NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street #2, Sturbridge, MA 01566
860-306-2326
victoria@northeastsitesolutions.com

October 15, 2020

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

RE: Notice of Exempt Modification
231Kettletown Road, Southbury CT 06488
Latitude: 41.471272
Longitude: 73.205097
T-Mobile Site#: CT11126F_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antenna at the 195-foot level of the existing 195-foot monopole located at 231 Kettletown Road, Southbury CT. The tower is owned by PTI US Assets and the property is owned by Town of Southbury. T-Mobile now intends to add three (3) new antenna 2500 MHz antenna. The new antennas would be installed at the 195-foot level of the tower.

Planned Modifications:
Remove:
NONE

Remove and Replace:
(3) RRU 4415 B25 (**Remove) –** (3) RRU 4424 B25 **(Replace)**

Install New:
(3) AIR 6449 Antenna 2500 MHz
(1) Hybrid Line

Existing to Remain:
(9) 1-5/8" Coax
(3) Hybrid Lines
(3) APX16DWV-16DWV Antenna 1900/2100 MHz (161-ft RAD)
(3) APXVAARR24-43-U-NA20 Antenna 600/700/1900/2100 MHz

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

This facility was approved by the Town of Southbury Zoning Board of Appeals in Omnipoint Application #763 on February 2, 1999.

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 First Selectman Jeff Manville, as Elected Official for the Town of Southbury and Jessica Townsend, Land Use Inspector/ Enforcement Officer as well as the property owner and 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).

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street #2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments
cc:
First Selectman Jeff Manville- as elected official and property owner
Jessica Townsend- Land Use Inspector/ Enforcement Officer
PTI US Assets- Tower owner

Exhibit A

TOWN OF SOUTHBURY

ZONING BOARD OF APPEALS

February 2, 1999

At the Regular Meeting on February 2, 1999 the following motion was unanimously approved.

Peirce Behardt motioned to approve the request from Omnipoint Application # 763 for a variance of Section Schedule B 6 of the Zoning Regulations, relating to Height Requirements with all of the changes set forth by the Zoning Board of Appeals as to permit construction of a monopole telecommunications tower for PCS coverage.

I hereby move that the application of the Omnipoint communications, Inc. dated August 14, 1998 seeking a variance to construct a 199 foot monopole, and an associated equipment cabinet for use as a PCS communications facility on parcel of land to be leased from the town of Southbury on Kettletown Road adjacent to the existing recycling facility in the R-60 zone, as requested in said application and as shown on the site plan submitted therewith, be granted subject to the following conditions:

1. The monopole and equipment cabinet will be completely surrounded by and eight-foot high, chain link, security fence (30' x 30') topped with barbed wire.
2. Omnipoint will obtain access to the site by means of a proposed road leading from Kettletown Road as shown on the site plan submitted with its application.
3. An Omnipoint employee will visit the site as least once a month for equipment checks and routine maintenance.
4. There is no requirement for water supply or sewerage or solid waste disposal.
5. No lights will be mounted on the monopole
6. The monopole shall be able to support at least four (4) additional carriers and shall have a non-reflecting galvanized finish.

Exhibit B

231 KETTLETOWN ROAD

Location	231 KETTLETOWN ROAD	**Mblu**	35/ 43/ 23/ /
Acct#	00369500	**Owner**	SOUTHBURY TOWN OF
Assessment	$264,210	**Appraisal**	$377,430
PID	4358	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$85,880	$291,550	$377,430
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$60,120	$204,090	$264,210

Owner of Record

Owner	SOUTHBURY TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	501 MAIN ST SO SOUTHBURY, CT 06488	**Book & Page**	112/ 334
		Sale Date	03/15/1973
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
SOUTHBURY TOWN OF	$0		112/ 334	25	03/15/1973

Building Information

Building 1 : Section 1

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

Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Pln FPL:	
Det FPL:	
Gas Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
SF Rec Rm	
Fin Bsmt Qual	
Bsmt Access	

Building Photo

(http://images.vgsi.com/photos/SouthburyCTPhotos//default.jpg)

Building Layout

Building Layout

(http://images.vgsi.com/photos/SouthburyCTPhotos//Sketches/4358_4358.

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

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	929
Description	Exempt Comm Vac OB
Zone	R-60
Neighborhood	C200
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.95
Frontage	0
Depth	0
Assessed Value	$204,090
Appraised Value	$291,550

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed	FR	Frame	180 S.F.	$1,350	1
SHD1	Shed	FR	Frame	128 S.F.	$960	1
SHD1	Shed	FR	Frame	208 S.F.	$1,560	1
SHD1	Shed	FR	Frame	168 S.F.	$1,260	1
PAV1	Paving	AS	Asphalt	64600 S.F.	$80,750	1

Valuation History

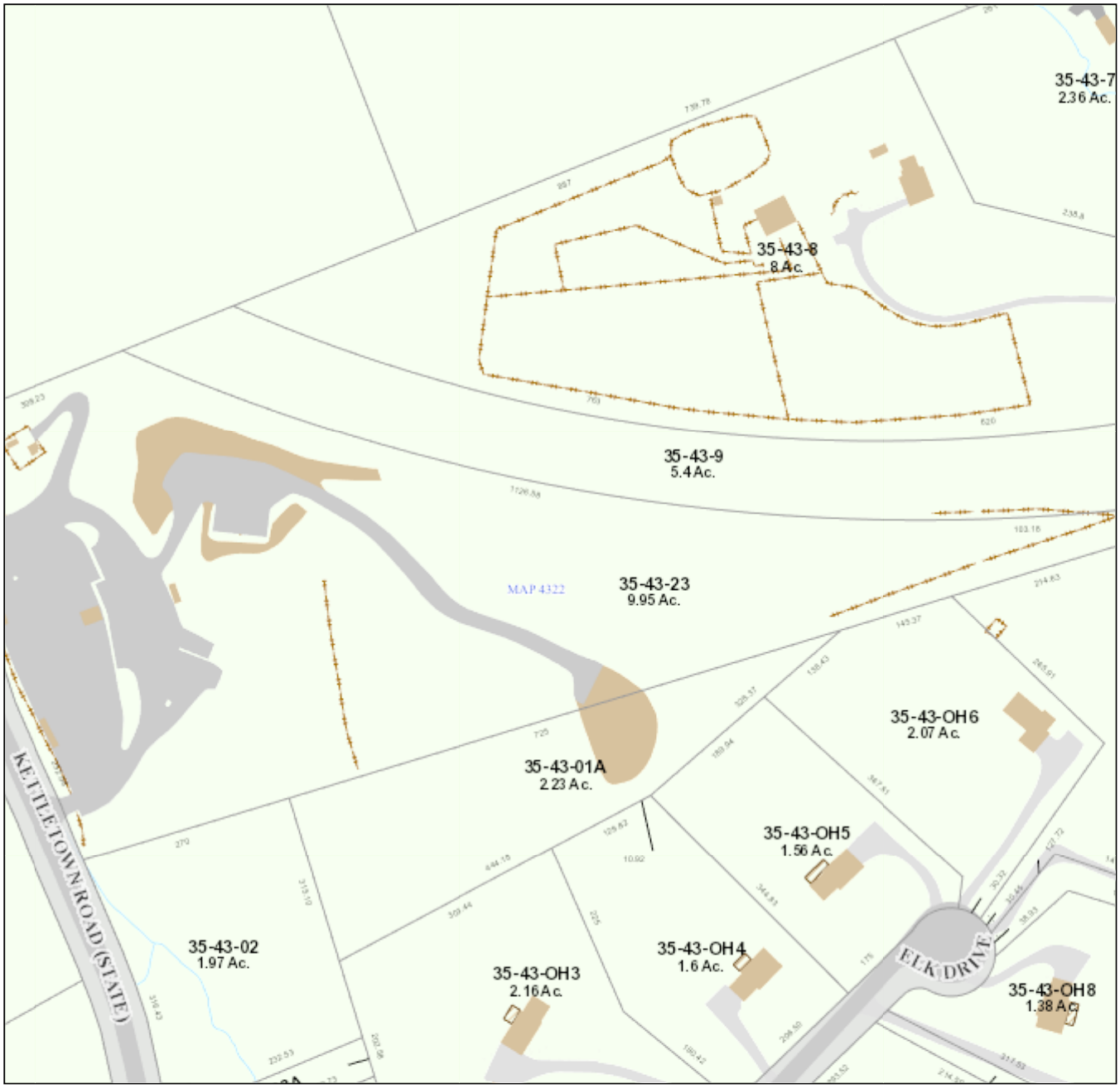
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$85,880	$291,550	$377,430
2016	$85,880	$291,550	$377,430
2012	$85,880	$291,550	$377,430

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$60,120	$204,090	$264,210
2016	$60,120	$204,090	$264,210
2012	$60,120	$204,090	$264,210

Town of Southbury

Geographic Information System (GIS)

Date Printed: 6/6/2019



MAP DISCLAIMER - NOTICE OF LIABILITY

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

Approximate Scale: 1 inch = 200 feet

0 200 Feet

N W E S

Exhibit C

T-Mobile NORTHEAST, LLC.

PROJECT: ANCHOR

SITE I.D. NUMBER:

CT11126F

SITE NAME:

SOUTHBURY/ I-84 X15/ BAGL

SITE ADDRESS:

231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

PROJECT INDEX

SITE NUMBER:	CT11126F
SITE NAME:	SOUTHBURY/ I-84 X15/ BAGL
SITE ADDRESS:	231 KETTLETOWN ROAD SOUTHBURY, CT 06606
PROPERTY OWNER:	TOWN OF SOUTHBURY 501 MAIN STREET SO SOUTHBURY, CT 06488
APPLICANT:	T-MOBILE NORTHEAST LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
STRUCTURE TYPE:	MONOPOLE
LATTITUDE (NAD83):	N 41.471272"
LONGITUDE (NAD83):	W 73.205097"
GRADE ELEVATION:	402' AMSL (PER GOOGLE EARTH)
MUNICIPALITY:	SOUTHBURY
ZONING:	R-60
PARCEL #:	35-43-23

PROJECT CLIENT:	NORTHEAST SITE SOLUTIONS, LLC
CONTACT:	SHELDON FREINCLE
PHONE:	(201) 776-8521
ENGINEER/ STRUCTURAL ENG:	TECTONIC ENGINEERING & SURVEYING CONSULTANTS, PC.
CONTACT:	EDWARD IAMICELI
PHONE:	(845) 567-6656x2811

VICINITY MAP (NTS)

SHEET INDEX

SHEET NO	DESCRIPTION	REVISION	DATE
T-1	TITLE SHEET	0	10/02/20
A-1	SITE PLAN	0	10/02/20
A-2	TOWER ELEVATION	0	10/02/20
A-3	EXIST/DEMO & NEW EQUIPMENT PLANS	0	10/02/20
A-4	EXIST & NEW T-MOBILE ANTENNA PLANS & SCHEDULE	0	10/02/20
A-5	DETAILS, SPECIFICATIONS & ANTENNA SCHEMATIC	0	10/02/20
A-6	CABINET SPECIFICATIONS	0	10/02/20
A-7	NOTES	0	10/02/20
E-1	ELECTRICAL NOTES & ONE-LINE DIAGRAM	0	10/02/20
G-1	GROUNDING DETAILS & NOTES	0	10/02/20

CODE COMPLIANCE

CODE INFORMATION

- STATE OF CONNECTICUT BUILDING CODE, LATEST EDITION
- ANSI/TIA-222-G
- NATIONAL ELECTRIC CODE, LATEST EDITION

DESIGN NOTE

DESIGN BASED ON RFDS DATED 6/30/2020, VERSION 3.

RAN TEMPLATE: 67D5A998C MUAC
A&L TEMPLATE: 67D5998C_1xAIR+1QP+1OP

STRUCTURAL NOTE

ANTENNA FRAME

REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED OCTOBER 1, 2020.

MONOPOLE

REFER TO THE COMPREHENSIVE STRUCTURAL ANALYSIS REPORT BY GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION DATED SEPTEMBER 28, 2020 REV 1.

Know what's below.
Call before you dig.

STATE OF CONNECTICUT
EDWARD N. IAMICELI
PEN.0028473
LICENSED
PROFESSIONAL ENGINEER

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY _____ DATE _____

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

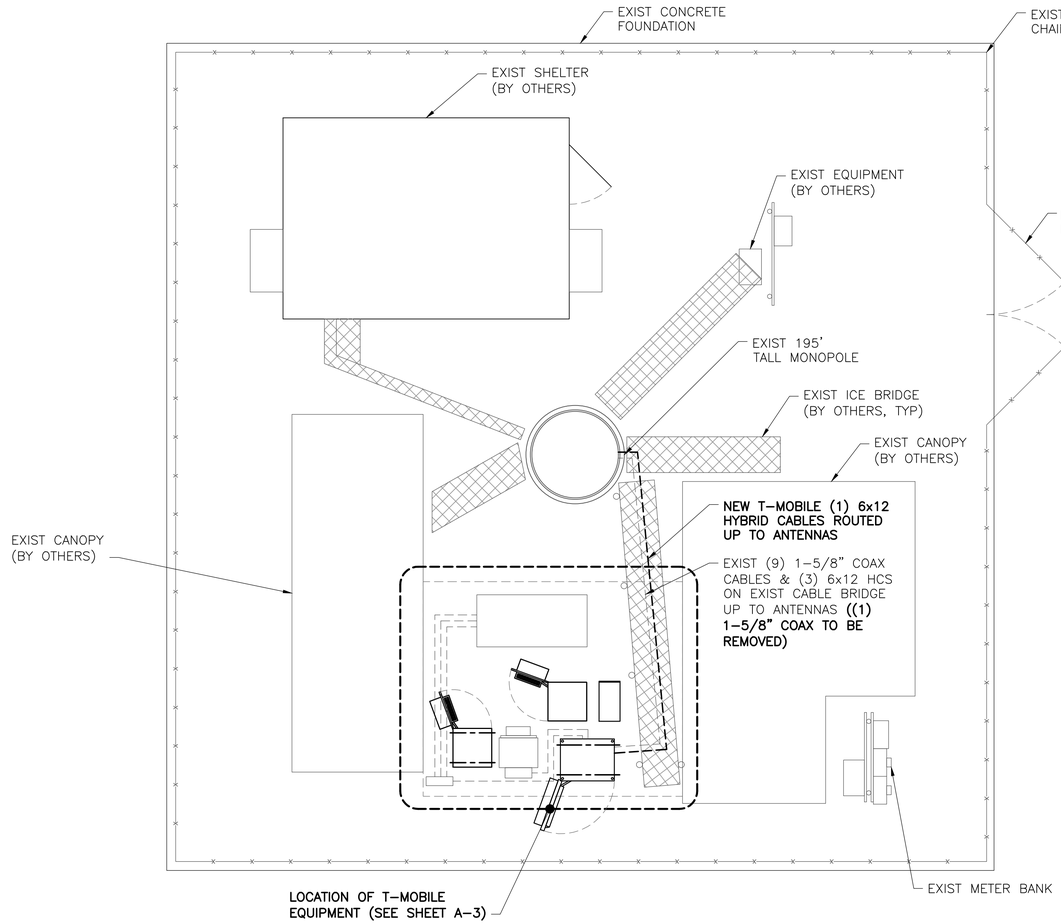
TITLE SHEET

SHEET NUMBER

T-1

N

TRUE



1 / A-1 SITE PLAN

SCALE: 1/4" = 1'-0"

STRUCTURAL NOTE

ANTENNA FRAME

REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED OCTOBER 1, 2020.

MONOPOLE

REFER TO THE COMPREHENSIVE STRUCTURAL ANALYSIS REPORT BY GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION DATED SEPTEMBER 28, 2020 REV 1.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY	DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

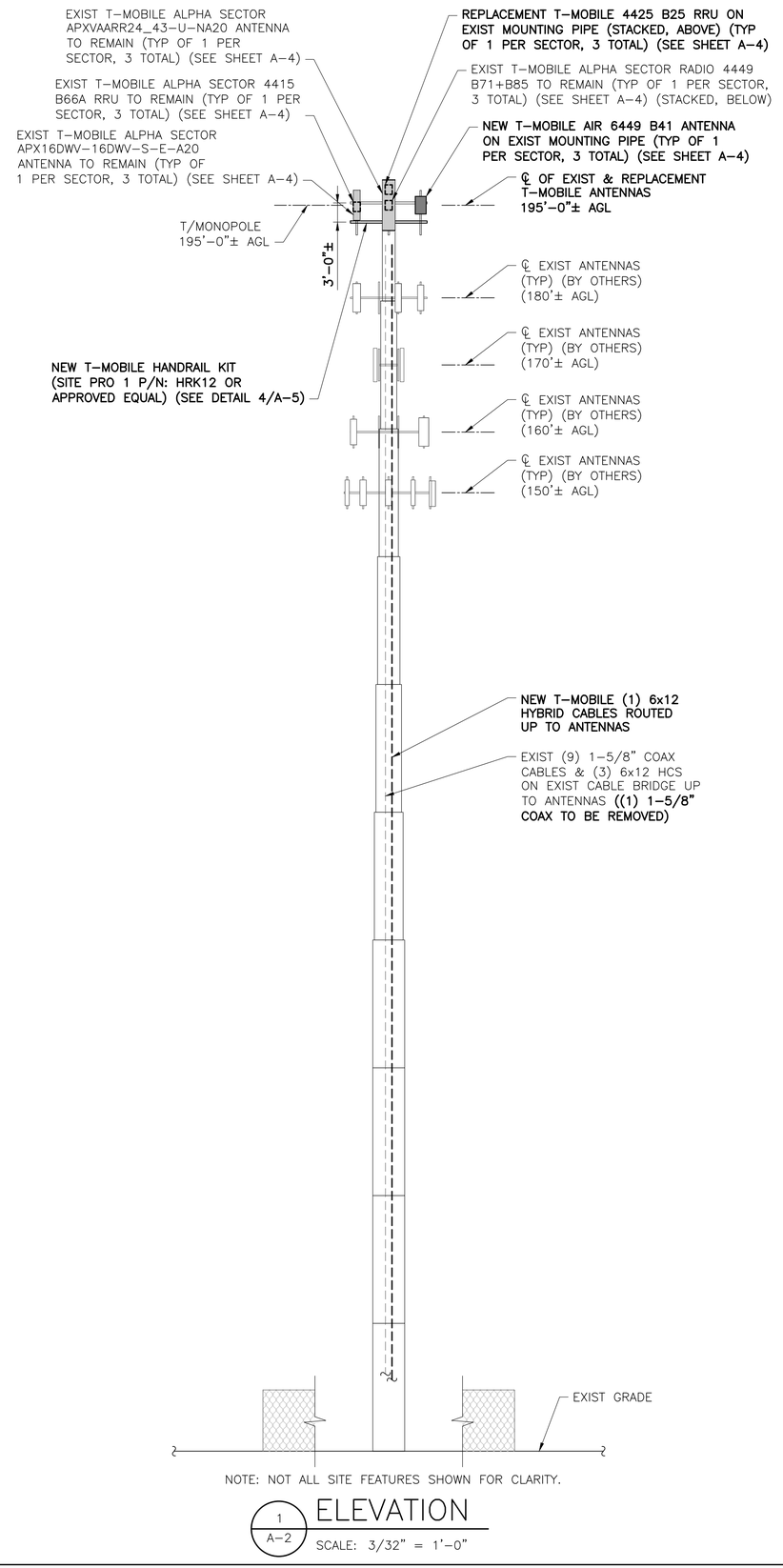
SHEET TITLE

SITE PLAN

SHEET NUMBER

A-1

STATE OF CONNECTICUT
EDWARD N. IAMICELI
PEN.0028473
LICENSED PROFESSIONAL ENGINEER



NOTE: NOT ALL SITE FEATURES SHOWN FOR CLARITY.

1 / A-2 ELEVATION

SCALE: 3/32" = 1'-0"

STATE OF CONNECTICUT
EDWARD N. IAMICELI
PEN.0028473
LICENSED
PROFESSIONAL ENGINEER

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY	DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

TOWER ELEVATION

SHEET NUMBER

A-2

N

TRUE

STRUCTURAL NOTE

ANTENNA FRAME

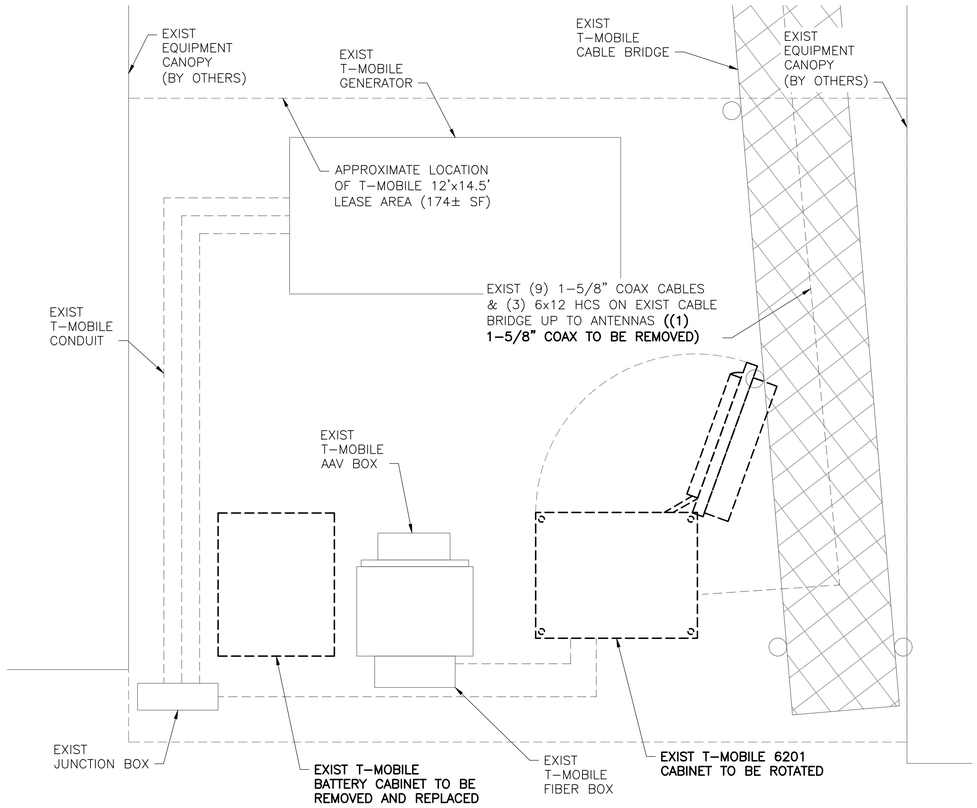
REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED OCTOBER 1, 2020.

MONOPOLE

REFER TO THE COMPREHENSIVE STRUCTURAL ANALYSIS REPORT BY GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION DATED SEPTEMBER 28, 2020 REV 1.

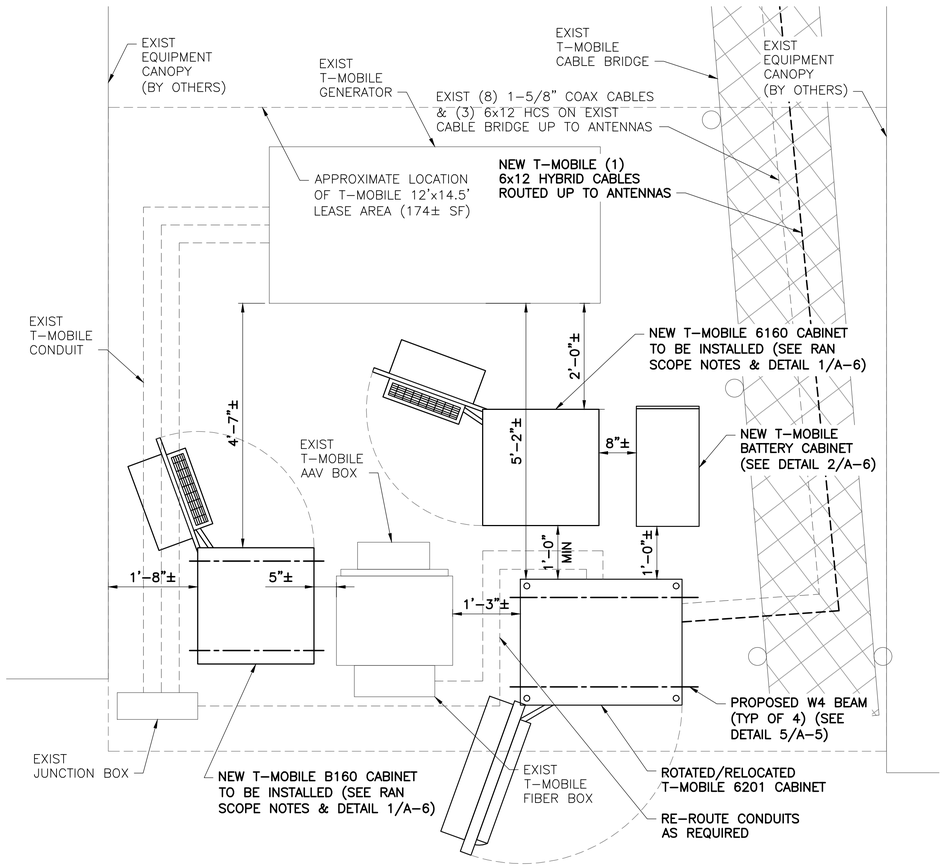
RAN SCOPE NOTES

1. ADD (1) ENCLOSURE 6160.
2. ADD (1) BATTERY CABINET B160.
3. ADD (1) IXRE ROUTER TO NEW ENCLOSURE 6160
4. ADD (1) BB6630 FOR L2500 TO NEW ENCLOSURE 6160
5. ADD (1) BB6648 FOR N2500 TO NEW ENCLOSURE 6160
6. ADD (1) PSU 4813 POWER BOOSTER.
7. ADD HANDRAIL KIT.
8. RELOCATE EXISTING BATTERY CABINET TO SMALL CABINET TO MAKE ROOM FOR NEW CABINETS.
9. ROTATE/RELOCATE 6201 ODE CABINET.
10. EXISTING (9) 1-5/8" COAXIAL LINES
11. EXISTING (3) 6x12 HCS.
12. ADD (1) 6x12 HCS. LENGTH OF NEW HCS TO MATCH EXIST.
13. KEEP (8) COAX LINES UNCONNECTED, REMOVE (1) COAX.



1 A-3 EXIST/DEMO EQUIPMENT PLAN

SCALE: 3/4" = 1'-0"



2 A-3 NEW EQUIPMENT PLAN

SCALE: 3/4" = 1'-0"

STATE OF CONNECTICUT
EDWARD N. IANNICELLI
PEN.0028473
LICENSED
PROFESSIONAL ENGINEER

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY _____ DATE _____

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

EXIST/DEMO & NEW EQUIPMENT PLANS

SHEET NUMBER

A-3

N

TRUE

STRUCTURAL NOTE

ANTENNA FRAME

REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC ENGINEERING & SURVEYING CONSULTANTS P.C. DATED OCTOBER 1, 2020.

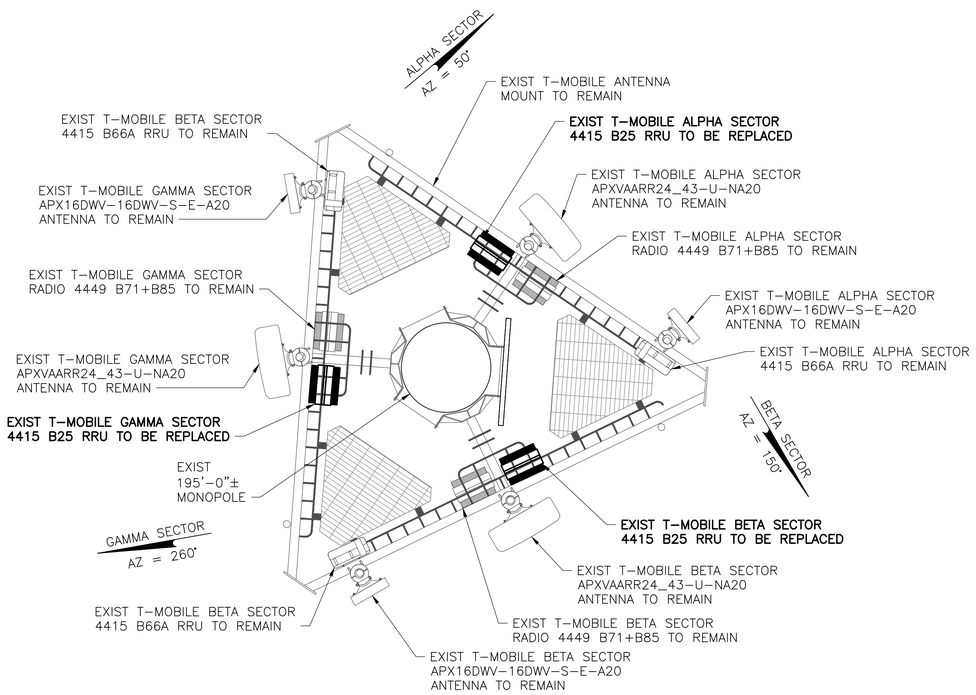
MONOPOLE

REFER TO THE COMPREHENSIVE STRUCTURAL ANALYSIS REPORT BY GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION DATED SEPTEMBER 28, 2020 REV 1.

ANTENNA CABLE SCHEDULE

SECTOR MARK	ANTENNA MODEL	AZIMUTH	ELEC DOWNTILT	MECH DOWNTILT	ANTENNA CENTERLINE	SECTOR	STATUS	TMA/RRU	CABLE	JUMPER TYPE	CABLE LENGTH
A–1 LTE	**ERICSSON AIR6449 B41**	**50°**	**0°**	**0°**	**195'–0"±**	**LEFT ALPHA**	**NEW**	0/0	**NEW SHARED 6x12 HYBRID CABLE**	**FIBER**	**210'– 0"**
										FIBER	**210'– 0"**
A–2 LTE/GSM	RFS APXVAARR24–43–U–NA20	50°	2°	0°	195'–0"±	CENTER ALPHA	EXISTING	0/2	SHARED 6x12 HYBRID CABLE	FIBER	210'– 0"
										FIBER	210'– 0"
A–3 LTE	RFS APX16DWV–16DWV–S–E–A20	50°	0°	0°	195'–0"±	RIGHT ALPHA	EXISTING	0/1	SHARED 6x12 HYBRID CABLE	FIBER	210'– 0"
										FIBER	210'– 0"
B–1 LTE	**ERICSSON AIR6449 B41**	**150°**	**0°**	**0°**	**195'–0"±**	**LEFT BETA**	**NEW**	0/0	**NEW SHARED 6x12 HYBRID CABLE**	**FIBER**	**210'– 0"**
										FIBER	**210'– 0"**
B–2 LTE/GSM	RFS APXVAARR24–43–U–NA20	150°	2°	0°	195'–0"±	CENTER BETA	EXISTING	0/2	SHARED 6x12 HYBRID CABLE	FIBER	210'– 0"
										FIBER	210'– 0"
B–3 LTE	RFS APX16DWV–16DWV–S–E–A20	150°	0°	0°	195'–0"±	RIGHT BETA	EXISTING	0/1	SHARED 6x12 HYBRID CABLE	FIBER	210'– 0"
										FIBER	210'– 0"
C–1 LTE	**ERICSSON AIR6449 B41**	**260°**	**0°**	**0°**	**195'–0"±**	**LEFT GAMMA**	**NEW**	0/0	**NEW SHARED 6x12 HYBRID CABLE**	**FIBER**	**210'– 0"**
										FIBER	**210'– 0"**
C–2 LTE/GSM	RFS APXVAARR24–43–U–NA20	260°	2°	0°	195'–0"±	CENTER GAMMA	EXISTING	0/2	SHARED 6x12 HYBRID CABLE	FIBER	210'– 0"
										FIBER	210'– 0"
C–3 LTE	RFS APX16DWV–16DWV–S–E–A20	260°	0°	0°	195'–0"±	RIGHT GAMMA	EXISTING	0/1	SHARED 6x12 HYBRID CABLE	FIBER	210'– 0"
										FIBER	210'– 0"

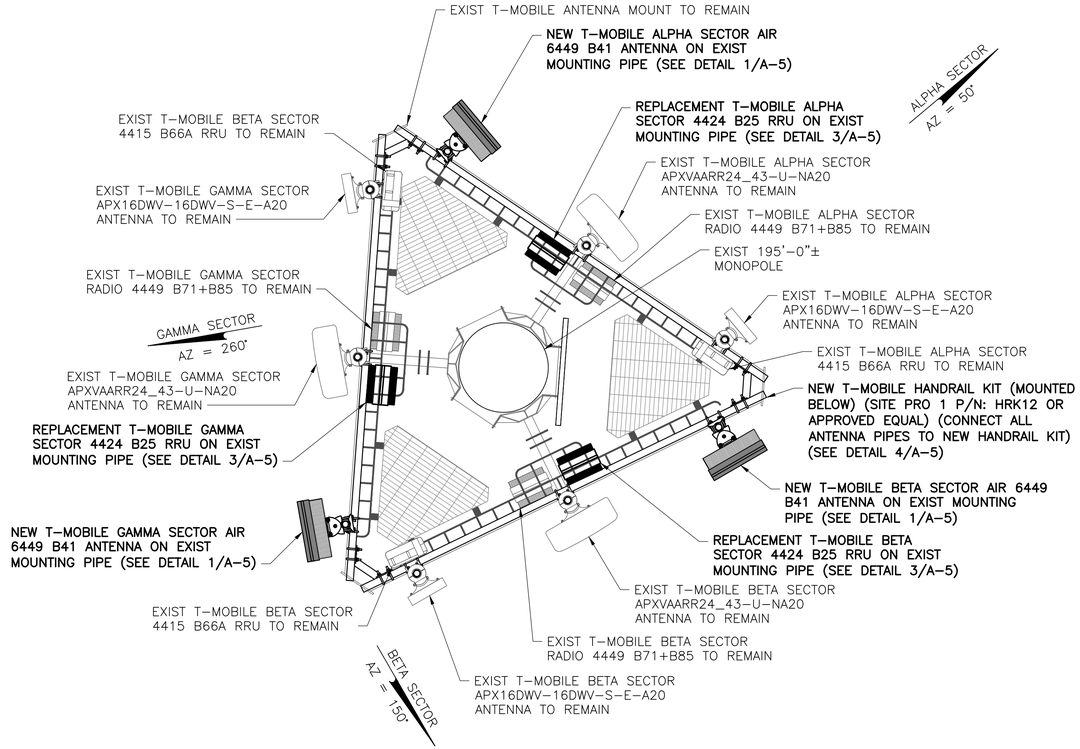
NOTE: THIS UPGRADE ASSUMES THAT THE L600 WORK WILL BE COMPLETED PRIOR TO THE ANCHOR UPGRADE INSTALLATION.



(ALL SECTOR)

1 / A–4 EXIST T–MOBILE ANTENNA PLAN

SCALE: 1/2" = 1'–0"



(ALL SECTORS)

2 / A–4 NEW T–MOBILE ANTENNA PLAN

SCALE: 1/2" = 1'–0"

STATE OF CONNECTICUT
EDWARD N. LAMICELI
PEN.0028473
LICENSED
PROFESSIONAL ENGINEER

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road — Phone: (845) 534–5959
P.O. Box 37 — (800) 829–6531
Mountainville, NY 10953 — www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550 — Phone: (845) 567–6656

T–Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____

RF _____

CONSTRUCTION _____

OPERATIONS _____

SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY	DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

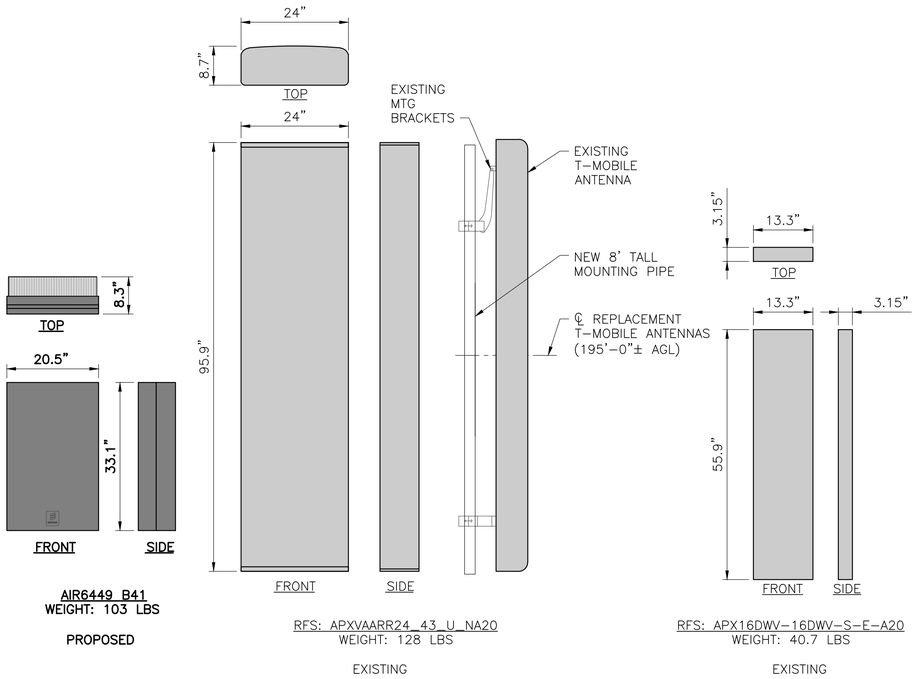
SOUTHBURY/I–84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

EXIST/NEW T–MOBILE ANTENNA PLANS & ANTENNA SCHEDULE

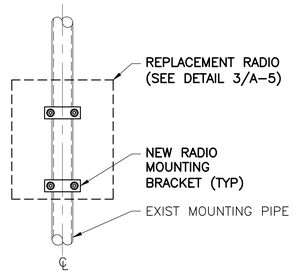
SHEET NUMBER

A–4



1 A-5 ANTENNA DETAILS

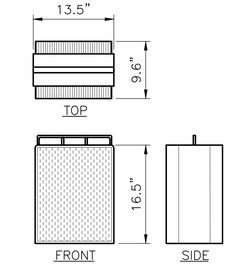
SCALE: 3/4" = 1'-0"



NOTE: MOUNTING OF RADIO TO MOUNTING PIPE, INCLUDING MOUNTING BRACKET ASSEMBLY SHALL BE PER MANUFACTURER DIRECTION.

2 A-5 RADIO MOUNTING DETAIL

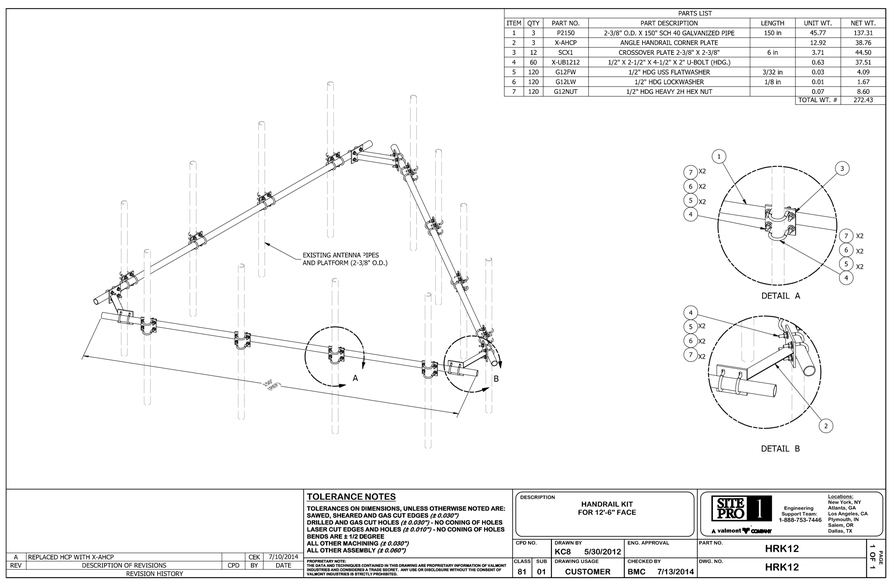
SCALE: 1" = 1'-0"



RRUS-4424 B25
WEIGHT: 88.0 LBS

3 A-5 RADIO DETAIL

SCALE: 1" = 1'-0"



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCXU	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	272.43

TOLERANCE NOTES

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

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED MCP WITH X-AHCP	CPD	CEK	7/10/2014

REVISION HISTORY

DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE

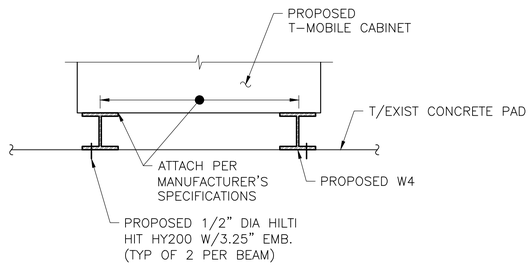
SITE PRO 1 — A valmont coleo — Engineering Support Team: 1-888-753-7446 — Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
KC8	5/30/2012		HRK12
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
01 / 01	CUSTOMER	BMC 7/13/2014	HRK12

SHT 1 OF 1

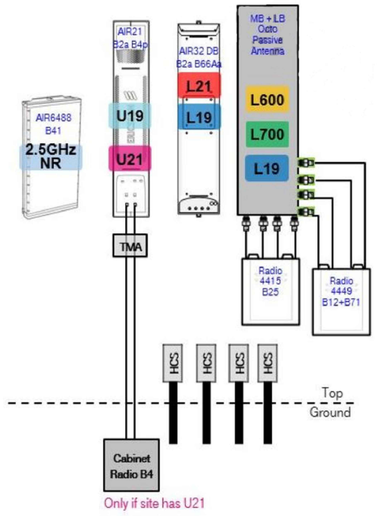
4 A-5 HANDRAIL KIT DETAIL

SCALE: NTS



5 A-5 CONNECTION DETAIL

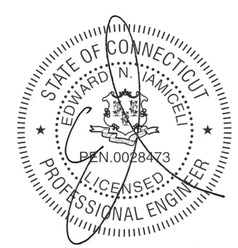
SCALE: NTS



TYP ALL SECTORS

6 A-5 ANTENNA SCHEMATIC

SCALE: NTS



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road — Phone: (845) 534-5959
P.O. Box 37 — (800) 829-6531
Mountainville, NY 10953 — www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550 — Phone: (845) 567-6656

T-Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY _____ DATE _____

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

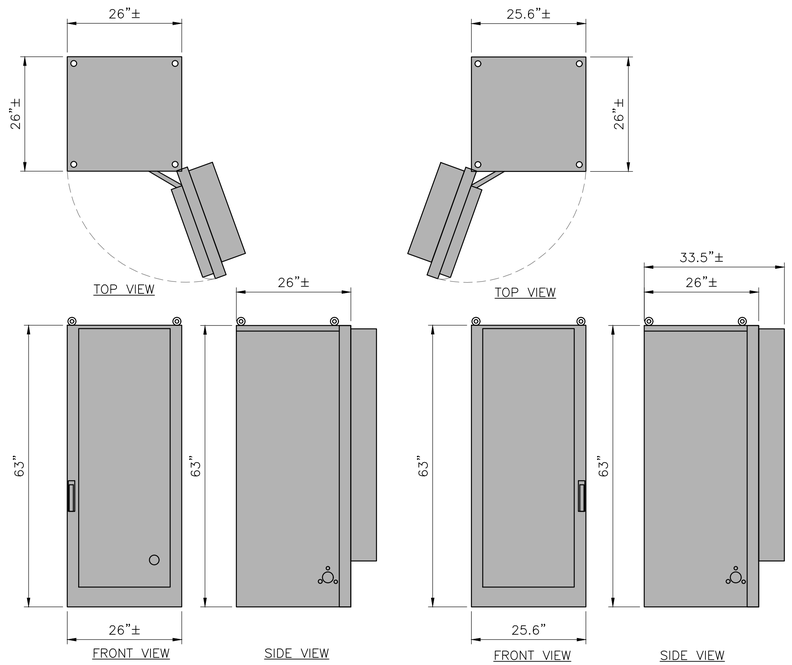
SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

DETAILS,
SPECIFICATIONS &
ANTENNA SCHEMATIC

SHEET NUMBER

A-5



WEIGHT: 1883 LBS (W/3 BATTERY STRINGS)

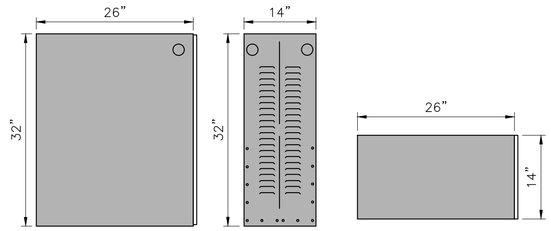
ERICSSON ENCLOSURE B160

WEIGHT: 605 LB (FULLY LOADED)

ERICSSON ENCLOSURE 6160 AC

1 A-6 EQUIPMENT CABINET SPECIFICATIONS

SCALE: NTS



WEIGHT 60± LB

PACIFIC TECHNICAL SOLUTIONS, INC

P/N: PTS8003

2 A-6 EQUIPMENT CABINET SPECIFICATIONS

SCALE: NTS

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____

RF _____

CONSTRUCTION _____

OPERATIONS _____

SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY	DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

CABINET SPECIFICATIONS

SHEET NUMBER

A-6

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE STATE OF CONNECTICUT BUILDING CODE, LATEST VERSION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. DIMENSIONS SHOWN ARE TO FINISH SURFACES, UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE AUTHORIZED REPRESENTATIVE OR THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
5. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
6. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE "NOTICE TO PROCEED," CONTRACTOR WILL CONTACT THE CONSTRUCTION MANAGER OF RECORD A MINIMUM OF 48 HOURS PRIOR TO WORK START.
8. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
9. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
10. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
12. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
14. CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE TO PROTECT THE OWNER.
15. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
16. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, AND PIPING. REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
17. REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
18. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
19. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
20. PROVIDE 48 HOURS WRITTEN NOTICE TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
21. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO AT COMPLETION OF CONSTRUCTION.
22. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE BY. ANY WORK, MATERIALS OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST TO T–MOBILE.

STRUCTURAL NOTES

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
2. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION.
3. STRUCTURAL STEEL BEAMS SHALL CONFORM TO ASTM A992 (Fy=50ksi). STRUCTURAL STEEL PLATES AND ANGLES SHALL CONFORM TO ASTM A36.
4. ROUND AND SQUARE HOLLOW STRUCTURAL SECTIONS (HSS) CONFORM TO ASTM A500 "COLD–FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE C.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD–FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 "PIPE, STEEL, BLACK AND HOT–DIPPED, ZINC–COATED WELDED AND SEAMLESS", TYPE E OR S, GRADE B.
6. CONNECTIONS: WELD OR BOLT CONNECTIONS, AS INDICATED:

   A) CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL CONFORM TO THE REQUIREMENTS OF THE CITED AISC SPECIFICATION.

   B) STRUCTURAL BOLTS SHALL CONFORM TO THE LATEST ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS".

   C) WHERE THE REACTION VALUES OF BEAMS, BRACING, STRUTS, ETC., ARE NOT SHOWN ON THE DRAWINGS THE CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE END REACTION DERIVED FROM THE TABLES AND FORMULA OF UNIFORM LOAD CONSTANTS IN PART 2, NINTH EDITION, OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN MEMBER SIZE, SPAN AND YIELD STRENGTH.

   D) MINIMUM 3/16" FILLET E70–XX WELD SHALL APPLY UNLESS NOTED.

   E) MINIMUM 1/2" DIA. A325 BOLTS SHALL APPLY UNLESS NOTED.

   F) MINIMUM SIZE OF CLIP ANGLES SHALL BE L3x3x3/8" UNLESS NOTED.

   G) ALL GUSSET PLATES SHALL BE 3/8" THICK UNLESS NOTED.

   H) ALL HOLES FOR BOLTS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 1/2 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER. ALL BOLTS SHALL BE PROVIDED WITH PALNUTS OR LOCK NUTS.
7. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS AND CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS", LATEST EDITION. BOLTS SHALL BE 3/4 INCH DIA. UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
9. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT–DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
10. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC–COATING (HOT–DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
12. ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
13. SLEEVE ANCHORS SHALL CONFORM TO FEDERAL SPECIFICATION FF–S–325, GROUP II, TYPE 3, CLASS 3, AS MANUFACTURED BY HILTI FASTENING SYSTEMS OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE (3) INCHES.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF–S–325, GROUP II, TYPE 4, CLASS 1, HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE FOUR (4) INCHES.
15. EPOXY ANCHORING SYSTEM SHALL BE THE HILTI HY–270 FOR MASONRY CONSTRUCTION WITH HOLLOW BRICK OR BLOCK & THE HILTI HIT HY200 INJECTION ADHESIVE ANCHOR FOR GROUT FILLED CONCRETE MASONRY UNITS AND CONCRETE. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2"ø STAINLESS STEEL ANCHOR ROD W/NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEN TUBE FOR THE HY–270 ONLY & AN EPOXY ADHESIVE (6" MIN EMBEDMENT). THE INSTALLATION PROCEDURE SHALL BE AS FOLLOWS

   A. DRILL THE HOLE USING MANUFACTURER RECOMMENDED DRILL BIT UP TO SPECIFIED DEPTH. HAMMERING IS NOT PERMITTED.

   B. CLEAN THE HOLE USING NYLON BRUSH AND/OR COMPRESSED AIR. THE HOLE SHOULD BE CLEAR OF ANY LOOSE MATERIAL. IF WET, THE MASONRY SHOULD BE ALLOWED TO DRY FULLY BEFORE ANCHOR INSTALLATION.

   C. INSERT SPECIFIED SCREEN TUBE INTO THE HOLE.

   D. FILL THE SCREEN TUBE COMPLETELY WITH ADHESIVE, BEGINNING AT THE BOTTOM END.

   E. INSERT ANCHOR ROD OR INTERNALLY THREADED INSERT INTO THE ADHESIVE–FILLED SCREEN TUBE, TWISTING SLIGHTLY.

   F. LOAD FASTENER ONLY AFTER MANUFACTURER SPECIFIED CURE TIME HAS ELAPSED.
16. GRATING SHALL BE GALVANIZED WELDED STEEL BAR GRATING TYPE W/BA WITH 1–1/4" BEARING BARS AT 1–3/16" OC. FASTEN TO SUPPORTING MEMBERS WITH SADDLE–TYPE CLIPS AT 2'–0" O.C. AND BAND ALL EXPOSED EDGES.
17. SUBMIT DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.
18. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.
19. ALL WORK SHALL BE INSPECTED BY THE ENGINEER DURING AND AT THE COMPLETION OF CONSTRUCTION.
20. CONTRACTOR TO REMOVE MASTIC ON THE EXISTING WALL/PARAPET AT EVERY STEEL SUPPORT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BED OF SILICONE SHALL BE APPLIED BEHIND AND ALL AROUND THE STEEL SUPPORT ATTACHMENT TO MAKE IT WEATHERPROOF.
21. HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
22. ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED.
23. NOTES ARE NOT PROJECT SPECIFIC.

SITE NOTES

1. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWING.
2. RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
3. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
4. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
5. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
6. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES.
7. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEER.
8. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH.
9. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
10. CARE SHALL BE TAKEN TO RETAIN NATURAL GROWTH AND PREVENT DAMAGE TO TREES WITHIN AND OUTSIDE THE LIMITS OF CONSTRUCTION AND SPECIFIED WORK AREAS CAUSED BY EQUIPMENT AND MATERIALS. ANY DAMAGE TO THIS NATURAL GROWTH SHALL BE RESTORED AT THE EXPENSE OF THE CONTRACTOR.
11. ALL AREAS DISTURBED BY THE CONTRACTOR WITHOUT AUTHORIZATION SHALL BE RESTORED BY THE CONTRACTOR.
12. IN THE EVENT THE CONTRACTOR DAMAGES AN EXISTING UTILITY SERVICE CAUSING AN INTERRUPTION IN SAID SERVICE, HE SHALL IMMEDIATELY COMMENCE WORK TO RESTORE SERVICE AND MAY NOT CEASE HIS WORK OPERATION UNTIL SERVICE IS RESTORED.

STATE OF CONNECTICUT
EDWARD N. IAMICELI
PEN.0028473
LICENSED
PROFESSIONAL ENGINEER

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road — Phone: (845) 534–5959
P.O. Box 37 — (800) 829–6531
Mountainville, NY 10953 — www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550 — Phone: (845) 567–6656

T-Mobile
NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY _____ DATE _____

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

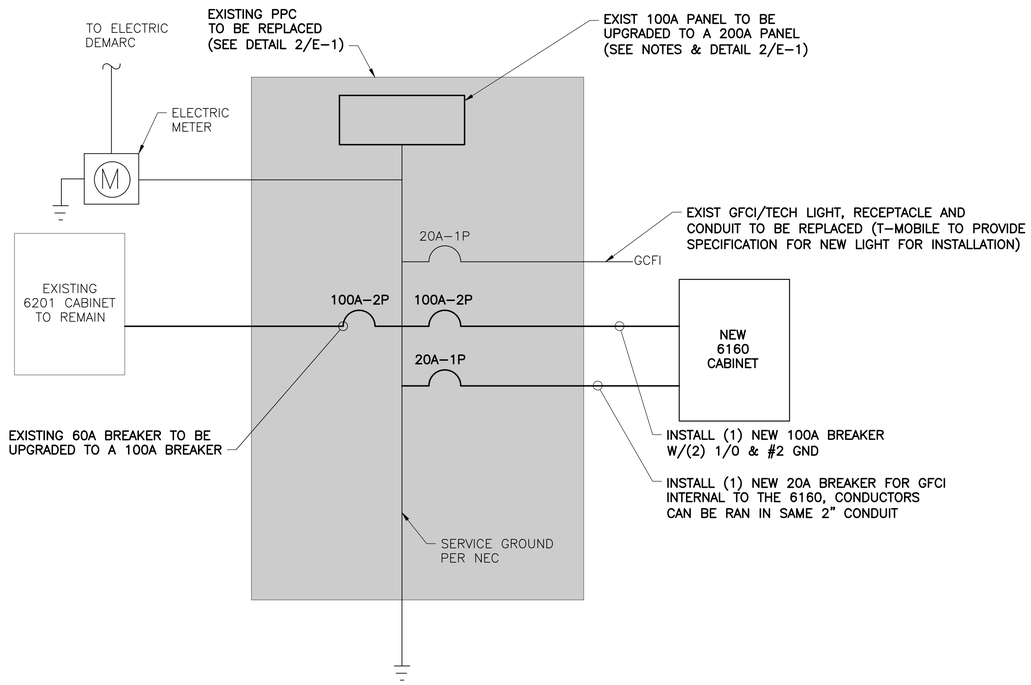
SOUTHBURY/I–84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

NOTES

SHEET NUMBER

A–7



NOTES:
1. THE ABOVE DIAGRAM IS GENERIC AND ANY ELECTRICAL WORK SHALL BE COMPLETED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH NEC STANDARDS.
2. ELECTRICAL CONSULT SHALL BE PERFORMED TO CONSTRUCTION TO CONFIRM THE POWER REQUIREMENTS AND FEASIBILITY.

1/E-1 ONE-LINE DIAGRAM

SCALE: NTS

Product data sheet
Characteristics

QO120M200PRB
Load center, QO, 1 phase, 20 spaces, 20 circuits, 200A convertible main breaker, PoN, NEMA3R, UL

SQUARE D by Schneider Electric

Product availability: Stock - Normally stocked in distribution facility

Price*: 1025.00 USD

Main

Range of product	QO
Product or component type	Load Center
Enclosure type	Weatherproof enclosure

Complementary

Load center type	Main breaker
Line Rated Current	200 A
Number of spaces	20
Short-circuit current	22 KA
Number of circuits	20
Number of tandem circuit breakers	10
Phase	1 phase
Box number	5R
Maximum Height	26.04 In (661.42 mm)
Width	14.75 In (374.65 mm)
Depth	4.52 In (114.81 mm)

Environment

NEMA degree of protection	NEMA 3R outdoor
Ambient air temperature for operation	23 °F (-5 °C) 104 °F (40 °C)
Product certifications	UL Listed

Aug 11, 2020

Schneider Electric

1

Ordering and shipping details

Category	10002 - QO PON 1PH LC,12-60 CKT, N3R
Discount Schedule	DE3A
GTIN	00785901609360
Nbr. of units in pkg.	1
Package weight(Lbs)	1 Lb(US) (0.45 kg)
Returnability	Yes

Product Life Status : Commercialised

Schneider Electric

2

2/E-1 POWER PANEL DETAIL

SCALE: NTS

GENERAL ELECTRICAL NOTES

1. CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATION TESTS, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
2. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
3. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES (U.L.) AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION. AND SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU.
4. CONTRACTOR TO COORDINATE WITH SITE OWNER FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
5. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
6. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
7. METER SOCKETS AMPERES, VOLTAGE AND NUMBER OF PHASES SHALL BE NOTED AND SHALL BE MANUFACTURED BY SQUARE "D" COMPANY, SANGAMO OR APPROVED EQUAL. METER SOCKET SHALL BE APPROVED BY UTILITY COMPANY PRIOR TO INSTALLATION.
8. WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM WITH TYPE THHN INSULATION UNLESS SPECIFICALLY NOTED OTHERWISE.
9. ALL CONDUCTORS SHALL BE COPPER.
10. USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
11. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULLBOX, J-BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
12. CONDUIT:
    A. RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR.
    B. INTERMEDIATE METAL CONDUIT SHALL BE U.L. LABEL, FITTINGS SHALL BE THREADED ALUMINUM OR STEEL AND SHALL BE USED FOR ALL EXTERIOR RUNS. THREADLESS COUPLINGS AND CONNECTORS SHALL NOT BE USED.
    C. ELECTRICAL METALLIC TUBING (EMT) SHALL HAVE U.L. LABEL, FITTINGS SHALL BE NO SET SCREW OR CRIMP TYPE FITTINGS SHALL BE USED. GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
    D. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL HAVE FULL SIZE GROUND WIRE.
    E. CONDUIT SHALL BE SIZED PER THE NEC AND AS SHOWN.
    F. CONDUIT RUNS MAY BE SURFACE MOUNTED IN CEILINGS OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH OWNER PRIOR TO INSTALLING.
    G. ALL CONDUIT ONLY (C.O.) RUNS SHALL HAVE A PULL WIRE OR ROPE.
13. COVERPLATES SHALL BE BRUSHED STAINLESS STEEL FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, AND SHALL HAVE ENGRAVED LETTERING WHERE INDICATED WEATHERPROOF RECEPTACLES SHALL HAVE SIERRA #WPD-8 LIFT COVERPLATES.
14. REFER TO MANUFACTURERS MANUAL FOR RECOMMENDED FUSE AND WIRE SIZES.
15. ALL FINAL CONNECTIONS TO THE EQUIPMENT ARE TO BE OF FLEXIBLE WEATHERPROOF CONDUIT TO MEET APPLICABLE CODES.
16. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
17. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2, UNLESS OTHERWISE NOTED.
18. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE CONSTRUCTION MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
19. PROVIDE CONSTRUCTION MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH GAINING APPROVALS AND PAYING ALL FEES ASSESSED BY UTILITY COMPANY FOR ELECTRICAL SERVICE.

STATE OF CONNECTICUT
EDWARD N. IAMICELI
PEN.0028473
LICENSED PROFESSIONAL ENGINEER

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile NORTHEAST, LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY | DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

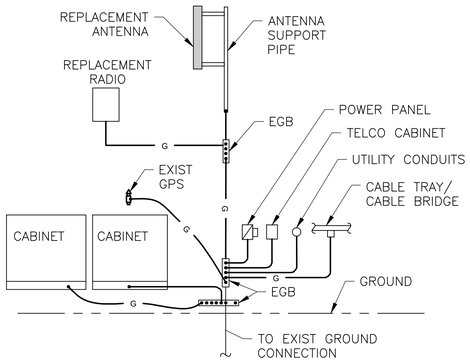
SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

ELECTRICAL NOTES & ONE-LINE DIAGRAM

SHEET NUMBER

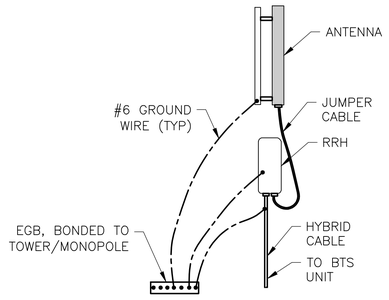
E-1



NOTE: CONTRACTOR SHALL CONFIRM ALL EQUIPMENT IS GROUNDED. IF NOT, CONTRACTOR SHALL GROUND EQUIPMENT AS SHOWN AND AS REQUIRED.

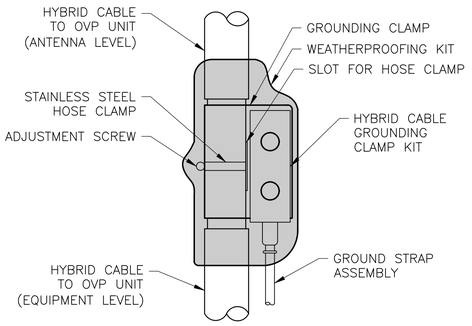
1 / G-1 GROUNDING RISER DIAGRAM

SCALE: NTS



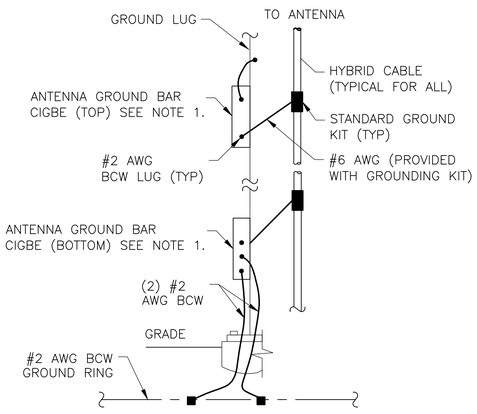
2 / G-1 HYBRID CABLE CONNECTION DETAIL

SCALE: NTS



3 / G-1 HYBRID CABLE GROUNDING DETAIL

SCALE: NTS

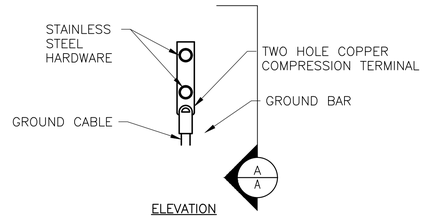


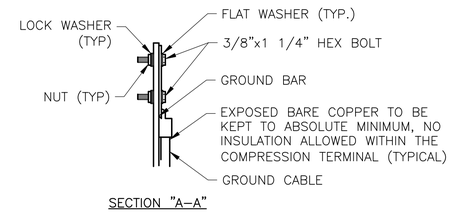
NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS UNIT IF REQUIRED.

4 / G-1 ANTENNA CABLE GROUNDING

SCALE: NTS





NOTES:

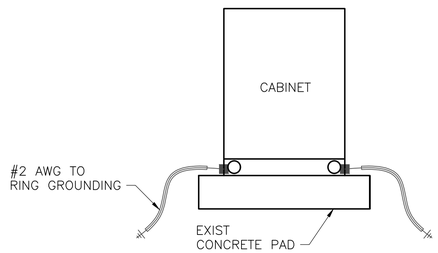
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.
4. ALL GROUND LUGS MUST NE HEAT SHRUNK AT WIRE/LUG CONNECTION.

5 / G-1 GROUND BAR CONNECTION DETAIL

SCALE: NTS

GROUNDING NOTES

1. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
2. ALL GROUNDING WORK SHALL BE IN ACCORDANCE WITH T-MOBILE STANDARD PRACTICE.
3. ALL BUS CONNECTORS SHALL BE TWO-HOLE, LONG-BARREL TYPE COMPRESSION LUGS, T&B OR EQUAL, UNLESS OTHERWISE NOTED ON DRAWINGS. ALL LUGS SHALL BE ATTACHED TO BUSSES USING BOLTS, NUTS, AND LOCK WASHERS. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED.
4. ALL CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS, T&B #TBM 8 OR EQUIVALENT.
5. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. NO WASHERS ARE ALLOWED BETWEEN THE ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE A NON-OXIDIZING AGENT APPLIED PRIOR TO INSTALLATION.
6. ALL COPPER BUSSES SHALL BE CLEANED, POLISHED, AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
7. ALL BENDS SHALL BE AS SHALLOW AS POSSIBLE, WITH NO TURN SHORTER THAN AN 8-INCH NOMINAL RADIUS.
8. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2. ALL GROUNDING CONDUCTORS SHALL RUN THROUGH PVC SLEEVES WHEREVER CONDUCTORS RUN THROUGH WALLS, FLOORS, OR CEILINGS. IF CONDUCTORS MUST RUN THROUGH EMT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
9. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 10 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE PROJECT MANAGER FOR FURTHER INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE.
10. ALL ROOF TOP ANTENNA MOUNTS SHALL BE GROUNDED WITH A #2 GROUND WIRE CONNECTED TO THE NEAREST GROUND BUS. ALL CONNECTIONS ARE TO BE CAD-WELDED IF POSSIBLE.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. GROUNDING CONNECTION TO TRAVEL IN A DOWNWARD DIRECTION.
13. ALL EXPOSED #2 WIRE MUST BE TINN NOT BTW.
14. TECTONIC TAKES NO RESPONSIBILITY OR LIABILITY FOR THE GROUNDING SYSTEM AS SHOWN ON THIS SITE. THIS IS A STANDARD GROUNDING SYSTEM.



6 / G-1 CABINET GROUNDING DETAIL

SCALE: NTS

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-5959
(800) 829-6531
www.tectonicengineering.com
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656

T-Mobile
NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

APPROVALS

LANDLORD _____
RF _____
CONSTRUCTION _____
OPERATIONS _____
SITE ACQ. _____

PROJECT NUMBER	DESIGNED BY
10473.CT11126F	EI

REV.	DATE	DESCRIPTION	DRAWN BY
0	10/02/20	ISSUED FOR CONSTRUCTION	BWY

ISSUED BY | DATE

0 1 2 3
ORIGINAL SIZE IN INCHES

SITE INFORMATION

SOUTHBURY/I-84 X15/BAGL
CT11126F
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET TITLE

GROUNDING DETAILS & NOTES

SHEET NUMBER

G-1

Exhibit D

Phoenix Tower International
999 Yamato Road, Suite 100
Boca Raton, FL, 33431
(610) 357-8763

GPD Engineering and Architecture Professional Corporation
Todd Rasey
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-2198
trasey@gpdgroup.com

GPD# 2020791.CT1002.11 Rev. 1
September 28, 2020

COMPREHENSIVE STRUCTURAL ANALYSIS REPORT

SITE DESIGNATION:	**PTI Site #:**	**US-CT-1002**
	PTI Site Name:	**Kettletown**
	T-Mobile Site #:	**CT11126F**
	T-Mobile Site Name:	**Anchor**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-H** **120 mph (3-second gust) w/ 0" ice** **50 mph (3-second gust) w/ 1" ice**
SITE DATA:		**231 Kettleton Road, Southbury, CT 6488, New Haven County** **Latitude 41° 28' 16.26" N, Longitude 73° 12' 19.99" W** **196' Modified PiROD Monopole**

Dear David Rodriguez,

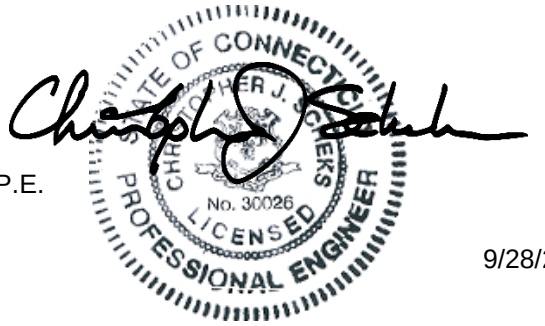
GPD is pleased to submit this Comprehensive Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	81.8%	Pass
Foundation Ratio with Proposed Equipment:	65.7%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Phoenix Tower International. If you have any questions or need further assistance on this or any other projects, please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

9/28/2020

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by T-Mobile and commissioned by Phoenix Tower International.

This analysis has been performed in accordance with the TIA-222-H Standard based upon a 3-second gust wind speed of 106 mph. Applicable Standard references and design criteria are listed in Appendices A & B.

Seismic loads were determined from spreadsheet calculations. It was concluded from these calculations that the wind loads control the maximum loading on the structure. The seismic loading case will not control.

The proposed feedlines shall be installed as shown in Appendices A & B for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	81.8%	Pass
Anchor Rods	75.4%	Pass
Base Plate	72.5%	Pass
Foundation	65.7%	Pass

RECOMMENDATIONS

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

ANALYSIS METHOD

tnxTower (Version 8.0.7.5), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various load cases. Selected output from the analysis is included the report appendices. The following table details the information provided to complete this structural analysis. This analysis is based solely on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Collocation Application	PTI T-Mobile Collocation Application, dated 9/02/2020	PTI
Tower Design	PiROD, File #: A-115080, dated 3/26/1999	PTI
Foundation Design	PiROD, File #: A-115080, dated 3/26/1999	PTI
Geotechnical Report	Dr. Clarence Welti, dated 10/7/1998	PTI
Previous Tower Analysis	GPD Project #: 2020791.CT1002.10, dated 5/1/2020	PTI
Mount Modification Report	Destek Engineering Project #: 1978010, dated 9/14/2010	PTI
Modification Report	GPD Project #: 2010293.91, dated 01/12/2011	PTI
Modification Report	GPD Project #: 5013792.15 Rev. A, dated 1/12/2011	PTI
Post Modification Report	GPD Project #: 2010299.50, dated 1/12/2011	PTI
Post Modification Report	GPD Project #: 2014506.06, dated 6/3/2014	PTI

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
4. The soil parameters are as per data supplied or as assumed and stated in the calculations.
5. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
8. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
9. Loading interpreted from photos is accurate to ±5' AGL, antenna size accurate to ±3.3 sf, and coax equal to the number of existing antennas without reserve.
10. All existing and proposed loading has been taken from the available site photos as well as documents supplied to GPD at the time of generating this report. All such documents are listed in the Documents Provided Table and are assumed to be accurate. GPD is not responsible for loading scenarios outside those conveyed in the supplied documentation.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Comprehensive Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	Anchor (CT11126F)
Site Number	US-CT-1002
Date of Analysis	Kettletown
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	196'	
Tower Manufacturer	PiROD	
Tower Model	n/a	
Tower Design	PiROD, File #: A-115080	3/26/1999
Foundation Design	PiROD, File #: A-115080	3/26/1999
Geotech Report	Dr. Clarence Welti	10/7/1998
Previous Structural Analysis	GPD Project #: 2019791.CT1002.09 Rev. 3	6/7/2019
Tower Mapping	n/a	
Foundation Mapping	n/a	

Design Parameters

Design Code Used	TIA-222-H
Location of Tower (County, State)	New Haven, CT
Nominal Wind Speed (mph)	120 (3-second gust)
Ice Thickness (in)	1
Risk Category (I, II, III)	II
Exposure Category (B, C, D)	B
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	75.0%
Tower Base (%)	50.0%
Foundation (%)	50.0%
Foundation Adequate?	Yes

T-Mobile Future Loading Information	
Existing Area (in^2)	18,788
Proposed Area (in^2)	2,110
Final Area (in^2)	20,898
Future Area (in^2)	1,102
Total Wind Area (in^2)	22,000
Does T-Mobile's Loading Exceed 22,000 in^2?	No
If yes, by how much? (in^2)	n/a

Note: Nominal equipment dimensions (Height x Width) have been utilized for the purposes of these calculations.

Monopole Shaft	65
Base Plate	36
Anchor Rods	75

Note: Steel strengths have been assumed based on industry standards.

Existing/ Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	195	193	3	Panel	RFS	APXVAARR24	50/150/260	1	Unknown	LP Platform	9	Unknown	1-5/8"	Internal
T-Mobile	195	195	3	Panel	RFS	APX16DWV	50/150/260	1	Site Pro 1	HRK12 Handrail Kit	3	Fiber	1-1/4"	Internal
T-Mobile	195	193	3	RRH	Ericsson	4449 B71+B12				On The Same Mount				
T-Mobile	195	193	3	RRH	Ericsson	4415 B25				On The Same Mount				
T-Mobile	195	195	3	RRH	Ericsson	4415 B66A				On The Same Mount				
T-Mobile	195	195	1	Surge	Raycap	DC4-48-60-8-20F				On The Same Mount				
AT&T Mobility	185	185	3	Panel	Powerwave	7770	23/143/263	1	Unknown	LP Platform	12	Unknown	1-1/4"	Internal
AT&T Mobility	185	185	3	Panel	CCI	HPA-65R-BUU-H8	23/143/263	1	SitePro 1	PRK-1245L Kicker Supports	4	DC Power	3/4"	Internal
AT&T Mobility	185	185	2	Panel	Quintel	QS66512-2	23/143			On The Same Mount	2	Fiber Cable	1.496"	Internal
AT&T Mobility	185	185	1	Panel	CCI	TPA-65R-LCUUUU-H8	263			On The Same Mount				
AT&T Mobility	185	185	3	TMA	Powerwave	TT19-08BP111-001				On The Same Mount				
AT&T Mobility	185	185	6	Diplexer	Powerwave	LGP 21901				On The Same Mount				
AT&T Mobility	185	185	6	Diplexer	Kathrein	782-10250				On The Same Mount				
AT&T Mobility	185	185	3	RRH	Ericsson	RRUS 11				On The Same Mount				
AT&T Mobility	185	185	3	RRH	Ericsson	RRUS 12				On The Same Mount				
AT&T Mobility	185	185	3	RRH	Ericsson	RRUS 32				On The Same Mount				
AT&T Mobility	185	185	3	RRH	Ericsson	RRUS 4426 B66				On The Same Mount				
AT&T Mobility	185	185	2	Surge	Raycap	DC6-48-60-18-8F				On The Same Mount				
Pocket	175	175	3	Panel	RFS	APXV18-206517S-C	110/230/350			Flush Mounted	6	Unknown	1-5/8"	External
Sprint	165	165	3	Panel	RFS	APXVTM14-ALU-I20	340/70/260	1	Unknown	LP Platform	4	Hybriflex	1-1/4"	External
Sprint	165	165	3	Panel	Commscope	NNVV-65B-R4	340/70/260			On The Same Mount				
Sprint	165	165	3	RRH	Alcatel Lucent	RRH 1900 4x45 65 MHz				On The Same Mount				
Sprint	165	165	3	RRH	Alcatel Lucent	800 MHz RRH				On The Same Mount				
Sprint	165	165	3	RRH	Alcatel Lucent	TD-RRH8x20-25 w/ Solar Shield				On The Same Mount				
Sprint	165	165	3	RRH	Alcatel Lucent	RRH2x50-08 (800 MHz)				On The Same Mount				
Verizon Wireless	155	155	6	Panel	Commscope	JAHH-65B-R3B	60/180/300	1	Unknown	LP Platform	10	Unknown	1-5/8"	External
Verizon Wireless	155	155	3	Panel	Samsung	XXDWMM	60/180/300	3	Commscope	BSAMNT SBS-2-2	2	Hybriflex	1-5/8"	External
Verizon Wireless	155	155	6	Panel	Andrew	844 H90EXYBAM	60/180/300	1	SitePro 1	PRK-SFS-L Reinforcement Kit				
Verizon Wireless	155	155	3	RRH	Samsung	B2B66A RRH PCS+AWS				On The Same Mount				
Verizon Wireless	155	155	3	RRH	Samsung	B5/B13 RRH				On The Same Mount				
Verizon Wireless	155	155	3	Diplexer	Commscope	CBC 78T DS 43				On The Same Mount				
Verizon Wireless	155	155	1	OVP	RFS	DB-C1-12C-24-AB-0Z				On The Same Mount				
Sprint	75	75	1	Panel	Pctel	TMG-HR-26N GPS	240			Pipe Mounted	1	Unknown	7/8"	External

Note:(3) 4415 B25 and (1) 1-5/8" coax shall be removed prior to the installation of the proposed loading and has not been considered for this analysis.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	195	195	3	Panel	Ericsson	AIR6449	50/150/260			On Existing Mount	1	Fiber	1-1/4"	Internal
T-Mobile	195	193	3	RRH	Ericsson	4424 B25				On Existing Mount				

Note: The proposed equipment shall be installed in addition to the remaining existing/reserved loading at the same elevation.

Reserved Loading

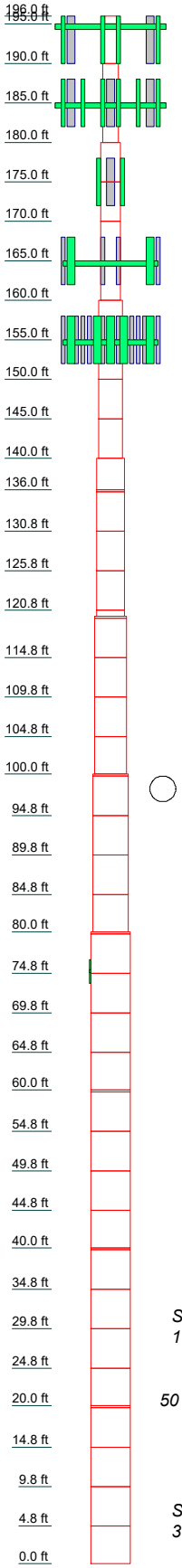
Antenna						Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	195	195	1	1,102 in^2 Remaining Reserved Loading				on the existing mounts				

Note: T-Mobile's final loading configuration uses 20,898 in^2 of their MLA reserved loading.

APPENDIX B

Tower Analysis Output File

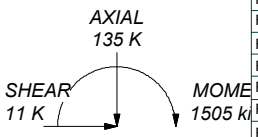
Section	Size	Length (ft)	Grade	Weight (K)
1	P60x0.375	5.00	A53-B-42	0.1
2	P60x0.375	5.00	A53-B-42	0.5
3	P60x0.375	5.00	A53-B-42	0.5
4	P60x0.375	5.00	A53-B-42	0.5
5	P60x0.375	5.00	A53-B-42	0.6
6	P60x0.375	5.00	A53-B-42	0.6
7	P60x0.375	5.00	A53-B-42	0.6
8	P60x0.375	5.00	A53-B-42	0.6
9	P60x0.375	5.00	A53-B-42	0.7
10	P60x0.375	5.00	A53-B-42	0.7
11	P60x0.375	5.00	A53-B-42	0.7
12	P60x0.375	5.00	A53-B-42	0.7
13	P60x0.375	6.00	A53-B-42	10.7
14	P60x0.375	5.00	A53-B-42	1.3
15	P60x0.375	5.00	A53-B-42	1.3
16	P60x0.375	5.00	A53-B-42	1.3
17	P60x0.375	5.00	A53-B-42	1.3
18	P60x0.375	5.00	A53-B-42	1.5
20	P60x0.375	5.00	A53-B-42	1.5
21	P48x0.375	5.00	A53-B-42	1.5
22	P48x0.375	5.00	A53-B-42	1.5
23	P48x0.375	3.75	A53-B-42	11.4
24	P48x0.375	5.00	A53-B-42	1.6
25	P48x0.375	5.00	A53-B-42	1.6
26	P48x0.375	5.00	A53-B-42	1.6
27	P48x0.375	5.00	A53-B-42	1.6
28	P48x0.375	3.75	A53-B-42	11.5
29	P48x0.375	5.00	A53-B-42	1.7
30	P48x0.375	5.00	A53-B-42	1.7
31	P48x0.375	5.00	A53-B-42	1.7
32	P48x0.375	5.00	A53-B-42	1.7
33	P48x0.375	3.75	A53-B-42	11.6
34	P48x0.375	5.00	A53-B-42	2.1
35	P48x0.375	5.00	A53-B-42	2.1
36	P48x0.375	5.00	A53-B-42	2.1
37	P48x0.375	5.00	A53-B-42	2.1
38	P48x0.375	3.75	A53-B-42	12.0
40	P48x0.375	5.00	A53-B-42	2.5
41	P60x0.375	5.00	A53-B-42	2.5
42	P60x0.375	5.00	A53-B-42	2.5
43	P60x0.375	3.75	A53-B-42	12.4
44	P60x0.375	5.00	A53-B-42	2.5
45	P60x0.375	5.00	A53-B-42	2.5
46	P60x0.375	5.00	A53-B-42	2.5
47	P60x0.375	5.00	A53-B-42	2.5
48	P60x0.375	4.75	A53-B-42	2.4
				58.7



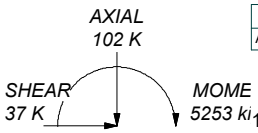
DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Pirod 16.5' LP Platform	195	DC6-48-60-18-8F Surge Suppression Unit	185
APXVAARR24_43-U-NA20 w/ Mount Pipe	195	DC6-48-60-18-8F Surge Suppression Unit	185
APXVAARR24_43-U-NA20 w/ Mount Pipe	195	Valmont Light Duty Tri-Bracket (1)	175
APXVAARR24_43-U-NA20 w/ Mount Pipe	195	APXV18-206517S-C w/ Mount Pipe	175
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	195	APXV18-206517S-C w/ Mount Pipe	175
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	195	APXV18-206517S-C w/ Mount Pipe	175
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	195	MTS 12.5' LP Platform	165
AIR6449 B41 w/ Mount Pipe	195	APXVTM14-ALU-I20 w/ Mount Pipe	165
AIR6449 B41 w/ Mount Pipe	195	APXVTM14-ALU-I20 w/ Mount Pipe	165
AIR6449 B41 w/ Mount Pipe	195	APXVTM14-ALU-I20 w/ Mount Pipe	165
RADIO 4449 B12/B71	195	NNVV-65B-R4 w/ Mount Pipe	165
RADIO 4449 B12/B71	195	NNVV-65B-R4 w/ Mount Pipe	165
RADIO 4449 B12/B71	195	NNVV-65B-R4 w/ Mount Pipe	165
4424 B25	195	RRH 1900 4x45 65 MHz	165
4424 B25	195	RRH 1900 4x45 65 MHz	165
4424 B25	195	RRH 1900 4x45 65 MHz	165
RADIO 4415 B66A	195	800 MHz RRH	165
RADIO 4415 B66A	195	800 MHz RRH	165
RADIO 4415 B66A	195	800 MHz RRH	165
DC4-48-60-8-20F	195	TD-RRH8x20-25 w/ Solar Shield	165
DC4-48-60-8-20F	195	TD-RRH8x20-25 w/ Solar Shield	165
367.22 Sq In Generic Appurtenances	195	TD-RRH8x20-25 w/ Solar Shield	165
367.22 Sq In Generic Appurtenances	195	RRH2X50-08 (800 MHz)	165
367.22 Sq In Generic Appurtenances	195	RRH2X50-08 (800 MHz)	165
(3) Commscope VSR-MA-B w/ 15.5' Horizontal Pipe	193	RRH2X50-08 (800 MHz)	165
PiROD 13' Low Profile Platform (Monopole)	185	PiROD 15' Low Profile Platform (Monopole)	155
7770.00 w/Mount Pipe	185	PRK-SFS-L Stabilizer Kit (1)	155
7770.00 w/Mount Pipe	185	BSAMNT SBS-2-2	155
7770.00 w/Mount Pipe	185	BSAMNT SBS-2-2	155
QS66512-2 w/ Mount Pipe	185	BSAMNT SBS-2-2	155
QS66512-2 w/ Mount Pipe	185	(2) JAHH-65B-R3B w/ Mount Pipe	155
TPA-65R-LCUUUU-H8 w/ Mount Pipe	185	(2) JAHH-65B-R3B w/ Mount Pipe	155
HPA-65R-BUU-H8 w/ Mount Pipe	185	(2) JAHH-65B-R3B w/ Mount Pipe	155
HPA-65R-BUU-H8 w/ Mount Pipe	185	(2) 844H90E-XYBAM w/ Mount Pipe	155
HPA-65R-BUU-H8 w/ Mount Pipe	185	(2) 844H90E-XYBAM w/ Mount Pipe	155
TT19-08BP111-001	185	(2) 844H90E-XYBAM w/ Mount Pipe	155
TT19-08BP111-001	185	XXDWMM w/ Mount Pipe	155
TT19-08BP111-001	185	XXDWMM w/ Mount Pipe	155
(2) LGP21901	185	XXDWMM w/ Mount Pipe	155
(2) LGP21901	185	B2B66A RRH PCS+AWS	155
(2) LGP21901	185	B2B66A RRH PCS+AWS	155
(2) 782 10250	185	B2B66A RRH PCS+AWS	155
(2) 782 10250	185	B5/B13 RRH	155
(2) 782 10250	185	B5/B13 RRH	155
RRUS 11	185	B5/B13 RRH	155
RRUS 11	185	CBC78T-DS-43	155
RRUS 11	185	CBC78T-DS-43	155
RRUS 12	185	CBC78T-DS-43	155
RRUS 12	185	DB-C1-12C-24AB-0Z	155
RRUS 12	185	Bridge Stiffener (3.25 sq ft)	120
RRUS 32	185	Bridge Stiffener (3.25 sq ft)	120
RRUS 32	185	Bridge Stiffener (3.25 sq ft)	120
RRUS 32	185	Bridge Stiffener (3.25 sq ft)	100
RRUS 4426 B66	185	Bridge Stiffener (3.25 sq ft)	100
RRUS 4426 B66	185	Bridge Stiffener (3.25 sq ft)	100
RRUS 4426 B66	185	Bridge Stiffener (3.25 sq ft)	80
		Bridge Stiffener (3.25 sq ft)	80
		Bridge Stiffener (3.25 sq ft)	80
		GPS-TMG-HR-26N	75
		Pipe Mount 3'x4.5"	75

ALL REACTIONS ARE FACTORED



TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 2 kip-ft
REACTIONS - 120 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

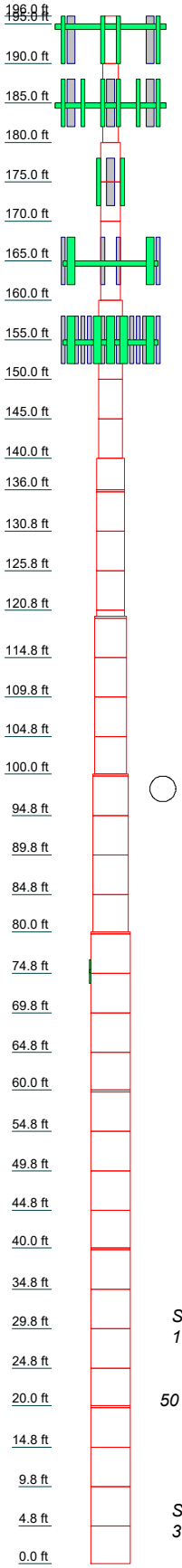
TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: **Kettleton / US-CT-1002**		
Project: **2020791.CT1002.11**		
Client: PTI	Drawn by: msteward	App'd:
Code: TIA-222-H	Date: 09/28/20	Scale: NTS
Path: T:\PTI\US-CT-1002 (CT1126F)\11 SA 2020791 CT1002 11 PTI TMO SA\5_Structural\00_Structure\00_Rev.0\03_Modeling\CT1002 MOD.eri		Dwg No. E-1

Section	Size	Length (ft)	Grade	Weight (K)
1	P60x0.375	5.00	A53-B-42	0.1
2	P60x0.375	5.00	A53-B-42	0.5
3	P60x0.375	5.00	A53-B-42	0.5
4	P60x0.375	5.00	A53-B-42	0.5
5	P60x0.375	5.00	A53-B-42	0.6
6	P60x0.375	5.00	A53-B-42	0.6
7	P60x0.375	5.00	A53-B-42	0.6
8	P60x0.375	5.00	A53-B-42	0.6
9	P60x0.375	5.00	A53-B-42	0.7
10	P60x0.375	5.00	A53-B-42	0.7
11	P60x0.375	5.00	A53-B-42	0.7
12	P60x0.375	5.00	A53-B-42	0.7
13	P60x0.375	4.00	A53-B-42	10.7
14	P60x0.375	5.00	A53-B-42	1.3
15	P60x0.375	5.00	A53-B-42	1.3
16	P60x0.375	5.00	A53-B-42	1.3
17	P60x0.375	5.00	A53-B-42	1.3
18	P60x0.375	5.00	A53-B-42	1.5
20	P48x0.375	5.00	A53-B-42	1.5
21	P48x0.375	5.00	A53-B-42	1.5
22	P48x0.375	5.00	A53-B-42	1.5
23	P48x0.375	3.75	A53-B-42	11.4
24	P48x0.375	5.00	A53-B-42	1.6
25	P48x0.375	5.00	A53-B-42	1.6
26	P48x0.375	5.00	A53-B-42	1.6
27	P48x0.375	5.00	A53-B-42	1.6
28	P48x0.375	3.75	A53-B-42	11.5
29	P48x0.375	5.00	A53-B-42	1.7
30	P48x0.375	5.00	A53-B-42	1.7
31	P48x0.375	5.00	A53-B-42	1.7
32	P48x0.375	5.00	A53-B-42	1.7
33	P48x0.375	3.75	A53-B-42	11.6
34	P48x0.375	5.00	A53-B-42	2.1
35	P48x0.375	5.00	A53-B-42	2.1
36	P48x0.375	5.00	A53-B-42	2.1
37	P48x0.375	5.00	A53-B-42	2.1
38	P48x0.375	3.75	A53-B-42	12.0
40	P48x0.375	5.00	A53-B-42	2.5
41	P60x0.375	5.00	A53-B-42	2.5
42	P60x0.375	5.00	A53-B-42	2.5
43	P60x0.375	3.75	A53-B-42	12.4
44	P60x0.375	5.00	A53-B-42	2.5
45	P60x0.375	5.00	A53-B-42	2.5
46	P60x0.375	5.00	A53-B-42	2.5
47	P60x0.375	5.00	A53-B-42	2.5
48	P60x0.375	4.75	A53-B-42	2.4
				58.7



ALL REACTIONS ARE FACTORED

AXIAL 135 K

SHEAR 11 K *MOMENT 1505 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 102 K

SHEAR 37 K *MOMENT 5253 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 120 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

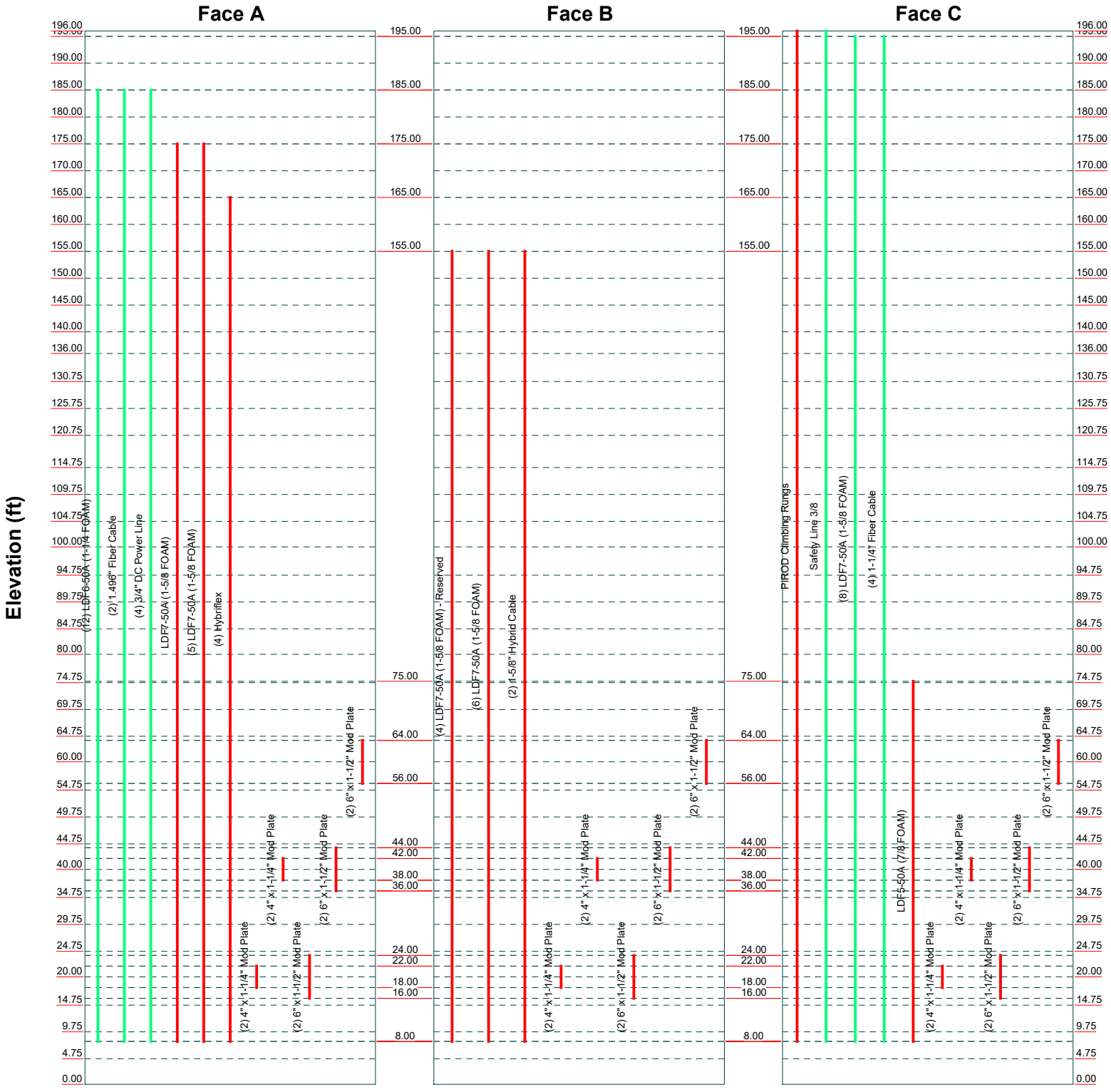
1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***Kettleton / US-CT-1002***		
Project: ***2020791.CT1002.11***		
Client: PTI	Drawn by: msteward	App'd:
Code: TIA-222-H	Date: 09/28/20	Scale: NTS
Path: T:\PTI\US-CT-1002 (CT1126F)\11 SA 2020791 CT1002 11 PTI TMO SA\5_Structural\00_Structure\00_Rev.003_Modeling\CT1002 MOD.eri		Dwg No. E-1

Feed Line Distribution Chart
0' - 196'

Round | Flat | App In Face | App Out Face | Truss Leg

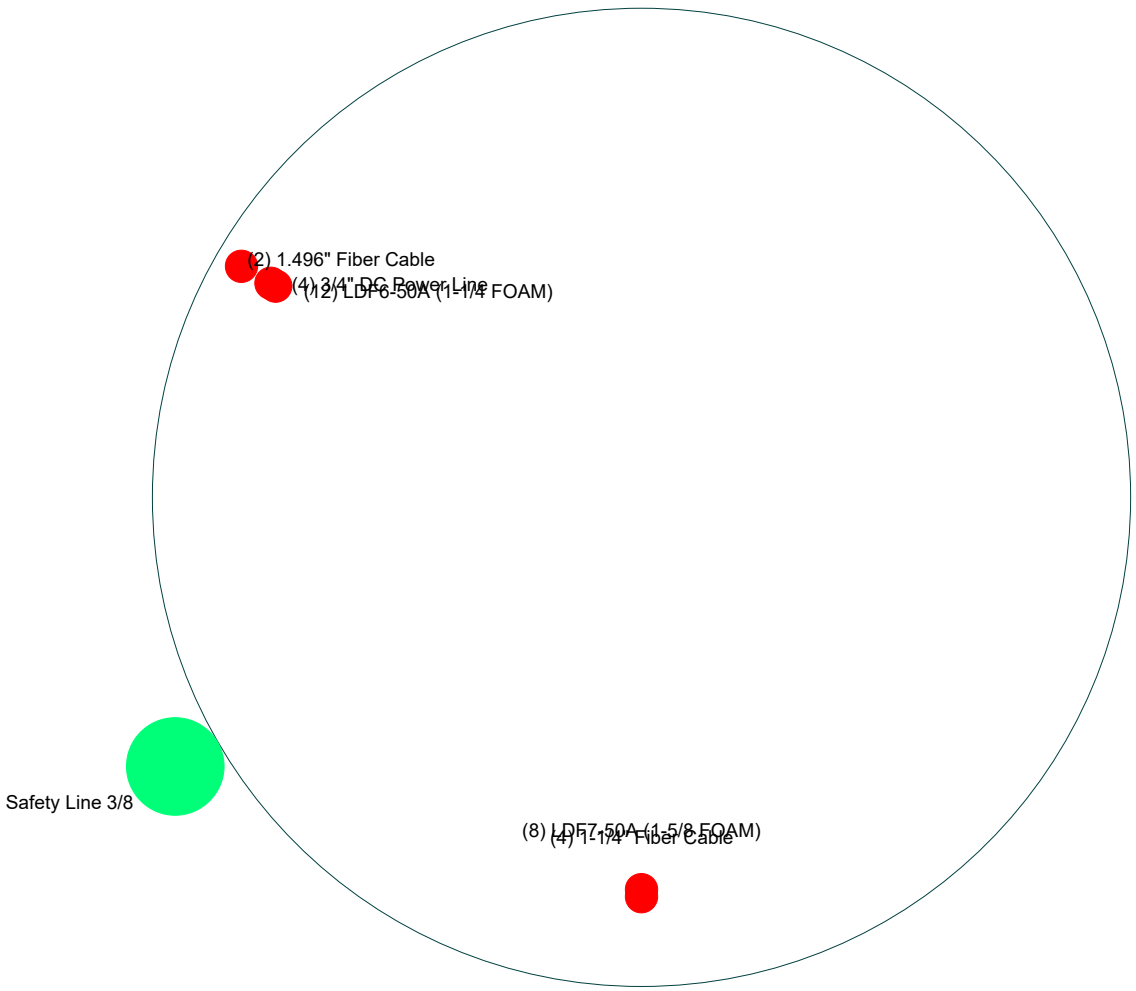


GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***Kettleton / US-CT-1002***		
Project: ***2020791.CT1002.11***		
Client: PTI	Drawn by: msteward	App'd:
Code: TIA-222-H	Date: 09/28/20	Scale: NTS
Path: T:\PTI\US-CT-1002 (CT1126F)\11 SA 2020791 CT1002 11 PTI TMO SA\5_Structural\00_Structure\00_Rev.0\03_Modeling\CT1002 MOD.eri		Dwg No. E-7

Feed Line Plan

Round Flat App In Face App Out Face



GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***Kettleton / US-CT-1002***		
Project: ***2020791.CT1002.11***		
Client: PTI	Drawn by: msteward	App'd:
Code: TIA-222-H	Date: 09/28/20	Scale: NTS
Path: T:\PTI\US-CT-1002 (CT1126F)\11 SA 2020791 CT1002 11 PTI TMO SA\5_Structural\00_Structure\00_Rev.0\03_Modeling\CT1002 MOD.eri		Dwg No. E-7

Tower Input Data

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

Tower base elevation above sea level: 408.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
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 1.05.
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-H Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-H 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

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	196.00-195.00	1.00	P18x0.375	A53-B-42 (42 ksi)	
L2	195.00-190.00	5.00	P24x0.375	A53-B-42 (42 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L3	190.00-185.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L4	185.00-180.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L5	180.00-175.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L6	175.00-170.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L7	170.00-165.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L8	165.00-160.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L9	160.00-155.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L10	155.00-150.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L11	150.00-145.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L12	145.00-140.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L13	140.00-136.00	4.00	P42x0.375	A53-B-42 (42 ksi)	
L14	136.00-135.75	0.25	P42x0.6375	A53-B-42 (42 ksi)	
L15	135.75-130.75	5.00	P42x0.6375	A53-B-42 (42 ksi)	
L16	130.75-125.75	5.00	P42x0.6375	A53-B-42 (42 ksi)	
L17	125.75-120.75	5.00	P42x0.6375	A53-B-42 (42 ksi)	
L18	120.75-120.00	0.75	P42x0.6375	A53-B-42 (42 ksi)	
L19	120.00-119.75	0.25	P48x0.6	A53-B-42 (42 ksi)	
L20	119.75-114.75	5.00	P48x0.6	A53-B-42 (42 ksi)	
L21	114.75-109.75	5.00	P48x0.6	A53-B-42 (42 ksi)	
L22	109.75-104.75	5.00	P48x0.6	A53-B-42 (42 ksi)	
L23	104.75-100.00	4.75	P48x0.6	A53-B-42 (42 ksi)	
L24	100.00-99.75	0.25	P54x0.5625	A53-B-42 (42 ksi)	
L25	99.75-94.75	5.00	P54x0.5625	A53-B-42 (42 ksi)	
L26	94.75-89.75	5.00	P54x0.5625	A53-B-42 (42 ksi)	
L27	89.75-84.75	5.00	P54x0.5625	A53-B-42 (42 ksi)	
L28	84.75-80.00	4.75	P54x0.5625	A53-B-42 (42 ksi)	
L29	80.00-79.75	0.25	P60x0.55	A53-B-42 (42 ksi)	
L30	79.75-74.75	5.00	P60x0.55	A53-B-42 (42 ksi)	
L31	74.75-69.75	5.00	P60x0.55	A53-B-42 (42 ksi)	
L32	69.75-64.75	5.00	P60x0.55	A53-B-42 (42 ksi)	
L33	64.75-60.00	4.75	P60x0.55	A53-B-42	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L34	60.00-59.75	0.25	P60x0.675	(42 ksi) A53-B-42 (42 ksi)	
L35	59.75-54.75	5.00	P60x0.675	A53-B-42 (42 ksi)	
L36	54.75-49.75	5.00	P60x0.675	A53-B-42 (42 ksi)	
L37	49.75-44.75	5.00	P60x0.675	A53-B-42 (42 ksi)	
L38	44.75-40.00	4.75	P60x0.675	A53-B-42 (42 ksi)	
L39	40.00-39.75	0.25	P60x0.8	A53-B-42 (42 ksi)	
L40	39.75-34.75	5.00	P60x0.8	A53-B-42 (42 ksi)	
L41	34.75-29.75	5.00	P60x0.8	A53-B-42 (42 ksi)	
L42	29.75-24.75	5.00	P60x0.8	A53-B-42 (42 ksi)	
L43	24.75-20.00	4.75	P60x0.8	A53-B-42 (42 ksi)	
L44	20.00-19.75	0.25	P60x0.8	A53-B-42 (42 ksi)	
L45	19.75-14.75	5.00	P60x0.8	A53-B-42 (42 ksi)	
L46	14.75-9.75	5.00	P60x0.8	A53-B-42 (42 ksi)	
L47	9.75-4.75	5.00	P60x0.8	A53-B-42 (42 ksi)	
L48	4.75-0.00	4.75	P60x0.8	A53-B-42 (42 ksi)	

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 196.00-195.00				1	1	1			
L2 195.00-190.00				1	1	1			
L3 190.00-185.00				1	1	1			
L4 185.00-180.00				1	1	1			
L5 180.00-175.00				1	1	1			
L6 175.00-170.00				1	1	1			
L7 170.00-165.00				1	1	1			
L8 165.00-160.00				1	1	1			
L9 160.00-155.00				1	1	1			
L10 155.00-150.00				1	1	1			
L11				1	1	1			

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
150.00-145.00									
L12				1	1	1			
145.00-140.00									
L13				1	1	1			
140.00-136.00									
L14				1	1	0.945061			
136.00-135.75									
L15				1	1	0.945061			
135.75-130.75									
L16				1	1	0.945061			
130.75-125.75									
L17				1	1	0.945061			
125.75-120.75									
L18				1	1	0.945061			
120.75-120.00									
L19				1	1	0.955342			
120.00-119.75									
L20				1	1	0.955342			
119.75-114.75									
L21				1	1	0.955342			
114.75-109.75									
L22				1	1	0.955342			
109.75-104.75									
L23				1	1	0.955342			
104.75-100.00									
L24				1	1	0.978753			
100.00-99.75									
L25				1	1	0.978753			
99.75-94.75									
L26				1	1	0.978753			
94.75-89.75									
L27				1	1	0.978753			
89.75-84.75									
L28				1	1	0.978753			
84.75-80.00									
L29				1	1	0.968574			
80.00-79.75									
L30				1	1	0.968574			
79.75-74.75									
L31				1	1	0.968574			
74.75-69.75									
L32				1	1	0.968574			
69.75-64.75									
L33				1	1	0.968574			
64.75-60.00									
L34				1	1	0.975432			
60.00-59.75									
L35				1	1	0.975432			
59.75-54.75									
L36				1	1	0.975432			
54.75-49.75									
L37				1	1	0.975432			
49.75-44.75									
L38				1	1	0.975432			
44.75-40.00									
L39				1	1	0.980151			
40.00-39.75									
L40				1	1	0.980151			
39.75-34.75									

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
L41 34.75-29.75				1	1	0.980151			
L42 29.75-24.75				1	1	0.980151			
L43 24.75-20.00				1	1	0.980151			
L44 20.00-19.75				1	1	0.980151			
L45 19.75-14.75				1	1	0.980151			
L46 14.75-9.75				1	1	0.980151			
L47 9.75-4.75				1	1	0.980151			
L48 4.75-0.00				1	1	0.980151			

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 klf
PiROD Climbing Rungs	C	No	Surface Ar (CaAa)	196.00 - 8.00	1	1	0.000 0.000	0.6250		0.00
LDF7-50A (1-5/8 FOAM)	A	No	Surface Ar (CaAa)	175.00 - 8.00	1	1	0.000 0.000	1.9800		0.00
LDF7-50A (1-5/8 FOAM)	A	No	Surface Ar (CaAa)	175.00 - 8.00	5	5	0.000 0.000	0.0000		0.00
Hybriflex	A	No	Surface Ar (CaAa)	165.00 - 8.00	4	4	0.000 0.000	1.2500		0.00
LDF7-50A (1-5/8 FOAM) - Reserved	B	No	Surface Ar (CaAa)	155.00 - 8.00	4	4	0.000 0.000	0.0000		0.00
LDF7-50A (1-5/8 FOAM)	B	No	Surface Ar (CaAa)	155.00 - 8.00	6	6	0.000 0.000	1.9800		0.00
1-5/8" Hybrid Cable	B	No	Surface Ar (CaAa)	155.00 - 8.00	2	2	0.000 0.000	1.9800		0.00
LDF5-50A (7/8 FOAM)	C	No	Surface Ar (CaAa)	75.00 - 8.00	1	1	0.000 0.000	1.0900		0.00
4" x 1-1/4" Mod Plate	A	No	Surface Af (CaAa)	22.00 - 18.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	B	No	Surface Af (CaAa)	22.00 - 18.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	C	No	Surface Af (CaAa)	22.00 - 18.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	A	No	Surface Af (CaAa)	42.00 - 38.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	B	No	Surface Af (CaAa)	42.00 - 38.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	C	No	Surface Af (CaAa)	42.00 - 38.00	2	2	0.000 0.000	1.2500	10.5000	0.02
6" x 1-1/2" Mod Plate	A	No	Surface Af (CaAa)	24.00 - 16.00	2	2	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	B	No	Surface Af (CaAa)	24.00 - 16.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	C	No	Surface Af (CaAa)	24.00 - 16.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	A	No	Surface Af (CaAa)	44.00 - 36.00	2	1	0.000 0.000	0.0000	0.0000	0.03

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 klf
6" x 1-1/2" Mod Plate	B	No	Surface Af (CaAa)	44.00 - 36.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	C	No	Surface Af (CaAa)	44.00 - 36.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	A	No	Surface Af (CaAa)	64.00 - 56.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	B	No	Surface Af (CaAa)	64.00 - 56.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	C	No	Surface Af (CaAa)	64.00 - 56.00	2	1	0.000 0.000	0.0000	0.0000	0.03

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 klf
Safety Line 3/8	C	No	No	CaAa (Out Of Face)	196.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.04 0.14 0.24	0.00 0.00 0.00
LDF7-50A (1-5/8 FOAM)	C	No	No	Inside Pole	195.00 - 8.00	8	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1-1/4" Fiber Cable	C	No	No	Inside Pole	195.00 - 8.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
LDF6-50A (1-1/4 FOAM)	A	No	No	Inside Pole	185.00 - 8.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1.496" Fiber Cable	A	No	No	Inside Pole	185.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
3/4" DC Power Line	A	No	No	Inside Pole	185.00 - 8.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

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
Pirod 16.5' LP Platform	C	None		0.0000	195.00	No Ice 1/2" Ice 1" Ice	20.80 28.10 35.40	20.80 28.10 35.40	1.80 2.07 2.33
(3) Commscope VSR-MA-B w/ 15.5' Horizontal Pipe	C	None		0.0000	193.00	No Ice 1/2" Ice 1" Ice	16.65 25.43 34.21	16.65 25.43 34.21	0.56 0.73 0.89
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 -2.00	50.0000	195.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	0.16 0.29 0.44

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 -2.00	30.0000	195.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	0.16 0.29 0.44
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 -2.00	20.0000	195.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	0.16 0.29 0.44
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	50.0000	195.00	No Ice 1/2" Ice 1" Ice	7.14 7.76 8.29	3.81 4.88 5.66	0.07 0.12 0.18
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	195.00	No Ice 1/2" Ice 1" Ice	7.14 7.76 8.29	3.81 4.88 5.66	0.07 0.12 0.18
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	195.00	No Ice 1/2" Ice 1" Ice	7.14 7.76 8.29	3.81 4.88 5.66	0.07 0.12 0.18
AIR6449 B41 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.45 7.02 7.53	3.92 4.64 5.25	0.13 0.18 0.24
AIR6449 B41 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.45 7.02 7.53	3.92 4.64 5.25	0.13 0.18 0.24
AIR6449 B41 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	6.45 7.02 7.53	3.92 4.64 5.25	0.13 0.18 0.24
RADIO 4449 B12/B71	A	From Centroid-Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	B	From Centroid-Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Centroid-Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
4424 B25	A	From Centroid-Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	1.32 1.47 1.62	0.09 0.11 0.13
4424 B25	B	From Centroid-Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	1.32 1.47 1.62	0.09 0.11 0.13
4424 B25	C	From Centroid-Leg	4.00 0.00 -2.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	1.32 1.47 1.62	0.09 0.11 0.13
RADIO 4415 B66A	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	0.87 1.00 1.13	0.05 0.06 0.08
RADIO 4415 B66A	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	0.87 1.00 1.13	0.05 0.06 0.08
RADIO 4415 B66A	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.86 2.03 2.20	0.87 1.00 1.13	0.05 0.06 0.08
DC4-48-60-8-20F	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.43 1.58 1.74	0.59 0.70 0.81	0.01 0.02 0.03
DC4-48-60-8-20F	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice 1" Ice	1.43 1.58 1.74	0.59 0.70 0.81	0.01 0.02 0.03

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
367.22 Sq In Generic Appurtenances	A	From Centroid-Leg	4.00 0.00 0.00	50.0000	195.00	No Ice 1/2" Ice 1" Ice	5.10 5.86 6.54	6.78 7.46 8.10	0.05 0.08 0.13
367.22 Sq In Generic Appurtenances	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	195.00	No Ice 1/2" Ice 1" Ice	5.10 5.10 6.54	6.78 7.46 8.10	0.05 0.08 0.13
367.22 Sq In Generic Appurtenances	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	195.00	No Ice 1/2" Ice 1" Ice	5.10 5.10 6.54	6.78 7.46 8.10	0.05 0.08 0.13
PiROD 13' Low Profile Platform (Monopole)	C	None		0.0000	185.00	No Ice 1/2" Ice 1" Ice	15.70 20.10 24.50	15.70 20.10 24.50	1.30 1.76 2.23
7770.00 w/Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	4.10 4.73 5.37	0.06 0.11 0.16
7770.00 w/Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	4.10 4.73 5.37	0.06 0.11 0.16
7770.00 w/Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	4.10 4.73 5.37	0.06 0.11 0.16
QS66512-2 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
QS66512-2 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	13.54 14.24 14.95	10.96 12.49 14.04	0.11 0.22 0.33
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	13.05 13.66 14.27	9.42 10.82 12.07	0.09 0.19 0.29
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	13.05 13.66 14.27	9.42 10.82 12.07	0.09 0.19 0.29
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	13.05 13.66 14.27	9.42 10.82 12.07	0.09 0.19 0.29
TT19-08BP111-001	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
TT19-08BP111-001	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
TT19-08BP111-001	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
(2) LGP21901	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP21901	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP21901	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01

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
(2) 782 10250	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.45 0.54 0.64	0.25 0.32 0.40	0.01 0.01 0.02
(2) 782 10250	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.45 0.54 0.64	0.25 0.32 0.40	0.01 0.01 0.02
(2) 782 10250	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.45 0.54 0.64	0.25 0.32 0.40	0.01 0.01 0.02
RRUS 11	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 11	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 11	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 12	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 12	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 12	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 32	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	0.08 0.10 0.14
RRUS 32	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	0.08 0.10 0.14
RRUS 32	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	0.08 0.10 0.14
RRUS 4426 B66	A	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.73 0.84 0.97	0.05 0.06 0.08
RRUS 4426 B66	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.73 0.84 0.97	0.05 0.06 0.08
RRUS 4426 B66	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.73 0.84 0.97	0.05 0.06 0.08
DC6-48-60-18-8F Surge Suppression Unit	B	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
DC6-48-60-18-8F Surge Suppression Unit	C	From Centroid-Leg	4.00 0.00 0.00	23.0000	185.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
Valmont Light Duty Tri-Bracket (1)	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice	1.76 2.08 2.40	1.76 2.08 2.40	0.05 0.07 0.09
APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	-10.0000	175.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08	4.46 5.39 6.20	0.05 0.09 0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXV18-206517S-C w/ Mount Pipe	B	From Leg	0.50 0.00 0.00	-10.0000	175.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08	4.46 5.39 6.20	0.05 0.09 0.14
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	-10.0000	175.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08	4.46 5.39 6.20	0.05 0.09 0.14
MTS 12.5' LP Platform	C	None		0.0000	165.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	40.0000	165.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	10.0000	165.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	80.0000	165.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
NNVV-65B-R4 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	40.0000	165.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	7.17 8.13 8.97	0.10 0.19 0.28
NNVV-65B-R4 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	10.0000	165.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	7.17 8.13 8.97	0.10 0.19 0.28
NNVV-65B-R4 w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	80.0000	165.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	7.17 8.13 8.97	0.10 0.19 0.28
RRH 1900 4x45 65 MHz	A	From Centroid-Face	4.00 0.00 0.00	40.0000	165.00	No Ice 1/2" Ice 1" Ice	2.29 2.50 2.71	2.29 2.50 2.71	0.06 0.08 0.11
RRH 1900 4x45 65 MHz	B	From Centroid-Face	4.00 0.00 0.00	10.0000	165.00	No Ice 1/2" Ice 1" Ice	2.29 2.50 2.71	2.29 2.50 2.71	0.06 0.08 0.11
RRH 1900 4x45 65 MHz	C	From Centroid-Face	4.00 0.00 0.00	80.0000	165.00	No Ice 1/2" Ice 1" Ice	2.29 2.50 2.71	2.29 2.50 2.71	0.06 0.08 0.11
800 MHz RRH	A	From Centroid-Face	4.00 0.00 0.00	40.0000	165.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
800 MHz RRH	B	From Centroid-Face	4.00 0.00 0.00	10.0000	165.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
800 MHz RRH	C	From Centroid-Face	4.00 0.00 0.00	80.0000	165.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
TD-RRH8x20-25 w/ Solar Shield	A	From Centroid-Face	4.00 0.00 0.00	40.0000	165.00	No Ice 1/2" Ice 1" Ice	3.70 3.95 4.20	1.29 1.46 1.64	0.07 0.09 0.12
TD-RRH8x20-25 w/ Solar Shield	B	From Centroid-Face	4.00 0.00 0.00	10.0000	165.00	No Ice 1/2" Ice 1" Ice	3.70 3.95 4.20	1.29 1.46 1.64	0.07 0.09 0.12
TD-RRH8x20-25 w/ Solar Shield	C	From Centroid-Face	4.00 0.00 0.00	80.0000	165.00	No Ice 1/2" Ice 1" Ice	3.70 3.95 4.20	1.29 1.46 1.64	0.07 0.09 0.12
RRH2X50-08 (800 MHz)	A	From Centroid-Face	4.00 0.00 0.00	40.0000	165.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09

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
RRH2X50-08 (800 MHz)	B	From Centroid-Face	4.00 0.00 0.00	10.0000	165.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
RRH2X50-08 (800 MHz)	C	From Centroid-Face	4.00 0.00 0.00	80.0000	165.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
PiROD 15' Low Profile Platform (Monopole)	C	None		0.0000	155.00	No Ice 1/2" Ice 1" Ice	17.30 22.10 26.90	17.30 22.10 26.90	1.50 2.03 2.56
PRK-SFS-L Stabilizer Kit (1)	C	None		0.0000	155.00	No Ice 1/2" Ice 1" Ice	14.55 16.00 17.00	14.55 16.00 17.00	0.52 0.60 0.68
BSAMNT SBS-2-2	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.43 1.92 2.29	0.03 0.04 0.05
BSAMNT SBS-2-2	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.43 1.92 2.29	0.03 0.04 0.05
BSAMNT SBS-2-2	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.43 1.92 2.29	0.03 0.04 0.05
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
(2) 844H90E-XYBAM w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	3.06 3.37 3.67	4.48 5.03 5.60	0.03 0.07 0.11
(2) 844H90E-XYBAM w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	3.06 3.37 3.67	4.48 5.03 5.60	0.03 0.07 0.11
(2) 844H90E-XYBAM w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	3.06 3.37 3.67	4.48 5.03 5.60	0.03 0.07 0.11
XXDWMM w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	2.64 3.19 3.64	2.18 2.80 3.29	0.05 0.08 0.11
XXDWMM w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	2.64 3.19 3.64	2.18 2.80 3.29	0.05 0.08 0.11
XXDWMM w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	2.64 3.19 3.64	2.18 2.80 3.29	0.05 0.08 0.11
B2B66A RRH PCS+AWS	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
B2B66A RRH PCS+AWS	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
B2B66A RRH PCS+AWS	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12

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
B5/B13 RRH	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.00 1.13 1.27	0.10 0.11 0.13
B5/B13 RRH	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.00 1.13 1.27	0.10 0.11 0.13
B5/B13 RRH	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.00 1.13 1.27	0.10 0.11 0.13
CBC78T-DS-43	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.25 0.32 0.39	0.01 0.01 0.02
CBC78T-DS-43	B	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.25 0.32 0.39	0.01 0.01 0.02
CBC78T-DS-43	C	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.25 0.32 0.39	0.01 0.01 0.02
DB-C1-12C-24AB-0Z	A	From Centroid-Face	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	4.06 4.32 4.58	3.10 3.34 3.58	0.03 0.07 0.11
Pipe Mount 3'x4.5"	C	From Leg	0.50 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.89 1.12 1.33	0.89 1.12 1.33	0.03 0.04 0.05
GPS-TMG-HR-26N	C	From Leg	0.50 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.13 0.18 0.24	0.13 0.18 0.24	0.00 0.00 0.01
Bridge Stiffener (3.25 sq ft)	A	From Leg	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	B	From Leg	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	C	From Leg	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	A	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	B	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	C	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	A	From Leg	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	B	From Leg	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00
Bridge Stiffener (3.25 sq ft)	C	From Leg	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	3.25 3.60 3.94	0.74 1.25 1.73	0.00 0.00 0.00

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	196 - 195	17.346	48	0.8178	0.0010
L2	195 - 190	17.175	48	0.8178	0.0010
L3	190 - 185	16.319	48	0.8160	0.0010
L4	185 - 180	15.468	48	0.8086	0.0011
L5	180 - 175	14.629	48	0.7932	0.0011
L6	175 - 170	13.805	48	0.7803	0.0011
L7	170 - 165	12.997	48	0.7620	0.0011
L8	165 - 160	12.211	48	0.7380	0.0011
L9	160 - 155	11.453	48	0.7074	0.0010
L10	155 - 150	10.724	48	0.6855	0.0009
L11	150 - 145	10.019	48	0.6586	0.0008
L12	145 - 140	9.346	48	0.6262	0.0007
L13	140 - 136	8.710	48	0.5880	0.0006
L14	136 - 135.75	8.226	48	0.5662	0.0005
L15	135.75 - 130.75	8.197	48	0.5654	0.0005
L16	130.75 - 125.75	7.614	48	0.5470	0.0005
L17	125.75 - 120.75	7.052	48	0.5263	0.0005
L18	120.75 - 120	6.513	48	0.5034	0.0004
L19	120 - 119.75	6.434	48	0.4997	0.0004
L20	119.75 - 114.75	6.408	48	0.4989	0.0004
L21	114.75 - 109.75	5.895	48	0.4807	0.0004
L22	109.75 - 104.75	5.402	48	0.4608	0.0004
L23	104.75 - 100	4.930	48	0.4392	0.0003
L24	100 - 99.75	4.504	48	0.4170	0.0003
L25	99.75 - 94.75	4.483	48	0.4161	0.0003
L26	94.75 - 89.75	4.056	48	0.3974	0.0003
L27	89.75 - 84.75	3.651	48	0.3773	0.0003
L28	84.75 - 80	3.267	48	0.3558	0.0002
L29	80 - 79.75	2.924	48	0.3340	0.0002
L30	79.75 - 74.75	2.906	48	0.3332	0.0002
L31	74.75 - 69.75	2.567	48	0.3151	0.0002
L32	69.75 - 64.75	2.247	48	0.2959	0.0002
L33	64.75 - 60	1.947	48	0.2756	0.0002
L34	60 - 59.75	1.683	48	0.2553	0.0002
L35	59.75 - 54.75	1.670	48	0.2544	0.0002
L36	54.75 - 49.75	1.413	48	0.2359	0.0001
L37	49.75 - 44.75	1.176	48	0.2165	0.0001
L38	44.75 - 40	0.960	42	0.1960	0.0001
L39	40 - 39.75	0.775	42	0.1757	0.0001
L40	39.75 - 34.75	0.766	42	0.1748	0.0001
L41	34.75 - 29.75	0.593	42	0.1558	0.0001
L42	29.75 - 24.75	0.440	42	0.1360	0.0001
L43	24.75 - 20	0.308	42	0.1153	0.0001
L44	20 - 19.75	0.204	42	0.0948	0.0001
L45	19.75 - 14.75	0.199	42	0.0937	0.0001
L46	14.75 - 9.75	0.112	42	0.0713	0.0000
L47	9.75 - 4.75	0.050	42	0.0480	0.0000
L48	4.75 - 0	0.012	42	0.0238	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Pirod 16.5' LP Platform	48	17.175	0.8178	0.0010	83754
193.00	(3) Commscope VSR-MA-B w/ 15.5' Horizontal Pipe	48	16.833	0.8175	0.0010	83754
185.00	PiROD 13' Low Profile Platform (Monopole)	48	15.468	0.8086	0.0011	25852
175.00	Valmont Light Duty Tri-Bracket (1)	48	13.805	0.7803	0.0011	18314
165.00	MTS 12.5' LP Platform	48	12.211	0.7380	0.0011	10512
155.00	PiROD 15' Low Profile Platform (Monopole)	48	10.724	0.6855	0.0009	11807
120.00	Bridge Stiffener (3.25 sq ft)	48	6.434	0.4997	0.0004	13809
100.00	Bridge Stiffener (3.25 sq ft)	48	4.504	0.4170	0.0003	13635
80.00	Bridge Stiffener (3.25 sq ft)	48	2.924	0.3340	0.0002	14002
75.00	Pipe Mount 3'x4.5"	48	2.583	0.3160	0.0002	15424

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	196 - 195	78.085	20	3.6835	0.0043
L2	195 - 190	77.314	20	3.6835	0.0043
L3	190 - 185	73.461	20	3.6754	0.0044
L4	185 - 180	69.631	20	3.6419	0.0049
L5	180 - 175	65.852	20	3.5728	0.0049
L6	175 - 170	62.141	20	3.5147	0.0049
L7	170 - 165	58.504	20	3.4320	0.0049
L8	165 - 160	54.966	20	3.3236	0.0049
L9	160 - 155	51.557	20	3.1855	0.0043
L10	155 - 150	48.273	20	3.0869	0.0039
L11	150 - 145	45.103	20	2.9660	0.0035
L12	145 - 140	42.073	20	2.8198	0.0031
L13	140 - 136	39.209	20	2.6479	0.0027
L14	136 - 135.75	37.032	20	2.5499	0.0024
L15	135.75 - 130.75	36.898	20	2.5460	0.0024
L16	130.75 - 125.75	34.275	20	2.4632	0.0023
L17	125.75 - 120.75	31.745	20	2.3701	0.0021
L18	120.75 - 120	29.317	20	2.2668	0.0019
L19	120 - 119.75	28.962	20	2.2504	0.0019
L20	119.75 - 114.75	28.844	20	2.2465	0.0019
L21	114.75 - 109.75	26.534	20	2.1646	0.0018
L22	109.75 - 104.75	24.315	20	2.0750	0.0016
L23	104.75 - 100	22.192	20	1.9776	0.0015
L24	100 - 99.75	20.275	20	1.8777	0.0014
L25	99.75 - 94.75	20.176	20	1.8737	0.0014
L26	94.75 - 89.75	18.258	20	1.7892	0.0013
L27	89.75 - 84.75	16.432	20	1.6986	0.0012
L28	84.75 - 80	14.703	20	1.6018	0.0011
L29	80 - 79.75	13.158	20	1.5039	0.0010
L30	79.75 - 74.75	13.080	20	1.5000	0.0010
L31	74.75 - 69.75	11.551	20	1.4185	0.0009
L32	69.75 - 64.75	10.111	20	1.3321	0.0009
L33	64.75 - 60	8.763	20	1.2407	0.0008
L34	60 - 59.75	7.574	20	1.1492	0.0007
L35	59.75 - 54.75	7.514	20	1.1451	0.0007
L36	54.75 - 49.75	6.359	20	1.0618	0.0006

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L37	49.75 - 44.75	5.292	20	0.9742	0.0006
L38	44.75 - 40	4.320	8	0.8823	0.0005
L39	40 - 39.75	3.487	8	0.7909	0.0005
L40	39.75 - 34.75	3.446	8	0.7868	0.0005
L41	34.75 - 29.75	2.666	8	0.7012	0.0004
L42	29.75 - 24.75	1.979	8	0.6119	0.0003
L43	24.75 - 20	1.386	8	0.5188	0.0003
L44	20 - 19.75	0.916	8	0.4267	0.0002
L45	19.75 - 14.75	0.893	8	0.4217	0.0002
L46	14.75 - 9.75	0.504	8	0.3208	0.0002
L47	9.75 - 4.75	0.223	8	0.2159	0.0001
L48	4.75 - 0	0.054	8	0.1071	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Pirod 16.5' LP Platform	20	77.314	3.6835	0.0048	18795
193.00	(3) Commscope VSR-MA-B w/ 15.5' Horizontal Pipe	20	75.772	3.6821	0.0048	18795
185.00	PiROD 13' Low Profile Platform (Monopole)	20	69.631	3.6419	0.0049	5804
175.00	Valmont Light Duty Tri-Bracket (1)	20	62.141	3.5147	0.0049	4103
165.00	MTS 12.5' LP Platform	20	54.966	3.3236	0.0049	2350
155.00	PiROD 15' Low Profile Platform (Monopole)	20	48.273	3.0869	0.0039	2636
120.00	Bridge Stiffener (3.25 sq ft)	20	28.962	2.2504	0.0019	3075
100.00	Bridge Stiffener (3.25 sq ft)	20	20.275	1.8777	0.0014	3033
80.00	Bridge Stiffener (3.25 sq ft)	20	13.158	1.5039	0.0010	3112
75.00	Pipe Mount 3'x4.5"	20	11.626	1.4227	0.0009	3428

CCIpole

per TIA-222- H

Site BU: US-CT-1002

Work Order: Kettleton

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	196	1		0	18	18	0.375		A53-B-42
2	195	15		0	24.00	24	0.375		A53-B-42
3	180	20		0	30.00	30	0.375		A53-B-42
4	160	20		0	36.00	36	0.375		A53-B-42
5	140	20		0	42.00	42	0.375		A53-B-42
6	120	20		0	48.00	48	0.375		A53-B-42
7	100	20		0	54.00	54	0.375		A53-B-42
8	80	20		0	60.00	60	0.375		A53-B-42
9	60	20		0	60.00	60	0.5		A53-B-42
10	40	40		0	60.00	60	0.625		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	20	plate	6-1/2"x1-1/2" FP	3	0						120						240					
2	20	40	plate	6-1/2"x1-1/2" FP	3	0						120						240					
3	40	60	plate	6-1/2"x1-1/2" FP	3	0						120						240					
4	60	80	plate	6-1/2"x1-1/2" FP	3	0						120						240					
5	80	100	plate	6-1/2"x1-1/2" FP	3	0						120						240					
6	100	120	plate	6-1/2"x1-1/2" FP	3	0						120						240					
7	120	136	plate	6-1/2"x1-1/2" FP	3	0						120						240					
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65
2	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65
3	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65
4	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65
5	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65
6	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65
7	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	196 - 195	1	0	0	18.000	18.000	0.375	A53-B-42	1.000
2	195 - 190	5		0	24.000	24.000	0.375	A53-B-42	1.000
3	190 - 185	5		0	24.000	24.000	0.375	A53-B-42	1.000
4	185 - 180	5	0	0	24.000	24.000	0.375	A53-B-42	1.000
5	180 - 175	5		0	30.000	30.000	0.375	A53-B-42	1.000
6	175 - 170	5		0	30.000	30.000	0.375	A53-B-42	1.000
7	170 - 165	5		0	30.000	30.000	0.375	A53-B-42	1.000
8	165 - 160	5	0	0	30.000	30.000	0.375	A53-B-42	1.000
9	160 - 155	5		0	36.000	36.000	0.375	A53-B-42	1.000
10	155 - 150	5		0	36.000	36.000	0.375	A53-B-42	1.000
11	150 - 145	5		0	36.000	36.000	0.375	A53-B-42	1.000
12	145 - 140	5	0	0	36.000	36.000	0.375	A53-B-42	1.000
13	140 - 136	4		0	42.000	42.000	0.375	A53-B-42	1.000
14	136 - 135.75	0.25		0	42.000	42.000	0.6375	A53-B-42	0.945
15	135.75 - 130.75	5		0	42.000	42.000	0.6375	A53-B-42	0.945
16	130.75 - 125.75	5		0	42.000	42.000	0.6375	A53-B-42	0.945
17	125.75 - 120.75	5		0	42.000	42.000	0.6375	A53-B-42	0.945
18	120.75 - 120	0.75	0	0	42.000	42.000	0.6375	A53-B-42	0.945
19	120 - 119.75	0.25		0	48.000	48.000	0.6	A53-B-42	0.955
20	119.75 - 114.75	5		0	48.000	48.000	0.6	A53-B-42	0.955
21	114.75 - 109.75	5		0	48.000	48.000	0.6	A53-B-42	0.955
22	109.75 - 104.75	5		0	48.000	48.000	0.6	A53-B-42	0.955
23	104.75 - 100	4.75	0	0	48.000	48.000	0.6	A53-B-42	0.955
24	100 - 99.75	0.25		0	54.000	54.000	0.5625	A53-B-42	0.979
25	99.75 - 94.75	5		0	54.000	54.000	0.5625	A53-B-42	0.979
26	94.75 - 89.75	5		0	54.000	54.000	0.5625	A53-B-42	0.979
27	89.75 - 84.75	5		0	54.000	54.000	0.5625	A53-B-42	0.979
28	84.75 - 80	4.75	0	0	54.000	54.000	0.5625	A53-B-42	0.979
29	80 - 79.75	0.25		0	60.000	60.000	0.55	A53-B-42	0.969
30	79.75 - 74.75	5		0	60.000	60.000	0.55	A53-B-42	0.969
31	74.75 - 69.75	5		0	60.000	60.000	0.55	A53-B-42	0.969
32	69.75 - 64.75	5		0	60.000	60.000	0.55	A53-B-42	0.969
33	64.75 - 60	4.75	0	0	60.000	60.000	0.55	A53-B-42	0.969
34	60 - 59.75	0.25		0	60.000	60.000	0.675	A53-B-42	0.975
35	59.75 - 54.75	5		0	60.000	60.000	0.675	A53-B-42	0.975
36	54.75 - 49.75	5		0	60.000	60.000	0.675	A53-B-42	0.975
37	49.75 - 44.75	5		0	60.000	60.000	0.675	A53-B-42	0.975
38	44.75 - 40	4.75	0	0	60.000	60.000	0.675	A53-B-42	0.975
39	40 - 39.75	0.25		0	60.000	60.000	0.8	A53-B-42	0.980
40	39.75 - 34.75	5		0	60.000	60.000	0.8	A53-B-42	0.980
41	34.75 - 29.75	5		0	60.000	60.000	0.8	A53-B-42	0.980
42	29.75 - 24.75	5		0	60.000	60.000	0.8	A53-B-42	0.980
43	24.75 - 20	4.75		0	60.000	60.000	0.8	A53-B-42	0.980
44	20 - 19.75	0.25		0	60.000	60.000	0.8	A53-B-42	0.980
45	19.75 - 14.75	5		0	60.000	60.000	0.8	A53-B-42	0.980
46	14.75 - 9.75	5		0	60.000	60.000	0.8	A53-B-42	0.980
47	9.75 - 4.75	5		0	60.000	60.000	0.8	A53-B-42	0.980
48	4.75 - 0	4.75		0	60.000	60.000	0.8	A53-B-42	0.980

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	196 - 195	0.09	0.03	0.05
2	195 - 190	5.38	27.96	7.00
3	190 - 185	6.02	63.75	7.32
4	185 - 180	10.07	125.40	12.47
5	180 - 175	10.93	188.67	12.85
6	175 - 170	12.02	257.14	13.89
7	170 - 165	12.92	327.44	14.25
8	165 - 160	16.64	416.39	17.98
9	160 - 155	17.72	507.33	18.40
10	155 - 150	22.88	624.85	23.69
11	150 - 145	24.05	744.21	24.07
12	145 - 140	25.22	865.42	24.43
13	140 - 136	26.26	963.81	24.78
14	136 - 135.75	26.36	970.00	24.80
15	135.75 - 130.75	28.23	1095.19	25.28
16	130.75 - 125.75	30.12	1222.72	25.74
17	125.75 - 120.75	32.01	1352.51	26.19
18	120.75 - 120	32.29	1372.17	26.25
19	120 - 119.75	32.39	1378.80	26.51
20	119.75 - 114.75	34.41	1512.61	27.02
21	114.75 - 109.75	36.44	1648.92	27.51
22	109.75 - 104.75	38.48	1787.64	27.99
23	104.75 - 100	40.41	1921.57	28.42
24	100 - 99.75	40.52	1928.73	28.67
25	99.75 - 94.75	42.70	2073.34	29.19
26	94.75 - 89.75	44.88	2220.49	29.69
27	89.75 - 84.75	47.06	2370.08	30.17
28	84.75 - 80	49.14	2514.35	30.60
29	80 - 79.75	49.26	2522.05	30.83
30	79.75 - 74.75	51.62	2677.58	31.39
31	74.75 - 69.75	53.95	2835.72	31.88
32	69.75 - 64.75	56.29	2996.27	32.36
33	64.75 - 60	59.39	3150.97	32.80
34	60 - 59.75	59.59	3159.17	32.82
35	59.75 - 54.75	63.23	3324.41	33.29
36	54.75 - 49.75	66.04	3491.87	33.72
37	49.75 - 44.75	68.86	3661.38	34.11
38	44.75 - 40	72.67	3824.23	34.48
39	40 - 39.75	72.92	3832.85	34.49
40	39.75 - 34.75	77.25	4006.22	34.87
41	34.75 - 29.75	80.54	4181.33	35.20
42	29.75 - 24.75	83.84	4358.02	35.50
43	24.75 - 20	88.10	4527.25	35.79
44	20 - 19.75	88.36	4536.20	35.79
45	19.75 - 14.75	92.70	4715.80	36.07
46	14.75 - 9.75	96.01	4896.70	36.32
47	9.75 - 4.75	99.14	5078.78	36.54
48	4.75 - 0	102.04	5252.74	36.74

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
196 - 195	Pole	TP18x18x0.375	Pole	0.0%	Pass
195 - 190	Pole	TP24x24x0.375	Pole	5.0%	Pass
190 - 185	Pole	TP24x24x0.375	Pole	10.8%	Pass
185 - 180	Pole	TP24x24x0.375	Pole	21.1%	Pass
180 - 175	Pole	TP30x30x0.375	Pole	20.8%	Pass
175 - 170	Pole	TP30x30x0.375	Pole	28.1%	Pass
170 - 165	Pole	TP30x30x0.375	Pole	35.6%	Pass
165 - 160	Pole	TP30x30x0.375	Pole	45.3%	Pass
160 - 155	Pole	TP36x36x0.375	Pole	39.1%	Pass
155 - 150	Pole	TP36x36x0.375	Pole	48.3%	Pass
150 - 145	Pole	TP36x36x0.375	Pole	57.3%	Pass
145 - 140	Pole	TP36x36x0.375	Pole	66.4%	Pass
140 - 136	Pole	TP42x42x0.375	Pole	55.3%	Pass
136 - 135.75	Pole + Reinf.	TP42x42x0.6375	Pole	33.4%	Pass
135.75 - 130.75	Pole + Reinf.	TP42x42x0.6375	Pole	37.7%	Pass
130.75 - 125.75	Pole + Reinf.	TP42x42x0.6375	Pole	42.0%	Pass
125.75 - 120.75	Pole + Reinf.	TP42x42x0.6375	Pole	46.5%	Pass
120.75 - 120	Pole + Reinf.	TP42x42x0.6375	Pole	47.1%	Pass
120 - 119.75	Pole + Reinf.	TP48x48x0.6	Pole	38.9%	Pass
119.75 - 114.75	Pole + Reinf.	TP48x48x0.6	Pole	42.6%	Pass
114.75 - 109.75	Pole + Reinf.	TP48x48x0.6	Pole	46.4%	Pass
109.75 - 104.75	Pole + Reinf.	TP48x48x0.6	Pole	50.3%	Pass
104.75 - 100	Pole + Reinf.	TP48x48x0.6	Pole	54.1%	Pass
100 - 99.75	Pole + Reinf.	TP54x54x0.5625	Pole	45.4%	Pass
99.75 - 94.75	Pole + Reinf.	TP54x54x0.5625	Pole	48.7%	Pass
94.75 - 89.75	Pole + Reinf.	TP54x54x0.5625	Pole	52.2%	Pass
89.75 - 84.75	Pole + Reinf.	TP54x54x0.5625	Pole	55.7%	Pass
84.75 - 80	Pole + Reinf.	TP54x54x0.5625	Pole	59.0%	Pass
80 - 79.75	Pole + Reinf.	TP60x60x0.55	Pole	50.2%	Pass
79.75 - 74.75	Pole + Reinf.	TP60x60x0.55	Pole	53.3%	Pass
74.75 - 69.75	Pole + Reinf.	TP60x60x0.55	Pole	56.4%	Pass
69.75 - 64.75	Pole + Reinf.	TP60x60x0.55	Pole	59.6%	Pass
64.75 - 60	Pole + Reinf.	TP60x60x0.55	Pole	62.7%	Pass
60 - 59.75	Pole + Reinf.	TP60x60x0.675	Pole	50.0%	Pass
59.75 - 54.75	Pole + Reinf.	TP60x60x0.675	Pole	52.6%	Pass
54.75 - 49.75	Pole + Reinf.	TP60x60x0.675	Pole	55.2%	Pass
49.75 - 44.75	Pole + Reinf.	TP60x60x0.675	Pole	57.9%	Pass
44.75 - 40	Pole + Reinf.	TP60x60x0.675	Pole	60.5%	Pass
40 - 39.75	Pole + Reinf.	TP60x60x0.8	Pole	50.0%	Pass
39.75 - 34.75	Pole + Reinf.	TP60x60x0.8	Pole	52.3%	Pass
34.75 - 29.75	Pole + Reinf.	TP60x60x0.8	Pole	54.5%	Pass
29.75 - 24.75	Pole + Reinf.	TP60x60x0.8	Pole	56.8%	Pass
24.75 - 20	Pole + Reinf.	TP60x60x0.8	Pole	59.1%	Pass
20 - 19.75	Pole + Reinf.	TP60x60x0.8	Pole	59.2%	Pass
19.75 - 14.75	Pole + Reinf.	TP60x60x0.8	Pole	61.5%	Pass
14.75 - 9.75	Pole + Reinf.	TP60x60x0.8	Pole	63.9%	Pass
9.75 - 4.75	Pole + Reinf.	TP60x60x0.8	Pole	66.3%	Pass
4.75 - 0	Pole + Reinf.	TP60x60x0.8	Pole	68.5%	Pass
				Summary	
			Pole	68.5%	Pass
			Reinforcement	64.8%	Pass
			Overall	68.5%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7
196 - 195	807	n/a	807	20.76	n/a	20.76	0.0%							
195 - 190	1942	n/a	1942	27.83	n/a	27.83	5.0%							
190 - 185	1942	n/a	1942	27.83	n/a	27.83	10.8%							
185 - 180	1942	n/a	1942	27.83	n/a	27.83	21.1%							
180 - 175	3829	n/a	3829	34.90	n/a	34.90	20.8%							
175 - 170	3829	n/a	3829	34.90	n/a	34.90	28.1%							
170 - 165	3829	n/a	3829	34.90	n/a	34.90	35.6%							
165 - 160	3829	n/a	3829	34.90	n/a	34.90	45.3%							
160 - 155	6659	n/a	6659	41.97	n/a	41.97	39.1%							
155 - 150	6659	n/a	6659	41.97	n/a	41.97	48.3%							
150 - 145	6659	n/a	6659	41.97	n/a	41.97	57.3%							
145 - 140	6659	n/a	6659	41.97	n/a	41.97	66.4%							
140 - 136	10622	n/a	10622	49.04	n/a	49.04	55.3%							
136 - 135.75	10622	6973	17594	49.04	29.25	78.29	33.4%							31.4%
135.75 - 130.75	10622	6973	17594	49.04	29.25	78.29	37.7%							34.4%
130.75 - 125.75	10622	6973	17594	49.04	29.25	78.29	42.0%							38.4%
125.75 - 120.75	10622	6973	17594	49.04	29.25	78.29	46.5%							42.4%
120.75 - 120	10622	6973	17594	49.04	29.25	78.29	47.1%							44.2%
120 - 119.75	15908	9013	24921	56.11	29.25	85.36	38.9%						35.9%	
119.75 - 114.75	15908	9013	24921	56.11	29.25	85.36	42.6%						38.2%	
114.75 - 109.75	15908	9013	24921	56.11	29.25	85.36	46.4%						41.6%	
109.75 - 104.75	15908	9013	24921	56.11	29.25	85.36	50.3%						45.1%	
104.75 - 100	15908	9013	24921	56.11	29.25	85.36	54.1%						49.8%	
100 - 99.75	22710	11316	34026	63.18	29.25	92.43	45.4%					41.2%		
99.75 - 94.75	22710	11316	34026	63.18	29.25	92.43	48.7%					43.1%		
94.75 - 89.75	22710	11316	34026	63.18	29.25	92.43	52.2%					46.1%		
89.75 - 84.75	22710	11316	34026	63.18	29.25	92.43	55.7%					49.2%		
84.75 - 80	22710	11316	34026	63.18	29.25	92.43	59.0%					53.6%		
80 - 79.75	31217	13883	45100	70.24	29.25	99.49	50.2%				45.1%			
79.75 - 74.75	31217	13883	45100	70.24	29.25	99.49	53.3%				46.6%			
74.75 - 69.75	31217	13883	45100	70.24	29.25	99.49	56.4%				49.3%			
69.75 - 64.75	31217	13883	45100	70.24	29.25	99.49	59.6%				52.1%			
64.75 - 60	31217	13883	45100	70.24	29.25	99.49	62.7%				56.3%			
60 - 59.75	41363	13883	55246	93.46	29.25	122.71	50.0%			46.1%				
59.75 - 54.75	41363	13883	55246	93.46	29.25	122.71	52.6%			47.2%				
54.75 - 49.75	41363	13883	55246	93.46	29.25	122.71	55.2%			49.6%				
49.75 - 44.75	41363	13883	55246	93.46	29.25	122.71	57.9%			52.0%				
44.75 - 40	41363	13883	55246	93.46	29.25	122.71	60.5%			55.8%				
40 - 39.75	51381	13883	65264	116.58	29.25	145.83	50.0%		47.3%					
39.75 - 34.75	51381	13883	65264	116.58	29.25	145.83	52.3%		48.1%					
34.75 - 29.75	51381	13883	65264	116.58	29.25	145.83	54.5%		50.2%					
29.75 - 24.75	51381	13883	65264	116.58	29.25	145.83	56.8%		52.3%					
24.75 - 20	51381	13883	65264	116.58	29.25	145.83	59.1%		55.9%					
20 - 19.75	51381	13883	65264	116.58	29.25	145.83	59.2%	56.0%						
19.75 - 14.75	51381	13883	65264	116.58	29.25	145.83	61.5%	56.7%						
14.75 - 9.75	51381	13883	65264	116.58	29.25	145.83	63.9%	58.8%						
9.75 - 4.75	51381	13883	65264	116.58	29.25	145.83	66.3%	61.0%						
4.75 - 0	51381	13883	65264	116.58	29.25	145.83	68.5%	64.8%						

Note: Section capacity checked in 5 degree increments.

APPENDIX C

Additional Calculations

Existing Flange Connection @ **20'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	995.7	k-ft
Axial =	88.1	k
Shear =	35.787	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1.75	in
Bolt Circle =	50	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	105	ksi
A_b =	2.405	in^2
A_n =	1.9	in^2
ϕR_{nv} =	94.71	k
ϕR_{nt} =	149.63	k
ϕR_{nt} (adjusted)=	149.61	k
V_{ub} =	1.12	k
T_{ub} =	27.10	k
Max Comp. on Bolt =	32.61	k

Prying Action Check
N/A for stiffened flange

Shear Capacity =	1.2%
Tensile Capacity =	18.1%
Interaction Capacity =	3.3%
Bolt Capacity =	**18.1% OK**

Upper Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
ϕ_f =	0.9	
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.75	k-in
ϕM_n =	75.94	k-in
Upper Plate Capacity =	**27.3% OK**	

Upper Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	14.64	k
Vert. Weld Capacity =	*Not Verified*	
Horiz. Weld Capacity =	*Not Verified*	
Stiffener Capacity =	26.7%	
Controlling Capacity =	**26.7%**	**OK**

Pole Information

Shaft Diam. (Upper) =	60	in
Thickness (Upper)=	0.625	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.625	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.75	k-in
ϕM_n =	75.94	k-in
Lower Plate Capacity =	**27.3% OK**	

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	14.64	k
Vert. Weld Capacity =	*Not Verified*	
Horiz. Weld Capacity =	*Not Verified*	
Stiffener Capacity =	26.7%	
Controlling Capacity =	**26.7%**	**OK**

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD GROUP
Engineers • Architects • Planners

Project #: 2020791.CT1002.11

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 20'

Moment from TNX (M) =	4527.25	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	88.10	kip					
Inner Bolt Diameter =	1.25	in					
Inner Bolt Area (A_{inner}) =	1.23	in^2	Inner Bolt Circle (BC_{inner}) =	47	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.12	in^4	Total Area ($A_{tot.in}$) =	39.27	in^2		
Number Inner Bolts (N_{inner}) =	32		Percent Total Area (η_{in}) =	24.2%		Axial, Inner Bolts ($P*\eta_{in}$) =	21.29 kips
Outer Bolt Diameter =	1.25	in					
Outer Bolt Area (A_{outer}) =	1.23	in^2	Outer Bolt Circle (BC_{outer}) =	53	in		
Outer Bolt MOI ($I_{o.outer}$) =	0.12	in^4	Total Area ($A_{tot.out}$) =	39.27	in^2		
Number Outer Bolts (N_{outer}) =	32		Percent Total Area (η_{out}) =	24.2%		Axial, Outer Bolts ($P*\eta_{out}$) =	21.29 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	1.21875	in		
Bridge Stiffener Unbraced Length =	30.00	in	Net Bridge Stiffener Area ($A_{e.pl}$) =	7.17188	in		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	60.75	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	54.00	in^2		
Number Bridge Stiffeners (N_{pl})	6		Percent Total Area (η_{pl}) =	33.2%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	29.27 kips
Bridge Stiffener Width =	4.00	in					
Bridge Stiffener Thickness =	1.25	in	Connection Bolt Hole Size =	1.21875	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$) =	3.47656	in		
Bridge Stiffener Area (A_{pl}) =	5.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	60.625	in		
Bridge Stiffener MOI (I_o) =	6.67	in^4	Total Area ($A_{tot.pl}$) =	30.00	in^2		
Number Bridge Stiffeners (N_{pl})	6		Percent Total Area (η_{pl}) =	18.5%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	16.26 kips

I_{inner} =	10847.24	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{outer} =	13792.48	$in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8 + N_{outer}*I_{o.outer})$
I_{pl} =	25073.30	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{pl} =	13822.71	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	63535.73	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	24.0	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.outer}$ =	27.1	kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} - P*\eta_{out}/N_{outer})$
$P_{u.t.pl}$ =	228.9	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	238.6	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$P_{u.t.pl}$ =	126.9	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	132.3	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	96.64	kips	
Bolt Rating =	28.1%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	58.890	
F_e =	82.53	ksi
F_{cr} =	38.80	ksi
$ØP_{nc}$ =	314.29	kips
$ØP_{nt}$ =	349.63	kips
Bridge Stiffener Rating =	75.9%	OK

Existing Flange Connection @ 40'
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	1019.5	k-ft
Axial =	72.666	k
Shear =	34.482	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1.75	in
Bolt Circle =	50	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	105	ksi
A_b =	2.405	in^2
A_n =	1.9	in^2
ϕR_{nv} =	94.71	k
ϕR_{nt} =	149.63	k
ϕR_{nt} (adjusted)=	149.62	k
V_{ub} =	1.08	k
T_{ub} =	28.30	k
Max Comp. on Bolt =	32.84	k

Prying Action Check
N/A for stiffened flange

Shear Capacity =	1.1%
Tensile Capacity =	18.9%
Interaction Capacity =	3.6%
Bolt Capacity =	**18.9% OK**

Upper Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
ϕ_f =	0.9	
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.90	k-in
ϕM_n =	75.94	k-in
Upper Plate Capacity =	**27.5% OK**	

Upper Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	16.43	k
Vert. Weld Capacity =	*Not Verified*	
Horiz. Weld Capacity =	*Not Verified*	
Stiffener Capacity =	30.0%	
Controlling Capacity =	**30.0%**	**OK**

Pole Information

Shaft Diam. (Upper) =	60	in
Thickness (Upper)=	0.5	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.625	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.90	k-in
ϕM_n =	75.94	k-in
Lower Plate Capacity =	**27.5% OK**	

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	14.71	k
Vert. Weld Capacity =	*Not Verified*	
Horiz. Weld Capacity =	*Not Verified*	
Stiffener Capacity =	26.8%	
Controlling Capacity =	**26.8%**	**OK**

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD Engineering and Architecture Professional Corporation

GPD GROUP

Engineers • Architects • Planners

Project #: 2020791.CT1002.11

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 40'

Moment from TNX (M) =	3824.23 kip-ft	ASIF =	1.00				
Axial from TNX (P) =	72.67 kip						
Inner Bolt Diameter =	1.25 in						
Inner Bolt Area (A_{inner}) =	1.23 in^2	Inner Bolt Circle (BC_{inner}) =	47 in				
Inner Bolt MOI ($I_{o.inner}$) =	0.12 in^4	Total Area ($A_{tot.in}$) =	39.27 in^2				
Number Inner Bolts (N_{inner}) =	32	Percent Total Area (η_{in}) =	29.6%	Axial, Inner Bolts ($P*\eta_{in}$) =	21.53 kips		
Outer Bolt Diameter =	1.25 in						
Outer Bolt Area (A_{outer}) =	1.23 in^2	Outer Bolt Circle (BC_{outer}) =	53 in				
Outer Bolt MOI ($I_{o.outer}$) =	0.12 in^4	Total Area ($A_{tot.out}$) =	39.27 in^2				
Number Outer Bolts (N_{outer}) =	32	Percent Total Area (η_{out}) =	29.6%	Axial, Outer Bolts ($P*\eta_{out}$) =	21.53 kips		
Bridge Stiffener Width =	6.00 in						
Bridge Stiffener Thickness =	1.50 in	Connection Bolt Hole Size =	1.18 in				
Bridge Stiffener Unbraced Length =	30.00 in	Net Bridge Stiffener Area ($A_{e.pl}$)	7.23 in				
Bridge Stiffener Area (A_{pl}) =	9.00 in^2	Bridge Stiffener Circle (BC_{pl}) =	63 in				
Bridge Stiffener MOI (I_o) =	27.00 in^4	Total Area ($A_{tot.pl}$) =	54.00 in^2				
Number Bridge Stiffeners (N_{pl})	6	Percent Total Area (η_{pl}) =	40.7%	Axial, Bridge Stiffener ($P*\eta_{pl}$) =	29.61 kips		

I_{inner} =	10847.24 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$				
I_{outer} =	13792.48 $in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8 + N_{outer}*I_{o.outer})$				
I_{pl} =	26952.75 $in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$				
I_{tot} =	51592.47 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$				
$P_{u.t.inner}$ =	25.0 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$				
$P_{u.t.outer}$ =	28.3 kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} - P*\eta_{out}/N_{outer})$				
$P_{u.t.pl}$ =	247.2 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$				
$P_{u.c.pl}$ =	257.1 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$				
$ØP_{nt.bolt}$ =	96.64 kips					
Bolt Rating =	29.2% OK					

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	58.890	
F_e =	82.53	ksi
F_{cr} =	38.80	ksi
$ØP_{nc}$ =	314.29	kips
$ØP_{nt}$ =	352.46	kips
Bridge Stiffener Rating =	81.8%	OK

Existing Flange Connection @ **60'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	738.5	k-ft
Axial =	59.39	k
Shear =	32.80	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1.75	in
Bolt Circle =	44	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	105	ksi
A_b =	2.405	in^2
A_n =	1.9	in^2
ϕR_{nv} =	94.71	k
ϕR_{nt} =	149.63	k
ϕR_{nt} (adjusted)=	149.62	k
V_{ub} =	1.03	k
T_{ub} =	23.30	k
Max Comp. on Bolt =	27.01	k

Prying Action Check
N/A for stiffened flange

Shear Capacity =	1.1%
Tensile Capacity =	15.6%
Interaction Capacity =	2.4%
Bolt Capacity =	**15.6% OK**

Upper Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
ϕ_f =	0.9	
b =	3.69	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	15.94	k-in
ϕM_n =	75.94	k-in
Upper Plate Capacity =	**21.0% OK**	

Upper Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	13.63	k
Vert. Weld Capacity =	*Not Verified*	
Horiz. Weld Capacity =	*Not Verified*	
Stiffener Capacity =	24.9%	
Controlling Capacity =	**24.9%**	**OK**

Pole Information

Shaft Diam. (Upper) =	60	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.5	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
b =	3.69	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	15.94	k-in
ϕM_n =	75.94	k-in
Lower Plate Capacity =	**21.0% OK**	

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	12.03	k
Vert. Weld Capacity =	*Not Verified*	
Horiz. Weld Capacity =	*Not Verified*	
Stiffener Capacity =	22.0%	
Controlling Capacity =	**22.0%**	**OK**

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD Engineering and Architecture Professional Corporation

GPD GROUP

Engineers • Architects • Planners

Project #: 2020791.CT1002.11

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 60'

Moment from TNX (M) =	3150.97 kip-ft	ASIF =	1.00				
Axial from TNX (P) =	59.39 kip						
Inner Bolt Diameter =	1.25 in						
Inner Bolt Area (A_{inner}) =	1.23 in^2	Inner Bolt Circle (BC_{inner}) =	47 in				
Inner Bolt MOI ($I_{o.inner}$) =	0.12 in^4	Total Area ($A_{tot.in}$) =	39.27 in^2				
Number Inner Bolts (N_{inner}) =	32	Percent Total Area (η_{in}) =	29.6%	Axial, Inner Bolts ($P*\eta_{in}$) =	17.60 kips		
Outer Bolt Diameter =	1.25 in						
Outer Bolt Area (A_{outer}) =	1.23 in^2	Outer Bolt Circle (BC_{outer}) =	53 in				
Outer Bolt MOI ($I_{o.outer}$) =	0.12 in^4	Total Area ($A_{tot.out}$) =	39.27 in^2				
Number Outer Bolts (N_{outer}) =	32	Percent Total Area (η_{out}) =	29.6%	Axial, Outer Bolts ($P*\eta_{out}$) =	17.60 kips		
Bridge Stiffener Width =	6.00 in						
Bridge Stiffener Thickness =	1.50 in	Connection Bolt Hole Size =	1.21875 in				
Bridge Stiffener Unbraced Length =	30.00 in	Net Bridge Stiffener Area ($A_{e.pl}$)	7.17188 in				
Bridge Stiffener Area (A_{pl}) =	9.00 in^2	Bridge Stiffener Circle (BC_{pl}) =	63 in				
Bridge Stiffener MOI (I_o) =	27.00 in^4	Total Area ($A_{tot.pl}$) =	54.00 in^2				
Number Bridge Stiffeners (N_{pl})	6	Percent Total Area (η_{pl}) =	40.7%	Axial, Bridge Stiffener ($P*\eta_{pl}$) =	24.20 kips		

I_{inner} =	10847.24 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$	
I_{outer} =	13792.48 $in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8 + N_{outer}*I_{o.outer})$	
I_{pl} =	26952.75 $in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$	
I_{tot} =	51592.47 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$	
$P_{u.t.inner}$ =	20.6 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$	
$P_{u.t.outer}$ =	23.3 kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} - P*\eta_{out}/N_{outer})$	
$P_{u.t.pl}$ =	203.7 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$	
$P_{u.c.pl}$ =	211.8 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$	
$ØP_{nt.bolt}$ =	96.64 kips		
Bolt Rating =	24.1% OK		

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	58.890	
F_e =	82.53	ksi
F_{cr} =	38.80	ksi
$ØP_{nc}$ =	314.29	kips
$ØP_{nt}$ =	349.63	kips
Bridge Stiffener Rating =	67.4%	OK

Existing Flange Connection @ **80'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	1364	k-ft
Axial =	49.14	k
Shear =	30.60	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	48	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	57	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.53	k
V_{ub} =	0.64	k
T_{ub} =	22.90	k
Max Comp. on Bolt =	24.95	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	1.8%	
Tensile Capacity =	42.0%	
Interaction Capacity =	17.7%	
Bolt Capacity =	**42.0%**	**OK**

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	60.375	in
ϕ_f =	0.9	
b =	3.11	in
Le =	3.00	in
Z =	2.34	in^3
M_u =	31.70	k-in
ϕM_n =	75.94	k-in
Upper Plate Capacity =	**41.7%**	**OK**

Upper Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	14.24	k
Vert. Weld Capacity =	31.3%	
Horiz. Weld Capacity =	44.6%	
Stiffener Capacity =	49.5%	
Controlling Capacity =	**49.5%**	**OK**

Pole Information

Shaft Diam. (Upper) =	54	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	51.375	in
b =	3.11	in
Le =	2.00	in
Z =	2.34	in^3
M_u =	37.85	k-in
ϕM_n =	75.94	k-in
Lower Plate Capacity =	**49.8%**	**OK**

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	9.23	k
Vert. Weld Capacity =	30.0%	
Horiz. Weld Capacity =	48.2%	
Stiffener Capacity =	45.5%	
Controlling Capacity =	**48.2%**	**OK**

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD Engineering and Architecture Professional Corporation

GPD GROUP

Engineers • Architects • Planners

Project #: 2020791.CT1002.11

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 80'

Moment from TNX (M) =	2514.35	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	49.14	kip					
Inner Bolt Diameter =	1	in					
Inner Bolt Area (A_{inner}) =	0.79	in^2	Inner Bolt Circle (BC_{inner}) =	57	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.05	in^4	Total Area ($A_{tot.in}$) =	37.70	in^2		
Number Inner Bolts (N_{inner}) =	48		Percent Total Area (η_{in}) =	58.3%		Axial, Inner Bolts ($P*\eta_{in}$) =	28.64 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	0	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$)	9	in		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	63	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	27.00	in^2		
Number Bridge Stiffeners (N_{pl})	3		Percent Total Area (η_{pl}) =	41.7%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	20.51 kips

I_{inner} =	15312.91	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{pl} =	13476.38	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	28789.28	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	22.9	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.pl}$ =	290.3	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	304.0	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	61.85	kips	
Bolt Rating =	37.0%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	23.556	
F_e =	515.82	ksi
F_{cr} =	48.01	ksi
$ØP_{nc}$ =	388.90	kips
$ØP_{nt}$ =	438.75	kips
Bridge Stiffener Rating =	78.2%	OK

Existing Flange Connection @ **100'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	926.8	k-ft
Axial =	40.42	k
Shear =	28.42	k

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

Flange Bolts

# Bolts =	36	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	51	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.53	k
V_{ub} =	0.79	k
T_{ub} =	23.10	k
Max Comp. on Bolt =	25.35	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	2.2%
Tensile Capacity =	42.4%
Interaction Capacity =	18.0%
Bolt Capacity =	**42.4% OK**

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	54.375	in
ϕ_f =	0.9	
wcalc =	17.23	in
wmax =	25.70	in
w =	17.23	in
Z =	6.73	in^3
M_u =	101.82	k-in
ϕM_n =	218.11	k-in
Upper Plate Capacity =	**46.7% OK**	

Upper Stiffeners

Configuration =	None

Pole Information

Shaft Diam. (Upper) =	48	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	54	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	45.375	in
Pole Inner Diameter =	53.25	in
e =	1.13	in
w =	4.65	in
Z =	1.82	in^3
M_u =	28.52	k-in
ϕM_n =	58.81	k-in
Lower Plate Capacity =	**48.5% OK**	

Lower Stiffeners

Configuration =	None

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD Engineering and Architecture Professional Corporation

GPD GROUP

Engineers • Architects • Planners

Project #: 2020791.CT1002.11

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 100'

Moment from TNX (M) =	1921.57	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	40.42	kip					
Inner Bolt Diameter =	1	in					
Inner Bolt Area (A_{inner}) =	0.79	in^2	Inner Bolt Circle (BC_{inner}) =	51	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.05	in^4	Total Area ($A_{tot.in}$) =	25.92	in^2		
Number Inner Bolts (N_{inner}) =	33		Percent Total Area (η_{in}) =	49.0%		Axial, Inner Bolts ($P*\eta_{in}$) =	19.79 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	0	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$)	9	in2		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	57	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	27.00	in^2		
Number Bridge Stiffeners (N_{pl})	3		Percent Total Area (η_{pl}) =	51.0%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	20.62 kips

I_{inner} =	8428.25	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{pl} =	11046.38	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	19474.63	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	23.1	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.pl}$ =	296.8	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	310.6	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	61.85	kips	
Bolt Rating =	37.4%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	23.556	
F_e =	515.82	ksi
F_{cr} =	48.01	ksi
$ØP_{nc}$ =	388.90	kips
$ØP_{nt}$ =	438.75	kips
Bridge Stiffener Rating =	79.9%	OK

Existing Flange Connection @ **120'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	888.5	k-ft
Axial =	32.29	k
Shear =	26.25	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	45	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.53	k
V_{ub} =	0.82	k
T_{ub} =	28.60	k
Max Comp. on Bolt =	30.62	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	2.3%	
Tensile Capacity =	52.4%	
Interaction Capacity =	27.6%	
Bolt Capacity =	**52.4%**	**OK**

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	48.375	in
ϕ_f =	0.9	
wcalc =	16.16	in
wmax =	25.56	in
w =	16.16	in
Z =	6.31	in^3
M_u =	116.00	k-in
ϕM_n =	204.47	k-in
Upper Plate Capacity =	**56.7%**	**OK**

Upper Stiffeners

Configuration =	None

Pole Information

Shaft Diam. (Upper) =	42	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	48	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	39.375	in
Pole Inner Diameter =	47.25	in
e =	1.13	in
w =	4.64	in
Z =	1.81	in^3
M_u =	34.45	k-in
ϕM_n =	58.71	k-in
Lower Plate Capacity =	**58.7%**	**OK**

Lower Stiffeners

Configuration =	None

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD Engineering and Architecture Professional Corporation

GPD GROUP

Engineers • Architects • Planners

Project #: 2020791.CT1002.11

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 120'

Moment from TNX (M) =	1372.17	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	32.29	kip					
Inner Bolt Diameter =	1	in					
Inner Bolt Area (A_{inner}) =	0.79	in^2	Inner Bolt Circle (BC_{inner}) =	45	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.05	in^4	Total Area ($A_{tot.in}$) =	25.13	in^2		
Number Inner Bolts (N_{inner}) =	32		Percent Total Area (η_{in}) =	48.2%		Axial, Inner Bolts ($P*\eta_{in}$) =	15.57 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	0	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$)	9	in2		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	51	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	27.00	in^2		
Number Bridge Stiffeners (N_{pl})	3		Percent Total Area (η_{pl}) =	51.8%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	16.72 kips

I_{inner} =	6363.30	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{pl} =	8859.38	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	15222.67	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	18.6	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.pl}$ =	242.7	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	253.8	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	61.85	kips	
Bolt Rating =	30.1%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	23.556	
F_e =	515.82	ksi
F_{cr} =	48.01	ksi
$ØP_{nc}$ =	388.90	kips
$ØP_{nt}$ =	438.75	kips
Bridge Stiffener Rating =	65.3%	OK

Existing Flange Connection @ **140'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	865.42	k-ft
Axial =	25.22	k
Shear =	24.43	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts		
# Bolts =	28	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	39	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.52	k
V_{ub} =	0.87	k
T_{ub} =	37.13	k
Max Comp. on Bolt =	38.93	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	2.5%	
Tensile Capacity =	68.1%	
Interaction Capacity =	46.4%	
Bolt Capacity =	**68.1%**	**OK**

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	42.375	in
ϕ_f =	0.9	
wcalc =	15.00	in
wmax =	25.38	in
w =	15.00	in
Z =	5.86	in^3
M_u =	136.44	k-in
ϕM_n =	189.84	k-in
Upper Plate Capacity =	**71.9%**	**OK**

Upper Stiffeners		
Configuration =	None	

Pole Information		
Shaft Diam. (Upper) =	36	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	42	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate		
Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	33.375	in
Pole Inner Diameter =	41.25	in
e =	1.13	in
w =	4.63	in
Z =	1.81	in^3
M_u =	43.79	k-in
ϕM_n =	58.58	k-in
Lower Plate Capacity =	**74.8%**	**OK**

Lower Stiffeners		
Configuration =	None	

Existing Flange Connection @ **160'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	416.39	k-ft
Axial =	16.65	k
Shear =	17.98	k

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

Flange Bolts

# Bolts =	24	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	33	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.53	k
V_{ub} =	0.75	k
T_{ub} =	24.53	k
Max Comp. on Bolt =	25.92	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	2.1%	
Tensile Capacity =	45.0%	
Interaction Capacity =	20.3%	
Bolt Capacity =	**45.0%**	**OK**

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	36.375	in
ϕ_f =	0.9	
wcalc =	13.75	in
wmax =	21.04	in
w =	13.75	in
Z =	5.37	in^3
M_u =	85.87	k-in
ϕM_n =	173.99	k-in
Upper Plate Capacity =	**49.4%**	**OK**

Upper Stiffeners

Configuration =	None

Pole Information

Shaft Diam. (Upper) =	30	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	36	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	27.375	in
Pole Inner Diameter =	35.25	in
e =	1.13	in
w =	4.61	in
Z =	1.80	in^3
M_u =	29.16	k-in
ϕM_n =	58.40	k-in
Lower Plate Capacity =	**49.9%**	**OK**

Lower Stiffeners

Configuration =	None

Existing Flange Connection @ **180'**
US-CT-1002, Kettleton
2020791.CT1002.11

*Moment =	125.40	k-ft
Axial =	10.07	k
Shear =	12.47	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts		
# Bolts =	20	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	27	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.53	k
V_{ub} =	0.62	k
T_{ub} =	10.64	k
Max Comp. on Bolt =	11.64	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	1.8%
Tensile Capacity =	19.5%
Interaction Capacity =	3.8%
Bolt Capacity =	**19.5% OK**

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	30.375	in
ϕ_f =	0.9	
wcalc =	12.37	in
wmax =	20.84	in
w =	12.37	in
Z =	4.83	in^3
M_u =	36.09	k-in
ϕM_n =	156.55	k-in
Upper Plate Capacity =	**23.1% OK**	

Upper Stiffeners		
Configuration =	None	

Pole Information		
Shaft Diam. (Upper) =	24	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	30	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Lower Flange Plate		
Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	24.25	in
Pole Inner Diameter =	29.25	in
e =	1.13	in
w =	4.59	in
Z =	1.79	in^3
M_u =	13.10	k-in
ϕM_n =	58.15	k-in
Lower Plate Capacity =	**22.5% OK**	

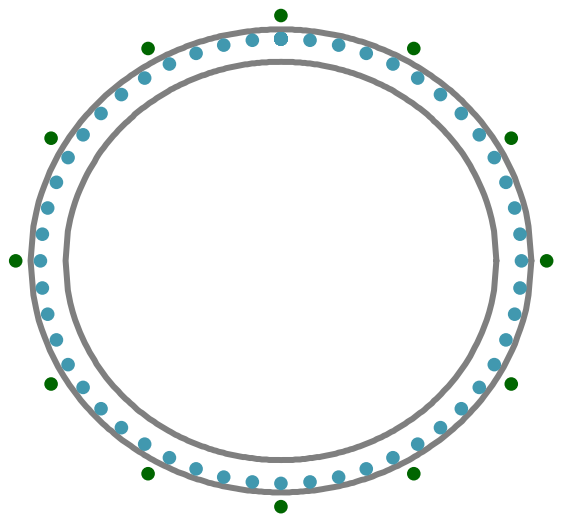
Lower Stiffeners		
Configuration =	None	

Anchor Rod Interaction, TIA-222-H
Kettleton / US-CT-1002
2020791.CT1002.11

Analysis Criteria		
Analysis Type =	Wind	
Analysis Interaction =	Pole to Added Rod	
Acceptable Stress Ratio =	1.00	
ASIF =	1.00	
Apply TIA-222-H Section 15.5? =	No	

tnx Reactions		
Overturning Moment =	5253.00	k*ft
Axial Force =	102.00	k
Shear Force =	37.00	k

Existing Anchor Rods		
Number of Rods =	52	
Rod Circle =	67	in
Rod Diameter =	1.25	in
Est. Dist. b/w ea. Rod =		in
Plate Type =	Round	
Plate Diameter =	69.75	in



Pole		
Pole Diameter =	60	in
Number of Sides =	Round	
Thickness =	0.625	in

First Added Anchor Rods		
Number of Rods =	12	
Rod Circle =	74.00	in
Rod Diameter =	1.25	in
Anchor Rod Grade =	F1554 GR 105	
Unbraced Length, lar =	1.25	in

Second Added Anchor Rods		
Number of Rods =		
Rod Circle =		in
Rod Diameter =		in
Anchor Rod Grade =		
Unbraced Length, lar =		in

Rod Number	Initial Angle
1	0
2	30
3	60
4	90
5	120
6	150
7	180
8	210
9	240
10	270
11	300
12	330

First Added Anchor Rods		
Max Rod Force =	46.57	k
ϕRnt =	90.84	k
ϕRnc =	101.75	k
Anchor Rod Capacity =	51.3%	**OK**

Reactions in Existing Rods		
Overturning Moment =	**4391.36**	k*ft
Axial Force =	**102.00**	k
Shear Force =	**37.00**	k
Centroid Offset =	**0.00**	in
Max Existing Rod Force =	62.45	kips

Anchor Rod and Base Plate Stresses, TIA-222-H-1
Kettleton / US-CT-1002
2020791.CT1002.11

Overturning Moment =	4391.36	k*ft
Axial Force =	102.00	k
Shear Force =	37.00	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	No

Anchor Rods		
Number of Rods =	52	
Rod Yield Strength, F_y =	75	ksi
Rod Ultimate Strength, F_u =	100	ksi
Rod Circle =	67	in
Rod Diameter =	1.25	in
Rod Projection, l_{ar} =	1.25	in
Is grout present?	No	
Max Tension on Rod, P_{ut} =	58.53	k
Max Compression on Rod, P_{uc} =	62.45	k
Shear on Rod, V_u =	0.71	k
Moment on Rod, M_u =	0.00	k-in
Tension Interaction =	**64.9%**	**OK**
Compression Interaction =	**75.4%**	**OK**

Base Plate		
Location =	External	
Plate Strength, F_y =	36	ksi
ϕ =	0.9	
Outside Diameter =	69.75	in
Plate Thickness =	1.25	in
b =	3.42	in
Le =	4.50	in
Z =	2.34	in^3
M_u =	55.06	k-in
φM_n =	75.94	k-in
BP Capacity =	**72.5%**	**OK**

Stiffeners		
Configuration =	Every Rod	
Thickness =	0.625	in
Width =	4.5	in
Notch =	0.5	in
Height =	8	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.375	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.375	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	36.69	kips
Vert. Weld Capacity =	39.0%	
Horiz. Weld Capacity =	58.9%	
Stiffener Capacity =	79.0%	
Controlling Capacity =	**79.0%**	**OK**

Pole		
Pole Diameter =	60	in
Number of Sides =	Round	
Thickness =	0.625	in
Pole Yield Strength =	42	ksi

Pile Analysis

Kettleton / US-CT-1002

2020791.CT1002.11

M	5253.00	k-ft
P	102.00	k
V	37.00	k
M tot	5456.5	k-ft
M tot 45	3858.328	k-ft
d	5.5	ft
h	46	ft
Vconc	11638	ft^3
wconc	1745.7	k

Pile Ultimate Capacities

Existing

Compression	150	k
Tension	100	k

Modification

Compression	100	k
Tension	100	k

Wequip	75	k

(weight of the equipment above the pad)

n existing	24
n mod	48

Total force on piles

				X			45	
	n	x (ft)	y (ft)	Pc (k)	Pt (k)	Mu (k-ft)	Pc (k)	Pt (k)
Existing	4	0	0	25.66	25.66	0.00	25.66	25.66
	10	6	6	27.71	23.61	831.41	28.56	22.76
	10	12	12	29.76	21.56	1785.89	31.46	19.86
	24							
Mod	2	0	0	25.66	25.66	0.00	25.66	25.66
	4	3.5	3.5	26.86	24.47	188.01	27.35	23.97
	4	7	7	28.06	23.27	392.78	29.05	22.28
	4	10.5	10.5	29.25	22.07	614.29	30.74	20.59
	4	14	14	30.45	20.88	852.56	32.43	18.89
	4	17.5	17.5	31.65	19.68	1107.58	34.12	17.20
	26	21	21	32.84	18.48	8965.77	35.82	15.51
	48							

Pile Capacities

Existing

Compression	37.8%
Tension	48.9%

Modification

Compression	65.7%
Tension	51.3%

Reinforcement Capacity

Mu	14738.30	k-ft
a	4.262575	in
d	60.885	in
Phi Mn	22473.3	k-ft
Capacity	65.6%	

Exhibit E

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **October 1, 2020**

Mount Analysis Report – Rev1

Tower Owner: Town of Southbury
Carrier: T-Mobile Northeast LLC

Site ID: CT11126F
Site Name: Southbury/ I-84 X15 / Bagl
Site Data: 231 Kettleton Rd, Southbury, New Haven County, CT 06487
Latitude *41° 28' 16.58"*, Longitude *-73° 12' 18.35"*
16.5 ft Platform Mount

Tectonic Project Number: 10473.CT11126F

Tectonic Engineering & Surveying Consultants P.C. is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of the above mentioned mount.

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

Platform Mount: **Sufficient Capacity – 77%**
***The mount has sufficient capacity once the changes, described in the Recommendations section of this report, are completed.**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Structure Class 2 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with this analysis for the determined available structural capacity to be effective.

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and T-Mobile. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering & Surveying Consultants P.C.

Edward N. Iamiceli, P.E.
Managing Director - Structural

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
Equal Opportunity Employer

TABLE OF CONTENTS

1) INTRODUCTION

The existing mount is a 16.5 ft low profile platform on a monopole.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	93 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
195.0	T-Mobile	3	ericsson	RRUS 4424 B25	Platform Mount w/ SitePro1 HRK12	1
		3	ericsson	AIR 6449 B41		

Note:
1) Proposed equipment to be installed on the existing platform mount.

Table 2 - Existing Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Existing Mount Type	Note
195.0	T-Mobile	3	ericsson	RRUS 4415 B66A	Platform Mount	1
		3	rfs	APXVARR24_43-C-NA20		
		3	rfs	APX16DWVS-16DWVS		
		3	ericsson	RADIO 4449 B12/B71		
		3	ericsson	RRUS 4415 B25	-	2

Notes:
1) Existing equipment.
2) Existing equipment to be removed, not considered in analysis.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
MANUFACTURER DRAWINGS	SitePro1	03/09/15
RFDS	T-Mobile	07/06/20
MOUNT ANALYSIS	Tectonic	08/10/20

3.1) Analysis Method

A tool internally developed, using Microsoft Excel, was used to calculate wind loading on all appurtenances and mount members. This information was then used in conjunction with another program, RISA-3D, which is a commercially available analysis software package, used to check the supporting building framing and calculate member stresses for various loading cases. The selected output from the analysis is included in Appendices B and C.

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The mount members are based on similarly manufactured mounts (PiRod Clamp-On Low Profile Platform) and site visit photos.
5) Steel grades have been assumed as follows, unless noted otherwise:

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

This analysis may be affected if any assumptions are not valid or have been made in error. Tectonic should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 4 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	195.0	54	Pass
	Grating Support		33	Pass
	Mount Pipe		77	Pass
	(P) Center Mount Pipe		66	Pass
	Standoff Horizontal		44	Pass
	(P) HRK12 Bottom Rail		59	Pass
	Connection to Collar Mount		59	Pass

Structure Rating (max from all components) =	77%

Note:
1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.

4.1) Results/Conclusion

The existing antenna mount will have sufficient capacity to carry the proposed T-Mobile load configurations once the following modifications have been satisfied as detailed in the report below.

1) The center antenna pipe on all three sectors shall be replaced with 2.5 STD pipe, 8'-0" long.
2) A top rail kit shall be installed and attached to the existing antenna pipes, part number HRK12 HD as manufactured by SitePro1.

This structural analysis only includes evaluation of the antenna platform mount and not the monopole tower. The monopole analysis is to be completed by others.

Contractor shall field verify existing conditions and recommendations as noted on the construction drawings and notify the design engineer of any discrepancies prior to construction. Any further changes to the antenna and/or appurtenance configuration should be reviewed with respect to their effect on structural loads prior to implementation.

APPENDIX A

SOFTWARE INPUT CALCULATIONS

Tectonic PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Job No.	10473.CT11126F - Rev1		
	Sheet No.	1	of	3
	Calculated By	JJ	Date :	10/01/20
	Checked By	IM	Date :	10/01/20

WIND AND ICE LOADS PER TIA-222-G

W.O.	10473.CT11126F - Rev1
Project Name	Southbury / I-84 X15 / Bagl
Location	231 Kettleton Rd, Southbury, CT 06487
County	New Haven

Tower Type	MP	Monopole
Structure Class	2	Substantial hazard
Exposure Category	B	Suburban/wooded/obstructed
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft

Basic Wind Speed (3-sec gust):		
Without ice	93	mph*
With ice	50	mph
Service	60	mph
Ice thickness	0.75	in

*Nominal converted from 120 mph ultimate risk cat. 2

Importance Factor	
Wind only	1.00
Wind with ice	1.00
Ice thickness	1.00

Supporting Data:	
K_e	0.90
K_t	N/A
f	N/A
z_g	1200
α	7
$K_{z,min}$	0.7
K_d	0.95
G_h	1.00

Height	z (ft)	195
	Kh	N/A
	Kzt	1.00
	Kz	1.20
	Kiz	1.19
Wind Pressure, qz (psf)	No Ice	25.16
	With Ice	7.27
	Service	10.47
(tiz)	Ice Thk	1.79
Appurtenances (qzGh)	No Ice	25.16
	With Ice	7.27
	Service	10.47

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10473.CT11126F - Rev1		
Sheet No.	2	of	3
Calculated By	JJ	Date :	10/01/20
Checked By	IM	Date :	10/01/20

Appurtenance Information

Effective Projected Area for Appurtenance $(EPA)_A=Max((EPA)_N,(EPA)_T)$

$(EPA)_T=\sum(C_aA_A)_T$ | $(EPA)_N=\sum(C_aA_A)_N$

Reduction Factor = 0.9

Wind Only Load Combinations

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(Aa)_T$ (ft^2)	Wind ward Side Face $(CaAa)_T$ (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
AIR 6449 B41	**P**	**1**	195	2.76	20.50	8.30	Flat	1.27	1.20	1.91	2.17	4.71	5.09	128	55	103.0	103.0
RRUS 4424 B25	**P**	**1**	195	1.38	13.50	9.60	Flat	1.20	1.20	1.10	1.19	1.55	1.67	42	30	88.0	88.0
RRUS 4415 B66A	E	1	195	1.25	13.19	5.80	Flat	1.20	1.20	0.60	0.65	1.37	1.48	37	16	48.4	48.4
RRU 4449 B71+B12	E	1	195	1.25	13.20	10.40	Flat	1.20	1.20	1.08	1.17	1.38	1.49	37	29	75.0	75.0
APX16DWV-16DWVS-E-A20	E	1	195	4.66	13.00	3.15	Flat	1.76	1.28	1.22	1.93	5.05	5.81	146	49	40.7	40.7
APXVAARR24_43-U-NA20	E	1	195	7.99	24.00	8.70	Flat	1.53	1.27	5.79	8.00	15.98	18.22	458	201	153.3	153.3
										$\sum(CaA_A)_T$	15.12	$\sum(CaA_A)_N$	33.76				508

Wind with Ice Load Combinations **Ice Thk=** 1.79 in

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(A_a)_T$ (ft^2)	Windward Side Face $(CaAa)_T$ (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft^2)	Ice Weight Alone (lbs)
AIR 6449 B41	P	1	195.00	3.06	24.08	11.88	Cylindrical	0.7	0.7	3.03	1.91	6.14	3.87	28	14	13.2	110.7
RRUS 4424 B25	P	1	195.00	1.67	17.08	13.18	Cylindrical	0.7	0.7	1.84	1.16	2.38	1.50	11	8	5.3	44.3
RRUS 4415 B66A	E	1	195.00	1.55	16.77	9.38	Cylindrical	0.7	0.7	1.21	0.76	2.16	1.36	10	6	3.9	33.0
RRU 4449 B71+B12	E	1	195.00	1.55	16.78	13.98	Cylindrical	0.7	0.7	1.80	1.14	2.17	1.36	10	8	4.9	41.1
APX16DWV-16DWVS-E-A20	E	1	195.00	4.96	16.58	6.73	Cylindrical	0.72	0.72	2.78	1.81	6.85	4.46	32	13	12.5	104.8
APXVAARR24_43-U-NA20	E	1	195.00	8.29	27.58	12.28	Cylindrical	0.72	0.72	8.49	5.53	19.06	12.43	90	40	43.6	364.2
										$\sum(CaA_A)_T$	12.31	$\sum(CaA_A)_N$	24.98				698

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10473.CT11126F - Rev1		
Sheet No.	3	of	3
Calculated By	JJ	Date :	10/01/20
Checked By	IM	Date :	10/01/20

Existing Low-Profile Platform

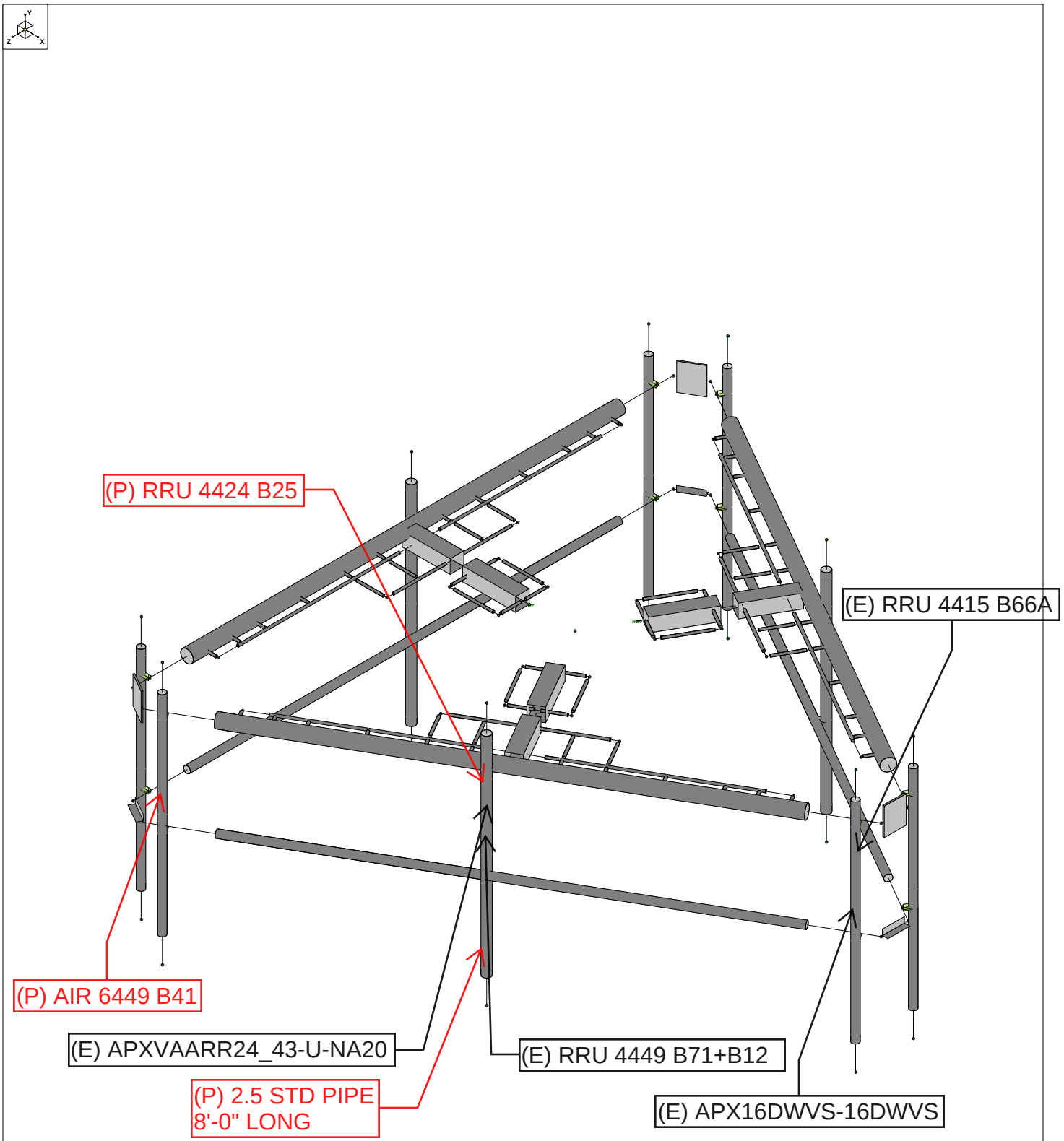
Mount Center Line=	195 ft

Reduction Factor =	0.9

Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical ?	Drag Factor	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Service Force (lbs/ft)
4.0" STD Pipe - Face Horizontal	3	16.50	4.50	4.50	Cylindrical	1.2	22.28	10.2	58.29	9.8	40.01	5.3	4.2
3/4" Solid Rod - Grating Support	3	0.50	0.75	0.75	Cylindrical	1.2	0.11	1.7	0.29	1.6	0.65	2.8	0.7
2.0" STD Pipe - MountPIpe	6	8.00	2.38	2.38	Cylindrical	1.2	11.42	5.4	29.89	5.2	28.62	3.9	2.2
(P) 2.5" STD Pipe - Mount Pipe	3	8.00	2.88	2.88	Cylindrical	1.2	6.90	6.5	18.06	6.3	15.50	4.2	2.7
(P) 2.0" STD Pipe - HRK12 Top Rail	3	16.50	2.38	2.38	Cylindrical	1.2	11.78	5.4	30.83	5.2	29.52	3.9	2.2
HSS 5x5 x3/8 - Standoff	3	4.00	5.00	5.00	Flat	2	10.00	18.9	20.00	13.9	17.17	9.4	7.9
(P) L2x2x1/4 - Corner Angle	3	1.00	2.00	2.00	Flat	2	1.00	7.5	2.00	5.6	2.79	6.1	3.1
PL 1/2 x10	3	0.86	10.00	0.50	Flat	2	4.30	37.7	4.52	14.6	5.84	14.8	15.7

APPENDIX B

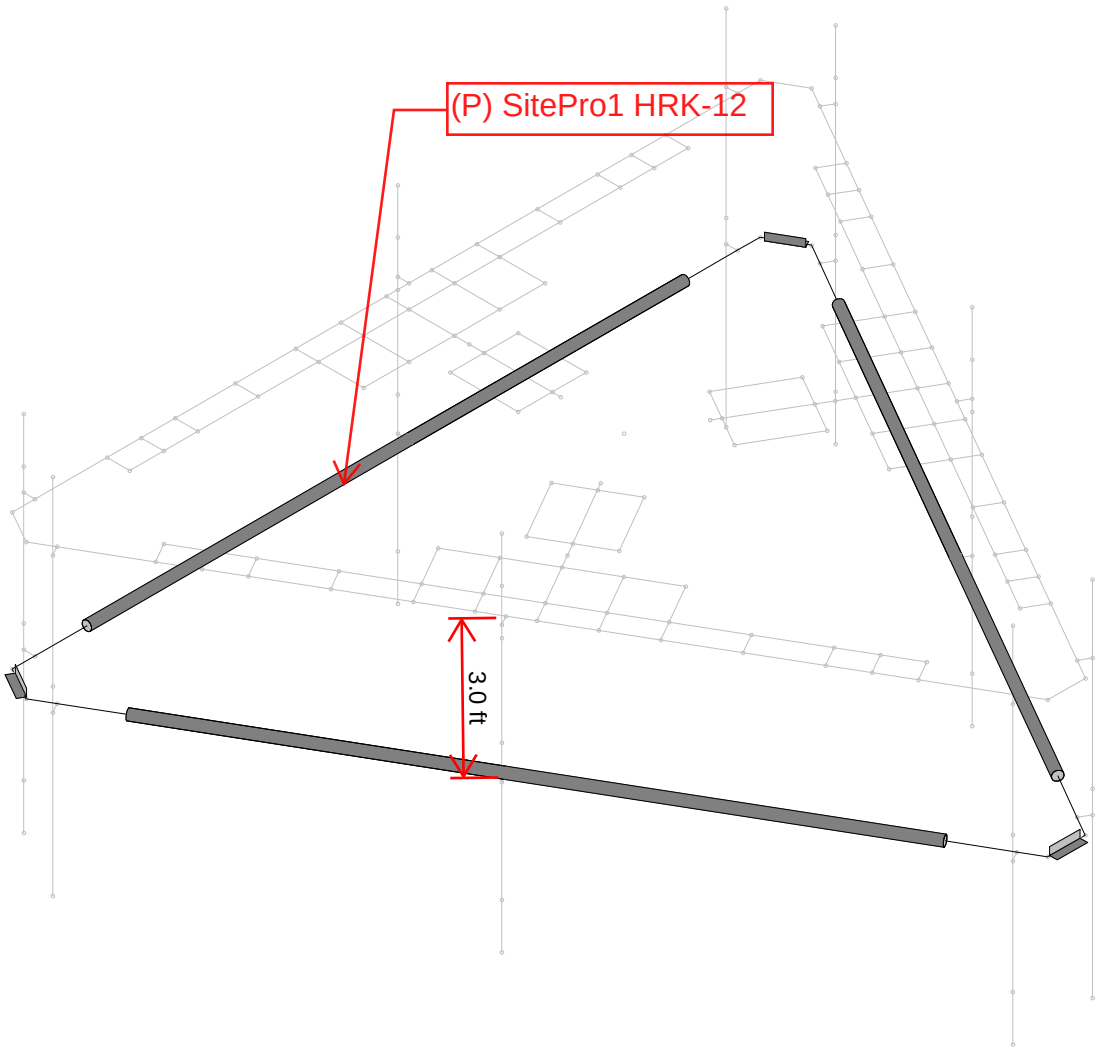
WIRE FRAME AND RENDERED MODELS



(P) PROPOSED
(E) EXISTING

NOTES:
1)EXISTING AND PROPOSED ANTENNAS AND MOUNTING PIPES HAVE BEEN VERTICALLY CENTERED ALONG THE EXISTING MOUNT (NO OFFSET).
2) LISTED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS.
3) RADIOS ARE LOCATED BEHIND THE ANTENNAS.

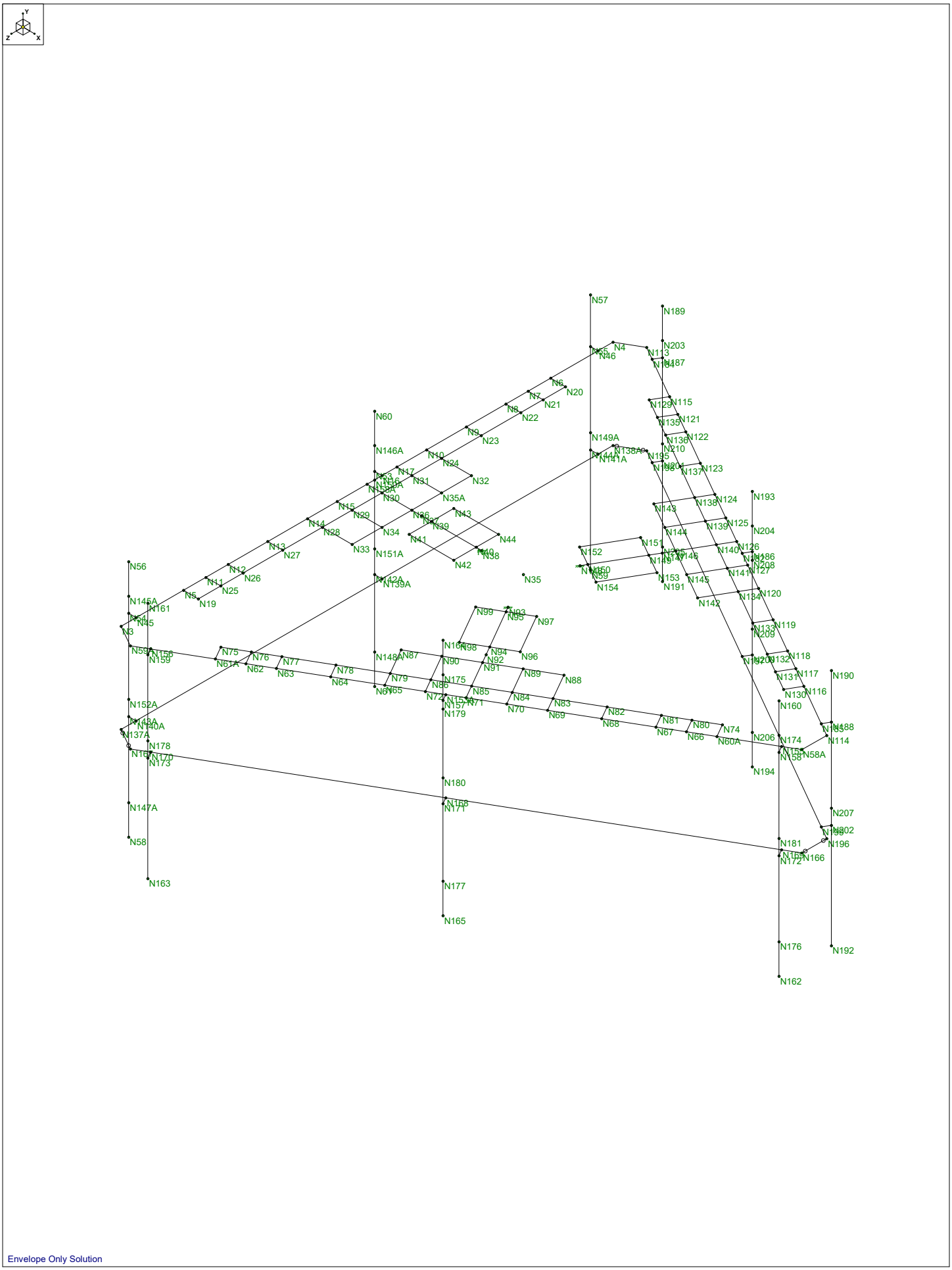
Envelope Only Solution



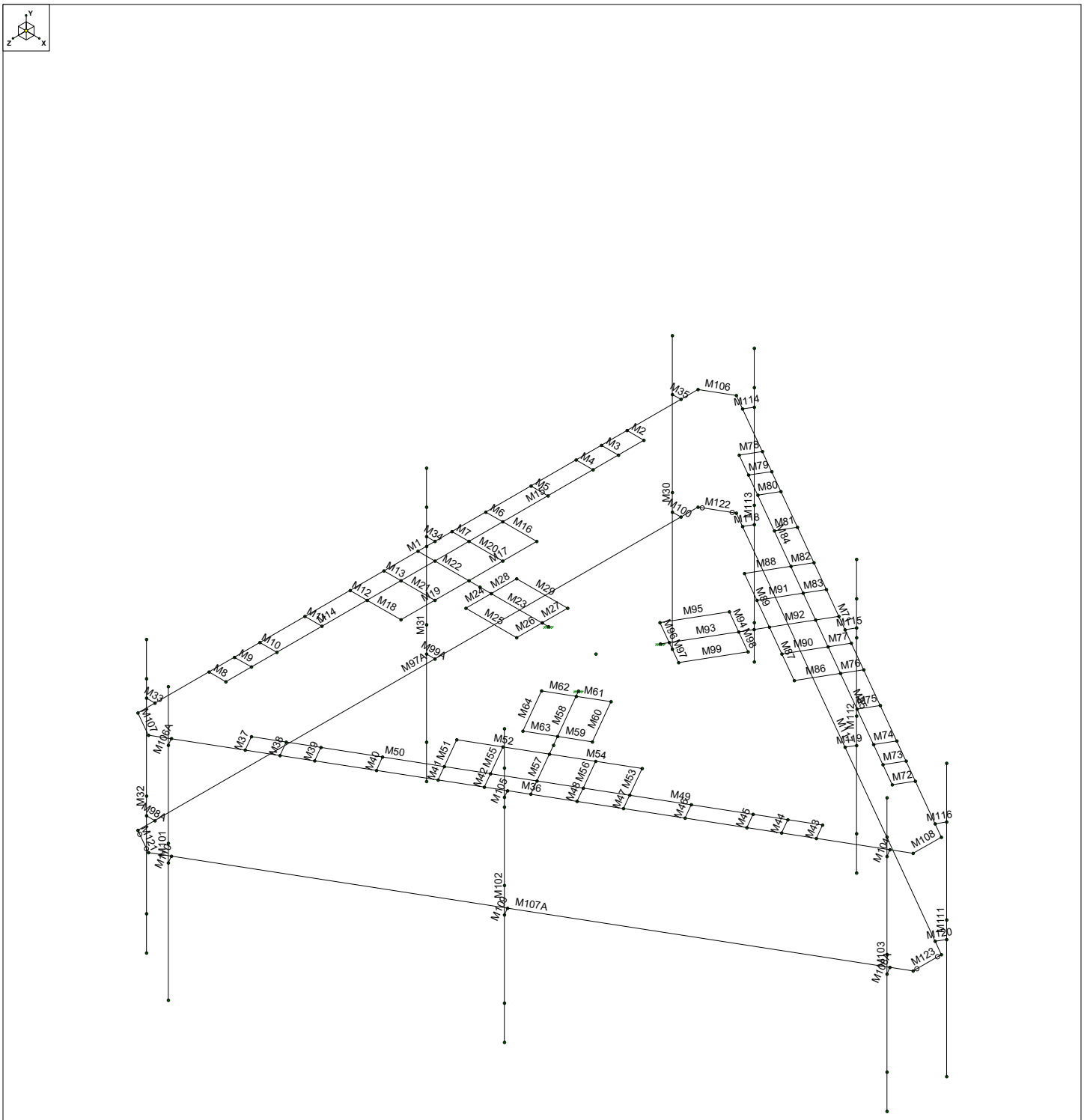
*Handrail kit added to satisfy two point connections for APXVARR24_43-C-NA20 antenna per T-Mobile Policy.

NOTE:
1) EXISTING AND PROPOSED ANTENNAS AND MOUNTING PIPES ARE TO BEEN VERTICALLY CENTERED ON THE PLATFORM AND PROPOSED BOTTOM RAIL

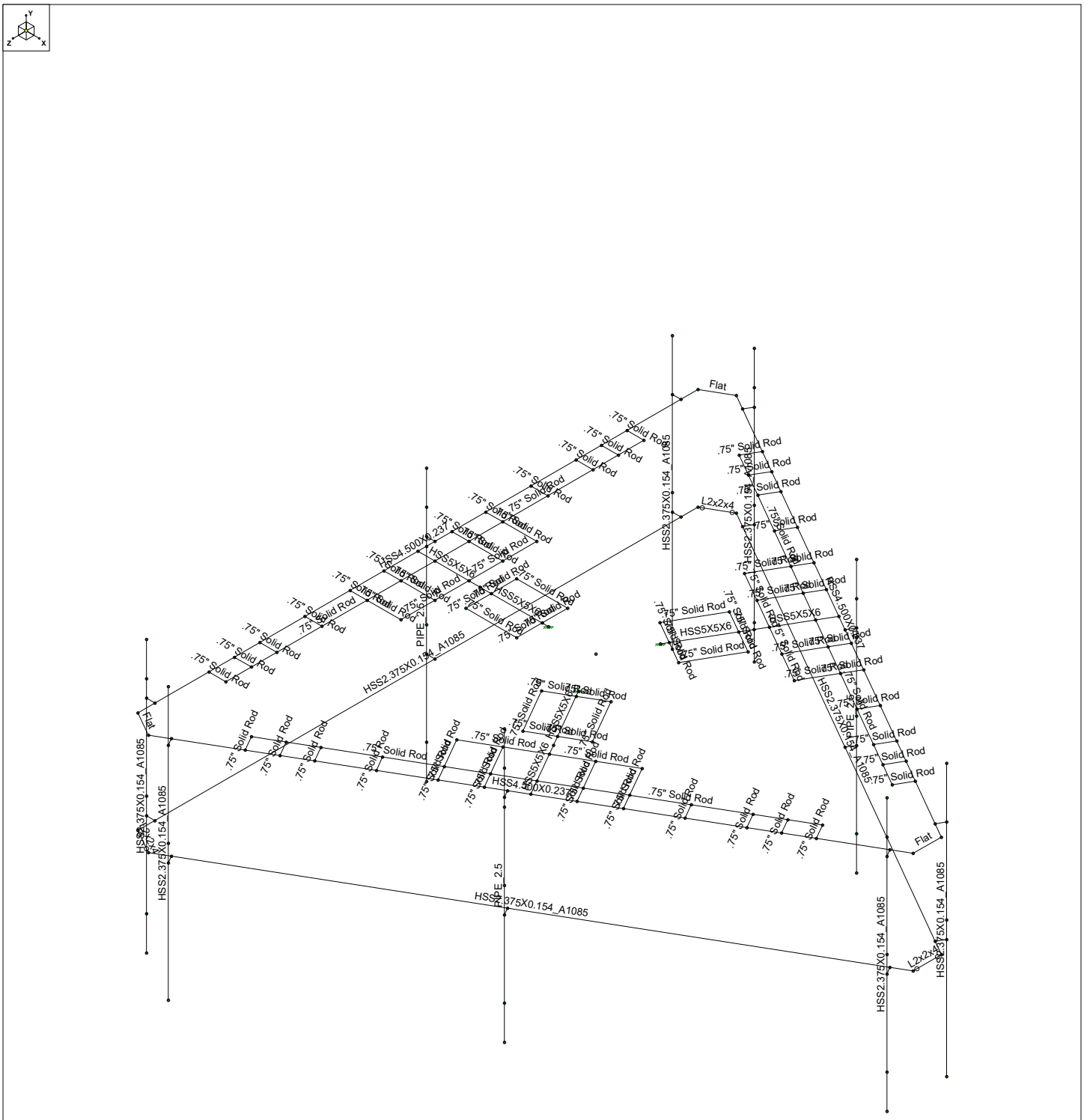
Envelope Only Solution



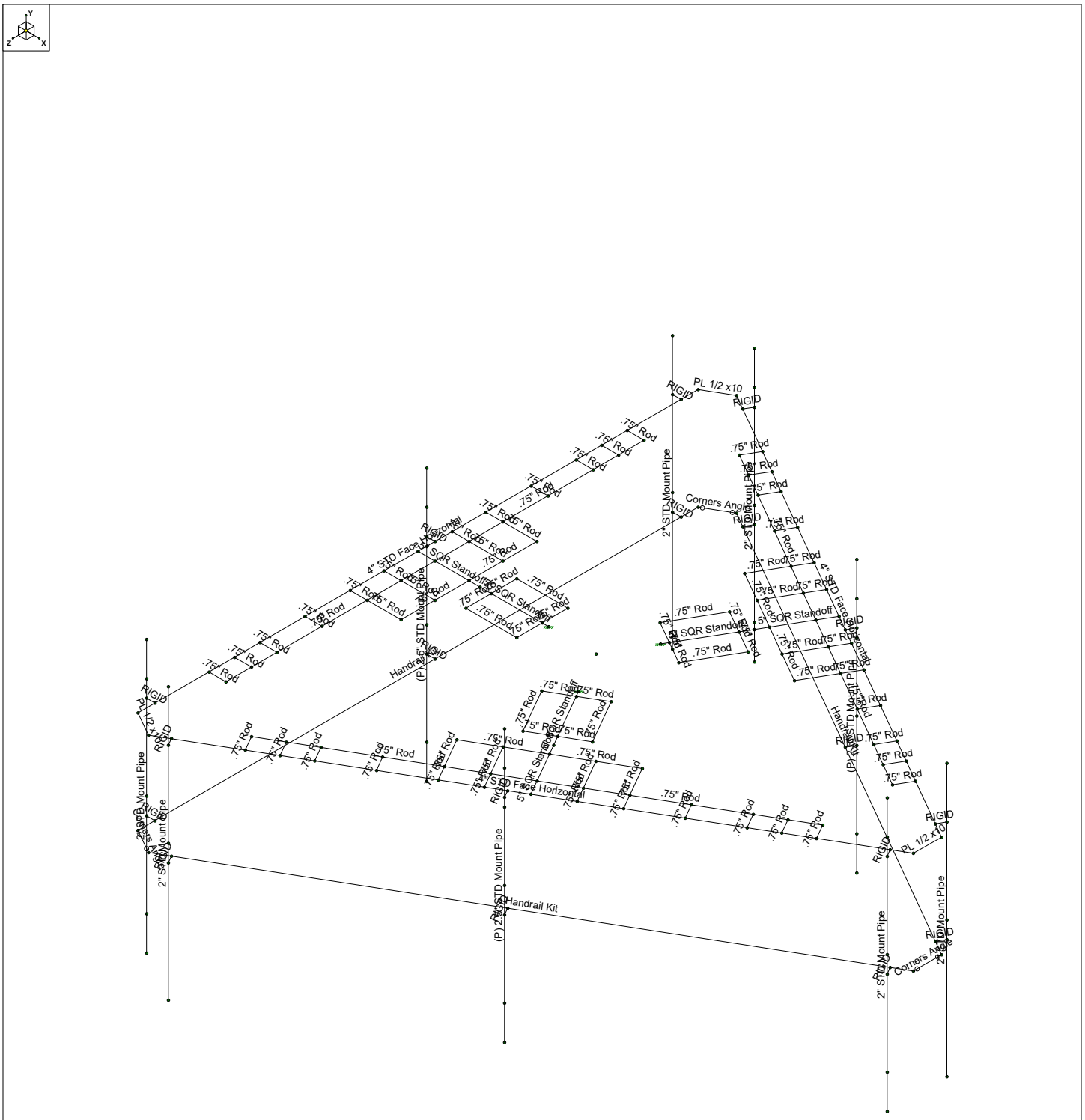
Envelope Only Solution



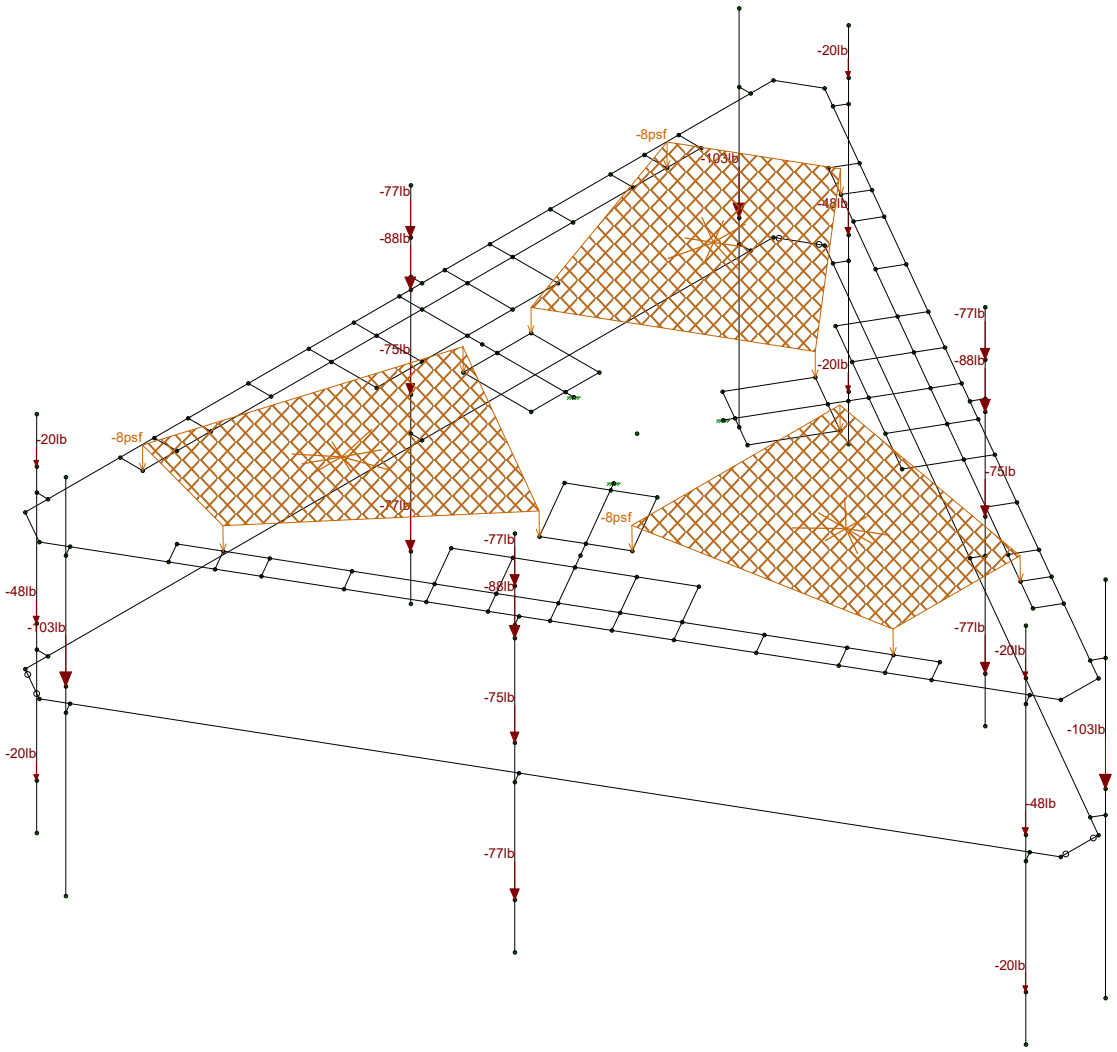
Envelope Only Solution



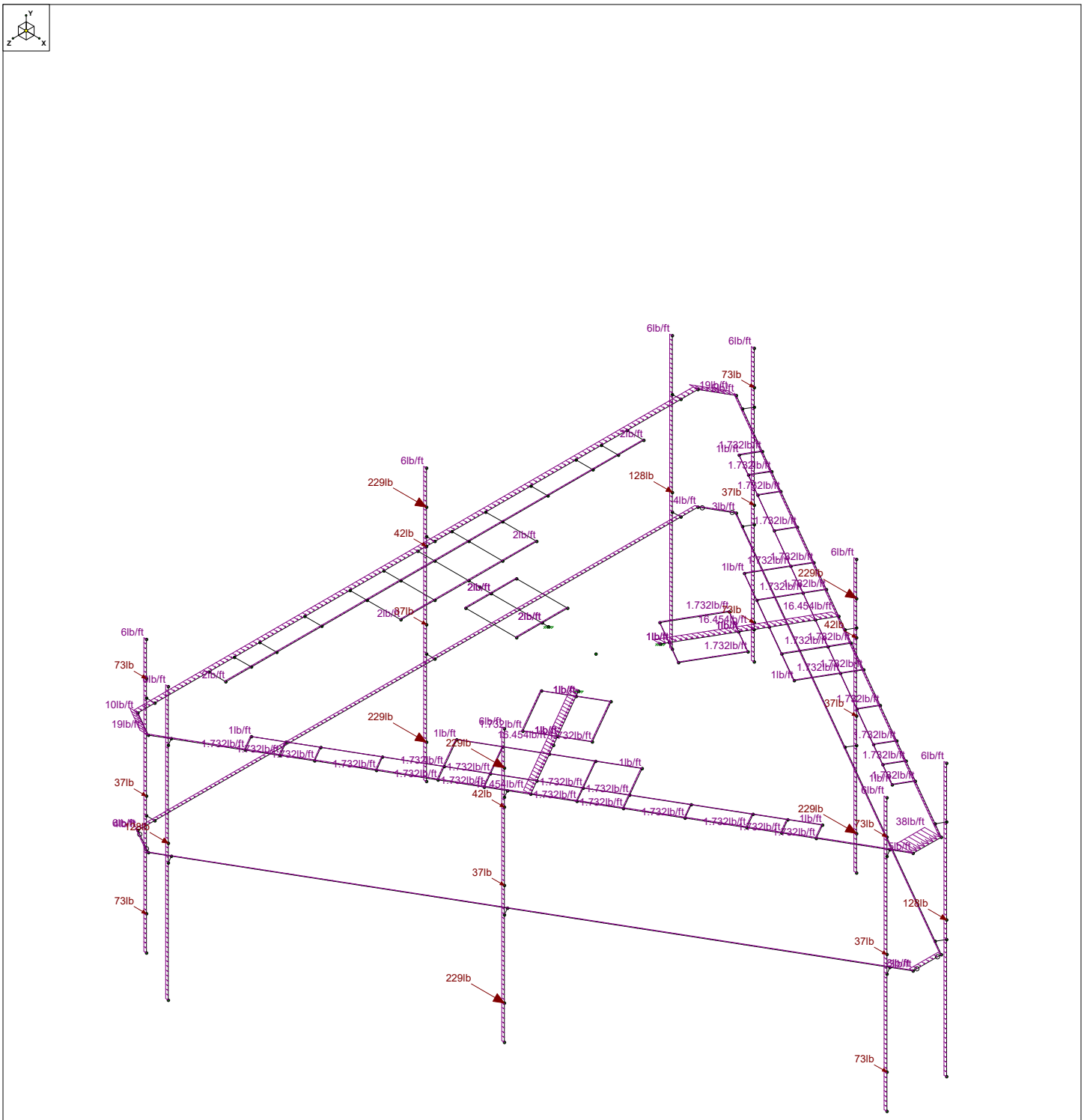
Envelope Only Solution



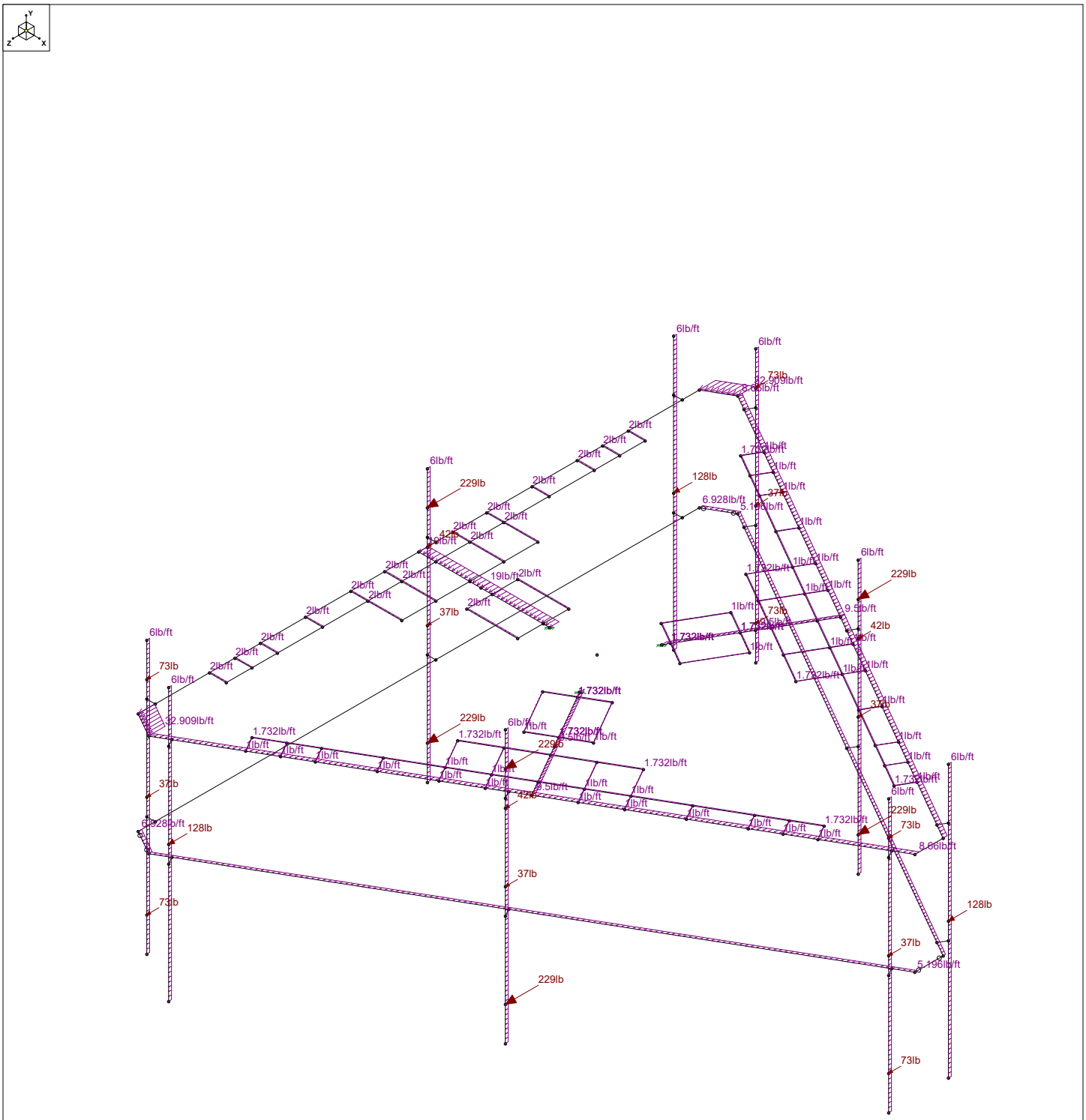
Envelope Only Solution



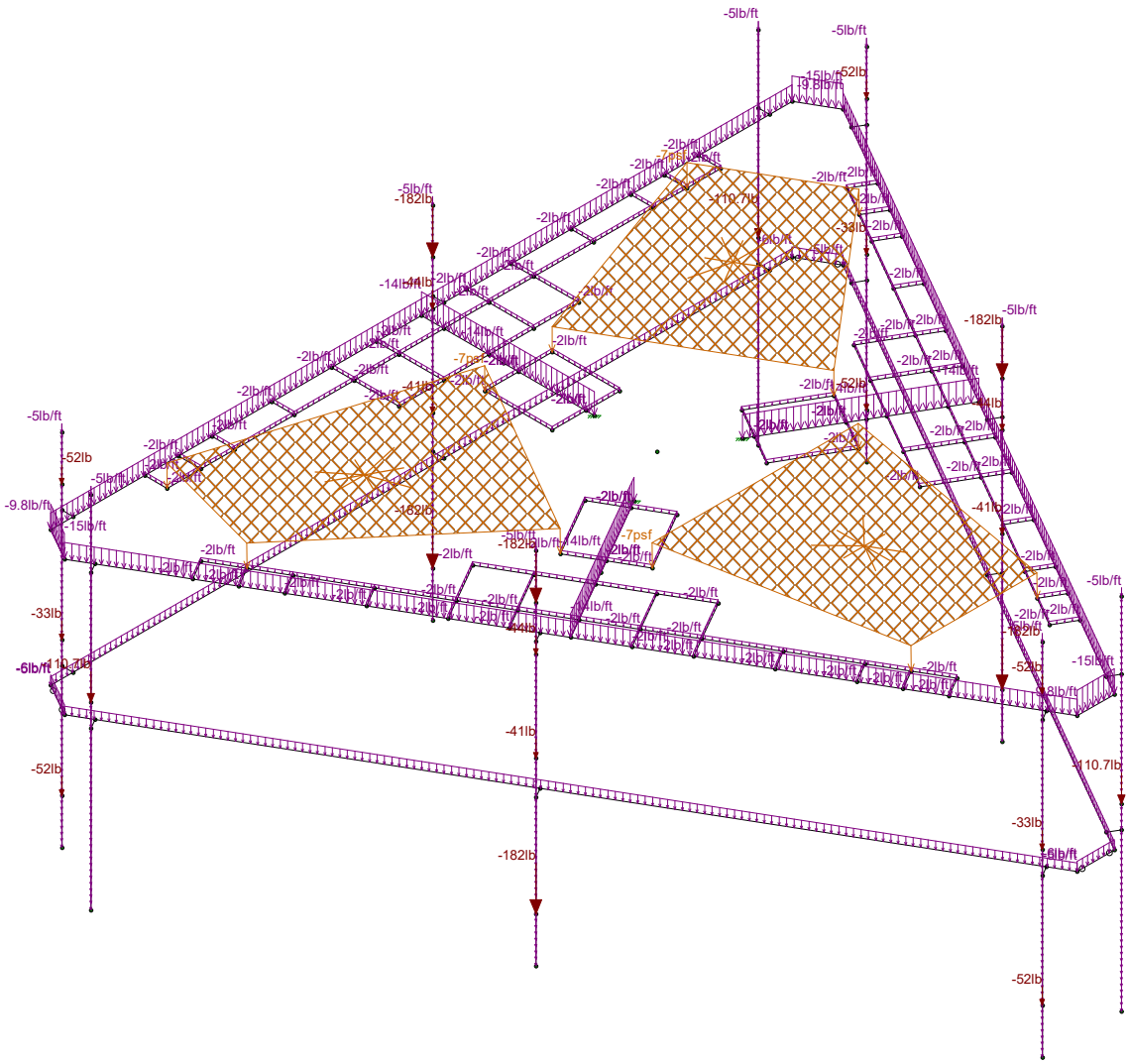
Loads: BLC 1, DL
Envelope Only Solution



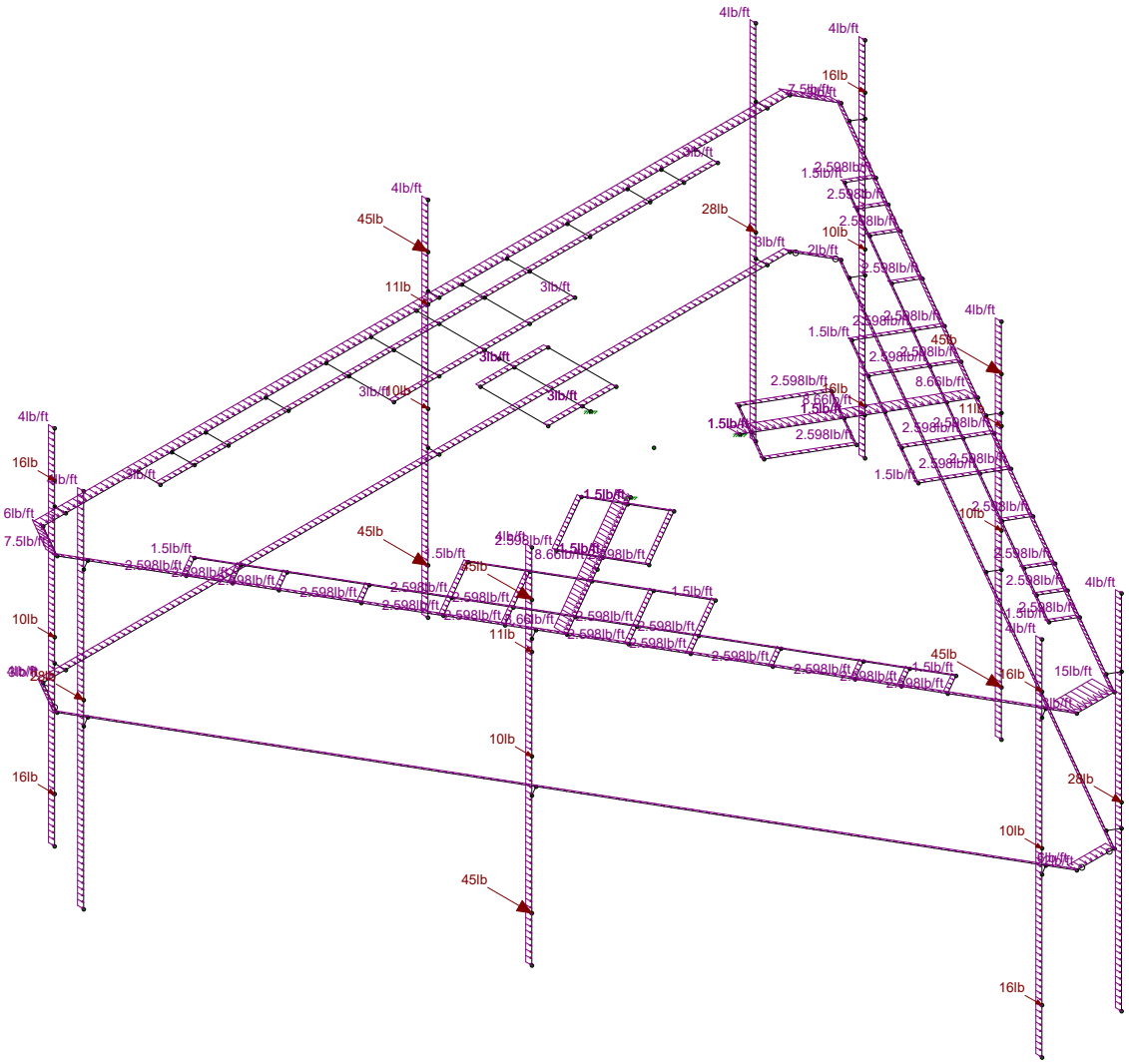
Loads: BLC 2, WLX
Envelope Only Solution



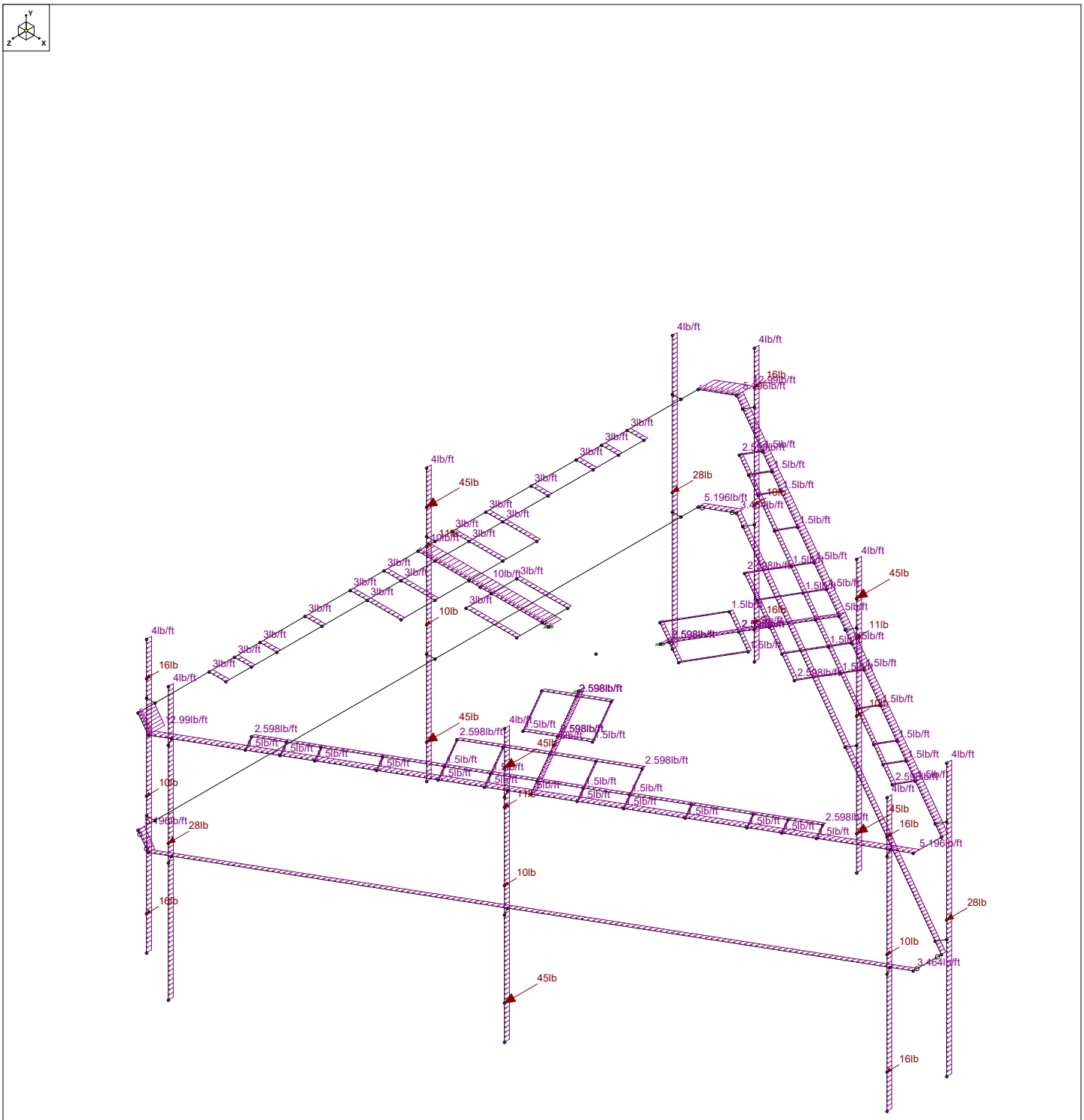
Loads: BLC 3, WLZ
Envelope Only Solution



Loads: BLC 4, DL (ICE)
Envelope Only Solution



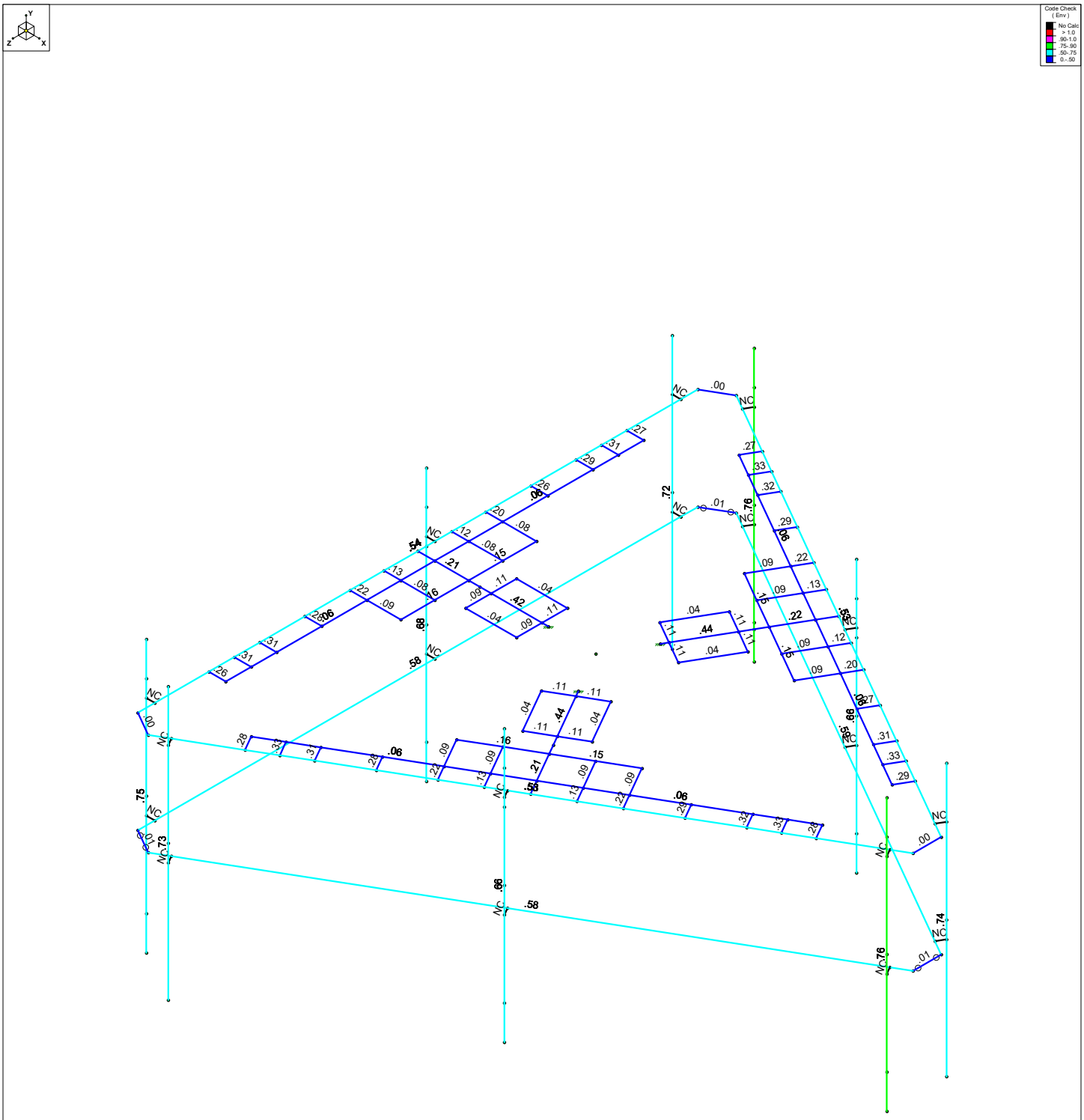
Loads: BLC 5, WLX (ICE)
Envelope Only Solution



Loads: BLC 6, WLZ (ICE)
Envelope Only Solution

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	DL	DL		-1.05		24			3	
2	WLX	WL+X				24		105		
3	WLZ	WL+Z				24		105		
4	DL (ICE)	SL				24		105	3	
5	WLX (ICE)	WL+X				24		105		
6	WLZ (ICE)	WL+Z				24		105		
7	BLC 1 Transient Area...	None						29		
8	BLC 4 Transient Area...	None						29		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4D	Yes	Y		1	1.4																		
2	1.2D+1.6(WLX+WLZ) - 0 Deg	Yes	Y		1	1.2	2	1.6																
3	1.2D+1.6(WLX+WLZ) - 30 Deg	Yes	Y		1	1.2	2	1.3...	3	.8														
4	1.2D+1.6(WLX+WLZ) - 60 Deg	Yes	Y		1	1.2	2	.8	3	1.3...														
5	1.2D+1.6(WLX+WLZ) - 90 Deg	Yes	Y		1	1.2	2		3	1.6														
6	1.2D+1.6(WLX+WLZ) - 120 Deg	Yes	Y		1	1.2	2	-.8	3	1.3...														
7	1.2D+1.6(WLX+WLZ) - 150 Deg	Yes	Y		1	1.2	2	-1....	3	.8														
8	1.2D+1.6(WLX+WLZ) - 180 Deg	Yes	Y		1	1.2	2	-1.6	3															
9	1.2D+1.6(WLX+WLZ) - 210 Deg	Yes	Y		1	1.2	2	-1....	3	-.8														
10	1.2D+1.6(WLX+WLZ) - 240 Deg	Yes	Y		1	1.2	2	-.8	3	-1....														
11	1.2D+1.6(WLX+WLZ) - 270 Deg	Yes	Y		1	1.2	2		3	-1.6														
12	1.2D+1.6(WLX+WLZ) - 300 Deg	Yes	Y		1	1.2	2	.8	3	-1....														
13	1.2D+1.6(WLX+WLZ) - 330 Deg	Yes	Y		1	1.2	2	1.3...	3	-.8														
14	**Wind Load with Ice**																							
15	1.2D+1.0Di+1.0(WLXi+WLZi) - 0...	Yes	Y		1	1.2	4	1	5	1	6													
16	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.87	6	.5												
17	1.2D+1.0Di+1.0(WLXi+WLZi) - 6...	Yes	Y		1	1.2	4	1	5	.5	6	.87												
18	1.2D+1.0Di+1.0(WLXi+WLZi) - 9...	Yes	Y		1	1.2	4	1	5		6	1												
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-.5	6	.87												
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-.87	6	.5												
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-1	6													
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5	-.87	6	-.5												
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5	-.5	6	-.87												
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5		6	-1												
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.5	6	-.87												
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.87	6	-.5												

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	4" STD Face Horizon...	HSS4.500X0.237	None	None	A53 Gr.B	Typical	2.96	6.79	6.79	13.6
2	.75" Rod	.75" Solid Rod	None	None	A36 Gr.36	Typical	.442	.016	.016	.031
3	2" STD Mount Pipe	HSS2.375X0.154_A...	None	None	A53 Gr.B	Typical	1.075	.669	.669	1.339
4	5" SQR Standoff	HSS5X5X6	None	None	A500 Gr.B Rect	Typical	6.18	21.7	21.7	36.1
5	PL 1/2 x10	Flat	None	None	A36 Gr.36	Typical	200	1666....	6666....	4577....
6	3" STD Support	PIPE_3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
7	2" STD Stiff-Arm	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
8	Handrail Kit	HSS2.375X0.154_A...	None	None	A53 Gr.B	Typical	1.075	.669	.669	1.339
9	Corners Angle	L2x2x4	None	None	A36 Gr.36	Typical	.944	.346	.346	.021
10	(P) 2.5" STD Mount ...	PIPE_2.5	None	None	A36 Gr.36	Typical	1.61	1.45	1.45	2.89

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	N38	max	1657.622	8	3542.432	15	2259.919	11	2.009	5	5.98	11	-2.545	8
2		min	-1651.285	2	1433.89	8	-2265.942	5	-1.875	11	-5.991	5	-13.182	15
3	N148	max	2249.288	8	3533.994	19	1884.245	11	11.291	19	6.641	3	6.778	20
4		min	-2246.578	2	1437.485	12	-1848.003	5	2.147	12	-6.657	9	.949	13
5	N93	max	2220.107	8	3533.661	23	1879.259	11	-2.345	4	6.644	7	6.842	9
6		min	-2229.123	2	1436.594	4	-1909.445	5	-11.412	23	-6.651	13	.565	3
7	Totals:	max	6127.017	8	10221.33	15	6023.423	11						
8		min	-6126.986	2	6251.012	8	-6023.39	5						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc		phi*P	phi*P	phi*M	phi*M	Cb	Eqn
1	M113	HSS2.375X0.1...	.763	1.5	23	.164	4.5	17	15877...	33875...	2.004	2.004	2.114	H1-1b
2	M103	HSS2.375X0.1...	.760	1.5	26	.163	4.5	22	15877...	33875...	2.004	2.004	2.261	H1-1b
3	M32	HSS2.375X0.1...	.750	1.5	19	.166	4.5	26	15877...	33875...	2.004	2.004	2.339	H1-1b
4	M111	HSS2.375X0.1...	.735	1.5	4	.146	4.5	21	15877...	33875...	2.004	2.004	1.893	H1-1b
5	M101	HSS2.375X0.1...	.733	1.5	8	.148	4.5	25	15877...	33875...	2.004	2.004	2.135	H1-1b
6	M30	HSS2.375X0.1...	.718	1.5	12	.149	4.5	17	15877...	33875...	2.004	2.004	1.992	H1-1b
7	M31	PIPE_2.5	.675	1.75	8	.072	1.75	12	30437...	52164	3.699	3.699	1.614	H1-1b
8	M102	PIPE_2.5	.662	1.75	4	.075	1.75	8	30437...	52164	3.699	3.699	1.59	H1-1b
9	M112	PIPE_2.5	.661	1.75	12	.077	1.75	4	30437...	52164	3.699	3.699	1.601	H1-1b
10	M117	HSS2.375X0.1...	.587	8.766	4	.094	8.7...	7	3857....	33875...	2.004	2.004	4.164	H1-1b
11	M107A	HSS2.375X0.1...	.585	8.766	8	.096	8.7...	11	3857....	33875...	2.004	2.004	4.116	H1-1b
12	M97A	HSS2.375X0.1...	.579	8.766	12	.098	8.7...	3	3857....	33875...	2.004	2.004	4.014	H1-1b
13	M1	HSS4.500X0.2...	.538	8.25	2	.307	8.25	2	38879	93240	10.579	10.579	1.623	H3-6
14	M36	HSS4.500X0.2...	.532	8.25	10	.301	8.25	10	38879	93240	10.579	10.579	1.622	H3-6
15	M71	HSS4.500X0.2...	.530	8.25	6	.302	8.25	6	38879	93240	10.579	10.579	1.621	H3-6
16	M93	HSS5X5X6	.441	2.02	4	.102	2.02	z 9	25298...	255852	36.57	36.57	1.237	H1-1b
17	M58	HSS5X5X6	.436	2.02	8	.102	2.02	z 13	25298...	255852	36.57	36.57	1.238	H1-1b
18	M23	HSS5X5X6	.424	2.02	12	.097	2.02	z 5	25298...	255852	36.57	36.57	1.237	H1-1b
19	M73	.75" Solid Rod	.333	0	3	.035	0	3	13562...	14313...	.179	.179	2.736	H1-1b
20	M44	.75" Solid Rod	.330	0	2	.036	.5	2	13562...	14313...	.179	.179	2.667	H1-1b
21	M79	.75" Solid Rod	.329	0	10	.036	.5	10	13562...	14313...	.179	.179	2.668	H1-1b
22	M38	.75" Solid Rod	.327	0	7	.035	.5	7	13562...	14313...	.179	.179	2.763	H1-1b
23	M45	.75" Solid Rod	.321	0	2	.035	.5	2	13562...	14313...	.179	.179	1.893	H1-1b
24	M80	.75" Solid Rod	.320	0	10	.035	.5	10	13562...	14313...	.179	.179	1.893	H1-1b
25	M9	.75" Solid Rod	.313	0	6	.033	.5	6	13562...	14313...	.179	.179	2.389	H1-1b
26	M74	.75" Solid Rod	.309	0	3	.033	.5	3	13562...	14313...	.179	.179	1.832	H1-1b
27	M39	.75" Solid Rod	.309	0	6	.033	.5	6	13562...	14313...	.179	.179	1.505	H1-1b
28	M3	.75" Solid Rod	.309	0	11	.033	.5	11	13562...	14313...	.179	.179	2.732	H1-1b
29	M10	.75" Solid Rod	.308	0	6	.033	0	6	13562...	14313...	.179	.179	2.338	H1-1b
30	M81	.75" Solid Rod	.291	0	10	.029	.5	10	13562...	14313...	.179	.179	1.731	H1-1b

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc...	...	...	phi*P...	phi*P...	phi*M...	phi*M...	Cb	Eqn
31	M46	.75" Solid Rod	.290	0	2	.028	.5		2	13562..	14313..	.179	.179	1.731	H1-1b
32	M72	.75" Solid Rod	.288	0	3	.030	.5		3	13562..	14313..	.179	.179	1.77	H1-1b
33	M4	.75" Solid Rod	.288	0	11	.031	.5		10	13562..	14313..	.179	.179	1.832	H1-1b
34	M37	.75" Solid Rod	.283	0	7	.031	.5		7	13562..	14313..	.179	.179	1.985	H1-1b
35	M40	.75" Solid Rod	.283	0	6	.030	0		6	13562..	14313..	.179	.179	1.843	H1-1b
36	M11	.75" Solid Rod	.280	0	6	.028	.5		6	13562..	14313..	.179	.179	1.556	H1-1b
37	M43	.75" Solid Rod	.277	0	13	.031	.5		13	13562..	14313..	.179	.179	1.91	H1-1b
38	M78	.75" Solid Rod	.273	0	9	.030	.5		9	13562..	14313..	.179	.179	1.894	H1-1b
39	M75	.75" Solid Rod	.272	0	2	.028	.5		3	13562..	14313..	.179	.179	1.736	H1-1b
40	M2	.75" Solid Rod	.266	0	11	.028	.5		11	13562..	14313..	.179	.179	1.751	H1-1b
41	M5	.75" Solid Rod	.260	0	10	.026	.5		10	13562..	14313..	.179	.179	1.738	H1-1b
42	M8	.75" Solid Rod	.256	0	5	.028	.5		5	13562..	14313..	.179	.179	1.675	H1-1b
43	M82	.75" Solid Rod	.220	0	10	.029	.5		11	13562..	14313..	.179	.179	1.393	H1-1b
44	M47	.75" Solid Rod	.219	0	2	.029	.5		3	13562..	14313..	.179	.179	1.393	H1-1b
45	M12	.75" Solid Rod	.216	0	6	.030	.5		7	13562..	14313..	.179	.179	1.376	H1-1b
46	M41	.75" Solid Rod	.216	0	6	.030	.5		6	13562..	14313..	.179	.179	1.416	H1-1b
47	M92	HSS5X5X6	.215	1.83	5	.101	1.83	z	9	25349..	255852	36.57	36.57	1.386	H1-1b
48	M22	HSS5X5X6	.212	1.83	13	.096	1.83	z	5	25349..	255852	36.57	36.57	1.385	H1-1b
49	M57	HSS5X5X6	.211	1.83	9	.101	1.83	z	13	25349..	255852	36.57	36.57	1.388	H1-1b
50	M76	.75" Solid Rod	.205	0	2	.028	.5		13	13562..	14313..	.179	.179	1.424	H1-1b
51	M6	.75" Solid Rod	.198	0	10	.028	.5		9	13562..	14313..	.179	.179	1.426	H1-1b
52	M19	.75" Solid Rod	.161	2	25	.037	1		20	6041....	14313..	.179	.179	1.858	H1-1b
53	M52	.75" Solid Rod	.160	2	26	.036	1		18	6041....	14313..	.179	.179	1.887	H1-1b
54	M87	.75" Solid Rod	.152	2	22	.032	1		26	6041....	14313..	.179	.179	1.884	H1-1b
55	M17	.75" Solid Rod	.151	2	18	.032	1		22	6041....	14313..	.179	.179	1.883	H1-1b
56	M54	.75" Solid Rod	.150	2	20	.031	1		16	6041....	14313..	.179	.179	1.862	H1-1b
57	M89	.75" Solid Rod	.150	2	16	.031	1		24	6041....	14313..	.179	.179	1.862	H1-1b
58	M83	.75" Solid Rod	.134	0	10	.033	0		24	13562..	14313..	.179	.179	1.384	H1-1b
59	M48	.75" Solid Rod	.133	0	2	.033	0		16	13562..	14313..	.179	.179	1.381	H1-1b
60	M13	.75" Solid Rod	.130	0	6	.036	0		20	13562..	14313..	.179	.179	1.355	H1-1b
61	M42	.75" Solid Rod	.128	0	6	.038	.5		5	13562..	14313..	.179	.179	1.401	H1-1b
62	M77	.75" Solid Rod	.121	0	2	.037	.5		13	13562..	14313..	.179	.179	1.434	H1-1b
63	M7	.75" Solid Rod	.117	0	10	.037	.5		9	13562..	14313..	.179	.179	1.428	H1-1b
64	M97	.75" Solid Rod	.113	0	22	.057	0		20	12678..	14313..	.179	.179	1.691	H1-1b
65	M62	.75" Solid Rod	.113	0	26	.057	0		24	12678..	14313..	.179	.179	1.691	H1-1b
66	M27	.75" Solid Rod	.113	0	18	.057	0		16	12678..	14313..	.179	.179	1.691	H1-1b
67	M96	.75" Solid Rod	.112	0	16	.057	0		18	12678..	14313..	.179	.179	1.697	H1-1b
68	M61	.75" Solid Rod	.112	0	20	.057	0		22	12678..	14313..	.179	.179	1.697	H1-1b
69	M94	.75" Solid Rod	.108	0	23	.048	0		20	12678..	14313..	.179	.179	1.676	H1-1b
70	M59	.75" Solid Rod	.108	0	26	.048	0		24	12678..	14313..	.179	.179	1.675	H1-1b
71	M98	.75" Solid Rod	.107	0	16	.047	0		18	12678..	14313..	.179	.179	1.681	H1-1b
72	M28	.75" Solid Rod	.106	0	24	.047	0		26	12678..	14313..	.179	.179	1.681	H1-1b
73	M63	.75" Solid Rod	.106	0	20	.047	0		22	12678..	14313..	.179	.179	1.681	H1-1b
74	M26	.75" Solid Rod	.094	0	24	.052	0		26	12678..	14313..	.179	.179	1.703	H1-1b
75	M18	.75" Solid Rod	.092	0	6	.038	0		20	11537..	14313..	.179	.179	2.34	H1-1b
76	M51	.75" Solid Rod	.092	0	6	.038	0		17	11537..	14313..	.179	.179	2.222	H1-1b
77	M88	.75" Solid Rod	.091	0	10	.030	0		24	11537..	14313..	.179	.179	2.297	H1-1b
78	M53	.75" Solid Rod	.091	0	2	.030	0		16	11537..	14313..	.179	.179	2.297	H1-1b
79	M24	.75" Solid Rod	.090	0	18	.044	0		16	12678..	14313..	.179	.179	1.677	H1-1b
80	M86	.75" Solid Rod	.088	0	2	.032	0		25	11537..	14313..	.179	.179	2.197	H1-1b
81	M91	.75" Solid Rod	.087	1	10	.039	0		24	11537..	14313..	.179	.179	2.357	H1-1b
82	M55	.75" Solid Rod	.087	1	6	.044	0		18	11537..	14313..	.179	.179	2.352	H1-1b
83	M56	.75" Solid Rod	.087	1	2	.039	0		16	11537..	14313..	.179	.179	2.354	H1-1b
84	M90	.75" Solid Rod	.087	1	2	.040	1		26	11537..	14313..	.179	.179	2.551	H1-1b
85	M16	.75" Solid Rod	.085	0	10	.032	0		21	11537..	14313..	.179	.179	2.188	H1-1b
86	M21	.75" Solid Rod	.085	1	6	.045	0		20	11537..	14313..	.179	.179	2.167	H1-1b
87	M20	.75" Solid Rod	.084	1	10	.039	1		22	11537..	14313..	.179	.179	2.592	H1-1b

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc...	...	...	phi*P...	phi*P...	phi*M...	phi*M...	Cb	Eqn
88	M84	.75" Solid Rod	.063	6.16	10	.033	5.1...		24	642.1...	14313...	.179	.179	2.438	H1-1...
89	M49	.75" Solid Rod	.063	6.16	2	.033	5.1...		16	642.1...	14313...	.179	.179	2.454	H1-1...
90	M50	.75" Solid Rod	.061	6.16	6	.038	5.1...		18	642.1...	14313...	.179	.179	2.207	H1-1...
91	M85	.75" Solid Rod	.060	6.16	3	.034	5.1...		26	642.1...	14313...	.179	.179	2.037	H1-1...
92	M14	.75" Solid Rod	.059	5.197	6	.038	5.1...		20	642.1...	14313...	.179	.179	2.284	H1-1...
93	M15	.75" Solid Rod	.056	5.197	11	.034	5.1...		22	642.1...	14313...	.179	.179	2.029	H1-1...
94	M99	.75" Solid Rod	.040	1.5	20	.008	0		3	8811....	14313...	.179	.179	2.863	H1-1b
95	M29	.75" Solid Rod	.040	1.5	16	.008	0		11	8811....	14313...	.179	.179	2.882	H1-1b
96	M64	.75" Solid Rod	.040	1.5	24	.008	0		7	8811....	14313...	.179	.179	2.872	H1-1b
97	M60	.75" Solid Rod	.039	1.5	22	.008	0		13	8811....	14313...	.179	.179	2.843	H1-1b
98	M95	.75" Solid Rod	.039	1.5	18	.008	0		9	8811....	14313...	.179	.179	2.845	H1-1b
99	M25	.75" Solid Rod	.037	1.5	26	.008	0		5	8811....	14313...	.179	.179	3.295	H1-1b
100	M122	L2x2x4	.012	.406	5	.157	0	y	12	29537...	30585...	.691	1.577	1.136	H2-1
101	M121	L2x2x4	.012	.424	13	.156	.83	y	9	29537...	30585...	.691	1.577	1.136	H2-1
102	M123	L2x2x4	.012	.415	9	.153	.83	y	5	29537...	30585...	.691	1.577	1.136	H2-1
103	M108	Flat	.001	.83	9	.876	0	y	5	6.475...	6.48e...	1350	2700	1.052	H1-1b
104	M106	Flat	.001	0	5	.887	.83	y	13	6.475...	6.48e...	1350	2700	1.049	H1-1b
105	M107	Flat	.001	.83	13	.891	0	y	9	6.475...	6.48e...	1350	2700	1.051	H1-1b

UPON MODIFICATION THE MAXIMUM MEMBER STRESS WILL BE REDUCED TO 77% OF ITS CAPACITY AND WILL BE ADEQUATE TO SUPPORT THE PROPOSED T-MOBILE UPGRADE.

SERVICE DEFLECTION = 1.91" x [(60MPH)^2/(93MPH)^2] = 0.80" < 1.6"
HENCE, OK.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10473.CT11126F - Rev1
Calculated By: JJ Date : 10/1/20
Checked By: IM Date : 10/1/20

Design connection per AISC Steel Manual, 14th edition [LRFD].

Connection Details

Bolts

Quantity =	4	
Diameter =	0.75	
Vertical Spacing =	6.75	in (assumed)
Horizontal Spacing =	6.75	in (assumed)
Grade =	A325	
F_{nt} =	90	ksi
F_{nv} =	54	ksi

Loading Details

Node N38

Shear, Z =	2.265	k
Shear, Y =	3.542	k
Tension, X =	1.657	k
Mz =	13.18	k-ft
My =	5.991	k-ft
Mx =	2	k-ft

[Table J3.2]
[Table J3.2]

1 - Tensile Capacity

$$\phi R_{nt} = F_{nt} A_b$$ [Eqn. J3-1]

φ =	0.75	
F_{nt} =	90	ksi
A_b =	0.442	in^2
φR_{nt} =	29.84	k
T_{max} =	17.46	k

Rnt > Tmax

59%

OK

2 - Shear Capacity

$$\phi R_{nv} = F_{nv} A_b$$ [Eqn. J3-1]

φ =	0.75	
F_{nv} =	54	ksi
A_b =	0.442	in^2
φR_{nv} =	17.90	k
V_{max} =	3.57	k

Rnv > Vmax

20%

OK

3 - Combined Tension and Shear Capacity

$$\phi R'_{nt} = F'_{nt} A_b$$ [Eqn. J3-2]

$$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt}$$ [Eqn. J3-3a]

φ =	0.75	
F'_{nt} =	90	ksi
A_b =	0.442	in^2
$\varphi R'_{nt}$ =	29.84	k
T_{max} =	17.46	k

R'nt > Tmax

59%

OK

CONNECTICUT DESIGN CRITERIA - STATE

Revison:

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS

Municipality	Ground Snow Load	*Wind Design Parameters*							
		MCE Spectral Accelerations (%g)		Ultimate Design Wind Speeds, V_{ult} (mph)			Nominal Design Wind Speeds, V_{asd} (mph)		
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV
Andover	30	0.176	0.063	120	130	140	93	101	108
Ansonia	30	0.195	0.064	115	125	135	89	97	105
Ashford	35	0.173	0.063	120	130	140	93	101	108
Avon	35	0.181	0.064	110	120	130	85	93	101
Barkhamsted	40	0.177	0.065	110	120	125	85	93	97
Beacon Falls	30	0.192	0.064	115	125	135	89	97	105
Berlin	30	0.183	0.063	115	125	135	89	97	105
Bethany	30	0.189	0.063	115	125	135	89	97	105
Bethel	30	0.215	0.066	110	120	125	85	93	97
Bethlehem	35	0.190	0.065	110	120	125	85	93	97
Bloomfield	35	0.180	0.064	115	125	130	89	97	101
Bolton	30	0.177	0.063	115	125	135	89	97	105
Bozrah	30	0.170	0.061	120	135	145	93	105	112
Branford	30	0.180	0.061	120	130	140	93	101	108
Bridgeport	30	0.209	0.064	115	125	135	89	97	105
Bridgewater	35	0.201	0.066	110	120	125	85	93	97
Bristol	35	0.185	0.064	110	120	130	85	93	101
Brookfield	35	0.208	0.066	110	120	125	85	93	97
Brooklyn	35	0.171	0.062	120	130	140	93	101	108
Burlington	35	0.182	0.064	110	120	130	85	93	101
Canaan	40	0.173	0.065	105	115	120	81	89	93
Canterbury	35	0.171	0.061	120	130	140	93	101	108
Canton	35	0.180	0.064	110	120	130	85	93	101
Chaplin	35	0.173	0.062	120	130	140	93	101	108
Cheshire	30	0.186	0.063	115	125	135	89	97	105
Chester	30	0.172	0.060	120	130	140	93	101	108
Clinton	30	0.169	0.059	120	135	140	93	105	108
Colchester	30	0.174	0.061	120	130	140	93	101	108
Colebrook	40	0.174	0.065	105	115	125	81	89	97
Columbia	30	0.175	0.062	120	130	140	93	101	108
Cornwall	40	0.180	0.065	105	115	120	81	89	93
Coventry	30	0.176	0.063	120	130	140	93	101	108
Cromwell	30	0.181	0.063	115	125	135	89	97	105
Danbury	30	0.217	0.067	110	120	125	85	93	97
Darien	30	0.242	0.068	110	120	130	85	93	101
Deep River	30	0.170	0.060	120	130	140	93	101	108
Derby	30	0.195	0.064	115	125	135	89	97	105
Durham	30	0.179	0.062	115	130	140	89	101	108
Eastford	40	0.172	0.063	120	130	140	93	101	108
East Granby	35	0.177	0.065	110	120	130	85	93	101
East Haddam	30	0.172	0.061	120	130	140	93	101	108
East Hampton	30	0.177	0.062	120	130	140	93	101	108

East Hartford	30	0.180	0.064	115	125	135	89	97	105
East Haven	30	0.182	0.062	120	130	140	93	101	108
East Lyme	30	0.164	0.059	125	135	145	97	105	112
Easton	30	0.215	0.066	110	120	130	85	93	101
East Windsor	35	0.177	0.064	115	125	135	89	97	105
Ellington	35	0.176	0.064	115	125	135	89	97	105
Enfield	35	0.176	0.065	110	125	130	85	97	101
Essex	30	0.168	0.059	120	135	145	93	105	112
Fairfield	30	0.215	0.065	115	125	135	89	97	105
Farmington	35	0.183	0.064	115	125	135	89	97	105
Franklin	30	0.171	0.061	120	130	140	93	101	108
Glastonbury	30	0.180	0.063	115	125	135	89	97	105
Goshen	40	0.181	0.065	105	115	125	81	89	97
Granby	35	0.176	0.065	110	120	130	85	93	101
Greenwich	30	0.259	0.070	110	120	130	85	93	101
Griswold	30	0.168	0.060	125	135	145	97	105	112
Groton	30	0.160	0.058	125	135	145	97	105	112
Guilford	30	0.176	0.061	120	130	140	93	101	108
Haddam	30	0.175	0.061	120	130	140	93	101	108
Hamden	30	0.185	0.063	115	125	135	89	97	105
Hampton	35	0.172	0.062	120	130	140	93	101	108
Hartford	30	0.181	0.064	115	125	135	89	97	105
Hartland	40	0.175	0.065	110	120	125	85	93	97
Harwinton	35	0.183	0.065	110	120	130	85	93	101
Hebron	30	0.177	0.063	120	130	140	93	101	108
Kent	40	0.188	0.065	105	115	120	81	89	93
Killingly	40	0.171	0.062	120	130	140	93	101	108
Killingworth	30	0.173	0.061	120	130	140	93	101	108
Lebanon	30	0.173	0.062	120	130	140	93	101	108
Ledyard	30	0.163	0.059	125	135	145	97	105	112
Lisbon	30	0.169	0.061	125	135	145	97	105	112
Litchfield	40	0.184	0.065	110	120	125	85	93	97
Lyme	30	0.164	0.059	125	135	145	97	105	112
Madison	30	0.173	0.060	120	130	140	93	101	108
Manchester	30	0.178	0.064	115	125	135	89	97	105
Mansfield	35	0.173	0.062	120	130	140	93	101	108
Marlborough	30	0.177	0.062	120	130	140	93	101	108
Meriden	30	0.183	0.063	115	125	135	89	97	105
Middlebury	35	0.191	0.064	110	120	130	85	93	101
Middlefield	30	0.181	0.063	115	125	135	89	97	105
Middletown	30	0.180	0.063	115	130	135	89	101	105
Milford	30	0.194	0.063	115	125	135	89	97	105
Monroe	30	0.205	0.065	110	120	130	85	93	101
Montville	30	0.165	0.059	125	135	145	97	105	112
Morris	35	0.187	0.065	110	120	125	85	93	97
Naugatuck	30	0.190	0.064	110	125	135	85	97	105
New Britain	30	0.183	0.064	115	125	135	89	97	105
New Canaan	30	0.240	0.068	110	120	130	85	93	101
New Fairfield	35	0.212	0.067	105	115	125	81	89	97
New Hartford	40	0.180	0.065	110	120	130	85	93	101
New Haven	30	0.186	0.062	115	125	135	89	97	105
Newington	30	0.182	0.064	115	125	135	89	97	105
Southbury	35	0.198	0.065	110	120	130	85	93	101

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Aug 06 2020

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

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

Exhibit F

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: CT11126F

Southbury/ I-84 X15/ Bagl
231 Kettletown Road
Southbury, Connecticut 06488

September 20, 2020

EBI Project Number: 6220004903

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**10.10%**

September 20, 2020

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

Emissions Analysis for Site: CT11126F - Southbury/ I-84 X15/ Bagl

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **231 Kettletown Road** in **Southbury, 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 231 Kettletown Road in Southbury, 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) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 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.

4) 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.

5) 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.

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) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

8) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

9) 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.

10) 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.

11) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antenna mounting height centerlines of the proposed antennas are 193 and 195 feet above ground level (AGL).

13) 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.

14) 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 AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	195 feet	Height (AGL):	195 feet	Height (AGL):	195 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A1 MPE %:	**2.43%**	Antenna B1 MPE %:	**2.43%**	Antenna C1 MPE %:	**2.43%**
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 / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd
Height (AGL):	193 feet	Height (AGL):	193 feet	Height (AGL):	193 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,873.80	ERP (W):	12,873.80	ERP (W):	12,873.80
Antenna A2 MPE %:	**1.79%**	Antenna B2 MPE %:	**1.79%**	Antenna C2 MPE %:	**1.79%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	195 feet	Height (AGL):	195 feet	Height (AGL):	195 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A3 MPE %:	**0.44%**	Antenna B3 MPE %:	**0.44%**	Antenna C3 MPE %:	**0.44%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	4.65%
AT&T	1.57%
Metro PCS	0.24%
Verizon	1.46%
Sprint	2.18%
Site Total MPE % :	10.10%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	4.65%
T-Mobile Sector B Total:	4.65%
T-Mobile Sector C Total:	4.65%
Site Total MPE % :	10.10%

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 2500 MHz LTE	2	6412.98	195.0	12.13	2500 MHz LTE	1000	1.21%
T-Mobile 2500 MHz NR	2	6412.98	195.0	12.13	2500 MHz NR	1000	1.21%
T-Mobile 600 MHz LTE	2	591.73	193.0	1.14	600 MHz LTE	400	0.29%
T-Mobile 600 MHz NR	1	1577.94	193.0	1.52	600 MHz NR	400	0.38%
T-Mobile 700 MHz LTE	2	648.82	193.0	1.25	700 MHz LTE	467	0.27%
T-Mobile 1900 MHz GSM	4	1101.85	193.0	4.25	1900 MHz GSM	1000	0.43%
T-Mobile 1900 MHz LTE	2	2203.69	193.0	4.25	1900 MHz LTE	1000	0.43%
T-Mobile 2100 MHz LTE	2	2334.27	195.0	4.41	2100 MHz LTE	1000	0.44%
						Total:	**4.65%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

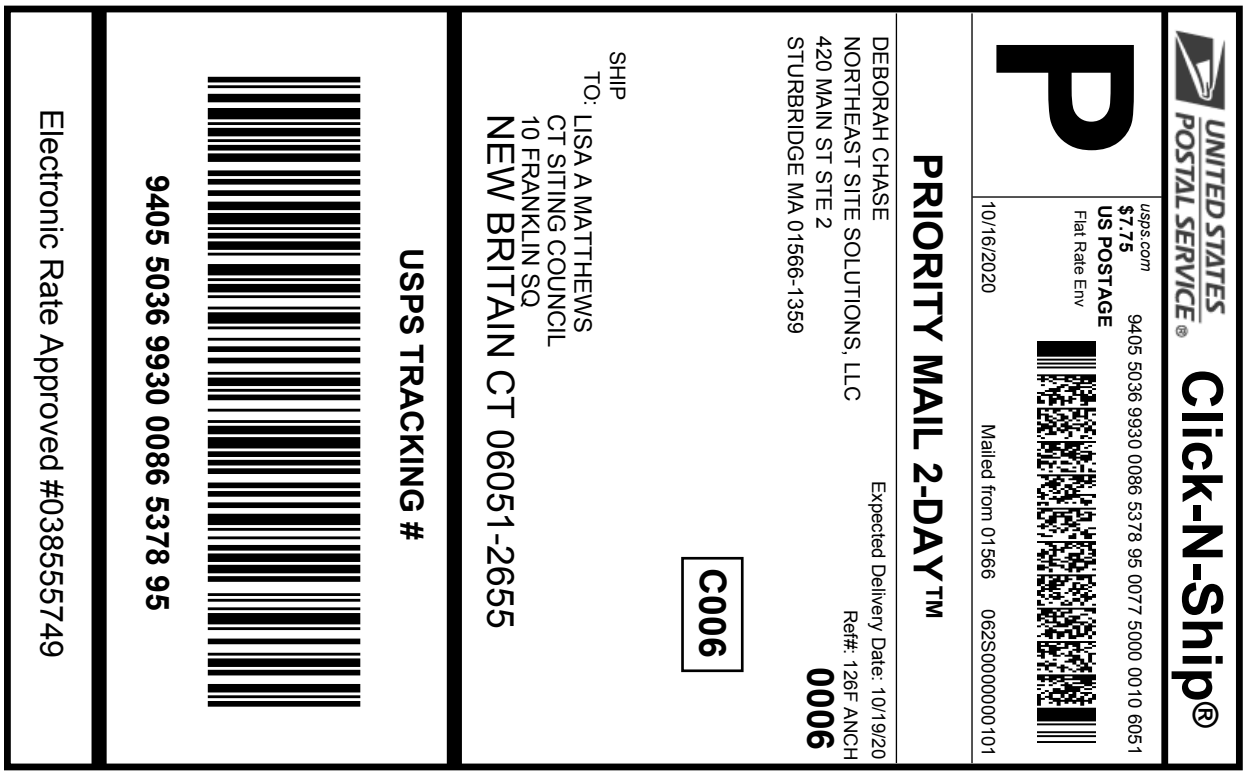
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	4.65%
Sector B:	4.65%
Sector C:	4.65%
T-Mobile Maximum MPE % (Sector A):	4.65%
Site Total:	10.10%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.10%** 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



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0086 5378 95

Trans. #:	510552646
Print Date:	10/15/2020
Ship Date:	10/16/2020
Expected Delivery Date:	10/19/2020

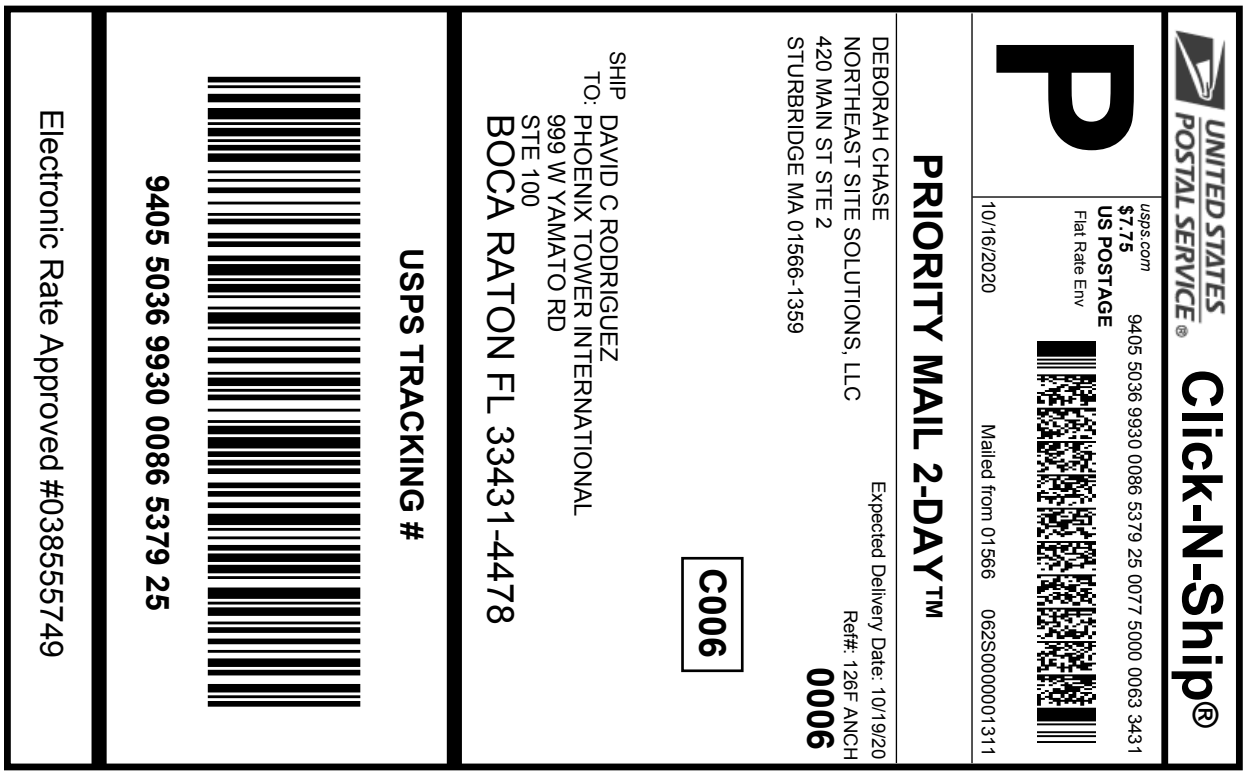
Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 126F ANCH
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: LISA A MATTHEWS
CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0086 5379 25

Trans. #:	510552646
Print Date:	10/15/2020
Ship Date:	10/16/2020
Expected Delivery Date:	10/19/2020

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 126F ANCH
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: DAVID C RODRIGUEZ
PHOENIX TOWER INTERNATIONAL
999 W YAMATO RD
STE 100
BOCA RATON FL 33431-4478

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0086 5379 49 0077 5000 0010 6488

usps.com
$7.75
US POSTAL SERVICE
Flat Rate Env

10/16/2020 Mailed from 01566 062S0000001307

P

PRIORITY MAIL 2-DAY™

DEBORAH CHASE
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

Expected Delivery Date: 10/19/20
Ref#: 126F ANCH

0006

C008

SHIP TO: JESSICA TOWNSEND
LAND USE INSPECTOR/ZONING ENFOREMENT
501 MAIN ST S # 3
SOUTHBURY CT 06488-4217

USPS TRACKING #

9405 5036 9930 0086 5379 49

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0086 5379 49

Trans. #:	510552646
Print Date:	10/15/2020
Ship Date:	10/16/2020
Expected Delivery Date:	10/19/2020

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 126F ANCH
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: JESSICA TOWNSEND
LAND USE INSPECTOR/ZONING ENFOREMENT
501 MAIN ST S # 3
SOUTHBURY CT 06488-4217

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0086 5379 63 0077 5000 0010 6488

usps.com
$7.75
US POSTAGE
Flat Rate Env

10/16/2020 Mailed from 01566 062S0000001307

P

PRIORITY MAIL 2-DAY™

DEBORAH CHASE
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

Expected Delivery Date: 10/19/20
Ref#: 126f anch

0006

C008

SHIP TO: JEFF MANVILLE
FIST SELECTMAN-TOWN OF SOUTHBURY
501 MAIN ST S
SOUTHBURY CT 06488-4217

USPS TRACKING #

9405 5036 9930 0086 5379 63

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0086 5379 63

Trans. #:	510552646
Print Date:	10/15/2020
Ship Date:	10/16/2020
Expected Delivery Date:	10/19/2020

Priority Mail® Postage:	**$7.75**
Total:	**$7.75**

From: DEBORAH CHASE Ref#: 126f anch
NORTHEAST SITE SOLUTIONS, LLC
420 MAIN ST STE 2
STURBRIDGE MA 01566-1359

To: JEFF MANVILLE
FIST SELECTMAN-TOWN OF SOUTHBURY
501 MAIN ST S
SOUTHBURY CT 06488-4217

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

Exhibit H

Deborah Chase

From: Deborah Chase
Sent: Thursday, October 15, 2020 1:56 PM
To: 'selectman@southbury-ct.gov'; 'landuseofc@southbury-ct.gov'; 'David C. Rodriguez'
Subject: 231 KETTLETON ROAD, SOUTHBURY CT 06488 T-MOBILE EM APPLICATION (CT11126F-ANCHOR)
Attachments: 231 KETTLETON ROAD, SOUTHBUTY, CT 06488 T-MOBILE EM APPLICATION (CT11126F ANCHOR).pdf

Good afternoon,

On behalf of our client, (T-Mobile), I am forwarding copies of T-Mobile's Exempt Modification Request to collocate

on a wireless telecommunications facility located at 231 Kettleton Road in Southbury, CT

Hard copies will be sent as well for your records.

Please do not hesitate to contact me with any questions regarding T-Mobile's Exempt Modification Request.

Thank you very much

Deborah Chase
Senior Project Coordinator & Analyst
Mobile: 860-490-8839

NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
www.northeastsitesolutions.com

Save a tree. Refuse.Reduce. Reuse. Recycle.