



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

November 12, 2018

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification for T-Mobile / Crown Site BU: 876342
T-Mobile Site ID: CT11229A
111 School House Road, Milford, CT 06460
Latitude: 41° 12' 46.06"/ Longitude: -73° 5' 7.1"

Dear Ms. Bachman:

T-Mobile currently maintains six (9) antennas at the 116 foot level of the existing 140-foot monopole tower at 111 School House Road in Milford, CT. The tower is owned by Crown Castle. The property is owned by the Milford Enterprises LLC. T-Mobile now proposes to swap out (6) panel antennas and remove (3) existing antennas as well as swapping out (2) line of coax for (2) hybrid fiber line and adding (3) RRUs.

This facility was approved by the by the City of Milford on May 15, 1997. This approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Benjamin Blake, Mayor, City of Milford, David Sulkis, City Planner, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

The Foundation for a Wireless World.

CrownCastle.com

Melanie A. Bachman

Page 2

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: William Stone.

Sincerely,

William Stone
Real Estate Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
518-373-3543
William.stone@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc:

The Honorable Benjamin Blake, Mayor City of Milford
110 River Street
Milford, CT 06460
203-783-3201

David Sulkis, City Planner
City of Milford
110 River Street
Milford, CT 06460
203-783-3245

Milford Enterprises LLC
111 Schoolhouse Road
Milford, CT 06460

ORIGIN: DSGFA (518) 373-3523
ANNE MARIE ZSAMBA
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 30NOV18
ACTWGT: 1.40 LB
CAD: 104924194/NET14040
BILL SENDER

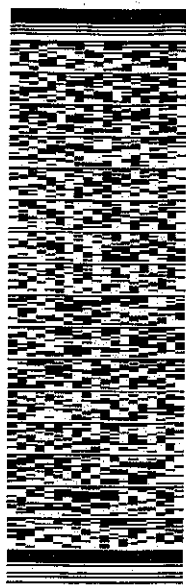
TO MILFORD ENTERPRISES LLC

111 SCHOOLHOUSE ROAD

MILFORD CT 06460

(518) 373-3543 REF: 1734/7690
INV. DEPT.
PO.

552J2/E4/AF/DCA5



J182118051531ur

MON - 03 DEC 10:30A

PRIORITY OVERNIGHT

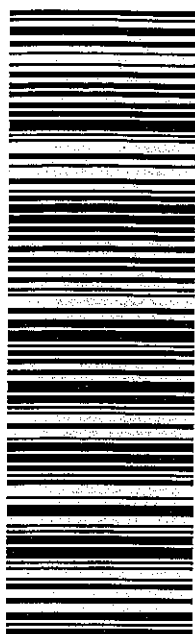
TRK# 7738 4870 6260
0201

DSR

06460

CT-US BDL

SE OXCA



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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID: GELA (518) 373-3523
ANNE MARIE ZSAMBRA
GROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK NY 12065
UNITED STATES US

SHIP DATE: 30NOV18
ACT WGT: 1.40 LB
CAD: 104924194/NET/4040
BILL SENDER

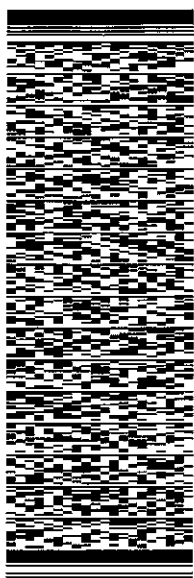
TO CITY OF MILFORD
DAVID SULKIS, CITY PLANNER
110 RIVER STREET

MILFORD CT 06460

REF: 1734 7890

(203) 783-3201
NY
PC:

DEPT:



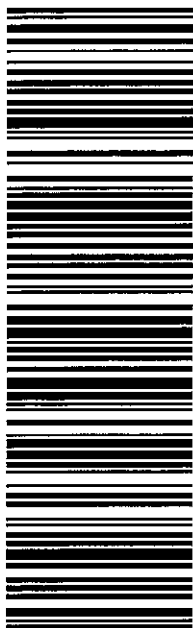
552J2/E4/AF/DCA5

TRK# 7738 4868 7889
0201

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CT-US BDL



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CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 30NOV18
ACTWGT: 1.40 LB
CAD: 104924194/NET/4040
BILL SENDER

TO CITY OF MILFORD
MAYOR BLAKE
110 RIVER STREET

MILFORD CT 06460

REF: 17347880

(203) 783-3201
INV/
PO:

DEPT:



J182118081501uv

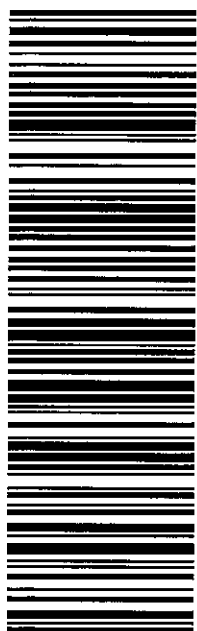
552J2/E4/AF/DCA5

TRK# 7738 4867 4385
0201

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UNITED STATES US

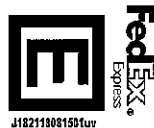
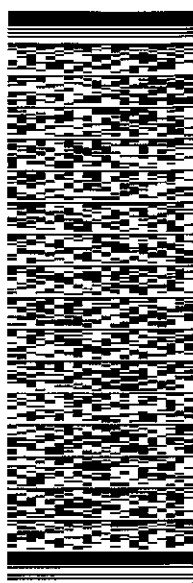
SHIP DATE: 30NOV18
ACT WGT: 4.40 LB
CAD: 104924194/NET14040
BILL SENDER

TO **MELANIE BACHMAN**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

NEW BRITAIN CT 06051

(860) 827-2951 REF: 17656680
INV/ DEPT:
PO

552J2/E4/AF/DCA5

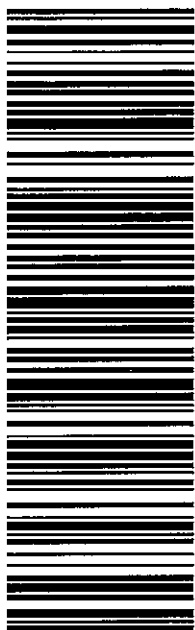


TRK# 7738 4871 5036
0201

MON - 03 DEC 10:30A
PRIORITY OVERNIGHT

SEBDLA

DSR 06051
CT-US BDL



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DATE FILED 5/15/97
 RECEIPT # 10391
 FEE (INCLUDES CZC) \$ \$ 22.00

City of Milford, Connecticut

APPLICATION FOR ZONING PERMIT

INSTRUCTIONS: Fill out this application in ball point pen. A scaled plot plan in duplicate, based on a certified surveyor's plot plan must be submitted with this application showing the proposed or existing lot and building dimensions and the location of all buildings in relation to the street lines, side lot lines and rear lot lines.

ADDRESS OF PROPERTY 111 School House Rd. ZONE G.I.
 MAP 33 BLOCK 335 PARCEL 5 LOT NO. _____ ADDRESS MAP NO. _____ LOT SIZE _____
 WIDTH OF STREET RIGHT OF WAY LESS THAN 50 FT.? YES _____ NO CORNER LOT? YES _____ NO
 IS ANY PORTION OF THE LOT BELOW REGULATORY FLOOD ELEVATION? YES _____ NO CAM YES _____ NO
 CITY WATER PRIVATE WELL* _____ SEWER** SEPTIC*** _____ ENGINEERING OFF STREET PERMIT # _____

OWNER Telach Prop. L.P. PHONE () 877-8000

ADDRESS OF OWNER 111 School House Rd. 11162 CT
STREET CITY STATE ZIP CODE

PRESENT USE OF PROPERTY Motel

PROPOSED CONSTRUCTION NEW ADDITION _____ ALTERATION _____ REPAIR _____

SIZE/USE OF PROPOSED CONSTRUCTION 140' Telecommunications monopole
-Netherlands Permit Req-

NO. OF STORIES _____ HEIGHT 140' REQUIRED PARKING SPACES _____ LOT COVERAGE _____%

DATE OF APPROVALS: ZBA 2/11/97 CASPR _____ SITE PLAN May 6, 1997 SPECIAL PERMIT May 6, 1997

EXEMPTION ISSUED _____ SUBDV. NAME _____ HISTORIC DIST. CERT. OF APPROPRIATENESS

CERTIFICATION: (WARNING) I hereby certify that I am making this application on behalf of and with full authority of the owner of the property and that I am aware of the Zoning Regulations pertinent in this case and that the statements made herein are true and correct. APPROVAL SHALL BE VALID FOR PLANS AS SUBMITTED.

THE OCCUPANCY AND USE OF LAND AND BUILDINGS OR STRUCTURES PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY IS PROHIBITED

APPROVED BY: Richard L. Vaneck
 Zoning Official

APPLICANT: NAME MIKE EVANCHICK AGENT FOR SPRINT PCS
 SIGNATURE [Signature] (Please Print)
 ADDRESS 9 BARNES INDUSTRIAL ROAD
 CITY WALTON TOWNSHIP STATE CT ZIP 06494
 TELEPHONE NO. (203) 299-5609

DATE ISSUED 5/15/97

* Permit required from State Health Dept. for apartments, subdivisions, trailer parks, shopping centers and public buildings.
 ** Permits for sewer connections are granted by Sewer Commission
 *** Septic system approvals are granted by Health Department



MILFORD PLANNING & ZONING BOARD
PETITION FOR SPECIAL PERMIT

Sprint PCS

I (WE) _____
HEREBY PETITION FOR A:

SPECIAL PERMIT _____ AMENDMENT TO A SPECIAL PERMIT xx

TO ESTABLISH _____ OR CONSTRUCT Telecommunications Monopole
(DESCRIPTION)

ON THE FOLLOWING PROPERTY:

ADDRESS OF PROPERTY 111 School House Road SEWER _____ SEPTIC _____

ASSESSOR'S MAP 33 BLOCK 335 PARCEL 5 ZONE GI ACRES 2.216

APPLICANT'S NAME Sprint PCS PHONE # (203) 294-5684

APPLICANT'S MAILING ADDRESS 95 Barnes Industrial Road, Wallingford, CT

PROPERTY OWNER'S NAME TELAHC Prop., L.P. PHONE # c/o (203) 877-8000

PROPERTY OWNER'S SIGNATURE *[Signature]*

PROPERTY OWNER'S MAILING ADDRESS 111 School House Road, Milford, CT

IF APPEARING BY ATTORNEY OR AGENT:

NAME Harris Beach & Wilcox, LLP

SIGNATURE *[Signature]* PHONE # (203) 877-8000

MAILING ADDRESS 147 North Broad Street, Milford, CT

HAS ANY PREVIOUS PETITION FOR A SPECIAL PERMIT BEEN FILED FOR THIS PROPERTY?

YES x NO _____

IF YES, GIVE DECISION: APPROVED x DENIED _____ DATE 11/6/85

APPLICANT _____

NOTE: COPIES OF THIS APPLICATION WILL NOT BE ACCEPTED

FEE - SEE SCHEDULE OF ZONING FEES.

RECEIVED OF _____ DATE _____
RECEIVED BY _____ AMOUNT _____ RECEIPT NO. _____

DATE APPLICATION FILED _____ DATE APPLICATION CERTIFIED _____

PLANNING & ZONING BOARD ACTION: DATE _____ APPROVED _____ DENIED _____

REVISED 6/93

**PROCEDURE FOLLOWING APPROVAL
BY
PLANNING & ZONING BOARD**

SITE PLAN REVIEW

Following approval by the Planning & Zoning Board, it is necessary to obtain a zoning permit at the Planning & Zoning Office. Plans for this permit will be the Board approved plans on file in our office unless the Board has stipulated revisions to be made. Please call the reviewing officer for this application at 783-3245 to make arrangements for the issuance of a zoning permit. The fee for a zoning permit following Board approval is \$22.00. The zoning permit, associated plans and other exhibits must then be taken to the Building Inspector for the issuance of a building permit.

SPECIAL PERMIT/SPECIAL EXCEPTION

Following approval by the Planning & Zoning Board, it is necessary to obtain a zoning permit at the Planning & Zoning Office. Plans for this permit will be the Board approved plans on file in our office unless the Board has stipulated revisions to be made. Please call the reviewing officer for this application at 783-3245 to make arrangements for the issuance of a zoning permit. The fee for a zoning permit following Board approval is \$22.00. The zoning permit, associated plans and other exhibits must then be taken to the Building Inspector for the issuance of a building permit.

Prior to the issuance of a zoning permit, a certificate, which is being held at the office must be filed on the land records in the City Clerk's Office for which a fee of \$10.00 is required. You must present your receipt from the City Clerk's Office at the Planning & Zoning Office to be recorded in your file.

111 SCHOOLHOUSE RD

Location 111 SCHOOLHOUSE RD

Mblu 33/ 335/ 5/A /

Acct# 023043

Owner MILFORD ENTERPRISES LLC

Assessment \$315,000

Appraisal \$450,000

PID 100242

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2013	\$450,000	\$0	\$450,000

Assessment			
Valuation Year	Improvements	Land	Total
2013	\$315,000	\$0	\$315,000

Owner of Record

Owner MILFORD ENTERPRISES LLC
Other C/O JAYESH PATEL
Address 7871 BELLE POINT DR
 GREENBELT, MD 20770

Sale Price \$3,675,000
Certificate
Book & Page 03622/0230
Sale Date 03/27/2015
Instrument 18

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
MILFORD ENTERPRISES LLC	\$3,675,000		03622/0230	18	03/27/2015
CSMC 2007 C5 FFI HOTEL PORTFOLIO LLC	\$6,930,207		03602/0294	22	10/06/2014
MILFORD FFI LLC	\$4,800,000		03168/0407	00	05/10/2007
OLY REALTY ONE LLC	\$3,800,000		02396/0375		02/28/2000
TELAHC PROPERTIES L P	\$0		02040/0184		03/11/1994

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: \$0
Building Percent Good:
Replacement Cost Less Depreciation: \$0

Building Photo

Building Attributes	
Field	Description
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Description:	
Kitchen Descrip:	
Int Condition:	
Solar Panels	
House Generator	



(<http://images.vgsi.com/photos/MilfordCTPhotos//default.jpg>)

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 434V
Description CELL TOWER MDL-00
Zone
Neighborhood C
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 0
Frontage
Depth
Assessed Value \$0
Appraised Value \$0

Outbuildings

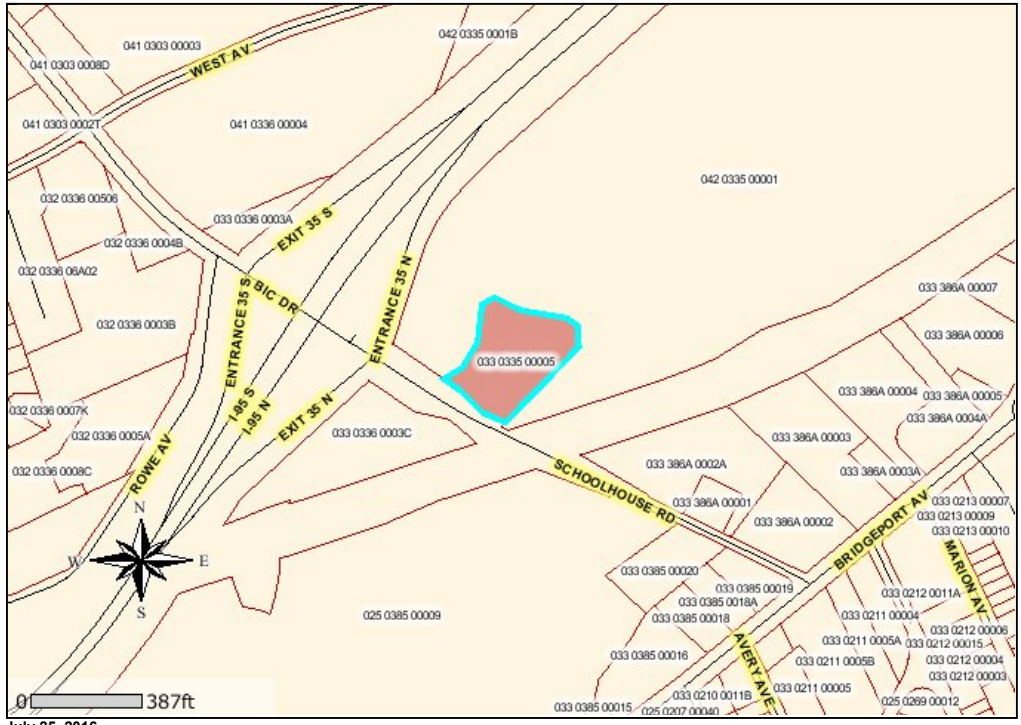
Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CEL1	CEL TWR SITE			1 UNITS	\$450,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$450,000	\$0	\$450,000
2013	\$450,000	\$0	\$450,000
2012	\$450,000	\$0	\$450,000

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$315,000	\$0	\$315,000
2013	\$315,000	\$0	\$315,000
2012	\$315,000	\$0	\$315,000

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Legend

- Streets
- Tax Parcels
- Town Boundary

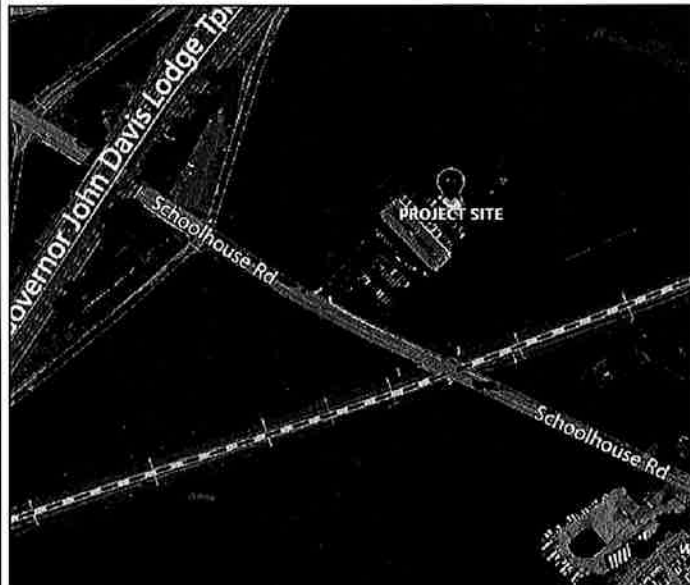
Disclaimer: This map was produced from the City of Milford Geographic Information System. The map was compiled using the most current GIS data available. It is deemed accurate, but is not guaranteed. The City expressly disclaims any liability that may result from the use of this map. This map is not a survey and is subject to any changes an actual land survey discloses.

SHEET INDEX	
NO.	DESCRIPTION
T1	TITLE PAGE
N1	NOTES
C1	PLAN & ELEVATION
C2	RF CHART AND ORIENTATION
D1	EQUIPMENT DETAILS
E1	GROUNDING & ELECTRICAL DETAILS
E2	RF PLUMBING DIAGRAM
S1	STRUCTURAL MODIFICATION DETAILS
S2	STRUCTURAL MODIFICATION DETAILS
S3	STRUCTURAL MODIFICATION DETAILS
S4	STRUCTURAL NOTES

TOWER OWNER NOTIFICATION

ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

LOCATION MAP



CBU
876342
SITE ID
CT11229A
SITE NAME
BIC DRIVE (SSUSA)
SITE ADDRESS
 111 SCHOOL HOUSE ROAD
 MILFORD, CT 06460
CONFIGURATION
67D94DB HYBRID

GENERAL NOTES

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- FACILITY HAS NO PLUMBING OR REFRIGERANTS.
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. EQUIPMENT, ANTENNAS/RRH AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
- THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON STORMWATER DRAINAGE.
- NO SANITARY SEWER, POTABLE WATER, OR TRASH DISPOSAL SERVICE IS REQUIRED
- NO COMMERCIAL SIGNAGE IS PROPOSED

CODE COMPLIANCE

- ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED WITH ANY LOCAL AMENDMENTS BY THE LOCAL GOVERNING AUTHORITIES:
- INTERNATIONAL BUILDING CODE
 - NATIONAL ELECTRICAL CODE
 - NATIONAL FIRE PROTECTION ASSOCIATION 101
 - NATIONAL FIRE PROTECTION ASSOCIATION 1
 - LOCAL BUILDING CODES
 - CITY/COUNTY ORDINANCES
 - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS (AISC)
 - UNDERWRITERS LABORATORIES APPROVED ELECTRICAL PRODUCTS.
 - ANSI EIA/TIA 222 REV. G
 - TIA 607
 - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
 - IEEE C2 (LATEST EDITION)
 - TELCORDIA GR-1275
 - ANSI T1.311

PROJECT SITE INFORMATION

SITE ID: CT11229A
SITE NAME: BIC DRIVE (SSUSA)
SITE ADDRESS: 111 SCHOOL HOUSE ROAD
 MILFORD, CT 06460
PERMITTING JURISDICTION: CITY OF MILFORD
COUNTY: NEW HAVEN
ZONING: LI
SITE COORDINATES:
LATITUDE: 41° 12' 46.06" (NAD 83)
LONGITUDE: -73° 5' 7.10" (NAD 83)
APPLICANT: T-MOBILE NORTHEAST LLC
 12920 SE 38th STREET
 BELLEVUE, WA 98006

STRUCTURAL ANALYSIS INFORMATION

TOWER ANALYSIS

INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING TOWER FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS FROM TOWER OWNER PRIOR TO ANY CONSTRUCTION.

ANTENNA MOUNTS

BASED ON THE MOUNT ANALYSIS COMPLETED BY MASER DATED 10/15/18. THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION WITH THE FOLLOWING MODIFICATIONS:

- GC TO INSTALL PLATFORM KICKER KIT (SITE PRO 1 #PRK-1245L OR ENGINEER APPROVED EQUIVALENT) MID-WAY ALONG THE EXISTING LL3x3x4 MEMBERS AND 48" BELOW THE EXISTING PLATFORM
- INSTALL A HANDRAIL KIT (SITE PRO 1 #HRK14 OR ENGINEER APPROVED EQUIVALENT) 1'-6" ABOVE THE EXISTING PLATFORM. CONTRACTOR TO CUT THE PROPOSED HANDRAIL PIPE MASTS TO DOWN TO 13'-6". SEE APPENDIX E OF MOUNT ANALYSIS FOR MODIFICATION DESIGN DETAILS.

PROJECT TEAM INFORMATION

CLIENT REPRESENTATIVE: CROWN CASTLE
 3 CORPORATE PARK DRIVE SUITE 101
 CLIFTON PARK, NY 12065
CLIENT REP. CONTACT: WILL STONE
 (518) 373-3543
ENGINEER: INFINIGY
 6865 DEERPATH ROAD SUITE 152
 ELK RIDGE, MD 21075
ENGINEER CONTACT: MATTHEW LIVERETTE
 (518) 690-0790

SCOPE OF WORK

SCOPE OF WORK:
 L700 4X2 67D94DB HYBRID CONFIG: REPLACE (9) ANTENNAS WITH (6) NEW ANTENNAS. REPLACE (2) COAX WITH (2) HYBRIDS. ADD (3) RRU'S. INSTALL MOUNT MODIFICATIONS.
 FINAL CONFIG: (6) ANTENNAS, (16) COAX, (2) HYBRIDS, (6) TMA'S, AND (3) RRU'S.

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG
 TOLL FREE: 1-800-922-4455 OR www.cbyd.com
 CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

T-Mobile
 T-MOBILE NORTHEAST LLC
 103 MONARCH DRIVE
 LIVERPOOL, NY 13088

INFINIGY
 6865 DEERPATH ROAD SUITE 152
 ELK RIDGE, MD 21075
 TEL (443) 592-3143



D	ISSUED FOR CONSTRUCTION	SL	11/05/18
A	ISSUED FOR REVIEW	SL	03/14/18
No.	Submital / Revision	App'd	Date

Project Number: 600-007

Project Title:
CT11229A
BIC DRIVE (SSUSA)

111 SCHOOL HOUSE ROAD
MILFORD, CT 06460

Prepared For:
CROWN CASTLE

Drawing Title
TITLE PAGE

Drawing Number
T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

- 1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
 - A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
 - B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 - C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC").
 - D. AND NFPA 101 (LIFE SAFETY CODE).
 - E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
 - F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).
- 1.2 DEFINITIONS:
 - A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
 - B. COMPANY: T-MOBILE CORPORATION
 - C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
 - D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
 - E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- 1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.
- 1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
 - A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
- 1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
- 1.7 NOTICE TO PROCEED:
 - A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
 - B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE T-MOBILE WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

- 2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HERewith, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

- 2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
 - A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY T-MOBILE TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.
- 2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.
- 2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

- 3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR T-MOBILE PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
 - A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
 - B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
 - C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
 - D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO T-MOBILE OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
 - E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
 - F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

- 4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- 4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- 4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 - A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 - B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- 4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.
- 4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

- 5.1 TESTS AND INSPECTIONS:
 - A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
 - B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.
 - C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
 - D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
 - E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.

- F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
- G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

- 6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.
 - A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.
 - B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.
 - C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
 - D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.
 - E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.
 - F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.
 - G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ROOTS, SOD, RUBBING, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
	TRANSFORMER
	KILOWATT HOUR METER
	JUNCTION BOX
	PULL BOX TO NEC/TELCO STANDARDS
	UNDERGROUND UTILITIES
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION
	GROUND ROD
	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	120AC DUPLEX RECEPTACLE
	GROUND CONDUCTOR
	DC POWER AND FIBER OPTIC TRUNK CABLES
	DC POWER CABLES
	REPRESENTS DETAIL NUMBER
	REF. DRAWING NUMBER

ABBREVIATIONS

CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MIGB	MASTER ISOLATED GROUND BAR
SST	SELF SUPPORTING TOWER
GPS	GLOBAL POSITIONING SYSTEM
TYP.	TYPICAL
DWG	DRAWING
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
PVC	POLYVINYL CHLORIDE
CAB	CABINET
C	CONDUIT
SS	STAINLESS STEEL
G	GROUND
AWG	AMERICAN WIRE GAUGE
RGS	RIGID GALVANIZED STEEL
AHJ	AUTHORITY HAVING JURISDICTION
TTLNA	TOWER TOP LOW NOISE AMPLIFIER
UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING
AGL	ABOVE GROUND LEVEL

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ISSUED FOR CONSTRUCTION SE 11/05/18

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No. Submittal / Revision App'd Date

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Designed: MRL

Checked: AB

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BIC DRIVE (SSUSA)

111 SCHOOL HOUSE ROAD

MILFORD, CT 06460

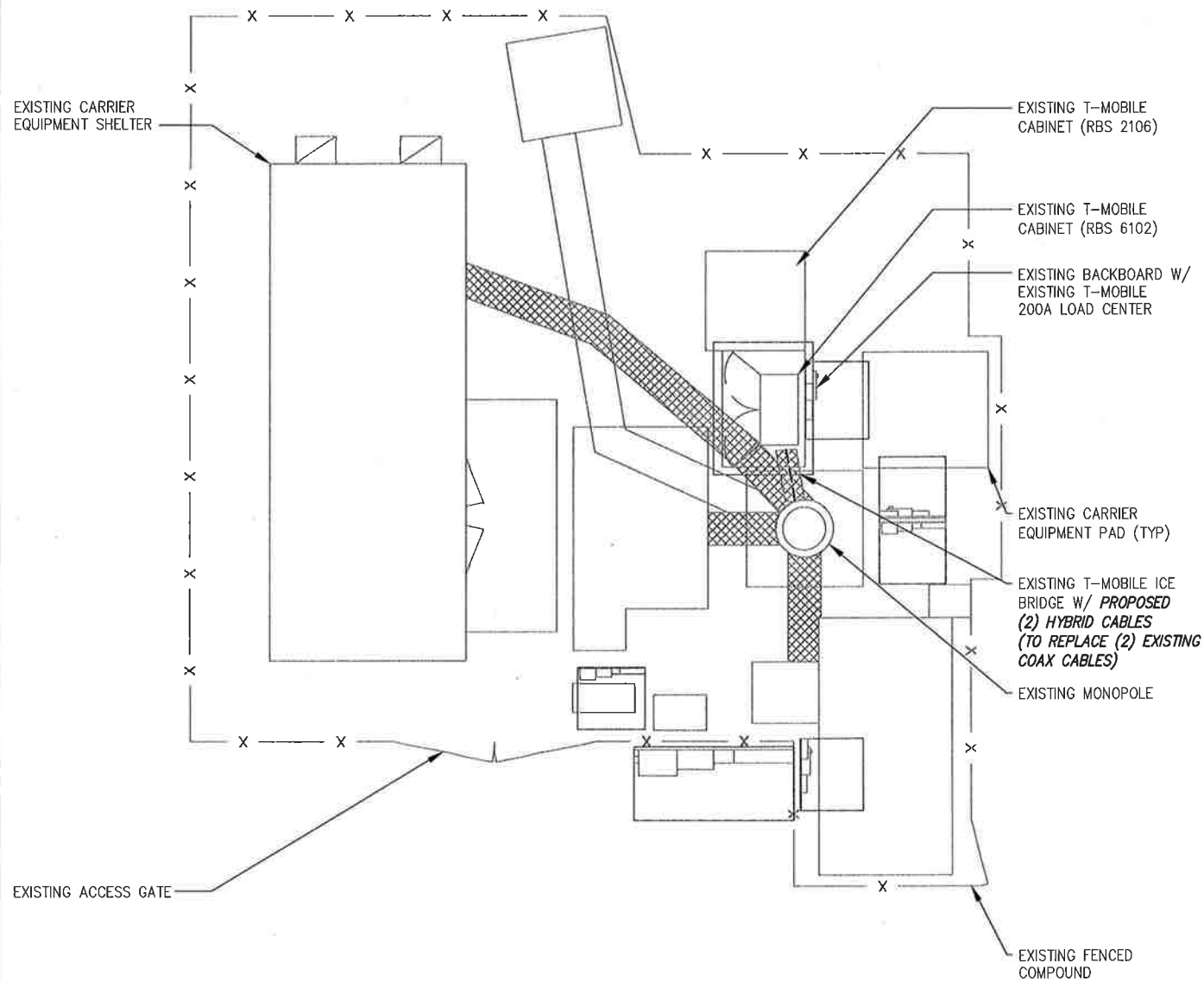
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Drawing Title

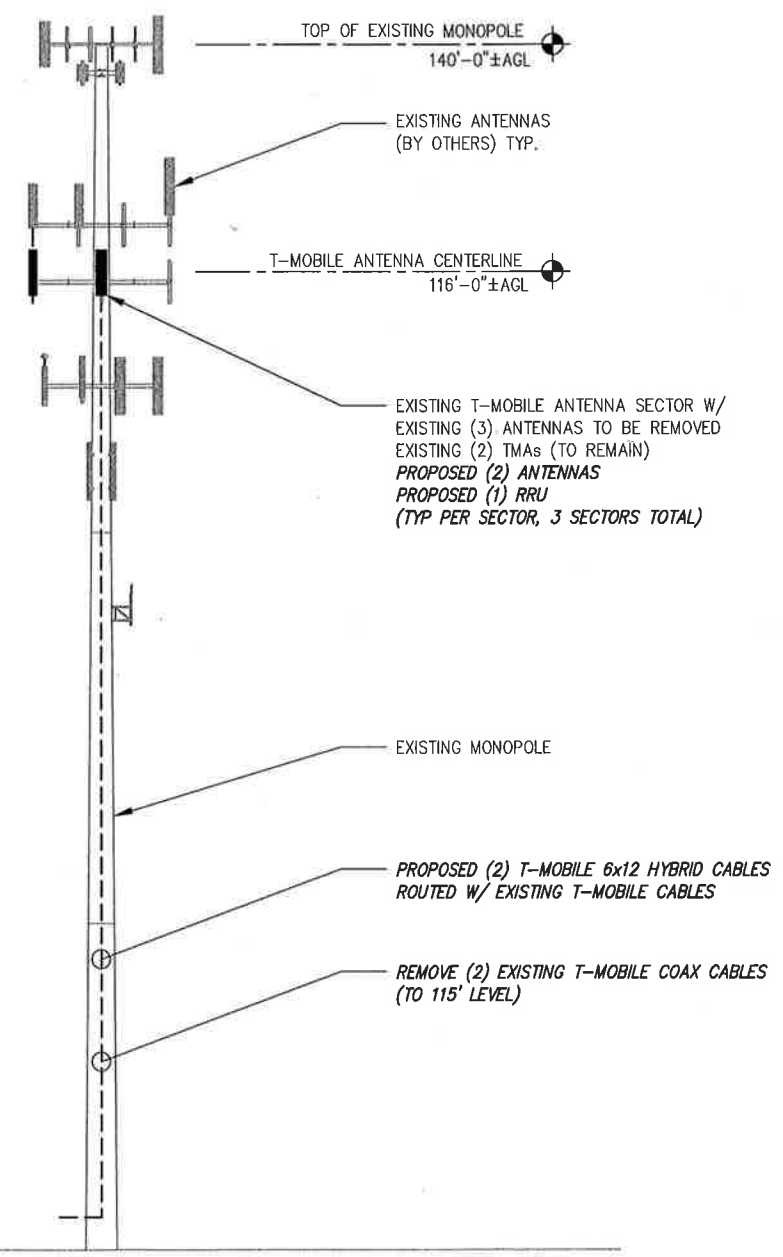
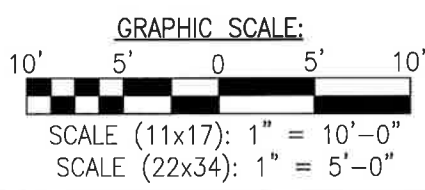
NOTES

Drawing Number

N1



1 PLAN VIEW
SCALE: AS NOTED



2 ELEVATION
SCALE: NOT TO SCALE

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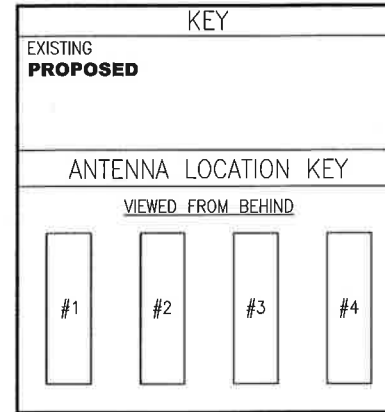
111 SCHOOL HOUSE ROAD
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Drawing Title:
PLAN AND ELEVATION

Drawing Number:
C1

SECTOR	ANTENNA POSITION	ANTENNA MODEL #	VENDOR	AZIMUTH	M-TILT	E-TILT	ANTENNA CENTERLINE	TMA/RRU MODEL #	CABLE LENGTH	CABLE TYPE AND QUANTITY
ALPHA	A-1	AIR32 KRD901146-1_B66A_B2A	ERICSSON	30°	0	TBD	116'-0"	-	175'±	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
	A-2	APXVAARR24_43-U-NA20	RFS	30°	0	TBD	116'-0"	(1) ETWVS1200UB (1) S20070A1 (1) 4449 B71+B12	EXISTING	(1) 6X12 HYBRID TRUNK CABLE (SHARED) (5) 1-5/8" COAX (1) 1-1/4" COAX
	A-3	-	-	-	-	-	-	-	-	-
BETA	B-1	AIR32 KRD901146-1_B66A_B2A	ERICSSON	140°	0	TBD	116'-0"	-	175'±	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
	B-2	APXVAARR24_43-U-NA20	RFS	140°	0	TBD	116'-0"	(1) ETWVS1200UB (1) S20070A1 (1) 4449 B71+B12	EXISTING	(1) 6X12 HYBRID TRUNK CABLE (SHARED) (6) 1-1/4" COAX
	B-3	-	-	-	-	-	-	-	-	-
GAMMA	C-1	AIR32 KRD901146-1_B66A_B2A	ERICSSON	280°	0	TBD	116'-0"	-	175'±	(1) 6X12 HYBRID TRUNK CABLE (SHARED)
	C-2	APXVAARR24_43-U-NA20	RFS	280°	0	TBD	116'-0"	(1) ETWVS1200UB (1) S20070A1 (1) 4449 B71+B12	EXISTING	(1) 6X12 HYBRID TRUNK CABLE (SHARED) (4) 1-1/4" COAX
	C-3	-	-	-	-	-	-	-	-	-



GENERAL NOTES:

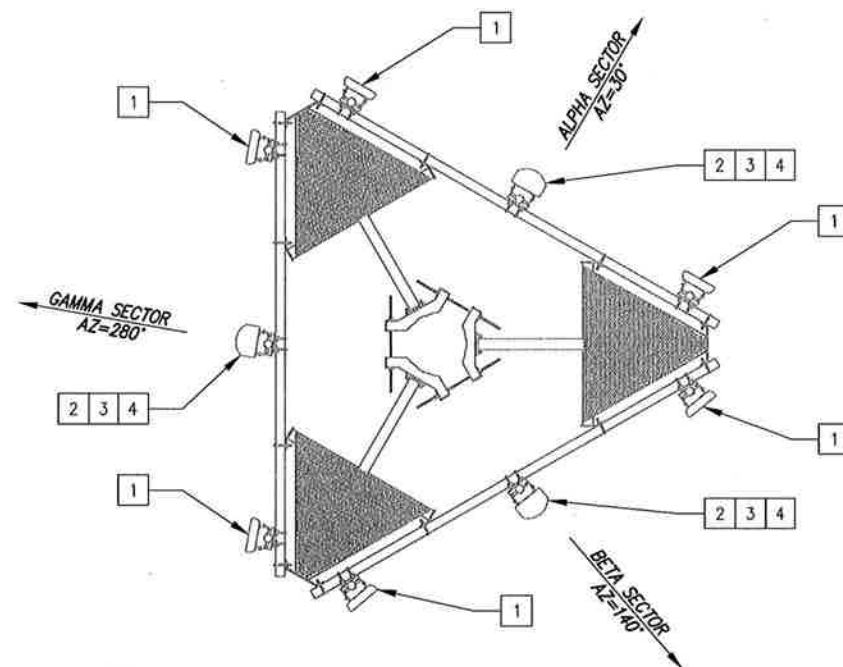
- CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT AT TIME OF CONSTRUCTION.
- CONTRACTOR TO CONFIRM CABLE LENGTHS FOR ANY PROPOSED CABLES/JUMPERS PRIOR TO CONSTRUCTION.

ORIENTATION PLAN KEY				
KEY	DESCRIPTION	TYPE	QTY	STATUS
1	RR90-17-XXDP	ANTENNA	6	REMOVED
2	APX16DWV-16DWV-S-E-A20	ANTENNA	3	REMOVED
3	ETWVS1200UB	TMA	3	REMAIN
4	S20070A1	TMA	3	REMAIN
5	AIR32 KRD901146-1_B66A_B2A	ANTENNA	3	PROPOSED
6	APXVAARR24_43-U-NA20	ANTENNA	3	PROPOSED
7	4449 B71+B12	RRU	3	PROPOSED
8	PRK-1245L	KICKER KIT	1	PROPOSED
9	HRK14	HANDRAIL KIT	1	PROPOSED

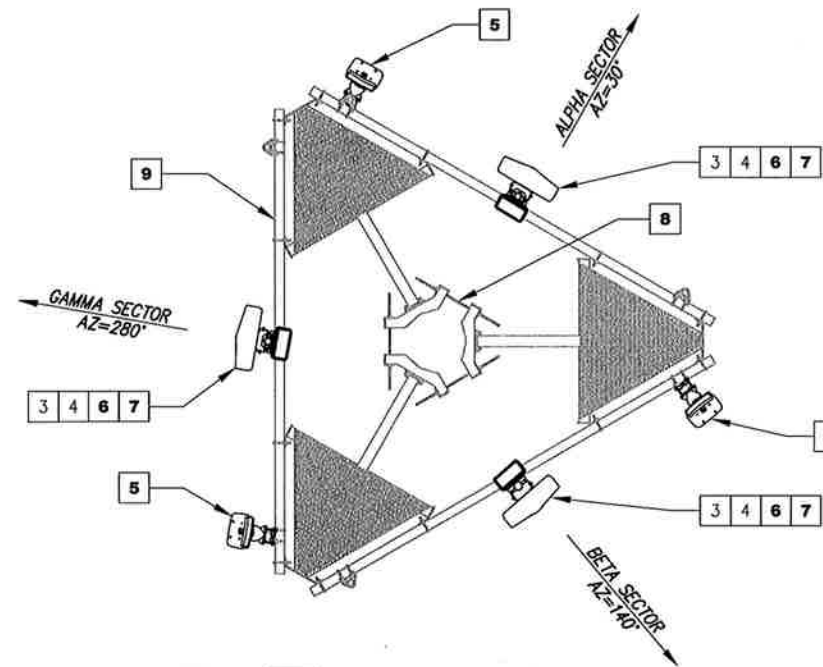
NOTE:

- GC TO INSTALL PLATFORM KICKER KIT (SITE PRO 1 #PRK-1245L OR ENGINEER APPROVED EQUIVALENT) MID-WAY ALONG THE EXISTING LL3x3x4 MEMBERS AND 48" BELOW THE EXISTING PLATFORM
- INSTALL A HANDRAIL KIT (SITE PRO 1 #HRK14 OR ENGINEER APPROVED EQUIVALENT) 1'-6" ABOVE THE EXISTING PLATFORM. CONTRACTOR TO CUT THE PROPOSED HANDRAIL PIPE MASTS TO DOWN TO 13'-6". SEE APPENDIX E OF MOUNT ANALYSIS FOR MODIFICATION DESIGN DETAILS.

1 RF SYSTEM CHART
SCALE: NOT TO SCALE



2 EXISTING ANTENNA ORIENTATION
SCALE: NOT TO SCALE



3 PROPOSED ANTENNA ORIENTATION
SCALE: NOT TO SCALE

INFINIGY & T-Mobile

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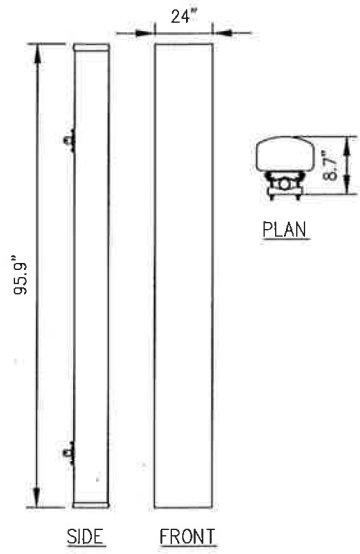
111 SCHOOL HOUSE ROAD
MILFORD, CT 06460

Prepared For:



Drawing Title:
RF CHART

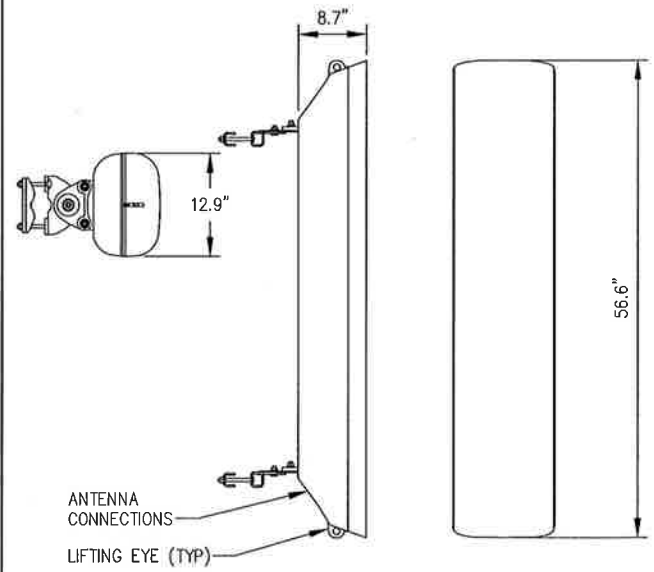
Drawing Number:
C2



RFS MODEL NO.: **APXVAARR24_43-U-NA20**

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD:	95.9"x24"x8.7"
WEIGHT, W/O MOUNTING KIT:	128 LBS

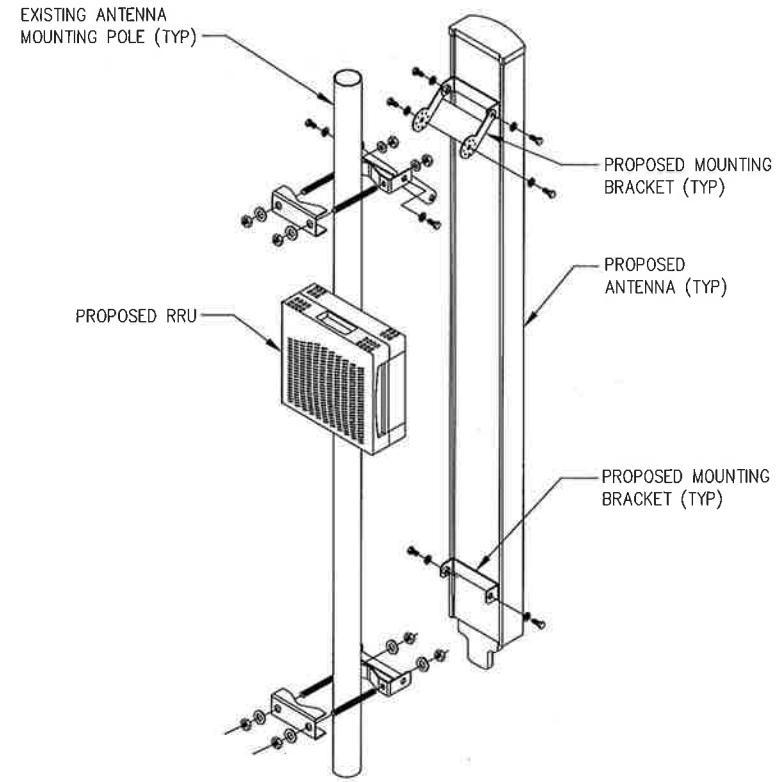
1 APX ANTENNA DETAIL
D1 SCALE: NOT TO SCALE



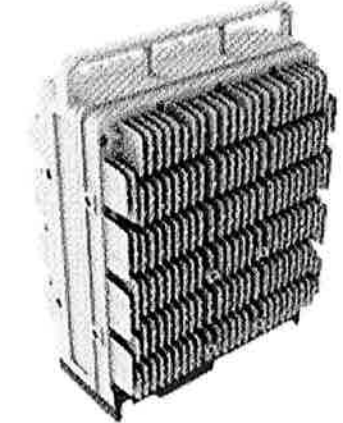
ERICSSON MODEL NO.: **AIR32 KRD901146-1_B66A_B2A**

RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	56.6"x12.9"x8.7"
WEIGHT, W/ PRE-MOUNTED BRACKETS:	132.2 LBS

2 AIR32 ANTENNA DETAIL
D1 SCALE: NOT TO SCALE



3 ANTENNA/RRU MOUNTING DETAIL
D1 SCALE: NOT TO SCALE



ERICSSON 4449 B71+B12 SPECIFICATIONS

- HxWxD, (INCHES) : 17.91"x13.19"x10.63"
- WEIGHT (LBS) : 74.96
- COLOR : GRAY

4 4449 B71+B12 RRU DETAIL
D1 SCALE: NOT TO SCALE



T-Mobile
T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY
6865 DEERPATH ROAD SUITE 152
ELKBRIDGE, MD 21075
TEL (443) 592-3143

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ISSUED FOR CONSTRUCTION	SL	11/05/18	
ISSUED FOR REVIEW	SL	03/14/18	
No	Submittal / Revision	App'd	Date
	Drawn: SL		
	Designed: MR		
	Checked: AJD		

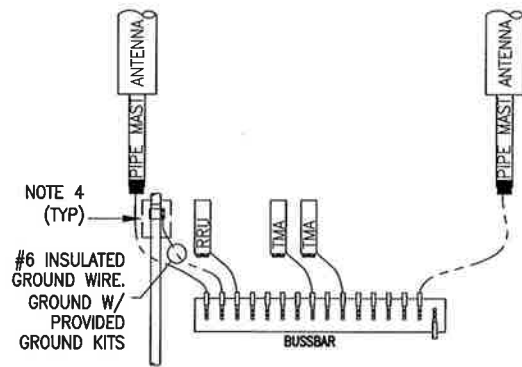
Project Number: **600-007**
Project Title: **CT11229A BIC DRIVE (SSUSA)**
111 SCHOOL HOUSE ROAD
MILFORD, CT 06460



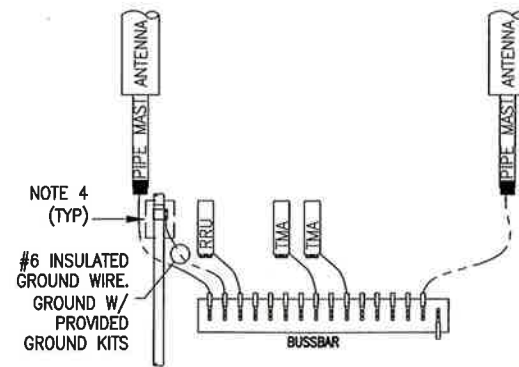
Drawing Title: **EQUIPMENT DETAILS**

Drawing Number: **D1**

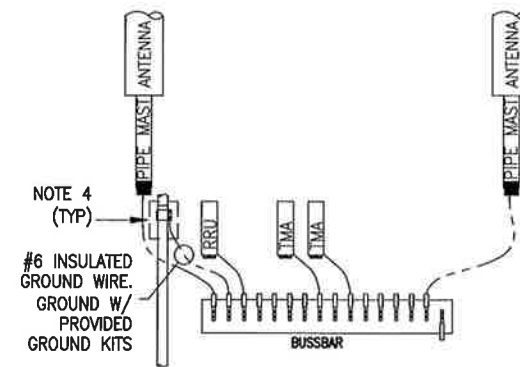
ALPHA SECTOR
(LAYOUT SHOWN GENERICALLY,
SEE ANTENNA ORIENTATION)



BETA SECTOR
(LAYOUT SHOWN GENERICALLY,
SEE ANTENNA ORIENTATION)



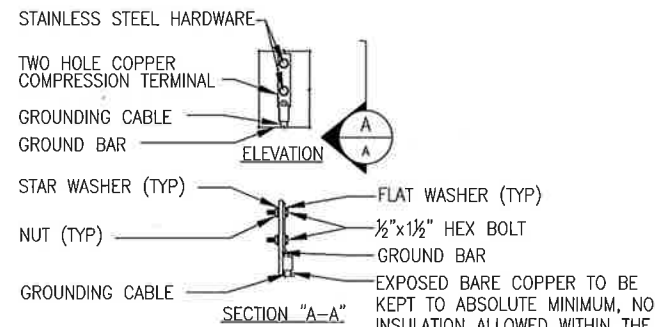
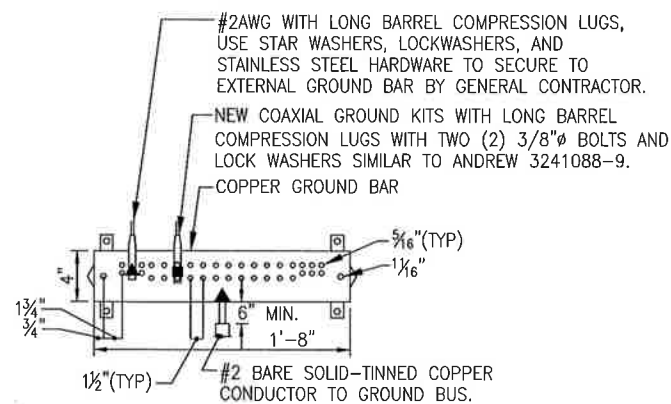
GAMMA SECTOR
(LAYOUT SHOWN GENERICALLY,
SEE ANTENNA ORIENTATION)



NOTES:

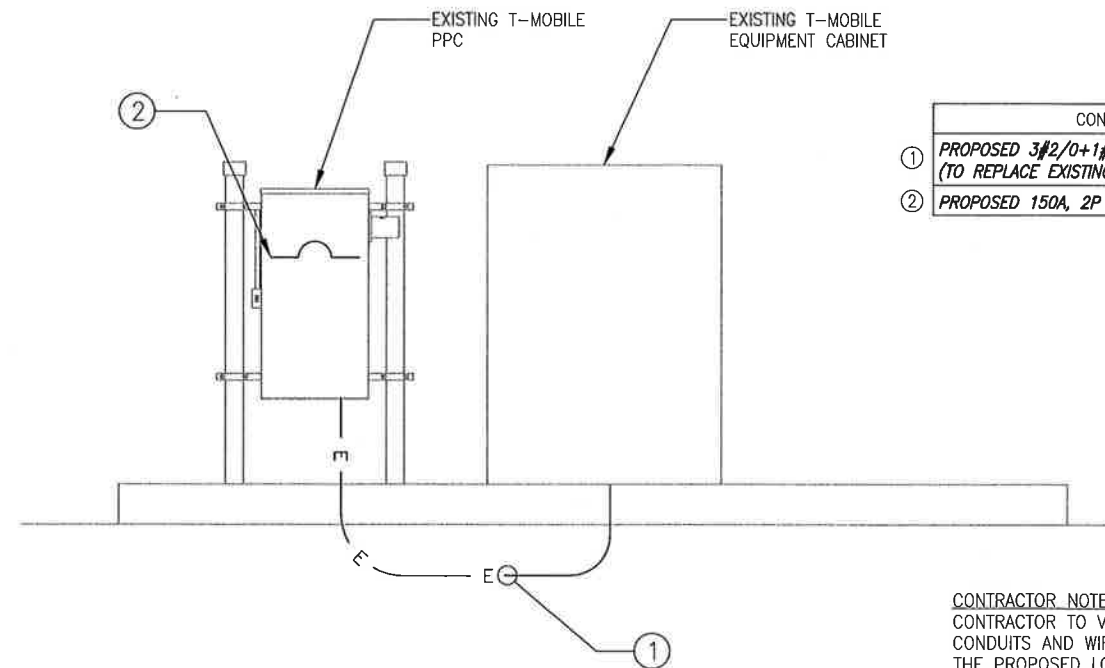
1. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
2. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION, U.O.N.
3. PROVIDE SOLID TINNED BARE COPPER WIRE (BCW) GROUNDING CONDUCTOR.
4. PROVIDE STANDARD COAX OR HYBRID CABLE GROUNDING KIT OR FIELD FABRICATE TO SUIT CONDITIONS. TOTAL LENGTH OF GROUNDING CONDUCTOR SHALL NOT EXCEED 10'-0".
5. PROVIDE GROUNDING ELECTRODES QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
6. LEAVE GROUND WIRE COILED UP ABOVE GRADE. CAP END OF CONDUIT.
7. ADD COAX OR HYBRID CABLE GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF CABLE TRAY (FROM TOWER OR MONOPOLE TO EQUIPMENT) IS GREATER THAN 20'-0".
8. ADD #2/0 GREEN INSULATED CONDUCTOR BETWEEN CABLE TRAY AND GRIPSTRUT/COVER.
9. BUSSBARS ARE TO BE TINNED COPPER BARS (1/4"X2"X12") MOUNTED ON INSULATORS, U.O.N.
10. GROUND ALL PROPOSED ANTENNAS, DIPLEXERS, TMAS, AND RRUS PER MANU. SPECS.

1 GROUNDING DIAGRAM
E1 SCALE: NOT TO SCALE



- NOTES:**
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
 2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
 3. ALL HOLES ARE COUNTERSUNK 1/16".

2 GROUND BAR CONNECTION DETAIL
E1 SCALE: NOT TO SCALE



CONDUIT SCHEDULE	
①	PROPOSED 3#2/0+1#4G IN 2" CONDUIT (TO REPLACE EXISTING CONDUCTOR AND CONDUIT)
②	PROPOSED 150A, 2P C.B.

CONTRACTOR NOTE:
CONTRACTOR TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

3 ONE LINE DIAGRAM
E1 SCALE: NOT TO SCALE



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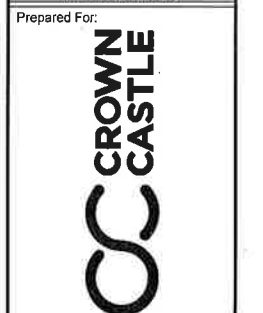
No	Submital / Revision	App'd	Date

Drawn: SL
Designed: MR
Checked: AD

Project Number: 600-007

Project Title: **CT11229A**
BIC DRIVE (SSUSA)

111 SCHOOL HOUSE ROAD
MILFORD, CT 06460



Drawing Title: **GROUNDING & ELECTRICAL DETAILS**

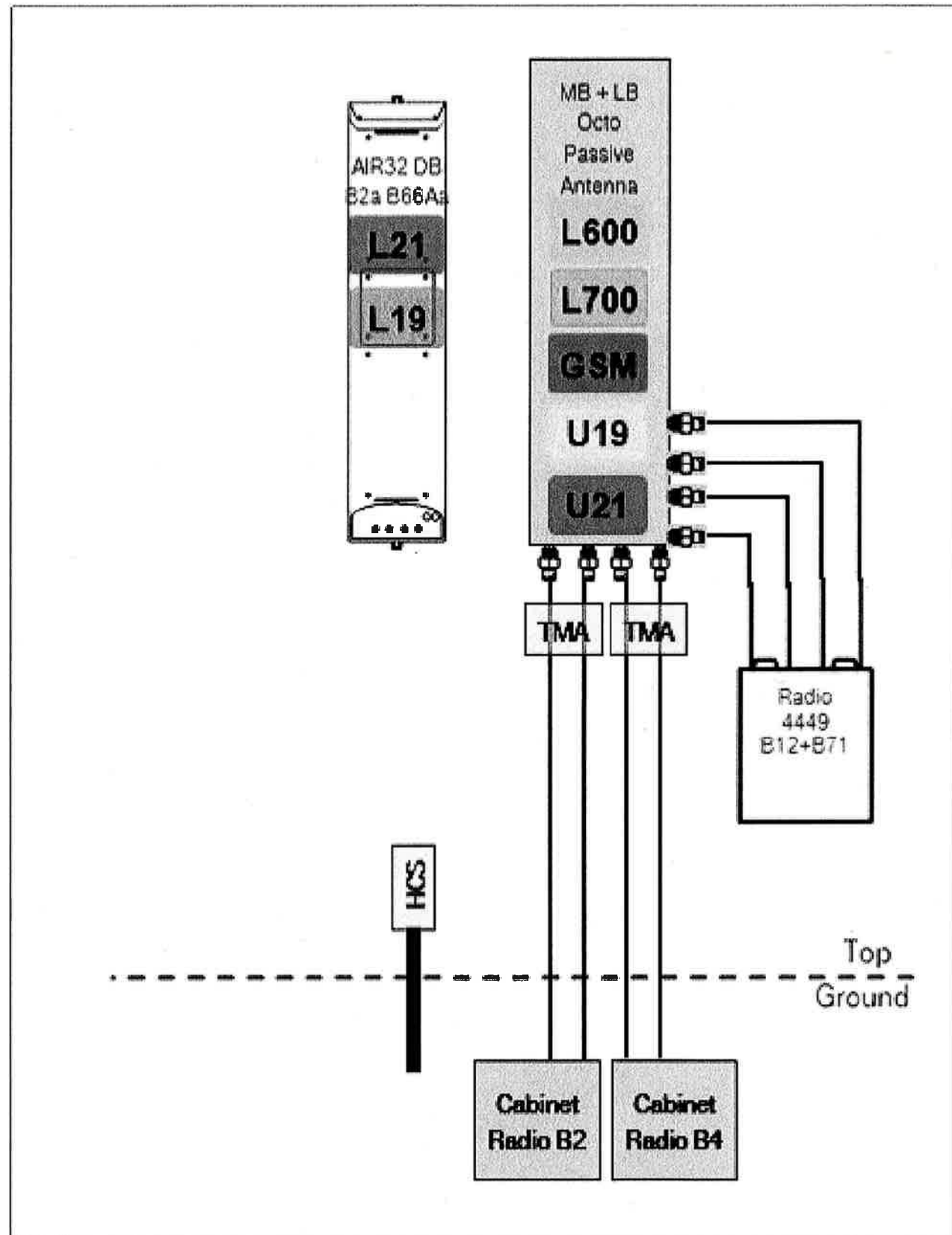
Drawing Number: **E1**

T-Mobile

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY

6865 DEERPATH ROAD, SUITE 152
ELK RIDGE, MD 21075
TEL (443) 592-3143



Notes:

1 RF PLUMBING DIAGRAM
E2 SCALE: AS NOTED

T-Mobile
T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

INFINIGY8

6865 DEERPATH ROAD SUITE 152
ELKRIDGE, MD 21075
TEL (443) 592-3143

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 44705
2018
LICENSED PROFESSIONAL ENGINEER

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0	ISSUED FOR CONSTRUCTION	SL	11/05/18
A	ISSUED FOR REVIEW	SL	03/14/19
No.	Submital / Revision	App'd	Date

Drawn: SL
Designed: ML
Checked: AD

Project Number: 600-007

Project Title:
CT11229A
BIC DRIVE (SSUSA)
111 SCHOOL HOUSE ROAD
MILFORD, CT 06460

Prepared For:
CROWN CASTLE

Drawing Title:
RF PLUMBING DIAGRAM

Drawing Number:
E2



SCALE: AS SHOWN JOB NUMBER: 18922082A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
0	10/11/18	FOR CONSTRUCTION	CL	SMS



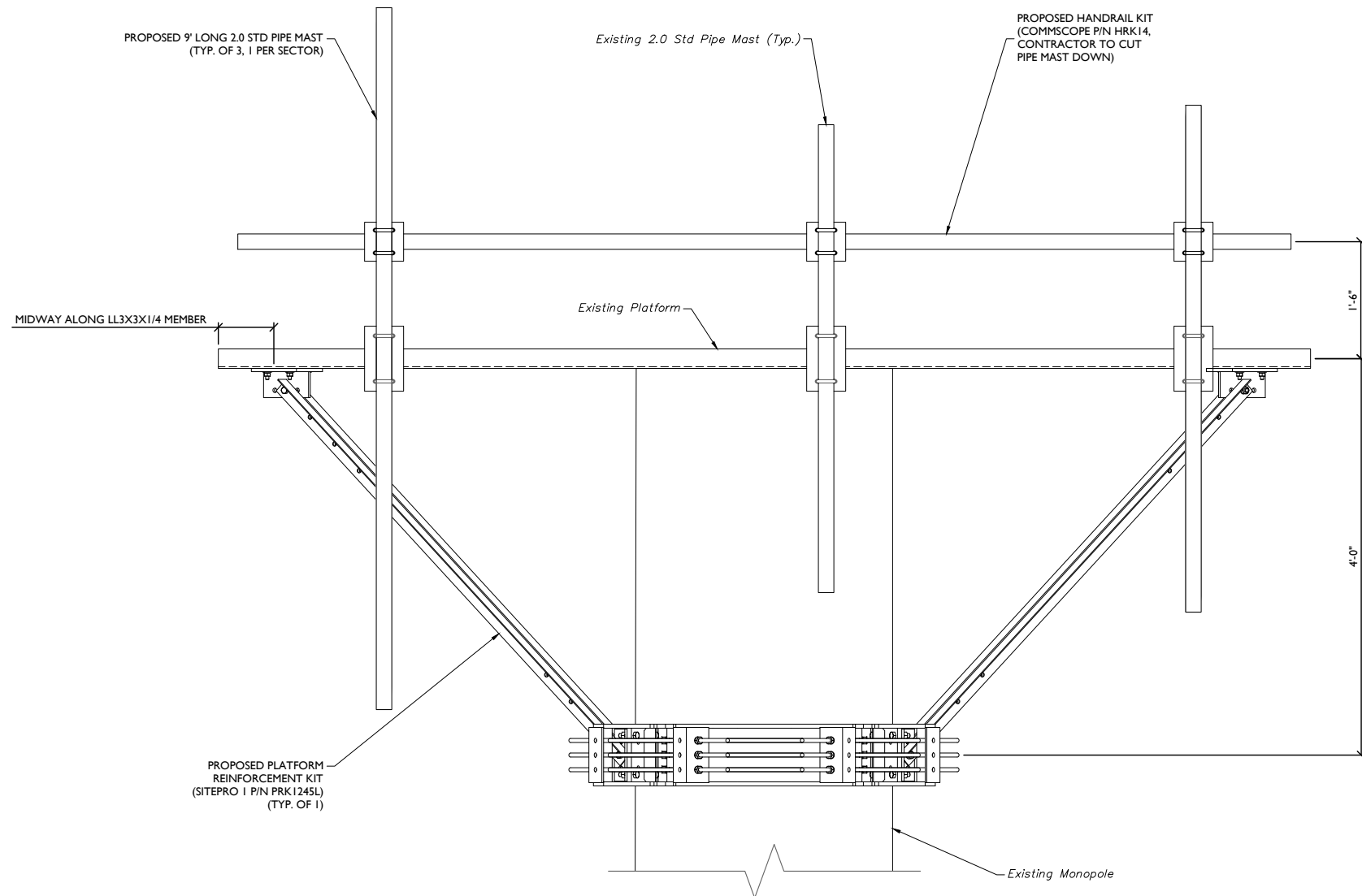
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SITE NAME:
BU: 876342
SITE NAME: BIC DRIVE (SSUA)
CARRIER SITE NUMBER: CT11229A
111 HOUSE ROAD
A/K/A BIC DRIVE, CT 06460
NEW HAVEN COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mt. Laurel NJ 08054
Phone: 856.797.0412
Fax: 856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE:
STRUCTURAL MODIFICATION DETAILS

SHEET NUMBER:
S-1



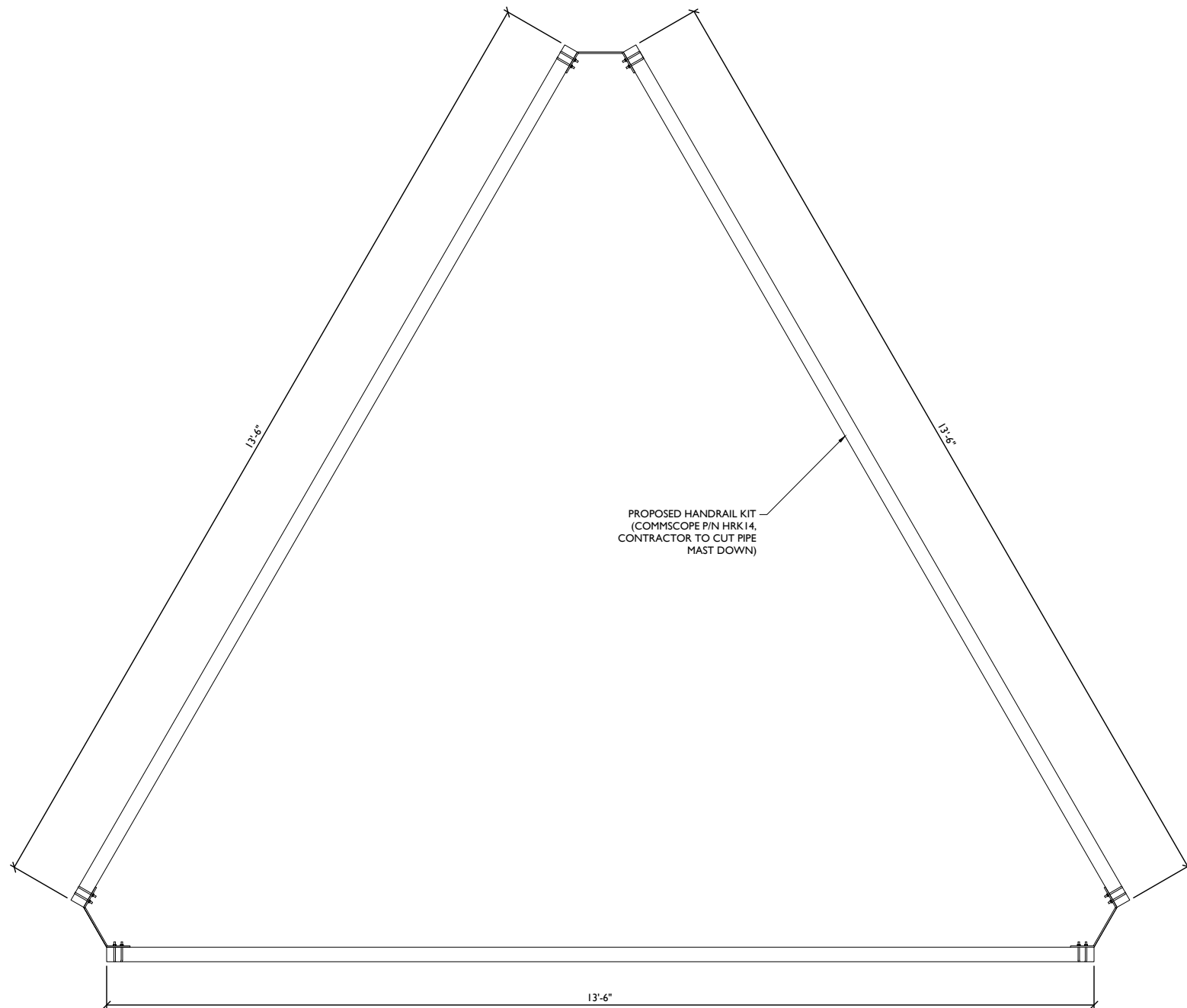
PLATFORM MODIFICATION DETAILS ELEVATION VIEW
NOT TO SCALE

LOADING SUMMARY

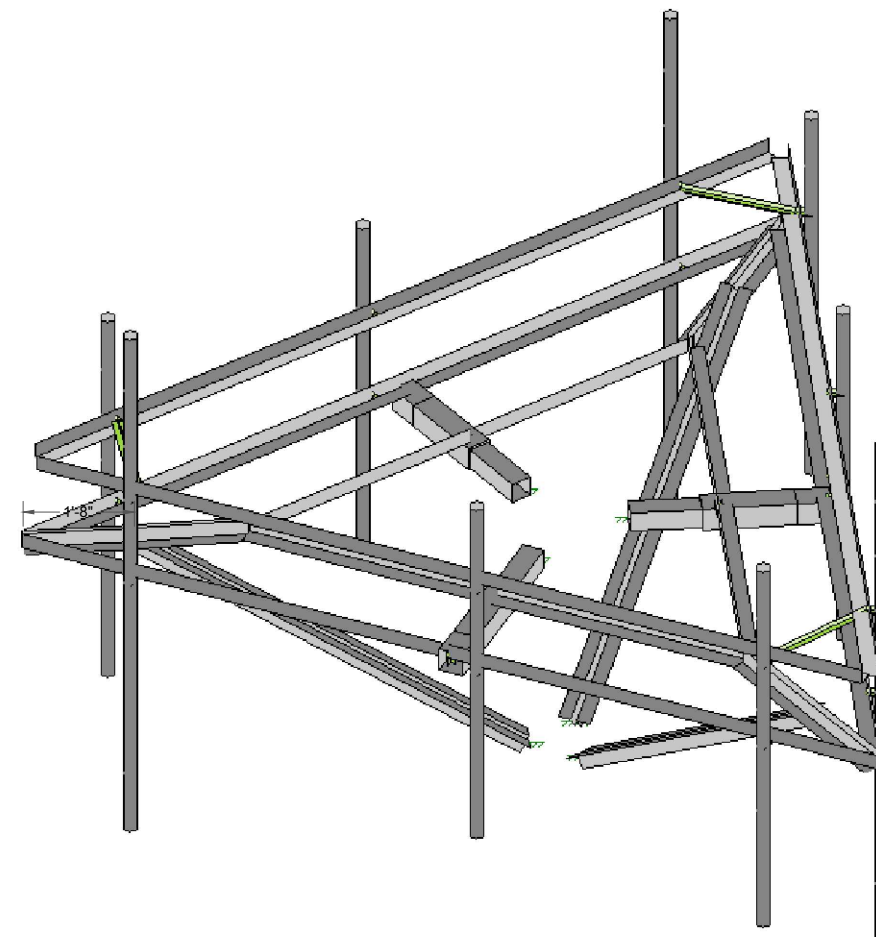
Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	ERICSSON	Air 32 DB B2A B66Aa	Proposed	Alpha, Beta, & Gamma
3	RFS	APXVAARR24_43-U-NA20	Proposed	Alpha, Beta, & Gamma
3	ANDREW	ETW200VS12UB	Existing	Alpha, Beta, & Gamma
3	REMEC	S20070A1	Existing	Alpha, Beta, & Gamma
3	ERICSSON	RRU 4449 B71 + B12	Proposed	Alpha, Beta, & Gamma

NOTE:

MASER CONSULTING P.A. HAS DETERMINED THAT THE SUPPORT MOUNTS, WITH THE PROPOSED MODIFICATIONS, HAVE ADEQUATE STRUCTURAL CAPACITY TO SUPPORT THE EXISTING AND PROPOSED LOADING. THE SUPPORT MOUNTS HAVE BEEN DETERMINED TO BE STRESSED TO A MAXIMUM OF 79.2% OF ITS STRUCTURAL CAPACITY, ONCE THE PROPOSED MODIFICATIONS IN THIS DRAWING ARE INSTALLED AS INTENDED AT EACH SUPPORT MOUNT.



PROPOSED HANDRAIL DETAILS PLAN VIEW
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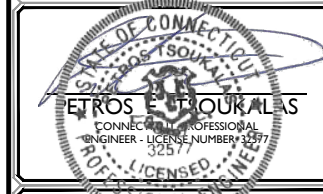
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SITE NAME:
BU: 876342
SITE NAME: BIC DRIVE
(SSUA)
CARRIER SITE NUMBER:
CT11229A
111 HOUSE ROAD
A/K/A BIC DRIVE, CT 06460
NEW HAVEN COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mt. Laurel NJ 08054
Phone: 856.797.0412
Fax: 856.722.1120
email: solutions@maserconsulting.com

**STRUCTURAL
MODIFICATION DETAILS**

SHEET NUMBER: S-2

2000118922082A Structural Mount Analysis - MaserCADWIS/MS/ECT/11229A Mount Mod Rev 0.dwg-S-2 By: CLURINGAS

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR DISSEMINATION OF REVISIONS TO CONTRACT DOCUMENTS AND REQUIREMENTS TO ALL SUBCONTRACTORS. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES AND EQUIPMENT MANUFACTURERS.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING FIELD CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES, GROUNDS, DRAIN PIPES AND VENTS BEFORE COMMENCING WORK. CONTRACTOR SHALL NOTIFY ENGINEER IF ACTUAL CONDITIONS DIFFER SIGNIFICANTLY FROM WHAT IS SHOWN ON DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY PROJECT SITE, REMOVE AND DISPOSE OF OFF SITE RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES DAILY.
- INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE OWNER'S WRITTEN APPROVAL.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUCH COVERING, SHIELDING, AND BARRICADES AS REQUIRED TO PROTECT BYSTANDERS AND PASSERSBY, EQUIPMENT, SUPPLIES, ETC. FROM DUST, DEBRIS AND OTHER CAUSE OF DAMAGE RESULTING FROM CONSTRUCTION. ANY DAMAGE DURING CONSTRUCTION SHALL BE RESTORED TO PREVIOUS CONDITIONS.
- IN AREAS WHERE EXISTING ANTENNA MOUNTS, TRANSMISSION LINES OR OTHER SUPPORTING EQUIPMENT IS TO BE REMOVED, THE EXISTING STRUCTURE SHALL BE REPAIRED AS REQUIRED.
- ALL SAFETY AND OSHA REGULATIONS SHALL BE FOLLOWED STRICTLY. METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIAL ARE THE CONTRACTOR'S RESPONSIBILITY.
- CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR ALL EXISTING ANTENNAS, TRANSMISSION LINES OR OTHER APPURTENANCES DURING CONSTRUCTION.
- CONTRACTOR SHALL PROTECT EXISTING APPURTENANCES FROM DAMAGE DURING CONSTRUCTION.
- NO ANTENNAS, CABLES, OR OTHER APPURTENANCES SHALL BE ADDED TO THE TOWER UNTIL THE MODIFICATION WORK IS COMPLETE.
- ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE DIMENSIONS WITH TOWER MANUFACTURER OR FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING MEMBERS.
- THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.
- ALL EXISTING PLANS, DETAILS, DIMENSIONS, AND ELEVATIONS INDICATE EXISTING CONDITIONS AS KNOWN. THE EXISTING INFORMATION SHOWN IS NOT INTENDED TO BE "AS BUILT" AND THE ACTUAL CONSTRUCTION MAY DIFFER FROM THAT SHOWN. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING DIMENSIONS AND ELEVATIONS PRIOR TO STARTING CONSTRUCTION. MINOR VARIATIONS CAN BE EXPECTED AND ANY REQUIRED DEVIATION FROM THE CONTRACT DOCUMENTS SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- MODIFICATION DETAILS REPRESENTS TYPICAL CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATION AS A RESULT OF SITE SPECIFIC CONDITIONS. REINFORCE ALL TOWER FACES IDENTICALLY, UNLESS OTHERWISE NOTED.
- IN AREAS TO BE MODIFIED, ANY ANTENNA, COAX, OR CONDUIT SHALL BE TEMPORARILY MOVED AND THEN REPLACED AFTER COMPLETION OF WORK. COORDINATE WITH OWNER.
- CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL MATERIAL TO BE REMOVED.
- CONTRACTOR SHALL ENSURE STABILITY OF THE ANTENNA PLATFORM DURING ALL WORK.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TEMPORARY BRACING OF THE STRUCTURE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE IS DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE MAY REQUIRE ADDITIONAL SUPPORT BEFORE COMPLETIONS.
- THIS DESIGN ASSUMES THE ANTENNA PLATFORM HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION BY MASER CONSULTING P.A. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.
- ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
- PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
- INSPECTION OF THE MODIFICATIONS SHALL BE COMPLETED BY A THIRD PARTY. INSPECTION SHALL TAKE PLACE WITHIN 72 HOURS OF THE COMPLETION OF THE ANTENNA PLATFORM MODIFICATIONS. NO PROPOSED LOADING SHALL BE INSTALLED PRIOR TO INSPECTOR APPROVAL.

DESIGN LOADS

- WIND: ANSI/TIA/EIA-222-H
ULTIMATE WIND SPEED: 125 MPH
- ANTENNA PLATFORM MODIFICATIONS WERE DESIGNED IN ACCORDANCE TO TIA-222-H AND 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 IBC, AS WELL AS APPLICABLE LOCAL BUILDING CODES.

STRUCTURAL STEEL

- DESIGN, FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO AISC MANUAL OF STEEL CONSTRUCTION, FOURTEENTH EDITION.
- CONNECTION BOLTS SHALL BE 3/4"Ø ASTM A325N UNLESS OTHERWISE NOTED.
- FIELD WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", LRFD 3RD EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
- RETURN ALL WELDS AT CORNERS TWICE THE NOMINAL SIZE OF THE WELD MINIMUM, UNLESS OTHERWISE NOTED.
- TO REDUCE WARPING TO A MINIMUM WHEN WELDING TO EXISTING MEMBERS CARRYING LOAD, SHORE OR BRACE EXISTING MEMBER DURING WELDING.
- ALL COPES, BLOCKS, CUT OUTS, AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENRANT CORNERS SHAPED, NOTCHED FREE TO A RADIUS OF AT LEAST 1/2".
- CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF STEEL CONSTRUCTION.
- ALL NEW STRUCTURAL STEEL SHAPES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
- ALL NEW STEEL BOLTS, NUTS, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL STRUCTURAL STEEL SHALL ABIDE BY THE FOLLOWING MATERIAL STRENGTH LIST UNLESS OTHERWISE NOTED:

PIPES	A-53 (GR B)
PLATES	ASTM A572 (GR 50)
ANGLES	ASTM A36 (GR 36)
SOLID ROUND	ASTM A572 (GR 50)
BOLTS	ASTM A325 (ALL BOLT HOLES STANDARD SIZE U.N.O.)
NUTS	ASTM A194-2H
WASHERS	ASTM F436
HOT-DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

CONTRACTOR NOTES

- ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND MASER CONSULTING P.A. THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND MASER CONSULTING P.A. ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND MASER CONSULTING P.A.
- IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, MASER CONSULTING P.A. SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
- IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TELECOMMUNICATION CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.
- THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS.
- CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE ANTENNA PLATFORM MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
- SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
- CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH) CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL ANTENNA PLATFORM SHORING, TEMPORARY GLOBAL ANTENNA PLATFORM SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.



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SCALE: AS SHOWN JOB NUMBER: 18922082A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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BU: 876342
SITE NAME: BIC DRIVE (SSUA)
CARRIER SITE NUMBER: CT11229A
111 HOUSE ROAD
A/K/A BIC DRIVE, CT 06460
NEW HAVEN COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mt. Laurel NJ 08054
Phone: 856.797.0412
Fax: 856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE:
STRUCTURAL NOTES

SHEET NUMBER:
S-4

Date: November 1, 2018

Heather Simeone
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: Structural Analysis Report

Carrier Designation: T-Mobile Co-Locate
Carrier Site Number: CT11229A
Carrier Site Name: N/A

Crown Castle Designation: Crown Castle BU Number: 876342
Crown Castle Site Name: BIC DRIVE (SSUSA)
Crown Castle JDE Job Number: 512704
Crown Castle Work Order Number: 1655665
Crown Castle Order Number: 446218 Rev. 0

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37518-0321.005.7805

Site Data: 111 School House Road, a/k/a Bic Drive, MILFORD, New Haven County, CT
Latitude 41° 12' 46.06", Longitude -73° 5' 7.1"
140 Foot - Monopole Tower

Dear Heather Simeone,

Paul J. Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower.

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

LC7: Proposed Equipment Configuration

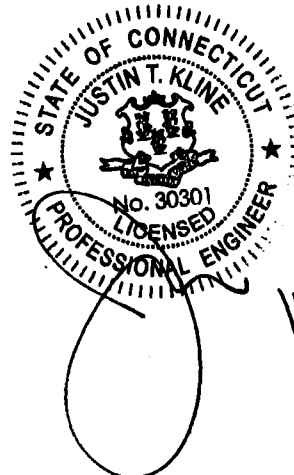
Sufficient Capacity

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2016 Connecticut State Building Code per section 1609.3 and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:


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C.J.P.



11/2/18

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1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by SUMMIT.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
115.0	116.0	3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe	11	1-1/4 1-3/8 1-5/8
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	115.0	3	andrew	ETW200VS12UB		
		3	remec	S20070A1		
		1	tower mounts	Miscellaneous [NA 509-3]		
		1	tower mounts	Miscellaneous [NA 510-1]		
		1	tower mounts	Platform Mount [LP 1201-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	140.0	3	alcatel lucent	TD-RRH8X20-25	1 3 1	1/2 1-1/4 1-5/8
		9	rfs celwave	ACU-A20-N		
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		1	tower mounts	Platform Mount [LP 1201-1]		
137.0	137.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	--	--
		3	alcatel lucent	TME-1900MHz RRH (65 MHz)		
		3	alcatel lucent	TME-800MHZ RRH		
		1	tower mounts	Side Arm Mount [SO 103-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
121.0	123.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	2 2 2 12	3/8 7/16 3/4 1-5/8
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS12/RRUS A2		
		3	kaelus	DBC0061F1V51-2		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	quintel technology	QS66512-6 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C		
	1	raycap	DC6-48-60-18-8F			
	121.0	121.0	1	tower mounts		
1			tower mounts	Platform Mount [LP 1201-1]		
104.0	104.0	3	alcatel lucent	B13 RRH 4X30	8	1-5/8
		3	andrew	LNx-6514DS-VTM w/ Mount Pipe		
		3	commscope	CBC1923T-DS-43		
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		3	nokia	AIRSCALE RRH 4T4R B5 160W		
		3	nokia	B25 RRH4X30 (UHFA)		
		3	nokia	B66A RRH4X45 (UHIE)		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	rymsa wireless	MG D3-800TX w/ Mount Pipe		
		1	tower mounts	Platform Mount [LP 1201-1]		
95.0	95.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		
80.0	82.0	1	kathrein	OG-860/1920/GPS-A	1	1/2
	80.0	1	tower mounts	Side Arm Mount [SO 901-1]		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 08-12040E G1, 12/05/2008	1531894	CCISITES
4-POST-MODIFICATION INSPECTION	PJF, 41709-0132, 12/04/2009	2547672	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25566, 04/21/2016	6234048	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PJF, 29299-549, 09/29/1999	1631615	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PJF, 29299-549, 10/29/1999	1630877	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 41709-0132, 12/04/2009	2547673	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37515-2876.002.7700 R1, 10/20/2015	6173982	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 3) Monopole was modified in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	140 - 135	Pole	TP17.015x16x0.25	Pole	7.8%	Pass
L2	135 - 130	Pole	TP18.03x17.015x0.25	Pole	15.1%	Pass
L3	130 - 125	Pole	TP19.045x18.03x0.25	Pole	21.3%	Pass
L4	125 - 120	Pole	TP20.061x19.045x0.25	Pole	30.2%	Pass
L5	120 - 115	Pole	TP21.076x20.061x0.25	Pole	41.9%	Pass
L6	115 - 110	Pole	TP22.091x21.076x0.25	Pole	58.3%	Pass
L7	110 - 105	Pole	TP23.106x22.091x0.25	Pole	71.9%	Pass
L8	105 - 104	Pole	TP23.309x23.106x0.25	Pole	74.4%	Pass
L9	104 - 103.75	Pole + Reinf.	TP23.36x23.309x0.4625	Reinf. 9 Tension Rupture	69.0%	Pass
L10	103.75 - 98.75	Pole + Reinf.	TP24.375x23.36x0.45	Reinf. 9 Tension Rupture	83.9%	Pass
L11	98.75 - 98.5	Pole + Reinf.	TP24.426x24.375x0.45	Reinf. 9 Tension Rupture	84.6%	Pass
L12	98.5 - 98.25	Pole + Reinf.	TP24.476x24.426x0.725	Reinf. 9 Tension Rupture	54.6%	Pass
L13	98.25 - 97	Pole + Reinf.	TP24.73x24.476x0.725	Reinf. 9 Tension Rupture	56.9%	Pass
L14	97 - 96.75	Pole + Reinf.	TP24.781x24.73x0.5125	Reinf. 5 Tension Rupture	67.7%	Pass
L15	96.75 - 88.5	Pole + Reinf.	TP26.456x24.781x0.5	Reinf. 5 Tension Rupture	77.9%	Pass
L16	88.5 - 88	Pole + Reinf.	TP26.058x25.296x0.5625	Reinf. 5 Tension Rupture	77.6%	Pass
L17	88 - 87.75	Pole + Reinf.	TP26.108x26.058x0.7625	Reinf. 5 Tension Rupture	60.7%	Pass
L18	87.75 - 82.75	Pole + Reinf.	TP27.124x26.108x0.7375	Reinf. 5 Tension Rupture	67.0%	Pass
L19	82.75 - 77.75	Pole + Reinf.	TP28.139x27.124x0.725	Reinf. 5 Tension Rupture	72.8%	Pass
L20	77.75 - 72.75	Pole + Reinf.	TP29.154x28.139x0.7125	Reinf. 5 Tension Rupture	78.1%	Pass
L21	72.75 - 68.08	Pole + Reinf.	TP30.102x29.154x0.6875	Reinf. 5 Tension Rupture	82.6%	Pass
L22	68.08 - 67.83	Pole + Reinf.	TP30.153x30.102x0.8125	Reinf. 7 Tension Rupture	70.5%	Pass
L23	67.83 - 62.83	Pole + Reinf.	TP31.168x30.153x0.7875	Reinf. 7 Tension Rupture	74.7%	Pass
L24	62.83 - 57.83	Pole + Reinf.	TP32.184x31.168x0.7625	Reinf. 7 Tension Rupture	78.6%	Pass
L25	57.83 - 52.83	Pole + Reinf.	TP33.199x32.184x0.75	Reinf. 7 Tension Rupture	82.2%	Pass
L26	52.83 - 47.25	Pole + Reinf.	TP34.332x33.199x0.75	Reinf. 7 Tension Rupture	83.2%	Pass
L27	47.25 - 46.5	Pole + Reinf.	TP33.859x32.844x0.8	Reinf. 7 Tension Rupture	82.0%	Pass
L28	46.5 - 41.5	Pole + Reinf.	TP34.874x33.859x0.8	Reinf. 7 Tension Rupture	84.8%	Pass
L29	41.5 - 37.75	Pole + Reinf.	TP35.636x34.874x0.775	Reinf. 7 Tension Rupture	86.8%	Pass
L30	37.75 - 37.5	Pole + Reinf.	TP35.686x35.636x0.85	Reinf. 7 Tension Rupture	81.2%	Pass
L31	37.5 - 32.5	Pole + Reinf.	TP36.702x35.686x0.825	Reinf. 7 Tension Rupture	83.6%	Pass
L32	32.5 - 32.25	Pole + Reinf.	TP36.752x36.702x0.875	Reinf. 2 Tension Rupture	77.3%	Pass
L33	32.25 - 27.25	Pole + Reinf.	TP37.767x36.752x0.8625	Reinf. 6 Tension Rupture	79.4%	Pass
L34	27.25 - 23.5	Pole + Reinf.	TP38.529x37.767x0.85	Reinf. 6 Tension Rupture	80.9%	Pass
L35	23.5 - 23.25	Pole + Reinf.	TP38.58x38.529x0.95	Reinf. 2 Tension Rupture	76.1%	Pass
L36	23.25 - 20.75	Pole + Reinf.	TP39.087x38.58x0.95	Reinf. 2 Tension Rupture	77.0%	Pass
L37	20.75 - 20.5	Pole + Reinf.	TP39.138x39.087x0.9	Reinf. 2 Tension Rupture	78.1%	Pass
L38	20.5 - 15.5	Pole + Reinf.	TP40.153x39.138x0.875	Reinf. 2 Tension Rupture	79.8%	Pass
L39	15.5 - 10.5	Pole + Reinf.	TP41.168x40.153x0.8625	Reinf. 2 Tension Rupture	81.4%	Pass
L40	10.5 - 5.5	Pole + Reinf.	TP42.183x41.168x0.85	Reinf. 2 Tension Rupture	82.8%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L41	5.5 - 3	Pole + Reinf.	TP42.691x42.183x0.8375	Reinf. 2 Tension Rupture	83.5%	Pass
L42	3 - 2.75	Pole + Reinf.	TP42.742x42.691x0.9	Reinf. 2 Tension Rupture	78.7%	Pass
L43	2.75 - 0	Pole + Reinf.	TP43.3x42.742x0.9	Reinf. 2 Tension Rupture	79.5%	Pass
					Summary	
				Pole	74.4%	Pass
				Reinforcement	86.8%	Pass
				Overall	86.8%	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	83.7	Pass
1	Base Plate	0	70.2	Pass
1	Base Foundation Structural Steel	0	58.0	Pass
1	Base Foundation Soil Interaction	0	57.8	Pass

Structure Rating (max from all components) =	86.8%
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Notes:

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- 1) Tower is located in New Haven County, Connecticut.
- 2) Tower base elevation above sea level: 40.0000 ft.
- 3) Basic wind speed of 125 mph.
- 4) Risk Category II.
- 5) Exposure Category C.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height 0.0000 ft.
- 9) Nominal ice thickness of 1.2750 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56.00 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) TIA-222-H Annex S.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.05.
- 19) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.0000- 135.0000	5.0000	0.00	12	16.0000	17.0151	0.2500	1.0000	A572-65 (65 ksi)
L2	135.0000- 130.0000	5.0000	0.00	12	17.0151	18.0303	0.2500	1.0000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	130.0000-125.0000	5.0000	0.00	12	18.0303	19.0454	0.2500	1.0000	A572-65 (65 ksi)
L4	125.0000-120.0000	5.0000	0.00	12	19.0454	20.0606	0.2500	1.0000	A572-65 (65 ksi)
L5	120.0000-115.0000	5.0000	0.00	12	20.0606	21.0757	0.2500	1.0000	A572-65 (65 ksi)
L6	115.0000-110.0000	5.0000	0.00	12	21.0757	22.0909	0.2500	1.0000	A572-65 (65 ksi)
L7	110.0000-105.0000	5.0000	0.00	12	22.0909	23.1060	0.2500	1.0000	A572-65 (65 ksi)
L8	105.0000-104.0000	1.0000	0.00	12	23.1060	23.3090	0.2500	1.0000	A572-65 (65 ksi)
L9	104.0000-103.7500	0.2500	0.00	12	23.3090	23.3598	0.4625	1.8500	A572-65 (65 ksi)
L10	103.7500-98.7500	5.0000	0.00	12	23.3598	24.3750	0.4500	1.8000	A572-65 (65 ksi)
L11	98.7500-98.5000	0.2500	0.00	12	24.3750	24.4257	0.4500	1.8000	A572-65 (65 ksi)
L12	98.5000-98.2500	0.2500	0.00	12	24.4257	24.4765	0.7250	2.9000	A572-65 (65 ksi)
L13	98.2500-97.0000	1.2500	0.00	12	24.4765	24.7303	0.7250	2.9000	A572-65 (65 ksi)
L14	97.0000-96.7500	0.2500	0.00	12	24.7303	24.7810	0.5125	2.0500	A572-65 (65 ksi)
L15	96.7500-88.5000	8.2500	3.25	12	24.7810	26.4560	0.5000	2.0000	A572-65 (65 ksi)
L16	88.5000-88.0000	3.7500	0.00	12	25.2962	26.0576	0.5625	2.2500	A572-65 (65 ksi)
L17	88.0000-87.7500	0.2500	0.00	12	26.0576	26.1084	0.7625	3.0500	A572-65 (65 ksi)
L18	87.7500-82.7500	5.0000	0.00	12	26.1084	27.1236	0.7375	2.9500	A572-65 (65 ksi)
L19	82.7500-77.7500	5.0000	0.00	12	27.1236	28.1389	0.7250	2.9000	A572-65 (65 ksi)
L20	77.7500-72.7500	5.0000	0.00	12	28.1389	29.1542	0.7125	2.8500	A572-65 (65 ksi)
L21	72.7500-68.0800	4.6700	0.00	12	29.1542	30.1024	0.6875	2.7500	A572-65 (65 ksi)
L22	68.0800-67.8300	0.2500	0.00	12	30.1024	30.1532	0.8125	3.2500	A572-65 (65 ksi)
L23	67.8300-62.8300	5.0000	0.00	12	30.1532	31.1684	0.7875	3.1500	A572-65 (65 ksi)
L24	62.8300-57.8300	5.0000	0.00	12	31.1684	32.1837	0.7625	3.0500	A572-65 (65 ksi)
L25	57.8300-52.8300	5.0000	0.00	12	32.1837	33.1990	0.7500	3.0000	A572-65 (65 ksi)
L26	52.8300-47.2500	5.5800	4.25	12	33.1990	34.3320	0.7500	3.0000	A572-65 (65 ksi)
L27	47.2500-46.5000	5.0000	0.00	12	32.8440	33.8592	0.8000	3.2000	A572-65 (65 ksi)
L28	46.5000-41.5000	5.0000	0.00	12	33.8592	34.8743	0.8000	3.2000	A572-65 (65 ksi)
L29	41.5000-37.7500	3.7500	0.00	12	34.8743	35.6357	0.7750	3.1000	A572-65 (65 ksi)
L30	37.7500-37.5000	0.2500	0.00	12	35.6357	35.6864	0.8500	3.4000	A572-65 (65 ksi)
L31	37.5000-32.5000	5.0000	0.00	12	35.6864	36.7016	0.8250	3.3000	A572-65 (65 ksi)
L32	32.5000-32.2500	0.2500	0.00	12	36.7016	36.7523	0.8750	3.5000	A572-65 (65 ksi)
L33	32.2500-27.2500	5.0000	0.00	12	36.7523	37.7675	0.8625	3.4500	A572-65 (65 ksi)
L34	27.2500-23.5000	3.7500	0.00	12	37.7675	38.5288	0.8500	3.4000	A572-65 (65 ksi)
L35	23.5000-23.2500	0.2500	0.00	12	38.5288	38.5796	0.9500	3.8000	A572-65 (65 ksi)
L36	23.2500-20.7500	2.5000	0.00	12	38.5796	39.0872	0.9500	3.8000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L37	20.7500- 20.5000	0.2500	0.00	12	39.0872	39.1379	0.9000	3.6000	A572-65 (65 ksi)
L38	20.5000- 15.5000	5.0000	0.00	12	39.1379	40.1531	0.8750	3.5000	A572-65 (65 ksi)
L39	15.5000- 10.5000	5.0000	0.00	12	40.1531	41.1682	0.8625	3.4500	A572-65 (65 ksi)
L40	10.5000- 5.5000	5.0000	0.00	12	41.1682	42.1833	0.8500	3.4000	A572-65 (65 ksi)
L41	5.5000-3.0000	2.5000	0.00	12	42.1833	42.6909	0.8375	3.3500	A572-65 (65 ksi)
L42	3.0000-2.7500	0.2500	0.00	12	42.6909	42.7417	0.9000	3.6000	A572-65 (65 ksi)
L43	2.7500-0.0000	2.7500		12	42.7417	43.3000	0.9000	3.6000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	16.4762	12.6788	401.4426	5.6385	8.2880	48.4366	813.4316	6.2401	3.6180	14.472
	17.5272	13.4959	484.1767	6.0019	8.8138	54.9336	981.0732	6.6423	3.8901	15.56
L2	17.5272	13.4959	484.1767	6.0019	8.8138	54.9336	981.0732	6.6423	3.8901	15.56
	18.5781	14.3131	577.5618	6.3653	9.3397	61.8395	1170.2967	7.0445	4.1621	16.648
L3	18.5781	14.3131	577.5618	6.3653	9.3397	61.8395	1170.2967	7.0445	4.1621	16.648
	19.6291	15.1303	682.2430	6.7288	9.8655	69.1542	1382.4094	7.4467	4.4342	17.737
L4	19.6291	15.1303	682.2430	6.7288	9.8655	69.1542	1382.4094	7.4467	4.4342	17.737
	20.6801	15.9475	798.8654	7.0922	10.3914	76.8777	1618.7178	7.8489	4.7062	18.825
L5	20.6801	15.9475	798.8654	7.0922	10.3914	76.8777	1618.7178	7.8489	4.7062	18.825
	21.7310	16.7647	928.0736	7.4556	10.9172	85.0100	1880.5287	8.2511	4.9783	19.913
L6	21.7310	16.7647	928.0736	7.4556	10.9172	85.0100	1880.5287	8.2511	4.9783	19.913
	22.7820	17.5819	1070.5128	7.8190	11.4431	93.5512	2169.1492	8.6533	5.2504	21.001
L7	22.7820	17.5819	1070.5128	7.8190	11.4431	93.5512	2169.1492	8.6533	5.2504	21.001
	23.8329	18.3991	1226.8278	8.1825	11.9689	102.5011	2485.8857	9.0555	5.5224	22.09
L8	23.8329	18.3991	1226.8278	8.1825	11.9689	102.5011	2485.8857	9.0555	5.5224	22.09
	24.0431	18.5625	1259.8128	8.2551	12.0741	104.3402	2552.7222	9.1359	5.5768	22.307
L9	23.9682	34.0242	2266.8114	8.1791	12.0741	187.7418	4593.1744	16.7457	5.0073	10.827
	24.0207	34.0998	2281.9531	8.1972	12.1004	188.5853	4623.8557	16.7829	5.0209	10.856
L10	24.0251	33.1963	2223.9170	8.2017	12.1004	183.7890	4506.2587	16.3382	5.0544	11.232
	25.0761	34.6673	2532.8385	8.5651	12.6262	200.6014	5132.2176	17.0622	5.3265	11.837
L11	25.0761	34.6673	2532.8385	8.5651	12.6262	200.6014	5132.2176	17.0622	5.3265	11.837
	25.1286	34.7408	2548.9934	8.5833	12.6525	201.4614	5164.9517	17.0984	5.3401	11.867
L12	25.0316	55.3293	3967.0150	8.4849	12.6525	313.5356	8038.2479	27.2314	4.6031	6.349
	25.0841	55.4478	3992.5567	8.5030	12.6788	314.9000	8090.0023	27.2897	4.6167	6.368
L13	25.0841	55.4478	3992.5567	8.5030	12.6788	314.9000	8090.0023	27.2897	4.6167	6.368
	25.3469	56.0403	4121.9113	8.5939	12.8103	321.7661	8352.1097	27.5813	4.6847	6.462
L14	25.4219	39.9653	2991.8318	8.6700	12.8103	233.5495	6062.2624	19.6697	5.2542	10.252
	25.4744	40.0491	3010.6830	8.6881	12.8366	234.5396	6100.4600	19.7110	5.2678	10.279
L15	25.4788	39.0924	2941.7927	8.6926	12.8366	229.1729	5960.8696	19.2401	5.3013	10.603
	27.2129	41.7892	3593.5618	9.2922	13.7042	262.2232	7281.5305	20.5674	5.7502	11.5
L16	26.6733	44.7988	3498.0760	8.8546	13.1034	266.9592	7088.0504	22.0486	5.2719	9.372
	26.7784	46.1780	3831.1986	9.1272	13.4978	283.8379	7763.0470	22.7274	5.4759	9.735
L17	26.7078	62.1058	5072.1376	9.0556	13.4978	375.7741	10277.525	30.5666	4.9399	6.479
	26.7604	62.2304	5102.7357	9.0738	13.5241	377.3059	10339.525	30.6279	4.9535	6.496
L18	26.7692	60.2495	4950.0515	9.0828	13.5241	366.0162	10030.146	29.6530	5.0205	6.808
	27.8203	62.6605	5568.4066	9.4462	14.0500	396.3267	11283.101	30.8396	5.2926	7.176
L19	27.8247	61.6276	5481.8102	9.4507	14.0500	390.1633	11107.633	30.3312	5.3261	7.346
	28.8758	63.9977	6138.9199	9.8142	14.5759	421.1678	12439.116	31.4977	5.5982	7.722
L20	28.8802	62.9230	6041.3330	9.8186	14.5759	414.4728	12241.378	30.9688	5.6317	7.904

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
	29.9313	65.2523	6737.3844	10.1821	15.1019	446.1297	13651.7675	32.1152	5.9038	8.286
L21	29.9401	63.0181	6518.1430	10.1911	15.1019	431.6121	13207.5249	31.0156	5.9708	8.685
	30.9218	65.1173	7191.4619	10.5305	15.5930	461.1966	14571.8515	32.0487	6.2249	9.054
L22	30.8777	76.6297	8391.1096	10.4858	15.5930	538.1314	17002.6629	37.7148	5.8899	7.249
	30.9302	76.7625	8434.8145	10.5040	15.6193	540.0236	17091.2211	37.7802	5.9036	7.266
L23	30.9391	74.4640	8196.1971	10.5129	15.6193	524.7465	16607.7174	36.6489	5.9706	7.582
	31.9901	77.0385	9076.0308	10.8764	16.1453	562.1486	18390.4991	37.9160	6.2426	7.927
L24	31.9990	74.6542	8809.6150	10.8853	16.1453	545.6474	17850.6684	36.7425	6.3096	8.275
	33.0500	77.1469	9721.8764	11.2488	16.6712	583.1554	19699.1573	37.9694	6.5817	8.632
L25	33.0544	75.9124	9573.9184	11.2533	16.6712	574.2803	19399.3543	37.3618	6.6152	8.82
	34.1055	78.3643	10531.8744	11.6167	17.1971	612.4228	21340.4329	38.5685	6.8873	9.183
L26	34.1055	78.3643	10531.8744	11.6167	17.1971	612.4228	21340.4329	38.5685	6.8873	9.183
	35.2785	81.1005	11674.0825	12.0224	17.7840	656.4383	23654.8561	39.9152	7.1910	9.588
L27	34.6137	82.5454	10818.6491	11.4718	17.0132	635.8972	21921.5162	40.6263	6.6582	8.323
	34.7714	85.1604	11879.7584	11.8352	17.5390	677.3319	24071.6112	41.9134	6.9303	8.663
L28	34.7714	85.1604	11879.7584	11.8352	17.5390	677.3319	24071.6112	41.9134	6.9303	8.663
	35.8223	87.7754	13008.0769	12.1986	18.0649	720.0749	26357.8905	43.2004	7.2023	9.003
L29	35.8312	85.0948	12629.3318	12.2076	18.0649	699.1091	25590.4503	41.8811	7.2693	9.38
	36.6194	86.9948	13494.3110	12.4801	18.4593	731.0314	27343.1325	42.8162	7.4734	9.643
L30	36.5929	95.2084	14704.8929	12.4533	18.4593	796.6126	29796.0997	46.8587	7.2724	8.556
	36.6455	95.3473	14769.3561	12.4714	18.4856	798.9668	29926.7197	46.9270	7.2860	8.572
L31	36.6543	92.6094	14365.8475	12.4804	18.4856	777.1385	29109.1018	45.5795	7.3530	8.913
	37.7052	95.3061	15657.7198	12.8438	19.0114	823.5958	31726.7853	46.9068	7.6250	9.242
L32	37.6876	100.9414	16537.3367	12.8259	19.0114	869.8636	33509.1276	49.6803	7.4910	8.561
	37.7401	101.0844	16607.7237	12.8441	19.0377	872.3595	33651.7509	49.7507	7.5046	8.577
L33	37.7446	99.6750	16387.5874	12.8486	19.0377	860.7964	33205.6949	49.0570	7.5381	8.74
	38.7955	102.4943	17817.8581	13.2120	19.5635	910.7682	36103.8111	50.4446	7.8102	9.055
L34	38.7999	101.0431	17577.4770	13.2165	19.5635	898.4810	35616.7340	49.7303	7.8437	9.228
	39.5881	103.1269	18687.5716	13.4890	19.9579	936.3481	37866.0865	50.7559	8.0477	9.468
L35	39.5529	114.9536	20720.2545	13.4532	19.9579	1038.1964	41984.8533	56.5767	7.7797	8.189
	39.6054	115.1089	20804.3290	13.4714	19.9842	1041.0376	42155.2109	56.6531	7.7933	8.204
L36	39.6054	115.1089	20804.3290	13.4714	19.9842	1041.0376	42155.2109	56.6531	7.7933	8.204
	40.1309	116.6616	21657.6004	13.6531	20.2471	1069.6618	43884.1701	57.4173	7.9294	8.347
L37	40.1485	110.6664	20598.5323	13.6710	20.2471	1017.3548	41738.2110	54.4666	8.0634	8.959
	40.2011	110.8135	20680.7780	13.6892	20.2734	1020.0923	41904.8632	54.5390	8.0770	8.974

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L38	40.2099	107.8058	20145.774 4	13.6981	20.2734	993.7029	40820.800 7	53.0587	8.1440	9.307
	41.2608	110.6659	21792.137 5	14.0615	20.7993	1047.7350	44156.778 7	54.4664	8.4160	9.618
L39	41.2652	109.1197	21501.336 2	14.0660	20.7993	1033.7537	43567.536 4	53.7054	8.4495	9.797
	42.3162	111.9390	23211.344 5	14.4294	21.3251	1088.4505	47032.476 9	55.0930	8.7216	10.112
L40	42.3206	110.3509	22896.237 4	14.4339	21.3251	1073.6741	46393.984 5	54.3114	8.7551	10.3
	43.3716	113.1294	24669.613 4	14.7973	21.8510	1128.9939	49987.325 0	55.6788	9.0271	10.62
L41	43.3760	111.4994	24328.884 2	14.8018	21.8510	1113.4006	49296.915 3	54.8766	9.0606	10.819
	43.9014	112.8682	25235.929 5	14.9835	22.1139	1141.1798	51134.835 0	55.5503	9.1967	10.981
L42	43.8794	121.1101	26997.897 2	14.9611	22.1139	1220.8568	54705.059 3	59.6067	9.0292	10.032
	43.9319	121.2572	27096.387 4	14.9793	22.1402	1223.8555	54904.627 0	59.6791	9.0428	10.048
L43	43.9319	121.2572	27096.387 4	14.9793	22.1402	1223.8555	54904.627 0	59.6791	9.0428	10.048
	44.5100	122.8752	28195.636 4	15.1792	22.4294	1257.0838	57132.003 5	60.4754	9.1924	10.214

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 140.0000- 135.0000				1	1	1			
L2 135.0000- 130.0000				1	1	1			
L3 130.0000- 125.0000				1	1	1			
L4 125.0000- 120.0000				1	1	1			
L5 120.0000- 115.0000				1	1	1			
L6 115.0000- 110.0000				1	1	1			
L7 110.0000- 105.0000				1	1	1			
L8 105.0000- 104.0000				1	1	1			
L9 104.0000- 103.7500				1	1	0.942021			
L10 103.7500- 98.7500				1	1	0.950174			
L11 98.7500- 98.5000				1	1	0.949339			
L12 98.5000- 98.2500				1	1	0.901676			
L13 98.2500- 97.0000				1	1	0.895789			
L14 97.0000- 96.7500				1	1	0.916918			
L15 96.7500- 88.5000				1	1	0.921726			
L16 88.5000- 88.0000				1	1	0.928587			
L17 88.0000- 87.7500				1	1	0.97954			
L18 87.7500- 82.7500				1	1	0.989121			
L19 82.7500- 77.7500				1	1	0.984416			

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L20 77.7500-72.7500				1	1	0.981146			
L21 72.7500-68.0800				1	1	0.997834			
L22 68.0800-67.8300				1	1	0.957491			
L23 67.8300-62.8300				1	1	0.967322			
L24 62.8300-57.8300				1	1	0.979205			
L25 57.8300-52.8300				1	1	0.97703			
L26 52.8300-47.2500				1	1	0.972405			
L27 47.2500-46.5000				1	1	0.985251			
L28 46.5000-41.5000				1	1	0.969863			
L29 41.5000-37.7500				1	1	0.989134			
L30 37.7500-37.5000				1	1	0.961419			
L31 37.5000-32.5000				1	1	0.974696			
L32 32.5000-32.2500				1	1	0.982743			
L33 32.2500-27.2500				1	1	0.981183			
L34 27.2500-23.5000				1	1	0.984079			
L35 23.5000-23.2500				1	1	1.02955			
L36 23.2500-20.7500				1	1	1.0211			
L37 20.7500-20.5000				1	1	0.982282			
L38 20.5000-15.5000				1	1	0.994668			
L39 15.5000-10.5000				1	1	0.994306			
L40 10.5000-5.5000				1	1	0.994679			
L41 5.5000-3.0000				1	1	1.00241			
L42 3.0000-2.7500				1	1	0.956794			
L43 2.7500-0.0000				1	1	0.949681			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf
LDF4-50A(1/2)	C	No	No	Inside Pole	140.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00
LDF7-50A(1-5/8)	C	No	No	Inside Pole	140.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00
HB114-1-0813U4-M5J(1-1/4)	C	No	No	Inside Pole	140.0000 - 0.0000	3	No Ice 1/2" Ice	0.0000 0.0000	0.00 0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00

LDF7-50A(1-5/8)	C	No	No	Inside Pole	121.0000 - 0.0000	12	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	121.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
WR-VG122ST-BRDA(7/16)	C	No	No	Inside Pole	121.0000 - 0.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
FB-L98B-034-XXX(3/8)	C	No	No	CaAa (Out Of Face)	121.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.01
WR-VG86ST-BRD(3/4)	C	No	No	CaAa (Out Of Face)	121.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.01
WR-VG86ST-BRD(3/4)	C	No	No	CaAa (Out Of Face)	95.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.01
WR-VG86ST-BRD(3/4)	C	No	No	CaAa (Out Of Face)	121.0000 - 95.0000	1	No Ice	0.0795	0.00
							1/2" Ice	0.1795	0.00
							1" Ice	0.2795	0.00
							2" Ice	0.4795	0.01
2 1/2" (Nominal) Conduit	C	No	No	Inside Pole	121.0000 - 0.0000	2	No Ice	0.0000	0.01
							1/2" Ice	0.0000	0.01
							1" Ice	0.0000	0.01
							2" Ice	0.0000	0.01

HJ7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	115.0000 - 0.0000	1	No Ice	0.1980	0.00
							1/2" Ice	0.2980	0.00
							1" Ice	0.3980	0.00
							2" Ice	0.5980	0.01
HJ7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	115.0000 - 0.0000	4	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.01
LDF6-50A(1-1/4)	C	No	No	Inside Pole	115.0000 - 0.0000	11	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
HCS 6X12 6AWG(1-3/8)	C	No	No	CaAa (Out Of Face)	115.0000 - 0.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.01

LDF7-50A(1-5/8)	C	No	No	Inside Pole	104.0000 - 0.0000	6	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	104.0000 - 0.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00

CR 50 1873(1-5/8)	C	No	No	CaAa (Out Of Face)	95.0000 - 0.0000	1	No Ice	0.1980	0.00
							1/2" Ice	0.2980	0.00
							1" Ice	0.3980	0.00
							2" Ice	0.5980	0.01
CR 50 1873(1-5/8)	C	No	No	CaAa (Out Of Face)	95.0000 - 0.0000	5	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.01

LDF4-50A(1/2)	C	No	No	Inside Pole	80.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00

Aero MP3-08	C	No	No	CaAa (Out Of Face)	41.7500 - 0.0000	1	No Ice	0.4667	0.00
							1/2" Ice	0.5778	0.00
							1" Ice	0.6889	0.00
							2" Ice	0.9111	0.00
Aero MP3-06	C	No	No	CaAa (Out Of Face)	71.7500 - 41.7500	1	No Ice	0.4343	0.00
							1/2" Ice	0.5454	0.00
							1" Ice	0.6566	0.00
							2" Ice	0.8788	0.00
Aero MP3-05	C	No	No	CaAa (Out Of Face)	100.7500 - 71.7500	1	No Ice	0.3478	0.00
							1/2" Ice	0.4001	0.00
							1" Ice	0.6566	0.00
							2" Ice	0.8788	0.00

1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	35.5000 - 0.0000	1	No Ice	0.2083	0.00
							1/2" Ice	0.3194	0.00
							1" Ice	0.4306	0.00
							2" Ice	0.6528	0.00
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	90.6700 - 35.5000	1	No Ice	0.1667	0.00
							1/2" Ice	0.2778	0.00
							1" Ice	0.3889	0.00
							2" Ice	0.6111	0.00
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	105.5000 - 95.5000	1	No Ice	0.1667	0.00
							1/2" Ice	0.2778	0.00
							1" Ice	0.3889	0.00
							2" Ice	0.6111	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	140.0000-135.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L2	135.0000-130.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	130.0000-125.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L4	125.0000-120.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.080	0.05
L5	120.0000-115.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.398	0.16
L6	115.0000-110.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.388	0.23
L7	110.0000-105.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.471	0.23
L8	105.0000-104.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.444	0.05
L9	104.0000-103.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation	Face	A _R	A _F	C _{AA} _A In Face	C _{AA} _A Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
L10	103.7500-98.7500	C	0.000	0.000	0.000	0.111	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L11	98.7500-98.5000	C	0.000	0.000	0.000	2.916	0.27
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L12	98.5000-98.2500	C	0.000	0.000	0.000	0.198	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L13	98.2500-97.0000	C	0.000	0.000	0.000	0.198	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L14	97.0000-96.7500	C	0.000	0.000	0.000	0.990	0.07
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L15	96.7500-88.5000	C	0.000	0.000	0.000	0.198	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L16	88.5000-88.0000	C	0.000	0.000	0.000	6.499	0.48
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L17	88.0000-87.7500	C	0.000	0.000	0.000	0.455	0.03
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L18	87.7500-82.7500	C	0.000	0.000	0.000	0.228	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L19	82.7500-77.7500	C	0.000	0.000	0.000	4.552	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L20	77.7500-72.7500	C	0.000	0.000	0.000	4.552	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L21	72.7500-68.0800	C	0.000	0.000	0.000	4.552	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L22	68.0800-67.8300	C	0.000	0.000	0.000	4.569	0.28
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L23	67.8300-62.8300	C	0.000	0.000	0.000	0.249	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L24	62.8300-57.8300	C	0.000	0.000	0.000	4.985	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L25	57.8300-52.8300	C	0.000	0.000	0.000	4.985	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L26	52.8300-47.2500	C	0.000	0.000	0.000	4.985	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L27	47.2500-46.5000	C	0.000	0.000	0.000	5.563	0.33
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L28	46.5000-41.5000	C	0.000	0.000	0.000	0.748	0.04
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L29	41.5000-37.7500	C	0.000	0.000	0.000	4.993	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L30	37.7500-37.5000	C	0.000	0.000	0.000	3.860	0.22
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L31	37.5000-32.5000	C	0.000	0.000	0.000	0.257	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L32	32.5000-32.2500	C	0.000	0.000	0.000	5.272	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.00	0.00

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L33	32.2500-27.2500	C	0.000	0.000	0.000	0.268	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L34	27.2500-23.5000	C	0.000	0.000	0.000	5.355	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L35	23.5000-23.2500	C	0.000	0.000	0.000	4.016	0.22
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L36	23.2500-20.7500	C	0.000	0.000	0.000	0.268	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L37	20.7500-20.5000	C	0.000	0.000	0.000	2.678	0.15
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L38	20.5000-15.5000	C	0.000	0.000	0.000	0.268	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L39	15.5000-10.5000	C	0.000	0.000	0.000	5.355	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L40	10.5000-5.5000	C	0.000	0.000	0.000	5.355	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L41	5.5000-3.0000	C	0.000	0.000	0.000	5.355	0.30
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L42	3.0000-2.7500	C	0.000	0.000	0.000	2.678	0.15
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L43	2.7500-0.0000	C	0.000	0.000	0.000	0.268	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.945	0.16

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	140.0000-135.0000	A	1.471	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L2	135.0000-130.0000	A	1.465	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L3	130.0000-125.0000	A	1.459	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L4	125.0000-120.0000	A	1.454	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.370	0.06
L5	120.0000-115.0000	A	1.448	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.845	0.22
L6	115.0000-110.0000	A	1.441	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.270	0.50
L7	110.0000-105.0000	A	1.435	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.500	0.50
L8	105.0000-104.0000	A	1.431	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.334	0.10
L9	104.0000-103.7500	A	1.430	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.333	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L10	103.7500-98.7500	A	1.426	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.161	0.54
L11	98.7500-98.5000	A	1.423	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.520	0.03
L12	98.5000-98.2500	A	1.422	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.520	0.03
L13	98.2500-97.0000	A	1.421	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.598	0.13
L14	97.0000-96.7500	A	1.420	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.519	0.03
L15	96.7500-88.5000	A	1.414	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.543	1.15
L16	88.5000-88.0000	A	1.407	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.095	0.07
L17	88.0000-87.7500	A	1.406	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.546	0.04
L18	87.7500-82.7500	A	1.402	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.904	0.74
L19	82.7500-77.7500	A	1.393	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.868	0.74
L20	77.7500-72.7500	A	1.385	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.831	0.73
L21	72.7500-68.0800	A	1.375	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.080	0.68
L22	68.0800-67.8300	A	1.371	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.539	0.04
L23	67.8300-62.8300	A	1.365	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.749	0.72
L24	62.8300-57.8300	A	1.354	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.703	0.72
L25	57.8300-52.8300	A	1.343	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.654	0.71
L26	52.8300-47.2500	A	1.329	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.826	0.79
L27	47.2500-46.5000	A	1.321	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.590	0.11
L28	46.5000-41.5000	A	1.312	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.533	0.70
L29	41.5000-37.7500	A	1.299	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.972	0.52
L30	37.7500-37.5000	A	1.292	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.530	0.03
L31	37.5000-32.5000	A	1.282	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.687	0.69
L32	32.5000-32.2500	A	1.273	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.536	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L33	32.2500-27.2500	A	1.262	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.683	0.68
L34	27.2500-23.5000	A	1.242	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.949	0.50
L35	23.5000-23.2500	A	1.232	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.528	0.03
L36	23.2500-20.7500	A	1.224	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.262	0.33
L37	20.7500-20.5000	A	1.216	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.525	0.03
L38	20.5000-15.5000	A	1.200	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.421	0.65
L39	15.5000-10.5000	A	1.161	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.259	0.63
L40	10.5000-5.5000	A	1.106	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.027	0.60
L41	5.5000-3.0000	A	1.039	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.870	0.29
L42	3.0000-2.7500	A	0.999	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.479	0.03
L43	2.7500-0.0000	A	0.928	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.100	0.29

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	140.0000-135.0000	0.0000	0.0000	0.0000	0.0000
L2	135.0000-130.0000	0.0000	0.0000	0.0000	0.0000
L3	130.0000-125.0000	0.0000	0.0000	0.0000	0.0000
L4	125.0000-120.0000	-0.0853	0.0492	-0.2689	0.1552
L5	120.0000-115.0000	-0.4027	0.2325	-1.1826	0.6828
L6	115.0000-110.0000	-1.2716	0.7342	-2.3699	1.3683
L7	110.0000-105.0000	-1.3471	0.7777	-2.5063	1.4470
L8	105.0000-104.0000	-1.9081	1.1016	-3.3404	1.9286
L9	104.0000-103.7500	-1.9149	1.1055	-3.3532	1.9360
L10	103.7500-98.7500	-2.3929	1.3815	-3.8668	2.2325
L11	98.7500-98.5000	-3.0108	1.7383	-4.5079	2.6027
L12	98.5000-98.2500	-3.0209	1.7441	-4.5211	2.6103
L13	98.2500-97.0000	-3.0261	1.7471	-4.5336	2.6175
L14	97.0000-96.7500	-3.0248	1.7464	-4.5391	2.6207
L15	96.7500-88.5000	-3.0450	1.7580	-4.3568	2.5154
L16	88.5000-88.0000	-3.3880	1.9561	-4.7940	2.7678
L17	88.0000-87.7500	-3.3972	1.9614	-4.8008	2.7717
L18	87.7500-82.7500	-3.4165	1.9725	-4.8422	2.7956

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L19	82.7500-77.7500	-3.4529	1.9935	-4.9188	2.8399
L20	77.7500-72.7500	-3.4874	2.0135	-4.9910	2.8815
L21	72.7500-68.0800	-3.7065	2.1400	-5.0563	2.9193
L22	68.0800-67.8300	-3.7771	2.1807	-5.0925	2.9402
L23	67.8300-62.8300	-3.7950	2.1910	-5.1248	2.9588
L24	62.8300-57.8300	-3.8285	2.2104	-5.1838	2.9929
L25	57.8300-52.8300	-3.8609	2.2291	-5.2390	3.0247
L26	52.8300-47.2500	-3.8940	2.2482	-5.2930	3.0559
L27	47.2500-46.5000	-3.8960	2.2493	-5.2957	3.0575
L28	46.5000-41.5000	-3.9180	2.2621	-5.3147	3.0684
L29	41.5000-37.7500	-4.0321	2.3279	-5.4016	3.1186
L30	37.7500-37.5000	-4.0461	2.3360	-5.4200	3.1293
L31	37.5000-32.5000	-4.1339	2.3867	-5.4811	3.1645
L32	32.5000-32.2500	-4.1986	2.4241	-5.5290	3.1922
L33	32.2500-27.2500	-4.2138	2.4328	-5.5456	3.2017
L34	27.2500-23.5000	-4.2386	2.4472	-5.5690	3.2152
L35	23.5000-23.2500	-4.2527	2.4553	-5.5808	3.2220
L36	23.2500-20.7500	-4.2603	2.4597	-5.5857	3.2249
L37	20.7500-20.5000	-4.2664	2.4632	-5.5883	3.2264
L38	20.5000-15.5000	-4.2799	2.4710	-5.5927	3.2289
L39	15.5000-10.5000	-4.3057	2.4859	-5.5894	3.2271
L40	10.5000-5.5000	-4.3306	2.5003	-5.5578	3.2088
L41	5.5000-3.0000	-4.3486	2.5107	-5.4907	3.1701
L42	3.0000-2.7500	-4.3568	2.5154	-5.4440	3.1431
L43	2.7500-0.0000	-4.3639	2.5195	-5.3458	3.0864

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						Ice	9.3462	9.0212	0.23
						1" Ice	10.4181	10.8440	0.41
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						Ice	9.3462	9.0212	0.23
						1" Ice	10.4181	10.8440	0.41
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						Ice	9.3462	9.0212	0.23
						1" Ice	10.4181	10.8440	0.41
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						Ice	7.4733	6.4723	0.19
						1" Ice	8.3846	7.9407	0.34
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00	0.00	140.0000	No Ice	6.5799	4.9591	0.08
						Ice	7.0306	5.7544	0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2" Ice 7.4733 8.3846	6.4723 7.9407	0.19 0.34	
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.5799 7.0306 7.4733 8.3846	4.9591 5.7544 6.4723 7.9407	0.08 0.13 0.19 0.34
(3) ACU-A20-N	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.0667 0.1037 0.1481 0.2593	0.1167 0.1620 0.2148 0.3426	0.00 0.00 0.00 0.01
(3) ACU-A20-N	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.0667 0.1037 0.1481 0.2593	0.1167 0.1620 0.2148 0.3426	0.00 0.00 0.00 0.01
(3) ACU-A20-N	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.0667 0.1037 0.1481 0.2593	0.1167 0.1620 0.2148 0.3426	0.00 0.00 0.00 0.01
TD-RRH8X20-25	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.0455 4.2975 4.5570 5.0981	1.5345 1.7142 1.9008 2.2951	0.07 0.10 0.13 0.20
TD-RRH8X20-25	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.0455 4.2975 4.5570 5.0981	1.5345 1.7142 1.9008 2.2951	0.07 0.10 0.13 0.20
TD-RRH8X20-25	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.0455 4.2975 4.5570 5.0981	1.5345 1.7142 1.9008 2.2951	0.07 0.10 0.13 0.20
(2) 2.375" OD x 6' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
(2) 2.375" OD x 6' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
(2) 2.375" OD x 6' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
Platform Mount [LP 1201- 1]	C	None		0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice	23.1000 26.8000 30.5000 37.9000	23.1000 26.8000 30.5000 37.9000	2.10 2.50 2.90 3.70
*** TME-1900MHz RRH (65 MHz)	A	From Leg	2.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.3125 2.5168 2.7284 3.1740	2.3750 2.5809 2.7943 3.2431	0.06 0.08 0.11 0.18

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA}		Weight K	
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²		
TME-1900MHz RRH (65 MHz)	B	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.3125	2.3750	0.06
							1/2"	2.5168	2.5809	0.08
							Ice	2.7284	2.7943	0.11
							1" Ice	3.1740	3.2431	0.18
TME-1900MHz RRH (65 MHz)	C	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.3125	2.3750	0.06
							1/2"	2.5168	2.5809	0.08
							Ice	2.7284	2.7943	0.11
							1" Ice	3.1740	3.2431	0.18
TME-800MHz RRH	A	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.1342	1.7730	0.05
							1/2"	2.3195	1.9461	0.07
							Ice	2.5123	2.1267	0.10
							1" Ice	2.9201	2.5100	0.16
TME-800MHz RRH	B	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.1342	1.7730	0.05
							1/2"	2.3195	1.9461	0.07
							Ice	2.5123	2.1267	0.10
							1" Ice	2.9201	2.5100	0.16
TME-800MHz RRH	C	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.1342	1.7730	0.05
							1/2"	2.3195	1.9461	0.07
							Ice	2.5123	2.1267	0.10
							1" Ice	2.9201	2.5100	0.16
800MHz 2X50W RRH W/FILTER	A	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.0583	1.9317	0.06
							1/2"	2.2398	2.1087	0.09
							Ice	2.4287	2.2931	0.11
							1" Ice	2.8287	2.6843	0.17
800MHz 2X50W RRH W/FILTER	B	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.0583	1.9317	0.06
							1/2"	2.2398	2.1087	0.09
							Ice	2.4287	2.2931	0.11
							1" Ice	2.8287	2.6843	0.17
800MHz 2X50W RRH W/FILTER	C	From Leg	2.0000 0.00 0.00		0.00	137.0000	No Ice	2.0583	1.9317	0.06
							1/2"	2.2398	2.1087	0.09
							Ice	2.4287	2.2931	0.11
							1" Ice	2.8287	2.6843	0.17
Side Arm Mount [SO 103-3]	C	None			0.00	137.0000	No Ice	9.5000	9.5000	0.22
							1/2"	11.8000	11.8000	0.32
							Ice	14.1000	14.1000	0.41
							1" Ice	18.7000	18.7000	0.60

7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00		0.00	121.0000	No Ice	5.7460	4.2543	0.06
							1/2"	6.1791	5.0137	0.10
							Ice	6.6067	5.7109	0.16
							1" Ice	7.4880	7.1553	0.29
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00		0.00	121.0000	No Ice	5.7460	4.2543	0.06
							1/2"	6.1791	5.0137	0.10
							Ice	6.6067	5.7109	0.16
							1" Ice	7.4880	7.1553	0.29
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00		0.00	121.0000	No Ice	5.7460	4.2543	0.06
							1/2"	6.1791	5.0137	0.10
							Ice	6.6067	5.7109	0.16
							1" Ice	7.4880	7.1553	0.29
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00		0.00	121.0000	No Ice	9.8953	8.1125	0.08
							1/2"	10.4700	9.3041	0.16
							Ice	11.0098	10.2095	0.25
							1" Ice	12.1119	12.0135	0.46

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	9.8953	8.1125	0.08
						1/2"	10.4700	9.3041	0.16
						Ice	11.0098	10.2095	0.25
						1" Ice	12.1119	12.0135	0.46
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	9.8953	8.1125	0.08
						1/2"	10.4700	9.3041	0.16
						Ice	11.0098	10.2095	0.25
						1" Ice	12.1119	12.0135	0.46
QS66512-6 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	8.3708	8.4625	0.14
						1/2"	8.9314	9.6573	0.21
						Ice	9.4571	10.5478	0.30
						1" Ice	10.5310	12.3523	0.49
QS66512-6 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	8.3708	8.4625	0.14
						1/2"	8.9314	9.6573	0.21
						Ice	9.4571	10.5478	0.30
						1" Ice	10.5310	12.3523	0.49
QS66512-6 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	8.3708	8.4625	0.14
						1/2"	8.9314	9.6573	0.21
						Ice	9.4571	10.5478	0.30
						1" Ice	10.5310	12.3523	0.49
(2) LGP21401	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	1.1040	0.3471	0.01
						1/2"	1.2388	0.4422	0.02
						Ice	1.3810	0.5444	0.03
						1" Ice	1.6877	0.7696	0.05
(2) LGP21401	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	1.1040	0.3471	0.01
						1/2"	1.2388	0.4422	0.02
						Ice	1.3810	0.5444	0.03
						1" Ice	1.6877	0.7696	0.05
(2) LGP21401	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	1.1040	0.3471	0.01
						1/2"	1.2388	0.4422	0.02
						Ice	1.3810	0.5444	0.03
						1" Ice	1.6877	0.7696	0.05
DC6-48-60-18-8F	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	0.9167	0.9167	0.02
						1/2"	1.4583	1.4583	0.04
						Ice	1.6431	1.6431	0.06
						1" Ice	2.0417	2.0417	0.11
RRUS12/RRUS A2	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	3.1435	1.8351	0.07
						1/2"	3.3632	2.0121	0.10
						Ice	3.5904	2.1965	0.13
						1" Ice	4.0669	2.5875	0.20
RRUS12/RRUS A2	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	3.1435	1.8351	0.07
						1/2"	3.3632	2.0121	0.10
						Ice	3.5904	2.1965	0.13
						1" Ice	4.0669	2.5875	0.20
RRUS12/RRUS A2	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	3.1435	1.8351	0.07
						1/2"	3.3632	2.0121	0.10
						Ice	3.5904	2.1965	0.13
						1" Ice	4.0669	2.5875	0.20
RRUS 11	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	2.7908	1.1923	0.05
						1/2"	2.9984	1.3395	0.07
						Ice	3.2134	1.4957	0.10
						1" Ice	3.6656	1.8390	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
RRUS 11	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	2.7908	1.1923	0.05
						1/2"	2.9984	1.3395	0.07
						Ice	3.2134	1.4957	0.10
RRUS 11	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	1" Ice	3.6656	1.8390	0.15
						2" Ice			
						No Ice	2.7908	1.1923	0.05
						1/2"	2.9984	1.3395	0.07
RRUS 32	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	Ice	3.2134	1.4957	0.10
						1" Ice	3.6656	1.8390	0.15
						2" Ice			
						No Ice	2.8571	1.7766	0.06
RRUS 32	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	1/2"	3.0830	1.9677	0.08
						Ice	3.3163	2.1658	0.10
						1" Ice	3.8052	2.5829	0.16
						2" Ice			
RRUS 32	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice	2.8571	1.7766	0.06
						1/2"	3.0830	1.9677	0.08
						Ice	3.3163	2.1658	0.10
						1" Ice	3.8052	2.5829	0.16
DBC0061F1V51-2	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	2" Ice			
						No Ice	0.2133	0.4133	0.01
						1/2"	0.2793	0.4959	0.02
						Ice	0.3526	0.5859	0.02
DBC0061F1V51-2	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	1" Ice	0.5215	0.7881	0.04
						2" Ice			
						No Ice	0.2133	0.4133	0.01
						1/2"	0.2793	0.4959	0.02
DBC0061F1V51-2	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	Ice	0.3526	0.5859	0.02
						1" Ice	0.5215	0.7881	0.04
						2" Ice			
						No Ice	0.2133	0.4133	0.01
DC6-48-60-18-8C	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	1/2"	0.2793	0.4959	0.02
						Ice	0.3526	0.5859	0.02
						1" Ice	0.5215	0.7881	0.04
						2" Ice			
Platform Mount [LP 1201-1]	C	None		0.00	121.0000	No Ice	2.7366	2.7366	0.03
						1/2"	2.9630	2.9630	0.05
						Ice	3.1964	3.1964	0.08
						1" Ice	3.6842	3.6842	0.15
Miscellaneous [NA 510-1]	C	None		0.00	121.0000	2" Ice			
						No Ice	23.1000	23.1000	2.10
						1/2"	26.8000	26.8000	2.50
						Ice	30.5000	30.5000	2.90
(4) L 4 x 4 x 1/4 x 5' Mount Angle (Horiz)	A	None		0.00	121.0000	1" Ice	37.9000	37.9000	3.70
						2" Ice			
						No Ice	6.0000	6.0000	0.26
						1/2"	8.5000	8.5000	0.34
(4) L 4 x 4 x 1/4 x 5' Mount Angle (Horiz)	B	None		0.00	121.0000	Ice	11.0000	11.0000	0.42
						1" Ice	16.0000	16.0000	0.59
						2" Ice			
						No Ice	2.7778	0.2217	0.02
(4) L 4 x 4 x 1/4 x 5' Mount Angle (Horiz)	A	None		0.00	121.0000	1/2"	3.1457	0.7859	0.03
						Ice	3.5210	1.3624	0.04
						1" Ice	4.2938	2.3980	0.08
						2" Ice			
(4) L 4 x 4 x 1/4 x 5' Mount Angle (Horiz)	B	None		0.00	121.0000	No Ice	2.7778	0.2217	0.02
						1/2"	3.1457	0.7859	0.03
						Ice	3.5210	1.3624	0.04
						1" Ice	4.2938	2.3980	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(4) L 4 x 4 x 1/4 x 5' Mount Angle (Horiz)	C	None		0.00	121.0000	2" Ice			
						No Ice	2.7778	0.2217	0.02
						1/2"	3.1457	0.7859	0.03
						Ice	3.5210	1.3624	0.04
3' x 2" Sch 40 Pipe Mount	A	None		0.00	121.0000	2" Ice			
						No Ice	0.5826	0.5826	0.01
						1/2"	0.7701	0.7701	0.02
						Ice	0.9669	0.9669	0.02
3' x 2" Sch 40 Pipe Mount	B	None		0.00	121.0000	2" Ice			
						No Ice	0.5826	0.5826	0.01
						1/2"	0.7701	0.7701	0.02
						Ice	0.9669	0.9669	0.02
3' x 2" Sch 40 Pipe Mount	C	None		0.00	121.0000	2" Ice			
						No Ice	0.5826	0.5826	0.01
						1/2"	0.7701	0.7701	0.02
						Ice	0.9669	0.9669	0.02

AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	2" Ice			
						No Ice	6.7474	6.0700	0.15
						1/2"	7.2017	6.8671	0.21
						Ice	7.6475	7.5828	0.28
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	2" Ice			
						No Ice	6.7474	6.0700	0.15
						1/2"	7.2017	6.8671	0.21
						Ice	7.6475	7.5828	0.28
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	2" Ice			
						No Ice	6.7474	6.0700	0.15
						1/2"	7.2017	6.8671	0.21
						Ice	7.6475	7.5828	0.28
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	2" Ice			
						No Ice	20.4801	11.0240	0.16
						1/2"	21.2306	12.5496	0.30
						Ice	21.9900	14.0992	0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	2" Ice			
						No Ice	20.4801	11.0240	0.16
						1/2"	21.2306	12.5496	0.30
						Ice	21.9900	14.0992	0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	2" Ice			
						No Ice	20.4801	11.0240	0.16
						1/2"	21.2306	12.5496	0.30
						Ice	21.9900	14.0992	0.44
(2) S20070A1	A	From Leg	4.0000 0.00 0.00	0.00	115.0000	2" Ice			
						No Ice	0.6560	0.3257	0.01
						1/2"	0.7636	0.4114	0.01
						Ice	0.8786	0.5041	0.02
S20070A1	B	From Leg	4.0000 0.00 0.00	0.00	115.0000	2" Ice			
						No Ice	0.6560	0.3257	0.01
						1/2"	0.7636	0.4114	0.01
						Ice	0.8786	0.5041	0.02
ETW200VS12UB	A	From Leg	4.0000 0.00	0.00	115.0000	2" Ice			
						No Ice	0.4043	0.1628	0.01
						1/2"	0.4857	0.2187	0.01
						Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1/2" Ice 0.5746	0.2820 0.4309	0.02 0.03
ETW200VS12UB	B	From Leg	4.0000 0.00 0.00	0.00	115.0000	No Ice 1/2" Ice 0.4043 0.4857 0.5746 0.7746	0.1628 0.2187 0.2820 0.4309	0.01 0.01 0.02 0.03
ETW200VS12UB	C	From Leg	4.0000 0.00 0.00	0.00	115.0000	No Ice 1/2" Ice 0.4043 0.4857 0.5746 0.7746	0.1628 0.2187 0.2820 0.4309	0.01 0.01 0.02 0.03
RADIO 4449 B12/B71	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1.6500 1.8104 1.9781 2.3359	1.1625 1.3012 1.4473 1.7618	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1.6500 1.8104 1.9781 2.3359	1.1625 1.3012 1.4473 1.7618	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1.6500 1.8104 1.9781 2.3359	1.1625 1.3012 1.4473 1.7618	0.07 0.09 0.11 0.16
Platform Mount [LP 1201-1]	C	None		0.00	115.0000	No Ice 1/2" Ice 23.1000 26.8000 30.5000 37.9000	23.1000 26.8000 30.5000 37.9000	2.10 2.50 2.90 3.70
Miscellaneous [NA 509-3]	C	None		0.00	115.0000	No Ice 1/2" Ice 11.8400 16.9600 22.0800 32.3200	11.8400 16.9600 22.0800 32.3200	0.28 0.30 0.32 0.36
Miscellaneous [NA 510-1]	C	None		0.00	115.0000	No Ice 1/2" Ice 6.0000 8.5000 11.0000 16.0000	6.0000 8.5000 11.0000 16.0000	0.26 0.34 0.42 0.59
2.375" OD x 9' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	115.0000	No Ice 1/2" Ice 2.1375 3.0656 4.0104 5.1312	2.1375 3.0656 4.0104 5.1312	0.03 0.04 0.06 0.13
2.375" OD x 9' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	115.0000	No Ice 1/2" Ice 2.1375 3.0656 4.0104 5.1312	2.1375 3.0656 4.0104 5.1312	0.03 0.04 0.06 0.13
2.375" OD x 9' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	115.0000	No Ice 1/2" Ice 2.1375 3.0656 4.0104 5.1312	2.1375 3.0656 4.0104 5.1312	0.03 0.04 0.06 0.13
*** LNx-6514DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice 1/2" Ice 8.3968 8.9546 9.4800 10.5532	7.0679 8.2532 9.1523 10.9842	0.06 0.13 0.21 0.39

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
LNx-6514DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.3968	7.0679	0.06
						1/2" Ice	8.9546	8.2532	0.13
						Ice	9.4800	9.1523	0.21
						1" Ice	10.5532	10.9842	0.39
						2" Ice			
LNx-6514DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.3968	7.0679	0.06
						1/2" Ice	8.9546	8.2532	0.13
						Ice	9.4800	9.1523	0.21
						1" Ice	10.5532	10.9842	0.39
						2" Ice			
MG D3-800TX w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.5703	3.4178	0.03
						1/2" Ice	3.9790	4.1193	0.07
						Ice	4.3870	4.7842	0.11
						1" Ice	5.1988	6.1642	0.21
						2" Ice			
MG D3-800TX w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.5703	3.4178	0.03
						1/2" Ice	3.9790	4.1193	0.07
						Ice	4.3870	4.7842	0.11
						1" Ice	5.1988	6.1642	0.21
						2" Ice			
MG D3-800TX w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.5703	3.4178	0.03
						1/2" Ice	3.9790	4.1193	0.07
						Ice	4.3870	4.7842	0.11
						1" Ice	5.1988	6.1642	0.21
						2" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.3995	7.0730	0.07
						1/2" Ice	8.9639	8.2637	0.14
						Ice	9.4943	9.1753	0.21
						1" Ice	10.5749	11.0130	0.39
						2" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.3995	7.0730	0.07
						1/2" Ice	8.9639	8.2637	0.14
						Ice	9.4943	9.1753	0.21
						1" Ice	10.5749	11.0130	0.39
						2" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.3995	7.0730	0.07
						1/2" Ice	8.9639	8.2637	0.14
						Ice	9.4943	9.1753	0.21
						1" Ice	10.5749	11.0130	0.39
						2" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	4.8000	2.0000	0.04
						1/2" Ice	5.0704	2.1926	0.08
						Ice	5.3481	2.3926	0.12
						1" Ice	5.9259	2.8148	0.21
						2" Ice			
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	4.8000	2.0000	0.04
						1/2" Ice	5.0704	2.1926	0.08
						Ice	5.3481	2.3926	0.12
						1" Ice	5.9259	2.8148	0.21
						2" Ice			
B25 RRH4X30 (UHFA)	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.1147	1.2897	0.05
						1/2" Ice	2.3027	1.4450	0.07
						Ice	2.4981	1.6073	0.09
						1" Ice	2.9111	1.9584	0.14
						2" Ice			
B25 RRH4X30 (UHFA)	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.1147	1.2897	0.05
						1/2" Ice	2.3027	1.4450	0.07
						Ice	2.4981	1.6073	0.09
						1" Ice	2.9111	1.9584	0.14
						2" Ice			
B25 RRH4X30 (UHFA)	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.1147	1.2897	0.05
						1/2" Ice	2.3027	1.4450	0.07
						Ice	2.4981	1.6073	0.09
						1" Ice	2.9111	1.9584	0.14
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
B66A RRH4X45 (UHIE)	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.5370	1.6101	0.06
						1/2"	2.7496	1.7906	0.08
						Ice	2.9696	1.9781	0.10
						1" Ice	3.4318	2.3740	0.16
						2" Ice			
B66A RRH4X45 (UHIE)	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.5370	1.6101	0.06
						1/2"	2.7496	1.7906	0.08
						Ice	2.9696	1.9781	0.10
						1" Ice	3.4318	2.3740	0.16
						2" Ice			
B66A RRH4X45 (UHIE)	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.5370	1.6101	0.06
						1/2"	2.7496	1.7906	0.08
						Ice	2.9696	1.9781	0.10
						1" Ice	3.4318	2.3740	0.16
						2" Ice			
B13 RRH 4X30	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.0552	1.3201	0.06
						1/2"	2.2405	1.4754	0.07
						Ice	2.4333	1.6376	0.09
						1" Ice	2.8411	1.9966	0.14
						2" Ice			
B13 RRH 4X30	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.0552	1.3201	0.06
						1/2"	2.2405	1.4754	0.07
						Ice	2.4333	1.6376	0.09
						1" Ice	2.8411	1.9966	0.14
						2" Ice			
B13 RRH 4X30	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.0552	1.3201	0.06
						1/2"	2.2405	1.4754	0.07
						Ice	2.4333	1.6376	0.09
						1" Ice	2.8411	1.9966	0.14
						2" Ice			
AIRSCALE RRH 4T4R B5 160W	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	1.2857	0.7204	0.04
						1/2"	1.4277	0.8341	0.05
						Ice	1.5771	0.9552	0.06
						1" Ice	1.8983	1.2197	0.09
						2" Ice			
AIRSCALE RRH 4T4R B5 160W	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	1.2857	0.7204	0.04
						1/2"	1.4277	0.8341	0.05
						Ice	1.5771	0.9552	0.06
						1" Ice	1.8983	1.2197	0.09
						2" Ice			
AIRSCALE RRH 4T4R B5 160W	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	1.2857	0.7204	0.04
						1/2"	1.4277	0.8341	0.05
						Ice	1.5771	0.9552	0.06
						1" Ice	1.8983	1.2197	0.09
						2" Ice			
CBC1923T-DS-43	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	0.3162	0.2300	0.01
						1/2"	0.3888	0.2943	0.01
						Ice	0.4688	0.3659	0.02
						1" Ice	0.6511	0.5315	0.03
						2" Ice			
CBC1923T-DS-43	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	0.3162	0.2300	0.01
						1/2"	0.3888	0.2943	0.01
						Ice	0.4688	0.3659	0.02
						1" Ice	0.6511	0.5315	0.03
						2" Ice			
CBC1923T-DS-43	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	0.3162	0.2300	0.01
						1/2"	0.3888	0.2943	0.01
						Ice	0.4688	0.3659	0.02
						1" Ice	0.6511	0.5315	0.03
						2" Ice			
Platform Mount [LP 1201- 1]	C	None		0.00	104.0000	No Ice	23.1000	23.1000	2.10
						1/2"	26.8000	26.8000	2.50
						Ice	30.5000	30.5000	2.90
						1" Ice	37.9000	37.9000	3.70
						2" Ice			

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

APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.0000 0.00 0.00	0.00	95.0000	No Ice	5.4042	4.7000	0.05
						1/2" Ice	5.9597	5.8600	0.10
						Ice	6.4808	6.7338	0.15
						1" Ice	7.5467	8.5150	0.28
						2" Ice			
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.0000 0.00 0.00	0.00	95.0000	No Ice	5.4042	4.7000	0.05
						1/2" Ice	5.9597	5.8600	0.10
						Ice	6.4808	6.7338	0.15
						1" Ice	7.5467	8.5150	0.28
						2" Ice			
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.0000 0.00 0.00	0.00	95.0000	No Ice	5.4042	4.7000	0.05
						1/2" Ice	5.9597	5.8600	0.10
						Ice	6.4808	6.7338	0.15
						1" Ice	7.5467	8.5150	0.28
						2" Ice			
Pipe Mount [PM 601-3]	C	None		0.00	95.0000	No Ice	4.3900	4.3900	0.20
						1/2" Ice	5.4800	5.4800	0.24
						Ice	6.5700	6.5700	0.28
						1" Ice	8.7500	8.7500	0.36
						2" Ice			

OG-860/1920/GPS-A	A	From Leg	4.0000 0.00 2.00	0.00	80.0000	No Ice	0.3077	0.3667	0.00
						1/2" Ice	0.3952	0.4572	0.01
						Ice	0.4897	0.5548	0.01
						1" Ice	0.6997	0.7708	0.02
						2" Ice			
Side Arm Mount [SO 901-1]	A	None		0.00	80.0000	No Ice	0.5000	0.8800	0.11
						1/2" Ice	0.6800	1.1300	0.11
						Ice	0.8600	1.3800	0.11
						1" Ice	1.2200	1.8800	0.12
						2" Ice			

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _Z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 140.0000-135.0000	137.4744	1.353	0.05	7.084	A	0.000	7.084	7.084	100.00	0.000	0.000
					B	0.000	7.084		100.00	0.000	0.000
					C	0.000	7.084		100.00	0.000	0.000
L2 135.0000-130.0000	132.4759	1.343	0.05	7.522	A	0.000	7.522	7.522	100.00	0.000	0.000
					B	0.000	7.522		100.00	0.000	0.000
					C	0.000	7.522		100.00	0.000	0.000
L3 130.0000-125.0000	127.4772	1.332	0.05	7.960	A	0.000	7.960	7.960	100.00	0.000	0.000
					B	0.000	7.960		100.00	0.000	0.000
					C	0.000	7.960		100.00	0.000	0.000
L4 125.0000-120.0000	122.4784	1.321	0.05	8.398	A	0.000	8.398	8.398	100.00	0.000	0.000
					B	0.000	8.398		100.00	0.000	0.000
					C	0.000	8.398		100.00	0.000	0.080
L5 120.0000-115.0000	117.4794	1.309	0.05	8.836	A	0.000	8.836	8.836	100.00	0.000	0.000
					B	0.000	8.836		100.00	0.000	0.000
					C	0.000	8.836		100.00	0.000	0.398
L6 115.0000-110.0000	112.4804	1.297	0.05	9.274	A	0.000	9.274	9.274	100.00	0.000	0.000
					B	0.000	9.274		100.00	0.000	0.000
					C	0.000	9.274		100.00	0.000	1.388
L7 110.0000-105.0000	107.4813	1.285	0.05	9.711	A	0.000	9.711	9.711	100.00	0.000	0.000
					B	0.000	9.711		100.00	0.000	0.000
					C	0.000	9.711		100.00	0.000	1.471

Section Elevation ft	z ft	K_z	q_z ksf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L8 105.0000- 104.0000	104.4993	1.277	0.05	1.995	A	0.000	1.995	1.995	100.00	0.000	0.000
					B	0.000	1.995	100.00	0.000	0.000	
					C	0.000	1.995	100.00	0.000	0.444	
L9 104.0000- 103.7500	103.8750	1.276	0.05	0.500	A	0.000	0.500	0.500	100.00	0.000	0.000
					B	0.000	0.500	100.00	0.000	0.000	
					C	0.000	0.500	100.00	0.000	0.111	
L10 103.7500- 98.7500	101.2323	1.269	0.05	10.229	A	0.000	10.229	10.229	100.00	0.000	0.000
					B	0.000	10.229	100.00	0.000	0.000	
					C	0.000	10.229	100.00	0.000	2.916	
L11 98.7500- 98.5000	98.6250	1.262	0.05	0.523	A	0.000	0.523	0.523	100.00	0.000	0.000
					B	0.000	0.523	100.00	0.000	0.000	
					C	0.000	0.523	100.00	0.000	0.198	
L12 98.5000- 98.2500	98.3750	1.261	0.05	0.522	A	0.000	0.522	0.522	100.00	0.000	0.000
					B	0.000	0.522	100.00	0.000	0.000	
					C	0.000	0.522	100.00	0.000	0.198	
L13 98.2500- 97.0000	97.6239	1.259	0.05	2.627	A	0.000	2.627	2.627	100.00	0.000	0.000
					B	0.000	2.627	100.00	0.000	0.000	
					C	0.000	2.627	100.00	0.000	0.990	
L14 97.0000- 96.7500	96.8750	1.257	0.05	0.530	A	0.000	0.530	0.530	100.00	0.000	0.000
					B	0.000	0.530	100.00	0.000	0.000	
					C	0.000	0.530	100.00	0.000	0.198	
L15 96.7500- 88.5000	92.5800	1.245	0.04	18.113	A	0.000	18.113	18.113	100.00	0.000	0.000
					B	0.000	18.113	100.00	0.000	0.000	
					C	0.000	18.113	100.00	0.000	6.499	
L16 88.5000- 88.0000	88.2498	1.233	0.04	1.114	A	0.000	1.114	1.114	100.00	0.000	0.000
					B	0.000	1.114	100.00	0.000	0.000	
					C	0.000	1.114	100.00	0.000	0.455	
L17 88.0000- 87.7500	87.8750	1.232	0.04	0.557	A	0.000	0.557	0.557	100.00	0.000	0.000
					B	0.000	0.557	100.00	0.000	0.000	
					C	0.000	0.557	100.00	0.000	0.228	
L18 87.7500- 82.7500	85.2341	1.224	0.04	11.373	A	0.000	11.373	11.373	100.00	0.000	0.000
					B	0.000	11.373	100.00	0.000	0.000	
					C	0.000	11.373	100.00	0.000	4.552	
L19 82.7500- 77.7500	80.2347	1.208	0.04	11.813	A	0.000	11.813	11.813	100.00	0.000	0.000
					B	0.000	11.813	100.00	0.000	0.000	
					C	0.000	11.813	100.00	0.000	4.552	
L20 77.7500- 72.7500	75.2352	1.192	0.04	12.252	A	0.000	12.252	12.252	100.00	0.000	0.000
					B	0.000	12.252	100.00	0.000	0.000	
					C	0.000	12.252	100.00	0.000	4.552	
L21 72.7500- 68.0800	70.4025	1.175	0.04	11.843	A	0.000	11.843	11.843	100.00	0.000	0.000
					B	0.000	11.843	100.00	0.000	0.000	
					C	0.000	11.843	100.00	0.000	4.569	
L22 68.0800- 67.8300	67.9550	1.167	0.04	0.644	A	0.000	0.644	0.644	100.00	0.000	0.000
					B	0.000	0.644	100.00	0.000	0.000	
					C	0.000	0.644	100.00	0.000	0.249	
L23 67.8300- 62.8300	65.3162	1.157	0.04	13.110	A	0.000	13.110	13.110	100.00	0.000	0.000
					B	0.000	13.110	100.00	0.000	0.000	
					C	0.000	13.110	100.00	0.000	4.985	
L24 62.8300- 57.8300	60.3166	1.138	0.04	13.552	A	0.000	13.552	13.552	100.00	0.000	0.000
					B	0.000	13.552	100.00	0.000	0.000	
					C	0.000	13.552	100.00	0.000	4.985	
L25 57.8300- 52.8300	55.3171	1.117	0.04	13.992	A	0.000	13.992	13.992	100.00	0.000	0.000
					B	0.000	13.992	100.00	0.000	0.000	
					C	0.000	13.992	100.00	0.000	4.985	
L26 52.8300- 47.2500	50.0244	1.094	0.04	16.132	A	0.000	16.132	16.132	100.00	0.000	0.000
					B	0.000	16.132	100.00	0.000	0.000	
					C	0.000	16.132	100.00	0.000	5.563	
L27 47.2500- 46.5000	46.8747	1.079	0.04	2.168	A	0.000	2.168	2.168	100.00	0.000	0.000
					B	0.000	2.168	100.00	0.000	0.000	
					C	0.000	2.168	100.00	0.000	0.748	
L28 46.5000- 41.5000	43.9877	1.065	0.04	14.707	A	0.000	14.707	14.707	100.00	0.000	0.000
					B	0.000	14.707	100.00	0.000	0.000	
					C	0.000	14.707	100.00	0.000	4.993	
L29 41.5000- 37.7500	39.6183	1.041	0.04	11.320	A	0.000	11.320	11.320	100.00	0.000	0.000
					B	0.000	11.320	100.00	0.000	0.000	
					C	0.000	11.320	100.00	0.000	3.860	
L30 37.7500- 37.5000	37.6250	1.03	0.04	0.763	A	0.000	0.763	0.763	100.00	0.000	0.000
					B	0.000	0.763	100.00	0.000	0.000	
					C	0.000	0.763	100.00	0.000	0.000	

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L31 37.5000- 32.5000	34.9883	1.015	0.04	15.492	C	0.000	0.763	15.492	100.00	0.000	0.257
					A	0.000	15.492		100.00	0.000	0.000
					B	0.000	15.492		100.00	0.000	0.000
L32 32.5000- 32.2500	32.3750	0.998	0.04	0.786	C	0.000	15.492	0.786	100.00	0.000	5.272
					A	0.000	0.786		100.00	0.000	0.000
					B	0.000	0.786		100.00	0.000	0.000
L33 32.2500- 27.2500	29.7386	0.98	0.04	15.946	C	0.000	15.946	15.946	100.00	0.000	0.000
					A	0.000	15.946		100.00	0.000	0.000
					B	0.000	15.946		100.00	0.000	0.000
L34 27.2500- 23.5000	25.3688	0.948	0.03	12.248	C	0.000	15.946	12.248	100.00	0.000	5.355
					A	0.000	12.248		100.00	0.000	0.000
					B	0.000	12.248		100.00	0.000	0.000
L35 23.5000- 23.2500	23.3750	0.932	0.03	0.825	C	0.000	12.248	0.825	100.00	0.000	4.016
					A	0.000	0.825		100.00	0.000	0.000
					B	0.000	0.825		100.00	0.000	0.000
L36 23.2500- 20.7500	21.9973	0.92	0.03	8.306	C	0.000	8.306	8.306	100.00	0.000	0.000
					A	0.000	8.306		100.00	0.000	0.000
					B	0.000	8.306		100.00	0.000	0.000
L37 20.7500- 20.5000	20.6250	0.908	0.03	0.837	C	0.000	8.306	0.837	100.00	0.000	2.678
					A	0.000	0.837		100.00	0.000	0.000
					B	0.000	0.837		100.00	0.000	0.000
L38 20.5000- 15.5000	17.9893	0.882	0.03	16.973	C	0.000	0.837	16.973	100.00	0.000	0.268
					A	0.000	16.973		100.00	0.000	0.000
					B	0.000	16.973		100.00	0.000	0.000
L39 15.5000- 10.5000	12.9896	0.85	0.03	17.413	C	0.000	16.973	17.413	100.00	0.000	5.355
					A	0.000	17.413		100.00	0.000	0.000
					B	0.000	17.413		100.00	0.000	0.000
L40 10.5000- 5.5000	7.9899	0.85	0.03	17.853	C	0.000	17.413	17.853	100.00	0.000	5.355
					A	0.000	17.853		100.00	0.000	0.000
					B	0.000	17.853		100.00	0.000	0.000
L41 5.5000- 3.0000	4.2475	0.85	0.03	9.091	C	0.000	17.853	9.091	100.00	0.000	2.678
					A	0.000	9.091		100.00	0.000	0.000
					B	0.000	9.091		100.00	0.000	0.000
L42 3.0000- 2.7500	2.8750	0.85	0.03	0.915	C	0.000	9.091	0.915	100.00	0.000	0.000
					A	0.000	0.915		100.00	0.000	0.000
					B	0.000	0.915		100.00	0.000	0.000
L43 2.7500- 0.0000	1.3720	0.85	0.03	10.134	C	0.000	0.915	10.134	100.00	0.000	0.268
					A	0.000	10.134		100.00	0.000	0.000
					B	0.000	10.134		100.00	0.000	0.000
					C	0.000	10.134		100.00	0.000	2.945

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 140.0000- 135.0000	137.4744	1.353	0.01	1.4706	8.310	A	0.000	8.310	8.310	100.00	0.000	0.000
						B	0.000	8.310		100.00	0.000	0.000
						C	0.000	8.310		100.00	0.000	0.000
L2 135.0000- 130.0000	132.4759	1.343	0.01	1.4651	8.743	A	0.000	8.743	8.743	100.00	0.000	0.000
						B	0.000	8.743		100.00	0.000	0.000
						C	0.000	8.743		100.00	0.000	0.000
L3 130.0000- 125.0000	127.4772	1.332	0.01	1.4595	9.176	A	0.000	9.176	9.176	100.00	0.000	0.000
						B	0.000	9.176		100.00	0.000	0.000
						C	0.000	9.176		100.00	0.000	0.000
L4 125.0000- 120.0000	122.4784	1.321	0.01	1.4537	9.609	A	0.000	9.609	9.609	100.00	0.000	0.000
						B	0.000	9.609		100.00	0.000	0.000
						C	0.000	9.609		100.00	0.000	0.370
L5 120.0000- 115.0000	117.4794	1.309	0.01	1.4476	10.042	A	0.000	10.042	10.042	100.00	0.000	0.000
						B	0.000	10.042		100.00	0.000	0.000
						C	0.000	10.042		100.00	0.000	1.845
L6 115.0000- 110.0000	112.4804	1.297	0.01	1.4413	10.475	A	0.000	10.475	10.475	100.00	0.000	0.000
						B	0.000	10.475		100.00	0.000	0.000
						C	0.000	10.475		100.00	0.000	4.270

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L7 110.0000- 105.0000	107.4813	1.285	0.01	1.4348	10.907	A	0.000	10.907	10.907	100.00	0.000	0.000
						B	0.000	10.907	10.907	100.00	0.000	0.000
						C	0.000	10.907	10.907	100.00	0.000	4.500
L8 105.0000- 104.0000	104.4993	1.277	0.01	1.4308	2.233	A	0.000	2.233	2.233	100.00	0.000	0.000
						B	0.000	2.233	2.233	100.00	0.000	0.000
						C	0.000	2.233	2.233	100.00	0.000	1.334
L9 104.0000- 103.7500	103.8750	1.276	0.01	1.4299	0.559	A	0.000	0.559	0.559	100.00	0.000	0.000
						B	0.000	0.559	0.559	100.00	0.000	0.000
						C	0.000	0.559	0.559	100.00	0.000	0.333
L10 103.7500- 98.7500	101.2323	1.269	0.01	1.4262	11.418	A	0.000	11.418	11.418	100.00	0.000	0.000
						B	0.000	11.418	11.418	100.00	0.000	0.000
						C	0.000	11.418	11.418	100.00	0.000	8.161
L11 98.7500- 98.5000	98.6250	1.262	0.01	1.4225	0.582	A	0.000	0.582	0.582	100.00	0.000	0.000
						B	0.000	0.582	0.582	100.00	0.000	0.000
						C	0.000	0.582	0.582	100.00	0.000	0.520
L12 98.5000- 98.2500	98.3750	1.261	0.01	1.4222	0.581	A	0.000	0.581	0.581	100.00	0.000	0.000
						B	0.000	0.581	0.581	100.00	0.000	0.000
						C	0.000	0.581	0.581	100.00	0.000	0.520
L13 98.2500- 97.0000	97.6239	1.259	0.01	1.4211	2.923	A	0.000	2.923	2.923	100.00	0.000	0.000
						B	0.000	2.923	2.923	100.00	0.000	0.000
						C	0.000	2.923	2.923	100.00	0.000	2.598
L14 97.0000- 96.7500	96.8750	1.257	0.01	1.4200	0.589	A	0.000	0.589	0.589	100.00	0.000	0.000
						B	0.000	0.589	0.589	100.00	0.000	0.000
						C	0.000	0.589	0.589	100.00	0.000	0.519
L15 96.7500- 88.5000	92.5800	1.245	0.01	1.4135	20.056	A	0.000	20.056	20.056	100.00	0.000	0.000
						B	0.000	20.056	20.056	100.00	0.000	0.000
						C	0.000	20.056	20.056	100.00	0.000	15.543
L16 88.5000- 88.0000	88.2498	1.233	0.01	1.4068	1.231	A	0.000	1.231	1.231	100.00	0.000	0.000
						B	0.000	1.231	1.231	100.00	0.000	0.000
						C	0.000	1.231	1.231	100.00	0.000	1.095
L17 88.0000- 87.7500	87.8750	1.232	0.01	1.4062	0.616	A	0.000	0.616	0.616	100.00	0.000	0.000
						B	0.000	0.616	0.616	100.00	0.000	0.000
						C	0.000	0.616	0.616	100.00	0.000	0.546
L18 87.7500- 82.7500	85.2341	1.224	0.01	1.4019	12.541	A	0.000	12.541	12.541	100.00	0.000	0.000
						B	0.000	12.541	12.541	100.00	0.000	0.000
						C	0.000	12.541	12.541	100.00	0.000	10.904
L19 82.7500- 77.7500	80.2347	1.208	0.01	1.3935	12.974	A	0.000	12.974	12.974	100.00	0.000	0.000
						B	0.000	12.974	12.974	100.00	0.000	0.000
						C	0.000	12.974	12.974	100.00	0.000	10.868
L20 77.7500- 72.7500	75.2352	1.192	0.01	1.3845	13.406	A	0.000	13.406	13.406	100.00	0.000	0.000
						B	0.000	13.406	13.406	100.00	0.000	0.000
						C	0.000	13.406	13.406	100.00	0.000	10.831
L21 72.7500- 68.0800	70.4025	1.175	0.01	1.3754	12.913	A	0.000	12.913	12.913	100.00	0.000	0.000
						B	0.000	12.913	12.913	100.00	0.000	0.000
						C	0.000	12.913	12.913	100.00	0.000	10.080
L22 68.0800- 67.8300	67.9550	1.167	0.01	1.3705	0.701	A	0.000	0.701	0.701	100.00	0.000	0.000
						B	0.000	0.701	0.701	100.00	0.000	0.000
						C	0.000	0.701	0.701	100.00	0.000	0.539
L23 67.8300- 62.8300	65.3162	1.157	0.01	1.3651	14.248	A	0.000	14.248	14.248	100.00	0.000	0.000
						B	0.000	14.248	14.248	100.00	0.000	0.000
						C	0.000	14.248	14.248	100.00	0.000	10.749
L24 62.8300- 57.8300	60.3166	1.138	0.01	1.3543	14.680	A	0.000	14.680	14.680	100.00	0.000	0.000
						B	0.000	14.680	14.680	100.00	0.000	0.000
						C	0.000	14.680	14.680	100.00	0.000	10.703
L25 57.8300- 52.8300	55.3171	1.117	0.01	1.3426	15.110	A	0.000	15.110	15.110	100.00	0.000	0.000
						B	0.000	15.110	15.110	100.00	0.000	0.000
						C	0.000	15.110	15.110	100.00	0.000	10.654
L26 52.8300- 47.2500	50.0244	1.094	0.01	1.3292	17.368	A	0.000	17.368	17.368	100.00	0.000	0.000
						B	0.000	17.368	17.368	100.00	0.000	0.000
						C	0.000	17.368	17.368	100.00	0.000	11.826
L27 47.2500- 46.5000	46.8747	1.079	0.01	1.3205	2.334	A	0.000	2.334	2.334	100.00	0.000	0.000
						B	0.000	2.334	2.334	100.00	0.000	0.000
						C	0.000	2.334	2.334	100.00	0.000	1.590
L28 46.5000- 41.5000	43.9877	1.065	0.01	1.3122	15.801	A	0.000	15.801	15.801	100.00	0.000	0.000
						B	0.000	15.801	15.801	100.00	0.000	0.000
						C	0.000	15.801	15.801	100.00	0.000	10.533
L29 41.5000- 37.7500	39.6183	1.041	0.01	1.2985	12.132	A	0.000	12.132	12.132	100.00	0.000	0.000
						B	0.000	12.132	12.132	100.00	0.000	0.000
						C	0.000	12.132	12.132	100.00	0.000	0.000

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L30 37.7500-37.5000	37.6250	1.03	0.01	1.2918	0.817	C	0.000	12.132	0.817	100.00	0.000	7.972
						A	0.000	0.817		100.00	0.000	0.000
						B	0.000	0.817		100.00	0.000	0.000
L31 37.5000-32.5000	34.9883	1.015	0.01	1.2825	16.560	C	0.000	0.817	16.560	100.00	0.000	0.530
						A	0.000	16.560		100.00	0.000	0.000
						B	0.000	16.560		100.00	0.000	0.000
L32 32.5000-32.2500	32.3750	0.998	0.01	1.2726	0.839	C	0.000	0.839	0.839	100.00	0.000	10.687
						A	0.000	0.839		100.00	0.000	0.000
						B	0.000	0.839		100.00	0.000	0.000
L33 32.2500-27.2500	29.7386	0.98	0.01	1.2618	16.997	C	0.000	0.839	16.997	100.00	0.000	0.536
						A	0.000	16.997		100.00	0.000	0.000
						B	0.000	16.997		100.00	0.000	0.000
L34 27.2500-23.5000	25.3688	0.948	0.01	1.2419	13.024	C	0.000	16.997	13.024	100.00	0.000	10.683
						A	0.000	13.024		100.00	0.000	0.000
						B	0.000	13.024		100.00	0.000	0.000
L35 23.5000-23.2500	23.3750	0.932	0.01	1.2318	0.876	C	0.000	13.024	0.876	100.00	0.000	7.949
						A	0.000	0.876		100.00	0.000	0.000
						B	0.000	0.876		100.00	0.000	0.000
L36 23.2500-20.7500	21.9973	0.92	0.01	1.2243	8.816	C	0.000	0.876	8.816	100.00	0.000	0.528
						A	0.000	8.816		100.00	0.000	0.000
						B	0.000	8.816		100.00	0.000	0.000
L37 20.7500-20.5000	20.6250	0.908	0.01	1.2165	0.888	C	0.000	8.816	0.888	100.00	0.000	5.262
						A	0.000	0.888		100.00	0.000	0.000
						B	0.000	0.888		100.00	0.000	0.000
L38 20.5000-15.5000	17.9893	0.882	0.01	1.1999	17.973	C	0.000	0.888	17.973	100.00	0.000	0.525
						A	0.000	17.973		100.00	0.000	0.000
						B	0.000	17.973		100.00	0.000	0.000
L39 15.5000-10.5000	12.9896	0.85	0.00	1.1615	18.381	C	0.000	17.973	18.381	100.00	0.000	10.421
						A	0.000	18.381		100.00	0.000	0.000
						B	0.000	18.381		100.00	0.000	0.000
L40 10.5000-5.5000	7.9899	0.85	0.00	1.1064	18.775	C	0.000	18.381	18.775	100.00	0.000	10.259
						A	0.000	18.775		100.00	0.000	0.000
						B	0.000	18.775		100.00	0.000	0.000
L41 5.5000-3.0000	4.2475	0.85	0.00	1.0387	9.524	C	0.000	18.775	9.524	100.00	0.000	10.027
						A	0.000	9.524		100.00	0.000	0.000
						B	0.000	9.524		100.00	0.000	0.000
L42 3.0000-2.7500	2.8750	0.85	0.00	0.9989	0.956	C	0.000	9.524	0.956	100.00	0.000	4.870
						A	0.000	0.956		100.00	0.000	0.000
						B	0.000	0.956		100.00	0.000	0.000
L43 2.7500-0.0000	1.3720	0.85	0.00	0.9277	10.559	C	0.000	0.956	10.559	100.00	0.000	0.479
						A	0.000	10.559		100.00	0.000	0.000
						B	0.000	10.559		100.00	0.000	0.000
						C	0.000	10.559		100.00	0.000	5.100

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 140.0000-135.0000	137.4744	1.353	0.01	7.084	A	0.000	7.084	7.084	100.00	0.000	0.000
					B	0.000	7.084		100.00	0.000	0.000
					C	0.000	7.084		100.00	0.000	0.000
L2 135.0000-130.0000	132.4759	1.343	0.01	7.522	A	0.000	7.522	7.522	100.00	0.000	0.000
					B	0.000	7.522		100.00	0.000	0.000
					C	0.000	7.522		100.00	0.000	0.000
L3 130.0000-125.0000	127.4772	1.332	0.01	7.960	A	0.000	7.960	7.960	100.00	0.000	0.000
					B	0.000	7.960		100.00	0.000	0.000
					C	0.000	7.960		100.00	0.000	0.000
L4 125.0000-120.0000	122.4784	1.321	0.01	8.398	A	0.000	8.398	8.398	100.00	0.000	0.000
					B	0.000	8.398		100.00	0.000	0.000
					C	0.000	8.398		100.00	0.000	0.080
L5 120.0000-115.0000	117.4794	1.309	0.01	8.836	A	0.000	8.836	8.836	100.00	0.000	0.000
					B	0.000	8.836		100.00	0.000	0.000

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L6 115.0000- 110.0000	112.4804	1.297	0.01	9.274	C	0.000	8.836	9.274	100.00	0.000	0.398
					A	0.000	9.274		100.00	0.000	0.000
					B	0.000	9.274		100.00	0.000	0.000
L7 110.0000- 105.0000	107.4813	1.285	0.01	9.711	C	0.000	9.274	9.711	100.00	0.000	1.388
					A	0.000	9.711		100.00	0.000	0.000
					B	0.000	9.711		100.00	0.000	0.000
L8 105.0000- 104.0000	104.4993	1.277	0.01	1.995	C	0.000	9.711	1.995	100.00	0.000	1.471
					A	0.000	1.995		100.00	0.000	0.000
					B	0.000	1.995		100.00	0.000	0.000
L9 104.0000- 103.7500	103.8750	1.276	0.01	0.500	C	0.000	1.995	0.500	100.00	0.000	0.444
					A	0.000	0.500		100.00	0.000	0.000
					B	0.000	0.500		100.00	0.000	0.000
L10 103.7500- 98.7500	101.2323	1.269	0.01	10.229	C	0.000	0.500	10.229	100.00	0.000	0.111
					A	0.000	10.229		100.00	0.000	0.000
					B	0.000	10.229		100.00	0.000	0.000
L11 98.7500- 98.5000	98.6250	1.262	0.01	0.523	C	0.000	10.229	0.523	100.00	0.000	2.916
					A	0.000	0.523		100.00	0.000	0.000
					B	0.000	0.523		100.00	0.000	0.000
L12 98.5000- 98.2500	98.3750	1.261	0.01	0.522	C	0.000	0.523	0.522	100.00	0.000	0.198
					A	0.000	0.522		100.00	0.000	0.000
					B	0.000	0.522		100.00	0.000	0.000
L13 98.2500- 97.0000	97.6239	1.259	0.01	2.627	C	0.000	0.522	2.627	100.00	0.000	0.198
					A	0.000	2.627		100.00	0.000	0.000
					B	0.000	2.627		100.00	0.000	0.000
L14 97.0000- 96.7500	96.8750	1.257	0.01	0.530	C	0.000	2.627	0.530	100.00	0.000	0.990
					A	0.000	0.530		100.00	0.000	0.000
					B	0.000	0.530		100.00	0.000	0.000
L15 96.7500- 88.5000	92.5800	1.245	0.01	18.113	C	0.000	0.530	18.113	100.00	0.000	0.198
					A	0.000	18.113		100.00	0.000	0.000
					B	0.000	18.113		100.00	0.000	0.000
L16 88.5000- 88.0000	88.2498	1.233	0.01	1.114	C	0.000	18.113	1.114	100.00	0.000	6.499
					A	0.000	1.114		100.00	0.000	0.000
					B	0.000	1.114		100.00	0.000	0.000
L17 88.0000- 87.7500	87.8750	1.232	0.01	0.557	C	0.000	1.114	0.557	100.00	0.000	0.455
					A	0.000	0.557		100.00	0.000	0.000
					B	0.000	0.557		100.00	0.000	0.000
L18 87.7500- 82.7500	85.2341	1.224	0.01	11.373	C	0.000	0.557	11.373	100.00	0.000	0.228
					A	0.000	11.373		100.00	0.000	0.000
					B	0.000	11.373		100.00	0.000	0.000
L19 82.7500- 77.7500	80.2347	1.208	0.01	11.813	C	0.000	11.373	11.813	100.00	0.000	4.552
					A	0.000	11.813		100.00	0.000	0.000
					B	0.000	11.813		100.00	0.000	0.000
L20 77.7500- 72.7500	75.2352	1.192	0.01	12.252	C	0.000	11.813	12.252	100.00	0.000	4.552
					A	0.000	12.252		100.00	0.000	0.000
					B	0.000	12.252		100.00	0.000	0.000
L21 72.7500- 68.0800	70.4025	1.175	0.01	11.843	C	0.000	12.252	11.843	100.00	0.000	4.552
					A	0.000	11.843		100.00	0.000	0.000
					B	0.000	11.843		100.00	0.000	0.000
L22 68.0800- 67.8300	67.9550	1.167	0.01	0.644	C	0.000	11.843	0.644	100.00	0.000	4.569
					A	0.000	0.644		100.00	0.000	0.000
					B	0.000	0.644		100.00	0.000	0.000
L23 67.8300- 62.8300	65.3162	1.157	0.01	13.110	C	0.000	0.644	13.110	100.00	0.000	0.249
					A	0.000	13.110		100.00	0.000	0.000
					B	0.000	13.110		100.00	0.000	0.000
L24 62.8300- 57.8300	60.3166	1.138	0.01	13.552	C	0.000	13.110	13.552	100.00	0.000	4.985
					A	0.000	13.552		100.00	0.000	0.000
					B	0.000	13.552		100.00	0.000	0.000
L25 57.8300- 52.8300	55.3171	1.117	0.01	13.992	C	0.000	13.552	13.992	100.00	0.000	4.985
					A	0.000	13.992		100.00	0.000	0.000
					B	0.000	13.992		100.00	0.000	0.000
L26 52.8300- 47.2500	50.0244	1.094	0.01	16.132	C	0.000	13.992	16.132	100.00	0.000	4.985
					A	0.000	16.132		100.00	0.000	0.000
					B	0.000	16.132		100.00	0.000	0.000
L27 47.2500- 46.5000	46.8747	1.079	0.01	2.168	C	0.000	16.132	2.168	100.00	0.000	5.563
					A	0.000	2.168		100.00	0.000	0.000
					B	0.000	2.168		100.00	0.000	0.000
					C	0.000	2.168		100.00	0.000	0.748

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L28 46.5000- 41.5000	43.9877	1.065	0.01	14.707	A	0.000	14.707	14.707	100.00	0.000	0.000
					B	0.000	14.707	100.00	0.000	0.000	
					C	0.000	14.707	100.00	0.000	4.993	
L29 41.5000- 37.7500	39.6183	1.041	0.01	11.320	A	0.000	11.320	11.320	100.00	0.000	0.000
					B	0.000	11.320	100.00	0.000	0.000	
					C	0.000	11.320	100.00	0.000	3.860	
L30 37.7500- 37.5000	37.6250	1.03	0.01	0.763	A	0.000	0.763	0.763	100.00	0.000	0.000
					B	0.000	0.763	100.00	0.000	0.000	
					C	0.000	0.763	100.00	0.000	0.257	
L31 37.5000- 32.5000	34.9883	1.015	0.01	15.492	A	0.000	15.492	15.492	100.00	0.000	0.000
					B	0.000	15.492	100.00	0.000	0.000	
					C	0.000	15.492	100.00	0.000	5.272	
L32 32.5000- 32.2500	32.3750	0.998	0.01	0.786	A	0.000	0.786	0.786	100.00	0.000	0.000
					B	0.000	0.786	100.00	0.000	0.000	
					C	0.000	0.786	100.00	0.000	0.268	
L33 32.2500- 27.2500	29.7386	0.98	0.01	15.946	A	0.000	15.946	15.946	100.00	0.000	0.000
					B	0.000	15.946	100.00	0.000	0.000	
					C	0.000	15.946	100.00	0.000	5.355	
L34 27.2500- 23.5000	25.3688	0.948	0.01	12.248	A	0.000	12.248	12.248	100.00	0.000	0.000
					B	0.000	12.248	100.00	0.000	0.000	
					C	0.000	12.248	100.00	0.000	4.016	
L35 23.5000- 23.2500	23.3750	0.932	0.01	0.825	A	0.000	0.825	0.825	100.00	0.000	0.000
					B	0.000	0.825	100.00	0.000	0.000	
					C	0.000	0.825	100.00	0.000	0.268	
L36 23.2500- 20.7500	21.9973	0.92	0.01	8.306	A	0.000	8.306	8.306	100.00	0.000	0.000
					B	0.000	8.306	100.00	0.000	0.000	
					C	0.000	8.306	100.00	0.000	2.678	
L37 20.7500- 20.5000	20.6250	0.908	0.01	0.837	A	0.000	0.837	0.837	100.00	0.000	0.000
					B	0.000	0.837	100.00	0.000	0.000	
					C	0.000	0.837	100.00	0.000	0.268	
L38 20.5000- 15.5000	17.9893	0.882	0.01	16.973	A	0.000	16.973	16.973	100.00	0.000	0.000
					B	0.000	16.973	100.00	0.000	0.000	
					C	0.000	16.973	100.00	0.000	5.355	
L39 15.5000- 10.5000	12.9896	0.85	0.01	17.413	A	0.000	17.413	17.413	100.00	0.000	0.000
					B	0.000	17.413	100.00	0.000	0.000	
					C	0.000	17.413	100.00	0.000	5.355	
L40 10.5000- 5.5000	7.9899	0.85	0.01	17.853	A	0.000	17.853	17.853	100.00	0.000	0.000
					B	0.000	17.853	100.00	0.000	0.000	
					C	0.000	17.853	100.00	0.000	5.355	
L41 5.5000- 3.0000	4.2475	0.85	0.01	9.091	A	0.000	9.091	9.091	100.00	0.000	0.000
					B	0.000	9.091	100.00	0.000	0.000	
					C	0.000	9.091	100.00	0.000	2.678	
L42 3.0000- 2.7500	2.8750	0.85	0.01	0.915	A	0.000	0.915	0.915	100.00	0.000	0.000
					B	0.000	0.915	100.00	0.000	0.000	
					C	0.000	0.915	100.00	0.000	0.268	
L43 2.7500- 0.0000	1.3720	0.85	0.01	10.134	A	0.000	10.134	10.134	100.00	0.000	0.000
					B	0.000	10.134	100.00	0.000	0.000	
					C	0.000	10.134	100.00	0.000	2.945	

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 135	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-8.90	0.01	-0.01
			Max. Mx	20	-3.97	26.23	-0.01
			Max. My	14	-3.97	0.01	-26.23
			Max. Vy	20	-6.30	26.23	-0.01
			Max. Vx	14	6.30	0.01	-26.23
			Max. Torque	12			0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.39	0.03	-0.02
			Max. Mx	20	-4.24	58.73	-0.01
L2	135 - 130	Pole	Max. My	14	-4.24	0.02	-58.74
			Max. Vy	20	-6.71	58.73	-0.01
			Max. Vx	14	6.71	0.02	-58.74
			Max. Torque	12			0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.90	0.05	-0.03
			Max. Mx	20	-4.53	93.32	-0.02
			Max. My	14	-4.53	0.03	-93.33
			Max. Vy	20	-7.13	93.32	-0.02
			Max. Vx	14	7.13	0.03	-93.33
L3	130 - 125	Pole	Max. Torque	12			0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.90	0.05	-0.03
			Max. Mx	20	-4.53	93.32	-0.02
			Max. My	14	-4.53	0.03	-93.33
			Max. Vy	20	-7.13	93.32	-0.02
			Max. Vx	14	7.13	0.03	-93.33
			Max. Torque	12			0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.49	0.23	-0.53
L4	125 - 120	Pole	Max. Mx	20	-8.92	146.19	-0.13
			Max. My	14	-8.92	0.05	-146.30
			Max. Vy	20	-15.53	146.19	-0.13
			Max. Vx	14	15.53	0.05	-146.30

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	120 - 115	Pole	Max. Torque	22			0.50
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.28	0.32	-0.58
			Max. Mx	20	-9.47	225.01	-0.14
			Max. My	14	-9.47	0.08	-225.12
			Max. Vy	20	-16.00	225.01	-0.14
			Max. Vx	14	16.00	0.08	-225.12
L6	115 - 110	Pole	Max. Torque	22			0.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.91	0.51	-0.54
			Max. Mx	20	-14.22	339.00	-0.10
			Max. My	14	-14.21	0.09	-339.19
			Max. Vy	20	-22.47	339.00	-0.10
			Max. Vx	14	22.49	0.09	-339.19
L7	110 - 105	Pole	Max. Torque	22			0.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.04	0.83	-0.72
			Max. Mx	20	-14.99	452.55	-0.11
			Max. My	14	-14.99	0.13	-452.83
			Max. Vy	20	-22.96	452.55	-0.11
			Max. Vx	14	22.98	0.13	-452.83
L8	105 - 104	Pole	Max. Torque	24			0.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.27	0.89	-0.76
			Max. Mx	20	-15.15	475.56	-0.12
			Max. My	14	-15.15	0.14	-475.85
			Max. Vy	20	-23.06	475.56	-0.12
			Max. Vx	14	23.08	0.14	-475.85
L9	104 - 103.75	Pole	Max. Torque	24			0.54
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.02	1.64	-0.35
			Max. Mx	20	-18.90	483.00	-0.03
			Max. My	14	-18.88	0.33	-482.99
			Max. Vy	20	-28.95	483.00	-0.03
			Max. Vx	14	29.03	0.33	-482.99
L10	103.75 - 98.75	Pole	Max. Torque	2			0.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.50	1.98	-0.54
			Max. Mx	20	-19.97	629.29	-0.29
			Max. My	14	-19.96	0.62	-629.65
			Max. Vy	20	-29.57	629.29	-0.29
			Max. Vx	14	29.65	0.62	-629.65
L11	98.75 - 98.5	Pole	Max. Torque	2			0.91
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.57	2.00	-0.55
			Max. Mx	20	-20.04	636.68	-0.30
			Max. My	14	-20.03	0.63	-637.07
			Max. Vy	20	-29.59	636.68	-0.30
			Max. Vx	14	29.67	0.63	-637.07
L12	98.5 - 98.25	Pole	Max. Torque	2			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.67	2.02	-0.56
			Max. Mx	20	-20.11	644.09	-0.32
			Max. My	14	-20.10	0.65	-644.49
			Max. Vy	20	-29.63	644.09	-0.32
			Max. Vx	14	29.71	0.65	-644.49
L13	98.25 - 97	Pole	Max. Torque	2			0.93
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.13	2.10	-0.61
			Max. Mx	20	-20.45	681.25	-0.38
			Max. My	14	-20.43	0.72	-681.74
			Max. Vy	20	-29.82	681.25	-0.38
			Max. Vx	14	29.90	0.72	-681.74
L14	97 - 96.75	Pole	Max. Torque	24			0.97
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.20	2.12	-0.62
			Max. Mx	20	-20.52	688.71	-0.39
			Max. My	14	-20.50	0.73	-689.22

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L15	96.75 - 88.5	Pole	Max. Vy	20	-29.85	688.71	-0.39
			Max. Vx	14	29.93	0.73	-689.22
			Max. Torque	24			0.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.95	2.64	-0.91
			Max. Mx	20	-22.06	842.43	-0.66
			Max. My	14	-22.05	1.04	-843.31
			Max. Vy	20	-31.37	842.43	-0.66
			Max. Vx	14	31.45	1.04	-843.31
L16	88.5 - 88	Pole	Max. Torque	24			1.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.01	3.04	-1.14
			Max. Mx	20	-23.52	961.23	-0.87
			Max. My	14	-23.51	1.28	-962.39
			Max. Vy	20	-31.97	961.23	-0.87
			Max. Vx	14	32.05	1.28	-962.39
			Max. Torque	24			1.35
			Max Tension	1	0.00	0.00	0.00
L17	88 - 87.75	Pole	Max. Compression	26	-48.12	3.07	-1.15
			Max. Mx	20	-23.61	969.23	-0.88
			Max. My	14	-23.60	1.30	-970.41
			Max. Vy	20	-32.00	969.23	-0.88
			Max. Vx	14	32.08	1.30	-970.41
			Max. Torque	24			1.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.41	3.64	-1.48
			Max. Mx	20	-25.29	1131.16	-1.16
L18	87.75 - 82.75	Pole	Max. My	14	-25.28	1.61	-1132.71
			Max. Vy	20	-32.76	1131.16	-1.16
			Max. Vx	14	32.84	1.61	-1132.71
			Max. Torque	24			1.60
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.87	4.23	-1.73
			Max. Mx	20	-27.14	1297.01	-1.43
			Max. My	14	-27.13	1.94	-1298.90
			Max. Vy	20	-33.57	1297.01	-1.43
L19	82.75 - 77.75	Pole	Max. Vx	14	33.64	1.94	-1298.90
			Max. Torque	24			1.81
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.21	4.83	-2.07
			Max. Mx	20	-28.90	1466.67	-1.71
			Max. My	14	-28.90	2.26	-1468.91
			Max. Vy	20	-34.29	1466.67	-1.71
			Max. Vx	14	34.37	2.26	-1468.91
			Max. Torque	24			2.06
L20	77.75 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.41	5.40	-2.40
			Max. Mx	20	-30.58	1628.42	-1.98
			Max. My	14	-30.57	2.56	-1630.98
			Max. Vy	20	-34.98	1628.42	-1.98
			Max. Vx	14	35.05	2.56	-1630.98
			Max. Torque	24			2.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.54	5.44	-2.42
L21	72.75 - 68.08	Pole	Max. Mx	20	-30.70	1637.17	-1.99
			Max. My	14	-30.69	2.58	-1639.75
			Max. Vy	20	-35.00	1637.17	-1.99
			Max. Vx	14	35.08	2.58	-1639.75
			Max. Torque	24			2.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.09	6.06	-2.77
			Max. Mx	20	-32.66	1814.10	-2.28
			Max. My	14	-32.66	2.91	-1817.03
L22	68.08 - 67.83	Pole	Max. Mx	20	-32.66	1814.10	-2.28
			Max. My	14	-32.66	2.91	-1817.03
			Max. Vy	20	-32.66	2.91	-1817.03
L23	67.83 - 62.83	Pole	Max. Vy	20	-32.66	2.91	-1817.03
			Max. Vx	14	32.66	2.91	-1817.03
			Max. Torque	24			2.33

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
L24	62.83 - 57.83	Pole	Max. Vy	20	-35.76	1814.10	-2.28	
			Max. Vx	14	35.84	2.91	-1817.03	
			Max. Torque	24				2.62
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-62.67	6.70	-3.14	
			Max. Mx	20	-34.68	1994.75	-2.56	
			Max. My	14	-34.67	3.24	-1998.02	
			Max. Vy	20	-36.49	1994.75	-2.56	
			Max. Vx	14	36.57	3.24	-1998.02	
			Max. Torque	24				2.92
L25	57.83 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-65.26	7.34	-3.50	
			Max. Mx	20	-36.72	2179.02	-2.85	
			Max. My	14	-36.71	3.57	-2182.63	
			Max. Vy	20	-37.21	2179.02	-2.85	
			Max. Vx	14	37.29	3.57	-2182.63	
			Max. Torque	24				3.22
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-65.96	7.51	-3.60	
			Max. Mx	20	-37.26	2228.64	-2.92	
L26	52.83 - 47.25	Pole	Max. My	14	-37.26	3.66	-2232.34	
			Max. Vy	20	-37.40	2228.64	-2.92	
			Max. Vx	14	37.48	3.66	-2232.34	
			Max. Torque	24				3.30
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-70.30	8.17	-3.98	
			Max. Mx	20	-40.74	2417.80	-3.21	
			Max. My	14	-40.74	4.00	-2421.84	
			Max. Vy	20	-38.24	2417.80	-3.21	
			Max. Vx	14	38.31	4.00	-2421.84	
L27	47.25 - 46.5	Pole	Max. Torque	24			3.60	
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-73.06	8.82	-4.35	
			Max. Mx	20	-42.97	2610.68	-3.50	
			Max. My	14	-42.96	4.34	-2615.06	
			Max. Vy	20	-38.91	2610.68	-3.50	
			Max. Vx	14	38.99	4.34	-2615.06	
			Max. Torque	24				3.90
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-75.15	9.32	-4.64	
L28	46.5 - 41.5	Pole	Max. Mx	20	-44.66	2757.51	-3.72	
			Max. My	14	-44.65	4.59	-2762.15	
			Max. Vy	20	-39.41	2757.51	-3.72	
			Max. Vx	14	39.48	4.59	-2762.15	
			Max. Torque	24				4.13
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-75.30	9.35	-4.66	
			Max. Mx	20	-44.80	2767.37	-3.73	
			Max. My	14	-44.79	4.61	-2772.02	
			Max. Vy	20	-39.42	2767.37	-3.73	
L29	41.5 - 37.75	Pole	Max. Vx	14	39.50	4.61	-2772.02	
			Max. Torque	24				4.15
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-78.21	10.01	-5.03	
			Max. Mx	20	-47.17	2966.17	-4.02	
			Max. My	14	-47.17	4.95	-2971.16	
			Max. Vy	20	-40.09	2966.17	-4.02	
			Max. Vx	14	40.16	4.95	-2971.16	
			Max. Torque	24				4.47
			Max Tension	1	0.00	0.00	0.00	
L30	37.75 - 37.5	Pole	Max. Compression	26	-78.37	10.05	-5.05	
			Max. Mx	20	-47.31	2976.20	-4.04	
			Max. My	14	-47.31	4.96	-2981.21	
			Max. Vy	20	-40.11	2976.20	-4.04	
			Max. Vx	14	40.18	4.96	-2981.21	
			Max. Torque	24				4.48
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-78.37	10.05	-5.05	
			Max. Mx	20	-47.31	2976.20	-4.04	
			Max. My	14	-47.31	4.96	-2981.21	
L31	37.5 - 32.5	Pole	Max. Vy	20	-40.11	2976.20	-4.04	
			Max. Vx	14	40.18	4.96	-2981.21	
			Max. Torque	24				4.47
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-78.37	10.05	-5.05	
			Max. Mx	20	-47.31	2976.20	-4.04	
			Max. My	14	-47.31	4.96	-2981.21	
			Max. Vy	20	-40.11	2976.20	-4.04	
			Max. Vx	14	40.18	4.96	-2981.21	
			Max. Torque	24				4.48
L32	32.5 - 32.25	Pole	Max. Torque	24			4.48	
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-78.37	10.05	-5.05	
			Max. Mx	20	-47.31	2976.20	-4.04	
			Max. My	14	-47.31	4.96	-2981.21	
			Max. Vy	20	-40.11	2976.20	-4.04	
			Max. Vx	14	40.18	4.96	-2981.21	
			Max. Torque	24				4.48
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	26	-78.37	10.05	-5.05	

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L33	32.25 - 27.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.43	10.67	-5.42
			Max. Mx	20	-49.84	3178.40	-4.33
			Max. My	14	-49.84	5.31	-3183.74
			Max. Vy	20	-40.76	3178.40	-4.33
			Max. Vx	14	40.83	5.31	-3183.74
L34	27.25 - 23.5	Pole	Max. Torque	24			4.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.74	11.14	-5.69
			Max. Mx	20	-51.77	3332.10	-4.54
			Max. My	14	-51.76	5.56	-3337.69
			Max. Vy	20	-41.22	3332.10	-4.54
L35	23.5 - 23.25	Pole	Max. Vx	14	41.30	5.56	-3337.69
			Max. Torque	24			5.04
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.92	11.18	-5.71
			Max. Mx	20	-51.93	3342.41	-4.56
			Max. My	14	-51.93	5.58	-3348.02
L36	23.25 - 20.75	Pole	Max. Vy	20	-41.23	3342.41	-4.56
			Max. Vx	14	41.31	5.58	-3348.02
			Max. Torque	24			5.06
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.64	11.49	-5.89
			Max. Mx	20	-53.38	3445.91	-4.70
L37	20.75 - 20.5	Pole	Max. My	14	-53.37	5.75	-3451.68
			Max. Vy	20	-41.56	3445.91	-4.70
			Max. Vx	14	41.63	5.75	-3451.68
			Max. Torque	24			5.22
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.80	11.52	-5.91
L38	20.5 - 15.5	Pole	Max. Mx	20	-53.53	3456.31	-4.72
			Max. My	14	-53.53	5.77	-3462.09
			Max. Vy	20	-41.57	3456.31	-4.72
			Max. Vx	14	41.64	5.77	-3462.09
			Max. Torque	24			5.23
			Max Tension	1	0.00	0.00	0.00
L39	15.5 - 10.5	Pole	Max. Compression	26	-89.03	12.15	-6.27
			Max. Mx	20	-56.25	3665.62	-5.01
			Max. My	14	-56.25	6.11	-3671.73
			Max. Vy	20	-42.14	3665.62	-5.01
			Max. Vx	14	42.22	6.11	-3671.73
			Max. Torque	24			5.54
L40	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.27	12.77	-6.63
			Max. Mx	20	-59.02	3877.64	-5.30
			Max. My	14	-59.02	6.46	-3884.08
			Max. Vy	20	-42.67	3877.64	-5.30
			Max. Vx	14	42.74	6.46	-3884.08
L41	5.5 - 3	Pole	Max. Torque	24			5.85
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.50	13.36	-6.97
			Max. Mx	20	-61.82	4092.27	-5.60
			Max. My	14	-61.82	6.81	-4099.03
			Max. Vy	20	-43.18	4092.27	-5.60
L42	3 - 2.75	Pole	Max. Vx	14	43.26	6.81	-4099.03
			Max. Torque	24			6.16
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.10	13.64	-7.13
			Max. Mx	20	-63.23	4200.56	-5.74
			Max. My	14	-63.23	6.98	-4207.47
L42	3 - 2.75	Pole	Max. Vy	20	-43.45	4200.56	-5.74
			Max. Vx	14	43.52	6.98	-4207.47
			Max. Torque	24			6.32
			Max Tension	1	0.00	0.00	0.00
L42	3 - 2.75	Pole	Max. Compression	26	-97.27	13.67	-7.15
			Max. Mx	20	-63.39	4211.42	-5.76
			Max. My	14	-63.39	7.00	-4218.35
			Max. Vy	20	-43.45	4200.56	-5.74

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L43	2.75 - 0	Pole	Max. Vy	20	-43.45	4211.42	-5.76
			Max. Vx	14	43.52	7.00	-4218.35
			Max. Torque	24			6.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-99.04	13.95	-7.31
			Max. Mx	20	-64.96	4331.36	-5.92
			Max. My	14	-64.96	7.19	-4338.46
			Max. Vy	20	-43.76	4331.36	-5.92
			Max. Vx	14	43.84	7.19	-4338.46
		Max. Torque	24			6.51	

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	99.04	-0.00	0.00
	Max. H _x	21	48.74	43.73	-0.04
	Max. H _z	3	48.74	-0.04	43.81
	Max. M _x	2	4335.83	-0.04	43.80
	Max. M _z	8	4326.16	-43.73	0.04
	Max. Torsion	24	6.51	21.83	37.91
	Min. Vert	9	48.74	-43.73	0.04
	Min. H _x	8	64.99	-43.73	0.04
	Min. H _z	15	48.74	0.04	-43.81
	Min. M _x	14	-4338.46	0.04	-43.80
	Min. M _z	20	-4331.36	43.73	-0.04
	Min. Torsion	12	-6.51	-21.83	-37.91

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	54.16	-0.00	0.00	1.06	2.08	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	64.99	0.04	-43.80	-4335.83	-2.04	-5.81
0.9 Dead+1.0 Wind 0 deg - No Ice	48.74	0.04	-43.81	-4284.17	-2.65	-5.80
1.2 Dead+1.0 Wind 30 deg - No Ice	64.99	21.90	-37.96	-3757.08	-2165.80	-3.54
0.9 Dead+1.0 Wind 30 deg - No Ice	48.74	21.90	-37.96	-3712.36	-2140.47	-3.54
1.2 Dead+1.0 Wind 60 deg - No Ice	64.99	37.89	-21.94	-2171.27	-3748.56	-0.33
0.9 Dead+1.0 Wind 60 deg - No Ice	48.74	37.89	-21.94	-2145.56	-3704.25	-0.33
1.2 Dead+1.0 Wind 90 deg - No Ice	64.99	43.73	-0.04	-3.31	-4326.16	2.97
0.9 Dead+1.0 Wind 90 deg - No Ice	48.74	43.73	-0.04	-3.60	-4274.89	2.97
1.2 Dead+1.0 Wind 120 deg - No Ice	64.99	37.85	21.87	2165.91	-3743.98	5.47
0.9 Dead+1.0 Wind 120 deg - No Ice	48.74	37.85	21.87	2139.61	-3699.72	5.47
1.2 Dead+1.0 Wind 150 deg - No Ice	64.99	21.83	37.91	3755.12	-2157.84	6.51
0.9 Dead+1.0 Wind 150 deg - No Ice	48.74	21.83	37.91	3709.77	-2132.59	6.51
1.2 Dead+1.0 Wind 180 deg - No Ice	64.99	-0.04	43.80	4338.46	7.19	5.80
0.9 Dead+1.0 Wind 180 deg - No Ice	48.74	-0.04	43.81	4286.13	6.47	5.80

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 210 deg - No Ice	64.99	-21.90	37.96	3759.73	2170.98	3.54
0.9 Dead+1.0 Wind 210 deg - No Ice	48.74	-21.90	37.96	3714.32	2144.31	3.54
1.2 Dead+1.0 Wind 240 deg - No Ice	64.99	-37.89	21.94	2173.91	3753.76	0.33
0.9 Dead+1.0 Wind 240 deg - No Ice	48.74	-37.89	21.94	2147.52	3708.11	0.33
1.2 Dead+1.0 Wind 270 deg - No Ice	64.99	-43.73	0.04	5.92	4331.36	-2.97
0.9 Dead+1.0 Wind 270 deg - No Ice	48.74	-43.73	0.04	5.53	4278.80	-2.97
1.2 Dead+1.0 Wind 300 deg - No Ice	64.99	-37.85	-21.87	-2163.31	3749.16	-5.47
0.9 Dead+1.0 Wind 300 deg - No Ice	48.74	-37.85	-21.87	-2137.69	3703.56	-5.47
1.2 Dead+1.0 Wind 330 deg - No Ice	64.99	-21.83	-37.91	-3752.51	2162.99	-6.51
0.9 Dead+1.0 Wind 330 deg - No Ice	48.74	-21.83	-37.91	-3707.83	2136.41	-6.51
1.2 Dead+1.0 Ice+1.0 Temp	99.04	0.00	-0.00	7.31	13.95	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	99.04	0.01	-10.41	-1054.65	13.28	-1.92
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	99.04	5.20	-9.02	-912.77	-516.85	-1.15
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	99.04	9.00	-5.21	-524.34	-904.71	-0.07
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	99.04	10.39	-0.01	6.57	-1046.38	1.03
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	99.04	9.00	5.20	537.69	-903.90	1.85
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	99.04	5.19	9.01	926.72	-515.44	2.17
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	99.04	-0.01	10.41	1069.41	14.90	1.92
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	99.04	-5.20	9.02	927.53	545.03	1.15
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	99.04	-9.00	5.21	539.10	932.90	0.07
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	99.04	-10.39	0.01	8.19	1074.57	-1.03
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	99.04	-9.00	-5.20	-522.93	932.09	-1.85
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	99.04	-5.19	-9.01	-911.96	543.63	-2.17
Dead+Wind 0 deg - Service	54.16	0.01	-9.03	-887.32	1.21	-1.20
Dead+Wind 30 deg - Service	54.16	4.52	-7.82	-768.85	-442.06	-0.73
Dead+Wind 60 deg - Service	54.16	7.81	-4.52	-443.98	-766.30	-0.07
Dead+Wind 90 deg - Service	54.16	9.01	-0.01	0.15	-884.54	0.62
Dead+Wind 120 deg - Service	54.16	7.80	4.51	444.53	-765.36	1.13
Dead+Wind 150 deg - Service	54.16	4.50	7.82	770.10	-440.42	1.35
Dead+Wind 180 deg - Service	54.16	-0.01	9.03	889.51	3.11	1.20
Dead+Wind 210 deg - Service	54.16	-4.52	7.82	771.04	446.38	0.73
Dead+Wind 240 deg - Service	54.16	-7.81	4.52	446.17	770.62	0.07
Dead+Wind 270 deg - Service	54.16	-9.01	0.01	2.04	888.86	-0.62
Dead+Wind 300 deg - Service	54.16	-7.80	-4.51	-442.34	769.68	-1.13
Dead+Wind 330 deg - Service	54.16	-4.50	-7.82	-767.91	444.74	-1.35

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-54.16	0.00	0.00	54.16	-0.00	0.000%
2	0.04	-64.99	-43.81	-0.04	64.99	43.80	0.000%
3	0.04	-48.74	-43.81	-0.04	48.74	43.81	0.000%
4	21.90	-64.99	-37.96	-21.90	64.99	37.96	0.000%
5	21.90	-48.74	-37.96	-21.90	48.74	37.96	0.000%
6	37.89	-64.99	-21.94	-37.89	64.99	21.94	0.000%
7	37.89	-48.74	-21.94	-37.89	48.74	21.94	0.000%
8	43.73	-64.99	-0.04	-43.73	64.99	0.04	0.001%
9	43.73	-48.74	-0.04	-43.73	48.74	0.04	0.001%
10	37.85	-64.99	21.87	-37.85	64.99	-21.87	0.000%
11	37.85	-48.74	21.87	-37.85	48.74	-21.87	0.000%
12	21.83	-64.99	37.91	-21.83	64.99	-37.91	0.000%
13	21.83	-48.74	37.91	-21.83	48.74	-37.91	0.000%
14	-0.04	-64.99	43.81	0.04	64.99	-43.80	0.000%
15	-0.04	-48.74	43.81	0.04	48.74	-43.81	0.000%
16	-21.90	-64.99	37.96	21.90	64.99	-37.96	0.000%
17	-21.90	-48.74	37.96	21.90	48.74	-37.96	0.000%
18	-37.89	-64.99	21.94	37.89	64.99	-21.94	0.000%
19	-37.89	-48.74	21.94	37.89	48.74	-21.94	0.000%
20	-43.73	-64.99	0.04	43.73	64.99	-0.04	0.001%
21	-43.73	-48.74	0.04	43.73	48.74	-0.04	0.001%
22	-37.85	-64.99	-21.87	37.85	64.99	21.87	0.000%
23	-37.85	-48.74	-21.87	37.85	48.74	21.87	0.000%
24	-21.83	-64.99	-37.91	21.83	64.99	37.91	0.000%
25	-21.83	-48.74	-37.91	21.83	48.74	37.91	0.000%
26	0.00	-99.04	0.00	-0.00	99.04	0.00	0.000%
27	0.01	-99.04	-10.41	-0.01	99.04	10.41	0.000%
28	5.20	-99.04	-9.02	-5.20	99.04	9.02	0.000%
29	9.00	-99.04	-5.21	-9.00	99.04	5.21	0.000%
30	10.39	-99.04	-0.01	-10.39	99.04	0.01	0.000%
31	9.00	-99.04	5.20	-9.00	99.04	-5.20	0.000%
32	5.19	-99.04	9.01	-5.19	99.04	-9.01	0.000%
33	-0.01	-99.04	10.41	0.01	99.04	-10.41	0.000%
34	-5.20	-99.04	9.02	5.20	99.04	-9.02	0.000%
35	-9.00	-99.04	5.21	9.00	99.04	-5.21	0.000%
36	-10.39	-99.04	0.01	10.39	99.04	-0.01	0.000%
37	-9.00	-99.04	-5.20	9.00	99.04	5.20	0.000%
38	-5.19	-99.04	-9.01	5.19	99.04	9.01	0.000%
39	0.01	-54.16	-9.03	-0.01	54.16	9.03	0.002%
40	4.52	-54.16	-7.82	-4.52	54.16	7.82	0.000%
41	7.81	-54.16	-4.52	-7.81	54.16	4.52	0.000%
42	9.02	-54.16	-0.01	-9.01	54.16	0.01	0.002%
43	7.80	-54.16	4.51	-7.80	54.16	-4.51	0.000%
44	4.50	-54.16	7.82	-4.50	54.16	-7.82	0.000%
45	-0.01	-54.16	9.03	0.01	54.16	-9.03	0.002%
46	-4.52	-54.16	7.82	4.52	54.16	-7.82	0.000%
47	-7.81	-54.16	4.52	7.81	54.16	-4.52	0.000%
48	-9.02	-54.16	0.01	9.01	54.16	-0.01	0.002%
49	-7.80	-54.16	-4.51	7.80	54.16	4.51	0.000%
50	-4.50	-54.16	-7.82	4.50	54.16	7.82	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	19	0.00000001	0.00009719
3	Yes	19	0.00000001	0.00007091
4	Yes	23	0.00000001	0.00007569
5	Yes	22	0.00000001	0.00011478
6	Yes	23	0.00000001	0.00007717
7	Yes	22	0.00000001	0.00011711
8	Yes	18	0.00000001	0.00009237
9	Yes	17	0.00000001	0.00014734
10	Yes	23	0.00000001	0.00007849
11	Yes	22	0.00000001	0.00011922
12	Yes	23	0.00000001	0.00007457
13	Yes	22	0.00000001	0.00011305
14	Yes	19	0.00000001	0.00010651
15	Yes	19	0.00000001	0.00007758
16	Yes	23	0.00000001	0.00007855
17	Yes	22	0.00000001	0.00011916
18	Yes	23	0.00000001	0.00007695
19	Yes	22	0.00000001	0.00011667
20	Yes	18	0.00000001	0.00011165
21	Yes	18	0.00000001	0.00008217
22	Yes	23	0.00000001	0.00007504
23	Yes	22	0.00000001	0.00011375
24	Yes	23	0.00000001	0.00007907
25	Yes	22	0.00000001	0.00012008
26	Yes	13	0.00000001	0.00012608
27	Yes	20	0.00000001	0.00009419
28	Yes	20	0.00000001	0.00011730
29	Yes	20	0.00000001	0.00011810
30	Yes	20	0.00000001	0.00009297
31	Yes	20	0.00000001	0.00012097
32	Yes	20	0.00000001	0.00011824
33	Yes	20	0.00000001	0.00009541
34	Yes	20	0.00000001	0.00012416
35	Yes	20	0.00000001	0.00012294
36	Yes	20	0.00000001	0.00009543
37	Yes	20	0.00000001	0.00012005
38	Yes	20	0.00000001	0.00012322
39	Yes	15	0.00000001	0.00012153
40	Yes	17	0.00000001	0.00010419
41	Yes	17	0.00000001	0.00011175
42	Yes	15	0.00000001	0.00007516
43	Yes	17	0.00000001	0.00012171
44	Yes	17	0.00000001	0.00010092
45	Yes	15	0.00000001	0.00012356
46	Yes	17	0.00000001	0.00012019
47	Yes	17	0.00000001	0.00011070
48	Yes	15	0.00000001	0.00007677
49	Yes	17	0.00000001	0.00010281
50	Yes	17	0.00000001	0.00012553

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	22.64	46	1.54	0.00
L2	135 - 130	21.03	46	1.53	0.00
L3	130 - 125	19.44	46	1.50	0.00
L4	125 - 120	17.89	46	1.47	0.00
L5	120 - 115	16.37	46	1.42	0.00
L6	115 - 110	14.91	46	1.36	0.00
L7	110 - 105	13.52	46	1.28	0.00
L8	105 - 104	12.23	46	1.18	0.00
L9	104 - 103.75	11.99	46	1.16	0.00
L10	103.75 - 98.75	11.93	46	1.16	0.00
L11	98.75 - 98.5	10.75	46	1.09	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L12	98.5 - 98.25	10.70	46	1.08	0.00
L13	98.25 - 97	10.64	46	1.08	0.00
L14	97 - 96.75	10.36	46	1.07	0.00
L15	96.75 - 88.5	10.30	46	1.07	0.00
L16	91.75 - 88	9.22	46	1.00	0.00
L17	88 - 87.75	8.45	46	0.96	0.00
L18	87.75 - 82.75	8.40	46	0.96	0.00
L19	82.75 - 77.75	7.43	46	0.90	0.00
L20	77.75 - 72.75	6.51	46	0.84	0.00
L21	72.75 - 68.08	5.67	46	0.78	0.00
L22	68.08 - 67.83	4.93	46	0.72	0.00
L23	67.83 - 62.83	4.90	46	0.71	0.00
L24	62.83 - 57.83	4.18	46	0.66	0.00
L25	57.83 - 52.83	3.52	46	0.60	0.00
L26	52.83 - 47.25	2.93	46	0.54	0.00
L27	51.5 - 46.5	2.78	46	0.52	0.00
L28	46.5 - 41.5	2.26	46	0.48	0.00
L29	41.5 - 37.75	1.78	46	0.43	0.00
L30	37.75 - 37.5	1.46	46	0.38	0.00
L31	37.5 - 32.5	1.44	46	0.38	0.00
L32	32.5 - 32.25	1.08	46	0.32	0.00
L33	32.25 - 27.25	1.06	46	0.32	0.00
L34	27.25 - 23.5	0.75	46	0.27	0.00
L35	23.5 - 23.25	0.56	46	0.23	0.00
L36	23.25 - 20.75	0.55	46	0.23	0.00
L37	20.75 - 20.5	0.43	46	0.20	0.00
L38	20.5 - 15.5	0.42	46	0.20	0.00
L39	15.5 - 10.5	0.24	46	0.15	0.00
L40	10.5 - 5.5	0.11	46	0.10	0.00
L41	5.5 - 3	0.03	46	0.05	0.00
L42	3 - 2.75	0.01	46	0.03	0.00
L43	2.75 - 0	0.01	46	0.02	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.0000	APXVSPP18-C-A20 w/ Mount Pipe	46	22.64	1.54	0.00	18520
137.0000	TME-1900MHz RRH (65 MHz)	46	21.67	1.53	0.00	18520
121.0000	7770.00 w/ Mount Pipe	46	16.67	1.43	0.00	5741
115.0000	AIR 32 B2A/B66AA w/ Mount Pipe	46	14.91	1.36	0.00	3974
104.0000	LNx-6514DS-VTM w/ Mount Pipe	46	11.99	1.16	0.00	3355
95.0000	APXV18-206517S-C w/ Mount Pipe	46	9.92	1.04	0.00	4494
80.0000	OG-860/1920/GPS-A	46	6.92	0.87	0.00	4699

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	110.28	14	7.50	0.01
L2	135 - 130	102.47	14	7.46	0.01
L3	130 - 125	94.74	14	7.35	0.01
L4	125 - 120	87.15	14	7.18	0.01
L5	120 - 115	79.77	14	6.96	0.01
L6	115 - 110	72.65	14	6.65	0.01
L7	110 - 105	65.91	14	6.25	0.01
L8	105 - 104	59.63	16	5.76	0.01
L9	104 - 103.75	58.44	16	5.66	0.01

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	103.75 - 98.75	58.14	16	5.64	0.01
L11	98.75 - 98.5	52.42	16	5.31	0.01
L12	98.5 - 98.25	52.15	16	5.29	0.01
L13	98.25 - 97	51.87	16	5.28	0.01
L14	97 - 96.75	50.50	16	5.22	0.01
L15	96.75 - 88.5	50.23	16	5.21	0.01
L16	91.75 - 88	44.97	16	4.86	0.01
L17	88 - 87.75	41.21	16	4.71	0.01
L18	87.75 - 82.75	40.97	16	4.69	0.01
L19	82.75 - 77.75	36.21	16	4.41	0.01
L20	77.75 - 72.75	31.76	16	4.11	0.01
L21	72.75 - 68.08	27.62	16	3.80	0.01
L22	68.08 - 67.83	24.06	16	3.50	0.01
L23	67.83 - 62.83	23.87	16	3.49	0.01
L24	62.83 - 57.83	20.37	16	3.20	0.01
L25	57.83 - 52.83	17.18	16	2.91	0.01
L26	52.83 - 47.25	14.29	16	2.61	0.00
L27	51.5 - 46.5	13.57	16	2.53	0.00
L28	46.5 - 41.5	11.00	16	2.37	0.00
L29	41.5 - 37.75	8.67	16	2.08	0.00
L30	37.75 - 37.5	7.13	16	1.86	0.00
L31	37.5 - 32.5	7.03	16	1.84	0.00
L32	32.5 - 32.25	5.24	16	1.57	0.00
L33	32.25 - 27.25	5.16	16	1.56	0.00
L34	27.25 - 23.5	3.66	16	1.30	0.00
L35	23.5 - 23.25	2.72	16	1.11	0.00
L36	23.25 - 20.75	2.66	16	1.10	0.00
L37	20.75 - 20.5	2.11	16	0.99	0.00
L38	20.5 - 15.5	2.06	16	0.97	0.00
L39	15.5 - 10.5	1.17	16	0.73	0.00
L40	10.5 - 5.5	0.53	16	0.49	0.00
L41	5.5 - 3	0.14	16	0.25	0.00
L42	3 - 2.75	0.04	16	0.13	0.00
L43	2.75 - 0	0.03	16	0.12	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.0000	APXVSP18-C-A20 w/ Mount Pipe	14	110.28	7.50	0.01	3903
137.0000	TME-1900MHz RRRH (65 MHz)	14	105.59	7.48	0.01	3903
121.0000	7770.00 w/ Mount Pipe	14	81.23	7.01	0.01	1209
115.0000	AIR 32 B2A/B66AA w/ Mount Pipe	14	72.65	6.65	0.01	835
104.0000	LNx-6514DS-VTM w/ Mount Pipe	16	58.44	5.66	0.01	700
95.0000	APXV18-206517S-C w/ Mount Pipe	16	48.35	5.08	0.01	934
80.0000	OG-860/1920/GPS-A	16	33.72	4.24	0.01	972

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K
L1	140 - 135 (1)	TP17.0151x16x0.25	5.0000	0.0000	0.0	13.4959	-3.97
L2	135 - 130 (2)	TP18.0303x17.0151x0.25	5.0000	0.0000	0.0	14.3131	-4.24

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K
L3	130 - 125 (3)	TP19.0454x18.0303x0.25	5.0000	0.0000	0.0	15.1303	-4.53
L4	125 - 120 (4)	TP20.0606x19.0454x0.25	5.0000	0.0000	0.0	15.9475	-8.92
L5	120 - 115 (5)	TP21.0757x20.0606x0.25	5.0000	0.0000	0.0	16.7647	-9.47
L6	115 - 110 (6)	TP22.0909x21.0757x0.25	5.0000	0.0000	0.0	17.5819	-14.21
L7	110 - 105 (7)	TP23.106x22.0909x0.25	5.0000	0.0000	0.0	18.3991	-14.99
L8	105 - 104 (8)	TP23.309x23.106x0.25	1.0000	0.0000	0.0	18.5625	-15.15
L9	104 - 103.75 (9)	TP23.3598x23.309x0.4625	0.2500	0.0000	0.0	34.0998	-18.88
L10	103.75 - 98.75 (10)	TP24.375x23.3598x0.45	5.0000	0.0000	0.0	34.6673	-19.95
L11	98.75 - 98.5 (11)	TP24.4257x24.375x0.45	0.2500	0.0000	0.0	34.7408	-20.02
L12	98.5 - 98.25 (12)	TP24.4765x24.4257x0.72	0.2500	0.0000	0.0	55.4478	-20.09
L13	98.25 - 97 (13)	TP24.7303x24.4765x0.72	1.2500	0.0000	0.0	56.0403	-20.43
L14	97 - 96.75 (14)	TP24.781x24.7303x0.512	0.2500	0.0000	0.0	40.0491	-20.50
L15	96.75 - 88.5 (15)	TP26.456x24.781x0.5	8.2500	0.0000	0.0	40.7268	-22.05
L16	88.5 - 88 (16)	TP26.0576x25.2962x0.56	3.7500	0.0000	0.0	46.1780	-23.50
L17	88 - 87.75 (17)	TP26.1084x26.0576x0.76	0.2500	0.0000	0.0	62.2304	-23.59
L18	87.75 - 82.75 (18)	TP27.1236x26.1084x0.73	5.0000	0.0000	0.0	62.6605	-25.27
L19	82.75 - 77.75 (19)	TP28.1389x27.1236x0.72	5.0000	0.0000	0.0	63.9977	-27.13
L20	77.75 - 72.75 (20)	TP29.1542x28.1389x0.71	5.0000	0.0000	0.0	65.2523	-28.89
L21	72.75 - 68.08 (21)	TP30.1024x29.1542x0.68	4.6700	0.0000	0.0	65.1173	-30.57
L22	68.08 - 67.83 (22)	TP30.1532x30.1024x0.81	0.2500	0.0000	0.0	76.7625	-30.69
L23	67.83 - 62.83 (23)	TP31.1684x30.1532x0.78	5.0000	0.0000	0.0	77.0385	-32.65
L24	62.83 - 57.83 (24)	TP32.1837x31.1684x0.76	5.0000	0.0000	0.0	77.1469	-34.67
L25	57.83 - 52.83 (25)	TP33.199x32.1837x0.75	5.0000	0.0000	0.0	78.3643	-36.71
L26	52.83 - 47.25 (26)	TP34.332x33.199x0.75	5.5800	0.0000	0.0	79.0164	-37.26
L27	47.25 - 46.5 (27)	TP33.8592x32.844x0.8	5.0000	0.0000	0.0	85.1604	-40.73
L28	46.5 - 41.5 (28)	TP34.8743x33.8592x0.8	5.0000	0.0000	0.0	87.7754	-42.96
L29	41.5 - 37.75 (29)	TP35.6357x34.8743x0.77	3.7500	0.0000	0.0	86.9948	-44.65
L30	37.75 - 37.5 (30)	TP35.6864x35.6357x0.85	0.2500	0.0000	0.0	95.3473	-44.79
L31	37.5 - 32.5 (31)	TP36.7016x35.6864x0.82	5.0000	0.0000	0.0	95.3061	-47.17
L32	32.5 - 32.25 (32)	TP36.7523x36.7016x0.87	0.2500	0.0000	0.0	101.0840	-47.31
L33	32.25 - 27.25 (33)	TP37.7675x36.7523x0.86	5.0000	0.0000	0.0	102.4940	-49.84
L34	27.25 - 23.5 (34)	TP38.5288x37.7675x0.85	3.7500	0.0000	0.0	103.1270	-51.76
L35	23.5 - 23.25 (35)	TP38.5796x38.5288x0.95	0.2500	0.0000	0.0	115.1090	-51.93
L36	23.25 - 20.75 (36)	TP39.0872x38.5796x0.95	2.5000	0.0000	0.0	116.6620	-53.37
L37	20.75 - 20.5 (37)	TP39.1379x39.0872x0.9	0.2500	0.0000	0.0	110.8130	-53.52

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K
L38	20.5 - 15.5 (38)	TP40.1531x39.1379x0.87 5	5.0000	0.0000	0.0	110.66 60	-56.25
L39	15.5 - 10.5 (39)	TP41.1682x40.1531x0.86 25	5.0000	0.0000	0.0	111.93 90	-59.02
L40	10.5 - 5.5 (40)	TP42.1833x41.1682x0.85	5.0000	0.0000	0.0	113.12 90	-61.82
L41	5.5 - 3 (41)	TP42.6909x42.1833x0.83 75	2.5000	0.0000	0.0	112.86 80	-63.23
L42	3 - 2.75 (42)	TP42.7417x42.6909x0.9	0.2500	0.0000	0.0	121.25 70	-63.39
L43	2.75 - 0 (43)	TP43.3x42.7417x0.9	2.7500	0.0000	0.0	122.87 50	-64.96

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	M _{uy} kip-ft
L1	140 - 135 (1)	TP17.0151x16x0.25	26.23	0.00
L2	135 - 130 (2)	TP18.0303x17.0151x0.25	58.74	0.00
L3	130 - 125 (3)	TP19.0454x18.0303x0.25	93.33	0.00
L4	125 - 120 (4)	TP20.0606x19.0454x0.25	146.30	0.00
L5	120 - 115 (5)	TP21.0757x20.0606x0.25	225.12	0.00
L6	115 - 110 (6)	TP22.0909x21.0757x0.25	339.19	0.00
L7	110 - 105 (7)	TP23.106x22.0909x0.25	452.83	0.00
L8	105 - 104 (8)	TP23.309x23.106x0.25	475.85	0.00
L9	104 - 103.75 (9)	TP23.3598x23.309x0.462 5	483.06	0.00
L10	103.75 - 98.75 (10)	TP24.375x23.3598x0.45	629.85	0.00
L11	98.75 - 98.5 (11)	TP24.4257x24.375x0.45	637.27	0.00
L12	98.5 - 98.25 (12)	TP24.4765x24.4257x0.72 5	644.70	0.00
L13	98.25 - 97 (13)	TP24.7303x24.4765x0.72 5	681.98	0.00
L14	97 - 96.75 (14)	TP24.781x24.7303x0.512 5	689.47	0.00
L15	96.75 - 88.5 (15)	TP26.456x24.781x0.5	843.68	0.00
L16	88.5 - 88 (16)	TP26.0576x25.2962x0.56 25	962.86	0.00
L17	88 - 87.75 (17)	TP26.1084x26.0576x0.76 25	970.88	0.00
L18	87.75 - 82.75 (18)	TP27.1236x26.1084x0.73 75	1133.32	0.00
L19	82.75 - 77.75 (19)	TP28.1389x27.1236x0.72 5	1299.65	0.00
L20	77.75 - 72.75 (20)	TP29.1542x28.1389x0.71 25	1469.80	0.00
L21	72.75 - 68.08 (21)	TP30.1024x29.1542x0.68 75	1632.00	0.00
L22	68.08 - 67.83 (22)	TP30.1532x30.1024x0.81 25	1640.78	0.00
L23	67.83 - 62.83 (23)	TP31.1684x30.1532x0.78 75	1818.20	0.00
L24	62.83 - 57.83 (24)	TP32.1837x31.1684x0.76 25	1999.33	0.00
L25	57.83 - 52.83 (25)	TP33.199x32.1837x0.75	2184.09	0.00
L26	52.83 - 47.25 (26)	TP34.332x33.199x0.75	2233.84	0.00
L27	47.25 - 46.5 (27)	TP33.8592x32.844x0.8	2423.49	0.00
L28	46.5 - 41.5 (28)	TP34.8743x33.8592x0.8	2616.86	0.00
L29	41.5 - 37.75 (29)	TP35.6357x34.8743x0.77 5	2764.06	0.00

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L30	37.75 - 37.5 (30)	TP35.6864x35.6357x0.85	2773.93	0.00
L31	37.5 - 32.5 (31)	TP36.7016x35.6864x0.82 5	2973.22	0.00
L32	32.5 - 32.25 (32)	TP36.7523x36.7016x0.87 5	2983.28	0.00
L33	32.25 - 27.25 (33)	TP37.7675x36.7523x0.86 25	3185.96	0.00
L34	27.25 - 23.5 (34)	TP38.5288x37.7675x0.85	3340.03	0.00
L35	23.5 - 23.25 (35)	TP38.5796x38.5288x0.95	3350.36	0.00
L36	23.25 - 20.75 (36)	TP39.0872x38.5796x0.95	3454.10	0.00
L37	20.75 - 20.5 (37)	TP39.1379x39.0872x0.9	3464.52	0.00
L38	20.5 - 15.5 (38)	TP40.1531x39.1379x0.87 5	3674.31	0.00
L39	15.5 - 10.5 (39)	TP41.1682x40.1531x0.86 25	3886.81	0.00
L40	10.5 - 5.5 (40)	TP42.1833x41.1682x0.85	4101.91	0.00
L41	5.5 - 3 (41)	TP42.6909x42.1833x0.83 75	4210.43	0.00
L42	3 - 2.75 (42)	TP42.7417x42.6909x0.9	4221.32	0.00
L43	2.75 - 0 (43)	TP43.3x42.7417x0.9	4341.51	0.00

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	140 - 135 (1)	TP17.0151x16x0.25	6.30	0.00
L2	135 - 130 (2)	TP18.0303x17.0151x0.25	6.71	0.00
L3	130 - 125 (3)	TP19.0454x18.0303x0.25	7.13	0.00
L4	125 - 120 (4)	TP20.0606x19.0454x0.25	15.54	0.32
L5	120 - 115 (5)	TP21.0757x20.0606x0.25	16.00	0.34
L6	115 - 110 (6)	TP22.0909x21.0757x0.25	22.49	0.33
L7	110 - 105 (7)	TP23.106x22.0909x0.25	22.98	0.39
L8	105 - 104 (8)	TP23.309x23.106x0.25	23.08	0.41
L9	104 - 103.75 (9)	TP23.3598x23.309x0.462 5	29.05	0.60
L10	103.75 - 98.75 (10)	TP24.375x23.3598x0.45	29.67	0.67
L11	98.75 - 98.5 (11)	TP24.4257x24.375x0.45	29.70	0.68
L12	98.5 - 98.25 (12)	TP24.4765x24.4257x0.72 5	29.74	0.68
L13	98.25 - 97 (13)	TP24.7303x24.4765x0.72 5	29.92	0.71
L14	97 - 96.75 (14)	TP24.781x24.7303x0.512 5	29.96	0.71
L15	96.75 - 88.5 (15)	TP26.456x24.781x0.5	31.47	0.81
L16	88.5 - 88 (16)	TP26.0576x25.2962x0.56 25	32.07	0.89
L17	88 - 87.75 (17)	TP26.1084x26.0576x0.76 25	32.11	0.90
L18	87.75 - 82.75 (18)	TP27.1236x26.1084x0.73 75	32.86	1.02
L19	82.75 - 77.75 (19)	TP28.1389x27.1236x0.72 5	33.66	1.19
L20	77.75 - 72.75 (20)	TP29.1542x28.1389x0.71 25	34.39	1.32
L21	72.75 - 68.08 (21)	TP30.1024x29.1542x0.68 75	35.07	1.45
L22	68.08 - 67.83 (22)	TP30.1532x30.1024x0.81 25	35.10	1.46

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L23	67.83 - 62.83 (23)	TP31.1684x30.1532x0.78 75	35.86	1.60
L24	62.83 - 57.83 (24)	TP32.1837x31.1684x0.76 25	36.59	1.75
L25	57.83 - 52.83 (25)	TP33.199x32.1837x0.75	37.31	1.90
L26	52.83 - 47.25 (26)	TP34.332x33.199x0.75	37.50	1.94
L27	47.25 - 46.5 (27)	TP33.8592x32.844x0.8	38.33	2.09
L28	46.5 - 41.5 (28)	TP34.8743x33.8592x0.8	39.01	2.24
L29	41.5 - 37.75 (29)	TP35.6357x34.8743x0.77 5	39.50	2.35
L30	37.75 - 37.5 (30)	TP35.6864x35.6357x0.85	39.52	2.36
L31	37.5 - 32.5 (31)	TP36.7016x35.6864x0.82 5	40.18	2.52
L32	32.5 - 32.25 (32)	TP36.7523x36.7016x0.87 5	40.20	2.53
L33	32.25 - 27.25 (33)	TP37.7675x36.7523x0.86 25	40.85	2.69
L34	27.25 - 23.5 (34)	TP38.5288x37.7675x0.85	41.32	2.81
L35	23.5 - 23.25 (35)	TP38.5796x38.5288x0.95	41.33	2.82
L36	23.25 - 20.75 (36)	TP39.0872x38.5796x0.95	41.65	2.90
L37	20.75 - 20.5 (37)	TP39.1379x39.0872x0.9	41.66	2.90
L38	20.5 - 15.5 (38)	TP40.1531x39.1379x0.87 5	42.24	3.06
L39	15.5 - 10.5 (39)	TP41.1682x40.1531x0.86 25	42.76	3.21
L40	10.5 - 5.5 (40)	TP42.1833x41.1682x0.85	43.28	3.37
L41	5.5 - 3 (41)	TP42.6909x42.1833x0.83 75	43.54	3.45
L42	3 - 2.75 (42)	TP42.7417x42.6909x0.9	43.54	3.45
L43	2.75 - 0 (43)	TP43.3x42.7417x0.9	43.86	3.54

Site BU: 876342

Work Order: _____



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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	140	51.5	3.25	12	16	26.456	0.25	Auto	A572-65
2	91.75	44.5	4.25	12	25.30	34.332	0.3125	Auto	A572-65
3	51.5	51.5	0	12	32.84	43.3	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	23.5	channel	MP3-06 (1.1875")	2						o		o				
2	0	37.75	channel	MP3-08 (1.1875")	2			o								o	
3	20.75	37.75	channel	MP3-08 (1.1875")	1							o					
4	37.75	68.08	channel	MP3-06 (1.1875")	3			o				o				o	
5	68.08	98.5	channel	MP3-05 (1.1875")	3			o				o				o	
6	3	32.5	plate	CI-065125; (1) (1.1875)	3					o				o			o
7	32.5	68.08	plate	CCI-AFP-060100	3					o				o			o
8	68.08	88	plate	CCI-AFP-060100	3					o				o			o
9	97	104	plate	CCI-SFP-045100	3	o				o				o			
10	0	3	plate	FP 1.25 x 7.25_1	3					o				o			o
11																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _v (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	6.89	2.61	8.47	0.93	41.000	41.000	24.000	7.670	1.1875	A572-65
2	7.93	2.8	10.32	0.95	47.000	44.000	24.000	9.370	1.1875	A572-65
3	7.93	2.8	10.32	0.95	47.000	44.000	24.000	9.370	1.1875	A572-65
4	6.89	2.61	8.47	0.93	41.000	41.000	24.000	7.670	1.1875	A572-65
5	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
6	6.5	1.25	8.125	0.625	n/a	36.000	19.000	6.563	1.1875	A572-65
7	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
8	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
10	1.25	7.25	9.0625	3.625	n/a	n/a	0.000	9.063	0.0000	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	140 - 135	5		12	16.000	17.015	0.25	A572-65	1.000
2	135 - 130	5		12	17.015	18.030	0.25	A572-65	1.000
3	130 - 125	5		12	18.030	19.045	0.25	A572-65	1.000
4	125 - 120	5		12	19.045	20.061	0.25	A572-65	1.000
5	120 - 115	5		12	20.061	21.076	0.25	A572-65	1.000
6	115 - 110	5		12	21.076	22.091	0.25	A572-65	1.000
7	110 - 105	5		12	22.091	23.106	0.25	A572-65	1.000
8	105 - 104	1		12	23.106	23.309	0.25	A572-65	1.000
9	104 - 103.75	0.25		12	23.309	23.360	0.4625	A572-65	0.942
10	103.75 - 98.75	5		12	23.360	24.375	0.45	A572-65	0.950
11	98.75 - 98.5	0.25		12	24.375	24.426	0.45	A572-65	0.949
12	98.5 - 98.25	0.25		12	24.426	24.476	0.725	A572-65	0.902
13	98.25 - 97	1.25		12	24.476	24.730	0.725	A572-65	0.896
14	97 - 96.75	0.25		12	24.730	24.781	0.5125	A572-65	0.917
15	96.75 - 91.75	8.25	3.25	12	24.781	26.456	0.5	A572-65	0.922
16	91.75 - 88	3.75		12	25.296	26.058	0.5625	A572-65	0.929
17	88 - 87.75	0.25		12	26.058	26.108	0.7625	A572-65	0.980
18	87.75 - 82.75	5		12	26.108	27.124	0.7375	A572-65	0.989
19	82.75 - 77.75	5		12	27.124	28.139	0.725	A572-65	0.984
20	77.75 - 72.75	5		12	28.139	29.154	0.7125	A572-65	0.981
21	72.75 - 68.08	4.67		12	29.154	30.102	0.6875	A572-65	0.998
22	68.08 - 67.83	0.25		12	30.102	30.153	0.8125	A572-65	0.957
23	67.83 - 62.83	5		12	30.153	31.168	0.7875	A572-65	0.967
24	62.83 - 57.83	5		12	31.168	32.184	0.7625	A572-65	0.979
25	57.83 - 52.83	5		12	32.184	33.199	0.75	A572-65	0.977
26	52.83 - 51.5	5.58	4.25	12	33.199	34.332	0.75	A572-65	0.972
27	51.5 - 46.5	5		12	32.844	33.859	0.8	A572-65	0.985
28	46.5 - 41.5	5		12	33.859	34.874	0.8	A572-65	0.970
29	41.5 - 37.75	3.75		12	34.874	35.636	0.775	A572-65	0.989
30	37.75 - 37.5	0.25		12	35.636	35.686	0.85	A572-65	0.961
31	37.5 - 32.5	5		12	35.686	36.702	0.825	A572-65	0.975
32	32.5 - 32.25	0.25		12	36.702	36.752	0.875	A572-65	0.983
33	32.25 - 27.25	5		12	36.752	37.767	0.8625	A572-65	0.981
34	27.25 - 23.5	3.75		12	37.767	38.529	0.85	A572-65	0.984
35	23.5 - 23.25	0.25		12	38.529	38.580	0.95	A572-65	1.030
36	23.25 - 20.75	2.5		12	38.580	39.087	0.95	A572-65	1.021
37	20.75 - 20.5	0.25		12	39.087	39.138	0.9	A572-65	0.982
38	20.5 - 15.5	5		12	39.138	40.153	0.875	A572-65	0.995
39	15.5 - 10.5	5		12	40.153	41.168	0.8625	A572-65	0.994
40	10.5 - 5.5	5		12	41.168	42.183	0.85	A572-65	0.995
41	5.5 - 3	2.5		12	42.183	42.691	0.8375	A572-65	1.002
42	3 - 2.75	0.25		12	42.691	42.742	0.9	A572-65	0.957
43	2.75 - 0	2.75		12	42.742	43.300	0.9	A572-65	0.950

TNX Section Forces

Increment (ft):		TNX Output		
	5	P _u	M _{ux} (kip-ft)	V _u (K)
	Section Height (ft)	(K)		
1	140 - 135	3.97	26.23	6.30
2	135 - 130	4.24	58.74	6.71
3	130 - 125	4.53	93.33	7.13
4	125 - 120	8.92	146.31	15.54
5	120 - 115	9.47	225.14	16.00
6	115 - 110	14.21	339.19	22.49
7	110 - 105	14.99	452.83	22.98
8	105 - 104	15.15	475.85	23.08
9	104 - 103.75	18.88	483.06	29.05
10	103.75 - 98.75	19.95	629.85	29.67
11	98.75 - 98.5	20.02	637.27	29.70
12	98.5 - 98.25	20.09	644.70	29.74
13	98.25 - 97	20.43	681.98	29.92
14	97 - 96.75	20.50	689.47	29.96
15	96.75 - 91.75	22.05	843.68	31.47
16	91.75 - 88	23.50	962.86	32.07
17	88 - 87.75	23.59	970.88	32.11
18	87.75 - 82.75	25.27	1133.32	32.86
19	82.75 - 77.75	27.13	1299.65	33.66
20	77.75 - 72.75	28.89	1469.80	34.39
21	72.75 - 68.08	30.57	1632.00	35.07
22	68.08 - 67.83	30.69	1640.77	35.10
23	67.83 - 62.83	32.65	1818.20	35.86
24	62.83 - 57.83	34.67	1999.34	36.59
25	57.83 - 52.83	36.71	2184.09	37.31
26	52.83 - 51.5	37.26	2233.84	37.50
27	51.5 - 46.5	40.73	2423.49	38.33
28	46.5 - 41.5	42.96	2616.86	39.01
29	41.5 - 37.75	44.65	2764.06	39.50
30	37.75 - 37.5	44.79	2773.94	39.52
31	37.5 - 32.5	47.17	2973.22	40.18
32	32.5 - 32.25	47.31	2983.27	40.20
33	32.25 - 27.25	49.84	3185.96	40.85
34	27.25 - 23.5	51.76	3340.02	41.32
35	23.5 - 23.25	51.93	3350.36	41.33
36	23.25 - 20.75	53.37	3454.10	41.65
37	20.75 - 20.5	53.52	3464.51	41.66
38	20.5 - 15.5	56.25	3674.31	42.24
39	15.5 - 10.5	59.02	3886.81	42.76
40	10.5 - 5.5	61.82	4101.91	43.28
41	5.5 - 3	63.23	4210.43	43.54
42	3 - 2.75	63.39	4221.32	43.54
43	2.75 - 0	64.96	4341.51	43.86

Analysis Results

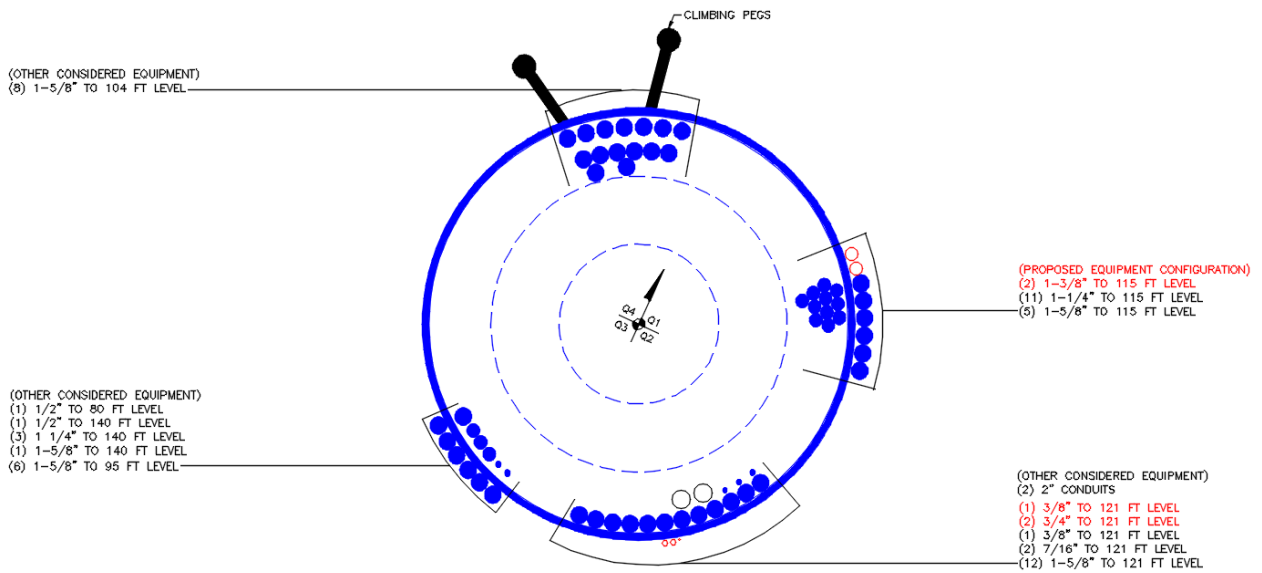
Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP17.015x16x0.25	Pole	7.8%	Pass
135 - 130	Pole	TP18.03x17.015x0.25	Pole	15.1%	Pass
130 - 125	Pole	TP19.045x18.03x0.25	Pole	21.3%	Pass
125 - 120	Pole	TP20.061x19.045x0.25	Pole	30.2%	Pass
120 - 115	Pole	TP21.076x20.061x0.25	Pole	41.9%	Pass
115 - 110	Pole	TP22.091x21.076x0.25	Pole	58.3%	Pass
110 - 105	Pole	TP23.106x22.091x0.25	Pole	71.9%	Pass
105 - 104	Pole	TP23.309x23.106x0.25	Pole	74.4%	Pass
104 - 103.75	Pole + Reinf.	TP23.36x23.309x0.4625	Reinf. 9 Tension Rupture	69.0%	Pass
103.75 - 98.75	Pole + Reinf.	TP24.375x23.36x0.45	Reinf. 9 Tension Rupture	83.9%	Pass
98.75 - 98.5	Pole + Reinf.	TP24.426x24.375x0.45	Reinf. 9 Tension Rupture	84.6%	Pass
98.5 - 98.25	Pole + Reinf.	TP24.476x24.426x0.725	Reinf. 9 Tension Rupture	54.6%	Pass
98.25 - 97	Pole + Reinf.	TP24.73x24.476x0.725	Reinf. 9 Tension Rupture	56.9%	Pass
97 - 96.75	Pole + Reinf.	TP24.781x24.73x0.5125	Reinf. 5 Tension Rupture	67.7%	Pass
96.75 - 91.75	Pole + Reinf.	TP26.456x24.781x0.5	Reinf. 5 Tension Rupture	77.9%	Pass
91.75 - 88	Pole + Reinf.	TP26.058x25.296x0.5625	Reinf. 5 Tension Rupture	77.6%	Pass
88 - 87.75	Pole + Reinf.	TP26.108x26.058x0.7625	Reinf. 5 Tension Rupture	60.7%	Pass
87.75 - 82.75	Pole + Reinf.	TP27.124x26.108x0.7375	Reinf. 5 Tension Rupture	67.0%	Pass
82.75 - 77.75	Pole + Reinf.	TP28.139x27.124x0.725	Reinf. 5 Tension Rupture	72.8%	Pass
77.75 - 72.75	Pole + Reinf.	TP29.154x28.139x0.7125	Reinf. 5 Tension Rupture	78.1%	Pass
72.75 - 68.08	Pole + Reinf.	TP30.102x29.154x0.6875	Reinf. 5 Tension Rupture	82.6%	Pass
68.08 - 67.83	Pole + Reinf.	TP30.153x30.102x0.8125	Reinf. 7 Tension Rupture	70.5%	Pass
67.83 - 62.83	Pole + Reinf.	TP31.168x30.153x0.7875	Reinf. 7 Tension Rupture	74.7%	Pass
62.83 - 57.83	Pole + Reinf.	TP32.184x31.168x0.7625	Reinf. 7 Tension Rupture	78.6%	Pass
57.83 - 52.83	Pole + Reinf.	TP33.199x32.184x0.75	Reinf. 7 Tension Rupture	82.2%	Pass
52.83 - 51.5	Pole + Reinf.	TP34.332x33.199x0.75	Reinf. 7 Tension Rupture	83.2%	Pass
51.5 - 46.5	Pole + Reinf.	TP33.859x32.844x0.8	Reinf. 7 Tension Rupture	82.0%	Pass
46.5 - 41.5	Pole + Reinf.	TP34.874x33.859x0.8	Reinf. 7 Tension Rupture	84.8%	Pass
41.5 - 37.75	Pole + Reinf.	TP35.636x34.874x0.775	Reinf. 7 Tension Rupture	86.8%	Pass
37.75 - 37.5	Pole + Reinf.	TP35.686x35.636x0.85	Reinf. 7 Tension Rupture	81.2%	Pass
37.5 - 32.5	Pole + Reinf.	TP36.702x35.686x0.825	Reinf. 7 Tension Rupture	83.6%	Pass
32.5 - 32.25	Pole + Reinf.	TP36.752x36.702x0.875	Reinf. 2 Tension Rupture	77.3%	Pass
32.25 - 27.25	Pole + Reinf.	TP37.767x36.752x0.8625	Reinf. 6 Tension Rupture	79.4%	Pass
27.25 - 23.5	Pole + Reinf.	TP38.529x37.767x0.85	Reinf. 6 Tension Rupture	80.9%	Pass
23.5 - 23.25	Pole + Reinf.	TP38.58x38.529x0.95	Reinf. 2 Tension Rupture	76.1%	Pass
23.25 - 20.75	Pole + Reinf.	TP39.087x38.58x0.95	Reinf. 2 Tension Rupture	77.0%	Pass
20.75 - 20.5	Pole + Reinf.	TP39.138x39.087x0.9	Reinf. 2 Tension Rupture	78.1%	Pass
20.5 - 15.5	Pole + Reinf.	TP40.153x39.138x0.875	Reinf. 2 Tension Rupture	79.8%	Pass
15.5 - 10.5	Pole + Reinf.	TP41.168x40.153x0.8625	Reinf. 2 Tension Rupture	81.4%	Pass
10.5 - 5.5	Pole + Reinf.	TP42.183x41.168x0.85	Reinf. 2 Tension Rupture	82.8%	Pass
5.5 - 3	Pole + Reinf.	TP42.691x42.183x0.8375	Reinf. 2 Tension Rupture	83.5%	Pass
3 - 2.75	Pole + Reinf.	TP42.742x42.691x0.9	Reinf. 2 Tension Rupture	78.7%	Pass
2.75 - 0	Pole + Reinf.	TP43.3x42.742x0.9	Reinf. 2 Tension Rupture	79.5%	Pass
				Summary	
			Pole	74.4%	Pass
			Reinforcement	86.8%	Pass
			Overall	86.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*										
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
140 - 135	485	n/a	485	13.48	n/a	13.48	7.8%										
135 - 130	578	n/a	578	14.29	n/a	14.29	15.1%										
130 - 125	683	n/a	683	15.11	n/a	15.11	21.3%										
125 - 120	800	n/a	800	15.92	n/a	15.92	30.2%										
120 - 115	929	n/a	929	16.74	n/a	16.74	41.9%										
115 - 110	1072	n/a	1072	17.56	n/a	17.56	58.3%										
110 - 105	1228	n/a	1228	18.37	n/a	18.37	71.9%										
105 - 104	1262	n/a	1262	18.54	n/a	18.54	74.4%										
104 - 103.75	1270	1013	2283	18.58	13.50	32.08	40.8%									69.0%	
103.75 - 98.75	1445	1099	2543	19.39	13.50	32.89	50.4%									83.9%	
98.75 - 98.5	1454	1103	2557	19.43	13.50	32.93	50.9%									84.6%	
98.5 - 98.25	1463	2557	4020	19.47	30.45	49.92	32.8%				46.8%					54.6%	
98.25 - 97	1509	2607	4116	19.68	30.45	50.13	34.4%				48.8%					56.9%	
97 - 96.75	1519	1483	3002	19.72	16.95	36.67	47.7%				67.7%						
96.75 - 91.75	1715	1599	3314	20.54	16.95	37.49	55.8%				77.9%						
91.75 - 88	2195	1629	3824	25.87	16.95	42.82	51.8%				77.6%						
88 - 87.75	2218	2867	5085	25.92	34.95	60.87	42.4%				60.7%				59.1%		
87.75 - 82.75	2491	3149	5640	26.94	34.95	61.89	46.4%				67.0%				65.3%		
82.75 - 77.75	2784	3375	6159	27.96	34.95	62.91	51.1%				72.8%				71.1%		
77.75 - 72.75	3099	3609	6708	28.98	34.95	63.93	55.6%				78.1%				76.4%		
72.75 - 68.08	3415	3835	7249	29.93	34.95	64.88	59.5%				82.6%				81.0%		
68.08 - 67.83	3429	4990	8419	29.98	43.41	73.39	51.4%				70.3%			70.5%			
67.83 - 62.83	3791	5311	9102	31.00	43.41	74.41	55.1%				74.3%			74.7%			
62.83 - 57.83	4177	5643	9819	32.02	43.41	75.43	58.7%				78.0%			78.6%			
57.83 - 52.83	4588	5984	10572	33.04	43.41	76.45	62.2%				81.4%			82.2%			
52.83 - 51.5	4702	6077	10779	33.32	43.41	76.73	63.1%				82.3%			83.2%			
51.5 - 46.5	5809	6214	12023	40.37	43.41	83.78	58.1%				80.7%			82.0%			
46.5 - 41.5	6353	6572	12925	41.60	43.41	85.01	60.7%				83.3%			84.8%			
41.5 - 37.75	6782	6848	13630	42.52	43.41	85.93	62.5%				85.2%			86.8%			
37.75 - 37.5	6810	7877	14687	42.58	48.96	91.54	58.2%		80.4%	76.9%				81.2%			
37.5 - 32.5	7414	8308	15721	43.80	48.96	92.76	60.6%	81.1%	77.7%					83.6%			
32.5 - 32.25	7455	9253	16708	43.86	55.34	99.20	57.8%		77.3%	73.2%			77.3%				
32.25 - 27.25	8095	9744	17840	45.09	55.34	100.42	60.0%		79.4%	75.1%			79.4%				
27.25 - 23.5	8600	10121	18721	46.00	55.34	101.34	61.6%		80.8%	76.5%			80.9%				
23.5 - 23.25	8810	12398	21208	46.07	72.28	118.34	58.1%	59.5%	76.1%	54.8%			71.9%				
23.25 - 20.75	9163	12712	21875	46.68	72.28	118.95	59.1%	60.2%	77.0%	55.5%			72.8%				
20.75 - 20.5	9060	11536	20596	46.74	61.96	108.69	61.2%		72.8%	78.1%			77.8%				
20.5 - 15.5	9789	12114	21903	47.96	61.96	109.92	63.3%	74.5%	79.8%				79.5%				
15.5 - 10.5	10556	12706	23261	49.19	61.96	111.14	65.3%	76.0%	81.4%				81.2%				
10.5 - 5.5	11361	13312	24673	50.41	61.96	112.37	67.2%	77.4%	82.8%				82.7%				
5.5 - 3	11779	13620	25399	51.02	61.96	112.98	68.2%	78.1%	83.5%				83.5%				
3 - 2.75	11844	15497	27342	51.08	64.77	115.85	64.3%	73.1%	78.7%								71.6%
2.75 - 0	12317	15870	28187	51.76	64.77	116.53	65.4%	73.9%	79.5%								72.2%

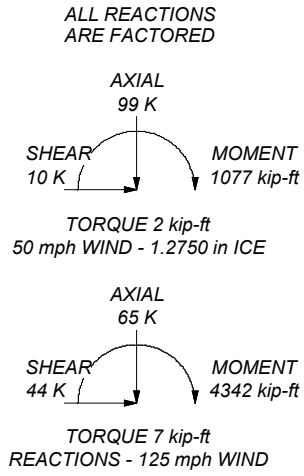
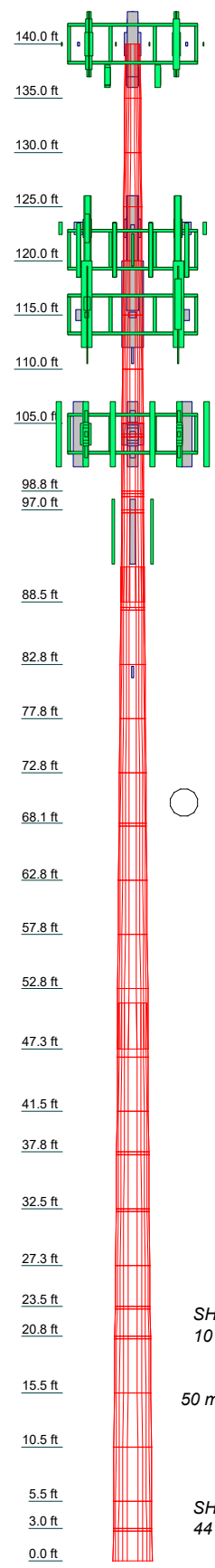
Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	16.0000	12	0.2500	3.2500	17.0151	18.0303	A572-65	0.2
2	16.0000	12	0.2500	3.2500	19.0454	20.0606	A572-65	0.2
3	16.0000	12	0.2500	3.2500	21.0757	22.0909	A572-65	0.3
4	16.0000	12	0.2500	3.2500	23.1111	24.1272	A572-65	0.3
5	16.0000	12	0.2500	3.2500	25.1566	26.1727	A572-65	0.3
6	16.0000	12	0.2500	3.2500	27.2122	28.2283	A572-65	0.3
7	16.0000	12	0.2500	3.2500	29.2779	30.2940	A572-65	0.3
8	16.0000	12	0.2500	3.2500	31.3536	32.3697	A572-65	0.3
9	16.0000	12	0.2500	3.2500	33.4393	34.4454	A572-65	0.3
10	16.0000	12	0.2500	3.2500	35.5350	36.5211	A572-65	0.3
11	16.0000	12	0.2500	3.2500	37.6407	38.5968	A572-65	0.3
12	16.0000	12	0.2500	3.2500	39.7564	40.6725	A572-65	0.3
13	16.0000	12	0.2500	3.2500	41.8821	42.7482	A572-65	0.3
14	16.0000	12	0.2500	3.2500	44.0178	44.8239	A572-65	0.3
15	16.0000	12	0.2500	3.2500	46.1635	46.8996	A572-65	0.3
16	16.0000	12	0.2500	3.2500	48.3192	48.9753	A572-65	0.3
17	16.0000	12	0.2500	3.2500	50.4849	51.0510	A572-65	0.3
18	16.0000	12	0.2500	3.2500	52.6606	53.1267	A572-65	0.3
19	16.0000	12	0.2500	3.2500	54.8463	55.2024	A572-65	0.3
20	16.0000	12	0.2500	3.2500	57.0420	57.2781	A572-65	0.3
21	16.0000	12	0.2500	3.2500	59.2477	59.3538	A572-65	0.3
22	16.0000	12	0.2500	3.2500	61.4634	61.4295	A572-65	0.3
23	16.0000	12	0.2500	3.2500	63.6891	63.5052	A572-65	0.3
24	16.0000	12	0.2500	3.2500	65.9248	65.5809	A572-65	0.3
25	16.0000	12	0.2500	3.2500	68.1705	67.6566	A572-65	0.3
26	16.0000	12	0.2500	3.2500	70.4262	69.7323	A572-65	0.3
27	16.0000	12	0.2500	3.2500	72.6919	71.8080	A572-65	0.3
28	16.0000	12	0.2500	3.2500	74.9676	73.8837	A572-65	0.3
29	16.0000	12	0.2500	3.2500	77.2533	75.9594	A572-65	0.3
30	16.0000	12	0.2500	3.2500	79.5490	78.0351	A572-65	0.3
31	16.0000	12	0.2500	3.2500	81.8547	80.1108	A572-65	0.3
32	16.0000	12	0.2500	3.2500	84.1704	82.1865	A572-65	0.3
33	16.0000	12	0.2500	3.2500	86.4961	84.2622	A572-65	0.3
34	16.0000	12	0.2500	3.2500	88.8318	86.3379	A572-65	0.3
35	16.0000	12	0.2500	3.2500	91.1775	88.4136	A572-65	0.3
36	16.0000	12	0.2500	3.2500	93.5332	90.4893	A572-65	0.3
37	16.0000	12	0.2500	3.2500	95.8989	92.5650	A572-65	0.3
38	16.0000	12	0.2500	3.2500	98.2746	94.6407	A572-65	0.3
39	16.0000	12	0.2500	3.2500	100.6603	96.7164	A572-65	0.3
40	16.0000	12	0.2500	3.2500	103.0560	98.7921	A572-65	0.3
41	16.0000	12	0.2500	3.2500	105.4617	100.8678	A572-65	0.3
42	16.0000	12	0.2500	3.2500	107.8774	102.9435	A572-65	0.3
43	16.0000	12	0.2500	3.2500	110.3031	105.0192	A572-65	0.3
44	16.0000	12	0.2500	3.2500	112.7388	107.0949	A572-65	0.3
45	16.0000	12	0.2500	3.2500	115.1845	109.1706	A572-65	0.3
46	16.0000	12	0.2500	3.2500	117.6402	111.2463	A572-65	0.3
47	16.0000	12	0.2500	3.2500	120.1059	113.3220	A572-65	0.3
48	16.0000	12	0.2500	3.2500	122.5816	115.3977	A572-65	0.3
49	16.0000	12	0.2500	3.2500	125.0673	117.4734	A572-65	0.3
50	16.0000	12	0.2500	3.2500	127.5630	119.5491	A572-65	0.3
51	16.0000	12	0.2500	3.2500	130.0687	121.6248	A572-65	0.3
52	16.0000	12	0.2500	3.2500	132.5844	123.7005	A572-65	0.3
53	16.0000	12	0.2500	3.2500	135.1101	125.7762	A572-65	0.3
54	16.0000	12	0.2500	3.2500	137.6458	127.8519	A572-65	0.3
55	16.0000	12	0.2500	3.2500	140.1915	129.9276	A572-65	0.3
56	16.0000	12	0.2500	3.2500	142.7472	132.0033	A572-65	0.3
57	16.0000	12	0.2500	3.2500	145.3129	134.0790	A572-65	0.3
58	16.0000	12	0.2500	3.2500	147.8886	136.1547	A572-65	0.3
59	16.0000	12	0.2500	3.2500	150.4743	138.2304	A572-65	0.3
60	16.0000	12	0.2500	3.2500	153.0700	140.3061	A572-65	0.3
61	16.0000	12	0.2500	3.2500	155.6757	142.3818	A572-65	0.3
62	16.0000	12	0.2500	3.2500	158.2914	144.4575	A572-65	0.3
63	16.0000	12	0.2500	3.2500	160.9171	146.5332	A572-65	0.3
64	16.0000	12	0.2500	3.2500	163.5528	148.6089	A572-65	0.3
65	16.0000	12	0.2500	3.2500	166.1985	150.6846	A572-65	0.3
66	16.0000	12	0.2500	3.2500	168.8542	152.7603	A572-65	0.3
67	16.0000	12	0.2500	3.2500	171.5200	154.8360	A572-65	0.3
68	16.0000	12	0.2500	3.2500	174.1957	156.9117	A572-65	0.3
69	16.0000	12	0.2500	3.2500	176.8815	158.9874	A572-65	0.3
70	16.0000	12	0.2500	3.2500	179.5772	161.0631	A572-65	0.3
71	16.0000	12	0.2500	3.2500	182.2830	163.1388	A572-65	0.3
72	16.0000	12	0.2500	3.2500	184.9987	165.2145	A572-65	0.3
73	16.0000	12	0.2500	3.2500	187.7245	167.2902	A572-65	0.3
74	16.0000	12	0.2500	3.2500	190.4602	169.3659	A572-65	0.3
75	16.0000	12	0.2500	3.2500	193.2060	171.4416	A572-65	0.3
76	16.0000	12	0.2500	3.2500	195.9617	173.5173	A572-65	0.3
77	16.0000	12	0.2500	3.2500	198.7275	175.5930	A572-65	0.3
78	16.0000	12	0.2500	3.2500	201.5032	177.6687	A572-65	0.3
79	16.0000	12	0.2500	3.2500	204.2890	179.7444	A572-65	0.3
80	16.0000	12	0.2500	3.2500	207.0847	181.8201	A572-65	0.3
81	16.0000	12	0.2500	3.2500	209.8905	183.8958	A572-65	0.3
82	16.0000	12	0.2500	3.2500	212.7062	185.9715	A572-65	0.3
83	16.0000	12	0.2500	3.2500	215.5320	188.0472	A572-65	0.3
84	16.0000	12	0.2500	3.2500	218.3677	190.1229	A572-65	0.3
85	16.0000	12	0.2500	3.2500	221.2135	192.1986	A572-65	0.3
86	16.0000	12	0.2500	3.2500	224.0692	194.2743	A572-65	0.3
87	16.0000	12	0.2500	3.2500	226.9350	196.3500	A572-65	0.3
88	16.0000	12	0.2500	3.2500	229.8107	198.4257	A572-65	0.3
89	16.0000	12	0.2500	3.2500	232.6965	200.5014	A572-65	0.3
90	16.0000	12	0.2500	3.2500	235.5922	202.5771	A572-65	0.3
91	16.0000	12	0.2500	3.2500	238.4980	204.6528	A572-65	0.3
92	16.0000	12	0.2500	3.2500	241.4137	206.7285	A572-65	0.3
93	16.0000	12	0.2500	3.2500	244.3400	208.8042	A572-65	0.3
94	16.0000	12	0.2500	3.2500	247.2760	210.8799	A572-65	0.3
95	16.0000	12	0.2500	3.2500	250.2215	212.9556	A572-65	0.3
96	16.0000	12	0.2500	3.2500	253.1770	215.0313	A572-65	0.3
97	16.0000	12	0.2500	3.2500	256.1425	217.1070	A572-65	0.3
98	16.0000	12	0.2500	3.2500	259.1180	219.1827	A572-65	0.3
99	16.0000	12	0.2500	3.2500	262.1035	221.2584	A572-65	0.3
100	16.0000	12	0.2500	3.2500	265.0990	223.3341	A572-65	0.3



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.27 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H Annex S

<p>Paul J. Ford and Company 250 East Broad st., Suite 600 Columbus, OH 43215 Phone: (614) 221-6679 FAX:</p>	<p>Job: 140-Ft Monopole / Bic Drive (SSUSA)</p>
	<p>Project: PJF 37518-0321.005.7805 / BU# 876342</p>
	<p>Client: Crown Castle Drawn by: jacuna App'd:</p>
	<p>Code: TIA-222-H Date: 11/02/18 Scale: NTS</p>
	<p>Path: Dwg No. E-1</p>

v4.5.1 - Effective 09-27-18

Asymmetric Anchor Rod Analysis

Moment =	4342	k-ft	TIA Ref.	H	η =	N/A	for Base Plates, Rev. G Sect. 4.9.9
Axial =	65.0	kips (+Comp, -Tension)	ASIF =	N/A	Threads =	N/A	for Flange Plates, Rev. G & H
Shear =	44.0	kips	Max Ratio =	100.0%	lar =	0.00	in, for Base Plates, Rev. H Sect 4.9.9 (Max of Original Items)
Anchor Qty =	19		Location =	Base Plate	Grout =	0.00	psi, for Base Plates, Rev. H Sect 4.9.9 (Note)

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Type	Area Override, in ²	Area, in ²	Max Net Comp, kips	Max Net Tension, kips	Tension Override, kips	Comp Override, kips	Tension Cap, kips	Comp Cap, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	26.0	54.00	Original	0.00	3.98	212.43	204.30	0.00	0.00	243.75	243.75	83.1%
2	2.250	#18J A615 Gr 75	75	100	39.0	54.00	Original	0.00	3.98	213.79	205.66	0.00	0.00	243.75	243.75	83.7%
3	2.250	#18J A615 Gr 75	75	100	51.0	54.00	Original	0.00	3.98	212.49	204.37	0.00	0.00	243.75	243.75	83.2%
4	2.250	#18J A615 Gr 75	75	100	64.0	54.00	Original	0.00	3.98	208.60	200.48	0.00	0.00	243.75	243.75	81.6%
5	2.250	#18J A615 Gr 75	75	100	116.0	54.00	Original	0.00	3.98	185.04	176.91	0.00	0.00	243.75	243.75	72.4%
6	2.250	#18J A615 Gr 75	75	100	129.0	54.00	Original	0.00	3.98	182.76	174.64	0.00	0.00	243.75	243.75	71.5%
7	2.250	#18J A615 Gr 75	75	100	141.0	54.00	Original	0.00	3.98	183.15	175.02	0.00	0.00	243.75	243.75	71.7%
8	2.250	#18J A615 Gr 75	75	100	154.0	54.00	Original	0.00	3.98	185.93	177.80	0.00	0.00	243.75	243.75	72.8%
9	2.250	#18J A615 Gr 75	75	100	206.0	54.00	Original	0.00	3.98	200.84	192.72	0.00	0.00	243.75	243.75	78.6%
10	2.250	#18J A615 Gr 75	75	100	219.0	54.00	Original	0.00	3.98	200.65	192.53	0.00	0.00	243.75	243.75	78.5%
11	2.250	#18J A615 Gr 75	75	100	231.0	54.00	Original	0.00	3.98	198.36	190.24	0.00	0.00	243.75	243.75	77.6%
12	2.250	#18J A615 Gr 75	75	100	244.0	54.00	Original	0.00	3.98	193.92	185.80	0.00	0.00	243.75	243.75	75.9%
13	2.250	#18J A615 Gr 75	75	100	296.0	54.00	Original	0.00	3.98	175.40	167.27	0.00	0.00	243.75	243.75	68.7%
14	2.250	#18J A615 Gr 75	75	100	309.0	54.00	Original	0.00	3.98	176.34	168.22	0.00	0.00	243.75	243.75	69.0%
15	2.250	#18J A615 Gr 75	75	100	321.0	54.00	Original	0.00	3.98	180.07	171.94	0.00	0.00	243.75	243.75	70.5%
16	2.250	#18J A615 Gr 75	75	100	334.0	54.00	Original	0.00	3.98	186.51	178.39	0.00	0.00	243.75	243.75	73.0%
17	2.250	A193 Gr B7	105	125	125.0	66.30	Post-Installed	0.00	3.98	218.78	218.78	0.00	0.00	304.47	341.01	61.1%
18	2.250	A193 Gr B7	105	125	240.0	66.30	Post-Installed	0.00	3.98	236.43	236.43	0.00	0.00	304.47	341.01	66.0%
19	2.250	A193 Gr B7	105	125	330.0	66.30	Post-Installed	0.00	3.98	221.10	221.10	0.00	0.00	304.47	341.01	61.8%
									75.61							

Pier and Pad Foundation



BU #: 876342
 Site Name: Bic Drive (SSUSA)
 App. Number:

TIA-222 Revision: H
 Tower Type: Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	65	kips
Base Shear, V_{u_comp} :	44	kips
Moment, M_u :	4342	ft-kips
Tower Height, H :	140	ft
BP Dist. Above Fdn, bp_{dist} :	3	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	455.82	44.00	9.2%	Pass
<i>Bearing Pressure (ksf)</i>	15.98	3.65	22.9%	Pass
<i>Overturing (kip*ft)</i>	8328.12	4815.00	57.8%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	7603.29	4628.00	58.0%	Pass
<i>Pier Compression (kip)</i>	23390.64	122.33	0.5%	Pass
<i>Pad Flexure (kip*ft)</i>	6671.79	1746.10	24.9%	Pass
<i>Pad Shear - 1-way (kips)</i>	951.31	260.42	26.1%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.028	16.4%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	5544.53	2776.80	47.7%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$:	7	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, S_c :	11	
Pier Rebar Quantity, mc :	32	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :		
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

*Rating per TIA-222-H Section 15.5

Soil Rating*:	57.8%
Structural Rating*:	58.0%

Pad Properties		
Depth, D :	10	ft
Pad Width, W :	22.5	ft
Pad Thickness, T :	4	ft
Pad Rebar Size, Sp :	11	
Pad Rebar Quantity, mp :	23	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60000	psi
Concrete Compressive Strength, F'_c :	3000	psi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	130	pcf
Ultimate Net Bearing, Q_{net} :	20.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	32	degrees
SPT Blow Count, N_{blows} :	22	
Base Friction, μ :		
Neglected Depth, N :	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

<--Toggle between Gross and Net

Monopole Base Plate Connection

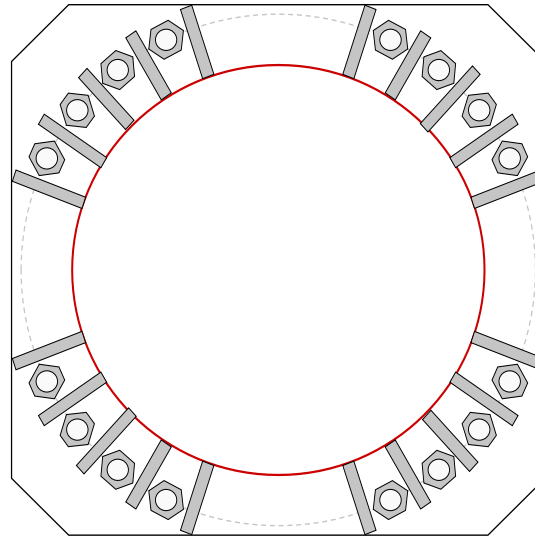


Site Info	
BU #	876342
Site Name	Bic Drive (SSUSA)
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	3775.07
Axial Force (kips)	65.00
Shear Force (kips)	44.00

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data
 (16) 2-1/4" ϕ bolts (A615-75 X; $F_y=75$ ksi, $F_u=100$ ksi) on 54" BC

Base Plate Data
 56" OD x 3" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)

Stiffener Data
 (20) 18"H x 7.75"W x 1.25"T, Notch: 0.75"
 plate: $F_y=65$ ksi ; weld: $F_y=70$ ksi
 horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet
 vert. weld: 0.3125" fillet

Pole Data
 43.3" x 0.375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary		<i>(units of kips, kip-in)</i>	
$Pu_c = 213.64$	$\phi Pn_c = 243.75$		Stress Rating
$Vu = 2.75$	$\phi Vn = 73.13$		83.6%
$Mu = n/a$	$\phi Mn = n/a$		Pass

Base Plate Summary		
Max Stress (ksi):	4.59	(Shear)
Allowable Stress (ksi):	29.25	
Stress Rating:	14.9%	Pass

Stiffener Summary		
Horizontal Weld:	63.3%	Pass
Vertical Weld:	70.2%	Pass
Plate Flexure+Shear:	10.4%	Pass
Plate Tension+Shear:	29.5%	Pass
Plate Compression:	44.2%	Pass

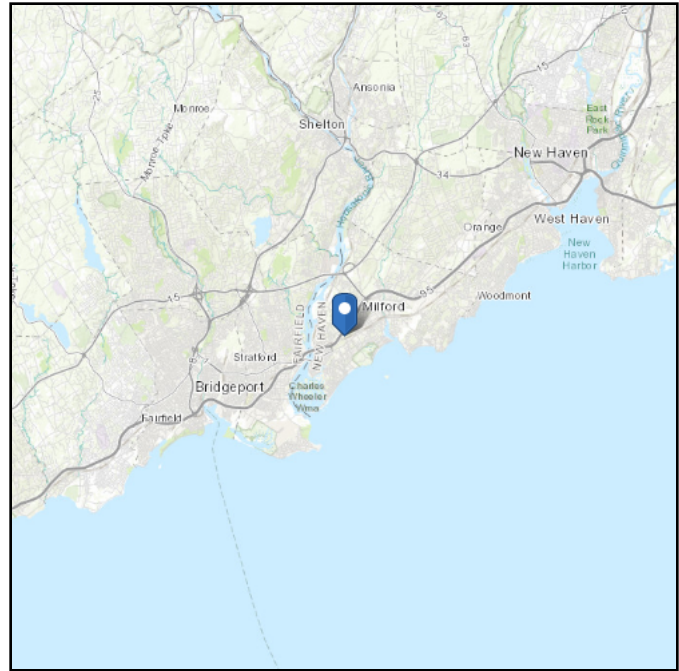
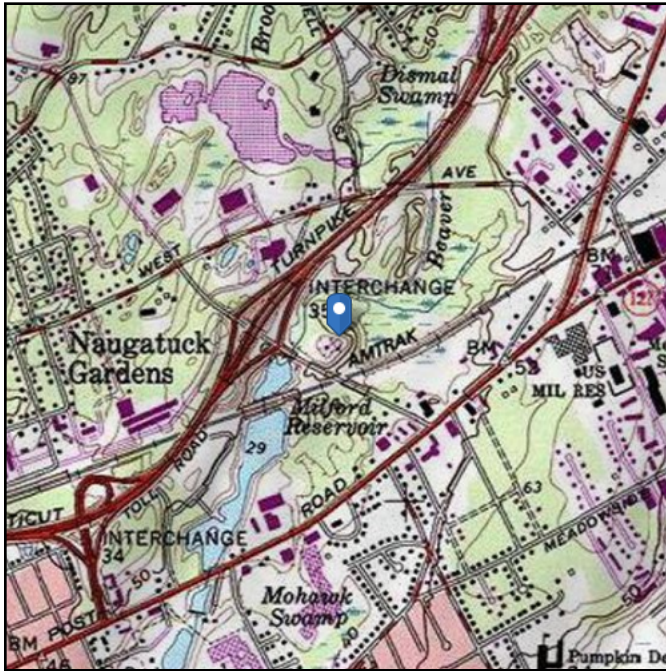
Pole Summary		
Punching Shear:	18.8%	Pass

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 40.17 ft (NAVD 88)
Latitude: 41.212794
Longitude: -73.085306



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	100 Vmph

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

Date Accessed: Thu Oct 04 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

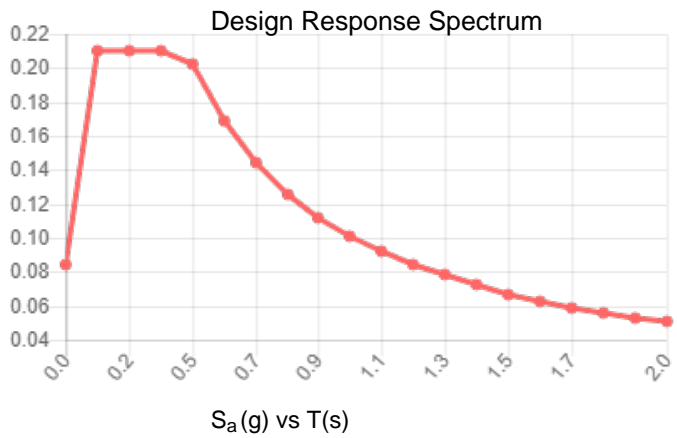
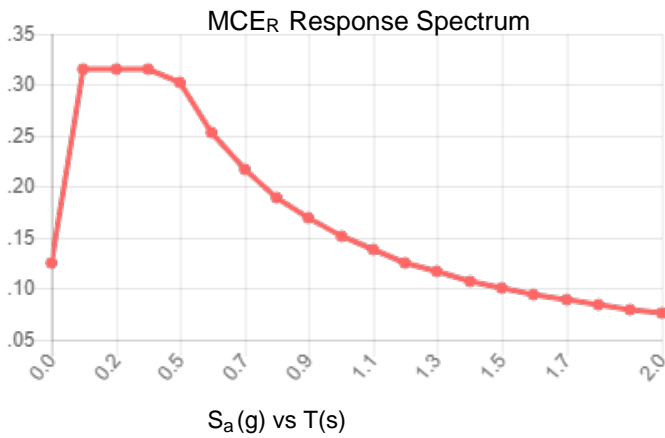
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.197	S_{DS} :	0.210
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.105
S_{MS} :	0.315	PGA_M :	0.167
S_{M1} :	0.152	F_{PGA} :	1.590
		I_e :	1

Seismic Design Category B



Data Accessed:

Thu Oct 04 2018

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

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

Date Accessed: Thu Oct 04 2018

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

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

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

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Date: **October 15, 2018**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6607



Subject: **Mount Modification Design Report**

Carrier Designation: **T-Mobile Tower Equipment**
Carrier Site Number: CT11229A
Carrier Site Name: CT11229A

Crown Castle Designation: **Crown Castle BU Number:** 876342
Crown Castle Site Name: BIC DRIVE (SSUSA)
Crown Castle JDE Job Number: 512704
Crown Castle Order Number: 446218 Rev 0

Engineering Firm Designation: Maser Consulting, CT Report Designation: 18922082A

Site Data: **111 School House Road, a/k/a Bic Drive, Milford, New Haven County, CT, 06460**
Latitude 41°12'46.06" Longitude -73°5'7.10"

Structure Information: **Tower Height & Type:** **140 ft Monopole**
Mount Elevation: **115 ft**
Mount Type: **14 ft Platform**

Dear Charles McGuirt,

Maser Consulting, CT is pleased to submit this "**Mount Modification Design Report**" to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

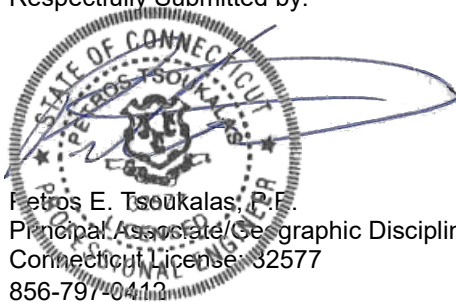
Platform

Sufficient

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2012 International Building Code. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

Mount structural analysis prepared by: Carol Luengas
Respectfully Submitted by:



Petros E. Tsoukalas, P.E.
Principal Associate/Geographic Discipline Leader
Connecticut License 32577
856-797-0412
Ptsoukalas@Maserconsulting.com



Carol Luengas, E.I.T.
Engineer

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Mount Modification Design Drawings (MDD)

1) INTRODUCTION

This mount is an existing 14 ft Platform mapped by Tower Engineering Professionals. This mount is installed at the 115 ft elevation on 3 sector(s) of the 140 ft monopole.

2) ANALYSIS CRITERIA

Building Code:	2012 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount Details
115	116	3	Ericsson	AIR-32 B2A/B66AA	Platform
	116		RFS	APXVAARR24_43-U-NA20	
	115		Andrew	ETW200VS12UB	
	115		Remec	S20070A1	
	116		Ericsson	Radio 4449 B12/B71	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
BIC DRIVE (SSUSA) Mount Mapping Dated September 17, 2018	Crown Castle	TEP# 25566.177510	Tower Engineering Professionals

3.1) Analysis Method

RISA-3D, a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases. The program performs design checks of structures under user specified loads. The user specified loads have been calculated separately based on the requirements of the above referenced codes. The program performs an analysis based on the steel code to determine the adequacy of the members and produces the reactions at the connection points of the mounts to the existing structure.

Proprietary excel sheets were used to calculate appurtenance and member loading for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) Steel grades have been assumed as follows, unless noted otherwise:

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

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

4) ANALYSIS RESULTS

Table 3(a) - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Single Platform Angles		115	79.2	Pass
1,3	Double Platform Angles		115	54.9	Pass
1,3	Standoff Arm		115	25.7	Pass
1,3	Standoff Arm Reinforcement		115	6.1	Pass
1,3	Antenna Pipes		115	78.7	Pass
2,3	Connection to Tower		115	31.9	Pass
1,3	Modification Kickers		115	10.2	Pass
1,3	Handrail		115	15.1	Pass

Structure Rating (max from all components) =	79.2%
-----------------------------------------------------	--------------

Notes:

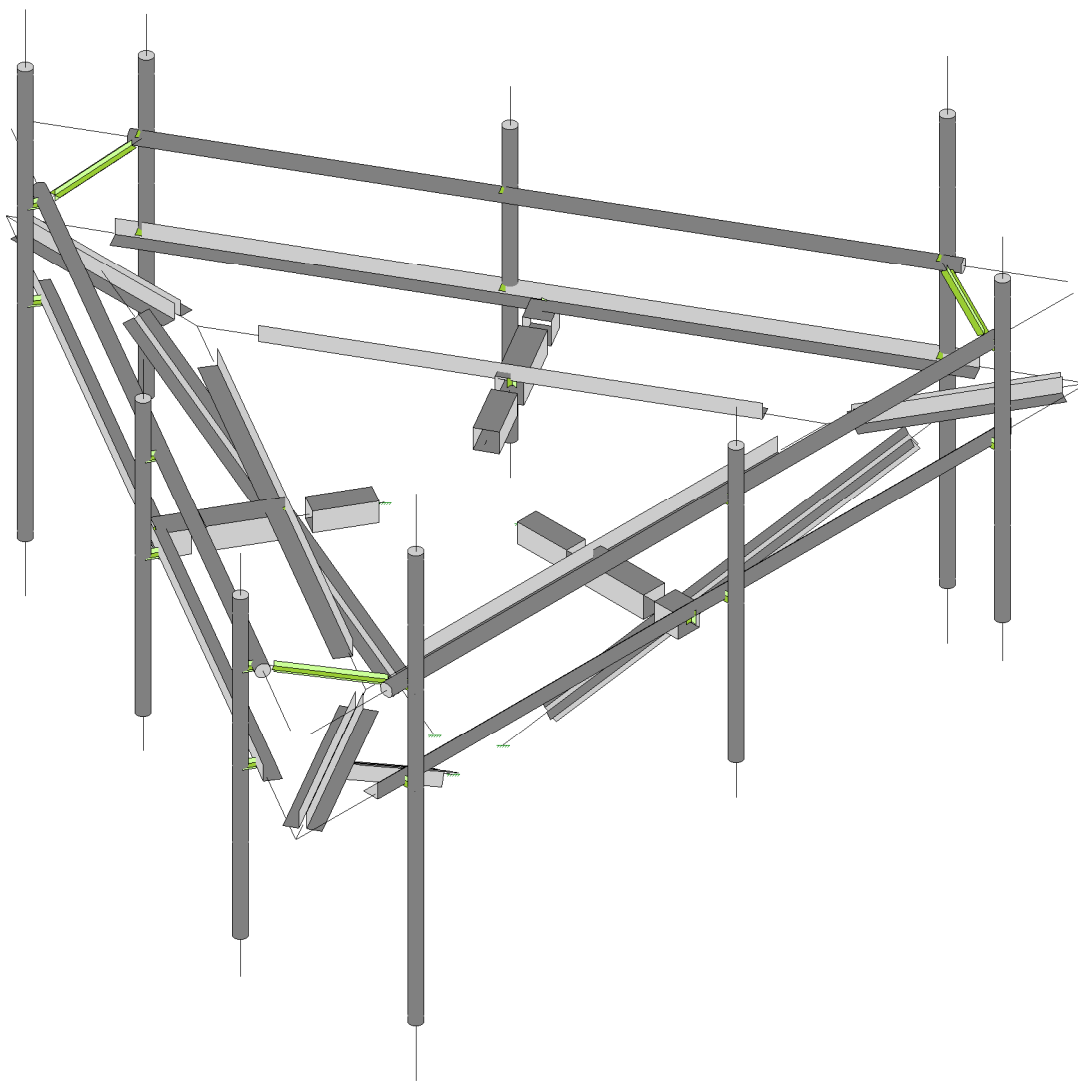
- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 3) All sectors are typical

4.1) Recommendations

The modification has sufficient capacity to support the proposed loading configuration with the proposed modifications, therefore, the proposed installation **can** be installed as intended, once the modifications are installed. The proposed modifications consists of:

- Installing a Platform Kicker Kit (SitePro 1 P/N PRK-1245L or engineer approved equivalent) mid-way along the existing LL3x3x4 members and 4' below the existing platform.
- Installing a Handrail Kit (SitePro 1 P/N HRK14 or engineer approved equivalent) 1'-6" above the existing platform. Contractor to cut the proposed handrail pipe masts down to 13'-6". Please see Appendix E for the modification design details.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



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CL

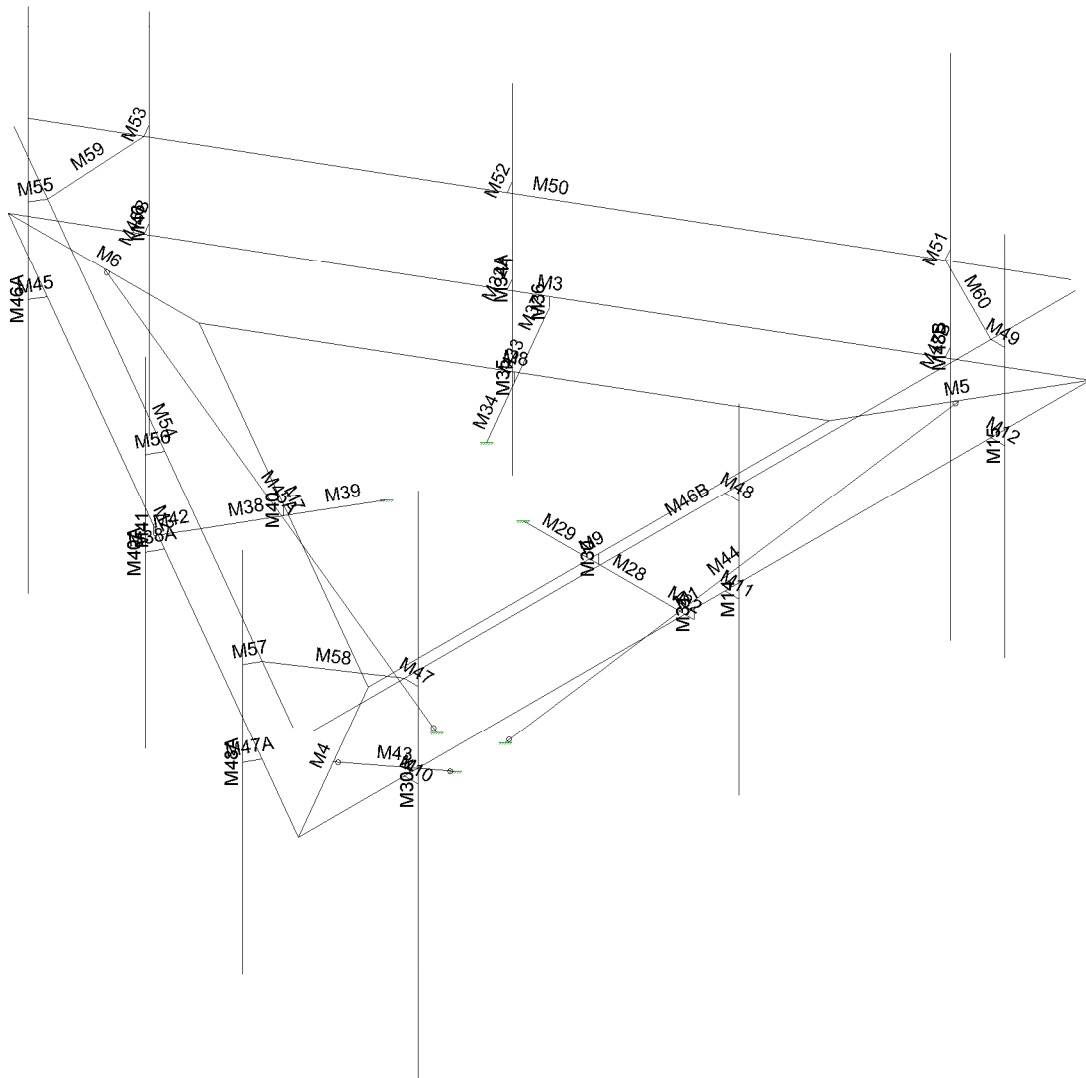
18922082

Antenna Mount Analysis
Rendered Model

SK - 1

Oct 12, 2018 at 11:14 AM

Platform.R3D



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CL

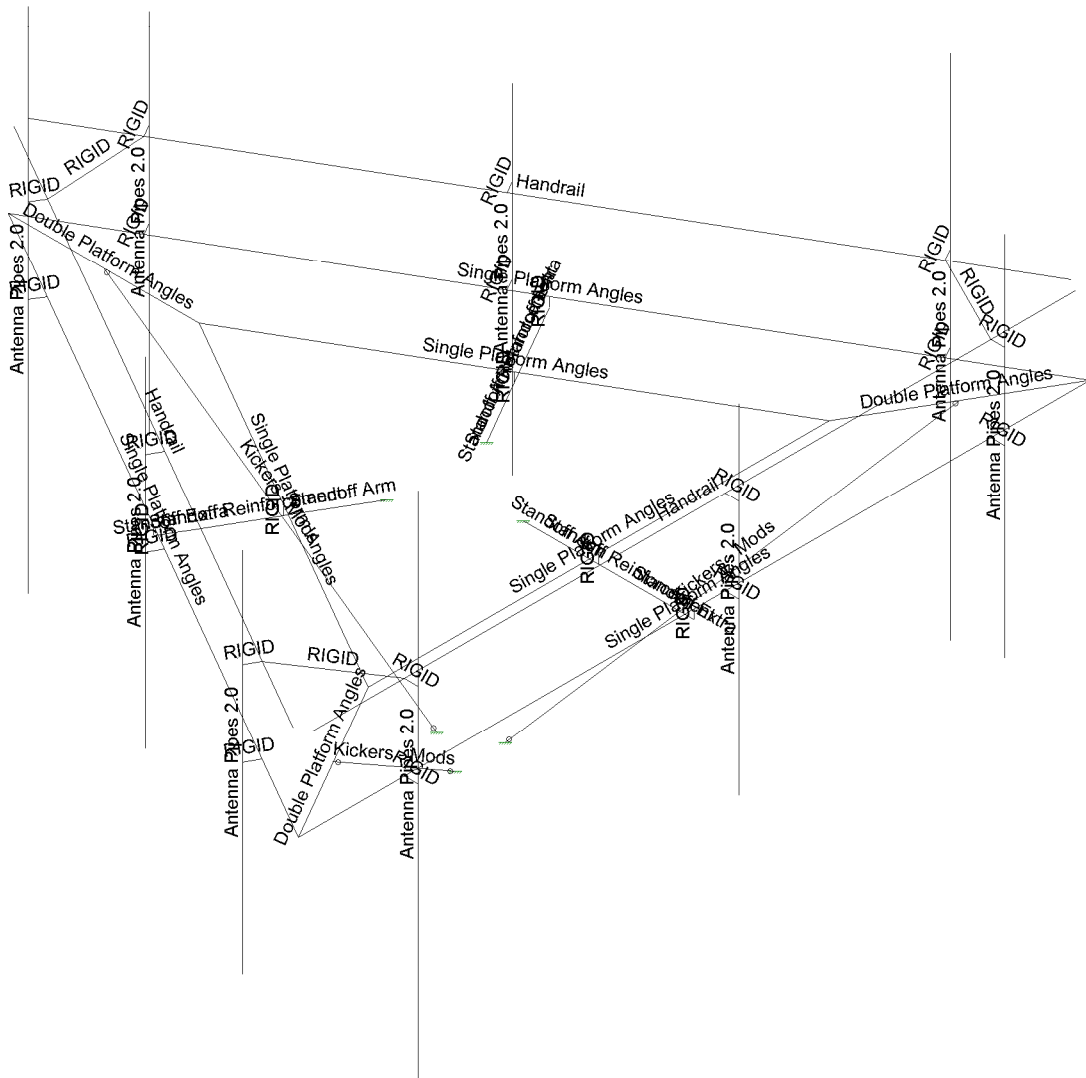
18922082

Antenna Mount Analysis
Member Labels

SK - 3

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Platform.R3D

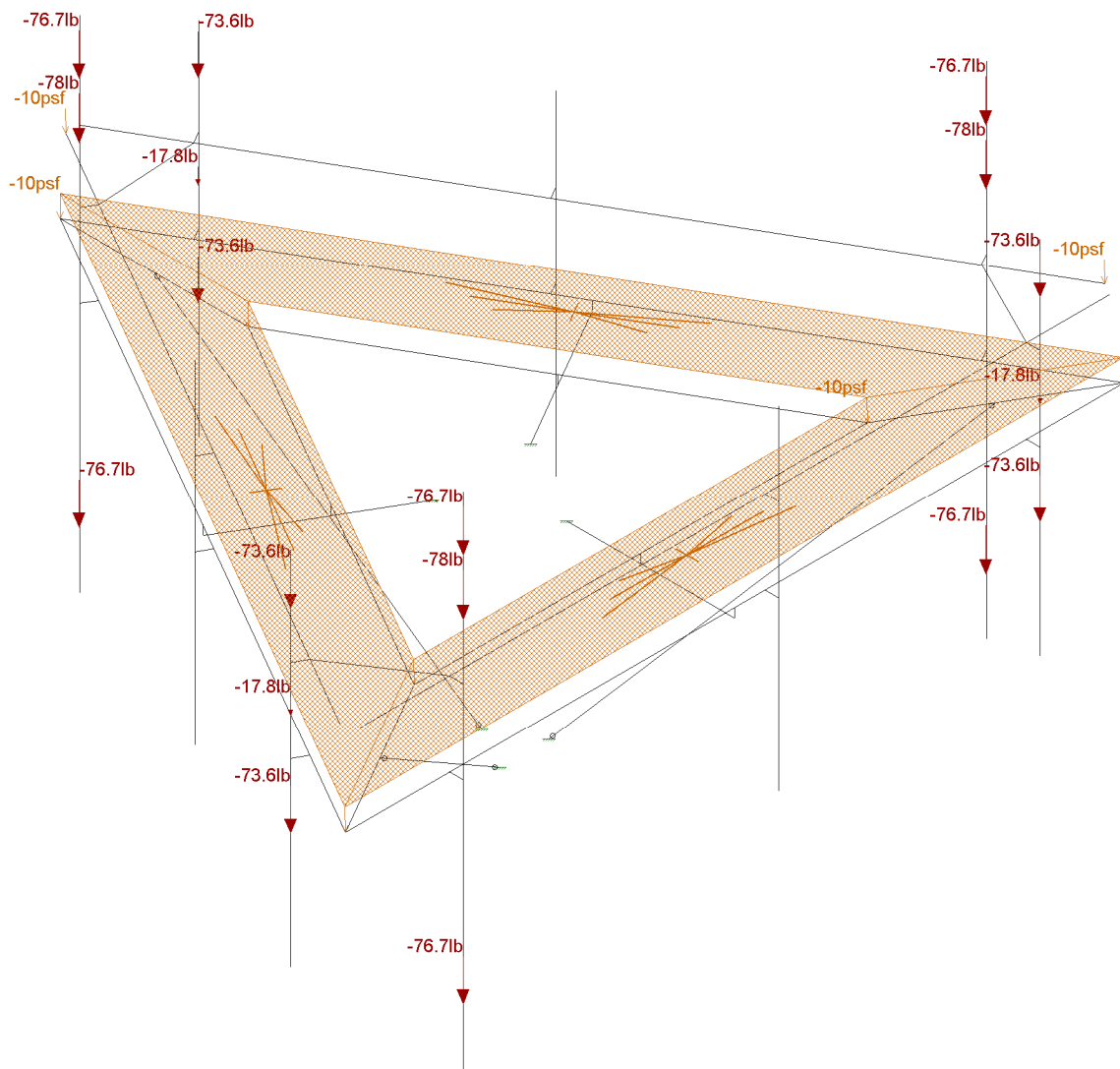


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CL
18922082

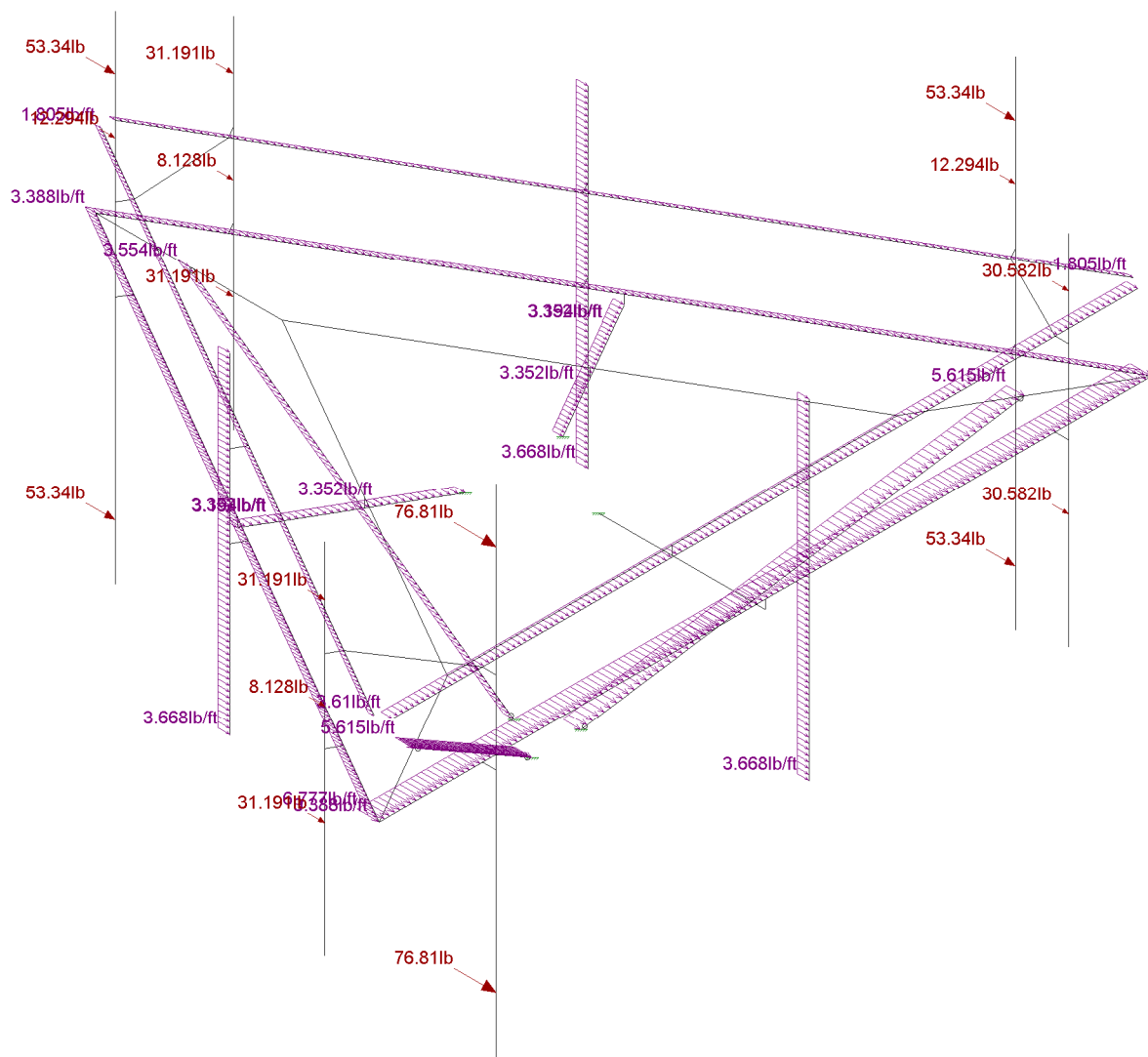
Antenna Mount Analysis
Section Sets

SK - 5
Oct 12, 2018 at 11:15 AM
Platform.R3D



Loads: BLC 1, Dead
Envelope Only Solution

Maser Consulting P.A.	Antenna Mount Analysis Dead Load	SK - 6
CL		Oct 12, 2018 at 11:15 AM
18922082		Platform.R3D



Loads: BLC 4, Ice Wx
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Maser Consulting P.A.

CL

18922082

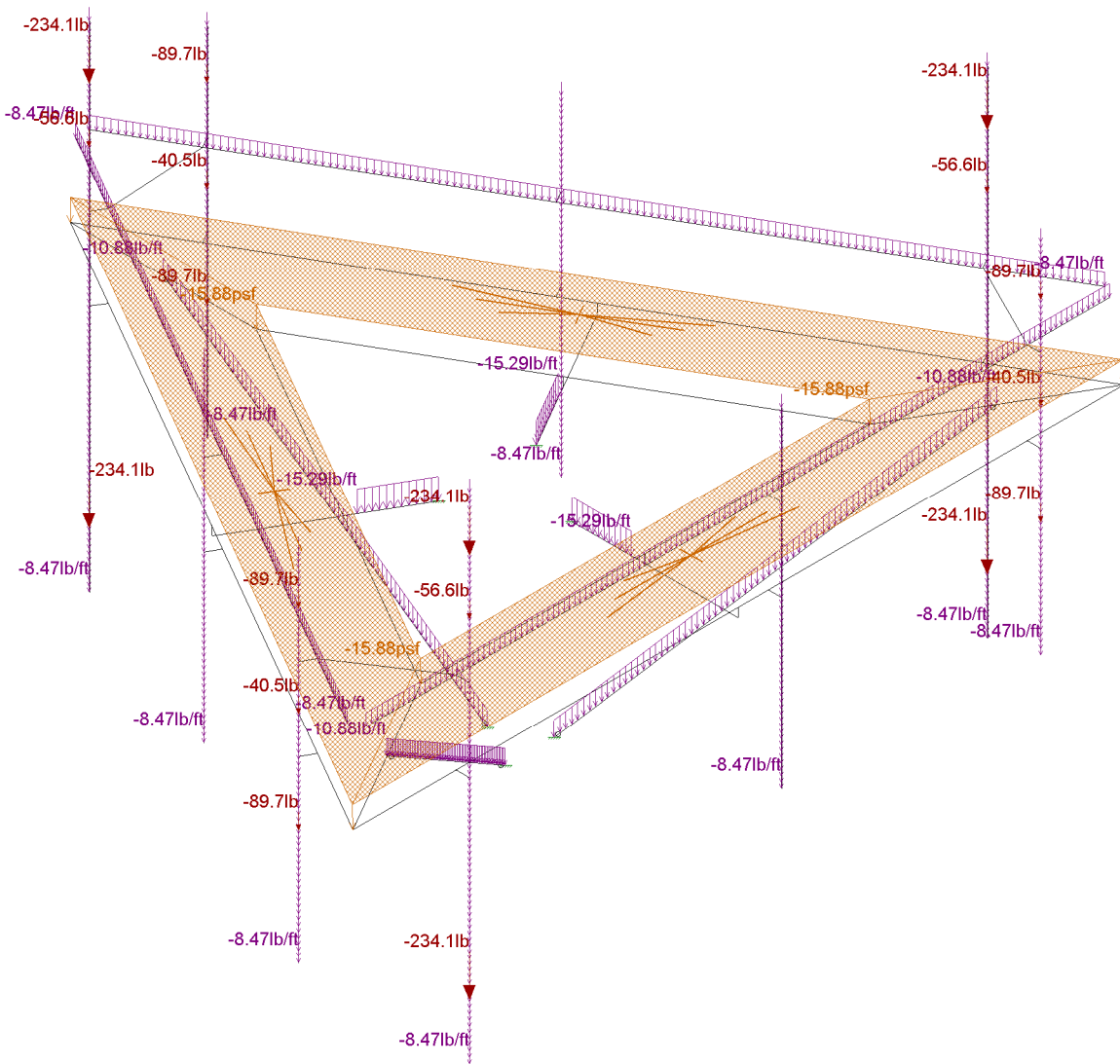
Antenna Mount Analysis

Ice Wind X

SK - 9

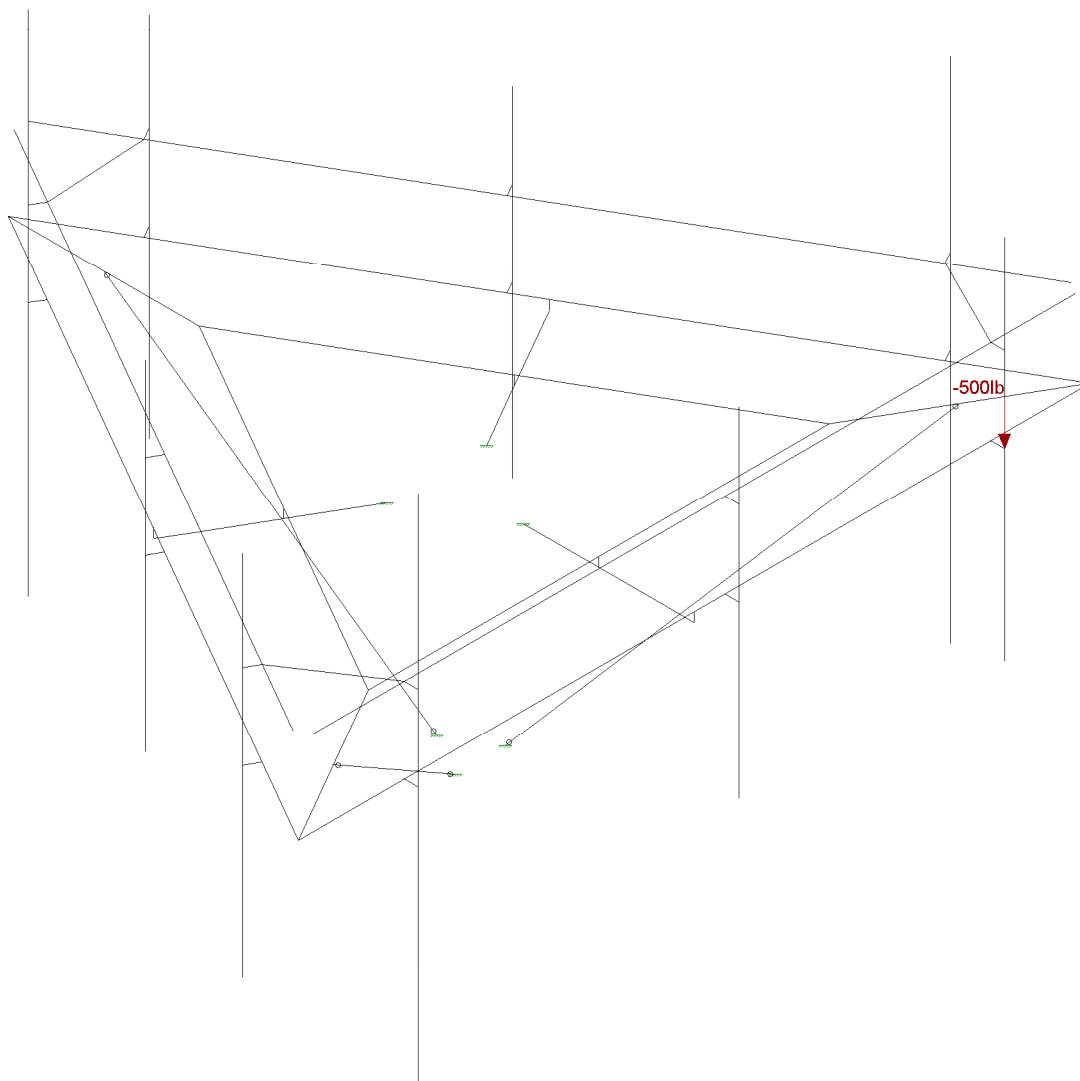
Oct 12, 2018 at 11:15 AM

Platform.R3D



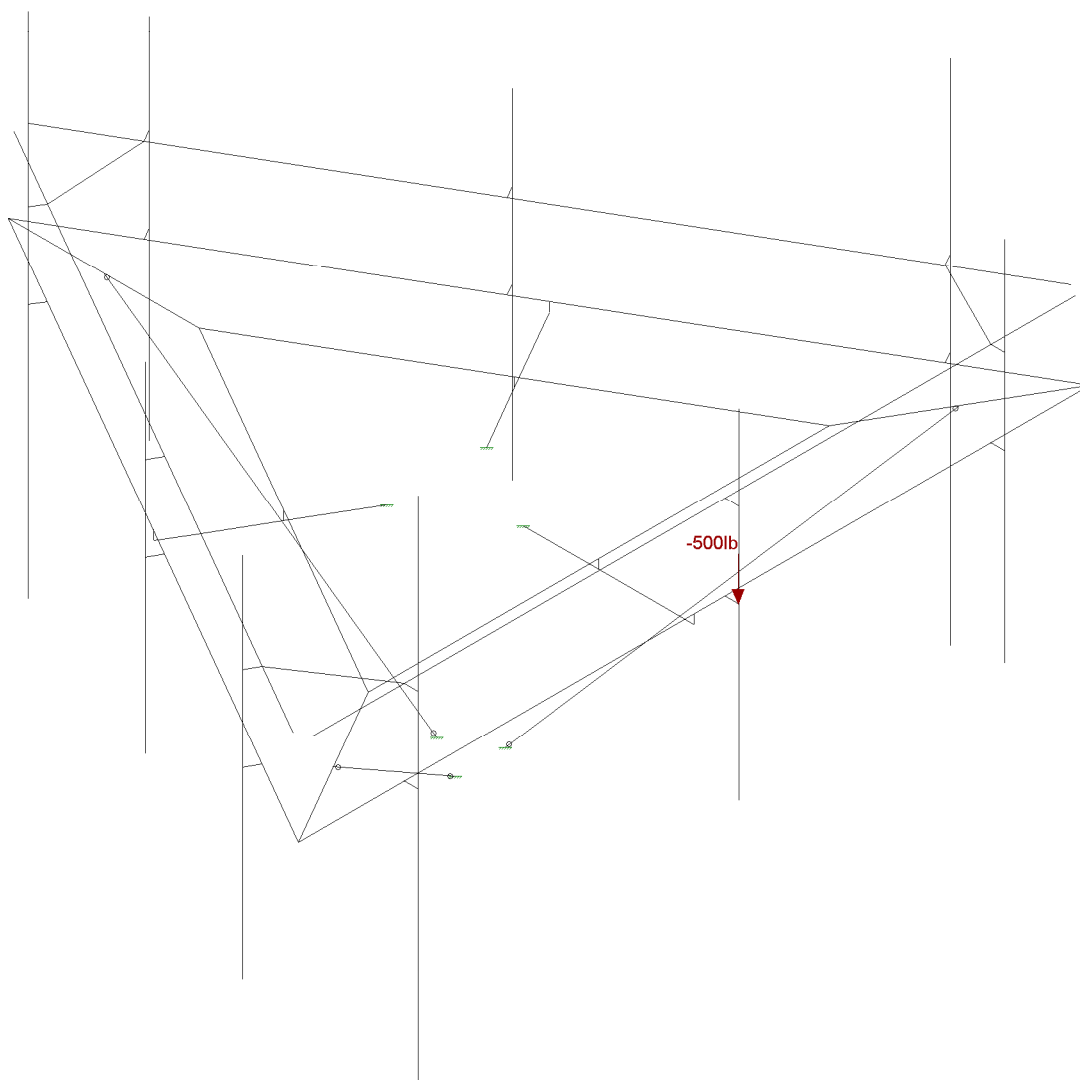
Loads: BLC 6, Ice weight
Envelope Only Solution

Maser Consulting P.A.	Antenna Mount Analysis Ice Weight	SK - 11
CL		Oct 12, 2018 at 11:16 AM
18922082		Platform.R3D



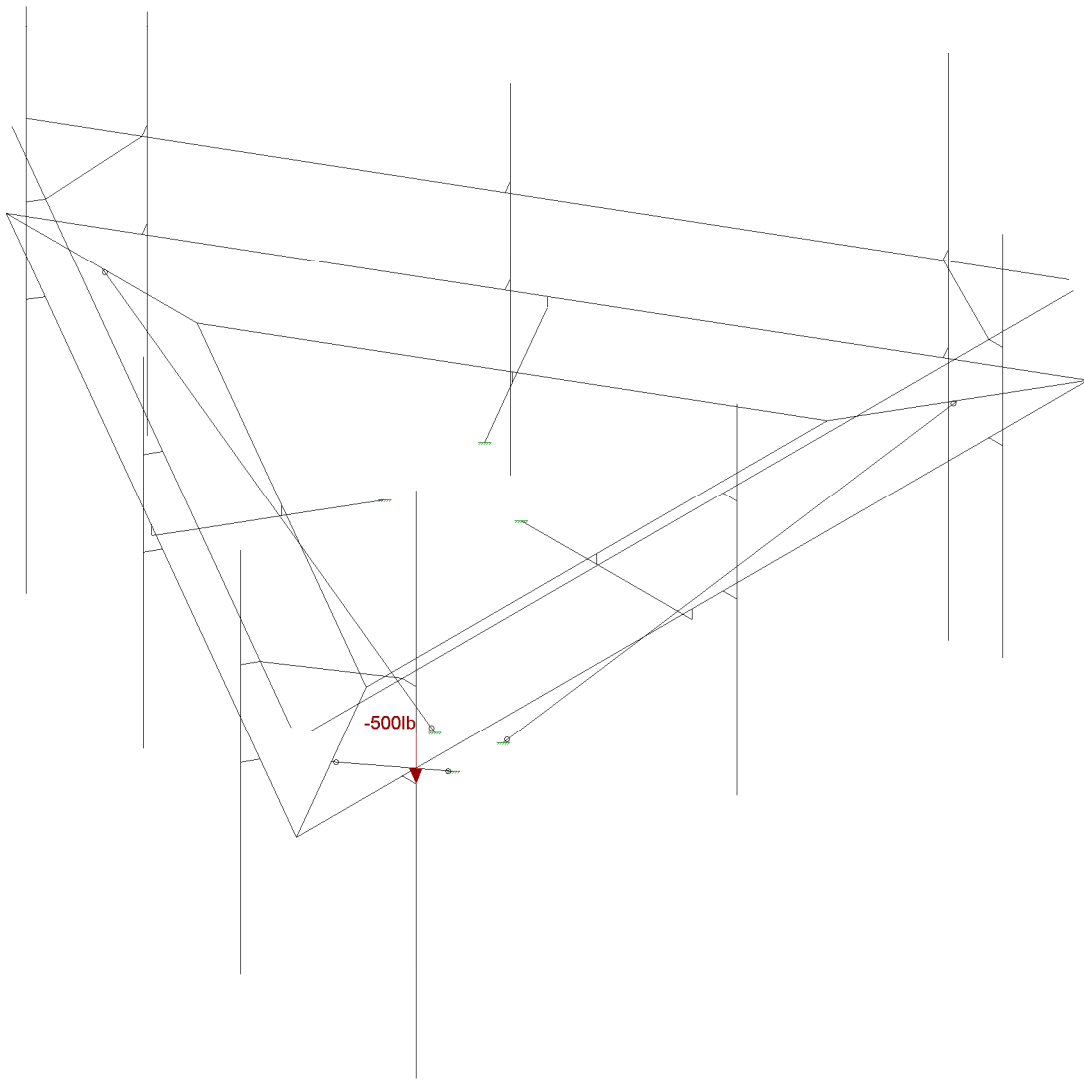
Loads: BLC 9, Service 1 Pipe
Envelope Only Solution

Maser Consulting P.A.	Antenna Mount Analysis Maintenance Load 1	SK - 14
CL		Oct 12, 2018 at 11:16 AM
18922082		Platform.R3D



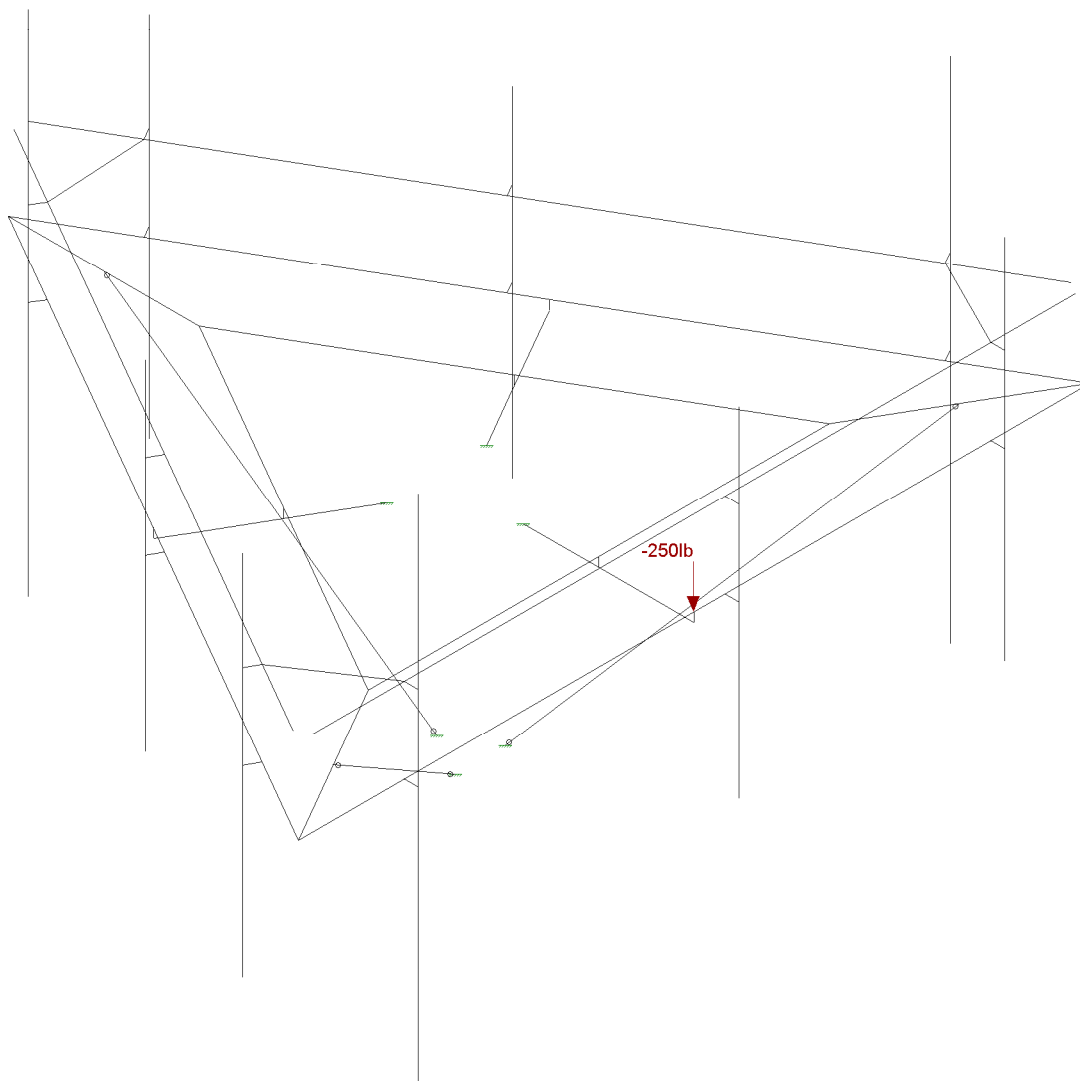
Loads: BLC 10, Service 2 Pipe
Envelope Only Solution

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18922082		Platform.R3D



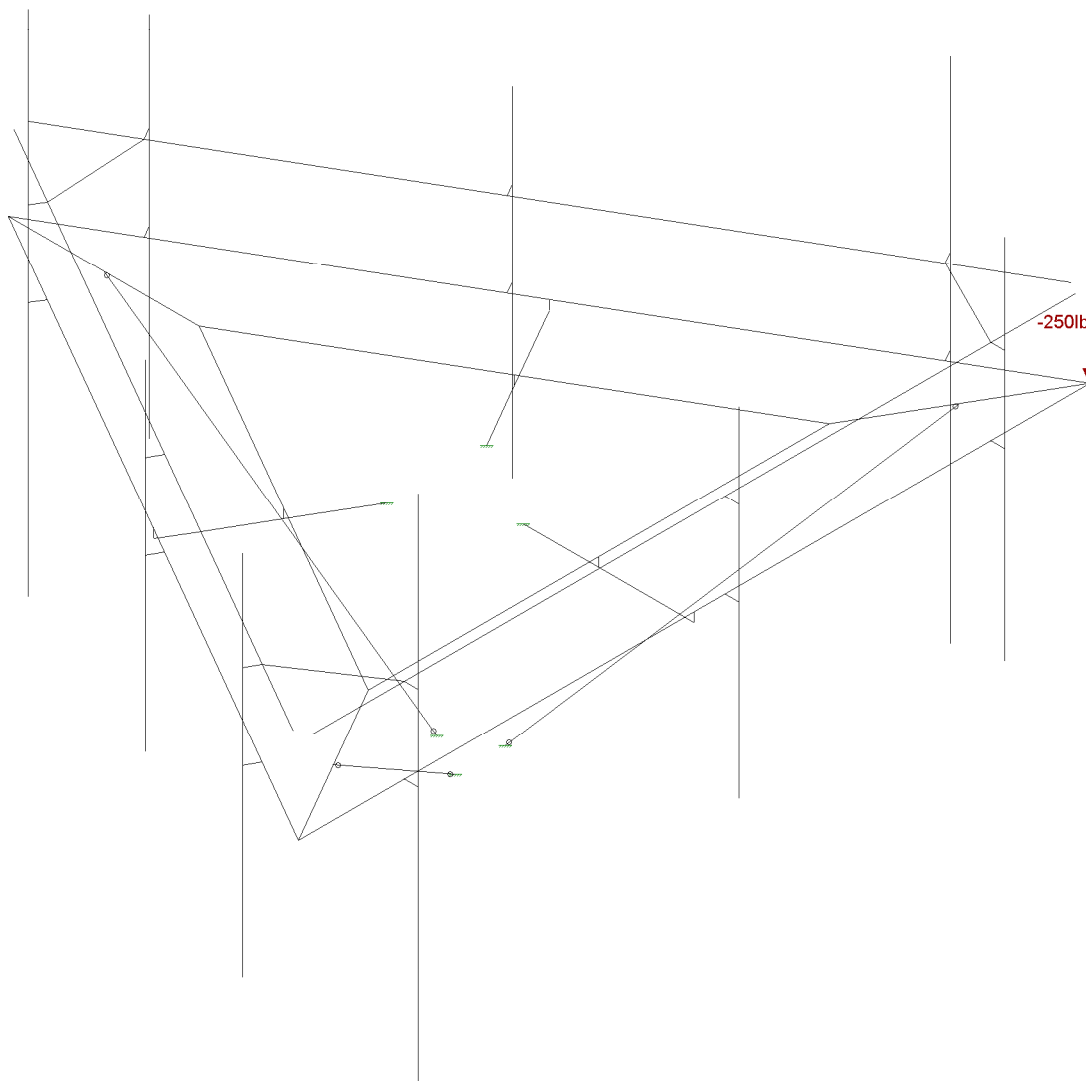
Loads: BLC 11, Service 3 Pipe
Envelope Only Solution

Maser Consulting P.A.	Antenna Mount Analysis Maintenance Load 3	SK - 16
CL		Oct 12, 2018 at 11:16 AM
18922082		Platform.R3D



Loads: BLC 13, Service 5 Middle
Envelope Only Solution

Maser Consulting P.A.	Antenna Mount Analysis Maintenance Load 4	SK - 17
CL		Oct 12, 2018 at 11:17 AM
18922082		Platform.R3D



Loads: BLC 14, Service 6 End
Envelope Only Solution

Maser Consulting P.A.	Antenna Mount Analysis Maintenance Load 5	SK - 18
CL		Oct 12, 2018 at 11:17 AM
18922082		Platform.R3D

APPENDIX B
SOFTWARE INPUT CALCULATIONS



Client:	TMobile	Computed By:	CL
Site Name:	876342	Date:	10/12/2018
Project No.	18922082A	Verified By:	PET
Title:	Antenna Mount Analysis	Page:	1

Version 2.1

LOADING SUMMARY

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	ERICSSON	Air 32 DB B2A B66Aa	Proposed	Alpha, Beta, & Gamma
3	RFS	APXVAARR24_43-U-NA20	Proposed	Alpha, Beta, & Gamma
3	ANDREW	ETW200VS12UB	Existing	Alpha, Beta, & Gamma
3	REMEC	S20070A1	Existing	Alpha, Beta, & Gamma
3	ERICSSON	RRU 4449 B71 + B12	Proposed	Alpha, Beta, & Gamma



Client:	TMobile	Computed By:	CL
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I. DESIGN INPUTS

Calculations for gravity and lateral loading on equipment and support mounts are determined as per the ANSI/TIA-222-H Code

Wind Load Inputs Parameters

		Reference	Equation
Antenna Centerline	z 116 ft		
Ultimate Wind Speed	V _u 125 mph		
Normal Wind Speed with Ice (3 sec. Gust):	V _i 50 mph	Figure B9, p. 238	
Maintenace Wind Speed:	V _s 30 mph	Section 2.8.3	
Design Ice Thickness	t _i 1.50 in	Figure B9, p. 238	
Surface Roughness:	B	Section 2.6.5.1.1	
Exposure Category:	B	Section 2.6.5.1.2	
Risk Category:	II	Table 2-1	
Rooftop Wind Speed-Up Factor	K _s 1.0	Section 2.6.7	
Ground Elevation:	90.0 ft		
Ground Elevation Factor:	K _e 0.99675	Table 2-6	
Gust Effect Factor:	G _H 1.00	Section 2.6.9	
Wind Directionality Factor:	K _d 0.95	Table 2-2	
Topographic Category:	1	Section 2.6.6.2	

Wind Load Coefficients

Importance Factors:

Iced:	I _{ice} 1	Table 2-3
-------	--------------------	-----------

Exposure Category Coefficients:

3-s Gust-Speed Power Law Exponent:	α 7.0	Table 2-4	
Nominal Height of the Atmospheric Boundary Layer:	Z _g 1200 ft	Table 2-4	
Min. Value for k _z :	K _{z,min} 1.03	Table 2-4	
Terrain Constant:	K _e 1.10	Table 2-4	
Velocity Pressure Exposure Coefficient:	K _z 1.031	Section 2.6.5.2	=2.01 · (z/Z _g) ^{2/α}

Topographic Category Coefficients:

Topographic Constant:	K _t N/A	Table 2-5	
Height Attenuation Factor:	f N/A	Table 2-5	
Height Reduction Factor:	K _h N/A	Section 2.6.6.2.1	=e ^(f·z/h)
Topographic Factor:	K _{zt} 1.00	Section 2.6.6.2	=[1+(K _c ·K _t /K _h)] ²

Ice Accumulation:

Ice Velocity Pressure Exposure Coefficient:	K _{iz} 1.13		=(z/33) ^{0.10}
Factored Ice Thickness:	t _{iz} 1.70 in	Section 2.6.10	=t _i · I · K _{iz} · (K _{zt}) ^{0.35}
Ice Density:	ρ _i 56.00 pcf		

Design Wind Pressures:

Velocity Pressure:	q _z 39.05 psf	Section 2.6.11.6	=0.00256 · K _z · K _{zt} · K _s · K _e · K _d · V ²
Velocity Pressure (With Ice):	q _{zi} 6.25 psf	Section 2.6.11.6	=0.00256 · K _z · K _{zt} · K _s · K _e · K _d · V _i ²
Velocity Pressure (Maintenance):	q _{zm} 2.25 psf	Section 2.6.11.6	=0.00256 · K _z · K _{zt} · K _s · K _e · K _d · V _m ²



Client: TMobile
 Site Name: 876342
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II. CALCULATIONS

• Wind Load on Appurtenances

Dimensions and Force Coefficients

Antenna/ Appurtenance	Non-Iced Condition								Iced Condition							
	Mounting Pipe			Equipment					Mounting Pipe			Equipment				
	Length (in)	Diameter (in)	Force Coefficient C _a	Height (in)	Width (in)	Depth (in)	Force Coefficient		Length (in)	Diameter (in)	Force Coefficient C _a	Height (in)	Width (in)	Depth (in)	Force Coefficient	
							C _a Front	C _a Side							C _a Front	C _a Side
Air 32 DB B2A B66Aa	80.0	2.375	1.200	56.60	12.90	8.70	1.28	1.38	83.4	5.8	0.965	60.00	16.30	12.10	1.25	1.31
APXVAARR24_43-U-NA20	108.0	2.375	1.200	95.90	24.00	8.70	1.27	1.53	111.4	5.8	1.073	99.30	27.40	12.10	1.25	1.44
ETW200VS12UB	0.0	0.000	0.000	6.30	7.70	3.00	1.20	1.20	0.0	0.0	0.000	9.70	11.10	6.40	1.20	1.20
S20070A1	0.0	0.000	0.000	12.30	6.40	3.00	1.20	1.27	0.0	0.0	0.000	15.70	9.80	6.40	1.20	1.20
RRU 4449 B71 + B12	0.0	0.000	0.000	14.90	13.20	9.30	1.20	1.20	0.0	0.0	0.000	18.30	16.60	12.70	1.20	1.20

Antenna/ Appurtenance	# of Brackets	Non-Iced Condition		Iced Condition			Maintenance Condition		
		Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)		Gravity (lbs.)	Wind Force (lbs.)	
		F _N	F _T		F _N	F _T		F _N	F _T
Air 32 DB B2A B66Aa	2	136.1	122.9	73.6	30.1	30.7	89.7	7.8	7.1
APXVAARR24_43-U-NA20	2	399.9	215.3	76.7	75.6	52.5	234.1	23.0	12.4
ETW200VS12UB	1	15.8	6.2	11.0	5.6	3.2	16.7	0.9	0.4
S20070A1	1	25.6	12.7	6.8	8.0	5.2	23.8	1.5	0.7
RRU 4449 B71 + B12	1	0.0	45.1	78.0	0.0	12.1	56.6	0.0	2.6

* ALL CALCULATED LOADS ARE PER MOUNTING BRACKET. TO GET THE TOTAL EQUIPMENT LOAD, MULTIPLY THE INDIVIDUAL LOADS BY THE NUMBER OF BRACKETS

• Wind Load on Framing Members

Member Category	Member Shape	Length (in)	Member Surface	Non-Iced Condition			Iced Condition				Maintenance Condition		
				Exposed Wind Height (in)	Force Coefficient C _a	Wind Load (plf)	Exposed Wind Height (in)	Depth (in)	Length (in)	Force Coefficient C _a	Wind Load (plf)	Ice Weight (plf)	Wind Load (plf)
Pipe	Pipe 2.0	80	Round	2.38	1.20	9.27	5.78	5.78	83.40	1.20	3.61	8.47	0.53
Square HSS	HSS 4x4x3/16	30	HSS	4.00	0.99	12.87	7.40	7.40	33.40	0.99	3.81	15.29	0.74
Square HSS	HSS 4.5x4.5x3/8	24	HSS	4.50	0.88	12.91	7.90	7.90	27.40	0.88	3.63	16.76	0.74
Equal Angle	L3x3	168	Square	3.00	2.00	19.53	6.40	6.40	171.40	2.00	6.67	12.35	1.12
Double Angle	2L3x3	40	Square	6.00	1.39	27.04	9.40	6.40	43.40	1.39	6.78	17.47	1.56
Grating												15.88	(psf)
Equal Angle	L2.5x2.5	84	Square	2.50	2.00	16.27	5.90	5.90	87.40	2.00	6.15	10.88	0.94
Pipe	Pipe 2.0	162	Round	2.38	1.20	9.27	5.78	5.78	165.40	1.20	3.61	8.47	0.53



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BASIC EQUATIONS

ANSI/TIA-222-H Reference

Force Coefficient:
(Square)

$$C_{f_square}(h, w) := \begin{cases} 1.2 & \text{if } \frac{h}{w} \leq 2.5 \\ \left[1.2 + \frac{0.2}{4.5} \cdot \left(\frac{h}{w} - 2.5 \right) \right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \leq 7 \\ \left[1.4 + \frac{0.6}{18} \cdot \left(\frac{h}{w} - 7 \right) \right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \leq 25 \\ 2.0 & \text{otherwise} \end{cases} \quad \text{Table 2-9}$$

Force Coefficient:
(Round)

$$C_{f_round}(h, w) := \begin{cases} 0.7 & \text{if } \frac{h}{w} \leq 2.5 \\ \left[0.7 + \frac{0.1}{4.5} \cdot \left(\frac{h}{w} - 2.5 \right) \right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \leq 7 \\ \left[0.8 + \frac{0.4}{18} \cdot \left(\frac{h}{w} - 7 \right) \right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \leq 25 \\ 1.2 & \text{otherwise} \end{cases} \quad \text{Table 2-9}$$

Terrain Exposure Constants:

Table 2-5

$$\alpha := \begin{cases} 7.0 & \text{if Exp} = \text{"B"} \\ 9.5 & \text{if Exp} = \text{"C"} \\ 11.5 & \text{if Exp} = \text{"D"} \end{cases} \quad Z_g := \begin{cases} 1200\text{ft} & \text{if Exp} = \text{"B"} \\ 900\text{ft} & \text{if Exp} = \text{"C"} \\ 700\text{ft} & \text{if Exp} = \text{"D"} \end{cases} \quad K_{zmin} := \begin{cases} 0.70 & \text{if Exp} = \text{"B"} \\ 0.85 & \text{if Exp} = \text{"C"} \\ 1.03 & \text{if Exp} = \text{"D"} \end{cases}$$



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BASIC EQUATIONS

ANSI/TIA-222-H Reference

Velocity Pressure Coefficient:

$$K_z(z) := \begin{cases} K_z \leftarrow \max \left[2.01 \cdot \left(\frac{z}{Z_g} \right)^{\frac{2}{\alpha}}, K_{zmin} \right] \\ K_z \leftarrow \min(K_z, 2.01) \end{cases}$$

Section 2.6.5.6

$$K_z := K_z(z)$$

$$K_{zt}(z) := K_{zt} \leftarrow \begin{cases} 1.0 & \text{if Topo} = "1" \\ \text{otherwise} \\ \begin{cases} K_e \leftarrow \begin{cases} 0.90 & \text{if Exp} = "B" \\ 1.00 & \text{if Exp} = "C" \\ 1.10 & \text{if Exp} = "D" \end{cases} \\ K_t \leftarrow \begin{cases} 0.43 & \text{if Topo} = "2" \\ 0.53 & \text{if Topo} = "3" \\ 0.72 & \text{if Topo} = "4" \end{cases} \\ f \leftarrow \begin{cases} 1.25 & \text{if Topo} = "2" \\ 2.00 & \text{if Topo} = "3" \\ 1.50 & \text{if Topo} = "4" \end{cases} \\ K_h \leftarrow e^{\left(\frac{f \cdot z}{CH} \right)} \\ \left(1 + \frac{K_e \cdot K_t}{K_h} \right)^2 \end{cases} \end{cases}$$

Table 2-4

$$K_{zt} := K_{zt}(z)$$

Velocity Pressure:

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot V^2 \cdot \text{psf}$$

Section 2.6.9.6



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LOAD EQUATIONS

WIND LOAD

Area (Normal):	$AN_{area} = H_{ant} \cdot Want$
Area (Side):	$AT_{area} = H_{ant} \cdot Dant$
Force Coefficient (Normal):	$C_{fn} = C_{fsquare}(H_{ant}, Want)$
Force Coefficient (Side):	$C_{fs} = C_{fsquare}(H_{ant}, Dant)$
Pipe Area (Normal):	$AN_p = \max[(L_p - H_{ant}) \cdot Dp, 0]$
Pipe Area (Side):	$AT_p = L_p \cdot Dp$
Force Coefficient (Normal):	$C_{fp} = C_{fround}(Lp, Dp)$
Normal Effective Projected Area:	$E_{pan} = (C_{fn} \cdot AN_{area}) + (C_{fp} \cdot AN_p)$
Side Effective Projected Area:	$E_{pat} = (C_{fs} \cdot AT_{area}) + (C_{fp} \cdot AT_p)$
Effective Projected Area:	$EPA = \max(E_{pan}, Epat)$
Wind Force:	$F_{ant} = q_z \cdot Gh \cdot EPA$

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2		270	Single Platform Angles	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N1	N3			Single Platform Angles	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N3	N2			Single Platform Angles	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N1	N5		180	Double Platform Angl...	Beam	Double Angle ...	A36 Gr.36	Typical
5	M5	N2	N6		180	Double Platform Angl...	Beam	Double Angle ...	A36 Gr.36	Typical
6	M6	N3	N4		180	Double Platform Angl...	Beam	Double Angle ...	A36 Gr.36	Typical
7	M7	N4	N5			Single Platform Angles	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N6	N4			Single Platform Angles	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N5	N6			Single Platform Angles	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N7	N8			RIGID	None	None	RIGID	Typical
11	M11	N9	N10			RIGID	None	None	RIGID	Typical
12	M12	N11	N12			RIGID	None	None	RIGID	Typical
13	M14	N15	N16			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
14	M15	N17	N18			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
15	M28	N74A	N43			Standoff Reinforcem...	Beam	SquareTube	A500 Gr.46	Typical
16	M29	N43	N44			Standoff Arm	Beam	SquareTube	A500 Gr.46	Typical
17	M30	N45	N46			RIGID	None	None	RIGID	Typical
18	M31	N47	N48			RIGID	None	None	RIGID	Typical
19	M32	N74A	N48			Standoff Extra	Beam	SquareTube	A500 Gr.46	Typical
20	M33	N82A	N75A			Standoff Reinforcem...	Beam	SquareTube	A500 Gr.46	Typical
21	M34	N75A	N76A			Standoff Arm	Beam	SquareTube	A500 Gr.46	Typical
22	M35	N77A	N78A			RIGID	None	None	RIGID	Typical
23	M36	N79A	N80A			RIGID	None	None	RIGID	Typical
24	M37	N82A	N80A			Standoff Extra	Beam	SquareTube	A500 Gr.46	Typical
25	M38	N90	N83A			Standoff Reinforcem...	Beam	SquareTube	A500 Gr.46	Typical
26	M39	N83A	N84A			Standoff Arm	Beam	SquareTube	A500 Gr.46	Typical
27	M40	N85A	N86			RIGID	None	None	RIGID	Typical
28	M41	N87	N88			RIGID	None	None	RIGID	Typical
29	M42	N90	N88			Standoff Extra	Beam	SquareTube	A500 Gr.46	Typical
30	M30A	N39	N40			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
31	M32A	N43A	N44A			RIGID	None	None	RIGID	Typical
32	M34A	N47A	N48A			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
33	M38A	N56	N57			RIGID	None	None	RIGID	Typical
34	M40A	N60	N61A			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
35	M45	N85B	N86B			RIGID	None	None	RIGID	Typical
36	M46A	N87A	N88A			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
37	M47A	N91A	N92A			RIGID	None	None	RIGID	Typical
38	M48A	N93A	N94A			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
39	M45B	N85	N86A			RIGID	None	None	RIGID	Typical
40	M46	N87C	N88C			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
41	M47B	N91B	N92B			RIGID	None	None	RIGID	Typical
42	M48B	N93B	N94B			Antenna Pipes 2.0	Beam	Pipe	A53 Gr. B	Typical
43	M43	N83	N86C			Kickers - Mods	Beam	Double Angle ...	A36 Gr.36	Typical
44	M44	N84	N88B			Kickers - Mods	Beam	Double Angle ...	A36 Gr.36	Typical
45	M45A	N85C	N90C			Kickers - Mods	Beam	Double Angle ...	A36 Gr.36	Typical
46	M46B	N89B	N90D		270	Handrail	Beam	Pipe	A53 Gr. B	Typical
47	M47	N91	N92			RIGID	None	None	RIGID	Typical
48	M48	N93	N94			RIGID	None	None	RIGID	Typical
49	M49	N95B	N96B			RIGID	None	None	RIGID	Typical
50	M50	N97	N98		270	Handrail	Beam	Pipe	A53 Gr. B	Typical
51	M51	N99	N100			RIGID	None	None	RIGID	Typical
52	M52	N101	N102			RIGID	None	None	RIGID	Typical
53	M53	N103	N104			RIGID	None	None	RIGID	Typical
54	M54	N105	N106		270	Handrail	Beam	Pipe	A53 Gr. B	Typical
55	M55	N107	N108			RIGID	None	None	RIGID	Typical
56	M56	N109	N110			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M57	N111	N112			RIGID	None	None	RIGID	Typical
58	M58	N91	N111			RIGID	None	None	RIGID	Typical
59	M59	N107	N103			RIGID	None	None	RIGID	Typical
60	M60	N99	N95B			RIGID	None	None	RIGID	Typical

Joint Loads and Enforced Displacements (BLC 1 : Dead)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	Y	-76.7
2	N68	L	Y	-76.7
3	N71	L	Y	-73.6
4	N74	L	Y	-73.6
5	N89	L	Y	-76.7
6	N90A	L	Y	-76.7
7	N95A	L	Y	-73.6
8	N96	L	Y	-73.6
9	N89A	L	Y	-73.6
10	N90B	L	Y	-73.6
11	N95	L	Y	-76.7
12	N96A	L	Y	-76.7
13	N77	L	Y	-78
14	N78	L	Y	-78
15	N79	L	Y	-78
16	N80	L	Y	-17.8
17	N81	L	Y	-17.8
18	N82	L	Y	-17.8

Joint Loads and Enforced Displacements (BLC 2 : Wx)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	X	399.796
2	N68	L	X	399.796
3	N71	L	X	136.144
4	N74	L	X	136.144
5	N89	L	X	215.189
6	N90A	L	X	215.189
7	N95A	L	X	122.936
8	N96	L	X	122.936
9	N89A	L	X	122.936
10	N90B	L	X	122.936
11	N95	L	X	215.189
12	N96A	L	X	215.189
13	N78	L	X	45.11
14	N79	L	X	45.11
15	N81	L	X	25.603
16	N82	L	X	25.603

Joint Loads and Enforced Displacements (BLC 3 : Wz)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	Z	215.189
2	N68	L	Z	215.189
3	N71	L	Z	122.936
4	N74	L	Z	122.936
5	N89	L	Z	399.796
6	N90A	L	Z	399.796
7	N95A	L	Z	136.144

Joint Loads and Enforced Displacements (BLC 3 : Wz) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
8	N96	L	Z	136.144
9	N89A	L	Z	136.144
10	N90B	L	Z	136.144
11	N95	L	Z	399.796
12	N96A	L	Z	399.796
13	N77	L	Z	45.11
14	N80	L	Z	25.603

Joint Loads and Enforced Displacements (BLC 4 : Ice Wx)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	X	76.81
2	N68	L	X	76.81
3	N71	L	X	30.582
4	N74	L	X	30.582
5	N89	L	X	53.34
6	N90A	L	X	53.34
7	N95A	L	X	31.191
8	N96	L	X	31.191
9	N89A	L	X	31.191
10	N90B	L	X	31.191
11	N95	L	X	53.34
12	N96A	L	X	53.34
13	N78	L	X	12.294
14	N79	L	X	12.294
15	N81	L	X	8.128
16	N82	L	X	8.128

Joint Loads and Enforced Displacements (BLC 5 : Ice Wz)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	Z	53.34
2	N68	L	Z	53.34
3	N71	L	Z	31.191
4	N74	L	Z	31.191
5	N89	L	Z	76.81
6	N90A	L	Z	76.81
7	N95A	L	Z	30.582
8	N96	L	Z	30.582
9	N89A	L	Z	30.582
10	N90B	L	Z	30.582
11	N95	L	Z	76.81
12	N96A	L	Z	76.81
13	N77	L	Z	12.294
14	N80	L	Z	8.128

Joint Loads and Enforced Displacements (BLC 6 : Ice weight)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	Y	-234.1
2	N68	L	Y	-234.1
3	N71	L	Y	-89.7
4	N74	L	Y	-89.7
5	N89	L	Y	-234.1
6	N90A	L	Y	-234.1
7	N95A	L	Y	-89.7
8	N96	L	Y	-89.7
9	N89A	L	Y	-89.7

Joint Loads and Enforced Displacements (BLC 6 : Ice weight) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
10	N90B	L	Y	-89.7
11	N95	L	Y	-234.1
12	N96A	L	Y	-234.1
13	N77	L	Y	-56.6
14	N78	L	Y	-56.6
15	N79	L	Y	-56.6
16	N80	L	Y	-40.5
17	N81	L	Y	-40.5
18	N82	L	Y	-40.5

Joint Loads and Enforced Displacements (BLC 7 : Service X)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	X	23.368
2	N68	L	X	23.368
3	N71	L	X	7.925
4	N74	L	X	7.925
5	N89	L	X	12.598
6	N90A	L	X	12.598
7	N95A	L	X	7.214
8	N96	L	X	7.214
9	N89A	L	X	7.214
10	N90B	L	X	7.214
11	N95	L	X	12.598
12	N96A	L	X	12.598
13	N78	L	X	2.642
14	N79	L	X	2.642
15	N81	L	X	1.524
16	N82	L	X	1.524

Joint Loads and Enforced Displacements (BLC 8 : Service Z)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N65A	L	Z	12.598
2	N68	L	Z	12.598
3	N71	L	Z	7.214
4	N74	L	Z	7.214
5	N89	L	Z	23.368
6	N90A	L	Z	23.368
7	N95A	L	Z	7.925
8	N96	L	Z	7.925
9	N89A	L	Z	7.925
10	N90B	L	Z	7.925
11	N95	L	Z	23.368
12	N96A	L	Z	23.368
13	N77	L	Z	2.642
14	N80	L	Z	1.524

Joint Loads and Enforced Displacements (BLC 9 : Service 1 Pipe)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N12	L	Y	-500

Joint Loads and Enforced Displacements (BLC 10 : Service 2 Pipe)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N10	L	Y	-500



Joint Loads and Enforced Displacements (BLC 11 : Service 3 Pipe)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N8	L	Y	-500

Joint Loads and Enforced Displacements (BLC 13 : Service 5 Middle)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N47	L	Y	-250

Joint Loads and Enforced Displacements (BLC 14 : Service 6 End)

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/in, lb*s^2*in)]
1	N2	L	Y	-250

Member Point Loads

Member Label	Direction	Magnitude[lb.k-ft]	Location[in,%]
No Data to Print ...			

Member Distributed Loads (BLC 2 : Wx)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..End Location[in...
1	M1	PX	19.517	19.517	0 0
2	M2	PX	19.517	19.517	0 0
3	M3	PX	19.517	19.517	0 0
4	M28	PX	12.903	12.903	0 0
5	M33	PX	12.903	12.903	0 0
6	M38	PX	12.903	12.903	0 0
7	M29	PX	12.873	12.873	0 0
8	M32	PX	12.873	12.873	0 0
9	M34	PX	12.873	12.873	0 0
10	M37	PX	12.873	12.873	0 0
11	M39	PX	12.873	12.873	0 0
12	M42	PX	12.873	12.873	0 0
13	M14	PX	9.276	9.276	0 0
14	M34A	PX	9.276	9.276	0 0
15	M40A	PX	9.276	9.276	0 0
16	M43	PX	16.27	16.27	0 0
17	M45A	PX	16.27	16.27	0 0
18	M44	PX	16.27	16.27	0 0
19	M54	PX	9.27	9.27	0 0
20	M46B	PX	9.27	9.27	0 0
21	M50	PX	9.27	9.27	0 0

Member Distributed Loads (BLC 3 : Wz)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..End Location[in...
1	M1	PZ	19.517	19.517	0 0
2	M2	PZ	19.517	19.517	0 0
3	M3	PZ	19.517	19.517	0 0
4	M28	PZ	12.903	12.903	0 0
5	M33	PZ	12.903	12.903	0 0
6	M38	PZ	12.903	12.903	0 0
7	M29	PZ	12.873	12.873	0 0
8	M32	PZ	12.873	12.873	0 0
9	M34	PZ	12.873	12.873	0 0
10	M37	PZ	12.873	12.873	0 0
11	M39	PZ	12.873	12.873	0 0
12	M42	PZ	12.873	12.873	0 0

Member Distributed Loads (BLC 3 : Wz) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..	End Location[in...
13	M14	PZ	9.276	9.276	0	0
14	M34A	PZ	9.276	9.276	0	0
15	M40A	PZ	9.276	9.276	0	0
16	M54	PZ	9.27	9.27	0	0
17	M50	PZ	9.27	9.27	0	0
18	M43	PZ	16.27	16.27	0	0
19	M45A	PZ	16.27	16.27	0	0
20	M44	PZ	16.27	16.27	0	0

Member Distributed Loads (BLC 4 : Ice Wx)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..	End Location[in...
1	M1	PX	6.777	6.777	0	0
2	M2	PX	6.777	6.777	0	0
3	M3	PX	6.777	6.777	0	0
4	M28	PX	3.688	3.688	0	0
5	M33	PX	3.688	3.688	0	0
6	M38	PX	3.688	3.688	0	0
7	M29	PX	3.871	3.871	0	0
8	M32	PX	3.871	3.871	0	0
9	M34	PX	3.871	3.871	0	0
10	M37	PX	3.871	3.871	0	0
11	M39	PX	3.871	3.871	0	0
12	M42	PX	3.871	3.871	0	0
13	M14	PX	3.668	3.668	0	0
14	M34A	PX	3.668	3.668	0	0
15	M40A	PX	3.668	3.668	0	0
16	M43	PX	6.15	6.15	0	0
17	M45A	PX	6.15	6.15	0	0
18	M44	PX	6.15	6.15	0	0
19	M54	PX	3.61	3.61	0	0
20	M46B	PX	3.61	3.61	0	0
21	M50	PX	3.61	3.61	0	0

Member Distributed Loads (BLC 5 : Ice Wz)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..	End Location[in...
1	M1	PZ	6.777	6.777	0	0
2	M2	PZ	6.777	6.777	0	0
3	M3	PZ	6.777	6.777	0	0
4	M28	PZ	3.688	3.688	0	0
5	M33	PZ	3.688	3.688	0	0
6	M38	PZ	3.688	3.688	0	0
7	M29	PZ	3.871	3.871	0	0
8	M32	PZ	3.871	3.871	0	0
9	M34	PZ	3.871	3.871	0	0
10	M37	PZ	3.871	3.871	0	0
11	M39	PZ	3.871	3.871	0	0
12	M42	PZ	3.871	3.871	0	0
13	M14	PZ	3.668	3.668	0	0
14	M34A	PZ	3.668	3.668	0	0
15	M40A	PZ	3.668	3.668	0	0
16	M54	PZ	3.61	3.61	0	0
17	M50	PZ	3.61	3.61	0	0
18	M43	PZ	6.15	6.15	0	0
19	M45A	PZ	6.15	6.15	0	0
20	M44	PZ	6.15	6.15	0	0



Member Distributed Loads (BLC 6 : Ice weight)

	Member Label	Direction	Start Magnitude[lb/ft.F]	End Magnitude[lb/ft.F]	Start Location[in..	End Location[in....
1	M29	Y	-15.29	-15.29	0	0
2	M34	Y	-15.29	-15.29	0	0
3	M39	Y	-15.29	-15.29	0	0
4	M14	Y	-8.47	-8.47	0	0
5	M15	Y	-8.47	-8.47	0	0
6	M34A	Y	-8.47	-8.47	0	0
7	M40A	Y	-8.47	-8.47	0	0
8	M48A	Y	-8.47	-8.47	0	0
9	M46	Y	-8.47	-8.47	0	0
10	M30A	Y	-8.47	-8.47	0	0
11	M46A	Y	-8.47	-8.47	0	0
12	M48B	Y	-8.47	-8.47	0	0
13	M43	Y	-10.88	-10.88	0	0
14	M45A	Y	-10.88	-10.88	0	0
15	M44	Y	-10.88	-10.88	0	0
16	M46B	Y	-8.47	-8.47	0	0
17	M54	Y	-8.47	-8.47	0	0
18	M50	Y	-8.47	-8.47	0	0

Member Distributed Loads (BLC 7 : Service X)

	Member Label	Direction	Start Magnitude[lb/ft.F]	End Magnitude[lb/ft.F]	Start Location[in..	End Location[in....
1	M1	PX	1.138	1.138	0	0
2	M2	PX	1.138	1.138	0	0
3	M3	PX	1.138	1.138	0	0
4	M28	PX	.752	.752	0	0
5	M33	PX	.752	.752	0	0
6	M38	PX	.752	.752	0	0
7	M29	PX	.752	.752	0	0
8	M32	PX	.752	.752	0	0
9	M34	PX	.752	.752	0	0
10	M37	PX	.752	.752	0	0
11	M39	PX	.752	.752	0	0
12	M42	PX	.752	.752	0	0
13	M14	PX	.538	.538	0	0
14	M34A	PX	.538	.538	0	0
15	M40A	PX	.538	.538	0	0
16	M43	PX	.94	.94	0	0
17	M45A	PX	.94	.94	0	0
18	M44	PX	.94	.94	0	0
19	M54	PX	.53	.53	0	0
20	M50	PX	.53	.53	0	0
21	M46B	PX	.53	.53	0	0

Member Distributed Loads (BLC 8 : Service Z)

	Member Label	Direction	Start Magnitude[lb/ft.F]	End Magnitude[lb/ft.F]	Start Location[in..	End Location[in....
1	M1	PZ	1.138	1.138	0	0
2	M2	PZ	1.138	1.138	0	0
3	M3	PZ	1.138	1.138	0	0
4	M28	PZ	.752	.752	0	0
5	M33	PZ	.752	.752	0	0
6	M38	PZ	.752	.752	0	0
7	M29	PZ	.752	.752	0	0
8	M32	PZ	.752	.752	0	0
9	M34	PZ	.752	.752	0	0
10	M37	PZ	.752	.752	0	0
11	M39	PZ	.752	.752	0	0



Member Distributed Loads (BLC 8 : Service Z) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft.F]	End Magnitude[lb/ft.F]	Start Location[in..	End Location[in...
12	M42	PZ	.752	.752	0	0
13	M14	PZ	.538	.538	0	0
14	M34A	PZ	.538	.538	0	0
15	M40A	PZ	.538	.538	0	0
16	M54	PZ	.53	.53	0	0
17	M50	PZ	.53	.53	0	0
18	M43	PZ	.94	.94	0	0
19	M45A	PZ	.94	.94	0	0
20	M44	PZ	.94	.94	0	0

Member Distributed Loads (BLC 15 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft.F]	End Magnitude[lb/ft.F]	Start Location[in..	End Location[in...
1	M2	Y	-.547	-5.579	0	24
2	M2	Y	-5.579	-8.502	24	48
3	M2	Y	-8.502	-8.608	48	72
4	M2	Y	-8.608	-8.559	72	96
5	M2	Y	-8.559	-8.11	96	120
6	M2	Y	-8.11	-5.228	120	144
7	M2	Y	-5.228	-.87	144	168
8	M4	Y	-.699	-3.956	0	8.1
9	M4	Y	-3.956	-6.629	8.1	16.2
10	M4	Y	-6.629	-10.617	16.2	24.3
11	M4	Y	-10.617	-14.568	24.3	32.4
12	M4	Y	-14.568	-16.581	32.4	40.5
13	M6	Y	-.799	-4.064	0	8.1
14	M6	Y	-4.064	-6.769	8.1	16.2
15	M6	Y	-6.769	-10.63	16.2	24.3
16	M6	Y	-10.63	-13.391	24.3	32.4
17	M6	Y	-13.391	-13.338	32.4	40.5
18	M7	Y	-8.328	-8.659	0	19.57
19	M7	Y	-8.659	-8.429	19.57	39.141
20	M7	Y	-8.429	-8.544	39.141	58.711
21	M7	Y	-8.544	-8.195	58.711	78.282
22	M7	Y	-8.195	-6.478	78.282	97.852
23	M3	Y	-.87	-5.228	0	24
24	M3	Y	-5.228	-8.11	24	48
25	M3	Y	-8.11	-8.559	48	72
26	M3	Y	-8.559	-8.608	72	96
27	M3	Y	-8.608	-8.502	96	120
28	M3	Y	-8.502	-5.579	120	144
29	M3	Y	-5.579	-.547	144	168
30	M5	Y	-.751	-4.011	0	8.1
31	M5	Y	-4.011	-6.691	8.1	16.2
32	M5	Y	-6.691	-10.621	16.2	24.3
33	M5	Y	-10.621	-13.978	24.3	32.4
34	M5	Y	-13.978	-14.934	32.4	40.5
35	M8	Y	-6.478	-8.195	0	19.57
36	M8	Y	-8.195	-8.544	19.57	39.141
37	M8	Y	-8.544	-8.429	39.141	58.711
38	M8	Y	-8.429	-8.659	58.711	78.282
39	M8	Y	-8.659	-8.328	78.282	97.852
40	M1	Y	-.598	-5.54	0	24
41	M1	Y	-5.54	-8.216	24	48
42	M1	Y	-8.216	-8.483	48	72
43	M1	Y	-8.483	-8.676	72	96
44	M1	Y	-8.676	-8.281	96	120



Member Distributed Loads (BLC 15 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..	End Location[in...
45	M1	Y	-8.281	-5.408	120	144
46	M1	Y	-5.408	-7.16	144	168
47	M9	Y	-6.464	-8.21	0	19.57
48	M9	Y	-8.21	-8.519	19.57	39.141
49	M9	Y	-8.519	-8.148	39.141	58.711
50	M9	Y	-8.148	-8.577	58.711	78.282
51	M9	Y	-8.577	-9.049	78.282	97.852

Member Distributed Loads (BLC 16 : BLC 6 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..	End Location[in...
1	M2	Y	-1.137	-8.589	0	24
2	M2	Y	-8.589	-13.15	24	48
3	M2	Y	-13.15	-13.777	48	72
4	M2	Y	-13.777	-13.471	72	96
5	M2	Y	-13.471	-13.047	96	120
6	M2	Y	-13.047	-8.797	120	144
7	M2	Y	-8.797	-.949	144	168
8	M4	Y	-1.183	-6.36	0	8.1
9	M4	Y	-6.36	-10.626	8.1	16.2
10	M4	Y	-10.626	-16.859	16.2	24.3
11	M4	Y	-16.859	-22.269	24.3	32.4
12	M4	Y	-22.269	-23.977	32.4	40.5
13	M6	Y	-1.183	-6.36	0	8.1
14	M6	Y	-6.36	-10.626	8.1	16.2
15	M6	Y	-10.626	-16.859	16.2	24.3
16	M6	Y	-16.859	-22.269	24.3	32.4
17	M6	Y	-22.269	-23.977	32.4	40.5
18	M7	Y	-10.265	-13.037	0	19.57
19	M7	Y	-13.037	-13.528	19.57	39.141
20	M7	Y	-13.528	-12.939	39.141	58.711
21	M7	Y	-12.939	-13.619	58.711	78.282
22	M7	Y	-13.619	-14.37	78.282	97.852
23	M3	Y	-1.137	-8.589	0	24
24	M3	Y	-8.589	-13.15	24	48
25	M3	Y	-13.15	-13.777	48	72
26	M3	Y	-13.777	-13.471	72	96
27	M3	Y	-13.471	-13.047	96	120
28	M3	Y	-13.047	-8.797	120	144
29	M3	Y	-8.797	-.949	144	168
30	M5	Y	-1.183	-6.36	0	8.1
31	M5	Y	-6.36	-10.626	8.1	16.2
32	M5	Y	-10.626	-16.859	16.2	24.3
33	M5	Y	-16.859	-22.269	24.3	32.4
34	M5	Y	-22.269	-23.977	32.4	40.5
35	M8	Y	-10.265	-13.037	0	19.57
36	M8	Y	-13.037	-13.528	19.57	39.141
37	M8	Y	-13.528	-12.939	39.141	58.711
38	M8	Y	-12.939	-13.619	58.711	78.282
39	M8	Y	-13.619	-14.37	78.282	97.852
40	M1	Y	-.949	-8.797	0	24
41	M1	Y	-8.797	-13.047	24	48
42	M1	Y	-13.047	-13.471	48	72
43	M1	Y	-13.471	-13.777	72	96
44	M1	Y	-13.777	-13.15	96	120
45	M1	Y	-13.15	-8.589	120	144
46	M1	Y	-8.589	-1.137	144	168



Member Distributed Loads (BLC 16 : BLC 6 Transient Area Loads) (Continued)

Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[in..	End Location[in...
47	M9	Y	-10.265	-13.037	0 19.57
48	M9	Y	-13.037	-13.528	19.57 39.141
49	M9	Y	-13.528	-12.939	39.141 58.711
50	M9	Y	-12.939	-13.619	58.711 78.282
51	M9	Y	-13.619	-14.37	78.282 97.852

Basic Load Cases

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
1 Dead	DL		-1.05		18			5	
2 Wx	WL				16		21		
3 Wz	WL				14		20		
4 Ice Wx	WL				16		21		
5 Ice Wz	WL				14		20		
6 Ice weight	DL				18		18	3	
7 Service X	WL				16		21		
8 Service Z	WL				14		20		
9 Service 1 Pipe	OL1				1				
10 Service 2 Pipe	OL1				1				
11 Service 3 Pipe	OL1				1				
12 Service 4 Pipe	OL1								
13 Service 5 Middle	OL1				1				
14 Service 6 End	OL1				1				
15 BLC 1 Transient Area Lo...	None						51		
16 BLC 6 Transient Area Lo...	None						51		

Load Combinations

Description	Solve	PDelta	S...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
1 1.4D	Yes	Y		1	1.4															
2 1.2D+1.0W1	Yes	Y		1	1.2	2	1	3												
3 1.2D+1.0W2	Yes	Y		1	1.2	2	.866	3	.5											
4 1.2D+1.0W3	Yes	Y		1	1.2	2	.5	3	.866											
5 1.2D+1.0W4	Yes	Y		1	1.2	2		3	1											
6 1.2D+1.0W5	Yes	Y		1	1.2	2	-.5	3	.866											
7 1.2D+1.0W6	Yes	Y		1	1.2	2	-.866	3	.5											
8 1.2D+1.0W7	Yes	Y		1	1.2	2	-1	3												
9 1.2D+1.0W8	Yes	Y		1	1.2	2	-.866	3	-.5											
10 1.2D+1.0W9	Yes	Y		1	1.2	2	-.5	3	-.866											
11 1.2D+1.0W10	Yes	Y		1	1.2	2		3	-1											
12 1.2D+1.0W11	Yes	Y		1	1.2	2	.5	3	-.866											
13 1.2D+1.0W12	Yes	Y		1	1.2	2	.866	3	-.5											
14 1.2D+1.0 Ice	Yes	Y		1	1.2	6	1													
15 1.2D+1.0ICE+1.0W1ICE	Yes	Y		1	1.2	6	1	4	1	5										
16 1.2D+1.0ICE+1.0W2ICE	Yes	Y		1	1.2	6	1	4	.866	5	.5									
17 1.2D+1.0ICE+1.0W3ICE	Yes	Y		1	1.2	6	1	4	.5	5	.866									
18 1.2D+1.0ICE+1.0W4ICE	Yes	Y		1	1.2	6	1	4		5	1									
19 1.2D+1.0ICE+1.0W5ICE	Yes	Y		1	1.2	6	1	4	-.5	5	.866									
20 1.2D+1.0ICE+1.0W6ICE	Yes	Y		1	1.2	6	1	4	-.866	5	.5									
21 1.2D+1.0ICE+1.0W7ICE	Yes	Y		1	1.2	6	1	4	-1	5										
22 1.2D+1.0ICE+1.0W8ICE	Yes	Y		1	1.2	6	1	4	-.866	5	-.5									
23 1.2D+1.0ICE+1.0W9ICE	Yes	Y		1	1.2	6	1	4	-.5	5	-.866									
24 1.2D+1.0ICE+1.0W10ICE	Yes	Y		1	1.2	6	1	4		5	-1									
25 1.2D+1.0ICE+1.0W11ICE	Yes	Y		1	1.2	6	1	4	.5	5	-.866									
26 1.2D+1.0ICE+1.0W12ICE	Yes	Y		1	1.2	6	1	4	.866	5	-.5									
27 1.2D+1.5LM1+1.0W1SER	Yes	Y		1	1.2	9	1.5	7	1	8										



Load Combinations (Continued)

	Description	Solve	PDelta	S...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	
28	1.2D+1.5LM1+1.0W2SER	Yes	Y		1	1.2	9	1.5	7	.866	8	.5										
29	1.2D+1.5LM1+1.0W3SER	Yes	Y		1	1.2	9	1.5	7	.5	8	.866										
30	1.2D+1.5LM1+1.0W4SER	Yes	Y		1	1.2	9	1.5	7		8	1										
31	1.2D+1.5LM1+1.0W5SER	Yes	Y		1	1.2	9	1.5	7	-.5	8	.866										
32	1.2D+1.5LM1+1.0W6SER	Yes	Y		1	1.2	9	1.5	7	-.866	8	.5										
33	1.2D+1.5LM1+1.0W7SER	Yes	Y		1	1.2	9	1.5	7	-1	8											
34	1.2D+1.5LM1+1.0W8SER	Yes	Y		1	1.2	9	1.5	7	-.866	8	-.5										
35	1.2D+1.5LM1+1.0W9SER	Yes	Y		1	1.2	9	1.5	7	-.5	8	-.866										
36	1.2D+1.5LM1+1.0W10SER	Yes	Y		1	1.2	9	1.5	7		8	-1										
37	1.2D+1.5LM1+1.0W11SER	Yes	Y		1	1.2	9	1.5	7	.5	8	-.866										
38	1.2D+1.5LM1+1.0W12SER	Yes	Y		1	1.2	9	1.5	7	.866	8	-.5										
39																						
40	1.2D+1.5LM2+1.0W1SER	Yes	Y		1	1.2	10	1.5	7	1	8											
41	1.2D+1.5LM2+1.0W2SER	Yes	Y		1	1.2	10	1.5	7	.866	8	.5										
42	1.2D+1.5LM2+1.0W3SER	Yes	Y		1	1.2	10	1.5	7	.5	8	.866										
43	1.2D+1.5LM2+1.0W4SER	Yes	Y		1	1.2	10	1.5	7		8	1										
44	1.2D+1.5LM2+1.0W5SER	Yes	Y		1	1.2	10	1.5	7	-.5	8	.866										
45	1.2D+1.5LM2+1.0W6SER	Yes	Y		1	1.2	10	1.5	7	-.866	8	.5										
46	1.2D+1.5LM2+1.0W7SER	Yes	Y		1	1.2	10	1.5	7	-1	8											
47	1.2D+1.5LM2+1.0W8SER	Yes	Y		1	1.2	10	1.5	7	-.866	8	-.5										
48	1.2D+1.5LM2+1.0W9SER	Yes	Y		1	1.2	10	1.5	7	-.5	8	-.866										
49	1.2D+1.5LM2+1.0W10SER	Yes	Y		1	1.2	10	1.5	7		8	-1										
50	1.2D+1.5LM2+1.0W11SER	Yes	Y		1	1.2	10	1.5	7	.5	8	-.866										
51	1.2D+1.5LM2+1.0W12SER	Yes	Y		1	1.2	10	1.5	7	.866	8	-.5										
52																						
53	1.2D+1.5LV1	Yes	Y		1	1.2	13	1.5														
54	1.2D+1.5LV2	Yes	Y		1	1.2	14	1.5														
55			Y																			
56	1.2D+1.5LM3+1.0W1SER	Yes	Y		1	1.2	11	1.5	7	1	8											
57	1.2D+1.5LM3+1.0W2SER	Yes	Y		1	1.2	11	1.5	7	.866	8	.5										
58	1.2D+1.5LM3+1.0W3SER	Yes	Y		1	1.2	11	1.5	7	.5	8	.866										
59	1.2D+1.5LM3+1.0W4SER	Yes	Y		1	1.2	11	1.5	7		8	1										
60	1.2D+1.5LM3+1.0W5SER	Yes	Y		1	1.2	11	1.5	7	-.5	8	.866										
61	1.2D+1.5LM3+1.0W6SER	Yes	Y		1	1.2	11	1.5	7	-.866	8	.5										
62	1.2D+1.5LM3+1.0W7SER	Yes	Y		1	1.2	11	1.5	7	-1	8											
63	1.2D+1.5LM3+1.0W8SER	Yes	Y		1	1.2	11	1.5	7	-.866	8	-.5										
64	1.2D+1.5LM3+1.0W9SER	Yes	Y		1	1.2	11	1.5	7	-.5	8	-.866										
65	1.2D+1.5LM3+1.0W10SER	Yes	Y		1	1.2	11	1.5	7		8	-1										
66	1.2D+1.5LM3+1.0W11SER	Yes	Y		1	1.2	11	1.5	7	.5	8	-.866										
67	1.2D+1.5LM3+1.0W12SER	Yes	Y		1	1.2	11	1.5	7	.866	8	-.5										
68			Y																			
69	1.2D+1.5LM4+1.0W1SER	Yes	Y		1	1.2	12	1.5	7	1	8											
70	1.2D+1.5LM4+1.0W2SER	Yes	Y		1	1.2	12	1.5	7	.866	8	.5										
71	1.2D+1.5LM4+1.0W3SER	Yes	Y		1	1.2	12	1.5	7	.5	8	.866										
72	1.2D+1.5LM4+1.0W4SER	Yes	Y		1	1.2	12	1.5	7		8	1										
73	1.2D+1.5LM4+1.0W5SER	Yes	Y		1	1.2	12	1.5	7	-.5	8	.866										
74	1.2D+1.5LM4+1.0W6SER	Yes	Y		1	1.2	12	1.5	7	-.866	8	.5										
75	1.2D+1.5LM4+1.0W7SER	Yes	Y		1	1.2	12	1.5	7	-1	8											
76	1.2D+1.5LM4+1.0W8SER	Yes	Y		1	1.2	12	1.5	7	-.866	8	-.5										
77	1.2D+1.5LM4+1.0W9SER	Yes	Y		1	1.2	12	1.5	7	-.5	8	-.866										
78	1.2D+1.5LM4+1.0W10SER	Yes	Y		1	1.2	12	1.5	7		8	-1										
79	1.2D+1.5LM4+1.0W11SER	Yes	Y		1	1.2	12	1.5	7	.5	8	-.866										
80	1.2D+1.5LM4+1.0W12SER	Yes	Y		1	1.2	12	1.5	7	.866	8	-.5										

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]		MY [k-ft]		MZ [k-ft]		
1	N44	max	523.363	8	852.107	42	1935.867	11	.395	11	1.249	5	2.538	41
2		min	-375.784	2	229.347	10	-1929.027	5	-.408	5	-1.246		.548	9
3	N76A	max	1848.334	7	573.906	25	1207.426	12	1.518	25	1.893		-.101	2
4		min	-1917.092	13	194.676	5	-1337.89	6	.238	6	-1.891	6	-.865	21
5	N84A	max	2133.909	9	572.138	21	1436.731	10	-.486	11	2.313	9	.103	3
6		min	-2212.952	3	215.72	2	-1311.137	4	-1.437	18	-2.311	3	-.953	22
7	N86C	max	1394.694	19	2043.641	16	2414.339	15	.042	2	.122	8	.073	2
8		min	544.034	12	765.127	9	911.284	8	-.043	8	-.12	2	-.075	8
9	N88B	max	1401.703	22	2038.378	25	-981.512	6	.028	9	.081	3	.05	3
10		min	517.436	3	802.234	5	-2400.663	26	-.029	3	-.079	9	-.048	9
11	N90C	max	-1056.065	12	2045.593	20	82.377	11	-.112	11	.158		0	1
12		min	-2784.492	20	756.886	13	-81.395	5	-.11	5	-.156	5	0	1
13	Totals:	max	3878.962	8	7716.387	20	4108.885	11						
14		min	-3878.961	2	3417.371	13	-4108.887	5						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

Mem..	Shape	Code Check	Loc...	LC	Shear	Loc...	Dir	LC	phi...	phi...	phi*Mn y-y [k-ft]	phi*Mn.....	Eqn	
1	M1	L3x3...	.792	0	3	.136	0	y	8	39...	46...	1.688	3.197	..H...
2	M46A	PIP...	.787	54	5	.133	54		12	12...	32...	1.872	1.872	..H...
3	M3	L3x3...	.769	168	11	.118	168	z	4	39...	46...	1.688	3.206	..H...
4	M48B	PIP...	.767	54	5	.174	54		5	12...	32...	1.872	1.872	..H...
5	M30A	PIP...	.764	54	2	.165	54		8	12...	32...	1.872	1.872	..H...
6	M2	L3x3...	.710	168	6	.125	168	z	11	39...	46...	1.688	3.13	..H...
7	M4	LL3x...	.549	0	15	.065	20.25	y	26	80...	93...	6.48	3.069	..H...
8	M6	LL3x...	.547	0	19	.066	20.25	y	18	80...	93...	6.48	3.069	..H...
9	M5	LL3x...	.544	0	23	.065	20.25	y	22	80...	93...	6.48	3.069	..H...
10	M39	HSS...	.257	13	9	.130	13	z	9	10...	10...	12.662	12.662	..H...
11	M34	HSS...	.232	13	12	.113	13	z	13	10...	10...	12.662	12.662	..H...
12	M7	L3x3...	.211	49...	10	.014	0	y	24	11...	46...	1.688	3.316	..H...
13	M29	HSS...	.207	13	50	.103	13	z	5	10...	10...	12.662	12.662	..H...
14	M15	PIP...	.194	39	13	.055	39		24	19...	32...	1.872	1.872	..H...
15	M46	PIP...	.190	39	8	.055	39		21	19...	32...	1.872	1.872	..H...
16	M48A	PIP...	.189	39	4	.056	39		16	19...	32...	1.872	1.872	..H...
17	M8	L3x3...	.163	47...	6	.014	97...	y	17	11...	46...	1.688	3.309	..H...
18	M9	L3x3...	.154	49...	6	.014	97...	y	20	11...	46...	1.688	3.372	..H...
19	M50	PIP...	.151	20.25	7	.031	86...		17	53...	32...	1.872	1.872	..H...
20	M54	PIP...	.144	20.25	4	.031	86...		25	53...	32...	1.872	1.872	..H...
21	M46B	PIP...	.140	20.25	65	.036	143...		40	53...	32...	1.872	1.872	..H...
22	M34A	PIP...	.139	54	7	.043	36		21	20...	32...	1.872	1.872	..H...
23	M40A	PIP...	.135	54	3	.044	36		9	20...	32...	1.872	1.872	..H...
24	M14	PIP...	.133	54	11	.042	36		25	20...	32...	1.872	1.872	..H...
25	M43	LL2....	.102	43....	17	.004	86....	z	8	30...	58...	4.246	2.614	..H...
26	M44	LL2....	.102	41....	26	.004	86....	y	25	30...	58...	4.246	2.614	..H...
27	M45A	LL2....	.100	42....	20	.005	86....	z	11	30...	58...	4.246	2.614	..H...
28	M28	HSS...	.061	14....	5	.048	17	z	5	22...	22...	28.842	28.842	..H...
29	M33	HSS...	.056	14....	13	.054	17	z	13	22...	22...	28.842	28.842	..H...
30	M38	HSS...	.053	14....	9	.061	17	z	9	22...	22...	28.842	28.842	..H...
31	M37	HSS...	.036	0	12	.020	6.25	z	8	12...	12...	16.25	16.25	..H...
32	M32	HSS...	.035	0	4	.037	0	y	44	12...	12...	16.25	16.25	..H...
33	M42	HSS...	.029	0	7	.019	0	y	17	12...	12...	16.25	16.25	..H...

APPENDIX D
ADDITIONAL CALCUATIONS

Rectangular Weld Check (Existing 5/16" weld all around):

X-Direction Tension (lbs):	$T_x := 490 \cdot \text{lbf}$	(From RISA 3-D, resulting in worst case reaction combination)
Y-Direction Shear (lbs):	$V_y := 888 \cdot \text{lbf}$	(From RISA 3-D, resulting in worst case reaction combination)
Z-Direction Shear (lbs):	$V_z := 1779 \cdot \text{lbf}$	(From RISA 3-D, resulting in worst case reaction combination)
X-Moment (lbs):	$M_x := 0.4 \cdot \text{kip} \cdot \text{ft}$	(From RISA 3-D, resulting in worst case reaction combination)
Y-Moment (lbs):	$M_y := 1.18 \cdot \text{kip} \cdot \text{ft}$	(From RISA 3-D, resulting in worst case reaction combination)
Z-Moment (lbs):	$M_z := 2.65 \cdot \text{kip} \cdot \text{ft}$	(From RISA 3-D, resulting in worst case reaction combination)
Length of Weld, d (in):	$d := 4 \text{ in}$	(Length of Weld)
Width of Weld, b (in):	$b := 4 \text{ in}$	(Width of Weld)
Section Modulus Bending:	$S_{x_z} := b \cdot d + \frac{d^2}{3} = 21.333 \cdot \text{in}^2$	$S_{x_y} := b \cdot d + \frac{b^2}{3} = 21.333 \cdot \text{in}^2$
Polar Moment of Inertia:	$J_w := \frac{(b + d)^3}{6} = 85.333 \cdot \text{in}^3$	
Shear Component on Weld:		
Shear from Concentrated Load:	$f_{vx} := \frac{V_y}{2d} = 111 \cdot \frac{\text{lbf}}{\text{in}}$	$f_{vz} := \frac{V_z}{2b} = 222.4 \cdot \frac{\text{lbf}}{\text{in}}$
Shear from Moment Load:	$f_{vh_my} := \frac{M_x \cdot \left(\frac{d}{2}\right)}{J_w} = 112.5 \cdot \frac{\text{lbf}}{\text{in}}$	$f_{vv_my} := \frac{M_x \cdot \left(\frac{b}{2}\right)}{J_w} = 112.5 \cdot \frac{\text{lbf}}{\text{in}}$
Horizontal Shear:	$f_{vh} := f_{vh_my} + f_{vz} = 334.875 \cdot \frac{\text{lbf}}{\text{in}}$	
Vertical Shear:	$f_{vv} := f_{vv_my} + f_{vx} = 223.5 \cdot \frac{\text{lbf}}{\text{in}}$	
Resultant Shear:	$F_v := \sqrt{f_{vh}^2 + f_{vv}^2} = 402.608 \cdot \frac{\text{lbf}}{\text{in}}$	
Tensile Component on Weld:		
Tension from Concentrated Load:	$f_{ty} := \frac{T_x}{2d + 2 \cdot b} = 30.6 \cdot \frac{\text{lbf}}{\text{in}}$	
Tension from Moment Load:	$f_{t_mx} := \frac{M_y}{S_{x_y}} = 663.75 \cdot \frac{\text{lbf}}{\text{in}}$	$f_{t_mz} := \frac{M_z}{S_{x_y}} = 1490.625 \cdot \frac{\text{lbf}}{\text{in}}$

Resultant Tension:

$$F_t := f_{ty} + f_{t_mx} + f_{t_mz} = 2.185 \cdot \frac{\text{kip}}{\text{in}}$$

Total Force on Weld:
(force per linear inch):

$$f_T := \sqrt{F_v^2 + F_t^2} = 2221.8 \cdot \frac{\text{lbf}}{\text{in}}$$

Weld sized (1/16 inch):

$$D := 5$$

(Used)

Weld Capacity using 1/4"
weld (kip/in):

$$\text{Weld}_{\text{Cap}} := 1.392 \cdot D \cdot \frac{\text{kip}}{\text{in}} = 6.96 \cdot \frac{\text{kip}}{\text{in}}$$

$$\text{Check} := \begin{cases} \text{"OK, connection can be used"} & \text{if } f_T \leq \text{Weld}_{\text{Cap}} \\ \text{"No Good"} & \text{otherwise} \end{cases}$$

Check = "OK, connection can be used"

$$\text{Interaction} := \frac{f_T}{\text{Weld}_{\text{Cap}}} = 31.9\%$$

APPENDIX E
MOUNT MODIFICATION DESIGN DRAWINGS (MDD)



SCALE: AS SHOWN JOB NUMBER: 18922082A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
0	10/11/18	FOR CONSTRUCTION	CL	SMS



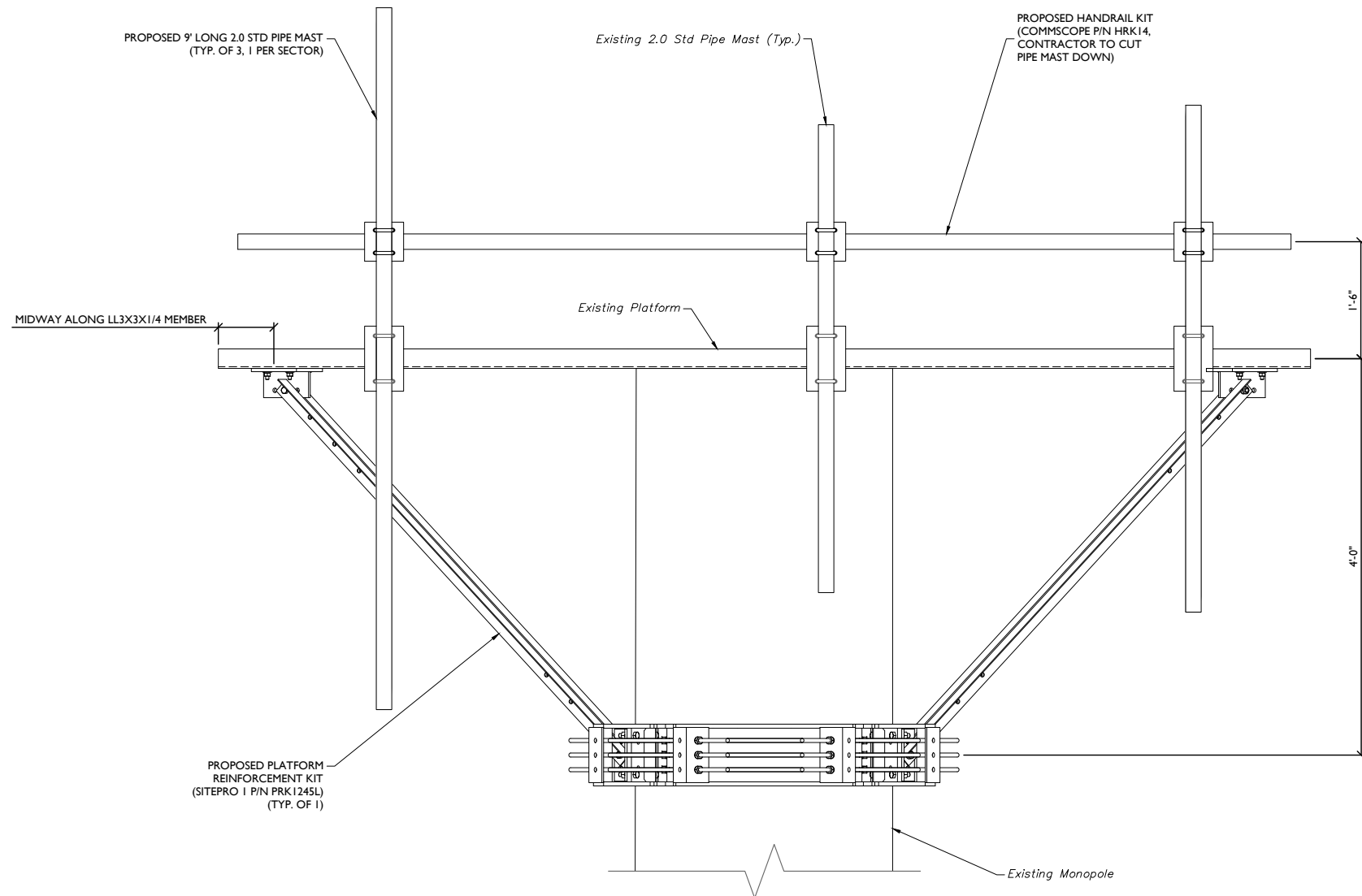
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING IN THE DIRECTION OF THE RESPONSIBLE LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:
BU: 876342
SITE NAME: BIC DRIVE (SSUA)
CARRIER SITE NUMBER: CT11229A
111 HOUSE ROAD
A/K/A BIC DRIVE, CT 06460
NEW HAVEN COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mt. Laurel NJ 08054
Phone: 856.797.0412
Fax: 856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE:
STRUCTURAL MODIFICATION DETAILS

SHEET NUMBER:
S-1



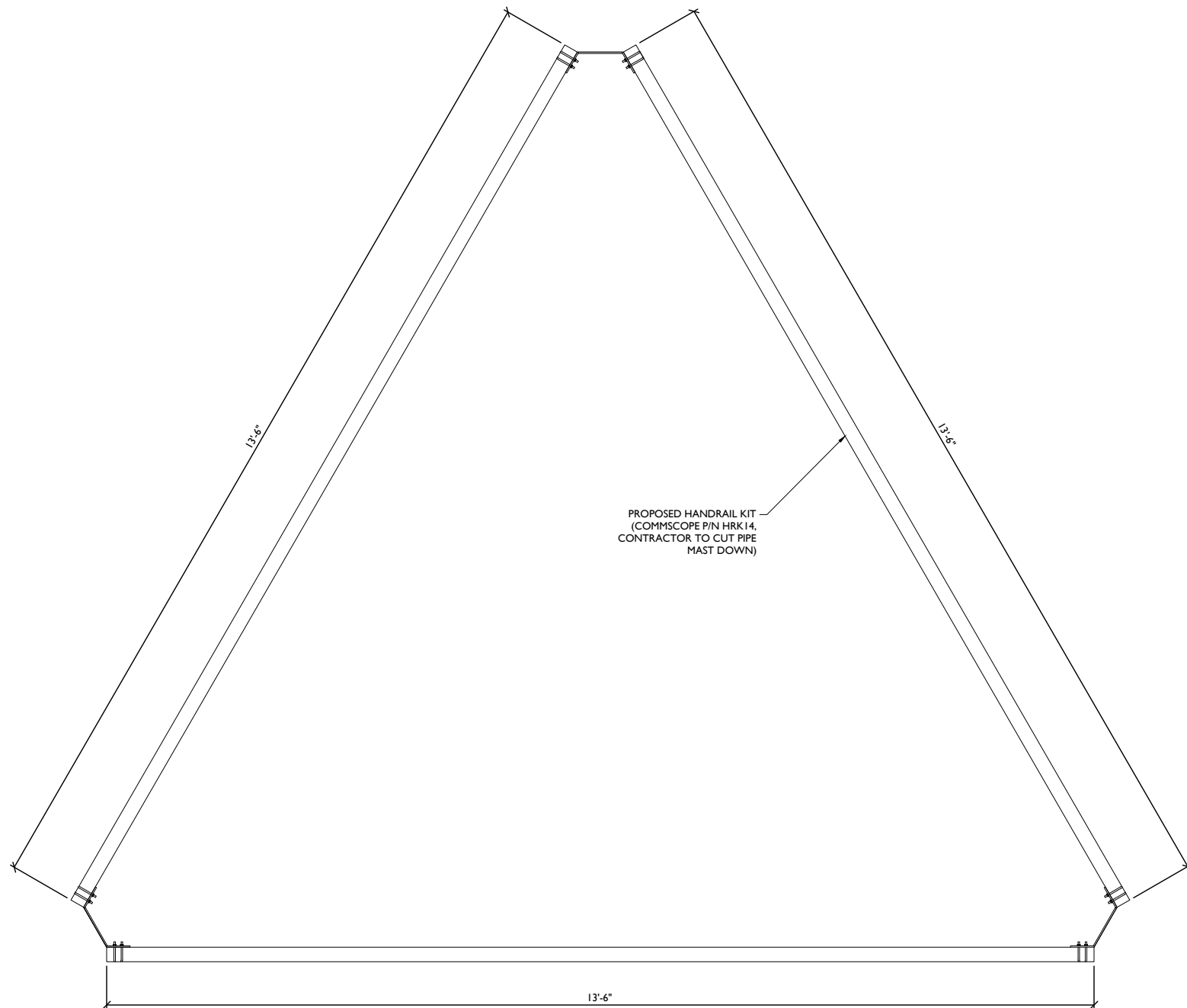
PLATFORM MODIFICATION DETAILS ELEVATION VIEW
NOT TO SCALE

LOADING SUMMARY

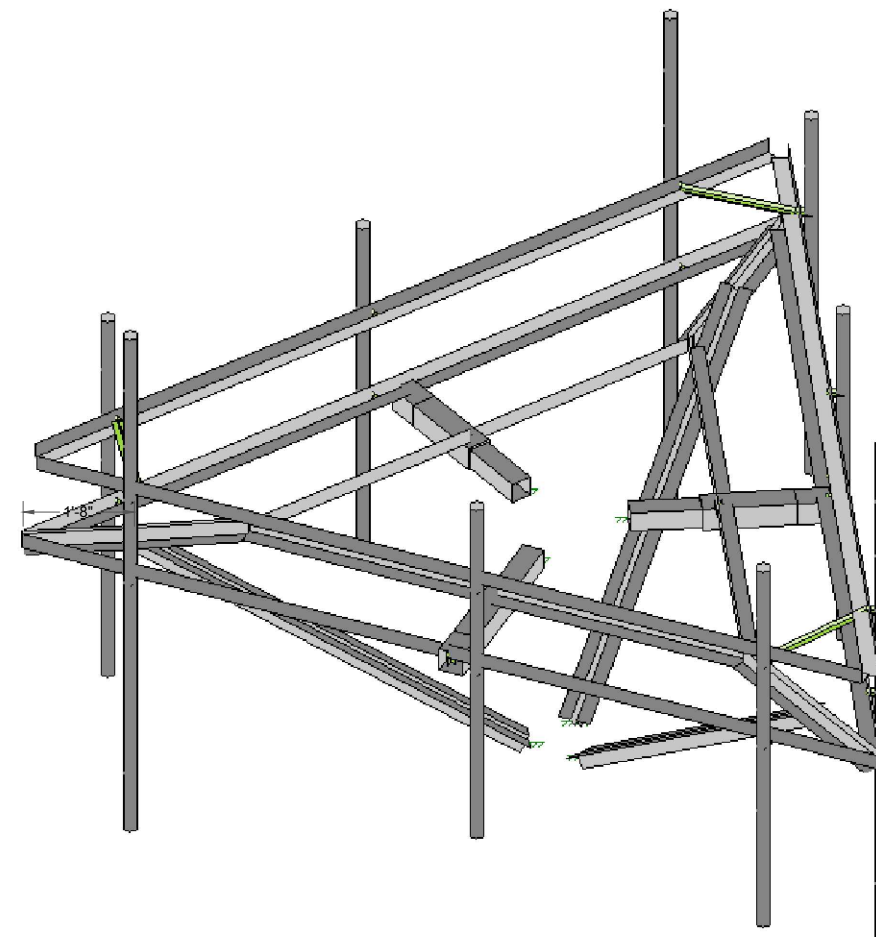
Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	ERICSSON	Air 32 DB B2A B66Aa	Proposed	Alpha, Beta, & Gamma
3	RFS	APXVAARR24_43-U-NA20	Proposed	Alpha, Beta, & Gamma
3	ANDREW	ETW200VS12UB	Existing	Alpha, Beta, & Gamma
3	REMEC	S20070A1	Existing	Alpha, Beta, & Gamma
3	ERICSSON	RRU 4449 B71 + B12	Proposed	Alpha, Beta, & Gamma

NOTE:

MASER CONSULTING P.A. HAS DETERMINED THAT THE SUPPORT MOUNTS, WITH THE PROPOSED MODIFICATIONS, HAVE ADEQUATE STRUCTURAL CAPACITY TO SUPPORT THE EXISTING AND PROPOSED LOADING. THE SUPPORT MOUNTS HAVE BEEN DETERMINED TO BE STRESSED TO A MAXIMUM OF 79.2% OF ITS STRUCTURAL CAPACITY, ONCE THE PROPOSED MODIFICATIONS IN THIS DRAWING ARE INSTALLED AS INTENDED AT EACH SUPPORT MOUNT.



PROPOSED HANDRAIL DETAILS PLAN VIEW
NOT TO SCALE



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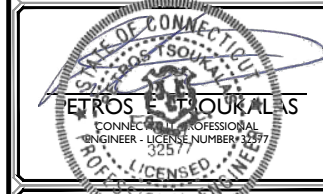
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SITE NAME:
BU: 876342
SITE NAME: BIC DRIVE
(SSUA)
CARRIER SITE NUMBER:
CT11229A
111 HOUSE ROAD
A/K/A BIC DRIVE, CT 06460
NEW HAVEN COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mt. Laurel NJ 08054
Phone: 856.797.0412
Fax: 856.722.1120
email: solutions@maserconsulting.com

SHEET TITLE:
**STRUCTURAL
MODIFICATION DETAILS**

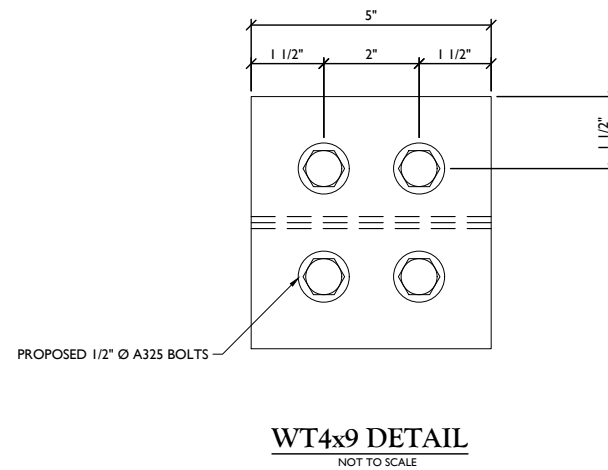
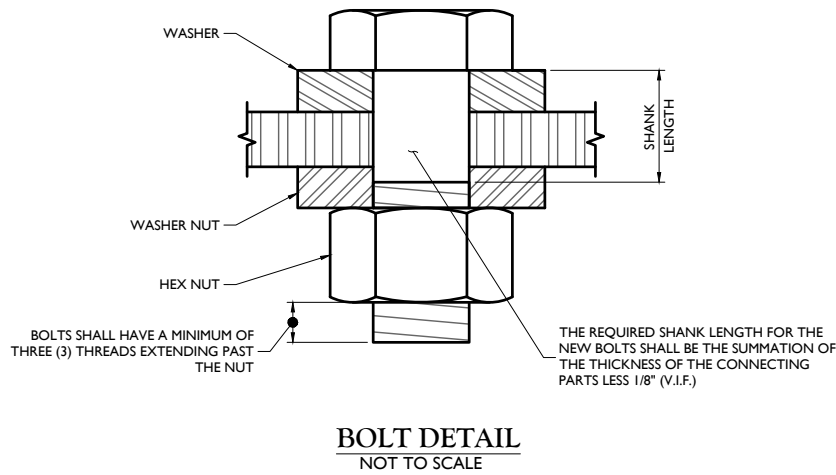
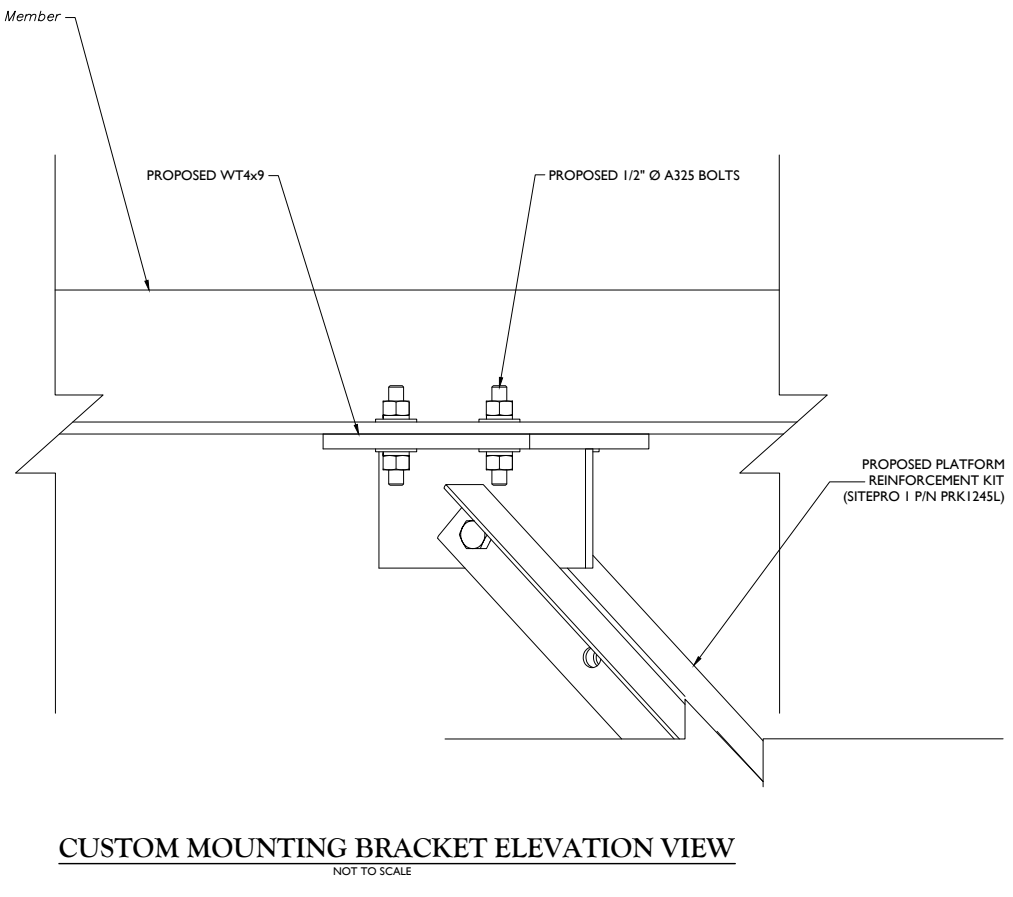
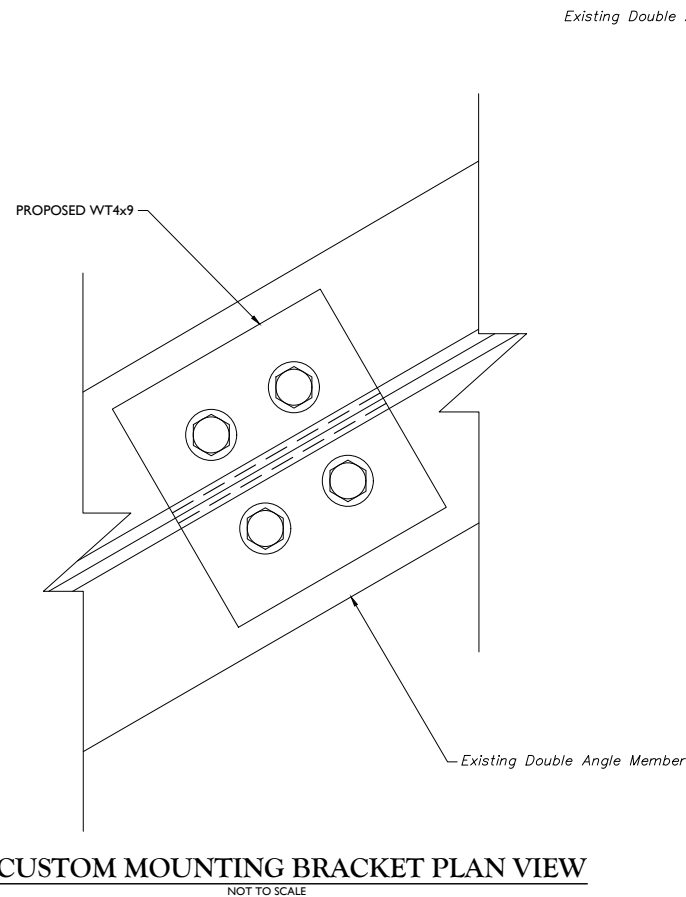
SHEET NUMBER:
S-2

2000118922082A/Structural/Plan - Analysis - MaserCAD/2018/11/12/2018 - Mount Mod Rev 0.dwg-S-2 By: CLURINGAS

STRUCTURAL STEEL

1. DESIGN, FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO AISC MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION.
2. CONNECTION BOLTS SHALL BE 3/4" Ø ASTM A325N UNLESS OTHERWISE NOTED.
3. FIELD WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO PERFORM THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", LRFD 3RD EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
4. RETURN ALL WELDS AT CORNERS TWICE THE NOMINAL SIZE OF THE WELD MINIMUM, UNLESS OTHERWISE NOTED.
5. TO REDUCE WARPING TO A MINIMUM WHEN WELDING TO EXISTING MEMBERS CARRYING LOAD, SHORE OR BRACE EXISTING MEMBER DURING WELDING.
6. ALL COPEs, BLOCKS, CUT OUTS, AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENTRANT CORNERS SHAPED, NOTCHED FREE TO A RADIUS OF AT LEAST 1/2".
7. CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF STEEL CONSTRUCTION.
8. ALL NEW STRUCTURAL STEEL SHAPES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
9. ALL NEW STEEL BOLTS, NUTS, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
10. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
11. ALL STRUCTURAL STEEL SHALL ABIDE BY THE FOLLOWING MATERIAL STRENGTH LIST UNLESS OTHERWISE NOTED:

PLATES	ASTM A572 (GR 50)
ANGLES	ASTM A36 (GR 36)
PIPES	ASTM A53 (GR B)
SOLID ROUND	ASTM A572 (GR 50)
BOLTS	ASTM A325 (ALL BOLT HOLES STANDARD SIZE U.N.O.)
NUTS	ASTM A194-2H
WASHERS	ASTM F436
HOT-DIPPED GALVANIZING	ASTM A123
WELDS	E70XX



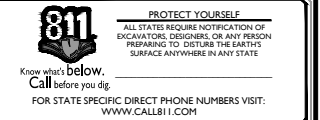
NOTE:

1. CONTRACTOR SHALL FIELD DRILL INTO THE EXISTING STEEL AS REQUIRED FOR THE PROPOSED CONNECTIONS. DAMAGED GALVANIZED SURFACES, SUCH AS THE PROPOSED BOLT HOLE LOCATIONS, SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.



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STRUCTURAL MODIFICATION DETAILS

S-3

2000/10/20/2018/Structural/Plan - Analysis - MtLCT11229A - Mount Laurel Rev 0.dwg-S3 By: CLURINGAS

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR DISSEMINATION OF REVISIONS TO CONTRACT DOCUMENTS AND REQUIREMENTS TO ALL SUBCONTRACTORS. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES AND EQUIPMENT MANUFACTURERS.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING FIELD CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES, GROUNDS, DRAIN PIPES AND VENTS BEFORE COMMENCING WORK. CONTRACTOR SHALL NOTIFY ENGINEER IF ACTUAL CONDITIONS DIFFER SIGNIFICANTLY FROM WHAT IS SHOWN ON DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY PROJECT SITE, REMOVE AND DISPOSE OF OFF SITE RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES DAILY.
- INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE OWNER'S WRITTEN APPROVAL.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUCH COVERING, SHIELDING, AND BARRICADES AS REQUIRED TO PROTECT BYSTANDERS AND PASSERSBY, EQUIPMENT, SUPPLIES, ETC. FROM DUST, DEBRIS AND OTHER CAUSE OF DAMAGE RESULTING FROM CONSTRUCTION. ANY DAMAGE DURING CONSTRUCTION SHALL BE RESTORED TO PREVIOUS CONDITIONS.
- IN AREAS WHERE EXISTING ANTENNA MOUNTS, TRANSMISSION LINES OR OTHER SUPPORTING EQUIPMENT IS TO BE REMOVED, THE EXISTING STRUCTURE SHALL BE REPAIRED AS REQUIRED.
- ALL SAFETY AND OSHA REGULATIONS SHALL BE FOLLOWED STRICTLY. METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIAL ARE THE CONTRACTOR'S RESPONSIBILITY.
- CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR ALL EXISTING ANTENNAS, TRANSMISSION LINES OR OTHER APPURTENANCES DURING CONSTRUCTION.
- CONTRACTOR SHALL PROTECT EXISTING APPURTENANCES FROM DAMAGE DURING CONSTRUCTION.
- NO ANTENNAS, CABLES, OR OTHER APPURTENANCES SHALL BE ADDED TO THE TOWER UNTIL THE MODIFICATION WORK IS COMPLETE.
- ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE DIMENSIONS WITH TOWER MANUFACTURER OR FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING MEMBERS.
- THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.
- ALL EXISTING PLANS, DETAILS, DIMENSIONS, AND ELEVATIONS INDICATE EXISTING CONDITIONS AS KNOWN. THE EXISTING INFORMATION SHOWN IS NOT INTENDED TO BE "AS BUILT" AND THE ACTUAL CONSTRUCTION MAY DIFFER FROM THAT SHOWN. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING DIMENSIONS AND ELEVATIONS PRIOR TO STARTING CONSTRUCTION. MINOR VARIATIONS CAN BE EXPECTED AND ANY REQUIRED DEVIATION FROM THE CONTRACT DOCUMENTS SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- MODIFICATION DETAILS REPRESENTS TYPICAL CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATION AS A RESULT OF SITE SPECIFIC CONDITIONS. REINFORCE ALL TOWER FACES IDENTICALLY, UNLESS OTHERWISE NOTED.
- IN AREAS TO BE MODIFIED, ANY ANTENNA, COAX, OR CONDUIT SHALL BE TEMPORARILY MOVED AND THEN REPLACED AFTER COMPLETION OF WORK. COORDINATE WITH OWNER.
- CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL MATERIAL TO BE REMOVED.
- CONTRACTOR SHALL ENSURE STABILITY OF THE ANTENNA PLATFORM DURING ALL WORK.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TEMPORARY BRACING OF THE STRUCTURE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE IS DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE MAY REQUIRE ADDITIONAL SUPPORT BEFORE COMPLETIONS.
- THIS DESIGN ASSUMES THE ANTENNA PLATFORM HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION BY MASER CONSULTING P.A. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.
- ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
- PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
- INSPECTION OF THE MODIFICATIONS SHALL BE COMPLETED BY A THIRD PARTY. INSPECTION SHALL TAKE PLACE WITHIN 72 HOURS OF THE COMPLETION OF THE ANTENNA PLATFORM MODIFICATIONS. NO PROPOSED LOADING SHALL BE INSTALLED PRIOR TO INSPECTOR APPROVAL.

DESIGN LOADS

- WIND: ANSI/TIA/EIA-222-H
ULTIMATE WIND SPEED: 125 MPH
- ANTENNA PLATFORM MODIFICATIONS WERE DESIGNED IN ACCORDANCE TO TIA-222-H AND 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 IBC, AS WELL AS APPLICABLE LOCAL BUILDING CODES.

STRUCTURAL STEEL

- DESIGN, FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO AISC MANUAL OF STEEL CONSTRUCTION, FOURTEENTH EDITION.
- CONNECTION BOLTS SHALL BE 3/4"Ø ASTM A325N UNLESS OTHERWISE NOTED.
- FIELD WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", LRFD 3RD EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
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- TO REDUCE WARPING TO A MINIMUM WHEN WELDING TO EXISTING MEMBERS CARRYING LOAD, SHORE OR BRACE EXISTING MEMBER DURING WELDING.
- ALL COPES, BLOCKS, CUT OUTS, AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENRANT CORNERS SHAPED, NOTCHED FREE TO A RADIUS OF AT LEAST 1/2".
- CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF STEEL CONSTRUCTION.
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- ALL NEW STEEL BOLTS, NUTS, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL STRUCTURAL STEEL SHALL ABIDE BY THE FOLLOWING MATERIAL STRENGTH LIST UNLESS OTHERWISE NOTED:

PIPES	A-53 (GR B)
PLATES	ASTM A572 (GR 50)
ANGLES	ASTM A36 (GR 36)
SOLID ROUND	ASTM A572 (GR 50)
BOLTS	ASTM A325 (ALL BOLT HOLES STANDARD SIZE U.N.O.)
NUTS	ASTM A194-2H
WASHERS	ASTM F436
HOT-DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

CONTRACTOR NOTES

- ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND MASER CONSULTING P.A. THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND MASER CONSULTING P.A. ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND MASER CONSULTING P.A.
- IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, MASER CONSULTING P.A. SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
- IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TELECOMMUNICATION CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.
- THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS.
- CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE ANTENNA PLATFORM MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
- SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
- CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH) CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL ANTENNA PLATFORM SHORING, TEMPORARY GLOBAL ANTENNA PLATFORM SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.



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SHEET TITLE:
STRUCTURAL NOTES

SHEET NUMBER:
S-4



SCALE: AS SHOWN JOB NUMBER: 18922082A

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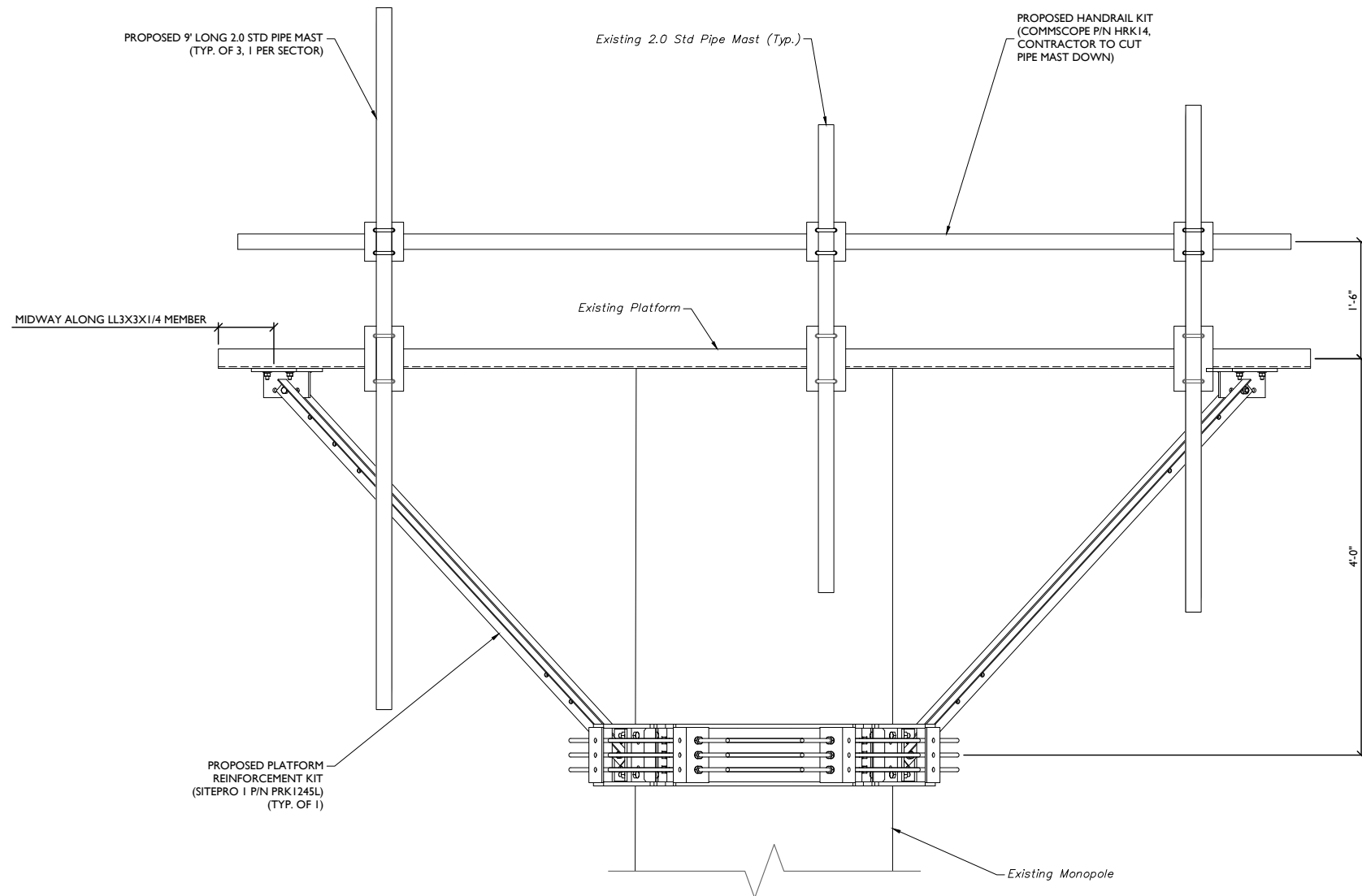
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SHEET TITLE:
STRUCTURAL MODIFICATION DETAILS

SHEET NUMBER:
S-1



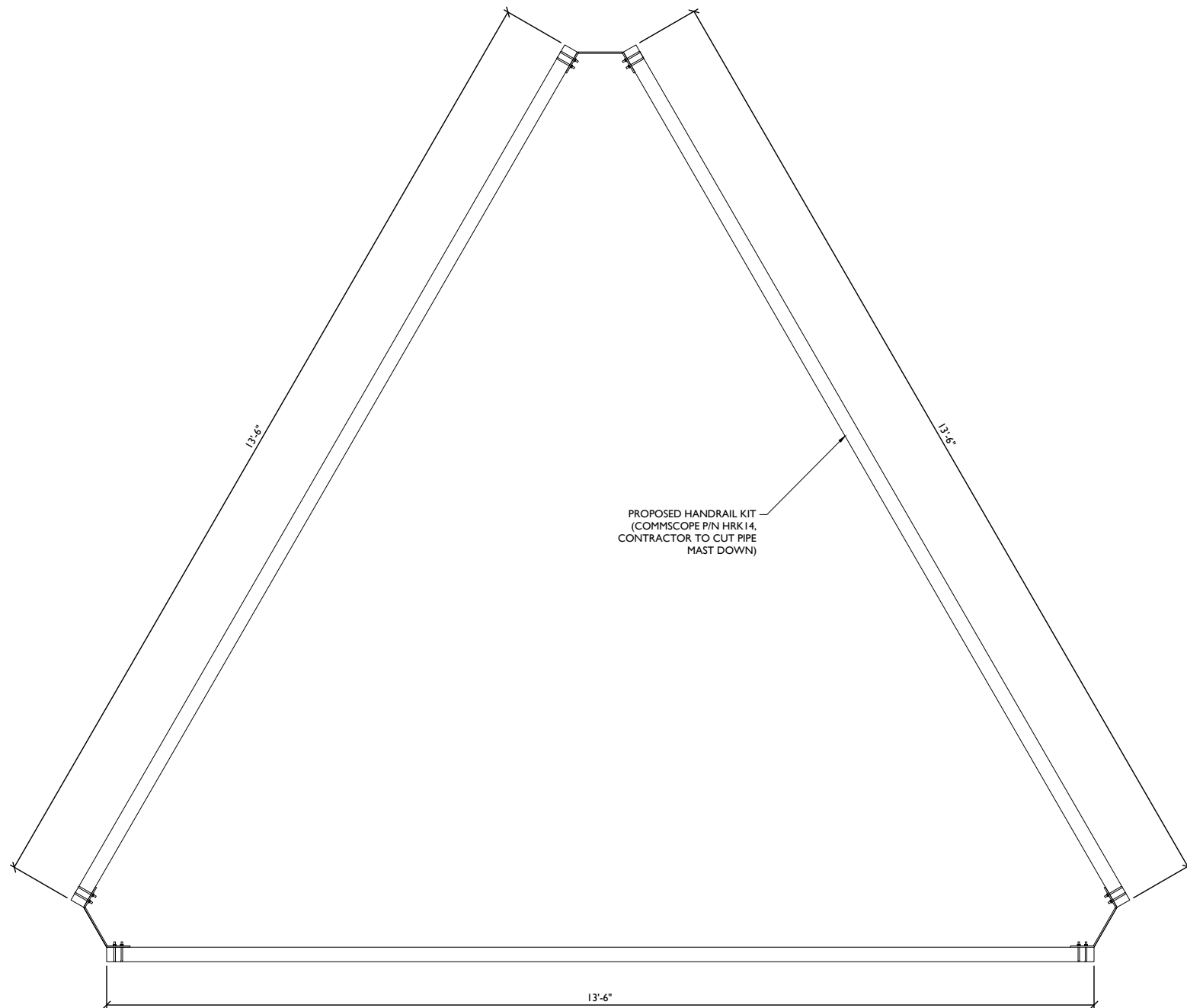
PLATFORM MODIFICATION DETAILS ELEVATION VIEW
NOT TO SCALE

LOADING SUMMARY

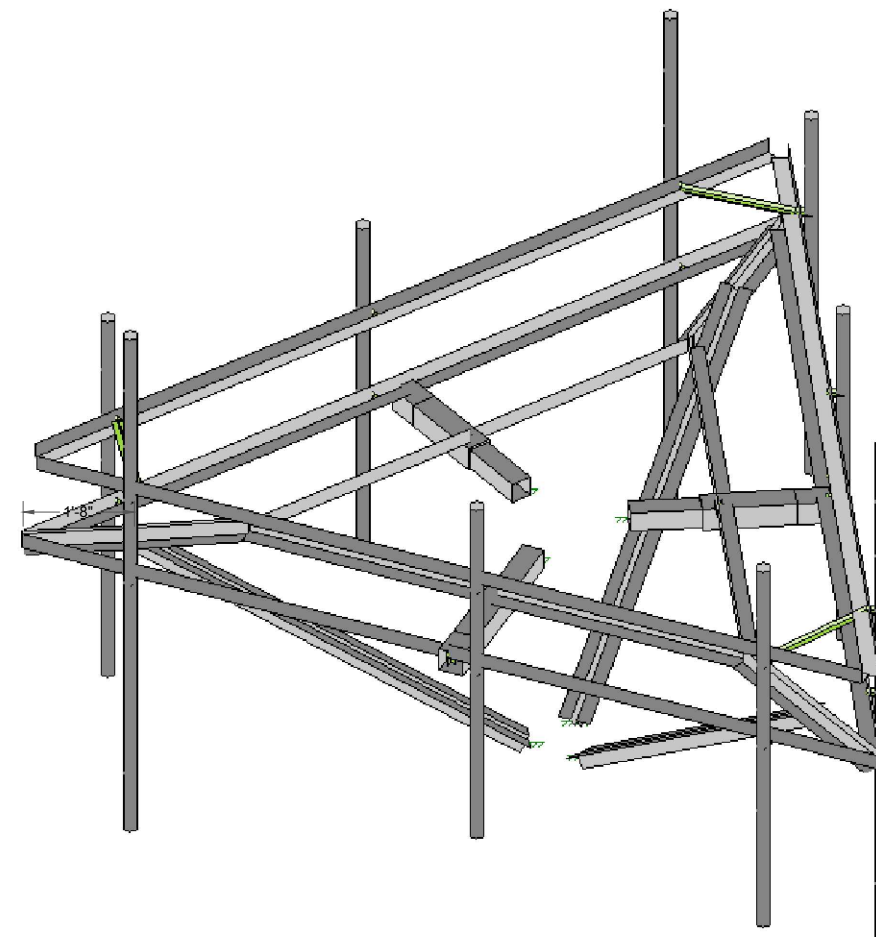
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3	RFS	APXVAARR24_43-U-NA20	Proposed	Alpha, Beta, & Gamma
3	ANDREW	ETW200VS12UB	Existing	Alpha, Beta, & Gamma
3	REMEC	S20070A1	Existing	Alpha, Beta, & Gamma
3	ERICSSON	RRU 4449 B71 + B12	Proposed	Alpha, Beta, & Gamma

NOTE:

MASER CONSULTING P.A. HAS DETERMINED THAT THE SUPPORT MOUNTS, WITH THE PROPOSED MODIFICATIONS, HAVE ADEQUATE STRUCTURAL CAPACITY TO SUPPORT THE EXISTING AND PROPOSED LOADING. THE SUPPORT MOUNTS HAVE BEEN DETERMINED TO BE STRESSED TO A MAXIMUM OF 79.2% OF ITS STRUCTURAL CAPACITY, ONCE THE PROPOSED MODIFICATIONS IN THIS DRAWING ARE INSTALLED AS INTENDED AT EACH SUPPORT MOUNT.



PROPOSED HANDRAIL DETAILS PLAN VIEW
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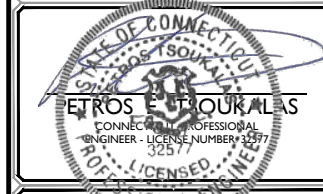
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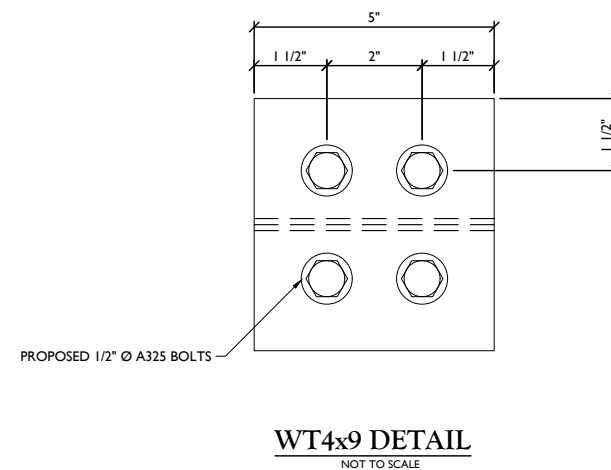
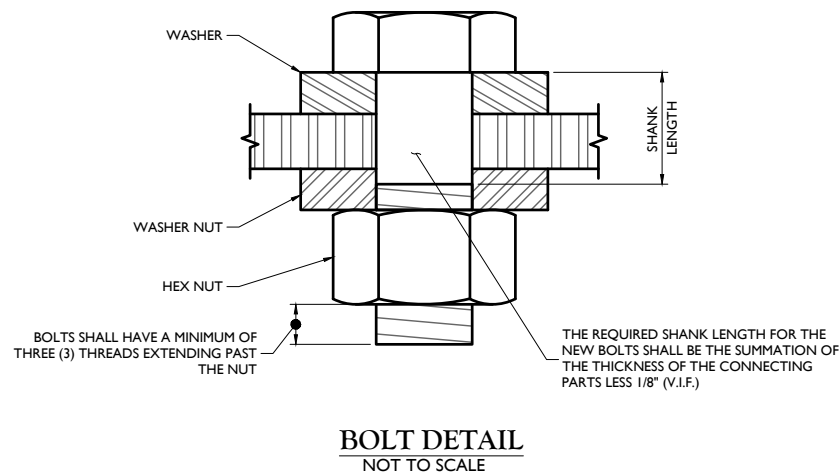
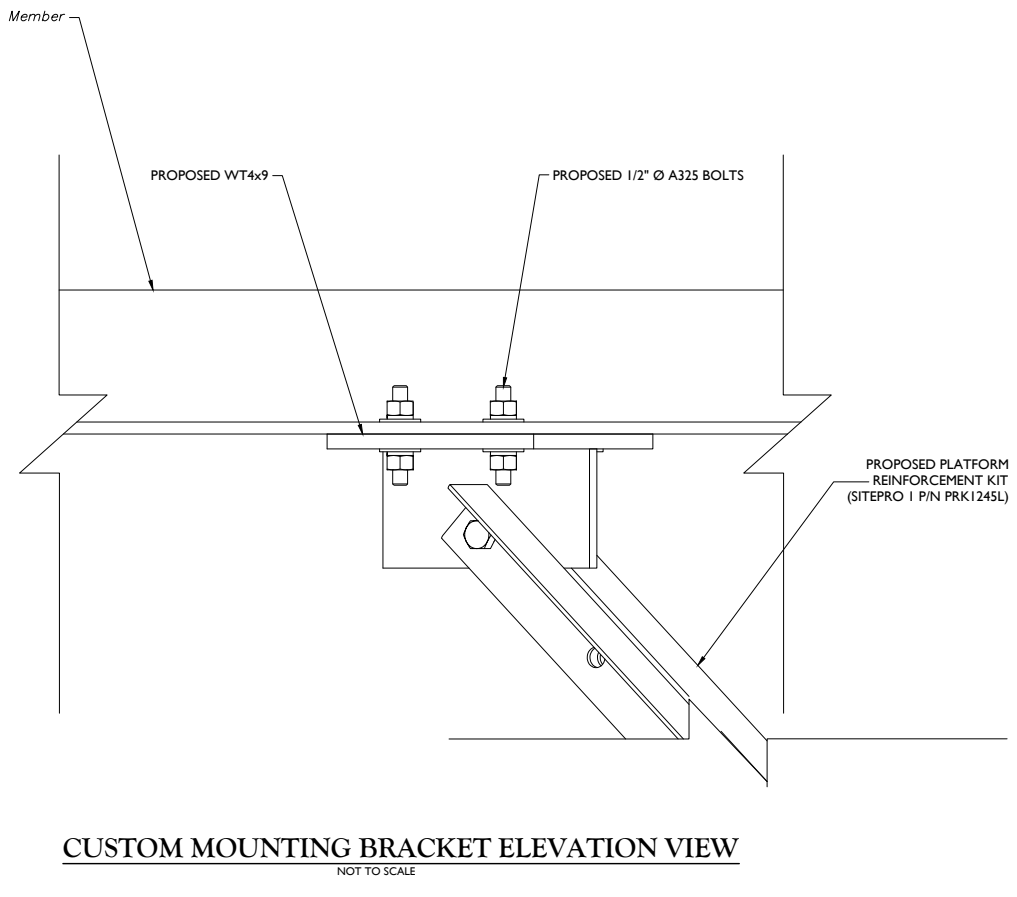
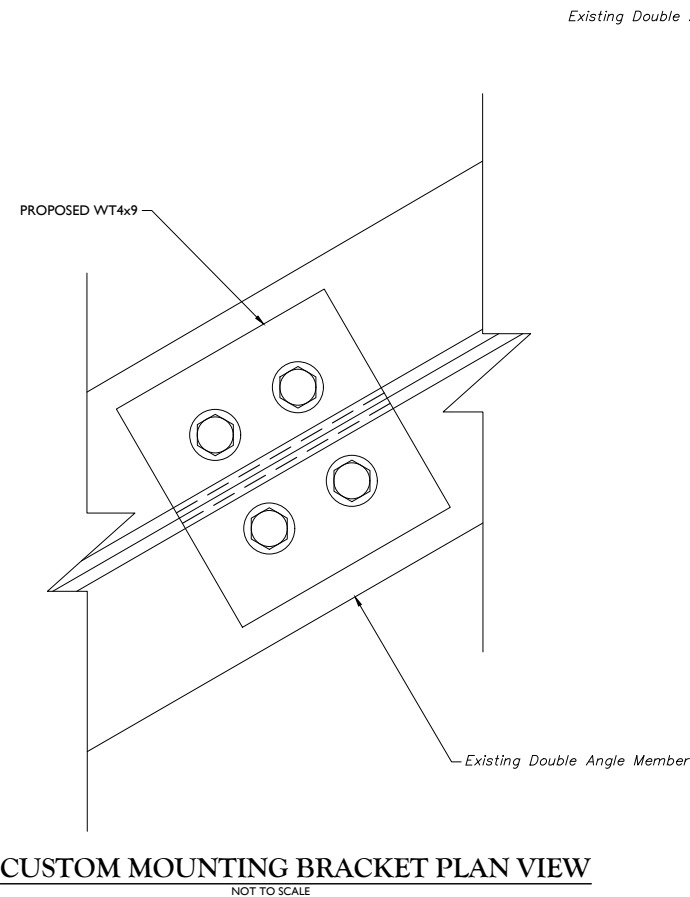
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SHEET NUMBER: S-2

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8. ALL NEW STRUCTURAL STEEL SHAPES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
9. ALL NEW STEEL BOLTS, NUTS, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
10. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
11. ALL STRUCTURAL STEEL SHALL ABIDE BY THE FOLLOWING MATERIAL STRENGTH LIST UNLESS OTHERWISE NOTED:

PLATES	ASTM A572 (GR 50)
ANGLES	ASTM A36 (GR 36)
PIPES	ASTM A53 (GR B)
SOLID ROUND	ASTM A572 (GR 50)
BOLTS	ASTM A325 (ALL BOLT HOLES STANDARD SIZE U.N.O.)
NUTS	ASTM A194-2H
WASHERS	ASTM F436
HOT-DIPPED GALVANIZING	ASTM A123
WELDS	E70XX



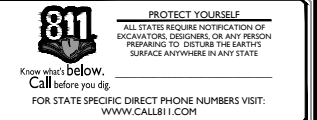
NOTE:

1. CONTRACTOR SHALL FIELD DRILL INTO THE EXISTING STEEL AS REQUIRED FOR THE PROPOSED CONNECTIONS. DAMAGED GALVANIZED SURFACES, SUCH AS THE PROPOSED BOLT HOLE LOCATIONS, SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.

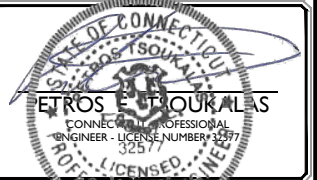


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SCALE:	AS SHOWN	JOB NUMBER:	18922082A
REV	DATE	DESCRIPTION	DRAWN BY CL
0	10/11/18	FOR CONSTRUCTION	SMS
			CHECKED BY



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SITE NAME:

BU: 876342
 SITE NAME: BIC DRIVE (SSUA)
 CARRIER SITE NUMBER: CT11229A
 111 HOUSE ROAD
 A/K/A BIC DRIVE, CT 06460
 NEW HAVEN COUNTY

MT. LAUREL OFFICE
 2000 Midlantic Drive
 Suite 100
 Mt. Laurel NJ 08054
 Phone: 856.797.0412
 Fax: 856.722.1120
 email: solutions@maserconsulting.com

STRUCTURAL MODIFICATION DETAILS

S-3

2000/11/02/0822082A/Structural/Plan - Analysis - MtL/CA/07/03/MLCT11229A - Mount Laurel Rev 0.dwg-S-3 By: CLURINGAS

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR DISSEMINATION OF REVISIONS TO CONTRACT DOCUMENTS AND REQUIREMENTS TO ALL SUBCONTRACTORS. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES AND EQUIPMENT MANUFACTURERS.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING FIELD CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES, GROUNDS, DRAIN PIPES AND VENTS BEFORE COMMENCING WORK. CONTRACTOR SHALL NOTIFY ENGINEER IF ACTUAL CONDITIONS DIFFER SIGNIFICANTLY FROM WHAT IS SHOWN ON DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY PROJECT SITE, REMOVE AND DISPOSE OF OFF SITE RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES DAILY.
- INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE OWNER'S WRITTEN APPROVAL.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUCH COVERING, SHIELDING, AND BARRICADES AS REQUIRED TO PROTECT BYSTANDERS AND PASSERSBY, EQUIPMENT, SUPPLIES, ETC. FROM DUST, DEBRIS AND OTHER CAUSE OF DAMAGE RESULTING FROM CONSTRUCTION. ANY DAMAGE DURING CONSTRUCTION SHALL BE RESTORED TO PREVIOUS CONDITIONS.
- IN AREAS WHERE EXISTING ANTENNA MOUNTS, TRANSMISSION LINES OR OTHER SUPPORTING EQUIPMENT IS TO BE REMOVED, THE EXISTING STRUCTURE SHALL BE REPAIRED AS REQUIRED.
- ALL SAFETY AND OSHA REGULATIONS SHALL BE FOLLOWED STRICTLY. METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIAL ARE THE CONTRACTOR'S RESPONSIBILITY.
- CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR ALL EXISTING ANTENNAS, TRANSMISSION LINES OR OTHER APPURTENANCES DURING CONSTRUCTION.
- CONTRACTOR SHALL PROTECT EXISTING APPURTENANCES FROM DAMAGE DURING CONSTRUCTION.
- NO ANTENNAS, CABLES, OR OTHER APPURTENANCES SHALL BE ADDED TO THE TOWER UNTIL THE MODIFICATION WORK IS COMPLETE.
- ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE DIMENSIONS WITH TOWER MANUFACTURER OR FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING MEMBERS.
- THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.
- ALL EXISTING PLANS, DETAILS, DIMENSIONS, AND ELEVATIONS INDICATE EXISTING CONDITIONS AS KNOWN. THE EXISTING INFORMATION SHOWN IS NOT INTENDED TO BE "AS BUILT" AND THE ACTUAL CONSTRUCTION MAY DIFFER FROM THAT SHOWN. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING DIMENSIONS AND ELEVATIONS PRIOR TO STARTING CONSTRUCTION. MINOR VARIATIONS CAN BE EXPECTED AND ANY REQUIRED DEVIATION FROM THE CONTRACT DOCUMENTS SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- MODIFICATION DETAILS REPRESENTS TYPICAL CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATION AS A RESULT OF SITE SPECIFIC CONDITIONS. REINFORCE ALL TOWER FACES IDENTICALLY, UNLESS OTHERWISE NOTED.
- IN AREAS TO BE MODIFIED, ANY ANTENNA, COAX, OR CONDUIT SHALL BE TEMPORARILY MOVED AND THEN REPLACED AFTER COMPLETION OF WORK. COORDINATE WITH OWNER.
- CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL MATERIAL TO BE REMOVED.
- CONTRACTOR SHALL ENSURE STABILITY OF THE ANTENNA PLATFORM DURING ALL WORK.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TEMPORARY BRACING OF THE STRUCTURE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE IS DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE MAY REQUIRE ADDITIONAL SUPPORT BEFORE COMPLETIONS.
- THIS DESIGN ASSUMES THE ANTENNA PLATFORM HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION BY MASER CONSULTING P.A. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.
- ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
- PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
- INSPECTION OF THE MODIFICATIONS SHALL BE COMPLETED BY A THIRD PARTY. INSPECTION SHALL TAKE PLACE WITHIN 72 HOURS OF THE COMPLETION OF THE ANTENNA PLATFORM MODIFICATIONS. NO PROPOSED LOADING SHALL BE INSTALLED PRIOR TO INSPECTOR APPROVAL.

DESIGN LOADS

- WIND: ANSI/TIA/EIA-222-H
ULTIMATE WIND SPEED: 125 MPH
- ANTENNA PLATFORM MODIFICATIONS WERE DESIGNED IN ACCORDANCE TO TIA-222-H AND 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 IBC, AS WELL AS APPLICABLE LOCAL BUILDING CODES.

STRUCTURAL STEEL

- DESIGN, FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO AISC MANUAL OF STEEL CONSTRUCTION, FOURTEENTH EDITION.
- CONNECTION BOLTS SHALL BE 3/4"Ø ASTM A325N UNLESS OTHERWISE NOTED.
- FIELD WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", LRFD 3RD EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
- RETURN ALL WELDS AT CORNERS TWICE THE NOMINAL SIZE OF THE WELD MINIMUM, UNLESS OTHERWISE NOTED.
- TO REDUCE WARPING TO A MINIMUM WHEN WELDING TO EXISTING MEMBERS CARRYING LOAD, SHORE OR BRACE EXISTING MEMBER DURING WELDING.
- ALL COPES, BLOCKS, CUT OUTS, AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENRANT CORNERS SHAPED, NOTCHED FREE TO A RADIUS OF AT LEAST 1/2".
- CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF STEEL CONSTRUCTION.
- ALL NEW STRUCTURAL STEEL SHAPES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
- ALL NEW STEEL BOLTS, NUTS, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL STRUCTURAL STEEL SHALL ABIDE BY THE FOLLOWING MATERIAL STRENGTH LIST UNLESS OTHERWISE NOTED:

PIPES	A-53 (GR B)
PLATES	ASTM A572 (GR 50)
ANGLES	ASTM A36 (GR 36)
SOLID ROUND	ASTM A572 (GR 50)
BOLTS	ASTM A325 (ALL BOLT HOLES STANDARD SIZE U.N.O.)
NUTS	ASTM A194-2H
WASHERS	ASTM F436
HOT-DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

CONTRACTOR NOTES

- ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND MASER CONSULTING P.A. THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND MASER CONSULTING P.A. ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND MASER CONSULTING P.A.
- IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, MASER CONSULTING P.A. SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
- IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TELECOMMUNICATION CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.
- THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS.
- CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE ANTENNA PLATFORM MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
- SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
- CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH) CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL ANTENNA PLATFORM SHORING, TEMPORARY GLOBAL ANTENNA PLATFORM SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.



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SCALE:	JOB NUMBER:
AS SHOWN	18922082A

0	10/11/18	FOR CONSTRUCTION	CL	SMS
REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY



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SITE NAME:
BU: 876342
SITE NAME: BIC DRIVE (SSUA)
CARRIER SITE NUMBER: CT11229A
111 HOUSE ROAD
A/K/A BIC DRIVE, CT 06460
NEW HAVEN COUNTY



SHEET TITLE:
STRUCTURAL NOTES

SHEET NUMBER:
S-4

2000/11/02/2018/Structure/Phone_Analysis - MaserCAD/06/03/06/CT11229A_Mount_Laurel_Bic_Drive_0.dwg-4 By: CLURINGAS



RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11229A

Stratford/ Rt 1/ Rt 162
111 Schoolhouse Road
Milford, CT 06460

November 15, 2018

EBI Project Number: 6218007159

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.98 %



November 15, 2018

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11229A – Stratford/ Rt 1/ Rt 162**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **111 Schoolhouse Road, Milford, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **111 Schoolhouse Road, Milford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 1 GSM channels (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 15 Watts per Channel.
- 2) 1 UMTS channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 1 UMTS channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.



- 7) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antennas used in this modeling are the **Ericsson AIR32 B2A/B66A & RFS APXVAARR24_43-U-NA20** for 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerline of the proposed antennas is **116 feet** above ground level (AGL).
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 13) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B2A/B66A	Make / Model:	Ericsson AIR32 B2A/B66A	Make / Model:	Ericsson AIR32 B2A/B66A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	116 feet	Height (AGL):	116 feet	Height (AGL):	116 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	200	Total TX Power(W):	200	Total TX Power(W):	200
ERP (W):	7,780.90	ERP (W):	7,780.90	ERP (W):	7,780.90
Antenna A1 MPE%	2.31	Antenna B1 MPE%	2.31	Antenna C1 MPE%	2.31
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	12.95 / 13.35 / 15.65 / 16.35 dBd	Gain:	12.95 / 13.35 / 15.65 / 16.35 dBd	Gain:	12.95 / 13.35 / 15.65 / 16.35 dBd
Height (AGL):	116 feet	Height (AGL):	116 feet	Height (AGL):	116 feet
Frequency Bands	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	7	Channel Count	7	Channel Count	7
Total TX Power(W):	215	Total TX Power(W):	215	Total TX Power(W):	215
ERP (W):	6,189.15	ERP (W):	6,189.15	ERP (W):	6,189.15
Antenna A2 MPE%	2.84	Antenna B2 MPE%	2.84	Antenna C2 MPE%	2.84

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	5.15 %
Verizon Wireless	4.31 %
MetroPCS	0.86 %
Sprint	0.43 %
AT&T	2.23 %
Site Total MPE %:	12.98 %

T-Mobile Sector A Total:	5.15 %
T-Mobile Sector B Total:	5.15 %
T-Mobile Sector C Total:	5.15 %
Site Total:	
	12.98 %



T-Mobile Maximum MPE Power Values (Per Sector)

T-Mobile_Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile PCS - 1900 MHz LTE	2	1,556.18	116	9.25	PCS - 1900 MHz	1000.00	0.92%
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	116	13.87	AWS - 2100 MHz	1000.00	1.39%
T-Mobile PCS - 1900 MHz GSM	1	550.92	116	1.64	PCS - 1900 MHz	1000.00	0.17%
T-Mobile PCS - 1900 MHz UMTS	1	1,469.13	116	4.36	PCS - 1900 MHz	1000.00	0.44%
T-Mobile AWS - 2100 MHz UMTS	1	1,726.08	116	5.13	AWS - 2100 MHz	1000.00	0.51%
T-Mobile 600 MHz LTE	2	788.97	116	4.69	600 MHz	400.00	1.17%
T-Mobile 700 MHz LTE	2	432.54	116	2.57	700 MHz	467.00	0.55%
						Total:	5.15%



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	5.15 %
Sector B:	5.15 %
Sector C:	5.15 %
T-Mobile Maximum MPE % (Per Sector):	5.15 %
Site Total:	12.98 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.98%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.