EVERSOURCE ENERGY

56 Prospect Street
P.O. Box 270
Hartford, CT 06141-0270

John R. Morissette
Project Manager - Transmission Siting - CT

October 5, 2015

Robert Stein, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Petition No. 1156
Telecommunication Tower Replacement at 2 Tindall Avenue, Norwalk, CT
Final Structural Design Drawings

Dear Chairman Stein:

On June 15, 2015, The Connecticut Light and Power Company doing business as Eversource Energy ("Eversource") received a declaratory ruling from the Connecticut Siting Council ("Council") that a Certificate of Environmental Compatibility and Public Need would not be required for the work proposed in Petition No. 1156, subject to conditions. As a condition of the ruling, the Council required Eversource to submit the final structural design drawings of the tower and foundation prior to construction.

Eversource is submitting this letter, along with the attached drawings and calculations, to comply with this condition.

Attached are an original and fifteen (15) copies.

If you have any questions or comments, please call me at (860) 728-4532.

Sincerely,

John R. Morissette
Project Manager - Transmission Siting - CT

Attachment: Drawings and Calculations

cc: Mayor Harry W. Rilling, City of Norwalk

1 Fairholm Avenue
Peoria, IL 61603 USA
Phone 309-566-3000
FAX 309-566-3079

PURCHASER: NORTHEAST UTILITIES

NAME OF PRODUCT: NORWALK TINDALL, FAIRFIELD COUNTY, CONNECTICUT
150 FT MODEL RS TOWER

FILE NUMBER: 210856

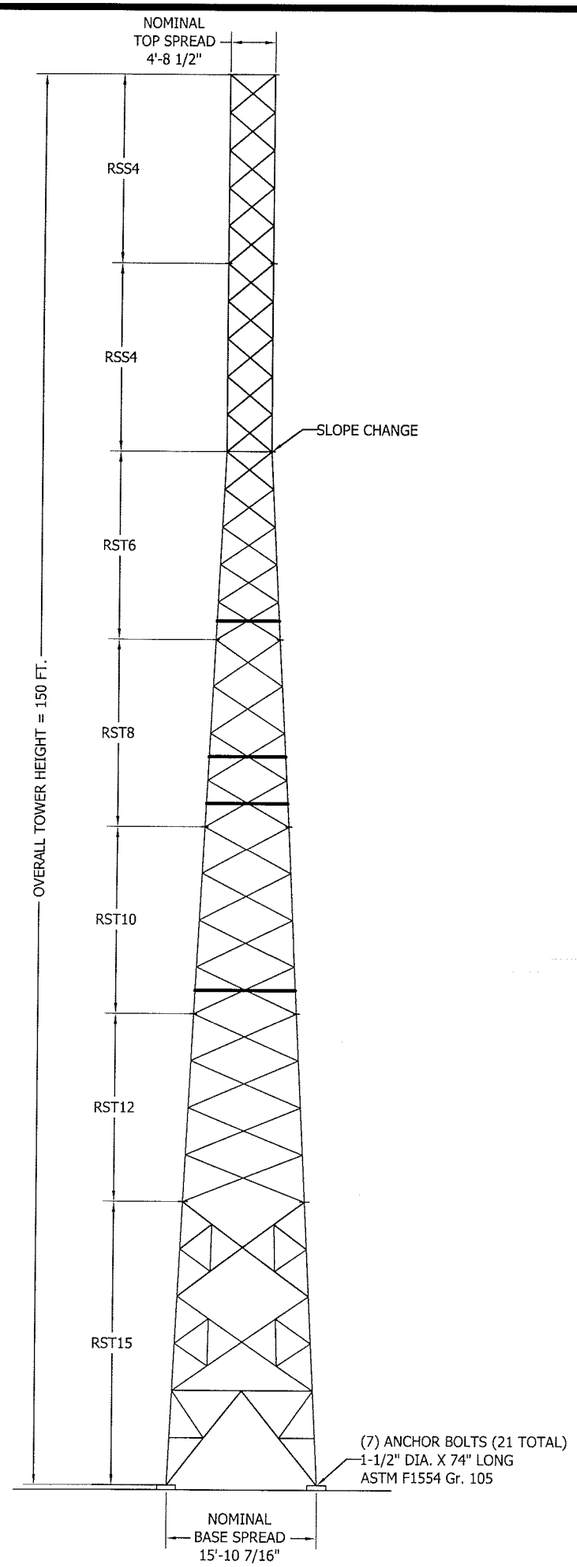
DRAWING NUMBER: 210856-01-D1 AND 210856-01-F1

I CERTIFY THAT THE ATTACHED DRAWINGS AND CALCULATIONS WERE PREPARED UNDER MY SUPERVISION IN ACCORDANCE WITH THE LOADING AND SOIL CRITERIA SPECIFIED BY THE PURCHASER AND THAT I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CONNECTICUT.

CERTIFIED BY: _____

DATE: 7-15-14

STATE OF CONNECTICUT
DAVID G. BRINKER
14002
LICENSED
PROFESSIONAL ENGINEER




Jul 09, 2014 @ 04:49 PM

| TOWER DESIGN LOADING | | |
|---|---|---|
| DESIGN WIND LOAD PER ANSI/TIA-222-G:<br>BASIC WIND SPEED (NO ICE) = 110 MPH<br>BASIC WIND SPEED (ICE) = 50 MPH<br>DESIGN ICE THICKNESS = 0.75 IN.<br>STRUCTURE CLASS = III<br>EXPOSURE CATEGORY = C<br>TOPOGRAPHIC CATEGORY = 1<br>EARTHQUAKE SPECTRAL RESPONSE ACCELERATION : Ss = 0.41<br>THIS TOWER IS DESIGNED TO SUPPORT THE FOLLOWING LOADS: | | |
| **ELEVATION (FT)** | **ANTENNA TYPE** | **LINE SIZE (NOM)** |
| TOP | LIGHTNING ROD | |
| 159 | ANT150F6, DS9A09F36D-N ANT'S+(2) 6' SA W/1TB | (3) 1 5/8" |
| 156 | 1151-3N ANT. + 6' SA W/1TB | (1) 1 5/8" |
| 144 | ANT220F2, ANT150F2 ANT'S+(2) 6' SA W/1TB | (2) 1 5/8" |
| 139 | CO-36A ANT. + 6' SA W/1TB | (1) 1 5/8" |
| 135 | 6 FT DISH W/O RADOME (AZ. 240 DEG) | (1) E 65 |
| 130 | CO-36A ANT. + 6' SA W/1TB | (1) 1 5/8" |
| 129 | ANT150F2 ANT. + 6' SA W/1TB | (1) 1 5/8" |
| 123 | CO-36A ANT. + 6' SA W/1TB | (1) 1 5/8" |
| 121 | ANT220F2 ANT. + 6' SA W/1TB | (1) 1 5/8" |
| 120 | 6 FT DISH W/O RADOME (AZ. 0 DEG) | (1) E 65 |
| 110 | (6) BXA-70063-6CF, (6)BXA-171063, (9)RRH2X40-AWS, (1)DB-T1-6Z-8AB-0Z,+ (3) 12' SECTOR FRAMES (TOTAL 109 SQ. FT. MAX. NO ICE) | (5) 1 5/8" |
| 100 | (6) BXA-70063-6CF, (6)BXA-171063, (9)RRH2X40-AWS, (1)DB-T1-6Z-8AB-0Z,+(3) 12' SECTOR FRAMES (TOTAL 109 SQ. FT. MAX. NO ICE) | (5) 1 5/8" |
| 90 | (3) APXVSPP18-C, (3) RRH2X40 +(3)12' SECTOR FR. | (6) 1 5/8" |
| 80 | (6) ERICSSON AIR21 ANT., (3) TMA'S + (3) 12' SECTOR FRAMES ( TOTAL 74 SQ. FT. MAX. NO ICE) | (8) 1 5/8" |
| 70 | (2) ANT150F2 +(2) 6' SA w/1TB | (2) 1 5/8" |

SEE STRESS ANALYSIS FOR A COMPLETE LISTING OF ALL LOADS ON TOWER.

| SECTION MAIN MEMBER SCHEDULE | | | |
|---|---|---|---|
| **SECTION** | **LEG** | **DIAGONAL** | **HORIZONTALS** |
| RSS4 | SR 2 1/4 | L1 1/2x1 1/2x3/16 (5) | L1 1/2x1 1/2x3/16 (1) |
| RSS4 | SR 2 1/2 | L1 3/4x1 3/4x3/16 (5) | N/A |
| RST6 | SR 2 3/4 | L2x2x3/16 (5) | L2x2x3/16 (1) , L2X2X1/4 (1) |
| RST8 | SR 3 1/4 | L2 1/2x2 1/2x3/16 (4) | L2.5X2.5X3/16 (2) |
| RST10 | SR 3 3/4 | L2 1/2x2 1/2x1/4 (4) | L2.5X2.5X1/4 (1) |
| RST12 | SR 4 1/4 | L3x3x3/16 (4) | N/A |
| RST15 | SR 4 1/2 | L3 1/2x3 1/2x1/4 (3) | L3 1/2x3 1/2x1/4 (1) |

NOTE: SECTION NUMBERS ARE FOR REFERENCE ONLY. FOR NOMINAL FACE WIDTH DIMENSIONS, REFER TO THE STRESS ANALYSIS.
THE NUMBERS SHOWN IN PARENTHESES INDICATE THE NUMBER OF BAYS FROM TOP TO BOTTOM.

## GENERAL NOTES

1. ROHN PRODUCTS, LLC TOWER DESIGNS CONFORM TO ANSI/TIA-222-G UNLESS OTHERWISE SPECIFIED UNDER TOWER DESIGN LOADING.
2. THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA-222-G AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. ANTENNAS AND LINES LISTED IN TOWER DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
4. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
5. WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-G, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
6. THE MINIMUM YIELD STRENGTH OF STRUCTURAL STEEL MEMBERS SHALL BE 50 KSI .
7. FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
8. STRUCTURAL BOLTS SHALL CONFORM TO ASTM A325 OR ASTM A354 GR BC, EXCEPT WHERE NOTED.
9. NUT LOCKING DEVICES PROVIDED FOR FLANGE BOLTS SHALL BE THE FOLLOWING :
   PAL NUTS FOR BOLTS 1" DIA. OR SMALLER & TRI LOCK NUTS FOR 1 1 /2" DIA. BOLTS.
   ANCHOR BOLTS : AFTER ALL TOP AND LEVELING NUTS ARE TIGHTENDED TO A SNUG TIGHT CONDITION, TOP NUTS SHALL BE FURTHER TIGHTENED IN AN INCREMENTAL STAR PATTERN WITH THE LEVELING NUTS SECURED TO RESULT IN A 1/3 TOP NUT ROTATION.
10. STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ANSI/TIA-222-G.
11. ALL HIGH STRENGTH BOLTS ARE TO BE TIGHTENED TO A "SNUGTIGHT CONDITION" AS DEFINED IN THE JUNE 23, 2000, AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
12. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
13. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
14. DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA-222-G.
15. DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
16. FOUNDATIONS SHALL BE DESIGNED TO SUPPORT THE REACTIONS SHOWN FOR THE CONDITIONS EXISTING AT THE SITE.

| MAXIMUM ADJUSTED FACTORED REACTIONS | | | |
|---|---|---|---|
| COMPRESSION | = | 605.4 | KIPS |
| TENSION | = | 546.6 | KIPS |
| TOTAL SHEAR | = | 94.9 | KIPS |
| O.T.M. | = | 7997.0 | FT-KIPS |

FILE NO.
210856

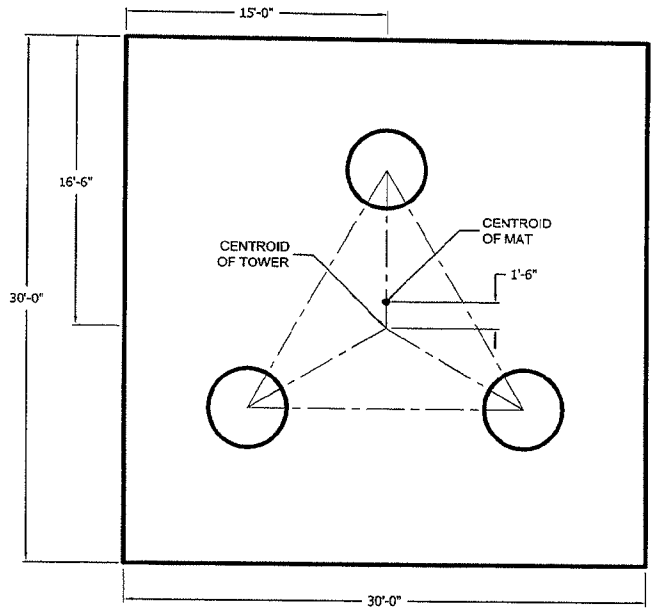
| REVISIONS | | | | |
|---|---|---|---|---|
| REV. | DESCRIPTION | DWN | CHK | APP |

ROHN PRODUCTS LLC
PO BOX 5999
PEORIA, IL 61601-5999
TOLL FREE 800-727-ROHN

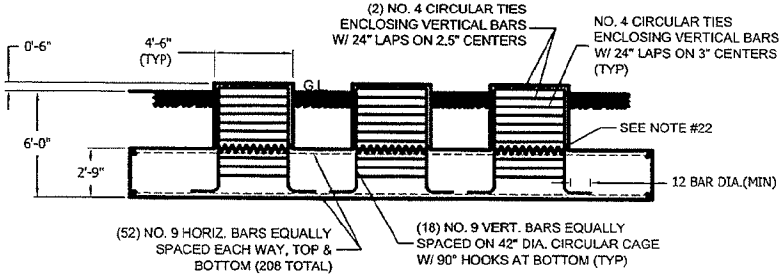


NORTHEAST UTILITIES
DESIGN PROFILE
150 FT RS TOWER
NORWALK TINDALL, CT

| DWN: | CHK'D: | DATE: |
|---|---|---|
| OH | DWG | Jul/09/14 |
| ENG'R: DWG | SHEET #: | |
| PRJ. ENG'R: OH | PRJ. MANG'R: | |
| DRAWING NO: 210856-01-D1 | | REV: 0 |




**PLAN VIEW**




**ELEVATION VIEW**

**ADJUSTED FACTORED REACTIONS**

| | |
|---|---|
| Maximum O.T.M = | 7,997.0 FT-K |
| Total Tower Wt = | 44.7 KIPS |
| Total Shear = | 94.9 KIPS |
| Max. Shear/Leg = | 56.8 KIPS |
| Max. Ten./Leg = | 546.6 KIPS |
| Max. Comp./Leg = | 605.4 KIPS |

**CONCRETE VOLUME (cu.yds)**

| | |
|---|---|
| PIER | 6.6 |
| PAD | 91.7 |
| TOTAL | 98.3 |

## GENERAL NOTES

1. FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.
   A) ULTIMATE SOIL BEARING PRESSURE AT 6 FT DEPTH = 8,000 PSF.
      ALLOWABLE SOIL BEARING PRESSURE AT 6 FT DEPTH = 4,000 PSF.
   B) GROUND WATER TABLE IS AT OR BELOW FOUNDATION DEPTH.
   C) MAXIMUM FROST PENETRATION DEPTH LESS THAN FOUNDATION DEPTH.
2. WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
3. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
4. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI (27.6 MPA) IN 28 DAYS.
5. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 1/3 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. MAXIMUM SIZE MAY BE INCREASED TO 2/3 CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS OR VOIDS.
6. REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.
7. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
8. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES (76 MM) UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH (76 MM) MINIMUM COVER ON REINFORCEMENT.
9. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES (76MM) NOR BE LESS THAN 2 INCHES (51MM).
10. FOUNDATION DESIGN ASSUMES STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH (200 MM) MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D1557. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 100 POUNDS PER CUBIC FOOT (16 KN/M3).
11. FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT DATED **04/21/2014** BY **DR. CLARENCE WELTI, P.E., P.C.**
12. FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.
13. FOUNDATION DESIGN ASSUMES LEVEL GRADE AT STRUCTURE SITE.
14. FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.
15. FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
16. FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
17. FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
18. FOR FOUNDATION AND ANCHOR TOLERANCES SEE ANCHOR BOLT LAYOUT DRAWING.
19. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
20. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
21. CONCRETE PREFERABLY SHALL BE PLACED AGAINST UNDISTURBED SOIL. WHEN FORMS ARE NECESSARY, THEY SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.
22. CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, MUST BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH (6 MM). FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.
23. TOP OF FOUNDATION OUTSIDE LIMITS OF ANCHOR BOLTS SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH. AREA INSIDE LIMITS OF ANCHOR BOLTS SHALL BE LEVEL WITH A SCRATCHED FINISH.
24. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" (19MM X 19MM) MINIMUM.

**NOTE: SEE STRUCTURE ASSEMBLY DRAWING FOR FOUNDATION LAYOUT AND ANCHORAGE EMBEDMENT DRAWING NUMBER.**

FILE NO. 210856

REVISIONS

| REV. | DESCRIPTION | DWN | CHK | APP |
|---|---|---|---|---|

ROHN® PRODUCTS, LLC
PO BOX 5999
PEORIA, IL 61601-5999
TOLL FREE 800-727-ROHN



NORTHEAST UTILITIES
MAT W/ RAISED PIERS
FOUNDATION DETAILS
NORWALK TINDALL, CT

| DWN: | CHK'D: | DATE: |
|---|---|---|
| SM | DWG | Jul/14/14 |

| ENG'R: | SHEET #: |
|---|---|
| DWG | : OF 1 |

| PRJ. ENG'R: | PRJ. MANG'R: |
|---|---|
| OH | |

| DRAWING NO | REV: |
|---|---|
| 210856-01-F1 | 0 |

File: W:\Jobs\2014\210856\210856.out
Contract:
Project: 150FT SSV TOWER
Date and Time: 7/11/2014 4:14:56 PM

Revision: 0
Site: NORWALK TINDALL
Engineer: OH

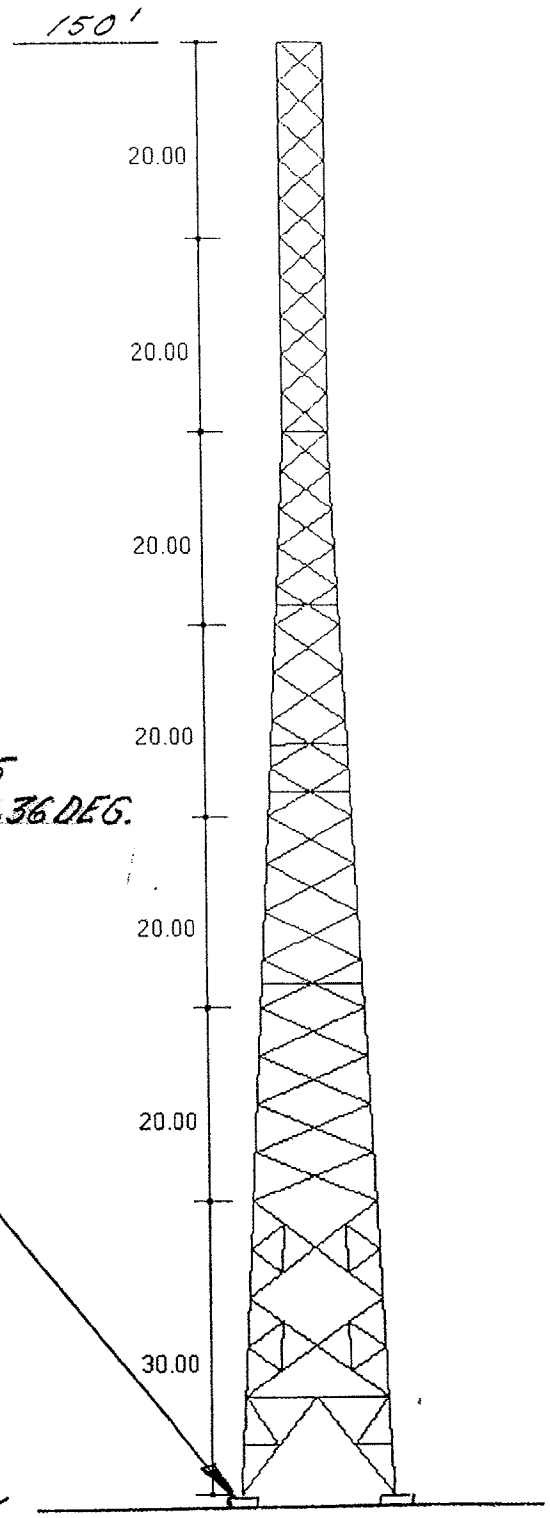
## DESIGN SPECIFICATION

Design Standard: ANSI/TIA-222-G-2005 Add.2
Basic Wind Speed (No Ice) = 110.0 (mph)
Basic Wind Speed (With Ice) = 50.0 (mph)
Design Ice Thickness = 0.75 (in)
Structure Class = III
Exposure Category = C
Topographic Category = 1

| Sct. | Length (ft) | Top W. (in) | Bot Width (in) |
|---|---|---|---|
| 1 | 30.00 | 154.40 | 190.40 |
| 2 | 20.00 | 130.18 | 154.40 |
| 3 | 20.00 | 105.75 | 130.18 |
| 4 | 20.00 | 81.31 | 105.75 |
| 5 | 20.00 | 56.88 | 81.31 |
| 6 | 20.00 | 56.67 | 56.88 |
| 7 | 20.00 | 56.45 | 56.67 |

NOTE: LINES TO BE DUAL STACKED EXCEPT E65 WAVEGUIDES.

MAX. STRESS RATIO FOR MEMBERS = 0.85
MAX. TWIST & SWAY @ SERVICE WIND = 0.36 DEG.
STRUCTURE FALL RADIUS = 0 FT.




(7) 1.5"DIA. x 74"LG. ASTM F1554 GR. 105 ANCHOR BOLTS PER LEG - (21 TOTAL)
(STRESS RATIO = 0.61 < 0.85

## MAXIMUM BASE REACTIONS

Download (Kips) (451.3 X 1.1) ÷ 0.82 = 605.4 K
Uplift (Kips) (407.5 X 1.1) ÷ 0.82 = 546.6 K
Shear (Kips) (42.4 X 1.1) ÷ 0.82 = 56.9 K
O.T.M. (5961.4 X 1.1) ÷ 0.82 = 7997 FT. K

File: W:\Jobs\2014\210856\210856.out
Contract:
Project: 150FT SSV TOWER
Date and Time: 7/11/2014 4:14:56 PM

Revision: 0
Site: NORWALK TINDALL
Engineer: OH

## Section A: PROJECT DATA

| | |
|---|---|
| Project Title: | 150FT SSV TOWER |
| Customer Name: | NORTHEAST UTILITIES |
| Site: | NORWALK TINDALL |
| Contract No.: | |
| Revision: | 0 |
| Engineer: | OH |
| Date: | Jul 11 2014 |
| Time: | 04:13:14 PM |
| Project Notes: | CTY: FAIRFIELD, CT |

Design Standard: ANSI/TIA-222-G-2005 Addendum 2

GENERAL DESIGN CONDITIONS

| | |
|---|---|
| Start wind direction: | 0.00 (Deg) |
| End wind direction: | 330.00 (Deg) |
| Increment wind direction: | 30.00 (Deg) |
| Elevation above ground: | 0.00(ft) |
| Gust Response Factor Gh: | 0.85 |
| Structure class: | III |
| Exposure category: | C |
| Topographic category: | 1 |
| Material Density: | 490.1(lbs/ft^3) |
| Young's Modulus: | 29000.0(ksi) |
| Poisson Ratio: | 0.30 |
| Weight Multiplier: | 1.25 |

Minimum Bracing Resistance as per 4.4.1

WIND ONLY CONDITIONS:

| | |
|---|---|
| Basic Wind Speed (No Ice): | 110.00(mph) |
| Directionality Factor Kd: | 0.85 |
| Importance Factor I: | 1.15 |
| Wind Load Factor: | 1.60 |
| Dead Load Factor: | 1.20 |
| Dead Load Factor for Uplift: | 0.90 |

WIND AND ICE CONDITIONS:

| | |
|---|---|
| Basic Wind Speed (With Ice): | 50.00(mph) |
| Directionality Factor Kd: | 0.85 |
| Wind Load Importance Factor Iw: | 1.00 |
| Ice Thickness Importance Factor Ii: | 1.25 |
| Ice Thickness: | 0.75(in) |
| Ice Density: | 56.19(lbs/ft^3) |
| Wind Load Factor: | 1.00 |
| Dead Load Factor: | 1.20 |
| Ice Load Factor: | 1.00 |

WIND ONLY SERVICEABILITY CONDITIONS:

| | |
|---|---|
| Serviceability Wind Speed: | 60.00(mph) |
| Directionality Factor Kd: | 0.85 |
| Importance Factor I: | 1.00 |
| Wind Load Factor: | 1.00 |
| Dead Load Factor: | 1.00 |

Analysis performed using: Robot Millenium Finite Element Analysis Software (by Robobat)

## Section B: STRUCTURE GEOMETRY

TOWER GEOMETRY

| Cross-Section | Height (ft) | Tot Height (ft) | # of Section | Bot Width (in) | Top Width (in) |
|---|---|---|---|---|---|
| Triangular | 150.00 | 170.00 | 7 | 190.40 | 56.45 |

SECTION GEOMETRY

| Sec # | Sec. Name | Elevation Bottom (ft) | Elevation Top (ft) | Widths Bottom (in) | Widths Top (in) | Masses Legs (lbs) | Masses Brcg. (lbs) | Masses Sec.Brc (lbs) | Masses Int.Brc (lbs) | Masses Sect. (lbs) | Masses Database (lbs) | Brcg. Clear. (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | RSS4* | 130.00 | 150.00 | 57 | 56 | 1015 | 449 | 0 | 0 | 1464 | 0 | 0.787 |
| 6 | RSS4* | 110.00 | 130.00 | 57 | 57 | 1253 | 490 | 0 | 0 | 1743 | 0 | 0.787 |
| 5 | RST6* | 90.00 | 110.00 | 81 | 57 | 1519 | 680 | 79 | 0 | 2277 | 0 | 0.787 |
| 4 | RST8* | 70.00 | 90.00 | 106 | 81 | 2121 | 852 | 191 | 0 | 3164 | 0 | 0.787 |
| 3 | RST10* | 50.00 | 70.00 | 130 | 106 | 2824 | 1341 | 161 | 0 | 4326 | 0 | 0.787 |
| 2 | RST12 | 30.00 | 50.00 | 154 | 130 | 3627 | 1432 | 0 | 0 | 5059 | 0 | 0.787 |
| 1 | RST15* | 0.00 | 30.00 | 190 | 154 | 6099 | 2347 | 1044 | 137 | 9627 | 0 | 0.787 |
| Total Mass: | | | | | | 18458 | 7591 | 1474 | 137 | 27661 | 0 | |

PANEL GEOMETRY

| Sec# | Pnl# | Type | SecBrcg | Mid. Horiz Continuous | Horiz Height (ft) | Bottom Width (in) | Top Width (in) | Plan Bracing | Hip Bracing | Gusset Plate Area (ft^2) | Gusset Plate Weight (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 5 | X | (None) | Yes | 4.0 | 56.5 | 56.5 | (None) | (None) | 0.000 | 0.00 |
| 7 | 4 | X | (None) | None | 4.0 | 56.5 | 56.5 | (None) | (None) | 0.000 | 0.00 |
| 7 | 3 | X | (None) | None | 4.0 | 56.6 | 56.5 | (None) | (None) | 0.000 | 0.00 |
| 7 | 2 | X | (None) | None | 4.0 | 56.6 | 56.6 | (None) | (None) | 0.000 | 0.00 |
| 7 | 1 | X | (None) | None | 4.0 | 56.7 | 56.6 | (None) | (None) | 0.000 | 0.00 |
| 6 | 5 | X | (None) | None | 4.0 | 56.7 | 56.7 | (None) | (None) | 0.000 | 0.00 |
| 6 | 4 | X | (None) | None | 4.0 | 56.8 | 56.7 | (None) | (None) | 0.000 | 0.00 |
| 6 | 3 | X | (None) | None | 4.0 | 56.8 | 56.8 | (None) | (None) | 0.000 | 0.00 |
| 6 | 2 | X | (None) | None | 4.0 | 56.8 | 56.8 | (None) | (None) | 0.000 | 0.00 |
| 6 | 1 | X | (None) | None | 4.0 | 56.9 | 56.8 | (None) | (None) | 0.000 | 0.00 |
| 5 | 5 | X | (None) | Yes | 4.0 | 61.8 | 56.9 | (None) | (None) | 0.000 | 0.00 |
| 5 | 4 | X | (None) | None | 4.0 | 66.7 | 61.8 | (None) | (None) | 0.000 | 0.00 |
| 5 | 3 | X | (None) | None | 4.0 | 71.5 | 66.7 | (None) | (None) | 0.000 | 0.00 |
| 5 | 2 | X | (None) | None | 4.0 | 76.4 | 71.5 | (None) | (None) | 0.000 | 0.00 |
| 5 | 1 | X | 2-Subdiv. | No None | 4.0 | 81.3 | 76.4 | (None) | (None) | 0.000 | 0.00 |
| 4 | 4 | X | (None) | None | 5.0 | 87.4 | 81.3 | (None) | (None) | 0.000 | 0.00 |
| 4 | 3 | X | (None) | None | 5.0 | 93.5 | 87.4 | (None) | (None) | 0.350 | 0.00 |
| 4 | 2 | X | 2-Subdiv. | No None | 5.0 | 99.6 | 93.5 | (None) | (None) | 0.000 | 0.00 |
| 4 | 1 | X | 2-Subdiv. | No None | 5.0 | 105.8 | 99.6 | (None) | (None) | 0.000 | 0.00 |
| 3 | 4 | X | (None) | None | 5.0 | 111.9 | 105.8 | (None) | (None) | 0.350 | 0.00 |
| 3 | 3 | X | (None) | None | 5.0 | 118.0 | 111.9 | (None) | (None) | 0.350 | 0.00 |
| 3 | 2 | X | (None) | None | 5.0 | 124.1 | 118.0 | (None) | (None) | 0.350 | 0.00 |
| 3 | 1 | X | 2-Subdiv. | No None | 5.0 | 130.2 | 124.1 | (None) | (None) | 0.000 | 0.00 |
| 2 | 4 | X | (None) | None | 5.0 | 136.2 | 130.2 | (None) | (None) | 0.350 | 0.00 |
| 2 | 3 | X | (None) | None | 5.0 | 142.3 | 136.2 | (None) | (None) | 0.350 | 0.00 |
| 2 | 2 | X | (None) | None | 5.0 | 148.3 | 142.3 | (None) | (None) | 0.350 | 0.00 |
| 2 | 1 | X | (None) | None | 5.0 | 154.4 | 148.3 | (None) | (None) | 0.350 | 0.00 |
| 1 | 3 | X | Tri-Div. | No None | 10.0 | 166.4 | 154.4 | (None) | (None) | 0.000 | 0.00 |
| 1 | 2 | X | Tri-Div. | No None | 10.0 | 178.4 | 166.4 | (None) | (None) | 0.000 | 0.00 |
| 1 | 1 | K | 2-Subdiv. | Yes | 10.0 | 190.4 | 178.4 | 2-Subdiv. | (None) | 0.000 | 0.00 |

MEMBER PROPERTIES

| Sec/ Pnl | Type | Description | Steel Grade | Conn. Type | Bolt #-Size | Bolt Grade | End Dist. | Edge Dist. | Gusset Thick. | Bolt Space | Dble Member Spacing Mem. Stitch |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | (in) | | (in) | (in) | (in) | (in) | (in) | Bolt (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/5 | Leg | SR 2 1/4 | A572 gr.50Tension | 4-0.875 | A325X | | | | | | |
| 7/5 | Diag | L1 1/2x1 1/2x3/16 | A572 gr.50Bolted | 1-0.500 | A325X | 1.625 | 0.630 | 0.250 | 1.875 | | |
| 7/5 | Horiz | L1 1/2x1 1/2x3/16 | A529 gr.50Bolted | 1-0.500 | A325X | 1.625 | 0.630 | 0.250 | 1.875 | | |
| 7/4 | Leg | SR 2 1/4 | A572 gr.50Tension | 4-0.875 | A325X | | | | | | |
| 7/4 | Diag | L1 1/2x1 1/2x3/16 | A572 gr.50Bolted | 1-0.500 | A325X | 1.625 | 0.630 | 0.250 | 1.875 | | |
| 7/3 | Leg | SR 2 1/4 | A572 gr.50Tension | 4-0.875 | A325X | | | | | | |
| 7/3 | Diag | L1 1/2x1 1/2x3/16 | A572 gr.50Bolted | 1-0.500 | A325X | 1.625 | 0.630 | 0.250 | 1.875 | | |
| 7/2 | Leg | SR 2 1/4 | A572 gr.50Tension | 4-0.875 | A325X | | | | | | |
| 7/2 | Diag | L1 1/2x1 1/2x3/16 | A572 gr.50Bolted | 1-0.500 | A325X | 1.625 | 0.630 | 0.250 | 1.875 | | |
| 7/1 | Leg | SR 2 1/4 | A572 gr.50Tension | 4-0.875 | A325X | | | | | | |
| 7/1 | Diag | L1 1/2x1 1/2x3/16 | A572 gr.50Bolted | 1-0.500 | A325X | 1.625 | 0.630 | 0.250 | 1.875 | | |
| 6/5 | Leg | SR 2 1/2 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 6/5 | Diag | L1 3/4x1 3/4x3/16 | A572 gr.50Bolted | 2-0.625 | A325X | 1.625 | 0.875 | 0.375 | 2.000 | | |
| 6/4 | Leg | SR 2 1/2 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 6/4 | Diag | L1 3/4x1 3/4x3/16 | A572 gr.50Bolted | 2-0.625 | A325X | 1.625 | 0.875 | 0.375 | 2.000 | | |
| 6/3 | Leg | SR 2 1/2 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 6/3 | Diag | L1 3/4x1 3/4x3/16 | A572 gr.50Bolted | 2-0.625 | A325X | 1.625 | 0.875 | 0.375 | 2.000 | | |
| 6/2 | Leg | SR 2 1/2 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 6/2 | Diag | L1 3/4x1 3/4x3/16 | A572 gr.50Bolted | 2-0.625 | A325X | 1.625 | 0.875 | 0.375 | 2.000 | | |
| 6/1 | Leg | SR 2 1/2 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 6/1 | Diag | L1 3/4x1 3/4x3/16 | A572 gr.50Bolted | 2-0.625 | A325X | 1.625 | 0.875 | 0.375 | 2.000 | | |
| 5/5 | Leg | SR 2 3/4 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 5/5 | Diag | L2x2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 5/5 | Horiz | L2x2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 5/4 | Leg | SR 2 3/4 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 5/4 | Diag | L2x2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 5/3 | Leg | SR 2 3/4 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 5/3 | Diag | L2x2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 5/2 | Leg | SR 2 3/4 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 5/2 | Diag | L2x2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 5/1 | Leg | SR 2 3/4 | A572 gr.50Tension | 5-1.000 | A325X | | | | | | |
| 5/1 | Diag | L2x2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 5/1 | SecH1 | L2x2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 | | |
| 4/4 | Leg | SR 3 1/4 | A572 gr.50Tension | 7-1.000 | A325X | | | | | | |
| 4/4 | Diag | L2 1/2x2 1/2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.313 | 0.375 | 1.875 | | |
| 4/3 | Leg | SR 3 1/4 | A572 gr.50Tension | 7-1.000 | A325X | | | | | | |
| 4/3 | Diag | L2 1/2x2 1/2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.313 | 0.375 | 1.875 | | |
| 4/2 | Leg | SR 3 1/4 | A572 gr.50Tension | 7-1.000 | A325X | | | | | | |
| 4/2 | Diag | L2 1/2x2 1/2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.313 | 0.375 | 1.875 | | |
| 4/2 | SecH1 | L2 1/2x2 1/2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.313 | 0.375 | 1.875 | | |
| 4/1 | Leg | SR 3 1/4 | A572 gr.50Tension | 7-1.000 | A325X | | | | | | |
| 4/1 | Diag | L2 1/2x2 1/2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.313 | 0.375 | 1.875 | | |
| 4/1 | SecH1 | L2 1/2x2 1/2x3/16 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.313 | 0.375 | 1.875 | | |
| 3/4 | Leg | SR 3 3/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |
| 3/4 | Diag | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.250 | 0.375 | 1.875 | | |
| 3/3 | Leg | SR 3 3/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |
| 3/3 | Diag | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.250 | 0.375 | 1.875 | | |
| 3/2 | Leg | SR 3 3/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |
| 3/2 | Diag | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.250 | 0.375 | 1.875 | | |
| 3/1 | Leg | SR 3 3/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |
| 3/1 | Diag | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.250 | 0.375 | 1.875 | | |
| 3/1 | SecH1 | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.250 | 0.375 | 1.875 | | |
| 2/4 | Leg | SR 4 1/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |
| 2/4 | Diag | L3x3x3/16 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.813 | 0.375 | 2.250 | | |
| 2/3 | Leg | SR 4 1/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |
| 2/3 | Diag | L3x3x3/16 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.813 | 0.375 | 2.250 | | |
| 2/2 | Leg | SR 4 1/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2/2 | Diag | L3x3x3/16 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.813 | 0.375 | 2.250 |
| 2/1 | Leg | SR 4 1/4 | A572 gr.50Tension | 5-1.500 | A325X | | | | |
| 2/1 | Diag | L3x3x3/16 | A529 gr.50Bolted | 1-0.750 | A325X | 1.625 | 1.813 | 0.375 | 2.250 |
| 1/3 | Leg | SR 4 1/2 | A572 gr.50Tension | 7-1.500 | A325X | | | | |
| 1/3 | Diag | L3 1/2x3 1/2x1/4 | A529 gr.50Bolted | 2-0.625 | A325X | 1.625 | 2.125 | 0.375 | 1.875 |
| 1/3 | SecD1 | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.250 | 0.375 | 1.875 |
| 1/3 | SecD2 | L2x2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 |
| 1/3 | SecD3 | L2x2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 |
| 1/2 | Leg | SR 4 1/2 | A572 gr.50Tension | 7-1.500 | A325X | | | | |
| 1/2 | Diag | L3 1/2x3 1/2x1/4 | A529 gr.50Bolted | 2-0.625 | A325X | 1.625 | 2.125 | 0.375 | 1.875 |
| 1/2 | SecD1 | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.250 | 0.375 | 1.875 |
| 1/2 | SecD2 | L2x2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 |
| 1/2 | SecD3 | L2x2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.000 | 0.375 | 1.875 |
| 1/1 | Leg | SR 4 1/2 | A572 gr.50Tension | 7-1.500 | A325X | | | | |
| 1/1 | Diag | L3 1/2x3 1/2x1/4 | A529 gr.50Bolted | 2-0.625 | A325X | 1.625 | 2.125 | 0.375 | 1.875 |
| 1/1 | Horiz | L3 1/2x3 1/2x1/4 | A529 gr.50Bolted | 2-0.625 | A325X | 1.625 | 2.125 | 0.375 | 1.875 |
| 1/1 | SecD1 | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.250 | 0.375 | 1.875 |
| 1/1 | SecH1 | L2 1/2x2 1/2x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 1.625 | 1.250 | 0.375 | 1.875 |
| 1/1 | PlanH1 | L3x3x1/4 | A529 gr.50Bolted | 1-0.625 | A325X | 0.938 | 1.750 | 0.375 | 1.875 |

## Section L: STRENGTH ASSESSMENT SORTED DATA

Load Combination Max Envelope
Wind Direction Maximum

| Sec | Pnl | Elev. (ft) | MType | Desc. | Len (ft) | kl/r | Gov. comp. cap. (Kips) | Gov. tens. cap. (Kips) | Max Compr. (Kips) | Max Tens. (Kips) | Asses. Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 5 | 146.00 | Leg | SR 2 1/4 | 4.00 | 85.3 | 105.2 | 167.9 | 7.6 | 6.9 | 0.07 |
| 7 | 4 | 142.00 | Leg | SR 2 1/4 | 4.00 | 85.3 | 105.2 | 167.9 | 11.4 | 10.0 | 0.11 |
| 7 | 3 | 138.00 | Leg | SR 2 1/4 | 4.00 | 85.3 | 105.2 | 167.9 | 16.4 | 14.5 | 0.16 |
| 7 | 2 | 134.00 | Leg | SR 2 1/4 | 4.00 | 85.3 | 105.2 | 167.9 | 22.6 | 20.5 | 0.21 |
| 7 | 1 | 130.00 | Leg | SR 2 1/4 | 4.00 | 85.3 | 105.2 | 167.9 | 30.6 | 28.4 | 0.29 |
| 6 | 5 | 126.00 | Leg | SR 2 1/2 | 4.00 | 76.8 | 143.6 | 221.1 | 40.4 | 38.7 | 0.28 |
| 6 | 4 | 122.00 | Leg | SR 2 1/2 | 4.00 | 76.8 | 143.6 | 221.1 | 52.0 | 50.4 | 0.36 |
| 6 | 3 | 118.00 | Leg | SR 2 1/2 | 4.00 | 76.8 | 143.6 | 221.1 | 64.9 | 63.0 | 0.45 |
| 6 | 2 | 114.00 | Leg | SR 2 1/2 | 4.00 | 76.8 | 143.6 | 221.1 | 80.7 | 78.3 | 0.56 |
| 6 | 1 | 110.00 | Leg | SR 2 1/2 | 4.00 | 76.8 | 143.6 | 221.1 | 96.5 | 93.6 | 0.67 |
| 5 | 5 | 106.00 | Leg | SR 2 3/4 | 4.01 | 69.9 | 187.1 | 267.5 | 111.5 | 106.7 | 0.60 |
| 5 | 4 | 102.00 | Leg | SR 2 3/4 | 4.01 | 69.9 | 187.1 | 267.5 | 125.7 | 119.8 | 0.67 |
| 5 | 3 | 98.00 | Leg | SR 2 3/4 | 4.01 | 69.9 | 187.1 | 267.5 | 136.8 | 129.6 | 0.73 |
| 5 | 2 | 94.00 | Leg | SR 2 3/4 | 4.01 | 69.9 | 187.1 | 267.5 | 152.6 | 143.7 | 0.82 |
| 5 | 1 | 90.00 | Leg | SR 2 3/4 | 4.01 | 34.9 | 244.6 | 267.5 | 165.3 | 155.7 | 0.68 |
| 4 | 4 | 85.00 | Leg | SR 3 1/4 | 5.01 | 73.9 | 250.4 | 373.6 | 182.3 | 170.3 | 0.73 |
| 4 | 3 | 80.00 | Leg | SR 3 1/4 | 5.01 | 73.9 | 250.4 | 373.6 | 199.4 | 186.2 | 0.80 |
| 4 | 2 | 75.00 | Leg | SR 3 1/4 | 5.01 | 37.0 | 338.0 | 373.6 | 217.5 | 201.7 | 0.64 |
| 4 | 1 | 70.00 | Leg | SR 3 1/4 | 5.01 | 37.0 | 338.0 | 373.6 | 236.2 | 218.9 | 0.70 |
| 3 | 4 | 65.00 | Leg | SR 3 3/4 | 5.01 | 64.1 | 368.3 | 497.4 | 253.3 | 234.3 | 0.69 |
| 3 | 3 | 60.00 | Leg | SR 3 3/4 | 5.01 | 64.1 | 368.3 | 497.4 | 271.4 | 250.8 | 0.74 |
| 3 | 2 | 55.00 | Leg | SR 3 3/4 | 5.01 | 64.1 | 368.3 | 497.4 | 287.2 | 265.2 | 0.78 |
| 3 | 1 | 50.00 | Leg | SR 3 3/4 | 5.01 | 32.0 | 461.4 | 497.4 | 303.8 | 280.1 | 0.66 |
| 2 | 4 | 45.00 | Leg | SR 4 1/4 | 5.01 | 56.5 | 505.6 | 637.8 | 318.8 | 293.4 | 0.63 |
| 2 | 3 | 40.00 | Leg | SR 4 1/4 | 5.01 | 56.5 | 505.6 | 637.8 | 334.5 | 307.3 | 0.66 |
| 2 | 2 | 35.00 | Leg | SR 4 1/4 | 5.01 | 56.5 | 505.6 | 637.8 | 348.8 | 320.0 | 0.69 |
| 2 | 1 | 30.00 | Leg | SR 4 1/4 | 5.01 | 56.5 | 505.6 | 637.8 | 363.7 | 333.0 | 0.72 |
| 1 | 3 | 20.00 | Leg | SR 4 1/2 | 10.02 | 53.4 | 581.3 | 716.3 | 384.2 | 350.7 | 0.66 |
| 1 | 2 | 10.00 | Leg | SR 4 1/2 | 10.02 | 53.4 | 581.3 | 716.3 | 412.4 | 374.9 | 0.71 |
| 1 | 1 | 0.00 | Leg | SR 4 1/2 | 10.02 | 53.4 | 581.3 | 716.3 | 426.7 | 385.7 | 0.73 |
| 7 | 5 | 146.00 | Diag | L1 1/2x1 1/2x3/16 | 6.18 | 112.7 | 9.4 | 9.7 | 1.8 | 1.8 | 0.19 |
| 7 | 4 | 142.00 | Diag | L1 1/2x1 1/2x3/16 | 6.18 | 112.7 | 9.4 | 9.7 | 2.2 | 2.1 | 0.23 |
| 7 | 3 | 138.00 | Diag | L1 1/2x1 1/2x3/16 | 6.18 | 112.8 | 9.4 | 9.7 | 2.8 | 2.7 | 0.30 |
| 7 | 2 | 134.00 | Diag | L1 1/2x1 1/2x3/16 | 6.18 | 112.8 | 9.3 | 9.7 | 3.3 | 3.3 | 0.35 |
| 7 | 1 | 130.00 | Diag | L1 1/2x1 1/2x3/16 | 6.19 | 112.9 | 9.3 | 9.7 | 4.2 | 4.2 | 0.45 |
| 6 | 5 | 126.00 | Diag | L1 3/4x1 3/4x3/16 | 6.19 | 98.1 | 13.9 | 17.5 | 4.8 | 4.8 | 0.35 |
| 6 | 4 | 122.00 | Diag | L1 3/4x1 3/4x3/16 | 6.19 | 98.1 | 13.8 | 17.5 | 5.2 | 5.2 | 0.37 |
| 6 | 3 | 118.00 | Diag | L1 3/4x1 3/4x3/16 | 6.20 | 98.1 | 13.8 | 17.5 | 6.2 | 6.1 | 0.45 |
| 6 | 2 | 114.00 | Diag | L1 3/4x1 3/4x3/16 | 6.20 | 98.2 | 13.8 | 17.5 | 6.7 | 6.7 | 0.48 |
| 6 | 1 | 110.00 | Diag | L1 3/4x1 3/4x3/16 | 6.20 | 98.2 | 13.8 | 17.5 | 6.9 | 6.9 | 0.50 |
| 5 | 5 | 106.00 | Diag | L2x2x3/16 | 6.36 | 96.0 | 15.2 | 12.5 | 6.5 | 6.0 | 0.48 |
| 5 | 4 | 102.00 | Diag | L2x2x3/16 | 6.68 | 99.9 | 15.2 | 12.5 | 5.6 | 6.0 | 0.48 |
| 5 | 3 | 98.00 | Diag | L2x2x3/16 | 7.01 | 103.9 | 14.5 | 12.5 | 7.2 | 6.8 | 0.55 |
| 5 | 2 | 94.00 | Diag | L2x2x3/16 | 7.35 | 108.0 | 13.6 | 12.5 | 7.4 | 7.5 | 0.60 |
| 5 | 1 | 90.00 | Diag | L2x2x3/16 | 7.69 | 112.1 | 12.8 | 12.5 | 7.3 | 7.1 | 0.57 |
| 4 | 4 | 85.00 | Diag | L2 1/2x2 1/2x3/16 | 8.63 | 103.4 | 15.2 | 14.7 | 8.5 | 8.5 | 0.58 |
| 4 | 3 | 80.00 | Diag | L2 1/2x2 1/2x3/16 | 9.05 | 107.4 | 15.2 | 14.7 | 8.2 | 8.2 | 0.56 |
| 4 | 2 | 75.00 | Diag | L2 1/2x2 1/2x3/16 | 9.48 | 111.5 | 15.2 | 14.7 | 9.6 | 9.5 | 0.65 |
| 4 | 1 | 70.00 | Diag | L2 1/2x2 1/2x3/16 | 9.91 | 115.6 | 15.2 | 14.7 | 9.4 | 9.4 | 0.64 |
| 3 | 4 | 65.00 | Diag | L2 1/2x2 1/2x1/4 | 10.36 | 119.3 | 18.9 | 18.4 | 10.0 | 9.7 | 0.53 |
| 3 | 3 | 60.00 | Diag | L2 1/2x2 1/2x1/4 | 10.80 | 124.7 | 17.3 | 18.4 | 9.6 | 9.7 | 0.56 |
| 3 | 2 | 55.00 | Diag | L2 1/2x2 1/2x1/4 | 11.26 | 130.3 | 15.8 | 18.4 | 9.8 | 9.5 | 0.62 |
| 3 | 1 | 50.00 | Diag | L2 1/2x2 1/2x1/4 | 11.72 | 136.1 | 14.5 | 18.4 | 9.5 | 9.6 | 0.65 |
| 2 | 4 | 45.00 | Diag | L3x3x3/16 | 12.18 | 117.8 | 17.7 | 16.5 | 9.8 | 9.6 | 0.58 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 3 | 40.00 | Diag | L3x3x3/16 | 12.64 | 121.8 | 16.6 | 16.5 | 9.6 | 9.7 | 0.59 |
| 2 | 2 | 35.00 | Diag | L3x3x3/16 | 13.10 | 126.6 | 15.4 | 16.5 | 9.9 | 9.7 | 0.65 |
| 2 | 1 | 30.00 | Diag | L3x3x3/16 | 13.57 | 131.4 | 14.3 | 16.5 | 9.8 | 9.8 | 0.68 |
| 1 | 3 | 20.00 | Diag | L3 1/2x3 1/2x1/4 | 16.70 | 134.6 | 21.1 | 30.4 | 12.0 | 11.6 | 0.57 |
| 1 | 2 | 10.00 | Diag | L3 1/2x3 1/2x1/4 | 17.51 | 140.1 | 19.5 | 30.4 | 11.6 | 11.6 | 0.60 |
| 1 | 1 | 0.00 | Diag | L3 1/2x3 1/2x1/4 | 12.77 | 125.1 | 24.4 | 30.4 | 16.2 | 16.2 | 0.67 |
| 7 | 5 | 146.00 | Horiz | L1 1/2x1 1/2x3/16 | 4.70 | 168.6 | 4.2 | 9.7 | 0.5 | 0.5 | 0.13 |
| 5 | 5 | 106.00 | Horiz | L2x2x3/16 | 4.74 | 126.4 | 10.0 | 12.5 | 1.6 | 1.5 | 0.16 |
| 1 | 1 | 0.00 | Horiz | L3 1/2x3 1/2x1/4 | 7.43 | 120.7 | 26.2 | 30.4 | 10.4 | 10.0 | 0.40 |
| 5 | 1 | 90.00 | SecH1 | L2x2x1/4 | 3.29 | 110.6 | 15.2 | 15.2 | 2.9 | 2.9 | 0.19 |
| 4 | 2 | 75.00 | SecH1 | L2 1/2x2 1/2x3/16 | 4.03 | 109.3 | 15.2 | 14.7 | 3.8 | 3.8 | 0.26 |
| 4 | 1 | 70.00 | SecH1 | L2 1/2x2 1/2x3/16 | 4.28 | 112.4 | 15.2 | 14.7 | 4.1 | 4.1 | 0.28 |
| 3 | 1 | 50.00 | SecH1 | L2 1/2x2 1/2x1/4 | 5.30 | 129.7 | 16.0 | 18.4 | 5.2 | 5.2 | 0.33 |
| 1 | 3 | 20.00 | SecD1 | L2 1/2x2 1/2x1/4 | 4.02 | 109.2 | 15.2 | 15.2 | 4.2 | 4.2 | 0.28 |
| 1 | 3 | 20.00 | SecD2 | L2x2x1/4 | 4.33 | 133.2 | 12.0 | 15.2 | 4.1 | 4.1 | 0.34 |
| 1 | 3 | 20.00 | SecD3 | L2x2x1/4 | 5.01 | 154.1 | 8.9 | 15.2 | 3.3 | 3.3 | 0.37 |
| 1 | 2 | 10.00 | SecD1 | L2 1/2x2 1/2x1/4 | 4.22 | 111.7 | 15.2 | 15.2 | 4.4 | 4.4 | 0.29 |
| 1 | 2 | 10.00 | SecD2 | L2x2x1/4 | 4.53 | 139.4 | 10.9 | 15.2 | 4.3 | 4.3 | 0.39 |
| 1 | 2 | 10.00 | SecD3 | L2x2x1/4 | 5.01 | 154.1 | 8.9 | 15.2 | 3.6 | 3.6 | 0.40 |
| 1 | 1 | 0.00 | SecH1 | L2 1/2x2 1/2x1/4 | 3.72 | 105.5 | 15.2 | 15.2 | 7.4 | 7.4 | 0.48 |
| 1 | 1 | 0.00 | SecD1 | L2 1/2x2 1/2x1/4 | 6.09 | 149.0 | 12.1 | 15.2 | 6.5 | 6.5 | 0.53 |
| 1 | 1 | 0.00 | PlanH1 | L3x3x1/4 | 7.43 | 151.2 | 14.2 | 11.7 | 0.1 | 0.1 | 0.01 |