Centerline Communications
Andres Lopez
750 West Center Street, Floor 3
West Bridgewater, MA 02379
908-358-5305
alopez@clinell.comc

July 22, 2019

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
100 Filley Street, Bloomfield, CT
Latitude: 41.85166667
Longitude: -72.71527778
T-Mobile Site#: CT11000A_L600

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 93-foot level and (3) antennas at the 95-foot level of the existing 93-foot monopole tower at 100 Filley Street, Bloomfield, CT. The 93-foot tower is owned by T-Mobile and the property is owned by FJS Properties LLC. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 600/700 MHz antennas at the 93-foot level of the tower. T-Mobile also plans to add three (3) new 1900/2100 MHz antennas at the 95-foot level of the tower. Please note the existing RRU's were on the loading at 93' on a previous structural. This was a mistake. The RRU' were installed on the ground. The current structural reflects this change. The existing platform mount will have adequate capacity for the proposed changes (Platform reinforcement kit, replace brackets, and add a Handrail kit) once the platform mount is modified.

Planned Modifications:

Remove:

(3) Andrew Smart Bias T

(6) Coax Lines

Remove and Replace:

(3) LNX6515 Antenna **(Remove)** - (3) APXVAARR24 600/700 MHz **(Replace)**

Install New:

(3) AIR32 KRD901146 1900/2100 MHz
(3) Hybrid Coax
(3) 4449 B71+B12 RRUs on tower

Existing to Remain:

(3) APX16DWV 1900 Mhz/2100 Mhz
(6) TMA's
(12) coax

Ground:

(3) RRUS11 B12 -Ground Mounted on H-Frame **(Remove)**

This facility was approved by the Town of Bloomfield Zoning Board of Appeals on June 2, 1997. The approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Bloomfield Mayor Suzette DeBeatham-Brown, Jose Giner Director of Planning and Zoning, Town of Bloomfield, FJS Properties, LLC as property owner, and T-Mobile as the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications 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 Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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 referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Respectfully submitted,

Andres Lopez

Andres Lopez
Mobile: 908-358-5305
Fax: 508-819-3017
Office: 750 West Center Street, Floor 3 West Bridgewater, MA 02379
Email: alopez@clinellc.com

Attachments

cc: Mayor Suzette DeBeatham-Brown – as chief elected official
Jose Giner – Director of Planning and Zoning Town of Bloomfield
FJS Properties, LLC – as property owner
T-Mobile – as tower owner

012085

Centerline Communications LLC

Connecticut Siting Council

CT 11000A

Check: 12085
Date: 6/14/2019
Vendor: 0

Invoice	P.O. Num.	Invoice Amt	Prior Balance	Retention	Discount	Amt. Paid
19503-009		625.00	625.00	0.00	0.00	625.00
		625.00	625.00	0.00	0.00	625.00

012085

Centerline Communications LLC
750 W. Center Street
Suite 301
W. Bridgewater, MA 02379
(781) 713-4725

ROCKLAND TRUST COMPANY
MEDFIELD, MA 02052

53-447/113

12085

DATE	AMOUNT
6/14/2019	**********625.00

PAY TO THE ORDER OF Connecticut Siting Council

THE SUM OF SIX HUNDRED TWENTY FIVE DOLLARS AND NO CENTS **********

AUTHORIZED SIGNATURE

Exhibit A

Original Facility Approval

ZONING BOARD OF APPEALS

TOWN OF BLOOMFIELD

LOCATION: 100 FILLEY ST. BLOOMFIELD, CT. 06002
Please type or print

OWNER OF RECORD: FRANK SPONZO SR.

The foregoing application for / / Variance; /X/ Special Exception pursuant to Section M4B of the Bloomfield Zoning Regulations, pertains to premises bounded and described as follows:
(Type or attach written legal boundary description)

NORTHERLY	:	**By land nor or formerly of Lewis Steinberg and by other land of Bennett Millstein, et al., partly by each, being Lots Nos. 2025 and 2024 on said map, in all, 523.88 feet;**
EASTERLY	:	**By land nor or formerly of Anthony Semenuk, 200 feet;**
SOUTHERLY	:	**By other land of Bennett Millstein, et al., being Lot No. 2027, on said map, 536.82 feet; and**
WESTERLY	:	**By Filley Street, 200.70 feet.**

5-6-97
Date

Frank Sponzo
Signature of Owner of Record

PLEASE NOTE REQUIREMENTS BELOW FOR RECORDING APPROVAL ON LAND RECORDS

To be completed by Zoning Board of Appeals following approval:

I hereby certify that the Zoning Board of Appeals, at a meeting held on June 2, 1997, approved / / Variance or /X/ Special Exception of Omnipoint Communications for 95-foot tower at 100 Filley Street, I-2 zone (property owner: Frank Sponzo).

at the above premises, pursuant to Section III.M. of the Bloomfield Zoning Regulations, subject to the following conditions (if any):

No delivery trucks to be parked overnight on the property.

Woodrow Weyon
Secretary - ZBA

NOTE: PURSUANT TO SECTION 8-3d OF THE CONN. GENERAL STATUTES, THIS VARIANCE/SPECIAL EXCEPTION WILL NOT BECOME EFFECTIVE UNTIL IT HAS BEEN RECORDED ON THE LAND RECORDS OF THE TOWN OF BLOOMFIELD. IT IS THE RESPONSIBILITY OF THE OWNER TO RECORD THIS FORM AND PAY THE RECORDING FEE. ($10.00 FOR THE FIRST PAGE, $5.00 EACH ADDITIONAL PAGE

NO BUILDING PERMITS REQUIRED IN CONNECTION WITH THE ABOVE VARIANCE OR SPECIAL EXCEPTION MAY BE ISSUED UNTIL THIS APPROVAL HAS BEEN RECORDED.

Rev. 1/91

242 580

Exhibit B

Property Card

TOWN OF BLOOMFIELD CONNECTICUT

GIS & Real Property Information

Town Offices
800 Bloomfield Avenue
Bloomfield CT 06002

Property Search

Name: ex. Smith

House No:
100

Street:
FILLEY ST

Unique Id: ex. 7764

GO

Information Updates

GIS Parcels Provided
June 2017

Property Info Data Updated
Nightly

Current Parcel Count
7,318 +/-

Search Results

Click on Zoom to GIS to navigate to the MapXpress Application.

Your Search of: ,100 FILLEY ST,

Picture	MBL/Unique ID/Owner/Address	Quick Links	MapXpress
	300-2027 2259 FJS PROPERTIES LLC 100 FILLEY ST **Land Use:** Industrial	**Parcel Details** **Quick Map** **Summary Card** **Assessor Tax Map**	Zoom to GIS

Start Over

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You should promptly consult the specific office or department with any questions. Use of this web site and any information you find through it is subject to the Disclaimer.

Designed and hosted by New England GeoSystems

Town of Bloomfield

Geographic Information System (GIS)

Date Printed: 6/5/2019

MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Bloomfield and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 100 feet

0 100 Feet

N W E S

Exhibit C

Construction Drawings

SITE NAME: BLOOMFIELD/ W DUDLEY_1

100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SITE NUMBER: CT11000A

PROJECT: T-MOBILE L600

CONFIGURATION: 67D94DB HYBRID

GENERAL NOTES

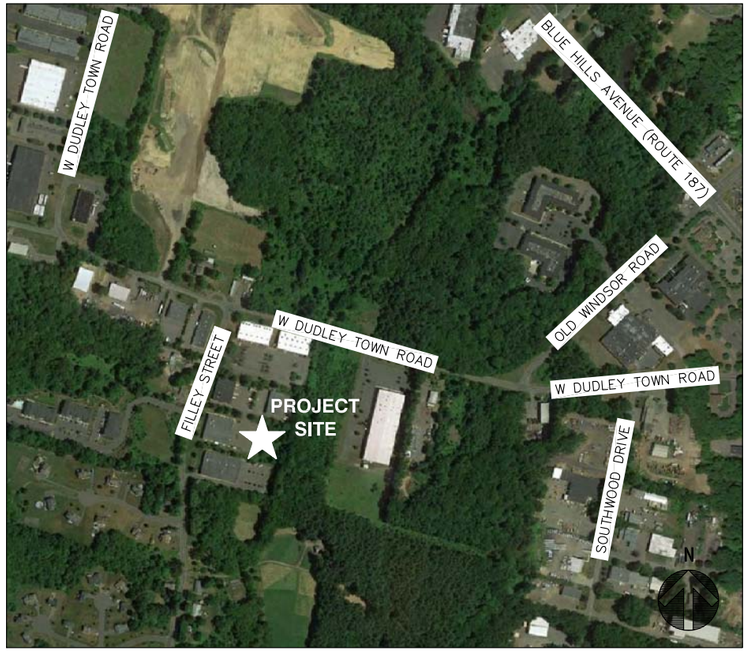
1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T–MOBILE NORTHEAST, LLC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T–MOBILE NORTHEAST. LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL CONSTRUCTION NOTES

1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH THE GLOBAL TOWER STRUCTURAL ANALYSIS PREPARED BY DESTEK ENGINEERING, LLC DATED 07/22/19.
2. PROTERRA DESIGN GROUP ASSUMES THAT THE MONOPOLE IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES.
3. ANY REQUIRED ANTENNA MOUNT WORK SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY EQUIPMENT IN ACCORDANCE WITH THE ANTENNA MOUNT STRUCTURAL ANALYSIS (MSA) REPORT AND DRAWING PREPARED BY DESTEK ENGINEERING, LLC DATED 07/18/19.

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS NOT PERMITTED
SECTOR B:	ACCESS NOT PERMITTED
SECTOR C:	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED*
	(*CAUTION: OSHA–APPROVED PORTABLE 8' STEP–LADDER REQUIRED)
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE



DIG SAFE SYSTEM
(MA, ME, NH, RI, VT):
1–888–344–7233

CALL BEFORE YOU DIG
(CT): 1–800–922–4455

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T–MOBILE EQUIPMENT ALTERATION
ZONING JURISDICTION:	SPECIAL ZONING NOTE (ELIGIBLE FACILITY REQUEST): BASED ON INFORMATION PROVIDED BY T–MOBILE REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE–EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).
SITE ADDRESS:	100 FILLEY STREET BLOOMFIELD, CT 06002
LATITUDE:	41° 51' 06.37" N (FROM RFDS: 41.8517690)
LONGITUDE:	72° 42' 54.63" W (FROM RFDS: –72.7151750)
GROUND ELEVATION:	132'± (FROM GOOGLE EARTH)
JURISDICTION:	CONNECTICUT SITING COUNCIL / TOWN OF BLOOMFIELD
BUILDING CODE:	2018 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS (IBC 2015 BASED)
ELECTRICAL CODE:	2017 NATIONAL ELECTRICAL CODE AND AMENDMENTS
CURRENT/ PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	T–MOBILE COMMUNICATIONS, INC.
TOWER OWNER SITE ID:	CT11000A
TOWER OWNER SITE NAME:	BLOOMFIELD/ W DUDLEY_1

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	0
GN–1	GENERAL NOTES	0
A–1	COMPOUND & EQUIPMENT PLANS	0
A–2	ELEVATION & ANTENNA PLANS	0
A–3	DETAILS	0
S–1	ANTENNA MOUNTING DETAILS	0
E–1	ONE–LINE DIAGRAM & GROUNDING DETAILS	0
E–2	UTILITY SITE PLAN & ONE–LINE DIAGRAM	0

T-MOBILE NORTHEAST LLC
35 Griffin Road South
Bloomfield, CT 06002
Office: (860) 648–1116

CENTERLINE COMMUNICATIONS
750 West Center St. Suite 301
West Bridgewater, MA 02379

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph (413) 320–4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
7/22/19

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	19–023
DRAWN BY:	TBD/PN
CHECKED BY:	TEJ/JMM

0	07/19/19	ISSUED FOR CONSTRUCTION
A	07/15/19	ISSUED FOR REVIEW

SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T–1

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE COMMUNICATIONS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T–MOBILE

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CUR\BS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR CONSTRUCTION SHALL BE AIR–ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 35 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH LTE OR 700 MHz SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T–MOBILE SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE, (IBC 2015) WITH AMENDMENTS

    ELECTRICAL CODE: NEC 2017 AND AMENDMENTS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, 14TH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222–G, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE–SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER SURCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	RAN	RADIO ACCESS NETWORK
AWG	AMERICAN WIRE GAUGE	G.C.	GENERAL CONTRACTOR	REF	REFERENCE
BTCW	BARE TINNED SOLID COPPER WIRE	GRC	GALVANIZED RIGID CONDUIT	REQ	REQUIRED
		MSA	MOUNT STRUCTURAL ANALYSIS	RF	RADIO FREQUENCY
BGR	BURIED GROUND RING	MGB	MASTER GROUND BAR	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	MIN	MINIMUM	TBR	TO BE REMOVED
EXISTING	EXISTING OR (E)	PROPOSED	NEW OR (P)	TBRR	TO BE REMOVED AND REPLACED
EGB	EQUIPMENT GROUND BAR	N.T.S.	NOT TO SCALE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	RAD	RADIATION CENTERLINE (ANTENNA)	VIF	VERIFY IN FIELD

T-MOBILE NORTHEAST LLC
35 Griffin Road South
Bloomfield, CT 06002
Office: (860) 648–1116

CENTERLINE COMMUNICATIONS
750 West Center St. Suite 301
West Bridgewater, MA 02379

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph (413) 320–4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
7/22/19

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	19–023
DRAWN BY:	TBD/PN
CHECKED BY:	TEJ/JMM

0	07/19/19	ISSUED FOR CONSTRUCTION
A	07/15/19	ISSUED FOR REVIEW

SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

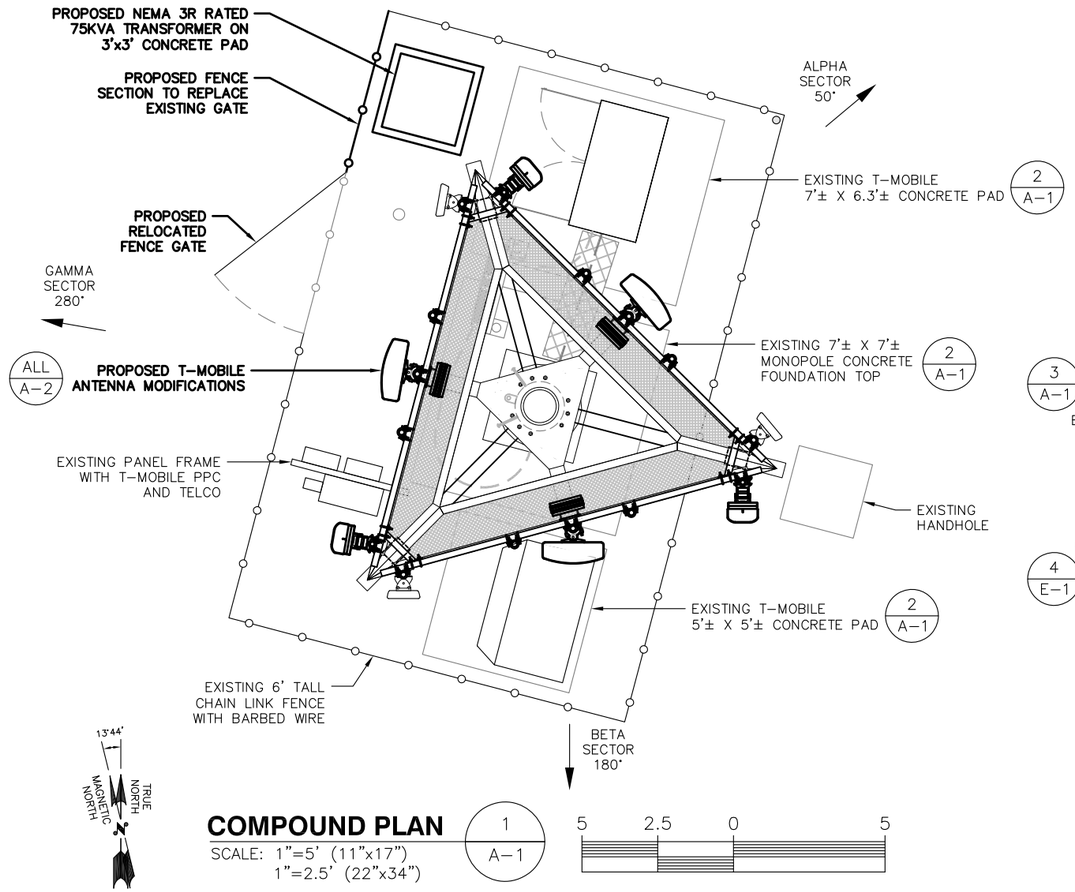
100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

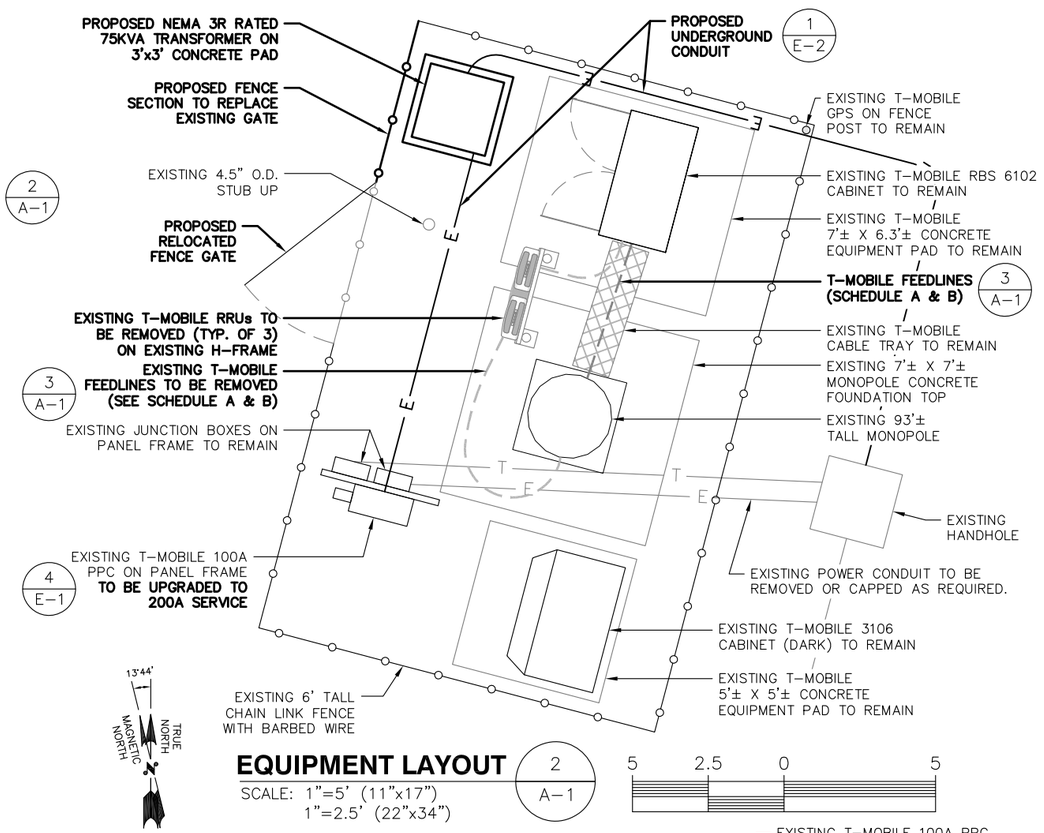
GN–1



COMPOUND PLAN

1 A-1

SCALE: 1"=5' (11"x17")
1"=2.5' (22"x34")



EQUIPMENT LAYOUT

2 A-1

SCALE: 1"=5' (11"x17")
1"=2.5' (22"x34")

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (12) 1 5/8" COAX TO 93' RAD EXISTING TO BE REMOVED: (6) 1 5/8" COAX TO 93' RAD	UP MONOPOLE TO RAD
B	PROPOSED: (3) 6x12 HYBRID TO 93' RAD	UP MONOPOLE TO RAD

NOTE: EXISTING T-MOBILE EQUIPMENT FEEDLINE LEASING ENTITLEMENTS BASED ON T-MOBILE RFDS. OBSERVED FIELD CONDITIONS MAY DIFFER.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

MOUNT MODIFICATIONS TO BE COMPLETED PRIOR TO THE INSTALLATION OF ANY EQUIPMENT. REFER TO THE MOUNT STRUCTURAL ANALYSIS REPORT AND DRAWING BY DESTEK ENGINEERING, LLC DATED 07/18/19.

ALL WORK TO BE COMPLETED IN ACCORDANCE WITH THE GLOBAL TOWER STRUCTURAL ANALYSIS PREPARED BY DESTEK ENGINEERING, LLC DATED 07/22/19.

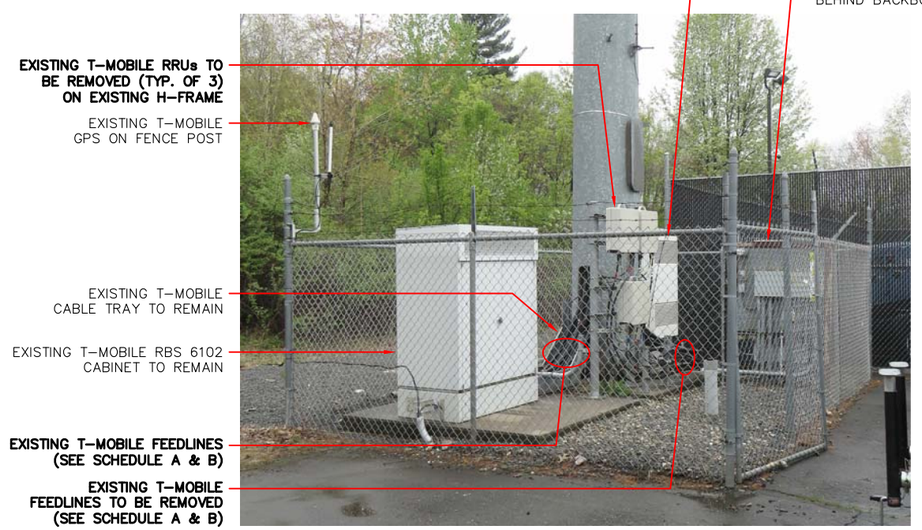


IMAGE SOURCE: PROTERRA 05/03/19

GROUND EQUIPMENT PHOTO DETAIL

3 A-1

SCALE: N.T.S.

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ProTerra DESIGN GROUP, LLC
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Hadley, MA 01035 Ph (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
7/22/19

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	19-023
DRAWN BY:	TBD/PN
CHECKED BY:	TEJ/JMM

0	07/19/19	ISSUED FOR CONSTRUCTION
A	07/15/19	ISSUED FOR REVIEW

SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

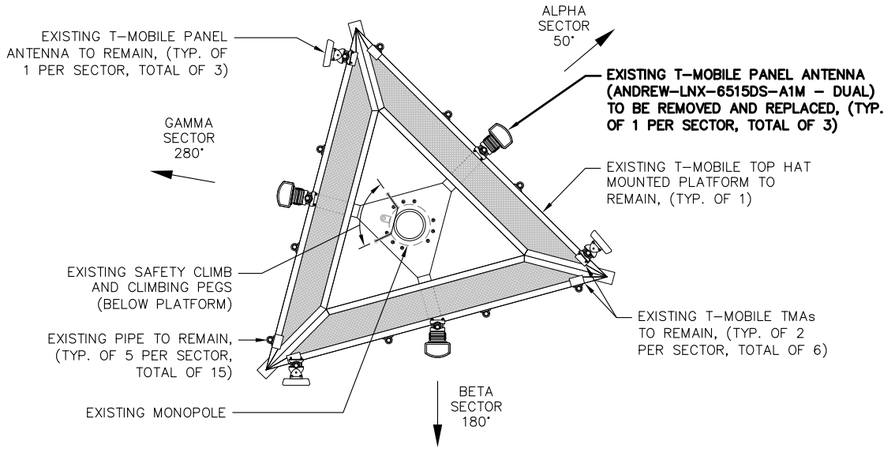
100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

COMPOUND & EQUIPMENT PLANS

SHEET NUMBER

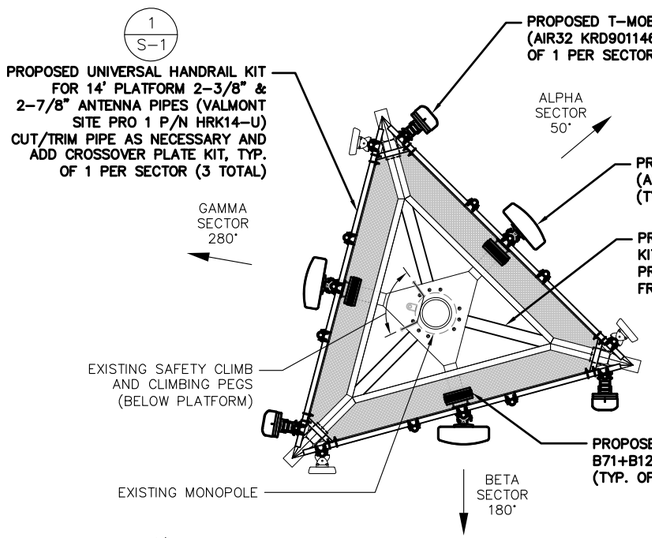
A-1



EXISTING ANTENNA PLAN

SCALE: N.T.S.

1 / A-2



PROPOSED ANTENNA PLAN

SCALE: N.T.S.

2 / A-2

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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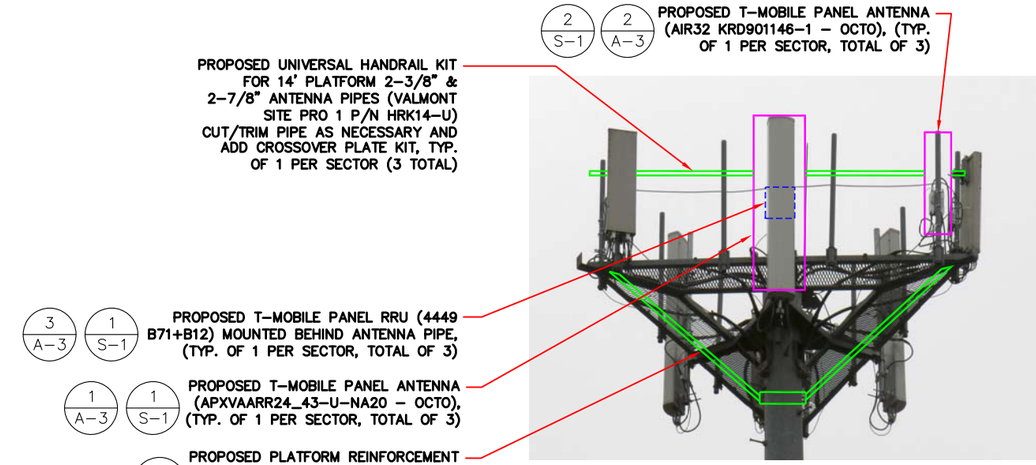

IMAGE SOURCE: PROTERRA 05/03/19
NOTE: ONLY ONE SECTOR SHOWN FOR CLARITY

ANTENNA PHOTO DETAIL

SCALE: N.T.S.

3 / A-2

IMAGE SOURCE: PROTERRA 05/03/19

PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.

4 / A-2

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STATE OF CONNECTICUT
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SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

ELEVATION & ANTENNA PLANS

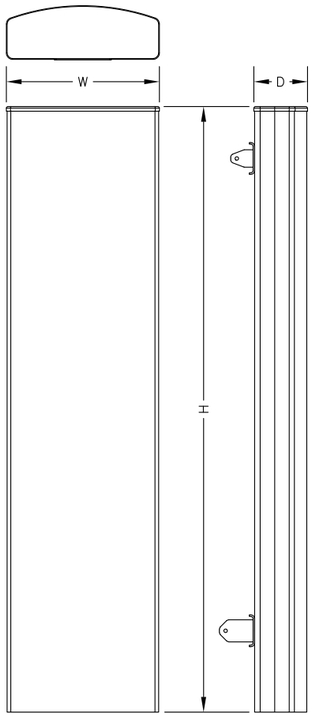
SHEET NUMBER

A-2

ANTENNA CONFIGURATION

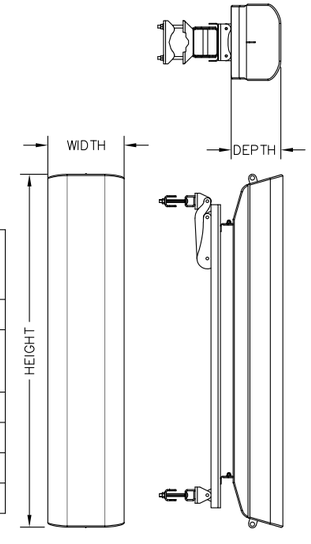
SECTOR	BAND	ANTENNA MODEL	ANTENNA RAD (FROM RFDS)	AZIMUTH	DOWNTILT MECH./ELEC.		RADIOS	CABLE FEED LINES (APPROX. CABLE LENGTH 145'±)
ALPHA	L1900 L2100	(1) ERICSSON – AIR32 KRD901146–1_B66A_B2A (OCTO)	95'±	50°	0°	3°	N/A	PROPOSED (1) 6x12 HYBRID CABLE TRUNK
	L600 L700	(1) RFS – APXVAARR24_43–U–NA20 (OCTO)	93'±	50°	0°	2°	PROPOSED (1) 4449 B71+B12 RRU	SHARED HYBRID CABLE TRUNK
	G1900 U2100	(E) (1) RFS – APX16DWV–16DWV–S–E–A20 (QUAD)	95'±	50°	0°	3°	(E) (1) TWIN STYLE 1A – PCS (EXISTING) (E) (1) TWIN STYLE 1B – AWS (EXISTING)	EXISTING (4) 1–5/8" COAX
BETA	L1900 L2100	(1) ERICSSON – AIR32 KRD901146–1_B66A_B2A (OCTO)	95'±	180°	0°	3°	N/A	PROPOSED (1) 6x12 HYBRID CABLE TRUNK
	L600 L700	(1) RFS – APXVAARR24_43–U–NA20 (OCTO)	93'±	180°	0°	2°	PROPOSED (1) 4449 B71+B12 RRU	SHARED HYBRID CABLE TRUNK
	G1900 U2100	(E) (1) RFS – APX16DWV–16DWV–S–E–A20 (QUAD)	95'±	180°	0°	3°	(E) (1) TWIN STYLE 1A – PCS (EXISTING) (E) (1) TWIN STYLE 1B – AWS (EXISTING)	EXISTING (4) 1–5/8" COAX
GAMMA	L1900 L2100	(1) ERICSSON – AIR32 KRD901146–1_B66A_B2A (OCTO)	95'±	280°	0°	3°	N/A	PROPOSED (1) 6x12 HYBRID CABLE TRUNK
	L600 L700	(1) RFS – APXVAARR24_43–U–NA20 (OCTO)	93'±	280°	0°	2°	PROPOSED (1) 4449 B71+B12 RRU	SHARED HYBRID CABLE TRUNK
	G1900 U2100	(E) (1) RFS – APX16DWV–16DWV–S–E–A20 (QUAD)	95'±	280°	0°	3°	(E) (1) TWIN STYLE 1A – PCS (EXISTING) (E) (1) TWIN STYLE 1B – AWS (EXISTING)	EXISTING (4) 1–5/8" COAX

BASED ON RFDS DATED 04/25/19. REFER TO FINAL RFDS FOR FINAL ANTENNA SETTINGS, CONFIGURATION, QUANTITIES AND RAN WIRING.



APXVAARR24_43-U-NA20 (OCTO) ANTENNA SPECIFICATIONS	
MANUF.	RFS
MODEL #	APXVAARR24_43–U–NA20 (OCTO)
HEIGHT	95.9"
WIDTH	24"
DEPTH	8.7"
WEIGHT	128± LBS.

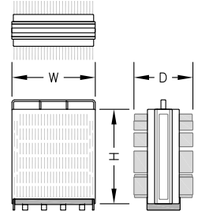
ANTENNA DETAIL 1 / A–3
SCALE: N.T.S.



AIR ANTENNA SPECIFICATIONS	
MANUF.	ERICSSON
MODEL #	AIR32 KRD901146–1_B66A _B2A (OCTO)
HEIGHT	56.6"
WIDTH	12.9"
DEPTH	8.7"
WEIGHT	132.2± LBS.

ANTENNA DETAIL (AIR32 KRD901146-1_B66A_B2A OCTA) 2 / A–3
SCALE: N.T.S.

4449 B71+B12 SPECIFICATIONS	
MANUF.	ERICSSON
MODEL #	4449 B71+B12
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	9.2"
WEIGHT	74± LBS.



REMOTE RADIO UNIT (RRU) DETAIL 3 / A–3
SCALE: N.T.S.

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STATE OF CONNECTICUT
THOMAS E. JOHNSON
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LICENSED PROFESSIONAL ENGINEER
7/22/19

APPROVALS

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SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

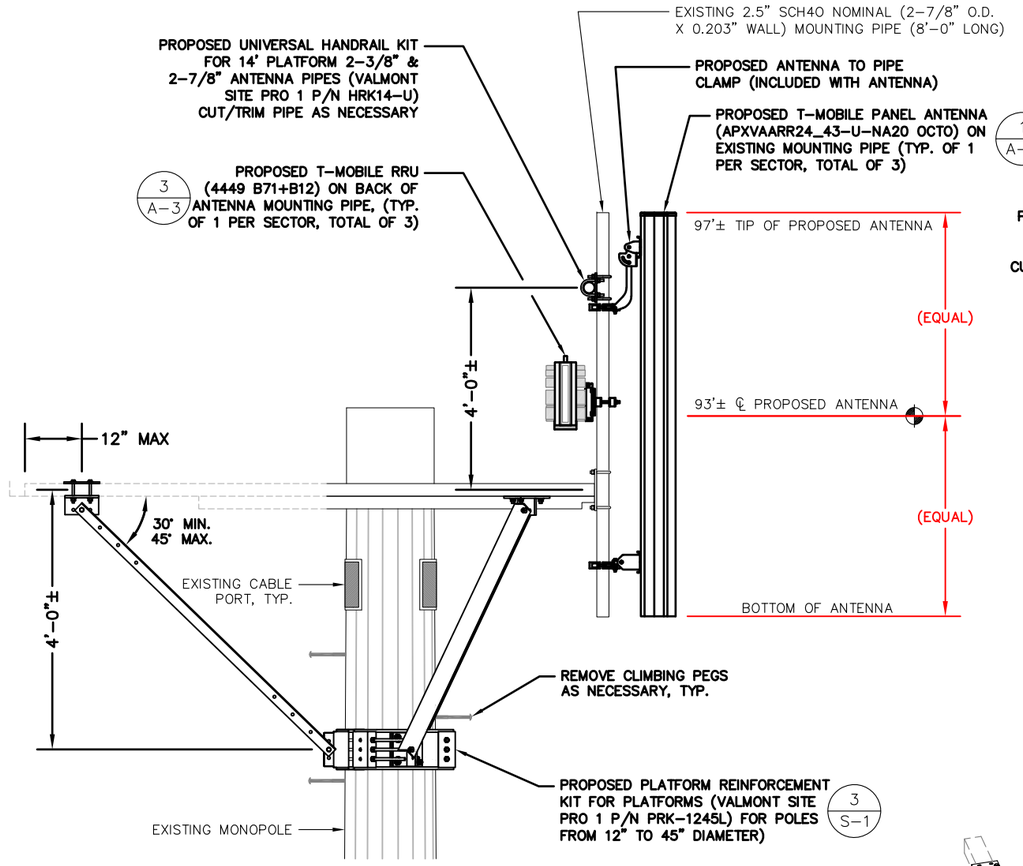
100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

DETAILS

SHEET NUMBER

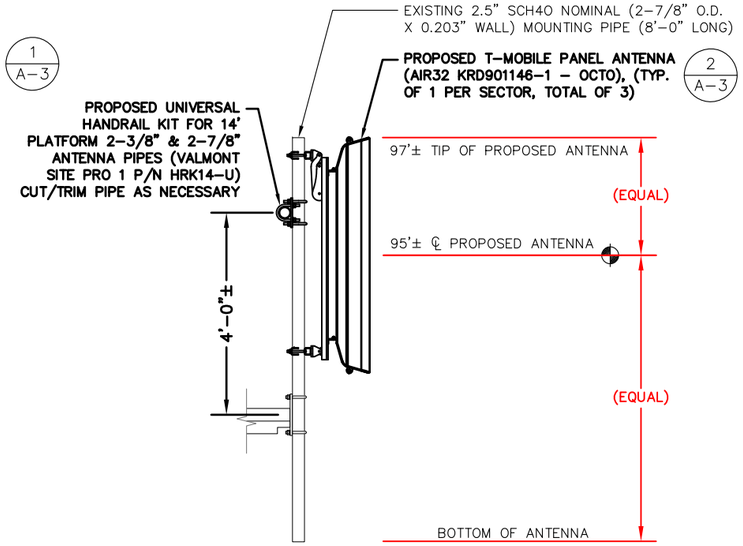
A–3



APXVAARR24 ANTENNA & RRU MOUNTING DETAIL

1 S-1

SCALE: N.T.S.



AIR32 ANTENNA MOUNTING DETAIL

2 S-1

SCALE: N.T.S.

NOTE:
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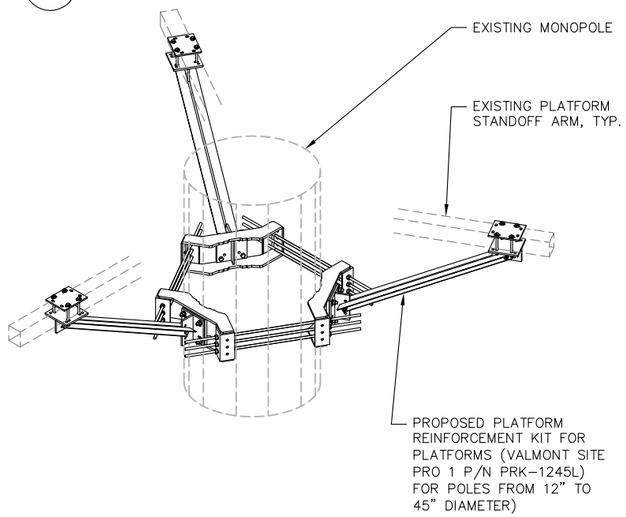

TYPICAL REINFORCEMENT KIT

3 S-1

SCALE: N.T.S.

NOTE:
1. STRICTLY FOLLOW MANUFACTURER'S INSTRUCTION & SPECIFICATIONS AND MOUNT STRUCTURAL ANALYSIS PLAN SHEET S1 NOTES & UPGRADE DETAIL

PLATFORM REINFORCEMENT SPECIFICATIONS

MANUF.	VALMONT SITE PRO 1
MODEL #	PRK-1245L
WEIGHT	517.2± LBS.

T-Mobile

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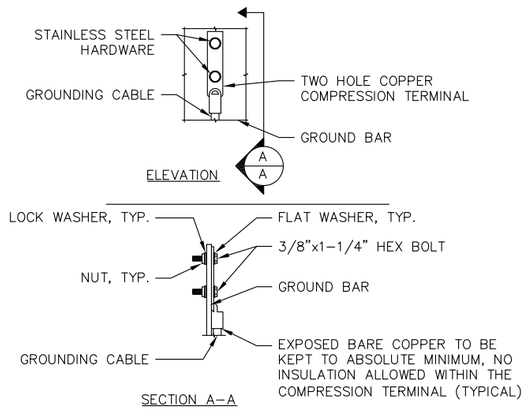
SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE
ANTENNA MOUNTING DETAILS

SHEET NUMBER
S-1

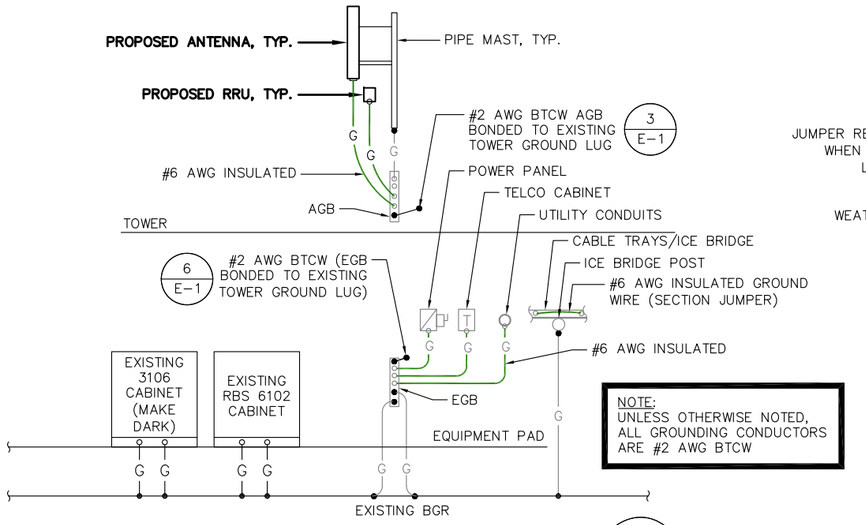


NOTES:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

1 / E-1

SCALE: N.T.S.

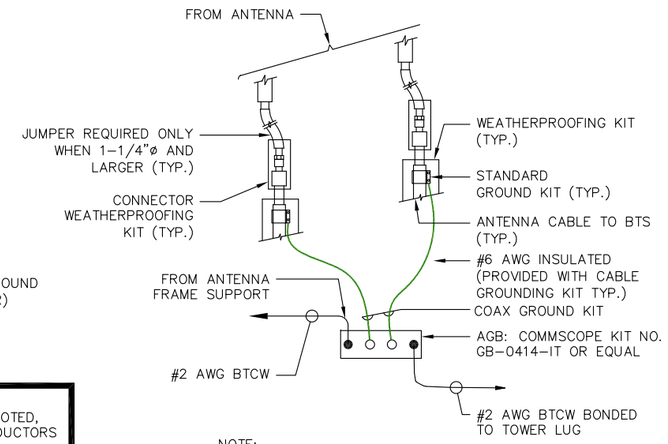


NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

TYPICAL GROUNDING RISER DIAGRAM

2 / E-1

SCALE: N.T.S.



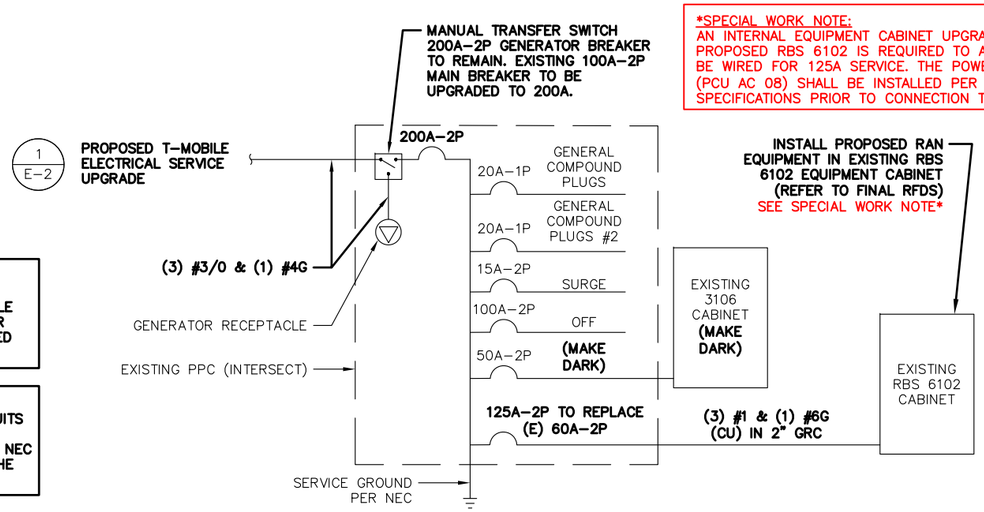
NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

TOWER TOP CABLE GROUNDING DETAIL

3 / E-1

SCALE: N.T.S.

*SPECIAL WORK NOTE:
AN INTERNAL EQUIPMENT CABINET UPGRADE WITHIN THE PROPOSED RBS 6102 IS REQUIRED TO ALLOW THE CABINET TO BE WIRED FOR 125A SERVICE. THE POWER CONNECTION UNIT (PCU AC 08) SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS PRIOR TO CONNECTION TO THE 125A BREAKER.



NOTE:
ELECTRICAL UPGRADE DESIGN BASED ON RECOMMENDATIONS NOTED IN THE T-MOBILE ELECTRICAL SERVICE INVESTIGATION LETTER PREPARED BY McPHEE ELECTRIC LTD DATED JUNE 21, 2019.

CONTRACTOR NOTE:
G.C. 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.

ONE LINE POWER SCHEMATIC

4 / E-1

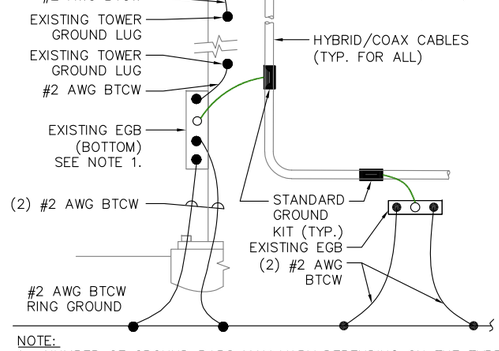
SCALE: N.T.S.

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
MGB	GROUND
	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	INSULATED GROUNDING CONDUCTOR (#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
	5/8"x10' COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL & GROUNDING NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) 2017 AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION AS REQUIRED BY NEC.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LYGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN/GROUND RING.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.



NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED

TOWER BOTTOM CABLE GROUNDING DETAIL

5 / E-1

SCALE: N.T.S.

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APPROVALS

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SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

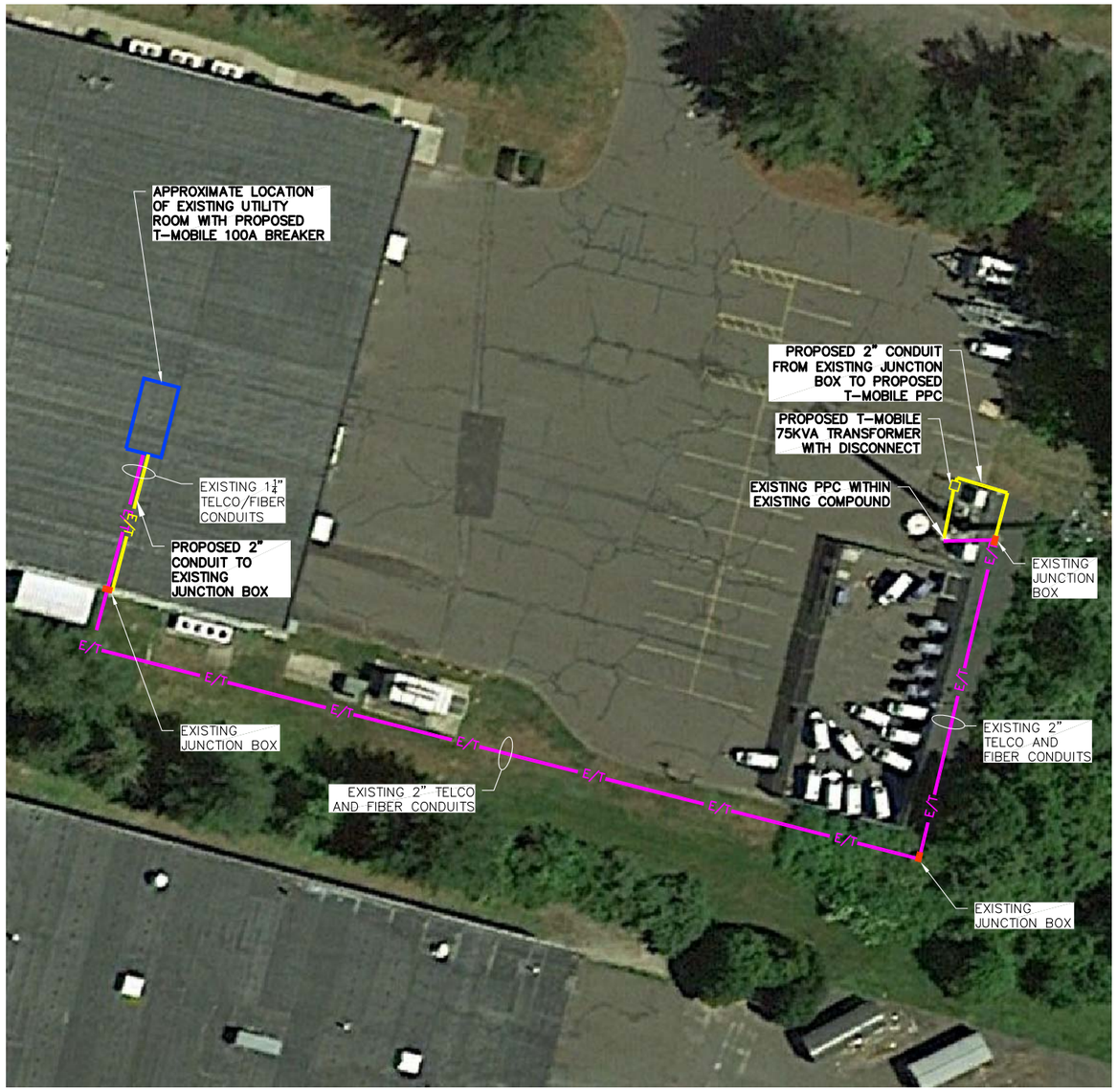
100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

ONE LINE DIAGRAM & GROUNDING DETAILS

SHEET NUMBER

E-1

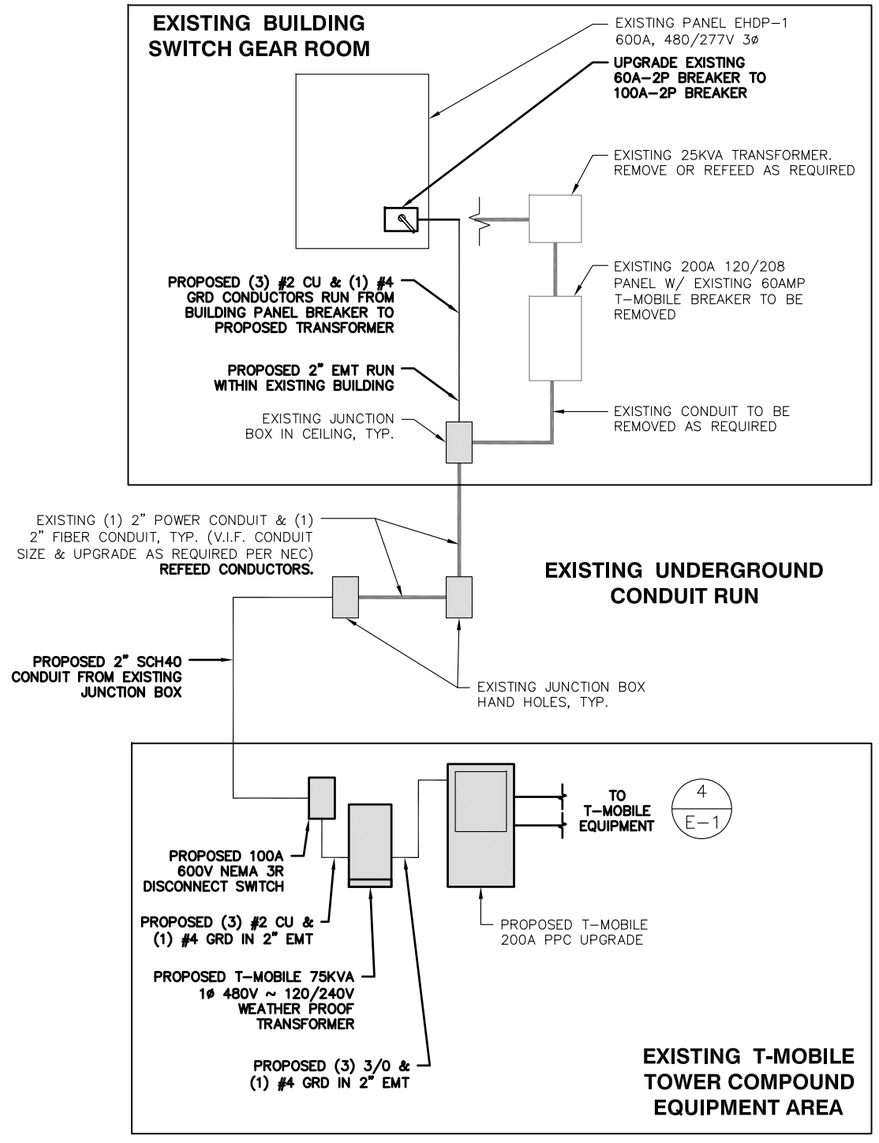


NOTE:
ELECTRICAL UPGRADE DESIGN BASED ON RECOMMENDATIONS NOTED IN THE T-MOBILE ELECTRICAL SERVICE INVESTIGATION LETTER PREPARED BY McPHEE ELECTRIC LTD DATED JUNE 21, 2019.

UTILITY SITE PLAN AND ONE LINE DIAGRAM

SCALE: N.T.S.

1 / E-2



T-MOBILE NORTHEAST LLC
35 Griffin Road South
Bloomfield, CT 06002
Office: (860) 648-1116

CENTERLINE COMMUNICATIONS
750 West Center St. Suite 301
West Bridgewater, MA 02379

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER

FOR SCHEMATIC 7/22/19

APPROVALS

CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO:	19-023
DRAWN BY:	TBD/PN
CHECKED BY:	TEJ/JMM

0	07/19/19	ISSUED FOR CONSTRUCTION
A	07/15/19	ISSUED FOR REVIEW

SITE NUMBER: CT11000A
SITE NAME:
BLOOMFIELD/ W DUDLEY_1

100 FILLEY STREET
BLOOMFIELD, CT 06002
HARTFORD COUNTY

SHEET TITLE

ONE LINE DIAGRAM & GROUNDING DETAILS

SHEET NUMBER

E-2

Exhibit D

Structural Analysis Report

STRUCTURAL ANALYSIS REPORT REV. 2
MONOPOLE

Prepared For:

ProTerra Design Group, LLC
4 Bay Road, Building A Suite 200
Hadley, MA 01035

Structure Rating:	
Monopole:	**78.2% (Pass)**
Base Plate:	**55.0% (Pass)**
Anchor Bolts:	**53.7% (Pass)**

Sincerely,
Destek Engineering, LLC
Firm License No: PEC0001429

07-22-2019

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

T-Mobile Site Name: Bloomfield/ W Dudley-1
T-Mobile Site Number: CT11000A
100 Filley St.
Bloomfield, CT 06002

Destek Job No: 1978008

July 22, 2019

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the 93 ft. monopole located at 100 Filley St., Bloomfield, CT 06002 for the addition of wireless telecommunication appurtenances proposed by T-Mobile.

The structural analysis is based on the following documentation provided to Destek Engineering, LLC (Destek):

- Construction Drawing prepared by ProTerra Design Group, dated 05/22/2019.
- Structural Analysis Report prepared by EBI Consulting, dated 08/11/2014.
- RFDS provided by T-Mobile, dated 04/16/2019.
- Site Photographs, dated 05/03/2019.
- Mount Structural Analysis Report – Upgrade prepared by Destek, dated 07/18/2019.

1.1 STRUCTURE

The structure is a 93 ft. tall, 18-sided monopole, which is attached to the foundation with a base plate and anchor bolts. It is formed by the following sections:

Section Length (ft)	Lap Splice (ft)	Shaft Thickness (in)	Top Diameter (in)	Bottom Diameter (in)	Yield Strength (ksi)
48.25	3.25	0.1875	19.5625	25.4500	60
48	0	0.2500	24.6784	33.3500	60

2.0 EXISTING AND PROPOSED APPURTENANCES

The analysis is based on the following proposed appurtenances:

Existing Configuration of T-Mobile Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
95.0	(3) RFS APX16DWV-16DWV-S-E-A20 (3) Generic Twin Style 1A-PCS (3) Generic Twin Style 1B-AWS	(18) 1-1/4''	(1) Existing Platform Mount
93.0	(3) Andrew LNX-6515DS-A1M		

***Feedlines located inside the monopole.**

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

Proposed and Final Configuration of T-Mobile Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	COAX*	MOUNT
95.0	(3) RFS APX16DWV-16DWV-S-E-A20 (3) Ericsson AIR32 KRD901146-1-B66A-B2A (3) Generic Twin Style 1A-PCS (3) Generic Twin Style 1B-AWS	(12) 1-1/4'' (3) 6x12 HCS	(1) Existing Platform Mount with Proposed Mount Modifications
93.0	(3) RFS APXVAARR24-43-U-NA20 (3) Ericsson Radio4449 B71+B12**		

***Feedlines located inside the monopole.**

****Proposed RRUs to be mounted behind the antennas.**

3.0 CODES AND LOADING

This analysis has been performed in accordance with the 2018 Connecticut Building Code (2015 IBC) based upon an ultimate 3-second gust wind speed of 125 mph (Risk Category II) converted to a nominal 3-second gust wind speed of 97 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. The following loading criteria were used in the analysis:

- Basic wind speed of 97 mph without ice (V)
- Basic wind speed of 50 mph concurrent with the design ice thickness of 1 " (V_i and t_i)
- Exposure Category C, Topographic Category 1

The following load combinations were used with wind blowing at 30^o intervals, measured from a line normal to the face of the monopole.

- $1.2D + 1.6W_o$
- $0.9D + 1.6W_o$
- $1.2D + 1.0D_i + 1.0W_i$

D: Dead Load of structure and appurtenances
W_o: Wind Load, without ice
W_i: Wind Load with ice
D_i: Weight of ice due to factored ice thickness

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure is assumed to be in good condition, free of defects, and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service lifespan. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the antenna mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed appurtenances. Any deviation of the appurtenances and placement, etc., will require Destek to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The monopole was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

6.0 RESULTS AND CONCLUSION

Based on a structural analysis per ANSI/TIA-222-G, the existing monopole tower has **adequate** structural capacity for the proposed changes by T-Mobile. For the code specified load combinations and as a maximum, the monopole shaft from 0 ft. to 44.75 ft. is stressed to **78.2%** of its structural capacity. The base plate and the anchor bolts are stressed to 55.0%, and 53.7% of their structural capacity, respectively.

Due to lack of information, the base foundation could not be analyzed.

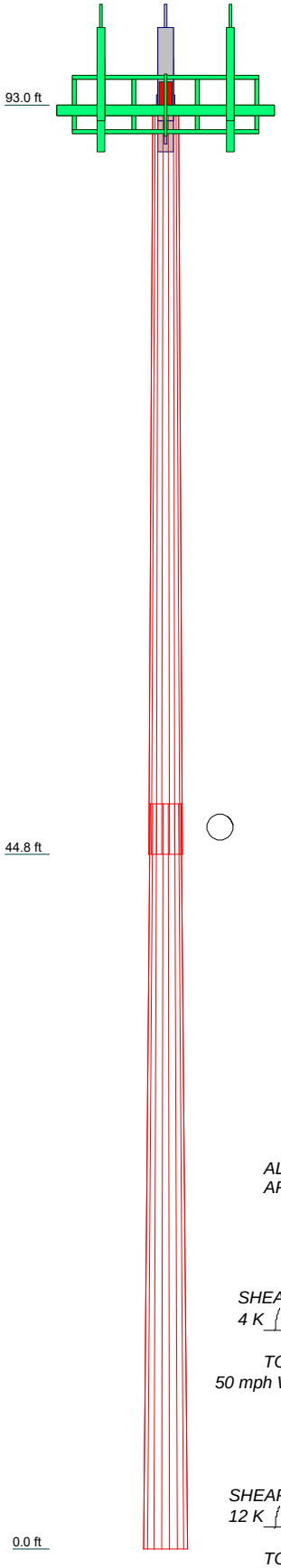
Therefore, the additions and alterations proposed by T-Mobile **can** be implemented as intended and with the conditions outlined in this report**.**

Should you have any questions about this report or require any additional information, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

APPENDIX A
SOFTWARE OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	48.25	18	0.1875	3.25	19.5625	25.4500	A607-60	2.2
2	48.00	18	0.2500		24.6784	33.3500		3.7
								5.9



ALL REACTIONS ARE FACTORED

AXIAL 28 K
SHEAR 4 K
MOMENT 297 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 13 K
SHEAR 12 K
MOMENT 884 kip-ft
TORQUE 0 kip-ft
REACTIONS - 97 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod	93	AIR 32 B2a/B66Aa	93
Beacon	93	AIR 32 B2a/B66Aa	93
APXVAARR24_43-U-NA20 w/ Mount Pipe	93	AIR 32 B2a/B66Aa	93
APXVAARR24_43-U-NA20 w/ Mount Pipe	93	Generic Style 1A - Twin PCS	93
APXVAARR24_43-U-NA20 w/ Mount Pipe	93	Generic Style 1A - Twin PCS	93
RADIO 4449 B12/B71	93	Generic Style 1A - Twin PCS	93
RADIO 4449 B12/B71	93	Generic Style 1B - Twin AWS	93
RADIO 4449 B12/B71	93	Generic Style 1B - Twin AWS	93
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	93	Generic Style 1B - Twin AWS	93
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	93	(2) 9'-P2x0.154	93
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	93	(2) 9'-P2x0.154	93
		(2) 9'-P2x0.154	93
		Platform Mount [LP 1201-1]	93
		Miscellaneous [NA 507-1]	93
		Miscellaneous [NA 509-3]	93

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 78.2%

Destek Engineering, LLC
1281 Kennestone Circle, Ste 100
Marietta, GA
Phone: (770) 693-0835
FAX:

Job: **1978008**			
Project: ***CT11000A***			
Client: Pro Terra	Drawn by: Ahmet Colakoglu		App'd:
Code: TIA-222-G	Date: 07/10/19		Scale: NTS
Path: S:\Projects\2019\78 - ProTerra Design Group\008 - CT11000A\TNX\Rev.1\CT11000A_Rev.1.eri			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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	93.00-44.75	48.25	3.25	18	19.5625	25.4500	0.1875	0.7500	A607-60

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
L2	44.75-0.00	48.00		18	24.6784	33.3500	0.2500	1.0000	(60 ksi) A607-60 (60 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	It/Q in^2	w in	w/t
L1	19.8354	11.5305	546.8532	6.8781	9.9377	55.0279	1094.4260	5.7664	3.1130	16.603
	25.8137	15.0343	1212.2010	8.9682	12.9286	93.7612	2425.9970	7.5186	4.1492	22.129
L2	25.6168	19.3840	1461.4071	8.6721	12.5366	116.5708	2924.7371	9.6938	3.9034	15.614
	33.8259	26.2648	3635.5353	11.7505	16.9418	214.5897	7275.8543	13.1349	5.4296	21.718

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	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 93.00-44.75				1	1	1			
L2 44.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
**********										
**********										
**********										
Safety Line 5/16	A	No	Surface Ar (CaAa)	93.00 - 0.00	1	1	0.000 0.000	0.3125		0.26

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
**********									
**********									
93ft T-Mobile									
LDF6-50A(1-1/4)	C	No	No	Inside Pole	93.00 - 0.00	15	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	93.00-44.75	A	0.000	0.000	1.508	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.43
L2	44.75-0.00	A	0.000	0.000	1.398	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.40

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	93.00-44.75	A	2.151	0.000	0.000	22.263	0.000	0.32
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.43
L2	44.75-0.00	A	1.923	0.000	0.000	20.648	0.000	0.30
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.40

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	93.00-44.75	-0.2436	-0.1406	-1.4364	-0.8293
L2	44.75-0.00	-0.2442	-0.1410	-1.5317	-0.8843

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
L1	7	Safety Line 5/16	44.75 - 93.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
**********									
**********									
Lighting Rod	B	None		0.0000	93.00	No Ice	0.25	0.25	0.03
						1/2" Ice	0.66	0.66	0.03
						1" Ice	1.07	1.07	0.04
Beacon	B	None		0.0000	93.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.59	1.59	0.06
93ft T-Mobile									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
RADIO 4449 B12/B71	A	From Leg	4.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.30 1.44 1.60	0.08 0.09 0.11
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.30 1.44 1.60	0.08 0.09 0.11
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.30 1.44 1.60	0.08 0.09 0.11
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	7.23 7.71 8.18	3.78 4.64 5.38	0.06 0.11 0.17
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	7.23 7.71 8.18	3.78 4.64 5.38	0.06 0.11 0.17
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	7.23 7.71 8.18	3.78 4.64 5.38	0.06 0.11 0.17
AIR 32 B2a/B66Aa	A	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	6.51 6.89 7.27	4.71 5.07 5.43	0.13 0.18 0.23
AIR 32 B2a/B66Aa	B	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	6.51 6.89 7.27	4.71 5.07 5.43	0.13 0.18 0.23
AIR 32 B2a/B66Aa	C	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	6.51 6.89 7.27	4.71 5.07 5.43	0.13 0.18 0.23
Generic Style 1A - Twin PCS	A	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	0.57 0.67 0.77	0.32 0.40 0.48	0.02 0.02 0.03
Generic Style 1A - Twin PCS	B	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	0.57 0.67 0.77	0.32 0.40 0.48	0.02 0.02 0.03
Generic Style 1A - Twin PCS	C	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	0.57 0.67 0.77	0.32 0.40 0.48	0.02 0.02 0.03
Generic Style 1B - Twin AWS	A	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	0.40 0.49 0.57	0.16 0.22 0.28	0.01 0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Generic Style 1B - Twin AWS	B	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	0.40 0.49 0.57	0.16 0.22 0.28	0.01 0.01 0.02
Generic Style 1B - Twin AWS	C	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	0.40 0.49 0.57	0.16 0.22 0.28	0.01 0.01 0.02
(2) 9'-P2x0.154	A	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	2.14 3.07 4.01	2.14 3.07 4.01	0.03 0.05 0.07
(2) 9'-P2x0.154	B	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	2.14 3.07 4.01	2.14 3.07 4.01	0.03 0.05 0.07
(2) 9'-P2x0.154	C	From Leg	4.00 0.00 2.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	2.14 3.07 4.01	2.14 3.07 4.01	0.03 0.05 0.07
Platform Mount [LP 1201-1]	C	None		0.0000	93.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 30.50	2.10 2.50 2.90
Miscellaneous [NA 507-1]	C	None		0.0000	93.00	No Ice 1/2" Ice 1" Ice	4.80 6.70 8.60	4.80 6.70 8.60	0.25 0.29 0.34
Miscellaneous [NA 509-3]	C	None		0.0000	93.00	No Ice 1/2" Ice 1" Ice	11.84 16.96 22.08	11.84 16.96 22.08	0.28 0.30 0.32

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice

Comb. No.	Description
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 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	93 - 44.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.43	0.25	0.15
			Max. Mx	20	-7.53	371.52	0.01
			Max. My	2	-7.53	0.01	371.52
			Max. Vy	20	-9.42	371.52	0.01
			Max. Vx	2	-9.42	0.01	371.52
			Max. Torque	28			-0.00
L2	44.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.71	0.59	0.34
			Max. Mx	20	-13.28	883.66	0.02
			Max. My	2	-13.28	0.03	883.65
			Max. Vy	20	-11.84	883.66	0.02
			Max. Vx	2	-11.84	0.03	883.65
			Max. Torque	28			-0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	27.71	3.83	0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	20	13.30	11.82	0.00
	Max. H_z	2	13.30	0.00	11.82
	Max. M_x	2	883.65	0.00	11.82
	Max. M_z	8	883.60	-11.82	0.00
	Max. Torsion	34	0.00	1.91	-3.32
	Min. Vert	11	9.97	-10.24	-5.91
	Min. H_x	8	13.30	-11.82	0.00
	Min. H_z	14	13.30	0.00	-11.82
	Min. M_x	14	-883.62	0.00	-11.82
	Min. M_z	20	-883.66	11.82	0.00
	Min. Torsion	28	-0.00	-1.91	3.32

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	11.08	0.00	0.00	-0.01	0.02	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	13.30	0.00	-11.82	-883.65	0.03	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	9.97	0.00	-11.82	-873.44	0.02	0.00
1.2 Dead+1.6 Wind 30 deg - No Ice	13.30	5.91	-10.24	-765.27	-441.79	0.00
0.9 Dead+1.6 Wind 30 deg - No Ice	9.97	5.91	-10.24	-756.43	-436.69	0.00
1.2 Dead+1.6 Wind 60 deg - No Ice	13.30	10.24	-5.91	-441.84	-765.23	-0.00
0.9 Dead+1.6 Wind 60 deg - No Ice	9.97	10.24	-5.91	-436.73	-756.39	0.00
1.2 Dead+1.6 Wind 90 deg - No Ice	13.30	11.82	0.00	-0.02	-883.60	0.00
0.9 Dead+1.6 Wind 90 deg - No Ice	9.97	11.82	0.00	-0.01	-873.41	0.00
1.2 Dead+1.6 Wind 120 deg - No Ice	13.30	10.24	5.91	441.80	-765.23	0.00
0.9 Dead+1.6 Wind 120 deg - No Ice	9.97	10.24	5.91	436.70	-756.39	0.00
1.2 Dead+1.6 Wind 150 deg - No Ice	13.30	5.91	10.24	765.24	-441.79	-0.00
0.9 Dead+1.6 Wind 150 deg - No Ice	9.97	5.91	10.24	756.40	-436.69	-0.00
1.2 Dead+1.6 Wind 180 deg - No Ice	13.30	0.00	11.82	883.62	0.03	-0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	9.97	0.00	11.82	873.42	0.02	-0.00
1.2 Dead+1.6 Wind 210 deg - No Ice	13.30	-5.91	10.24	765.24	441.85	0.00
0.9 Dead+1.6 Wind 210 deg - No Ice	9.97	-5.91	10.24	756.40	436.74	-0.00
1.2 Dead+1.6 Wind 240 deg - No Ice	13.30	-10.24	5.91	441.80	765.28	-0.00
0.9 Dead+1.6 Wind 240 deg - No Ice	9.97	-10.24	5.91	436.70	756.43	-0.00
1.2 Dead+1.6 Wind 270 deg - No Ice	13.30	-11.82	0.00	-0.02	883.66	-0.00
0.9 Dead+1.6 Wind 270 deg -	9.97	-11.82	0.00	-0.01	873.45	-0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
1.2 Dead+1.6 Wind 300 deg - No Ice	13.30	-10.24	-5.91	-441.84	765.28	0.00
0.9 Dead+1.6 Wind 300 deg - No Ice	9.97	-10.24	-5.91	-436.73	756.43	0.00
1.2 Dead+1.6 Wind 330 deg - No Ice	13.30	-5.91	-10.24	-765.27	441.85	-0.00
0.9 Dead+1.6 Wind 330 deg - No Ice	9.97	-5.91	-10.24	-756.43	436.74	-0.00
1.2 Dead+1.0 Ice+1.0 Temp	27.71	0.00	0.00	-0.34	0.59	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	27.71	-0.00	-3.83	-296.53	0.66	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	27.71	1.91	-3.32	-256.85	-147.41	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	27.71	3.32	-1.91	-148.46	-255.81	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	27.71	3.83	-0.00	-0.38	-295.48	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	27.71	3.32	1.91	147.69	-255.81	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	27.71	1.91	3.32	256.09	-147.41	-0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	27.71	-0.00	3.83	295.76	0.66	-0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	27.71	-1.91	3.32	256.09	148.74	-0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	27.71	-3.32	1.91	147.69	257.14	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	27.71	-3.83	-0.00	-0.38	296.81	-0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	27.71	-3.32	-1.91	-148.46	257.14	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	27.71	-1.91	-3.32	-256.85	148.74	0.00
Dead+Wind 0 deg - Service	11.08	0.00	-2.53	-187.95	0.02	0.00
Dead+Wind 30 deg - Service	11.08	1.26	-2.19	-162.77	-93.94	0.00
Dead+Wind 60 deg - Service	11.08	2.19	-1.26	-93.98	-162.73	0.00
Dead+Wind 90 deg - Service	11.08	2.53	0.00	-0.01	-187.91	0.00
Dead+Wind 120 deg - Service	11.08	2.19	1.26	93.95	-162.73	0.00
Dead+Wind 150 deg - Service	11.08	1.26	2.19	162.74	-93.94	-0.00
Dead+Wind 180 deg - Service	11.08	0.00	2.53	187.92	0.02	-0.00
Dead+Wind 210 deg - Service	11.08	-1.26	2.19	162.74	93.99	-0.00
Dead+Wind 240 deg - Service	11.08	-2.19	1.26	93.95	162.78	-0.00
Dead+Wind 270 deg - Service	11.08	-2.53	0.00	-0.01	187.96	-0.00
Dead+Wind 300 deg - Service	11.08	-2.19	-1.26	-93.98	162.78	0.00
Dead+Wind 330 deg - Service	11.08	-1.26	-2.19	-162.77	93.99	0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-11.08	0.00	0.00	11.08	0.00	0.000%
2	0.00	-13.30	-11.82	0.00	13.30	11.82	0.000%
3	0.00	-9.97	-11.82	0.00	9.97	11.82	0.000%
4	5.91	-13.30	-10.24	-5.91	13.30	10.24	0.000%
5	5.91	-9.97	-10.24	-5.91	9.97	10.24	0.000%
6	10.24	-13.30	-5.91	-10.24	13.30	5.91	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	10.24	-9.97	-5.91	-10.24	9.97	5.91	0.000%
8	11.82	-13.30	0.00	-11.82	13.30	0.00	0.000%
9	11.82	-9.97	0.00	-11.82	9.97	0.00	0.000%
10	10.24	-13.30	5.91	-10.24	13.30	-5.91	0.000%
11	10.24	-9.97	5.91	-10.24	9.97	-5.91	0.000%
12	5.91	-13.30	10.24	-5.91	13.30	-10.24	0.000%
13	5.91	-9.97	10.24	-5.91	9.97	-10.24	0.000%
14	0.00	-13.30	11.82	0.00	13.30	-11.82	0.000%
15	0.00	-9.97	11.82	0.00	9.97	-11.82	0.000%
16	-5.91	-13.30	10.24	5.91	13.30	-10.24	0.000%
17	-5.91	-9.97	10.24	5.91	9.97	-10.24	0.000%
18	-10.24	-13.30	5.91	10.24	13.30	-5.91	0.000%
19	-10.24	-9.97	5.91	10.24	9.97	-5.91	0.000%
20	-11.82	-13.30	0.00	11.82	13.30	0.00	0.000%
21	-11.82	-9.97	0.00	11.82	9.97	0.00	0.000%
22	-10.24	-13.30	-5.91	10.24	13.30	5.91	0.000%
23	-10.24	-9.97	-5.91	10.24	9.97	5.91	0.000%
24	-5.91	-13.30	-10.24	5.91	13.30	10.24	0.000%
25	-5.91	-9.97	-10.24	5.91	9.97	10.24	0.000%
26	0.00	-27.71	0.00	0.00	27.71	0.00	0.000%
27	0.00	-27.71	-3.83	0.00	27.71	3.83	0.000%
28	1.91	-27.71	-3.32	-1.91	27.71	3.32	0.000%
29	3.32	-27.71	-1.91	-3.32	27.71	1.91	0.000%
30	3.83	-27.71	0.00	-3.83	27.71	0.00	0.000%
31	3.32	-27.71	1.91	-3.32	27.71	-1.91	0.000%
32	1.91	-27.71	3.32	-1.91	27.71	-3.32	0.000%
33	0.00	-27.71	3.83	0.00	27.71	-3.83	0.000%
34	-1.91	-27.71	3.32	1.91	27.71	-3.32	0.000%
35	-3.32	-27.71	1.91	3.32	27.71	-1.91	0.000%
36	-3.83	-27.71	0.00	3.83	27.71	0.00	0.000%
37	-3.32	-27.71	-1.91	3.32	27.71	1.91	0.000%
38	-1.91	-27.71	-3.32	1.91	27.71	3.32	0.000%
39	0.00	-11.08	-2.53	0.00	11.08	2.53	0.000%
40	1.26	-11.08	-2.19	-1.26	11.08	2.19	0.000%
41	2.19	-11.08	-1.26	-2.19	11.08	1.26	0.000%
42	2.53	-11.08	0.00	-2.53	11.08	0.00	0.000%
43	2.19	-11.08	1.26	-2.19	11.08	-1.26	0.000%
44	1.26	-11.08	2.19	-1.26	11.08	-2.19	0.000%
45	0.00	-11.08	2.53	0.00	11.08	-2.53	0.000%
46	-1.26	-11.08	2.19	1.26	11.08	-2.19	0.000%
47	-2.19	-11.08	1.26	2.19	11.08	-1.26	0.000%
48	-2.53	-11.08	0.00	2.53	11.08	0.00	0.000%
49	-2.19	-11.08	-1.26	2.19	11.08	1.26	0.000%
50	-1.26	-11.08	-2.19	1.26	11.08	2.19	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00069881
3	Yes	4	0.00000001	0.00019901
4	Yes	5	0.00000001	0.00081269
5	Yes	5	0.00000001	0.00034109
6	Yes	5	0.00000001	0.00081270
7	Yes	5	0.00000001	0.00034109

8	Yes	4	0.00000001	0.00069875
9	Yes	4	0.00000001	0.00019900
10	Yes	5	0.00000001	0.00081264
11	Yes	5	0.00000001	0.00034108
12	Yes	5	0.00000001	0.00081264
13	Yes	5	0.00000001	0.00034108
14	Yes	4	0.00000001	0.00069877
15	Yes	4	0.00000001	0.00019900
16	Yes	5	0.00000001	0.00081274
17	Yes	5	0.00000001	0.00034110
18	Yes	5	0.00000001	0.00081273
19	Yes	5	0.00000001	0.00034110
20	Yes	4	0.00000001	0.00069882
21	Yes	4	0.00000001	0.00019901
22	Yes	5	0.00000001	0.00081279
23	Yes	5	0.00000001	0.00034112
24	Yes	5	0.00000001	0.00081279
25	Yes	5	0.00000001	0.00034112
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00029690
28	Yes	5	0.00000001	0.00053452
29	Yes	5	0.00000001	0.00053524
30	Yes	5	0.00000001	0.00029580
31	Yes	5	0.00000001	0.00053283
32	Yes	5	0.00000001	0.00053264
33	Yes	5	0.00000001	0.00029610
34	Yes	5	0.00000001	0.00053682
35	Yes	5	0.00000001	0.00053610
36	Yes	5	0.00000001	0.00029719
37	Yes	5	0.00000001	0.00053853
38	Yes	5	0.00000001	0.00053872
39	Yes	4	0.00000001	0.00003078
40	Yes	4	0.00000001	0.00020611
41	Yes	4	0.00000001	0.00020613
42	Yes	4	0.00000001	0.00003077
43	Yes	4	0.00000001	0.00020606
44	Yes	4	0.00000001	0.00020605
45	Yes	4	0.00000001	0.00003077
46	Yes	4	0.00000001	0.00020618
47	Yes	4	0.00000001	0.00020617
48	Yes	4	0.00000001	0.00003078
49	Yes	4	0.00000001	0.00020624
50	Yes	4	0.00000001	0.00020625

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	93 - 44.75	13.595	48	1.2528	0.0000
L2	48 - 0	3.670	49	0.7157	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
93.00	Lighting Rod	48	13.595	1.2528	0.0000	23250

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	93 - 44.75	63.950	20	5.9009	0.0000
L2	48 - 0	17.267	20	3.3695	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
93.00	Lighting Rod	20	63.950	5.9009	0.0000	5014

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	93 - 44.75 (1)	TP25.45x19.5625x0.1875	48.25	0.00	0.0	14.7983	-7.53	944.36	0.008
L2	44.75 - 0 (2)	TP33.35x24.6784x0.25	48.00	0.00	0.0	26.2649	-13.28	1677.05	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	93 - 44.75 (1)	TP25.45x19.5625x0.1875	371.53	483.03	0.769	0.00	483.03	0.000
L2	44.75 - 0 (2)	TP33.35x24.6784x0.25	883.67	1141.82	0.774	0.00	1141.82	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	93 - 44.75 (1)	TP25.45x19.5625x0.1875	9.42	472.18	0.020	0.00	968.34	0.000
L2	44.75 - 0 (2)	TP33.35x24.6784x0.25	11.84	838.52	0.014	0.00	2289.04	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	93 - 44.75 (1)	0.008	0.769	0.000	0.020	0.000	0.778	1.000	4.8.2
L2	44.75 - 0 (2)	0.008	0.774	0.000	0.014	0.000	0.782	1.000	4.8.2

Section Capacity Table

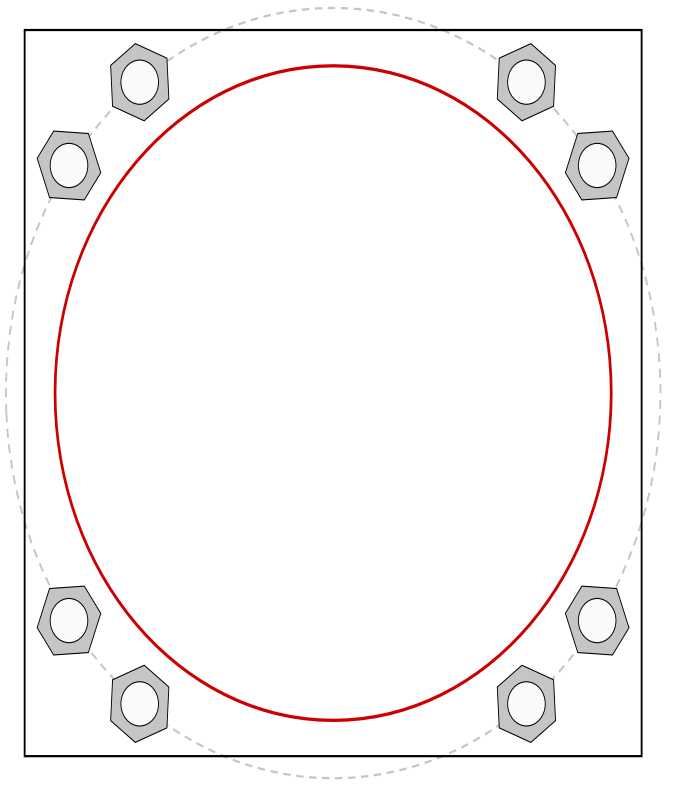
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	93 - 44.75	Pole	TP25.45x19.5625x0.1875	1	-7.53	944.36	77.8	Pass
L2	44.75 - 0	Pole	TP33.35x24.6784x0.25	2	-13.28	1677.05	78.2	Pass
							Summary	
						Pole (L2)	78.2	Pass
						RATING =	**78.2**	**Pass**

Monopole Base Plate Connection

Site Info	
BU #	
Site Name	CT11000A
Order #	

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	2
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	883.67
Axial Force (kips)	13.28
Shear Force (kips)	11.84



Connection Properties

Anchor Rod Data

(8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 39.25" BC

Anchor Spacing: 6 in

Base Plate Data

37" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

33.35" x 0.25" 18-sided pole (A607-60; Fy=60 ksi, Fu=75 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_c = 136.56	ϕPn_t = 260	**Stress Rating**
Vu = 1.48	ϕVn = n/a	**53.7%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	24.76	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**55.0%**	**Pass**

Exhibit E

Mount Analysis

Date: 7/18/2019

To: Mr. Peter Nute
ProTerra Design Group, LLC
4 Bay Road, Building A, Suite 200
Hadley, MA 01035

Subject:	**Mount Structural Analysis Report – Upgrade Rev 1**	
T-Mobile Designation:	**Site ID:**	CT11000A
	Site Name:	Bloomfield/W Dudley_1
Destek Designation:	**Project Number:**	1978008
Site Data:	**100 Filley Street, Bloomfield, CT 06002** **Latitude 41.851769, Longitude -72.715175**	

Dear Mr. Nute,

Destek Engineering, LLC is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural capacity of the antenna mount utilized by T-Mobile at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by T-Mobile. Under the following load case we have determined the mount to have:

Existing + Proposed Equipment — **Adequate Capacity with Mods (85.9%)**
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with TIA-222-G Standard and the 2018 Connecticut State Building Code (2015 IBC).

We at *Destek Engineering, LLC* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Sincerely,
Destek Engineering, LLC
License No: PEC 0001429

7/18/2019

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: PEN 27057

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 - Tel: (770) 693-0835

1) ANALYSIS CRITERIA

The analysis was performed for the existing and proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

Table 1 – Loading and Analysis Criteria

Rad Center	93’ & 95’
Structure Type	Monopole
Exposure Category	C
Wind Speed	125 mph* √0.6 = 97 mph (ASD)
Ice Loading	1.00” with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Existing Appurtenance Configuration

Qty	Model
3	Andrew LNX-6515DS-A1M – Antennas
3	RFS APX16DWV-16DWV-S-E-A20 – Antennas
3	Generic Twin Style 1A - PCS – TMAs
3	Generic Twin Style 1B - AWS – TMAs

Table 1.2 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Ericsson AIR32 KRD901146-1_B66A_B2A – Antennas
3	RFS APXVAARR24_43-U-NA20 – Antennas
3	RFS APX16DWV-16DWV-S-E-A20 – Antennas
3	Radio 4449 B71+B12 – RRUs*
3	Generic Twin Style 1A - PCS – TMAs
3	Generic Twin Style 1B - AWS – TMAs

***To be mounted behind antennas.**

Table 1.3 – Assumed Material Properties

Member Type	ASTM Material Designation	Fy (ksi)	Fu (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B - 46	46	58
Round HSS	A500 Gr. B - 42	42	58
Others (UNO)	A572 Gr. 50	50	65

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 - Tel: (770) 693-0835

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
Site Photographs	ProTerra	05/03/2019
RFDS	T-Mobile	04/16/2019
Construction Drawings	ProTerra	05/22/2019
Structural Analysis Report	EBI Consulting	08/11/2019

2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix.

2.2) Analysis Conditions and Assumptions

1) The mount was built and installed in accordance with the manufacturer's specifications.
2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
3) The configuration of antennas is as specified in "1) Analysis Criteria".
4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
8) Member sizes per the available site photographs and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
9) 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.

Destek Engineering, LLC must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Horizontal Face Angle	64.7	Pass
Antenna Mount Pipe	43.0	Pass
Handrail Pipe	36.8	Pass
Handrail Corner Connection	50.7	Pass
Grating Angle	48.9	Pass
Horizontal Standoff Channel	85.9	Pass

Platform Mount: The existing platform mount **will have adequate** capacity for the proposed changes by T-Mobile, **once the platform mount is modified per attached Destek Drawings, dated 07/18/2019**. For the code specified load combinations and as a maximum, the mount members are stressed to **85.9%** of their structural capacity.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 - Tel: (770) 693-0835

APPENDIX

INPUT LOADS
ANALYSIS OUTPUT
UPGRADE DRAWINGS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Suite 100, Marietta, GA 30066 - Tel: (770) 693-0835

CLIENT: Proterra

PROJECT: CT11000A Upgrade Rev 1

SUBJECT: Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

Tower Height	95.00	ft	Type of Mount: Platform
Basic Wind Speed, V	97	mph (=Ultimate Speed*Sqrt(0.6))	
Basic Wind Speed with Ice, V_i	50	mph	
Maintanence Load Factor, L_{FM}	0.0957	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)	
Design Ice Thickness, t_i	1	inches	

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

1

Table 2-4 Exposure Category Coefficients

Exposure Category	Zg	α	Kzmin	Ke	m
C	900	9.5	0.85	1	0.6

Table 2-5 Topographic Categories

Kzt 1.000

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd	
2 Monopole	0.95	DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh	
2 Monopole	1.00	DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka	
Monopole	0.90	DOES NOT CHANGE

Seismic Factors

Ss	0.179	
S1	0.064	
Fa	1.6	
Fv	2.4	
R	1.5	Truss or Pole

CLIENT: Proterra

PROJECT: CT11000A Upgrade Rev 1

SUBJECT: Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

Rad Center 95.00 ft

Antenna AND Mount Without Ice

Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A_N (ft2)	***A_T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K_z	q_z (psf)	Pounds: Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load	Lateral Load (Seismic)	Vertical Load (Seismic)
Pos. 1	**95.00**	AIR32 B66A B2A	1	143.0	59.3	12.9	8.7	0.90	5.30	3.56	4.60	6.84	1.29	1.39	1.252	28.6	176.6	128.0	143	177	128	143	16	5
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				89	**64**	**72**	**8**	**3**
Pos.2	**93.00**	APXVAARR24_43-U-NA20	1	128.0	95.9	24.0	8.7	0.90	15.98	5.79	4.00	11.02	1.27	1.53	1.246	28.5	519.6	228.1	128	520	258	203	23	8
	93.00	RADIO 4449 B12/B71	1	75.0	15.0	N/A	9.3	0.90	-	0.96	-	1.62	-	1.20	1.246	28.5	0.0	29.6	75					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				260	**129**	**102**	**11**	**4**
Pos.3	**95.00**	APX16DWV-16DWV-S-E-A20	1	40.7	55.9	13.3	3.2	0.90	5.16	1.22	4.20	17.75	1.28	1.76	1.252	28.6	169.8	55.4	40.7	170	85	70	8	3
	95.00	ETW190VS12UB Twin TMA	2	14.6	10.2	N/A	6.7	0.90	-	0.47	-	1.52	-	1.20	1.252	28.6	0.0	29.4	29.2					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				85	**43**	**35**	**4**	**1**
Pos.4		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	0	0	0	0	0
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				0	**0**	**0**	**0**	**0**

* Enter N/A in the W column for front sheilded apurtanances.

** A_N is the product of H and W

*** A_T is the product of H and D

DL 416

Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	Weight (lb/ft)	*** Ca	K_z	q_z (psf)	Wind Load (PLF)	Lateral Load (Seismic)	Vertical Load (Seismic)
	95.00	2 STD Pipe	12.00	2.38	0.00		1.20	1.252	25.8	6	-	-
	95.00	1.25 STD Pipe	0.00	1.50	0.00		-	-	-	-	-	-
	95.00	3/4" SR	0.00	0.75	0.00		-	-	-	-	-	-
	95.00	(L3x3x4)	12.00	3.00	3.00		2.00	1.252	25.8	13	-	-
	95.00	(L2.5x2.5)	12.00	2.50	2.50		2.00	1.252	25.8	11	-	-
	95.00	Angle Diagonal	0.00	0.00	0.00		-	-	-	-	-	-
	95.00	Plate Horizontal (PL2.5x3/16)	12.00	2.50	0.19		2.00	1.252	25.8	11	-	-
	95.00	Plate Horizontal (PL7x0.4)	0.00	0.40	7.00		-	-	-	-	-	-
	95.00	Tube Radial (4x4)	0.00	4.00	4.00		-	-	-	-	-	-
	95.00	Double Angle (LL2.5x2.5x3x0)	12.00	5.00	2.50		2.00	1.252	25.8	21	-	-
	95.00	Double Angle (LL3x3x4x0)	12.00	3.00	3.00		2.00	1.252	25.8	13	-	-
	95.00	Andrew VSR	12.00	5.44	3.96		2.00	1.252	25.8	23	-	-
	95.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38		-	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** Ca will equal 1.2 for round members and 2.0 for flat members

CLIENT: Proterra

PROJECT: CT11000A Upgrade Rev 1

SUBJECT: Antenna Loads -TIA 222 G Stanadard (chapter 16 revisions)

ti (in) 2.223059 Kiz 1.1115294 reduction 0.2657

Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A_N (ft2)	*A_T (ft2)	*Volume Ice (ft3)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q_z (psf)	Pounds: Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load
Pos. 1	**95.00**	AIR32 B66A B2A	1	59.3	12.9	8.7	0.90	2.36	2.23	4.54	254.46	0.73	0.75	1.252	7.6	11.8	11.5	58.7	45.5	254	59	46	254
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					30	**23**	**128**
Pos.2	**93.00**	APXVAARR24_43-U-NA20	1	95.9	24.0	8.7	0.90	3.84	3.37	10.13	567.17	0.72	0.81	1.246	7.6	18.9	18.7	157.0	79.3	567	157	91	660
on standoff	**93.00**	RADIO 4449 B12/B71	1	15.0	13.2	9.3	0.90	-	0.88	1.66	92.72	0.70	0.70	1.246	7.6	0.0	4.2	0.0	12.1	93			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					79	**46**	**330**
Pos.3	**95.00**	APX16DWV-16DWV-S-E-A20	1	55.9	13.3	3.2	0.90	2.27	1.96	3.35	187.73	0.72	0.82	1.252	7.6	11.2	11.0	56.3	25.8	188	56	40	258
	95.00	ETW190VS12UB Twin TMA	2	10.2	3.7	6.7	0.90	-	0.66	0.62	34.90	0.70	0.70	1.252	7.6	0.0	6.3	0.0	14.1	70			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					29	**20**	**129**
Pos.4		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	0	0	0
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					0	**0**	**0**

* A_N ,A_T, Volume Ice and Weight Ice are calculated per unit

** Ca will equal 1.2 for all ice load calculations

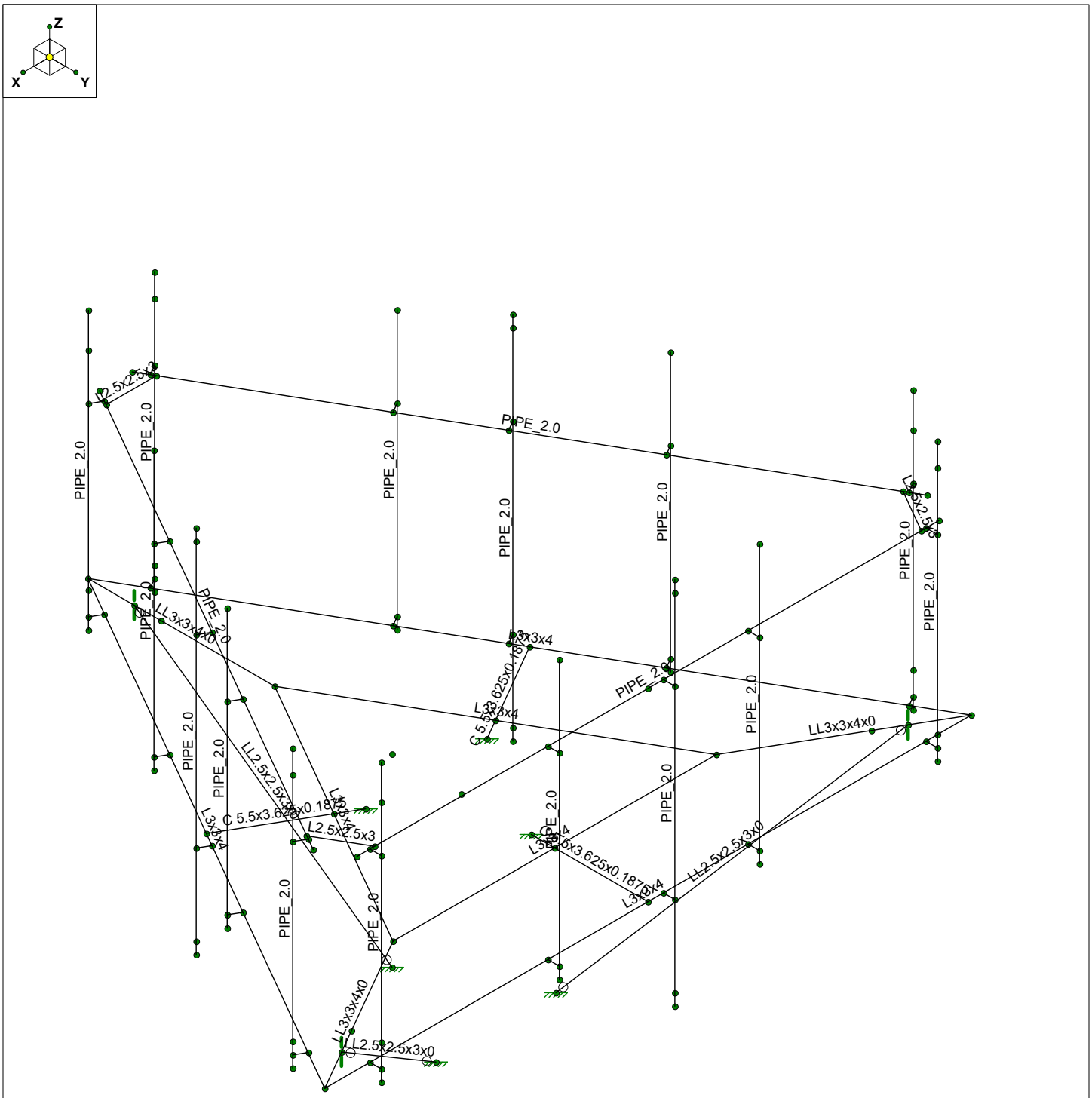
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	PLF: Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	95.00	2 STD Pipe	12.00	2.38	0.00	0.58	0.22	12.50	1.20	1.252	6.9	4.8	6.4	13
	95.00	1.25 STD Pipe	0.00	1.50	0.00	-	-	-	-	-	-	-	-	-
	95.00	3/4" SR	0.00	0.75	0.00	-	-	-	-	-	-	-	-	-
	95.00	(L3x3x4)	12.00	3.00	3.00	0.60	0.19	10.37	1.20	1.252	6.9	4.9	8.4	10
	95.00	(L2.5x2.5)	12.00	2.50	2.50	0.58	0.15	8.65	1.20	1.252	6.9	4.8	7.7	9
	95.00	Angle Diagonal	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-
	95.00	Plate Horizontal (PL2.5x3/16)	12.00	2.50	0.19	0.58	0.30	16.97	1.20	1.252	6.9	4.8	7.7	17
	95.00	Plate Horizontal (PL7x0.4)	0.00	0.40	7.00	-	-	-	-	-	-	-	-	-
	95.00	Tube Radial (4x4)	0.00	4.00	4.00	-	-	-	-	-	-	-	-	-
	95.00	Double Angle (LL2.5x2.5x3x0)	12.00	5.00	2.50	0.66	0.39	21.61	1.20	1.252	6.9	5.4	11.2	22
	95.00	Double Angle (LL3x3x4x0)	12.00	3.00	3.00	0.60	0.28	15.56	1.20	1.252	6.9	4.9	8.4	16
	95.00	Andrew VSR	12.00	5.44	3.96	0.68	0.46	25.66	1.20	1.252	6.9	5.6	11.8	26
	95.00	Invert U 5.375x3.625x.375	0.00	3.63	5.38	-	-	-	-	-	-	-	-	-

* The dimension L is the longest dimension of the member

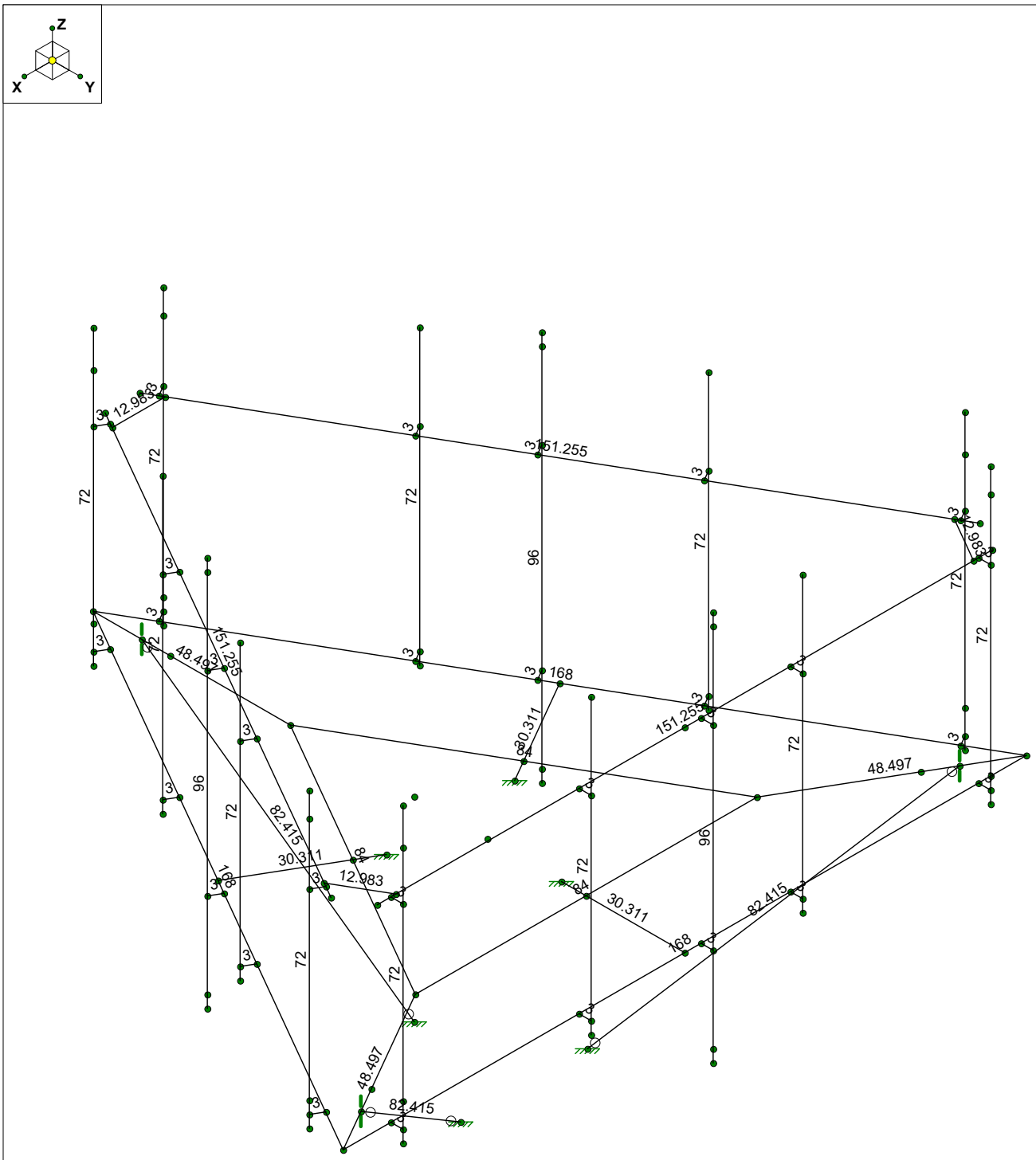
** The dimension W is the height or width of the member that resists wind load

*** A_N is the area of ice built up on the LW plane

**** Ca will equal 1.2 for all ice load calculations

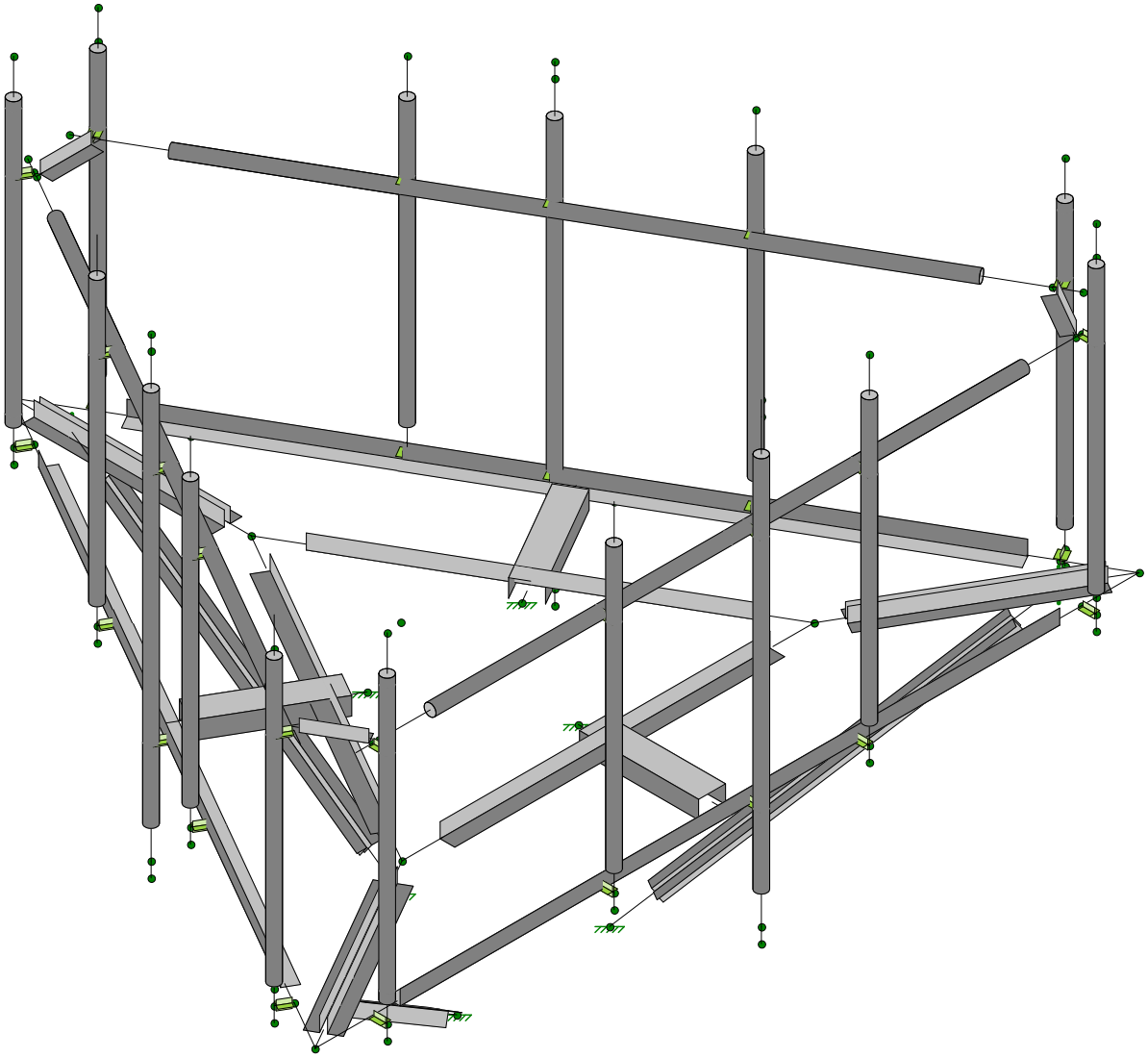


Proterra / Destek	CT11000A-Upgrade	SK - 1
US		July 1, 2019 at 5:12 PM
1978008		CT11000A Upgrade.r3d

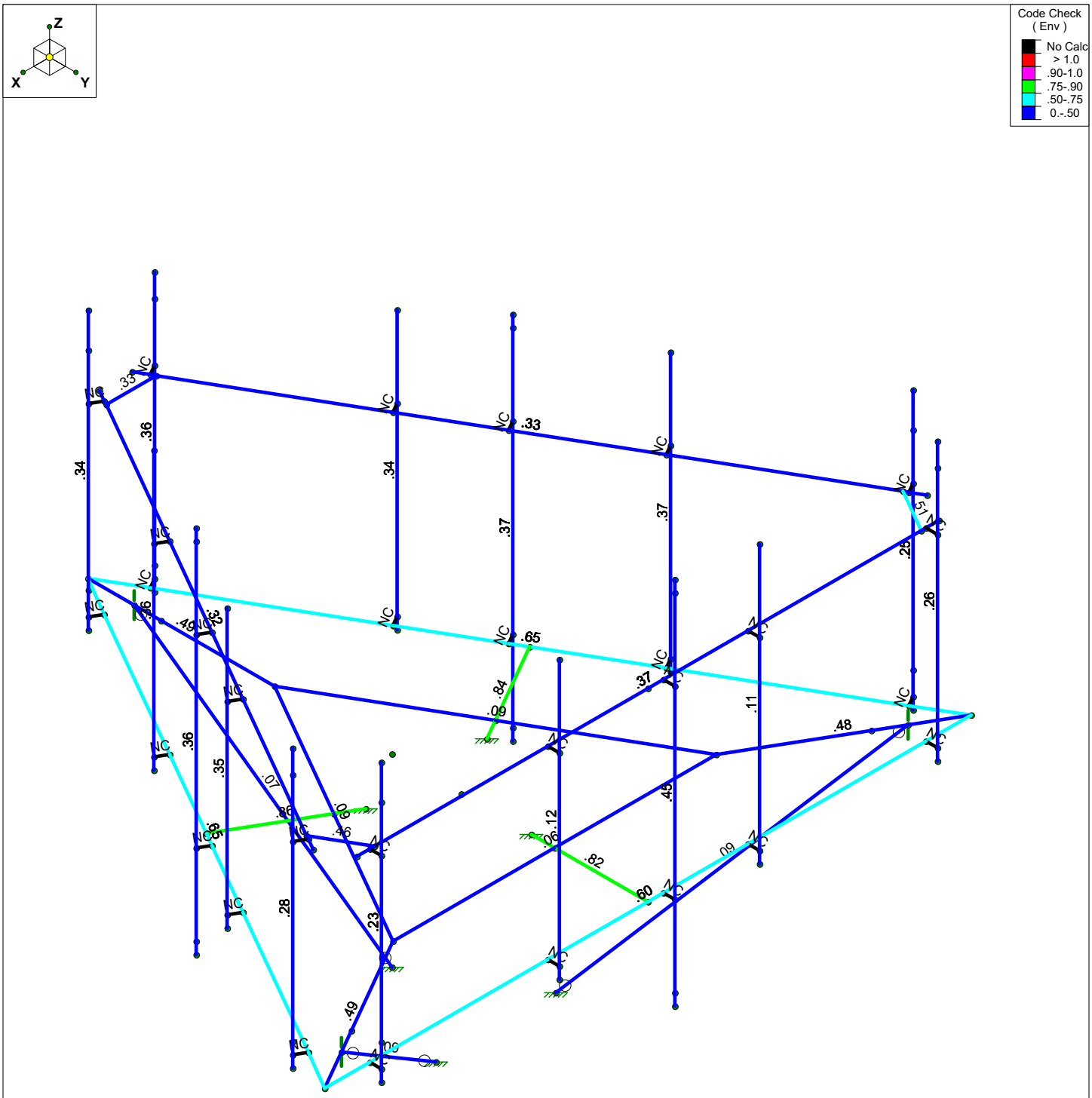


Member Length (in) Displayed

Proterra / Destek	CT11000A-Upgrade	SK - 2
US		July 1, 2019 at 5:12 PM
1978008		CT11000A Upgrade.r3d

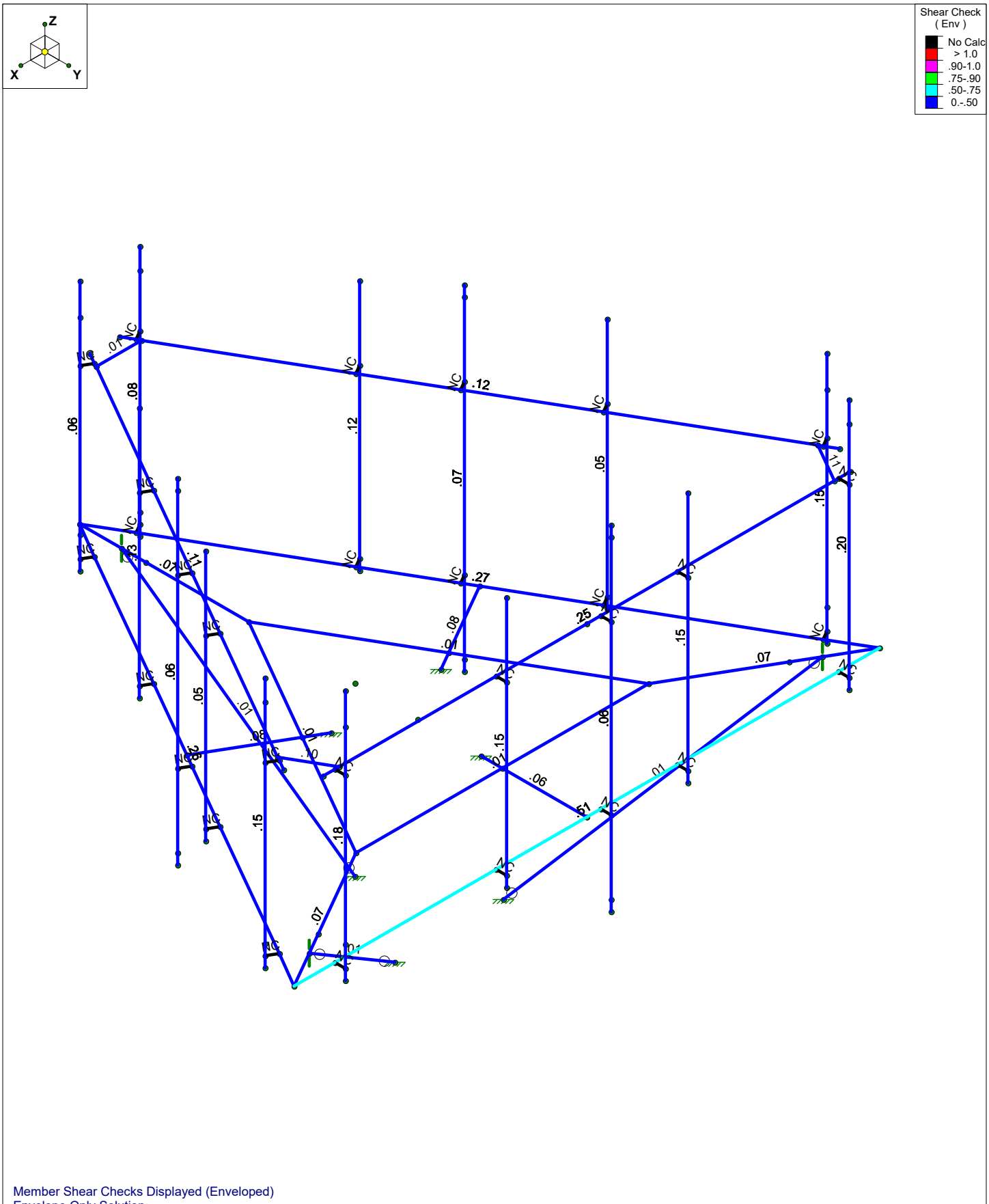


Proterra / Destek	CT11000A-Upgrade	SK - 3
US		July 1, 2019 at 5:13 PM
1978008		CT11000A Upgrade.r3d



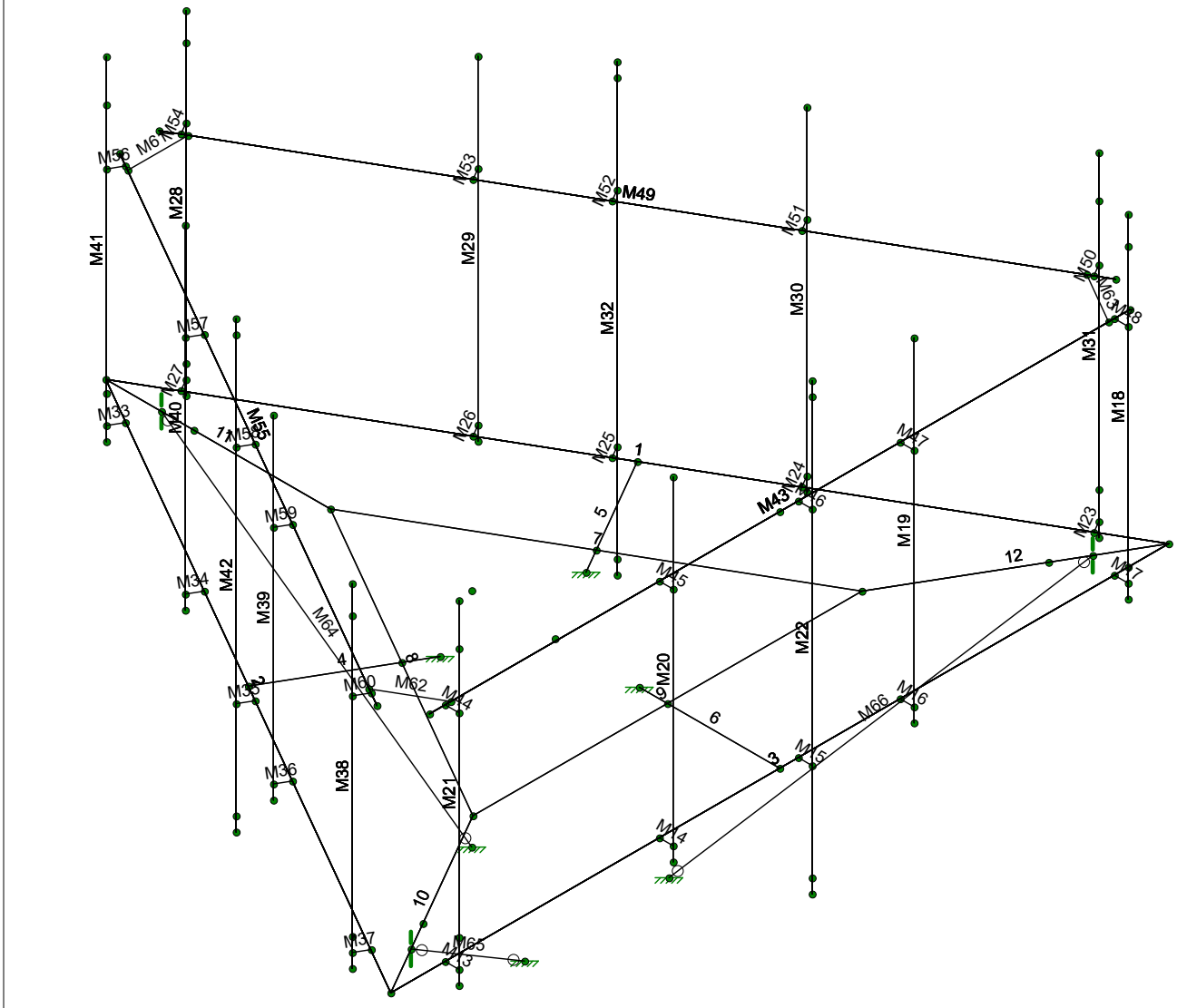
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Proterra / Destek	CT11000A-Upgrade	SK - 4
US		July 1, 2019 at 5:13 PM
1978008		CT11000A Upgrade.r3d



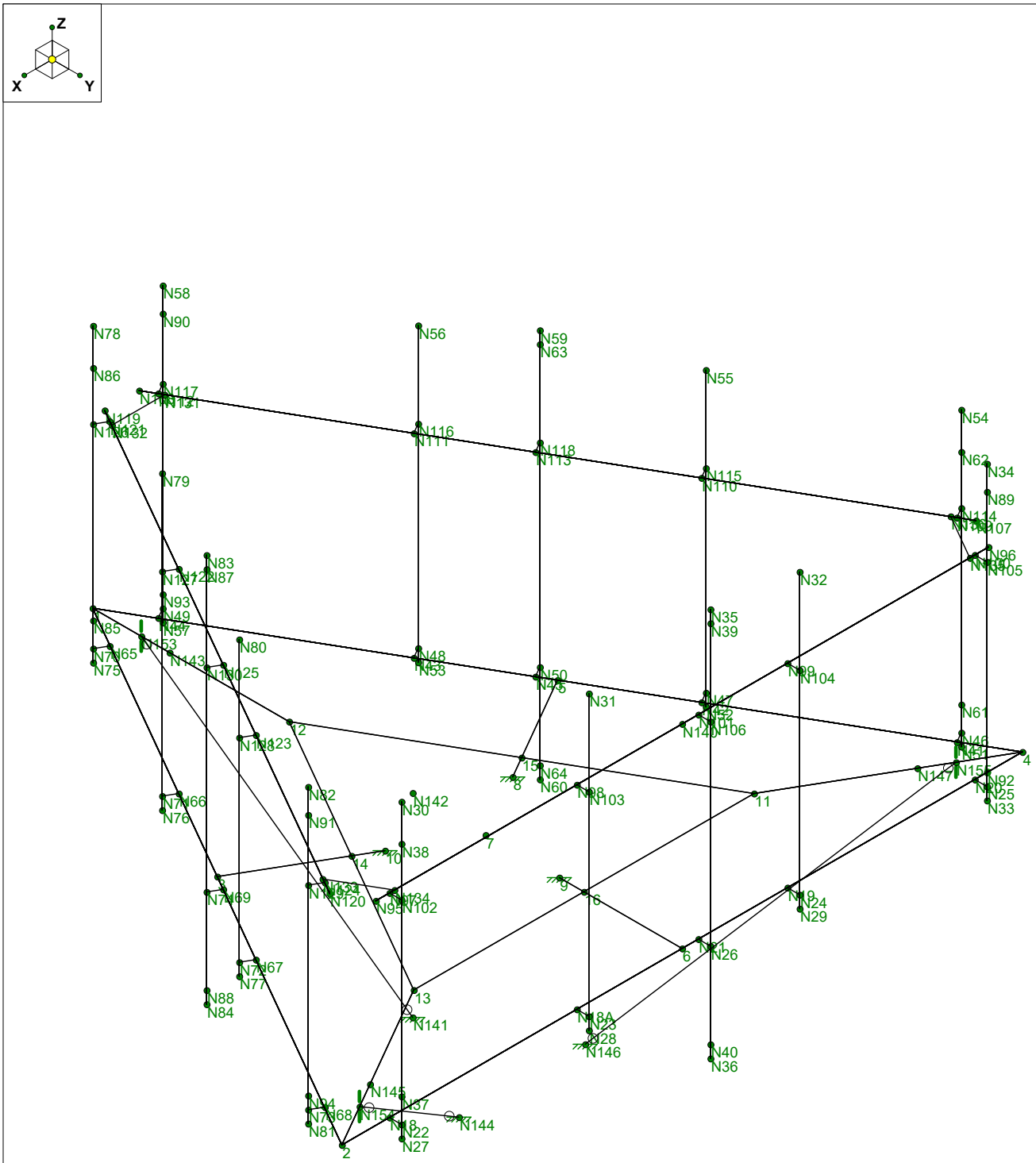
Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Proterra / Destek	CT11000A-Upgrade	SK - 5
US		July 1, 2019 at 5:13 PM
1978008		CT11000A Upgrade.r3d



Envelope Only Solution

Proterra / Destek	CT11000A-Upgrade	SK - 6
US		July 1, 2019 at 5:14 PM
1978008		CT11000A Upgrade.r3d



Envelope Only Solution

Proterra / Destek	CT11000A-Upgrade	SK - 7
US		July 1, 2019 at 5:14 PM
1978008		CT11000A Upgrade.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Standard Skyline
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 13th(360-05): ASD
Cold Formed Steel Code	AISI NAS-01: ASD
Wood Code	AF&PA NDS-05/08: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-05
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
	AISC 14th(360-10): ASD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Project Grid Lines

	Label	Start X [in]	End X [in]	Start Y [in]	End Y [in]	Start Bubble	End Bubble
No Data to Print ...							

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.5	58	1.2
7	Q235	29000	11154	.3	.65	.49	34	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HR1A	W10x17	Beam	Wide Flange	A36 Gr.36	Typical	4.99	3.56	81.9	.156

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	4	3	10		90	C 5.5x3.625x0.1875	Beam	Channel	A36 Gr.36	Typical
2	5	5	8		90	C 5.5x3.625x0.1875	Beam	Channel	A36 Gr.36	Typical
3	6	6	9		90	C 5.5x3.625x0.1875	Beam	Channel	A36 Gr.36	Typical
4	1	4	1		270	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
5	2	1	2		270	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
6	3	2	4		270	L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
7	7	11	12			L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
8	8	12	13			L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
9	9	13	11			L3x3x4	Beam	Single Angle	A36 Gr.36	Typical
10	10	2	13		180	LL3x3x4x0	Beam	Double Angle ...	A36 Gr.36	Typical
11	11	1	12		180	LL3x3x4x0	Beam	Double Angle ...	A36 Gr.36	Typical
12	12	4	11		180	LL3x3x4x0	Beam	Double Angle ...	A36 Gr.36	Typical
13	M18	N34	N33			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
14	M19	N32	N29			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
15	M20	N31	N28			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
16	M21	N30	N27			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
17	M22	N35	N36			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
18	M28	N58	N57			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
19	M29	N56	N53			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
20	M30	N55	N52			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
21	M31	N54	N51			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
22	M32	N59	N60			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
23	M38	N82	N81			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
24	M39	N80	N77			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
25	M40	N79	N76			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
26	M41	N78	N75			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
27	M42	N83	N84			PIPE_2.0	Beam	Wide Flange	A53 Gr.B	Typical
28	M43	N95	N96		270	PIPE_2.0	Beam	Single Angle	A36 Gr.36	Typical
29	M49	N107	N108		270	PIPE_2.0	Beam	Single Angle	A36 Gr.36	Typical
30	M55	N119	N120		270	PIPE_2.0	Beam	Single Angle	A36 Gr.36	Typical
31	M61	N132	N131			L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
32	M62	N134	N133			L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
33	M63	N136	N135			L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
34	M13	N18	N22			RIGID	None	None	RIGID	Typical
35	M14	N18A	N23			RIGID	None	None	RIGID	Typical
36	M15	N21	N26			RIGID	None	None	RIGID	Typical
37	M16	N19	N24			RIGID	None	None	RIGID	Typical
38	M17	N20	N25			RIGID	None	None	RIGID	Typical
39	M23	N41	N46			RIGID	None	None	RIGID	Typical
40	M24	N42	N47			RIGID	None	None	RIGID	Typical
41	M25	N45	N50			RIGID	None	None	RIGID	Typical
42	M26	N43	N48			RIGID	None	None	RIGID	Typical
43	M27	N44	N49			RIGID	None	None	RIGID	Typical
44	M33	N65	N70			RIGID	None	None	RIGID	Typical
45	M34	N66	N71			RIGID	None	None	RIGID	Typical
46	M35	N69	N74			RIGID	None	None	RIGID	Typical
47	M36	N67	N72			RIGID	None	None	RIGID	Typical
48	M37	N68	N73			RIGID	None	None	RIGID	Typical
49	M44	N97	N102			RIGID	None	None	RIGID	Typical
50	M45	N98	N103			RIGID	None	None	RIGID	Typical
51	M46	N101	N106			RIGID	None	None	RIGID	Typical
52	M47	N99	N104			RIGID	None	None	RIGID	Typical
53	M48	N100	N105			RIGID	None	None	RIGID	Typical
54	M50	N109	N114			RIGID	None	None	RIGID	Typical
55	M51	N110	N115			RIGID	None	None	RIGID	Typical
56	M52	N113	N118			RIGID	None	None	RIGID	Typical
57	M53	N111	N116			RIGID	None	None	RIGID	Typical
58	M54	N112	N117			RIGID	None	None	RIGID	Typical
59	M56	N121	N126			RIGID	None	None	RIGID	Typical
60	M57	N122	N127			RIGID	None	None	RIGID	Typical
61	M58	N125	N130			RIGID	None	None	RIGID	Typical
62	M59	N123	N128			RIGID	None	None	RIGID	Typical
63	M60	N124	N129			RIGID	None	None	RIGID	Typical
64	M64	N153	N141			LL2.5x2.5x3x0	Beam	Double Angle ...	A36 Gr.36	Typical
65	M65	N154	N144			LL2.5x2.5x3x0	Beam	Double Angle ...	A36 Gr.36	Typical
66	M66	N155	N146			LL2.5x2.5x3x0	Beam	Double Angle ...	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	4						Yes			None
2	5						Yes			None
3	6						Yes			None
4	1						Yes			None
5	2						Yes			None
6	3						Yes			None
7	7						Yes			None
8	8						Yes			None
9	9						Yes			None
10	10						Yes			None
11	11						Yes			None
12	12						Yes			None
13	M18						Yes			None
14	M19						Yes			None
15	M20						Yes			None
16	M21						Yes			None
17	M22						Yes			None
18	M28						Yes			None
19	M29						Yes			None
20	M30						Yes			None
21	M31						Yes			None
22	M32						Yes			None
23	M38						Yes			None
24	M39						Yes			None
25	M40						Yes			None
26	M41						Yes			None
27	M42						Yes			None
28	M43						Yes			None
29	M49						Yes			None
30	M55						Yes			None
31	M61						Yes			None
32	M62						Yes			None
33	M63						Yes			None
34	M13						Yes			None
35	M14						Yes			None
36	M15						Yes			None
37	M16						Yes			None
38	M17						Yes			None
39	M23						Yes			None
40	M24						Yes			None
41	M25						Yes			None
42	M26						Yes			None
43	M27						Yes			None
44	M33						Yes			None
45	M34						Yes			None
46	M35						Yes			None
47	M36						Yes			None
48	M37						Yes			None
49	M44						Yes			None
50	M45						Yes			None
51	M46						Yes			None
52	M47						Yes			None
53	M48						Yes			None
54	M50						Yes			None
55	M51						Yes			None
56	M52						Yes			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
57	M53						Yes			None
58	M54						Yes			None
59	M56						Yes			None
60	M57						Yes			None
61	M58						Yes			None
62	M59						Yes			None
63	M60						Yes			None
64	M64	BenPIN	BenPIN				Yes			None
65	M65	BenPIN	BenPIN				Yes			None
66	M66	BenPIN	BenPIN				Yes			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	4	C 5.5x3.625...	30.311			Lbyy						Lateral
2	5	C 5.5x3.625...	30.311			Lbyy						Lateral
3	6	C 5.5x3.625...	30.311			Lbyy						Lateral
4	1	L3x3x4	168	84	84	Lbyy						Lateral
5	2	L3x3x4	168	84	84	Lbyy						Lateral
6	3	L3x3x4	168	84	84	Lbyy						Lateral
7	7	L3x3x4	84			Lbyy						Lateral
8	8	L3x3x4	84			Lbyy						Lateral
9	9	L3x3x4	84			Lbyy						Lateral
10	10	LL3x3x4x0	48.497			Lbyy						Lateral
11	11	LL3x3x4x0	48.497			Lbyy						Lateral
12	12	LL3x3x4x0	48.497			Lbyy						Lateral
13	M18	PIPE_2.0	72			Lbyy						Lateral
14	M19	PIPE_2.0	72			Lbyy						Lateral
15	M20	PIPE_2.0	72			Lbyy						Lateral
16	M21	PIPE_2.0	72			Lbyy						Lateral
17	M22	PIPE_2.0	96			Lbyy						Lateral
18	M28	PIPE_2.0	72			Lbyy						Lateral
19	M29	PIPE_2.0	72			Lbyy						Lateral
20	M30	PIPE_2.0	72			Lbyy						Lateral
21	M31	PIPE_2.0	72			Lbyy						Lateral
22	M32	PIPE_2.0	96			Lbyy						Lateral
23	M38	PIPE_2.0	72			Lbyy						Lateral
24	M39	PIPE_2.0	72			Lbyy						Lateral
25	M40	PIPE_2.0	72			Lbyy						Lateral
26	M41	PIPE_2.0	72			Lbyy						Lateral
27	M42	PIPE_2.0	96			Lbyy						Lateral
28	M43	PIPE_2.0	151.255	84	84	Lbyy						Lateral
29	M49	PIPE_2.0	151.255	84	84	Lbyy						Lateral
30	M55	PIPE_2.0	151.255	84	84	Lbyy						Lateral
31	M61	L2.5x2.5x3	12.983			Lbyy						Lateral
32	M62	L2.5x2.5x3	12.983			Lbyy						Lateral
33	M63	L2.5x2.5x3	12.983			Lbyy						Lateral
34	M64	LL2.5x2.5x3...	82.415			Lbyy						Lateral
35	M65	LL2.5x2.5x3...	82.415			Lbyy						Lateral
36	M66	LL2.5x2.5x3...	82.415			Lbyy						Lateral

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	1	-0.00002	-96.994834	0	0	
2	2	83.99998	48.497434	0	0	
3	3	41.99998	-24.2487	0	0	
4	4	-84.00002	48.497434	0	0	
5	5	-42.00002	-24.2487	0	0	
6	6	-0.00002	48.497434	0	0	
7	7	0	0.000023	0	0	
8	8	-15.75002	-9.093255	0	0	
9	9	-0.00002	18.186545	0	0	
10	10	15.74998	-9.093255	0	0	
11	11	-42.00002	24.248723	0	0	
12	12	-0.00002	-48.497411	0	0	
13	13	41.99998	24.248723	0	0	
14	14	20.99998	-12.124344	0	0	
15	15	-21.00002	-12.124344	0	0	
16	16	-0.00002	24.248723	0	0	
17	N18	72.24998	48.497434	0	0	
18	N18A	25.99998	48.497434	0	0	
19	N19	-26.00002	48.497434	0	0	
20	N20	-72.25002	48.497434	0	0	
21	N21	-4.00002	48.497434	0	0	
22	N22	72.24998	51.497434	0	0	
23	N23	25.99998	51.497434	0	0	
24	N24	-26.00002	51.497434	0	0	
25	N25	-72.25002	51.497434	0	0	
26	N26	-4.00002	51.497434	0	0	
27	N27	72.24998	51.497434	-3	0	
28	N28	25.99998	51.497434	-3	0	
29	N29	-26.00002	51.497434	-3	0	
30	N30	72.24998	51.497434	69	0	
31	N31	25.99998	51.497434	69	0	
32	N32	-26.00002	51.497434	69	0	
33	N33	-72.25002	51.497434	-3	0	
34	N34	-72.25002	51.497434	69	0	
35	N35	-4.00002	51.497434	72	0	
36	N36	-4.00002	51.497434	-24	0	
37	N37	72.24998	51.497434	6	0	
38	N38	72.24998	51.497434	60	0	
39	N39	-4.00002	51.497434	69	0	
40	N40	-4.00002	51.497434	-21	0	
41	N41	-78	38.301248	0	0	
42	N42	-55	-1.732073	0	0	
43	N43	-29	-46.765394	0	0	
44	N44	-6	-86.798715	0	0	
45	N45	-40	-27.712836	0	0	
46	N46	-80.598076	36.801248	0	0	
47	N47	-57.598076	-3.232073	0	0	
48	N48	-31.598076	-48.265394	0	0	
49	N49	-8.598076	-88.298715	0	0	
50	N50	-42.598076	-29.212836	0	0	
51	N51	-80.598076	36.801248	-3	0	
52	N52	-57.598076	-3.232073	-3	0	
53	N53	-31.598076	-48.265394	-3	0	
54	N54	-80.598076	36.801248	69	0	
55	N55	-57.598076	-3.232073	69	0	
56	N56	-31.598076	-48.265394	69	0	
57	N57	-8.598076	-88.298715	-3	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
58	N58	-8.598076	-88.298715	69	0	
59	N59	-42.598076	-29.212836	72	0	
60	N60	-42.598076	-29.212836	-24	0	
61	N61	-80.598076	36.801248	6	0	
62	N62	-80.598076	36.801248	60	0	
63	N63	-42.598076	-29.212836	69	0	
64	N64	-42.598076	-29.212836	-21	0	
65	N65	6.00002	-86.798681	0	0	
66	N66	29.00002	-46.76536	0	0	
67	N67	55.00002	-1.73204	0	0	
68	N68	78.00002	38.301281	0	0	
69	N69	44.00002	-20.784598	0	0	
70	N70	8.598096	-88.298681	0	0	
71	N71	31.598096	-48.26536	0	0	
72	N72	57.598096	-3.23204	0	0	
73	N73	80.598096	36.801281	0	0	
74	N74	46.598096	-22.284598	0	0	
75	N75	8.598096	-88.298681	-3	0	
76	N76	31.598096	-48.26536	-3	0	
77	N77	57.598096	-3.23204	-3	0	
78	N78	8.598096	-88.298681	69	0	
79	N79	31.598096	-48.26536	69	0	
80	N80	57.598096	-3.23204	69	0	
81	N81	80.598096	36.801281	-3	0	
82	N82	80.598096	36.801281	69	0	
83	N83	46.598096	-22.284598	72	0	
84	N84	46.598096	-22.284598	-24	0	
85	N85	8.598096	-88.298681	6	0	
86	N86	8.598096	-88.298681	60	0	
87	N87	46.598096	-22.284598	69	0	
88	N88	46.598096	-22.284598	-21	0	
89	N89	-72.25002	51.497434	63	0	
90	N90	-8.598076	-88.298715	63	0	
91	N91	80.598096	36.801281	63	0	
92	N92	-72.25002	51.497434	3	0	
93	N93	-8.598076	-88.298715	3	0	
94	N94	80.598096	36.801281	3	0	
95	N95	75.62748	48.497434	48	0	
96	N96	-75.62752	48.497434	48	0	
97	N97	72.24998	48.497434	48	0	
98	N98	25.99998	48.497434	48	0	
99	N99	-26.00002	48.497434	48	0	
100	N100	-72.25002	48.497434	48	0	
101	N101	-4.00002	48.497434	48	0	
102	N102	72.24998	51.497434	48	0	
103	N103	25.99998	51.497434	48	0	
104	N104	-26.00002	51.497434	48	0	
105	N105	-72.25002	51.497434	48	0	
106	N106	-4.00002	51.497434	48	0	
107	N107	-79.75	41.283298	48	0	
108	N108	-4.25	-89.780766	48	0	
109	N109	-78	38.301248	48	0	
110	N110	-55	-1.732073	48	0	
111	N111	-29	-46.765394	48	0	
112	N112	-6	-86.798715	48	0	
113	N113	-40	-27.712836	48	0	
114	N114	-80.598076	36.801248	48	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
115	N115	-57.598076	-3.232073	48	0	
116	N116	-31.598076	-48.265394	48	0	
117	N117	-8.598076	-88.298715	48	0	
118	N118	-42.598076	-29.212836	48	0	
119	N119	4.25002	-89.780732	48	0	
120	N120	79.75002	41.283332	48	0	
121	N121	6.00002	-86.798681	48	0	
122	N122	29.00002	-46.76536	48	0	
123	N123	55.00002	-1.73204	48	0	
124	N124	78.00002	38.301281	48	0	
125	N125	44.00002	-20.784598	48	0	
126	N126	8.598096	-88.298681	48	0	
127	N127	31.598096	-48.26536	48	0	
128	N128	57.598096	-3.23204	48	0	
129	N129	80.598096	36.801281	48	0	
130	N130	46.598096	-22.284598	48	0	
131	N131	-6.49149	-85.751277	48	0	
132	N132	6.49149	-85.751277	48	0	
133	N133	77.50853	37.253843	48	0	
134	N134	71.01704	48.497434	48	0	
135	N135	-71.01704	48.497434	48	0	
136	N136	-77.50853	37.253843	48	0	
137	N140	-0.00002	48.497434	48	0	
138	N153	-0.00002	-84.994834	0	0	
139	N154	73.607685	42.497417	0	0	
140	N155	-73.607685	42.497417	0	0	
141	N141	0	-17.999977	-48	0	
142	N142	0	-17.999977	0	0	
143	N143	0	-77.999977	0	0	
144	N144	15.588438	8.999989	-48	0	
145	N145	67.549962	38.999989	0	0	
146	N146	-15.588438	8.999989	-48	0	
147	N147	-67.549962	38.999989	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	10	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	8	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	9	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N153			Reaction			
5	N154			Reaction			
6	N155			Reaction			
7	N141	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N144	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N146	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	DEAD LOAD	None			-1	18			3	
2	DEAD LOAD ICE	None				18		36	3	
3	WIND LOAD (NO ICE) FRONT	None				18		36		
4	WIND LOAD (NO ICE) SIDE	None				18		36		
5	WIND LOAD (ICE) FRONT	None				18		36		
6	WIND LOAD (ICE) SIDE	None				18		36		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
7	LIVE LOAD 1	None				1				
8	LIVE LOAD 2	None				1				
9	LIVE LOAD 3	None				1				
10	MAINTENANCE LOAD 1	None				1				
11	MAINTENANCE LOAD 2	None				1				
12	MAINTENANCE LOAD 3	None				1				
13	MAINTENANCE LOAD 4	None				1				
14	EQ Horizontal Y	None								
15	EQ Horizontal X	None								
16	EQ Vertical	None								
17	BLC 1 Transient Area Loads	None						30		
18	BLC 2 Transient Area Loads	None						30		

Joint Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N89	L	Z	-72
2	N92	L	Z	-72
3	N91	L	Z	-72
4	N94	L	Z	-72
5	N90	L	Z	-72
6	N93	L	Z	-72
7	N39	L	Z	-102
8	N40	L	Z	-102
9	N87	L	Z	-102
10	N88	L	Z	-102
11	N63	L	Z	-102
12	N64	L	Z	-102
13	N38	L	Z	-35
14	N37	L	Z	-35
15	N86	L	Z	-35
16	N85	L	Z	-35
17	N62	L	Z	-35
18	N61	L	Z	-35

Joint Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N89	L	Z	-128
2	N92	L	Z	-128
3	N91	L	Z	-128
4	N94	L	Z	-128
5	N90	L	Z	-128
6	N93	L	Z	-128
7	N39	L	Z	-330
8	N40	L	Z	-330
9	N87	L	Z	-330
10	N88	L	Z	-330
11	N63	L	Z	-330
12	N64	L	Z	-330
13	N38	L	Z	-129
14	N37	L	Z	-129
15	N86	L	Z	-129
16	N85	L	Z	-129
17	N62	L	Z	-129
18	N61	L	Z	-129

Joint Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N89	L	Y	-89
2	N92	L	Y	-89
3	N91	L	Y	-64
4	N94	L	Y	-64
5	N90	L	Y	-64
6	N93	L	Y	-64
7	N39	L	Y	-261
8	N40	L	Y	-261
9	N87	L	Y	-130
10	N88	L	Y	-130
11	N63	L	Y	-130
12	N64	L	Y	-130
13	N38	L	Y	-85
14	N37	L	Y	-85
15	N86	L	Y	-43
16	N85	L	Y	-43
17	N62	L	Y	-43
18	N61	L	Y	-43

Joint Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N89	L	X	-64
2	N92	L	X	-64
3	N91	L	X	-89
4	N94	L	X	-89
5	N90	L	X	-89
6	N93	L	X	-89
7	N39	L	X	-130
8	N40	L	X	-130
9	N87	L	X	-261
10	N88	L	X	-261
11	N63	L	X	-261
12	N64	L	X	-261
13	N38	L	X	-43
14	N37	L	X	-43
15	N86	L	X	-85
16	N85	L	X	-85
17	N62	L	X	-85
18	N61	L	X	-85

Joint Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N89	L	Y	-30
2	N92	L	Y	-30
3	N91	L	Y	-23
4	N94	L	Y	-23
5	N90	L	Y	-23
6	N93	L	Y	-23
7	N39	L	Y	-79
8	N40	L	Y	-79
9	N87	L	Y	-46
10	N88	L	Y	-46
11	N63	L	Y	-46
12	N64	L	Y	-46
13	N38	L	Y	-29
14	N37	L	Y	-29

Joint Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
15	N86	L	Y	-20
16	N85	L	Y	-20
17	N62	L	Y	-20
18	N61	L	Y	-20

Joint Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N89	L	X	-23
2	N92	L	X	-23
3	N91	L	X	-30
4	N94	L	X	-30
5	N90	L	X	-30
6	N93	L	X	-30
7	N39	L	X	-46
8	N40	L	X	-46
9	N87	L	X	-79
10	N88	L	X	-79
11	N63	L	X	-79
12	N64	L	X	-79
13	N38	L	X	-20
14	N37	L	X	-20
15	N86	L	X	-29
16	N85	L	X	-29
17	N62	L	X	-29
18	N61	L	X	-29

Joint Loads and Enforced Displacements (BLC 7 : LIVE LOAD 1)

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

Joint Loads and Enforced Displacements (BLC 8 : LIVE LOAD 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	4	L	Z	-500

Joint Loads and Enforced Displacements (BLC 9 : LIVE LOAD 3)

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

Joint Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N33	L	Z	-500

Joint Loads and Enforced Displacements (BLC 11 : MAINTENANCE LOAD 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N36	L	Z	-500

Joint Loads and Enforced Displacements (BLC 12 : MAINTENANCE LOAD 3)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N28	L	Z	-500

Joint Loads and Enforced Displacements (BLC 13 : MAINTENANCE LOAD 4)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N27	L	Z	-500

Member Point Loads

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

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M43	Z	-13	-13	0	0
2	M49	Z	-13	-13	0	0
3	M55	Z	-13	-13	0	0
4	M61	Z	-17	-17	0	0
5	M62	Z	-17	-17	0	0
6	M63	Z	-17	-17	0	0
7	4	Z	-22	-22	0	0
8	5	Z	-22	-22	0	0
9	6	Z	-22	-22	0	0
10	1	Z	-10	-10	0	0
11	2	Z	-10	-10	0	0
12	3	Z	-10	-10	0	0
13	7	Z	-10	-10	0	0
14	8	Z	-10	-10	0	0
15	9	Z	-10	-10	0	0
16	10	Z	-16	-16	0	0
17	11	Z	-16	-16	0	0
18	12	Z	-16	-16	0	0
19	M18	Z	-13	-13	0	0
20	M19	Z	-13	-13	0	0
21	M20	Z	-13	-13	0	0
22	M21	Z	-13	-13	0	0
23	M22	Z	-13	-13	0	0
24	M28	Z	-13	-13	0	0
25	M29	Z	-13	-13	0	0
26	M30	Z	-13	-13	0	0
27	M31	Z	-13	-13	0	0
28	M32	Z	-13	-13	0	0
29	M38	Z	-13	-13	0	0
30	M39	Z	-13	-13	0	0
31	M40	Z	-13	-13	0	0
32	M41	Z	-13	-13	0	0
33	M42	Z	-13	-13	0	0
34	M64	Z	-22	-22	0	0
35	M65	Z	-22	-22	0	0
36	M66	Z	-22	-22	0	0

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M43	PY	-6	-6	0	0
2	M49	PY	-6	-6	0	0
3	M55	PY	-6	-6	0	0
4	M61	PY	-11	-11	0	0
5	M62	PY	-11	-11	0	0
6	M63	PY	-11	-11	0	0
7	4	PY	-16	-16	0	0
8	5	PY	-16	-16	0	0
9	6	PY	-16	-16	0	0
10	1	PY	-13	-13	0	0
11	2	PY	-13	-13	0	0

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
12	3	PY	-13	-13	0	0
13	7	PY	-13	-13	0	0
14	8	PY	-13	-13	0	0
15	9	PY	-13	-13	0	0
16	10	PY	-13	-13	0	0
17	11	PY	-13	-13	0	0
18	12	PY	-13	-13	0	0
19	M18	PY	-6	-6	0	0
20	M19	PY	-6	-6	0	0
21	M20	PY	-6	-6	0	0
22	M21	PY	-6	-6	0	0
23	M22	PY	-6	-6	0	0
24	M28	PY	-6	-6	0	0
25	M29	PY	-6	-6	0	0
26	M30	PY	-6	-6	0	0
27	M31	PY	-6	-6	0	0
28	M32	PY	-6	-6	0	0
29	M38	PY	-6	-6	0	0
30	M39	PY	-6	-6	0	0
31	M40	PY	-6	-6	0	0
32	M41	PY	-6	-6	0	0
33	M42	PY	-6	-6	0	0
34	M64	PY	-21	-21	0	0
35	M65	PY	-21	-21	0	0
36	M66	PY	-21	-21	0	0

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M43	PX	-6	-6	0	0
2	M49	PX	-6	-6	0	0
3	M55	PX	-6	-6	0	0
4	M61	PX	-11	-11	0	0
5	M62	PX	-11	-11	0	0
6	M63	PX	-11	-11	0	0
7	4	PX	-16	-16	0	0
8	5	PX	-16	-16	0	0
9	6	PX	-16	-16	0	0
10	1	PX	-13	-13	0	0
11	2	PX	-13	-13	0	0
12	3	PX	-13	-13	0	0
13	7	PX	-13	-13	0	0
14	8	PX	-13	-13	0	0
15	9	PX	-13	-13	0	0
16	10	PX	-13	-13	0	0
17	11	PX	-13	-13	0	0
18	12	PX	-13	-13	0	0
19	M18	PX	-6	-6	0	0
20	M19	PX	-6	-6	0	0
21	M20	PX	-6	-6	0	0
22	M21	PX	-6	-6	0	0
23	M22	PX	-6	-6	0	0
24	M28	PX	-6	-6	0	0
25	M29	PX	-6	-6	0	0
26	M30	PX	-6	-6	0	0
27	M31	PX	-6	-6	0	0
28	M32	PX	-6	-6	0	0

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
29	M38	PX	-6	-6	0	0
30	M39	PX	-6	-6	0	0
31	M40	PX	-6	-6	0	0
32	M41	PX	-6	-6	0	0
33	M42	PX	-6	-6	0	0
34	M64	PX	-21	-21	0	0
35	M65	PX	-21	-21	0	0
36	M66	PX	-21	-21	0	0

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M43	PY	-6.4	-6.4	0	0
2	M49	PY	-6.4	-6.4	0	0
3	M55	PY	-6.4	-6.4	0	0
4	M61	PY	-7.7	-7.7	0	0
5	M62	PY	-7.7	-7.7	0	0
6	M63	PY	-7.7	-7.7	0	0
7	4	PY	-9.2	-9.2	0	0
8	5	PY	-9.2	-9.2	0	0
9	6	PY	-9.2	-9.2	0	0
10	1	PY	-8.4	-8.4	0	0
11	2	PY	-8.4	-8.4	0	0
12	3	PY	-8.4	-8.4	0	0
13	7	PY	-8.4	-8.4	0	0
14	8	PY	-8.4	-8.4	0	0
15	9	PY	-8.4	-8.4	0	0
16	10	PY	-8.4	-8.4	0	0
17	11	PY	-8.4	-8.4	0	0
18	12	PY	-8.4	-8.4	0	0
19	M18	PY	-6.4	-6.4	0	0
20	M19	PY	-6.4	-6.4	0	0
21	M20	PY	-6.4	-6.4	0	0
22	M21	PY	-6.4	-6.4	0	0
23	M22	PY	-6.4	-6.4	0	0
24	M28	PY	-6.4	-6.4	0	0
25	M29	PY	-6.4	-6.4	0	0
26	M30	PY	-6.4	-6.4	0	0
27	M31	PY	-6.4	-6.4	0	0
28	M32	PY	-6.4	-6.4	0	0
29	M38	PY	-6.4	-6.4	0	0
30	M39	PY	-6.4	-6.4	0	0
31	M40	PY	-6.4	-6.4	0	0
32	M41	PY	-6.4	-6.4	0	0
33	M42	PY	-6.4	-6.4	0	0
34	M64	PY	-11.2	-11.2	0	0
35	M65	PY	-11.2	-11.2	0	0
36	M66	PY	-11.2	-11.2	0	0

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M43	PX	-6.4	-6.4	0	0
2	M49	PX	-6.4	-6.4	0	0
3	M55	PX	-6.4	-6.4	0	0
4	M61	PX	-7.7	-7.7	0	0
5	M62	PX	-7.7	-7.7	0	0
6	M63	PX	-7.7	-7.7	0	0

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
7	4	PX	-9.2	-9.2	0	0
8	5	PX	-9.2	-9.2	0	0
9	6	PX	-9.2	-9.2	0	0
10	1	PX	-8.4	-8.4	0	0
11	2	PX	-8.4	-8.4	0	0
12	3	PX	-8.4	-8.4	0	0
13	7	PX	-8.4	-8.4	0	0
14	8	PX	-8.4	-8.4	0	0
15	9	PX	-8.4	-8.4	0	0
16	10	PX	-8.4	-8.4	0	0
17	11	PX	-8.4	-8.4	0	0
18	12	PX	-8.4	-8.4	0	0
19	M18	PX	-6.4	-6.4	0	0
20	M19	PX	-6.4	-6.4	0	0
21	M20	PX	-6.4	-6.4	0	0
22	M21	PX	-6.4	-6.4	0	0
23	M22	PX	-6.4	-6.4	0	0
24	M28	PX	-6.4	-6.4	0	0
25	M29	PX	-6.4	-6.4	0	0
26	M30	PX	-6.4	-6.4	0	0
27	M31	PX	-6.4	-6.4	0	0
28	M32	PX	-6.4	-6.4	0	0
29	M38	PX	-6.4	-6.4	0	0
30	M39	PX	-6.4	-6.4	0	0
31	M40	PX	-6.4	-6.4	0	0
32	M41	PX	-6.4	-6.4	0	0
33	M42	PX	-6.4	-6.4	0	0
34	M64	PX	-11.2	-11.2	0	0
35	M65	PX	-11.2	-11.2	0	0
36	M66	PX	-11.2	-11.2	0	0

Member Distributed Loads (BLC 17 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	4	Z	-9.611	-9.611	12.187	24.187
2	2	Z	-.451	-3.626	0	28
3	2	Z	-3.626	-5.138	28	56
4	2	Z	-5.138	-5.06	56	84
5	2	Z	-5.06	-5.137	84	112
6	2	Z	-5.137	-3.627	112	140
7	2	Z	-3.627	-.451	140	168
8	8	Z	-3.041	-3.042	0	42
9	8	Z	-3.042	-3.043	42	84
10	10	Z	-7.17	-6.084	9.699	48.497
11	11	Z	-7.171	-6.084	9.699	48.497
12	6	Z	-9.611	-9.611	12.187	24.187
13	3	Z	-.451	-3.626	0	28
14	3	Z	-3.626	-5.138	28	56
15	3	Z	-5.138	-5.06	56	84
16	3	Z	-5.06	-5.137	84	112
17	3	Z	-5.137	-3.627	112	140
18	3	Z	-3.627	-.451	140	168
19	9	Z	-3.041	-3.042	0	42
20	9	Z	-3.042	-3.043	42	84
21	12	Z	-7.169	-6.084	9.699	48.497
22	5	Z	-9.611	-9.611	12.187	24.187
23	1	Z	-.451	-3.627	0	28

Member Distributed Loads (BLC 17 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
24	1	Z	-3.627	-5.137	28	56
25	1	Z	-5.137	-5.06	56	84
26	1	Z	-5.06	-5.138	84	112
27	1	Z	-5.138	-3.626	112	140
28	1	Z	-3.626	-.451	140	168
29	7	Z	-3.043	-3.042	0	42
30	7	Z	-3.042	-3.041	42	84

Member Distributed Loads (BLC 18 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	4	Z	-19.942	-19.942	12.187	24.187
2	2	Z	-.936	-7.524	0	28
3	2	Z	-7.524	-10.66	28	56
4	2	Z	-10.66	-10.5	56	84
5	2	Z	-10.5	-10.659	84	112
6	2	Z	-10.659	-7.525	112	140
7	2	Z	-7.525	-.936	140	168
8	8	Z	-6.309	-6.311	0	42
9	8	Z	-6.311	-6.314	42	84
10	10	Z	-14.876	-12.623	9.699	48.497
11	11	Z	-14.879	-12.623	9.699	48.497
12	6	Z	-19.942	-19.942	12.187	24.187
13	3	Z	-.936	-7.524	0	28
14	3	Z	-7.524	-10.66	28	56
15	3	Z	-10.66	-10.5	56	84
16	3	Z	-10.5	-10.659	84	112
17	3	Z	-10.659	-7.525	112	140
18	3	Z	-7.525	-.936	140	168
19	9	Z	-6.309	-6.311	0	42
20	9	Z	-6.311	-6.314	42	84
21	12	Z	-14.874	-12.623	9.699	48.497
22	5	Z	-19.942	-19.942	12.187	24.187
23	1	Z	-.936	-7.525	0	28
24	1	Z	-7.525	-10.659	28	56
25	1	Z	-10.659	-10.5	56	84
26	1	Z	-10.5	-10.66	84	112
27	1	Z	-10.66	-7.524	112	140
28	1	Z	-7.524	-.936	140	168
29	7	Z	-6.314	-6.311	0	42
30	7	Z	-6.311	-6.309	42	84

Member Area Loads (BLC 1 : DEAD LOAD)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	1	12	13	2	Z	Two Way	-5
2	2	13	11	4	Z	Two Way	-5
3	11	4	1	12	Z	Two Way	-5

Member Area Loads (BLC 2 : DEAD LOAD ICE)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	1	12	13	2	Z	Two Way	-10.374
2	2	13	11	4	Z	Two Way	-10.374
3	11	4	1	12	Z	Two Way	-10.374

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
1	DL + WL (NO ICE) 0 ...	Yes	Y		1	1.2			3	1.6																
2	DL + WL (NO ICE) 30 ...	Yes	Y		1	1.2			3	1.3...																
3	DL + WL (NO ICE) 60 ...	Yes	Y		1	1.2			3	.8																
4	DL + WL (NO ICE) 90 ...	Yes	Y		1	1.2																				
5	DL + WL (NO ICE) 12...	Yes	Y		1	1.2			3	-.8	7	1.5														
6	DL + WL (NO ICE) 15...	Yes	Y		1	1.2			3	-1.3...																
7	DL + WL (NO ICE) 18...	Yes	Y		1	1.2			3	-1.6																
8	DL + WL (NO ICE) 21...	Yes	Y		1	1.2			3	-1.3...																
9	DL + WL (NO ICE) 24...	Yes	Y		1	1.2			3	-.8		1.5														
10	DL + WL (NO ICE) 27...	Yes	Y		1	1.2					8	1.5														
11	DL + WL (NO ICE) 30...	Yes	Y		1	1.2			3	.8	9	1.5														
12	DL + WL (NO ICE) 33...	Yes	Y		1	1.2			3	1.3...																
13	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	1																
14	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	.866																
15	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	.5																
16	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1																		
17	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	-.5																
18	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	-.866																
19	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	-1																
20	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	-.866																
21	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	-.5																
22	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1																		
23	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	.5																
24	DL + DL ICE + WL (IC...	Yes	Y		1	1.2	2	1	5	.866																
25	DEAD LOAD + LIVE L...	Yes	Y		1	1.2																				
26	DEAD LOAD + LIVE L...	Yes	Y		1	1.2																				
27	DEAD LOAD + LIVE L...	Yes	Y		1	1.2																				
28	DL + MAIN L1+30MP...	Yes	Y		1	1.2	10	1.5	3	.125																
29	DL + MAIN L2+30MP...	Yes	Y		1	1.2	11	1.5	3	.125																
30	DL + MAIN L3+30MP...	Yes	Y		1	1.2	12	1.5	3	.125																
31	DL + MAIN L4+30MP...	Yes	Y		1	1.2	13	1.5	3	.125																
32	DL + MAIN L1+30MP...	Yes	Y		1	1.2	10	1.5	4	.125																
33	DL + MAIN L2+30MP...	Yes	Y		1	1.2	11	1.5	4	.125																
34	DL + MAIN L3+30MP...	Yes	Y		1	1.2	12	1.5	4	.125																
35	DL + MAIN L4+30MP...	Yes	Y		1	1.2	13	1.5	4	.125																
36	DL + MAIN L1+30MP...	Yes	Y		1	1.2	10	1.5	3	-.125																
37	DL + MAIN L2+30MP...	Yes	Y		1	1.2	11	1.5	3	-.125																
38	DL + MAIN L3+30MP...	Yes	Y		1	1.2	12	1.5	3	-.125																
39	DL + MAIN L4+30MP...	Yes	Y		1	1.2	13	1.5	3	-.125																
40	DL + MAIN L1+30MP...	Yes	Y		1	1.2	10	1.5	4	-.125																
41	DL + MAIN L2+30MP...	Yes	Y		1	1.2	11	1.5	4	-.125																
42	DL + MAIN L3+30MP...	Yes	Y		1	1.2	12	1.5	4	-.125																
43	DL + MAIN L4+30MP...	Yes	Y		1	1.2	13	1.5	4	-.125																
44	DL + 1.0 EQ Hor. Y + ...	Yes	Y		1	1.2	14	1	16	1																
45	DL + 1.0 EQ Hor. X + ...	Yes	Y		1	1.2	15	1	16	1																

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	10	max	447.691	1	1454.658	1	1402.268	13	-.383	7	-.599	7	.825	1
2		min	-483.253	7	-1435.155	7	334.563	5	-1.573	13	-2.755	13	-.821	7
3	8	max	460.135	7	1437.232	1	1411.386	19	-.393	11	2.712	13	.802	7
4		min	-425.684	1	-1414.747	7	332.609	11	-1.565	19	.702	7	-.8	1
5	9	max	109.05	33	971.63	1	1410.714	13	3.178	19	.031	5	.05	1
6		min	-112.766	42	-1015.511	7	339.525	5	.671	1	-.028	10	-.047	7

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
7	N153	max	0	1	0	1	2698.617	13	0	1	0	1	0	1
8		min	0	1	0	1	-1089.799	7	0	1	0	1	0	1
9	N154	max	0	1	0	1	2391.329	19	0	1	0	1	0	1
10		min	0	1	0	1	-266.205	1	0	1	0	1	0	1
11	N155	max	0	1	0	1	2377.355	19	0	1	0	1	0	1
12		min	0	1	0	1	-222.033	1	0	1	0	1	0	1
13	N141	max	9.015	33	1166.341	1	802.25	7	0	1	0	32	0	43
14		min	-9.015	42	-1151.641	7	-762.226	1	0	1	0	43	0	32
15	N144	max	490.826	1	388.667	1	431.268	1	0	7	0	7	0	7
16		min	-501.452	7	-395.067	7	-389.654	7	0	1	0	1	0	1
17	N146	max	480.874	7	376.799	1	414.246	1	0	7	0	1	0	1
18		min	-470.245	1	-383.179	7	-372.628	7	0	1	0	7	0	7
19	Totals:	max	493.397	34	5795.326	1	10613.347	13						
20		min	-493.401	43	-5795.3	7	3192.207	7						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
1	1	max	.003	42	.004	7	.022	7	2.836e-03	11	1.215e-04	42	6.56e-05	34
2		min	-.003	35	-.004	1	-.042	11	-1.808e-03	7	-7.723e-04	32	-6.075e-05	43
3	2	max	.002	1	.007	7	.01	1	4.389e-03	1	1.37e-03	1	8.367e-04	1
4		min	-.002	7	-.007	1	-.037	5	-3.695e-03	7	-1.296e-03	7	-8.341e-04	7
5	3	max	.003	7	.005	7	-.033	7	3.325e-03	13	6.917e-03	13	2.148e-04	7
6		min	-.003	1	-.005	1	-.158	13	1.631e-04	7	1.61e-03	7	-2.379e-04	1
7	4	max	.002	7	.007	7	.011	1	4.068e-03	1	1.695e-03	7	8.776e-04	7
8		min	-.002	1	-.006	1	-.03	10	-4.516e-03	7	-1.584e-03	10	-8.693e-04	1
9	5	max	.002	1	.005	7	-.039	7	4.691e-03	13	-1.575e-03	40	1.572e-04	1
10		min	-.002	7	-.004	1	-.156	13	6.54e-04	7	-6.07e-03	19	-1.77e-04	7
11	6	max	0	35	0	7	-.029	1	-1.187e-03	1	1.12e-03	42	7.397e-05	42
12		min	0	42	0	1	-.16	19	-7.751e-03	19	-8.435e-04	19	-7.561e-05	7
13	7	max	0	1	0	1	0	1	0	1	0	1	0	1
14		min	0	1	0	1	0	1	0	1	0	1	0	1
15	8	max	0	1	0	7	0	11	0	19	0	7	0	1
16		min	0	7	0	1	0	19	0	11	0	13	0	7
17	9	max	0	42	0	7	0	5	0	1	0	10	0	7
18		min	0	33	0	1	0	13	0	19	0	5	0	1
19	10	max	0	7	0	7	0	5	0	13	0	13	0	7
20		min	0	1	0	1	0	13	0	7	0	7	0	1
21	11	max	0	43	.002	7	.022	10	5.875e-04	1	5.729e-04	7	4.158e-04	1
22		min	0	34	-.002	1	-.014	1	-5.073e-04	7	-3.484e-04	1	-4.247e-04	7
23	12	max	0	42	.003	7	.033	11	1.074e-04	7	1.445e-04	5	6.729e-05	42
24		min	0	33	-.003	1	-.025	7	-5.356e-04	11	-1.83e-04	32	-7.463e-05	35
25	13	max	0	41	.003	7	.027	5	6.308e-04	1	3.635e-04	1	4.175e-04	7
26		min	0	32	-.003	1	-.014	1	-4.817e-04	7	-5.859e-04	5	-4.268e-04	1
27	14	max	0	7	.001	7	-.002	7	1.433e-03	19	2.515e-03	13	1.199e-04	7
28		min	0	1	-.001	1	-.01	13	-5.071e-05	11	3.159e-04	5	-1.208e-04	1
29	15	max	0	1	.001	7	-.002	40	1.518e-03	19	-4.251e-04	7	1.159e-04	1
30		min	0	7	-.001	1	-.009	13	-5.773e-05	11	-2.44e-03	13	-1.167e-04	7
31	16	max	0	43	0	7	-.002	1	-5.614e-04	1	3.293e-04	10	9.493e-06	7
32		min	0	32	0	1	-.01	19	-2.813e-03	19	-3.567e-04	5	-1.044e-05	1
33	N18	max	.002	1	.027	7	.025	1	9.914e-03	1	7.557e-04	1	1.54e-03	1
34		min	-.002	7	-.023	1	-.041	19	-1.084e-02	7	-2.775e-03	19	-1.931e-03	7
35	N18A	max	0	13	.026	38	-.028	1	2.074e-02	1	4.075e-04	42	9.151e-04	19
36		min	0	42	-.006	1	-.15	19	-2.152e-02	7	-8.966e-04	33	-7.494e-05	1
37	N19	max	0	19	.021	19	-.035	1	2.1e-02	1	9.16e-04	41	4.726e-05	1
38		min	0	42	-.007	1	-.167	19	-2.179e-02	7	-3.65e-04	32	-7.609e-04	19

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
39	N20	max	.001	7	.027	7	.022	1	9.347e-03	1	3.147e-03	19	1.98e-03	7
40		min	-.001	1	-.023	1	-.047	19	-1.058e-02	7	-5.224e-04	1	-1.629e-03	1
41	N21	max	0	19	.003	7	-.029	1	1.399e-02	1	7.496e-04	42	3.232e-04	1
42		min	0	42	-.002	1	-.164	19	-1.684e-02	7	-8.924e-04	19	-5.498e-04	19
43	N22	max	.004	7	.027	7	.055	1	9.914e-03	1	7.557e-04	1	1.54e-03	1
44		min	-.003	1	-.023	1	-.073	7	-1.084e-02	7	-2.775e-03	19	-1.931e-03	7
45	N23	max	0	1	.026	38	.034	1	2.074e-02	1	4.075e-04	42	9.151e-04	19
46		min	-.003	42	-.006	1	-.177	19	-2.152e-02	7	-8.966e-04	33	-7.494e-05	1
47	N24	max	.003	19	.021	19	.028	1	2.1e-02	1	9.16e-04	41	4.726e-05	1
48		min	0	1	-.007	1	-.194	19	-2.179e-02	7	-3.65e-04	32	-7.609e-04	19
49	N25	max	.004	1	.027	7	.05	1	9.347e-03	1	3.147e-03	19	1.98e-03	7
50		min	-.005	7	-.023	1	-.077	7	-1.058e-02	7	-5.224e-04	1	-1.629e-03	1
51	N26	max	.002	19	.003	7	.013	1	1.399e-02	1	7.496e-04	42	3.232e-04	1
52		min	0	1	-.002	1	-.199	19	-1.684e-02	7	-8.924e-04	19	-5.498e-04	19
53	N27	max	.012	19	.007	1	.055	1	9.914e-03	1	7.557e-04	1	1.54e-03	1
54		min	-.005	1	-.006	7	-.073	7	-1.084e-02	7	-2.775e-03	19	-1.931e-03	7
55	N28	max	.003	33	.056	1	.034	1	2.074e-02	1	4.074e-04	42	9.151e-04	19
56		min	-.004	42	-.048	7	-.177	19	-2.152e-02	7	-8.966e-04	33	-7.494e-05	1
57	N29	max	.002	32	.056	1	.028	1	2.1e-02	1	9.159e-04	41	4.726e-05	1
58		min	-.003	42	-.049	7	-.194	19	-2.179e-02	7	-3.65e-04	32	-7.609e-04	19
59	N30	max	.061	7	.623	7	.056	1	9.997e-03	1	1.121e-03	7	1.319e-02	1
60		min	-.069	1	-.647	1	-.075	7	-9.142e-03	7	-1.689e-03	1	-1.345e-02	7
61	N31	max	.044	7	1.56	7	.033	1	2.255e-02	1	7.822e-04	7	8.879e-03	1
62		min	-.052	1	-1.526	1	-.177	19	-2.265e-02	7	-1.526e-03	13	-9.675e-03	7
63	N32	max	.064	1	1.626	7	.027	1	2.365e-02	1	1.58e-03	1	9.397e-03	7
64		min	-.051	7	-1.576	1	-.194	19	-2.41e-02	7	-1.024e-03	7	-8.787e-03	1
65	N33	max	.005	1	.005	1	.05	1	9.347e-03	1	3.147e-03	19	1.98e-03	7
66		min	-.012	19	-.005	7	-.077	7	-1.058e-02	7	-5.224e-04	1	-1.629e-03	1
67	N34	max	.086	1	.657	7	.051	1	1.064e-02	1	1.935e-03	1	1.43e-02	7
68		min	-.069	7	-.652	1	-.078	7	-1.052e-02	7	-1.223e-03	7	-1.401e-02	1
69	N35	max	.073	42	2.085	7	.013	1	3.676e-02	1	1.763e-03	42	7.443e-04	7
70		min	-.035	33	-2.032	1	-.2	19	-3.693e-02	7	-7.018e-04	32	-7.791e-04	1
71	N36	max	.024	19	.222	1	.013	1	7.512e-03	1	8.44e-04	34	3.232e-04	1
72		min	-.018	34	-.29	7	-.199	19	-1.036e-02	7	-8.861e-04	19	-5.498e-04	19
73	N37	max	.002	5	.089	7	.055	1	9.392e-03	1	3.328e-04	1	2.996e-03	1
74		min	-.009	34	-.081	1	-.073	7	-9.94e-03	7	-1.254e-03	19	-3.37e-03	7
75	N38	max	.051	7	.541	7	.056	1	9.99e-03	1	1.121e-03	7	1.319e-02	1
76		min	-.054	1	-.557	1	-.075	7	-9.136e-03	7	-1.689e-03	1	-1.345e-02	7
77	N39	max	.068	42	1.975	7	.013	1	3.676e-02	1	1.763e-03	42	7.443e-04	7
78		min	-.033	33	-1.922	1	-.2	19	-3.693e-02	7	-7.018e-04	32	-7.791e-04	1
79	N40	max	.021	19	.199	1	.013	1	7.512e-03	1	8.44e-04	34	3.232e-04	1
80		min	-.015	34	-.259	7	-.199	19	-1.036e-02	7	-8.861e-04	19	-5.498e-04	19
81	N41	max	.014	7	.014	7	.014	7	6.868e-03	1	5.089e-03	7	1.558e-03	7
82		min	-.017	1	-.016	1	-.037	13	-5.353e-03	7	-5.245e-03	1	-1.932e-03	1
83	N42	max	0	7	.006	7	-.035	1	6.571e-03	1	8.665e-03	7	7.626e-04	19
84		min	-.017	13	-.011	13	-.146	19	-5.978e-03	7	-8.92e-03	1	6.499e-05	1
85	N43	max	0	7	.005	7	-.019	7	5.41e-03	1	5.994e-03	7	4.718e-04	7
86		min	-.015	13	-.01	13	-.172	13	-5.436e-03	7	-6.627e-03	1	-8.236e-04	13
87	N44	max	.002	42	.004	7	.003	7	2.162e-03	1	1.501e-03	7	5.076e-04	19
88		min	-.006	13	-.006	1	-.04	13	-3.011e-03	7	-3.841e-03	13	1.536e-05	41
89	N45	max	.002	1	.004	7	-.037	7	5.28e-03	1	5.146e-03	7	2.691e-05	40
90		min	-.003	7	-.004	1	-.162	13	-3.596e-03	7	-7.088e-03	1	-4.105e-04	13
91	N46	max	.017	7	.01	7	.035	7	6.868e-03	1	5.089e-03	7	1.558e-03	7
92		min	-.02	1	-.011	1	-.053	1	-5.353e-03	7	-5.245e-03	1	-1.932e-03	1
93	N47	max	0	7	.005	7	-.014	7	6.571e-03	1	8.665e-03	7	7.626e-04	19
94		min	-.016	13	-.013	13	-.157	13	-5.978e-03	7	-8.92e-03	1	6.499e-05	1
95	N48	max	0	7	.004	7	.005	7	5.41e-03	1	5.994e-03	7	4.718e-04	7

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
96		min	-.016	13	-.008	13	-.185	13	-5.436e-03	7	-6.627e-03	1	-8.236e-04	13
97	N49	max	.002	42	.003	7	.011	7	2.162e-03	1	1.501e-03	7	5.076e-04	19
98		min	-.005	13	-.006	1	-.05	13	-3.011e-03	7	-3.841e-03	13	1.536e-05	41
99	N50	max	.002	1	.005	7	-.019	7	5.28e-03	1	5.146e-03	7	2.691e-05	40
100		min	-.003	7	-.004	1	-.185	13	-3.596e-03	7	-7.088e-03	1	-4.105e-04	13
101	N51	max	.001	7	.011	13	.035	7	6.868e-03	1	5.089e-03	7	1.558e-03	7
102		min	-.007	13	-.006	7	-.053	1	-5.352e-03	7	-5.245e-03	1	-1.932e-03	1
103	N52	max	.018	1	.009	1	-.014	7	6.571e-03	1	8.665e-03	7	7.626e-04	19
104		min	-.026	7	-.013	7	-.157	13	-5.978e-03	7	-8.92e-03	1	6.499e-05	1
105	N53	max	.012	1	.009	1	.005	7	5.41e-03	1	5.994e-03	7	4.718e-04	7
106		min	-.017	7	-.012	7	-.185	13	-5.436e-03	7	-6.627e-03	1	-8.236e-04	13
107	N54	max	.211	7	.43	7	.036	7	4.153e-03	1	3.e-03	7	9.653e-03	7
108		min	-.183	1	-.424	1	-.054	1	-4.098e-03	7	-1.933e-03	1	-9.74e-03	1
109	N55	max	.508	7	.594	7	-.014	7	6.095e-03	1	8.692e-03	7	7.028e-04	7
110		min	-.517	1	-.61	1	-.158	13	-5.566e-03	7	-8.231e-03	1	-1.274e-03	1
111	N56	max	.334	7	.548	7	.005	7	5.521e-03	1	6.319e-03	7	5.037e-03	1
112		min	-.369	1	-.552	1	-.185	13	-5.907e-03	7	-6.786e-03	1	-4.678e-03	7
113	N57	max	.007	1	0	1	.011	7	2.162e-03	1	1.501e-03	7	5.076e-04	19
114		min	-.004	7	-.01	19	-.05	13	-3.011e-03	7	-3.841e-03	13	1.536e-05	41
115	N58	max	.062	43	.428	7	.012	7	5.615e-03	1	1.39e-03	7	2.803e-03	1
116		min	-.072	32	-.414	1	-.051	13	-6.32e-03	7	-1.6e-03	1	-2.669e-03	7
117	N59	max	.489	7	.716	7	-.019	7	1.134e-02	1	8.575e-03	7	2.972e-03	1
118		min	-.515	1	-.729	1	-.187	13	-1.136e-02	7	-8.46e-03	1	-3.039e-03	7
119	N60	max	.172	1	.105	13	-.019	7	4.18e-03	13	5.136e-03	7	2.691e-05	40
120		min	-.126	7	-.025	7	-.185	13	-3.138e-04	7	-7.074e-03	1	-4.105e-04	13
121	N61	max	.044	7	.047	7	.035	7	7.561e-03	1	3.983e-03	7	2.57e-03	7
122		min	-.048	1	-.054	1	-.054	1	-6.836e-03	7	-4.16e-03	1	-2.908e-03	1
123	N62	max	.184	7	.393	7	.036	7	4.146e-03	1	3.e-03	7	9.653e-03	7
124		min	-.166	1	-.387	1	-.054	1	-4.091e-03	7	-1.933e-03	1	-9.74e-03	1
125	N63	max	.463	7	.682	7	-.019	7	1.134e-02	1	8.575e-03	7	2.972e-03	1
126		min	-.49	1	-.695	1	-.187	13	-1.136e-02	7	-8.46e-03	1	-3.039e-03	7
127	N64	max	.151	1	.093	13	-.019	7	4.18e-03	13	5.136e-03	7	2.691e-05	40
128		min	-.111	7	-.024	7	-.185	13	-3.141e-04	7	-7.074e-03	1	-4.105e-04	13
129	N65	max	.006	42	.003	7	.003	7	2.399e-03	1	3.533e-03	13	-1.307e-05	1
130		min	-.002	35	-.005	13	-.034	13	-3.022e-03	7	-1.427e-03	7	-6.974e-04	19
131	N66	max	.015	13	.004	7	-.017	7	4.895e-03	1	6.148e-03	1	9.567e-04	13
132		min	.002	35	-.011	13	-.153	13	-4.954e-03	7	-5.484e-03	7	-3.754e-04	7
133	N67	max	.013	13	.006	7	-.035	1	6.63e-03	1	8.477e-03	1	4.181e-05	1
134		min	.001	7	-.011	13	-.166	19	-6.067e-03	7	-8.183e-03	7	-6.496e-04	19
135	N68	max	.017	1	.014	7	.008	7	6.855e-03	1	5.236e-03	1	1.831e-03	1
136		min	-.014	7	-.016	1	-.042	13	-4.807e-03	7	-5.033e-03	7	-1.499e-03	7
137	N69	max	.002	7	.006	7	-.036	7	5.063e-03	1	7.863e-03	1	3.027e-04	7
138		min	-.001	1	-.006	1	-.162	13	-4.204e-03	7	-5.417e-03	7	-5.105e-04	1
139	N70	max	.005	42	.002	7	.011	7	2.399e-03	1	3.533e-03	13	-1.307e-05	1
140		min	-.002	35	-.007	13	-.043	13	-3.022e-03	7	-1.427e-03	7	-6.974e-04	19
141	N71	max	.016	13	.003	7	.005	7	4.895e-03	1	6.148e-03	1	9.567e-04	13
142		min	.002	35	-.009	13	-.165	13	-4.954e-03	7	-5.484e-03	7	-3.754e-04	7
143	N72	max	.013	13	.005	7	-.026	7	6.63e-03	1	8.477e-03	1	4.181e-05	1
144		min	0	7	-.012	13	-.172	13	-6.067e-03	7	-8.183e-03	7	-6.496e-04	19
145	N73	max	.02	1	.01	7	.029	7	6.855e-03	1	5.236e-03	1	1.831e-03	1
146		min	-.016	7	-.012	1	-.055	13	-4.807e-03	7	-5.033e-03	7	-1.499e-03	7
147	N74	max	.002	7	.006	7	-.015	7	5.063e-03	1	7.863e-03	1	3.027e-04	7
148		min	-.002	1	-.007	1	-.186	13	-4.204e-03	7	-5.417e-03	7	-5.105e-04	1
149	N75	max	.006	7	.002	1	.011	7	2.398e-03	1	3.533e-03	13	-1.307e-05	1
150		min	-.008	1	-.01	19	-.043	13	-3.022e-03	7	-1.427e-03	7	-6.974e-04	19
151	N76	max	.019	7	.008	1	.005	7	4.894e-03	1	6.148e-03	1	9.567e-04	13
152		min	-.012	1	-.012	7	-.165	13	-4.954e-03	7	-5.484e-03	7	-3.754e-04	7

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
153	N77	max	.025	7	.01	1	-.026	7	6.63e-03	1	8.477e-03	1	4.181e-05	1
154		min	-.019	1	-.013	7	-.172	13	-6.067e-03	7	-8.183e-03	7	-6.496e-04	19
155	N78	max	.056	43	.406	7	.011	7	4.544e-03	1	9.371e-04	1	1.879e-03	7
156		min	-.076	32	-.386	1	-.044	13	-5.484e-03	7	-1.434e-03	7	-2.009e-03	1
157	N79	max	.321	1	.526	7	.005	7	4.896e-03	1	6.128e-03	1	4.751e-03	7
158		min	-.301	7	-.526	1	-.165	13	-5.553e-03	7	-5.889e-03	7	-5.318e-03	1
159	N80	max	.517	1	.589	7	-.026	7	6.282e-03	1	8.509e-03	1	1.18e-03	13
160		min	-.495	7	-.618	1	-.172	13	-5.676e-03	7	-8.596e-03	7	-6.154e-04	32
161	N81	max	.006	13	.01	13	.029	7	6.855e-03	1	5.236e-03	1	1.831e-03	1
162		min	0	7	-.004	7	-.055	13	-4.807e-03	7	-5.033e-03	7	-1.499e-03	7
163	N82	max	.195	1	.435	7	.029	7	5.159e-03	1	2.309e-03	1	9.416e-03	1
164		min	-.202	7	-.452	1	-.057	13	-4.612e-03	7	-2.817e-03	7	-9.303e-03	7
165	N83	max	.517	1	.712	7	-.016	7	1.108e-02	1	8.386e-03	1	2.59e-03	7
166		min	-.492	7	-.73	1	-.187	13	-1.116e-02	7	-8.449e-03	7	-2.664e-03	1
167	N84	max	.132	7	.069	13	-.016	7	2.826e-03	13	7.848e-03	1	3.027e-04	7
168		min	-.19	1	-.038	7	-.186	13	-9.208e-04	7	-5.407e-03	7	-5.105e-04	1
169	N85	max	.02	13	.026	7	.011	7	4.468e-03	1	1.797e-03	13	1.305e-04	35
170		min	-.006	32	-.026	1	-.043	13	-4.67e-03	7	-7.826e-04	32	-6.514e-04	13
171	N86	max	.052	43	.357	7	.011	7	4.537e-03	1	9.371e-04	1	1.879e-03	7
172		min	-.066	32	-.345	1	-.044	13	-5.477e-03	7	-1.434e-03	7	-2.009e-03	1
173	N87	max	.492	1	.679	7	-.016	7	1.108e-02	1	8.386e-03	1	2.59e-03	7
174		min	-.466	7	-.697	1	-.187	13	-1.116e-02	7	-8.449e-03	7	-2.664e-03	1
175	N88	max	.116	7	.06	13	-.016	7	2.827e-03	13	7.848e-03	1	3.027e-04	7
176		min	-.167	1	-.035	7	-.186	13	-9.21e-04	7	-5.407e-03	7	-5.105e-04	1
177	N89	max	.075	1	.593	7	.051	1	1.064e-02	1	1.935e-03	1	1.43e-02	7
178		min	-.061	7	-.588	1	-.078	7	-1.051e-02	7	-1.223e-03	7	-1.401e-02	1
179	N90	max	.057	43	.39	7	.012	7	5.613e-03	1	1.39e-03	7	2.803e-03	1
180		min	-.067	32	-.38	1	-.051	13	-6.318e-03	7	-1.6e-03	1	-2.669e-03	7
181	N91	max	.181	1	.408	7	.029	7	5.157e-03	1	2.309e-03	1	9.416e-03	1
182		min	-.185	7	-.421	1	-.057	13	-4.61e-03	7	-2.817e-03	7	-9.303e-03	7
183	N92	max	.006	13	.058	7	.05	1	9.125e-03	1	2.232e-03	19	2.75e-03	7
184		min	-.001	10	-.051	1	-.077	7	-1.01e-02	7	-3.092e-04	1	-2.403e-03	1
185	N93	max	.004	7	.014	7	.011	7	3.302e-03	1	9.715e-04	7	5.224e-04	13
186		min	-.015	13	-.015	1	-.05	13	-3.888e-03	7	-2.84e-03	13	-6.582e-05	40
187	N94	max	.035	1	.026	7	.029	7	7.245e-03	1	4.655e-03	1	2.305e-03	1
188		min	-.03	7	-.033	1	-.055	13	-5.711e-03	7	-4.45e-03	7	-1.987e-03	7
189	N95	max	.032	42	.388	7	.034	1	9.236e-03	1	1.121e-03	7	1.319e-02	1
190		min	-.025	35	-.396	1	-.053	7	-8.382e-03	7	-1.688e-03	1	-1.345e-02	7
191	N96	max	.033	42	.393	7	.029	1	9.45e-03	1	1.934e-03	1	1.43e-02	7
192		min	-.025	35	-.387	1	-.055	19	-9.323e-03	7	-1.222e-03	7	-1.401e-02	1
193	N97	max	.032	42	.434	7	.028	1	9.236e-03	1	1.121e-03	7	1.319e-02	1
194		min	-.025	35	-.44	1	-.053	19	-8.382e-03	7	-1.688e-03	1	-1.345e-02	7
195	N98	max	.032	42	1.085	7	-.034	1	2.247e-02	1	7.822e-04	7	8.879e-03	1
196		min	-.025	35	-1.053	1	-.154	19	-2.256e-02	7	-1.526e-03	13	-9.675e-03	7
197	N99	max	.032	42	1.12	7	-.043	1	2.356e-02	1	1.58e-03	1	9.397e-03	7
198		min	-.025	35	-1.079	1	-.169	19	-2.401e-02	7	-1.024e-03	7	-8.787e-03	1
199	N100	max	.033	42	.441	7	.023	1	9.45e-03	1	1.934e-03	1	1.43e-02	7
200		min	-.025	35	-.434	1	-.057	19	-9.323e-03	7	-1.222e-03	7	-1.401e-02	1
201	N101	max	.032	42	1.243	7	-.02	7	3.023e-02	1	1.504e-03	42	7.443e-04	7
202		min	-.025	35	-1.194	1	-.177	13	-3.04e-02	7	-4.444e-04	32	-7.791e-04	1
203	N102	max	.038	7	.434	7	.056	1	9.236e-03	1	1.121e-03	7	1.319e-02	1
204		min	-.034	1	-.44	1	-.075	7	-8.382e-03	7	-1.688e-03	1	-1.345e-02	7
205	N103	max	.035	42	1.085	7	.033	1	2.247e-02	1	7.822e-04	7	8.879e-03	1
206		min	-.025	35	-1.053	1	-.177	19	-2.256e-02	7	-1.526e-03	13	-9.675e-03	7
207	N104	max	.031	1	1.12	7	.027	1	2.356e-02	1	1.58e-03	1	9.397e-03	7
208		min	-.029	7	-1.079	1	-.194	19	-2.401e-02	7	-1.024e-03	7	-8.787e-03	1
209	N105	max	.046	1	.441	7	.051	1	9.45e-03	1	1.934e-03	1	1.43e-02	7

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
210		min	-.043	7	-.434	1	-.078	7	-9.323e-03	7	-1.222e-03	7	-1.401e-02	1
211	N106	max	.032	42	1.243	7	.013	1	3.023e-02	1	1.504e-03	42	7.443e-04	7
212		min	-.026	35	-1.194	1	-.2	19	-3.04e-02	7	-4.444e-04	32	-7.791e-04	1
213	N107	max	.105	7	.354	7	.017	7	3.727e-03	1	2.999e-03	7	9.653e-03	7
214		min	-.099	1	-.347	1	-.044	13	-3.672e-03	7	-1.933e-03	1	-9.74e-03	1
215	N108	max	.045	43	.288	7	.014	7	4.734e-03	1	1.389e-03	7	2.803e-03	1
216		min	-.053	32	-.288	1	-.049	13	-5.439e-03	7	-1.599e-03	1	-2.669e-03	7
217	N109	max	.134	7	.37	7	.023	7	3.727e-03	1	2.999e-03	7	9.653e-03	7
218		min	-.128	1	-.364	1	-.05	13	-3.671e-03	7	-1.932e-03	1	-9.74e-03	1
219	N110	max	.324	7	.479	7	-.037	1	6.009e-03	1	8.691e-03	7	7.028e-04	7
220		min	-.343	1	-.486	1	-.149	19	-5.48e-03	7	-8.23e-03	1	-1.274e-03	1
221	N111	max	.209	7	.412	7	-.02	7	5.436e-03	1	6.318e-03	7	5.037e-03	1
222		min	-.234	1	-.423	1	-.175	13	-5.822e-03	7	-6.786e-03	1	-4.678e-03	7
223	N112	max	.048	43	.293	7	0	7	4.734e-03	1	1.389e-03	7	2.803e-03	1
224		min	-.055	32	-.293	1	-.049	13	-5.439e-03	7	-1.599e-03	1	-2.669e-03	7
225	N113	max	.287	7	.457	7	-.045	1	8.044e-03	1	8.558e-03	7	2.972e-03	1
226		min	-.317	1	-.471	1	-.175	13	-8.065e-03	7	-8.443e-03	1	-3.039e-03	7
227	N114	max	.148	7	.345	7	.036	7	3.727e-03	1	2.999e-03	7	9.653e-03	7
228		min	-.143	1	-.339	1	-.054	1	-3.671e-03	7	-1.932e-03	1	-9.74e-03	1
229	N115	max	.325	7	.477	7	-.014	7	6.009e-03	1	8.691e-03	7	7.028e-04	7
230		min	-.345	1	-.483	1	-.158	13	-5.48e-03	7	-8.23e-03	1	-1.274e-03	1
231	N116	max	.202	7	.424	7	.005	7	5.436e-03	1	6.318e-03	7	5.037e-03	1
232		min	-.227	1	-.436	1	-.185	13	-5.822e-03	7	-6.786e-03	1	-4.678e-03	7
233	N117	max	.046	43	.3	7	.012	7	4.734e-03	1	1.389e-03	7	2.803e-03	1
234		min	-.054	32	-.3	1	-.051	13	-5.439e-03	7	-1.599e-03	1	-2.669e-03	7
235	N118	max	.283	7	.465	7	-.019	7	8.044e-03	1	8.558e-03	7	2.972e-03	1
236		min	-.313	1	-.479	1	-.186	13	-8.065e-03	7	-8.443e-03	1	-3.039e-03	7
237	N119	max	.045	43	.284	7	.013	7	4.117e-03	1	9.368e-04	1	1.879e-03	7
238		min	-.053	32	-.284	1	-.044	13	-5.057e-03	7	-1.434e-03	7	-2.009e-03	1
239	N120	max	.104	1	.351	7	.01	7	4.279e-03	1	2.307e-03	1	9.416e-03	1
240		min	-.101	7	-.356	1	-.047	13	-3.732e-03	7	-2.815e-03	7	-9.303e-03	7
241	N121	max	.048	43	.288	7	0	7	4.117e-03	1	9.368e-04	1	1.879e-03	7
242		min	-.055	32	-.287	1	-.044	13	-5.057e-03	7	-1.434e-03	7	-2.009e-03	1
243	N122	max	.2	1	.397	7	-.019	7	4.811e-03	1	6.128e-03	1	4.751e-03	7
244		min	-.184	7	-.41	1	-.157	13	-5.467e-03	7	-5.889e-03	7	-5.318e-03	1
245	N123	max	.337	1	.472	7	-.035	1	6.196e-03	1	8.509e-03	1	1.18e-03	13
246		min	-.314	7	-.489	1	-.168	19	-5.591e-03	7	-8.596e-03	7	-6.154e-04	32
247	N124	max	.132	1	.367	7	.016	7	4.279e-03	1	2.307e-03	1	9.416e-03	1
248		min	-.129	7	-.373	1	-.054	13	-3.732e-03	7	-2.815e-03	7	-9.303e-03	7
249	N125	max	.32	1	.46	7	-.045	43	7.785e-03	1	8.37e-03	1	2.59e-03	7
250		min	-.293	7	-.479	1	-.175	13	-7.859e-03	7	-8.433e-03	7	-2.664e-03	1
251	N126	max	.046	43	.293	7	.011	7	4.117e-03	1	9.368e-04	1	1.879e-03	7
252		min	-.054	32	-.292	1	-.044	13	-5.057e-03	7	-1.434e-03	7	-2.009e-03	1
253	N127	max	.192	1	.409	7	.005	7	4.811e-03	1	6.128e-03	1	4.751e-03	7
254		min	-.177	7	-.424	1	-.165	13	-5.467e-03	7	-5.889e-03	7	-5.318e-03	1
255	N128	max	.338	1	.471	7	-.026	7	6.196e-03	1	8.509e-03	1	1.18e-03	13
256		min	-.315	7	-.487	1	-.172	13	-5.591e-03	7	-8.596e-03	7	-6.154e-04	32
257	N129	max	.146	1	.343	7	.029	7	4.279e-03	1	2.307e-03	1	9.416e-03	1
258		min	-.143	7	-.348	1	-.056	13	-3.732e-03	7	-2.815e-03	7	-9.303e-03	7
259	N130	max	.316	1	.466	7	-.015	7	7.785e-03	1	8.37e-03	1	2.59e-03	7
260		min	-.289	7	-.486	1	-.187	13	-7.859e-03	7	-8.433e-03	7	-2.664e-03	1
261	N131	max	.048	43	.294	7	-.005	7	4.335e-03	1	1.644e-03	7	2.905e-03	1
262		min	-.056	32	-.295	1	-.049	13	-5.133e-03	7	-1.962e-03	1	-2.754e-03	7
263	N132	max	.049	43	.289	7	-.004	7	3.751e-03	1	1.266e-03	1	1.957e-03	7
264		min	-.056	32	-.288	1	-.044	13	-4.781e-03	7	-1.689e-03	7	-2.1e-03	1
265	N133	max	.142	1	.372	7	.018	7	3.913e-03	1	2.472e-03	1	9.593e-03	1
266		min	-.138	7	-.378	1	-.056	13	-3.224e-03	7	-3.005e-03	7	-9.462e-03	7

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
267	N134	max	.032	42	.451	7	.026	1	9.346e-03	1	1.059e-03	7	1.349e-02	1
268		min	-.025	35	-.457	1	-.054	19	-8.516e-03	7	-1.814e-03	34	-1.377e-02	7
269	N135	max	.033	42	.459	7	.021	1	9.535e-03	1	2.065e-03	13	1.464e-02	7
270		min	-.025	35	-.451	1	-.059	19	-9.463e-03	7	-1.142e-03	7	-1.433e-02	1
271	N136	max	.143	7	.376	7	.024	7	3.398e-03	1	3.192e-03	7	9.814e-03	7
272		min	-.138	1	-.369	1	-.053	13	-3.233e-03	7	-2.087e-03	1	-9.914e-03	1
273	N140	max	.032	42	1.242	7	-.021	7	2.92e-02	1	1.794e-03	42	9.395e-04	1
274		min	-.025	35	-1.193	1	-.176	13	-2.936e-02	7	-6.248e-04	33	-1.182e-03	7
275	N153	max	.003	42	.003	7	0	7	3.084e-03	11	1.227e-04	43	1.979e-05	42
276		min	-.003	35	-.003	1	0	13	-1.605e-03	7	-6.105e-04	32	-3.36e-05	19
277	N154	max	.005	1	.012	7	0	1	3.367e-03	1	1.626e-03	5	2.184e-04	1
278		min	-.005	7	-.013	1	0	19	-3.145e-03	7	-5.343e-04	34	-2.22e-04	7
279	N155	max	.005	7	.012	7	0	1	3.106e-03	1	8.457e-04	7	2.429e-04	7
280		min	-.005	1	-.012	1	0	19	-3.738e-03	7	-1.786e-03	10	-2.447e-04	1
281	N141	max	0	42	0	7	0	1	0	1	0	43	0	32
282		min	0	33	0	1	0	7	0	1	0	32	0	43
283	N142	max	0	1	0	1	0	1	0	1	0	1	0	1
284		min	0	1	0	1	0	1	0	1	0	1	0	1
285	N143	max	.003	42	.003	7	.018	11	2.047e-03	11	1.263e-04	43	4.9e-05	42
286		min	-.003	35	-.003	1	-.01	7	-1.234e-03	7	-5.286e-04	32	-5.35e-05	35
287	N144	max	0	7	0	7	0	7	0	1	0	1	0	1
288		min	0	1	0	1	0	1	0	7	0	7	0	7
289	N145	max	.006	1	.013	7	.015	5	2.854e-03	1	9.341e-04	5	7.307e-05	7
290		min	-.005	7	-.013	1	-.005	1	-2.549e-03	7	-6.746e-04	7	-7.976e-05	1
291	N146	max	0	1	0	7	0	7	0	1	0	7	0	7
292		min	0	7	0	1	0	1	0	7	0	1	0	1
293	N147	max	.005	7	.013	7	.012	10	2.634e-03	1	9.441e-04	7	5.684e-05	1
294		min	-.005	1	-.012	1	-.005	1	-3.032e-03	7	-1.135e-03	10	-6.231e-05	7

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

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	4	C 5.5x3.625x...	.859	30.311	13	.082	24.312	y	1	63031.179	75178.141	3.923	13.074	2....	H1-1b
2	5	C 5.5x3.625x...	.841	30.311	19	.081	24.312	y	7	63031.179	75178.141	3.923	13.074	2....	H1-1b
3	6	C 5.5x3.625x...	.819	30.311	19	.056	19.576	z	19	63031.179	75178.141	3.923	13.074	1....	H1-1b
4	1	L3x3x4	.647	168	13	.267	84	z	7	15778.129	46656	1.688	2.275	1	H2-1
5	2	L3x3x4	.646	0	13	.262	84	z	7	15778.129	46656	1.688	2.275	1	H2-1
6	3	L3x3x4	.603	0	19	.509	84	y	1	15778.129	46656	1.688	2.275	1	H2-1
7	7	L3x3x4	.088	84	7	.014	42	y	19	15778.129	46656	1.688	3.583	2....	H2-1
8	8	L3x3x4	.090	0	7	.014	42	y	19	15778.129	46656	1.688	3.571	2....	H2-1
9	9	L3x3x4	.059	0	1	.014	42	y	13	15778.129	46656	1.688	3.598	2....	H2-1
10	10	LL3x3x4x0	.489	0	19	.067	11.619	y	19	78414.872	93312	6.48	3.069	1....	H1-1b
11	11	LL3x3x4x0	.492	0	13	.072	11.619	y	13	78414.872	93312	6.48	3.069	1....	H1-1b
12	12	LL3x3x4x0	.483	0	19	.069	11.619	y	19	78414.872	93312	6.48	3.069	1....	H1-1b
13	M18	PIPE_2.0	.256	69	19	.196	21		1	20866.733	32130	1.872	1.872	2....	H1-1b
14	M19	PIPE_2.0	.107	21	33	.145	69		7	20866.733	32130	1.872	1.872	1....	H1-1b
15	M20	PIPE_2.0	.122	21	41	.152	69		7	20866.733	32130	1.872	1.872	1....	H1-1b
16	M21	PIPE_2.0	.229	69	19	.185	21		1	20866.733	32130	1.872	1.872	1....	H1-1b
17	M22	PIPE_2.0	.447	72	1	.064	24		7	14916.096	32130	1.872	1.872	1....	H1-1b
18	M28	PIPE_2.0	.359	69	1	.077	69		1	20866.733	32130	1.872	1.872	2....	H1-1b
19	M29	PIPE_2.0	.335	69	1	.118	69		1	20866.733	32130	1.872	1.872	2....	H1-1b
20	M30	PIPE_2.0	.366	69	7	.051	69		1	20866.733	32130	1.872	1.872	2....	H1-1b
21	M31	PIPE_2.0	.248	69	19	.147	69		7	20866.733	32130	1.872	1.872	2....	H1-1b
22	M32	PIPE_2.0	.371	72	7	.074	72		7	14916.096	32130	1.872	1.872	1....	H1-1b
23	M38	PIPE_2.0	.277	69	19	.148	69		7	20866.733	32130	1.872	1.872	2....	H1-1b
24	M39	PIPE_2.0	.349	21	7	.046	69		1	20866.733	32130	1.872	1.872	2....	H1-1b

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

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
25	M40	PIPE_2.0	.362	69	1	.125	69		1	20866.733	32130	1.872	1.872	2....	H1-1b
26	M41	PIPE_2.0	.342	69	1	.064	69		1	20866.733	32130	1.872	1.872	2....	H1-1b
27	M42	PIPE_2.0	.357	72	1	.063	72		7	14916.096	32130	1.872	1.872	1....	H1-1b
28	M43	PIPE_2.0	.368	102.4...	7	.245	146.5...		7	18059.529	33048	1.925	1.925	1	H3-6
29	M49	PIPE_2.0	.331	146.5...	1	.124	80.354		7	18059.529	33048	1.925	1.925	1....	H1-1b
30	M55	PIPE_2.0	.321	4.727	1	.114	146.5...		7	18059.529	33048	1.925	1.925	1....	H1-1b
31	M61	L2.5x2.5x3	.328	0	1	.013	0	z	35	27637.878	29192.4	.873	1.972	1....	H2-1
32	M62	L2.5x2.5x3	.457	12.983	7	.101	12.983	z	1	27637.878	29192.4	.873	1.972	2....	H2-1
33	M63	L2.5x2.5x3	.507	0	7	.106	0	z	7	27637.878	29192.4	.873	1.972	2....	H2-1
34	M64	LL2.5x2.5x3x0	.068	41.208	13	.006	82.415	y	13	31957.698	58320	3.3	2.55	1	H1-1b
35	M65	LL2.5x2.5x3x0	.088	41.208	7	.008	0	z	1	31957.698	58320	3.3	2.55	1....	H1-1b
36	M66	LL2.5x2.5x3x0	.088	41.208	7	.008	0	z	7	31957.698	58320	3.3	2.55	1....	H1-1b

1.0 DESIGN INFORMATION AND GENERAL REQUIREMENTS

1.0 GENERAL
ALL DIMENSIONS ARE APPROXIMATE, CONTRACTOR SHOULD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK.

1.1 CODES
a. 2018 CONNECTICUT STATE BUILDING CODE (IBC 2015)
b. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-10, AMERICAN SOCIETY OF CIVIL ENGINEERS
c. STEEL CONSTRUCTION MANUAL, 14TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION
d. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, ANSI/TIA-222-G, TELECOMMUNICATIONS INDUSTRY ASSOCIATION

1.2 LOADS AND DESIGN CRITERIA
a. WIND LOADING: ULTIMATE WIND SPEED V: 125 MPH (CONVERTED ASD 97 MPH), EXPOSURE C, RISK CATEGORY II
b. EQUIPMENT AS LISTED IN MOUNT STRUCTURAL ANALYSIS REPORT – UPGRADE REV 1 PREPARED BY DESTEK ENGINEERING, LLC, DATED 07/18/2019.

1.3 NOTES
a. PRIOR TO PURCHASE OR FABRICATION OF MATERIAL, THE CONTRACTOR SHALL PERFORM AN INSPECTION VERIFYING MEMBER AND BOLT SIZES. SHOULD THE CONTRACTOR DISCOVER ANY DAMAGED OR MISSING MEMBERS OR THE MEMBER OR BOLT SIZES DO NOT MATCH THOSE LISTED, DESTEK SHALL BE NOTIFIED IMMEDIATELY.
b. CONTRACTOR TO REPLACE ALL BOLTS REMOVED WITH NEW BOLTS OF SAME TYPE, UNLESS NOTED OTHERWISE.

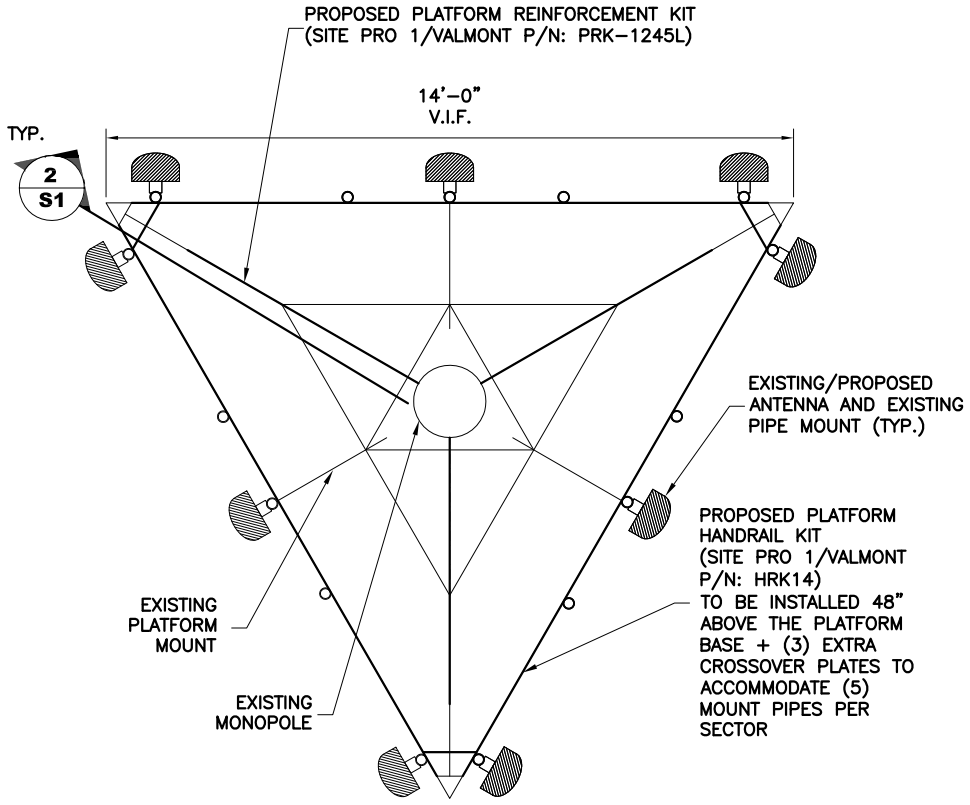
2.0 STRUCTURAL STEEL

2.1 MATERIALS
a. STRUCTURAL STEEL . . . . . ASTM A992
MISC ANGLE & PLATE . . . . ASTM A36
PIPE . . . . . ASTM A53 GR. B
RODS . . . . . ASTM A572-50 (MINIMUM)
HSS. . . . . ASTM A500, GR. B, Fy=46 KSI
b. BOLTS . . . . . ASTM A325 U.N.O.
c. WELDING ELECTRODES . . . . . AWS A5.1 (E70XX)
d. STEEL CONSTRUCTION SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ANSI/AISC 360-10"
e. WELDING SHALL CONFORM TO AWS D1.1/D1.3/D1.7 AS APPLICABLE.
f. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO "DETAILING FOR STEEL CONSTRUCTION, 2ND EDITION"
g. POOR MATCHING OF HOLES SHALL BE CORRECTED BY DRILLING TO THE NEXT LARGER SIZE. WELDING FOR REDRILLING WILL NOT BE PERMITTED.

2.2 CONNECTIONS
a. SHOP CONNECTIONS MAY BE BOLTED OR WELDED
b. CONNECTIONS WHERE THE BEAM SHEAR (V) IS NOT NOTED ON THE DRAWINGS, SIMPLE SHEAR CONNECTIONS SHALL BE DESIGNED TO DEVELOP 1/2 OF THE MAXIMUM TOTAL UNIFORM LOAD CAPACITY OF THE BEAM.
c. FIELD CONNECTIONS SHALL BE MADE WITH A325 BOLTS AND HARDENED WASHERS EXCEPT AS INDICATED ON THE DESIGN DRAWINGS
d. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
e. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.
f. BOLT HOLES SHALL BE CUT, DRILLED OR PUNCHED AT RIGHT ANGLES TO THE SURFACE OF THE METAL AND SHALL NOT BE MADE OR ENLARGED BY BURNING. HOLES SHALL BE CLEAN CUT WITHOUT TORN OR RAGGED EDGES. OUTSIDE BURRS RESULTING FROM DRILLING OR REAMING OPERATION SHALL BE REMOVED WITH A TOOL MAKING A 1/16 INCH BEVEL. BOLT HOLES SHALL BE 1/16 INCH OVERSIZE.

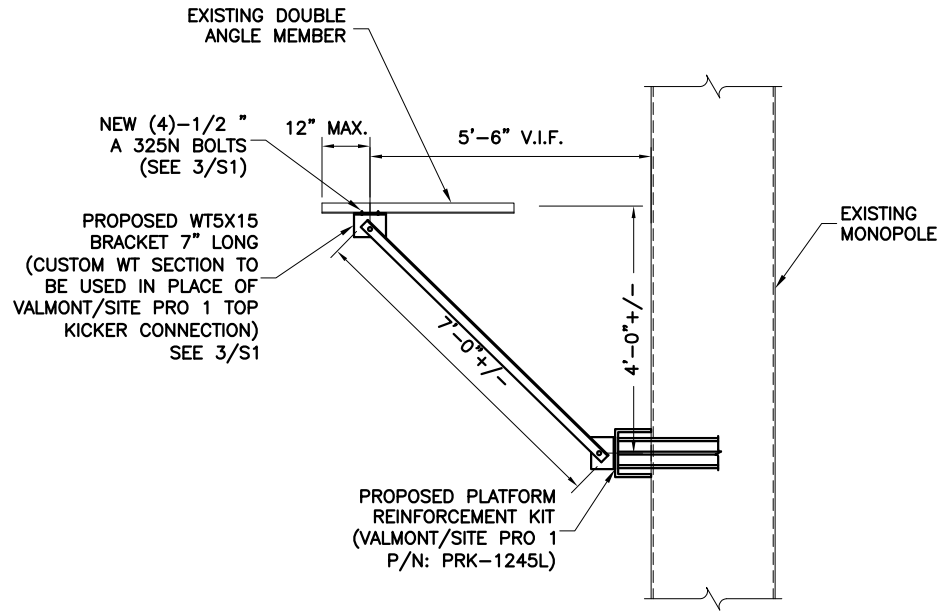
2.3 FINISHES
a. STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123
b. BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.
c. ALL SURFACES DAMAGED BY FIELD WELDING OR CUTTING SHALL BE PAINTED WITH COLD GALVANIZING COMPOUND TWICE. THE PAINT SHOULD BE AT LEAST 93% PURE ZINC. RUST-OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

2.4 WELDING
a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON GALVANIZED SURFACE. COAX IS FLAMMABLE AND SHALL CATCH FIRE IF NOT PROTECTED. WATER SHALL BE ON SITE OF ADEQUATE AMOUNT AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. CONTRACTOR SHOULD BE ABLE TO TRANSPORT THE WATER TO THE HEIGHT WELDING BEING PERFORMED.
b. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC, IT DOES NOT PROVIDE A STRUCTURAL WELD. GROUND GALVANIZING BEFORE WELDING.
c. WELDING CERTIFICATE MUST BE PROVIDED PRIOR TO WELDING. ALL



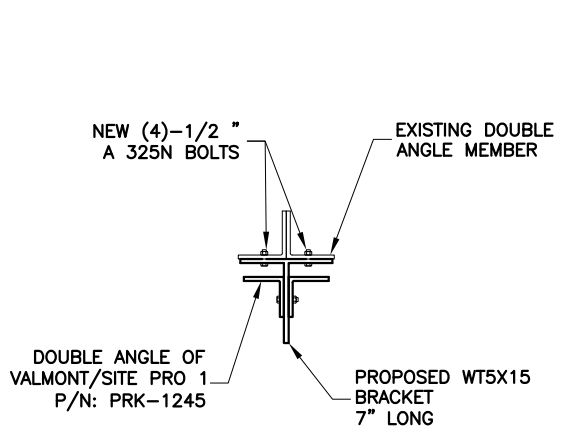
1 S1 **PLATFORM MOUNT PLAN**
1/4" = 1'-0"

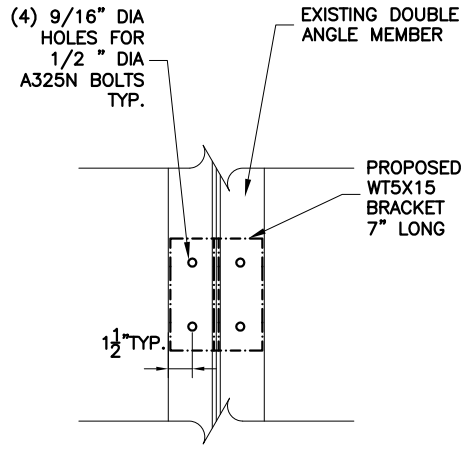
NOTE:
– ADDITIONAL EQUIPMENT AND MOUNTING HARDWARE NOT SHOWN FOR CLARITY

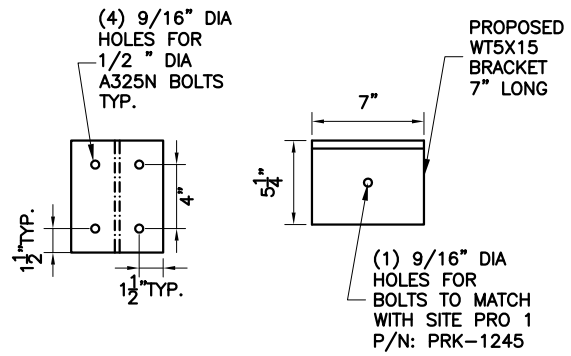


2 S1 **PLATFORM MOUNT ELEVATION**
1/4" = 1'-0"

NOTE:
– ADDITIONAL EQUIPMENT AND MOUNTING HARDWARE NOT SHOWN FOR CLARITY
– MODIFICATIONS SHOULD BE DONE AT ALL SECTORS







3 S1 **CONNECTION DETAIL**
1" = 1'-0"

NOTE:
– MODIFICATIONS SHOULD BE DONE AT ALL SECTORS

NOTE:
NEW PLATFORM HANDRAIL KIT TO BE INSTALLED 48" ABOVE THE PLATFORM BASE

PREPARED BY:
DESTEK ENGINEERING
DESTEK ENGINEERING, LLC
1281 KENNESTONE CIRCLE
SUITE 100
MARIETTA, GA 30066
TEL NO: 770-693-0835
ADMIN@DESTEKENGINEERING.COM
LICENSE NO: PEC0001429

PREPARED FOR:
PROTERRA DESIGN GROUP, LLC
4 BAY ROAD, BUILDING A, SUITE 200
HADLEY, MA 01035

NUM	DATE	DESCRIPTION:
A	07/18/19	ISSUED FOR CONSTRUCTION

SITE ID: BLOOMFIELD/W DUDLEY_1
ADDRESS: 100 FILLY STREET, BLOOMFIELD, CT 06002

DESIGNED: RH
DRAWN: RH
CHECKED: AC

JOB #: 1978008

S1 NOTES & UPGRADE DETAIL

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED PROFESSIONAL ENGINEER
7/18/2019

Ahmet Colakoglu, PE
CT License No: PEN27057

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11000A

Bloomfield/W Dudley_1
100 Filley Street
Bloomfield, Connecticut 06002

May 16, 2019

EBI Project Number: 6219001636

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**8.04%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting

environmental | engineering | due diligence

May 16, 2019

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

Emissions Analysis for Site: CT11000A - Bloomfield/W Dudley_1

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **100 Filley Street** in **Bloomfield, Connecticut** 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. 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 100 Filley Street in Bloomfield, Connecticut 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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 LTE channel (600 MHz Band) was considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 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 60 Watts per Channel.

5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 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.

7) 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.

8) 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

9) The antenna mounting height centerlines of the proposed antennas are 93 and 95 feet above ground level (AGL).

10) 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.

11) 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 B66A_B2A	Make / Model:	Ericsson AIR32 B66A_B2A	Make / Model:	Ericsson AIR32 B66A_B2A
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	95 feet	Height (AGL):	95 feet	Height (AGL):	95 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,728.31	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A1 MPE %:	**3.48%**	Antenna B1 MPE %:	**3.48%**	Antenna C1 MPE %:	**3.48%**
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
Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz
Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd
Height (AGL):	93 feet	Height (AGL):	93 feet	Height (AGL):	93 feet
Channel Count:	3	Channel Count:	3	Channel Count:	3
Total TX Power (W):	90 Watts	Total TX Power (W):	90 Watts	Total TX Power (W):	90 Watts
ERP (W):	1,889.36	ERP (W):	1,889.36	ERP (W):	1,889.36
Antenna A2 MPE %:	**1.77%**	Antenna B2 MPE %:	**1.77%**	Antenna C2 MPE %:	**1.77%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd
Height (AGL):	95 feet	Height (AGL):	95 feet	Height (AGL):	95 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A3 MPE %:	**2.79%**	Antenna B3 MPE %:	**2.79%**	Antenna C3 MPE %:	**2.79%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	8.04%
Site Total MPE % :	8.04%

T-Mobile Sector A Total:	8.04%
T-Mobile Sector B Total:	8.04%
T-Mobile Sector C Total:	8.04%
Site Total:	8.04%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz LTE	2	2056.61	95.0	16.39	1900 MHz LTE	1000	1.64%
T-Mobile 2100 MHz LTE	2	2307.55	95.0	18.38	2100 MHz LTE	1000	1.84%
T-Mobile 600 MHz LTE	1	591.73	93.0	2.46	600 MHz LTE	400	0.61%
T-Mobile 700 MHz LTE	2	648.82	93.0	5.39	700 MHz LTE	467	1.16%
T-Mobile 1900 MHz GSM	4	1167.14	95.0	18.60	1900 MHz GSM	1000	1.86%
T-Mobile 2100 MHz UMTS	2	1167.14	95.0	9.30	2100 MHz UMTS	1000	0.93%
						Total:	**8.04%**

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:	8.04%
Sector B:	8.04%
Sector C:	8.04%
T-Mobile Maximum MPE % (Sector A):	8.04%
Site Total:	8.04%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.04%** 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.

Exhibit G

Mailing Receipts/Proof of Notice

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1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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UPS Access Point™
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200 BLOOMFIELD AVE
WEST HARTFORD ,CT 06117

UPS Access Point™
THE UPS STORE
1022 BOULEVARD
WEST HARTFORD ,CT 06119

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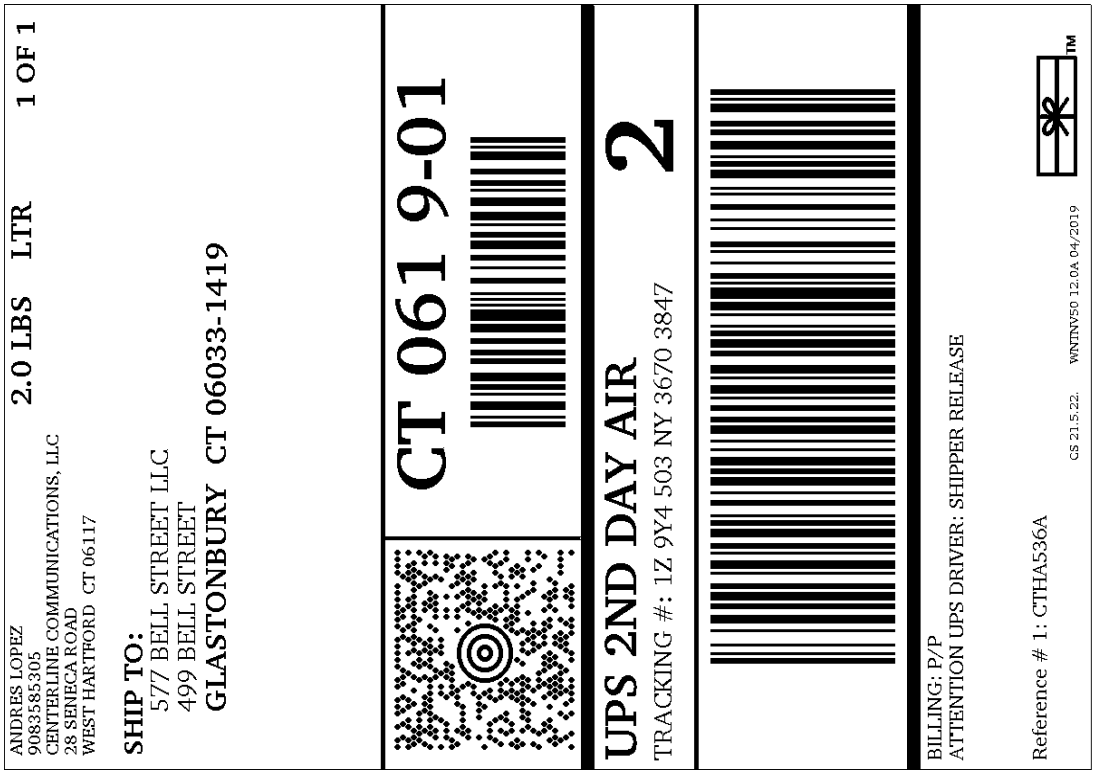

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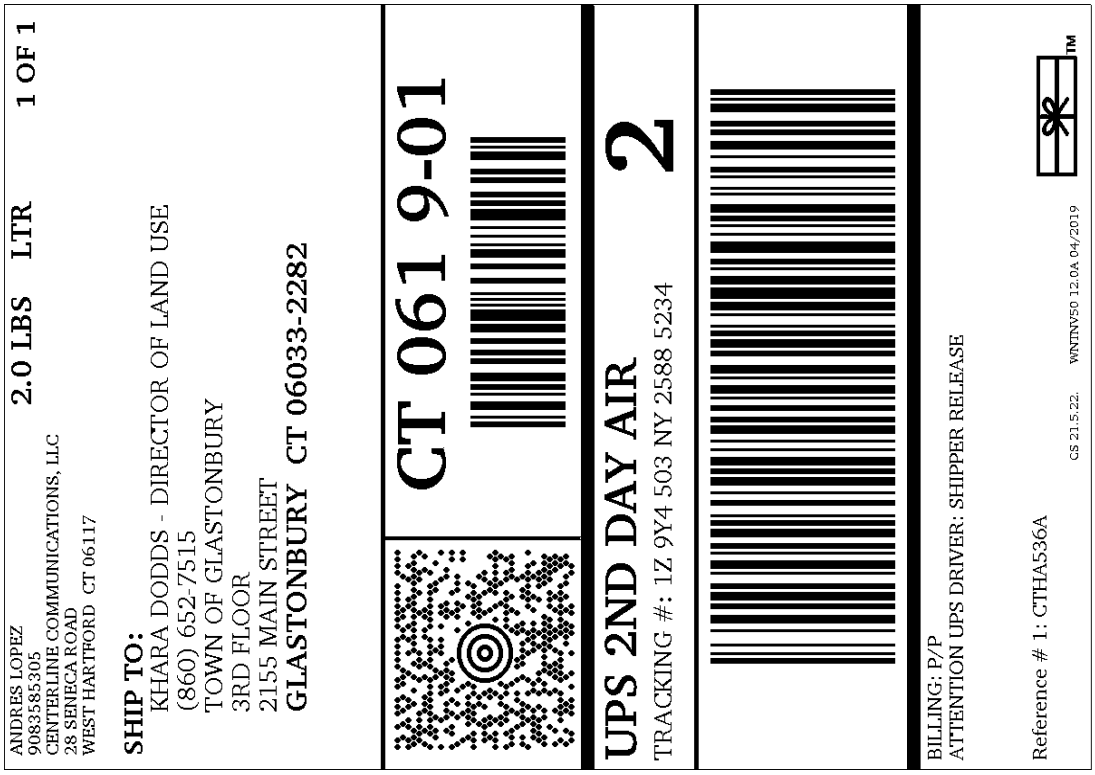

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