



T-Mobile
Cullen Morgan
Site Acquisition Consultant
750 W Center Street
Suite 301
West Bridgewater, MA 02379
(941)549-7263
cmorgan@clinellc.com

March 9, 2025

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

RE: NOTICE OF EXEMPT MODIFICATION
21 E Main Street, Clinton, CT 06413
Latitude: 41.278949 N
Longitude: -72.525976 W
T-Mobile Site #: CT11031B

Dear Members of the Siting Council:

T-Mobile currently maintains six (6) antennas at the 60-foot level of the existing 67-foot monopole tower located at 21 E Main Street, Clinton, CT. The 67-foot tower is owned by CTI Towers LLC and the property is owned by RREH II LLC. T-Mobile now intends to modify existing to their existing telecommunications facility. All modifications to equipment will take place at the 166-foot level of the tower.

Planned Modifications:

Existing to be Removed:

- (1) APX16DWV-16DWV-S-E-A20 Panel Antennas
- (12) 7/8" Coax Cables
- (1) Cabinet

Install New:

- (3) AIR6419 B41 Antennas
- (3) Radio 4460 B25+B66 RRUs
- (3) 1.99" Hybrid cables
- (3) Cabinets

Existing to Remain:

- (3) APXVAALL24_43-U-NA20 Antennas
- (3) RRU 4449 B71+B85

750 W Center St, Suite 301
West Bridgewater, MA 02379
781-713-4725

This facility was approved by the Town of Clinton in Building Permit No. 97-468 dated March 12, 1998. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, or construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Town Manager Michelle Benivegna, Building Inspector Richard Pleines, 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).

Respectfully Submitted,
Cullen Morgan
Site Acquisition Consultant
Centerline Communications, LLC (Agent to T-Mobile)
Mobile: (941) 549-7263
cmorgan@clinellc.com

Attachments

cc: Michelle Benivegna, Town Manager – Town of Clinton
Building Inspector Richard Pleines – Town of Clinton
CTI Towers LLC - Tower Owner
RREH II LLC - Property Owner

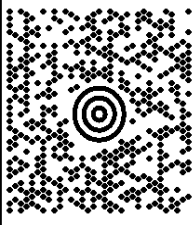
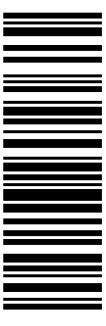
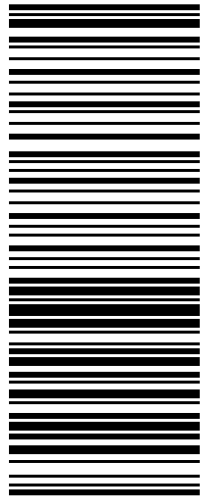
C/O CULLEN MORGAN 941-549-7263 CENTERLINE COMMUNICATIONS LLC 12579 SAGEWOOD DRIVE VENICE FL 34293		2 LBS	1 OF 1
SHIP TO: CONNECTICUT SITING COUNCIL 10 FRANKLIN SQUARE NEW BRITAIN CT 06051-2655			
	CT 067 9-06 		
UPS GROUND			
TRACKING #: 1Z 9Y4 503 03 0565 4110			
			
BILLING: P/P			
Reference # 1: CT11031B CSC EM			
CS 24.9.00. MACNV50 11.0A 03/2025*			
 ™			

EXHIBIT A

Letter of Authorization

LETTER OF AUTHORIZATION FOR PERMITTING & ZONING

Tenant Name: T-Mobile Northeast LLC ("T-Mobile")

T-Mobile Site Number: CT11031B

CTI Site Number: 11201

Site Address: 21 E Main Street, Clinton, CT 06413

Tax Map/Parcel ID #: 56/60/8/

I, Scott Crisler, of **CTI Towers Assets II, LLC ("CTI")**, do hereby authorize **T-Mobile Northeast LLC ("T-Mobile")** and **Centerline Communications LLC ("Centerline")**, their parents, subsidiaries, affiliates, successors, assigns, contractors, and agents, to act as the non-exclusive agent for the sole purpose of filing and consummating any land-use, building, zoning, or electrical permitting application(s) as may be required by the applicable permitting authorities for T-Mobile's proposed equipment:

Signature: Scott Crisler

Print Name: Scott Crisler

NOTARY BLOCK

State of Ca

County of Riverside

On 2/21/25, before me, _____ personally appeared _____, who provide to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the state of _____ that the foregoing paragraph is true and correct.

Witness my hand and official seal,

Signature: _____

My commission expires: 02/28/26

see attached CA document

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Riverside)

On February 21, 2025 before me, M. Kathleen Gonzales, Notary Public
(insert name and title of the officer)

personally appeared Scott Crisler
who proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ ~~(is)~~ are subscribed to the within instrument and acknowledged to me that ~~he~~ ~~she~~ they executed the same in ~~his~~ ~~her~~ their authorized capacity~~(ies)~~, and that by ~~his~~ ~~her~~ their signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature

M. Kathleen Gonzales

(Seal)

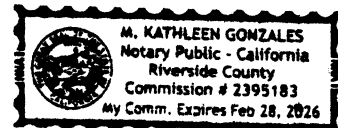


EXHIBIT B

Original Facility Approval

CERTIFICATE ISSUED

DATE 3/12/98

BUILDING PERMIT - CERTIFICATE OF OCCUPANCY

DATE Oct. 24 19 97

PERMIT NO. 97-468

APPLICANT Conti Enterprises, Inc.

ADDRESS 3001 South Clinton Ave.,
(NO.) S. Plainfield, NJ 07080

(CONTR'S LICENSE)

PERMIT TO Install equip. on tower STORY NO.

NUMBER OF DWELLING UNITS 0

AT (LOCATION) 21 East Main St.
(NO.)

(STREET)

ZONING DISTRICT B-3

BETWEEN Post Office Square
(CROSS STREET)

AND

Indian River

(CROSS STREET)

SUBDIVISION Map 156

LOT 8

BLOCK 60

LOT SIZE

N/A

BUILDING IS TO BE FT. WIDE BY FT. LONG BY FT. IN HEIGHT AND SHALL CONFORM IN CONSTRUCTION

TO TYPE USE GROUP BASEMENT WALLS OR FOUNDATION (TYPE)

REMARKS: Installation of telecommunications equipment and associated devices onto an existing tower and at the base of existing tower.

AREA OR VOLUME (CUBIC/SQUARE FEET)

Comcast Cablevision of Clinton

OWNER 21 East Main St., Clinton, CR 06413

ADDRESS

TO BE POSTED ON PREMISES
SEE REVERSE SIDE OF CERTIFICATE



CENTERLINE

EXHIBIT C

Property Card

21 EAST MAIN ST

Location

21 EAST MAIN ST

Mblu

56/ 60/ 8/ /

Acct#

S0553900

Owner

RREH II LLC

Assessment

\$1,217,500

Appraisal

\$1,739,300

PID

3528

Building Count

1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$1,492,500	\$246,800	\$1,739,300
Assessment			
Valuation Year	Improvements	Land	Total
2020	\$1,044,800	\$172,700	\$1,217,500

Owner of Record

Owner

RREH II LLC

Sale Price

\$500,000

Co-Owner

Certificate

Address

4181 BONITA WAY
DEERFIELD, FL 33064

Book & Page

559/248

Sale Date

11/12/2024

Instrument

25

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
RREH II LLC	\$500,000		559/248	25	11/12/2024
COMCAST OF CONNECTICUT INC	\$0		0505/0736	25	02/08/2018
STORER COMMUNICATIONS OF CLINTON	\$0		0124/0522		07/15/1981

Building Information

Building 1 : Section 1

Year Built:

1900

Living Area:

5,494

Replacement Cost:

\$1,105,073

Building Percent Good:

78

Replacement Cost
Less Depreciation: \$862,000

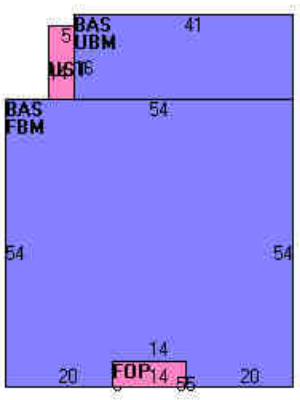
Building Attributes	
Field	Description
STYLE	Office Bldg
MODEL	Commercial
Grade	Good
Stories:	2
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Plastered
Interior Wall 2	Drywall/Sheet
Interior Floor 1	Quarry Tile
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Hot Water
AC Type	Central
Struct Class	
Bldg Use	OFFICE BLD M94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3400
Heat/AC	HEAT/AC PKGS
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	22.00
% Corn Wall	0.00

Building Photo



(https://images.vgsi.com/photos/ClintonCTPhotos///0021/P1000610_2125

Building Layout



(https://images.vgsi.com/photos/ClintonCTPhotos//Sketches/3528_3528.j

Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	3,502	3,502
FBM	Basement, Finished	2,846	1,992
FOP	Porch, Open, Finished	70	0
UBM	Basement, Unfinished	656	0
UST	Utility, Storage, Unfinished	70	0
		7,144	5,494

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	3400
Description	OFFICE BLD M94
Zone	B-3
Neighborhood	3000
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.28
Frontage	0
Depth	0
Assessed Value	\$172,700
Appraised Value	\$246,800

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	PAVING-ASPHALT			6000.00 S.F.	\$11,300	1
FN3	FENCE-6' CHAIN			32.00 L.F.	\$400	1
MSC51	TOWER			200.00 UNIT	\$112,500	1
MSC1				3.00 UNIT	\$506,300	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$1,492,500	\$246,800	\$1,739,300
2019	\$892,300	\$664,200	\$1,556,500
2018	\$892,300	\$664,200	\$1,556,500

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$1,044,800	\$172,700	\$1,217,500
2019	\$624,700	\$464,900	\$1,089,600
2018	\$624,700	\$464,900	\$1,089,600

EXHIBIT D

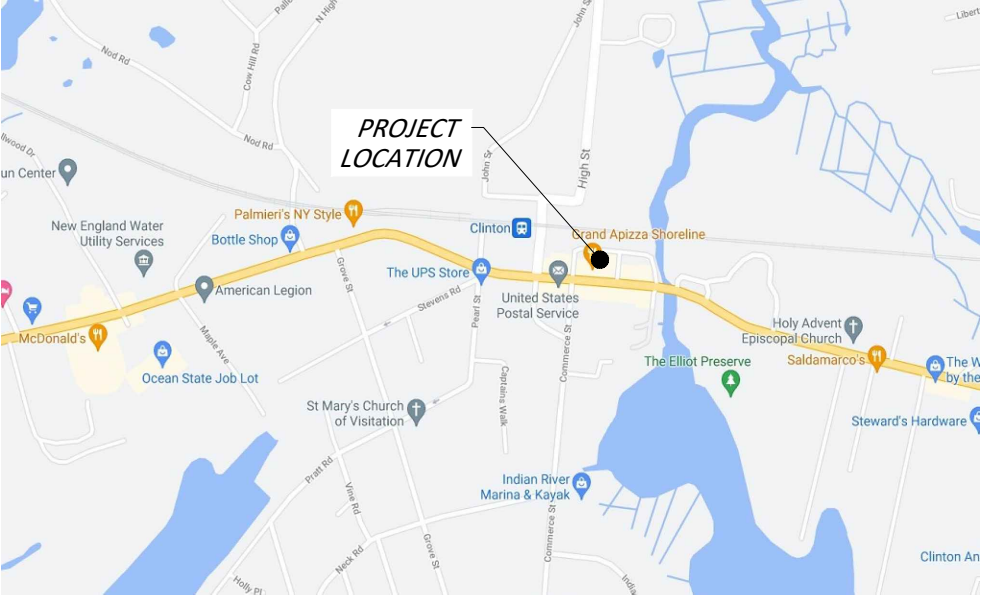
Construction Drawings

PROJECT INFORMATION

SITE NAME:	CLINTON/I-95/X63/AT_1
SITE NUMBER:	CT11031B
SITE ADDRESS:	21 EAST MAIN STREET CLINTON, CT 06413
COUNTY	MIDDLESEX
MUNICIPALITY:	TOWN OF CLINTON
ZONING:	B3
LATITUDE:	N 41°16'44.22" (41.278949°) (NAD83)
LONGITUDE:	W -72°31'33.51" (-72.525976°) (NAD83)
TYPE OF SITE:	SELF SUPPORT TOWER
STRUCTURE HEIGHT:	67'-5" AGL
ANTENNA CENTER:	60'-0" AGL
GROUND ELEVATION:	16.4' (NAVD 88)
BUILDING OWNER NAME:	CTI TOWERS INC. C/O MIKALA MANN
BUILDING OWNER ADDRESS:	38 POND STREET SUITE 305 FRANKLIN, MA 02038
APPLICANT:	T-MOBILE NORTHEAST, LLC. 35 GRIFFIN RD S BLOOMFIELD, CONNECTICUT 06002
APPLICANT PHONE:	(860) 692-7100



T - Mobile
NORTHEAST LLC



VICINITY MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE

SITE NAME: CLINTON/I-95/X63/AT_1
SITE ID: CT11031B
ADDRESS: 21 EAST MAIN STREET
CLINTON, CT 06413

TECHNOLOGY: 67D5D998E 6160
MODIFICATION: ANCHOR

T - Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

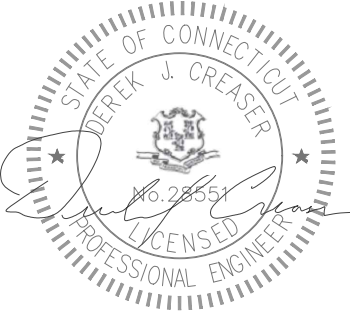


750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
0	08/21/2024	ISSUED FOR CONSTRUCTION	RC
B	07/01/2024	REVISED PER REDLINES	RC
A	06/27/2024	ISSUE FOR REVIEW	NB

DESIGNED BY:	APPROVED BY:
NB	RC



DATE: 08/21/2024

IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT. UNLESS EXPLICITLY AGREED TO BY THE ENGINEER IN WRITING, THE ENGINEER DISCLAIMS ALL LIABILITY ASSOCIATED WITH THE REUSE, ALTERATION OR MODIFICATION OF THE CONTENTS HEREIN.

SITE NAME:	CLINTON/I-95/X63/AT_1
SITE ID:	CT11031B
SITE ADDRESS:	21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY
SHEET TITLE:	TITLE SHEET
DRAWING:	T-1

PROJECT DIRECTORY

ENGINEERING FIRM:
CENTERLINE ENGINEERING SERVICES, PA
750 WEST CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
DEREK CREASER (617) 306-3034

CARRIER:
T-MOBILE NORTHEAST, LLC.
35 GRIFFIN RD S
BLOOMFIELD, CT 06002
PHONE: (860) 692-1700



Know what's below.
Call before you dig.

GENERAL NOTES

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

SCOPE OF WORK

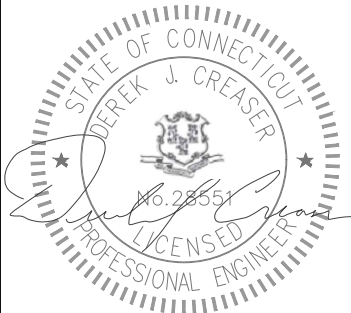
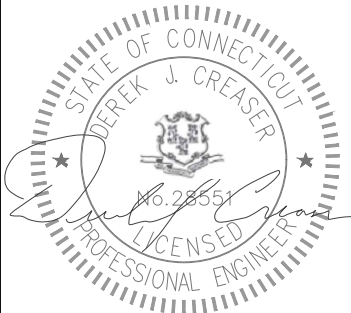
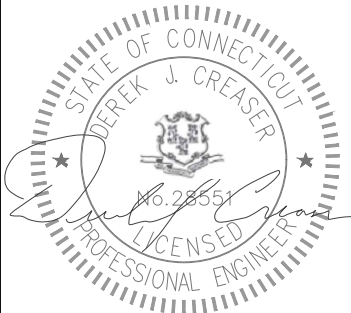
- REMOVE THREE EXISTING ANTENNAS
- INSTALL THREE NEW ANTENNAS
- INSTALL THREE NEW RRUS
- REMOVE RBS 6102 EQUIPMENT CABINET
- INSTALL ONE NEW ERICSSON 6160 EQUIPMENT CABINET
- INSTALL ONE NEW ERICSSON B160 BATTERY CABINET
- REMOVE TWELVE 7/8" COAX CABLES
- REMOVE ALL UNUSED CABLES AND EQUIPMENT
- INSTALL RBS6601 FOR DUG20

DRAWING INDEX

NO.	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES, RF NOTES, CABLING NOTES
A-1	COMPOUND PLAN
A-2	EQUIPMENT LAYOUT
A-3	EQUIPMENT DETAILS
A-4	WEST ELEVATION
A-5	ANTENNA PLAN & SCHEDULE
SN-1	STRUCTURAL NOTES & SPECIAL INSPECTIONS
S-1	ANTENNA & RRU MOUNTING DETAILS
G-1	GROUNDING & ONE LINE DIAGRAM

DRAWING SCALE NOTES:

THESE DRAWINGS ARE FORMATTED TO BE FULL SIZE AT 22"x34". CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

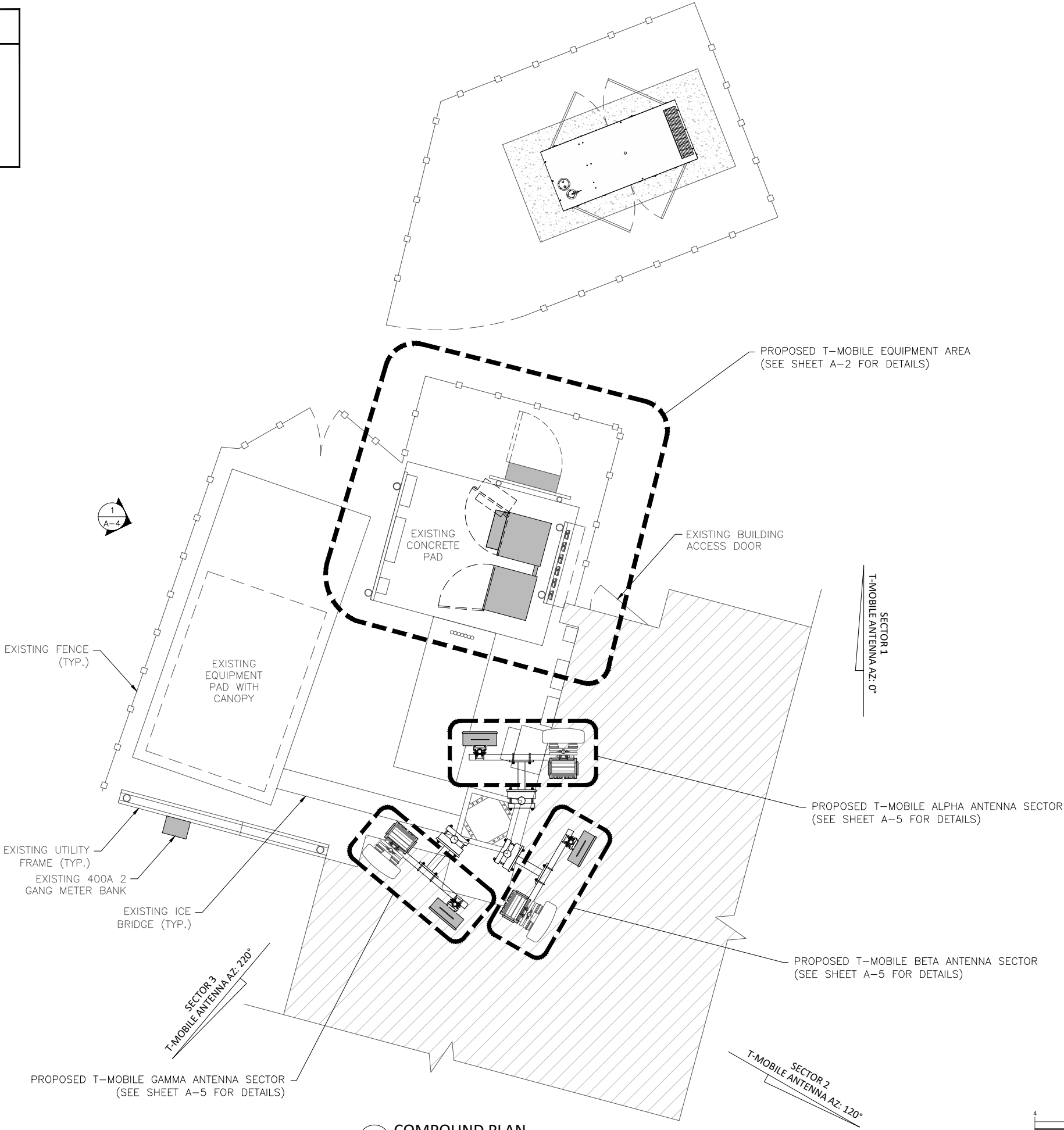
RF NOTES	ANTENNA CABLE & SCHEDULING NOTES	GENERAL NOTES				T - Mobile NORTHEAST LLC T-MOBILE NORTHEAST, LLC. 15 COMMERCE WAY, SUITE B NORTON, MA 02766 PHONE: (508) 286-2700 FAX: (508) 286-2893 CENTERLINE ENGINEERING SERVICES, PA 750 W CENTER ST, SUITE 301 WEST BRIDGEWATER, MA 02379 PHONE: 781.713.4725 REVISIONS <table><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td>0</td><td>08/21/2024</td><td>ISSUED FOR CONSTRUCTION</td><td>RC</td></tr><tr><td>B</td><td>07/01/2024</td><td>REVISED PER REDLINES</td><td>RC</td></tr><tr><td>A</td><td>06/27/2024</td><td>ISSUE FOR REVIEW</td><td>NB</td></tr><tr><td>REV</td><td>DATE</td><td>DESCRIPTION</td><td>BY</td></tr><tr><td colspan="2">DESIGNED BY: NB</td><td colspan="2" rowspan="9">  </td></tr><tr><td colspan="2"></td></tr><tr><td colspan="2">DATE: 08/21/2024</td></tr><tr><td colspan="2">IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT. UNLESS EXPLICITLY AGREED TO BY THE ENGINEER IN WRITING, THE ENGINEER DISCLAIMS ALL LIABILITY ASSOCIATED WITH THE REUSE, ALTERATION OR MODIFICATION OF THE CONTENTS HEREIN.</td></tr><tr><td colspan="2">SITE NAME: CLINTON/I-95/X63/AT_1</td></tr><tr><td colspan="2">SITE ID: CT11031B</td></tr><tr><td colspan="2">SITE ADDRESS: 21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY</td></tr><tr><td colspan="2">SHEET TITLE: GENERAL NOTES, RF NOTES, CABLING NOTES</td></tr><tr><td colspan="2">DRAWING: GN-1</td></tr></table>																																	0	08/21/2024	ISSUED FOR CONSTRUCTION	RC	B	07/01/2024	REVISED PER REDLINES	RC	A	06/27/2024	ISSUE FOR REVIEW	NB	REV	DATE	DESCRIPTION	BY	DESIGNED BY: NB						DATE: 08/21/2024		IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT. UNLESS EXPLICITLY AGREED TO BY THE ENGINEER IN WRITING, THE ENGINEER DISCLAIMS ALL LIABILITY ASSOCIATED WITH THE REUSE, ALTERATION OR MODIFICATION OF THE CONTENTS HEREIN.		SITE NAME: CLINTON/I-95/X63/AT_1		SITE ID: CT11031B		SITE ADDRESS: 21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY		SHEET TITLE: GENERAL NOTES, RF NOTES, CABLING NOTES		DRAWING: GN-1	
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1. ACTUAL LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR 2. THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED. 3. RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8. 4. ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G. OUT DOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC. 5. RADIO SIGNAL CABLE SHALL BE SUPPORTED AT MINIMUM OF EVERY THREE (3) FEET EXCEPT INSIDE MONOPOLES OR MONOPOLES WHERE CABLE AND CONNECTOR MANUFACTURERS SUPPORT RECOMMENDATIONS SHALL BE FOLLOWED. MANUFACTURER RECOMMENDATION CABLES SUPPORT ACCESSORIES SHALL BE USED. 6. THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT AND PROTECT ANTENNA CABLE RUNS. 7. DRIP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM BUILDING OR OUTDOOR BTS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE COAXIAL CABLE PORT. 8. ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS. 9. 7/16 DIN CONNECTORS REQUIRE NO ADDITIONAL WEATHER PROOFING IN INDOOR APPLICATIONS IF INSTALLED AND TORQUED PROPERLY. IN OUTDOOR APPLICATIONS WEATHER PROOFING IS REQUIRED AND THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED. 10. USING WEATHERPROOFING KIT APPROVED BY CABLE MANUFACTURER AND CONTRACTOR START TAPE APPROXIMATELY 5 INCHES FROM THE CONNECTOR, AND WRAP 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP. TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER INCH OR TWO. PASS THE BUTYL RUBBER AND FINISH WITH A FINAL LAYER OF TAPE. 11. ANTENNAS SHALL BE PAINTED,WHEN REQUIRED, BY THE LANDLORD OR AUTHORITY OF HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACES PREPARATION AND PAINTING REQUIREMENTS. 12. CABLE SHIELDS AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDED AT THE MIDPOINT OF THE TOWERS THAT ARE BETWEEN 60 FEET AND 200 FEET HIGH, AND AT INTERVALS OF 60 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.	1. SUBCONTRACTOR SHALL VERIFY THE ACTUAL LENGTH IN THE FIELD BEFORE INSTALLATION. 2. TAG AND COLOR CODE ALL MAIN CABLES AT LOCATIONS PER T-MOBILE ANTENNA CABLE MARKING STANDARD: TOP OF TOWER END OF MAIN COAX BOTTOM OF TOWER END OF MAIN COAX DIRECTLY BEFORE AND AFTER RF EQUIPMENT END OF JUMPERS AT BTS EQUIPMENT 3. ANTENNAS SHALL BE PROCURED AND INSTALLED WITH DOWN TILT MOUNTING BRACKETS SUPPLIED BY ANTENNA MANUFACTURER. 4. PRIOR APPROVAL IS REQUIRED BEFORE PERFORMING ANY WORK ON EXISTING CELL SITE EQUIPMENT.	1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY: CONTRACTOR - CENTERLINE COMMUNICATIONS SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION) OWNER - T-MOBILE MOBILITY 2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR. 3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS. 4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY. 5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS. 6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR. 7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE. 8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR. 9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. 10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER. 11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION. 12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. 13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301. 14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.	15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT. 16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE MOBILITY SITES." 17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION. 18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT. 19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS. 20. APPLICABLE BUILDING CODES: SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN. BUILDING CODE: IBC 2015 & CONNECTICUT STATE BUILDING CODE 2018 ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE LIGHTNING CODE: NFPA 780-2017 SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS: AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE; AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FIFTEENTH EDITION; TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.																																																																							
ABBREVIATIONS																																																																										
AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY																																																																					
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS																																																																							
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED																																																																					
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED																																																																					
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED																																																																					
EG	EQUIPMENT GROUND	REF	REFERENCE																																																																							
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED	TYP	TYPICAL																																																																					

NOTES

1.
- CONTRACTOR SHALL MAKE A UTILITY 811 DIG SAFE CALL TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.

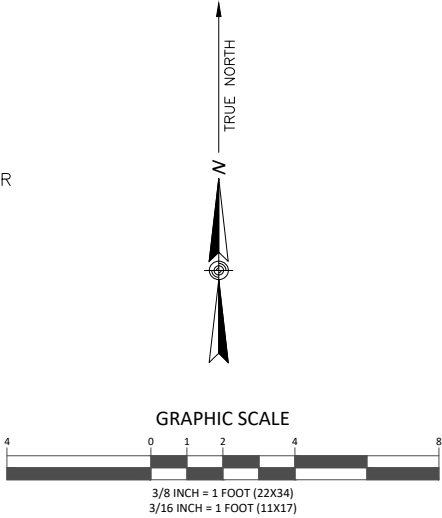
2.
- CONSTRUCTION TO COMMENCE UPON COMPLETION OF A PASSING MOUNT ANALYSIS.

3.
- REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA MODELS AND SETTINGS.



1
A-1

COMPOUND PLAN



T - Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
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FAX: (508) 286-2893

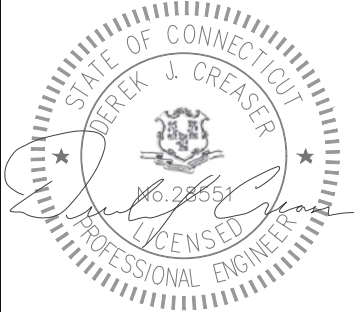


750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
0	08/21/2024	ISSUED FOR CONSTRUCTION	RC
B	07/01/2024	REVISED PER REDLINES	RC
A	06/27/2024	ISSUE FOR REVIEW	NB

DESIGNED BY: NB	APPROVED BY: RC
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DATE: 08/21/2024

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SITE NAME:	CLINTON/I-95/X63/AT_1
SITE ID:	CT11031B
SITE ADDRESS:	21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY
SHEET TITLE:	COMPOUND PLAN
DRAWING:	A-1

ERICSSON AIR 6419 B41	
MODEL #	AIR 6419 B41
MANUF.	ERICSSON
HEIGHT	34.5"
WIDTH	20.0"
DEPTH	8.0"
WEIGHT	68.5 LBS W/O MTG HARDWARE
FRONT EPA:	4.8 FT ²
SIDE EPA:	1.92 FT ²



PLAN



FRONT



SIDE



PLAN



FRONT



SIDE

RADIO DIMENSIONS	
MODEL #	RADIO 4460 B25_B66
MANUF.	ERICSSON
HEIGHT	15.1"
WIDTH	17.0"
DEPTH	11.9"
WEIGHT	108 LBS
FRONT EPA:	
SIDE EPA:	

2 RADIO DETAILS
A-3

1 ANTENNA DETAILS
A-3

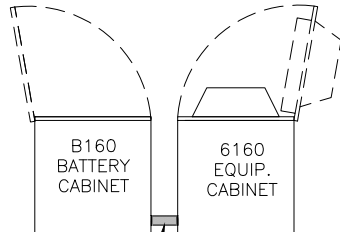


6160 AC ENCLOSURE	
CAPACITY	19U(19" RACK)
RACK SPACE USER EQUIP.	POWER AND CPRI SUPPORT FOR
HARDWARE CAPABILITIES	MULTI-STANDARD REMOTE RADIOS (RRU OR AIR)
	ERS BASEBAND AND TRANSPORT UNITS
	LI-ION BATTERIES
	3PP EQUIPMENT
	ADDITIONAL POWER FEED OPTIONS AVAILABLE
MECHANICAL SPECIFICATIONS	
WEIGHT	320lbs (INCLUDING ACTIVE EQUIPMENT)
DIMENSIONS (HWD)	63"x26"x26" (INCLUDING BASE FRAME)
BASE FRAME HEIGHT	6"
MOUNTING POSITION	GROUND
ENCLOSURE MATERIAL	ALUMINUM
COLOR	POWDER PAINT NCS 2002-B
DOOR	FRONT ACCESS
RACK TYPE	19" (IEC 60297-3-100)
LOCK TYPE	CYLINDER/PAD LOCK
POWER SYSTEM	
INPUT VOLTAGE	3P+N+PE 346/200-415/240 VAC
	2P+N+PE 208/120-220/127 VAC
	1P+N+PE 200-250 VAC



B160 BATTERY ENCLOSURE	
CAPACITY	100Ah/150Ah/170Ah/190Ah/210Ah
VRLA12V:	24U 19"/23"
LI-ION	3xFIAMM
SODIUM-NICKEL	
ELECTRICAL SPECIFICATIONS	
DC OUTPUT	-48VDC/200A
BATTERY BREAKERS	2x125/2p
ALARMS	DOOR OPEN, CLIMATE FAILURE, MCB CONNECTION
MECHANICAL SPECIFICATIONS	
WEIGHT	295 lbs (PLUS 3 STRINGS OF RECOMMENDED
	190 aHR FOR ADDITIONAL 1588LBS)
BATTERY WEIGHT	12 BATTERIES @ 136 lbs EACH = 1632 lbs
DIMENSIONS (HWD)	63"x26"x26" (INCLUDING BASE FRAME)
BASE FRAME HEIGHT	6"
MATERIAL	GALVANIZED STEEL (180g/m ²)
COLOR	POWDER PAINT NCS 2002-B
LOCKING TYPE	CYLINDER/PAD LOCK

3 PROPOSED EQUIPMENT CABINET SPECIFICATIONS
A-3



(1) PROPOSED 2"ØX 8" GALV. NIPPLE, (4) 2"Ø LOCK RINGS. & (2) 2"Ø PLASTIC BUSHING (NOT SHOWN)

4 PROPOSED EQUIPMENT CONDUIT DETAIL
A-3

T-Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
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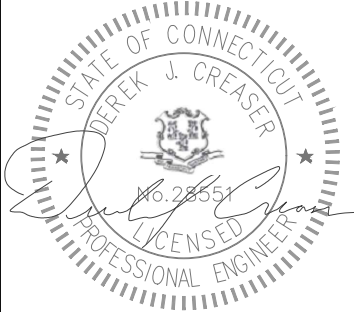


750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
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B	07/01/2024	REVISED PER REDLINES	RC
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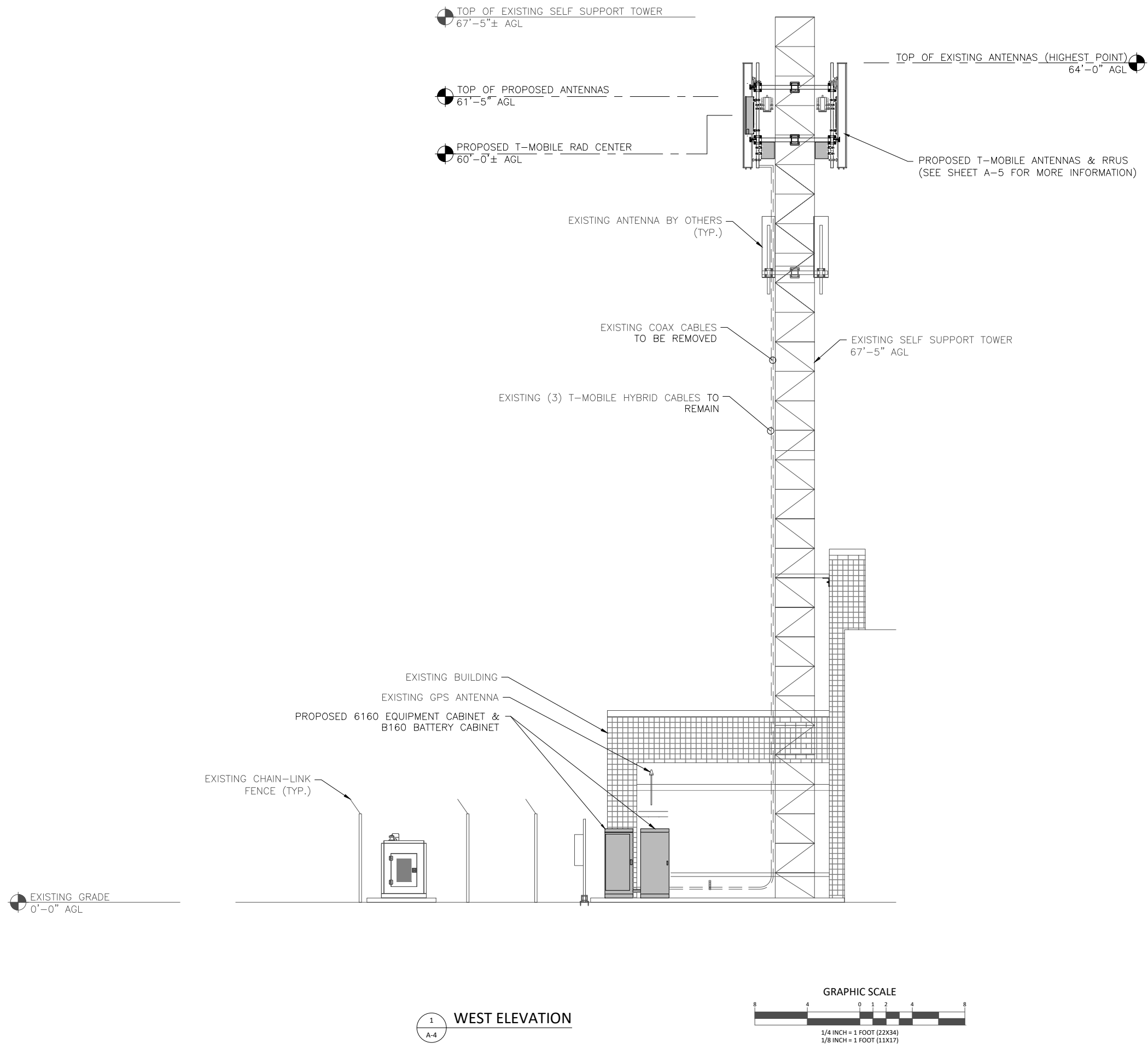
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SHEET TITLE:	EQUIPMENT DETAILS
DRAWING:	A-3



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SITE ADDRESS: 21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY	
SHEET TITLE: WEST ELEVATION	
DRAWING: A-4	

ANTENNA & CABLE SCHEDULE:

- ANTENNA & CABLE NOTES:
- CONSTRUCTION TO COMMENCE UPON COMPLETION OF A PASSING MOUNT ANALYSIS.
 - REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.
 - REMOVE ALL UNUSED CABLE, RRU's AND TMAs.
 - PAINT ANTENNAS AND EQUIP. TO MATCH EXISTING.

LOCATION		AZIMUTH	RAD CENTER	STATUS	TECHNOLOGY	ANTENNA MODEL NO.	MECH DOWNTILT	ELEC DOWNTILT	CABLES	DIPLEXERS	TMA/RRU	CABLE SIZE	CABLE LENGTH
ALPHA	A-1	0°	60'-0'	PROPOSED	N2500	AIR6419 B41	0°	0°	(2)FIBER JUMPER(X2)	N/A	N/A	6x24 HYBRID	N/A
	A-2	0°	60'-0'	EXISTING	L600,N600,L700,N1900,L1900,G1900,L2100	APXVAALL_43-U-NA20	0°	0°	(4)COAX JUMPER(X2) (4)FIBER JUMPER	N/A	RADIO 4449 B71+B85 RADIO 4460 B25+B66	SHARED	N/A
BETA	B-1	120°	60'-0'	PROPOSED	N2500	AIR6419 B41	0°	0°	(2)FIBER JUMPER(X2)	N/A	N/A	6x24 HYBRID	N/A
	B-2	120°	60'-0'	EXISTING	L600,N600,L700,N1900,L1900,G1900,L2100	APXVAALL_43-U-NA20	0°	0°	(4)COAX JUMPER(X2) (4)FIBER JUMPER	N/A	RRUS 4449 B71+B85 RADIO 4460 B25+B66	SHARED	N/A
GAMMA	C-1	220°	60'-0'	PROPOSED	N2500	AIR6419 B41	0°	0°	(2)FIBER JUMPER(X2)	N/A	N/A	6x24 HYBRID	N/A
	C-2	220°	60'-0'	EXISTING	L600,N600,L700,N1900,L1900,G1900,L2100	APXVAALL_43-U-NA20	0°	0°	(4)COAX JUMPER(X2) (4)FIBER JUMPER	N/A	RRUS 4449 B71+B85 RADIO 4460 B25+B66	SHARED	N/A
NOTE: DARK TEXT IN TABLE ABOVE DENOTES PROPOSED EQUIPMENT											(3) TOTAL 6x24 HYBRID CABLES	N/A	

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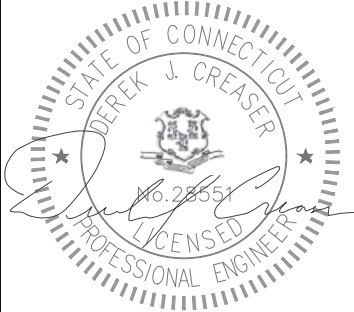


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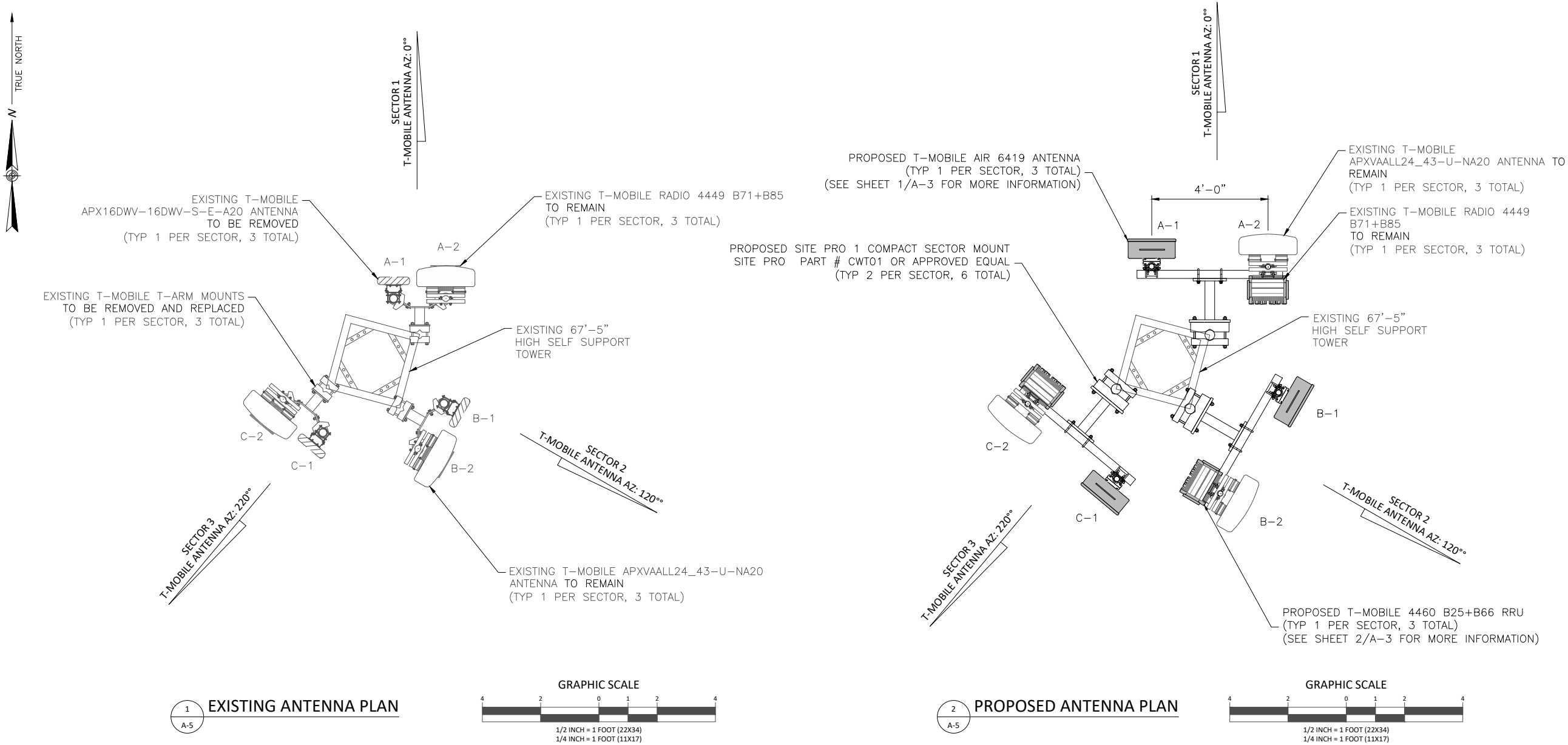
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CLINTON/I-95/X63/AT_1

SITE ID:
CT11031B

SITE ADDRESS:
21 EAST MAIN STREET
CLINTON, CT 06413
MIDDLESEX COUNTY

SHEET TITLE:
ANTENNA PLAN
& SCHEDULE

DRAWING:
A-5



STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. 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 CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. 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".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
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. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. 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.
8. 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.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. 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". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
N/A	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS ³
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

T - Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893

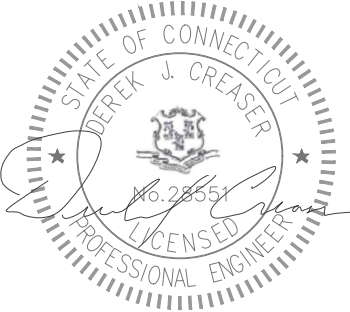


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PHONE: 781.713.4725

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0	08/21/2024	ISSUED FOR CONSTRUCTION	RC
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A	06/27/2024	ISSUE FOR REVIEW	NB
REV	DATE	DESCRIPTION	BY

DESIGNED BY: NB	APPROVED BY: RC
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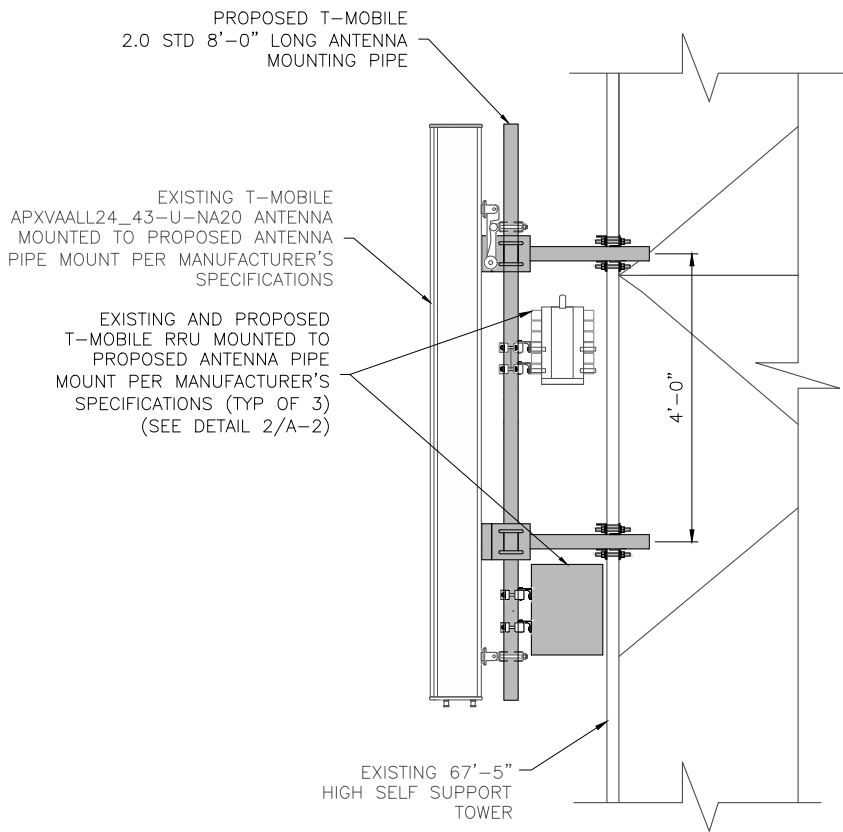


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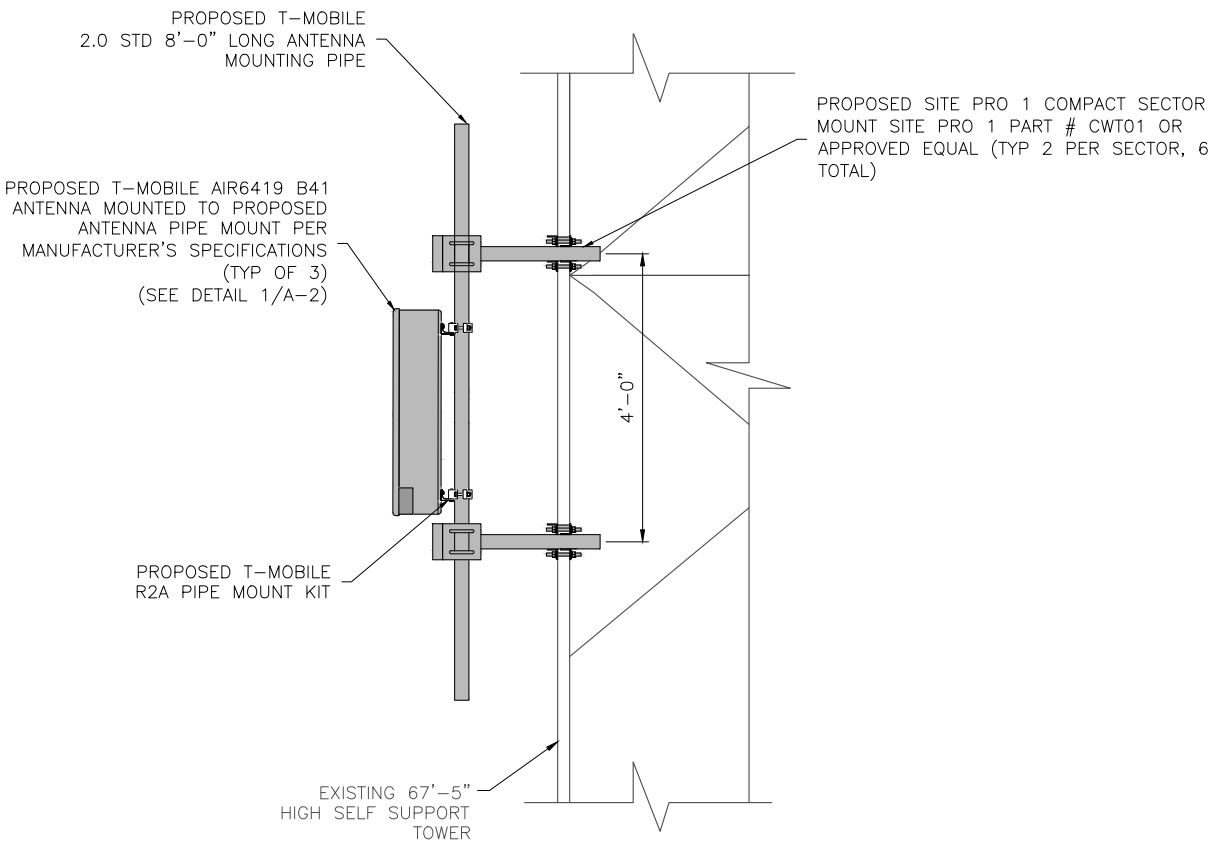
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SITE ID:	CT11031B
SITE ADDRESS:	21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY
SHEET TITLE:	STRUCTURAL NOTES & SPECIAL INSPECTIONS
DRAWING:	SN-1

- NOTES FOR ANTENNA MOUNTS:
- AIR6449: ERICSSON R2A PIPE MOUNT KIT
 - APXVAALL24-43-U-NA20: APM40-5E PIPE MOUNT KIT



AT POSITION A2, B2 & C2



AT POSITION A1, B1 & C1

1
S-1 TYPICAL ANTENNA & RRU MOUNTING DETAIL

T - Mobile
NORTHEAST LLC

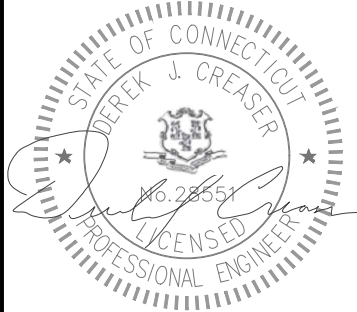
T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
PHONE: (508) 286-2700
FAX: (508) 286-2893



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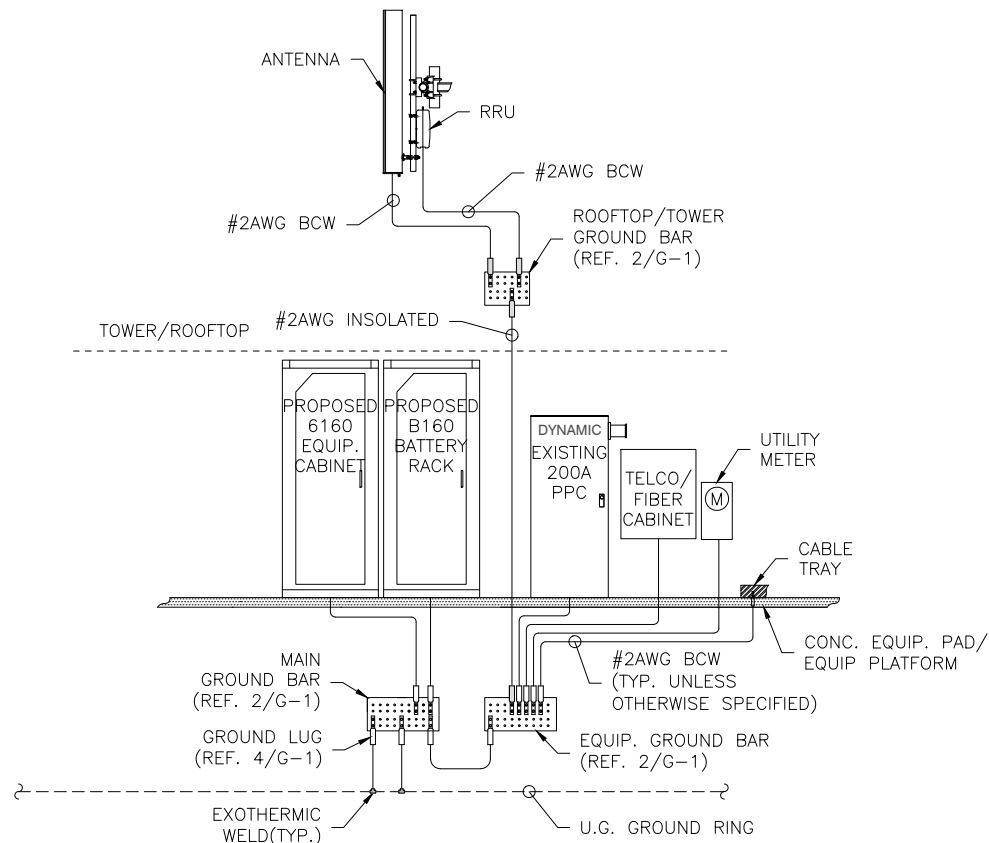
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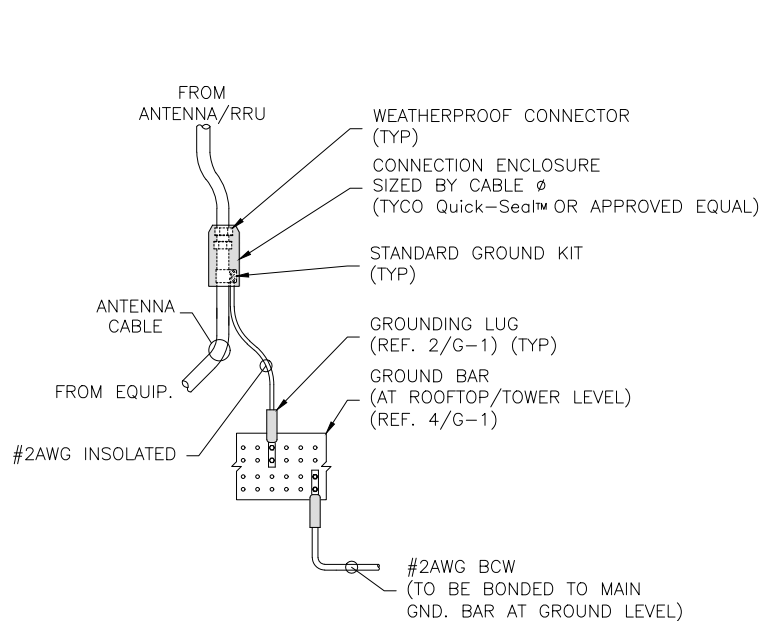
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SITE ID:	CT11031B
SITE ADDRESS:	21 EAST MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY
SHEET TITLE:	ANTENNA & RRU MOUNTING DETAILS
DRAWING:	S-1



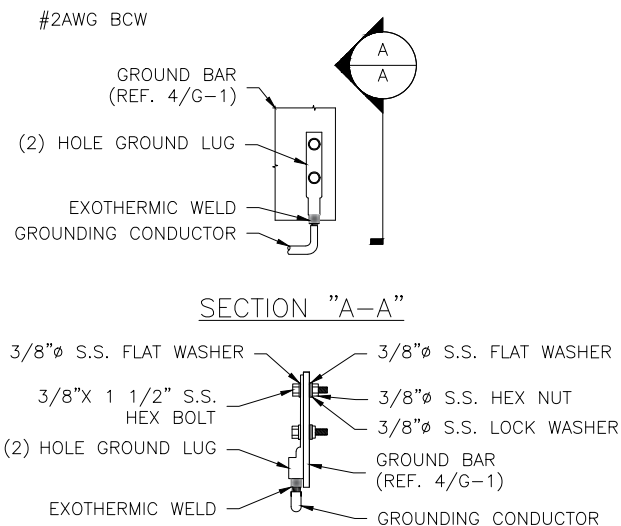
GROUNDING RISER NOTE:
UNLESS OTHERWISE SPECIFIED ALL GROUNDING CONDUCTORS ARE TO BE #2AWG BCW

1
G-1
GROUNDING RISER DIAGRAM



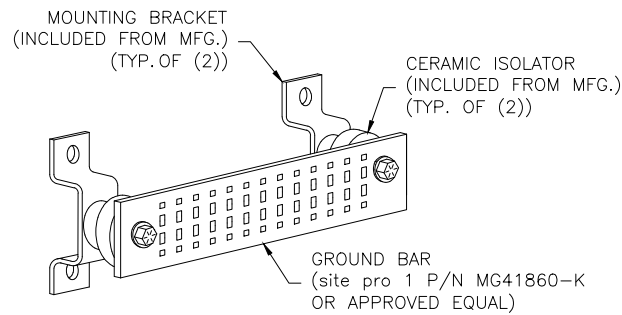
- NOTES:
- DO NOT INSTALL CABLE GROUND KIT AT BEND IN CABLE.
 - GROUND CABLES DIRECTLY TO CIGBE
 - JUMPER REQUIRED ONLY WHEN CABLE IS 1 1/4" OR LARGER

4
G-1
ANTENNA/RRU GROUNDING DETAIL



- GROUNDING LUG NOTES:
- DO NOT DOUBLE UP OR STACK LUGS.
 - OXIDE INHIBITING COMPOUND TO BE APPLIED TO ALL LUGS.
 - ALL LUGS ARE TO BE EXOTHERMIC WELDED TO GROUNDING CONDUCTORS.
 - FOR INSULATED GROUNDING CONDUCTORS, EXPOSED BARE COPPER TO BE KEPT TO ABSOLUTE MINIMUM.
 - NO INSULATION IS ALLOWED WITHIN THE BARREL OF THE COMPRESSION TERMINAL.

5
G-1
GROUND LUG DETAIL



2
G-1
GROUND BAR DETAIL

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

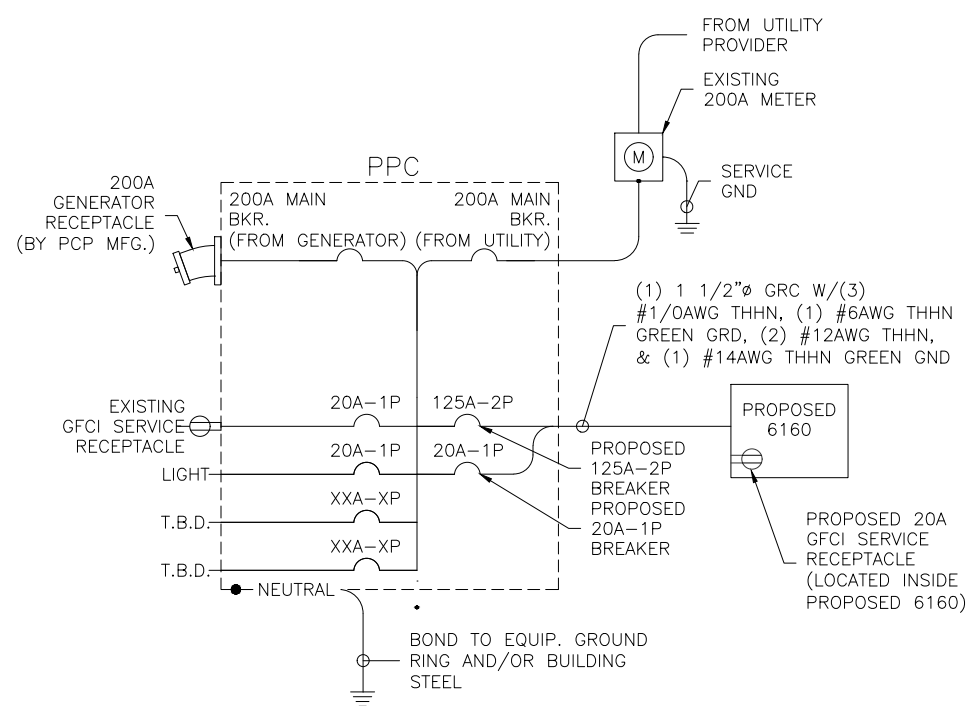
SECTION "P" - SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

3
G-1
GROUND WIRE SCHEDULE



6
G-1
ONE LINE DIAGRAM

T-Mobile
NORTHEAST LLC

T-MOBILE NORTHEAST, LLC.
15 COMMERCE WAY, SUITE B
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FAX: (508) 286-2893

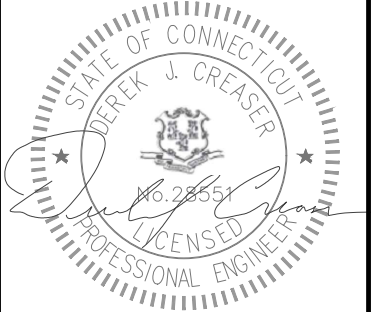


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PHONE: 781.713.4725

REVISIONS

REV	DATE	DESCRIPTION	BY
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B	07/01/2024	REVISED PER REDLINES	RC
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DESIGNED BY: NB	APPROVED BY: RC
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DATE: 08/21/2024

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SHEET TITLE:	GROUNDING & ONE LINE DIAGRAM
DRAWING:	G-1

EXHIBIT E

Structural Analysis Report

Date: **01/07/2025**

Christine Cooper
CTI Towers
3300 Paramount Pkwy Ste. 110
Morrisville, NC 27560



Engineered Tower Solutions, PLLC
3227 Wellington Court
Raleigh, NC 27615
(919) 782-2710

Subject: **Structural Modification Analysis Report**

Carrier Designation: **Verizon and T-Mobile Co-Locate**
Carrier Site Name: Clinton_2_CT

CTI Towers Designation: **CTI Towers Site Number:** 11201
CTI Towers Site Name: E Main Street Clinton

Engineering Firm Designation: **ETS, PLLC Job Number:** 24127161.STR.2664 R1

Site Data: **21 E Main Street, Clinton, Middlesex County, CT 06413**
Latitude 41.27883°, Longitude -72.52594°
67.5 Foot – Self Support Tower

Dear Christine Cooper,

Engineered Tower Solutions, PLLC is pleased to submit this “**Structural Modification Analysis Report**” to determine the structural integrity of the above-mentioned tower.

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

Modified Structure w/ Existing + Proposed Loading:	Tower:	85.1%	Sufficient Capacity
	Foundation:	89.7%	Sufficient Capacity

This analysis utilizes an ultimate 3-second gust wind speed of 124 mph as required by the 2022 Connecticut State Building Code (2021 International Building Code). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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

Structural Modification Analysis Report prepared by:

Anne E. Vago
Structural Engineering Lead

Respectfully submitted by:

Frederick G. Bost, PE
Chief Technical Officer

A handwritten signature in black ink, appearing to read 'F. Bost'.

1/7/25



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tnxTower Output

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Tower Modification Drawings

1) INTRODUCTION

The tower is a 67.5 ft Self Support Tower mapped by FDH in April of 2014. The original design standard and wind speed are unavailable.

The previous modifications designed by GPD Group have been assumed to be completed in this analysis. No foundation information was present at the time of this analysis.

The modification drawings included in appendix D of this report have also been considered in this analysis.

2) ANALYSIS CRITERIA

Building Code:	2021 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	124 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.0 in
Wind Speed With Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
47.0 (Verizon)	50.0	6	JMA	MX06FRO660-03	2	1-5/8 Hybrid
		3	Samsung	MT6413-77A		
		3	Samsung	RF4461d-13A		
		3	Samsung	RF4439d-25A		
		2	RFS	DT-T1-6Z-8AB-OZ		
		3	JMA	Dual-Mount bracket (P/N 91900314-02)		
	47.0	3	-	T-arm Mounts		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
60.0 (T-Mobile)	60.0	3	Ericsson	AIR 6419	3	1.99"
		3	RFS	APXVAALL24_43-U-NA20		
		3	Ericsson	4449 B71+B12		
		3	Ericsson	4460		
		3	SitePro	T-Arm Mounts (P/N CWT01)		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Mapping Report	FDH Inc (Job No. 1424V21500)	04/04/2014	CTI Towers
Modification Drawings	GPD Group (Proj. No. 2015783.11201.01)	12/23/2015	CTI Towers
Tower Inspection Form	CTI Towers	03/25/2020	CTI Towers
Previous Structural Analysis Report	ETS, PLLC (Proj. No. 24127161.STR.1387)	10/03/2024	On File
Geotechnical Investigation Report	ETS, PLLC (Proj. No. 24127161)	11/27/2024	On File
Tower Foundation Mapping Report	ETS, PLLC (Proj. No. 24127161.EI.2767)	12/03/2024	On File
Tower Modification Drawings	ETS, PLLC (Job No. 24127161.STR.2664)	12/31/2024	Appendix D

3.1) Analysis Method

tnxTower (version 8.3.1.2) and Risa3D (version 22.0.1) a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built and have been maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Table(s) 1 and 2 and the referenced drawings.
- 3) All member grades have been assumed.
- 4) Based on examination of the seismic base shear of a single tower within the array, wind loading is the controlling lateral load for the analysis of this structure.
- 5) The foundation steel reinforcement was assumed to be the minimum required per ACI 318.
- 6) The modification drawings by ETS (Project No. 24127161.STR.2664) dated 12/31/2024 must be correctly installed for this analysis to be considered valid.

This analysis may be affected if any assumptions are not valid or have been made in error. Engineered Tower Solutions, PLLC should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Critical Element	Size	% Capacity	Pass / Fail
T1	67.5-48	Leg	M1	L2.5x2.5x1/4	24.4	Pass
		Diagonal	M17	L1.5x1.5x1/4	18.7	Pass
		Top Inner Bracing	M258	L1.5x1.5x1/4	25.6	Pass
		Horizontal	M56	L1.5x1.5x1/4	9.7	Pass
T2	48-28	Leg	M71	L2.5x2.5x1/4	85.1	Pass
		Diagonal	M77	L1.5x1.5x1/4	57.7	Pass
		Horizontal	M83	L1.5x1.5x1/4	40.8	Pass
		Sec. Horizontal	M307	L1.5x1.5x1/4	12.6	Pass
T3	28-0	Leg	M137	L2.5x2.5x1/4	74.2	Pass
		Diagonal	M221	L1.5x1.5x1/4	56.7	Pass
		Horizontal	M144	L1.5x1.5x1/4	83.8	Pass
		Sec. Horizontal	M265	L1.5x1.5x1/4	5.3	Pass
	25	Bracing to Wall	M255	L1.5x1.5x1/4	75.3	Pass
	15	Bracing to Wall	M240	L2.5x1.5x1/4	84.2	Pass
	5	Bracing to Wall	M233	L2.5x1.5x1/4	30.1	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Wall Connection Bolts	25	47.3	Pass
1	Anchor Rods	0	61.8	Pass
1,2	Foundations	0	89.7	Pass

Structure Rating (max from all components) =	89.7%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Minimum steel reinforcement assumed per ACI 318.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed (see Appendix D).

APPENDIX A

TNXTOWER OUTPUT

<i>tnxTower</i> ETS, PLLC 4148 Old Mill Pkwy St Peters, MO 63376 Phone: (919) 782-2710 FAX:	Job 11201 - 21 E Main Street	Page 1 of 10
	Project ETS Job No. 24127161.STR.2664	Date 17:13:01 10/02/24
	Client CTI Towers	Designed by AEV

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 67.500 ft above the ground line.

The base of the tower is set at an elevation of 0.000 ft above the ground line.

The face width of the tower is 2.400 ft at the top and 2.400 ft at the base.

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

The following design criteria apply:

Tower base elevation above sea level: 15.330 ft.

Basic wind speed of 124 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.000 ft.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50.000 °F.

Deflections calculated using a wind speed of 60 mph.

TIA-222-H Annex S.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.

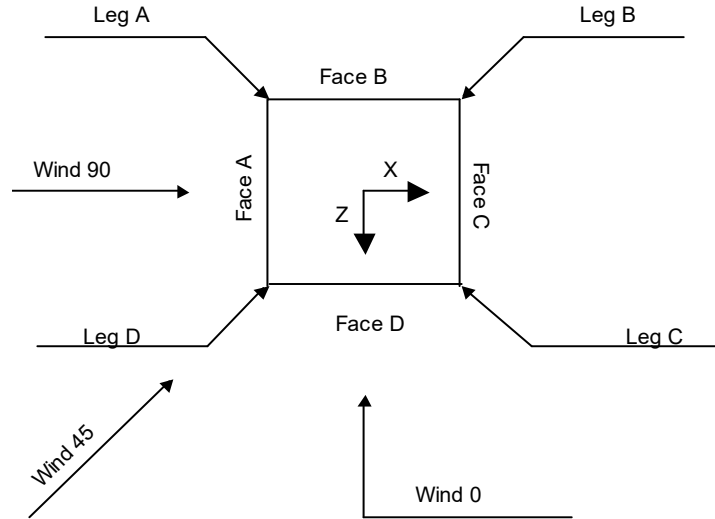
Maximum demand-capacity ratio is: 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	67.500-48.000			2.400	1	19.500
T2	48.000-28.000			2.400	1	20.000
T3	28.000-0.000			2.400	1	28.000

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	67.500-48.000	2.438	K Brace Right	No	Yes	0.000	0.000
T2	48.000-28.000	2.500	K Brace Right	No	Yes	0.000	0.000
T3	28.000-0.000	2.545	K Brace Left	No	Yes	0.000	0.000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 67.500-48.000	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)
T2 48.000-28.000	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)

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<i>Tower Elevation ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
T3 28.000-0.000	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T1 67.500-48.000	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T3 28.000-0.000	Flat Bar		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 67.500-48.000	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)
T2 48.000-28.000	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)
T3 28.000-0.000	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Secondary Horizontal Type</i>	<i>Secondary Horizontal Size</i>	<i>Secondary Horizontal Grade</i>	<i>Inner Bracing Type</i>	<i>Inner Bracing Size</i>	<i>Inner Bracing Grade</i>
T1 67.500-48.000	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 48.000-28.000	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 28.000-0.000	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry (cont'd)

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in							
T1 67.500-48.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T2 48.000-28.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T3 28.000-0.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 67.500-48.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 48.000-28.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 28.000-0.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 67.500-48.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 48.000-28.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 28.000-0.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 67.500-48.000	0.000	0.75 (1)	0.000	0.75 (1)	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75 (1)	0.000	0.75 (1)

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Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical	Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	Net Width Deduct in	U	Net Width Deduct in	U
T2 48.000-28.000	0.000	0.75 (2)	0.000	0.75 (2)						0.000	0.75 (2)	0.000	0.75 (2)
	0.000	0.75 (3)	0.000	0.75 (3)						0.000	0.75 (3)	0.000	0.75 (3)
	0.000	0.75 (4)	0.000	0.75 (4)						0.000	0.75 (4)	0.000	0.75 (4)
	0.000	0.75 (1)	0.000	0.75 (1)	0.000	0.75	0.000	0.75	0.000	0.75 (1)	0.000	0.75 (1)	
	0.000	0.75 (2)	0.000	0.75 (2)						0.000	0.75 (2)	0.000	0.75 (2)
	0.000	0.75 (3)	0.000	0.75 (3)						0.000	0.75 (3)	0.000	0.75 (3)
	0.000	0.75 (4)	0.000	0.75 (4)						0.000	0.75 (4)	0.000	0.75 (4)
T3 28.000-0.000	0.000	0.75 (1)	0.000	0.75 (1)	0.000	0.75	0.000	0.75	0.000	0.75 (1)	0.000	0.75 (1)	
	0.000	0.75 (2)	0.000	0.75 (2)						0.000	0.75 (2)	0.000	0.75 (2)
	0.000	0.75 (3)	0.000	0.75 (3)						0.000	0.75 (3)	0.000	0.75 (3)
	0.000	0.75 (4)	0.000	0.75 (4)						0.000	0.75 (4)	0.000	0.75 (4)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	No	Ar (CaAa)	67.500 - 0.000	0.000	0	1	1	0.375	0.375		0.220
Climbing Ladder	A	No	No	Af (CaAa)	3.000 - 0.000	0.000	0	1	1	3.840	3.840		4.810
Climbing Ladder Coax	A	No	No	Af (CaAa)	67.500 - 63.000	0.000	0	1	1	3.840	3.840		4.810
Waveguide (9"x3") *****	B	No	No	Af (CaAa)	60.000 - 4.000	2.000	0.45	1	1	0.261	0.261		1.070
1.99" Coax	B	No	No	Ar (CaAa)	60.000 - 4.000	0.000	0.5	3	1	0.500	1.990		1.700
MLE HYBRID	B	No	No	Ar (CaAa)	47.000 - 4.000	0.000	0	2	2	0.500	1.625		1.070

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	# Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
9POWER/18F IBER RL 2(1-5/8) ***												

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	67.500-48.000	A	0.000	0.000	2.889	0.000	25.935
		B	0.000	0.000	3.507	0.000	74.040
		C	0.000	0.000	0.000	0.000	0.000
		D	0.000	0.000	0.000	0.000	0.000
T2	48.000-28.000	A	0.000	0.000	0.750	0.000	4.400
		B	0.000	0.000	12.021	0.000	164.060
		C	0.000	0.000	0.000	0.000	0.000
		D	0.000	0.000	0.000	0.000	0.000
T3	28.000-0.000	A	0.000	0.000	2.378	0.000	20.590
		B	0.000	0.000	14.815	0.000	199.440
		C	0.000	0.000	0.000	0.000	0.000
		D	0.000	0.000	0.000	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	67.500-48.000	A	0.899	0.000	0.000	6.867	0.000	82.733
		B		0.000	0.000	8.362	0.000	206.916
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.000
T2	48.000-28.000	A	0.862	0.000	0.000	4.198	0.000	30.458
		B		0.000	0.000	28.846	0.000	460.210
		C		0.000	0.000	0.000	0.000	0.000
		D		0.000	0.000	0.000	0.000	0.000
T3	28.000-0.000	A	0.780	0.000	0.000	7.006	0.000	68.087
		B		0.000	0.000	34.018	0.000	517.492
		C		0.000	0.000	0.000	0.000	0.000

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
		D		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	67.500-48.000	0.033	-2.601	0.113	-2.486
T2	48.000-28.000	0.935	-4.531	1.087	-4.629
T3	28.000-0.000	0.569	-3.976	0.705	-4.127

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	Safety Line 3/8	48.00 - 67.50	0.6000	0.5036
T1	3	Climbing Ladder	63.00 - 67.50	0.6000	0.5036
T1	4	Coax Waveguide (9"x3")	48.00 - 60.00	0.6000	0.5036
T1	12	1.99" Coax	48.00 - 60.00	0.6000	0.5036
T2	1	Safety Line 3/8	28.00 - 48.00	0.6000	0.5195
T2	4	Coax Waveguide (9"x3")	28.00 - 48.00	0.6000	0.5195
T2	12	1.99" Coax	28.00 - 48.00	0.6000	0.5195
T2	16	MLE HYBRID	28.00 - 47.00	0.6000	0.5195
		9POWER/18FIBER RL			
		2(1-5/8)			
T3	1	Safety Line 3/8	0.00 - 28.00	0.6000	0.5309
T3	2	Climbing Ladder	0.00 - 3.00	0.6000	0.5309
T3	4	Coax Waveguide (9"x3")	4.00 - 28.00	0.6000	0.5309
T3	12	1.99" Coax	4.00 - 28.00	0.6000	0.5309
T3	16	MLE HYBRID	4.00 - 28.00	0.6000	0.5309
		9POWER/18FIBER RL			
		2(1-5/8)			

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
AIR 6419 B41_TMO_TIA w/ Mount Pipe	B	From Face	2.000 0.000	0.000	60.000	No Ice 1/2" Ice 7.974 9.013	5.253 6.528	133.000 202.761

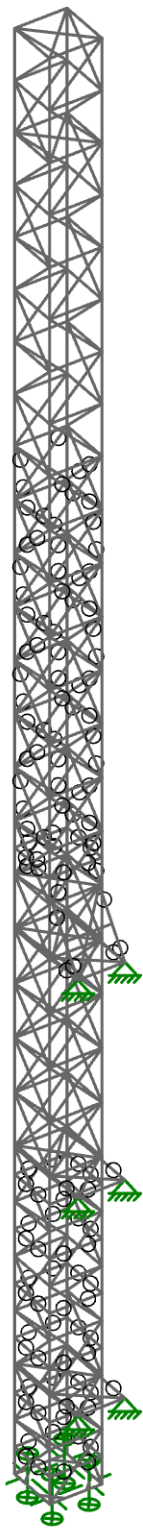
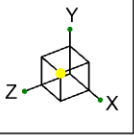
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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight lb</i>
AIR 6419 B41_TMO_TIA w/ Mount Pipe	C	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	1" Ice No Ice 1/2" Ice 1" Ice	10.071 7.974 9.013 10.071	7.826 5.253 6.528 7.826	279.490 133.000 202.761 279.490
AIR 6419 B41_TMO_TIA w/ Mount Pipe	D	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	7.974 9.013 10.071 10.071	5.253 6.528 7.826 7.826	133.000 202.761 279.490 279.490
APXVAALL24_43-U-NA20 (Octo) w/ Mount Pipe	B	From Face	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	20.245 20.893 21.548 21.548	11.033 12.463 13.555 13.555	174.320 310.999 459.310 459.310
APXVAALL24_43-U-NA20 (Octo) w/ Mount Pipe	C	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	20.245 20.893 21.548 21.548	11.033 12.463 13.555 13.555	174.320 310.999 459.310 459.310
APXVAALL24_43-U-NA20 (Octo) w/ Mount Pipe	D	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	20.245 20.893 21.548 21.548	11.033 12.463 13.555 13.555	174.320 310.999 459.310 459.310
4449 B71+B12	B	From Face	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	1.627 1.786 1.953 1.953	1.004 1.132 1.267 1.267	74.000 89.912 108.429 108.429
4449 B71+B12	C	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	1.627 1.786 1.953 1.953	1.004 1.132 1.267 1.267	74.000 89.912 108.429 108.429
4449 B71+B12	D	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	1.627 1.786 1.953 1.953	1.004 1.132 1.267 1.267	74.000 89.912 108.429 108.429
RADIO 4460	B	From Face	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	2.139 2.321 2.511 2.511	1.686 1.850 2.022 2.022	109.000 131.157 156.360 156.360
RADIO 4460	C	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	2.139 2.321 2.511 2.511	1.686 1.850 2.022 2.022	109.000 131.157 156.360 156.360
RADIO 4460	D	From Leg	0.000 2.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	2.139 2.321 2.511 2.511	1.686 1.850 2.022 2.022	109.000 131.157 156.360 156.360
CWT01 4' T-Arm	B	From Face	0.000 1.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	2.870 3.330 3.790 3.790	0.820 1.020 1.220 1.220	84.000 109.000 134.000 134.000
CWT01 4' T-Arm	C	From Leg	0.000 1.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	2.870 3.330 3.790 3.790	0.820 1.020 1.220 1.220	84.000 109.000 134.000 134.000
CWT01 4' T-Arm	D	From Leg	0.000 1.000 0.000 0.000	0.000	60.000	No Ice 1/2" Ice 1" Ice 1" Ice	2.870 3.330 3.790 3.790	0.820 1.020 1.220 1.220	84.000 109.000 134.000 134.000

(2) MX06FRO660-03 w/ Mount Pipe	D	From Leg	0.000 2.000 0.000 3.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 1" Ice	10.109 10.683 11.221 11.221	8.987 10.154 11.030 11.030	85.337 172.515 268.068 268.068
(2) MX06FRO660-03 w/ Mount Pipe	B	From Leg	0.000 2.000 0.000 3.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 1" Ice	10.109 10.683 11.221 11.221	8.987 10.154 11.030 11.030	85.337 172.515 268.068 268.068
(2) MX06FRO660-03 w/ Mount Pipe	C	From Leg	0.000 2.000 0.000 3.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 1" Ice	10.109 10.683 11.221 11.221	8.987 10.154 11.030 11.030	85.337 172.515 268.068 268.068
MT6413-77A w/Mount Pipe	D	From Leg	0.000 2.000 0.000 3.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 1" Ice	4.409 4.820 5.241 5.241	2.649 3.146 3.654 3.654	75.550 113.213 155.798 155.798
MT6413-77A w/Mount Pipe	B	From Leg	0.000 2.000 0.000 3.000	0.000	47.000	No Ice 1/2" Ice 1" Ice 1" Ice	4.409 4.820 5.241 5.241	2.649 3.146 3.654 3.654	75.550 113.213 155.798 155.798

<i>tnxTower</i> ETS, PLLC 4148 Old Mill Pkwy St Peters, MO 63376 Phone: (919) 782-2710 FAX:	Job	11201 - 21 E Main Street	Page	9 of 10
	Project	ETS Job No. 24127161.STR.2664	Date	17:13:01 10/02/24
	Client	CTI Towers	Designed by	AEV

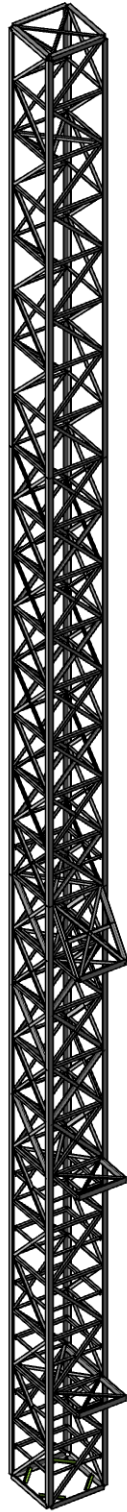
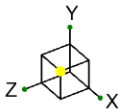
<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight lb</i>
MT6413-77A w/Mount Plpe	C	From Leg	0.000	0.000	47.000	1/2" Ice	4.820	113.213
			3.000			1" Ice	5.241	155.798
			2.000			No Ice	4.409	75.550
			0.000			1/2" Ice	4.820	113.213
RF4461d-13A	D	From Leg	3.000	0.000	47.000	1" Ice	5.241	155.798
			2.000			No Ice	1.865	79.000
			0.000			1/2" Ice	2.035	97.506
			3.000			1" Ice	2.212	118.808
RF4461d-13A	B	From Leg	2.000	0.000	47.000	No Ice	1.865	79.000
			0.000			1/2" Ice	2.035	97.506
			3.000			1" Ice	2.212	118.808
			2.000			No Ice	1.865	79.000
RF4461d-13A	C	From Leg	0.000	0.000	47.000	1/2" Ice	2.035	97.506
			3.000			1" Ice	2.212	118.808
			2.000			No Ice	1.865	79.000
			0.000			1/2" Ice	2.035	97.506
RF4439d-25A	D	From Leg	3.000	0.000	47.000	1" Ice	2.212	118.808
			2.000			No Ice	1.865	74.700
			0.000			1/2" Ice	2.035	93.015
			3.000			1" Ice	2.212	114.115
RF4439d-25A	B	From Leg	2.000	0.000	47.000	No Ice	1.865	74.700
			0.000			1/2" Ice	2.035	93.015
			3.000			1" Ice	2.212	114.115
			2.000			No Ice	1.865	74.700
RF4439d-25A	C	From Leg	0.000	0.000	47.000	1/2" Ice	2.035	93.015
			3.000			1" Ice	2.212	114.115
			2.000			No Ice	4.800	44.000
			0.000			1/2" Ice	5.070	80.134
DT-T1-6Z-8AB-OZ	D	From Leg	3.000	0.000	47.000	1" Ice	5.348	120.222
			2.000			No Ice	4.800	44.000
			0.000			1/2" Ice	5.070	80.134
			3.000			1" Ice	5.348	120.222
DT-T1-6Z-8AB-OZ	C	From Leg	2.000	0.000	47.000	No Ice	4.800	44.000
			0.000			1/2" Ice	5.070	80.134
			3.000			1" Ice	5.348	120.222
			2.000			No Ice	0.000	28.000
91900314-02 Dual-Mount Bracket	D	From Leg	0.000	0.000	47.000	1/2" Ice	0.000	36.619
			3.000			1" Ice	0.000	48.075
			2.000			No Ice	0.000	28.000
			0.000			1/2" Ice	0.000	36.619
91900314-02 Dual-Mount Bracket	B	From Leg	3.000	0.000	47.000	1" Ice	0.000	48.075
			2.000			No Ice	0.000	28.000
			0.000			1/2" Ice	0.000	36.619
			3.000			1" Ice	0.000	48.075
91900314-02 Dual-Mount Bracket	C	From Leg	2.000	0.000	47.000	No Ice	0.000	28.000
			0.000			1/2" Ice	0.000	36.619
			3.000			1" Ice	0.000	48.075
			1.000			No Ice	2.870	84.000
4' T-Arm	D	From Leg	0.000	0.000	47.000	1/2" Ice	3.330	109.000
			0.000			1" Ice	3.790	134.000
			1.000			No Ice	2.870	84.000
			0.000			1/2" Ice	3.330	109.000
4' T-Arm	B	From Leg	0.000	0.000	47.000	1" Ice	3.790	134.000
			1.000			No Ice	2.870	84.000
			0.000			1/2" Ice	3.330	109.000
			0.000			1" Ice	3.790	134.000
4' T-Arm	C	From Leg	1.000	0.000	47.000	No Ice	2.870	84.000
			0.000			1/2" Ice	3.330	109.000
			0.000			1" Ice	3.790	134.000
			0.000			1" Ice	3.790	134.000



ETS, PLLC
AEV
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11201 - 21 E Main Street

SK-1
21 E Main St Clinton_SA_M...



ETS, PLLC
AEV
ETS Job No. 24127161.S...

11201 - 21 E Main Street

SK-2
21 E Main St Clinton_SA_M...

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	General Members				
2	RIGID		12	60.1	0
3	Total General		12	60.1	0
4					
5	Hot Rolled Steel				
6	A36	L11/2X11/2X1/4	292	10373.3	2.022
7	A36	L2.5X1.5X4	6	299	0.08
8	A36	L21/2X21/2X1/4	8	230.4	0.078
9	A36	L2X2X4	21	864.4	0.231
10	A36	L4X3X4	3	77.4	0.037
11	A36	LL1.5X2.5X4X3	2	74.2	0.04
12	A572-50	L21/2X21/2X1/4	12	3240	1.093
13	Total HR Steel		344	15158.7	3.582

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	-14.4	810	14.4	
2	N2	-14.4	576	14.4	
3	N3	14.4	810	14.4	
4	N4	14.4	576	14.4	
5	N5	14.4	810	-14.4	
6	N6	14.4	576	-14.4	
7	N7	-14.4	810	-14.4	
8	N8	-14.4	576	-14.4	
9	N9	-14.4	605.25	14.4	
10	N10	14.4	605.25	14.4	
11	N11	14.4	605.25	-14.4	
12	N12	-14.4	605.25	-14.4	
13	N13	14.4	634.5	14.4	
14	N14	14.4	634.5	-14.4	
15	N15	-14.4	634.5	-14.4	
16	N16	-14.4	634.5	14.4	
17	N17	-14.4	663.75	14.4	
18	N18	14.4	663.75	14.4	
19	N19	14.4	663.75	-14.4	
20	N20	-14.4	663.75	-14.4	
21	N21	14.4	693	14.4	
22	N22	14.4	693	-14.4	
23	N23	-14.4	693	-14.4	
24	N24	-14.4	693	14.4	
25	N25	-14.4	722.25	14.4	
26	N26	14.4	722.25	14.4	
27	N27	14.4	722.25	-14.4	
28	N28	-14.4	722.25	-14.4	
29	N29	14.4	751.5	14.4	
30	N30	14.4	751.5	-14.4	
31	N31	-14.4	751.5	-14.4	
32	N32	-14.4	751.5	14.4	
33	N33	-14.4	780.75	14.4	
34	N34	14.4	780.75	14.4	
35	N35	14.4	780.75	-14.4	
36	N36	-14.4	780.75	-14.4	
37	N37	-14.4	336	14.4	
38	N38	14.4	336	14.4	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
39	N39	14.4	336	-14.4	
40	N40	-14.4	336	-14.4	
41	N41	-14.4	366	14.4	
42	N42	14.4	366	14.4	
43	N43	14.4	366	-14.4	
44	N44	-14.4	366	-14.4	
45	N45	14.4	396	14.4	
46	N46	14.4	396	-14.4	
47	N47	-14.4	396	-14.4	
48	N48	-14.4	396	14.4	
49	N49	-14.4	426	14.4	
50	N50	14.4	426	14.4	
51	N51	14.4	426	-14.4	
52	N52	-14.4	426	-14.4	
53	N53	14.4	456	14.4	
54	N54	14.4	456	-14.4	
55	N55	-14.4	456	-14.4	
56	N56	-14.4	456	14.4	
57	N57	-14.4	486	14.4	
58	N58	14.4	486	14.4	
59	N59	14.4	486	-14.4	
60	N60	-14.4	486	-14.4	
61	N61	14.4	516	14.4	
62	N62	14.4	516	-14.4	
63	N63	-14.4	516	-14.4	
64	N64	-14.4	516	14.4	
65	N65	-14.4	546	14.4	
66	N66	14.4	546	14.4	
67	N67	14.4	546	-14.4	
68	N68	-14.4	546	-14.4	
69	N69	-14.4	0	14.4	
70	N70	14.4	0	14.4	
71	N71	14.4	0	-14.4	
72	N72	-14.4	0	-14.4	
73	N73	14.4	30.545455	14.4	
74	N74	14.4	30.545455	-14.4	
75	N75	-14.4	30.545455	-14.4	
76	N76	-14.4	30.545455	14.4	
77	N77	-14.4	61.090909	14.4	
78	N78	14.4	61.090909	14.4	
79	N79	14.4	61.090909	-14.4	
80	N80	-14.4	61.090909	-14.4	
81	N81	14.4	91.636364	14.4	
82	N82	14.4	91.636364	-14.4	
83	N83	-14.4	91.636364	-14.4	
84	N84	-14.4	91.636364	14.4	
85	N85	-14.4	122.181818	14.4	
86	N86	14.4	122.181818	14.4	
87	N87	14.4	122.181818	-14.4	
88	N88	-14.4	122.181818	-14.4	
89	N89	14.4	152.727273	14.4	
90	N90	14.4	152.727273	-14.4	
91	N91	-14.4	152.727273	-14.4	
92	N92	-14.4	152.727273	14.4	
93	N93	-14.4	183.272727	14.4	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
94	N94	14.4	183.272727	14.4	
95	N95	14.4	183.272727	-14.4	
96	N96	-14.4	183.272727	-14.4	
97	N97	14.4	213.818182	14.4	
98	N98	14.4	213.818182	-14.4	
99	N99	-14.4	213.818182	-14.4	
100	N100	-14.4	213.818182	14.4	
101	N101	-14.4	244.363636	14.4	
102	N102	14.4	244.363636	14.4	
103	N103	14.4	244.363636	-14.4	
104	N104	-14.4	244.363636	-14.4	
105	N105	14.4	274.909091	14.4	
106	N106	14.4	274.909091	-14.4	
107	N107	-14.4	274.909091	-14.4	
108	N108	-14.4	274.909091	14.4	
109	N109	-14.4	305.454545	14.4	
110	N110	14.4	305.454545	14.4	
111	N111	14.4	305.454545	-14.4	
112	N112	-14.4	305.454545	-14.4	
113	N113	-14.4	61.090909	12.9	
114	N114	14.4	61.090909	12.9	
115	N115	14.4	61.090909	-12.9	
116	N116	-14.4	61.090909	-12.9	
117	N121	35.4	61.090909	12.9	
118	N122	35.4	61.090909	-12.9	
119	N123	-14.4	183.272727	12.9	
120	N124	-14.4	183.272727	-12.9	
121	N129	35.4	183.272727	12.9	
122	N130	35.4	183.272727	-12.9	
123	N131	14.4	183.272727	12.9	
124	N132	14.4	183.272727	-12.9	
125	N133	-14.4	305.454545	12.9	
126	N134	-14.4	305.454545	-12.9	
127	N141	14.4	305.454545	12.9	
128	N142	14.4	305.454545	-12.9	
129	N143	35.5	305.454545	12.9	
130	N144	35.5	305.454545	-12.9	
131	N145	14.4	336	12.9	
132	N146	14.4	336	-12.9	
133	N147	24.95	320.727273	12.9	
134	N148	24.95	320.727273	-12.9	
135	N149	14.4	15.272705	14.4	
136	N150	14.4	15.272705	-14.4	
137	N151	-14.4	15.272705	-14.4	
138	N152	-14.4	15.272705	14.4	
139	N153	14.4	45.818205	14.4	
140	N154	14.4	45.818205	-14.4	
141	N155	-14.4	45.818205	-14.4	
142	N156	-14.4	45.818205	14.4	
143	N157	14.4	76.363705	14.4	
144	N158	14.4	76.363705	-14.4	
145	N159	-14.4	76.363705	-14.4	
146	N160	-14.4	76.363705	14.4	
147	N161	14.4	106.909205	14.4	
148	N162	14.4	106.909205	-14.4	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
149	N163	-14.4	106.909205	-14.4	
150	N164	-14.4	106.909205	14.4	
151	N165	14.4	137.454705	14.4	
152	N166	14.4	137.454705	-14.4	
153	N167	-14.4	137.454705	-14.4	
154	N168	-14.4	137.454705	14.4	
155	N169	14.4	168.000205	14.4	
156	N170	14.4	168.000205	-14.4	
157	N171	-14.4	168.000205	-14.4	
158	N172	-14.4	168.000205	14.4	
159	N175	0	305.454545	0	
160	N176	0	336	0	
161	N177	0	61.090909	0	
162	N178	24.9	61.090909	0	
163	N179	24.95	305.454545	0	
164	N180	0	183.272727	0	
165	N181	24.9	183.272727	0	
166	N191	24.95	320.727273	0	
167	N193	-14.4	351	14.4	
168	N194	14.4	351	14.4	
169	N195	14.4	351	-14.4	
170	N196	-14.4	351	-14.4	
171	N200	0	351	14.4	
172	N201	14.4	351	0	
173	N202	0	351	-14.4	
174	N203	-14.4	351	0	
175	N211	14.4	381	0	
176	N212	-14.4	381	0	
177	N213	0	381	-14.4	
178	N214	0	381	14.4	
179	N215	0	411	14.4	
180	N216	0	411	-14.4	
181	N217	14.4	411	0	
182	N218	-14.4	411	0	
183	N219	14.4	441	0	
184	N220	0	441	-14.4	
185	N221	0	441	14.4	
186	N222	-14.4	441	0	
187	N223	0	471	-14.4	
188	N224	14.4	471	0	
189	N225	-14.4	471	0	
190	N226	0	471	14.4	
191	N227	-14.4	501	0	
192	N228	14.4	501	0	
193	N229	0	501	14.4	
194	N230	0	501	-14.4	
195	N231	14.4	531	0	
196	N232	0	531	14.4	
197	N233	-14.4	531	0	
198	N234	0	531	-14.4	
199	N235	0	561	14.4	
200	N236	-14.4	561	0	
201	N237	0	561	-14.4	
202	N238	14.4	561	0	
203	N239	14.4	308.454545	14.4	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
204	N259	-14.4	336	-12.9	
205	N260	-14.4	336	12.9	
206	N289	14.4	308.454545	-14.4	
207	W1	-14.4	198.545455	0	
208	W2	14.4	198.545455	0	
209	W3	0	198.545455	14.4	
210	W4	0	198.545455	-14.4	
211	W10	0	229.090909	-14.4	
212	W11	14.4	229.090909	0	
213	W12	-14.4	229.090909	0	
214	W13	0	229.090909	14.4	
215	W20	0	259.636364	14.4	
216	W21	0	259.636364	-14.4	
217	W22	14.4	259.636364	0	
218	W23	-14.4	259.636364	0	
219	W30	0	290.181818	14.4	
220	W31	0	290.181818	-14.4	
221	W32	14.4	290.181818	0	
222	W33	-14.4	290.181818	0	
223	ZN69	-10.15	0	10.15	
224	ZN70	10.15	0	10.15	
225	ZN71	10.15	0	-10.15	
226	ZN72	-10.15	0	-10.15	
227	ZN277	14.4	0	5.9	
228	ZN278	14.4	0	-5.9	
229	ZN279	5.9	0	-14.4	
230	ZN280	-5.9	0	-14.4	
231	ZN281	-14.4	0	-5.9	
232	ZN282	-14.4	0	5.9	
233	ZN283	-5.9	0	14.4	
234	ZN284	5.9	0	14.4	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	TWR LEG T1	L21/2X21/2X1/4	Column	Single Angle	A572-50	Typical	1.19	0.703	0.703	0.025
2	TWR TOP GIRT T1	L21/2X21/2X1/4	Beam	Single Angle	A36	Typical	1.19	0.703	0.703	0.025
3	TWR DIAG T1	L11/2X11/2X1/4	Column	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
4	TWR HORZ T1	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
5	TWR LEG T2	L21/2X21/2X1/4	Column	Single Angle	A572-50	Typical	1.19	0.703	0.703	0.025
6	TWR HORZ T2	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
7	TWR DIAG T2	L11/2X11/2X1/4	Column	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
8	TWR LEG T3	L21/2X21/2X1/4	Column	Single Angle	A572-50	Typical	1.19	0.703	0.703	0.025
9	TWR HORZ T3	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
10	TWR BOT GIRT T3	L21/2X21/2X1/4	Beam	Single Angle	A36	Typical	1.19	0.703	0.703	0.025
11	TWR DIAG T3	L11/2X11/2X1/4	Column	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
12	TWR SEC HORZ T2	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
13	TWR SEC HORZ T3	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
14	MOD DIAGS T2	L11/2X11/2X1/4	Column	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
15	TWR SEC HORZ T1	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical	0.688	0.139	0.139	0.014
16	MOD 2024 DIAGS T2	L11/2X11/2X1/4	Column	Single Angle	A36	Typical	0.688	0.139	0.139	0.014

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N2	N1	180	TWR LEG T1	Column	Single Angle	A572-50	Typical
2	M2	N4	N3	270	TWR LEG T1	Column	Single Angle	A572-50	Typical
3	M3	N6	N5		TWR LEG T1	Column	Single Angle	A572-50	Typical
4	M4	N8	N7	90	TWR LEG T1	Column	Single Angle	A572-50	Typical
5	M5	N1	N3	180	TWR TOP GIRT T1	Beam	Single Angle	A36	Typical
6	M6	N3	N5	180	TWR TOP GIRT T1	Beam	Single Angle	A36	Typical
7	M7	N5	N7	180	TWR TOP GIRT T1	Beam	Single Angle	A36	Typical
8	M8	N7	N1	180	TWR TOP GIRT T1	Beam	Single Angle	A36	Typical
9	M9	N4	N9	90	TWR DIAG T1	Column	Single Angle	A36	Typical
10	M10	N6	N10	90	TWR DIAG T1	Column	Single Angle	A36	Typical
11	M11	N8	N11	90	TWR DIAG T1	Column	Single Angle	A36	Typical
12	M12	N2	N12	90	TWR DIAG T1	Column	Single Angle	A36	Typical
13	M13	N9	N10	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
14	M14	N10	N11	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
15	M15	N11	N12	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
16	M16	N12	N9	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
17	M17	N9	N13	180	TWR DIAG T1	Column	Single Angle	A36	Typical
18	M18	N10	N14	180	TWR DIAG T1	Column	Single Angle	A36	Typical
19	M19	N11	N15	180	TWR DIAG T1	Column	Single Angle	A36	Typical
20	M20	N12	N16	180	TWR DIAG T1	Column	Single Angle	A36	Typical
21	M21	N16	N13	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
22	M22	N13	N14	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
23	M23	N14	N15	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
24	M24	N15	N16	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
25	M25	N13	N17	90	TWR DIAG T1	Column	Single Angle	A36	Typical
26	M26	N14	N18	90	TWR DIAG T1	Column	Single Angle	A36	Typical
27	M27	N15	N19	90	TWR DIAG T1	Column	Single Angle	A36	Typical
28	M28	N16	N20	90	TWR DIAG T1	Column	Single Angle	A36	Typical
29	M29	N17	N18	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
30	M30	N18	N19	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
31	M31	N19	N20	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
32	M32	N20	N17	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
33	M33	N17	N21	180	TWR DIAG T1	Column	Single Angle	A36	Typical
34	M34	N18	N22	180	TWR DIAG T1	Column	Single Angle	A36	Typical
35	M35	N19	N23	180	TWR DIAG T1	Column	Single Angle	A36	Typical
36	M36	N20	N24	180	TWR DIAG T1	Column	Single Angle	A36	Typical
37	M37	N24	N21	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
38	M38	N21	N22	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
39	M39	N22	N23	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
40	M40	N23	N24	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
41	M41	N21	N25	90	TWR DIAG T1	Column	Single Angle	A36	Typical
42	M42	N22	N26	90	TWR DIAG T1	Column	Single Angle	A36	Typical
43	M43	N23	N27	90	TWR DIAG T1	Column	Single Angle	A36	Typical
44	M44	N24	N28	90	TWR DIAG T1	Column	Single Angle	A36	Typical
45	M45	N25	N26	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
46	M46	N26	N27	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
47	M47	N27	N28	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
48	M48	N28	N25	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
49	M49	N25	N29	180	TWR DIAG T1	Column	Single Angle	A36	Typical
50	M50	N26	N30	180	TWR DIAG T1	Column	Single Angle	A36	Typical
51	M51	N27	N31	180	TWR DIAG T1	Column	Single Angle	A36	Typical
52	M52	N28	N32	180	TWR DIAG T1	Column	Single Angle	A36	Typical
53	M53	N32	N29	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
54	M54	N29	N30	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
55	M55	N30	N31	180	TWR HORZ T1	Beam	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
56	M56	N31	N32	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
57	M57	N29	N33	90	TWR DIAG T1	Column	Single Angle	A36	Typical
58	M58	N30	N34	90	TWR DIAG T1	Column	Single Angle	A36	Typical
59	M59	N31	N35	90	TWR DIAG T1	Column	Single Angle	A36	Typical
60	M60	N32	N36	90	TWR DIAG T1	Column	Single Angle	A36	Typical
61	M61	N33	N34	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
62	M62	N34	N35	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
63	M63	N35	N36	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
64	M64	N36	N33	180	TWR HORZ T1	Beam	Single Angle	A36	Typical
65	M65	N33	N3	180	TWR DIAG T1	Column	Single Angle	A36	Typical
66	M66	N34	N5	180	TWR DIAG T1	Column	Single Angle	A36	Typical
67	M67	N35	N7	180	TWR DIAG T1	Column	Single Angle	A36	Typical
68	M68	N36	N1	180	TWR DIAG T1	Column	Single Angle	A36	Typical
69	M69	N37	N2	180	TWR LEG T2	Column	Single Angle	A572-50	Typical
70	M70	N38	N4	270	TWR LEG T2	Column	Single Angle	A572-50	Typical
71	M71	N39	N6		TWR LEG T2	Column	Single Angle	A572-50	Typical
72	M72	N40	N8	90	TWR LEG T2	Column	Single Angle	A572-50	Typical
73	M73	N2	N4	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
74	M74	N4	N6	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
75	M75	N6	N8	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
76	M76	N8	N2	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
77	M77	N38	N41	90	TWR DIAG T2	Column	Single Angle	A36	Typical
78	M78	N39	N42	90	TWR DIAG T2	Column	Single Angle	A36	Typical
79	M79	N40	N43	90	TWR DIAG T2	Column	Single Angle	A36	Typical
80	M80	N37	N44	90	TWR DIAG T2	Column	Single Angle	A36	Typical
81	M81	N41	N42	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
82	M82	N42	N43	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
83	M83	N43	N44	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
84	M84	N44	N41	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
85	M85	N41	N45	180	TWR DIAG T2	Column	Single Angle	A36	Typical
86	M86	N42	N46	180	TWR DIAG T2	Column	Single Angle	A36	Typical
87	M87	N43	N47	180	TWR DIAG T2	Column	Single Angle	A36	Typical
88	M88	N44	N48	180	TWR DIAG T2	Column	Single Angle	A36	Typical
89	M89	N48	N45	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
90	M90	N45	N46	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
91	M91	N46	N47	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
92	M92	N47	N48	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
93	M93	N45	N49	90	TWR DIAG T2	Column	Single Angle	A36	Typical
94	M94	N46	N50	90	TWR DIAG T2	Column	Single Angle	A36	Typical
95	M95	N47	N51	90	TWR DIAG T2	Column	Single Angle	A36	Typical
96	M96	N48	N52	90	TWR DIAG T2	Column	Single Angle	A36	Typical
97	M97	N49	N50	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
98	M98	N50	N51	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
99	M99	N51	N52	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
100	M100	N52	N49	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
101	M101	N49	N53	180	TWR DIAG T2	Column	Single Angle	A36	Typical
102	M102	N50	N54	180	TWR DIAG T2	Column	Single Angle	A36	Typical
103	M103	N51	N55	180	TWR DIAG T2	Column	Single Angle	A36	Typical
104	M104	N52	N56	180	TWR DIAG T2	Column	Single Angle	A36	Typical
105	M105	N56	N53	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
106	M106	N53	N54	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
107	M107	N54	N55	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
108	M108	N55	N56	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
109	M109	N53	N57	90	TWR DIAG T2	Column	Single Angle	A36	Typical
110	M110	N54	N58	90	TWR DIAG T2	Column	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
111	M111	N55	N59	90	TWR DIAG T2	Column	Single Angle	A36	Typical
112	M112	N56	N60	90	TWR DIAG T2	Column	Single Angle	A36	Typical
113	M113	N57	N58	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
114	M114	N58	N59	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
115	M115	N59	N60	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
116	M116	N60	N57	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
117	M117	N57	N61	180	TWR DIAG T2	Column	Single Angle	A36	Typical
118	M118	N58	N62	180	TWR DIAG T2	Column	Single Angle	A36	Typical
119	M119	N59	N63	180	TWR DIAG T2	Column	Single Angle	A36	Typical
120	M120	N60	N64	180	TWR DIAG T2	Column	Single Angle	A36	Typical
121	M121	N64	N61	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
122	M122	N61	N62	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
123	M123	N62	N63	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
124	M124	N63	N64	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
125	M125	N61	N65	90	TWR DIAG T2	Column	Single Angle	A36	Typical
126	M126	N62	N66	90	TWR DIAG T2	Column	Single Angle	A36	Typical
127	M127	N63	N67	90	TWR DIAG T2	Column	Single Angle	A36	Typical
128	M128	N64	N68	90	TWR DIAG T2	Column	Single Angle	A36	Typical
129	M129	N65	N66	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
130	M130	N66	N67	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
131	M131	N67	N68	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
132	M132	N68	N65	180	TWR HORZ T2	Beam	Single Angle	A36	Typical
133	M133	N65	N4	180	TWR DIAG T2	Column	Single Angle	A36	Typical
134	M134	N66	N6	180	TWR DIAG T2	Column	Single Angle	A36	Typical
135	M135	N67	N8	180	TWR DIAG T2	Column	Single Angle	A36	Typical
136	M136	N68	N2	180	TWR DIAG T2	Column	Single Angle	A36	Typical
137	M137	N69	N37	180	TWR LEG T3	Column	Single Angle	A572-50	Typical
138	M138	N70	N38	270	TWR LEG T3	Column	Single Angle	A572-50	Typical
139	M139	N71	N39		TWR LEG T3	Column	Single Angle	A572-50	Typical
140	M140	N72	N40	90	TWR LEG T3	Column	Single Angle	A572-50	Typical
141	M141	N37	N38	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
142	M142	N145	N146	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
143	M143	N39	N40	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
144	M144	N40	N37	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
145	M145	N69	N70	270	TWR BOT GIRT T3	Beam	Single Angle	A36	Typical
146	M146	N70	N71	270	TWR BOT GIRT T3	Beam	Single Angle	A36	Typical
147	M147	N71	N72	270	TWR BOT GIRT T3	Beam	Single Angle	A36	Typical
148	M148	N72	N69	270	TWR BOT GIRT T3	Beam	Single Angle	A36	Typical
149	M149	N69	N73	180	TWR DIAG T3	Column	Single Angle	A36	Typical
150	M150	N70	N74	180	TWR DIAG T3	Column	Single Angle	A36	Typical
151	M151	N71	N75	180	TWR DIAG T3	Column	Single Angle	A36	Typical
152	M152	N72	N76	180	TWR DIAG T3	Column	Single Angle	A36	Typical
153	M153	N76	N73	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
154	M154	N73	N74	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
155	M155	N74	N75	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
156	M156	N75	N76	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
157	M157	N73	N77	90	TWR DIAG T3	Column	Single Angle	A36	Typical
158	M158	N74	N78	90	TWR DIAG T3	Column	Single Angle	A36	Typical
159	M159	N75	N79	90	TWR DIAG T3	Column	Single Angle	A36	Typical
160	M160	N76	N80	180	TWR DIAG T3	Column	Single Angle	A36	Typical
161	M161	N77	N78	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
162	M162	N114	N115	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
163	M163	N79	N80	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
164	M164	N80	N77	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
165	M165	N77	N81	180	TWR DIAG T3	Column	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
166	M166	N78	N82	180	TWR DIAG T3	Column	Single Angle	A36	Typical
167	M167	N79	N83	180	TWR DIAG T3	Column	Single Angle	A36	Typical
168	M168	N80	N84	180	TWR DIAG T3	Column	Single Angle	A36	Typical
169	M169	N84	N81	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
170	M170	N81	N82	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
171	M171	N82	N83	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
172	M172	N83	N84	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
173	M173	N81	N85	90	TWR DIAG T3	Column	Single Angle	A36	Typical
174	M174	N82	N86	90	TWR DIAG T3	Column	Single Angle	A36	Typical
175	M175	N83	N87	90	TWR DIAG T3	Column	Single Angle	A36	Typical
176	M176	N84	N88	90	TWR DIAG T3	Column	Single Angle	A36	Typical
177	M177	N85	N86	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
178	M178	N86	N87	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
179	M179	N87	N88	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
180	M180	N88	N85	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
181	M181	N85	N89	180	TWR DIAG T3	Column	Single Angle	A36	Typical
182	M182	N86	N90	180	TWR DIAG T3	Column	Single Angle	A36	Typical
183	M183	N87	N91	180	TWR DIAG T3	Column	Single Angle	A36	Typical
184	M184	N88	N92	180	TWR DIAG T3	Column	Single Angle	A36	Typical
185	M185	N92	N89	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
186	M186	N89	N90	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
187	M187	N90	N91	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
188	M188	N91	N92	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
189	M189	N89	N93	90	TWR DIAG T3	Column	Single Angle	A36	Typical
190	M190	N90	N94	90	TWR DIAG T3	Column	Single Angle	A36	Typical
191	M191	N91	N95	90	TWR DIAG T3	Column	Single Angle	A36	Typical
192	M192	N92	N96	90	TWR DIAG T3	Column	Single Angle	A36	Typical
193	M193	N93	N94	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
194	M194	N131	N132	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
195	M195	N95	N96	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
196	M196	N96	N93	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
197	M197	N93	N97	180	TWR DIAG T3	Column	Single Angle	A36	Typical
198	M198	N94	N98	180	TWR DIAG T3	Column	Single Angle	A36	Typical
199	M199	N95	N99	180	TWR DIAG T3	Column	Single Angle	A36	Typical
200	M200	N96	N100	180	TWR DIAG T3	Column	Single Angle	A36	Typical
201	M201	N100	N97	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
202	M202	N97	N98	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
203	M203	N98	N99	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
204	M204	N99	N100	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
205	M205	N97	N101	90	TWR DIAG T3	Column	Single Angle	A36	Typical
206	M206	N98	N102	90	TWR DIAG T3	Column	Single Angle	A36	Typical
207	M207	N99	N103	90	TWR DIAG T3	Column	Single Angle	A36	Typical
208	M208	N100	N104	90	TWR DIAG T3	Column	Single Angle	A36	Typical
209	M209	N101	N102	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
210	M210	N102	N103	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
211	M211	N103	N104	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
212	M212	N104	N101	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
213	M213	N101	N105	180	TWR DIAG T3	Column	Single Angle	A36	Typical
214	M214	N102	N106	180	TWR DIAG T3	Column	Single Angle	A36	Typical
215	M215	N103	N107	180	TWR DIAG T3	Column	Single Angle	A36	Typical
216	M216	N104	N108	180	TWR DIAG T3	Column	Single Angle	A36	Typical
217	M217	N108	N105	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
218	M218	N105	N106	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
219	M219	N106	N107	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
220	M220	N107	N108	180	TWR HORZ T3	Beam	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
221	M221	N105	N109	90	TWR DIAG T3	Column	Single Angle	A36	Typical
222	M222	N106	N110	90	TWR DIAG T3	Column	Single Angle	A36	Typical
223	M223	N107	N111	90	TWR DIAG T3	Column	Single Angle	A36	Typical
224	M224	N108	N112	90	TWR DIAG T3	Column	Single Angle	A36	Typical
225	M225	N109	N110	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
226	M226	N141	N142	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
227	M227	N111	N112	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
228	M228	N112	N109	180	TWR HORZ T3	Beam	Single Angle	A36	Typical
229	M229	N109	N38	180	TWR DIAG T3	Column	Single Angle	A36	Typical
230	M230	N110	N146	180	TWR DIAG T3	Column	Single Angle	A36	Typical
231	M231	N111	N40	180	TWR DIAG T3	Column	Single Angle	A36	Typical
232	M232	N112	N37	180	TWR DIAG T3	Column	Single Angle	A36	Typical
233	M233	N113	N121	270	L2.5X1.5X4	Beam	Single Angle	A36	Typical
234	M234	N122	N116	270	L2.5X1.5X4	Beam	Single Angle	A36	Typical
235	M235	N113	N115	270	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
236	M236	N116	N114	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
237	M237	N114	N122	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
238	M238	N115	N121		L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
239	M239	N123	N129	270	L2.5X1.5X4	Beam	Single Angle	A36	Typical
240	M240	N130	N124	270	L2.5X1.5X4	Beam	Single Angle	A36	Typical
241	M241	N123	N132	270	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
242	M242	N124	N131	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
243	M243	N131	N130	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
244	M244	N132	N129		L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
245	M245	N133	N143	270	L2.5X1.5X4	Beam	Single Angle	A36	Typical
246	M246	N144	N134	270	L2.5X1.5X4	Beam	Single Angle	A36	Typical
247	M247	N133	N142	270	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
248	M248	N134	N141	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
249	M249	N141	N144	270	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
250	M250	N142	N143	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
251	M253	N145	N259	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
252	M254	N146	N260	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
253	M255	N146	N143	53	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
254	M256	N145	N144	218	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
255	M257	N147	N148	55	L2X2X4	Beam	Single Angle	A36	Typical
256	M258	N1	N5	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
257	M259	N7	N3		L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
258	M260	N29	N31		L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
259	M261	N30	N32	90	L11/2X11/2X1/4	Beam	Single Angle	A36	Typical
260	M262	N152	N149	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
261	M263	N149	N150	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
262	M264	N150	N151	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
263	M265	N151	N152	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
264	M266	N156	N153	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
265	M267	N153	N154	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
266	M268	N154	N155	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
267	M269	N155	N156	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
268	M270	N160	N157	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
269	M271	N157	N158	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
270	M272	N158	N159	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
271	M273	N159	N160	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
272	M274	N164	N161	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
273	M275	N161	N162	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
274	M276	N162	N163	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
275	M277	N163	N164	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
276	M278	N168	N165	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
277	M279	N165	N166	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
278	M280	N166	N167	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
279	M281	N167	N168	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
280	M282	N172	N169	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
281	M283	N169	N170	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
282	M284	N170	N171	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
283	M285	N171	N172	90	TWR SEC HORZ T3	Beam	Single Angle	A36	Typical
284	M306	N193	N194	90	TWR SEC HORZ T2	Beam	Single Angle	A36	Typical
285	M307	N194	N195	90	TWR SEC HORZ T2	Beam	Single Angle	A36	Typical
286	M308	N195	N196	90	TWR SEC HORZ T2	Beam	Single Angle	A36	Typical
287	M309	N196	N193	90	TWR SEC HORZ T2	Beam	Single Angle	A36	Typical
288	M321	N37	N42		MOD DIAGS T2	Column	Single Angle	A36	Typical
289	M322	N38	N43		MOD DIAGS T2	Column	Single Angle	A36	Typical
290	M323	N39	N44		MOD DIAGS T2	Column	Single Angle	A36	Typical
291	M324	N40	N41		MOD DIAGS T2	Column	Single Angle	A36	Typical
292	M325	N42	N48		MOD DIAGS T2	Column	Single Angle	A36	Typical
293	M326	N43	N45		MOD DIAGS T2	Column	Single Angle	A36	Typical
294	M327	N44	N46		MOD DIAGS T2	Column	Single Angle	A36	Typical
295	M328	N41	N47		MOD DIAGS T2	Column	Single Angle	A36	Typical
296	M329	N47	N49		MOD DIAGS T2	Column	Single Angle	A36	Typical
297	M330	N48	N50		MOD DIAGS T2	Column	Single Angle	A36	Typical
298	M331	N45	N51		MOD DIAGS T2	Column	Single Angle	A36	Typical
299	M332	N51	N53		MOD DIAGS T2	Column	Single Angle	A36	Typical
300	M333	N46	N52		MOD DIAGS T2	Column	Single Angle	A36	Typical
301	M334	N50	N56		MOD DIAGS T2	Column	Single Angle	A36	Typical
302	M335	N52	N54		MOD DIAGS T2	Column	Single Angle	A36	Typical
303	M336	N49	N55		MOD DIAGS T2	Column	Single Angle	A36	Typical
304	M337	N55	N57		MOD DIAGS T2	Column	Single Angle	A36	Typical
305	M338	N56	N58		MOD DIAGS T2	Column	Single Angle	A36	Typical
306	M339	N53	N59		MOD DIAGS T2	Column	Single Angle	A36	Typical
307	M340	N59	N61		MOD DIAGS T2	Column	Single Angle	A36	Typical
308	M341	N54	N60		MOD DIAGS T2	Column	Single Angle	A36	Typical
309	M342	N58	N64		MOD DIAGS T2	Column	Single Angle	A36	Typical
310	M343	N60	N62		MOD DIAGS T2	Column	Single Angle	A36	Typical
311	M344	N57	N63		MOD DIAGS T2	Column	Single Angle	A36	Typical
312	M345	N63	N65		MOD DIAGS T2	Column	Single Angle	A36	Typical
313	M346	N64	N66		MOD DIAGS T2	Column	Single Angle	A36	Typical
314	M347	N61	N67		MOD DIAGS T2	Column	Single Angle	A36	Typical
315	M348	N67	N4		MOD DIAGS T2	Column	Single Angle	A36	Typical
316	M349	N62	N68		MOD DIAGS T2	Column	Single Angle	A36	Typical
317	M350	N66	N2		MOD DIAGS T2	Column	Single Angle	A36	Typical
318	M351	N68	N6		MOD DIAGS T2	Column	Single Angle	A36	Typical
319	M352	N65	N8		MOD DIAGS T2	Column	Single Angle	A36	Typical
320	M357	N145	N38		RIGID	None	None	RIGID	Typical
321	M370	N108	N110		L2X2X4	Column	Single Angle	A36	Typical
322	M358	N146	N39		RIGID	None	None	RIGID	Typical
323	M371	N105	N111		L2X2X4	Column	Single Angle	A36	Typical
324	M373	N129	N130	270	L4X3X4	Beam	Single Angle	A36	Typical
325	M372	N143	N144	270	L4X3X4	Beam	Single Angle	A36	Typical
326	M374	N121	N122	270	L4X3X4	Beam	Single Angle	A36	Typical
327	M379	N37	N110		L2X2X4	Column	Single Angle	A36	Typical
328	M381	N39	N112		L2X2X4	Column	Single Angle	A36	Typical
329	M380	N145	N111	90	L2X2X4	Column	Single Angle	A36	Typical
330	M382	N40	N109		L2X2X4	Column	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
331	M383	N106	N112		L2X2X4	Column	Single Angle	A36	Typical
332	M384	N107	N109		L2X2X4	Column	Single Angle	A36	Typical
333	M385	N108	N102		L2X2X4	Column	Single Angle	A36	Typical
334	M386	N105	N103		L2X2X4	Column	Single Angle	A36	Typical
335	M387	N106	N104		L2X2X4	Column	Single Angle	A36	Typical
336	M388	N107	N101		L2X2X4	Column	Single Angle	A36	Typical
337	M389	N100	N102		L2X2X4	Column	Single Angle	A36	Typical
338	M390	N97	N103		L2X2X4	Column	Single Angle	A36	Typical
339	M391	N98	N104		L2X2X4	Column	Single Angle	A36	Typical
340	M392	N99	N101		L2X2X4	Column	Single Angle	A36	Typical
341	M393	N100	N94		L2X2X4	Column	Single Angle	A36	Typical
342	M394	N99	N93		L2X2X4	Column	Single Angle	A36	Typical
343	M395	N97	N95		L2X2X4	Column	Single Angle	A36	Typical
344	M396	N98	N96		L2X2X4	Column	Single Angle	A36	Typical
345	m252	N144	N146	90	LL1.5X2.5X4X3	Beam	Double Angle (No Gap)	A36	Typical
346	m251	N145	N143	90	LL1.5X2.5X4X3	Beam	Double Angle (No Gap)	A36	Typical
347	M353	N142	N111		RIGID	None	None	RIGID	Typical
348	M354	N141	N110		RIGID	None	None	RIGID	Typical
349	Mz325	ZN284	ZN277	270	RIGID	None	None	RIGID	Typical
350	Mz326	ZN278	ZN279	270	RIGID	None	None	RIGID	Typical
351	Mz327	ZN280	ZN281	270	RIGID	None	None	RIGID	Typical
352	Mz328	ZN282	ZN283	270	RIGID	None	None	RIGID	Typical
353	M355	N132	N95		RIGID	None	None	RIGID	Typical
354	M356	N131	N94		RIGID	None	None	RIGID	Typical
355	M359	N115	N79		RIGID	None	None	RIGID	Typical
356	M360	N114	N78		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
1	M1				Yes	** NA **	None
2	M2				Yes	** NA **	None
3	M3				Yes	** NA **	None
4	M4				Yes	** NA **	None
5	M5				Yes	N/A	None
6	M6				Yes	N/A	None
7	M7				Yes	N/A	None
8	M8				Yes	N/A	None
9	M9				Yes	** NA **	None
10	M10				Yes	** NA **	None
11	M11				Yes	** NA **	None
12	M12				Yes	** NA **	None
13	M13				Yes	N/A	None
14	M14				Yes	N/A	None
15	M15				Yes	N/A	None
16	M16				Yes	N/A	None
17	M17				Yes	** NA **	None
18	M18				Yes	** NA **	None
19	M19				Yes	** NA **	None
20	M20				Yes	** NA **	None
21	M21				Yes	N/A	None
22	M22				Yes	N/A	None
23	M23				Yes	N/A	None
24	M24				Yes	N/A	None
25	M25				Yes	** NA **	None
26	M26				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
27	M27				Yes	** NA **	None
28	M28				Yes	** NA **	None
29	M29				Yes	N/A	None
30	M30				Yes	N/A	None
31	M31				Yes	N/A	None
32	M32				Yes	N/A	None
33	M33				Yes	** NA **	None
34	M34				Yes	** NA **	None
35	M35				Yes	** NA **	None
36	M36				Yes	** NA **	None
37	M37				Yes	N/A	None
38	M38				Yes	N/A	None
39	M39				Yes	N/A	None
40	M40				Yes	N/A	None
41	M41				Yes	** NA **	None
42	M42				Yes	** NA **	None
43	M43				Yes	** NA **	None
44	M44				Yes	** NA **	None
45	M45				Yes	N/A	None
46	M46				Yes	N/A	None
47	M47				Yes	N/A	None
48	M48				Yes	N/A	None
49	M49				Yes	** NA **	None
50	M50				Yes	** NA **	None
51	M51				Yes	** NA **	None
52	M52				Yes	** NA **	None
53	M53				Yes	N/A	None
54	M54				Yes	N/A	None
55	M55				Yes	N/A	None
56	M56				Yes	N/A	None
57	M57				Yes	** NA **	None
58	M58				Yes	** NA **	None
59	M59				Yes	** NA **	None
60	M60				Yes	** NA **	None
61	M61				Yes	N/A	None
62	M62				Yes	N/A	None
63	M63				Yes	N/A	None
64	M64				Yes	N/A	None
65	M65				Yes	** NA **	None
66	M66				Yes	** NA **	None
67	M67				Yes	** NA **	None
68	M68				Yes	** NA **	None
69	M69				Yes	** NA **	None
70	M70				Yes	** NA **	None
71	M71				Yes	** NA **	None
72	M72				Yes	** NA **	None
73	M73				Yes	N/A	None
74	M74				Yes	N/A	None
75	M75				Yes	N/A	None
76	M76				Yes	N/A	None
77	M77				Yes	** NA **	None
78	M78				Yes	** NA **	None
79	M79				Yes	** NA **	None
80	M80				Yes	** NA **	None
81	M81				Yes	N/A	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
82	M82				Yes	N/A	None
83	M83				Yes	N/A	None
84	M84				Yes	N/A	None
85	M85				Yes	** NA **	None
86	M86				Yes	** NA **	None
87	M87				Yes	** NA **	None
88	M88				Yes	** NA **	None
89	M89				Yes	N/A	None
90	M90				Yes	N/A	None
91	M91				Yes	N/A	None
92	M92				Yes	N/A	None
93	M93				Yes	** NA **	None
94	M94				Yes	** NA **	None
95	M95				Yes	** NA **	None
96	M96				Yes	** NA **	None
97	M97				Yes	N/A	None
98	M98				Yes	N/A	None
99	M99				Yes	N/A	None
100	M100				Yes	N/A	None
101	M101				Yes	** NA **	None
102	M102				Yes	** NA **	None
103	M103				Yes	** NA **	None
104	M104				Yes	** NA **	None
105	M105				Yes	N/A	None
106	M106				Yes	N/A	None
107	M107				Yes	N/A	None
108	M108				Yes	N/A	None
109	M109				Yes	** NA **	None
110	M110				Yes	** NA **	None
111	M111				Yes	** NA **	None
112	M112				Yes	** NA **	None
113	M113				Yes	N/A	None
114	M114				Yes	N/A	None
115	M115				Yes	N/A	None
116	M116				Yes	N/A	None
117	M117				Yes	** NA **	None
118	M118				Yes	** NA **	None
119	M119				Yes	** NA **	None
120	M120				Yes	** NA **	None
121	M121				Yes	N/A	None
122	M122				Yes	N/A	None
123	M123				Yes	N/A	None
124	M124				Yes	N/A	None
125	M125				Yes	** NA **	None
126	M126				Yes	** NA **	None
127	M127				Yes	** NA **	None
128	M128				Yes	** NA **	None
129	M129				Yes	N/A	None
130	M130				Yes	N/A	None
131	M131				Yes	N/A	None
132	M132				Yes	N/A	None
133	M133				Yes	** NA **	None
134	M134				Yes	** NA **	None
135	M135				Yes	** NA **	None
136	M136				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
137	M137				Yes	** NA **	None
138	M138				Yes	** NA **	None
139	M139				Yes	** NA **	None
140	M140				Yes	** NA **	None
141	M141				Yes	N/A	None
142	M142				Yes	Default	None
143	M143				Yes	N/A	None
144	M144				Yes	Default	None
145	M145				Yes	N/A	None
146	M146				Yes	N/A	None
147	M147				Yes	N/A	None
148	M148				Yes	N/A	None
149	M149				Yes	** NA **	None
150	M150				Yes	** NA **	None
151	M151				Yes	** NA **	None
152	M152				Yes	** NA **	None
153	M153				Yes	N/A	None
154	M154				Yes	N/A	None
155	M155				Yes	N/A	None
156	M156				Yes	N/A	None
157	M157				Yes	** NA **	None
158	M158				Yes	** NA **	None
159	M159				Yes	** NA **	None
160	M160				Yes	** NA **	None
161	M161				Yes	N/A	None
162	M162				Yes	Default	None
163	M163				Yes	N/A	None
164	M164				Yes	N/A	None
165	M165				Yes	** NA **	None
166	M166				Yes	** NA **	None
167	M167				Yes	** NA **	None
168	M168				Yes	** NA **	None
169	M169				Yes	N/A	None
170	M170				Yes	N/A	None
171	M171				Yes	N/A	None
172	M172				Yes	N/A	None
173	M173				Yes	** NA **	None
174	M174				Yes	** NA **	None
175	M175				Yes	** NA **	None
176	M176				Yes	** NA **	None
177	M177				Yes	N/A	None
178	M178				Yes	N/A	None
179	M179				Yes	N/A	None
180	M180				Yes	N/A	None
181	M181				Yes	** NA **	None
182	M182				Yes	** NA **	None
183	M183				Yes	** NA **	None
184	M184				Yes	** NA **	None
185	M185				Yes	N/A	None
186	M186				Yes	N/A	None
187	M187				Yes	N/A	None
188	M188				Yes	N/A	None
189	M189				Yes	** NA **	None
190	M190				Yes	** NA **	None
191	M191				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
192	M192				Yes	** NA **	None
193	M193				Yes	N/A	None
194	M194				Yes	Default	None
195	M195				Yes	N/A	None
196	M196				Yes	N/A	None
197	M197				Yes	** NA **	None
198	M198				Yes	** NA **	None
199	M199				Yes	** NA **	None
200	M200				Yes	** NA **	None
201	M201				Yes	Default	None
202	M202				Yes	Default	None
203	M203				Yes	Default	None
204	M204				Yes	Default	None
205	M205				Yes	** NA **	None
206	M206				Yes	** NA **	None
207	M207				Yes	** NA **	None
208	M208				Yes	** NA **	None
209	M209				Yes	Default	None
210	M210				Yes	Default	None
211	M211				Yes	Default	None
212	M212				Yes	Default	None
213	M213				Yes	** NA **	None
214	M214				Yes	** NA **	None
215	M215				Yes	** NA **	None
216	M216				Yes	** NA **	None
217	M217				Yes	Default	None
218	M218				Yes	Default	None
219	M219				Yes	Default	None
220	M220				Yes	Default	None
221	M221				Yes	** NA **	None
222	M222				Yes	** NA **	None
223	M223				Yes	** NA **	None
224	M224				Yes	** NA **	None
225	M225				Yes	Default	None
226	M226				Yes	Default	None
227	M227				Yes	N/A	None
228	M228				Yes	Default	None
229	M229				Yes	** NA **	None
230	M230				Yes	** NA **	None
231	M231				Yes	** NA **	None
232	M232				Yes	** NA **	None
233	M233		BenPIN		Yes	Default	None
234	M234	BenPIN			Yes	Default	None
235	M235				Yes	Default	None
236	M236				Yes	Default	None
237	M237				Yes	Default	None
238	M238				Yes	Default	None
239	M239		BenPIN		Yes	Default	None
240	M240	BenPIN			Yes	Default	None
241	M241				Yes	Default	None
242	M242				Yes	Default	None
243	M243				Yes	Default	None
244	M244				Yes	Default	None
245	M245		BenPIN		Yes	Default	None
246	M246	BenPIN			Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
247	M247				Yes	Default	None
248	M248				Yes	Default	None
249	M249				Yes	Default	None
250	M250				Yes	Default	None
251	M253				Yes	Default	None
252	M254				Yes	Default	None
253	M255				Yes	Default	None
254	M256				Yes	Default	None
255	M257				Yes	Default	None
256	M258				Yes	Default	None
257	M259				Yes	Default	None
258	M260				Yes	Default	None
259	M261				Yes	Default	None
260	M262	BenPIN	BenPIN		Yes	N/A	None
261	M263	BenPIN	BenPIN		Yes	N/A	None
262	M264	BenPIN	BenPIN		Yes	N/A	None
263	M265	BenPIN	BenPIN		Yes	N/A	None
264	M266	BenPIN	BenPIN		Yes	N/A	None
265	M267	BenPIN	BenPIN		Yes	N/A	None
266	M268	BenPIN	BenPIN		Yes	N/A	None
267	M269	BenPIN	BenPIN		Yes	N/A	None
268	M270	BenPIN	BenPIN		Yes	N/A	None
269	M271	BenPIN	BenPIN		Yes	N/A	None
270	M272	BenPIN	BenPIN		Yes	N/A	None
271	M273	BenPIN	BenPIN		Yes	N/A	None
272	M274	BenPIN	BenPIN		Yes	N/A	None
273	M275	BenPIN	BenPIN		Yes	N/A	None
274	M276	BenPIN	BenPIN		Yes	N/A	None
275	M277	BenPIN	BenPIN		Yes	N/A	None
276	M278	BenPIN	BenPIN		Yes	N/A	None
277	M279	BenPIN	BenPIN		Yes	N/A	None
278	M280	BenPIN	BenPIN		Yes	N/A	None
279	M281	BenPIN	BenPIN		Yes	N/A	None
280	M282	BenPIN	BenPIN		Yes	N/A	None
281	M283	BenPIN	BenPIN		Yes	N/A	None
282	M284	BenPIN	BenPIN		Yes	N/A	None
283	M285	BenPIN	BenPIN		Yes	N/A	None
284	M306	BenPIN	BenPIN		Yes	N/A	None
285	M307	BenPIN	BenPIN		Yes	N/A	None
286	M308	BenPIN	BenPIN		Yes	N/A	None
287	M309	BenPIN	BenPIN		Yes	N/A	None
288	M321	BenPIN	BenPIN		Yes	** NA **	None
289	M322	BenPIN	BenPIN		Yes	** NA **	None
290	M323	BenPIN	BenPIN		Yes	** NA **	None
291	M324	BenPIN	BenPIN		Yes	** NA **	None
292	M325	BenPIN	BenPIN		Yes	** NA **	None
293	M326	BenPIN	BenPIN		Yes	** NA **	None
294	M327	BenPIN	BenPIN		Yes	** NA **	None
295	M328	BenPIN	BenPIN		Yes	** NA **	None
296	M329	BenPIN	BenPIN		Yes	** NA **	None
297	M330	BenPIN	BenPIN		Yes	** NA **	None
298	M331	BenPIN	BenPIN		Yes	** NA **	None
299	M332	BenPIN	BenPIN		Yes	** NA **	None
300	M333	BenPIN	BenPIN		Yes	** NA **	None
301	M334	BenPIN	BenPIN		Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
302	M335	BenPIN	BenPIN		Yes	** NA **	None
303	M336	BenPIN	BenPIN		Yes	** NA **	None
304	M337	BenPIN	BenPIN		Yes	** NA **	None
305	M338	BenPIN	BenPIN		Yes	** NA **	None
306	M339	BenPIN	BenPIN		Yes	** NA **	None
307	M340	BenPIN	BenPIN		Yes	** NA **	None
308	M341	BenPIN	BenPIN		Yes	** NA **	None
309	M342	BenPIN	BenPIN		Yes	** NA **	None
310	M343	BenPIN	BenPIN		Yes	** NA **	None
311	M344	BenPIN	BenPIN		Yes	** NA **	None
312	M345	BenPIN	BenPIN		Yes	** NA **	None
313	M346	BenPIN	BenPIN		Yes	** NA **	None
314	M347	BenPIN	BenPIN		Yes	** NA **	None
315	M348	BenPIN	BenPIN		Yes	** NA **	None
316	M349	BenPIN	BenPIN		Yes	** NA **	None
317	M350	BenPIN	BenPIN		Yes	** NA **	None
318	M351	BenPIN	BenPIN		Yes	** NA **	None
319	M352	BenPIN	BenPIN		Yes	** NA **	None
320	M357				Yes	** NA **	None
321	M370				Yes	** NA **	None
322	M358				Yes	** NA **	None
323	M371				Yes	** NA **	None
324	M373				Yes	N/A	None
325	M372				Yes	Default	None
326	M374				Yes	N/A	None
327	M379				Yes	** NA **	None
328	M381				Yes	** NA **	None
329	M380				Yes	** NA **	None
330	M382				Yes	** NA **	None
331	M383				Yes	** NA **	None
332	M384				Yes	** NA **	None
333	M385				Yes	** NA **	None
334	M386				Yes	** NA **	None
335	M387				Yes	** NA **	None
336	M388				Yes	** NA **	None
337	M389				Yes	** NA **	None
338	M390				Yes	** NA **	None
339	M391				Yes	** NA **	None
340	M392				Yes	** NA **	None
341	M393				Yes	** NA **	None
342	M394				Yes	** NA **	None
343	M395				Yes	** NA **	None
344	M396				Yes	** NA **	None
345	m252	BenPIN	BenPIN		Yes	Default	None
346	m251	BenPIN	BenPIN		Yes	Default	None
347	M353				Yes	** NA **	None
348	M354				Yes	** NA **	None
349	Mz325				Yes	** NA **	None
350	Mz326				Yes	** NA **	None
351	Mz327				Yes	** NA **	None
352	Mz328				Yes	** NA **	None
353	M355				Yes	** NA **	None
354	M356				Yes	** NA **	None
355	M359				Yes	** NA **	None
356	M360				Yes	** NA **	None



Company : ETS, PLLC
Designer : AEV
Job Number : ETS Job No. 24127161.STR.2664
Model Name : 11201 - 21 E Main Street

Checked By : _____

Member Advanced Data (Continued)

Label	I Release	J Release	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
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Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Channel Conn.	a [in]	Function
1	M1	TWR LEG T1	234	29.25	29.25	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
2	M2	TWR LEG T1	234	29.25	29.25	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
3	M3	TWR LEG T1	234	29.25	29.25	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
4	M4	TWR LEG T1	234	29.25	29.25	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
5	M5	TWR TOP GIRT T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
6	M6	TWR TOP GIRT T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
7	M7	TWR TOP GIRT T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
8	M8	TWR TOP GIRT T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
9	M9	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
10	M10	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
11	M11	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
12	M12	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
13	M13	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
14	M14	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
15	M15	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
16	M16	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
17	M17	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
18	M18	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
19	M19	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
20	M20	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
21	M21	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
22	M22	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
23	M23	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
24	M24	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
25	M25	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
26	M26	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
27	M27	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
28	M28	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
29	M29	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
30	M30	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
31	M31	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
32	M32	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
33	M33	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
34	M34	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
35	M35	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
36	M36	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
37	M37	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
38	M38	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
39	M39	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
40	M40	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
41	M41	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
42	M42	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
43	M43	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
44	M44	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
45	M45	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
46	M46	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
47	M47	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
48	M48	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
49	M49	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
50	M50	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
51	M51	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
52	M52	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
53	M53	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
54	M54	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
55	M55	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Channel Conn.	a [in]	Function
56 M56	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
57 M57	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
58 M58	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
59 M59	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
60 M60	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
61 M61	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
62 M62	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
63 M63	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
64 M64	TWR HORZ T1	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
65 M65	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
66 M66	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
67 M67	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
68 M68	TWR DIAG T1	41.049	41.049	41.049	41.049	41.049	41.049	0.65	0.65	N/A	N/A	Lateral
69 M69	TWR LEG T2	240	Segment	Segment	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
70 M70	TWR LEG T2	240	Segment	Segment	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
71 M71	TWR LEG T2	240	Segment	Segment	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
72 M72	TWR LEG T2	240	Segment	Segment	Lbyy	29.25	29.25	0.65	0.65	N/A	N/A	Lateral
73 M73	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
74 M74	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
75 M75	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
76 M76	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
77 M77	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
78 M78	TWR DIAG T2	41.587	Segment	Segment	Segment	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
79 M79	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
80 M80	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
81 M81	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
82 M82	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
83 M83	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
84 M84	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
85 M85	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
86 M86	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
87 M87	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
88 M88	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
89 M89	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
90 M90	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
91 M91	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
92 M92	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
93 M93	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
94 M94	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
95 M95	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
96 M96	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
97 M97	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
98 M98	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
99 M99	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
100 M100	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
101 M101	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
102 M102	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
103 M103	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
104 M104	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
105 M105	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
106 M106	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
107 M107	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
108 M108	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
109 M109	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
110 M110	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Channel Conn.	a [in]	Function
111M111	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
112M112	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
113M113	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
114M114	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
115M115	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
116M116	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
117M117	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
118M118	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
119M119	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
120M120	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
121M121	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
122M122	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
123M123	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
124M124	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
125M125	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
126M126	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
127M127	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
128M128	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
129M129	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
130M130	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
131M131	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
132M132	TWR HORZ T2	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
133M133	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
134M134	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
135M135	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
136M136	TWR DIAG T2	41.587	41.587	41.587	41.587	41.587	41.587	0.65	0.65	N/A	N/A	Lateral
137M137	TWR LEG T3	336	30.545	30.545	Lbyy	30.545	30.545	0.65	0.65	N/A	N/A	Lateral
138M138	TWR LEG T3	336	30.545	30.545	Lbyy	30.545	30.545	0.65	0.65	N/A	N/A	Lateral
139M139	TWR LEG T3	336	30.545	30.545	Lbyy	30.545	30.545	0.65	0.65	N/A	N/A	Lateral
140M140	TWR LEG T3	336	30.545	30.545	Lbyy	30.545	30.545	0.65	0.65	N/A	N/A	Lateral
141M141	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
142M142	TWR HORZ T3	25.8	Segment	Segment	Lbyy	Segment	Segment	0.65	0.65	N/A	N/A	Lateral
143M143	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
144M144	TWR HORZ T3	28.8	Segment					0.65	0.65	N/A	N/A	Lateral
145M145	TWR BOT GIRT T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
146M146	TWR BOT GIRT T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
147M147	TWR BOT GIRT T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
148M148	TWR BOT GIRT T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
149M149	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
150M150	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
151M151	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
152M152	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
153M153	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
154M154	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
155M155	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
156M156	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
157M157	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
158M158	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
159M159	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
160M160	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
161M161	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
162M162	TWR HORZ T3	25.8	Segment					0.65	0.65	N/A	N/A	Lateral
163M163	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
164M164	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
165M165	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

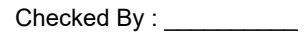
Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Channel Conn.	a [in]	Function
166M166	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
167M167	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
168M168	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
169M169	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
170M170	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
171M171	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
172M172	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
173M173	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
174M174	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
175M175	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
176M176	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
177M177	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
178M178	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
179M179	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
180M180	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
181M181	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
182M182	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
183M183	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
184M184	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
185M185	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
186M186	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
187M187	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
188M188	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
189M189	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
190M190	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
191M191	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
192M192	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
193M193	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
194M194	TWR HORZ T3	25.8	Segment		Lbyy			0.65	0.65	N/A	N/A	Lateral
195M195	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
196M196	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
197M197	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
198M198	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
199M199	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
200M200	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
201M201	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
202M202	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
203M203	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
204M204	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
205M205	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
206M206	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
207M207	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
208M208	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
209M209	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
210M210	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
211M211	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
212M212	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
213M213	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
214M214	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
215M215	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
216M216	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
217M217	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
218M218	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
219M219	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
220M220	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Channel Conn.	a [in]	Function
221 M221	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
222 M222	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
223 M223	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
224 M224	TWR DIAG T3	41.982	41.982	41.982	41.982	41.982	41.982	0.65	0.65	N/A	N/A	Lateral
225 M225	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
226 M226	TWR HORZ T3	25.8	Segment		Lbyy			0.65	0.65	N/A	N/A	Lateral
227 M227	TWR HORZ T3	28.8	28.8	28.8	28.8	28.8	28.8	0.65	0.65	N/A	N/A	Lateral
228 M228	TWR HORZ T3	28.8	Segment		Segment	Segment	Segment	0.65	0.65	N/A	N/A	Lateral
229 M229	TWR DIAG T3	41.982	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
230 M230	TWR DIAG T3	40.967	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
231 M231	TWR DIAG T3	41.982	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
232 M232	TWR DIAG T3	41.982	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
233 M233	L2.5X1.5X4	49.8	Segment	Segment	Lbyy			0.8	0.8	N/A	N/A	Lateral
234 M234	L2.5X1.5X4	49.8		Segment	Lbyy			0.8	0.8	N/A	N/A	Lateral
235 M235	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
236 M236	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
237 M237	L11/2X11/2X1/4	33.266			Lbyy			0.65	0.65	N/A	N/A	Lateral
238 M238	L11/2X11/2X1/4	33.266			Lbyy			0.65	0.65	N/A	N/A	Lateral
239 M239	L2.5X1.5X4	49.8	Segment	Segment	Lbyy			0.8	0.8	N/A	N/A	Lateral
240 M240	L2.5X1.5X4	49.8	Segment	Segment	Lbyy			0.8	0.8	N/A	N/A	Lateral
241 M241	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
242 M242	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
243 M243	L11/2X11/2X1/4	33.266			Lbyy			0.65	0.65	N/A	N/A	Lateral
244 M244	L11/2X11/2X1/4	33.266			Lbyy			0.65	0.65	N/A	N/A	Lateral
245 M245	L2.5X1.5X4	49.9	Segment	Segment	Lbyy			0.8	0.8	N/A	N/A	Lateral
246 M246	L2.5X1.5X4	49.9	Segment	Segment	Lbyy			0.8	0.8	N/A	N/A	Lateral
247 M247	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
248 M248	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
249 M249	L11/2X11/2X1/4	33.329			Lbyy			0.65	0.65	N/A	N/A	Lateral
250 M250	L11/2X11/2X1/4	33.329			Lbyy			0.65	0.65	N/A	N/A	Lateral
251 M253	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
252 M254	L11/2X11/2X1/4	38.666			Lbyy			0.65	0.65	N/A	N/A	Lateral
253 M255	L11/2X11/2X1/4	45.209	Segment	Segment	Lbyy		Segment	0.65	0.65	N/A	N/A	Lateral
254 M256	L11/2X11/2X1/4	45.209	Segment	Segment	Lbyy		Segment	0.65	0.65	N/A	N/A	Lateral
255 M257	L2X2X4	25.8	Segment	Segment	Lbyy			0.65	0.65	N/A	N/A	Lateral
256 M258	L11/2X11/2X1/4	40.729			Lbyy			0.65	0.65	N/A	N/A	Lateral
257 M259	L11/2X11/2X1/4	40.729			Lbyy			0.65	0.65	N/A	N/A	Lateral
258 M260	L11/2X11/2X1/4	40.729			Lbyy			0.65	0.65	N/A	N/A	Lateral
259 M261	L11/2X11/2X1/4	40.729			Lbyy			0.65	0.65	N/A	N/A	Lateral
260 M262	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
261 M263	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
262 M264	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
263 M265	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
264 M266	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
265 M267	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
266 M268	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
267 M269	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
268 M270	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
269 M271	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
270 M272	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
271 M273	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
272 M274	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
273 M275	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
274 M276	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
275 M277	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	K y-y	K z-z	Channel Conn.	a [in]	Function
276 M278	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
277 M279	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
278 M280	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
279 M281	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
280 M282	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
281 M283	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
282 M284	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
283 M285	TWR SEC HORZ T3	28.8			Lbyy			1	1	N/A	N/A	Lateral
284 M306	TWR SEC HORZ T2	28.8			Lbyy			1	1	N/A	N/A	Lateral
285 M307	TWR SEC HORZ T2	28.8			Lbyy			1	1	N/A	N/A	Lateral
286 M308	TWR SEC HORZ T2	28.8			Lbyy			1	1	N/A	N/A	Lateral
287 M309	TWR SEC HORZ T2	28.8			Lbyy			1	1	N/A	N/A	Lateral
288 M321	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
289 M322	MOD DIAGS T2	41.587	Segment		Lbyy		Segment	1	1	N/A	N/A	Lateral
290 M323	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
291 M324	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
292 M325	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
293 M326	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
294 M327	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
295 M328	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
296 M329	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
297 M330	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
298 M331	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
299 M332	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
300 M333	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
301 M334	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
302 M335	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
303 M336	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
304 M337	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
305 M338	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
306 M339	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
307 M340	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
308 M341	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
309 M342	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
310 M343	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
311 M344	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
312 M345	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
313 M346	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
314 M347	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
315 M348	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
316 M349	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
317 M350	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
318 M351	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
319 M352	MOD DIAGS T2	41.587	Segment		Lbyy			1	1	N/A	N/A	Lateral
320 M370	L2X2X4	41.982			Lbyy			0.65	0.65	N/A	N/A	Lateral
321 M371	L2X2X4	41.982			Lbyy			0.65	0.65	N/A	N/A	Lateral
322 M373	L4X3X4	25.8			Lbyy			0.65	0.65	N/A	N/A	Lateral
323 M372	L4X3X4	25.8			Lbyy			0.65	0.65	N/A	N/A	Lateral
324 M374	L4X3X4	25.8			Lbyy			0.65	0.65	N/A	N/A	Lateral
325 M379	L2X2X4	41.982	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
326 M381	L2X2X4	41.982	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
327 M380	L2X2X4	40.967	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
328 M382	L2X2X4	41.982	36	36	Lbyy			0.65	0.65	N/A	N/A	Lateral
329 M383	L2X2X4	41.982			Lbyy			0.65	0.65	N/A	N/A	Lateral
330 M384	L2X2X4	41.982			Lbyy			0.65	0.65	N/A	N/A	Lateral



Load Combinations (Continued)

Description		Solve	P-Delta	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
39	0.9 Dead+1.0 Wind 45 deg - No Ice	Yes	Y	1	0.9	3	1	28	0.9	29	1				
40	1.2 Dead+1.0 Wind 90 deg - No Ice	Yes	Y	1	1.2	4	1	28	1.2	29	1				
41	0.9 Dead+1.0 Wind 90 deg - No Ice	Yes	Y	1	0.9	4	1	28	0.9	29	1				
42	1.2 Dead+1.0 Wind 135 deg - No Ice	Yes	Y	1	1.2	5	1	28	1.2	29	1				
43	0.9 Dead+1.0 Wind 135 deg - No Ice	Yes	Y	1	0.9	5	1	28	0.9	29	1				
44	1.2 Dead+1.0 Wind 180 deg - No Ice	Yes	Y	1	1.2	6	1	28	1.2	29	1				
45	0.9 Dead+1.0 Wind 180 deg - No Ice	Yes	Y	1	0.9	6	1	28	0.9	29	1				
46	1.2 Dead+1.0 Wind 225 deg - No Ice	Yes	Y	1	1.2	7	1	28	1.2	29	1				
47	0.9 Dead+1.0 Wind 225 deg - No Ice	Yes	Y	1	0.9	7	1	28	0.9	29	1				
48	1.2 Dead+1.0 Wind 270 deg - No Ice	Yes	Y	1	1.2	8	1	28	1.2	29	1				
49	0.9 Dead+1.0 Wind 270 deg - No Ice	Yes	Y	1	0.9	8	1	28	0.9	29	1				
50	1.2 Dead+1.0 Wind 315 deg - No Ice	Yes	Y	1	1.2	9	1	28	1.2	29	1				
51	0.9 Dead+1.0 Wind 315 deg - No Ice	Yes	Y	1	0.9	9	1	28	0.9	29	1				
52	1.2 Dead+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	10	1	11	1	28	1.2	29	1		
53	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	12	1	10	1	11	1	28	1.2	29	1
54	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	13	1	10	1	11	1	28	1.2	29	1
55	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	14	1	10	1	11	1	28	1.2	29	1
56	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	15	1	10	1	11	1	28	1.2	29	1
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	16	1	10	1	11	1	28	1.2	29	1
58	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	17	1	10	1	11	1	28	1.2	29	1
59	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	18	1	10	1	11	1	28	1.2	29	1
60	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	Yes	Y	1	1.2	19	1	10	1	11	1	28	1.2	29	1
61	Dead+Wind 0 deg - Service	Yes	Y	1	1	20	1	28	1	29	1				
62	Dead+Wind 45 deg - Service	Yes	Y	1	1	21	1	28	1	29	1				
63	Dead+Wind 90 deg - Service	Yes	Y	1	1	22	1	28	1	29	1				
64	Dead+Wind 135 deg - Service	Yes	Y	1	1	23	1	28	1	29	1				
65	Dead+Wind 180 deg - Service	Yes	Y	1	1	24	1	28	1	29	1				
66	Dead+Wind 225 deg - Service	Yes	Y	1	1	25	1	28	1	29	1				
67	Dead+Wind 270 deg - Service	Yes	Y	1	1	26	1	28	1	29	1				

Envelope Node Reactions

Node Label			X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N129	max	12807.29	43	182.723	46	5158.326	44	0	68	0	68	0	68
2		min	-13582.504	16	-149.051	7	-5093.328	2	0	1	0	1	0	1
3	N143	max	24931.916	50	36530.475	44	8962.628	37	0	68	0	68	0	68
4		min	-24191.74	9	-31735.643	3	-9086.586	10	0	1	0	1	0	1
5	N121	max	1267.999	44	110.684	48	268.753	46	0	68	0	68	0	68
6		min	-1198.123	3	-56.252	7	-727.406	20	0	1	0	1	0	1
7	N130	max	12825.594	39	181.027	50	5168.366	44	0	68	0	68	0	68
8		min	-14331.635	12	-156.273	7	-4900.881	3	0	1	0	1	0	1
9	N122	max	1271.609	50	107.633	48	745.81	56	0	68	0	68	0	68
10		min	-1302.757	8	-52.626	7	-252.137	16	0	1	0	1	0	1
11	N144	max	25095.61	46	35910.293	36	8984.413	36	0	68	0	68	0	68
12		min	-23591.257	5	-32643.254	11	-9179.986	10	0	1	0	1	0	1
13	ZN71	max	9055.278	59	6114.092	48	515.227	41	0	68	0.05	44	0	68
14		min	-665.064	7	-4232.131	7	-9025.535	25	0	1	-0.042	3	0	1
15	ZN70	max	9017.994	59	6116.554	48	9042.746	60	0	68	0.159	44	0	68
16		min	-550.664	7	-4247.003	7	-723.106	9	0	1	-0.14	3	0	1
17	ZN72	max	500.345	41	6137.477	48	590.91	39	0	68	0.075	36	0	68
18		min	-9010.706	25	-4255.114	7	-9055.378	24	0	1	-0.068	11	0	1
19	ZN69	max	441.791	41	6128.953	48	9011.232	59	0	68	0.085	46	0	68
20		min	-8964.581	25	-4265.698	7	-534.083	7	0	1	-0.077	5	0	1
21	Totals:	max	8290.749	49	16193.602	53	8185.909	36						
22		min	-8290.752	6	6675.382	11	-8185.935	10						

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

Member	Shape	Code Check	Loc[in]	LC	Shear	Check	Loc[in]	Dir	Lcphi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	L21/2X21/2X1/4	0.244	24.375	46	0.037	146.25	y	4047989.598	53550	0.64	3.334	1	H2-1
2	M2	L21/2X21/2X1/4	0.224	21.938	42	0.037	146.25	z	4047989.598	53550	0.64	3.334	1	H2-1
3	M3	L21/2X21/2X1/4	0.22	21.938	38	0.031	146.25	z	3647989.598	53550	0.64	3.334	1	H2-1
4	M4	L21/2X21/2X1/4	0.229	24.375	50	0.031	146.25	y	4447989.598	53550	0.64	3.334	1	H2-1
5	M5	L21/2X21/2X1/4	0.067	10.5	58	0.002	0	y	5435715.584	38556	0.46	2.54	1	H2-1
6	M6	L21/2X21/2X1/4	0.067	10.5	56	0.002	0	y	6035715.584	38556	0.46	2.54	1	H2-1
7	M7	L21/2X21/2X1/4	0.067	10.5	55	0.002	0	y	5935715.584	38556	0.46	2.54	1	H2-1
8	M8	L21/2X21/2X1/4	0.067	10.5	53	0.002	0	y	5735715.584	38556	0.46	2.54	1	H2-1
9	M9	L11/2X11/2X1/4	0.18	39.766	40	0.004	0	z	4414352.693	22275	0.162	0.787	1	H2-1
10	M10	L11/2X11/2X1/4	0.162	35.063	36	0.003	0	z	4214352.693	22275	0.162	0.787	1	H2-1
11	M11	L11/2X11/2X1/4	0.127	39.766	51	0.003	0	z	3814352.693	22275	0.162	0.787	1	H2-1
12	M12	L11/2X11/2X1/4	0.17	38.056	44	0.004	0	z	4814352.693	22275	0.162	0.787	1	H2-1
13	M13	L11/2X11/2X1/4	0.015	19.2	42	0.004	28.8	y	4017941.394	22275	0.162	0.833	1	H2-1
14	M14	L11/2X11/2X1/4	0.014	18.6	39	0.003	28.8	y	3617941.394	22275	0.162	0.833	1	H2-1
15	M15	L11/2X11/2X1/4	0.01	17.4	51	0.003	0	y	4017941.394	22275	0.162	0.833	1	H2-1
16	M16	L11/2X11/2X1/4	0.011	17.7	46	0.002	28.8	y	5717941.394	22275	0.162	0.833	1	H2-1
17	M17	L11/2X11/2X1/4	0.187	12.828	48	0.002	0	y	4614352.693	22275	0.162	0.787	1	H2-1
18	M18	L11/2X11/2X1/4	0.161	12.828	44	0.002	0	y	4214352.693	22275	0.162	0.787	1	H2-1
19	M19	L11/2X11/2X1/4	0.121	40.621	40	0.001	0	y	3814352.693	22275	0.162	0.787	1	H2-1
20	M20	L11/2X11/2X1/4	0.164	12.828	36	0.002	0	y	5014352.693	22275	0.162	0.787	1	H2-1
21	M21	L11/2X11/2X1/4	0.01	8.7	46	0.003	0	y	4817941.394	22275	0.162	0.833	1	H2-1
22	M22	L11/2X11/2X1/4	0.013	6.3	43	0.002	28.8	y	3817941.394	22275	0.162	0.833	1	H2-1
23	M23	L11/2X11/2X1/4	0.013	6	39	0.002	28.8	y	4817941.394	22275	0.162	0.833	1	H2-1
24	M24	L11/2X11/2X1/4	0.01	8.4	50	0.002	0	y	3617941.394	22275	0.162	0.833	1	H2-1
25	M25	L11/2X11/2X1/4	0.175	7.697	40	0.002	0	z	4214352.693	22275	0.162	0.787	1	H2-1
26	M26	L11/2X11/2X1/4	0.149	8.124	36	0.002	0	z	3814352.693	22275	0.162	0.787	1	H2-1
27	M27	L11/2X11/2X1/4	0.115	8.552	50	0.002	0	z	5014352.693	22275	0.162	0.787	1	H2-1
28	M28	L11/2X11/2X1/4	0.155	6.841	44	0.002	0	z	4614352.693	22275	0.162	0.787	1	H2-1
29	M29	L11/2X11/2X1/4	0.008	19.8	43	0.003	28.8	y	4017941.394	22275	0.162	0.833	1	H2-1
30	M30	L11/2X11/2X1/4	0.008	19.8	39	0.002	28.8	y	3617941.394	22275	0.162	0.833	1	H2-1
31	M31	L11/2X11/2X1/4	0.009	20.7	50	0.002	0	y	3817941.394	22275	0.162	0.833	1	H2-1
32	M32	L11/2X11/2X1/4	0.009	20.7	46	0.002	28.8	y	4417941.394	22275	0.162	0.833	1	H2-1
33	M33	L11/2X11/2X1/4	0.171	10.69	48	0.002	0	y	5814352.693	22275	0.162	0.787	1	H2-1
34	M34	L11/2X11/2X1/4	0.144	10.69	44	0.001	0	y	5614352.693	22275	0.162	0.787	1	H2-1
35	M35	L11/2X11/2X1/4	0.101	37.628	42	0.001	0	y	3814352.693	22275	0.162	0.787	1	H2-1
36	M36	L11/2X11/2X1/4	0.149	10.69	36	0.001	0	y	6014352.693	22275	0.162	0.787	1	H2-1
37	M37	L11/2X11/2X1/4	0.01	10.2	46	0.003	0	y	4817941.394	22275	0.162	0.833	1	H2-1
38	M38	L11/2X11/2X1/4	0.009	9.9	42	0.002	28.8	y	3617941.394	22275	0.162	0.833	1	H2-1
39	M39	L11/2X11/2X1/4	0.009	9.9	38	0.002	28.8	y	4817941.394	22275	0.162	0.833	1	H2-1
40	M40	L11/2X11/2X1/4	0.009	10.5	51	0.002	0	y	3617941.394	22275	0.162	0.833	1	H2-1
41	M41	L11/2X11/2X1/4	0.149	19.242	40	0.002	41.049	z	3814352.693	22275	0.162	0.787	1	H2-1
42	M42	L11/2X11/2X1/4	0.121	21.807	36	0.002	0	z	4214352.693	22275	0.162	0.787	1	H2-1
43	M43	L11/2X11/2X1/4	0.091	29.931	46	0.002	0	z	3814352.693	22275	0.162	0.787	1	H2-1
44	M44	L11/2X11/2X1/4	0.128	20.097	44	0.002	41.049	z	4214352.693	22275	0.162	0.787	1	H2-1
45	M45	L11/2X11/2X1/4	0.038	17.7	49	0.002	28.8	y	5017941.394	22275	0.162	0.833	1	H2-1
46	M46	L11/2X11/2X1/4	0.034	18.3	44	0.003	28.8	y	4417941.394	22275	0.162	0.833	1	H2-1
47	M47	L11/2X11/2X1/4	0.023	15.6	43	0.002	28.8	y	4017941.394	22275	0.162	0.833	1	H2-1
48	M48	L11/2X11/2X1/4	0.033	17.7	37	0.002	28.8	y	3617941.394	22275	0.162	0.833	1	H2-1
49	M49	L11/2X11/2X1/4	0.019	30.787	48	0.002	0	y	5414352.693	22275	0.162	0.787	1	H2-1
50	M50	L11/2X11/2X1/4	0.017	31.214	44	0.001	0	y	6014352.693	22275	0.162	0.787	1	H2-1
51	M51	L11/2X11/2X1/4	0.023	32.069	40	0.002	0	y	5714352.693	22275	0.162	0.787	1	H2-1
52	M52	L11/2X11/2X1/4	0.021	30.359	37	0.002	0	y	5614352.693	22275	0.162	0.787	1	H2-1
53	M53	L11/2X11/2X1/4	0.097	6	58	0.001	28.8	y	5617941.394	22275	0.162	0.833	1	H2-1
54	M54	L11/2X11/2X1/4	0.097	5.4	53	0.001	28.8	y	5417941.394	22275	0.162	0.833	1	H2-1
55	M55	L11/2X11/2X1/4	0.097	6.6	56	0.001	28.8	y	6017941.394	22275	0.162	0.833	1	H2-1

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

Member	Shape	Code	Check	Loc[in]	LC	Shear	Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
56	M56	L11/2X11/2X1/4	0.097	6	52	0.001	28.8	y	57	17941.394	22275	0.162	0.833	1	H2-1	
57	M57	L11/2X11/2X1/4	0.012	32.925	40	0.001	0	z	57	14352.693	22275	0.162	0.787	1	H2-1	
58	M58	L11/2X11/2X1/4	0.012	8.979	36	0.001	0	z	56	14352.693	22275	0.162	0.787	1	H2-1	
59	M59	L11/2X11/2X1/4	0.014	9.835	49	0.001	0	z	54	14352.693	22275	0.162	0.787	1	H2-1	
60	M60	L11/2X11/2X1/4	0.012	9.835	45	0.001	0	z	59	14352.693	22275	0.162	0.787	1	H2-1	
61	M61	L11/2X11/2X1/4	0.002	24	48	0.001	28.8	y	55	17941.394	22275	0.162	0.833	1	H2-1	
62	M62	L11/2X11/2X1/4	0.002	24.6	45	0.001	28.8	y	60	17941.394	22275	0.162	0.833	1	H2-1	
63	M63	L11/2X11/2X1/4	0.003	24.6	40	0.001	28.8	y	59	17941.394	22275	0.162	0.833	1	H2-1	
64	M64	L11/2X11/2X1/4	0.002	24.6	37	0.001	28.8	y	57	17941.394	22275	0.162	0.833	1	H2-1	
65	M65	L11/2X11/2X1/4	0.004	32.069	49	0.001	0	y	56	14352.693	22275	0.162	0.787	1	H2-1	
66	M66	L11/2X11/2X1/4	0.004	32.069	44	0.001	0	y	54	14352.693	22275	0.162	0.787	1	H2-1	
67	M67	L11/2X11/2X1/4	0.005	32.069	40	0.001	0	y	60	14352.693	22275	0.162	0.787	1	H2-1	
68	M68	L11/2X11/2X1/4	0.004	32.069	36	0.001	0	y	58	14352.693	22275	0.162	0.787	1	H2-1	
69	M69	L21/2X21/2X1/4	0.794	37.5	46	0.029	240	y	48	47717.112	53550	0.64	3.334	1	H2-1	
70	M70	L21/2X21/2X1/4	0.848	32.5	42	0.088	15	y	42	47717.112	53550	0.64	3.546	1.5	H2-1	
71	M71	L21/2X21/2X1/4	0.851	10	38	0.074	15	z	38	52028.121	53550	0.64	3.334	1	H2-1	
72	M72	L21/2X21/2X1/4	0.769	0	50	0.018	15	z	56	52028.121	53550	0.64	3.334	1	H2-1	
73	M73	L11/2X11/2X1/4	0.079	10.8	44	0.005	28.8	y	48	17941.394	22275	0.162	0.833	1	H2-1	
74	M74	L11/2X11/2X1/4	0.075	13.8	47	0.004	28.8	y	44	17941.394	22275	0.162	0.833	1	H2-1	
75	M75	L11/2X11/2X1/4	0.073	10.5	43	0.006	28.8	y	40	17941.394	22275	0.162	0.833	1	H2-1	
76	M76	L11/2X11/2X1/4	0.066	9.6	46	0.007	28.8	y	36	17941.394	22275	0.162	0.833	1	H2-1	
77	M77	L11/2X11/2X1/4	0.577	13.862	43	0.03	20.793	y	42	14187.212	22275	0.162	0.785	1	H2-1	
78	M78	L11/2X11/2X1/4	0.552	9.963	38	0.058	0	z	38	19899.338	22275	0.162	0.785	1	H2-1	
79	M79	L11/2X11/2X1/4	0.466	10.397	50	0.033	20.793	y	44	14187.212	22275	0.162	0.785	1	H2-1	
80	M80	L11/2X11/2X1/4	0.383	27.291	46	0.021	20.793	z	50	14187.212	22275	0.162	0.785	1	H2-1	
81	M81	L11/2X11/2X1/4	0.396	15.3	37	0.008	28.8	z	36	17941.394	22275	0.162	0.833	1	H2-1	
82	M82	L11/2X11/2X1/4	0.322	28.8	39	0.009	0	y	44	17941.394	22275	0.162	0.833	1	H2-1	
83	M83	L11/2X11/2X1/4	0.408	9	45	0.007	28.8	y	46	17941.394	22275	0.162	0.833	1	H2-1	
84	M84	L11/2X11/2X1/4	0.319	28.8	40	0.009	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
85	M85	L11/2X11/2X1/4	0.384	10.83	46	0.012	20.793	y	46	14187.212	22275	0.162	0.785	1	H2-1	
86	M86	L11/2X11/2X1/4	0.425	37.255	42	0.018	20.793	y	42	14187.212	22275	0.162	0.785	1	H2-1	
87	M87	L11/2X11/2X1/4	0.384	36.821	38	0.019	20.793	y	44	14187.212	22275	0.162	0.785	1	H2-1	
88	M88	L11/2X11/2X1/4	0.385	10.397	48	0.015	41.587	y	38	14187.212	22275	0.162	0.785	1	H2-1	
89	M89	L11/2X11/2X1/4	0.321	17.4	37	0.007	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
90	M90	L11/2X11/2X1/4	0.317	10.5	49	0.009	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
91	M91	L11/2X11/2X1/4	0.329	15.3	44	0.009	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
92	M92	L11/2X11/2X1/4	0.328	27.9	40	0.008	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
93	M93	L11/2X11/2X1/4	0.394	5.198	42	0.013	0	z	42	14187.212	22275	0.162	0.785	1	H2-1	
94	M94	L11/2X11/2X1/4	0.426	5.632	38	0.013	20.793	z	42	14187.212	22275	0.162	0.785	1	H2-1	
95	M95	L11/2X11/2X1/4	0.34	22.526	50	0.014	20.793	z	42	14187.212	22275	0.162	0.785	1	H2-1	
96	M96	L11/2X11/2X1/4	0.326	22.526	46	0.014	0	z	46	14187.212	22275	0.162	0.785	1	H2-1	
97	M97	L11/2X11/2X1/4	0.278	13.8	37	0.007	28.8	z	42	17941.394	22275	0.162	0.833	1	H2-1	
98	M98	L11/2X11/2X1/4	0.276	2.7	49	0.008	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
99	M99	L11/2X11/2X1/4	0.288	11.1	44	0.006	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
100	M100	L11/2X11/2X1/4	0.282	23.4	41	0.006	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
101	M101	L11/2X11/2X1/4	0.335	9.53	46	0.008	20.793	y	44	14187.212	22275	0.162	0.785	1	H2-1	
102	M102	L11/2X11/2X1/4	0.351	37.255	42	0.012	20.793	y	42	14187.212	22275	0.162	0.785	1	H2-1	
103	M103	L11/2X11/2X1/4	0.32	35.522	38	0.014	20.793	y	44	14187.212	22275	0.162	0.785	1	H2-1	
104	M104	L11/2X11/2X1/4	0.306	9.097	48	0.012	41.587	y	38	14187.212	22275	0.162	0.785	1	H2-1	
105	M105	L11/2X11/2X1/4	0.241	17.4	37	0.005	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
106	M106	L11/2X11/2X1/4	0.234	10.8	49	0.006	28.8	z	42	17941.394	22275	0.162	0.833	1	H2-1	
107	M107	L11/2X11/2X1/4	0.253	15.3	45	0.006	28.8	z	44	17941.394	22275	0.162	0.833	1	H2-1	
108	M108	L11/2X11/2X1/4	0.247	27.6	41	0.006	28.8	z	39	17941.394	22275	0.162	0.833	1	H2-1	
109	M109	L11/2X11/2X1/4	0.317	6.065	42	0.009	0	z	42	14187.212	22275	0.162	0.785	1	H2-1	
110	M110	L11/2X11/2X1/4	0.347	6.498	38	0.01	20.793	z	42	14187.212	22275	0.162	0.785	1	H2-1	

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn	
111	M111	L11/2X11/2X1/4	0.282	21.226	50	0.011	20.793	z	42	14187.212	22275	0.162	0.785	1	H2-1
112	M112	L11/2X11/2X1/4	0.266	21.226	46	0.011	20.793	z	38	14187.212	22275	0.162	0.785	1	H2-1
113	M113	L11/2X11/2X1/4	0.201	14.1	37	0.005	28.8	z	42	17941.394	22275	0.162	0.833	1	H2-1
114	M114	L11/2X11/2X1/4	0.198	6.3	49	0.005	28.8	z	38	17941.394	22275	0.162	0.833	1	H2-1
115	M115	L11/2X11/2X1/4	0.213	11.1	44	0.005	28.8	z	36	17941.394	22275	0.162	0.833	1	H2-1
116	M116	L11/2X11/2X1/4	0.203	21	41	0.004	28.8	z	38	17941.394	22275	0.162	0.833	1	H2-1
117	M117	L11/2X11/2X1/4	0.29	9.53	46	0.006	20.793	y	42	14187.212	22275	0.162	0.785	1	H2-1
118	M118	L11/2X11/2X1/4	0.279	38.98	42	0.008	20.793	y	42	14187.212	22275	0.162	0.785	1	H2-1
119	M119	L11/2X11/2X1/4	0.247	37.688	38	0.009	20.793	y	44	14187.212	22275	0.162	0.785	1	H2-1
120	M120	L11/2X11/2X1/4	0.249	9.53	50	0.008	41.587	y	38	14187.212	22275	0.162	0.785	1	H2-1
121	M121	L11/2X11/2X1/4	0.169	15.9	44	0.004	28.8	z	39	17941.394	22275	0.162	0.833	1	H2-1
122	M122	L11/2X11/2X1/4	0.159	10.8	49	0.003	28.8	z	42	17941.394	22275	0.162	0.833	1	H2-1
123	M123	L11/2X11/2X1/4	0.176	15	44	0.003	28.8	z	42	17941.394	22275	0.162	0.833	1	H2-1
124	M124	L11/2X11/2X1/4	0.168	22.8	41	0.004	28.8	z	36	17941.394	22275	0.162	0.833	1	H2-1
125	M125	L11/2X11/2X1/4	0.254	6.065	42	0.007	0	z	42	14187.212	22275	0.162	0.785	1	H2-1
126	M126	L11/2X11/2X1/4	0.278	6.065	38	0.006	0	z	40	14187.212	22275	0.162	0.785	1	H2-1
127	M127	L11/2X11/2X1/4	0.222	8.664	50	0.008	20.793	z	42	14187.212	22275	0.162	0.785	1	H2-1
128	M128	L11/2X11/2X1/4	0.208	22.093	46	0.008	0	z	46	14187.212	22275	0.162	0.785	1	H2-1
129	M129	L11/2X11/2X1/4	0.14	13.8	44	0.005	28.8	y	42	17941.394	22275	0.162	0.833	1	H2-1
130	M130	L11/2X11/2X1/4	0.129	19.2	55	0.006	0	y	44	17941.394	22275	0.162	0.833	1	H2-1
131	M131	L11/2X11/2X1/4	0.145	10.8	45	0.007	0	y	38	17941.394	22275	0.162	0.833	1	H2-1
132	M132	L11/2X11/2X1/4	0.133	17.1	41	0.005	0	y	36	17941.394	22275	0.162	0.833	1	H2-1
133	M133	L11/2X11/2X1/4	0.229	30.757	46	0.007	20.793	y	42	14187.212	22275	0.162	0.785	1	H2-1
134	M134	L11/2X11/2X1/4	0.204	32.056	42	0.008	20.793	y	38	14187.212	22275	0.162	0.785	1	H2-1
135	M135	L11/2X11/2X1/4	0.185	39.421	38	0.007	20.793	y	36	14187.212	22275	0.162	0.785	1	H2-1
136	M136	L11/2X11/2X1/4	0.201	34.222	50	0.006	20.793	y	46	14187.212	22275	0.162	0.785	1	H2-1
137	M137	L21/2X21/2X1/4	0.742	308	46	0.051	14	y	48	47515.779	53550	0.64	3.307	1	H2-1
138	M138	L21/2X21/2X1/4	0.432	315	42	0.051	0	y	48	47515.779	53550	0.64	3.307	1	H2-1
139	M139	L21/2X21/2X1/4	0.437	315	39	0.052	0	y	48	47515.779	53550	0.64	3.307	1	H2-1
140	M140	L21/2X21/2X1/4	0.708	325.5	50	0.052	0	y	48	47515.779	53550	0.64	3.307	1	H2-1
141	M141	L11/2X11/2X1/4	0.229	15.9	38	0.033	28.8	z	42	17941.394	22275	0.162	0.833	1	H2-1
142	M142	L11/2X11/2X1/4	0.836	0	42	0.059	25.8	z	44	18724.575	22275	0.162	0.834	1.5	H2-1
143	M143	L11/2X11/2X1/4	0.193	13.2	42	0.028	28.8	z	38	17941.394	22275	0.162	0.833	1	H2-1
144	M144	L11/2X11/2X1/4	0.505	0.9	50	0.838	1.5	z	42	21018.378	22275	0.162	0.834	1.5	H2-1
145	M145	L21/2X21/2X1/4	0.109	8.7	53	0.28	8.4	z	48	35715.584	38556	0.46	2.54	1	H2-1
146	M146	L21/2X21/2X1/4	0.118	8.7	53	0.28	8.4	z	48	35715.584	38556	0.46	2.54	1	H2-1
147	M147	L21/2X21/2X1/4	0.138	8.7	57	0.282	8.4	z	48	35715.584	38556	0.46	2.54	1	H2-1
148	M148	L21/2X21/2X1/4	0.116	8.7	57	0.283	8.4	z	48	35715.584	38556	0.46	2.54	1	H2-1
149	M149	L11/2X11/2X1/4	0.026	27.988	47	0.017	0	y	48	14065.578	22275	0.162	0.784	1	H2-1
150	M150	L11/2X11/2X1/4	0.047	26.239	44	0.017	0	y	48	14065.578	22275	0.162	0.784	1	H2-1
151	M151	L11/2X11/2X1/4	0.014	26.676	45	0.017	0	y	48	14065.578	22275	0.162	0.784	1	H2-1
152	M152	L11/2X11/2X1/4	0.02	26.676	37	0.018	0	y	48	14065.578	22275	0.162	0.784	1	H2-1
153	M153	L11/2X11/2X1/4	0.012	5.1	59	0.002	0	y	54	17941.394	22275	0.162	0.833	1	H2-1
154	M154	L11/2X11/2X1/4	0.027	0	49	0.002	0	y	46	17941.394	22275	0.162	0.833	1	H2-1
155	M155	L11/2X11/2X1/4	0.019	0.9	50	0.001	0	y	46	17941.394	22275	0.162	0.833	1	H2-1
156	M156	L11/2X11/2X1/4	0.013	19.2	55	0.001	0	y	50	17941.394	22275	0.162	0.833	1	H2-1
157	M157	L11/2X11/2X1/4	0.018	26.676	51	0.006	41.982	z	55	14065.578	22275	0.162	0.784	1	H2-1
158	M158	L11/2X11/2X1/4	0.056	41.544	50	0.004	0	z	59	14065.578	22275	0.162	0.784	1	H2-1
159	M159	L11/2X11/2X1/4	0.027	20.554	50	0.004	41.982	z	54	14065.578	22275	0.162	0.784	1	H2-1
160	M160	L11/2X11/2X1/4	0.034	15.743	46	0.005	41.982	y	55	14065.578	22275	0.162	0.784	1	H2-1
161	M161	L11/2X11/2X1/4	0.117	24.3	56	0.002	28.8	z	56	17941.394	22275	0.162	0.833	1	H2-1
162	M162	L11/2X11/2X1/4	0.007	22.575	38	0.002	0	y	59	18724.575	22275	0.162	0.834	1.472	H2-1
163	M163	L11/2X11/2X1/4	0.106	2.7	55	0.002	28.8	z	54	17941.394	22275	0.162	0.833	1	H2-1
164	M164	L11/2X11/2X1/4	0.024	0.3	36	0.369	28.8	z	55	17941.394	22275	0.162	0.833	1	H2-1
165	M165	L11/2X11/2X1/4	0.081	19.242	46	0.005	0	y	56	14065.578	22275	0.162	0.784	1	H2-1

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

	Member	Shape	Code Check	Loc[in]	LC	Shear	Check	Loc[in]	Dir	Cphi*	Pnc [lb]	phi*	Pnt [lb]	phi*	Mn y-y [k-ft]	phi*	Mn z-z [k-ft]	Cb	Eqn
166	M166	L11/2X11/2X1/4	0.04	18.804	46	0.003	0	y	48	14065.578	22275	0.162	0.784	1	H2-1				
167	M167	L11/2X11/2X1/4	0.071	41.544	42	0.004	0	y	59	14065.578	22275	0.162	0.784	1	H2-1				
168	M168	L11/2X11/2X1/4	0.046	6.997	44	0.005	41.982	y	53	14065.578	22275	0.162	0.784	1	H2-1				
169	M169	L11/2X11/2X1/4	0.011	6.3	59	0.002	0	y	57	17941.394	22275	0.162	0.833	1	H2-1				
170	M170	L11/2X11/2X1/4	0.012	24	59	0.002	0	y	57	17941.394	22275	0.162	0.833	1	H2-1				
171	M171	L11/2X11/2X1/4	0.011	25.5	59	0.002	0	y	44	17941.394	22275	0.162	0.833	1	H2-1				
172	M172	L11/2X11/2X1/4	0.012	20.1	60	0.002	0	y	57	17941.394	22275	0.162	0.833	1	H2-1				
173	M173	L11/2X11/2X1/4	0.058	35.422	39	0.002	41.982	z	55	14065.578	22275	0.162	0.784	1	H2-1				
174	M174	L11/2X11/2X1/4	0.031	17.492	50	0.002	0	z	48	14065.578	22275	0.162	0.784	1	H2-1				
175	M175	L11/2X11/2X1/4	0.073	16.618	50	0.002	0	z	48	14065.578	22275	0.162	0.784	1	H2-1				
176	M176	L11/2X11/2X1/4	0.054	10.058	36	0.002	0	z	48	14065.578	22275	0.162	0.784	1	H2-1				
177	M177	L11/2X11/2X1/4	0.01	23.1	46	0.002	0	y	46	17941.394	22275	0.162	0.833	1	H2-1				
178	M178	L11/2X11/2X1/4	0.01	7.2	58	0.001	28.8	y	60	17941.394	22275	0.162	0.833	1	H2-1				
179	M179	L11/2X11/2X1/4	0.009	3.3	60	0.002	28.8	y	36	17941.394	22275	0.162	0.833	1	H2-1				
180	M180	L11/2X11/2X1/4	0.008	7.2	58	0.001	28.8	y	36	17941.394	22275	0.162	0.833	1	H2-1				
181	M181	L11/2X11/2X1/4	0.069	16.618	46	0.002	0	y	48	14065.578	22275	0.162	0.784	1	H2-1				
182	M182	L11/2X11/2X1/4	0.029	17.492	46	0.002	0	y	48	14065.578	22275	0.162	0.784	1	H2-1				
183	M183	L11/2X11/2X1/4	0.056	38.483	43	0.002	0	y	48	14065.578	22275	0.162	0.784	1	H2-1				
184	M184	L11/2X11/2X1/4	0.06	11.807	44	0.001	0	y	48	14065.578	22275	0.162	0.784	1	H2-1				
185	M185	L11/2X11/2X1/4	0.017	0.3	58	0.002	0	y	44	17941.394	22275	0.162	0.833	1	H2-1				
186	M186	L11/2X11/2X1/4	0.012	5.4	58	0.002	28.8	y	60	17941.394	22275	0.162	0.833	1	H2-1				
187	M187	L11/2X11/2X1/4	0.017	0.6	44	0.003	0	y	44	17941.394	22275	0.162	0.833	1	H2-1				
188	M188	L11/2X11/2X1/4	0.009	17.1	53	0.002	28.8	y	60	17941.394	22275	0.162	0.833	1	H2-1				
189	M189	L11/2X11/2X1/4	0.04	0	36	0.005	41.982	z	56	14065.578	22275	0.162	0.784	1	H2-1				
190	M190	L11/2X11/2X1/4	0.023	0	52	0.003	0	z	48	14065.578	22275	0.162	0.784	1	H2-1				
191	M191	L11/2X11/2X1/4	0.051	41.544	40	0.004	0	z	48	14065.578	22275	0.162	0.784	1	H2-1				
192	M192	L11/2X11/2X1/4	0.071	35.422	36	0.004	41.982	y	59	14065.578	22275	0.162	0.784	1	H2-1				
193	M193	L11/2X11/2X1/4	0.11	24.9	57	0.006	28.8	z	58	17941.394	22275	0.162	0.833	1	H2-1				
194	M194	L11/2X11/2X1/4	0.166	24.188	60	0.005	25.8	z	50	18724.575	22275	0.162	0.834	1.5	H2-1				
195	M195	L11/2X11/2X1/4	0.102	4.5	54	0.006	28.8	z	59	17941.394	22275	0.162	0.833	1	H2-1				
196	M196	L11/2X11/2X1/4	0.122	28.2	43	0.483	28.8	z	58	17941.394	22275	0.162	0.833	1	H2-1				
197	M197	L11/2X11/2X1/4	0.168	12.682	41	0.01	20.991	z	58	14065.578	22275	0.162	0.784	1	H2-1				
198	M198	L11/2X11/2X1/4	0.274	16.18	36	0.005	0	y	46	14065.578	22275	0.162	0.784	1	H2-1				
199	M199	L11/2X11/2X1/4	0.41	29.737	48	0.008	20.991	y	48	14065.578	22275	0.162	0.784	1	H2-1				
200	M200	L11/2X11/2X1/4	0.246	29.3	44	0.007	20.991	z	59	14065.578	22275	0.162	0.784	1	H2-1				
201	M201	L11/2X11/2X1/4	0.101	11.7	39	0.003	28.8	y	59	17941.394	22275	0.162	0.833	1	H2-1				
202	M202	L11/2X11/2X1/4	0.053	1.5	56	0.005	28.8	y	44	17941.394	22275	0.162	0.833	1	H2-1				
203	M203	L11/2X11/2X1/4	0.099	16.5	43	0.003	0	y	46	17941.394	22275	0.162	0.833	1	H2-1				
204	M204	L11/2X11/2X1/4	0.101	0	40	0.002	28.8	y	60	17941.394	22275	0.162	0.833	1	H2-1				
205	M205	L11/2X11/2X1/4	0.398	31.049	46	0.009	20.991	z	46	14065.578	22275	0.162	0.784	1	H2-1				
206	M206	L11/2X11/2X1/4	0.288	41.982	44	0.006	20.991	z	59	14065.578	22275	0.162	0.784	1	H2-1				
207	M207	L11/2X11/2X1/4	0.218	19.679	39	0.008	20.991	z	50	14065.578	22275	0.162	0.784	1	H2-1				
208	M208	L11/2X11/2X1/4	0.3	31.924	50	0.008	20.991	z	46	14065.578	22275	0.162	0.784	1	H2-1				
209	M209	L11/2X11/2X1/4	0.152	12.3	39	0.003	28.8	y	50	17941.394	22275	0.162	0.833	1	H2-1				
210	M210	L11/2X11/2X1/4	0.098	2.7	50	0.004	28.8	y	44	17941.394	22275	0.162	0.833	1	H2-1				
211	M211	L11/2X11/2X1/4	0.152	17.4	42	0.003	0	y	48	17941.394	22275	0.162	0.833	1	H2-1				
212	M212	L11/2X11/2X1/4	0.169	28.8	40	0.002	0	y	58	17941.394	22275	0.162	0.833	1	H2-1				
213	M213	L11/2X11/2X1/4	0.27	6.122	43	0.011	20.991	y	46	14065.578	22275	0.162	0.784	1	H2-1				
214	M214	L11/2X11/2X1/4	0.286	3.936	39	0.008	41.982	y	46	14065.578	22275	0.162	0.784	1	H2-1				
215	M215	L11/2X11/2X1/4	0.447	31.924	50	0.012	20.991	y	50	14065.578	22275	0.162	0.784	1	H2-1				
216	M216	L11/2X11/2X1/4	0.386	32.361	46	0.012	20.991	y	46	14065.578	22275	0.162	0.784	1	H2-1				
217	M217	L11/2X11/2X1/4	0.23	5.7	37	0.004	28.8	y	48	17941.394	22275	0.162	0.833	1	H2-1				
218	M218	L11/2X11/2X1/4	0.181	28.2	46	0.004	28.8	y	44	17941.394	22275	0.162	0.833	1	H2-1				
219	M219	L11/2X11/2X1/4	0.231	19.2	44	0.004	0	y	48	17941.394	22275	0.162	0.833	1	H2-1				
220	M220	L11/2X11/2X1/4	0.23	28.8	40	0.001	28.8	y	53	17941.394	22275	0.162	0.833	1	H2-1				

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

Member	Shape	Code Check	Loc[in]	LCShear	Check	Loc[in]	Dir	Lcphi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn	
221	M221	L11/2X11/2X1/4	0.567	38.046	46	0.017	20.991	z	4614065.578	22275	0.162	0.784	1	H2-1
222	M222	L11/2X11/2X1/4	0.37	8.309	42	0.011	20.991	z	4214065.578	22275	0.162	0.784	1	H2-1
223	M223	L11/2X11/2X1/4	0.329	34.547	39	0.014	41.982	y	5814065.578	22275	0.162	0.784	1	H2-1
224	M224	L11/2X11/2X1/4	0.489	30.612	50	0.014	20.991	z	4614065.578	22275	0.162	0.784	1	H2-1
225	M225	L11/2X11/2X1/4	0.245	19.2	44	0.006	28.8	z	4817941.394	22275	0.162	0.833	1	H2-1
226	M226	L11/2X11/2X1/4	0.258	25.262	48	0.006	0	y	3618724.575	22275	0.162	0.834	1.026	H2-1
227	M227	L11/2X11/2X1/4	0.26	18.3	53	0.007	28.8	z	5017941.394	22275	0.162	0.833	1	H2-1
228	M228	L11/2X11/2X1/4	0.325	24.6	41	0.581	28.8	z	4618724.575	22275	0.162	0.834	1.5	H2-1
229	M229	L11/2X11/2X1/4	0.46	41.982	45	0.034	41.982	y	4215885.571	22275	0.162	0.805	1	H2-1
230	M230	L11/2X11/2X1/4	0.387	40.967	39	0.018	40.967	z	3815885.571	22275	0.162	0.805	1	H2-1
231	M231	L11/2X11/2X1/4	0.372	3.498	42	0.017	41.982	z	4415885.571	22275	0.162	0.834	1.5	H2-1
232	M232	L11/2X11/2X1/4	0.558	16.618	46	0.007	0	y	5015885.571	22275	0.162	0.805	1	H2-1
233	M233	L2.5X1.5X4	0.301	29.05	48	0.011	49.8	z	4826562.585	30682.8	0.461	1.545	1.5	H2-1
234	M234	L2.5X1.5X4	0.292	20.75	48	0.011	0	z	4813636.862	30682.8	0.461	1.545	1.5	H2-1
235	M235	L11/2X11/2X1/4	0.135	26.986	58	0.013	19.333	y	5515081.705	22275	0.162	0.834	1.5	H2-1
236	M236	L11/2X11/2X1/4	0.141	11.278	54	0.009	19.333	y	5415081.705	22275	0.162	0.834	1.5	H2-1
237	M237	L11/2X11/2X1/4	0.056	27.375	57	0.024	16.287	z	4816689.915	22275	0.162	0.834	1.5	H2-1
238	M238	L11/2X11/2X1/4	0.054	12.475	55	0.024	16.633	y	4816689.915	22275	0.162	0.834	1.5	H2-1
239	M239	L2.5X1.5X4	0.794	29.05	50	0.021	49.8	z	4826562.585	30682.8	0.461	1.545	1.5	H2-1
240	M240	L2.5X1.5X4	0.842	20.75	46	0.022	0	z	4826562.585	30682.8	0.461	1.545	1.5	H2-1
241	M241	L11/2X11/2X1/4	0.213	29	44	0.014	19.333	y	5815081.705	22275	0.162	0.834	1.5	H2-1
242	M242	L11/2X11/2X1/4	0.198	26.583	36	0.009	19.333	y	6015081.705	22275	0.162	0.834	1.5	H2-1
243	M243	L11/2X11/2X1/4	0.352	32.92	46	0.037	16.633	z	4816689.915	22275	0.162	0.834	1.5	H2-1
244	M244	L11/2X11/2X1/4	0.381	0	37	0.037	16.633	y	4816689.915	22275	0.162	0.834	1.5	H2-1
245	M245	L2.5X1.5X4	0.509	29.108	58	0.016	49.9	z	4426526.045	30682.8	0.461	1.597	1.5	H2-1
246	M246	L2.5X1.5X4	0.56	20.792	60	0.016	20.792	z	4426526.045	30682.8	0.461	1.597	1.5	H2-1
247	M247	L11/2X11/2X1/4	0.113	29	44	0.021	38.666	y	5815081.705	22275	0.162	0.834	1.5	H2-1
248	M248	L11/2X11/2X1/4	0.127	27.389	54	0.022	19.333	y	5915081.705	22275	0.162	0.834	1.5	H2-1
249	M249	L11/2X11/2X1/4	0.17	3.819	36	0.019	16.665	y	6016671.597	22275	0.162	0.834	1.5	H2-1
250	M250	L11/2X11/2X1/4	0.164	6.944	44	0.019	16.665	y	6016671.597	22275	0.162	0.834	1.484	H2-1
251	M253	L11/2X11/2X1/4	0.508	27.389	44	0.048	19.333	y	4215081.705	22275	0.162	0.834	1.5	H2-1
252	M254	L11/2X11/2X1/4	0.67	9.264	38	0.067	19.333	y	3815081.705	22275	0.162	0.834	1.5	H2-1
253	M255	L11/2X11/2X1/4	0.753	18.837	44	0.02	0	y	3819495.465	22275	0.162	0.834	1.161	H2-1
254	M256	L11/2X11/2X1/4	0.738	17.895	36	0.029	0	z	4219495.465	22275	0.162	0.8	1.209	H2-1
255	M257	L2X2X4	0.183	25.8	44	0.029	0	z	4429838.982	30585.6	0.691	1.577	1.5	H2-1
256	M258	L11/2X11/2X1/4	0.256	31.396	54	0.001	0	z	5414450.892	22275	0.162	0.834	1.5	H2-1
257	M259	L11/2X11/2X1/4	0.256	9.334	60	0.001	40.729	y	6014450.892	22275	0.162	0.834	1.5	H2-1
258	M260	L11/2X11/2X1/4	0.213	7.637	60	0.001	0	y	4214450.892	22275	0.162	0.834	1.5	H2-1
259	M261	L11/2X11/2X1/4	0.212	32.668	52	0.001	0	z	3814450.892	22275	0.162	0.834	1.462	H2-1
260	M262	L11/2X11/2X1/4	0.052	28.8	41	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
261	M263	L11/2X11/2X1/4	0.052	28.8	41	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
262	M264	L11/2X11/2X1/4	0.052	28.8	41	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
263	M265	L11/2X11/2X1/4	0.053	28.8	41	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
264	M266	L11/2X11/2X1/4	0.012	28.8	55	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
265	M267	L11/2X11/2X1/4	0.013	28.8	55	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
266	M268	L11/2X11/2X1/4	0.011	28.8	55	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
267	M269	L11/2X11/2X1/4	0.014	28.8	55	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
268	M270	L11/2X11/2X1/4	0.011	28.8	60	0.003	28.8	z	5013348.227	22275	0.162	0.834	1.136	H2-1
269	M271	L11/2X11/2X1/4	0.011	28.8	55	0.003	28.8	z	5013348.227	22275	0.162	0.834	1.136	H2-1
270	M272	L11/2X11/2X1/4	0.012	28.8	59	0.003	28.8	z	5013348.227	22275	0.162	0.834	1.136	H2-1
271	M273	L11/2X11/2X1/4	0.014	28.8	55	0.003	28.8	z	4813348.227	22275	0.162	0.834	1.136	H2-1
272	M274	L11/2X11/2X1/4	0.014	28.8	54	0.003	28.8	z	4613348.227	22275	0.162	0.834	1.136	H2-1
273	M275	L11/2X11/2X1/4	0.014	28.8	55	0.003	28.8	z	4613348.227	22275	0.162	0.834	1.136	H2-1
274	M276	L11/2X11/2X1/4	0.014	28.8	56	0.003	28.8	z	4613348.227	22275	0.162	0.834	1.136	H2-1
275	M277	L11/2X11/2X1/4	0.014	28.8	55	0.003	28.8	z	4613348.227	22275	0.162	0.834	1.136	H2-1

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

Member	Shape	Code	Check	Loc[in]	LC	Shear	Check	Loc[in]	Dir	L	phi*	Pnc [lb]	phi*	Pnt [lb]	phi*	Mn y-y [k-ft]	phi*	Mn z-z [k-ft]	Cb	Eqn
276	M278	L11/2X11/2X1/4	0.014	28.8	54	0.003	28.8	z	50	13348.227	22275	0.162	0.834	1.136	H2-1					
277	M279	L11/2X11/2X1/4	0.014	28.8	55	0.003	28.8	z	48	13348.227	22275	0.162	0.834	1.136	H2-1					
278	M280	L11/2X11/2X1/4	0.014	28.8	56	0.003	28.8	z	50	13348.227	22275	0.162	0.834	1.136	H2-1					
279	M281	L11/2X11/2X1/4	0.014	28.8	55	0.003	28.8	z	48	13348.227	22275	0.162	0.834	1.136	H2-1					
280	M282	L11/2X11/2X1/4	0.008	28.8	55	0.003	28.8	z	46	13348.227	22275	0.162	0.834	1.136	H2-1					
281	M283	L11/2X11/2X1/4	0.011	28.8	55	0.003	28.8	z	48	13348.227	22275	0.162	0.834	1.136	H2-1					
282	M284	L11/2X11/2X1/4	0.007	28.8	56	0.002	28.8	z	46	13348.227	22275	0.162	0.834	1.136	H2-1					
283	M285	L11/2X11/2X1/4	0.013	28.8	57	0.003	28.8	z	46	13348.227	22275	0.162	0.834	1.136	H2-1					
284	M306	L11/2X11/2X1/4	0.081	14.1	40	0.023	28.8	y	42	13348.227	22275	0.162	0.834	1.422	H2-1					
285	M307	L11/2X11/2X1/4	0.126	0	51	0.023	14.4	y	38	13348.227	22275	0.162	0.834	1.33	H2-1					
286	M308	L11/2X11/2X1/4	0.055	14.7	38	0.016	14.4	z	38	13348.227	22275	0.162	0.834	1.367	H2-1					
287	M309	L11/2X11/2X1/4	0.02	0	43	0.009	0	z	46	13348.227	22275	0.162	0.834	1.363	H2-1					
288	M321	L11/2X11/2X1/4	0.395	0	46	0.026	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
289	M322	L11/2X11/2X1/4	0.425	0	42	0.035	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
290	M323	L11/2X11/2X1/4	0.396	0	38	0.015	41.587	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
291	M324	L11/2X11/2X1/4	0.356	0	48	0.019	20.793	y	46	16724.856	22275	0.162	0.834	1.5	H2-1					
292	M325	L11/2X11/2X1/4	0.332	0	42	0.013	20.793	y	36	16724.856	22275	0.162	0.834	1.5	H2-1					
293	M326	L11/2X11/2X1/4	0.366	0	38	0.013	20.793	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
294	M327	L11/2X11/2X1/4	0.299	0	50	0.015	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
295	M328	L11/2X11/2X1/4	0.286	0	46	0.013	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
296	M329	L11/2X11/2X1/4	0.28	0	50	0.014	20.793	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
297	M330	L11/2X11/2X1/4	0.317	0	46	0.017	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
298	M331	L11/2X11/2X1/4	0.307	0	42	0.015	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
299	M332	L11/2X11/2X1/4	0.306	0	38	0.013	20.793	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
300	M333	L11/2X11/2X1/4	0.283	0	38	0.013	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
301	M334	L11/2X11/2X1/4	0.281	0	42	0.01	41.587	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
302	M335	L11/2X11/2X1/4	0.255	0	50	0.015	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
303	M336	L11/2X11/2X1/4	0.241	0	46	0.013	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
304	M337	L11/2X11/2X1/4	0.236	0	50	0.011	20.793	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
305	M338	L11/2X11/2X1/4	0.272	0	46	0.013	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
306	M339	L11/2X11/2X1/4	0.25	0	42	0.011	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
307	M340	L11/2X11/2X1/4	0.249	0	38	0.009	20.793	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
308	M341	L11/2X11/2X1/4	0.225	0	38	0.009	41.587	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
309	M342	L11/2X11/2X1/4	0.227	0	42	0.006	41.587	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
310	M343	L11/2X11/2X1/4	0.208	0	50	0.011	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
311	M344	L11/2X11/2X1/4	0.195	0	46	0.01	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
312	M345	L11/2X11/2X1/4	0.191	0	50	0.007	41.587	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
313	M346	L11/2X11/2X1/4	0.226	0	46	0.008	20.793	y	44	16724.856	22275	0.162	0.834	1.5	H2-1					
314	M347	L11/2X11/2X1/4	0.199	27.724	42	0.007	20.793	y	38	16724.856	22275	0.162	0.834	1.432	H2-1					
315	M348	L11/2X11/2X1/4	0.173	0	38	0.005	20.793	y	42	16724.856	22275	0.162	0.834	1.5	H2-1					
316	M349	L11/2X11/2X1/4	0.172	26.425	38	0.007	41.587	y	42	16724.856	22275	0.162	0.834	1.441	H2-1					
317	M350	L11/2X11/2X1/4	0.16	0	42	0.004	20.793	y	39	16724.856	22275	0.162	0.834	1.5	H2-1					
318	M351	L11/2X11/2X1/4	0.147	0	50	0.005	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
319	M352	L11/2X11/2X1/4	0.139	0	46	0.003	20.793	y	38	16724.856	22275	0.162	0.834	1.5	H2-1					
320	M370	L2X2X4	0.322	41.982	43	0.016	0	y	46	23541.969	30585.6	0.691	1.572	1.5	H2-1					
321	M371	L2X2X4	0.344	41.982	39	0.013	20.991	y	38	23541.969	30585.6	0.691	1.572	1.5	H2-1					
322	M373	L4X3X4	0.005	22.306	50	0.003	0	z	44	49265.982	54756	1.795	4.739	1.5	H2-1					
323	M372	L4X3X4	0.025	25.8	36	0.006	25.8	z	36	49265.982	54756	1.844	4.936	1.197	H2-1					
324	M374	L4X3X4	0.003	12.9	56	0.001	0	z	44	49265.982	54756	1.795	4.739	1.5	H2-1					
325	M379	L2X2X4	0.369	0	38	0.021	41.982	z	44	25230.653	30585.6	0.691	1.577	1.5	H2-1					
326	M381	L2X2X4	0.444	0	38	0.03	0	y	38	25230.653	30585.6	0.691	1.577	1.5	H2-1					
327	M380	L2X2X4	0.456	0	42	0.016	40.967	y	42	25230.653	30585.6	0.691	1.478	1	H2-1					
328	M382	L2X2X4	0.467	0	50	0.011	41.982	y	58	25230.653	30585.6	0.691	1.524	1.05	H2-1					
329	M383	L2X2X4	0.457	20.991	50	0.016	20.991	y	50	23541.969	30585.6	0.691	1.572	1.497	H2-1					
330	M384	L2X2X4	0.448	20.991	46	0.016	20.991	y	46	23541.969	30585.6	0.691	1.548	1.348	H2-1					

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

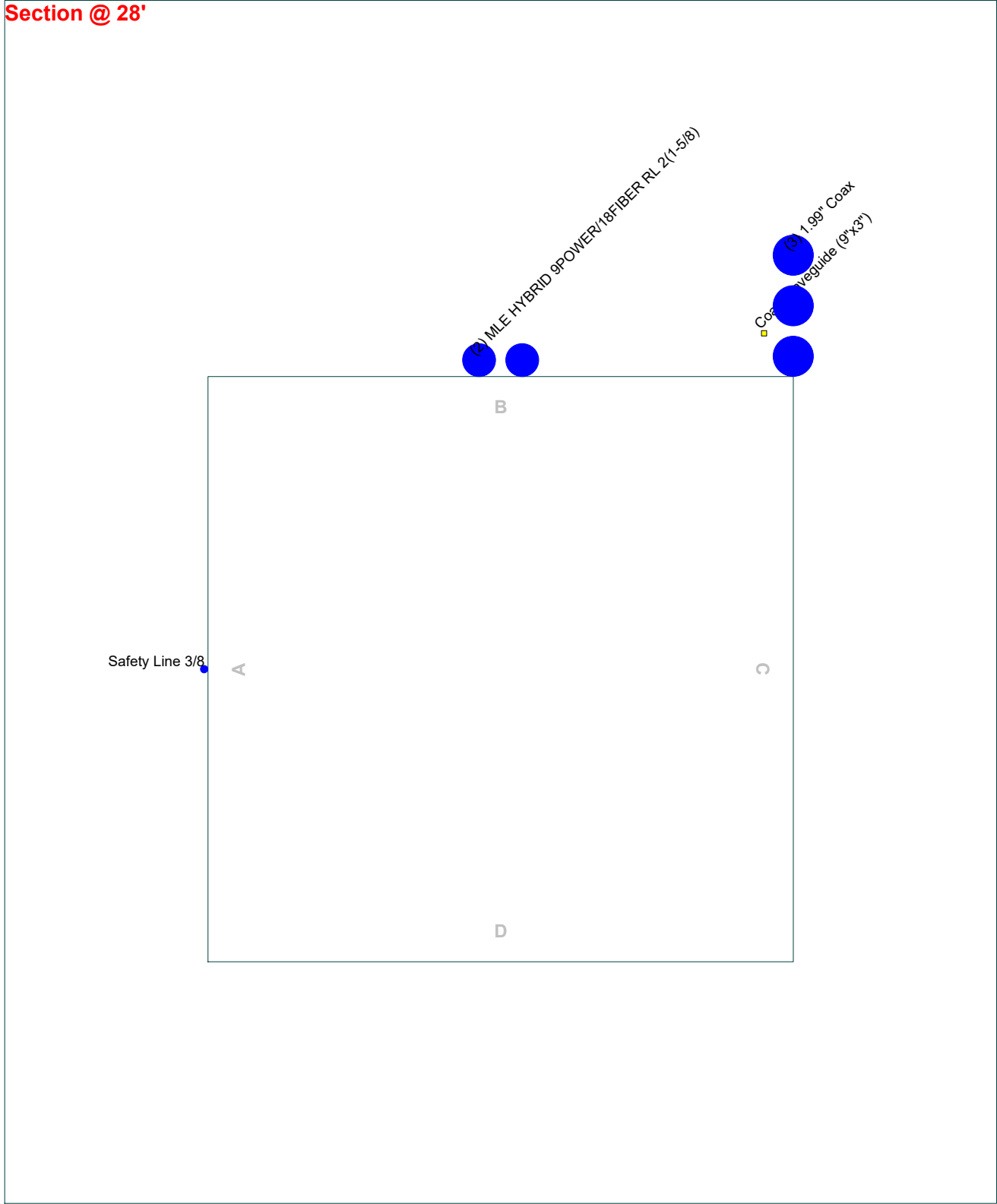
	Member	Shape	Code	CheckLoc[in]	LC	Shear	CheckLoc[in]	Dir	Cphi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
331	M385	L2X2X4	0.423	20.991	46	0.015	20.991	y	4623541.969	30585.6	0.691	1.572	1.5	H2-1
332	M386	L2X2X4	0.265	20.991	43	0.008	20.991	y	4623541.969	30585.6	0.691	1.559	1.415	H2-1
333	M387	L2X2X4	0.249	20.991	39	0.01	41.982	y	5023541.969	30585.6	0.691	1.566	1.461	H2-1
334	M388	L2X2X4	0.342	20.991	50	0.014	20.991	y	5023541.969	30585.6	0.691	1.572	1.5	H2-1
335	M389	L2X2X4	0.212	20.991	41	0.007	20.991	y	4623541.969	30585.6	0.691	1.571	1.495	H2-1
336	M390	L2X2X4	0.233	20.991	37	0.006	41.982	y	4623541.969	30585.6	0.691	1.546	1.34	H2-1
337	M391	L2X2X4	0.335	41.982	50	0.01	20.991	y	5023541.969	30585.6	0.691	1.571	1.49	H2-1
338	M392	L2X2X4	0.281	20.991	46	0.01	20.991	y	4623541.969	30585.6	0.691	1.572	1.5	H2-1
339	M393	L2X2X4	0.401	41.982	48	0.013	20.991	y	4823541.969	30585.6	0.691	1.572	1.5	H2-1
340	M394	L2X2X4	0.193	0	36	0.01	20.991	z	6023541.969	30585.6	0.691	1.572	1.5	H2-1
341	M395	L2X2X4	0.232	41.982	46	0.006	20.991	z	5323541.969	30585.6	0.691	1.57	1.486	H2-1
342	M396	L2X2X4	0.179	41.982	41	0.01	41.982	z	6023541.969	30585.6	0.691	1.572	1.5	H2-1
343	m252	LL1.5X2.5X4X3	0.73	18.562	36	0.018	37.125	y	4254345.747	61236	5.288	1.21	1	H1-1a
344	m251	LL1.5X2.5X4X3	0.745	18.562	44	0.014	18.562	y	3654345.747	61236	5.288	1.21	1	H1-1a

APPENDIX B
BASE LEVEL DRAWING

Feed Line Plan
28'

Round Flat App In Face App Out Face

Section @ 28'



 Consulting Engineers	ETS, PLLC 4148 Old Mill Pkwy St Peters, MO 63376 Phone: (919) 782-2710 FAX:		Job: 11201 - 21 E Main Street		
	Client: CTI Towers		Drawn by: AEV		App'd:
	Code: TIA-222-H		Date: 10/02/24		Scale: NTS
	Path:				Dwg No. E-7

APPENDIX C

ADDITIONAL CALCULATIONS

TIA-222-H Connection Check

Connection Details	
Bolt Type =	Bolt
Bolt Quantity =	4
Bolt Diameter =	0.750 in
Bolt Threads/Inch, n =	10
Bolt Grade =	A325
Vertical Bolt Spacing =	5.500 in
Horizontal Bolt Spacing =	5.500 in
Use TIA-222-H Section 15.5?	No
Single or Double Shear?	Single
Bolt Grade Override=	

Connection Check (Bolts)		
ϕ =	0.75	Strength Reduction Factor (TIA-H 4.9.6.1/4.9.6.3)
A_n =	0.334 in ²	Net Bolt Area (TIA-H 4.9.6.1)
A_b =	0.442 in ²	Gross Bolt Area
$F_{u_{bolt}}$ =	120 ksi	Bolt Ultimate Stress Capacity
ϕR_{nt} =	30.10 kip	Bolt Nominal Tensile Capacity (TIA-H 4.9.6.1/4.9.11.3)
ϕR_{nv} =	19.88 kip	Bolt Nominal Shear Capacity (TIA-H 4.9.6.3)
$V_{u_{bolt}}$ =	9.41 kip	Shear Force Per Bolt
$T_{u_{bolt}}$ =	0.00 kip	Tension Force Per Bolt
CSR =	47.3%	OK (TIA 4.9.6.4)



Self Support Anchor Rod Capacity

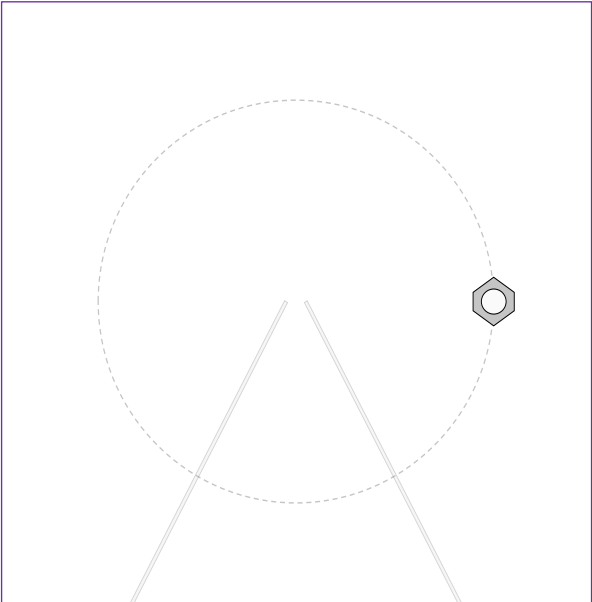
Site Info		
BU #	11201	
Site Name	21 E Main St Clinton	
Order #		

Analysis Considerations		
TIA-222 Revision	H	
Grout Considered:	No	
l_{ar} (in)	0	

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	4.30	6.14
Shear Force (kips)	12.80	12.80

Considered Eccentricity		
Leg Mod Eccentricity (in)	0.000	
Anchor Rod N.A Shift (in)	0.000	
Total Eccentricity (in)	0.000	

*Anchor Rod Eccentricity Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary	(units of kips, kip-in)
(1) 3/4" ϕ bolts (A490 N; Fy=130 ksi, Fu=125 ksi)		$P_{u,t}$ = 6.14	$\phi P_{n,t}$ = 31.31
$pos.$ (deg): 0		V_u = 12.8	ϕV_n = 20.71
l_{ar} (in): 0		M_u = n/a	ϕM_n = n/a
			Stress Rating
			61.8%
			Pass

SST Unit Base Foundation

BU # :
 Site Name:
 App. Number:

TIA-222 Revision:

Top & Bot. Pad Rein. Different?:	☐
Tower Centroid Offset?:	☒
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Global Moment, M :	3.7161	ft-kips
Global Axial, P :	33.534	kips
Global Shear, V :	0.4615	kips
Leg Compression, P_{comp} :	4.266	kips
Leg Comp. Shear, V_{u,comp} :	12.77	kips
Leg Uplift, P_{uplift} :	6.14	kips
Leg Uplift. Shear, V_{u,uplift} :	12.77	kips
Tower Height, H :	67.5	ft
Base Face Width, BW :	2.4	ft
BP Dist. Above Fdn, bp_{dist} :	0	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	7.82	0.46	5.9%	Pass
<i>Bearing Pressure (ksf)</i>	6.14	5.51	89.7%	Pass
<i>Overturing (kip*ft)</i>	23.98	14.46	60.3%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	392.94	12.77	3.2%	Pass
<i>Pier Flexure (Tension) (kip*ft)</i>	383.65	12.77	3.3%	Pass
<i>Pier Compression (kip)</i>	2148.12	5.89	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	20.95	0.00	0.0%	Pass
<i>Pad Shear - 1-way (kips)</i>	12.85	0.00	0.0%	Pass
<i>Pad Shear - Comp 2-way (ksi)</i>	0.164	0.017	10.6%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	9.59	7.66	79.9%	Pass
<i>Pad Shear - Tension 2-way (ksi)</i>	0.164	0.027	16.6%	Pass
<i>Flexural 2-way (Tension) (kip*ft)</i>	9.59	7.66	79.9%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier :	3.0	ft
Ext. Above Grade, E :	0.00	ft
Pier Rebar Size, Sc :	6	
Pier Rebar Quantity, mc :	14	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	0	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Structural Rating:	79.9%
Soil Rating:	89.7%

Pad Properties		
Depth, D :	1.67	ft
Pad Width, W₁ :	3.33	ft
Pad Thickness, T :	0.67	ft
Pad Rebar Size (Bottom dir. 2), Sp₂ :	6	
Pad Rebar Quantity (Bottom dir. 2), mp₂ :	3	
Pad Clear Cover, cc_{pad} :	3	in

*min steel assumed

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, F'c :	3.0	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	115	pcf
Ultimate Net Bearing, Q_{net} :	8.000	ksf
Cohesion, Cu :	0.000	ksf
Friction Angle, φ :	30	degrees
SPT Blow Count, N_{blows} :	12	
Base Friction, μ :	0.35	
Neglected Depth, N :	2.0	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	12.5	ft

<-- Toggle between Gross and Net

ASCE Hazards Report

Address:

No Address at This Location

Standard:

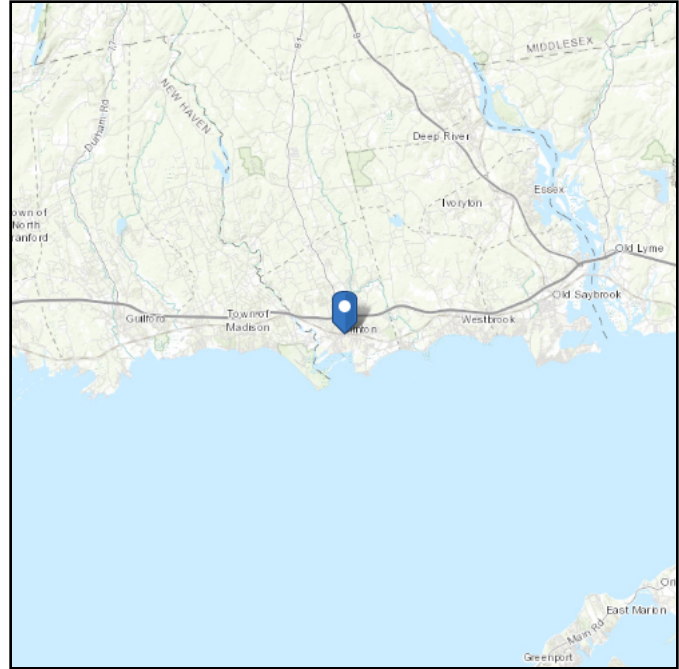
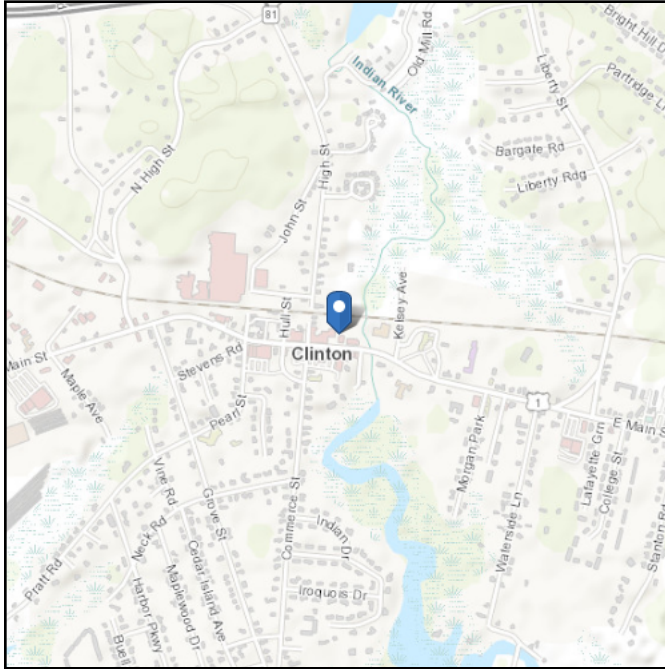
ASCE/SEI 7-16

Risk Category: II**Soil Class:**D - Default (see
Section 11.4.3)**Latitude:**

41.2789

Longitude:

-72.526

Elevation:15.330096107360959 ft
(NAVD 88)

Wind

Results:

Wind Speed	124 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	95 Vmph
100-year MRI	101 Vmph

Data Source:

ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed:

Thu Jun 20 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

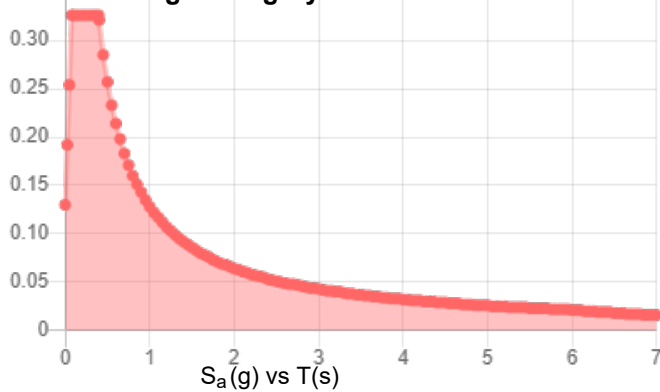
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

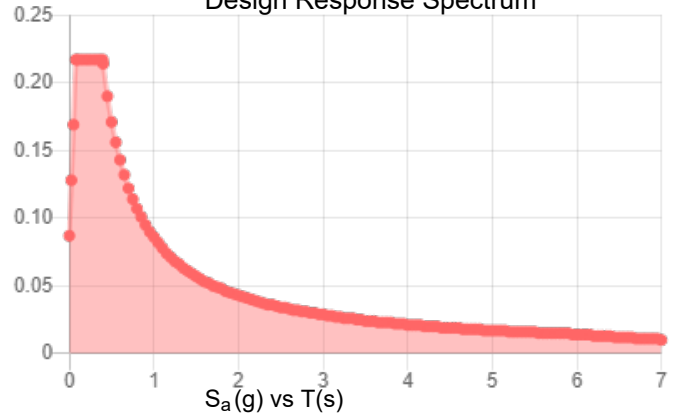
Results:

S_S :	0.204	S_{D1} :	0.086
S_1 :	0.053	T_L :	6
F_a :	1.6	PGA :	0.114
F_v :	2.4	PGA _M :	0.179
S_{MS} :	0.326	F_{PGA} :	1.573
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.217	C_v :	0.707

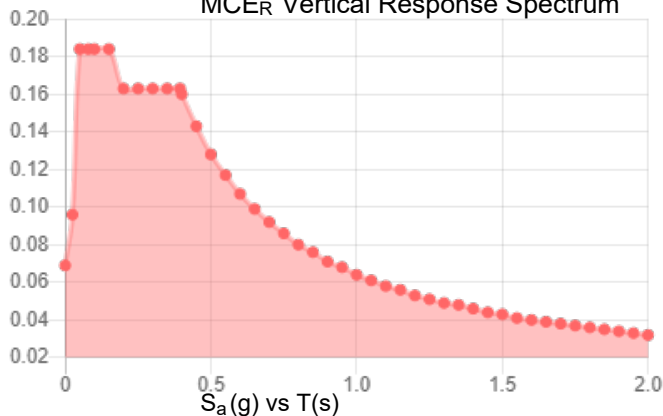
Seismic Design Category: B MCE_R Response Spectrum



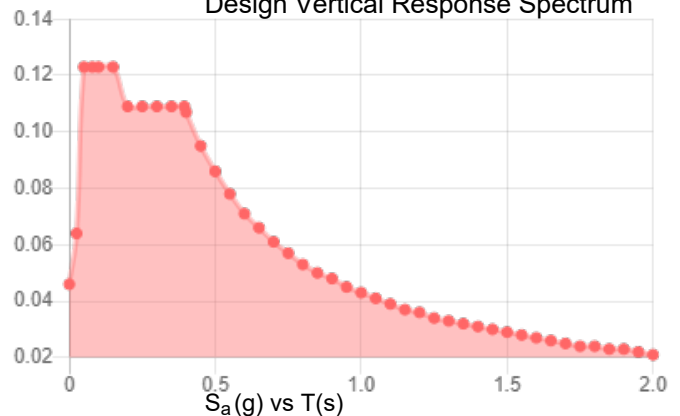
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Thu Jun 20 2024

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Thu Jun 20 2024

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

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

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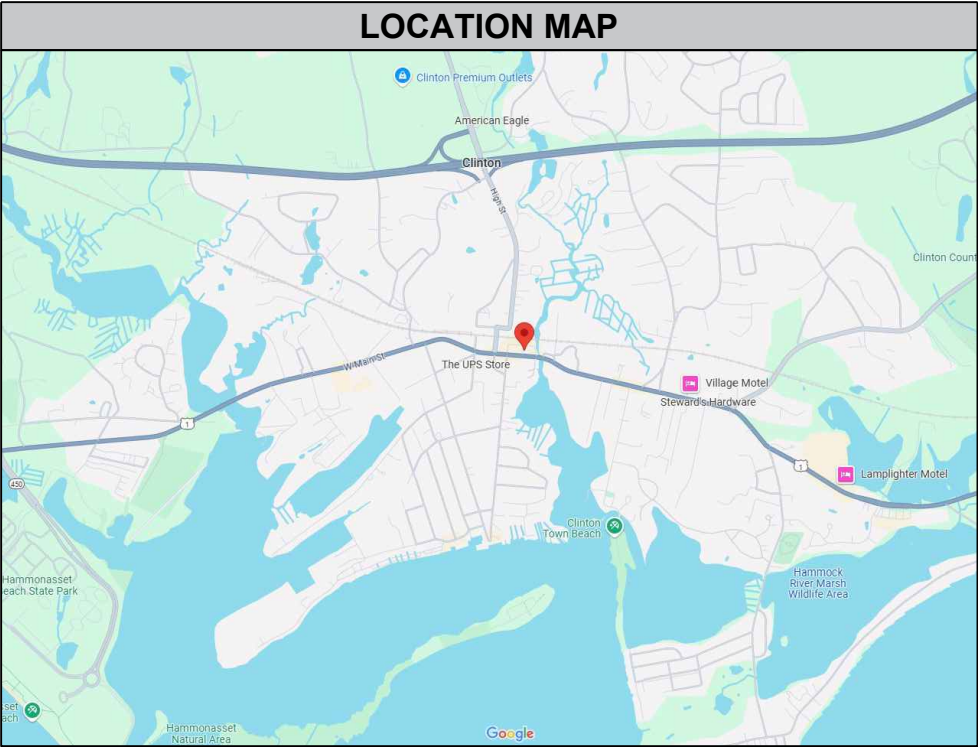
In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

APPENDIX D

TOWER MODIFICATION DRAWINGS

TOWER MODIFICATION DRAWINGS

SITE INFORMATION	
SITE NAME	E MAIN STREET CLINTON
SITE NUMBER	11201
SITE ADDRESS	21 E MAIN STREET CLINTON, CT 06413 MIDDLESEX COUNTY
LAT. / LONG.	N 41.2789°, W 72.526°
ETS JOB#:	24127161.STR.2664
TOWER MANUFACTURER	UNKNOWN
TOWER TYPE	SELF SUPPORT TOWER
TOWER HEIGHT	67.5 FT



DRIVING DIRECTIONS	
FROM CLINTON, HEAD SOUTH ON CT-81 S (0.6 MI). TURN LEFT ONTO HULL ST (486 FT). TURN LEFT ONTO W MAIN ST (0.1 MI). TURN LEFT ONTO SNOW LN (125 FT). TOWER WILL BE ON THE RIGHT.	

PROJECT CONTACTS	
1. CLIENT REPRESENTATIVE	CHRISTINE COOPER OPERATIONS SUPERVISOR CTI TOWERS, INC. 5000 CENTRE GREEN WAY, SUITE 325 CARY, NC 27513 OFFICE: (919) 893-2841 EXT. 435 CCOOPER@CTITOWERS.COM
2. CONSTRUCTION MANAGER	TBD
3. ENGINEER OF RECORD (EOR)	FREDERIC G. BOST, P.E. 3227 WELLINGTON CT. RALEIGH, NC 27615 OFFICE: (919) 782-2710 GEOFF.BOST@ETS-PLLC.COM

ETS OFFERS REVIEW OF CONTRACTOR-PREPARED CLASS IV RIGGING PLANS FOR A FEE. CONTACT RIGGING@ETS-PLLC.COM FOR PRICING AT TIMELINE.

NOTE FOR CONTRACTOR:

EOR HAS COMPLETED THIS DESIGN CAREFULLY TO ENSURE SUFFICIENT DETAILS ARE PROVIDED FOR AN EFFECTIVE AND CONSTRUCTIBLE DESIGN BASED ON THE AVAILABLE INFORMATION AT THE TIME OF THE DESIGN. IF NEW INFORMATION BECOMES AVAILABLE, INCLUDING INFORMATION GLEANED FROM THE PRE-MOD MAPPING AND / OR CONTRACTOR VISIT, EOR IS AVAILABLE TO REVIEW THIS PRIOR TO MATERIAL ORDERS, FABRICATION, OR CONSTRUCTION OF DESIGN. HOWEVER, ANY DEVIATION FROM THIS DESIGN SHALL REQUIRE EOR APPROVAL AS WELL AS FULL DOCUMENTATION OF SAID CHANGES. ETS RESERVES THE RIGHT TO CHARGE THE CONTRACTOR AN EOR CONSULTING FEE OF \$900 TO COVER TIME AND EFFORT OF EXAMINING SAID CHANGES FOR POSSIBLE APPROVAL. ADDITIONAL FEE MAY BE REQUIRED FOR PRODUCING REVISED SEALED DESIGN DRAWINGS. EXAMPLES OF ITEMS TRIGGERING EOR CONSULTING FEE OF \$900 INCLUDE BUT ARE NOT LIMITED TO: EVALUATION OF MOVING REINFORCEMENTS TO DIFFERENT POSITIONS, PROVIDING ALTERNATE OPTIONS, APPROVING MATERIAL SIZES OR GRADES THAT DIFFER FROM THOSE LISTED IN DESIGN DRAWINGS, ADDRESSING INTERFERENCE ISSUES, APPROVING COPING OR EDGE DISTANCES BEYOND THE TOLERANCES LISTED IN DESIGN DRAWINGS, RESOLVING QUESTIONS RELATED TO FOUNDATION MODIFICATION INTERFERENCES / CHANGES, AND REVIEW / RESOLUTION OF MODIFICATION INSPECTION DEFICIENCIES. NOTE: ETS MAY WITHHOLD RESOLUTION OF CONTRACTOR / FIELD QUESTIONS PENDING PAYMENT OR PO# FOR PAYMENT OF THE \$900 EOR CONSULTING FEE.

CODE COMPLIANCE	
THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF TIA STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES USING:	
TIA CODE	TIA-222-H
BUILDING CODE	2022 CONNECTICUT STATE BUILDING CODE (2021 IBC)
ULTIMATE WIND SPEED	124 MPH
ICE THICKNESS	1.00 IN
WIND SPEED WITH ICE	50 MPH
SERVICE LOAD WIND SPEED	60 MPH
EXPOSURE CATEGORY	C
RISK CATEGORY	II
TOPOGRAPHIC CATEGORY	1
SPECIAL NOTES	-

SHEET INDEX		
SHEET #	REV. (DATE)	DESCRIPTION
T-1	0- 12/31/2024	TITLE PAGE
N-1	0- 12/31/2024	MODIFICATION INSPECTION CHECKLIST
N-2	0- 12/31/2024	PROJECT NOTES
BM	0- 12/31/2024	BILL OF MATERIALS
S-1	0- 12/31/2024	TOWER ELEVATION AND MODIFICATION SCHEDULE
S-2	0- 12/31/2024	SITE PLAN
S-3	0- 12/31/2024	DIAGONAL INSTALLATION DETAILS
S-4	0- 12/31/2024	WALL CONNECTION REINFORCEMENT DETAILS
P-1	0- 12/31/2024	PHOTOS
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PREPARED BY:



**ENGINEERED
TOWER SOLUTIONS**

3227 WELLINGTON COURT
RALEIGH, NC 27615
o: 919-782-2710, f: 919-435-0631
www.ets-pllc.com

PREPARED FOR:



CTI TOWERS

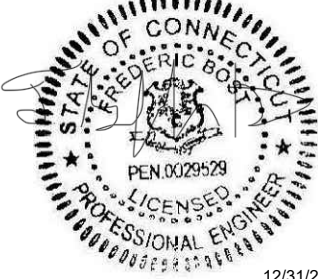
SITE NAME:
**E MAIN STREET
CLINTON**

SITE NUMBER:
11201

SITE ADDRESS:
21 E MAIN STREET
CLINTON, CT 06413

LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:



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DRAWN BY: EDR CHECKED BY: AEV

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TITLE PAGE

SHEET #	T-1	CURRENT REV #: 0
		ETS #: 24127161.STR.2664

MI CHECKLIST		
REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
PRE-CONSTRUCTION		
X	EOR APPROVED SHOP DRAWINGS	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS ALONG WITH EOR RFI FORM DETAILING ANY CHANGES FROM THE ORIGINAL DESIGN TO THE EOR FOR REVIEW AND APPROVAL.
N/A	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR CERTIFIED WELD INSPECTION	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION REPORT	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	NDE OF MONOPOLE BASE PLATE	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	PACKING/SHIPPING LIST FOR ALL MATERIAL USED DURING CONSTRUCTION OF THE MODIFICATION.
ADDITIONAL TESTING AND INSPECTIONS:		
N/A		
CONSTRUCTION		
N/A	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
	N/A	CONCRETE COMP. STRENGTH AND SLUMP TEST
	N/A	EARTHWORK: SOIL COMPACTION
	N/A	EARTHWORK: BEARING CAPACITY
	N/A	MICROPILE/ROCK ANCHOR
N/A	POST-INSTALLED ANCHOR ROD VERIFICATION	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	BASE PLATE GROUT VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
N/A	FIELD CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS PER THE WELDING NOTES ON SHEET N-2. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY APPLICABLE STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
N/A	FIELD NDE	A NDE OF THE FIELD WELDS AND ANY ADDITIONAL NDE REQUIREMENTS NOTED IN THESE DESIGN DOCUMENTS.
X	ON-SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
N/A	TENSION TWIST AND PLUMB	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
N/A	TOWER PLUMB DELIVERABLES	THE CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THE TOWER PLUMB CONDITION.
N/A	CANISTER DRAWINGS	THE CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF ANY FINAL FABRICATION OR PARTS DRAWINGS PROVIDED BY THE CANISTER VENDOR.
X	GC AS-BUILT DRAWINGS	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED.
ADDITIONAL TESTING AND INSPECTIONS:		
N/A		
POST-CONSTRUCTION		
X	CONSTRUCTION COMPLIANCE LETTER	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS.
N/A	POST-INSTALLED ANCHOR ROD PULL TESTS	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY AN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
N/A	BOLT HOLE INSTALLATION VERIFICATION REPORT	THE MI INSPECTOR SHALL VERIFY THE HOLE SIZE AND CONDITION OF 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCH LIST DEVELOPMENT AND CORRECTION DOCUMENTATION	FINAL PUNCH LIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION/APPROVAL.
X	MI INSPECTOR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:		
N/A		

MODIFICATION INSPECTION NOTES

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE POINT OF CONTACT FOR EVALUATION.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE POINT OF CONTACT (POC).

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

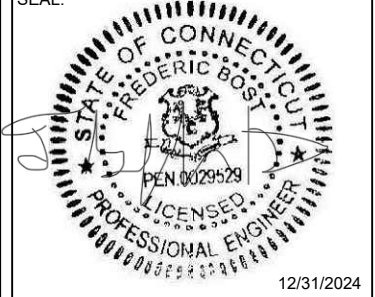
- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION
 - CONSTRUCTION/ERECTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - FOUNDATION MODIFICATIONS
 - WELD PREPARATION
 - BOLT INSTALLATION
 - FINAL INSTALLED CONDITION
 - SURFACE COATING REPAIR
 - POST CONSTRUCTION PHOTOGRAPHS
 - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

PREPARED BY:		
 3227 WELLINGTON COURT RALEIGH, NC 27615 o: 919-782-2710, f: 919-435-0631 www.ets-pllc.com		
PREPARED FOR:		
		
SITE NAME: E MAIN STREET CLINTON SITE NUMBER: 11201 SITE ADDRESS: 21 E MAIN STREET CLINTON, CT 06413 LATITUDE/LONGITUDE: N 41.2789°, W 72.526°		
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MODIFICATION INSPECTION CHECKLIST		
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GENERAL NOTES:

1. ALL REFERENCES TO THE OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED CTI TOWERS OR ITS DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF CONNECTICUT.
3. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 2022 CONNECTICUT STATE BUILDING CODE (2021 IBC).
4. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
5. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
7. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.
8. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
10. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
11. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
12. IF APPLICABLE, ALL CONCRETE WORK SHALL COMPLY TO LOCAL CODES AND THE ACI 318-19, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
13. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.

WELDING NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2015 "STRUCTURAL WELDING CODE-STEEL".
2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
3. CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS. A LETTER AND REPORT SHALL BE ISSUED TO THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LETTER AND REPORT TO TOWER OWNER.
4. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. GRIND THE SURFACE OF THE ROD TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING.
5. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0°F. WHEN THE TEMPERATURE IS BETWEEN 0°F AND 32°F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70°F DURING THE WELDING PROCESS.
6. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
7. FOR ALL WELDING, USE E70XX ELECTRODES.
8. AFTER FINAL INSPECTION, THE AREA OF THE WELDS, THE INSTALLATION AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE APPLIED BY BRUSH. THE GALVANIZING COMPOUND SHALL CONTAIN A MINIMUM OF 95% ± PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3 MILS.

STRUCTURAL STEEL NOTES:

1. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 15TH EDITION.
2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

A. STRUCTURAL STEEL:

• ANGLE: ASTM A36

• PIPE/TUBE: ASTM A53 GR. B (FY = 42 KSI)

• PLATE: ASTM A36 (SELF SUPPORTING AND GUYED TOWERS)

• PLATE: ASTM A572-65 (MONOPOLE)

• GUYED WIRES: ASTM A475 (EHS CABLES)

• GUYED WIRES: ASTM A586 OR A603 (BRIDGE STRAND)

B. ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.

C. ALL U-BOLTS, ASTM A193 GRADE B7

D. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.

E. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
3. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 15TH EDITION.
4. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER.
5. HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE.
6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL.
7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.
8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.
9. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
10. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.

BOLT TIGHTENING PROCEDURE:

1. CONNECTION BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

8.2.1 TURN-OF-THE-NUT TIGHTENING

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRETENSIONED BOLTS.
3. TIGHTEN CONNECTION BOLTS BY AISC - "TURN OF THE NUT" METHOD, USING THE CHART BELOW.

BOLT LENGTHS UP TO AND INCLUDING FOUR DIA.

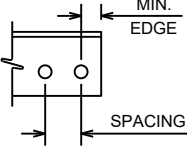
½"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
¾"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
¾"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
7⁄8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT

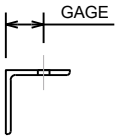
BOLT LENGTHS OVER FOUR DIA. BUT NOT EXCEEDING EIGHT DIA.

½"	BOLTS 2.25 TO 4.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
¾"	BOLTS 2.75 TO 5.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
¾"	BOLTS 3.25 TO 6.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
7⁄8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT

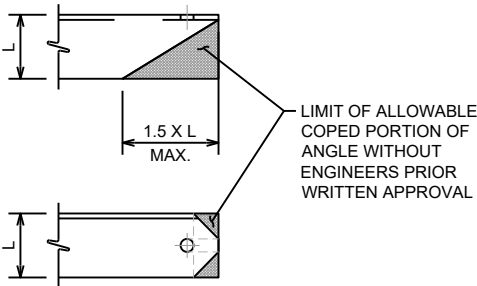
4. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

NOMINAL HOLE DIMENSIONS		
BOLT DIAMETER	STANDARD HOLE	SHORT SLOT
½	⅝	⅝ X 1⅛
⅝	1⅛	1⅛ X ⅞
¾	1⅜	1⅜ X 1
7⁄8	1⅝	1⅝ X 1⅝
1	1⅞	1⅞ X 1⅞

BOLT EDGE AND SPACING			
BOLT DIAMETER	MIN EDGE	SPACING	
½	⅞	1½	
⅝	1⅝	1⅞	
¾	1⅞	2¼	
7⁄8	1½	2⅝	
1	1¾	3	

WORKABLE GAGES		
LEG LENGTH	GAGE	
3½	2	
3	1¾	
2½	1⅝	
2	1⅝	
1¾	1	
1½	⅞	

MEMBER LENGTHS	
A+6" (WHEN A IS 10' OR LESS) A+12" (WHEN A IS GREATER THAN 10') PRELIMINARY CUT LENGTH A ESTIMATED LENGTH FIELD DRILL SHOP DRILL	

ALLOWABLE ANGLE COPE	
	

PREPARED BY:



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TOWER SOLUTIONS

3227 WELLINGTON COURT
RALEIGH, NC 27615
o: 919-782-2710, f: 919-435-0631
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PREPARED FOR:



CTI TOWERS

SITE NAME:

E MAIN STREET
CLINTON

SITE NUMBER:

11201

SITE ADDRESS:
21 E MAIN STREET
CLINTON, CT 06413

LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:



12/31/2024

REV	DATE	DETAILS
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DRAWN BY: EDR	CHECKED BY: AEV
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SHEET TITLE:

PROJECT NOTES

SHEET #	N-2	CURRENT REV #: 0
		ETS #: 24127161.STR.2664

BILL OF MATERIALS

[illegible]

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CLINTON, CT 06413**
LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:



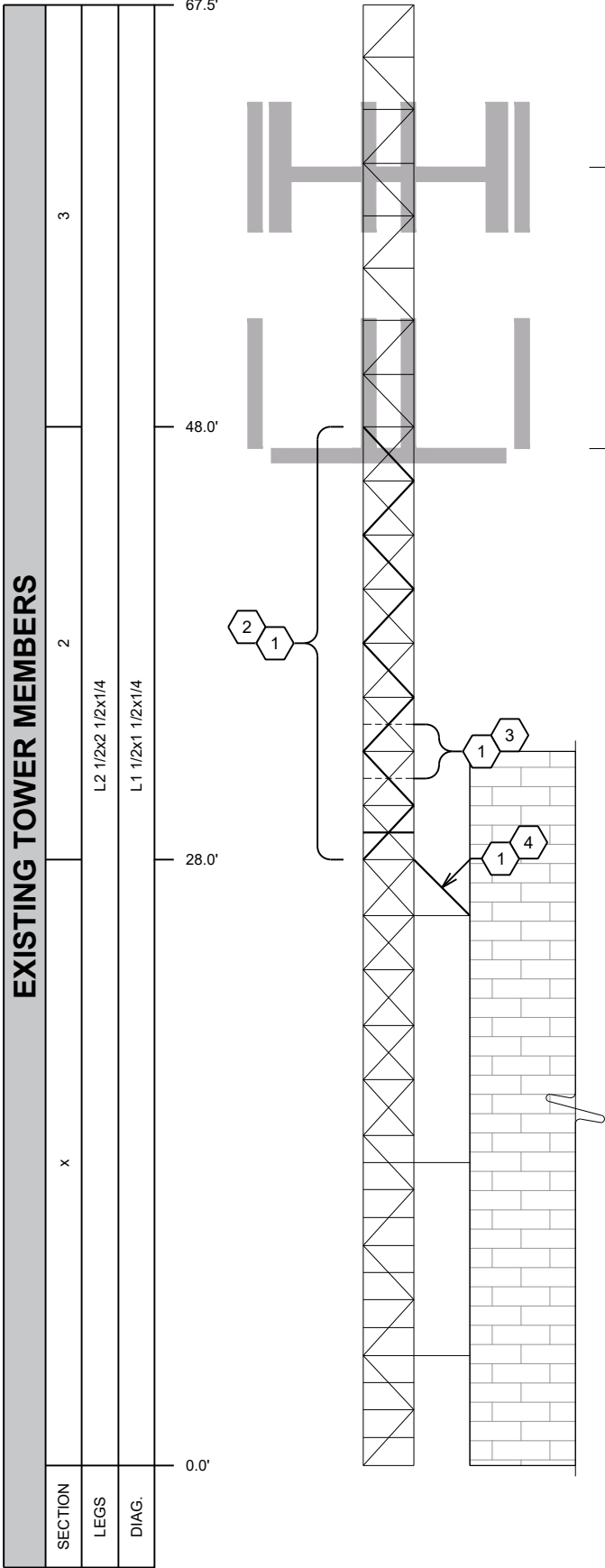
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SHEET TITLE:

BILL OF MATERIALS

SHEET #	BM	CURRENT REV #: 0
		ETS #: 24127161.STR.2664



FACEWIDTH	
ELEVATION (FT)	FACEWIDTH (FT)
0.0	2.4
67.5	2.4

MODIFICATION SCHEDULE			
NO.	MODIFICATION DESCRIPTION	ELEVATIONS (FT.)	DETAIL SHEET #
1	PRIOR TO MATERIAL ORDERS, FABRICATION, AND CONSTRUCTION OF DESIGN DETAILED WITHIN THESE DRAWINGS, ETS REQUIRES THAT A PRE-MOD VISIT AND MAPPING OF AREAS OF THE STRUCTURE THAT INTERACT WITH THE PROPOSED MODIFICATIONS BE COMPLETED TO VERIFY IN FIELD ALL MATERIALS BEING PROPOSED. ETS IS AVAILABLE TO QUOTE SAID PRE-MOD MAPPING VIA EMAIL AT MAPPINGS@ETS-PLLC.COM. HOWEVER, IN ADDITION TO THE PRE-MOD MAPPING, THE CONTRACTOR MUST ALSO PERFORM A PRE-MOD VISIT TO THE SITE PRIOR TO MATERIAL ORDERS AS THE CONTRACTOR IS ULTIMATELY RESPONSIBLE TO ENSURE THE DESIGN IS CONSTRUCTIBLE.	25.4 - 48.0	-
2	INSTALL BOLT-ON DIAGONALS TO CREATE X-BRACING.	28.0 - 48.0	S-3
3	REMOVE EXISTING SUB-HORIZONTALS	31.7 - 34.3	S-3
4	INSTALL DOUBLE ANGLES TO EXISTING WALL CONNECTION DIAGONALS SUPPORTS.	25.4 - 28.0	S-4

NOTES:

1. ANTENNAS AND OTHER APPURTENANCES MAY NEED TO BE TEMPORARILY REMOVED OR MOVED DURING MODIFICATION INSTALLATION.
2. FIELD VERIFICATION OF ALL MEASUREMENTS REQUIRED PRIOR TO FABRICATION.

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PREPARED FOR:



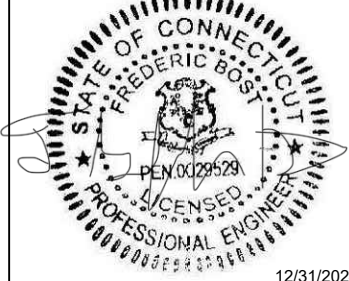
SITE NAME:
**E MAIN STREET
CLINTON**

SITE NUMBER:
11201

SITE ADDRESS:
21 E MAIN STREET
CLINTON, CT 06413

LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:



12/31/2024

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DRAWN BY: EDR

CHECKED BY: AEV

SHEET TITLE:

**TOWER ELEVATION
AND MODIFICATION
SCHEDULE**

SHEET #	S-1	CURRENT REV #: 0
		ETS #: 24127161.STR.2664

TOWER ELEVATION

SCALE: 1/8" = 1'-0"



SITE PLAN
APPROX. SCALE: 1" = 30'



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PREPARED FOR:

**CTI TOWERS**

SITE NAME:
**E MAIN STREET
CLINTON**

SITE NUMBER:
11201

SITE ADDRESS:
21 E MAIN STREET
CLINTON, CT 06413

LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:



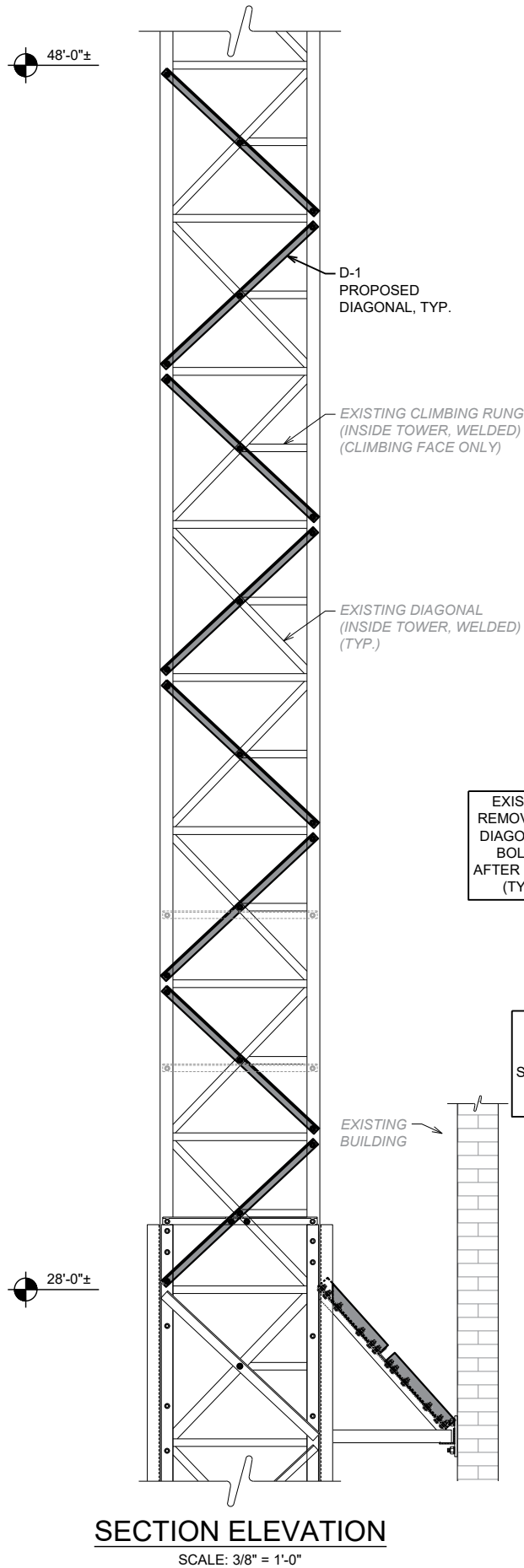
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DRAWN BY: EDR CHECKED BY: AEV

SHEET TITLE:

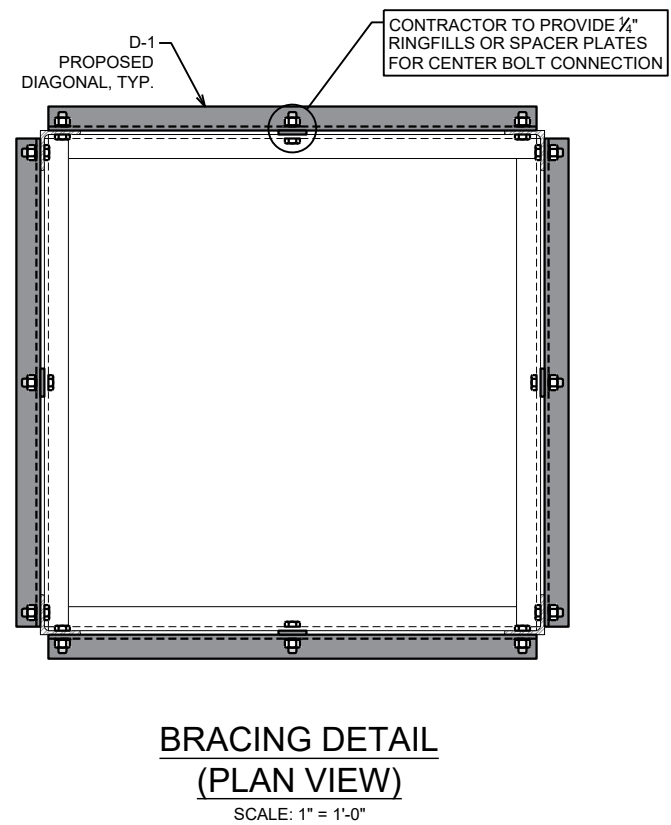
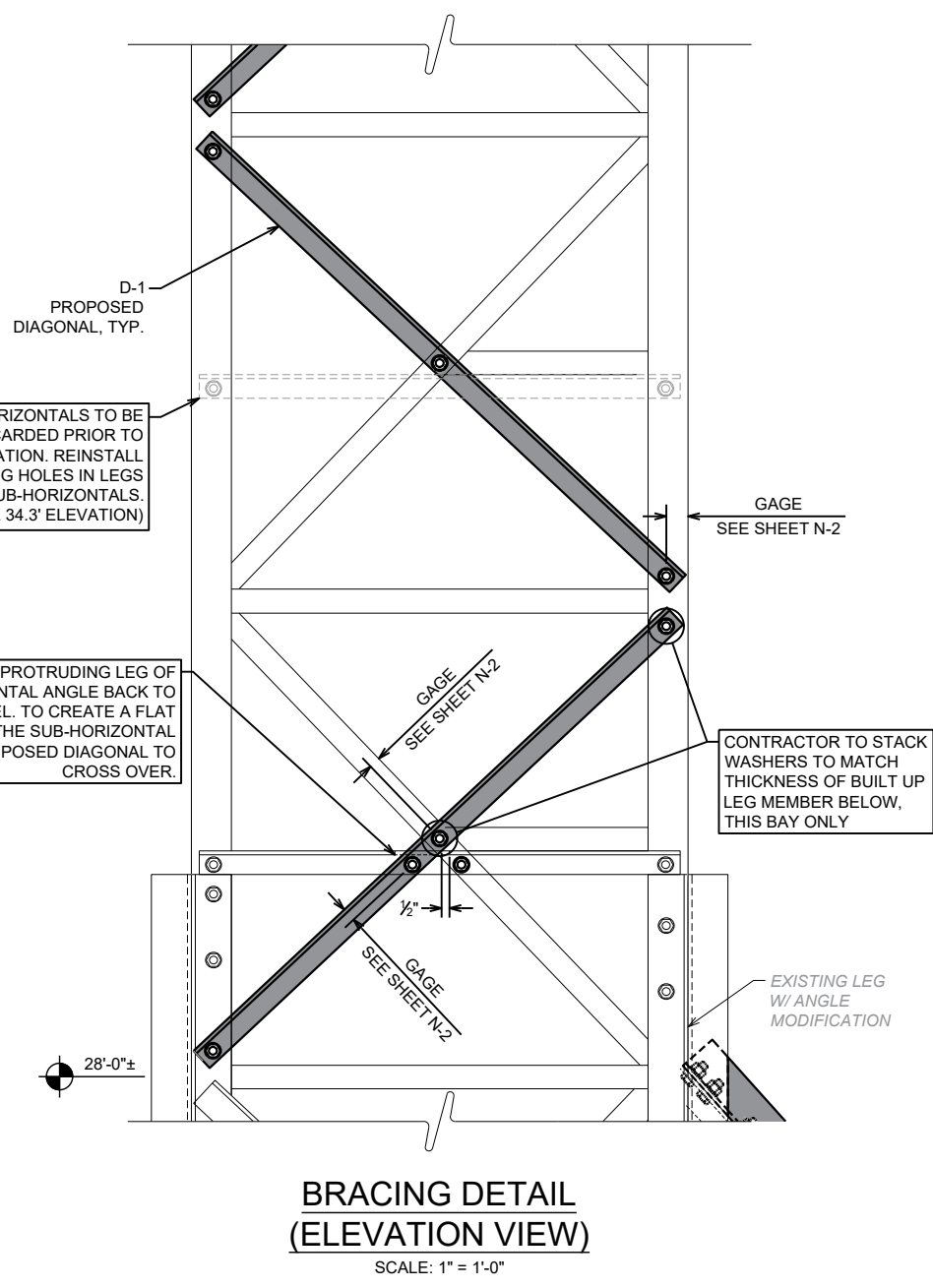
SITE PLAN

SHEET #	S-2	CURRENT REV #: 0
		ETS #: 24127161.STR.2664



DIAGONAL INSTALLATION SCHEDULE									
SECTION	ELEVATION (FT)	BAY	EXISTING LEG SIZE	PROPOSED BRACING				PROPOSED CONNECTION	
				PART NO.	SIZE & GRADE	ESTIMATED LENGTH	QTY.	SIZE & GRADE	QTY.
2	30.5 - 48.0	2-8 (of 8)	L 2½"x2½"x¼"	D-1	L 1½"x1½"x¼" A36	3'-6"±	28	½"Øx1¾" A325N W/ HHN, LKW, FW	84
2	28.0 - 30.5	1 (of 8)	L 2½"x2½"x¼"	D-1	L 1½"x1½"x¼" A36	3'-6"±	4	½"Øx1¾" A325N W/ HHN, LKW, FW	20

- NOTES:**
- IT IS THE CONTRACTORS RESPONSIBILITY TO MEASURE ALL RELEVANT EXISTING MEMBERS PRIOR TO ORDERING MATERIALS.
 - PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS.
 - ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN 15TH EDITION.



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PREPARED FOR:

CTI TOWERS

SITE NAME:
E MAIN STREET CLINTON

SITE NUMBER:
11201

SITE ADDRESS:
21 E MAIN STREET
CLINTON, CT 06413

LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:

STATE OF CONNECTICUT
FREDERIC BOST
PEN 0029529
LICENSED PROFESSIONAL ENGINEER
12/31/2024

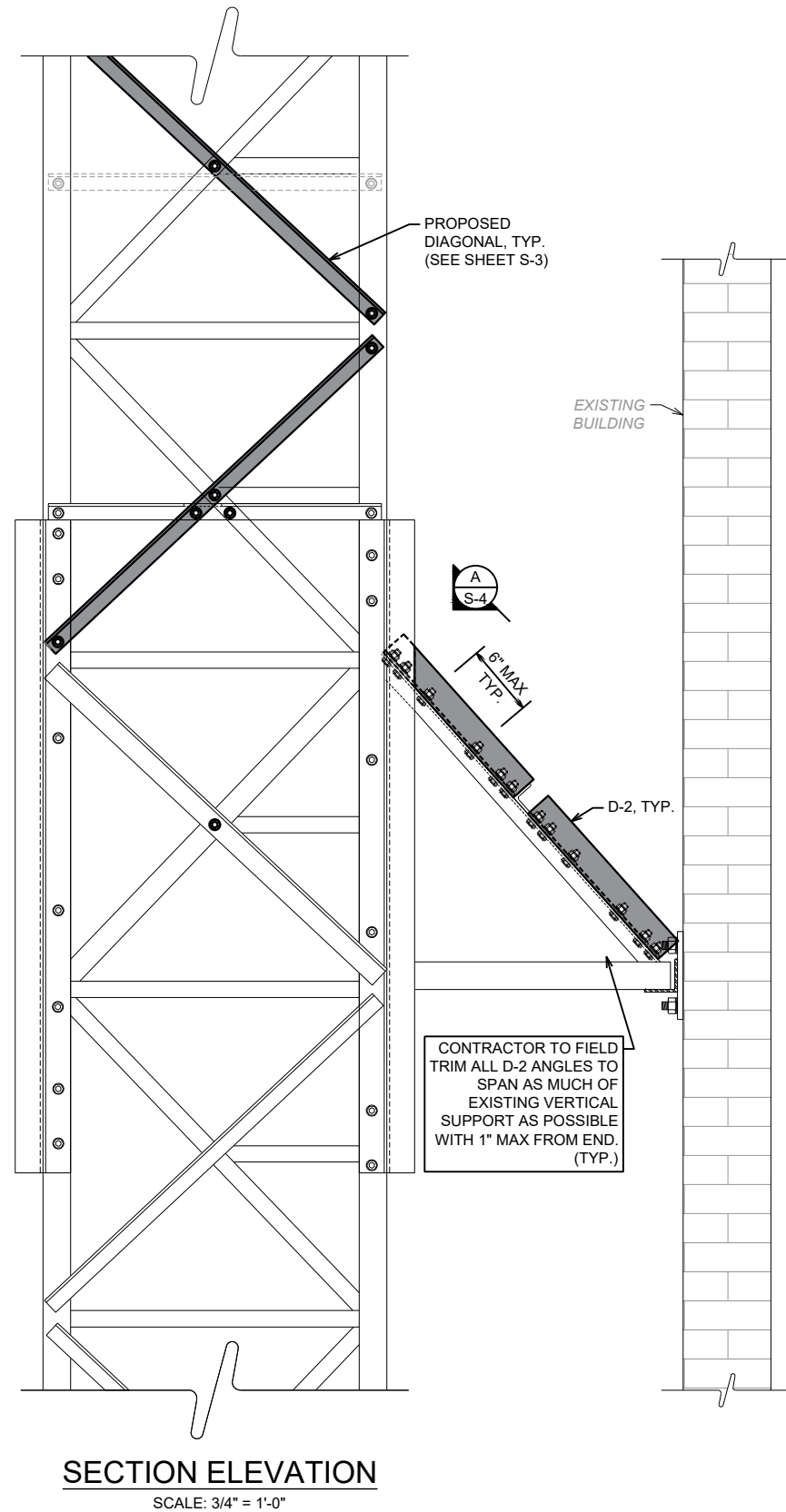
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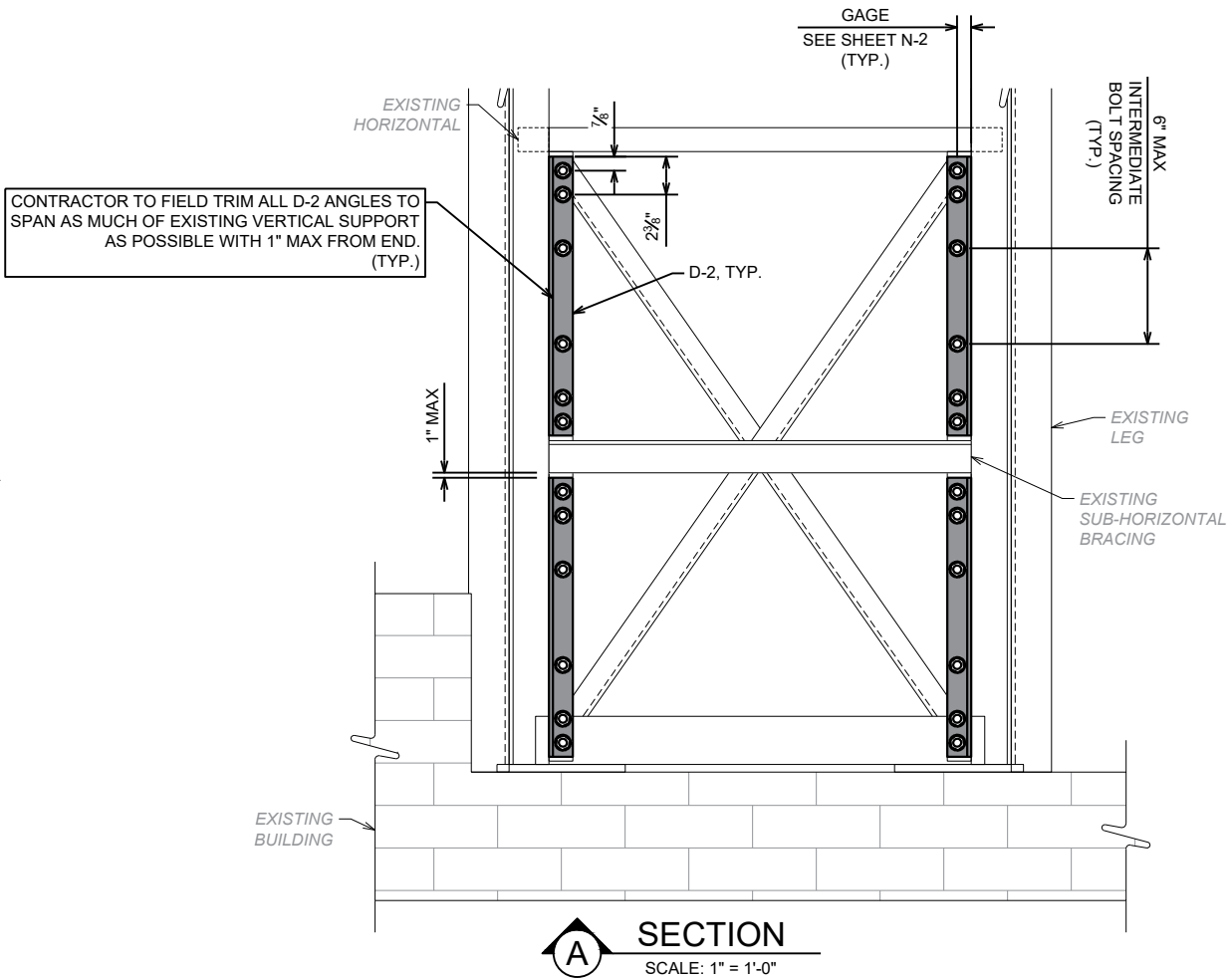
DIAGONAL INSTALLATION DETAILS

SHEET #	S-3	CURRENT REV #: 0
		ETS #: 24127161.STR.2664



WALL CONNECTION REINFORCEMENT SCHEDULE							
ELEVATION (FT)	EXISTING WALL CONNECTION DIAGONAL SIZE	PROPOSED REINFORCEMENT				PROPOSED CONNECTION	
		PART NO.	SIZE & GRADE	ESTIMATED LENGTH	QTY.	SIZE & GRADE	QTY.
25.4 - 28.0	L 2½"x1½"x¼"	D-2	L 2½"x1½"x¼" A36	1'-6"± (FIELD VERIFY)	4	½"Ø A325N W/ HHN, LKW, FW	24

- NOTES:
- IT IS THE CONTRACTORS RESPONSIBILITY TO MEASURE ALL RELEVANT EXISTING MEMBERS PRIOR TO ORDERING MATERIALS.
 - PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS.
 - ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN 15TH EDITION.



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PREPARED FOR:



CTI TOWERS

SITE NAME:
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CLINTON**

SITE NUMBER:
11201

SITE ADDRESS:
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LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

SEAL:



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CHECKED BY: AEV

SHEET TITLE:

**WALL CONNECTION
REINFORCEMENT
DETAILS**

SHEET #	S-4	CURRENT REV #: 0
		ETS #: 24127161.STR.2664



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PREPARED FOR:

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SITE NUMBER:
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SITE ADDRESS:
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LATITUDE/LONGITUDE:
N 41.2789°, W 72.526°

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12/31/2024

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SHEET TITLE:

PHOTOS

EXHIBIT F

Mount Analysis Report



23 Mauchly, #110, Irvine, CA 92618

Structural Mount Analysis

August 19, 2024

Site: CT11031B, "CLINTON/I-95/X63/AT_1"

Type: SST

Address: 21 EAST MAIN STREET, Clinton, CT 06413

County: MIDDLESEX County

Lat/Long: 41° 16' 44.2" N, 72° 31' 33.5" W (41.278949, -72.525976)

P#/Eng: P-000000/AP

P. Marshall & Associates (PM&A) is pleased to submit this antenna mount analysis report to T-Mobile. The purpose of this analysis is to design proposed antenna mounts. The project scope of work relevant to this report includes the following items:

- Remove (3) (E) Panel Antennas
- Install (3) (P) Panel Antennas
- Install (3) (P) RRU Units

A site visit was performed by PM&A personnel on June 3, 2024. Existing elements relevant to the project scope of work were visually inspected and found to be in good condition.

This report was prepared in accordance with the and the TIA-222-H.

This analysis is based off third party data and assumes satisfactory workmanship of all previously-installed and proposed components. If existing conditions vary from what is shown in this report, or if assumptions made within this analysis are inaccurate, the Engineer of Record shall be notified immediately in writing.

It has been our pleasure to be of service to you in this matter. The results of our analysis are summarized in the table below. Please contact us should you have any specific questions, require further clarification, or if we can be of further service.

Sincerely,

P. Marshall & Associates

Description of Element	Demand-Capacity Ratio	Result	Notes
(N) Mount Member (Pipe 2.0 STD)	44%	PASS	
(N) Horizontal (Pipe_3.0 STD)	21%	PASS	
(N) Standoff (HSS4x4x3)	13%	PASS	
(N) Mount to Tower Connection	2%	PASS	

Due Diligence Review

Project:

Engineer: **AP**

Date: August 6, 2024

This report is based on the information obtained in the documents listed below.

Documents Summary

[illegible]

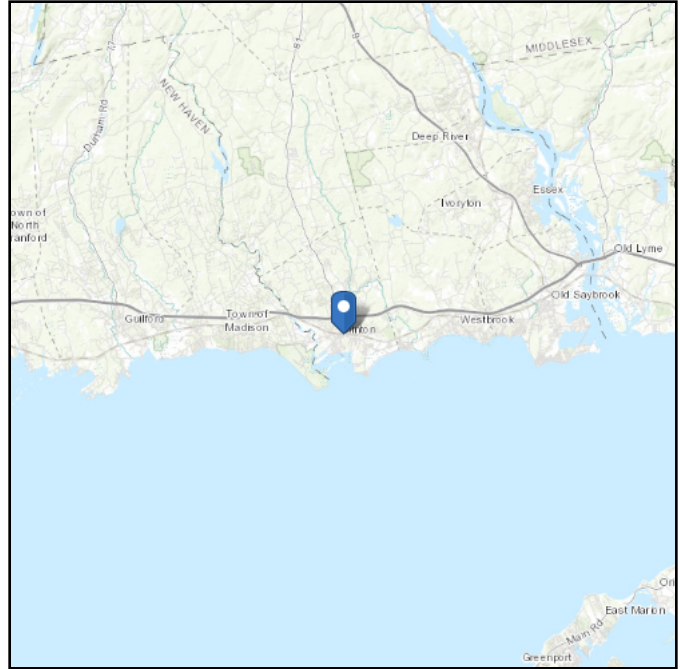
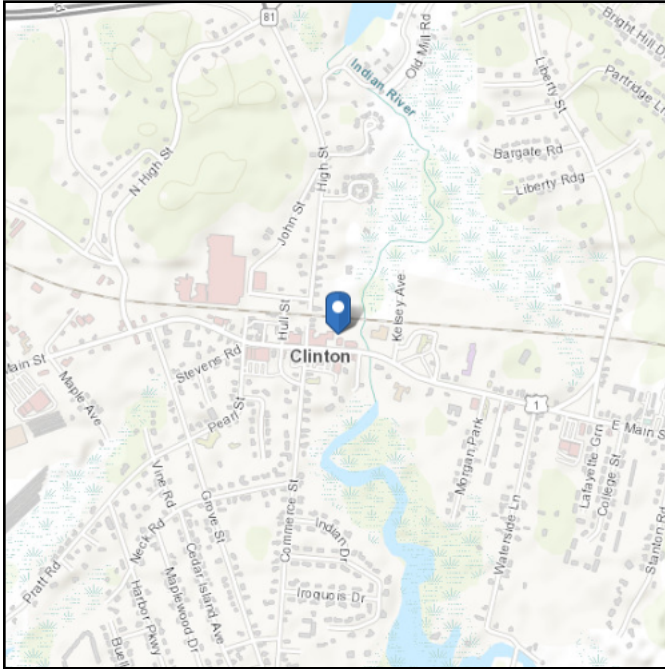


ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 41.278949
Longitude: -72.525976
Elevation: 15.05312379534824 ft
(NAVD 88)



Wind

Results:

Wind Speed	124 Vmph 125 mph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	95 Vmph
100-year MRI	101 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Aug 06 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

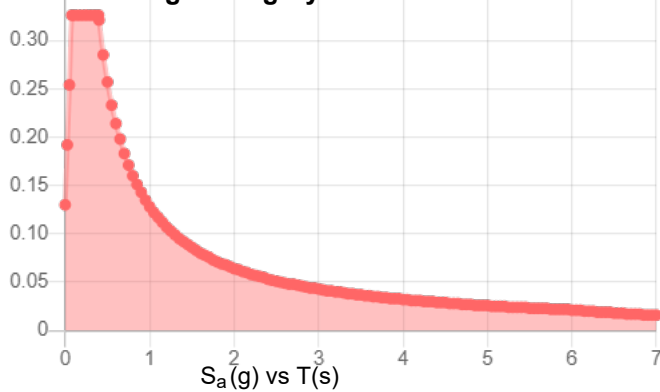
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

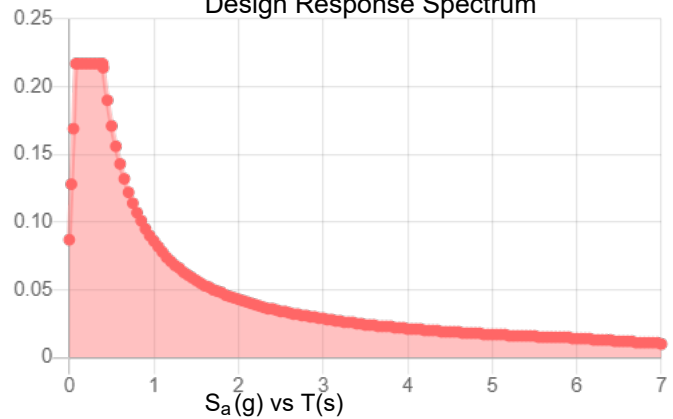
Results:

S_S :	0.204 0.205	S_{D1} :	0.086
S_1 :	0.053 0.054	T_L :	6
F_a :	1.6	PGA :	0.114
F_v :	2.4	PGA _M :	0.179
S_{MS} :	0.326	F_{PGA} :	1.573
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.217	C_v :	0.707

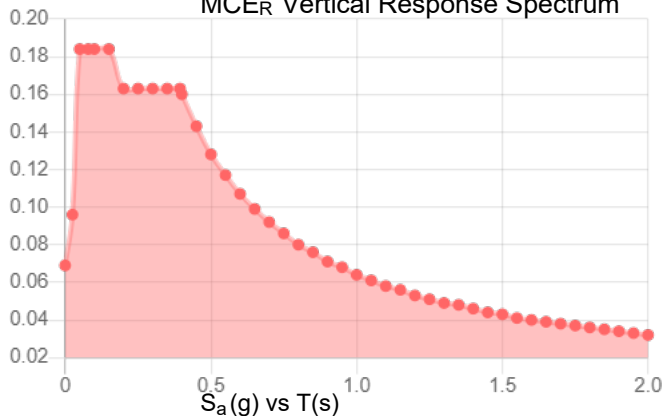
Seismic Design Category: B MCE_R Response Spectrum



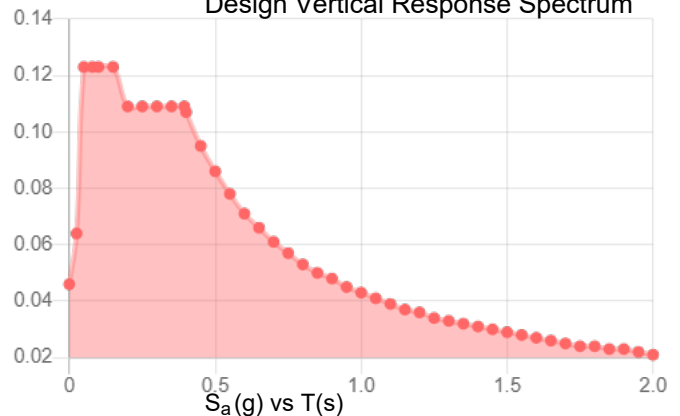
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Tue Aug 06 2024

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Aug 06 2024

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

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

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

APPURTENANCE FORCE SUMMARY

Wind Analysis Criteria	
Ultimate Wind Speed, Vult	125 mph
Antenna Rad Center, z	60.0 ft
Risk Category	II
Exposure Category	C
Mean Elevation Above Sea Level, zs	15.0 ft
Topographic Category	1

Seismic Analysis Criteria	
Seismic, S _s	0.205
Seismic, S ₁	0.054
Soil Type	D (Default)
Amplification Factor, A _s	1.00
Response Coefficient, R	2.00

Ice Criteria & Summary	
Basic Wind Speed with Ice, Vi	50 mph
Design Radial Ice Thickness, ti	1.00 in
Wind Pressure (Ice), q _{zi}	6.91 psf
Factored Radial Ice Thickness, t _{iz}	1.06 in
Importance Factor Wind on Ice, I _{wi}	1.00
Importance Factor Ice, I _i	1.00

Live Load Criteria	
Structure Live Load	250 lbs
Maintenance Live Load	500 lbs
Maintenance Wind Speed	30 mph

Wind Force Summary	
Importance Factor Wind, I _w	1.00
Topographic Factor at Base, K _{zt}	1.00
Topographic Factor at z, K _{zt}	1.00
Velocity Pressure Coefficient, K _z	1.14
Wind Direction Factor, K _d	0.95
Gust Effect Factor, G	1.00
Shielding Factor, K _a	0.90
Wind Pressure, q _z	43.19 psf
Ground Elevation Factor, K _e	1.00

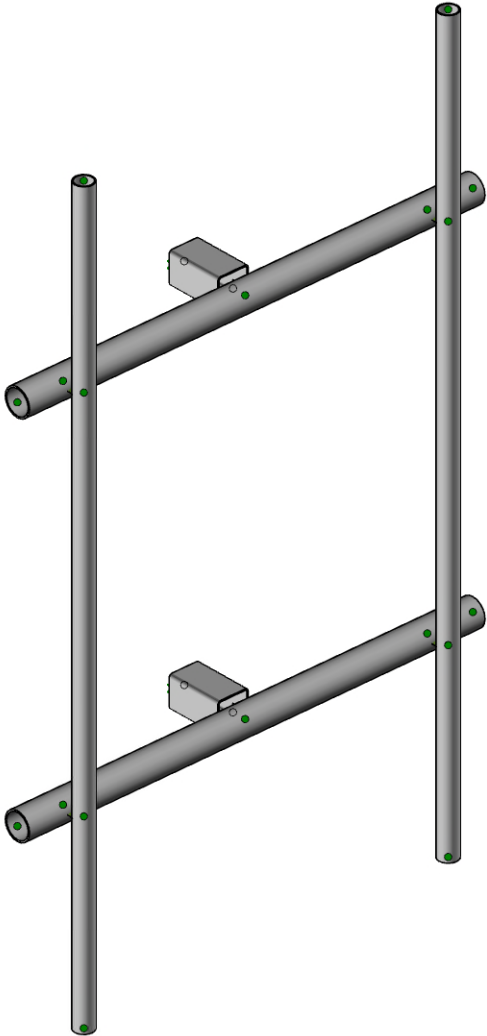
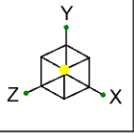
Seismic Force Summary	
Importance Factor Seismic, I _e	1.000
Site Coefficient, F _a	1.600
Site Coefficient, F _v	2.400
Design Spectra Response, S _{ds}	0.219
Design Spectra Response, S _{d1}	0.086
Seismic Response Coefficient, C _s	0.109
Total Seismic Shear Force, V _s	58 lbs
Appurtenance Total Weight	384 lbs
Structure Total Weight	145 lbs
Total Weight	529 lbs
Vertical Load Effect, E _v	23 lbs
Horizontal Load Effect, E _h	58 lbs

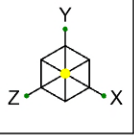
Appurtenance Information							Wind Force - No Ice				Escalated Ice Load				Wind Force - With Ice			
Dimensions & Shape							Front		Side		Appurtenance Ice Information				Front		Side	
Appurtenance Name	Height (in)	Width (in)	Depth (in)	Weight (lb)	Member Label	Flat or Round (F/R)	EPA (ft ²)	Design Wind Force (lb), F _A	EPA (ft ²)	Design Wind Force (lb), F _A	Height w/ Ice (in)	Width w/ Ice (in)	Depth w/ Ice (in)	Ice Weight, (lb)	EPA (ft ²)	Design Wind Force (lb), F _A	EPA (ft ²)	Design Wind Force (lb), F _A
ERICSSON AIR 6419 B41_TMO	34.5	20	8	78.5	M4	F	5.75	223.50	2.45	95.40	36.62	22.12	10.12	86.92	6.33	39.40	2.87	17.80
RFS/CELWAVE APXVAALL24_43-U-NA20	95.9	24	8.5	122.8	M3	F	20.24	786.90	8.73	339.50	98.02	26.12	10.62	247.56	21.38	133.00	9.68	60.20
ERICSSON RADIO 4460 B25/B66	19.6	15.7	12.1	109	M3	F	2.56	99.70	1.98	76.80	21.72	17.82	14.22	57.80	2.95	18.30	2.33	14.50
ERICSSON RADIO 4449 B71 B85A_T-MOBILE	17.91	13.2	10.63	73.21	M3	F	1.97	76.60	1.59	61.70	20.03	15.32	12.75	45.43	2.31	14.40	1.90	11.80

*Appurtenance Wind and Ice forces were calculated based on EPA's provided and as required by the tower owner (highlighted in green). Values highlighted in white are per applicable TIA-222.

Appurtenance Structure Forces									
Member Information ¹					Wind Force - No Ice		Member Ice	Wind Force - With Ice	
Member Set	Flat / Round	Weight (lb/ft)	Depth / Diameter (in)	Width (in)	Ca	Design Wind Force (lb/ft), F _A	Ice Weight (lb/ft)	Ca	Design Wind Force (lb/ft), F _A
HSS4X4X3	HSS	9.42	4	4	1.10	14.27	8.70	0.70	3.05
PIPE_2.0	R	3.66	2.38	–	1.20	9.25	4.50	1.12	2.71
PIPE_3.0	R	7.58	3.5	–	1.03	11.63	5.90	0.88	2.83

1. Values shown in this table are the maximum forces applied to similar member types. This is not an exhaustive list. Wind load on members can fluctuate due to force coefficients being a function of length.





Code Check
(Env)

No Calc

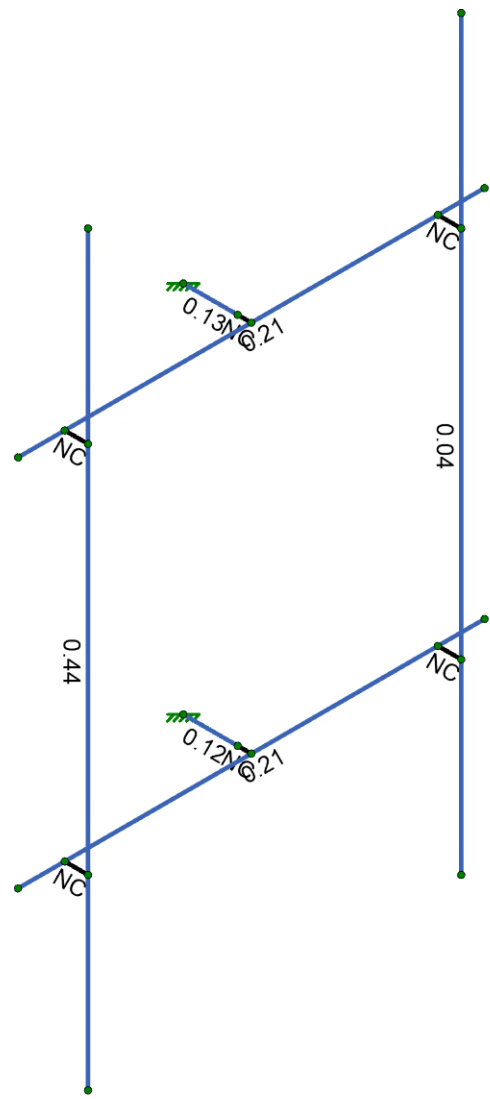
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.90-1.0

.75-.90

.50-.75

0.-.50



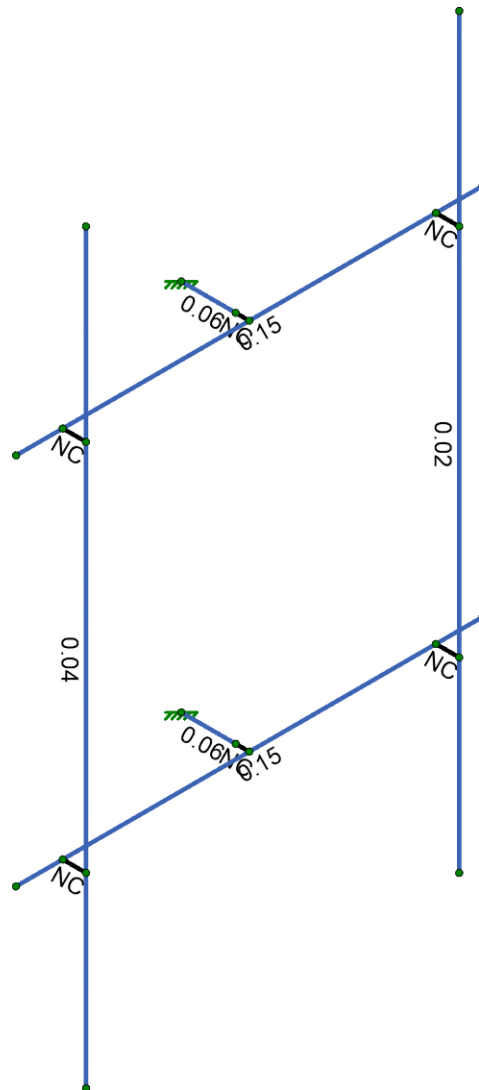
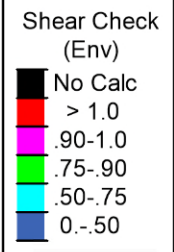
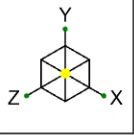
Member Code Checks Displayed (Enveloped)



PM&A
AP

CT11031B

SK-1
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CT11031B.r3d



Member Shear Checks Displayed (Enveloped)



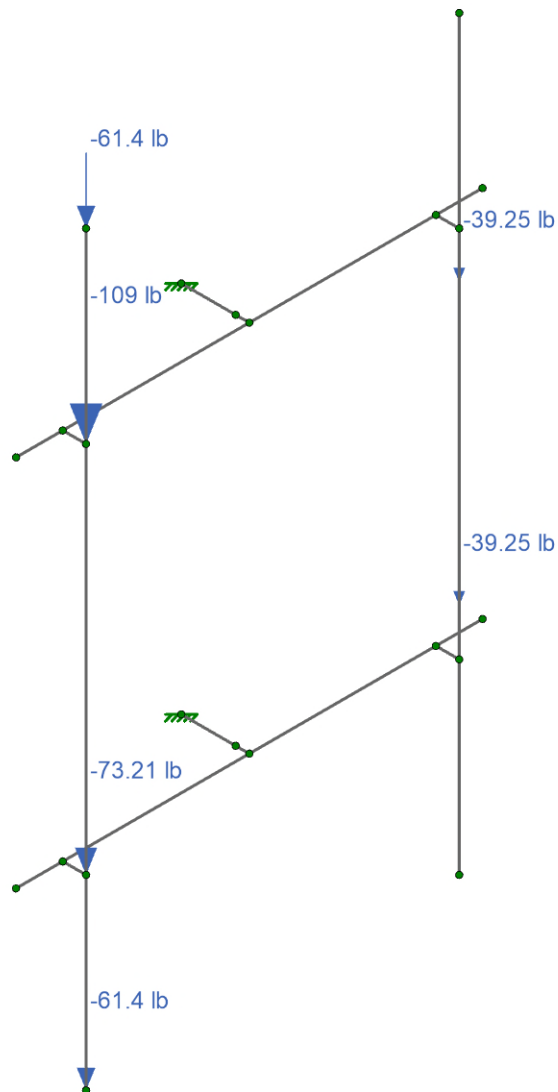
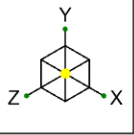
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SK-2

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Loads: BLC 1, Dead



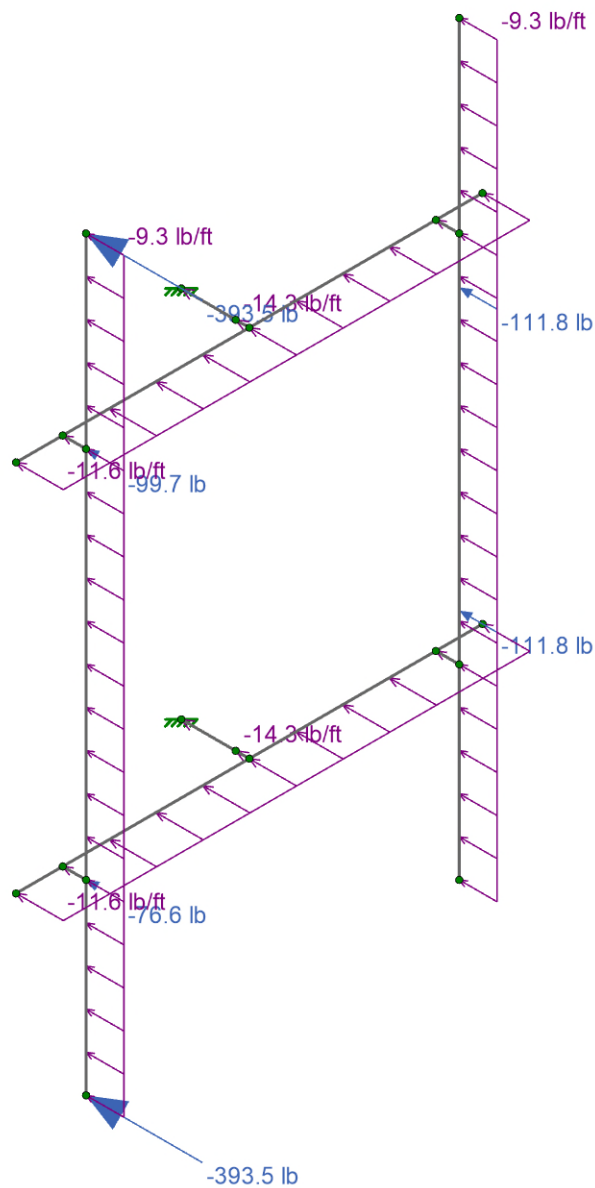
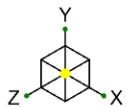
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SK-3

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CT11031B.r3d



Loads: BLC 3, Wind 0



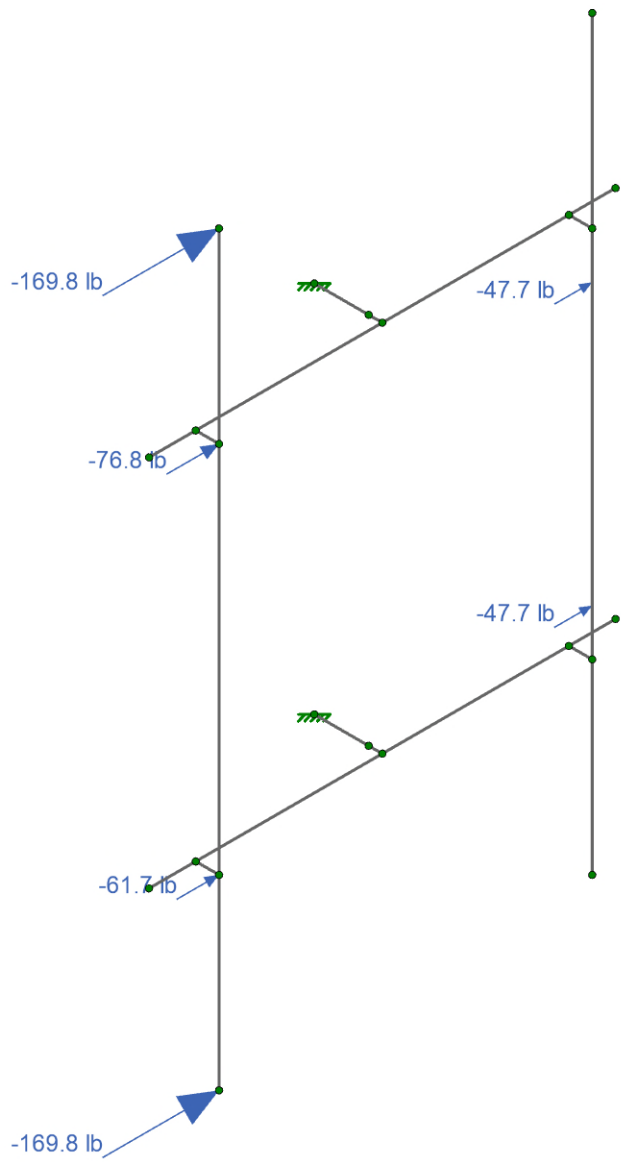
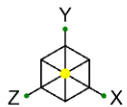
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CT11031B

SK-4

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Loads: BLC 6, Wind 90



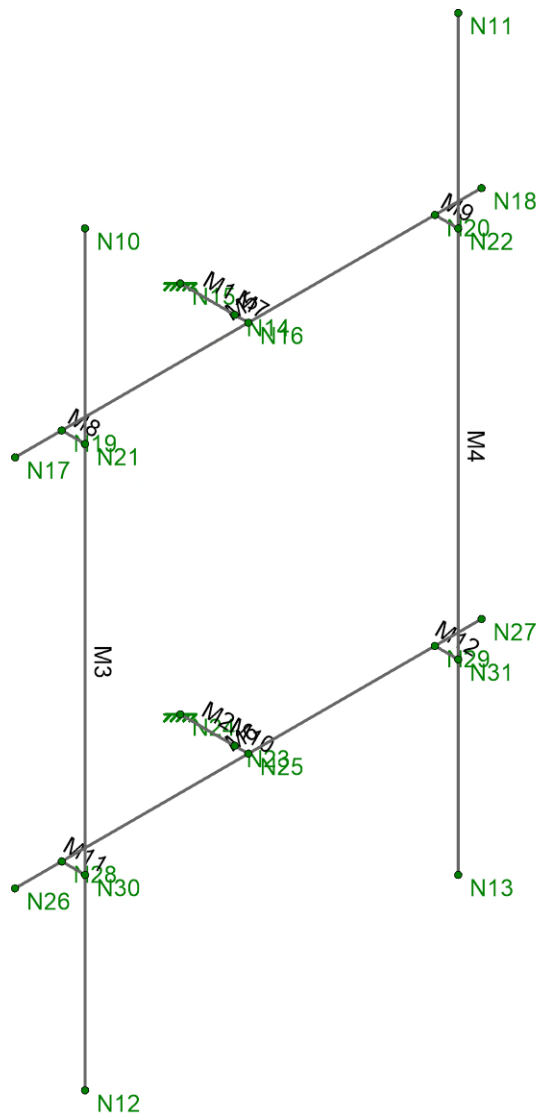
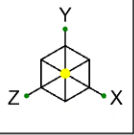
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CT11031B

SK-5

Aug 19, 2024 at 12:36 PM

CT11031B.r3d



PM&A
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CT11031B

SK-6

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Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in ²)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No
Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Global
Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 15th (360-16): LRFD
Cold Formed Steel	AISI S100-12: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18 / SDPWS-15 ASD
Temperature	< 100F
Concrete	ACI 318-14
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-15: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)
Analysis Methodology	Exact Integration Method
Parame Beta Factor	0.65
Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	Yes
List forces which were ignored for design in the Detail Report	Yes
Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4
Code	ASCE 7-16

Model Settings (Continued)

Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_i (g)	1
SD_i (g)	1
SD_s (g)	1
T_L (sec)	5
T_Z (sec)	
T_X (sec)	
C_Z	0.02
C_X	0.02
$C_{Exp. Z}$	0.75
$C_{Exp. X}$	0.75
R_Z	3
R_X	3
$\Omega_e Z$	1
$\Omega_e X$	1
$C_a Z$	4
$C_a X$	4
ρ_Z	1
ρ_X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [$10^{-6} F^{-1}$]	Density [lb/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	490	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	490	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	490	65	1.1	80	1.1

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N10	4.75	48	24	
2	N11	4.75	48	-24	
3	N12	4.75	-48	24	
4	N13	4.75	-48	-24	
5	N14	0	24	0	
6	N15	-7	24	0	
7	N16	1.75	24	0	
8	N17	1.75	24	30	
9	N18	1.75	24	-30	
10	N19	1.75	24	24	
11	N20	1.75	24	-24	
12	N21	4.75	24	24	
13	N22	4.75	24	-24	
14	N23	0	-24	0	
15	N24	-7	-24	0	
16	N25	1.75	-24	0	
17	N26	1.75	-24	30	
18	N27	1.75	-24	-30	
19	N28	1.75	-24	24	
20	N29	1.75	-24	-24	
21	N30	4.75	-24	24	
22	N31	4.75	-24	-24	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N15	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N24	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Pipe 3.0	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	HSS4x4x3	HSS4X4X3	Beam	Tube	A500 Gr.B RECT	Typical	2.58	6.21	6.21	10
3	Pipe 2.0	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N15	N14	HSS4x4x3	Beam	Tube	A500 Gr.B RECT	Typical
2	M2	N24	N23	HSS4x4x3	Beam	Tube	A500 Gr.B RECT	Typical
3	M3	N10	N12	Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
4	M4	N11	N13	Pipe 2.0	Beam	Pipe	A53 Gr.B	Typical
5	M5	N17	N18	Pipe 3.0	Beam	Pipe	A53 Gr.B	Typical
6	M6	N26	N27	Pipe 3.0	Beam	Pipe	A53 Gr.B	Typical
7	M7	N14	N16	RIGID	None	None	RIGID	Typical
8	M8	N19	N21	RIGID	None	None	RIGID	Typical
9	M9	N20	N22	RIGID	None	None	RIGID	Typical
10	M10	N23	N25	RIGID	None	None	RIGID	Typical
11	M11	N28	N30	RIGID	None	None	RIGID	Typical
12	M12	N29	N31	RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Seismic DR
1	M1	Yes	Default	None
2	M2	Yes	Default	None
3	M3	Yes	Default	None
4	M4	Yes	Default	None
5	M5	Yes	Default	None
6	M6	Yes	Default	None
7	M7	Yes	** NA **	None
8	M8	Yes	** NA **	None
9	M9	Yes	** NA **	None
10	M10	Yes	** NA **	None
11	M11	Yes	** NA **	None
12	M12	Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Channel Conn.	a [in]	Function
1	M1	HSS4x4x3	7	Lbyy	N/A	N/A	Lateral
2	M2	HSS4x4x3	7	Lbyy	N/A	N/A	Lateral
3	M3	Pipe 2.0	96	Lbyy	N/A	N/A	Lateral
4	M4	Pipe 2.0	96	Lbyy	N/A	N/A	Lateral
5	M5	Pipe 3.0	60	Lbyy	N/A	N/A	Lateral
6	M6	Pipe 3.0	60	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	Y	-39.25	30
2	M3	Y	-61.4	0
3	M3	Y	-109	24
4	M3	Y	-73.21	72
5	M4	Y	-39.25	66
6	M3	Y	-61.4	96
7	M3	Y	0	0
8	M3	Y	0	0

Member Point Loads (BLC 2 : Ice)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	Y	-43.46	30
2	M3	Y	-123.78	0
3	M3	Y	-57.8	24
4	M3	Y	-45.43	72
5	M4	Y	-43.46	66
6	M3	Y	-123.78	96
7	M3	Y	0	0
8	M3	Y	0	0

Member Point Loads (BLC 3 : Wind 0)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-111.8	30
2	M3	X	-393.5	0
3	M3	X	-99.7	24
4	M3	X	-76.6	72
5	M4	X	-111.8	66
6	M3	X	-393.5	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	0	30
10	M3	Z	0	0
11	M3	Z	0	24
12	M3	Z	0	72
13	M4	Z	0	66
14	M3	Z	0	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 4 : Wind 30)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-82.9	30
2	M3	X	-292.3	0
3	M3	X	-81.4	24
4	M3	X	-63.1	72
5	M4	X	-82.9	66
6	M3	X	-292.3	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-47.9	30
10	M3	Z	-168.8	0
11	M3	Z	-47	24
12	M3	Z	-36.4	72
13	M4	Z	-47.9	66
14	M3	Z	-168.8	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 5 : Wind 60)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-31.9	30
2	M3	X	-112.8	0

Member Point Loads (BLC 5 : Wind 60) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
3	M3	X	-41.3	24
4	M3	X	-32.7	72
5	M4	X	-31.9	66
6	M3	X	-112.8	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-55.2	30
10	M3	Z	-195.4	0
11	M3	Z	-71.5	24
12	M3	Z	-56.7	72
13	M4	Z	-55.2	66
14	M3	Z	-195.4	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 6 : Wind 90)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	0	30
2	M3	X	0	0
3	M3	X	0	24
4	M3	X	0	72
5	M4	X	0	66
6	M3	X	0	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-47.7	30
10	M3	Z	-169.8	0
11	M3	Z	-76.8	24
12	M3	Z	-61.7	72
13	M4	Z	-47.7	66
14	M3	Z	-169.8	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 7 : Wind 120)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	31.9	30
2	M3	X	112.8	0
3	M3	X	41.3	24
4	M3	X	32.7	72
5	M4	X	31.9	66
6	M3	X	112.8	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-55.2	30
10	M3	Z	-195.4	0
11	M3	Z	-71.5	24
12	M3	Z	-56.7	72
13	M4	Z	-55.2	66
14	M3	Z	-195.4	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 8 : Wind 150)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	82.9	30
2	M3	X	292.3	0
3	M3	X	81.4	24
4	M3	X	63.1	72
5	M4	X	82.9	66
6	M3	X	292.3	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-47.9	30
10	M3	Z	-168.8	0
11	M3	Z	-47	24
12	M3	Z	-36.4	72
13	M4	Z	-47.9	66
14	M3	Z	-168.8	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 9 : Wind Ice 0)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-19.7	30
2	M3	X	-66.5	0
3	M3	X	-18.3	24
4	M3	X	-14.4	72
5	M4	X	-19.7	66
6	M3	X	-66.5	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	0	30
10	M3	Z	0	0
11	M3	Z	0	24
12	M3	Z	0	72
13	M4	Z	0	66
14	M3	Z	0	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 10 : Wind Ice 30)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-14.7	30
2	M3	X	-49.7	0
3	M3	X	-15	24
4	M3	X	-11.9	72
5	M4	X	-14.7	66
6	M3	X	-49.7	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-8.5	30
10	M3	Z	-28.7	0
11	M3	Z	-8.7	24
12	M3	Z	-6.9	72
13	M4	Z	-8.5	66
14	M3	Z	-28.7	96

Member Point Loads (BLC 10 : Wind Ice 30) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 11 : Wind Ice 60)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-5.8	30
2	M3	X	-19.6	0
3	M3	X	-7.7	24
4	M3	X	-6.2	72
5	M4	X	-5.8	66
6	M3	X	-19.6	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-10	30
10	M3	Z	-33.9	0
11	M3	Z	-13.4	24
12	M3	Z	-10.8	72
13	M4	Z	-10	66
14	M3	Z	-33.9	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 12 : Wind Ice 90)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	0	30
2	M3	X	0	0
3	M3	X	0	24
4	M3	X	0	72
5	M4	X	0	66
6	M3	X	0	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-8.9	30
10	M3	Z	-30.1	0
11	M3	Z	-14.5	24
12	M3	Z	-11.8	72
13	M4	Z	-8.9	66
14	M3	Z	-30.1	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 13 : Wind Ice 120)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	5.8	30
2	M3	X	19.6	0
3	M3	X	7.7	24
4	M3	X	6.2	72
5	M4	X	5.8	66
6	M3	X	19.6	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-10	30

Member Point Loads (BLC 13 : Wind Ice 120) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
10	M3	Z	-33.9	0
11	M3	Z	-13.4	24
12	M3	Z	-10.8	72
13	M4	Z	-10	66
14	M3	Z	-33.9	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 14 : Wind Ice 150)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	14.7	30
2	M3	X	49.7	0
3	M3	X	15	24
4	M3	X	11.9	72
5	M4	X	14.7	66
6	M3	X	49.7	96
7	M3	X	0	0
8	M3	X	0	0
9	M4	Z	-8.5	30
10	M3	Z	-28.7	0
11	M3	Z	-8.7	24
12	M3	Z	-6.9	72
13	M4	Z	-8.5	66
14	M3	Z	-28.7	96
15	M3	Z	0	0
16	M3	Z	0	0

Member Point Loads (BLC 51 : Horizontal Seismic Load Effect)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	X	-39.3	30
2	M3	X	-61.4	0
3	M3	X	-109	24
4	M3	X	-73.2	72
5	M4	X	-39.3	66
6	M3	X	-61.4	96
7	M3	X	0	0
8	M3	X	0	0

Member Point Loads (BLC 52 : Horizontal Seismic Load Effect)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M4	Z	-39.3	30
2	M3	Z	-61.4	0
3	M3	Z	-109	24
4	M3	Z	-73.2	72
5	M4	Z	-39.3	66
6	M3	Z	-61.4	96
7	M3	Z	0	0
8	M3	Z	0	0

Member Distributed Loads (BLC 2 : Ice)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1 M1	Y	-8.7	-8.7	0	%100
2 M2	Y	-8.7	-8.7	0	%100
3 M3	Y	-4.5	-4.5	0	%100
4 M4	Y	-4.5	-4.5	0	%100
5 M5	Y	-5.9	-5.9	0	%100
6 M6	Y	-5.9	-5.9	0	%100

Member Distributed Loads (BLC 3 : Wind 0)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1 M1	X	-14.3	-14.3	0	%100
2 M2	X	-14.3	-14.3	0	%100
3 M3	X	-9.3	-9.3	0	%100
4 M4	X	-9.3	-9.3	0	%100
5 M5	X	-11.6	-11.6	0	%100
6 M6	X	-11.6	-11.6	0	%100
7 M1	Z	0	0	0	%100
8 M2	Z	0	0	0	%100
9 M3	Z	0	0	0	%100
10 M4	Z	0	0	0	%100
11 M5	Z	0	0	0	%100
12 M6	Z	0	0	0	%100

Member Distributed Loads (BLC 4 : Wind 30)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1 M1	X	-12.4	-12.4	0	%100
2 M2	X	-12.4	-12.4	0	%100
3 M3	X	-8	-8	0	%100
4 M4	X	-8	-8	0	%100
5 M5	X	-10.1	-10.1	0	%100
6 M6	X	-10.1	-10.1	0	%100
7 M1	Z	0	0	0	%100
8 M2	Z	0	0	0	%100
9 M3	Z	0	0	0	%100
10 M4	Z	0	0	0	%100
11 M5	Z	0	0	0	%100
12 M6	Z	0	0	0	%100

Member Distributed Loads (BLC 5 : Wind 60)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1 M1	X	-7.1	-7.1	0	%100
2 M2	X	-7.1	-7.1	0	%100
3 M3	X	-4.6	-4.6	0	%100
4 M4	X	-4.6	-4.6	0	%100
5 M5	X	-5.8	-5.8	0	%100
6 M6	X	-5.8	-5.8	0	%100
7 M1	Z	0	0	0	%100
8 M2	Z	0	0	0	%100
9 M3	Z	0	0	0	%100
10 M4	Z	0	0	0	%100
11 M5	Z	0	0	0	%100
12 M6	Z	0	0	0	%100

Member Distributed Loads (BLC 6 : Wind 90)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	0	0	%100
2	M2	X	0	0	%100
3	M3	X	0	0	%100
4	M4	X	0	0	%100
5	M5	X	0	0	%100
6	M6	X	0	0	%100
7	M1	Z	0	0	%100
8	M2	Z	0	0	%100
9	M3	Z	0	0	%100
10	M4	Z	0	0	%100
11	M5	Z	0	0	%100
12	M6	Z	0	0	%100

Member Distributed Loads (BLC 7 : Wind 120)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	7.1	0	%100
2	M2	X	7.1	0	%100
3	M3	X	4.6	0	%100
4	M4	X	4.6	0	%100
5	M5	X	5.8	0	%100
6	M6	X	5.8	0	%100
7	M1	Z	0	0	%100
8	M2	Z	0	0	%100
9	M3	Z	0	0	%100
10	M4	Z	0	0	%100
11	M5	Z	0	0	%100
12	M6	Z	0	0	%100

Member Distributed Loads (BLC 8 : Wind 150)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	12.4	0	%100
2	M2	X	12.4	0	%100
3	M3	X	8	0	%100
4	M4	X	8	0	%100
5	M5	X	10.1	0	%100
6	M6	X	10.1	0	%100
7	M1	Z	0	0	%100
8	M2	Z	0	0	%100
9	M3	Z	0	0	%100
10	M4	Z	0	0	%100
11	M5	Z	0	0	%100
12	M6	Z	0	0	%100

Member Distributed Loads (BLC 9 : Wind Ice 0)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	-3.1	0	%100
2	M2	X	-3.1	0	%100
3	M3	X	-2.7	0	%100
4	M4	X	-2.7	0	%100
5	M5	X	-2.8	0	%100
6	M6	X	-2.8	0	%100

Member Distributed Loads (BLC 9 : Wind Ice 0) (Continued)

Member	Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
7	M1	Z	0	0	0	%100
8	M2	Z	0	0	0	%100
9	M3	Z	0	0	0	%100
10	M4	Z	0	0	0	%100
11	M5	Z	0	0	0	%100
12	M6	Z	0	0	0	%100

Member Distributed Loads (BLC 10 : Wind Ice 30)

Member	Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	-2.6	-2.6	0	%100
2	M2	X	-2.6	-2.6	0	%100
3	M3	X	-2.3	-2.3	0	%100
4	M4	X	-2.3	-2.3	0	%100
5	M5	X	-2.5	-2.5	0	%100
6	M6	X	-2.5	-2.5	0	%100
7	M1	Z	0	0	0	%100
8	M2	Z	0	0	0	%100
9	M3	Z	0	0	0	%100
10	M4	Z	0	0	0	%100
11	M5	Z	0	0	0	%100
12	M6	Z	0	0	0	%100

Member Distributed Loads (BLC 11 : Wind Ice 60)

Member	Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	-1.5	-1.5	0	%100
2	M2	X	-1.5	-1.5	0	%100
3	M3	X	-1.4	-1.4	0	%100
4	M4	X	-1.4	-1.4	0	%100
5	M5	X	-1.4	-1.4	0	%100
6	M6	X	-1.4	-1.4	0	%100
7	M1	Z	0	0	0	%100
8	M2	Z	0	0	0	%100
9	M3	Z	0	0	0	%100
10	M4	Z	0	0	0	%100
11	M5	Z	0	0	0	%100
12	M6	Z	0	0	0	%100

Member Distributed Loads (BLC 12 : Wind Ice 90)

Member	Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	0	0	0	%100
2	M2	X	0	0	0	%100
3	M3	X	0	0	0	%100
4	M4	X	0	0	0	%100
5	M5	X	0	0	0	%100
6	M6	X	0	0	0	%100
7	M1	Z	0	0	0	%100
8	M2	Z	0	0	0	%100
9	M3	Z	0	0	0	%100
10	M4	Z	0	0	0	%100
11	M5	Z	0	0	0	%100
12	M6	Z	0	0	0	%100

Member Distributed Loads (BLC 13 : Wind Ice 120)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	1.5	0	%100
2	M2	X	1.5	0	%100
3	M3	X	1.4	0	%100
4	M4	X	1.4	0	%100
5	M5	X	1.4	0	%100
6	M6	X	1.4	0	%100
7	M1	Z	0	0	%100
8	M2	Z	0	0	%100
9	M3	Z	0	0	%100
10	M4	Z	0	0	%100
11	M5	Z	0	0	%100
12	M6	Z	0	0	%100

Member Distributed Loads (BLC 14 : Wind Ice 150)

Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	X	2.6	0	%100
2	M2	X	2.6	0	%100
3	M3	X	2.3	0	%100
4	M4	X	2.3	0	%100
5	M5	X	2.5	0	%100
6	M6	X	2.5	0	%100
7	M1	Z	0	0	%100
8	M2	Z	0	0	%100
9	M3	Z	0	0	%100
10	M4	Z	0	0	%100
11	M5	Z	0	0	%100
12	M6	Z	0	0	%100

Diaphragm Distributed Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
1	Dead	None		-1.05		8	
2	Ice	None				8	6
3	Wind 0	None				16	12
4	Wind 30	None				16	12
5	Wind 60	None				16	12
6	Wind 90	None				16	12
7	Wind 120	None				16	12
8	Wind 150	None				16	12
9	Wind Ice 0	None				16	12
10	Wind Ice 30	None				16	12
11	Wind Ice 60	None				16	12
12	Wind Ice 90	None				16	12
13	Wind Ice 120	None				16	12
14	Wind Ice 150	None				16	12
15	Live Load Point (1)	None					
16	Live Load Point (2)	None					
17	Live Load Point (3)	None					
18	Live Load Point (4)	None					
19	Live Load Point (5)	None					

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
20	Live Load Point (6)	None					
21	Live Load Point (7)	None					
22	Live Load Point (8)	None					
23	Live Load Point (9)	None					
24	Live Load Point (10)	None					
25	Live Load Point (11)	None					
26	Live Load Point (12)	None					
27	Live Load Point (13)	None					
28	Live Load Point (14)	None					
29	Live Load Point (15)	None					
30	Live Load Point (16)	None					
31	Live Load Point (17)	None					
32	Live Load Point (18)	None					
33	Live Load Point (19)	None					
34	Live Load Point (20)	None					
35	Live Load Point (21)	None					
36	Live Load Point (22)	None					
37	Live Load Point (23)	None					
38	Live Load Point (24)	None					
39	Live Load Point (25)	None					
40	Live Load Point (26)	None					
41	Live Load Point (27)	None					
42	Live Load Point (28)	None					
43	Live Load Point (29)	None					
44	Live Load Point (30)	None					
45	Maintenance Load (1)	None					
46	Maintenance Load (2)	None					
47	Maintenance Load (3)	None					
48	Maintenance Load (4)	None					
49	Maintenance Load (5)	None					
50	Maintenance Load (6)	None					
51	Horizontal Seismic Load Effect,	None	-1			8	
52	Horizontal Seismic Load Effect,	None			-1	8	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 D	Yes	Y	1	1.4						
2	1.2 D + 1.0 W 0	Yes	Y	1	1.2	3	1				
3	1.2 D + 1.0 W 30	Yes	Y	1	1.2	4	1				
4	1.2 D + 1.0 W 60	Yes	Y	1	1.2	5	1				
5	1.2 D + 1.0 W 90	Yes	Y	1	1.2	6	1				
6	1.2 D + 1.0 W 120	Yes	Y	1	1.2	7	1				
7	1.2 D + 1.0 W 150	Yes	Y	1	1.2	8	1				
8	1.2 D + 1.0 W 180	Yes	Y	1	1.2	3	-1				
9	1.2 D + 1.0 W 210	Yes	Y	1	1.2	4	-1				
10	1.2 D + 1.0 W 240	Yes	Y	1	1.2	5	-1				
11	1.2 D + 1.0 W 270	Yes	Y	1	1.2	6	-1				
12	1.2 D + 1.0 W 300	Yes	Y	1	1.2	7	-1				
13	1.2 D + 1.0 W 330	Yes	Y	1	1.2	8	-1				
14	1.2 D + 1.0 I + 1.0 W/I 0	Yes	Y	1	1.2	2	1	9	1		
15	1.2 D + 1.0 I + 1.0 W/I 30	Yes	Y	1	1.2	2	1	10	1		
16	1.2 D + 1.0 I + 1.0 W/I 60	Yes	Y	1	1.2	2	1	11	1		
17	1.2 D + 1.0 I + 1.0 W/I 90	Yes	Y	1	1.2	2	1	12	1		
18	1.2 D + 1.0 I + 1.0 W/I 120	Yes	Y	1	1.2	2	1	13	1		
19	1.2 D + 1.0 I + 1.0 W/I 150	Yes	Y	1	1.2	2	1	14	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
20	1.2 D + 1.0 I + 1.0 W/I 180	Yes	Y	1	1.2	2	1	9	-1		
21	1.2 D + 1.0 I + 1.0 W/I 210	Yes	Y	1	1.2	2	1	10	-1		
22	1.2 D + 1.0 I + 1.0 W/I 240	Yes	Y	1	1.2	2	1	11	-1		
23	1.2 D + 1.0 I + 1.0 W/I 270	Yes	Y	1	1.2	2	1	12	-1		
24	1.2 D + 1.0 I + 1.0 W/I 300	Yes	Y	1	1.2	2	1	13	-1		
25	1.2 D + 1.0 I + 1.0 W/I 330	Yes	Y	1	1.2	2	1	14	-1		
26	1.2 D + 1.5 LV1	Yes	Y	1	1.2	15	1.5				
27	1.2 D + 1.5 LV2	Yes	Y	1	1.2	16	1.5				
28	1.2 D + 1.5 LV3	Yes	Y	1	1.2	17	1.5				
29	1.2 D + 1.5 LV4	Yes	Y	1	1.2	18	1.5				
30	1.2 D + 1.5 LV5	Yes	Y	1	1.2	19	1.5				
31	1.2 D + 1.5 LV6	Yes	Y	1	1.2	20	1.5				
32	1.2 D + 1.5 LV7	Yes	Y	1	1.2	21	1.5				
33	1.2 D + 1.5 LV8	Yes	Y	1	1.2	22	1.5				
34	1.2 D + 1.5 LV9	Yes	Y	1	1.2	23	1.5				
35	1.2 D + 1.5 LV10	Yes	Y	1	1.2	24	1.5				
36	1.2 D + 1.5 LV11	Yes	Y	1	1.2	25	1.5				
37	1.2 D + 1.5 LV12	Yes	Y	1	1.2	26	1.5				
38	1.2 D + 1.5 LV13	Yes	Y	1	1.2	27	1.5				
39	1.2 D + 1.5 LV14	Yes	Y	1	1.2	28	1.5				
40	1.2 D + 1.5 LV15	Yes	Y	1	1.2	29	1.5				
41	1.2 D + 1.5 LV16	Yes	Y	1	1.2	30	1.5				
42	1.2 D + 1.5 LV17	Yes	Y	1	1.2	31	1.5				
43	1.2 D + 1.5 LV18	Yes	Y	1	1.2	32	1.5				
44	1.2 D + 1.5 LV19	Yes	Y	1	1.2	33	1.5				
45	1.2 D + 1.5 LV20	Yes	Y	1	1.2	34	1.5				
46	1.2 D + 1.5 LV21	Yes	Y	1	1.2	35	1.5				
47	1.2 D + 1.5 LV22	Yes	Y	1	1.2	36	1.5				
48	1.2 D + 1.5 LV23	Yes	Y	1	1.2	37	1.5				
49	1.2 D + 1.5 LV24	Yes	Y	1	1.2	38	1.5				
50	1.2 D + 1.5 LV25	Yes	Y	1	1.2	39	1.5				
51	1.2 D + 1.5 LV26	Yes	Y	1	1.2	40	1.5				
52	1.2 D + 1.5 LV27	Yes	Y	1	1.2	41	1.5				
53	1.2 D + 1.5 LV28	Yes	Y	1	1.2	42	1.5				
54	1.2 D + 1.5 LV29	Yes	Y	1	1.2	43	1.5				
55	1.2 D + 1.5 LV30	Yes	Y	1	1.2	44	1.5				
56	1.2 D + 1.5 LM1 + 1.0 W 0 (Maintenance)	Yes	Y	1	1.2	45	1.5	3	0.058		
57	1.2 D + 1.5 LM1 + 1.0 W 30 (Maintenance)	Yes	Y	1	1.2	45	1.5	4	0.058		
58	1.2 D + 1.5 LM1 + 1.0 W 60 (Maintenance)	Yes	Y	1	1.2	45	1.5	5	0.058		
59	1.2 D + 1.5 LM1 + 1.0 W 90 (Maintenance)	Yes	Y	1	1.2	45	1.5	6	0.058		
60	1.2 D + 1.5 LM1 + 1.0 W 120 (Maintenance)	Yes	Y	1	1.2	45	1.5	7	0.058		
61	1.2 D + 1.5 LM1 + 1.0 W 150 (Maintenance)	Yes	Y	1	1.2	45	1.5	8	0.058		
62	1.2 D + 1.5 LM1 + 1.0 W 180 (Maintenance)	Yes	Y	1	1.2	45	1.5	3	-0.058		
63	1.2 D + 1.5 LM1 + 1.0 W 210 (Maintenance)	Yes	Y	1	1.2	45	1.5	4	-0.058		
64	1.2 D + 1.5 LM1 + 1.0 W 240 (Maintenance)	Yes	Y	1	1.2	45	1.5	5	-0.058		
65	1.2 D + 1.5 LM1 + 1.0 W 270 (Maintenance)	Yes	Y	1	1.2	45	1.5	6	-0.058		
66	1.2 D + 1.5 LM1 + 1.0 W 300 (Maintenance)	Yes	Y	1	1.2	45	1.5	7	-0.058		
67	1.2 D + 1.5 LM1 + 1.0 W 330 (Maintenance)	Yes	Y	1	1.2	45	1.5	8	-0.058		
68	1.2 D + 1.5 LM2 + 1.0 W 0 (Maintenance)	Yes	Y	1	1.2	46	1.5	3	0.058		
69	1.2 D + 1.5 LM2 + 1.0 W 30 (Maintenance)	Yes	Y	1	1.2	46	1.5	4	0.058		
70	1.2 D + 1.5 LM2 + 1.0 W 60 (Maintenance)	Yes	Y	1	1.2	46	1.5	5	0.058		
71	1.2 D + 1.5 LM2 + 1.0 W 90 (Maintenance)	Yes	Y	1	1.2	46	1.5	6	0.058		
72	1.2 D + 1.5 LM2 + 1.0 W 120 (Maintenance)	Yes	Y	1	1.2	46	1.5	7	0.058		
73	1.2 D + 1.5 LM2 + 1.0 W 150 (Maintenance)	Yes	Y	1	1.2	46	1.5	8	0.058		
74	1.2 D + 1.5 LM2 + 1.0 W 180 (Maintenance)	Yes	Y	1	1.2	46	1.5	3	-0.058		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
75	1.2 D + 1.5 LM2 + 1.0 W 210 (Maintenance)	Yes	Y	1	1.2	46	1.5	4	-0.058		
76	1.2 D + 1.5 LM2 + 1.0 W 240 (Maintenance)	Yes	Y	1	1.2	46	1.5	5	-0.058		
77	1.2 D + 1.5 LM2 + 1.0 W 270 (Maintenance)	Yes	Y	1	1.2	46	1.5	6	-0.058		
78	1.2 D + 1.5 LM2 + 1.0 W 300 (Maintenance)	Yes	Y	1	1.2	46	1.5	7	-0.058		
79	1.2 D + 1.5 LM2 + 1.0 W 330 (Maintenance)	Yes	Y	1	1.2	46	1.5	8	-0.058		
80	1.2 D + 1.5 LM3 + 1.0 W 0 (Maintenance)	Yes	Y	1	1.2	47	1.5	3	0.058		
81	1.2 D + 1.5 LM3 + 1.0 W 30 (Maintenance)	Yes	Y	1	1.2	47	1.5	4	0.058		
82	1.2 D + 1.5 LM3 + 1.0 W 60 (Maintenance)	Yes	Y	1	1.2	47	1.5	5	0.058		
83	1.2 D + 1.5 LM3 + 1.0 W 90 (Maintenance)	Yes	Y	1	1.2	47	1.5	6	0.058		
84	1.2 D + 1.5 LM3 + 1.0 W 120 (Maintenance)	Yes	Y	1	1.2	47	1.5	7	0.058		
85	1.2 D + 1.5 LM3 + 1.0 W 150 (Maintenance)	Yes	Y	1	1.2	47	1.5	8	0.058		
86	1.2 D + 1.5 LM3 + 1.0 W 180 (Maintenance)	Yes	Y	1	1.2	47	1.5	3	-0.058		
87	1.2 D + 1.5 LM3 + 1.0 W 210 (Maintenance)	Yes	Y	1	1.2	47	1.5	4	-0.058		
88	1.2 D + 1.5 LM3 + 1.0 W 240 (Maintenance)	Yes	Y	1	1.2	47	1.5	5	-0.058		
89	1.2 D + 1.5 LM3 + 1.0 W 270 (Maintenance)	Yes	Y	1	1.2	47	1.5	6	-0.058		
90	1.2 D + 1.5 LM3 + 1.0 W 300 (Maintenance)	Yes	Y	1	1.2	47	1.5	7	-0.058		
91	1.2 D + 1.5 LM3 + 1.0 W 330 (Maintenance)	Yes	Y	1	1.2	47	1.5	8	-0.058		
92	1.2 D + 1.5 LM4 + 1.0 W 0 (Maintenance)	Yes	Y	1	1.2	48	1.5	3	0.058		
93	1.2 D + 1.5 LM4 + 1.0 W 30 (Maintenance)	Yes	Y	1	1.2	48	1.5	4	0.058		
94	1.2 D + 1.5 LM4 + 1.0 W 60 (Maintenance)	Yes	Y	1	1.2	48	1.5	5	0.058		
95	1.2 D + 1.5 LM4 + 1.0 W 90 (Maintenance)	Yes	Y	1	1.2	48	1.5	6	0.058		
96	1.2 D + 1.5 LM4 + 1.0 W 120 (Maintenance)	Yes	Y	1	1.2	48	1.5	7	0.058		
97	1.2 D + 1.5 LM4 + 1.0 W 150 (Maintenance)	Yes	Y	1	1.2	48	1.5	8	0.058		
98	1.2 D + 1.5 LM4 + 1.0 W 180 (Maintenance)	Yes	Y	1	1.2	48	1.5	3	-0.058		
99	1.2 D + 1.5 LM4 + 1.0 W 210 (Maintenance)	Yes	Y	1	1.2	48	1.5	4	-0.058		
100	1.2 D + 1.5 LM4 + 1.0 W 240 (Maintenance)	Yes	Y	1	1.2	48	1.5	5	-0.058		
101	1.2 D + 1.5 LM4 + 1.0 W 270 (Maintenance)	Yes	Y	1	1.2	48	1.5	6	-0.058		
102	1.2 D + 1.5 LM4 + 1.0 W 300 (Maintenance)	Yes	Y	1	1.2	48	1.5	7	-0.058		
103	1.2 D + 1.5 LM4 + 1.0 W 330 (Maintenance)	Yes	Y	1	1.2	48	1.5	8	-0.058		
104	1.2 D + 1.5 LM5 + 1.0 W 0 (Maintenance)	Yes	Y	1	1.2	49	1.5	3	0.058		
105	1.2 D + 1.5 LM5 + 1.0 W 30 (Maintenance)	Yes	Y	1	1.2	49	1.5	4	0.058		
106	1.2 D + 1.5 LM5 + 1.0 W 60 (Maintenance)	Yes	Y	1	1.2	49	1.5	5	0.058		
107	1.2 D + 1.5 LM5 + 1.0 W 90 (Maintenance)	Yes	Y	1	1.2	49	1.5	6	0.058		
108	1.2 D + 1.5 LM5 + 1.0 W 120 (Maintenance)	Yes	Y	1	1.2	49	1.5	7	0.058		
109	1.2 D + 1.5 LM5 + 1.0 W 150 (Maintenance)	Yes	Y	1	1.2	49	1.5	8	0.058		
110	1.2 D + 1.5 LM5 + 1.0 W 180 (Maintenance)	Yes	Y	1	1.2	49	1.5	3	-0.058		
111	1.2 D + 1.5 LM5 + 1.0 W 210 (Maintenance)	Yes	Y	1	1.2	49	1.5	4	-0.058		
112	1.2 D + 1.5 LM5 + 1.0 W 240 (Maintenance)	Yes	Y	1	1.2	49	1.5	5	-0.058		
113	1.2 D + 1.5 LM5 + 1.0 W 270 (Maintenance)	Yes	Y	1	1.2	49	1.5	6	-0.058		
114	1.2 D + 1.5 LM5 + 1.0 W 300 (Maintenance)	Yes	Y	1	1.2	49	1.5	7	-0.058		
115	1.2 D + 1.5 LM5 + 1.0 W 330 (Maintenance)	Yes	Y	1	1.2	49	1.5	8	-0.058		
116	1.2 D + 1.5 LM6 + 1.0 W 0 (Maintenance)	Yes	Y	1	1.2	50	1.5	3	0.058		
117	1.2 D + 1.5 LM6 + 1.0 W 30 (Maintenance)	Yes	Y	1	1.2	50	1.5	4	0.058		
118	1.2 D + 1.5 LM6 + 1.0 W 60 (Maintenance)	Yes	Y	1	1.2	50	1.5	5	0.058		
119	1.2 D + 1.5 LM6 + 1.0 W 90 (Maintenance)	Yes	Y	1	1.2	50	1.5	6	0.058		
120	1.2 D + 1.5 LM6 + 1.0 W 120 (Maintenance)	Yes	Y	1	1.2	50	1.5	7	0.058		
121	1.2 D + 1.5 LM6 + 1.0 W 150 (Maintenance)	Yes	Y	1	1.2	50	1.5	8	0.058		
122	1.2 D + 1.5 LM6 + 1.0 W 180 (Maintenance)	Yes	Y	1	1.2	50	1.5	3	-0.058		
123	1.2 D + 1.5 LM6 + 1.0 W 210 (Maintenance)	Yes	Y	1	1.2	50	1.5	4	-0.058		
124	1.2 D + 1.5 LM6 + 1.0 W 240 (Maintenance)	Yes	Y	1	1.2	50	1.5	5	-0.058		
125	1.2 D + 1.5 LM6 + 1.0 W 270 (Maintenance)	Yes	Y	1	1.2	50	1.5	6	-0.058		
126	1.2 D + 1.5 LM6 + 1.0 W 300 (Maintenance)	Yes	Y	1	1.2	50	1.5	7	-0.058		
127	1.2 D + 1.5 LM6 + 1.0 W 330 (Maintenance)	Yes	Y	1	1.2	50	1.5	8	-0.058		
128	1.2 D + 1.0 Ev + 1.0 Eh 0	Yes	Y	1	1.2	1	0.044	51	0.109	52	
129	1.2 D + 1.0 Ev + 1.0 Eh 30	Yes	Y	1	1.2	1	0.044	51	0.095	52	0.055

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
130	1.2 D + 1.0 Ev + 1.0 Eh 60	Yes	Y	1	1.2	1	0.044	51	0.055	52	0.095
131	1.2 D + 1.0 Ev + 1.0 Eh 90	Yes	Y	1	1.2	1	0.044	51		52	0.109
132	1.2 D + 1.0 Ev + 1.0 Eh 120	Yes	Y	1	1.2	1	0.044	51	-0.055	52	0.095
133	1.2 D + 1.0 Ev + 1.0 Eh 150	Yes	Y	1	1.2	1	0.044	51	-0.095	52	0.055
134	1.2 D + 1.0 Ev + 1.0 Eh 180	Yes	Y	1	1.2	1	0.044	51	-0.109	52	
135	1.2 D + 1.0 Ev + 1.0 Eh 210	Yes	Y	1	1.2	1	0.044	51	-0.095	52	-0.055
136	1.2 D + 1.0 Ev + 1.0 Eh 240	Yes	Y	1	1.2	1	0.044	51	-0.055	52	-0.095
137	1.2 D + 1.0 Ev + 1.0 Eh 270	Yes	Y	1	1.2	1	0.044	51		52	-0.109
138	1.2 D + 1.0 Ev + 1.0 Eh 300	Yes	Y	1	1.2	1	0.044	51	0.055	52	-0.095
139	1.2 D + 1.0 Ev + 1.0 Eh 330	Yes	Y	1	1.2	1	0.044	51	0.095	52	-0.055
140	0.9 D - 1.0 Ev + 1.0 Eh 0	Yes	Y	1	0.9	1	-0.044	51	0.109	52	
141	0.9 D - 1.0 Ev + 1.0 Eh 30	Yes	Y	1	0.9	1	-0.044	51	0.095	52	0.055
142	0.9 D - 1.0 Ev + 1.0 Eh 60	Yes	Y	1	0.9	1	-0.044	51	0.055	52	0.095
143	0.9 D - 1.0 Ev + 1.0 Eh 90	Yes	Y	1	0.9	1	-0.044	51		52	0.109
144	0.9 D - 1.0 Ev + 1.0 Eh 120	Yes	Y	1	0.9	1	-0.044	51	-0.055	52	0.095
145	0.9 D - 1.0 Ev + 1.0 Eh 150	Yes	Y	1	0.9	1	-0.044	51	-0.095	52	0.055
146	0.9 D - 1.0 Ev + 1.0 Eh 180	Yes	Y	1	0.9	1	-0.044	51	-0.109	52	
147	0.9 D - 1.0 Ev + 1.0 Eh 210	Yes	Y	1	0.9	1	-0.044	51	-0.095	52	-0.055
148	0.9 D - 1.0 Ev + 1.0 Eh 240	Yes	Y	1	0.9	1	-0.044	51	-0.055	52	-0.095
149	0.9 D - 1.0 Ev + 1.0 Eh 270	Yes	Y	1	0.9	1	-0.044	51		52	-0.109
150	0.9 D - 1.0 Ev + 1.0 Eh 300	Yes	Y	1	0.9	1	-0.044	51	0.055	52	-0.095
151	0.9 D - 1.0 Ev + 1.0 Eh 330	Yes	Y	1	0.9	1	-0.044	51	0.095	52	-0.055

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

Member	Shape	Code	CheckLoc[in]	LC	Shear	CheckLoc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
0	M3	PIPE 2.0	0.44	72	8	0.044	24	8	14916.096	32130	1871.625	1871.625	1	H1-1b
1	M5	PIPE 3.0	0.212	30	2	0.153	30	8	57037.472	65205	5748.75	5748.75	1	H1-1b
2	M6	PIPE 3.0	0.206	30	8	0.151	30	2	57037.472	65205	5748.75	5748.75	1	H1-1b
3	M1	HSS4X4X3	0.126	0	7	0.061	0	y	15	106665.831	106812	12661.5	1.136	H1-1b
4	M2	HSS4X4X3	0.123	0	13	0.061	0	y	21	106665.831	106812	12661.5	1.137	H1-1b
5	M4	PIPE 2.0	0.041	24	8	0.015	72	2	14916.096	32130	1871.625	1871.625	1	H1-1b

Envelope Node Reactions

Node Label			X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
0	N15	max	724.386	2	665.621	15	282.644	4	-38.092	9	856.6	13	754.787	7
1		min	-765.452	8	-32.221	9	-361.782	10	-406.312	15	-811.268	7	-248.794	13
2	N24	max	744	2	665.366	21	347.063	6	-38.407	3	775.267	13	749.688	13
3		min	-702.934	8	-32.741	3	-267.923	12	-405.664	21	-822.128	7	-244.138	7
4	Totals:	max	1468.386	2	1211.676	20	629.4	6						
5		min	-1468.386	8	451.408	140	-629.4	12						



P. Marshall Associates, LLC
1000 Holcomb Woods Pkwy, Suite 210
Roswell, GA 30076
(678) 280-2325

Mount to Tower Connection Check

Location: **Mount to Tower Connection at 60 ft**
Code: **ANSI/TIA-222-H**

Bolt Information

Bolt Type	Threaded Rods	
Diameter, D_b	0.63	in
Grade	SAE J429 Gr 5	
F_y	92	ksi
F_u	120	ksi
Number of Bolts, n	4	

Assumed

Maximum Connection Reactions

F_y (Shear)	0.67	kips
F_z (Shear)	0.36	kips
F_x (Tension)	0.77	kips
F_x (Compression)	0.74	kips
M_y (Torsion)	0.86	kips-ft

Maximum Bolt Forces per Leg

Tension	0.19	kips/bolt
Shear	0.19	kips/bolt

Combined Tension & Shear

ϕR_{nt}	20.34	kips/bolt
ϕR_{nv}	13.82	kips/bolt
Capacity	0.0%	

Bearing Strength

ϕR_n	46.20	kips
L_c	0.53	in
Capacity	1.4%	

Sliding and Torsion

ϕR_{ns}	7.14	kips
ϕR_{nr}	8.92	kip-ft
Capacity	1.8%	

Overall Capacity Usage: **1.8%** PASS

EXHIBIT G

Power Density/RF Emissions Report



CENTERLINE

Radio Frequency Exposure Analysis Report

September 16, 2024

T-Mobile

Site Name: Clinton/ I-95/ X63/ At_1

Site ID: CT11031B

Site Address: Comcast Tower/21 East Main Street, Clinton, CT 06413



Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Connecticut License Number 33928
Expires January 31, 2025

Signed 16 September 2024

Site Compliance Summary

T-Mobile Compliance Status:		Compliant
Cumulative Calculated Power Density (Ground Level):		0.45427 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):		0.04547%
Cumulative Calculated Power Density (Adj. 30 Building):		685.86932 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Adj. 30' Building):		68.59953%



September 16, 2024

T-Mobile

Attn: Adam Sullivan, Regulatory Compliance and Real Estate Consultant

RF Exposure Analysis for Site: **Clinton/ I-95/ X63/ At_1**

Centerline was contracted to analyze the proposed T-Mobile facility at **Comcast Tower/21 East Main Street, Clinton, CT 06413** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{\text{MHz}}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of $1 \text{ mW}/\text{cm}^2$ ($1000 \mu\text{W}/\text{cm}^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the 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.

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, 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.



Calculation Methodology

Centerline has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.



Data & Results

The following table details the antennas and operating parameters for the T-Mobile antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at ground level & the adjacent building.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average) and at the adjacent building (30-36'). The results from highest cumulative sample point at ground level & the adjacent building surrounding the site are displayed in the tables below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table(s) below. The cumulative power density and cumulative % MPE are displayed at the bottom of the table(s) below.



Maximum Calculated Cumulative Power Density (Ground: approximately 160' North of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBi)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
T-Mobile A 1	ERICSSON SON_AIR6419	2500	15.55	60.00	2.00	30.00	2153.53	0.25476	1000.00	0.02548
T-Mobile A 1	ERICSSON SON_AIR6419	2500	22.05	60.00	2.00	90.00	28858.42	0.17649	1000.00	0.01765
T-Mobile A 1	RFS APXVAALL24 43-U-NA20	700	13.65	60.00	4.00	40.00	3707.83	0.00012	466.67	0.00003
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	600	12.95	60.00	4.00	40.00	3155.88	0.00021	400.00	0.00005
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	2.00	10.00	701.50	0.00002	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	35.00	4910.53	0.00013	1000.00	0.00001
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	40.00	5612.03	0.00015	1000.00	0.00002
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	2100	16.45	60.00	4.00	60.00	10597.69	0.00022	1000.00	0.00002
T-Mobile B 3	ERICSSON SON_AIR6419	2500	15.55	60.00	2.00	30.00	2153.53	0.00100	1000.00	0.00010
T-Mobile B 3	ERICSSON SON_AIR6419	2500	22.05	60.00	2.00	90.00	28858.42	0.00028	1000.00	0.00003
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	700	13.65	60.00	4.00	40.00	3707.83	0.00000	466.67	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	600	12.95	60.00	4.00	40.00	3155.88	0.00000	400.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	2.00	10.00	701.50	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	35.00	4910.53	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	40.00	5612.03	0.00000	1000.00	0.00000
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	2100	16.45	60.00	4.00	60.00	10597.69	0.00000	1000.00	0.00000
T-Mobile C 5	ERICSSON SON_AIR6419	2500	15.55	60.00	2.00	30.00	2153.53	0.00993	1000.00	0.00099
T-Mobile C 5	ERICSSON SON_AIR6419	2500	22.05	60.00	2.00	90.00	28858.42	0.01088	1000.00	0.00109
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	700	13.65	60.00	4.00	40.00	3707.83	0.00000	466.67	0.00000
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	600	12.95	60.00	4.00	40.00	3155.88	0.00000	400.00	0.00000
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	2.00	10.00	701.50	0.00000	1000.00	0.00000
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	35.00	4910.53	0.00000	1000.00	0.00000
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	40.00	5612.03	0.00000	1000.00	0.00000
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	2100	16.45	60.00	4.00	60.00	10597.69	0.00001	1000.00	0.00000
Verizon A 7	COMMSCOPE SBNHH-1D65B	1900	15.89	47.50	4.00	30.00	4657.80	0.00003	1000.00	0.00000
Verizon A 8	COMMSCOPE SBNHH-1D65B	2100	16.44	47.50	4.00	45.00	7929.99	0.00004	1000.00	0.00000
Verizon B 9	COMMSCOPE SBNHH-1D65B	1900	15.89	47.50	4.00	30.00	4657.80	0.00000	1000.00	0.00000
Verizon B 10	COMMSCOPE SBNHH-1D65B	2100	16.44	47.50	4.00	45.00	7929.99	0.00000	1000.00	0.00000
Verizon C 11	COMMSCOPE SBNHH-1D65B	1900	15.89	47.50	4.00	30.00	4657.80	0.00000	1000.00	0.00000
Verizon C 12	COMMSCOPE SBNHH-1D65B	2100	16.44	47.50	4.00	45.00	7929.99	0.00000	1000.00	0.00000



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
							Cumulative Power Density:	0.45427 $\mu\text{W}/\text{cm}^2$	Cumulative % MPE:	0.04547%



Maximum Calculated Cumulative Power Density (Adjacent 30' Building)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBi)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
T-Mobile A 1	ERICSSON SON_AIR6419	2500	15.55	60.00	2.00	30.00	2153.53	0.00017	1000.00	0.00002
T-Mobile A 1	ERICSSON SON_AIR6419	2500	22.05	60.00	2.00	90.00	28858.42	0.58594	1000.00	0.05859
T-Mobile A 1	RFS APXVAALL24 43-U-NA20	700	13.65	60.00	4.00	40.00	3707.83	0.00037	466.67	0.00008
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	600	12.95	60.00	4.00	40.00	3155.88	0.00016	400.00	0.00004
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	2.00	10.00	701.50	0.00000	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	35.00	4910.53	0.00002	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	40.00	5612.03	0.00002	1000.00	0.00000
T-Mobile A 2	RFS APXVAALL24 43-U-NA20	2100	16.45	60.00	4.00	60.00	10597.69	0.00010	1000.00	0.00001
T-Mobile B 3	ERICSSON SON_AIR6419	2500	15.55	60.00	2.00	30.00	2153.53	0.03007	1000.00	0.00301
T-Mobile B 3	ERICSSON SON_AIR6419	2500	22.05	60.00	2.00	90.00	28858.42	336.39936	1000.00	33.63994
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	700	13.65	60.00	4.00	40.00	3707.83	0.02022	466.67	0.00433
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	600	12.95	60.00	4.00	40.00	3155.88	0.01791	400.00	0.00448
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	2.00	10.00	701.50	0.00186	1000.00	0.00019
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	35.00	4910.53	0.01300	1000.00	0.00130
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	40.00	5612.03	0.01485	1000.00	0.00149
T-Mobile B 4	RFS APXVAALL24 43-U-NA20	2100	16.45	60.00	4.00	60.00	10597.69	0.03150	1000.00	0.00315
T-Mobile C 5	ERICSSON SON_AIR6419	2500	15.55	60.00	2.00	30.00	2153.53	0.03259	1000.00	0.00326
T-Mobile C 5	ERICSSON SON_AIR6419	2500	22.05	60.00	2.00	90.00	28858.42	348.22116	1000.00	34.82212
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	700	13.65	60.00	4.00	40.00	3707.83	0.02074	466.67	0.00444
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	600	12.95	60.00	4.00	40.00	3155.88	0.03444	400.00	0.00861
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	2.00	10.00	701.50	0.00312	1000.00	0.00031
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	35.00	4910.53	0.02182	1000.00	0.00218
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	1900	15.45	60.00	4.00	40.00	5612.03	0.02494	1000.00	0.00249
T-Mobile C 6	RFS APXVAALL24 43-U-NA20	2100	16.45	60.00	4.00	60.00	10597.69	0.03477	1000.00	0.00348
Verizon A 7	COMMSCOPE SBNHH-1D65B	1900	15.89	47.50	4.00	30.00	4657.80	0.00030	1000.00	0.00003
Verizon A 8	COMMSCOPE SBNHH-1D65B	2100	16.44	47.50	4.00	45.00	7929.99	0.00017	1000.00	0.00002
Verizon B 9	COMMSCOPE SBNHH-1D65B	1900	15.89	47.50	4.00	30.00	4657.80	0.02453	1000.00	0.00245
Verizon B 10	COMMSCOPE SBNHH-1D65B	2100	16.44	47.50	4.00	45.00	7929.99	0.03280	1000.00	0.00328
Verizon C 11	COMMSCOPE SBNHH-1D65B	1900	15.89	47.50	4.00	30.00	4657.80	0.09542	1000.00	0.00954
Verizon C 12	COMMSCOPE SBNHH-1D65B	2100	16.44	47.50	4.00	45.00	7929.99	0.20697	1000.00	0.02070



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
							Cumulative Power Density:	685.86932 $\mu\text{W}/\text{cm}^2$	Cumulative % MPE:	68.59953%



Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at the ground level & the adjacent building that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **compliant** with FCC rules and regulations.

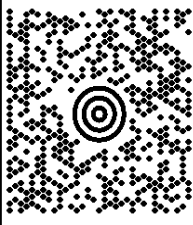
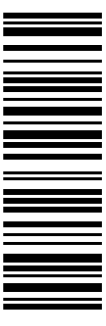
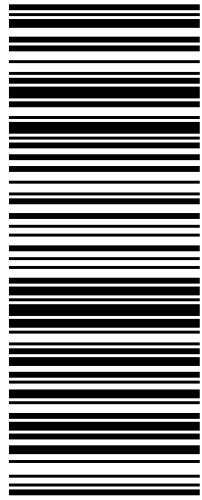
Michelle Stone
RF EME Technical Writer II
Centerline



CENTERLINE

EXHIBIT H

Mailing Receipts/Proof of Notice

C/O CULLEN MORGAN 9415497263 CENTERLINE COMMUNICATIONS LLC 12579 SAGEWOOD DRIVE VENICE FL 34293		1 LBS	1 OF 1
SHIP TO: RREH II LLC 4181 BONITA WAY POMPANO BEACH FL 33064-2126			
	FL 332 6-02 		
UPS GROUND			
TRACKING #: 1Z 9Y4 503 03 3902 9590			
			
BILLING: P/P			
Reference # 1: CT11031B - PROP OWNER CC			
CS 24.9.00. MACNV50 8.0A 02/2025*  ™			



Your shipment
1Z9Y45030339029590

Delivered On
Tuesday, March 04 at 7:31 P.M. at Front Door

Delivered To
POMPANO BEACH, FL US

Photo of Delivery

Label Created
United States
02/18/2025, 11:12 A.M.

We Have Your Package
Sarasota, FL, United States
03/03/2025, 5:30 P.M.

On the Way
Deerfield Beach, FL, United States
03/04/2025, 9:00 A.M.

Out for Delivery
Deerfield Beach, FL, United States
03/04/2025, 9:49 A.M.

Delivered
POMPANO BEACH, FL, US
03/04/2025, 7:31 P.M.

View All Shipping Details

Get Answers Fast

If you need help, use the [Virtual Assistant](#). Still stuck? Try our [Tracking Support](#) for more specific guidance.

Notify Me

File a Claim

Track Another Package

Track

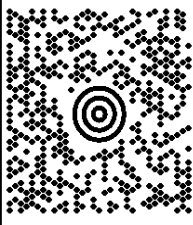
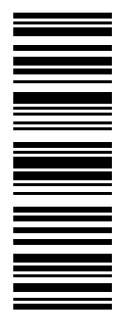
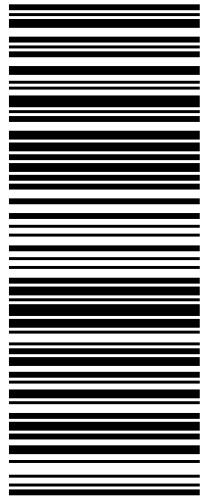
Stay Safe - Avoid Fraud and Scams

Received a text, call, or email that seems suspicious? Don't respond to it.

Tips to Avoid Fraud



Ask UPS

C/O CULLEN MORGAN 941-549-7263 CENTERLINE COMMUNICATIONS LLC 12579 SAGEWOOD DRIVE VENICE FL 34293		1 LBS	1 OF 1
SHIP TO: CTI TOWERS LLC SUITEAE 110 3300 PARAMOUNT PARKWAY MORRISVILLE NC 27560-7892			
	NC 275 1-01 		
UPS GROUND			
TRACKING #: 1Z 9Y4 503 03 3223 5987			
			
BILLING: P/P			
Reference # 1: CT11031B - Tower Owner CC			
CS 24.9.00. MACNV50 8.0A 02/2025*  ™			



Your shipment
1Z9Y4503032235987

Delivered On
Wednesday, March 05 at 11:26 A.M. at Front Desk

Delivered To
MORRISVILLE, NC US

Received By:
VERTT

Proof of Delivery

Label Created
United States
02/18/2025, 11:10 A.M.

We Have Your Package
Sarasota, FL, United States
03/03/2025, 5:30 P.M.

On the Way
Durham, NC, United States
03/05/2025, 6:59 A.M.

Out for Delivery
Durham, NC, United States
03/05/2025, 8:40 A.M.

Delivered
MORRISVILLE, NC, US
03/05/2025, 11:26 A.M.

View All Shipping Details

Get Answers Fast

If you need help, use the [Virtual Assistant](#). Still stuck? Try our [Tracking Support](#) for more specific guidance.

Notify Me

File a Claim

Track Another Package

Track

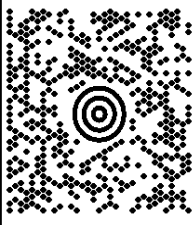
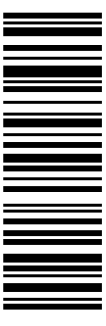
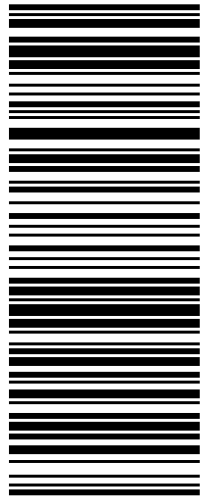
Stay Safe - Avoid Fraud and Scams

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Tips to Avoid Fraud



Ask UPS

C/O CULLEN MORGAN 9415497263 CENTERLINE COMMUNICATIONS LLC 12579 SAGEWOOD DRIVE VENICE FL 34293		1 LBS	1 OF 1
SHIP TO: ATTN: TOWN MANAGER & BUILDING OFFCL TOWN OF CLINTON 54 E MAIN STREET CLINTON CT 06413-2035			
		CT 063 5-35 	
UPS GROUND			
TRACKING #: 1Z 9Y4 503 03 3751 6209			
			
BILLING: P/P			
Reference # 1: CT11031B - TOWN CC		 ™	
CS 24.9.00. MACNV50 8.0A 02/2025*			



Your shipment
1Z9Y45030337516209

Delivered On
Thursday, March 06 at 11:58 A.M. at Front Desk

Delivered To
LINTON, CT US

Received By:
AROL

Proof of Delivery

Label Created
United States
02/18/2025, 11:14 A.M.

We Have Your Package
Sarasota, FL, United States
03/03/2025, 5:30 P.M.

On the Way
Waterford, CT, United States
03/06/2025, 8:55 A.M.

Out for Delivery
Waterford, CT, United States
03/06/2025, 9:27 A.M.

Delivered
CLINTON, CT, US
03/06/2025, 11:58 A.M.

View All Shipping Details

Get Answers Fast

If you need help, use the [Virtual Assistant](#). Still stuck? Try our [Tracking Support](#) for more specific guidance.

Notify Me

File a Claim

Track Another Package

Track

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Received a text, call, or email that seems suspicious? Don't respond to it.

Tips to Avoid Fraud



Ask UPS