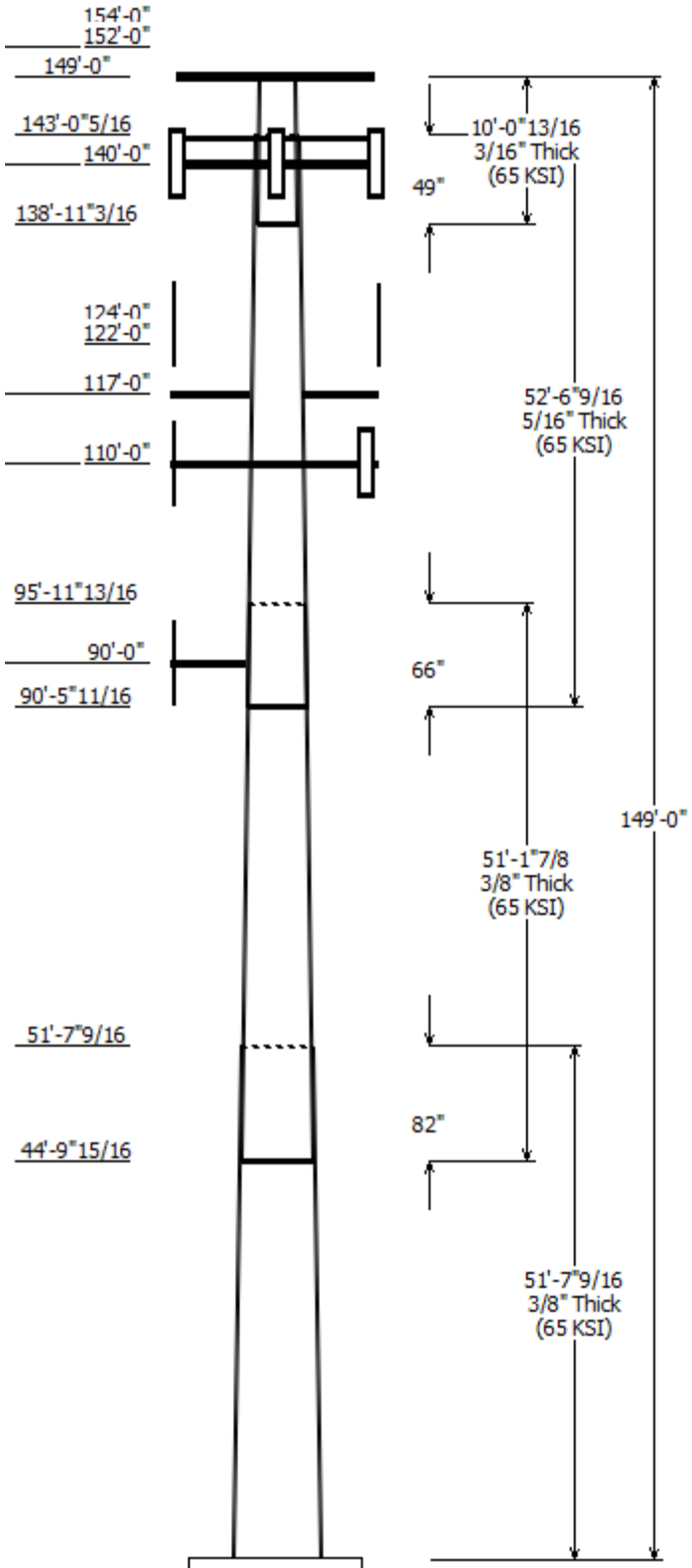


| Job Information            |                          |
|----------------------------|--------------------------|
| Client : EVERSOURCE ENERGY | Code: ANSI/TIA-222-H     |
| Pole : 413783              |                          |
| Location : Kent Pcs CT, CT |                          |
| Description : ATC413783    | Risk Category : II       |
| Shape : 18 Sides           | Exposure : C             |
| Height : 149.00 (ft)       | Topo Method : Method 1   |
| Base Elev (ft): 0.00       | Topographic Category : 1 |
| Taper: 0.241124(in/ft)     |                          |

| Sections Properties |             |               |        |                  |                     |             |
|---------------------|-------------|---------------|--------|------------------|---------------------|-------------|
| Shaft Section       | Length (ft) | Diameter (in) |        | Thick Joint (in) | Overlap Length (in) | Steel Grade |
|                     |             | Top           | Bottom |                  |                     |             |
| 1                   | 51.633      | 48.05         | 60.50  | 0.375            | 0.000               | 18 Sides 65 |
| 2                   | 51.156      | 38.10         | 50.44  | 0.375 Slip Joint | 81.656              | 18 Sides 65 |
| 3                   | 52.550      | 27.38         | 40.05  | 0.313 Slip Joint | 66.094              | 18 Sides 65 |
| 4                   | 10.065      | 26.32         | 28.74  | 0.188 Slip Joint | 49.094              | 18 Sides 65 |

| Discrete Appurtenance |                 |     |                               |
|-----------------------|-----------------|-----|-------------------------------|
| Attach Elev (ft)      | Force Elev (ft) | Qty | Description                   |
| 154.000               | 154.000         | 2   | RFS Celwave PD220             |
| 154.000               | 154.000         | 1   | Generic 3' Yagi               |
| 152.000               | 152.000         | 1   | VZW Unused Reserve            |
| 152.000               | 152.000         | 6   | Antel LPA-80080/6CF           |
| 152.000               | 152.000         | 6   | Commscope NHH-65B-R2B         |
| 152.000               | 152.000         | 1   | Raycap RVZDC-6627-PF-48       |
| 152.000               | 152.000         | 3   | Samsung PCS/AWS Dual Band     |
| 152.000               | 152.000         | 3   | Samsung 700+850MHZ Dual       |
| 149.000               | 149.000         | 1   | Flat Low Profile Platform     |
| 140.000               | 140.000         | 1   | Round Platform w/ Handrails   |
| 140.000               | 140.000         | 1   | CCI HPA-65R-BUU-H6            |
| 140.000               | 140.000         | 3   | CCI DMP65R-BU4D               |
| 140.000               | 140.000         | 3   | Powerwave Allgon P90-15-      |
| 140.000               | 140.000         | 2   | Andrew SBNHH-1D65A (33.5      |
| 140.000               | 140.000         | 3   | Ericsson RRUS 32 B2           |
| 140.000               | 140.000         | 1   | Raycap DC6-48-60-18-8C        |
| 140.000               | 140.000         | 3   | Ericsson RRUS 4478 B14        |
| 140.000               | 140.000         | 3   | Ericsson RRUS 4449 B5, B12    |
| 140.000               | 142.000         | 3   | Ericsson RRUS A2 Module       |
| 140.000               | 142.000         | 1   | Raycap DC6-48-60-18-8F (23.5" |
| 140.000               | 142.000         | 3   | Powerwave Allgon TT08-        |
| 140.000               | 142.000         | 6   | Powerwave Allgon TT19-        |
| 140.000               | 142.000         | 1   | Andrew ABT-DFDM-ADB           |
| 124.000               | 124.000         | 2   | Decibel DB222                 |
| 122.000               | 122.000         | 1   | Generic 3' Yagi               |
| 117.000               | 117.000         | 2   | Stand Off                     |
| 110.000               | 110.000         | 3   | Round T-Arm                   |
| 110.000               | 110.000         | 3   | Commscope LNX-6515DS-A1M      |
| 110.000               | 110.000         | 3   | RFS APX16DWV-16DWVS-E-A20     |
| 110.000               | 110.000         | 3   | Ericsson RRUS 11 B2           |
| 110.000               | 110.000         | 3   | Ericsson RRUS 11 B12          |
| 110.000               | 110.000         | 3   | Ericsson RRUS 11 B4           |
| 110.000               | 110.000         | 1   | Symmetricom 58532A            |
| 90.000                | 90.000          | 1   | dbSpectra DS2C00F36D          |
| 90.000                | 90.000          | 1   | Generic Flat Side Arm         |

| Linear Appurtenance |              |                |                 |
|---------------------|--------------|----------------|-----------------|
| From Elev (ft)      | To Elev (ft) | Description    | Exposed To Wind |
| 0.000               | 90.000       | 7/8" Coax      | No              |
| 0.000               | 110.0        | 1 5/8" (1.63"- | No              |
| 0.000               | 110.0        | 1/2" Coax      | No              |



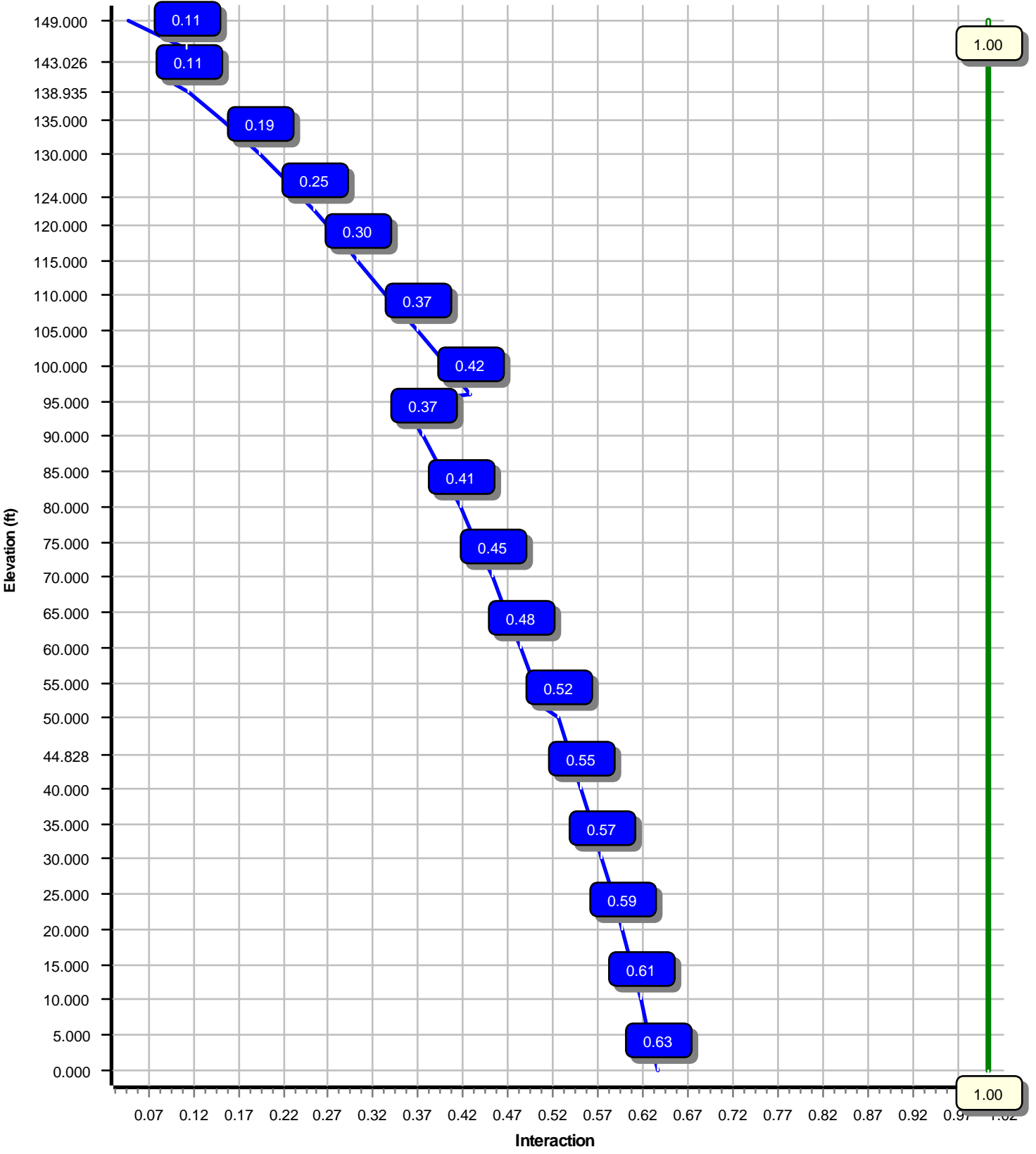
|       |       |                  |    |
|-------|-------|------------------|----|
| 0.000 | 122.0 | 7/8" Coax        | No |
| 0.000 | 124.0 | 7/8" Coax        | No |
| 0.000 | 140.0 | 0.39" (10mm)     | No |
| 0.000 | 140.0 | 0.78" (19.7mm) 8 | No |
| 0.000 | 140.0 | 1 5/8" Coax      | No |
| 0.000 | 140.0 | 2" conduit       | No |
| 0.000 | 152.0 | 1 5/8" Coax      | No |
| 0.000 | 152.0 | 1 5/8" Hybriflex | No |
| 0.000 | 154.0 | 7/8" Coax        | No |

| Load Cases           |                                  |
|----------------------|----------------------------------|
| 1.2D + 1.0W          | 114 mph with No Ice              |
| 0.9D + 1.0W          | 114 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 40 mph with 1.00 in Radial Ice   |
| 1.2D + 1.0Ev + 1.0Eh | Seismic                          |
| 0.9D - 1.0Ev + 1.0Eh | Seismic (Reduced DL)             |
| 1.0D + 1.0W          | Serviceability 60 mph            |

| Reactions            |                 |             |             |
|----------------------|-----------------|-------------|-------------|
| Load Case            | Moment (kip-ft) | Shear (kip) | Axial (kip) |
| 1.2D + 1.0W          | 3451.72         | 31.17       | 49.03       |
| 0.9D + 1.0W          | 3421.45         | 31.16       | 36.76       |
| 1.2D + 1.0Di + 1.0Wi | 652.81          | 5.93        | 73.33       |
| 1.2D + 1.0Ev + 1.0Eh | 150.23          | 1.23        | 48.97       |
| 0.9D - 1.0Ev + 1.0Eh | 148.64          | 1.23        | 34.01       |
| 1.0D + 1.0W          | 851.03          | 7.72        | 40.89       |

| Dish Deflections |                  |                 |                |
|------------------|------------------|-----------------|----------------|
| Load Case        | Attach Elev (ft) | Deflection (in) | Rotation (deg) |
|                  | 0.00             | 0.000           | 0.000          |

Load Case : 1.2D + 1.0W  
Max Ratio 63.30% at 0.0 ft



Site Number: 413783

Code: ANSI/TIA-222-H

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Site Name: Kent Pcs CT, CT

Engineering Number: OAA745078\_C3\_06

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Customer: EVERSOURCE ENERGY

Analysis Parameters

|                     |                       |                      |       |
|---------------------|-----------------------|----------------------|-------|
| Location :          | Litchfield County, CT | Height (ft) :        | 149   |
| Code :              | ANSI/TIA-222-H        | Base Diameter (in) : | 60.50 |
| Shape :             | 18 Sides              | Top Diameter (in) :  | 26.32 |
| Pole Type :         | Taper                 | Taper (in/ft) :      | 0.241 |
| Pole Manufacturer : | EEI                   | Rotation (deg) :     | 0.00  |
| Kd (non-service) :  | 0.95                  | Ke :                 | 0.99  |

Ice & Wind Parameters

|                               |          |                                |           |
|-------------------------------|----------|--------------------------------|-----------|
| Exposure Category:            | C        | Design Wind Speed Without Ice: | 114 mph   |
| Risk Category:                | II       | Design Wind Speed With Ice:    | 40 mph    |
| Topographic Factor Procedure: | Method 1 | Operational Wind Speed:        | 60 mph    |
| Topographic Category:         | 1        | Design Ice Thickness:          | 1.00 in   |
| Crest Height:                 | 0 ft     | HMSL:                          | 389.00 ft |

Seismic Parameters

|  |                                 |            |       |
|--|---------------------------------|------------|-------|
| Analysis Method:                       | Equivalent Lateral Force Method |            |       |
| Site Class:                            | D - Stiff Soil                  |            |       |
| Period Based on Rayleigh Method (sec): | 2.06                            |            |       |
| $T_L$ (sec):                           | 6                               | $p$ :      | 1     |
| $S_s$ :                                | 0.184                           | $S_1$ :    | 0.054 |
| $F_a$ :                                | 1.600                           | $F_v$ :    | 2.400 |
| $S_{ds}$ :                             | 0.196                           | $S_{d1}$ : | 0.086 |
|  |                                 | $C_s$ :    | 0.030 |
|  |                                 | $C_s$ Max: | 0.030 |
|  |                                 | $C_s$ Min: | 0.030 |

Load Cases

|                      |                                  |
|----------------------|----------------------------------|
| 1.2D + 1.0W          | 114 mph with No Ice              |
| 0.9D + 1.0W          | 114 mph with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 40 mph with 1.00 in Radial Ice   |
| 1.2D + 1.0Ev + 1.0Eh | Seismic                          |
| 0.9D - 1.0Ev + 1.0Eh | Seismic (Reduced DL)             |
| 1.0D + 1.0W          | Serviceability 60 mph            |



Site Number: 413783

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Site Name: Kent Pcs CT, CT

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Customer: EVERSOURCE ENERGY

**Shaft Section Properties**

| Sect Info    | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Joint Len (in) | Weight (lb) | Bottom   |           |                         |                       |           |           | Top      |           |                         |                       |           |           |               |  |
|--------------|-------------|------------|----------|------------|----------------|-------------|----------|-----------|-------------------------|-----------------------|-----------|-----------|----------|-----------|-------------------------|-----------------------|-----------|-----------|---------------|--|
|              |             |            |          |            |                |             | Dia (in) | Elev (ft) | Area (in <sup>2</sup> ) | Ix (in <sup>4</sup> ) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (in <sup>2</sup> ) | Ix (in <sup>4</sup> ) | W/t Ratio | D/t Ratio | Taper (in/ft) |  |
| 1-18         | 51.633      | 0.3750     | 65       |            | 0.00           | 11,271      | 60.50    | 0.00      | 71.56                   | 32684.4               | 27.04     | 161.33    | 48.05    | 51.63     | 56.74                   | 16294.8               | 21.18     | 128.13    | 0.241124      |  |
| 2-18         | 51.156      | 0.3750     | 65       | Slip       | 81.66          | 9,095       | 50.44    | 44.83     | 59.59                   | 18871.2               | 22.31     | 134.51    | 38.10    | 95.98     | 44.91                   | 8077.3                | 16.51     | 101.62    | 0.241124      |  |
| 3-18         | 52.549      | 0.3125     | 65       | Slip       | 66.09          | 5,926       | 40.05    | 90.48     | 39.42                   | 7868.4                | 21.19     | 128.19    | 27.38    | 143.03    | 26.85                   | 2487.3                | 14.04     | 87.64     | 0.241124      |  |
| 4-18         | 10.065      | 0.1875     | 65       | Slip       | 49.09          | 557         | 28.74    | 138.93    | 17.00                   | 1751.9                | 25.63     | 153.33    | 26.32    | 149.00    | 15.55                   | 1342.2                | 23.34     | 140.39    | 0.241124      |  |
| Shaft Weight |             |            |          |            |                | 26,849      |          |           |                         |                       |           |           |          |           |                         |                       |           |           |               |  |

**Discrete Appurtenance Properties**

| Attach Elev (ft) | Description                   | Qty | Ka   | Vert Ecc (ft) | Weight (lb) | No Ice EPAa (sf) | Orientation Factor | Weight (lb) | Ice EPAa (sf) | Orientation Factor |
|------------------|-------------------------------|-----|------|---------------|-------------|------------------|--------------------|-------------|---------------|--------------------|
| 154.00           | Generic 3' Yagi               | 1   | 1.00 | 0.000         | 10.00       | 2.980            | 1.00               | 69.89       | 7.157         | 1.00               |
| 154.00           | RFS Celwave PD220             | 2   | 1.00 | 0.000         | 25.00       | 5.400            | 1.00               | 118.04      | 10.032        | 1.00               |
| 152.00           | Samsung 700+850MHZ Dual       | 3   | 0.80 | 0.000         | 82.00       | 1.875            | 0.50               | 120.16      | 2.475         | 0.50               |
| 152.00           | Samsung PCS/AWS Dual Band     | 3   | 0.80 | 0.000         | 84.40       | 1.875            | 0.50               | 127.01      | 2.475         | 0.50               |
| 152.00           | Raycap RVZDC-6627-PF-48       | 1   | 0.80 | 0.000         | 32.00       | 3.781            | 1.00               | 105.11      | 4.663         | 1.00               |
| 152.00           | Commscope NHH-65B-R2B         | 6   | 0.80 | 0.000         | 43.70       | 8.079            | 0.69               | 159.94      | 9.936         | 0.69               |
| 152.00           | Antel LPA-80080/6CF           | 6   | 0.80 | 0.000         | 21.00       | 8.628            | 0.62               | 142.31      | 5.086         | 0.62               |
| 152.00           | VZW Unused Reserve (17440.19  | 1   | 0.80 | 0.000         | 1,580.60    | 121.112          | 0.90               | 2,314.71    | 177.363       | 0.90               |
| 149.00           | Flat Low Profile Platform     | 1   | 1.00 | 0.000         | 1,500.00    | 26.100           | 1.00               | 1,931.94    | 38.828        | 1.00               |
| 140.00           | Andrew ABT-DFDM-ADB           | 1   | 0.75 | 2.000         | 1.10        | 0.045            | 1.00               | 2.58        | 0.160         | 1.00               |
| 140.00           | Powerwave Allgon TT19-        | 6   | 0.75 | 2.000         | 16.00       | 0.553            | 0.50               | 29.39       | 0.892         | 0.50               |
| 140.00           | Powerwave Allgon TT08-        | 3   | 0.75 | 2.000         | 22.00       | 0.793            | 0.50               | 39.61       | 1.215         | 0.50               |
| 140.00           | Raycap DC6-48-60-18-8F (23.5" | 1   | 0.75 | 2.000         | 20.00       | 1.260            | 1.00               | 54.92       | 1.697         | 1.00               |
| 140.00           | Ericsson RRUS A2 Module       | 3   | 0.75 | 2.000         | 21.20       | 1.600            | 0.50               | 45.10       | 2.154         | 0.50               |
| 140.00           | Ericsson RRUS 4449 B5, B12    | 3   | 0.75 | 0.000         | 71.00       | 1.969            | 0.50               | 113.74      | 2.588         | 0.50               |
| 140.00           | Ericsson RRUS 4478 B14        | 3   | 0.75 | 0.000         | 59.40       | 2.021            | 0.67               | 100.10      | 2.647         | 0.67               |
| 140.00           | Raycap DC6-48-60-18-8C        | 1   | 0.75 | 0.000         | 16.00       | 2.030            | 1.00               | 54.61       | 2.534         | 1.00               |
| 140.00           | Ericsson RRUS 32 B2           | 3   | 0.75 | 0.000         | 53.00       | 2.743            | 0.67               | 101.78      | 3.519         | 0.67               |
| 140.00           | Andrew SBNHH-1D65A (33.5 lbs) | 2   | 0.75 | 0.000         | 33.50       | 5.883            | 0.77               | 123.27      | 7.294         | 0.77               |
| 140.00           | Powerwave Allgon P90-15-XLH-  | 3   | 0.75 | 0.000         | 53.00       | 8.133            | 0.67               | 162.24      | 9.982         | 0.67               |
| 140.00           | CCI DMP65R-BU4D               | 3   | 0.75 | 0.000         | 67.90       | 8.280            | 0.62               | 187.67      | 9.623         | 0.62               |
| 140.00           | CCI HPA-65R-BUU-H6            | 1   | 0.75 | 0.000         | 51.00       | 9.658            | 1.00               | 196.50      | 11.496        | 1.00               |
| 140.00           | Round Platform w/ Handrails   | 1   | 1.00 | 0.000         | 2,000.00    | 27.200           | 1.00               | 2,859.35    | 43.411        | 1.00               |
| 124.00           | Decibel DB222                 | 2   | 1.00 | 0.000         | 16.00       | 2.250            | 1.00               | 61.30       | 6.211         | 1.00               |
| 122.00           | Generic 3' Yagi               | 1   | 1.00 | 0.000         | 10.00       | 2.980            | 1.00               | 68.74       | 7.077         | 1.00               |
| 117.00           | Stand Off                     | 2   | 1.00 | 0.000         | 75.00       | 2.500            | 0.90               | 109.02      | 3.634         | 0.90               |
| 110.00           | Symmetricom 58532A            | 1   | 1.00 | 0.000         | 0.40        | 0.187            | 1.00               | 5.56        | 0.390         | 1.00               |
| 110.00           | Ericsson RRUS 11 B4           | 3   | 0.80 | 0.000         | 50.70       | 2.791            | 0.67               | 97.49       | 3.500         | 0.67               |
| 110.00           | Ericsson RRUS 11 B12          | 3   | 0.80 | 0.000         | 50.70       | 2.791            | 0.67               | 97.49       | 3.500         | 0.67               |
| 110.00           | Ericsson RRUS 11 B2           | 3   | 0.80 | 0.000         | 50.70       | 2.791            | 0.67               | 97.49       | 3.500         | 0.67               |
| 110.00           | RFS APX16DWV-16DWVS-E-A20     | 3   | 0.80 | 0.000         | 40.70       | 6.586            | 0.60               | 116.18      | 7.985         | 0.60               |
| 110.00           | Round T-Arm                   | 3   | 0.75 | 0.000         | 250.00      | 9.700            | 0.67               | 385.04      | 15.027        | 0.67               |
| 110.00           | Commscope LNX-6515DS-A1M      | 3   | 0.80 | 0.000         | 50.30       | 11.440           | 0.70               | 199.81      | 13.541        | 0.70               |
| 90.00            | dbSpectra DS2C00F36D          | 1   | 1.00 | 0.000         | 40.00       | 4.080            | 1.00               | 105.02      | 7.153         | 1.00               |
| 90.00            | Generic Flat Side Arm         | 1   | 1.00 | 0.000         | 187.50      | 6.300            | 1.00               | 271.84      | 8.272         | 1.00               |
| Totals           | Num Loadings:35               | 84  |      |               | 9,252.80    |                  |                    | 16,826.55   |               |                    |

**Linear Appurtenance Properties**

Load Case Azimuth (deg) :

| Elev From (ft) | Elev To (ft) | Qty | Description | Coax Dia (in) | Coax Wt (lb/ft) | Max Coax / Flat Row | Dist Between Rows (in) | Dist Between Cols (in) | Dist Azimuth (deg) | Dist From Face (in) | Exposed To Wind Carrier |
|----------------|--------------|-----|-------------|---------------|-----------------|---------------------|------------------------|------------------------|--------------------|---------------------|-------------------------|
| 0.00           | 154.00       | 3   | 7/8" Coax   | 1.09          | 0.33            | N 0                 | 0.00                   | 0.00                   | 0                  | 0.00                | N OTHER                 |
| 0.00           | 152.00       | 12  | 1 5/8" Coax | 1.98          | 0.82            | N 0                 | 0.00                   | 0.00                   | 0                  | 0.00                | N VERIZON WIRELESS      |

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Site Number: 413783

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Site Name: Kent Pcs CT, CT

Engineering Number: OAA745078\_C3\_06

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Customer: EVERSOURCE ENERGY

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|      |        |    |                       |      |      |   |   |      |      |   |      |   |                  |
|------|--------|----|-----------------------|------|------|---|---|------|------|---|------|---|------------------|
| 0.00 | 152.00 | 2  | 1 5/8" Hybriflex      | 1.98 | 1.30 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | VERIZON WIRELESS |
| 0.00 | 140.00 | 2  | 0.39" (10mm) Fiber    | 0.39 | 0.06 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY    |
| 0.00 | 140.00 | 4  | 0.78" (19.7mm) 8 AWG  | 0.78 | 0.59 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY    |
| 0.00 | 140.00 | 12 | 1 5/8" Coax           | 1.98 | 0.82 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY    |
| 0.00 | 140.00 | 1  | 2" conduit            | 2.38 | 3.65 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | AT&T MOBILITY    |
| 0.00 | 124.00 | 2  | 7/8" Coax             | 1.09 | 0.33 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | Other            |
| 0.00 | 122.00 | 1  | 7/8" Coax             | 1.09 | 0.33 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | Other            |
| 0.00 | 110.00 | 2  | 1 5/8" (1.63"-41.3mm) | 1.63 | 1.61 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | T-MOBILE         |
| 0.00 | 110.00 | 1  | 1/2" Coax             | 0.63 | 0.15 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | T-MOBILE         |
| 0.00 | 90.00  | 2  | 7/8" Coax             | 1.09 | 0.33 | N | 0 | 0.00 | 0.00 | 0 | 0.00 | N | EVSOURCE         |

Segment Properties (Max Len : 5. ft)

| Seg Top Elev (ft) | Description     | Thick (in) | Flat Dia (in) | Area (in <sup>2</sup> ) | Ix (in <sup>4</sup> ) | W/t Ratio | D/t Ratio | F'y (ksi) | S (in <sup>3</sup> ) | Z (in <sup>3</sup> ) | Weight (lb) |
|-------------------|-----------------|------------|---------------|-------------------------|-----------------------|-----------|-----------|-----------|----------------------|----------------------|-------------|
| 0.00              |                 | 0.3750     | 60.500        | 71.561                  | 32,684.4              | 27.04     | 161.33    | 69.6      | 1064.                | 0.0                  | 0.0         |
| 5.00              |                 | 0.3750     | 59.294        | 70.126                  | 30,757.4              | 26.47     | 158.12    | 70.3      | 1021.                | 0.0                  | 1,205.3     |
| 10.00             |                 | 0.3750     | 58.089        | 68.691                  | 28,907.7              | 25.90     | 154.90    | 70.9      | 980.2                | 0.0                  | 1,180.9     |
| 15.00             |                 | 0.3750     | 56.883        | 67.256                  | 27,133.7              | 25.34     | 151.69    | 71.6      | 939.5                | 0.0                  | 1,156.5     |
| 20.00             |                 | 0.3750     | 55.678        | 65.821                  | 25,433.7              | 24.77     | 148.47    | 72.3      | 899.7                | 0.0                  | 1,132.1     |
| 25.00             |                 | 0.3750     | 54.472        | 64.387                  | 23,806.3              | 24.20     | 145.26    | 72.9      | 860.8                | 0.0                  | 1,107.7     |
| 30.00             |                 | 0.3750     | 53.266        | 62.952                  | 22,249.9              | 23.64     | 142.04    | 73.6      | 822.7                | 0.0                  | 1,083.3     |
| 35.00             |                 | 0.3750     | 52.061        | 61.517                  | 20,762.8              | 23.07     | 138.83    | 74.3      | 785.5                | 0.0                  | 1,058.8     |
| 40.00             |                 | 0.3750     | 50.855        | 60.082                  | 19,343.5              | 22.50     | 135.61    | 74.9      | 749.2                | 0.0                  | 1,034.4     |
| 44.83             | Bot - Section 2 | 0.3750     | 49.691        | 58.696                  | 18,035.8              | 21.95     | 132.51    | 75.6      | 714.9                | 0.0                  | 975.7       |
| 45.00             |                 | 0.3750     | 49.649        | 58.647                  | 17,990.4              | 21.93     | 132.40    | 75.6      | 713.7                | 0.0                  | 69.2        |
| 50.00             |                 | 0.3750     | 48.444        | 57.212                  | 16,701.9              | 21.37     | 129.18    | 76.3      | 679.1                | 0.0                  | 1,986.4     |
| 51.63             | Top - Section 1 | 0.3750     | 48.800        | 57.636                  | 17,076.0              | 21.54     | 130.13    | 76.1      | 689.2                | 0.0                  | 638.1       |
| 55.00             |                 | 0.3750     | 47.988        | 56.670                  | 16,231.4              | 21.15     | 127.97    | 76.5      | 666.2                | 0.0                  | 654.8       |
| 60.00             |                 | 0.3750     | 46.783        | 55.235                  | 15,029.4              | 20.59     | 124.75    | 77.2      | 632.8                | 0.0                  | 952.0       |
| 65.00             |                 | 0.3750     | 45.577        | 53.800                  | 13,888.2              | 20.02     | 121.54    | 77.9      | 600.2                | 0.0                  | 927.5       |
| 70.00             |                 | 0.3750     | 44.371        | 52.365                  | 12,806.3              | 19.45     | 118.32    | 78.5      | 568.5                | 0.0                  | 903.1       |
| 75.00             |                 | 0.3750     | 43.166        | 50.930                  | 11,782.1              | 18.89     | 115.11    | 79.2      | 537.6                | 0.0                  | 878.7       |
| 80.00             |                 | 0.3750     | 41.960        | 49.495                  | 10,814.0              | 18.32     | 111.89    | 79.9      | 507.6                | 0.0                  | 854.3       |
| 85.00             |                 | 0.3750     | 40.754        | 48.060                  | 9,900.5               | 17.75     | 108.68    | 80.5      | 478.5                | 0.0                  | 829.9       |
| 90.00             |                 | 0.3750     | 39.549        | 46.625                  | 9,039.9               | 17.19     | 105.46    | 81.2      | 450.2                | 0.0                  | 805.5       |
| 90.48             | Bot - Section 3 | 0.3750     | 39.434        | 46.488                  | 8,960.6               | 17.13     | 105.16    | 81.3      | 447.6                | 0.0                  | 75.5        |
| 95.00             |                 | 0.3750     | 38.343        | 45.190                  | 8,230.7               | 16.62     | 102.25    | 81.9      | 422.8                | 0.0                  | 1,304.0     |
| 95.98             | Top - Section 2 | 0.3125     | 38.731        | 38.105                  | 7,105.8               | 20.44     | 123.94    | 77.4      | 361.4                | 0.0                  | 278.9       |
| 100.0             |                 | 0.3125     | 37.763        | 37.144                  | 6,581.9               | 19.90     | 120.84    | 78.0      | 343.3                | 0.0                  | 514.1       |
| 105.0             |                 | 0.3125     | 36.557        | 35.949                  | 5,966.5               | 19.22     | 116.98    | 78.8      | 321.5                | 0.0                  | 621.8       |
| 110.0             |                 | 0.3125     | 35.351        | 34.753                  | 5,390.7               | 18.54     | 113.12    | 79.6      | 300.3                | 0.0                  | 601.5       |
| 115.0             |                 | 0.3125     | 34.146        | 33.557                  | 4,853.2               | 17.86     | 109.27    | 80.4      | 279.9                | 0.0                  | 581.1       |
| 117.0             |                 | 0.3125     | 33.663        | 33.079                  | 4,648.6               | 17.58     | 107.72    | 80.7      | 272.0                | 0.0                  | 226.7       |
| 120.0             |                 | 0.3125     | 32.940        | 32.361                  | 4,352.6               | 17.18     | 105.41    | 81.2      | 260.3                | 0.0                  | 334.0       |
| 122.0             |                 | 0.3125     | 32.458        | 31.883                  | 4,162.4               | 16.90     | 103.87    | 81.5      | 252.6                | 0.0                  | 218.6       |
| 124.0             |                 | 0.3125     | 31.976        | 31.405                  | 3,977.9               | 16.63     | 102.32    | 81.8      | 245.0                | 0.0                  | 215.4       |
| 125.0             |                 | 0.3125     | 31.734        | 31.166                  | 3,887.7               | 16.50     | 101.55    | 82.0      | 241.3                | 0.0                  | 106.5       |
| 130.0             |                 | 0.3125     | 30.529        | 29.970                  | 3,457.2               | 15.82     | 97.69     | 82.6      | 223.0                | 0.0                  | 520.1       |
| 135.0             |                 | 0.3125     | 29.323        | 28.774                  | 3,059.6               | 15.13     | 93.83     | 82.6      | 205.5                | 0.0                  | 499.7       |
| 138.9             | Bot - Section 4 | 0.3125     | 28.374        | 27.833                  | 2,769.2               | 14.60     | 90.80     | 82.6      | 192.2                | 0.0                  | 379.0       |
| 140.0             |                 | 0.3125     | 28.118        | 27.578                  | 2,693.8               | 14.45     | 89.98     | 82.6      | 188.7                | 0.0                  | 161.7       |
| 143.0             | Top - Section 3 | 0.1875     | 27.763        | 16.410                  | 1,576.6               | 24.70     | 148.07    | 72.4      | 111.8                | 0.0                  | 451.5       |
| 145.0             |                 | 0.1875     | 27.287        | 16.127                  | 1,496.3               | 24.25     | 145.53    | 72.9      | 108.0                | 0.0                  | 109.3       |
| 149.0             |                 | 0.1875     | 26.322        | 15.553                  | 1,342.2               | 23.34     | 140.39    | 73.9      | 100.4                | 0.0                  | 215.6       |
| 26,849.2          |                 |            |               |                         |                       |           |           |           |                      |                      |             |

|                               |                            |                      |
|-------------------------------|----------------------------|----------------------|
| <b>Load Case: 1.2D + 1.0W</b> | <b>114 mph with No Ice</b> | <b>22 Iterations</b> |
| Gust Response Factor :1.10    |                            |                      |
| Dead Load Factor :1.20        |                            |                      |
| Wind Load Factor :1.00        |                            |                      |

Applied Segment Forces Summary

| Seg Elev (ft) | Description     | Shaft Forces |                | Discrete Forces |                    |                   | Linear Forces  |              | Sum of Forces  |              |                |                    |                |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
|               |                 | Wind FX (lb) | Dead Load (lb) | Wind FX (lb)    | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00          |                 | 269.5        | 0.0            |                 |                    |                   |                | 0.0          | 0.0            | 269.5        | 0.0            | 0.0                | 0.0            |
| 5.00          |                 | 533.6        | 1,446.4        |                 |                    |                   |                | 0.0          | 206.5          | 533.6        | 1,652.9        | 0.0                | 0.0            |
| 10.00         |                 | 522.8        | 1,417.1        |                 |                    |                   |                | 0.0          | 206.5          | 522.8        | 1,623.6        | 0.0                | 0.0            |
| 15.00         |                 | 519.9        | 1,387.8        |                 |                    |                   |                | 0.0          | 206.5          | 519.9        | 1,594.3        | 0.0                | 0.0            |
| 20.00         |                 | 530.8        | 1,358.5        |                 |                    |                   |                | 0.0          | 206.5          | 530.8        | 1,565.0        | 0.0                | 0.0            |
| 25.00         |                 | 544.6        | 1,329.2        |                 |                    |                   |                | 0.0          | 206.5          | 544.6        | 1,535.7        | 0.0                | 0.0            |
| 30.00         |                 | 553.5        | 1,299.9        |                 |                    |                   |                | 0.0          | 206.5          | 553.5        | 1,506.4        | 0.0                | 0.0            |
| 35.00         |                 | 559.0        | 1,270.6        |                 |                    |                   |                | 0.0          | 206.5          | 559.0        | 1,477.1        | 0.0                | 0.0            |
| 40.00         |                 | 552.0        | 1,241.3        |                 |                    |                   |                | 0.0          | 206.5          | 552.0        | 1,447.8        | 0.0                | 0.0            |
| 44.83         | Bot - Section 2 | 281.3        | 1,170.8        |                 |                    |                   |                | 0.0          | 199.4          | 281.3        | 1,370.3        | 0.0                | 0.0            |
| 45.00         |                 | 295.1        | 83.0           |                 |                    |                   |                | 0.0          | 7.1            | 295.1        | 90.1           | 0.0                | 0.0            |
| 50.00         |                 | 378.2        | 2,383.7        |                 |                    |                   |                | 0.0          | 206.5          | 378.2        | 2,590.2        | 0.0                | 0.0            |
| 51.63         | Top - Section 1 | 284.2        | 765.7          |                 |                    |                   |                | 0.0          | 67.4           | 284.2        | 833.2          | 0.0                | 0.0            |
| 55.00         |                 | 473.9        | 785.8          |                 |                    |                   |                | 0.0          | 139.1          | 473.9        | 924.9          | 0.0                | 0.0            |
| 60.00         |                 | 562.8        | 1,142.4        |                 |                    |                   |                | 0.0          | 206.5          | 562.8        | 1,348.9        | 0.0                | 0.0            |
| 65.00         |                 | 557.7        | 1,113.1        |                 |                    |                   |                | 0.0          | 206.5          | 557.7        | 1,319.6        | 0.0                | 0.0            |
| 70.00         |                 | 551.5        | 1,083.8        |                 |                    |                   |                | 0.0          | 206.5          | 551.5        | 1,290.3        | 0.0                | 0.0            |
| 75.00         |                 | 544.3        | 1,054.5        |                 |                    |                   |                | 0.0          | 206.5          | 544.3        | 1,261.0        | 0.0                | 0.0            |
| 80.00         |                 | 536.4        | 1,025.2        |                 |                    |                   |                | 0.0          | 206.5          | 536.4        | 1,231.7        | 0.0                | 0.0            |
| 85.00         |                 | 527.7        | 995.9          |                 |                    |                   |                | 0.0          | 206.5          | 527.7        | 1,202.4        | 0.0                | 0.0            |
| 90.00         | Appurtenance(s) | 286.2        | 966.6          | 440.5           | 0.0                | 0.0               | 273.0          | 0.0          | 206.5          | 726.7        | 1,446.1        | 0.0                | 0.0            |
| 90.48         | Bot - Section 3 | 260.4        | 90.6           |                 |                    |                   |                | 0.0          | 19.3           | 260.4        | 109.9          | 0.0                | 0.0            |
| 95.00         |                 | 286.5        | 1,564.8        |                 |                    |                   |                | 0.0          | 183.3          | 286.5        | 1,748.1        | 0.0                | 0.0            |
| 95.98         | Top - Section 2 | 255.7        | 334.7          |                 |                    |                   |                | 0.0          | 39.9           | 255.7        | 374.6          | 0.0                | 0.0            |
| 100.00        |                 | 455.2        | 616.9          |                 |                    |                   |                | 0.0          | 162.7          | 455.2        | 779.6          | 0.0                | 0.0            |
| 105.00        |                 | 494.9        | 746.2          |                 |                    |                   |                | 0.0          | 202.6          | 494.9        | 948.7          | 0.0                | 0.0            |
| 110.00        | Appurtenance(s) | 483.3        | 721.7          | 2,522.1         | 0.0                | 0.0               | 1,775.6        | 0.0          | 202.6          | 3,005.4      | 2,699.9        | 0.0                | 0.0            |
| 115.00        |                 | 332.4        | 697.3          |                 |                    |                   |                | 0.0          | 182.3          | 332.4        | 879.7          | 0.0                | 0.0            |
| 117.00        | Appurtenance(s) | 232.5        | 272.1          | 201.8           | 0.0                | 0.0               | 180.0          | 0.0          | 72.9           | 434.3        | 525.0          | 0.0                | 0.0            |
| 120.00        |                 | 230.0        | 400.8          |                 |                    |                   |                | 0.0          | 109.4          | 230.0        | 510.2          | 0.0                | 0.0            |
| 122.00        | Appurtenance(s) | 181.4        | 262.3          | 134.8           | 0.0                | 0.0               | 12.0           | 0.0          | 72.9           | 316.2        | 347.3          | 0.0                | 0.0            |
| 124.00        | Appurtenance(s) | 134.9        | 258.4          | 204.3           | 0.0                | 0.0               | 38.4           | 0.0          | 72.1           | 339.2        | 369.0          | 0.0                | 0.0            |
| 125.00        |                 | 264.2        | 127.7          |                 |                    |                   |                | 0.0          | 35.3           | 264.2        | 163.0          | 0.0                | 0.0            |
| 130.00        |                 | 432.3        | 624.1          |                 |                    |                   |                | 0.0          | 176.4          | 432.3        | 800.5          | 0.0                | 0.0            |
| 135.00        |                 | 375.3        | 599.7          |                 |                    |                   |                | 0.0          | 176.4          | 375.3        | 776.1          | 0.0                | 0.0            |
| 138.93        | Bot - Section 4 | 206.3        | 454.8          |                 |                    |                   |                | 0.0          | 138.8          | 206.3        | 593.6          | 0.0                | 0.0            |
| 140.00        | Appurtenance(s) | 166.5        | 194.1          | 3,767.5         | 0.0                | 459.2             | 3,952.3        | 0.0          | 37.6           | 3,934.1      | 4,184.0        | 0.0                | 0.0            |
| 143.03        | Top - Section 3 | 201.3        | 541.7          |                 |                    |                   |                | 0.0          | 48.8           | 201.3        | 590.5          | 0.0                | 0.0            |
| 145.00        |                 | 234.4        | 131.1          |                 |                    |                   |                | 0.0          | 31.8           | 234.4        | 162.9          | 0.0                | 0.0            |
| 149.00        | Appurtenance(s) | 155.8        | 258.7          | 1,231.6         | 0.0                | 0.0               | 1,800.0        | 0.0          | 64.5           | 1,387.4      | 2,123.2        | 0.0                | 0.0            |
| Totals:       |                 |              |                |                 |                    |                   |                |              |                | 23,750.9     | 45,997.3       | 0.00               | 0.00           |

**Load Case: 1.2D + 1.0W**

114 mph with No Ice

22 Iterations

Gust Response Factor :1.10  
 Dead Load Factor :1.20  
 Wind Load Factor :1.00

**Calculated Forces**

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00          | -49.03           | -31.17           | 0.00            | -3,451.72       | 0.00            | 3,451.72                   | 4,482.64      | 1,255.90      | 6,820.01         | 5,554.46         | 0.00               | 0.00           | 0.633 |
| 5.00          | -47.30           | -30.76           | 0.00            | -3,295.86       | 0.00            | 3,295.86                   | 4,434.84      | 1,230.72      | 6,549.27         | 5,384.36         | 0.08               | -0.15          | 0.623 |
| 10.00         | -45.60           | -30.35           | 0.00            | -3,142.06       | 0.00            | 3,142.06                   | 4,385.31      | 1,205.53      | 6,284.01         | 5,214.59         | 0.31               | -0.30          | 0.614 |
| 15.00         | -43.93           | -29.94           | 0.00            | -2,990.32       | 0.00            | 2,990.32                   | 4,334.06      | 1,180.35      | 6,024.24         | 5,045.30         | 0.70               | -0.45          | 0.603 |
| 20.00         | -42.29           | -29.50           | 0.00            | -2,840.64       | 0.00            | 2,840.64                   | 4,281.09      | 1,155.17      | 5,769.95         | 4,876.60         | 1.25               | -0.60          | 0.593 |
| 25.00         | -40.68           | -29.05           | 0.00            | -2,693.13       | 0.00            | 2,693.13                   | 4,226.40      | 1,129.98      | 5,521.14         | 4,708.64         | 1.97               | -0.75          | 0.582 |
| 30.00         | -39.10           | -28.58           | 0.00            | -2,547.87       | 0.00            | 2,547.87                   | 4,169.98      | 1,104.80      | 5,277.81         | 4,541.54         | 2.84               | -0.91          | 0.571 |
| 35.00         | -37.56           | -28.10           | 0.00            | -2,404.95       | 0.00            | 2,404.95                   | 4,111.84      | 1,079.62      | 5,039.97         | 4,375.42         | 3.88               | -1.07          | 0.559 |
| 40.00         | -36.04           | -27.62           | 0.00            | -2,264.43       | 0.00            | 2,264.43                   | 4,051.98      | 1,054.43      | 4,807.61         | 4,210.43         | 5.09               | -1.23          | 0.547 |
| 44.83         | -34.64           | -27.36           | 0.00            | -2,131.07       | 0.00            | 2,131.07                   | 3,992.55      | 1,030.12      | 4,588.45         | 4,052.29         | 6.41               | -1.39          | 0.535 |
| 45.00         | -34.52           | -27.11           | 0.00            | -2,126.37       | 0.00            | 2,126.37                   | 3,990.40      | 1,029.25      | 4,580.74         | 4,046.68         | 6.46               | -1.39          | 0.535 |
| 50.00         | -31.89           | -26.73           | 0.00            | -1,990.80       | 0.00            | 1,990.80                   | 3,927.10      | 1,004.07      | 4,359.35         | 3,884.30         | 8.00               | -1.55          | 0.521 |
| 51.63         | -31.03           | -26.47           | 0.00            | -1,947.16       | 0.00            | 1,947.16                   | 3,945.98      | 1,011.51      | 4,424.20         | 3,932.14         | 8.55               | -1.61          | 0.504 |
| 55.00         | -30.05           | -26.04           | 0.00            | -1,858.05       | 0.00            | 1,858.05                   | 3,902.73      | 994.55        | 4,277.11         | 3,823.33         | 9.72               | -1.72          | 0.494 |
| 60.00         | -28.65           | -25.51           | 0.00            | -1,727.86       | 0.00            | 1,727.86                   | 3,837.05      | 969.37        | 4,063.28         | 3,663.06         | 11.61              | -1.88          | 0.480 |
| 65.00         | -27.29           | -24.98           | 0.00            | -1,600.31       | 0.00            | 1,600.31                   | 3,769.65      | 944.18        | 3,854.92         | 3,504.48         | 13.66              | -2.03          | 0.465 |
| 70.00         | -25.95           | -24.46           | 0.00            | -1,475.40       | 0.00            | 1,475.40                   | 3,700.53      | 919.00        | 3,652.05         | 3,347.71         | 15.87              | -2.19          | 0.448 |
| 75.00         | -24.65           | -23.93           | 0.00            | -1,353.12       | 0.00            | 1,353.12                   | 3,629.69      | 893.82        | 3,454.67         | 3,192.88         | 18.25              | -2.35          | 0.431 |
| 80.00         | -23.37           | -23.41           | 0.00            | -1,233.47       | 0.00            | 1,233.47                   | 3,557.12      | 868.63        | 3,262.77         | 3,040.12         | 20.80              | -2.51          | 0.413 |
| 85.00         | -22.14           | -22.88           | 0.00            | -1,116.45       | 0.00            | 1,116.45                   | 3,482.83      | 843.45        | 3,076.35         | 2,889.56         | 23.51              | -2.66          | 0.393 |
| 90.00         | -20.69           | -22.12           | 0.00            | -1,002.04       | 0.00            | 1,002.04                   | 3,406.82      | 818.27        | 2,895.41         | 2,741.33         | 26.37              | -2.81          | 0.372 |
| 90.48         | -20.57           | -21.88           | 0.00            | -991.50         | 0.00            | 991.50                     | 3,399.49      | 815.87        | 2,878.45         | 2,727.33         | 26.66              | -2.83          | 0.370 |
| 95.00         | -18.81           | -21.53           | 0.00            | -892.53         | 0.00            | 892.53                     | 3,329.09      | 793.08        | 2,719.96         | 2,595.56         | 29.40              | -2.96          | 0.350 |
| 95.98         | -18.42           | -21.28           | 0.00            | -871.33         | 0.00            | 871.33                     | 2,652.87      | 668.74        | 2,320.58         | 2,096.47         | 30.01              | -2.99          | 0.424 |
| 100.00        | -17.61           | -20.83           | 0.00            | -785.88         | 0.00            | 785.88                     | 2,607.49      | 651.89        | 2,205.09         | 2,008.26         | 32.58              | -3.11          | 0.399 |
| 105.00        | -16.64           | -20.33           | 0.00            | -681.74         | 0.00            | 681.74                     | 2,549.43      | 630.90        | 2,065.42         | 1,899.81         | 35.92              | -3.27          | 0.366 |
| 110.00        | -14.07           | -17.20           | 0.00            | -580.11         | 0.00            | 580.11                     | 2,489.65      | 609.91        | 1,930.32         | 1,793.02         | 39.43              | -3.42          | 0.330 |
| 115.00        | -13.19           | -16.84           | 0.00            | -494.09         | 0.00            | 494.09                     | 2,428.15      | 588.93        | 1,799.78         | 1,688.03         | 43.08              | -3.56          | 0.299 |
| 117.00        | -12.67           | -16.39           | 0.00            | -460.41         | 0.00            | 460.41                     | 2,403.07      | 580.53        | 1,748.85         | 1,646.56         | 44.59              | -3.62          | 0.286 |
| 120.00        | -12.16           | -16.14           | 0.00            | -411.24         | 0.00            | 411.24                     | 2,364.93      | 567.94        | 1,673.82         | 1,584.96         | 46.88              | -3.70          | 0.265 |
| 122.00        | -11.82           | -15.81           | 0.00            | -378.95         | 0.00            | 378.95                     | 2,339.16      | 559.55        | 1,624.71         | 1,544.29         | 48.44              | -3.75          | 0.251 |
| 124.00        | -11.46           | -15.46           | 0.00            | -347.33         | 0.00            | 347.33                     | 2,313.11      | 551.15        | 1,576.33         | 1,503.97         | 50.02              | -3.80          | 0.237 |
| 125.00        | -11.30           | -15.20           | 0.00            | -331.87         | 0.00            | 331.87                     | 2,299.99      | 546.96        | 1,552.42         | 1,483.93         | 50.82              | -3.82          | 0.229 |
| 130.00        | -10.51           | -14.73           | 0.00            | -255.88         | 0.00            | 255.88                     | 2,226.60      | 525.97        | 1,435.59         | 1,380.92         | 54.88              | -3.93          | 0.191 |
| 135.00        | -9.74            | -14.31           | 0.00            | -182.23         | 0.00            | 182.23                     | 2,137.76      | 504.98        | 1,323.34         | 1,272.38         | 59.05              | -4.02          | 0.149 |
| 138.93        | -9.15            | -14.07           | 0.00            | -125.90         | 0.00            | 125.90                     | 2,067.85      | 488.47        | 1,238.21         | 1,190.09         | 62.38              | -4.08          | 0.111 |
| 140.00        | -5.26            | -9.85            | 0.00            | -110.45         | 0.00            | 110.45                     | 2,048.92      | 484.00        | 1,215.65         | 1,168.29         | 63.29              | -4.09          | 0.098 |
| 143.03        | -4.68            | -9.61            | 0.00            | -80.64          | 0.00            | 80.64                      | 1,068.58      | 288.00        | 717.29           | 606.93           | 65.89              | -4.12          | 0.138 |
| 145.00        | -4.53            | -9.37            | 0.00            | -61.66          | 0.00            | 61.66                      | 1,057.77      | 283.03        | 692.75           | 590.35           | 67.60              | -4.14          | 0.110 |
| 149.00        | 0.00             | -9.02            | 0.00            | -24.19          | 0.00            | 24.19                      | 1,035.06      | 272.96        | 644.32           | 556.98           | 71.08              | -4.17          | 0.045 |

|                               |                                  |               |
|-------------------------------|----------------------------------|---------------|
| <b>Load Case:</b> 0.9D + 1.0W | 114 mph with No Ice (Reduced DL) | 22 Iterations |
| Gust Response Factor :1.10    |                                  |               |
| Dead Load Factor :0.90        |                                  |               |
| Wind Load Factor :1.00        |                                  |               |

Applied Segment Forces Summary

| Seg Elev (ft) | Description     | Shaft Forces |                | Discrete Forces |                    |                   | Linear Forces  |              | Sum of Forces  |              |                |                    |                |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
|               |                 | Wind FX (lb) | Dead Load (lb) | Wind FX (lb)    | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00          |                 | 269.5        | 0.0            |                 |                    |                   |                | 0.0          | 0.0            | 269.5        | 0.0            | 0.0                | 0.0            |
| 5.00          |                 | 533.6        | 1,084.8        |                 |                    |                   |                | 0.0          | 154.9          | 533.6        | 1,239.7        | 0.0                | 0.0            |
| 10.00         |                 | 522.8        | 1,062.8        |                 |                    |                   |                | 0.0          | 154.9          | 522.8        | 1,217.7        | 0.0                | 0.0            |
| 15.00         |                 | 519.9        | 1,040.8        |                 |                    |                   |                | 0.0          | 154.9          | 519.9        | 1,195.7        | 0.0                | 0.0            |
| 20.00         |                 | 530.8        | 1,018.9        |                 |                    |                   |                | 0.0          | 154.9          | 530.8        | 1,173.8        | 0.0                | 0.0            |
| 25.00         |                 | 544.6        | 996.9          |                 |                    |                   |                | 0.0          | 154.9          | 544.6        | 1,151.8        | 0.0                | 0.0            |
| 30.00         |                 | 553.5        | 974.9          |                 |                    |                   |                | 0.0          | 154.9          | 553.5        | 1,129.8        | 0.0                | 0.0            |
| 35.00         |                 | 559.0        | 953.0          |                 |                    |                   |                | 0.0          | 154.9          | 559.0        | 1,107.8        | 0.0                | 0.0            |
| 40.00         |                 | 552.0        | 931.0          |                 |                    |                   |                | 0.0          | 154.9          | 552.0        | 1,085.9        | 0.0                | 0.0            |
| 44.83         | Bot - Section 2 | 281.3        | 878.1          |                 |                    |                   |                | 0.0          | 149.6          | 281.3        | 1,027.7        | 0.0                | 0.0            |
| 45.00         |                 | 295.1        | 62.2           |                 |                    |                   |                | 0.0          | 5.3            | 295.1        | 67.6           | 0.0                | 0.0            |
| 50.00         |                 | 378.2        | 1,787.8        |                 |                    |                   |                | 0.0          | 154.9          | 378.2        | 1,942.6        | 0.0                | 0.0            |
| 51.63         | Top - Section 1 | 284.2        | 574.3          |                 |                    |                   |                | 0.0          | 50.6           | 284.2        | 624.9          | 0.0                | 0.0            |
| 55.00         |                 | 473.9        | 589.4          |                 |                    |                   |                | 0.0          | 104.3          | 473.9        | 693.7          | 0.0                | 0.0            |
| 60.00         |                 | 562.8        | 856.8          |                 |                    |                   |                | 0.0          | 154.9          | 562.8        | 1,011.7        | 0.0                | 0.0            |
| 65.00         |                 | 557.7        | 834.8          |                 |                    |                   |                | 0.0          | 154.9          | 557.7        | 989.7          | 0.0                | 0.0            |
| 70.00         |                 | 551.5        | 812.8          |                 |                    |                   |                | 0.0          | 154.9          | 551.5        | 967.7          | 0.0                | 0.0            |
| 75.00         |                 | 544.3        | 790.8          |                 |                    |                   |                | 0.0          | 154.9          | 544.3        | 945.7          | 0.0                | 0.0            |
| 80.00         |                 | 536.4        | 768.9          |                 |                    |                   |                | 0.0          | 154.9          | 536.4        | 923.8          | 0.0                | 0.0            |
| 85.00         |                 | 527.7        | 746.9          |                 |                    |                   |                | 0.0          | 154.9          | 527.7        | 901.8          | 0.0                | 0.0            |
| 90.00         | Appurtenance(s) | 286.2        | 724.9          | 440.5           | 0.0                | 0.0               | 204.8          | 0.0          | 154.9          | 726.7        | 1,084.6        | 0.0                | 0.0            |
| 90.48         | Bot - Section 3 | 260.4        | 67.9           |                 |                    |                   |                | 0.0          | 14.5           | 260.4        | 82.4           | 0.0                | 0.0            |
| 95.00         |                 | 286.5        | 1,173.6        |                 |                    |                   |                | 0.0          | 137.4          | 286.5        | 1,311.1        | 0.0                | 0.0            |
| 95.98         | Top - Section 2 | 255.7        | 251.0          |                 |                    |                   |                | 0.0          | 29.9           | 255.7        | 280.9          | 0.0                | 0.0            |
| 100.00        |                 | 455.2        | 462.7          |                 |                    |                   |                | 0.0          | 122.0          | 455.2        | 584.7          | 0.0                | 0.0            |
| 105.00        |                 | 494.9        | 559.6          |                 |                    |                   |                | 0.0          | 151.9          | 494.9        | 711.5          | 0.0                | 0.0            |
| 110.00        | Appurtenance(s) | 483.3        | 541.3          | 2,522.1         | 0.0                | 0.0               | 1,331.7        | 0.0          | 151.9          | 3,005.4      | 2,025.0        | 0.0                | 0.0            |
| 115.00        |                 | 332.4        | 523.0          |                 |                    |                   |                | 0.0          | 136.8          | 332.4        | 659.8          | 0.0                | 0.0            |
| 117.00        | Appurtenance(s) | 232.5        | 204.1          | 201.8           | 0.0                | 0.0               | 135.0          | 0.0          | 54.7           | 434.3        | 393.8          | 0.0                | 0.0            |
| 120.00        |                 | 230.0        | 300.6          |                 |                    |                   |                | 0.0          | 82.1           | 230.0        | 382.7          | 0.0                | 0.0            |
| 122.00        | Appurtenance(s) | 181.4        | 196.7          | 134.8           | 0.0                | 0.0               | 9.0            | 0.0          | 54.7           | 316.2        | 260.5          | 0.0                | 0.0            |
| 124.00        | Appurtenance(s) | 134.9        | 193.8          | 204.3           | 0.0                | 0.0               | 28.8           | 0.0          | 54.1           | 339.2        | 276.7          | 0.0                | 0.0            |
| 125.00        |                 | 264.2        | 95.8           |                 |                    |                   |                | 0.0          | 26.5           | 264.2        | 122.3          | 0.0                | 0.0            |
| 130.00        |                 | 432.3        | 468.1          |                 |                    |                   |                | 0.0          | 132.3          | 432.3        | 600.4          | 0.0                | 0.0            |
| 135.00        |                 | 375.3        | 449.8          |                 |                    |                   |                | 0.0          | 132.3          | 375.3        | 582.1          | 0.0                | 0.0            |
| 138.93        | Bot - Section 4 | 206.3        | 341.1          |                 |                    |                   |                | 0.0          | 104.1          | 206.3        | 445.2          | 0.0                | 0.0            |
| 140.00        | Appurtenance(s) | 166.5        | 145.6          | 3,767.5         | 0.0                | 459.2             | 2,964.2        | 0.0          | 28.2           | 3,934.1      | 3,138.0        | 0.0                | 0.0            |
| 143.03        | Top - Section 3 | 201.3        | 406.3          |                 |                    |                   |                | 0.0          | 36.6           | 201.3        | 442.9          | 0.0                | 0.0            |
| 145.00        |                 | 234.4        | 98.3           |                 |                    |                   |                | 0.0          | 23.9           | 234.4        | 122.2          | 0.0                | 0.0            |
| 149.00        | Appurtenance(s) | 155.8        | 194.0          | 1,231.6         | 0.0                | 0.0               | 1,350.0        | 0.0          | 48.3           | 1,387.4      | 1,592.4        | 0.0                | 0.0            |
| Totals:       |                 |              |                |                 |                    |                   |                |              |                | 23,750.9     | 34,497.9       | 0.00               | 0.00           |

Load Case: 0.9D + 1.0W

114 mph with No Ice (Reduced DL)

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

**Calculated Forces**

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00          | -36.76           | -31.16           | 0.00            | -3,421.45       | 0.00            | 3,421.45                   | 4,482.64      | 1,255.90      | 6,820.01         | 5,554.46         | 0.00               | 0.00           | 0.625 |
| 5.00          | -35.44           | -30.71           | 0.00            | -3,265.67       | 0.00            | 3,265.67                   | 4,434.84      | 1,230.72      | 6,549.27         | 5,384.36         | 0.08               | -0.15          | 0.615 |
| 10.00         | -34.15           | -30.27           | 0.00            | -3,112.11       | 0.00            | 3,112.11                   | 4,385.31      | 1,205.53      | 6,284.01         | 5,214.59         | 0.31               | -0.29          | 0.605 |
| 15.00         | -32.88           | -29.83           | 0.00            | -2,960.75       | 0.00            | 2,960.75                   | 4,334.06      | 1,180.35      | 6,024.24         | 5,045.30         | 0.70               | -0.44          | 0.595 |
| 20.00         | -31.63           | -29.37           | 0.00            | -2,811.59       | 0.00            | 2,811.59                   | 4,281.09      | 1,155.17      | 5,769.95         | 4,876.60         | 1.24               | -0.59          | 0.585 |
| 25.00         | -30.41           | -28.90           | 0.00            | -2,664.72       | 0.00            | 2,664.72                   | 4,226.40      | 1,129.98      | 5,521.14         | 4,708.64         | 1.95               | -0.75          | 0.574 |
| 30.00         | -29.21           | -28.41           | 0.00            | -2,520.24       | 0.00            | 2,520.24                   | 4,169.98      | 1,104.80      | 5,277.81         | 4,541.54         | 2.81               | -0.90          | 0.563 |
| 35.00         | -28.04           | -27.91           | 0.00            | -2,378.20       | 0.00            | 2,378.20                   | 4,111.84      | 1,079.62      | 5,039.97         | 4,375.42         | 3.84               | -1.06          | 0.551 |
| 40.00         | -26.89           | -27.41           | 0.00            | -2,238.66       | 0.00            | 2,238.66                   | 4,051.98      | 1,054.43      | 4,807.61         | 4,210.43         | 5.04               | -1.22          | 0.539 |
| 44.83         | -25.83           | -27.14           | 0.00            | -2,106.34       | 0.00            | 2,106.34                   | 3,992.55      | 1,030.12      | 4,588.45         | 4,052.29         | 6.35               | -1.37          | 0.527 |
| 45.00         | -25.73           | -26.88           | 0.00            | -2,101.68       | 0.00            | 2,101.68                   | 3,990.40      | 1,029.25      | 4,580.74         | 4,046.68         | 6.40               | -1.38          | 0.526 |
| 50.00         | -23.75           | -26.50           | 0.00            | -1,967.28       | 0.00            | 1,967.28                   | 3,927.10      | 1,004.07      | 4,359.35         | 3,884.30         | 7.92               | -1.54          | 0.513 |
| 51.63         | -23.09           | -26.23           | 0.00            | -1,924.02       | 0.00            | 1,924.02                   | 3,945.98      | 1,011.51      | 4,424.20         | 3,932.14         | 8.46               | -1.59          | 0.496 |
| 55.00         | -22.35           | -25.79           | 0.00            | -1,835.70       | 0.00            | 1,835.70                   | 3,902.73      | 994.55        | 4,277.11         | 3,823.33         | 9.62               | -1.70          | 0.487 |
| 60.00         | -21.29           | -25.25           | 0.00            | -1,706.77       | 0.00            | 1,706.77                   | 3,837.05      | 969.37        | 4,063.28         | 3,663.06         | 11.49              | -1.86          | 0.472 |
| 65.00         | -20.25           | -24.72           | 0.00            | -1,580.52       | 0.00            | 1,580.52                   | 3,769.65      | 944.18        | 3,854.92         | 3,504.48         | 13.52              | -2.01          | 0.457 |
| 70.00         | -19.24           | -24.18           | 0.00            | -1,456.95       | 0.00            | 1,456.95                   | 3,700.53      | 919.00        | 3,652.05         | 3,347.71         | 15.71              | -2.17          | 0.441 |
| 75.00         | -18.25           | -23.65           | 0.00            | -1,336.04       | 0.00            | 1,336.04                   | 3,629.69      | 893.82        | 3,454.67         | 3,192.88         | 18.06              | -2.32          | 0.424 |
| 80.00         | -17.29           | -23.12           | 0.00            | -1,217.80       | 0.00            | 1,217.80                   | 3,557.12      | 868.63        | 3,262.77         | 3,040.12         | 20.58              | -2.48          | 0.406 |
| 85.00         | -16.35           | -22.60           | 0.00            | -1,102.19       | 0.00            | 1,102.19                   | 3,482.83      | 843.45        | 3,076.35         | 2,889.56         | 23.26              | -2.63          | 0.387 |
| 90.00         | -15.27           | -21.84           | 0.00            | -989.21         | 0.00            | 989.21                     | 3,406.82      | 818.27        | 2,895.41         | 2,741.33         | 26.09              | -2.78          | 0.366 |
| 90.48         | -15.18           | -21.60           | 0.00            | -978.80         | 0.00            | 978.80                     | 3,399.49      | 815.87        | 2,878.45         | 2,727.33         | 26.37              | -2.80          | 0.364 |
| 95.00         | -13.85           | -21.27           | 0.00            | -881.11         | 0.00            | 881.11                     | 3,329.09      | 793.08        | 2,719.96         | 2,595.56         | 29.08              | -2.93          | 0.344 |
| 95.98         | -13.56           | -21.01           | 0.00            | -860.18         | 0.00            | 860.18                     | 2,652.87      | 668.74        | 2,320.58         | 2,096.47         | 29.69              | -2.96          | 0.416 |
| 100.00        | -12.95           | -20.56           | 0.00            | -775.80         | 0.00            | 775.80                     | 2,607.49      | 651.89        | 2,205.09         | 2,008.26         | 32.23              | -3.07          | 0.392 |
| 105.00        | -12.21           | -20.06           | 0.00            | -673.00         | 0.00            | 673.00                     | 2,549.43      | 630.90        | 2,065.42         | 1,899.81         | 35.53              | -3.23          | 0.360 |
| 110.00        | -10.32           | -16.97           | 0.00            | -572.71         | 0.00            | 572.71                     | 2,489.65      | 609.91        | 1,930.32         | 1,793.02         | 39.00              | -3.38          | 0.324 |
| 115.00        | -9.65            | -16.61           | 0.00            | -487.88         | 0.00            | 487.88                     | 2,428.15      | 588.93        | 1,799.78         | 1,688.03         | 42.61              | -3.52          | 0.294 |
| 117.00        | -9.27            | -16.16           | 0.00            | -454.66         | 0.00            | 454.66                     | 2,403.07      | 580.53        | 1,748.85         | 1,646.56         | 44.10              | -3.57          | 0.281 |
| 120.00        | -8.88            | -15.92           | 0.00            | -406.16         | 0.00            | 406.16                     | 2,364.93      | 567.94        | 1,673.82         | 1,584.96         | 46.37              | -3.65          | 0.261 |
| 122.00        | -8.63            | -15.60           | 0.00            | -374.32         | 0.00            | 374.32                     | 2,339.16      | 559.55        | 1,624.71         | 1,544.29         | 47.91              | -3.70          | 0.247 |
| 124.00        | -8.37            | -15.25           | 0.00            | -343.13         | 0.00            | 343.13                     | 2,313.11      | 551.15        | 1,576.33         | 1,503.97         | 49.47              | -3.75          | 0.233 |
| 125.00        | -8.24            | -14.98           | 0.00            | -327.89         | 0.00            | 327.89                     | 2,299.99      | 546.96        | 1,552.42         | 1,483.93         | 50.26              | -3.78          | 0.225 |
| 130.00        | -7.65            | -14.53           | 0.00            | -252.97         | 0.00            | 252.97                     | 2,226.60      | 525.97        | 1,435.59         | 1,380.92         | 54.27              | -3.88          | 0.187 |
| 135.00        | -7.08            | -14.12           | 0.00            | -180.34         | 0.00            | 180.34                     | 2,137.76      | 504.98        | 1,323.34         | 1,272.38         | 58.39              | -3.97          | 0.146 |
| 138.93        | -6.64            | -13.89           | 0.00            | -124.79         | 0.00            | 124.79                     | 2,067.85      | 488.47        | 1,238.21         | 1,190.09         | 61.68              | -4.03          | 0.109 |
| 140.00        | -3.78            | -9.74            | 0.00            | -109.54         | 0.00            | 109.54                     | 2,048.92      | 484.00        | 1,215.65         | 1,168.29         | 62.58              | -4.04          | 0.096 |
| 143.03        | -3.35            | -9.51            | 0.00            | -80.05          | 0.00            | 80.05                      | 1,068.58      | 288.00        | 717.29           | 606.93           | 65.15              | -4.07          | 0.136 |
| 145.00        | -3.24            | -9.27            | 0.00            | -61.28          | 0.00            | 61.28                      | 1,057.77      | 283.03        | 692.75           | 590.35           | 66.84              | -4.09          | 0.108 |
| 149.00        | 0.00             | -9.02            | 0.00            | -24.19          | 0.00            | 24.19                      | 1,035.06      | 272.96        | 644.32           | 556.98           | 70.28              | -4.12          | 0.045 |

|  |                                |                             |
|--|--------------------------------|-----------------------------|
| <b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi | 40 mph with 1.00 in Radial Ice | 21 Iterations               |
| Gust Response Factor :1.10             | Ice Dead Load Factor :1.00     |                             |
| Dead Load Factor :1.20                 |                                | Ice Importance Factor :1.00 |
| Wind Load Factor :1.00                 |                                |                             |

Applied Segment Forces Summary

| Seg Elev (ft) | Description     | Shaft Forces |                | Discrete Forces |                    |                   | Linear Forces  |              | Sum of Forces  |              |                |                    |                |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
|               |                 | Wind FX (lb) | Dead Load (lb) | Wind FX (lb)    | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00          |                 | 55.9         | 0.0            |                 |                    |                   |                | 0.0          | 0.0            | 55.9         | 0.0            | 0.0                | 0.0            |
| 5.00          |                 | 110.9        | 1,737.1        |                 |                    |                   |                | 0.0          | 206.5          | 110.9        | 1,943.7        | 0.0                | 0.0            |
| 10.00         |                 | 109.0        | 1,735.6        |                 |                    |                   |                | 0.0          | 206.5          | 109.0        | 1,942.1        | 0.0                | 0.0            |
| 15.00         |                 | 108.6        | 1,716.4        |                 |                    |                   |                | 0.0          | 206.5          | 108.6        | 1,922.9        | 0.0                | 0.0            |
| 20.00         |                 | 111.0        | 1,691.4        |                 |                    |                   |                | 0.0          | 206.5          | 111.0        | 1,897.9        | 0.0                | 0.0            |
| 25.00         |                 | 114.1        | 1,663.5        |                 |                    |                   |                | 0.0          | 206.5          | 114.1        | 1,870.0        | 0.0                | 0.0            |
| 30.00         |                 | 116.1        | 1,633.6        |                 |                    |                   |                | 0.0          | 206.5          | 116.1        | 1,840.2        | 0.0                | 0.0            |
| 35.00         |                 | 117.4        | 1,602.5        |                 |                    |                   |                | 0.0          | 206.5          | 117.4        | 1,809.0        | 0.0                | 0.0            |
| 40.00         |                 | 116.1        | 1,570.4        |                 |                    |                   |                | 0.0          | 206.5          | 116.1        | 1,777.0        | 0.0                | 0.0            |
| 44.83         | Bot - Section 2 | 59.2         | 1,485.4        |                 |                    |                   |                | 0.0          | 199.4          | 59.2         | 1,684.9        | 0.0                | 0.0            |
| 45.00         |                 | 62.2         | 94.4           |                 |                    |                   |                | 0.0          | 7.1            | 62.2         | 101.5          | 0.0                | 0.0            |
| 50.00         |                 | 79.7         | 2,710.0        |                 |                    |                   |                | 0.0          | 206.5          | 79.7         | 2,916.5        | 0.0                | 0.0            |
| 51.63         | Top - Section 1 | 60.0         | 872.2          |                 |                    |                   |                | 0.0          | 67.4           | 60.0         | 939.6          | 0.0                | 0.0            |
| 55.00         |                 | 100.1        | 1,002.9        |                 |                    |                   |                | 0.0          | 139.1          | 100.1        | 1,141.9        | 0.0                | 0.0            |
| 60.00         |                 | 119.0        | 1,459.2        |                 |                    |                   |                | 0.0          | 206.5          | 119.0        | 1,665.7        | 0.0                | 0.0            |
| 65.00         |                 | 118.1        | 1,424.5        |                 |                    |                   |                | 0.0          | 206.5          | 118.1        | 1,631.0        | 0.0                | 0.0            |
| 70.00         |                 | 116.9        | 1,389.6        |                 |                    |                   |                | 0.0          | 206.5          | 116.9        | 1,596.1        | 0.0                | 0.0            |
| 75.00         |                 | 115.6        | 1,354.3        |                 |                    |                   |                | 0.0          | 206.5          | 115.6        | 1,560.9        | 0.0                | 0.0            |
| 80.00         |                 | 114.1        | 1,318.9        |                 |                    |                   |                | 0.0          | 206.5          | 114.1        | 1,525.4        | 0.0                | 0.0            |
| 85.00         |                 | 112.5        | 1,283.2        |                 |                    |                   |                | 0.0          | 206.5          | 112.5        | 1,489.7        | 0.0                | 0.0            |
| 90.00         | Appurtenance(s) | 61.1         | 1,247.3        | 80.6            | 0.0                | 0.0               | 649.9          | 0.0          | 206.5          | 141.7        | 2,103.7        | 0.0                | 0.0            |
| 90.48         | Bot - Section 3 | 55.6         | 117.4          |                 |                    |                   |                | 0.0          | 19.3           | 55.6         | 136.7          | 0.0                | 0.0            |
| 95.00         |                 | 61.2         | 1,816.7        |                 |                    |                   |                | 0.0          | 183.3          | 61.2         | 1,999.9        | 0.0                | 0.0            |
| 95.98         | Top - Section 2 | 54.7         | 389.4          |                 |                    |                   |                | 0.0          | 39.9           | 54.7         | 429.2          | 0.0                | 0.0            |
| 100.00        |                 | 97.5         | 835.0          |                 |                    |                   |                | 0.0          | 162.7          | 97.5         | 997.7          | 0.0                | 0.0            |
| 105.00        |                 | 106.2        | 1,010.5        |                 |                    |                   |                | 0.0          | 202.6          | 106.2        | 1,213.0        | 0.0                | 0.0            |
| 110.00        | Appurtenance(s) | 103.9        | 978.9          | 404.2           | 0.0                | 0.0               | 3,819.7        | 0.0          | 202.6          | 508.2        | 5,001.1        | 0.0                | 0.0            |
| 115.00        |                 | 71.6         | 947.1          |                 |                    |                   |                | 0.0          | 182.3          | 71.6         | 1,129.5        | 0.0                | 0.0            |
| 117.00        | Appurtenance(s) | 50.2         | 371.0          | 36.1            | 0.0                | 0.0               | 398.0          | 0.0          | 72.9           | 86.3         | 841.9          | 0.0                | 0.0            |
| 120.00        |                 | 49.7         | 546.3          |                 |                    |                   |                | 0.0          | 109.4          | 49.7         | 655.8          | 0.0                | 0.0            |
| 122.00        | Appurtenance(s) | 39.3         | 358.2          | 39.4            | 0.0                | 0.0               | 80.7           | 0.0          | 72.9           | 78.7         | 511.9          | 0.0                | 0.0            |
| 124.00        | Appurtenance(s) | 29.2         | 353.1          | 69.4            | 0.0                | 0.0               | 161.0          | 0.0          | 72.1           | 98.6         | 586.2          | 0.0                | 0.0            |
| 125.00        |                 | 57.3         | 174.8          |                 |                    |                   |                | 0.0          | 35.3           | 57.3         | 210.1          | 0.0                | 0.0            |
| 130.00        |                 | 94.0         | 851.2          |                 |                    |                   |                | 0.0          | 176.4          | 94.0         | 1,027.6        | 0.0                | 0.0            |
| 135.00        |                 | 81.8         | 819.0          |                 |                    |                   |                | 0.0          | 176.4          | 81.8         | 995.4          | 0.0                | 0.0            |
| 138.93        | Bot - Section 4 | 45.1         | 622.6          |                 |                    |                   |                | 0.0          | 138.8          | 45.1         | 761.4          | 0.0                | 0.0            |
| 140.00        | Appurtenance(s) | 36.4         | 239.8          | 632.1           | 0.0                | 82.7              | 9,793.9        | 0.0          | 37.6           | 668.5        | 10,071.3       | 0.0                | 0.0            |
| 143.03        | Top - Section 3 | 44.1         | 668.5          |                 |                    |                   |                | 0.0          | 48.8           | 44.1         | 717.3          | 0.0                | 0.0            |
| 145.00        |                 | 51.5         | 212.6          |                 |                    |                   |                | 0.0          | 31.8           | 51.5         | 244.4          | 0.0                | 0.0            |
| 149.00        | Appurtenance(s) | 34.2         | 418.6          | 225.6           | 0.0                | 0.0               | 3,731.9        | 0.0          | 64.5           | 259.8        | 4,215.0        | 0.0                | 0.0            |
| Totals:       |                 |              |                |                 |                    |                   |                |              | 4,728.56       | 65,104.8     | 0.00           | 0.00               |                |



Site Number: 413783

Code: ANSI/TIA-222-H

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Site Name: Kent Pcs CT, CT

Engineering Number: OAA745078\_C3\_06

12/9/2019 3:32:22 PM

Customer: EVERSOURCE ENERGY

Load Case: 1.2D + 1.0Di + 1.0Wi

40 mph with 1.00 in Radial Ice

21 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00          | -73.33           | -5.93            | 0.00            | -652.81         | 0.00            | 652.81                     | 4,482.64      | 1,255.90      | 6,820.01         | 5,554.46         | 0.00               | 0.00           | 0.134 |
| 5.00          | -71.38           | -5.85            | 0.00            | -623.16         | 0.00            | 623.16                     | 4,434.84      | 1,230.72      | 6,549.27         | 5,384.36         | 0.01               | -0.03          | 0.132 |
| 10.00         | -69.44           | -5.78            | 0.00            | -593.89         | 0.00            | 593.89                     | 4,385.31      | 1,205.53      | 6,284.01         | 5,214.59         | 0.06               | -0.06          | 0.130 |
| 15.00         | -67.51           | -5.70            | 0.00            | -565.00         | 0.00            | 565.00                     | 4,334.06      | 1,180.35      | 6,024.24         | 5,045.30         | 0.13               | -0.08          | 0.128 |
| 20.00         | -65.61           | -5.62            | 0.00            | -536.50         | 0.00            | 536.50                     | 4,281.09      | 1,155.17      | 5,769.95         | 4,876.60         | 0.24               | -0.11          | 0.125 |
| 25.00         | -63.74           | -5.53            | 0.00            | -508.40         | 0.00            | 508.40                     | 4,226.40      | 1,129.98      | 5,521.14         | 4,708.64         | 0.37               | -0.14          | 0.123 |
| 30.00         | -61.90           | -5.45            | 0.00            | -480.73         | 0.00            | 480.73                     | 4,169.98      | 1,104.80      | 5,277.81         | 4,541.54         | 0.54               | -0.17          | 0.121 |
| 35.00         | -60.09           | -5.35            | 0.00            | -453.50         | 0.00            | 453.50                     | 4,111.84      | 1,079.62      | 5,039.97         | 4,375.42         | 0.73               | -0.20          | 0.118 |
| 40.00         | -58.31           | -5.26            | 0.00            | -426.73         | 0.00            | 426.73                     | 4,051.98      | 1,054.43      | 4,807.61         | 4,210.43         | 0.96               | -0.23          | 0.116 |
| 44.83         | -56.62           | -5.21            | 0.00            | -401.34         | 0.00            | 401.34                     | 3,992.55      | 1,030.12      | 4,588.45         | 4,052.29         | 1.21               | -0.26          | 0.113 |
| 45.00         | -56.52           | -5.16            | 0.00            | -400.44         | 0.00            | 400.44                     | 3,990.40      | 1,029.25      | 4,580.74         | 4,046.68         | 1.22               | -0.26          | 0.113 |
| 50.00         | -53.60           | -5.09            | 0.00            | -374.63         | 0.00            | 374.63                     | 3,927.10      | 1,004.07      | 4,359.35         | 3,884.30         | 1.51               | -0.29          | 0.110 |
| 51.63         | -52.66           | -5.04            | 0.00            | -366.32         | 0.00            | 366.32                     | 3,945.98      | 1,011.51      | 4,424.20         | 3,932.14         | 1.61               | -0.30          | 0.107 |
| 55.00         | -51.52           | -4.95            | 0.00            | -349.36         | 0.00            | 349.36                     | 3,902.73      | 994.55        | 4,277.11         | 3,823.33         | 1.84               | -0.32          | 0.105 |
| 60.00         | -49.85           | -4.85            | 0.00            | -324.59         | 0.00            | 324.59                     | 3,837.05      | 969.37        | 4,063.28         | 3,663.06         | 2.19               | -0.35          | 0.102 |
| 65.00         | -48.22           | -4.75            | 0.00            | -300.34         | 0.00            | 300.34                     | 3,769.65      | 944.18        | 3,854.92         | 3,504.48         | 2.58               | -0.38          | 0.099 |
| 70.00         | -46.62           | -4.64            | 0.00            | -276.61         | 0.00            | 276.61                     | 3,700.53      | 919.00        | 3,652.05         | 3,347.71         | 3.00               | -0.41          | 0.095 |
| 75.00         | -45.06           | -4.54            | 0.00            | -253.39         | 0.00            | 253.39                     | 3,629.69      | 893.82        | 3,454.67         | 3,192.88         | 3.45               | -0.44          | 0.092 |
| 80.00         | -43.53           | -4.43            | 0.00            | -230.70         | 0.00            | 230.70                     | 3,557.12      | 868.63        | 3,262.77         | 3,040.12         | 3.92               | -0.47          | 0.088 |
| 85.00         | -42.04           | -4.33            | 0.00            | -208.53         | 0.00            | 208.53                     | 3,482.83      | 843.45        | 3,076.35         | 2,889.56         | 4.43               | -0.50          | 0.084 |
| 90.00         | -39.94           | -4.18            | 0.00            | -186.88         | 0.00            | 186.88                     | 3,406.82      | 818.27        | 2,895.41         | 2,741.33         | 4.97               | -0.53          | 0.080 |
| 90.48         | -39.80           | -4.13            | 0.00            | -184.89         | 0.00            | 184.89                     | 3,399.49      | 815.87        | 2,878.45         | 2,727.33         | 5.03               | -0.53          | 0.080 |
| 95.00         | -37.80           | -4.06            | 0.00            | -166.19         | 0.00            | 166.19                     | 3,329.09      | 793.08        | 2,719.96         | 2,595.56         | 5.54               | -0.56          | 0.075 |
| 95.98         | -37.37           | -4.01            | 0.00            | -162.19         | 0.00            | 162.19                     | 2,652.87      | 668.74        | 2,320.58         | 2,096.47         | 5.66               | -0.56          | 0.091 |
| 100.00        | -36.37           | -3.92            | 0.00            | -146.07         | 0.00            | 146.07                     | 2,607.49      | 651.89        | 2,205.09         | 2,008.26         | 6.14               | -0.58          | 0.087 |
| 105.00        | -35.16           | -3.82            | 0.00            | -126.46         | 0.00            | 126.46                     | 2,549.43      | 630.90        | 2,065.42         | 1,899.81         | 6.77               | -0.61          | 0.080 |
| 110.00        | -30.16           | -3.27            | 0.00            | -107.35         | 0.00            | 107.35                     | 2,489.65      | 609.91        | 1,930.32         | 1,793.02         | 7.43               | -0.64          | 0.072 |
| 115.00        | -29.03           | -3.20            | 0.00            | -90.99          | 0.00            | 90.99                      | 2,428.15      | 588.93        | 1,799.78         | 1,688.03         | 8.12               | -0.67          | 0.066 |
| 117.00        | -28.19           | -3.11            | 0.00            | -84.60          | 0.00            | 84.60                      | 2,403.07      | 580.53        | 1,748.85         | 1,646.56         | 8.40               | -0.68          | 0.063 |
| 120.00        | -27.53           | -3.06            | 0.00            | -75.28          | 0.00            | 75.28                      | 2,364.93      | 567.94        | 1,673.82         | 1,584.96         | 8.83               | -0.69          | 0.059 |
| 122.00        | -27.02           | -2.97            | 0.00            | -69.17          | 0.00            | 69.17                      | 2,339.16      | 559.55        | 1,624.71         | 1,544.29         | 9.12               | -0.70          | 0.056 |
| 124.00        | -26.44           | -2.87            | 0.00            | -63.22          | 0.00            | 63.22                      | 2,313.11      | 551.15        | 1,576.33         | 1,503.97         | 9.42               | -0.71          | 0.053 |
| 125.00        | -26.23           | -2.82            | 0.00            | -60.35          | 0.00            | 60.35                      | 2,299.99      | 546.96        | 1,552.42         | 1,483.93         | 9.57               | -0.72          | 0.052 |
| 130.00        | -25.20           | -2.72            | 0.00            | -46.26          | 0.00            | 46.26                      | 2,226.60      | 525.97        | 1,435.59         | 1,380.92         | 10.33              | -0.74          | 0.045 |
| 135.00        | -24.20           | -2.63            | 0.00            | -32.66          | 0.00            | 32.66                      | 2,137.76      | 504.98        | 1,323.34         | 1,272.38         | 11.11              | -0.75          | 0.037 |
| 138.93        | -23.44           | -2.58            | 0.00            | -22.32          | 0.00            | 22.32                      | 2,067.85      | 488.47        | 1,238.21         | 1,190.09         | 11.73              | -0.76          | 0.030 |
| 140.00        | -13.38           | -1.78            | 0.00            | -19.49          | 0.00            | 19.49                      | 2,048.92      | 484.00        | 1,215.65         | 1,168.29         | 11.90              | -0.76          | 0.023 |
| 143.03        | -12.66           | -1.72            | 0.00            | -14.12          | 0.00            | 14.12                      | 1,068.58      | 288.00        | 717.29           | 606.93           | 12.39              | -0.77          | 0.035 |
| 145.00        | -12.42           | -1.67            | 0.00            | -10.72          | 0.00            | 10.72                      | 1,057.77      | 283.03        | 692.75           | 590.35           | 12.71              | -0.77          | 0.030 |
| 149.00        | 0.00             | -1.50            | 0.00            | -4.04           | 0.00            | 4.04                       | 1,035.06      | 272.96        | 644.32           | 556.98           | 13.36              | -0.78          | 0.007 |

|                               |                              |                      |
|-------------------------------|------------------------------|----------------------|
| <b>Load Case: 1.0D + 1.0W</b> | <b>Serviceability 60 mph</b> | <b>21 Iterations</b> |
| Gust Response Factor :1.10    |                              |                      |
| Dead Load Factor :1.00        |                              |                      |
| Wind Load Factor :1.00        |                              |                      |

Applied Segment Forces Summary

| Seg Elev (ft) | Description     | Shaft Forces |                | Discrete Forces |                    |                   | Linear Forces  |              | Sum of Forces  |              |                |                    |                |
|---------------|-----------------|--------------|----------------|-----------------|--------------------|-------------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|
|               |                 | Wind FX (lb) | Dead Load (lb) | Wind FX (lb)    | Torsion MY (lb-ft) | Moment MZ (lb-ft) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Wind FX (lb) | Dead Load (lb) | Torsion MY (lb-ft) | Moment MZ (lb) |
| 0.00          |                 | 66.8         | 0.0            |                 |                    |                   |                | 0.0          | 0.0            | 66.8         | 0.0            | 0.0                | 0.0            |
| 5.00          |                 | 132.3        | 1,205.3        |                 |                    |                   |                | 0.0          | 172.1          | 132.3        | 1,377.4        | 0.0                | 0.0            |
| 10.00         |                 | 129.6        | 1,180.9        |                 |                    |                   |                | 0.0          | 172.1          | 129.6        | 1,353.0        | 0.0                | 0.0            |
| 15.00         |                 | 128.9        | 1,156.5        |                 |                    |                   |                | 0.0          | 172.1          | 128.9        | 1,328.6        | 0.0                | 0.0            |
| 20.00         |                 | 131.6        | 1,132.1        |                 |                    |                   |                | 0.0          | 172.1          | 131.6        | 1,304.2        | 0.0                | 0.0            |
| 25.00         |                 | 135.0        | 1,107.7        |                 |                    |                   |                | 0.0          | 172.1          | 135.0        | 1,279.8        | 0.0                | 0.0            |
| 30.00         |                 | 137.2        | 1,083.3        |                 |                    |                   |                | 0.0          | 172.1          | 137.2        | 1,255.4        | 0.0                | 0.0            |
| 35.00         |                 | 138.5        | 1,058.8        |                 |                    |                   |                | 0.0          | 172.1          | 138.5        | 1,230.9        | 0.0                | 0.0            |
| 40.00         |                 | 136.8        | 1,034.4        |                 |                    |                   |                | 0.0          | 172.1          | 136.8        | 1,206.5        | 0.0                | 0.0            |
| 44.83         | Bot - Section 2 | 69.7         | 975.7          |                 |                    |                   |                | 0.0          | 166.2          | 69.7         | 1,141.9        | 0.0                | 0.0            |
| 45.00         |                 | 73.1         | 69.2           |                 |                    |                   |                | 0.0          | 5.9            | 73.1         | 75.1           | 0.0                | 0.0            |
| 50.00         |                 | 93.7         | 1,986.4        |                 |                    |                   |                | 0.0          | 172.1          | 93.7         | 2,158.5        | 0.0                | 0.0            |
| 51.63         | Top - Section 1 | 70.5         | 638.1          |                 |                    |                   |                | 0.0          | 56.2           | 70.5         | 694.3          | 0.0                | 0.0            |
| 55.00         |                 | 117.4        | 654.8          |                 |                    |                   |                | 0.0          | 115.9          | 117.4        | 770.7          | 0.0                | 0.0            |
| 60.00         |                 | 139.5        | 952.0          |                 |                    |                   |                | 0.0          | 172.1          | 139.5        | 1,124.1        | 0.0                | 0.0            |
| 65.00         |                 | 138.2        | 927.5          |                 |                    |                   |                | 0.0          | 172.1          | 138.2        | 1,099.6        | 0.0                | 0.0            |
| 70.00         |                 | 136.7        | 903.1          |                 |                    |                   |                | 0.0          | 172.1          | 136.7        | 1,075.2        | 0.0                | 0.0            |
| 75.00         |                 | 134.9        | 878.7          |                 |                    |                   |                | 0.0          | 172.1          | 134.9        | 1,050.8        | 0.0                | 0.0            |
| 80.00         |                 | 132.9        | 854.3          |                 |                    |                   |                | 0.0          | 172.1          | 132.9        | 1,026.4        | 0.0                | 0.0            |
| 85.00         |                 | 130.8        | 829.9          |                 |                    |                   |                | 0.0          | 172.1          | 130.8        | 1,002.0        | 0.0                | 0.0            |
| 90.00         | Appurtenance(s) | 70.9         | 805.5          | 109.2           | 0.0                | 0.0               | 227.5          | 0.0          | 172.1          | 180.1        | 1,205.1        | 0.0                | 0.0            |
| 90.48         | Bot - Section 3 | 64.5         | 75.5           |                 |                    |                   |                | 0.0          | 16.1           | 64.5         | 91.6           | 0.0                | 0.0            |
| 95.00         |                 | 71.0         | 1,304.0        |                 |                    |                   |                | 0.0          | 152.7          | 71.0         | 1,456.7        | 0.0                | 0.0            |
| 95.98         | Top - Section 2 | 63.4         | 278.9          |                 |                    |                   |                | 0.0          | 33.2           | 63.4         | 312.2          | 0.0                | 0.0            |
| 100.00        |                 | 112.8        | 514.1          |                 |                    |                   |                | 0.0          | 135.6          | 112.8        | 649.7          | 0.0                | 0.0            |
| 105.00        |                 | 122.7        | 621.8          |                 |                    |                   |                | 0.0          | 168.8          | 122.7        | 790.6          | 0.0                | 0.0            |
| 110.00        | Appurtenance(s) | 119.8        | 601.5          | 625.1           | 0.0                | 0.0               | 1,479.7        | 0.0          | 168.8          | 744.9        | 2,250.0        | 0.0                | 0.0            |
| 115.00        |                 | 82.4         | 581.1          |                 |                    |                   |                | 0.0          | 152.0          | 82.4         | 733.1          | 0.0                | 0.0            |
| 117.00        | Appurtenance(s) | 57.6         | 226.7          | 50.0            | 0.0                | 0.0               | 150.0          | 0.0          | 60.8           | 107.6        | 437.5          | 0.0                | 0.0            |
| 120.00        |                 | 57.0         | 334.0          |                 |                    |                   |                | 0.0          | 91.2           | 57.0         | 425.2          | 0.0                | 0.0            |
| 122.00        | Appurtenance(s) | 45.0         | 218.6          | 33.4            | 0.0                | 0.0               | 10.0           | 0.0          | 60.8           | 78.4         | 289.4          | 0.0                | 0.0            |
| 124.00        | Appurtenance(s) | 33.4         | 215.4          | 50.6            | 0.0                | 0.0               | 32.0           | 0.0          | 60.1           | 84.1         | 307.5          | 0.0                | 0.0            |
| 125.00        |                 | 65.5         | 106.5          |                 |                    |                   |                | 0.0          | 29.4           | 65.5         | 135.9          | 0.0                | 0.0            |
| 130.00        |                 | 107.1        | 520.1          |                 |                    |                   |                | 0.0          | 147.0          | 107.1        | 667.1          | 0.0                | 0.0            |
| 135.00        |                 | 93.0         | 499.7          |                 |                    |                   |                | 0.0          | 147.0          | 93.0         | 646.7          | 0.0                | 0.0            |
| 138.93        | Bot - Section 4 | 51.1         | 379.0          |                 |                    |                   |                | 0.0          | 115.7          | 51.1         | 494.7          | 0.0                | 0.0            |
| 140.00        | Appurtenance(s) | 41.3         | 161.7          | 933.8           | 0.0                | 113.8             | 3,293.6        | 0.0          | 31.3           | 975.1        | 3,486.7        | 0.0                | 0.0            |
| 143.03        | Top - Section 3 | 49.9         | 451.5          |                 |                    |                   |                | 0.0          | 40.6           | 49.9         | 492.1          | 0.0                | 0.0            |
| 145.00        |                 | 58.1         | 109.3          |                 |                    |                   |                | 0.0          | 26.5           | 58.1         | 135.8          | 0.0                | 0.0            |
| 149.00        | Appurtenance(s) | 38.6         | 215.6          | 305.2           | 0.0                | 0.0               | 1,500.0        | 0.0          | 53.7           | 343.9        | 1,769.3        | 0.0                | 0.0            |
| Totals:       |                 |              |                |                 |                    |                   |                |              |                | 5,886.67     | 38,331.1       | 0.00               | 0.00           |

Load Case: 1.0D + 1.0W

Serviceability 60 mph

21 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00          | -40.89           | -7.72            | 0.00            | -851.03         | 0.00            | 851.03                     | 4,482.64      | 1,255.90      | 6,820.01         | 5,554.46         | 0.00               | 0.00           | 0.162 |
| 5.00          | -39.51           | -7.62            | 0.00            | -812.42         | 0.00            | 812.42                     | 4,434.84      | 1,230.72      | 6,549.27         | 5,384.36         | 0.02               | -0.04          | 0.160 |
| 10.00         | -38.15           | -7.51            | 0.00            | -774.34         | 0.00            | 774.34                     | 4,385.31      | 1,205.53      | 6,284.01         | 5,214.59         | 0.08               | -0.07          | 0.157 |
| 15.00         | -36.82           | -7.40            | 0.00            | -736.80         | 0.00            | 736.80                     | 4,334.06      | 1,180.35      | 6,024.24         | 5,045.30         | 0.17               | -0.11          | 0.155 |
| 20.00         | -35.51           | -7.29            | 0.00            | -699.79         | 0.00            | 699.79                     | 4,281.09      | 1,155.17      | 5,769.95         | 4,876.60         | 0.31               | -0.15          | 0.152 |
| 25.00         | -34.22           | -7.18            | 0.00            | -663.34         | 0.00            | 663.34                     | 4,226.40      | 1,129.98      | 5,521.14         | 4,708.64         | 0.48               | -0.19          | 0.149 |
| 30.00         | -32.96           | -7.06            | 0.00            | -627.46         | 0.00            | 627.46                     | 4,169.98      | 1,104.80      | 5,277.81         | 4,541.54         | 0.70               | -0.22          | 0.146 |
| 35.00         | -31.73           | -6.93            | 0.00            | -592.19         | 0.00            | 592.19                     | 4,111.84      | 1,079.62      | 5,039.97         | 4,375.42         | 0.96               | -0.26          | 0.143 |
| 40.00         | -30.52           | -6.81            | 0.00            | -557.52         | 0.00            | 557.52                     | 4,051.98      | 1,054.43      | 4,807.61         | 4,210.43         | 1.25               | -0.30          | 0.140 |
| 44.83         | -29.37           | -6.75            | 0.00            | -524.63         | 0.00            | 524.63                     | 3,992.55      | 1,030.12      | 4,588.45         | 4,052.29         | 1.58               | -0.34          | 0.137 |
| 45.00         | -29.30           | -6.68            | 0.00            | -523.47         | 0.00            | 523.47                     | 3,990.40      | 1,029.25      | 4,580.74         | 4,046.68         | 1.59               | -0.34          | 0.137 |
| 50.00         | -27.14           | -6.59            | 0.00            | -490.06         | 0.00            | 490.06                     | 3,927.10      | 1,004.07      | 4,359.35         | 3,884.30         | 1.97               | -0.38          | 0.133 |
| 51.63         | -26.44           | -6.52            | 0.00            | -479.31         | 0.00            | 479.31                     | 3,945.98      | 1,011.51      | 4,424.20         | 3,932.14         | 2.11               | -0.40          | 0.129 |
| 55.00         | -25.67           | -6.41            | 0.00            | -457.34         | 0.00            | 457.34                     | 3,902.73      | 994.55        | 4,277.11         | 3,823.33         | 2.40               | -0.42          | 0.126 |
| 60.00         | -24.54           | -6.28            | 0.00            | -425.27         | 0.00            | 425.27                     | 3,837.05      | 969.37        | 4,063.28         | 3,663.06         | 2.86               | -0.46          | 0.123 |
| 65.00         | -23.44           | -6.15            | 0.00            | -393.86         | 0.00            | 393.86                     | 3,769.65      | 944.18        | 3,854.92         | 3,504.48         | 3.37               | -0.50          | 0.119 |
| 70.00         | -22.36           | -6.02            | 0.00            | -363.11         | 0.00            | 363.11                     | 3,700.53      | 919.00        | 3,652.05         | 3,347.71         | 3.91               | -0.54          | 0.115 |
| 75.00         | -21.30           | -5.89            | 0.00            | -333.01         | 0.00            | 333.01                     | 3,629.69      | 893.82        | 3,454.67         | 3,192.88         | 4.50               | -0.58          | 0.110 |
| 80.00         | -20.28           | -5.76            | 0.00            | -303.57         | 0.00            | 303.57                     | 3,557.12      | 868.63        | 3,262.77         | 3,040.12         | 5.12               | -0.62          | 0.106 |
| 85.00         | -19.27           | -5.63            | 0.00            | -274.78         | 0.00            | 274.78                     | 3,482.83      | 843.45        | 3,076.35         | 2,889.56         | 5.79               | -0.66          | 0.101 |
| 90.00         | -18.07           | -5.44            | 0.00            | -246.63         | 0.00            | 246.63                     | 3,406.82      | 818.27        | 2,895.41         | 2,741.33         | 6.50               | -0.69          | 0.095 |
| 90.48         | -17.97           | -5.38            | 0.00            | -244.04         | 0.00            | 244.04                     | 3,399.49      | 815.87        | 2,878.45         | 2,727.33         | 6.57               | -0.70          | 0.095 |
| 95.00         | -16.52           | -5.30            | 0.00            | -219.69         | 0.00            | 219.69                     | 3,329.09      | 793.08        | 2,719.96         | 2,595.56         | 7.24               | -0.73          | 0.090 |
| 95.98         | -16.20           | -5.24            | 0.00            | -214.48         | 0.00            | 214.48                     | 2,652.87      | 668.74        | 2,320.58         | 2,096.47         | 7.39               | -0.74          | 0.108 |
| 100.00        | -15.55           | -5.12            | 0.00            | -193.45         | 0.00            | 193.45                     | 2,607.49      | 651.89        | 2,205.09         | 2,008.26         | 8.03               | -0.77          | 0.102 |
| 105.00        | -14.76           | -5.00            | 0.00            | -167.83         | 0.00            | 167.83                     | 2,549.43      | 630.90        | 2,065.42         | 1,899.81         | 8.85               | -0.80          | 0.094 |
| 110.00        | -12.52           | -4.23            | 0.00            | -142.82         | 0.00            | 142.82                     | 2,489.65      | 609.91        | 1,930.32         | 1,793.02         | 9.71               | -0.84          | 0.085 |
| 115.00        | -11.79           | -4.14            | 0.00            | -121.67         | 0.00            | 121.67                     | 2,428.15      | 588.93        | 1,799.78         | 1,688.03         | 10.61              | -0.88          | 0.077 |
| 117.00        | -11.35           | -4.03            | 0.00            | -113.38         | 0.00            | 113.38                     | 2,403.07      | 580.53        | 1,748.85         | 1,646.56         | 10.98              | -0.89          | 0.074 |
| 120.00        | -10.92           | -3.97            | 0.00            | -101.29         | 0.00            | 101.29                     | 2,364.93      | 567.94        | 1,673.82         | 1,584.96         | 11.55              | -0.91          | 0.069 |
| 122.00        | -10.63           | -3.89            | 0.00            | -93.34          | 0.00            | 93.34                      | 2,339.16      | 559.55        | 1,624.71         | 1,544.29         | 11.93              | -0.92          | 0.065 |
| 124.00        | -10.33           | -3.80            | 0.00            | -85.56          | 0.00            | 85.56                      | 2,313.11      | 551.15        | 1,576.33         | 1,503.97         | 12.32              | -0.94          | 0.061 |
| 125.00        | -10.19           | -3.74            | 0.00            | -81.76          | 0.00            | 81.76                      | 2,299.99      | 546.96        | 1,552.42         | 1,483.93         | 12.52              | -0.94          | 0.060 |
| 130.00        | -9.52            | -3.62            | 0.00            | -63.06          | 0.00            | 63.06                      | 2,226.60      | 525.97        | 1,435.59         | 1,380.92         | 13.52              | -0.97          | 0.050 |
| 135.00        | -8.88            | -3.52            | 0.00            | -44.94          | 0.00            | 44.94                      | 2,137.76      | 504.98        | 1,323.34         | 1,272.38         | 14.55              | -0.99          | 0.040 |
| 138.93        | -8.38            | -3.46            | 0.00            | -31.08          | 0.00            | 31.08                      | 2,067.85      | 488.47        | 1,238.21         | 1,190.09         | 15.37              | -1.00          | 0.030 |
| 140.00        | -4.92            | -2.43            | 0.00            | -27.27          | 0.00            | 27.27                      | 2,048.92      | 484.00        | 1,215.65         | 1,168.29         | 15.59              | -1.01          | 0.026 |
| 143.03        | -4.42            | -2.37            | 0.00            | -19.92          | 0.00            | 19.92                      | 1,068.58      | 288.00        | 717.29           | 606.93           | 16.23              | -1.01          | 0.037 |
| 145.00        | -4.29            | -2.31            | 0.00            | -15.24          | 0.00            | 15.24                      | 1,057.77      | 283.03        | 692.75           | 590.35           | 16.65              | -1.02          | 0.030 |
| 149.00        | 0.00             | -2.23            | 0.00            | -6.00           | 0.00            | 6.00                       | 1,035.06      | 272.96        | 644.32           | 556.98           | 17.51              | -1.03          | 0.011 |

### Equivalent Lateral Forces Method Analysis

|  |         |
|--|---------|
| Spectral Response Acceleration for Short Period ( $S_s$ ):               | 0.18    |
| Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):        | 0.05    |
| Long-Period Transition Period ( $T_L$ ):                                 | 6       |
| Importance Factor ( $I_E$ ):   | 1.00    |
| Site Coefficient $F_a$ :   | 1.60    |
| Site Coefficient $F_v$ :   | 2.40    |
| Response Modification Coefficient (R):                                   | 1.50    |
| Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):      | 0.20    |
| Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ): | 0.09    |
| Seismic Response Coefficient ( $C_s$ ):                                  | 0.03    |
| Upper Limit $C_s$  | 0.03    |
| Lower Limit $C_s$  | 0.03    |
| Period based on Rayleigh Method (sec):                                   | 2.06    |
| Redundancy Factor ( $\rho$ ):  | 1.00    |
| Seismic Force Distribution Exponent (k):                                 | 1.78    |
| Total Unfactored Dead Load:  | 40.89 k |
| Seismic Base Shear (E):  | 1.23 k  |

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---------|------------------------|-------------|---------------|----------|-----------------------|---------------------|
| 39      | 147.00                 | 269         | 1,934         | 0.016    | 19                    | 334                 |
| 38      | 144.01                 | 136         | 940           | 0.008    | 9                     | 168                 |
| 37      | 141.51                 | 492         | 3,303         | 0.027    | 33                    | 610                 |
| 36      | 139.47                 | 193         | 1,263         | 0.010    | 12                    | 239                 |
| 35      | 136.97                 | 495         | 3,133         | 0.025    | 31                    | 613                 |
| 34      | 132.50                 | 647         | 3,861         | 0.031    | 38                    | 801                 |
| 33      | 127.50                 | 667         | 3,719         | 0.030    | 37                    | 827                 |
| 32      | 124.50                 | 136         | 726           | 0.006    | 7                     | 168                 |
| 31      | 123.00                 | 275         | 1,441         | 0.012    | 14                    | 341                 |
| 30      | 121.00                 | 279         | 1,419         | 0.011    | 14                    | 346                 |
| 29      | 118.50                 | 425         | 2,081         | 0.017    | 20                    | 527                 |
| 28      | 116.00                 | 288         | 1,355         | 0.011    | 13                    | 356                 |
| 27      | 112.50                 | 733         | 3,271         | 0.026    | 32                    | 908                 |
| 26      | 107.50                 | 770         | 3,170         | 0.025    | 31                    | 955                 |
| 25      | 102.50                 | 791         | 2,989         | 0.024    | 29                    | 980                 |
| 24      | 97.99                  | 650         | 2,268         | 0.018    | 22                    | 805                 |
| 23      | 95.49                  | 312         | 1,041         | 0.008    | 10                    | 387                 |
| 22      | 92.74                  | 1,457       | 4,610         | 0.037    | 45                    | 1,805               |
| 21      | 90.24                  | 92          | 276           | 0.002    | 3                     | 113                 |
| 20      | 87.50                  | 978         | 2,789         | 0.022    | 27                    | 1,211               |
| 19      | 82.50                  | 1,002       | 2,575         | 0.021    | 25                    | 1,242               |
| 18      | 77.50                  | 1,026       | 2,360         | 0.019    | 23                    | 1,272               |
| 17      | 72.50                  | 1,051       | 2,146         | 0.017    | 21                    | 1,302               |
| 16      | 67.50                  | 1,075       | 1,933         | 0.016    | 19                    | 1,332               |
| 15      | 62.50                  | 1,100       | 1,724         | 0.014    | 17                    | 1,363               |

|                      |        |        |         |       |       |        |
|----------------------|--------|--------|---------|-------|-------|--------|
| 14                   | 57.50  | 1,124  | 1,520   | 0.012 | 15    | 1,393  |
| 13                   | 53.32  | 771    | 911     | 0.007 | 9     | 955    |
| 12                   | 50.82  | 694    | 753     | 0.006 | 7     | 860    |
| 11                   | 47.50  | 2,158  | 2,077   | 0.017 | 20    | 2,675  |
| 10                   | 44.91  | 75     | 65      | 0.001 | 1     | 93     |
| 9                    | 42.41  | 1,142  | 898     | 0.007 | 9     | 1,415  |
| 8                    | 37.50  | 1,207  | 762     | 0.006 | 8     | 1,495  |
| 7                    | 32.50  | 1,231  | 603     | 0.005 | 6     | 1,525  |
| 6                    | 27.50  | 1,255  | 457     | 0.004 | 4     | 1,556  |
| 5                    | 22.50  | 1,280  | 326     | 0.003 | 3     | 1,586  |
| 4                    | 17.50  | 1,304  | 212     | 0.002 | 2     | 1,616  |
| 3                    | 12.50  | 1,329  | 119     | 0.001 | 1     | 1,646  |
| 2                    | 7.50   | 1,353  | 49      | 0.000 | 0     | 1,677  |
| 1                    | 2.50   | 1,377  | 7       | 0.000 | 0     | 1,707  |
| Generic 3' Yagi      | 149.00 | 10     | 74      | 0.001 | 1     | 12     |
| RFS Celwave PD220    | 149.00 | 50     | 368     | 0.003 | 4     | 62     |
| Samsung 700+850MHZ D | 149.00 | 246    | 1,810   | 0.015 | 18    | 305    |
| Samsung PCS/AWS Dual | 149.00 | 253    | 1,863   | 0.015 | 18    | 314    |
| Raycap RVZDC-6627-PF | 149.00 | 32     | 235     | 0.002 | 2     | 40     |
| Commscope NHH-65B-R2 | 149.00 | 262    | 1,929   | 0.015 | 19    | 325    |
| Antel LPA-80080/6CF  | 149.00 | 126    | 927     | 0.007 | 9     | 156    |
| VZW Unused Reserve ( | 149.00 | 1,581  | 11,628  | 0.093 | 114   | 1,959  |
| Flat Low Profile Pla | 149.00 | 1,500  | 11,035  | 0.089 | 109   | 1,859  |
| Andrew ABT-DFDM-ADB  | 140.00 | 1      | 7       | 0.000 | 0     | 1      |
| Powerwave Allgon TT1 | 140.00 | 96     | 632     | 0.005 | 6     | 119    |
| Powerwave Allgon TT0 | 140.00 | 66     | 435     | 0.003 | 4     | 82     |
| Raycap DC6-48-60-18- | 140.00 | 20     | 132     | 0.001 | 1     | 25     |
| Ericsson RRUS A2 Mod | 140.00 | 64     | 419     | 0.003 | 4     | 79     |
| Ericsson RRUS 4449 B | 140.00 | 213    | 1,403   | 0.011 | 14    | 264    |
| Ericsson RRUS 4478 B | 140.00 | 178    | 1,173   | 0.009 | 12    | 221    |
| Raycap DC6-48-60-18- | 140.00 | 16     | 105     | 0.001 | 1     | 20     |
| Ericsson RRUS 32 B2  | 140.00 | 159    | 1,047   | 0.008 | 10    | 197    |
| Andrew SBNHH-1D65A ( | 140.00 | 67     | 441     | 0.004 | 4     | 83     |
| Powerwave Allgon P90 | 140.00 | 159    | 1,047   | 0.008 | 10    | 197    |
| CCI DMP65R-BU4D      | 140.00 | 204    | 1,341   | 0.011 | 13    | 252    |
| CCI HPA-65R-BUU-H6   | 140.00 | 51     | 336     | 0.003 | 3     | 63     |
| Round Platform w/ Ha | 140.00 | 2,000  | 13,170  | 0.106 | 130   | 2,479  |
| Decibel DB222        | 124.00 | 32     | 170     | 0.001 | 2     | 40     |
| Generic 3' Yagi      | 122.00 | 10     | 52      | 0.000 | 1     | 12     |
| Stand Off            | 117.00 | 150    | 718     | 0.006 | 7     | 186    |
| Symmetricom 58532A   | 110.00 | 0      | 2       | 0.000 | 0     | 0      |
| Ericsson RRUS 11 B4  | 110.00 | 152    | 652     | 0.005 | 6     | 188    |
| Ericsson RRUS 11 B12 | 110.00 | 152    | 652     | 0.005 | 6     | 188    |
| Ericsson RRUS 11 B2  | 110.00 | 152    | 652     | 0.005 | 6     | 188    |
| RFS APX16DWV-16DWVS- | 110.00 | 122    | 523     | 0.004 | 5     | 151    |
| Round T-Arm          | 110.00 | 750    | 3,216   | 0.026 | 32    | 929    |
| Commscope LNX-6515DS | 110.00 | 151    | 647     | 0.005 | 6     | 187    |
| dbSpectra DS2C00F36D | 90.00  | 40     | 120     | 0.001 | 1     | 50     |
| Generic Flat Side Ar | 90.00  | 188    | 563     | 0.005 | 6     | 232    |
|                      |        | 40,891 | 124,611 | 1.000 | 1,227 | 50,674 |

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

| Segment | Height Above Base (ft) | Weight (lb) | W <sub>z</sub> (lb-ft) | C <sub>vx</sub> | Horizontal Force (lb) | Vertical Force (lb) |
|---------|------------------------|-------------|------------------------|-----------------|-----------------------|---------------------|
| 39      | 147.00                 | 269         | 1,934                  | 0.016           | 19                    | 232                 |
| 38      | 144.01                 | 136         | 940                    | 0.008           | 9                     | 117                 |
| 37      | 141.51                 | 492         | 3,303                  | 0.027           | 33                    | 424                 |
| 36      | 139.47                 | 193         | 1,263                  | 0.010           | 12                    | 166                 |
| 35      | 136.97                 | 495         | 3,133                  | 0.025           | 31                    | 426                 |
| 34      | 132.50                 | 647         | 3,861                  | 0.031           | 38                    | 557                 |

|                      |        |       |        |       |     |       |
|----------------------|--------|-------|--------|-------|-----|-------|
| 33                   | 127.50 | 667   | 3,719  | 0.030 | 37  | 574   |
| 32                   | 124.50 | 136   | 726    | 0.006 | 7   | 117   |
| 31                   | 123.00 | 275   | 1,441  | 0.012 | 14  | 237   |
| 30                   | 121.00 | 279   | 1,419  | 0.011 | 14  | 240   |
| 29                   | 118.50 | 425   | 2,081  | 0.017 | 20  | 366   |
| 28                   | 116.00 | 288   | 1,355  | 0.011 | 13  | 247   |
| 27                   | 112.50 | 733   | 3,271  | 0.026 | 32  | 631   |
| 26                   | 107.50 | 770   | 3,170  | 0.025 | 31  | 663   |
| 25                   | 102.50 | 791   | 2,989  | 0.024 | 29  | 681   |
| 24                   | 97.99  | 650   | 2,268  | 0.018 | 22  | 559   |
| 23                   | 95.49  | 312   | 1,041  | 0.008 | 10  | 269   |
| 22                   | 92.74  | 1,457 | 4,610  | 0.037 | 45  | 1,254 |
| 21                   | 90.24  | 92    | 276    | 0.002 | 3   | 79    |
| 20                   | 87.50  | 978   | 2,789  | 0.022 | 27  | 841   |
| 19                   | 82.50  | 1,002 | 2,575  | 0.021 | 25  | 862   |
| 18                   | 77.50  | 1,026 | 2,360  | 0.019 | 23  | 883   |
| 17                   | 72.50  | 1,051 | 2,146  | 0.017 | 21  | 904   |
| 16                   | 67.50  | 1,075 | 1,933  | 0.016 | 19  | 926   |
| 15                   | 62.50  | 1,100 | 1,724  | 0.014 | 17  | 947   |
| 14                   | 57.50  | 1,124 | 1,520  | 0.012 | 15  | 968   |
| 13                   | 53.32  | 771   | 911    | 0.007 | 9   | 663   |
| 12                   | 50.82  | 694   | 753    | 0.006 | 7   | 598   |
| 11                   | 47.50  | 2,158 | 2,077  | 0.017 | 20  | 1,858 |
| 10                   | 44.91  | 75    | 65     | 0.001 | 1   | 65    |
| 9                    | 42.41  | 1,142 | 898    | 0.007 | 9   | 983   |
| 8                    | 37.50  | 1,207 | 762    | 0.006 | 8   | 1,039 |
| 7                    | 32.50  | 1,231 | 603    | 0.005 | 6   | 1,060 |
| 6                    | 27.50  | 1,255 | 457    | 0.004 | 4   | 1,081 |
| 5                    | 22.50  | 1,280 | 326    | 0.003 | 3   | 1,102 |
| 4                    | 17.50  | 1,304 | 212    | 0.002 | 2   | 1,123 |
| 3                    | 12.50  | 1,329 | 119    | 0.001 | 1   | 1,144 |
| 2                    | 7.50   | 1,353 | 49     | 0.000 | 0   | 1,165 |
| 1                    | 2.50   | 1,377 | 7      | 0.000 | 0   | 1,186 |
| Generic 3' Yagi      | 149.00 | 10    | 74     | 0.001 | 1   | 9     |
| RFS Celwave PD220    | 149.00 | 50    | 368    | 0.003 | 4   | 43    |
| Samsung 700+850MHZ D | 149.00 | 246   | 1,810  | 0.015 | 18  | 212   |
| Samsung PCS/AWS Dual | 149.00 | 253   | 1,863  | 0.015 | 18  | 218   |
| Raycap RVZDC-6627-PF | 149.00 | 32    | 235    | 0.002 | 2   | 28    |
| Commscope NHH-65B-R2 | 149.00 | 262   | 1,929  | 0.015 | 19  | 226   |
| Antel LPA-80080/6CF  | 149.00 | 126   | 927    | 0.007 | 9   | 108   |
| VZW Unused Reserve ( | 149.00 | 1,581 | 11,628 | 0.093 | 114 | 1,360 |
| Flat Low Profile Pla | 149.00 | 1,500 | 11,035 | 0.089 | 109 | 1,291 |
| Andrew ABT-DFDM-ADB  | 140.00 | 1     | 7      | 0.000 | 0   | 1     |
| Powerwave Allgon TT1 | 140.00 | 96    | 632    | 0.005 | 6   | 83    |
| Powerwave Allgon TT0 | 140.00 | 66    | 435    | 0.003 | 4   | 57    |
| Raycap DC6-48-60-18- | 140.00 | 20    | 132    | 0.001 | 1   | 17    |
| Ericsson RRUS A2 Mod | 140.00 | 64    | 419    | 0.003 | 4   | 55    |
| Ericsson RRUS 4449 B | 140.00 | 213   | 1,403  | 0.011 | 14  | 183   |
| Ericsson RRUS 4478 B | 140.00 | 178   | 1,173  | 0.009 | 12  | 153   |
| Raycap DC6-48-60-18- | 140.00 | 16    | 105    | 0.001 | 1   | 14    |
| Ericsson RRUS 32 B2  | 140.00 | 159   | 1,047  | 0.008 | 10  | 137   |
| Andrew SBNHH-1D65A ( | 140.00 | 67    | 441    | 0.004 | 4   | 58    |
| Powerwave Allgon P90 | 140.00 | 159   | 1,047  | 0.008 | 10  | 137   |
| CCI DMP65R-BU4D      | 140.00 | 204   | 1,341  | 0.011 | 13  | 175   |
| CCI HPA-65R-BUU-H6   | 140.00 | 51    | 336    | 0.003 | 3   | 44    |
| Round Platform w/ Ha | 140.00 | 2,000 | 13,170 | 0.106 | 130 | 1,721 |
| Decibel DB222        | 124.00 | 32    | 170    | 0.001 | 2   | 28    |
| Generic 3' Yagi      | 122.00 | 10    | 52     | 0.000 | 1   | 9     |
| Stand Off            | 117.00 | 150   | 718    | 0.006 | 7   | 129   |
| Symmetricom 58532A   | 110.00 | 0     | 2      | 0.000 | 0   | 0     |
| Ericsson RRUS 11 B4  | 110.00 | 152   | 652    | 0.005 | 6   | 131   |
| Ericsson RRUS 11 B12 | 110.00 | 152   | 652    | 0.005 | 6   | 131   |
| Ericsson RRUS 11 B2  | 110.00 | 152   | 652    | 0.005 | 6   | 131   |
| RFS APX16DWV-16DWVS- | 110.00 | 122   | 523    | 0.004 | 5   | 105   |

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Site Number: 413783

Code: ANSI/TIA-222-H

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Site Name: Kent Pcs CT, CT

Engineering Number: OAA745078\_C3\_06

12/9/2019 3:32:25 PM

Customer: EVERSOURCE ENERGY

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|                      |        |        |         |       |       |        |
|----------------------|--------|--------|---------|-------|-------|--------|
| Round T-Arm          | 110.00 | 750    | 3,216   | 0.026 | 32    | 646    |
| Commscope LNX-6515DS | 110.00 | 151    | 647     | 0.005 | 6     | 130    |
| dbSpectra DS2C00F36D | 90.00  | 40     | 120     | 0.001 | 1     | 34     |
| Generic Flat Side Ar | 90.00  | 188    | 563     | 0.005 | 6     | 161    |
|                      |        | 40,891 | 124,611 | 1.000 | 1,227 | 35,197 |

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00          | -48.97           | -1.23            | 0.00            | -150.23         | 0.00            | 150.23                     | 4,482.64      | 1,255.90      | 6,820.01         | 5,554.46         | 0.00               | 0.00           | 0.038 |
| 5.00          | -47.29           | -1.23            | 0.00            | -144.08         | 0.00            | 144.08                     | 4,434.84      | 1,230.72      | 6,549.27         | 5,384.36         | 0.00               | -0.01          | 0.037 |
| 10.00         | -45.64           | -1.24            | 0.00            | -137.92         | 0.00            | 137.92                     | 4,385.31      | 1,205.53      | 6,284.01         | 5,214.59         | 0.01               | -0.01          | 0.037 |
| 15.00         | -44.03           | -1.24            | 0.00            | -131.73         | 0.00            | 131.73                     | 4,334.06      | 1,180.35      | 6,024.24         | 5,045.30         | 0.03               | -0.02          | 0.036 |
| 20.00         | -42.44           | -1.24            | 0.00            | -125.53         | 0.00            | 125.53                     | 4,281.09      | 1,155.17      | 5,769.95         | 4,876.60         | 0.05               | -0.03          | 0.036 |
| 25.00         | -40.89           | -1.24            | 0.00            | -119.33         | 0.00            | 119.33                     | 4,226.40      | 1,129.98      | 5,521.14         | 4,708.64         | 0.09               | -0.03          | 0.035 |
| 30.00         | -39.36           | -1.24            | 0.00            | -113.12         | 0.00            | 113.12                     | 4,169.98      | 1,104.80      | 5,277.81         | 4,541.54         | 0.12               | -0.04          | 0.034 |
| 35.00         | -37.86           | -1.23            | 0.00            | -106.93         | 0.00            | 106.93                     | 4,111.84      | 1,079.62      | 5,039.97         | 4,375.42         | 0.17               | -0.05          | 0.034 |
| 40.00         | -36.45           | -1.23            | 0.00            | -100.76         | 0.00            | 100.76                     | 4,051.98      | 1,054.43      | 4,807.61         | 4,210.43         | 0.22               | -0.05          | 0.033 |
| 44.83         | -36.36           | -1.23            | 0.00            | -94.82          | 0.00            | 94.82                      | 3,992.55      | 1,030.12      | 4,588.45         | 4,052.29         | 0.28               | -0.06          | 0.033 |
| 45.00         | -33.68           | -1.21            | 0.00            | -94.61          | 0.00            | 94.61                      | 3,990.40      | 1,029.25      | 4,580.74         | 4,046.68         | 0.28               | -0.06          | 0.032 |
| 50.00         | -32.82           | -1.20            | 0.00            | -88.56          | 0.00            | 88.56                      | 3,927.10      | 1,004.07      | 4,359.35         | 3,884.30         | 0.35               | -0.07          | 0.031 |
| 51.63         | -31.87           | -1.20            | 0.00            | -86.60          | 0.00            | 86.60                      | 3,945.98      | 1,011.51      | 4,424.20         | 3,932.14         | 0.38               | -0.07          | 0.030 |
| 55.00         | -30.47           | -1.18            | 0.00            | -82.57          | 0.00            | 82.57                      | 3,902.73      | 994.55        | 4,277.11         | 3,823.33         | 0.43               | -0.08          | 0.029 |
| 60.00         | -29.11           | -1.17            | 0.00            | -76.66          | 0.00            | 76.66                      | 3,837.05      | 969.37        | 4,063.28         | 3,663.06         | 0.51               | -0.08          | 0.029 |
| 65.00         | -27.78           | -1.15            | 0.00            | -70.83          | 0.00            | 70.83                      | 3,769.65      | 944.18        | 3,854.92         | 3,504.48         | 0.60               | -0.09          | 0.028 |
| 70.00         | -26.47           | -1.13            | 0.00            | -65.08          | 0.00            | 65.08                      | 3,700.53      | 919.00        | 3,652.05         | 3,347.71         | 0.70               | -0.10          | 0.027 |
| 75.00         | -25.20           | -1.11            | 0.00            | -59.44          | 0.00            | 59.44                      | 3,629.69      | 893.82        | 3,454.67         | 3,192.88         | 0.81               | -0.10          | 0.026 |
| 80.00         | -23.96           | -1.08            | 0.00            | -53.90          | 0.00            | 53.90                      | 3,557.12      | 868.63        | 3,262.77         | 3,040.12         | 0.92               | -0.11          | 0.024 |
| 85.00         | -22.75           | -1.05            | 0.00            | -48.49          | 0.00            | 48.49                      | 3,482.83      | 843.45        | 3,076.35         | 2,889.56         | 1.04               | -0.12          | 0.023 |
| 90.00         | -22.35           | -1.05            | 0.00            | -43.22          | 0.00            | 43.22                      | 3,406.82      | 818.27        | 2,895.41         | 2,741.33         | 1.17               | -0.12          | 0.022 |
| 90.48         | -20.55           | -1.00            | 0.00            | -42.72          | 0.00            | 42.72                      | 3,399.49      | 815.87        | 2,878.45         | 2,727.33         | 1.18               | -0.12          | 0.022 |
| 95.00         | -20.16           | -0.99            | 0.00            | -38.21          | 0.00            | 38.21                      | 3,329.09      | 793.08        | 2,719.96         | 2,595.56         | 1.30               | -0.13          | 0.021 |
| 95.98         | -19.36           | -0.96            | 0.00            | -37.23          | 0.00            | 37.23                      | 2,652.87      | 668.74        | 2,320.58         | 2,096.47         | 1.33               | -0.13          | 0.025 |
| 100.00        | -18.38           | -0.94            | 0.00            | -33.36          | 0.00            | 33.36                      | 2,607.49      | 651.89        | 2,205.09         | 2,008.26         | 1.44               | -0.14          | 0.024 |
| 105.00        | -17.42           | -0.90            | 0.00            | -28.69          | 0.00            | 28.69                      | 2,549.43      | 630.90        | 2,065.42         | 1,899.81         | 1.59               | -0.14          | 0.022 |
| 110.00        | -14.68           | -0.80            | 0.00            | -24.17          | 0.00            | 24.17                      | 2,489.65      | 609.91        | 1,930.32         | 1,793.02         | 1.74               | -0.15          | 0.019 |
| 115.00        | -14.32           | -0.79            | 0.00            | -20.15          | 0.00            | 20.15                      | 2,428.15      | 588.93        | 1,799.78         | 1,688.03         | 1.90               | -0.16          | 0.018 |
| 117.00        | -13.61           | -0.76            | 0.00            | -18.57          | 0.00            | 18.57                      | 2,403.07      | 580.53        | 1,748.85         | 1,646.56         | 1.97               | -0.16          | 0.017 |
| 120.00        | -13.26           | -0.75            | 0.00            | -16.29          | 0.00            | 16.29                      | 2,364.93      | 567.94        | 1,673.82         | 1,584.96         | 2.07               | -0.16          | 0.016 |
| 122.00        | -12.91           | -0.73            | 0.00            | -14.79          | 0.00            | 14.79                      | 2,339.16      | 559.55        | 1,624.71         | 1,544.29         | 2.13               | -0.16          | 0.015 |
| 124.00        | -12.70           | -0.72            | 0.00            | -13.33          | 0.00            | 13.33                      | 2,313.11      | 551.15        | 1,576.33         | 1,503.97         | 2.20               | -0.17          | 0.014 |
| 125.00        | -11.88           | -0.68            | 0.00            | -12.61          | 0.00            | 12.61                      | 2,299.99      | 546.96        | 1,552.42         | 1,483.93         | 2.24               | -0.17          | 0.014 |
| 130.00        | -11.08           | -0.64            | 0.00            | -9.19           | 0.00            | 9.19                       | 2,226.60      | 525.97        | 1,435.59         | 1,380.92         | 2.41               | -0.17          | 0.012 |
| 135.00        | -10.46           | -0.61            | 0.00            | -5.96           | 0.00            | 5.96                       | 2,137.76      | 504.98        | 1,323.34         | 1,272.38         | 2.59               | -0.17          | 0.010 |
| 138.93        | -10.22           | -0.60            | 0.00            | -3.55           | 0.00            | 3.55                       | 2,067.85      | 488.47        | 1,238.21         | 1,190.09         | 2.74               | -0.17          | 0.008 |
| 140.00        | -5.53            | -0.34            | 0.00            | -2.91           | 0.00            | 2.91                       | 2,048.92      | 484.00        | 1,215.65         | 1,168.29         | 2.78               | -0.18          | 0.005 |
| 143.03        | -5.36            | -0.33            | 0.00            | -1.89           | 0.00            | 1.89                       | 1,068.58      | 288.00        | 717.29           | 606.93           | 2.89               | -0.18          | 0.008 |
| 145.00        | -5.03            | -0.31            | 0.00            | -1.24           | 0.00            | 1.24                       | 1,057.77      | 283.03        | 692.75           | 590.35           | 2.96               | -0.18          | 0.007 |
| 149.00        | 0.00             | -0.29            | 0.00            | 0.00            | 0.00            | 0.00                       | 1,035.06      | 272.96        | 644.32           | 556.98           | 3.11               | -0.18          | 0.000 |



Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Calculated Forces

| 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 (deg) | Ratio |
|---------------|------------------|------------------|-----------------|-----------------|-----------------|----------------------------|---------------|---------------|------------------|------------------|--------------------|----------------|-------|
| 0.00          | -34.01           | -1.23            | 0.00            | -148.64         | 0.00            | 148.64                     | 4,482.64      | 1,255.90      | 6,820.01         | 5,554.46         | 0.00               | 0.00           | 0.034 |
| 5.00          | -32.85           | -1.23            | 0.00            | -142.50         | 0.00            | 142.50                     | 4,434.84      | 1,230.72      | 6,549.27         | 5,384.36         | 0.00               | -0.01          | 0.034 |
| 10.00         | -31.70           | -1.23            | 0.00            | -136.34         | 0.00            | 136.34                     | 4,385.31      | 1,205.53      | 6,284.01         | 5,214.59         | 0.01               | -0.01          | 0.033 |
| 15.00         | -30.58           | -1.23            | 0.00            | -130.18         | 0.00            | 130.18                     | 4,334.06      | 1,180.35      | 6,024.24         | 5,045.30         | 0.03               | -0.02          | 0.033 |
| 20.00         | -29.48           | -1.23            | 0.00            | -124.00         | 0.00            | 124.00                     | 4,281.09      | 1,155.17      | 5,769.95         | 4,876.60         | 0.05               | -0.03          | 0.032 |
| 25.00         | -28.40           | -1.23            | 0.00            | -117.83         | 0.00            | 117.83                     | 4,226.40      | 1,129.98      | 5,521.14         | 4,708.64         | 0.09               | -0.03          | 0.032 |
| 30.00         | -27.34           | -1.23            | 0.00            | -111.67         | 0.00            | 111.67                     | 4,169.98      | 1,104.80      | 5,277.81         | 4,541.54         | 0.12               | -0.04          | 0.031 |
| 35.00         | -26.30           | -1.22            | 0.00            | -105.52         | 0.00            | 105.52                     | 4,111.84      | 1,079.62      | 5,039.97         | 4,375.42         | 0.17               | -0.05          | 0.031 |
| 40.00         | -25.32           | -1.22            | 0.00            | -99.40          | 0.00            | 99.40                      | 4,051.98      | 1,054.43      | 4,807.61         | 4,210.43         | 0.22               | -0.05          | 0.030 |
| 44.83         | -25.25           | -1.22            | 0.00            | -93.52          | 0.00            | 93.52                      | 3,992.55      | 1,030.12      | 4,588.45         | 4,052.29         | 0.28               | -0.06          | 0.029 |
| 45.00         | -23.39           | -1.20            | 0.00            | -93.32          | 0.00            | 93.32                      | 3,990.40      | 1,029.25      | 4,580.74         | 4,046.68         | 0.28               | -0.06          | 0.029 |
| 50.00         | -22.80           | -1.19            | 0.00            | -87.33          | 0.00            | 87.33                      | 3,927.10      | 1,004.07      | 4,359.35         | 3,884.30         | 0.35               | -0.07          | 0.028 |
| 51.63         | -22.13           | -1.18            | 0.00            | -85.38          | 0.00            | 85.38                      | 3,945.98      | 1,011.51      | 4,424.20         | 3,932.14         | 0.37               | -0.07          | 0.027 |
| 55.00         | -21.16           | -1.17            | 0.00            | -81.40          | 0.00            | 81.40                      | 3,902.73      | 994.55        | 4,277.11         | 3,823.33         | 0.42               | -0.08          | 0.027 |
| 60.00         | -20.22           | -1.15            | 0.00            | -75.56          | 0.00            | 75.56                      | 3,837.05      | 969.37        | 4,063.28         | 3,663.06         | 0.51               | -0.08          | 0.026 |
| 65.00         | -19.29           | -1.13            | 0.00            | -69.79          | 0.00            | 69.79                      | 3,769.65      | 944.18        | 3,854.92         | 3,504.48         | 0.60               | -0.09          | 0.025 |
| 70.00         | -18.39           | -1.11            | 0.00            | -64.12          | 0.00            | 64.12                      | 3,700.53      | 919.00        | 3,652.05         | 3,347.71         | 0.69               | -0.10          | 0.024 |
| 75.00         | -17.50           | -1.09            | 0.00            | -58.54          | 0.00            | 58.54                      | 3,629.69      | 893.82        | 3,454.67         | 3,192.88         | 0.80               | -0.10          | 0.023 |
| 80.00         | -16.64           | -1.07            | 0.00            | -53.08          | 0.00            | 53.08                      | 3,557.12      | 868.63        | 3,262.77         | 3,040.12         | 0.91               | -0.11          | 0.022 |
| 85.00         | -15.80           | -1.04            | 0.00            | -47.75          | 0.00            | 47.75                      | 3,482.83      | 843.45        | 3,076.35         | 2,889.56         | 1.03               | -0.12          | 0.021 |
| 90.00         | -15.53           | -1.03            | 0.00            | -42.55          | 0.00            | 42.55                      | 3,406.82      | 818.27        | 2,895.41         | 2,741.33         | 1.15               | -0.12          | 0.020 |
| 90.48         | -14.27           | -0.98            | 0.00            | -42.06          | 0.00            | 42.06                      | 3,399.49      | 815.87        | 2,878.45         | 2,727.33         | 1.16               | -0.12          | 0.020 |
| 95.00         | -14.00           | -0.97            | 0.00            | -37.61          | 0.00            | 37.61                      | 3,329.09      | 793.08        | 2,719.96         | 2,595.56         | 1.28               | -0.13          | 0.019 |
| 95.98         | -13.44           | -0.95            | 0.00            | -36.65          | 0.00            | 36.65                      | 2,652.87      | 668.74        | 2,320.58         | 2,096.47         | 1.31               | -0.13          | 0.023 |
| 100.00        | -12.76           | -0.92            | 0.00            | -32.84          | 0.00            | 32.84                      | 2,607.49      | 651.89        | 2,205.09         | 2,008.26         | 1.42               | -0.13          | 0.021 |
| 105.00        | -12.10           | -0.89            | 0.00            | -28.23          | 0.00            | 28.23                      | 2,549.43      | 630.90        | 2,065.42         | 1,899.81         | 1.57               | -0.14          | 0.020 |
| 110.00        | -10.20           | -0.79            | 0.00            | -23.78          | 0.00            | 23.78                      | 2,489.65      | 609.91        | 1,930.32         | 1,793.02         | 1.72               | -0.15          | 0.017 |
| 115.00        | -9.95            | -0.78            | 0.00            | -19.83          | 0.00            | 19.83                      | 2,428.15      | 588.93        | 1,799.78         | 1,688.03         | 1.87               | -0.15          | 0.016 |
| 117.00        | -9.45            | -0.75            | 0.00            | -18.27          | 0.00            | 18.27                      | 2,403.07      | 580.53        | 1,748.85         | 1,646.56         | 1.94               | -0.16          | 0.015 |
| 120.00        | -9.21            | -0.74            | 0.00            | -16.03          | 0.00            | 16.03                      | 2,364.93      | 567.94        | 1,673.82         | 1,584.96         | 2.04               | -0.16          | 0.014 |
| 122.00        | -8.97            | -0.72            | 0.00            | -14.56          | 0.00            | 14.56                      | 2,339.16      | 559.55        | 1,624.71         | 1,544.29         | 2.11               | -0.16          | 0.013 |
| 124.00        | -8.82            | -0.71            | 0.00            | -13.12          | 0.00            | 13.12                      | 2,313.11      | 551.15        | 1,576.33         | 1,503.97         | 2.17               | -0.16          | 0.013 |
| 125.00        | -8.25            | -0.67            | 0.00            | -12.40          | 0.00            | 12.40                      | 2,299.99      | 546.96        | 1,552.42         | 1,483.93         | 2.21               | -0.16          | 0.012 |
| 130.00        | -7.69            | -0.63            | 0.00            | -9.04           | 0.00            | 9.04                       | 2,226.60      | 525.97        | 1,435.59         | 1,380.92         | 2.38               | -0.17          | 0.010 |
| 135.00        | -7.27            | -0.60            | 0.00            | -5.87           | 0.00            | 5.87                       | 2,137.76      | 504.98        | 1,323.34         | 1,272.38         | 2.56               | -0.17          | 0.008 |
| 138.93        | -7.10            | -0.59            | 0.00            | -3.50           | 0.00            | 3.50                       | 2,067.85      | 488.47        | 1,238.21         | 1,190.09         | 2.70               | -0.17          | 0.006 |
| 140.00        | -3.84            | -0.33            | 0.00            | -2.87           | 0.00            | 2.87                       | 2,048.92      | 484.00        | 1,215.65         | 1,168.29         | 2.74               | -0.17          | 0.004 |
| 143.03        | -3.73            | -0.32            | 0.00            | -1.86           | 0.00            | 1.86                       | 1,068.58      | 288.00        | 717.29           | 606.93           | 2.85               | -0.17          | 0.007 |
| 145.00        | -3.49            | -0.30            | 0.00            | -1.22           | 0.00            | 1.22                       | 1,057.77      | 283.03        | 692.75           | 590.35           | 2.92               | -0.17          | 0.005 |
| 149.00        | 0.00             | -0.29            | 0.00            | 0.00            | 0.00            | 0.00                       | 1,035.06      | 272.96        | 644.32           | 556.98           | 3.07               | -0.17          | 0.000 |

Analysis Summary

| Load Case            | Reactions             |                       |                       |                           |                           |                           | Max Usage    |                      |
|----------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|---------------------------|--------------|----------------------|
|                      | Shear<br>FX<br>(kips) | Shear<br>FZ<br>(kips) | Axial<br>FY<br>(kips) | Moment<br>MX<br>(ft-kips) | Moment<br>MY<br>(ft-kips) | Moment<br>MZ<br>(ft-kips) | Elev<br>(ft) | Interaction<br>Ratio |
| 1.2D + 1.0W          | 31.17                 | 0.00                  | 49.03                 | 0.00                      | 0.00                      | 3451.72                   | 0.00         | 0.63                 |
| 0.9D + 1.0W          | 31.16                 | 0.00                  | 36.76                 | 0.00                      | 0.00                      | 3421.45                   | 0.00         | 0.62                 |
| 1.2D + 1.0Di + 1.0Wi | 5.93                  | 0.00                  | 73.33                 | 0.00                      | 0.00                      | 652.81                    | 0.00         | 0.13                 |
| 1.2D + 1.0Ev + 1.0Eh | 1.23                  | 0.00                  | 48.97                 | 0.00                      | 0.00                      | 150.23                    | 0.00         | 0.04                 |
| 0.9D - 1.0Ev + 1.0Eh | 1.23                  | 0.00                  | 34.01                 | 0.00                      | 0.00                      | 148.64                    | 0.00         | 0.03                 |
| 1.0D + 1.0W          | 7.72                  | 0.00                  | 40.89                 | 0.00                      | 0.00                      | 851.03                    | 0.00         | 0.16                 |



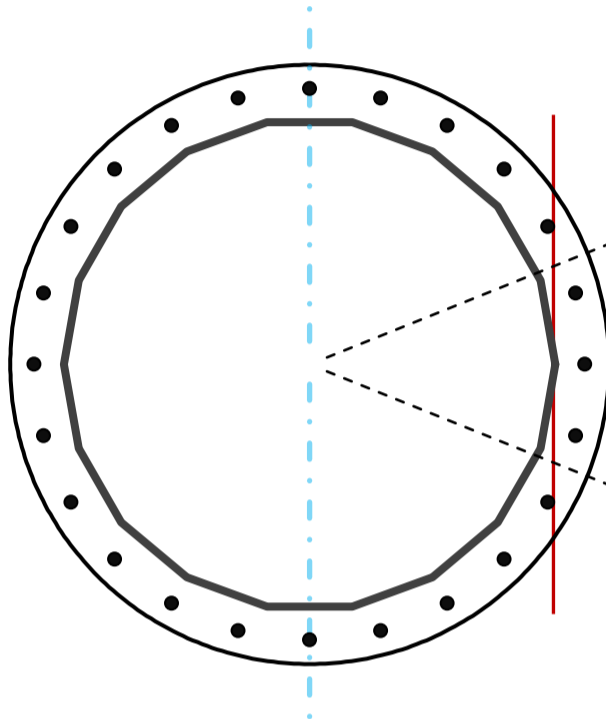
## Base Plate & Anchor Rod Analysis

| Pole Dimensions    |       |    |
|--------------------|-------|----|
| Number of Sides    | 18    | -  |
| Diameter           | 60.5  | in |
| Thickness          | 0.375 | in |
| Orientation Offset | 0     | °  |

| Base Reactions |        |      |
|----------------|--------|------|
| Moment, Mu     | 3451.7 | k-ft |
| Axial, Pu      | 49.0   | k    |
| Shear, Vu      | 31.2   | k    |
| Neutral Axis   | 270    | °    |

| Report Capacities |          |        |
|-------------------|----------|--------|
| Component         | Capacity | Result |
| Base Plate        | 29%      | Pass   |
| Anchor Rods       | 40%      | Pass   |
| Dwyidag           | -        | -      |

| Base Plate                |         |            |
|---------------------------|---------|------------|
| Shape                     | Round   | -          |
| Diameter, $\phi$          | 75      | in         |
| Thickness                 | 3 1/4   | in         |
| Grade                     | A572-50 |            |
| Yield Strength, Fy        | 50      | ksi        |
| Tensile Strength, Fu      | 65      | ksi        |
| Clip                      | N/A     | in         |
| Orientation Offset        | 0       | °          |
| Anchor Rod Detail         | d       | $\eta=0.5$ |
| Clear Distance            | 2       | in         |
| Applied Moment, Mu        | 1021.5  | k          |
| Bending Stress, $\phi Mn$ | 3495.8  | k          |



| Original Anchor Rods   |         |     |
|------------------------|---------|-----|
| Arrangement            | Radial  | -   |
| Quantity               | 24      | -   |
| Diameter, $\phi$       | 2 1/4   | in  |
| Bolt Circle            | 69      | in  |
| Grade                  | A615-75 |     |
| Yield Strength, Fy     | 75      | ksi |
| Tensile Strength, Fu   | 100     | ksi |
| Spacing                | 9.0     | in  |
| Orientation Offset     | 0       | °   |
| Applied Force, Pu      | 102.0   | k   |
| Anchor Rods, $\phi Pn$ | 259.8   | k   |

# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

| Reaction                      | Shear<br>Vu | Moment<br>Mu | Factor |
|-------------------------------|-------------|--------------|--------|
| -                             | k           | k-ft         | -      |
| Base Forces                   | 31.2        | 3451.7       | 1.00   |
| Anchor Rod Forces             | 31.2        | 3451.7       | 1.00   |
| Additional Bolt (Grp1) Forces | 0.0         | 0.0          | 0.00   |
| Additional Bolt (Grp2) Forces | 0.0         | 0.0          | 0.00   |
| Dywidag Forces                | 0.0         | 0.0          | 0.00   |
| Stiffener Forces              | 0.0         | 0.0          | 0.00   |

## Geometric Properties

| Section   | Gross Area      | Net Area        | Individual Inertia | Threads per Inch | Moment of Inertia |
|-----------|-----------------|-----------------|--------------------|------------------|-------------------|
| -         | in <sup>2</sup> | in <sup>2</sup> | in <sup>4</sup>    | #                | in <sup>4</sup>   |
| Pole      | 70.4740         | 3.9152          | 0.1841             |                  | 31848.90          |
| Bolt      | 3.9761          | 3.2477          | 0.8393             | 4.5              | 46406.89          |
| Bolt1     | 0.0000          | 0.0000          | 0.0000             | 0                | 0.00              |
| Bolt2     | 0.0000          | 0.0000          | 0.0000             | 0                | 0.00              |
| Dywidag   | 0.0000          | 0.0000          | 0.0000             |                  | 0.00              |
| Stiffener | 0.0000          | 0.0000          | 0.0000             |                  | 0.00              |

### Base Plate

|                      |        |     |
|----------------------|--------|-----|
| Shape                | Round  | -   |
| Diameter, D          | 75     | in  |
| Thickness, t         | 3.25   | in  |
| Yield Strength, Fy   | 50     | ksi |
| Tensile Strength, Fu | 65     | ksi |
| Base Plate Chord     | 44.326 | in  |
| Detail Type          | d      | -   |
| Detail Factor        | 0.50   | -   |
| Clear Distance       | 2      | -   |

### Anchor Rods

|                                  |       |     |
|----------------------------------|-------|-----|
| Anchor Rod Quantity, N           | 24    | -   |
| Rod Diameter, d                  | 2.25  | in  |
| Bolt Circle, BC                  | 69    | in  |
| Yield Strength, Fy               | 75    | ksi |
| Tensile Strength, Fu             | 100   | ksi |
| Applied Axial, Pu                | 102.0 | k   |
| Applied Shear, Vu                | 0.5   | k   |
| Compressive Capacity, $\phi P_n$ | 259.8 | k   |
| Tensile Capacity, $\phi R_n$     | 0.393 | OK  |
| Interaction Capacity             | 0.397 | OK  |

### External Base Plate

|                              |         |                 |
|------------------------------|---------|-----------------|
| Chord Length AA              | 37.906  | in              |
| Additional AA                | 6.000   | in              |
| Section Modulus, Z           | 115.939 | in <sup>3</sup> |
| Applied Moment, Mu           | 1021.5  | k-ft            |
| Bending Capacity, $\phi M_n$ | 5217.3  | k-ft            |
| Capacity, Mu/ $\phi M_n$     | 0.196   | OK              |

|                              |         |                 |
|------------------------------|---------|-----------------|
| Chord Length AB              | 36.367  | in              |
| Additional AB                | 6.000   | in              |
| Section Modulus, Z           | 111.876 | in <sup>3</sup> |
| Applied Moment, Mu           | 881.6   | k-ft            |
| Bending Capacity, $\phi M_n$ | 5034.4  | k-ft            |
| Capacity, Mu/ $\phi M_n$     | 0.175   | OK              |

|                              |        |                 |
|------------------------------|--------|-----------------|
| Bend Line Length             | 29.419 | in              |
| Additional Bend Line         | 0.000  | in              |
| Section Modulus, Z           | 77.683 | in <sup>3</sup> |
| Applied Moment, Mu           | 1021.5 | k-ft            |
| Bending Capacity, $\phi M_n$ | 3495.8 | k-ft            |
| Capacity, Mu/ $\phi M_n$     | 0.292  | OK              |

### Internal Base Plate

|                              |       |                 |
|------------------------------|-------|-----------------|
| Arc Length                   | 0.000 | in              |
| Section Modulus, Z           | 0.000 | in <sup>3</sup> |
| Moment Arm                   | 0.000 | in              |
| Applied Moment, Mu           | 0.0   | k-ft            |
| Bending Capacity, $\phi M_n$ | 0.0   | k-ft            |
| Capacity, Mu/ $\phi M_n$     |       |                 |

ATTACHMENT E - POWER DENSITY REPORT



C Squared Systems, LLC  
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Auburn, NH 03032  
603-644-2800  
[support@csquaredsystems.com](mailto:support@csquaredsystems.com)

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Calculated Radio Frequency Emissions Report



**ES-278**

38 Maple Street

Kent, CT 06755

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March 2, 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 38 Maple Street in Kent, CT.

Eversource is proposing to install one omnidirectional antenna on the existing monopole 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 ( $\text{mW}/\text{cm}^2$ ). 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:

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

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. 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. Please refer to Attachment C for the vertical pattern of the proposed Eversource antenna. The calculated results in Table 1 include a nominal 10 dB off-beam pattern loss for the omnidirectional antenna to account for the lower relative gain below the antenna.

| Carrier           | Antenna Height (Feet) | Operating Frequency (MHz) | Number of Trans. | ERP Per Transmitter (Watts) | Power Density (mw/cm <sup>2</sup> ) | Limit        | %MPE          |
|-------------------|-----------------------|---------------------------|------------------|-----------------------------|-------------------------------------|--------------|---------------|
| T-Mobile-AWS-LTE  | 110                   | 2100                      | 2                | 2559                        | 0.0170                              | 1.0000       | 1.70%         |
| T-Mobile-PCS-LTE  | 110                   | 1900                      | 2                | 2559                        | 0.0170                              | 1.0000       | 1.70%         |
| T-Mobile-AWS-UMTS | 110                   | 2100                      | 2                | 1280                        | 0.0085                              | 1.0000       | 0.85%         |
| T-Mobile-PCS-UMTS | 110                   | 1950                      | 2                | 1280                        | 0.0085                              | 1.0000       | 0.85%         |
| T-Mobile-PCS-GSM  | 110                   | 1950                      | 2                | 1280                        | 0.0085                              | 1.0000       | 0.85%         |
| T-Mobile-LTE      | 110                   | 700                       | 1                | 865                         | 0.0029                              | 0.4667       | 0.62%         |
| Verizon           | 150                   | 1970                      | 0                | 1802                        | 0.0000                              | 1.0000       | 0.00%         |
| Verizon           | 150                   | 869                       | 0                | 347                         | 0.0000                              | 0.5793       | 0.00%         |
| Verizon           | 150                   | 2145                      | 1                | 7770                        | 0.0135                              | 1.0000       | 1.35%         |
| Verizon           | 150                   | 746                       | 1                | 2062                        | 0.0036                              | 0.4973       | 0.72%         |
| AT&T              | 140                   | 850                       | 1                | 333                         | 0.0007                              | 0.5667       | 0.12%         |
| AT&T              | 140                   | 1900                      | 2                | 4842                        | 0.0194                              | 1.0000       | 1.94%         |
| AT&T              | 140                   | 700                       | 1                | 2951                        | 0.0059                              | 0.4667       | 1.27%         |
| AT&T              | 140                   | 700                       | 1                | 1476                        | 0.0030                              | 0.4667       | 0.63%         |
| AT&T              | 140                   | 850                       | 1                | 1000                        | 0.0020                              | 0.5667       | 0.35%         |
| AT&T              | 140                   | 850                       | 1                | 1000                        | 0.0020                              | 0.5667       | 0.35%         |
| Eversource        | 86.4                  | 217                       | 4                | 124                         | 0.0028                              | 0.2000       | 1.38%         |
|                   |                       |                           |                  |                             |                                     | <b>Total</b> | <b>14.69%</b> |

**Table 1: Proposed Tower % MPE <sup>1 2</sup>**

<sup>1</sup> 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.

<sup>2</sup> The proposed antenna height listed for Eversource is in reference to the Black & Veatch construction drawings dated 11/26/2019 (Rev. A). Operating parameters of any antennas shown that are listed as “By Others” and not accounted for in the CSC database referenced above have been omitted from this analysis.


## 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 **14.69% 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.

  
\_\_\_\_\_

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

February 28, 2020  
Date

  
\_\_\_\_\_

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

March 2, 2020  
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<sup>3</sup>**

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (E) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|---|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                  | 6   |
| 3.0-30                | 1842/f                            | 4.89/f                            | (900/f <sup>2</sup> )*                  | 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<sup>4</sup>**

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (E) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|---|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                  | 30  |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f <sup>2</sup> )*                  | 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)**

<sup>3</sup> 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

<sup>4</sup> 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

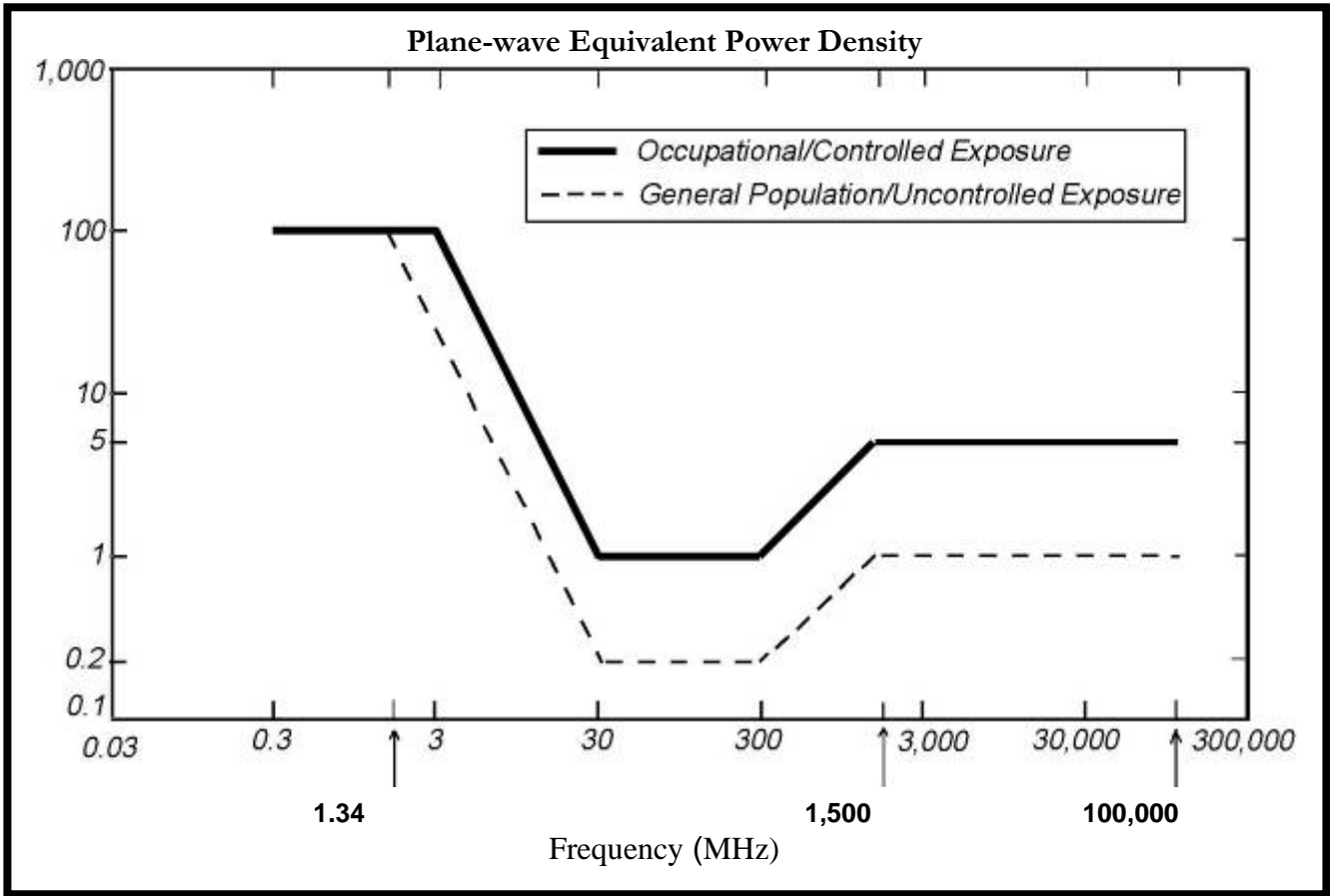
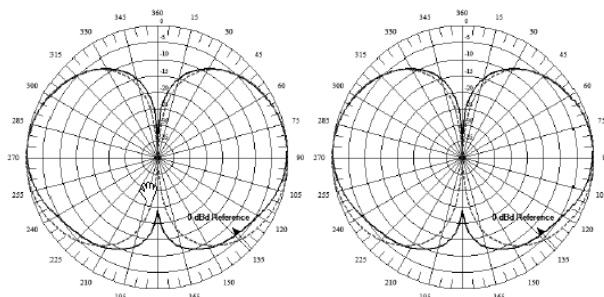


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

### Attachment C: Eversource Antenna Data Sheets and Electrical Patterns

|   |   |
|---|---|
| <p><b>217 MHz</b></p> <p>Manufacturer: dbSpectra<br/>         Model #: DS2C00F36D<br/>         Frequency Band: 217-222 MHz<br/>         Gain: 3.0 dBd<br/>         Vertical Beamwidth: 60°<br/>         Horizontal Beamwidth: 360°<br/>         Polarization: Vertical<br/>         Length: 13.6'</p> | <p style="text-align: center;"><b>DS2C00F36D-N<br/>DS2C00F36D-D</b></p>  <p style="text-align: center;">Top <span style="margin-left: 200px;">Bottom</span></p> |
|---|---|

ATTACHMENT F – PROOF OF DELIVERY OF NOTICE



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DV: 0.00

SHIPPING: 0.00  
SPECIAL: 0.00  
HANDLING: 0.00  
TOTAL: 0.00

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TRCK: 1714 2090 6505

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BL GRAPHICS  
BL GRAPHICS  
355 RESEARCH PARKWAY  
MERIDEN, CT 06450  
UNITED STATES US

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ACTWGT: 1.25 LB MAN  
CAD: 0765627/CAFE3311

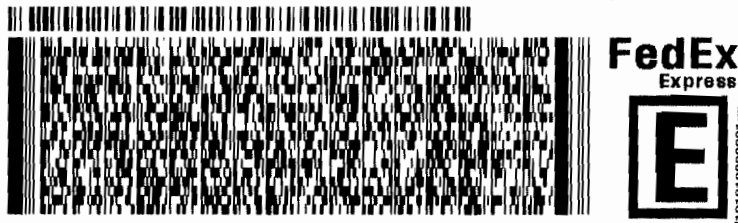
BILL THIRD PARTY

TO HONORABLE JEAN C. SPECK  
TOWN OF KENT  
41 KENT GREEN BLVD

KENT CT 06757

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DEPT: BL GRAPHICS

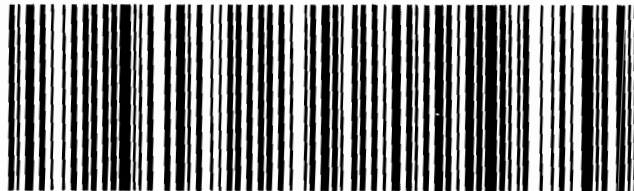


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06757  
CT-US BDL



565C3/CEAE/0542

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MERIDEN, CT 06450  
UNITED STATES US

BILL THIRD PARTY

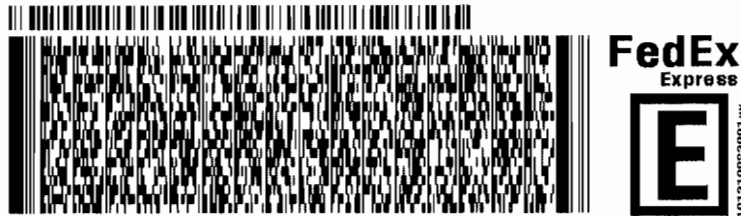
TO **DONNA HAYES LAND USE ADMINSTRATOR**  
**TOWN OF KENT**  
**41 KENT GREEN BLVD**

565C3/CSAG/0542

**KENT CT 06757**

REF: CT578100-ES-278 KENT ATC

DEPT: BL GRAPHICS



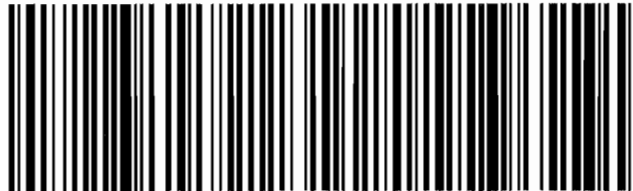
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**00 HFDA**

**06757**  
**CT-US BDL**



0201 1714 2090 6516 06757 CT-US BDL

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HANDLING: 0.00  
TOTAL: 0.00

DV:  
Svcs: PRIORITY OVERNIGHT  
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BL GRAPHICS  
355 RESEARCH PARKWAY

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ACTWGT: 1.25 LB MAN  
CAD: 0765627/CAFE3311

MERIDEN, CT 06450  
UNITED STATES US

BILL THIRD PARTY

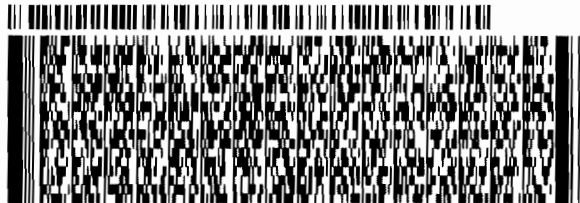
TO

**ATC SEQUOIA LLC  
10 PRESIDENTIAL WAY**

**WOBURN MA 01801**

REF: CT578100-ES-278 KENT ATC

DEPT: BL GRAPHICS



**FedEx  
Express**



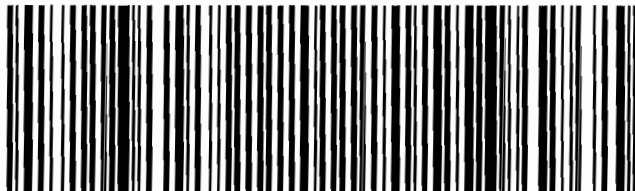
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**EM BEDA**

**01801  
MA-US BOS**



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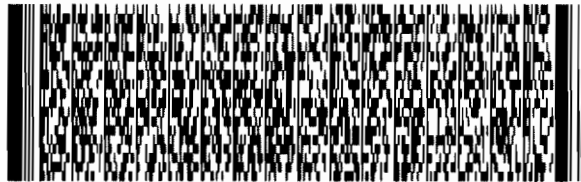
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BL GRAPHICS CAD: 0765627/CAFE3311  
355 RESEARCH PARKWAY  
MERIDEN, CT 06450 BILL THIRD PARTY  
UNITED STATES US

TO **GENERAL COUNSEL**  
**AMERICAN TOWERS LLC**  
**116 HUNTINGTON AVENUE**

**BOSTON MA 02116**

REF: CT678100-ES-278 KENT ATC  
DEPT: BL GRAPHICS



**FedEx**  
Express



JT191219082007 001

TRK# 1714 2090 6538  
0201

**WED - 15 JUL 10:30A**  
**PRIORITY OVERNIGHT**

**EM GBRA**

**02116**  
**MA-US BOS**

BLN # 183146-3- RITE BVT 0520 11

