Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

February 9, 2021

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

RE: Notice of Exempt Modification
652 Glenbrook Road, Stamford, CT 06906 (also known as 650 Glenbrook Road)
Latitude: 41.07548400
Longitude: -73.51914100
T-Mobile Site#: CT11334A – Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 85-foot level of the existing 108-foot water tower at 652 Glenbrook Road, Stamford, CT (also known as 650 Glenbrook Road). The 108-foot water tower and property are owned by Glenbrook Industrial Park LLC. T-Mobile now intends to remove three (3) existing antennas and add three (3) new 2500 MHz antennas. The new antennas support 5G services and will be installed at the same 85-foot level of the water tower.

Planned Modifications:
Tower:

Remove
(6) 1-5/8" coax

Remove and Replace:
(3) AIR 21 1900/2100 MHz for (3) AIR 6449 B41 2500 MHz

Install New:
(3) Ericsson Radio 4415 B25
(3) SDX1926Q-43 Diplexers
(3) 1-5/8" Hybrid

Existing to Remain:
(3) AIR 32 1900/2100 MHz
(3) APXVARR24_43-U-NA20 600/700/1900/2100 MHz
(3) Radio 4449 B71+B12 RRU
(3) TMA

Ground:
Install New: 6160 Cabinet and B160 Battery Cabinet

T-Mobile was approved (as VoiceStream) for tower-sharing at this facility on December 14, 2000. T-Mobile has been approved by the Council for subsequent modifications at their facility, and the City of Stamford has issued building permits to approve proposed work at the facility. The proposed modification complies with all known previous conditions of approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor -David Martin, Elected Official, and Ralph Blessing, Land Use Bureau Chief for the City of Stamford.

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

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

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

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

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kyle Richers
Transcend Wireless
Cell: 908-447-4716
Email: krichers@transcendwireless.com

Attachments
cc: David Martin– Mayor of the City of Stamford
Ralph Blessing– Land Use Bureau Chief – City of Stamford
Glenbrook Industrial Park LLC - owner

View/Print Label

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

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

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

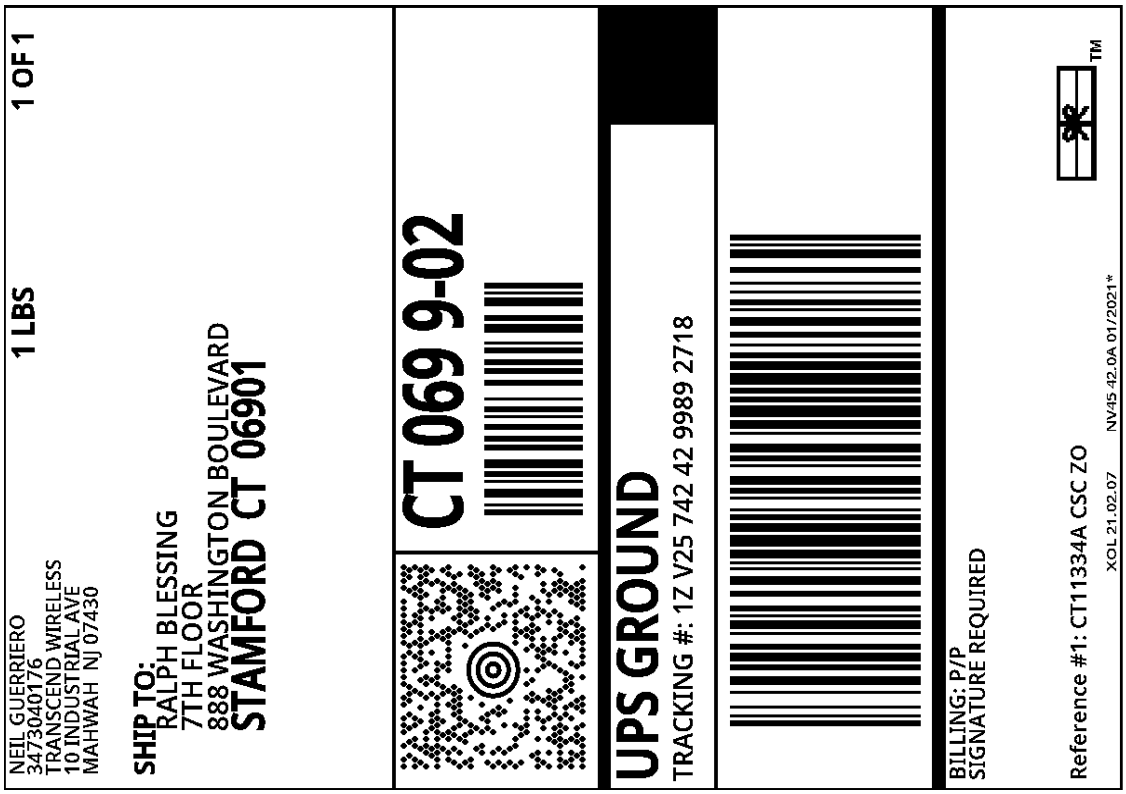
   Customers without a scheduled Pickup
   - Schedule a Pickup on ups.com to have a UPS driver pickup all of your packages.
   - Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. To find the location nearest you, please visit the 'Locations' Quick link at ups.com.

UPS Access Point™
MICHAELS STORE # 7773
75 INTERSTATE SHOP CTR
RAMSEY NJ 07446-1130

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH NJ 07430-1325

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY NJ 07446-1925

FOLD HERE



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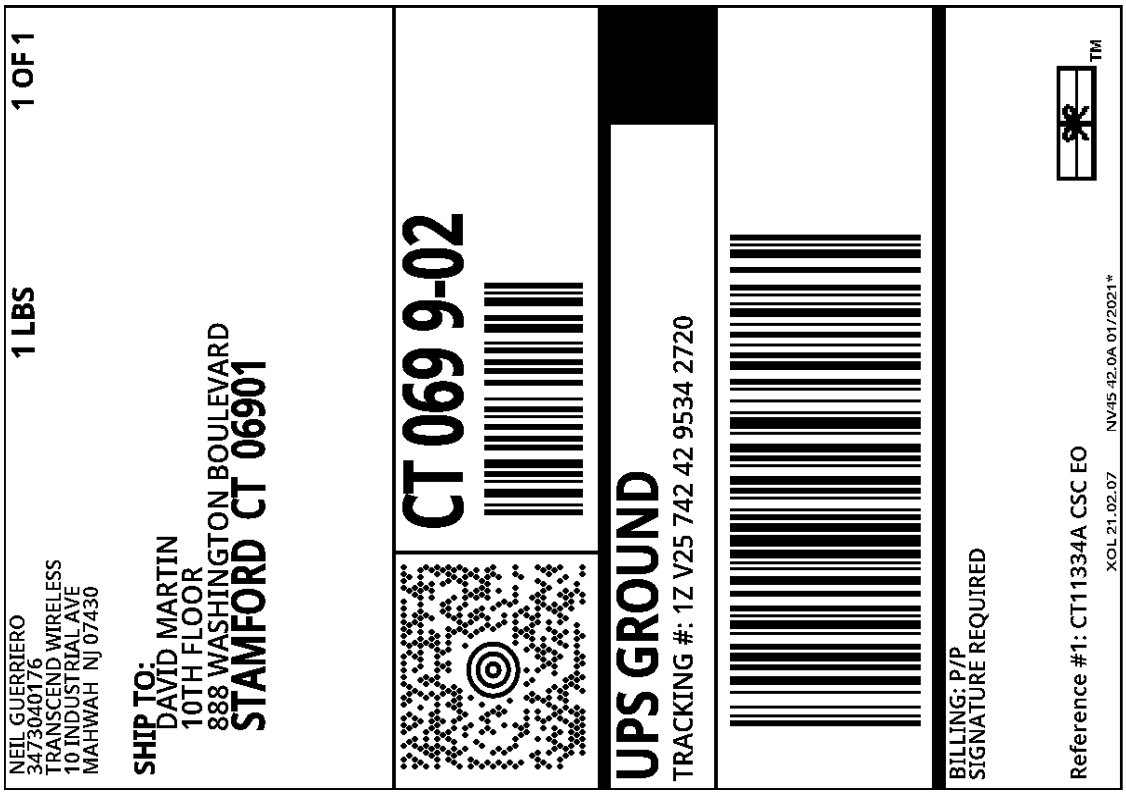

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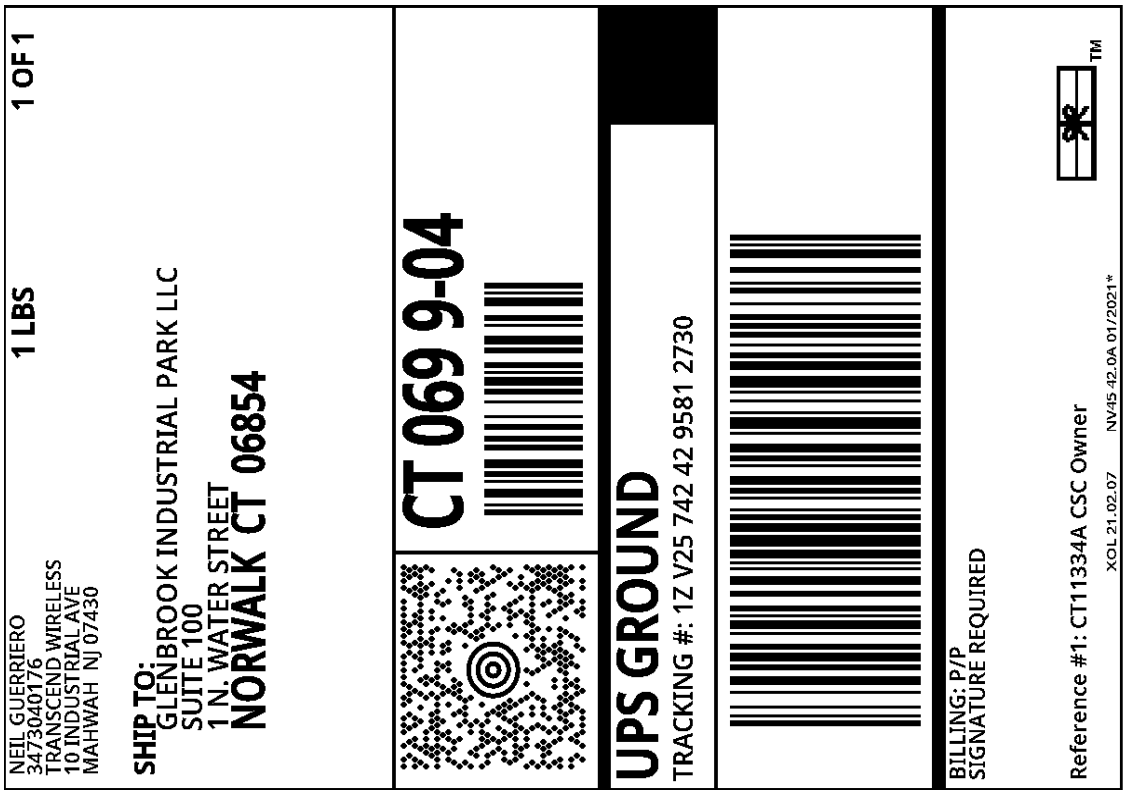


650 GLENBROOK ROAD

Location	650 GLENBROOK ROAD	**Mblu**	003/ 8507/ / /
Acct#	003-8507	**Owner**	GLENBROOK INDUSTRIAL PARK LLC
Assessment	$7,641,150	**Appraisal**	$10,915,890
PID	35719	**Building Count**	5

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$5,175,490	$5,740,400	$10,915,890

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$3,622,870	$4,018,280	$7,641,150

Owner of Record

Owner	GLENBROOK INDUSTRIAL PARK LLC	**Sale Price**	$0
Co-Owner	C/O SPINNAKER RE PARTNERS	**Book & Page**	7365/0192
Address	1 N WATER STREET SUITE 100 NORWALK, CT 06854	**Sale Date**	01/29/2004
		Instrument	25

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
GLENBROOK INDUSTRIAL PARK LLC	$0	7365/0192	25	01/29/2004
GLENBROOK INDUSTRIAL PARK ASC	$0	5077/0267		09/01/1998
GLENBROOK INDUSTRIAL PARK ASC	$0	5077/0267		08/31/1998
GLENBROOK INDUSTRIAL PARK ASC	$0	1691/0178	25	11/04/1997

Building Information

Building 1 : Section 1

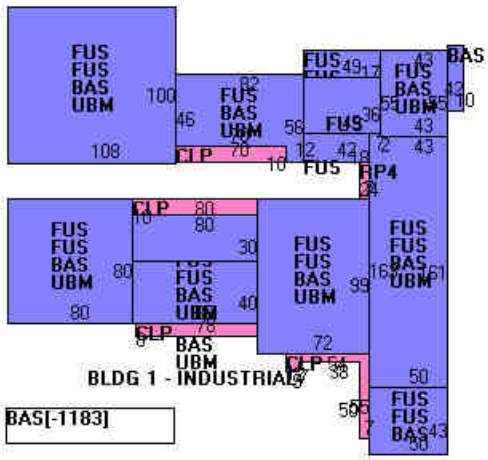
Year Built:	1943
Living Area:	134,160

Building Attributes	
Field	**Description**
Style:	Industry Light
Model	Ind/Comm
Grade	C-
Stories:	2
Occupancy	29.00
Exterior Wall 1	Brick
Exterior Wall 2	Stucco Mas
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Drywall/Plaste
Interior Wall 2	
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Forced Air-Duc
AC Type	None
Struct Class	
Bldg Use	Industrial MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil/Mn WL
Rooms/Prtns	Average
Wall Height	14.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/StamfordCTPhotos//\00\11\45\00.jpg)

Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
FUS	Upper Story, Finished	85,927	85,927
BAS	First Floor	48,233	48,233
CLP	Loading Platform	2,807	0
RP4	Porch Enclosed	168	0
UBM	Basement, Unfinished	44,249	0
		181,384	134,160

Building 2 : Section 1

Year Built: 1958
Living Area: 2,555

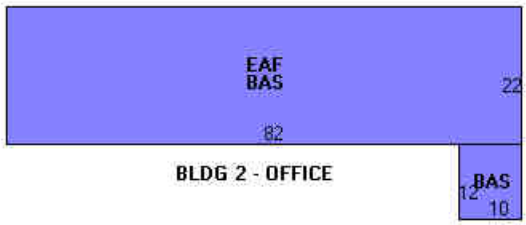
Building Attributes : Bldg 2 of 5	
Field	**Description**
Style:	Industry Light
Model	Comm/Ind

Grade	C
Stories:	3
Occupancy	1.00
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Drywall/Plaste
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Hot Wtr Bbd
AC Type	Unit/AC
Struct Class	
Bldg Use	Commercial MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	200
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil&Wall
Rooms/Prtns	Average
Wall Height	14.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/StamfordCTPhotos//\00\11\45\03.jpg)

Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,924	1,924
EAF	Attic, Expansion, Finished	1,804	631
		3,728	2,555

Building 3 : Section 1

Year Built: 1950
Living Area: 2,238

Building Attributes : Bldg 3 of 5	
Field	Description
Style:	Industry Light
Model	Ind/Comm
Grade	C
Stories:	3
Occupancy	1.00

Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	Industrial MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Ceiling Only
Rooms/Prtns	Average
Wall Height	20.00
% Comn Wall	

Building Photo

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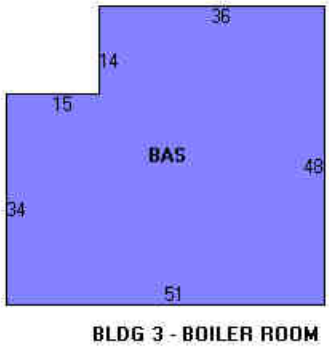
Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,238	2,238
		2,238	2,238

Building 4 : Section 1

Year Built: 1950
Living Area: 2,040

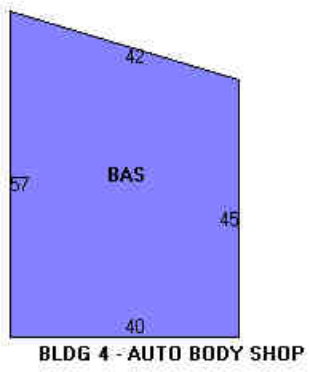
Building Attributes : Bldg 4 of 5	
Field	Description
Style:	Auto Repair
Model	Ind/Comm
Grade	C
Stories:	3
Occupancy	1.00
Exterior Wall 1	Concr/Cinder

Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	Industrial MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil/Mn WL
Rooms/Prtns	Average
Wall Height	14.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/StamfordCTPhotos//\00\11\45\09.jpg)

Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,040	2,040
		2,040	2,040

Building 5 : Section 1

Year Built: 1950
Living Area: 1,368

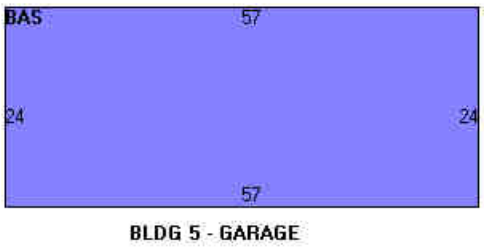
Building Attributes : Bldg 5 of 5	
Field	Description
Style:	Auto Repair
Model	Comm/Ind
Grade	C-
Stories:	3
Occupancy	1.00
Exterior Wall 1	Concr/Cinder

Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rolled Compos
Interior Wall 1	Minimum
Interior Wall 2	Drywall/Plaste
Interior Floor 1	Concrete Slab
Interior Floor 2	
Heating Fuel	Gas/LP
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	Industrial MDL-96
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	None
Ceiling/Wall	Ceiling Only
Rooms/Prtns	Average
Wall Height	8.00
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos/StamfordCTPhotos//\00\11\45\12.jpg)

Building Layout



BLDG 5 - GARAGE

(http://images.vgsi.com/photos/StamfordCTPhotos//Sketches/35719_1025

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,368	1,368
		1,368	1,368

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
OH1	Door Overhd Co	1.00 UNITS	$2,590	4
OH2	Door Overhd Re	3.00 UNITS	$7,770	5
SPR1	Sprinklers - Wet	1804.00 S.F.	$2,160	2
SPR1	Sprinklers - Wet	132518.00 S.F.	$86,930	1
H04	Air Con/Sfla	32000.00 S.F	$32,800	1
EL1	Elev Frght	3.00 STOPS	$67,650	1
EL1	Elev Frght	3.00 STOPS	$67,650	1

EL1	Elev Frght	3.00 STOPS	$67,650	1
EL1	Elev Frght	3.00 STOPS	$67,650	1
HL1	Hydro Lift Com	3.00 UNITS	$11,070	1

Land

Land Use

Use Code	300
Description	Industrial MDL-96
Zone	MZN
Neighborhood	0400
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	4.28
Depth	
Assessed Value	$4,018,280
Appraised Value	$5,740,400

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
AP1	Fence Chn Lk			1800.00 L.F.	$15,530	1
CEL1	Cell Tower			1.00 SITES	$146,250	3
AP1	Fence Chn Lk			3636.00 L.F.	$31,360	1
CSHD	Cell Equipment			330.00 S.F.	$8,980	3
FC4	Shed Finishd			128.00 S.F.	$2,740	1
LP4	Pavng Asphlt			80000.00 S.F	$96,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$5,175,490	$5,740,400	$10,915,890
2018	$5,175,490	$5,740,400	$10,915,890
2017	$5,175,490	$5,740,400	$10,915,890

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$3,622,870	$4,018,280	$7,641,150
2018	$3,622,870	$4,018,280	$7,641,150
2017	$3,622,870	$4,018,280	$7,641,150

T-Mobile

WIRELESS COMMUNICATIONS FACILITY

STAMFORD-3/HOPE ST
SITE ID: CT11334A
652 GLENBROOK ROAD
STAMFORD, CT 06906

T-MOBILE RF CONFIGURATION

67D5997DB_2xAIR+1OP

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTON, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

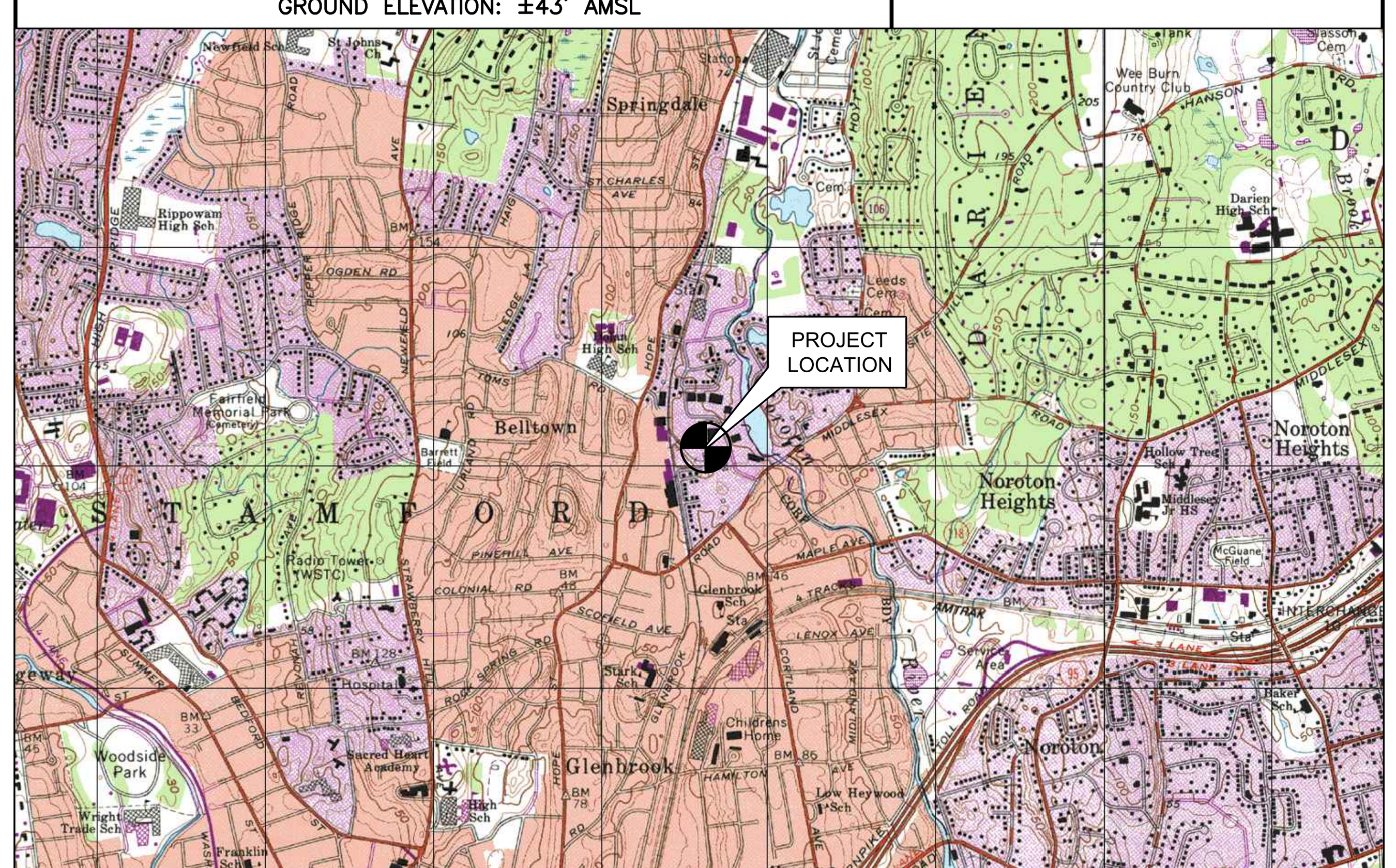
FROM: 35 GRIFFIN ROAD SOUTH, BLOOMFIELD, CT 06002

TO: 652 GLENBROOK ROAD, STAMFORD, CT 06906

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	0.30 MI.
2.	TAKE THE 2ND RIGHT ONTO DAY HILL RD.	0.14 MI.
3.	TAKE THE 1ST RIGHT ONTO BLUE HILLS AVENUE EXT/CT-187. CONTINUE TO FOLLOW CT-187.	0.64 MI.
4.	STAY STRAIGHT TO GO ONTO BLUE HILLS AVE/CT-187.	2.72 MI.
5.	TURN LEFT ONTO E WINTONBURY AVE/CT-178. CONTINUE TO FOLLOW CT-178.	1.77 MI.
6.	MERGE ONTO I-91 S TOWARD HARTFORD.	23.74 MI.
7.	MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.	51.6 MI.
8.	TAKE THE CT-106/OLD STAMFORD RD EXIT, EXIT 36.	0.11 MI.
9.	TURN RIGHT ONTO OLD STAMFORD RD/CT-106. CONTINUE TO FOLLOW CT-106.	3.03 MI.
10.	TURN SLIGHT RIGHT ONTO MIDDLESEX RD/CT-106. CONTINUE TO FOLLOW CT-106.	0.34 MI.
11.	652 GLENBROOK RD, STAMFORD, CT 06906-1408, 652 GLENBROOK RD IS ON THE RIGHT.	

SITE COORDINATES: LATITUDE: 41° 04' 31" N
LONGITUDE: 73° 31' 09" W
GROUND ELEVATION: ±43' AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH



VICINITY MAP

NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. INSTALL (1) ENCLOSURE 6160 AND (1) BATTERY CABINET B160.
2. INSTALL (1) IRXE ROUTER TO ENCLOSURE 6160.
3. REMOVE (6) EXISTING COAX LINES
4. INSTALL (3) 6X12 HCS
5. INSTALL (1) BB6630 FOR L2500, (1) BB6648 FOR N2500 TO ENCLOSURE 6160.
6. INSTALL (1) PSU 4813 TO ENCLOSURE 6160.
7. INSTALL (1) AIR6449 B41 ANTENNA PER SECTOR, TOTAL OF (3).
8. INSTALL (1) RADIO 4415 B25 PER SECTOR, TOTAL OF (3).
9. INSTALL (1) PCS/AWS DIPLEXER PER SECTOR, TOTAL OF (3).

PROJECT SUMMARY (STRUCTURAL)

FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR ADDITIONAL DETAILS. STEEL NEEDED FOR EQUIPMENT PLATFORM EXPANSION.

PROJECT INFORMATION

SITE NAME:	STAMFORD-3/HOPE ST
SITE ID:	CT11334A
SITE ADDRESS:	652 GLENBROOK ROAD STAMFORD, CT 06906
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
PROJECT COORDINATES:	LATITUDE: 41°-04'-31" N LONGITUDE: 73°-31'-09" W GROUND ELEVATION: 43'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	GENERAL NOTES AND SPEDIFIDATIONS	0
D-1	SITE LOCATION PLAN	0
D-2	DOMPOUND PLAN AND ELEVATION	0
D-3	EQUIPMENT PLANS	0
D-4	ANTENNA PLANS AND ELEVATIONS	0
D-5	TYPIDAL EQUIPMENT DETAILS	0
S-1	EXISTING/MODIFIED PLATFORM AND DETAILS	0
E-1	TYPIDAL ELEDTRIDAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	10/21/20	ASC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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WIRELESS COMMUNICATIONS FACILITY
STAMFORD-3/HOPE ST
SITE ID: CT11334A
652 GLENBROOK ROAD
STAMFORD, CT 06906

DATE: 09/04/20
SCALE: AS NOTED
JOB NO. 20074.67

TITLE SHEET

T-1

Sheet No. 1 of 9

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- ULTIMATE DESIGN SPEED (OTHER STRUCTURE): 120 MPH (Vasd) (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND IT'S COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS, ARE TO BE BROUGHT TO THE ATTENTION OF THE SITE OWNER'S CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
18. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
19. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
20. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

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WIRELESS COMMUNICATIONS FACILITY

STAMFORD-3/HOPE ST
SITE ID: CT11334A
652 GLENBROOK ROAD
STAMFORD, CT 06906

DATE: 09/04/20
SCALE: AS NOTED
JOB NO. 20074.67

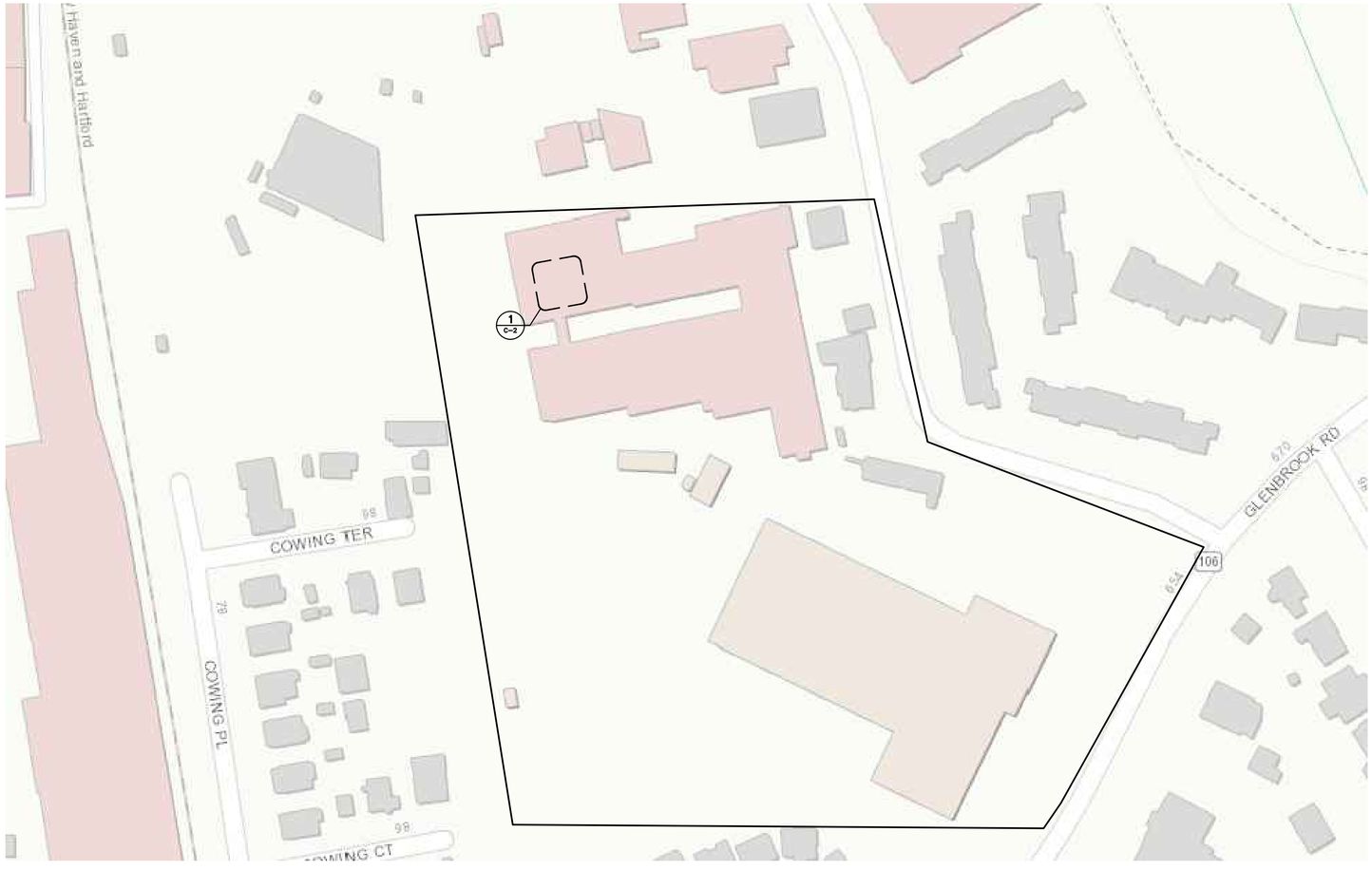
GENERAL NOTES AND SPECIFICATIONS

N-1

NOTE:
ALL COAX LENGTHS TO BE MEASURED
AND VERIFIED IN FIELD BEFORE ORDERING

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA/DIPLEXER (QTY)	(QTY) PROPOSED COAX (LENGTH)
A1	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.6 x 8.6	85'	60°			(1) 6x12 HYBRID CABLE (±110')
A2	EXISTING	ERICCSON (AIR32 KRD901146-1_B66A_B2A)	56.6 x 12.9 x 8.7	85'	60°			
A3	EXISTING	RFS - APXVAARR24_43-U-NA20	95.9 x 24 x 8.7	85'	60°	(E) RRU 4449 B12+B71 (1), (P) RRU 4415 B25 (1)	(E) GENERIC TWIN STYLE 1B (1), (P) COMMSCOPE SDX1926Q-43 (1)	
B1	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.6 x 8.6	85'	170°			(1) 6x12 HYBRID CABLE (±110')
B2	EXISTING	ERICCSON (AIR32 KRD901146-1_B66A_B2A)	56.6 x 12.9 x 8.7	85'	170°			
B3	EXISTING	RFS - APXVAARR24_43-U-NA20	95.9 x 24 x 8.7	85'	170°	(E) RRU 4449 B12+B71 (1), (P) RRU 4415 B25 (1)	(E) GENERIC TWIN STYLE 1B (1), (P) COMMSCOPE SDX1926Q-43 (1)	
C1	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.6 x 8.6	85'	300°			(1) 6x12 HYBRID CABLE (±110')
C2	EXISTING	ERICCSON (AIR32 KRD901146-1_B66A_B2A)	56.6 x 12.9 x 8.7	85'	300°			
C3	EXISTING	RFS - APXVAARR24_43-U-NA20	95.9 x 24 x 8.7	85'	300°	(E) RRU 4449 B12+B71 (1), (P) RRU 4415 B25 (1)	(E) GENERIC TWIN STYLE 1B (1), (P) COMMSCOPE SDX1926Q-43 (1)	



1 / C-1 SITE LOCATION PLAN
SCALE: NOT TO SCALE

TRUE NORTH

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SITE LOCATION PLAN

C-1

Sheet No. 3 of 9

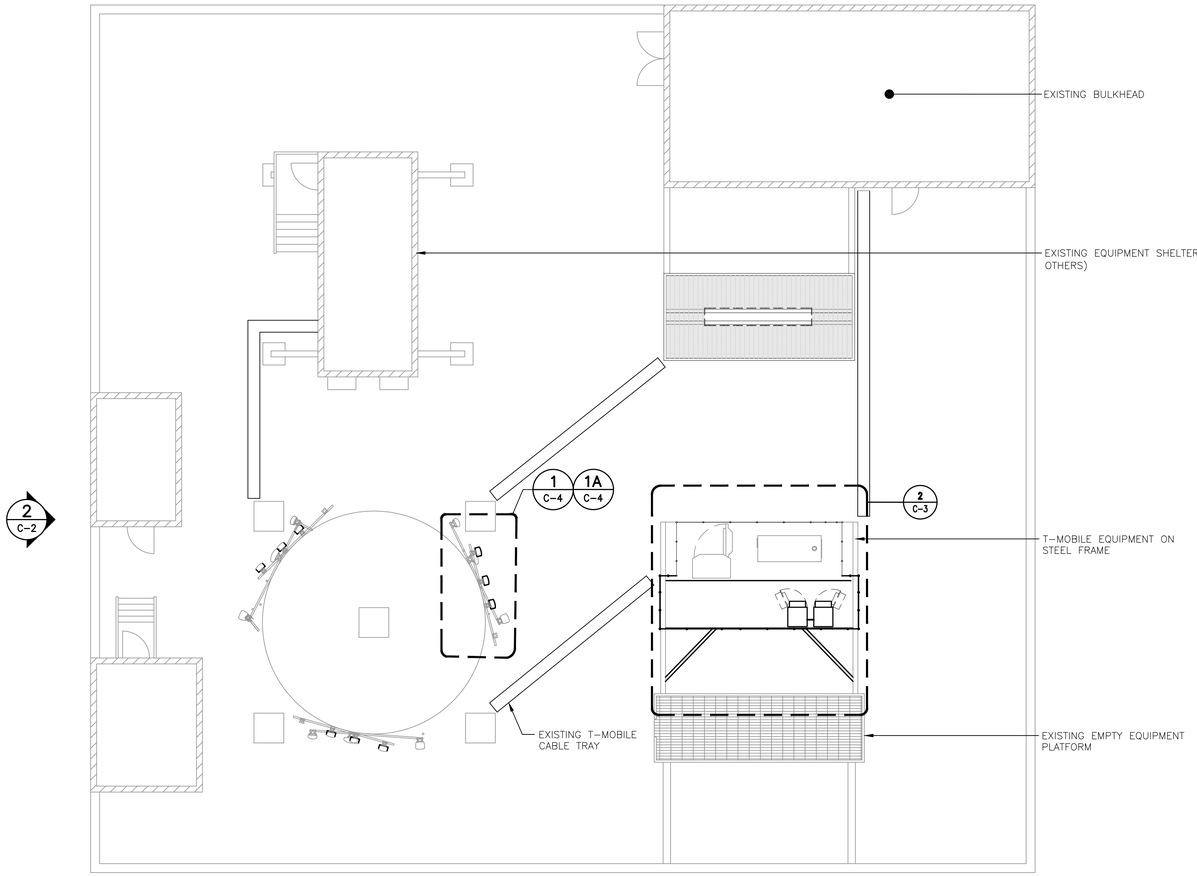
STRUCTURAL COMPLIANCE

ANTENNA MOUNTS & EQUIPMENT PLATFORM

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS AND EQUIPMENT PLATFORM WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY DEFICIENT AND WARRANTING MODIFICATION PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. FOR REQUIRED STRUCTURAL MODIFICATIONS, SEE SHEET(S) S-1 FOR DETAILS.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.67) DATED 10/09/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

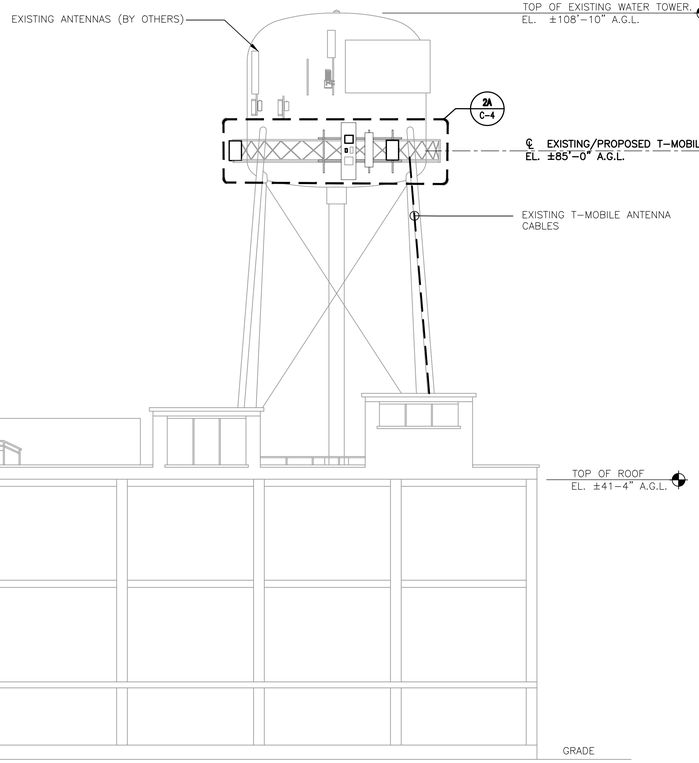
NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



1 C-2 **PROPOSED COMPOUND PLAN**
SCALE: 1/8" = 1'

APPROXIMATE NORTH

NOTE:
SOME ANTENNA EQUIPMENT NOT SHOWN FOR CLARITY.



2 C-2 **PROPOSED ELEVATION**
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

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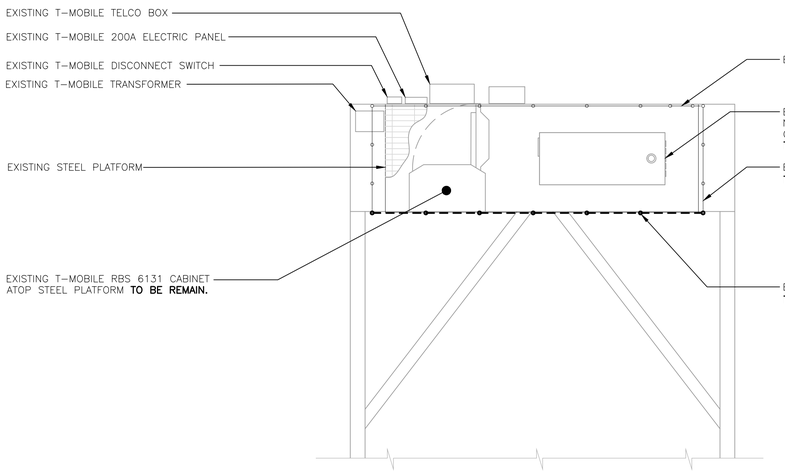
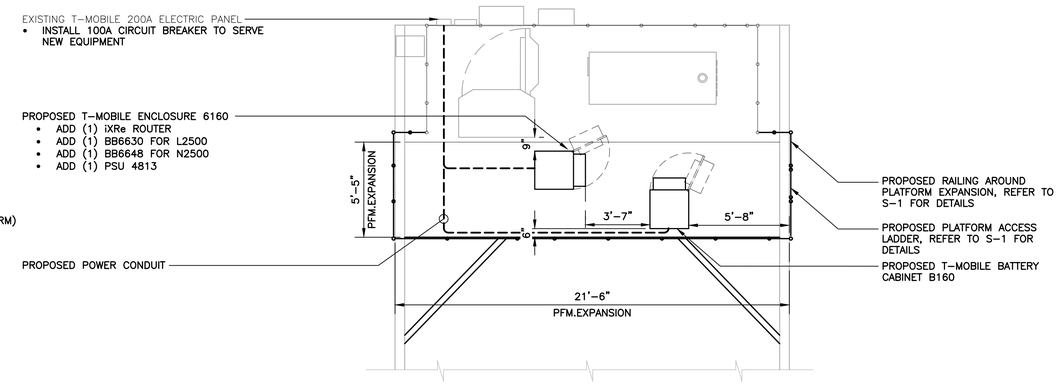
COMPOUND PLAN AND ELEVATION

C-2



1 C-3 **EXISTING EQUIPMENT PLAN**
SCALE: 1/4" = 1'

APPROXIMATE NORTH



2 C-3 **PROPOSED EQUIPMENT PLAN**
SCALE: 1/4" = 1'

APPROXIMATE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	10/21/20	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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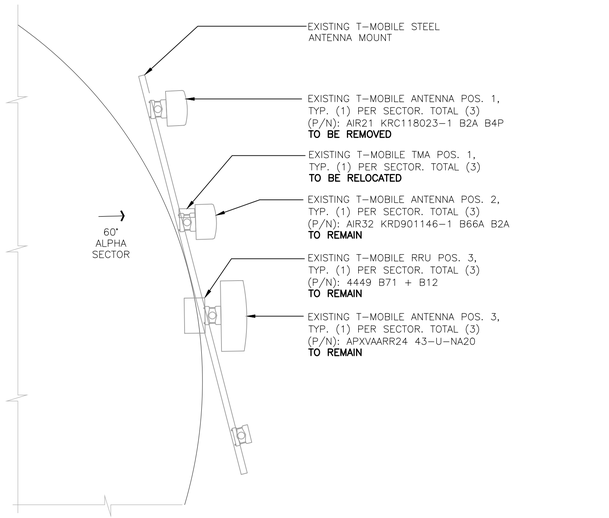
EQUIPMENT PLANS

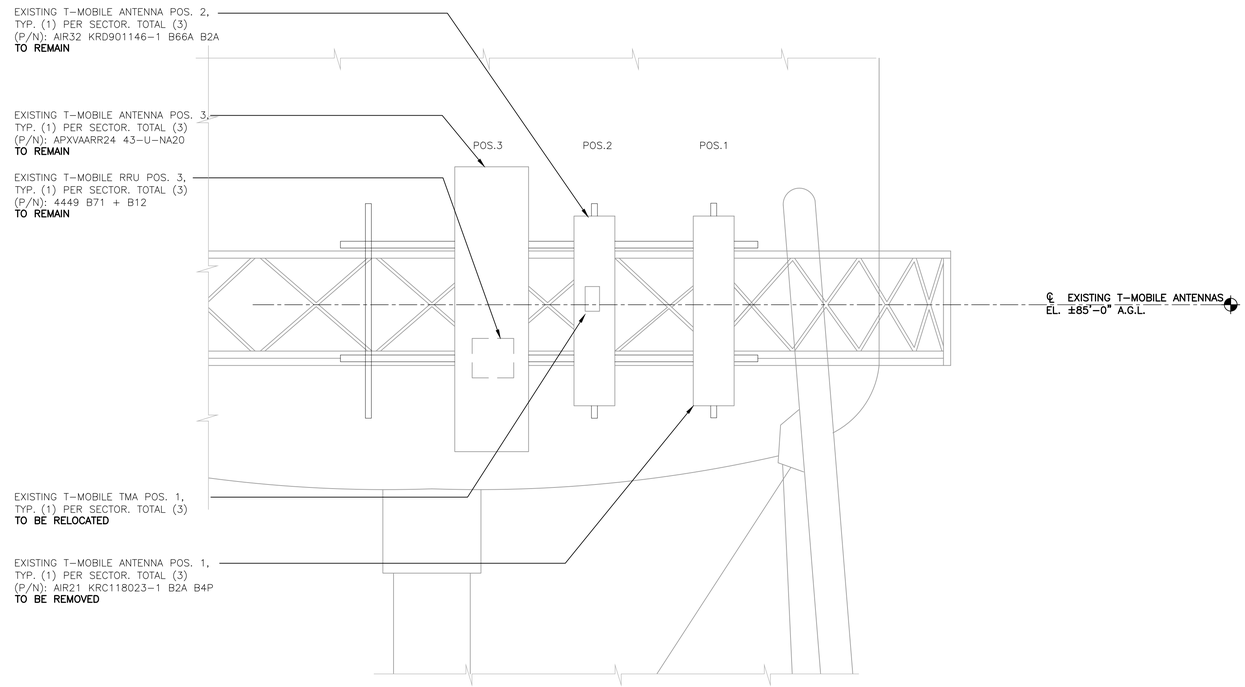
C-3

Sheet No. 5 of 9

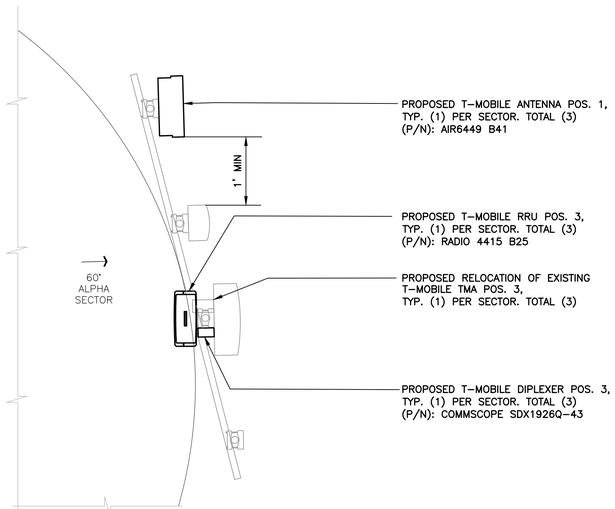


1 C-4 **EXISTING ANTENNA MOUNTING CONFIGURATION (TYP. SECTOR)**
SCALE: 1/2" = 1'

APPROXIMATE NORTH

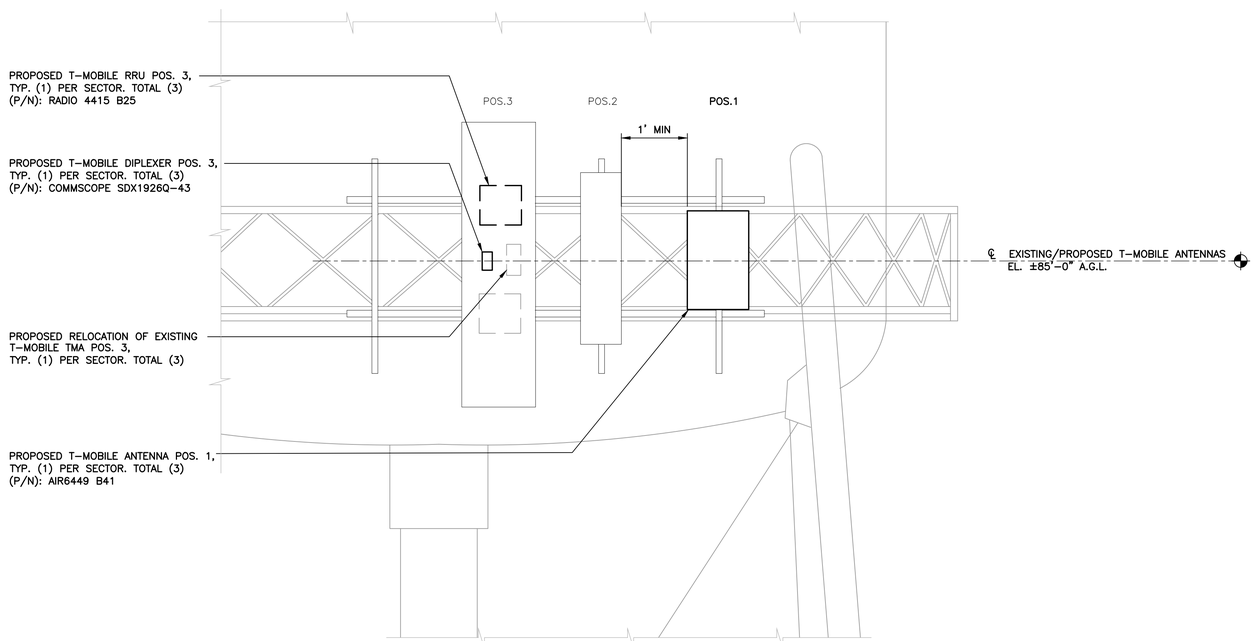


2 C-4 **EXISTING ANTENNA ELEVATION (TYP. SECTOR)**
SCALE: 1/2" = 1'



1A C-4 **PROPOSED ANTENNA MOUNTING CONFIGURATION (TYP. SECTOR)**
SCALE: 1/2" = 1'

APPROXIMATE NORTH



2A C-4 **PROPOSED ANTENNA ELEVATION (TYP. SECTOR)**
SCALE: 1/2" = 1'

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ANTENNA PLANS AND ELEVATIONS

C-4

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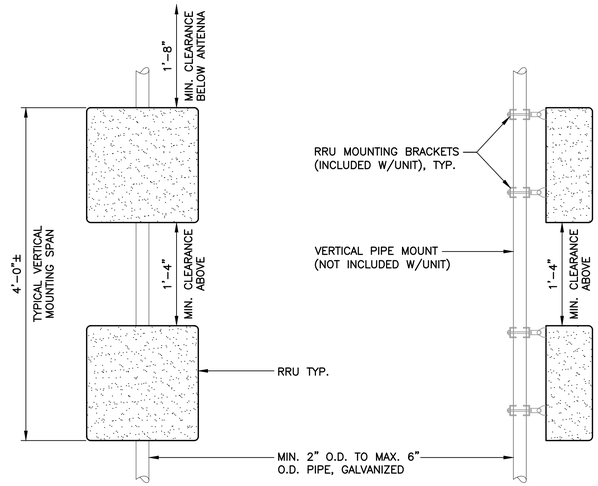
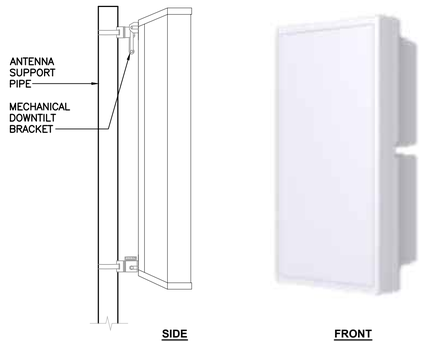


NOTES:

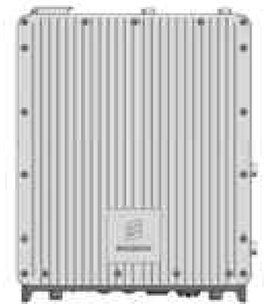
1. T–MOBILE SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 / C–5 **TYPICAL RRU MOUNTING DETAIL**
SCALE: NOT TO SCALE



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: AIR6449 B41	33.1"L x 20.6"W x 8.6"D	±104 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 / C–5 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE


FRONT VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4415 B25	16.5"L x 13.4"W x 5.9"D	±46 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.			

3 / C–5 **PROPOSED RRU DETAIL**
SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160	62.0"H x 26.0"W x 26.0"D	±1200 LBS

4 / C–5 **ENCLOSURE 6160 CABINET DETAIL**
SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: BATTERY CABINET B160	62.0"H x 26.0"W x 26.0"D	±1883 LBS

5 / C–5 **BATTERY B160 CABINET DETAIL**
SCALE: NOT TO SCALE

DIPLEXER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: SDX1926Q–43(E14F05P86)	4.2"L x 7.0"W x 3.0"D	–
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

6 / C–5 **PROPOSED DIPLEXER DETAIL**
SCALE: NOT TO SCALE

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TYPICAL EQUIPMENT DETAILS

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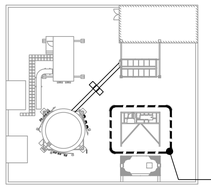


1 S-1

SITE KEY PLAN

SCALE: 1" = 40'- 0"

APPROXIMATE NORTH

PLAN NOTES

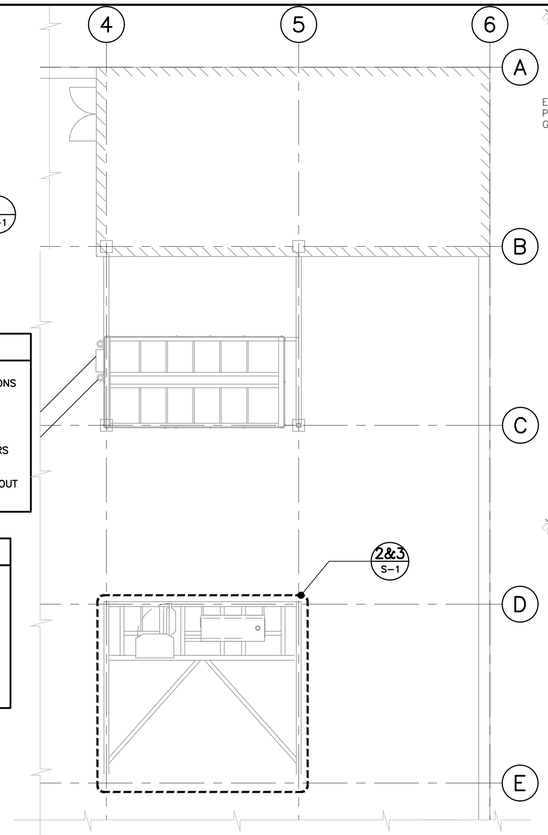
1. VERIFY ALL DIMENSIONS, ELEVATIONS, EXISTING FRAMING MEMBER SIZES AND GENERAL CONDITIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND EXISTING CONDITIONS.
2. DIMENSIONS APPLY TO THE CENTER OF MEMBERS UNLESS NOTED OTHERWISE.
3. REFER TO CIVIL DRAWINGS FOR EQUIPMENT LAYOUT AND CONFIGURATIONS.

LEGEND

P1 — DENOTES (E) HSS6X6X1/2 DUNNAGE SUPPORT POST

W.P. — DENOTES WORKING POINT.

G — INDICATES SPAN DIRECTION OF GALVANIZED BAR GRATING – Mc. NICHOLS GW-100A, 1 1/4" x 1/8" BAR GRATING WITH STANDARD SADDLE CLIP FASTENERS. REFER TO FRAMING PLAN FOR DECK SPAN DIRECTION.

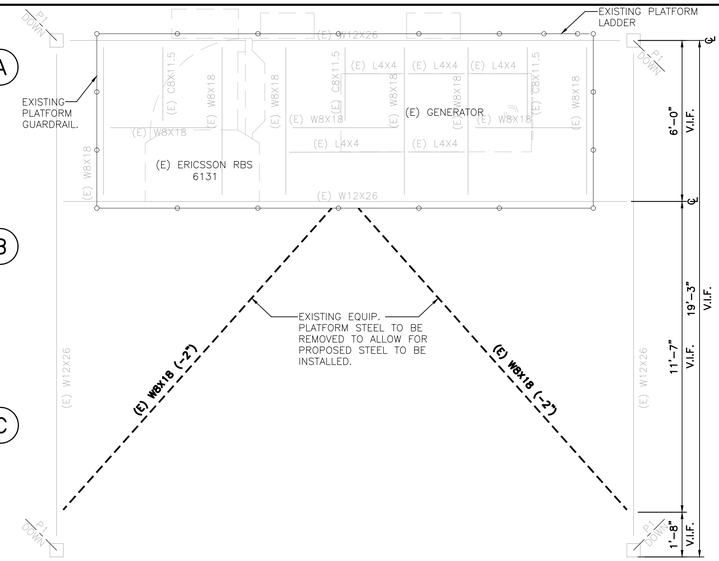


1 S-1 **PARTIAL EXISTING ROOF PLAN**

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

APPROXIMATE NORTH

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

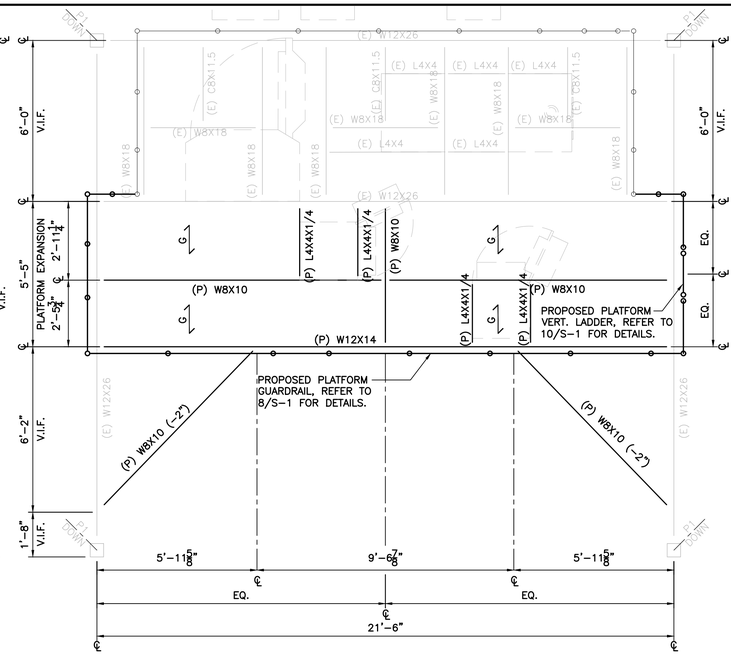


2 S-1 **EQUIPMENT PLATFORM DEMOLITION PLAN**

SCALE: 3/8" = 1'- 0"

APPROXIMATE NORTH

3/8" SCALE: 1 INCH= 2'-8"

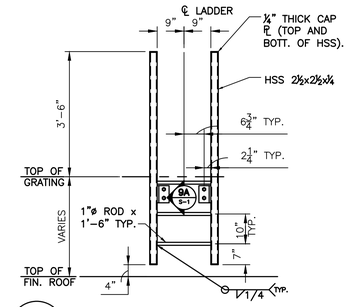


3 S-1 **EQUIPMENT PLATFORM FRAMING PLAN**

SCALE: 3/8" = 1'- 0"

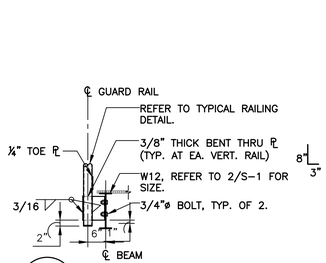
APPROXIMATE NORTH

3/8" SCALE: 1 INCH= 2'-8"



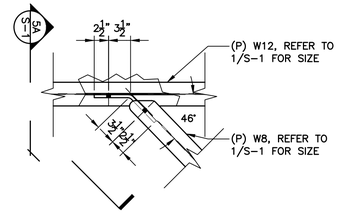
9 S-1 **TYP. VERT. LADDER DET.**

SCALE: 1/2" = 1'-0"



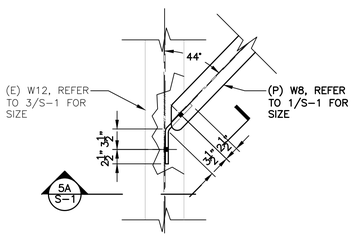
8A S-1 **TYP. GUARDRAIL CONNECTION**

SCALE: 1/2" = 1'-0"



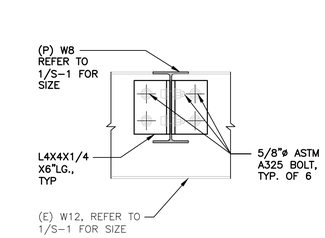
6 S-1 **(P)W12 TO (P)W8 BRACE CONNECTION DET.**

SCALE: 1" = 1'-0"



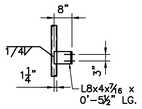
5 S-1 **(E)W12 TO (P)W8 BRACE CONNECTION DET.**

SCALE: 1" = 1'-0"



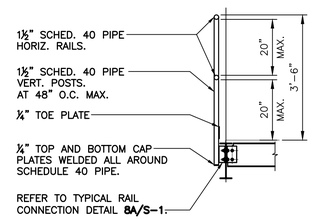
4 S-1 **(E)W12 TO (P)W8 BEAM CONNECTION DET.**

SCALE: 1-1/2" = 1'-0"



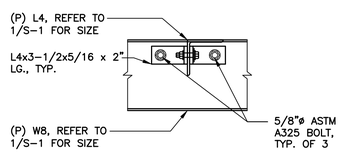
9A S-1 **VERT. LADDER CONNECTION**

SCALE: 3/8" = 1'-0"



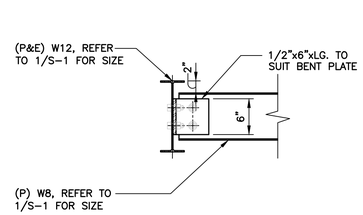
8 S-1 **TYP. GUARDRAIL DET.**

SCALE: 1/2" = 1'-0"



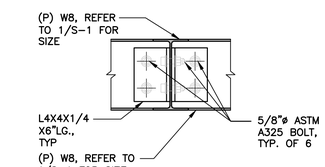
7 S-1 **(E)W8 TO (P)L4 BEAM CONNECTION DET.**

SCALE: 1-1/2" = 1'-0"



5A S-1 **BRACE CONNECTION PARTIAL SECTION**

SCALE: 1" = 1'-0"



6 S-1 **(E)W8 TO (P)W8 BEAM CONNECTION DET.**

SCALE: 1-1/2" = 1'-0"

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EXIST. / MODIFIED PLATFORM PLANS & DETAILS

S-1

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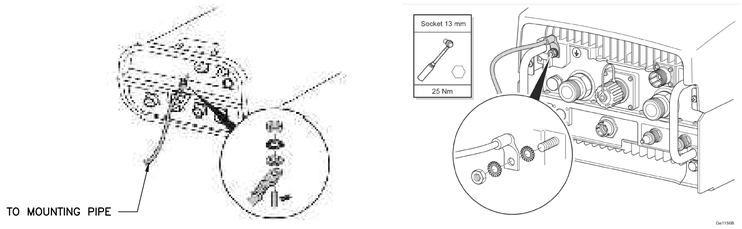
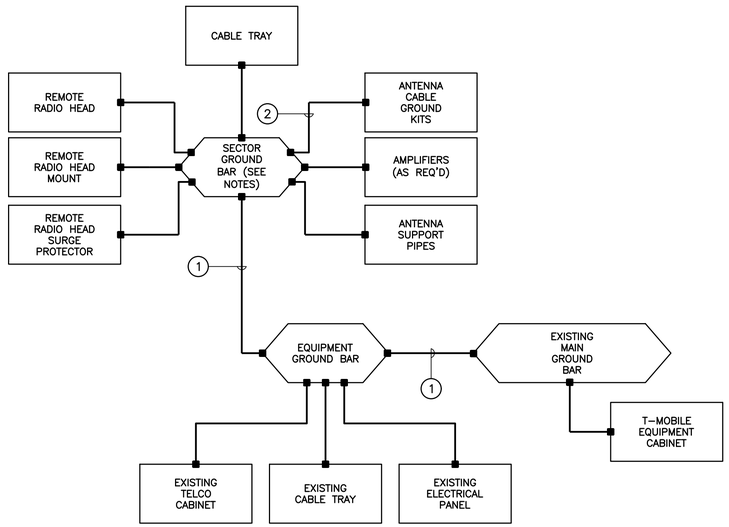


1 E-1 TYPICAL ANTENNA/RRU GROUNDING DETAILS

SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

(1) #2 AWG

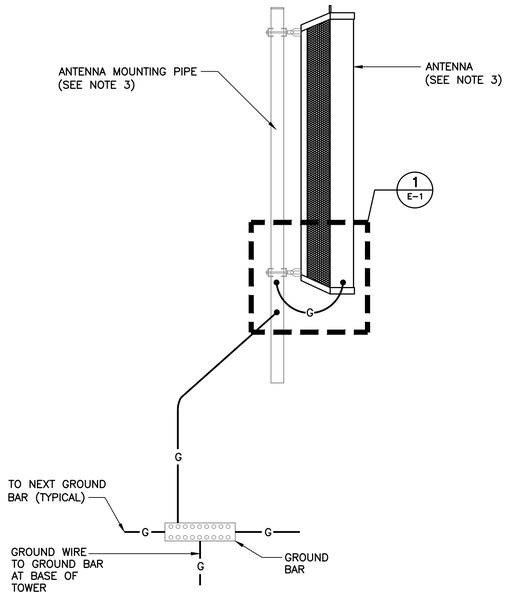
(2) #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
6. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
7. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

4 E-1 TYPICAL GROUNDING SCHEMATIC DETAIL

SCALE: NOT TO SCALE

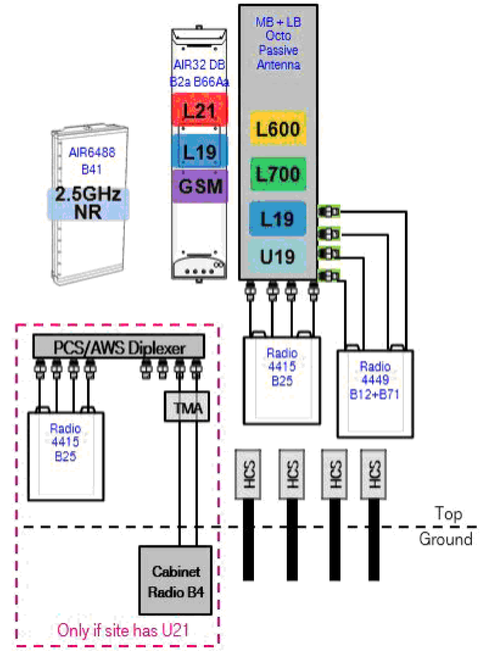


NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

2 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

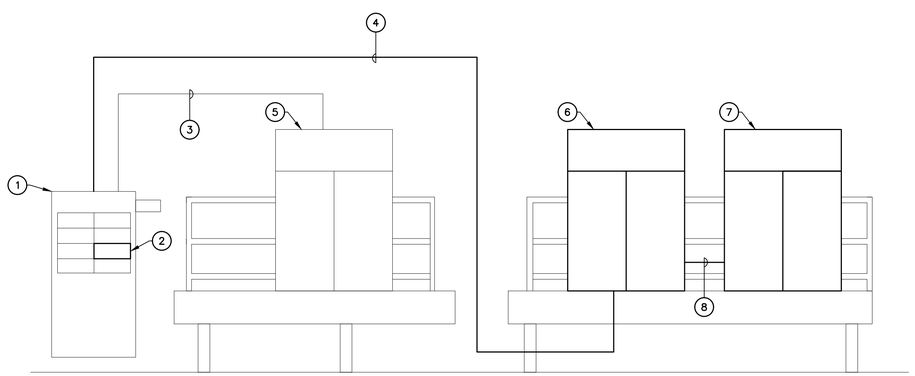


3 E-1 PROPOSED PLUMBING DIAGRAM

SCALE: NOT TO SCALE

RISER DIAGRAM NOTES

(1) EXISTING 200A, 120/240V, SINGLE PHASE PANEL TO REMAIN.
(2) NEW 100A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET
(3) EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
(4) (3) #1 AWG, (1) #8 AWG GROUND, 1–1/4" CONDUIT.
(5) EXISTING EQUIPMENT CABINET TO REMAIN.
(6) NEW RADIO EQUIPMENT CABINET.
(7) NEW BATTERY CABINET.
(8) DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.



5 E-1 ELECTRICAL POWER RISER DIAGRAM

SCALE: NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 9 of 9

CENTEK engineering

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Structural Analysis Report

Antenna Frames & Equipment Platform

Proposed T-Mobile
Antenna Upgrade

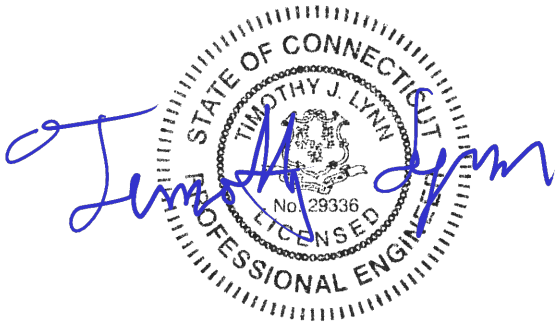
Site Ref: CT11334A

652 Glenbrook Road
Stamford, CT

CENTEK Project No. 20074.67

~~Date: September 2, 2020~~

Rev 2: October 9, 2020



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

Introduction

The purpose of this structural analysis report (SAR) is to summarize the results, of the impacted structural components, by the equipment upgrade proposed by T-Mobile on the existing host building located in Stamford, CT.

The antennas are mounted on steel frames attached to the water tank catwalk. The T-Mobile equipment cabinets are mounted on a structural steel platform on the roof of the building.

The mounts member sizes information and roof structural information were obtained from site visit performed by Centek personnel on August 24, 2020, a structural analysis report as prepared by Atlantis Group, dated February, 5 2015, construction documents REV.2 as prepared by Natcomm Consulting Engineers, dated May, 13 2009 and Voice Stream construction documents as prepared by Natcom Consulting Engineers, dated December 18 2000.Proposed/existing antenna and appurtenance information was taken from a RF data sheet dated 08/17/2020 provided by T-Mobile.

The existing roof framing consists of concrete slabs supported on 16-in ×16-in concrete columns. The antenna mounts were modeled based on visual inspection from the host building roof level, information presented on the aforementioned structural analysis report and conservative engineering judgement. The T-Mobile modified equipment platform is attached to the existing building bearing directly on top of four (4) building columns.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Proposed reinforcement and support steel will be properly installed and maintained.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment		Rad Center Elevation (AGL)	Mount Type
Alpha	(1) RFS APXVAARR24_43 Antenna (1) Ericsson AIR32 B66A B2A Antenna ~~(1) Ericsson AIR21 B2A B4P Antenna~~ (1) TMA **(1) Ericsson AIR6449 B41 Antenna** (1) Ericsson 4449 B71+B85 RRU **(1) Ericsson 4415 B25 RRU** **(1) Commscope SDX1926Q-43 Diplexer**		85-ft	(E) Antenna mounts
Beta Sector	(1) RFS APXVAARR24_43 Antenna (1) Ericsson AIR32 B66A B2A Antenna ~~(1) Ericsson AIR21 B2A B4P Antenna~~ (1) TMA **(1) Ericsson AIR6449 B41 Antenna** (1) Ericsson 4449 B71+B85 RRU **(1) Ericsson 4415 B25 RRU** **(1) Commscope SDX1926Q-43 Diplexer**		85-ft	(E) Antenna mounts
Gamma Sector	(1) RFS APXVAARR24_43 Antenna (1) Ericsson AIR32 B66A B2A Antenna ~~(1) Ericsson AIR21 B2A B4P Antenna~~ (1) TMA **(1) Ericsson AIR6449 B41 Antenna** (1) Ericsson 4449 B71+B85 RRU **(1) Ericsson 4415 B25 RRU** **(1) Commscope SDX1926Q-43 Diplexer**		85-ft	(E) Antenna mounts
Equipment Platform	(1) Generac 25kW	1265 lbs.	-	Steel dunnage platform on building roof
	(1) Ericsson RBS 6131	2593 lbs.		
	(1) Transformer	405 lbs.		
	(1) Ericsson B160	1883 lbs.		
	(1) Ericsson 6160	1200 lbs.	-	

~~Equipment~~ – Indicates equipment to be removed.
Equipment – Indicates equipment to be installed.

Analysis

The equipment platform and antenna frames were analyzed using a comprehensive computer program titled Risa3D. The program analyzes the equipment platform and antenna mounts considering the worst case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2015 International Building Code amended by the 2018 CSBC and ASCE 7-10 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	V_{ult} = 120 mph	*Appendix N of the 2018 CT State Building Code*
Risk Category:	II (Mounts) / III (Tank)	*2015 IBC; Table 1604.05*
Exposure Category:	Surface Roughness C	*ASCE 7-10; Section 26.7.2*
Ground Snow Load	30 psf	*Appendix N of the 2018 CT State Building Code*
Dead Load	Equipment and framing self-weight	*Identified within SAR design calculations*
Live Load	20 psf	*ASCE 7-10; Table 4-1 "Roofs – All Other Construction"*

Reference Standards

2015 International Building Code:

1. ACI 318-14, *Building Code Requirements for Structural Concrete*.
2. ACI 530-13, *Building Code Requirements for Masonry Structures*.
3. AISC 360-10, *Specification for Structural Steel Buildings*
4. AWS D1.1 – 00, *Structural Welding Code – Steel*.

Results

Structure stresses were calculated utilizing the structural analysis software RISA 3D. The stresses were determined based on the AISC standard.

- Calculated stresses for the antenna mounts & equipment platform and host building were found to **be within allowable** limits.

Component	Member	Stress Ratio (percentage of capacity)	Result
Antenna Mounts	Pipe 2.0 STD (Antenna Mast)	36.7%	**PASS**
	Pipe 2.0 STD (Existing Horz. Member)	30.4%	**PASS**
Water Tank	Tank Leg	67.6%	**PASS**
Equipment Platform	W12X26 (Existing Platform Girder)	49.9%	**PASS**
	HSS6X6X1/2 (Existing Platform Member)	10.4%	**PASS**
	W8X18 (Existing Platform Member)	30.6%	**PASS**
	W12X14 (Proposed Platform Member)	46.5%	**PASS**
	W8X10 (Proposed Platform Member)	29.2%	**PASS**
	Concrete Building Column (Column D4)	48.5%	**PASS**

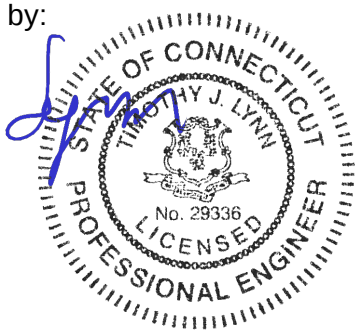
Conclusion

This analysis shows that the subject antenna frames & modified equipment platform **HAVE SUFFICIENT CAPACITY** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Prepared by:

Fernando J. Palacios
Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Stamford, CT

Rev. 0: 09/01/2020

Prepared by: F.J.P; Checked by: T.J.L.
Job No. 20074.67

Design Wind Load on Other Structures:

(Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	$V := 120$	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := C$		(User Input)	
Height Above Grade =	$Z := 85$	ft	(User Input)	
Structure Type =	$Structuretype := Square\_Chimney$			
Structure Height =	$Height := 8$	ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 2$	ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 900$$

(Table 26.9-1)

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 9.5$$

(Table 26.9-1)

Integral Length Scale Factor =

$$l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 500$$

(Table 26.9-1)

Integral Length Scale Power Law Exponent =

$$\varepsilon := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.2$$

(Table 26.9-1)

Turbulence Intensity Factor =

$$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.2$$

(Table 26.9-1)

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Exposure Constant =	$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 15$	(Table 26.9-1)
Exposure Coefficient =	$K_z := \begin{cases} 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.22$	(Table 29.3-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 40.58$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{else} \end{cases} = 15$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.228$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 427.057$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.972$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left(\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right) = 0.91$	(Eq. 26.9-6)
Force Coefficient =	$C_f = 1.35$	(Fig 29.5-1 - 29.5-3)
Wind Force =	$F := q_z \cdot G \cdot C_f = 50$	psf

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR6449 B41		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 33.1$	in	(User Input)
Antenna Width =	$W_{ant} := 20.6$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 104$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 4.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 236$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 2$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 2$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 99$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 104$	lbs

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	RFS - APXVAARR24_43-U-NA20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.5$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 153$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 15.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 15.9$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 794$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.8$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 288$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 153$	lbs

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR32 B66 B2A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.6$	in	(User Input)
Antenna Width =	$W_{ant} := 12.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 133$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.1$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 253$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.4$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.4$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 170$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 133$	lbs

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Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Ericsson 4449 B71+B85		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 17.9$	in	(User Input)
RRH Width =	$W_{RRH} := 13.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 9.5$	in	(User Input)
RRH Weight =	$WT_{RRH} := 75$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.6$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 82$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.2$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.2$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 59$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 75$	lbs

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Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Ericsson 4415 B25		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 14.9$	in	(User Input)
RRH Width =	$W_{RRH} := 13.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 5.4$	in	(User Input)
RRH Weight =	$WT_{RRH} := 46.3$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.4$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.4$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 68$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 0.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 0.6$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 28$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 46$	lbs

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Stamford, CT

Rev. 0: 09/01/2020

Prepared by: F.J.P; Checked by: T.J.L.
Job No. 20074.67

Development of Wind on Equipment

Equipment Data:

Equipment Model =	Commscope - SDX1926Q-43		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 4.2$	in	(User Input)
Equipment Width =	$W_{Eq} := 6.1$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 6.9$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 6.6$	lbs	(User Input)
Number of Equipment =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 0.2$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 0.2$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 9$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 0.2$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 0.2$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 10$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$WT_{Eq} \cdot N_{Eq} = 7$	lbs

Development of Wind & Ice Load on TMAs

TMA Data:

TMA Model =	Ericsson KRY112 TMA		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 6.9$	in	(User Input)
TMA Width =	$W_{TMA} := 6.1$	in	(User Input)
TMA Thickness =	$T_{TMA} := 2.8$	in	(User Input)
TMA Weight =	$WT_{TMA} := 11$	lbs	(User Input)
Number of TMAs =	$N_{TMA} := 1$		(User Input)

Wind Load (Front)

Surface Area for One TMA=	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.3$	sf
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 0.3$	sf
Total TMA Wind Force =	$F_{TMA} := F \cdot A_{TMA} = 15$	lbs

Wind Load (Side)

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.1$	sf
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 0.1$	sf
Total TMA Wind Force =	$F_{TMA} := F \cdot A_{TMA} = 7$	lbs

Gravity Load (without ice)

Weight of All TMA=	$WT_{TMA} \cdot N_{TMA} = 11$	lbs

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Stamford,CT

Rev. 1: 09/28/20

Prepared by: F.J.P; Checked by: T.J.L.
Job No. 20074.67

Design Wind Load on Other Structures:

(Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	V := 120	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	BC := II		(User Input)	(IBC Table 1604.5)
Exposure Category =	Exp := B		(User Input)	
Height Above Grade =	Z := 41.33	ft	(User Input)	
Structure Type =	Structuretype := Square_Chimney		(User Input)	
Structure Height =	Height := 4.5	ft	(User Input)	
Horizontal Dimension of Structure =	Width := 7.0	ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = $zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 1.2 \cdot 10^3$ (Table 26.9-1)

3-Sec Gust Speed Power Law Exponent = $\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 7$ (Table 26.9-1)

Integral Length Scale Factor = $l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 320$ (Table 26.9-1)

Integral Length Scale Power Law Exponent = $\varepsilon := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.333$ (Table 26.9-1)

Turbulence Intensity Factor = $c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.3$ (Table 26.9-1)

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Subject: Wind Load on Equipment per ASCE 7-10

Location: Stamford,CT

Rev. 1: 09/28/20

Prepared by: F.J.P; Checked by: T.J.L.
Job No. 20074.67

Exposure Constant =	$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 30$	(Table 26.9-1)
Exposure Coefficient =	$K_z := \begin{cases} 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 0.77$	(Table 29.3-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 25.47$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{else} \end{cases} = 30$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.305$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 309.993$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.963$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left(\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right) = 0.903$	(Eq. 26.9-6)
Force Coefficient =	$GC_r := 1.9$	(Section 29.5-1)
Wind Force =	$F := q_z \cdot GC_r = 48$	psf

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	Ericsson B160 Battery Cabinet		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 63$	in	(User Input)
Equipment Width =	$W_{Eq} := 26$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 26$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 1883$	lbs	(User Input)
Equipment Bearing Points =	$N_{Bp} := 4$		(User Input)
Number of Equipment =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 11.4$ sf

Equipment Projected Surface Area = $A_{Eq} := SA_{Eq} \cdot N_{Eq} = 11.4$ sf

Total Equipment Wind Force = $F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{T_{Eq}}{12} \cdot 2} = 333$ lbs

Total Equipment Shear Wind Force = $F_{Eq} := \frac{F \cdot A_{Eq}}{N_{Bp}} = 138$ lbs

Wind Load (Side)

Surface Area for One Equipment = $SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 11.4$ sf

Equipment Projected Surface Area = $A_{Eq} := SA_{Eq} \cdot N_{Eq} = 11.4$ sf

Total Equipment Wind Force = $F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{W_{Eq}}{12} \cdot 2} = 333$ lbs

Total Equipment Shear Wind Force = $F_{Eq} := \frac{F \cdot A_{Eq}}{N_{Bp}} = 138$ lbs

Gravity Load (without ice)

Weight of All Equipments = $\frac{WT_{Eq}}{N_{Bp}} = 471$ lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	Ericsson 6160 Cabinet		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 63$	in	(User Input)
Equipment Width =	$W_{Eq} := 26$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 26$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 1200$	lbs	(User Input)
Equipment Bearing Points =	$N_{Bp} := 4$		(User Input)
Number of Equipment =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 11.4$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 11.4$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{T_{Eq}}{12} \cdot 2} = 333$	lbs
Total Equipment Shear Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq}}{N_{Bp}} = 138$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 11.4$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 11.4$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{W_{Eq}}{12} \cdot 2} = 333$	lbs
Total Equipment Shear Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq}}{N_{Bp}} = 138$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$\frac{WT_{Eq}}{N_{Bp}} = 300$	lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	Generac 25 kW Natural Gas Generator		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 53.5$	in	(User Input)
Equipment Width =	$W_{Eq} := 35.0$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 84.2$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 1265$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)
Equipment Bearing Points=	$n_{bp} := 4$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 13$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 13$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{T_{Eq}}{12} \cdot 2} = 100$	lbs
Equipment Shear Wind Force =	$F_{EqS} := \frac{F \cdot A_{Eq}}{n_{bp}} = 157$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 31.3$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 31.3$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{W_{Eq}}{12} \cdot 2} = 579$	lbs
Equipment Shear Wind Force =	$F_{EqS} := \frac{F \cdot A_{Eq}}{n_{bp}} = 378$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$\frac{WT_{Eq}}{n_{bp}} = 316.25$	lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	Automatic Transfer Switch		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 36$	in	(User Input)
Equipment Width =	$W_{Eq} := 24$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 11.29$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 500$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 6$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 6$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 290$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 2.8$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 2.8$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 137$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$WT_{Eq} = 500$	lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	RBS 6131		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 63.62$	in	(User Input)
Equipment Width =	$W_{Eq} := 51.19$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 36.38$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 2593$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)
Equipment Bearing Points=	$n_{bp} := 4$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 22.6$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 22.6$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{T_{Eq}}{12} \cdot 2} = 479$	lbs
Equipment Shear Wind Force =	$F_{EqS} := \frac{F \cdot A_{Eq}}{n_{bp}} = 274$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 16.1$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 16.1$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{W_{Eq}}{12} \cdot 2} = 242$	lbs
Equipment Shear Wind Force =	$F_{EqS} := \frac{F \cdot A_{Eq}}{n_{bp}} = 194$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$\frac{WT_{Eq}}{n_{bp}} = 648.25$	lbs

Development of Wind on Equipments

Equipment Data:

Equipment Model =	T-Mobile Transformer		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 32$	in	(User Input)
Equipment Width =	$W_{Eq} := 17$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 26.5$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 405$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)
Equipment Bearing Points=	$n_{bp} := 4$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 3.8$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 3.8$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{T_{Eq}}{12} \cdot 2} = 55$	lbs
Equipment Shear Wind Force =	$F_{EqS} := \frac{F \cdot A_{Eq}}{n_{bp}} = 46$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 5.9$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 5.9$	sf
Total Equipment Wind Force =	$F_{Eq} := \frac{F \cdot A_{Eq} \cdot \frac{\left(\frac{L_{Eq}}{12}\right)}{2}}{\frac{W_{Eq}}{12} \cdot 2} = 134$	lbs
Equipment Shear Wind Force =	$F_{EqS} := \frac{F \cdot A_{Eq}}{n_{bp}} = 71$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$\frac{WT_{Eq}}{n_{bp}} = 101.25$	lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	T-Mobile Telco Box		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 33$	in	(User Input)
Equipment Width =	$W_{Eq} := 30$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 13$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 200$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 6.9$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 6.9$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 333$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 3$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 3$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 144$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$WT_{Eq} = 200$	lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	T-Mobile Existing Electric Panel		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 28$	in	(User Input)
Equipment Width =	$W_{Eq} := 15$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 4$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 150$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 2.9$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 2.9$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 141$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 0.8$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 0.8$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 38$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$WT_{Eq} = 150$	lbs

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Development of Wind on Equipment

Equipment Data:

Equipment Model =	T-Mobile Existing Transformer Switch		
Equipment Shape =	Flat		(User Input)
Equipment Height =	$L_{Eq} := 17$	in	(User Input)
Equipment Width =	$W_{Eq} := 10$	in	(User Input)
Equipment Thickness =	$T_{Eq} := 5$	in	(User Input)
Equipment Weight =	$WT_{Eq} := 50$	lbs	(User Input)
Number of Equipments =	$N_{Eq} := 1$		(User Input)

Wind Load (Front)

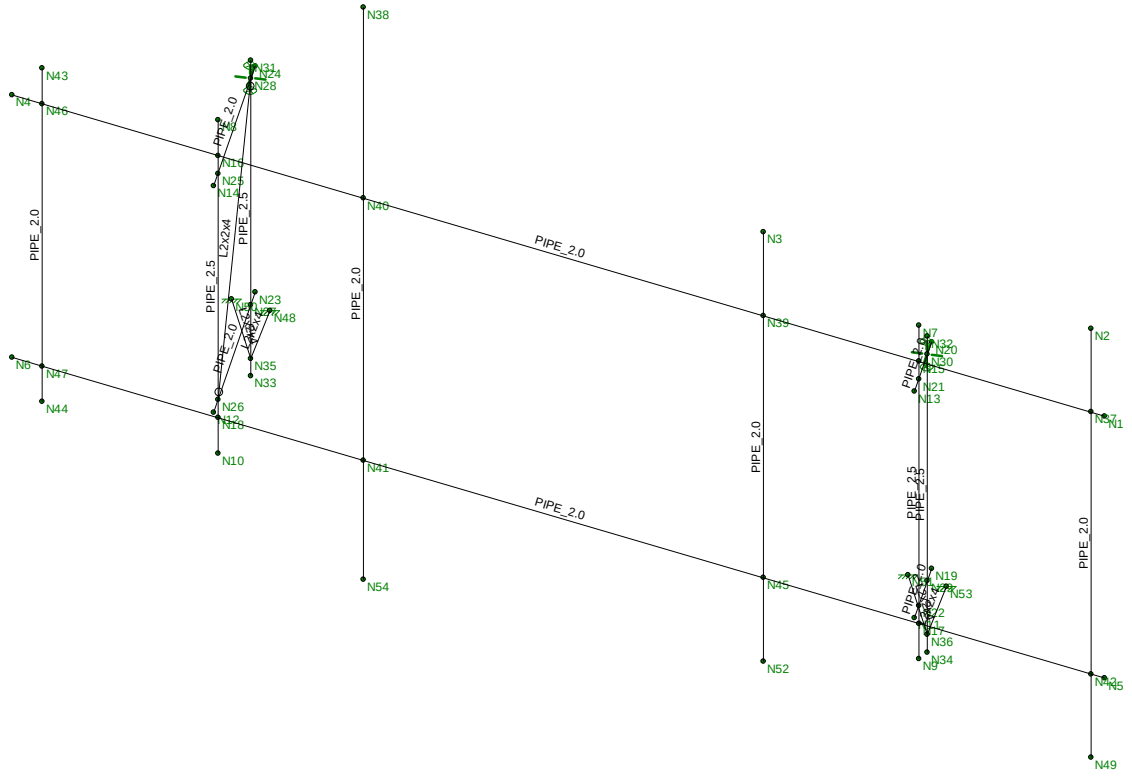
Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot W_{Eq}}{144} = 1.2$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 1.2$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 57$	lbs

Wind Load (Side)

Surface Area for One Equipment =	$SA_{Eq} := \frac{L_{Eq} \cdot T_{Eq}}{144} = 0.6$	sf
Equipment Projected Surface Area =	$A_{Eq} := SA_{Eq} \cdot N_{Eq} = 0.6$	sf
Total Equipment Wind Force =	$F_{Eq} := F \cdot A_{Eq} = 29$	lbs

Gravity Load (without ice)

Weight of All Equipments =	$WT_{Eq} = 50$	lbs



Envelope Only Solution

Centek		
FJP	CT11334A_AMA	Sept 2, 2020 at 12:05 PM
20074.67	Member Framing	CT11334A_AMA.R3D

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

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

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	(E)Horz. Mo...	168	Segment	Segment	Lbyy						Lateral
2	M2	(E)Horz. Mo...	168	Segment	Segment	Lbyy						Lateral
3	M3	(E)Vert. Mo...	56									Lateral
4	M4	(E)Vert. Mo...	56									Lateral
5	M5	(E)Horz. Mo...	12			Lbyy						Lateral
6	M6	(E)Horz. Mo...	12			Lbyy						Lateral
7	M7	(E)Horz. Mo...	29			Lbyy						Lateral
8	M8	(E)Horz. Mo...	29			Lbyy						Lateral
9	M9	(E)Vert. Mo...	53									Lateral
10	M10	(E)Vert. Mo...	53									Lateral
11	M11	(E) Antenna...	56									Lateral
12	M12	(E)L2	9.487									Lateral
13	M13	(E)L2	9.487									Lateral
14	M14	(E)L2	9.487									Lateral
15	M15	(E)L2	9.487									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
16	M16	(E)L2	44.418									Lateral
17	M17	(E)Horz. Mo...	72			Lbyy						Lateral
18	M18	(E)Horz. Mo...	72			Lbyy						Lateral
19	M19	(E) Antenna...	96			Lbyy						Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(E) Antenna Masts Pipe_2.0STD	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
2	(E)Horz. Mount Pipe_2.0STD	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
3	(E)Vert. Mount Pipe_2.5STD	PIPE_2.5	Column	Pipe	A53 Grade B	Typical	1.61	1.45	1.45	2.89
4	(E)L2	L2x2x4	VBrace	Single Angle	A36 Gr.36	Typical	.944	.346	.346	.021

Member Primary Data

	Label	I ...	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N4			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
2	M2	N5	N6			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
3	M3	N7	N9			(E)Vert. Mount Pipe_...	Column	Pipe	A53 Gra...	Typical
4	M4	N8	N10			(E)Vert. Mount Pipe_...	Column	Pipe	A53 Gra...	Typical
5	M5	N...	N20			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
6	M6	N...	N19			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
7	M7	N...	N24			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
8	M8	N...	N23			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
9	M9	N...	N33			(E)Vert. Mount Pipe_...	Column	Pipe	A53 Gra...	Typical
10	M10	N...	N34			(E)Vert. Mount Pipe_...	Column	Pipe	A53 Gra...	Typical
11	M11	N...	N44			(E) Antenna Masts Pi...	Column	Pipe	A53 Gra...	Typical
12	M12	N...	N50		90	(E)L2	VBrace	Single Angle	A36 Gr.36	Typical
13	M13	N...	N48		90	(E)L2	VBrace	Single Angle	A36 Gr.36	Typical
14	M14	N...	N51		180	(E)L2	VBrace	Single Angle	A36 Gr.36	Typical
15	M15	N...	N53		90	(E)L2	VBrace	Single Angle	A36 Gr.36	Typical
16	M16	N...	N26			(E)L2	VBrace	Single Angle	A36 Gr.36	Typical
17	M17	N...	N2			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
18	M18	N...	N3			(E)Horz. Mount Pipe_...	Beam	Pipe	A53 Gra...	Typical
19	M19	N...	N38			(E) Antenna Masts Pi...	Column	Pipe	A53 Gra...	Typical

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diaphragm
1	N1	0	0	0	0	
2	N2	-2.04562	14	-0.575383	0	
3	N3	-50.558089	14	-14.22076	0	
4	N4	-161.724277	0	-45.489102	0	
5	N5	0	-44.	0	0	
6	N6	-161.724277	-44.	-45.489102	0	
7	N7	-27.555699	6	-7.750747	0	
8	N8	-131.280644	6	-36.926049	0	
9	N9	-27.555699	-50.	-7.750747	0	
10	N10	-131.280644	-50.	-36.926049	0	
11	N11	-27.555699	-41.	-4.750747	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diaphragm
12	N12	-131.280645	-41.	-33.926049	0	
13	N13	-27.555699	-3	-4.750747	0	
14	N14	-131.280645	-3	-33.926049	0	
15	N15	-27.555699	0	-7.750747	0	
16	N16	-131.280644	0	-36.926049	0	
17	N17	-27.555699	-44.	-7.750747	0	
18	N18	-131.280644	-44.	-36.926049	0	
19	N19	-27.555699	-41.	-16.750748	0	
20	N20	-27.555699	-3	-16.750748	0	
21	N21	-27.555699	-3	-7.750747	0	
22	N22	-27.555699	-41.	-7.750747	0	
23	N23	-131.280644	-41.	-62.926049	0	
24	N24	-131.280644	-3	-62.926049	0	
25	N25	-131.280644	-3	-36.926049	0	
26	N26	-131.280644	-41.	-36.926049	0	
27	N27	-131.280644	-41.	-59.92605	0	
28	N28	-131.280644	-3	-59.92605	0	
29	N29	-27.555699	-41.	-13.750747	0	
30	N30	-27.555699	-3	-13.750747	0	
31	N31	-131.280644	0	-59.92605	0	
32	N32	-27.555699	0	-13.750747	0	
33	N33	-131.280644	-53.	-59.92605	0	
34	N34	-27.555699	-53.	-13.750747	0	
35	N35	-131.280644	-50.	-59.92605	0	
36	N36	-27.555699	-50.	-13.750747	0	
37	N37	-2.04562	0	-0.575383	0	
38	N38	-109.741473	32	-30.867605	0	
39	N39	-50.558089	0	-14.22076	0	
40	N40	-109.741473	0	-30.867605	0	
41	N41	-109.741473	-44.	-30.867605	0	
42	N42	-2.04562	-44.	-0.575383	0	
43	N43	-157.272046	6	-44.236798	0	
44	N44	-157.272046	-50.	-44.236798	0	
45	N45	-50.558089	-44.	-14.22076	0	
46	N46	-157.272046	0	-44.236798	0	
47	N47	-157.272046	-44.	-44.236798	0	
48	N48	-128.392711	-41.	-59.113744	0	
49	N49	-2.04562	-58	-0.575383	0	
50	N50	-134.168578	-41.	-60.738355	0	
51	N51	-30.443633	-41.	-14.563053	0	
52	N52	-50.558089	-58	-14.22076	0	
53	N53	-24.667766	-41.	-12.938442	0	
54	N54	-109.741473	-64.	-30.867605	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N48	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N50	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N51	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
5	N27						
6	N28	Reaction	Reaction	Reaction		Reaction	
7	N29						
8	N30	Reaction	Reaction	Reaction		Reaction	

Member Point Loads (BLC 2 : Equipment Weight)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M19	Y	-77	10.5
2	M19	Y	-77	85.5
3	M19	Y	-75	60
4	M19	Y	-46	48
5	M18	Y	-67	3.5
6	M18	Y	-67	60.5
7	M17	Y	-52	15.5
8	M17	Y	-52	48.5
9	M19	Y	-7	6
10	M19	Y	-11	24

Member Point Loads (BLC 3 : Wind X)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M19	X	144	10.5
2	M19	X	144	85.5
3	M19	X	59	60
4	M19	X	28	48
5	M18	X	85	3.5
6	M18	X	85	60.5
7	M17	X	50	15.5
8	M17	X	50	48.5
9	M19	X	10	6
10	M19	X	7	24

Member Point Loads (BLC 4 : Wind Z)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M19	Z	397	10.5
2	M19	Z	397	85.5
3	M19	Z	82	60
4	M19	Z	68	48
5	M18	Z	127	3.5
6	M18	Z	127	60.5
7	M17	Z	118	15.5
8	M17	Z	118	48.5
9	M19	Z	9	6
10	M19	Z	15	24

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
No Data to Print ...			

Member Distributed Loads (BLC 3 : Wind X)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[lb/ft,F,ksf]	Start Location[in,%]	End Location[in,...
1	M19	X	10	10	0	0
2	M18	X	10	10	0	0
3	M17	X	10	10	0	0
4	M9	X	12.1	12.1	0	0
5	M10	X	12.1	12.1	0	0
6	M5	X	10	10	0	0
7	M6	X	10	10	0	0
8	M7	X	10	10	0	0
9	M8	X	10	10	0	0
10	M3	X	12.1	12.1	0	0
11	M4	X	12.1	12.1	0	0
12	M11	X	10	10	0	0
13	M1	X	10	10	0	0
14	M2	X	10	10	0	0
15	M16	X	8.3	8.3	0	0

Member Distributed Loads (BLC 4 : Wind Z)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[lb/ft,F,ksf]	Start Location[in,%]	End Location[in,...
1	M19	Z	10	10	0	10.5
2	M19	Z	10	10	85.5	0
3	M18	Z	10	10	0	3.5
4	M18	Z	10	10	60.5	0
5	M17	Z	10	10	0	15.5
6	M17	Z	10	10	48.5	0
7	M1	Z	10	10	0	0
8	M2	Z	10	10	0	0
9	M11	Z	10	10	0	0
10	M4	Z	12.1	12.1	0	0
11	M3	Z	12.1	12.1	0	0
12	M9	Z	12.1	12.1	0	0
13	M10	Z	12.1	12.1	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Self Weight	DL		-1						
2	Equipment Weight	DL					10			
3	Wind X	WLX					10	15		
4	Wind Z	WLZ					10	13		

Load Combinations

	Description	Solve	PDelta	SR...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																				
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1																
3	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	S...	1																
4	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	S...	.75												
5	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																		
6	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																		

Load Combinations (Continued)

	Description	Solve P	Delta	SR...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
7	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
8	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
9	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75												
10	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75												
11	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75												
12	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75												
13	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
14	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
15	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
16	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
17	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
18	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																
19	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																
20	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N48	max	86.336	8	276.741	8	223.357	8	.016	18	.026	8	0	19
2		min	-75.416	18	-64.435	18	-45.678	18	-.072	8	-.005	18	-.028	5
3	N50	max	32.309	20	97.444	18	271.723	8	.027	18	.008	18	.002	18
4		min	-39.193	6	-252.071	8	-97.834	18	-.083	8	-.029	8	-.031	8
5	N51	max	140.857	7	165.128	5	181.499	7	.031	18	.01	18	.028	7
6		min	-108.83	17	-102.389	19	-84.966	17	-.066	8	-.019	8	-.012	17
7	N53	max	274.491	7	252.449	7	118.05	8	.033	18	.017	8	.042	19
8		min	-180.38	17	-56.954	17	-96.971	18	-.043	8	-.014	18	-.043	5
9	N28	max	248.655	8	423.274	8	392.527	20	0	20	.154	8	0	20
10		min	-245.87	6	233.58	18	-741.676	6	0	1	-.15	18	0	1
11	N30	max	454.725	19	266.256	8	170.942	20	0	20	.254	19	0	20
12		min	-583.663	5	135.523	18	-291.181	6	0	1	-.277	5	0	1
13	Totals:	max	904.524	19	859.088	16	1240.19	20						
14		min	-904.524	5	515.453	17	-1240.19	6						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	.009	8	-.006	17	.033	6	4.369e-4	8	1.698e-3	20	3.035e-5	17
2		min	-.009	18	-.018	7	-.031	20	-2.856e-4	18	-1.788e-3	6	-6.336e-4	7
3	N2	max	.013	8	-.006	17	.026	6	4.212e-4	8	1.697e-3	20	1.465e-5	17
4		min	-.004	18	-.017	7	-.022	20	-2.699e-4	18	-1.788e-3	6	-6.179e-4	7
5	N3	max	.012	20	-.007	19	.055	18	7.465e-4	18	2.684e-3	18	7.105e-4	6
6		min	-.023	6	-.017	5	-.056	8	-8.62e-4	8	-2.717e-3	8	7.484e-5	20
7	N4	max	.012	6	.006	7	.046	8	1.823e-4	6	1.404e-3	20	6.848e-5	17
8		min	-.011	20	-.002	17	-.045	18	-4.18e-5	20	-1.386e-3	6	-1.662e-4	7
9	N5	max	.014	17	-.006	17	.042	6	1.812e-4	5	1.895e-3	20	-1.787e-4	17
10		min	-.018	7	-.017	7	-.039	20	-1.927e-5	19	-2.018e-3	6	-4.407e-4	7
11	N6	max	.008	18	.006	7	.036	20	4.631e-4	8	1.366e-3	20	9.795e-5	20
12		min	-.011	8	-.002	17	-.041	6	-2.865e-4	18	-1.353e-3	6	-1.711e-4	6
13	N7	max	.003	5	0	18	.002	6	1.835e-4	6	4.533e-4	5	1.003e-4	18
14		min	-.003	19	-.001	8	0	20	-4.672e-5	20	-4.34e-4	19	-1.205e-4	8
15	N8	max	.006	5	0	18	.008	6	8.182e-4	6	2.002e-3	20	-7.804e-5	17

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
16		min	-.001	19	-.006	8	-.005	20	-5.496e-4	20	-1.988e-3	6	-5.267e-4	7
17	N9	max	.009	17	0	18	.004	18	3.155e-4	8	5.931e-4	17	2.079e-4	5
18		min	-.011	7	-.001	8	-.006	8	-1.768e-4	18	-8.176e-4	7	-1.811e-4	19
19	N10	max	.007	17	0	18	.008	18	9.042e-4	8	1.793e-3	20	-4.22e-5	20
20		min	-.013	7	-.006	8	-.016	8	-5.464e-4	18	-1.776e-3	18	-5.372e-4	6
21	N11	max	.009	17	0	18	.002	18	2.679e-4	8	6.53e-4	17	1.722e-4	17
22		min	-.012	7	-.002	8	-.003	8	-1.124e-4	18	-8.944e-4	7	-1.751e-4	7
23	N12	max	.01	17	.002	18	.003	18	7.825e-4	8	1.55e-3	20	-2.838e-6	20
24		min	-.011	7	-.008	8	-.008	8	-4.784e-4	18	-1.536e-3	6	-3.708e-4	6
25	N13	max	.004	5	0	19	0	6	1.541e-4	6	5.009e-4	5	6.823e-5	18
26		min	-.004	19	-.001	5	0	20	2.499e-6	20	-4.71e-4	19	-1.313e-4	8
27	N14	max	.007	20	0	18	0	6	6.158e-4	6	1.65e-3	20	8.346e-6	17
28		min	-.007	6	-.005	8	0	20	-4.06e-4	20	-1.64e-3	6	-4.097e-4	7
29	N15	max	.003	5	0	18	0	6	1.828e-4	6	4.533e-4	5	1.003e-4	18
30		min	-.003	19	-.001	8	0	20	-4.607e-5	20	-4.34e-4	19	-1.205e-4	8
31	N16	max	.005	5	0	18	.003	6	8.175e-4	6	2.002e-3	20	-7.739e-5	17
32		min	-.004	19	-.006	8	-.002	20	-5.49e-4	20	-1.988e-3	6	-5.273e-4	7
33	N17	max	.007	17	0	18	.003	18	3.149e-4	8	5.931e-4	17	2.073e-4	5
34		min	-.01	7	-.001	8	-.004	8	-1.761e-4	18	-8.176e-4	7	-1.805e-4	19
35	N18	max	.009	17	0	18	.005	18	9.036e-4	8	1.793e-3	20	-4.22e-5	20
36		min	-.011	7	-.006	8	-.01	8	-5.457e-4	18	-1.776e-3	18	-5.372e-4	6
37	N19	max	0	20	0	6	.002	18	1.314e-4	6	6.151e-4	17	2.19e-4	7
38		min	-.001	6	0	20	-.003	8	-4.695e-5	20	-8.585e-4	7	-1.266e-4	17
39	N20	max	0	17	0	8	0	20	1.982e-4	8	1.547e-7	19	8.287e-5	17
40		min	0	7	0	18	0	1	-1.063e-5	18	-1.547e-7	5	-1.598e-4	7
41	N21	max	.003	5	0	18	0	6	1.54e-4	6	5.007e-4	5	6.823e-5	18
42		min	-.002	19	-.001	8	0	20	2.445e-6	20	-4.709e-4	19	-1.313e-4	8
43	N22	max	.007	17	0	18	.002	18	2.678e-4	8	6.528e-4	17	1.722e-4	17
44		min	-.009	7	-.001	8	-.003	8	-1.125e-4	18	-8.942e-4	7	-1.751e-4	7
45	N23	max	0	18	0	18	.003	18	1.962e-4	18	2.71e-4	18	2.166e-4	8
46		min	-.002	8	-.001	8	-.007	8	-3.763e-4	8	-2.789e-4	8	-1.6e-4	18
47	N24	max	0	17	.002	8	0	20	5.134e-4	8	1.547e-7	19	1.14e-4	18
48		min	0	7	0	18	0	1	-2.634e-4	18	-1.547e-7	5	-2.201e-4	8
49	N25	max	.004	17	0	18	0	6	6.158e-4	6	1.65e-3	20	8.346e-6	17
50		min	-.005	7	-.006	8	0	20	-4.06e-4	20	-1.64e-3	6	-4.097e-4	7
51	N26	max	.009	17	0	18	.003	18	7.825e-4	8	1.55e-3	20	-2.838e-6	20
52		min	-.01	7	-.006	8	-.008	8	-4.785e-4	18	-1.536e-3	6	-3.708e-4	6
53	N27	max	.002	18	0	20	.003	18	1.963e-4	18	2.71e-4	18	2.166e-4	8
54		min	-.002	8	0	6	-.007	8	-3.762e-4	8	-2.789e-4	8	-1.6e-4	18
55	N28	max	0	20	0	20	0	20	5.135e-4	8	0	20	1.14e-4	18
56		min	0	1	0	1	0	1	-2.634e-4	18	0	1	-2.201e-4	8
57	N29	max	.002	17	0	20	.002	18	1.315e-4	6	6.153e-4	17	2.19e-4	7
58		min	-.003	7	0	6	-.003	8	-4.69e-5	20	-8.587e-4	7	-1.266e-4	17
59	N30	max	0	20	0	20	0	20	1.983e-4	8	0	20	8.287e-5	17
60		min	0	1	0	1	0	1	-1.058e-5	18	0	1	-1.598e-4	7
61	N31	max	0	8	0	20	.002	8	5.134e-4	8	0	20	1.14e-4	18
62		min	0	18	0	1	0	18	-2.633e-4	18	0	1	-2.201e-4	8
63	N32	max	0	7	0	20	0	8	1.982e-4	8	0	20	8.279e-5	17
64		min	0	17	0	1	0	18	-1.05e-5	18	0	1	-1.597e-4	7
65	N33	max	.001	8	0	17	0	18	1.896e-4	18	2.319e-4	18	3.161e-4	8
66		min	0	18	0	7	-.001	8	-3.856e-4	8	-2.387e-4	8	-1.653e-4	18
67	N34	max	0	8	0	20	0	18	8.236e-5	6	4.937e-4	17	1.997e-4	7

Envelope Joint Displacements (Continued)

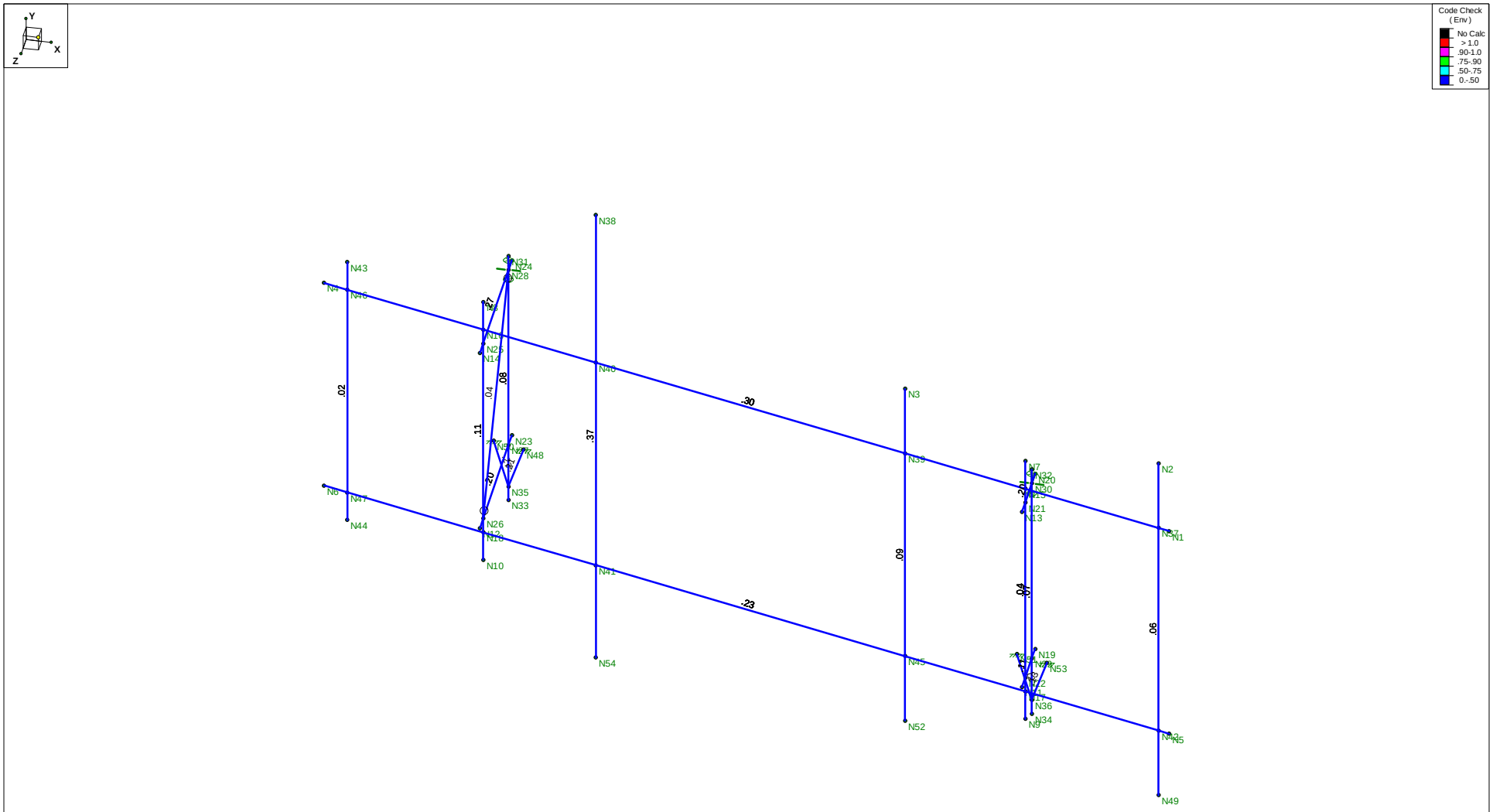
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
68		min	0	18	0	6	-.002	8	-2.867e-5	20	-6.821e-4	7	-1.107e-4	17
69	N35	max	0	8	0	17	0	18	1.897e-4	18	2.319e-4	18	3.161e-4	8
70		min	0	18	0	7	-.002	8	-3.857e-4	8	-2.387e-4	8	-1.653e-4	18
71	N36	max	0	8	0	20	0	18	8.244e-5	6	4.937e-4	17	1.997e-4	7
72		min	0	18	0	6	-.002	8	-2.875e-5	20	-6.821e-4	7	-1.108e-4	17
73	N37	max	.008	8	-.006	17	.029	6	4.369e-4	8	1.697e-3	20	3.037e-5	17
74		min	-.008	18	-.017	7	-.027	20	-2.856e-4	18	-1.788e-3	6	-6.336e-4	7
75	N38	max	.082	5	-.014	18	.29	6	7.402e-3	6	3.315e-3	8	1.705e-3	19
76		min	-.051	19	-.027	8	-.277	20	-7.013e-3	20	-3.281e-3	6	-2.659e-3	5
77	N39	max	.014	8	-.007	19	.045	6	7.143e-4	18	2.684e-3	18	7.102e-4	6
78		min	-.013	18	-.017	5	-.044	20	-8.296e-4	8	-2.717e-3	8	7.482e-5	20
79	N40	max	.025	8	-.014	18	.08	6	3.47e-3	6	3.315e-3	8	2.038e-4	18
80		min	-.023	18	-.027	8	-.08	20	-3.088e-3	20	-3.281e-3	6	-1.156e-3	8
81	N41	max	.02	20	-.014	18	.068	18	2.255e-3	8	2.788e-3	8	9.931e-5	20
82		min	-.022	6	-.027	8	-.074	8	-1.838e-3	18	-2.752e-3	18	-1.046e-3	6
83	N42	max	.013	17	-.006	17	.038	6	1.812e-4	5	1.895e-3	20	-1.787e-4	17
84		min	-.017	7	-.017	7	-.035	20	-1.928e-5	19	-2.018e-3	6	-4.407e-4	7
85	N43	max	.01	6	.005	6	.04	8	1.836e-4	6	1.405e-3	20	6.706e-5	17
86		min	-.008	20	-.002	20	-.038	18	-4.298e-5	20	-1.387e-3	6	-1.653e-4	7
87	N44	max	.007	17	.005	6	.027	20	4.644e-4	8	1.366e-3	20	9.776e-5	20
88		min	-.009	7	-.002	20	-.034	6	-2.877e-4	18	-1.354e-3	6	-1.715e-4	6
89	N45	max	.012	20	-.007	19	.041	18	8.13e-4	20	2.401e-3	18	6.66e-4	8
90		min	-.014	6	-.017	5	-.046	8	-9.117e-4	6	-2.514e-3	8	1.115e-4	18
91	N46	max	.01	6	.005	6	.04	8	1.824e-4	6	1.405e-3	20	6.829e-5	17
92		min	-.009	20	-.002	20	-.038	18	-4.175e-5	20	-1.387e-3	6	-1.666e-4	7
93	N47	max	.007	18	.005	6	.03	20	4.631e-4	8	1.366e-3	20	9.776e-5	20
94		min	-.009	8	-.002	20	-.035	6	-2.864e-4	18	-1.354e-3	6	-1.715e-4	6
95	N48	max	0	20	0	20	0	20	0	20	0	20	0	20
96		min	0	1	0	1	0	1	0	1	0	1	0	1
97	N49	max	.011	17	-.006	17	.038	6	1.812e-4	5	1.895e-3	20	-1.629e-4	17
98		min	-.024	7	-.017	7	-.037	20	-1.928e-5	19	-2.018e-3	6	-4.564e-4	7
99	N50	max	0	20	0	20	0	20	0	20	0	20	0	20
100		min	0	1	0	1	0	1	0	1	0	1	0	1
101	N51	max	0	20	0	20	0	20	0	20	0	20	0	20
102		min	0	1	0	1	0	1	0	1	0	1	0	1
103	N52	max	.021	8	-.007	19	.057	18	1.111e-3	20	2.401e-3	18	8.511e-4	5
104		min	-.012	18	-.017	5	-.06	8	-1.209e-3	6	-2.514e-3	8	-7.241e-5	19
105	N53	max	0	20	0	20	0	20	0	20	0	20	0	20
106		min	0	1	0	1	0	1	0	1	0	1	0	1
107	N54	max	.022	20	-.014	18	.118	18	3.068e-3	8	2.788e-3	8	3.026e-4	17
108		min	-.043	6	-.027	8	-.133	8	-2.652e-3	18	-2.752e-3	18	-1.248e-3	7

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

	Me...	Sha...	Code Ch...	Lo...	LC	Shear...	Loc...	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om...	Mnzz/o...	Cb	Eqn
1	M19	PIP...	.367	64	8	.051	20		6	9924.215	21377.246	1.245	1.245	2.303	H1-1b
2	M1	PIP...	.304	13...	8	.182	134...		8	20504.459	21377.246	1.245	1.245	3.583	H1-1b
3	M7	PIP...	.271	3.0...	8	.049	3.0...		6	19931.534	21377.246	1.245	1.245	1.723	H1-1b
4	M12	L2x...	.270	0	8	.042	.296	y	8	19716.007	20349.701	.46	1.049	2.243	H2-1
5	M2	PIP...	.234	13...	6	.111	134...		6	20504.459	21377.246	1.245	1.245	3.329	H1-1b
6	M13	L2x...	.210	0	8	.036	.198	y	8	19716.007	20349.701	.46	1.049	2.157	H2-1

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

	Me...	Sha...	Code Ch...	Lo...	LC	Shear...	Loc...	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om...	Mnzz/o...	Cb	Eqn
7	M5	PIP...	.197	9	5	.111	9		5	21122.466	21377.246	1.245	1.245	1.477	H1-1b
8	M8	PIP...	.197	3.0...	8	.035	25....		8	19931.534	21377.246	1.245	1.245	1.17	H1-1b
9	M15	L2x...	.132	0	7	.035	0	z	7	19716.007	20349.701	.46	1.049	2.154	H2-1
10	M14	L2x...	.118	0	8	.035	9.4...	y	7	19716.007	20349.701	.46	1.049	2.248	H2-1
11	M4	PIP...	.108	8.75	6	.204	8.75		8	28234.382	33742.515	2.393	2.393	2.266	H1-1b
12	M6	PIP...	.108	9	7	.144	9		7	21122.466	21377.246	1.245	1.245	1.54	H1-1b
13	M18	PIP...	.089	14....	6	.015	14....		6	13883.389	21377.246	1.245	1.245	1.699	H1-1b
14	M9	PIP...	.077	41....	8	.056	49....		8	28763.977	33742.515	2.393	2.393	1.574	H1-1b
15	M10	PIP...	.067	49....	7	.067	49....		7	28763.977	33742.515	2.393	2.393	2.431	H1-1b
16	M17	PIP...	.056	57....	5	.020	14....		8	13883.389	21377.246	1.245	1.245	1.731	H1-1b
17	M16	L2x...	.043	22....	5	.006	44....	y	8	10171.08	20349.701	.46	1.011	1.136	H2-1
18	M3	PIP...	.037	47....	6	.079	8.75		8	28234.382	33742.515	2.393	2.393	2.261	H1-1b
19	M11	PIP...	.020	6.4...	8	.003	6.4...		8	16464.642	21377.246	1.245	1.245	1.159	H1-1b



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
FJP	CT11334A_AMA	Sept 2, 2020 at 12:04 PM
20074.67	Member Unity Check	CT11334A_AMA.R3D

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Branford, CT 06405 F: (203) 488-8587

Subject: Water Tank Analysis

Location: Stamford, CT

Rev. 2: 9/1/20

Prepared by: T.J.L; Checked by: C.F.C.
Job No. 20074.67

Design Wind Load on Water Tanks:

Wind Speed =	V := 120 mph	(User Input)	
Exposure Category =	Exp := C	(User Input)	
Importance Factor =	I := 1.15	(User Input)	(AWWA D100-05 Sec. 3.1.4)
Commponent =	Tank Roof	(User Input)	
Type of Surface =	TOS := DC	(User Input)	(AWWA D100-05 Table 2)
Height Above Grade =	Z := 100 ft	(User Input)	
Area =	A := 72 sf	(User Input)	
Distance from Bot Tank to Centroid =	D_1 := 60 ft	(User Input)	

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases} = 9.5$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.27$$

Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 53.65$		(AWWA D100-05 Eq. 3-2)
Force Coefficient =	$C_f = 0.5$		(AWWA D100-05 Table 2)
Gust Effect Factor =	G := 1.0		(AWWA D100-05 Sec. 3.1.4)
Wind Pressure =	$P_W := q_z \cdot G \cdot C_f = 27$	psf	(AWWA D100-05 Eq. 3.1)
Wind Force =	$F_1 := P_W \cdot A = 1932$	lbs	
Overturning Moment @ Base =	$M_1 := F_1 \cdot D_1 = 115893$	ft·lbs	

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Commponent = Tank Wall (User Input)

Type of Surface = TOS := Cyl (User Input) (AWWA D100-05 Table 2)

Height Above Grade = Z := 92 ft (User Input)

Area = A := 398 sf (User Input)

Distance from Bot Tank to Centroid = $D_2 := 53$ ft

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 \text{ if Exp = B} = 900 \\ 900 \text{ if Exp = C} \\ 700 \text{ if Exp = D} \end{cases}$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 \text{ if Exp = B} = 9.5 \\ 9.5 \text{ if Exp = C} \\ 11.5 \text{ if Exp = D} \end{cases}$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \text{ if } 15 \le Z \le zg = 1.24 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} \text{ if } Z < 15 \end{cases}$$

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 52.72$ (AWWA D100-05 Eq. 3-2)

Force Coefficient = $C_f = 0.6$ (AWWA D100-05 Table 2)

Gust Effect Factor = $G := 1.0$ (AWWA D100-05 Sec. 3.1.4)

Wind Pressure = $P_w := q_z \cdot G \cdot C_f = 32$ psf (AWWA D100-05 Eq. 3.1)

Wind Force = $F_2 := P_w \cdot A = 12590$ lbs

Overturning Moment @ Base = $M_2 := F_2 \cdot D_2 = 667252$ ft·lbs

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Commponent = Tank Bottom (User Input)

Type of Surface = TOS := DC (User Input) (AWWA D100-05 Table 2)

Height Above Grade = Z := 90 ft (User Input)

Area = A := 92 sf (User Input)

Distance from Bot Tank to Centroid = $D_3 := 43$ ft

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases} = 9.5$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.24$$

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 52.48$ (AWWA D100-05 Eq. 3-2)

Force Coefficient = $C_f = 0.5$ (AWWA D100-05 Table 2)

Gust Effect Factor = $G := 1.0$ (AWWA D100-05 Sec. 3.1.4)

Wind Pressure = $P_w := q_z \cdot G \cdot C_f = 26$ psf (AWWA D100-05 Eq. 3.1)

Wind Force = $F_3 := P_w \cdot A = 2414$ lbs

Overturning Moment @ Base = $M_3 := F_3 \cdot D_3 = 103800$ ft·lbs

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Commponent =	Tank Leg	(User Input)	
Type of Surface =	TOS := Flat	(User Input)	(AWWA D100-05 Table 2)
Height Above Grade =	$Z := 65$ ft	(User Input)	
Area =	$A := 1.5$ $\frac{sf}{ft}$	(User Input)	
Distance from Bot Tank to Centroid =	$D_4 := 20$ ft		
Leg Height =	$H_{Leg} := 40$ ft		

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases} = 9.5$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.16$$

Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 49$		(AWWA D100-05 Eq. 3-2)
Force Coefficient =	$C_f = 1$		(AWWA D100-05 Table 2)
Gust Effect Factor =	$G := 1.0$		(AWWA D100-05 Sec. 3.1.4)
Wind Pressure =	$P_w := q_z \cdot G \cdot C_f = 49$	psf	(AWWA D100-05 Eq. 3.1)
Wind Force Top =	$F_4 := P_w \cdot A = 74$	lb/ft	
Overturning Moment @ Base =	$M_4 := F_4 \cdot H_{Leg} \cdot D_4 = 58803$	ft·lbs	

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Commponent = Tank Steel Riser (User Input)

Type of Surface = TOS := Cyl (User Input) (AWWA D100-05 Table 2)

Height Above Grade = $Z := 100$ ft (User Input)

Area = $A := 3 \frac{sf}{ft}$ (User Input)

Distance from Bot Tank to Centroid = $D_5 := 20$ ft

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases} = 9.5$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.27$$

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 53.65$ (AWWA D100-05 Eq. 3-2)

Force Coefficient = $C_f = 0.6$ (AWWA D100-05 Table 2)

Gust Effect Factor = $G := 1.0$ (AWWA D100-05 Sec. 3.1.4)

Wind Pressure = $P_w := q_z \cdot G \cdot C_f = 32$ psf (AWWA D100-05 Eq. 3.1)

Wind Force Top = $F_5 := P_w \cdot A = 97$ lb/ft

Overturning Moment @ Base = $M_5 := F_5 \cdot H_{Leg} \cdot D_5 = 77262$ ft·lbs

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Commponent = AT&T Equipment (User Input)

Type of Surface = TOS := Flat (User Input) (AWWA D100-05 Table 2)

Height Above Grade = Z := 100 ft (User Input)

Area = A := 34 sf (User Input)

(Assumes one sector of equipment consisting of (3) antennas and (4) RRHS)

Distance from Bot Tank to Centroid = $D_6 := 60$ ft

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} = 900 \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases}$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} = 9.5 \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases}$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg = 1.27 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$$

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 53.65$ (AWWA D100-05 Eq. 3-2)

Force Coefficient = $C_f = 1$ (AWWA D100-05 Table 2)

Gust Effect Factor = $G := 1.0$ (AWWA D100-05 Sec. 3.1.4)

Wind Pressure = $P_w := q_z \cdot G \cdot C_f = 54$ psf (AWWA D100-05 Eq. 3.1)

Wind Force = $F_6 := P_w \cdot A = 1824$ lb

Overturning Moment @ Base = $M_6 := F_6 \cdot D_6 = 109454$ ft·lbs

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Commponent = Sprint Equipment (User Input)

Type of Surface = TOS := Flat (User Input) (AWWA D100-05 Table 2)

Height Above Grade = Z := 93 ft (User Input)

Area = A := 25 sf (User Input)

(Assumes one sector of equipment consisting of (2) antennas and (3) RRHS)

Distance from Bot Tank to Centroid = $D_7 := 53$ ft

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases} = 9.5$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.25$$

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 52.84$ (AWWA D100-05 Eq. 3-2)

Force Coefficient = $C_f = 1$ (AWWA D100-05 Table 2)

Gust Effect Factor = $G := 1.0$ (AWWA D100-05 Sec. 3.1.4)

Wind Pressure = $P_w := q_z \cdot G \cdot C_f = 53$ psf (AWWA D100-05 Eq. 3.1)

Wind Force = $F_7 := P_w \cdot A = 1321$ lb

Overturning Moment @ Base = $M_7 := F_7 \cdot D_7 = 70014$ ft·lbs

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Commponent = T-Mobile Equipment (User Input)

Type of Surface = TOS := Flat (User Input) (AWWA D100-05 Table 2)

Height Above Grade = Z := 85 ft (User Input)

Area = A := 30 sf (User Input)

(Assumes one sector of equipment consisting of (3) antennas and (2) RRHS)

Distance from Bot Tank to Centroid = $D_8 := 45$ ft

Nominal Height of the Atmospheric Boundary Layer =

$$zg := \begin{cases} 1200 & \text{if Exp = B} = 900 \\ 900 & \text{if Exp = C} \\ 700 & \text{if Exp = D} \end{cases}$$

3-Sec Gust Speed Power Law Exponent =

$$\alpha := \begin{cases} 7 & \text{if Exp = B} = 9.5 \\ 9.5 & \text{if Exp = C} \\ 11.5 & \text{if Exp = D} \end{cases}$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg = 1.22 \\ 2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases}$$

Velocity Pressure = $q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I = 51.85$ (AWWA D100-05 Eq. 3-2)

Force Coefficient = $C_f = 1$ (AWWA D100-05 Table 2)

Gust Effect Factor = $G := 1.0$ (AWWA D100-05 Sec. 3.1.4)

Wind Pressure = $P_w := q_z \cdot G \cdot C_f = 52$ psf (AWWA D100-05 Eq. 3.1)

Wind Force = $F_8 := P_w \cdot A = 1555$ lb

Overturning Moment @ Base = $M_8 := F_8 \cdot D_8 = 69997$ ft·lbs

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Commponent =	Cables	(User Input)	
Type of Surface =	TOS := Cyl	(User Input)	(AWWA D100-05 Table 2)
Height Above Grade =	Z := 50 ft	(User Input)	
Area =	A := 0.51 $\frac{sf}{ft}$	(User Input)	
	(Three 1-5/8" dia cable exposed Typ. of 2 legs)		
Distance from Bot Tank to Centroid =	D_g := 20 ft		
Nominal Height of the Atmospheric Boundary Layer =	zg := 1200 if Exp = B = 900 900 if Exp = C 700 if Exp = D		(ACSE 7-02 Table 6-2)
3-Sec Gust Speed Power Law Exponent =	α := 7 if Exp = B = 9.5 9.5 if Exp = C 11.5 if Exp = D		(ACSE 7-02 Table 6-2)
Exposure Coefficient =	$K_z := 2.01\left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)}$ if $15 \le Z \le zg$ = 1.09 $2.01\left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)}$ if $Z < 15$		(ACSE 7-02 Table 6-3)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot V^2 \cdot I$ = 46.37		(AWWA D100-05 Eq. 3-2)
Force Coefficient =	C_f = 0.6		(AWWA D100-05 Table 2)
Gust Effect Factor =	G := 1.0		(AWWA D100-05 Sec. 3.1.4)
Wind Pressure =	$P_w := q_z \cdot G \cdot C_f$ = 28	psf	(AWWA D100-05 Eq. 3.1)
Wind Force =	$F_g := P_w \cdot A$ = 14	lb/ft	
Overturning Moment @ Base =	$M_g := F_g \cdot H_{Leg} \cdot D_g \cdot 2$ = 22702	ft·lbs	

Total Overtunring Moment = $M_{ot} := M_1 + M_2 + M_3 + M_4 + M_5 + M_6 + M_7 + M_8 + M_9 = 1295177$ ft·lbs

Weights:

Weight of Water = $W_{water} := 60000 \cdot gal \cdot 62.4 \cdot pcf = 500500\,lb$ Assumed 60,0000 Tank

Weight of Tank Shell = $W_{shell} := 25000 \cdot lb$ Assumed 1/4" Thick Plate

Weight of Tank Leg = $W_{Leg} := 19.57 \cdot in^2 \cdot 490 \cdot pcf \cdot H_{Leg} \cdot ft \cdot 4 = 10655\,lb$

Weight of Bracing = $W_{bracing} := 3000 \cdot lb$

Weight of Catwalk = $W_{catwalk} := 1250 \cdot lb$

Weight of Misc. = $W_{misc} := 10000 \cdot lb$

Weight of AT&T = $W_{ATT} := 2200 \cdot lb$

Weight of Sprt = $W_{Sprt} := 1500 \cdot lb$

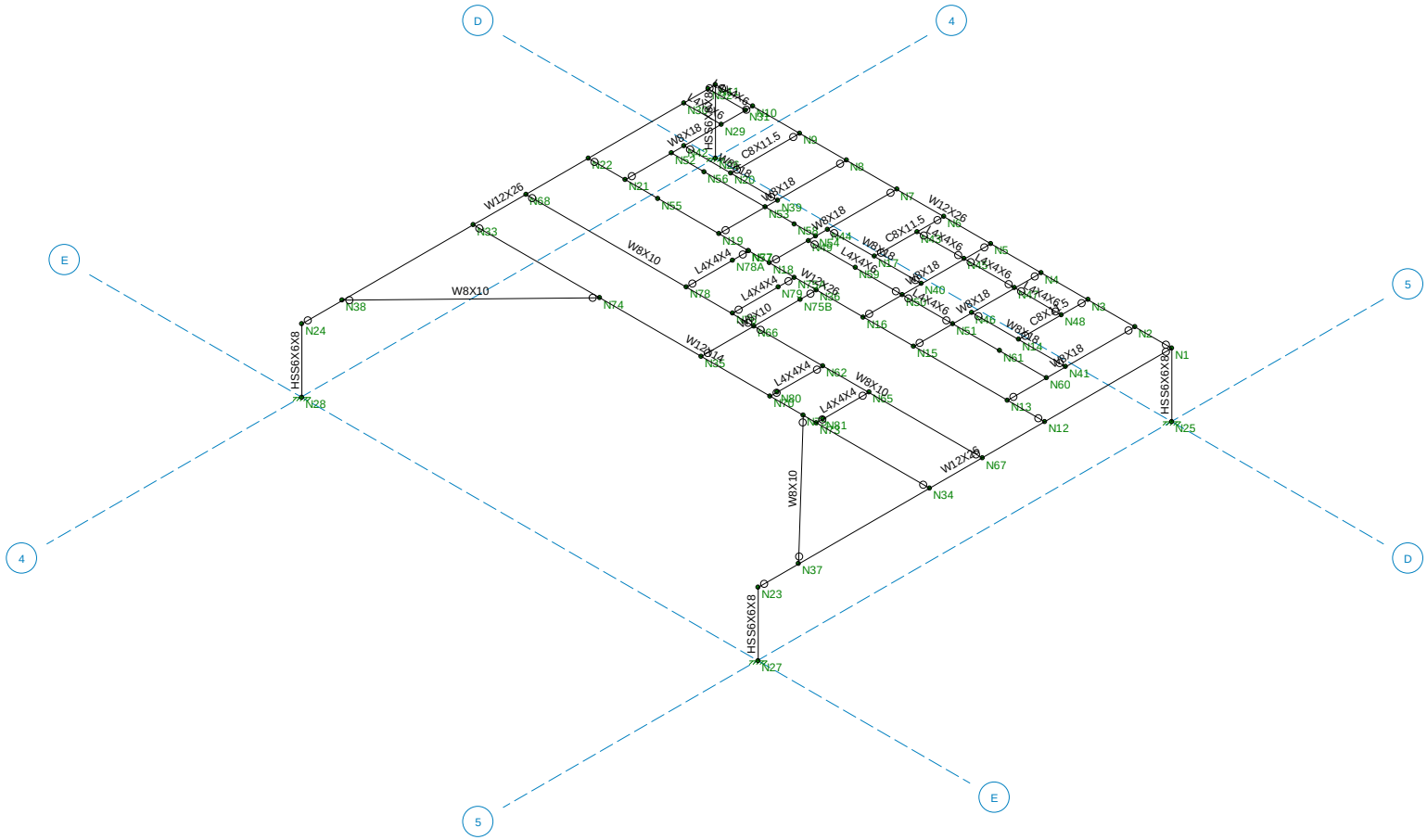
Weight of TMo = $W_{TMo} := 2000 \cdot lb$

Total Weight =

$$W_{tot} := W_{water} + W_{shell} + W_{Leg} + W_{bracing} + W_{catwalk} + W_{misc} + W_{ATT} + W_{Sprt} + W_{TMo} = 556105\,lb$$

Member Stress Check: (Based on AWWA D100-05)

Commponent =	Tank Leg	(User Input)	
Number of Legs =	$N_{Leg} := 4$	(User Input)	
Leg Spread =	$D_{Leg} := 19.5 \cdot ft$	(User Input)	
Area =	$Area := 19.57 \cdot in^2$	(User Input)	
Section Modulus =	$S := 81.1 \cdot in^3$	(User Input)	
Unbraced Length =	$L := 41 \cdot ft$	(User Input)	
Radius of Gyration =	$r := 5.9 \cdot in$	(User Input)	
Effective Length Factor =	$K := 1$	(User Input)	
Modulus of Elasticity =	$E := 29000 \cdot ksi$	(User Input)	
Material Class =	$MC := 2$	(User Input)	(AWWA D100-05 Table 9)
Allowable Local Buckling Stress =	$F_L = 18 \cdot ksi$		(AWWA D100-05 Sec. 3.4.2)
Column Slendeness Ratio =	$C_c := \sqrt{\frac{\pi^2 \cdot E}{F_L}} = 126.099$		(AWWA D100-05 Eq. 3-10)
Slenderness Reduction Factor =	$K_\varphi := \begin{cases} 1 - 0.5 \cdot \left[\frac{\left(\frac{K \cdot L}{r}\right)}{C_c}\right]^2 & \text{if } 25 < \frac{K \cdot L}{r} < C_c = 0.7813 \\ 0.5 \cdot \left(\frac{C_c}{\frac{K \cdot L}{r}}\right)^2 & \text{if } \frac{K \cdot L}{r} \geq C_c \\ 1.0 & \text{if } \frac{K \cdot L}{r} \leq 25 \end{cases}$		(AWWA D100-05 Eq. 3-7) (AWWA D100-05 Eq. 3-8) (AWWA D100-05 Eq. 3-9)
Allowable Compressive Stress Due to Axial Load =	$F_a := F_L \cdot K_\varphi = 14.064 \cdot ksi$		(AWWA D100-05 Eq. 3-4)
Allowable Compressive Stress Due to Bending Moment =	$F_b := F_L = 18 \cdot ksi$		(AWWA D100-05 Eq. 3-5)
Axial Stress =	$f_a := \frac{W_{tot}}{Area \cdot N_{Leg}} + \frac{M_{ot} \cdot ft \cdot lb}{\left(D_{Leg}^2 \cdot 2\right)^{0.5} \cdot Area} = 9.504 \cdot ksi$		
Combined Stress Check =	$Tank\_Leg := if\left(\frac{f_a}{F_a} \leq 1.0, "OK", "Overstressed"\right)$		(AWWA D100-05 Eq. 3-6)
	Tank_Leg = "OK"		
	$\frac{f_a}{F_a} = 67.6 \cdot \%$		



Centek Engineering		
FJP	CT11334A	Oct 8, 2020 at 4:51 PM
20074.67	Member Framing	CT11334A_Equipment Platform_1_Rev.1.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(E)W12X26_A	W12X26	Beam	Wide Flange	A36 Gr.36	Typical	7.65	17.3	204	.3
2	(E) W8X18_B	W8X18	Beam	Wide Flange	A36 Gr.36	Typical	5.26	7.97	61.9	.172
3	(E) C8X11.5_C	C8X11.5	Beam	Wide Flange	A36 Gr.36	Typical	3.37	1.31	32.5	.13
4	(E)HSS6X6X1/2	HSS6X6X8	Column	HSS Pipe	A500 Gr.B R...	Typical	9.74	48.3	48.3	81.1
5	(E)L4X4X3/8	L4X4X6	Beam	Single Angle	A36 Gr.36	Typical	2.86	4.32	4.32	.141
6	(P)W12X14	W12X14	Beam	Wide Flange	A992	Typical	4.16	2.36	88.6	.07
7	(P)W8X10	W8X10	Beam	HSS Pipe	A992	Typical	2.96	2.09	30.8	.043
8	(P)L4x4x1/4	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	(E)W12X2...	19.5	Segment		Lbyy						Lateral
2	M2	(E)W12X2...	19.5	Segment		Lbyy						Lateral
3	M3	(E)HSS6X...	3									Lateral
4	M4	(E)HSS6X...	3									Lateral
5	M5	(E)HSS6X...	3									Lateral
6	M6	(E)HSS6X...	3									Lateral
7	M7	(E)W12X2...	21.5	Segment		Lbyy						Lateral
8	M8	(E)W12X2...	21.5	Segment		Lbyy						Lateral
9	M9	(E) W8X18...	6			Lbyy						Lateral
10	M10	(E) C8X11...	3.25			Lbyy						Lateral
11	M11	(E) W8X18...	6	Segment		Lbyy						Lateral
12	M12	(E) W8X18...	6	Segment		Lbyy						Lateral
13	M13	(E) C8X11...	3.25	Segment		Lbyy						Lateral
14	M14	(E) W8X18...	6	Segment		Lbyy						Lateral
15	M15	(E) W8X18...	6	Segment		Lbyy						Lateral
16	M16	(E) W8X18...	6			Lbyy						Lateral
17	M17	(E) C8X11...	3.25	Segment		Lbyy						Lateral
18	M18	(E)L4X4X3/8	1.75			Lbyy						Lateral
19	M19	(E)L4X4X3/8	1.75			Lbyy						Lateral
20	M20	(E) W8X18...	4.417			Lbyy						Lateral
21	M21	(E) W8X18...	4.417			Lbyy						Lateral
22	M22	(E) W8X18...	4.417			Lbyy						Lateral
23	M23	(E)L4X4X3/8	4.417			Lbyy						Lateral
24	M24	(E)L4X4X3/8	2.375			Lbyy						Lateral
25	M25	(E)L4X4X3/8	2.208			Lbyy						Lateral
26	M26	(E)L4X4X3/8	2.375			Lbyy						Lateral
27	M27	(E)L4X4X3/8	2.208			Lbyy						Lateral
28	M31	(P)W12X14	21.5	Segment		Lbyy						Lateral
29	M32	(P)W8X10	5.417			Lbyy						Lateral
30	M33	(P)W8X10	10.75	Segment		Lbyy						Lateral
31	M34	(P)W8X10	10.75			Lbyy						Lateral
32	M35	(P)W8X10	8.58			Lbyy						Lateral
33	M36	(P)W8X10	8.58			Lbyy						Lateral
34	M37	(P)L4x4x1/4	2.933			Lbyy						Lateral
35	M38	(P)L4x4x1/4	2.933			Lbyy						Lateral
36	M39	(P)L4x4x1/4	2.483			Lbyy						Lateral
37	M40	(P)L4x4x1/4	2.483			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Ru...
1	M1	N1	N23			(E)W12X26_A	Beam	Wide Flange	A36 Gr.36	Typical
2	M2	N11	N24			(E)W12X26_A	Beam	Wide Flange	A36 Gr.36	Typical
3	M3	N27	N23			(E)HSS6X6X1/2	Column	HSS Pipe	A500 Gr...	Typical
4	M4	N28	N24			(E)HSS6X6X1/2	Column	HSS Pipe	A500 Gr...	Typical
5	M5	N26	N11			(E)HSS6X6X1/2	Column	HSS Pipe	A500 Gr...	Typical
6	M6	N25	N1			(E)HSS6X6X1/2	Column	HSS Pipe	A500 Gr...	Typical
7	M7	N11	N1			(E)W12X26_A	Beam	Wide Flange	A36 Gr.36	Typical
8	M8	N22	N12			(E)W12X26_A	Beam	Wide Flange	A36 Gr.36	Typical
9	M9	N2	N13			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
10	M10	N3	N14			(E) C8X11.5_C	Beam	Wide Flange	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Ru...
11	M11	N4	N15			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
12	M12	N5	N16			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
13	M13	N6	N17			(E) C8X11.5_C	Beam	Wide Flange	A36 Gr.36	Typical
14	M14	N7	N18			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
15	M15	N8	N19			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
16	M16	N10	N21			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
17	M17	N9	N20			(E) C8X11.5_C	Beam	Wide Flange	A36 Gr.36	Typical
18	M18	N31	N32		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N29	N30		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N42	N39			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
21	M21	N44	N40			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
22	M22	N46	N41			(E) W8X18_B	Beam	Wide Flange	A36 Gr.36	Typical
23	M23	N49	N50		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N50	N51		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
25	M25	N43	N45		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
26	M26	N45	N47		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
27	M27	N47	N48		90	(E)L4X4X3/8	Beam	Single Angle	A36 Gr.36	Typical
28	M28	N52	N53		90	RIGID	None	None	RIGID	Typical
29	M29	N53	N54		90	RIGID	None	None	RIGID	Typical
30	M30	N51	N60		90	RIGID	None	None	RIGID	Typical
31	M31	N33	N34			(P)W12X14	Beam	Wide Flange	A992	Typical
32	M32	N35	N36			(P)W8X10	Beam	HSS Pipe	A992	Typical
33	M33	N66	N67			(P)W8X10	Beam	HSS Pipe	A992	Typical
34	M34	N68	N66			(P)W8X10	Beam	HSS Pipe	A992	Typical
35	M35	N37	N75			(P)W8X10	Beam	HSS Pipe	A992	Typical
36	M36	N38	N74			(P)W8X10	Beam	HSS Pipe	A992	Typical
37	M37	N77	N78			(P)L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
38	M38	N75A	N76			(P)L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
39	M39	N70	N62			(P)L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical
40	M40	N73	N65			(P)L4x4x1/4	Beam	Single Angle	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
1	N1	21.5	3	-0.	0	
2	N2	19.75	3	-0.	0	Yes
3	N3	17.541667	3	-0.	0	
4	N4	15.333333	3	-0.	0	
5	N5	12.958333	3	-0.	0	
6	N6	10.75	3	-0.	0	
7	N7	8.541667	3	-0.	0	
8	N8	6.166667	3	-0.	0	
9	N9	3.958333	3	-0.	0	
10	N10	1.75	3	-0.	0	
11	N11	0	3	0	0	
12	N12	21.5	3	6	0	
13	N13	19.75	3	6	0	
14	N14	17.541667	3	3.25	0	
15	N15	15.333333	3	6	0	
16	N16	12.958333	3	6	0	
17	N17	10.75	3	3.25	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
18	N18	8.541667	3	6	0	
19	N19	6.166667	3	6	0	
20	N20	3.958333	3	3.25	0	
21	N21	1.75	3	6	0	
22	N22	0.	3	6	0	
23	N23	21.5	3	19.5	0	
24	N24	0.	3	19.5	0	
25	N25	21.5	0	-0.	0	
26	N26	0	0	0	0	
27	N27	21.5	0	19.5	0	
28	N28	0.	0	19.5	0	
29	N29	1.75	3	1.486667	0	
30	N30	0.	3	1.486667	0	
31	N31	1.75	3	0.333333	0	
32	N32	0.	3	0.333333	0	
33	N33	0.	3	11.416667	0	
34	N34	21.5	3	11.416667	0	
35	N35	10.75	3	11.416667	0	
36	N36	10.75	3	6	0	
37	N37	21.5	3	17.583333	0	
38	N38	0.	3	17.583333	0	
39	N39	6.166667	3	3.25	0	
40	N40	12.958333	3	3.25	0	
41	N41	19.75	3	3.25	0	
42	N42	1.75	3	3.25	0	
43	N43	10.75	3	1.24	0	
44	N44	8.541667	3	3.25	0	
45	N45	12.958333	3	1.24	0	
46	N46	15.333333	3	3.25	0	
47	N47	15.333333	3	1.24	0	
48	N48	17.541667	3	1.24	0	
49	N49	8.541667	3	4.166667	0	
50	N50	12.958333	3	4.166667	0	
51	N51	15.333333	3	4.166667	0	
52	N52	1.75	3	3.8225	0	
53	N53	6.166667	3	3.8225	0	
54	N54	8.541667	3	3.8225	0	
55	N55	3.281667	3	6	0	
56	N56	3.281667	3	3.8225	0	
57	N57	7.531667	3	6	0	
58	N58	7.531667	3	3.8225	0	
59	N59	10.75	3	4.166667	0	
60	N60	19.75	3	4.166667	0	
61	N61	17.541667	3	4.166667	0	
62	N62	13.991667	3	8.933333	0	
63	N65	16.158333	3	8.933333	0	
64	N66	10.75	3	8.933333	0	
65	N67	21.5	3	8.933333	0	
66	N68	0.	3	8.933333	0	
67	N70	13.991667	3	11.416667	0	
68	N73	16.158333	3	11.416667	0	
69	N74	5.965064	3	11.416667	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
70	N75	15.534936	3	11.416667	0	
71	N75A	9.725	3	6	0	
72	N76	9.725	3	8.933333	0	
73	N77	7.558333	3	6	0	
74	N78	7.558333	3	8.933333	0	
75	N75B	10.75	3	6.766667	0	
76	N78A	7.558333	3	6.766667	0	
77	N79	9.725	3	6.766667	0	
78	N80	13.991667	3	11.1	0	
79	N81	16.158333	3	11.1	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N26	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N27	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N28	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N74						
6	N75						

Member Point Loads (BLC 5 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Y	-.648	3.282
2	M8	Y	-.648	7.532
3	M28	Y	-.648	1.532
4	M29	Y	-.648	1.365
5	M39	Y	-.471	.317
6	M40	Y	-.471	.317
7	M39	Y	-.471	2.483
8	M40	Y	-.471	2.483
9	M23	Y	-.316	2.208
10	M30	Y	-.316	2.198
11	M13	Y	-.316	1.24
12	M10	Y	-.316	1.24
13	M34	Y	-.3	7.558
14	M34	Y	-.3	9.725
15	M37	Y	-.3	.767
16	M38	Y	-.3	.767
17	M18	Y	-.24	.167
18	M19	Y	-.24	.167
19	M18	Y	-.24	1.5
20	M19	Y	-.24	1.5
21	M7	Y	-.2	5.678
22	M7	Y	-.15	8.74
23	M7	Y	-.05	14.188

Member Point Loads (BLC 6 : Wind X-Direction (48psf))

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 6 : Wind X-Direction (48psf)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Y	.242	3.282
2	M8	Y	-.242	7.532
3	M28	Y	.242	1.532
4	M29	Y	-.242	1.365
5	M8	X	.194	3.282
6	M8	X	.194	7.532
7	M28	X	.194	1.532
8	M29	X	.194	1.365
9	M18	Y	-.134	.167
10	M19	Y	-.134	.167
11	M18	Y	.134	1.5
12	M19	Y	.134	1.5
13	M18	X	.046	.167
14	M19	X	.046	.167
15	M18	X	.046	1.5
16	M19	X	.046	1.5
17	M23	Y	.1	2.208
18	M13	Y	.1	1.24
19	M23	X	.157	2.208
20	M13	X	.157	1.24
21	M30	Y	-.1	2.198
22	M10	Y	-.1	1.24
23	M30	X	.157	2.198
24	M10	X	.157	1.24
25	M7	X	.144	5.678
26	M7	X	.029	14.188
27	M7	X	.038	8.74
28	M34	Y	.333	7.558
29	M34	Y	-.333	9.725
30	M37	X	.138	.767
31	M38	X	.138	.767
32	M37	Y	.333	.767
33	M38	Y	-.333	.767
34	M34	X	.138	7.558
35	M34	X	.138	9.725
36	M39	Y	.333	.317
37	M40	Y	-.333	.317
38	M39	X	.138	2.483
39	M40	X	.138	2.483
40	M39	Y	.333	2.483
41	M40	Y	-.333	2.483
42	M39	X	.138	.317
43	M40	X	.138	.317

Member Point Loads (BLC 7 : Wind Z-Direction (48psf))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M18	Y	-.134	.167
2	M19	Y	.134	.167
3	M18	Y	-.134	1.5
4	M19	Y	.134	1.5
5	M18	Z	-.071	.167

Member Point Loads (BLC 7 : Wind Z-Direction (48psf)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
6	M19	Z	-.071	.167
7	M18	Z	-.071	1.5
8	M19	Z	-.071	1.5
9	M8	Y	.479	3.282
10	M8	Y	.479	7.532
11	M28	Y	-.479	1.532
12	M29	Y	-.479	1.365
13	M8	Z	-.274	3.282
14	M8	Z	-.274	7.532
15	M28	Z	-.274	1.532
16	M29	Z	-.274	1.365
17	M23	Y	.579	2.208
18	M13	Y	-.579	1.24
19	M23	Z	-.378	2.208
20	M13	Z	-.378	1.24
21	M30	Y	.579	2.198
22	M10	Y	-.579	1.24
23	M30	Z	-.378	2.198
24	M10	Z	-.378	1.24
25	M7	Z	-.333	5.678
26	M7	Z	-.057	14.188
27	M7	Z	-.141	8.74
28	M34	Y	.333	7.558
29	M34	Y	.333	9.725
30	M37	Z	-.138	.767
31	M38	Z	-.138	.767
32	M37	Y	-.333	.767
33	M38	Y	-.333	.767
34	M34	Z	-.138	7.558
35	M34	Z	-.138	9.725
36	M39	Y	.333	.317
37	M40	Y	.333	.317
38	M39	Z	-.138	2.483
39	M40	Z	-.138	2.483
40	M39	Y	-.333	2.483
41	M40	Y	-.333	2.483
42	M39	Z	-.138	.317
43	M40	Z	-.138	.317

Member Distributed Loads (BLC 2 : Grating & Railing (9psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
1	M7	Y	-.015	-.015	1.667	19.167
2	M8	Y	-.015	-.015	0	1.75
3	M9	Y	-.015	-.015	0	0
4	M16	Y	-.015	-.015	0	0
5	M31	Y	-.015	-.015	0	0
6	M1	Y	-.015	-.015	6	11.417
7	M2	Y	-.015	-.015	6	11.417
8	M8	Y	-.015	-.015	19.75	0

Member Distributed Loads (BLC 6 : Wind X-Direction (48psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
1	M3	X	.016	.016	0	0
2	M4	X	.016	.016	0	0
3	M5	X	.016	.016	0	0
4	M6	X	.016	.016	0	0
5	M1	X	.048	.048	0	0
6	M2	X	.048	.048	0	0

Member Distributed Loads (BLC 7 : Wind Z-Direction (48psf))

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
1	M3	Z	-.016	-.016	0	0
2	M4	Z	-.016	-.016	0	0
3	M5	Z	-.016	-.016	0	0
4	M6	Z	-.016	-.016	0	0
5	M7	Z	-.048	-.048	0	0

Member Distributed Loads (BLC 8 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
1	M7	Y	-8.186e-5	-.008	0	2.15
2	M7	Y	-.008	-.013	2.15	4.3
3	M7	Y	-.013	-.016	4.3	6.45
4	M7	Y	-.016	-.018	6.45	8.6
5	M7	Y	-.018	-.01	8.6	10.75
6	M7	Y	-.01	-.006	10.75	12.9
7	M7	Y	-.006	-.005	12.9	15.05
8	M7	Y	-.005	-.01	15.05	17.2
9	M7	Y	-.01	-.008	17.2	19.35
10	M7	Y	-.008	-8.186e-5	19.35	21.5
11	M8	Y	-.009	-.023	0	2.15
12	M8	Y	-.023	-.025	2.15	4.3
13	M8	Y	-.025	-.022	4.3	6.45
14	M8	Y	-.022	-.021	6.45	8.6
15	M8	Y	-.021	-.015	8.6	10.75
16	M8	Y	-.015	-.011	10.75	12.9
17	M8	Y	-.011	-.01	12.9	15.05
18	M8	Y	-.01	-.008	15.05	17.2
19	M8	Y	-.008	-.005	17.2	19.35
20	M8	Y	-.005	-.001	19.35	21.5
21	M20	Y	-.024	-.017	0	.883
22	M20	Y	-.017	-.017	.883	1.767
23	M20	Y	-.017	-.017	1.767	2.65
24	M20	Y	-.017	-.017	2.65	3.533
25	M20	Y	-.017	-.025	3.533	4.417
26	M21	Y	-.026	-.018	0	.883
27	M21	Y	-.018	-.015	.883	1.767
28	M21	Y	-.015	-.012	1.767	2.65
29	M21	Y	-.012	-.011	2.65	3.533
30	M21	Y	-.011	-.019	3.533	4.417
31	M22	Y	-.02	-.012	0	.883
32	M22	Y	-.012	-.013	.883	1.767
33	M22	Y	-.013	-.019	1.767	2.65
34	M22	Y	-.019	-.018	2.65	3.533

Member Distributed Loads (BLC 8 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
35	M22	Y	-.018	-.016	3.533	4.417
36	M23	Y	-.01	-.013	0	.883
37	M23	Y	-.013	-.013	.883	1.767
38	M23	Y	-.013	-.011	1.767	2.65
39	M23	Y	-.011	-.011	2.65	3.533
40	M23	Y	-.011	-.013	3.533	4.417
41	M24	Y	-.015	-.028	0	.475
42	M24	Y	-.028	-.018	.475	.95
43	M24	Y	-.018	-.018	.95	1.425
44	M24	Y	-.018	-.028	1.425	1.9
45	M24	Y	-.028	-.015	1.9	2.375
46	M25	Y	-.015	-.015	1.11e-16	2.208
47	M26	Y	-.012	-.021	0	.792
48	M26	Y	-.021	-.021	.792	1.583
49	M26	Y	-.021	-.012	1.583	2.375
50	M27	Y	-.015	-.015	1.221e-15	2.208
51	M28	Y	-.013	-.011	0	.883
52	M28	Y	-.011	-.011	.883	1.767
53	M28	Y	-.011	-.011	1.767	2.65
54	M28	Y	-.011	-.011	2.65	3.533
55	M28	Y	-.011	-.013	3.533	4.417
56	M29	Y	-.02	-.026	0	.475
57	M29	Y	-.026	-.023	.475	.95
58	M29	Y	-.023	-.024	.95	1.425
59	M29	Y	-.024	-.029	1.425	1.9
60	M29	Y	-.029	-.027	1.9	2.375
61	M30	Y	-.013	-.012	0	.883
62	M30	Y	-.012	-.01	.883	1.767
63	M30	Y	-.01	-.01	1.767	2.65
64	M30	Y	-.01	-.012	2.65	3.533
65	M30	Y	-.012	-.013	3.533	4.417
66	M18	Y	-.005	-.005	5.551e-17	1.75
67	M19	Y	-.005	-.005	4.163e-16	1.75
68	M31	Y	-.011	-.011	1.221e-15	10.75
69	M34	Y	-.011	-.011	7.772e-16	10.75
70	M34	Y	-.009	-.015	0	2.15
71	M34	Y	-.015	-.015	2.15	4.3
72	M34	Y	-.015	-.014	4.3	6.45
73	M34	Y	-.014	-.014	6.45	8.6
74	M34	Y	-.014	-.011	8.6	10.75
75	M31	Y	-.0001928	-.007	8.6	10.75
76	M31	Y	-.007	-.011	10.75	12.9
77	M31	Y	-.011	-.01	12.9	15.05
78	M31	Y	-.01	-.012	15.05	17.2
79	M31	Y	-.012	-.012	17.2	19.35
80	M31	Y	-.012	-.007	19.35	21.5
81	M33	Y	-.014	-.011	0	2.15
82	M33	Y	-.011	-.01	2.15	4.3
83	M33	Y	-.01	-.012	4.3	6.45
84	M33	Y	-.012	-.012	6.45	8.6
85	M33	Y	-.012	-.007	8.6	10.75
86	M8	Y	-.013	-.013	10.75	21.5

Member Distributed Loads (BLC 8 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
87	M33	Y	-.013	-.013	3.331e-16	10.75

Member Distributed Loads (BLC 9 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
1	M7	Y	-.033	-.033	1.75	6.167
2	M20	Y	-.033	-.033	0	4.417
3	M20	Y	-.006	-.006	1.721e-15	4.417
4	M28	Y	-.006	-.006	6.939e-16	4.417
5	M16	Y	-.031	-.031	3.823	6
6	M14	Y	-.02	-.02	3.823	6
7	M14	Y	-.024	-.024	8.882e-16	3.823
8	M15	Y	-.024	-.024	0	3.823
9	M8	Y	-.001	-.015	6.45	9.46
10	M8	Y	-.015	-.019	9.46	12.47
11	M8	Y	-.019	-.019	12.47	15.48
12	M8	Y	-.019	-.015	15.48	18.49
13	M8	Y	-.015	-.001	18.49	21.5
14	M23	Y	-.018	-.018	1.11e-16	4.417
15	M24	Y	-.018	-.018	1.11e-16	2.375
16	M30	Y	-.018	-.018	1.332e-15	4.417
17	M9	Y	-.032	-.019	0	1.6
18	M9	Y	-.019	-.018	1.6	3.2
19	M9	Y	-.018	-.029	3.2	4.8
20	M10	Y	-.021	-.02	0	1.083
21	M10	Y	-.02	-.023	1.083	2.167
22	M10	Y	-.023	-.032	2.167	3.25
23	M13	Y	-.034	-.021	0	1.625
24	M13	Y	-.021	-.009	1.625	3.25
25	M14	Y	-.016	-.025	0	1.2
26	M14	Y	-.025	-.032	1.2	2.4
27	M14	Y	-.032	-.026	2.4	3.6
28	M14	Y	-.026	-.011	3.6	4.8
29	M7	Y	-.0003184	-.007	8.6	10.75
30	M7	Y	-.007	-.014	10.75	12.9
31	M7	Y	-.014	-.012	12.9	15.05
32	M7	Y	-.012	-.007	15.05	17.2
33	M7	Y	-.007	-.0003184	17.2	19.35
34	M25	Y	-.012	-.012	0	2.208
35	M26	Y	-.012	-.012	0	2.375
36	M27	Y	-.012	-.012	1.166e-15	2.208
37	M31	Y	-.025	-.025	1.221e-15	10.75
38	M34	Y	-.025	-.025	7.772e-16	10.75
39	M8	Y	-.029	-.029	10.75	21.5
40	M33	Y	-.029	-.029	3.331e-16	10.75
41	M31	Y	-.025	-.025	10.75	13.992
42	M33	Y	-.025	-.025	2.442e-15	3.242
43	M31	Y	-.025	-.025	16.158	21.5
44	M33	Y	-.025	-.025	5.408	10.75
45	M8	Y	-.029	-.029	0	7.532
46	M34	Y	-.029	-.029	.007	7.558
47	M32	Y	-.01	-.01	2.483	5.417

Member Distributed Loads (BLC 9 : BLC 3 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
48	M38	Y	-.01	-.01	4.441e-16	2.933
49	M8	Y	-.0002148	-.009	6.45	7.74
50	M8	Y	-.009	-.015	7.74	9.03
51	M8	Y	-.015	-.01	9.03	10.32
52	M8	Y	-.01	-.003	10.32	11.61
53	M8	Y	-.003	-.0002148	11.61	12.9
54	M37	Y	-.000426	-.0004409	0	.293
55	M37	Y	-.0004409	-.0002959	.293	.587
56	M37	Y	-.0002959	-7.212e-5	.587	.88
57	M37	Y	-7.212e-5	-7.425e-7	.88	1.173
58	M37	Y	-7.425e-7	-7.425e-7	1.173	1.467
59	M31	Y	-.006	-.006	13.992	16.158

Member Distributed Loads (BLC 10 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
1	M7	Y	-.0002729	-.026	0	2.15
2	M7	Y	-.026	-.043	2.15	4.3
3	M7	Y	-.043	-.054	4.3	6.45
4	M7	Y	-.054	-.059	6.45	8.6
5	M7	Y	-.059	-.035	8.6	10.75
6	M7	Y	-.035	-.02	10.75	12.9
7	M7	Y	-.02	-.018	12.9	15.05
8	M7	Y	-.018	-.034	15.05	17.2
9	M7	Y	-.034	-.027	17.2	19.35
10	M7	Y	-.027	-.0002729	19.35	21.5
11	M8	Y	-.031	-.075	0	2.15
12	M8	Y	-.075	-.084	2.15	4.3
13	M8	Y	-.084	-.078	4.3	6.45
14	M8	Y	-.078	-.077	6.45	8.6
15	M8	Y	-.077	-.052	8.6	10.75
16	M8	Y	-.052	-.036	10.75	12.9
17	M8	Y	-.036	-.034	12.9	15.05
18	M8	Y	-.034	-.027	15.05	17.2
19	M8	Y	-.027	-.017	17.2	19.35
20	M8	Y	-.017	-.005	19.35	21.5
21	M20	Y	-.082	-.056	0	.883
22	M20	Y	-.056	-.058	.883	1.767
23	M20	Y	-.058	-.058	1.767	2.65
24	M20	Y	-.058	-.056	2.65	3.533
25	M20	Y	-.056	-.082	3.533	4.417
26	M21	Y	-.087	-.06	0	.883
27	M21	Y	-.06	-.05	.883	1.767
28	M21	Y	-.05	-.039	1.767	2.65
29	M21	Y	-.039	-.037	2.65	3.533
30	M21	Y	-.037	-.064	3.533	4.417
31	M22	Y	-.065	-.039	0	.883
32	M22	Y	-.039	-.044	.883	1.767
33	M22	Y	-.044	-.063	1.767	2.65
34	M22	Y	-.063	-.06	2.65	3.533
35	M22	Y	-.06	-.052	3.533	4.417
36	M23	Y	-.034	-.043	0	.883

Member Distributed Loads (BLC 10 : BLC 4 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,...
37	M23	Y	-.043	-.044	.883	1.767
38	M23	Y	-.044	-.036	1.767	2.65
39	M23	Y	-.036	-.035	2.65	3.533
40	M23	Y	-.035	-.045	3.533	4.417
41	M24	Y	-.049	-.092	0	.475
42	M24	Y	-.092	-.059	.475	.95
43	M24	Y	-.059	-.059	.95	1.425
44	M24	Y	-.059	-.092	1.425	1.9
45	M24	Y	-.092	-.049	1.9	2.375
46	M25	Y	-.05	-.05	1.11e-16	2.208
47	M26	Y	-.039	-.07	0	.792
48	M26	Y	-.07	-.07	.792	1.583
49	M26	Y	-.07	-.039	1.583	2.375
50	M27	Y	-.05	-.05	1.221e-15	2.208
51	M28	Y	-.044	-.036	0	.883
52	M28	Y	-.036	-.037	.883	1.767
53	M28	Y	-.037	-.037	1.767	2.65
54	M28	Y	-.037	-.036	2.65	3.533
55	M28	Y	-.036	-.044	3.533	4.417
56	M29	Y	-.067	-.085	0	.475
57	M29	Y	-.085	-.076	.475	.95
58	M29	Y	-.076	-.079	.95	1.425
59	M29	Y	-.079	-.097	1.425	1.9
60	M29	Y	-.097	-.089	1.9	2.375
61	M30	Y	-.045	-.039	0	.883
62	M30	Y	-.039	-.034	.883	1.767
63	M30	Y	-.034	-.034	1.767	2.65
64	M30	Y	-.034	-.039	2.65	3.533
65	M30	Y	-.039	-.045	3.533	4.417
66	M18	Y	-.017	-.017	5.551e-17	1.75
67	M19	Y	-.017	-.017	4.163e-16	1.75
68	M31	Y	-.037	-.037	1.221e-15	10.75
69	M34	Y	-.037	-.037	7.772e-16	10.75
70	M34	Y	-.03	-.05	0	2.15
71	M34	Y	-.05	-.049	2.15	4.3
72	M34	Y	-.049	-.039	4.3	6.45
73	M34	Y	-.039	-.04	6.45	8.6
74	M34	Y	-.04	-.041	8.6	10.75
75	M31	Y	-.0006427	-.022	8.6	10.75
76	M31	Y	-.022	-.038	10.75	12.9
77	M31	Y	-.038	-.034	12.9	15.05
78	M31	Y	-.034	-.041	15.05	17.2
79	M31	Y	-.041	-.039	17.2	19.35
80	M31	Y	-.039	-.024	19.35	21.5
81	M33	Y	-.047	-.038	0	2.15
82	M33	Y	-.038	-.034	2.15	4.3
83	M33	Y	-.034	-.041	4.3	6.45
84	M33	Y	-.041	-.039	6.45	8.6
85	M33	Y	-.039	-.023	8.6	10.75
86	M8	Y	-.044	-.044	10.75	21.5
87	M33	Y	-.044	-.044	3.331e-16	10.75

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	J...	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1						
2	Grating & Railing (9psf)	DL						8	6	
3	Live Load (40 psf)	LL							17	
4	Snow Load (30 psf)	SL							6	
5	Weight of Equipment	DL					23			
6	Wind X-Direction (48psf)	WLX					43	6		
7	Wind Z-Direction (48psf)	WLZ					43	5		
8	BLC 2 Transient Area Loads	None						87		
9	BLC 3 Transient Area Loads	None						59		
10	BLC 4 Transient Area Loads	None						87		

Load Combinations

	Description	Solve	PDelta	SR...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																		
2	IBC 16-9	Yes	Y		DL	1	LL	1	LLS	1														
3	IBC 16-10 (b)	Yes	Y		DL	1	SL	1	S...	1														
4	IBC 16-11 (b)	Yes	Y		DL	1	LL	.75	LLS	.75	SL	.75	S...	.75										
5	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																
6	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																
7	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																
8	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																
9	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75												
10	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75												
11	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75												
12	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75												
13	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
14	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	LLS	.75	SL	.75	S...	.75								
15	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
16	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	LLS	.75	SL	.75	S...	.75								
17	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																
18	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																
19	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																
20	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N25	max	1.115	19	7.669	13	.853	18	2.523	6	0	20	3.508	5
2		min	-1.18	5	2.787	19	-.853	20	-2.524	8	0	1	-3.306	19
3	N26	max	1.228	7	9.076	14	.905	18	2.681	6	0	20	3.562	5
4		min	-1.162	17	3.591	20	-.905	20	-2.68	8	0	1	-3.464	19
5	N27	max	.299	7	3.652	16	.834	6	2.463	6	0	20	.857	5
6		min	-.3	5	1.29	18	-.835	8	-2.465	8	0	1	-.857	7
7	N28	max	.354	19	3.759	16	.859	6	2.538	6	0	20	1.026	5
8		min	-.355	5	1.31	18	-.858	8	-2.536	8	0	1	-1.019	19
9	Totals:	max	2.98	19	23.758	16	3.451	18						
10		min	-2.98	5	9.517	17	-3.451	8						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	.017	5	0	19	.012	8	4.838e-4	8	0	20	6.344e-4	19
2		min	-.016	19	-.001	13	-.012	6	-4.835e-4	6	0	1	-6.733e-4	5
3	N2	max	.017	5	-.031	20	.042	8	4.863e-4	8	1.214e-3	20	4.27e-3	14
4		min	-.016	19	-.095	14	-.042	6	-4.86e-4	6	-1.216e-3	6	1.39e-3	20
5	N3	max	.017	5	-.067	20	.066	20	4.893e-4	8	6.379e-4	20	3.705e-3	14
6		min	-.016	19	-.204	14	-.066	6	-4.891e-4	6	-6.396e-4	6	1.223e-3	20
7	N4	max	.017	5	-.096	20	.08	20	4.924e-4	8	5.445e-4	20	2.741e-3	14
8		min	-.016	19	-.293	14	-.08	6	-4.923e-4	6	-5.452e-4	6	9.127e-4	20
9	N5	max	.017	5	-.116	20	.096	20	4.958e-4	8	4.771e-4	19	1.408e-3	14
10		min	-.016	19	-.353	14	-.096	6	-4.956e-4	6	-4.776e-4	5	4.685e-4	20
11	N6	max	.018	5	-.123	20	.104	20	4.988e-4	8	4.012e-4	19	3.745e-5	9
12		min	-.017	19	-.373	14	-.104	6	-4.988e-4	6	-4.013e-4	17	1.174e-5	19
13	N7	max	.018	5	-.117	20	.098	20	5.019e-4	8	5.232e-4	6	-4.555e-4	20
14		min	-.017	19	-.355	14	-.099	6	-5.019e-4	6	-5.238e-4	20	-1.404e-3	14
15	N8	max	.018	5	-.097	20	.077	20	5.052e-4	8	7.95e-4	18	-9.138e-4	20
16		min	-.017	19	-.293	14	-.077	6	-5.053e-4	6	-7.971e-4	8	-2.765e-3	14
17	N9	max	.018	5	-.067	20	.057	20	5.083e-4	8	7.496e-4	18	-1.225e-3	20
18		min	-.017	19	-.204	14	-.057	6	-5.084e-4	6	-7.516e-4	8	-3.7e-3	14
19	N10	max	.018	5	-.031	20	.035	20	5.114e-4	8	9.631e-4	6	-1.405e-3	20
20		min	-.017	19	-.095	14	-.035	6	-5.116e-4	6	-9.588e-4	20	-4.266e-3	14
21	N11	max	.018	5	0	20	.013	8	5.139e-4	8	0	20	6.385e-4	19
22		min	-.016	19	-.001	14	-.013	6	-5.141e-4	6	0	1	-7.136e-4	5
23	N12	max	.077	5	-.121	18	.012	8	3.039e-3	16	8.771e-4	17	5.031e-4	7
24		min	-.076	19	-.357	16	-.012	6	1.032e-3	18	-8.818e-4	7	-4.958e-4	17
25	N13	max	.077	5	-.163	18	.043	8	3.054e-3	16	1.21e-3	20	5.11e-3	13
26		min	-.076	19	-.47	16	-.043	6	1.035e-3	18	-1.211e-3	6	1.913e-3	19
27	N14	max	.063	5	-.149	19	.066	20	5.649e-3	16	7.05e-4	20	4.326e-3	14
28		min	-.062	19	-.408	13	-.066	6	1.753e-3	18	-7.065e-4	6	1.614e-3	20
29	N15	max	.077	5	-.254	18	.08	20	3.09e-3	16	5.492e-4	20	3.377e-3	14
30		min	-.076	19	-.705	16	-.08	6	1.043e-3	18	-5.498e-4	6	1.303e-3	20
31	N16	max	.077	5	-.285	18	.096	20	3.109e-3	16	4.949e-4	19	1.877e-3	15
32		min	-.076	19	-.782	16	-.096	6	1.048e-3	18	-4.954e-4	5	7.304e-4	17
33	N17	max	.06	5	-.224	19	.103	20	6.323e-3	16	3.451e-4	19	4.715e-4	15
34		min	-.06	19	-.597	13	-.103	6	1.926e-3	18	-3.452e-4	17	2.072e-4	17
35	N18	max	.077	5	-.292	18	.099	20	3.145e-3	16	4.948e-4	6	-4.828e-4	19
36		min	-.076	19	-.792	16	-.099	6	1.056e-3	18	-4.95e-4	20	-1.632e-3	13
37	N19	max	.077	5	-.264	18	.077	20	3.165e-3	16	8.191e-4	18	-1.093e-3	19
38		min	-.076	19	-.72	16	-.077	6	1.06e-3	18	-8.213e-4	8	-3.195e-3	13
39	N20	max	.06	5	-.158	18	.057	20	5.989e-3	16	7.775e-4	18	-1.287e-3	19
40		min	-.059	19	-.412	16	-.057	6	1.884e-3	18	-7.785e-4	8	-3.644e-3	13
41	N21	max	.077	5	-.176	18	.035	20	3.201e-3	16	9.804e-4	6	-1.837e-3	19
42		min	-.076	19	-.501	16	-.035	6	1.068e-3	18	-9.761e-4	20	-5.006e-3	13
43	N22	max	.077	5	-.132	18	.013	8	3.215e-3	16	8.255e-4	17	-1.014e-3	19
44		min	-.077	19	-.39	16	-.013	6	1.071e-3	18	-8.297e-4	7	-3.138e-3	13
45	N23	max	.004	5	0	18	.012	8	4.723e-4	8	0	20	1.626e-4	7
46		min	-.004	7	0	16	-.012	6	-4.721e-4	6	0	1	-1.624e-4	5
47	N24	max	.005	5	0	18	.012	8	4.86e-4	8	0	20	1.931e-4	19
48		min	-.005	19	0	16	-.012	6	-4.864e-4	6	0	1	-1.958e-4	5
49	N25	max	0	20	0	20	0	20	0	20	0	20	0	20
50		min	0	1	0	1	0	1	0	1	0	1	0	1
51	N26	max	0	20	0	20	0	20	0	20	0	20	0	20

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
52		min	0	1	0	1	0	1	0	1	0	1	0	1
53	N27	max	0	20	0	20	0	20	0	20	0	20	0	20
54		min	0	1	0	1	0	1	0	1	0	1	0	1
55	N28	max	0	20	0	20	0	20	0	20	0	20	0	20
56		min	0	1	0	1	0	1	0	1	0	1	0	1
57	N29	max	.035	5	-.075	20	.035	20	5.873e-3	16	1.078e-3	17	-1.215e-3	19
58		min	-.034	19	-.195	14	-.035	6	2.023e-3	18	-1.092e-3	7	-4.07e-3	13
59	N30	max	.035	5	-.039	18	.013	8	6.039e-3	16	8.881e-4	17	-1.404e-3	19
60		min	-.034	19	-.115	16	-.013	6	2.054e-3	18	-8.896e-4	7	-4.106e-3	13
61	N31	max	.021	5	-.041	20	.035	20	5.866e-3	16	9.107e-4	17	-1.461e-3	19
62		min	-.02	19	-.118	14	-.035	6	2.059e-3	18	-9.285e-4	7	-4.366e-3	13
63	N32	max	.021	5	-.009	18	.013	8	6.225e-3	16	9.706e-4	17	-1.327e-3	19
64		min	-.021	19	-.027	16	-.013	6	2.119e-3	18	-9.973e-4	7	-4.206e-3	13
65	N33	max	.115	5	-.143	18	.013	8	-6.561e-4	18	9.464e-5	20	-5.466e-4	19
66		min	-.114	19	-.427	16	-.013	6	-1.923e-3	16	-9.9e-5	6	-1.976e-3	13
67	N34	max	.115	5	-.135	18	.012	8	-5.848e-4	18	2.642e-4	20	3.923e-4	7
68		min	-.114	19	-.399	16	-.012	6	-1.709e-3	16	-2.686e-4	6	-3.45e-4	17
69	N35	max	.115	5	-.319	18	.103	20	-1.011e-3	18	1.6e-3	5	-5.439e-6	18
70		min	-.114	19	-1.042	16	-.103	6	-3.188e-3	16	-1.595e-3	19	-2.028e-4	8
71	N36	max	.077	5	-.298	18	.103	20	3.127e-3	16	3.98e-4	19	2.585e-4	7
72		min	-.076	19	-.81	16	-.103	6	1.052e-3	18	-3.981e-4	17	7.122e-5	17
73	N37	max	.045	5	-.041	18	.012	8	-1.676e-3	18	1.681e-3	19	2.662e-4	7
74		min	-.045	19	-.12	16	-.012	6	-4.947e-3	16	-1.684e-3	5	-1.733e-4	17
75	N38	max	.048	5	-.043	18	.012	8	-1.766e-3	18	1.709e-3	19	-1.394e-5	19
76		min	-.047	19	-.128	16	-.012	6	-5.26e-3	16	-1.712e-3	5	-6.541e-4	13
77	N39	max	.06	5	-.193	19	.077	20	6.008e-3	16	6.983e-4	18	-1.243e-3	19
78		min	-.06	19	-.506	13	-.077	6	1.855e-3	18	-7.023e-4	8	-3.505e-3	13
79	N40	max	.06	5	-.218	19	.096	20	6.288e-3	16	6.59e-4	17	1.655e-3	14
80		min	-.06	19	-.584	13	-.096	6	1.878e-3	18	-6.632e-4	7	6.207e-4	20
81	N41	max	.063	5	-.106	19	.043	8	5.401e-3	16	5.935e-4	17	4.355e-3	14
82		min	-.062	19	-.293	13	-.043	6	1.718e-3	18	-5.982e-4	7	1.591e-3	20
83	N42	max	.06	5	-.12	18	.035	20	5.969e-3	16	8.148e-4	17	-1.268e-3	19
84		min	-.059	19	-.317	16	-.035	6	1.914e-3	18	-8.163e-4	7	-3.751e-3	13
85	N43	max	.037	5	-.162	20	.104	20	6.3e-3	16	1.191e-3	17	1.95e-4	14
86		min	-.037	19	-.459	14	-.104	6	1.887e-3	18	-1.201e-3	7	8.971e-5	20
87	N44	max	.061	5	-.229	19	.099	20	6.357e-3	16	6.302e-4	17	-1.169e-3	19
88		min	-.06	19	-.608	13	-.099	6	1.975e-3	18	-6.346e-4	7	-3.305e-3	13
89	N45	max	.037	5	-.156	20	.096	20	6.446e-3	16	1.228e-3	17	1.502e-3	14
90		min	-.037	19	-.441	14	-.096	6	1.92e-3	18	-1.239e-3	7	5.266e-4	20
91	N46	max	.063	5	-.192	19	.08	20	5.896e-3	16	6.18e-4	17	4.018e-3	14
92		min	-.062	19	-.521	13	-.08	6	1.788e-3	18	-6.228e-4	7	1.486e-3	20
93	N47	max	.038	5	-.136	20	.08	20	6.376e-3	16	1.316e-3	17	3.228e-3	14
94		min	-.037	19	-.38	14	-.08	6	1.876e-3	18	-1.326e-3	7	1.131e-3	20
95	N48	max	.038	5	-.1	20	.066	20	5.569e-3	16	1.249e-3	17	3.942e-3	14
96		min	-.037	19	-.282	14	-.066	6	1.712e-3	18	-1.257e-3	7	1.372e-3	20
97	N49	max	.066	5	-.254	19	.099	20	5.884e-3	16	5.213e-4	18	-1.158e-3	19
98		min	-.065	19	-.672	13	-.099	6	1.787e-3	18	-5.228e-4	8	-3.329e-3	13
99	N50	max	.066	5	-.242	19	.096	20	6.194e-3	16	4.989e-4	17	1.724e-3	14
100		min	-.066	19	-.65	13	-.096	6	1.857e-3	18	-5.005e-4	7	6.636e-4	20
101	N51	max	.067	5	-.215	19	.08	20	5.56e-3	16	7.027e-4	20	4.378e-3	14
102		min	-.066	19	-.583	13	-.08	6	1.734e-3	18	-7.041e-4	6	1.648e-3	20
103	N52	max	.064	5	-.133	18	.035	20	6.039e-3	16	7.753e-4	18	-1.285e-3	19

Envelope Joint Displacements (Continued)

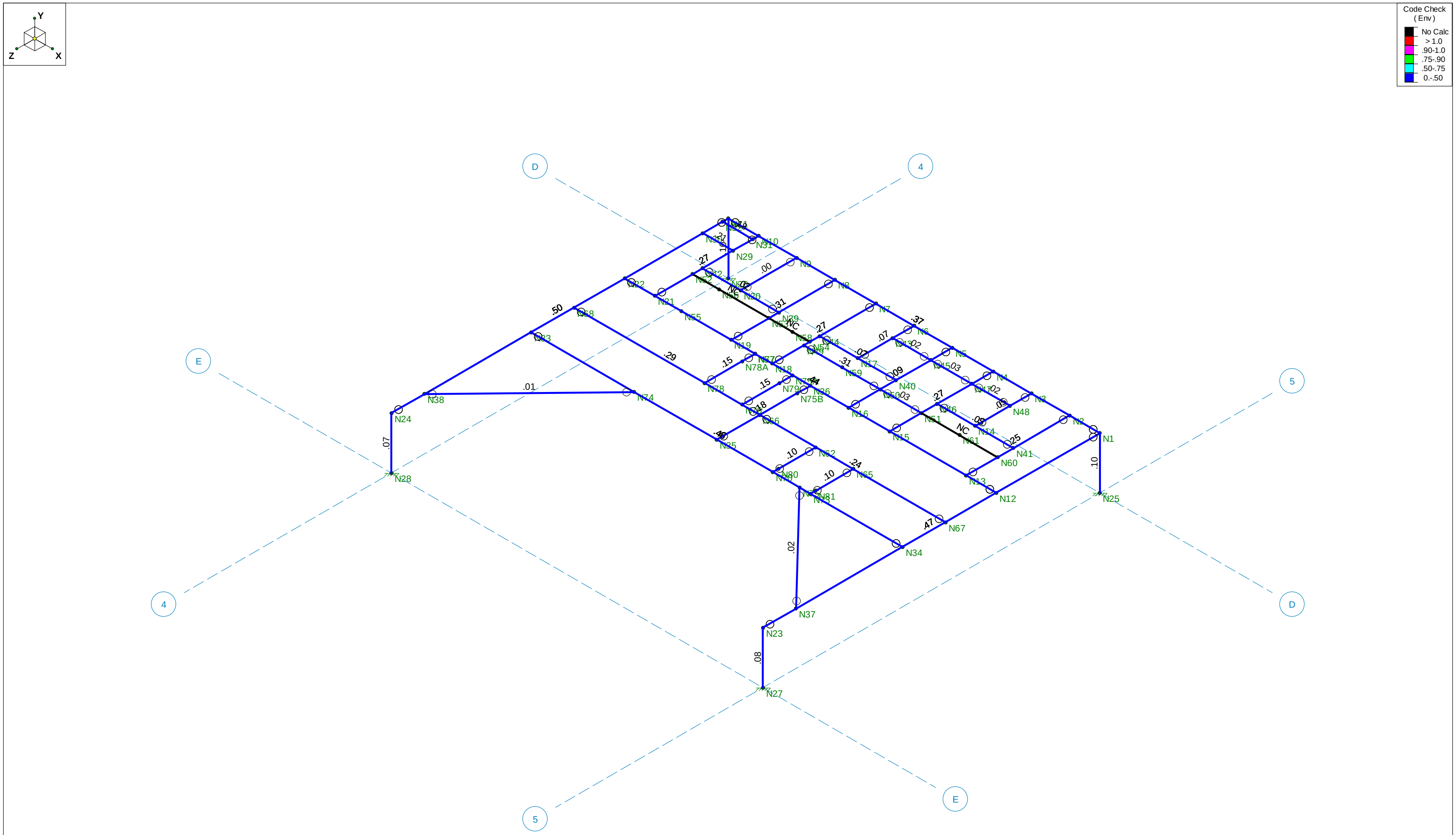
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
104		min	-.063	19	-.358	16	-.036	6	1.869e-3	18	-7.763e-4	8	-3.647e-3	13
105	N53	max	.064	5	-.209	18	.076	20	6.039e-3	16	7.753e-4	18	-1.285e-3	19
106		min	-.063	19	-.545	16	-.077	6	1.869e-3	18	-7.763e-4	8	-3.647e-3	13
107	N54	max	.064	5	-.245	19	.099	20	6.039e-3	16	7.753e-4	18	-1.285e-3	19
108		min	-.063	19	-.649	13	-.099	6	1.869e-3	18	-7.763e-4	8	-3.647e-3	13
109	N55	max	.077	5	-.211	18	.051	20	3.188e-3	16	7.761e-4	6	-1.624e-3	19
110		min	-.076	19	-.588	16	-.051	6	1.065e-3	18	-7.767e-4	20	-4.497e-3	13
111	N56	max	.064	5	-.159	18	.05	20	6.039e-3	16	7.753e-4	18	-1.285e-3	19
112		min	-.063	19	-.423	16	-.05	6	1.869e-3	18	-7.763e-4	8	-3.647e-3	13
113	N57	max	.077	5	-.282	18	.091	20	3.154e-3	16	7.72e-4	6	-7.705e-4	19
114		min	-.076	19	-.767	16	-.091	6	1.057e-3	18	-7.728e-4	20	-2.375e-3	13
115	N58	max	.064	5	-.23	19	.089	20	6.039e-3	16	7.753e-4	18	-1.285e-3	19
116		min	-.063	19	-.605	13	-.089	6	1.869e-3	18	-7.763e-4	8	-3.647e-3	13
117	N59	max	.066	5	-.238	18	.129	8	6.039e-3	16	3.458e-4	7	4.605e-4	15
118		min	-.065	19	-.701	16	-.112	18	1.822e-3	18	-3.451e-4	17	1.938e-4	17
119	N60	max	.067	5	-.126	18	.043	8	5.56e-3	16	7.027e-4	20	4.378e-3	14
120		min	-.066	19	-.352	16	-.043	6	1.734e-3	18	-7.041e-4	6	1.648e-3	20
121	N61	max	.067	5	-.171	19	.061	20	5.56e-3	16	7.027e-4	20	4.378e-3	14
122		min	-.066	19	-.467	13	-.061	6	1.734e-3	18	-7.041e-4	6	1.648e-3	20
123	N62	max	.106	5	-.321	18	.076	20	2.546e-3	16	1.045e-3	8	2.783e-3	16
124		min	-.105	19	-.883	16	-.076	6	2.41e-4	18	-1.045e-3	18	4.586e-4	18
125	N65	max	.106	5	-.296	18	.067	19	1.941e-3	16	1.065e-3	20	4.287e-3	16
126		min	-.105	19	-.792	16	-.068	5	2.143e-4	18	-1.066e-3	6	1.47e-3	18
127	N66	max	.106	5	-.318	18	.103	20	3.451e-3	16	5.393e-4	17	7.477e-5	7
128		min	-.105	19	-.96	16	-.103	6	2.81e-4	18	-5.436e-4	7	-3.609e-5	17
129	N67	max	.106	5	-.142	18	.012	8	4.505e-4	16	6.195e-4	17	4.431e-4	7
130		min	-.105	19	-.419	16	-.012	6	1.485e-4	18	-6.237e-4	7	-4.141e-4	17
131	N68	max	.106	5	-.152	18	.013	8	3.496e-4	16	6.157e-4	17	-7.61e-4	19
132		min	-.105	19	-.452	16	-.013	6	9.703e-5	18	-6.202e-4	7	-2.509e-3	13
133	N70	max	.115	5	-.298	18	.076	20	-1.004e-3	18	1.429e-3	8	3.46e-3	16
134		min	-.114	19	-.975	16	-.076	6	-3.167e-3	16	-1.428e-3	18	1.02e-3	18
135	N73	max	.115	5	-.264	18	.067	19	-9.573e-4	18	7.693e-4	20	5.508e-3	16
136		min	-.114	19	-.856	16	-.068	5	-3.005e-3	16	-7.7e-4	6	1.573e-3	18
137	N74	max	.115	5	-.276	18	.067	5	-1.021e-3	18	1.493e-3	6	-1.373e-3	18
138		min	-.114	19	-.887	16	-.067	19	-3.218e-3	16	-1.492e-3	20	-4.808e-3	16
139	N75	max	.115	5	-.275	18	.069	19	-1.001e-3	18	1.006e-3	20	4.964e-3	16
140		min	-.114	19	-.896	16	-.07	5	-3.157e-3	16	-1.007e-3	6	1.428e-3	18
141	N75A	max	.077	5	-.298	18	.103	20	3.136e-3	16	2.355e-4	19	-1.283e-4	19
142		min	-.076	19	-.807	16	-.103	6	1.053e-3	18	-2.355e-4	17	-6.893e-4	13
143	N76	max	.106	5	-.307	18	.103	20	3.155e-3	16	2.089e-4	19	-5.844e-4	19
144		min	-.105	19	-.942	16	-.103	6	2.634e-4	18	-2.09e-4	17	-1.95e-3	13
145	N77	max	.077	5	-.283	18	.091	20	3.153e-3	16	7.663e-4	6	-7.633e-4	19
146		min	-.076	19	-.768	16	-.091	6	1.057e-3	18	-7.671e-4	20	-2.357e-3	13
147	N78	max	.106	5	-.282	18	.091	20	2.53e-3	16	6.49e-4	6	-9.741e-4	19
148		min	-.105	19	-.887	16	-.091	6	2.264e-4	18	-6.49e-4	20	-2.786e-3	13
149	N75B	max	.086	5	-.304	18	.103	20	4.465e-3	16	9.374e-4	17	2.105e-4	7
150		min	-.085	19	-.853	16	-.103	6	6.434e-4	18	-9.42e-4	7	4.318e-5	17
151	N78A	max	.086	5	-.287	18	.091	20	3.538e-3	16	9.54e-4	5	-8.184e-4	19
152		min	-.082	19	-.801	16	-.091	6	3.177e-4	18	-6.932e-4	19	-2.469e-3	13
153	N79	max	.089	5	-.305	18	.103	20	3.982e-3	16	1.166e-3	5	-2.475e-4	19
154		min	-.085	19	-.845	16	-.103	6	6.136e-4	18	-9.051e-4	19	-1.019e-3	13
155	N80	max	.114	17	-.301	18	.076	20	2.73e-3	16	3.476e-4	5	3.374e-3	16

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
156		min	-.114	7	-.965	16	-.076	6	-8.172e-4	18	-8.58e-5	19	9.487e-4	18
157	N81	max	.113	17	-.268	18	.067	19	2.028e-3	8	4.829e-4	5	5.352e-3	16
158		min	-.114	7	-.85	16	-.068	5	-1.147e-3	18	-2.211e-4	19	1.56e-3	18

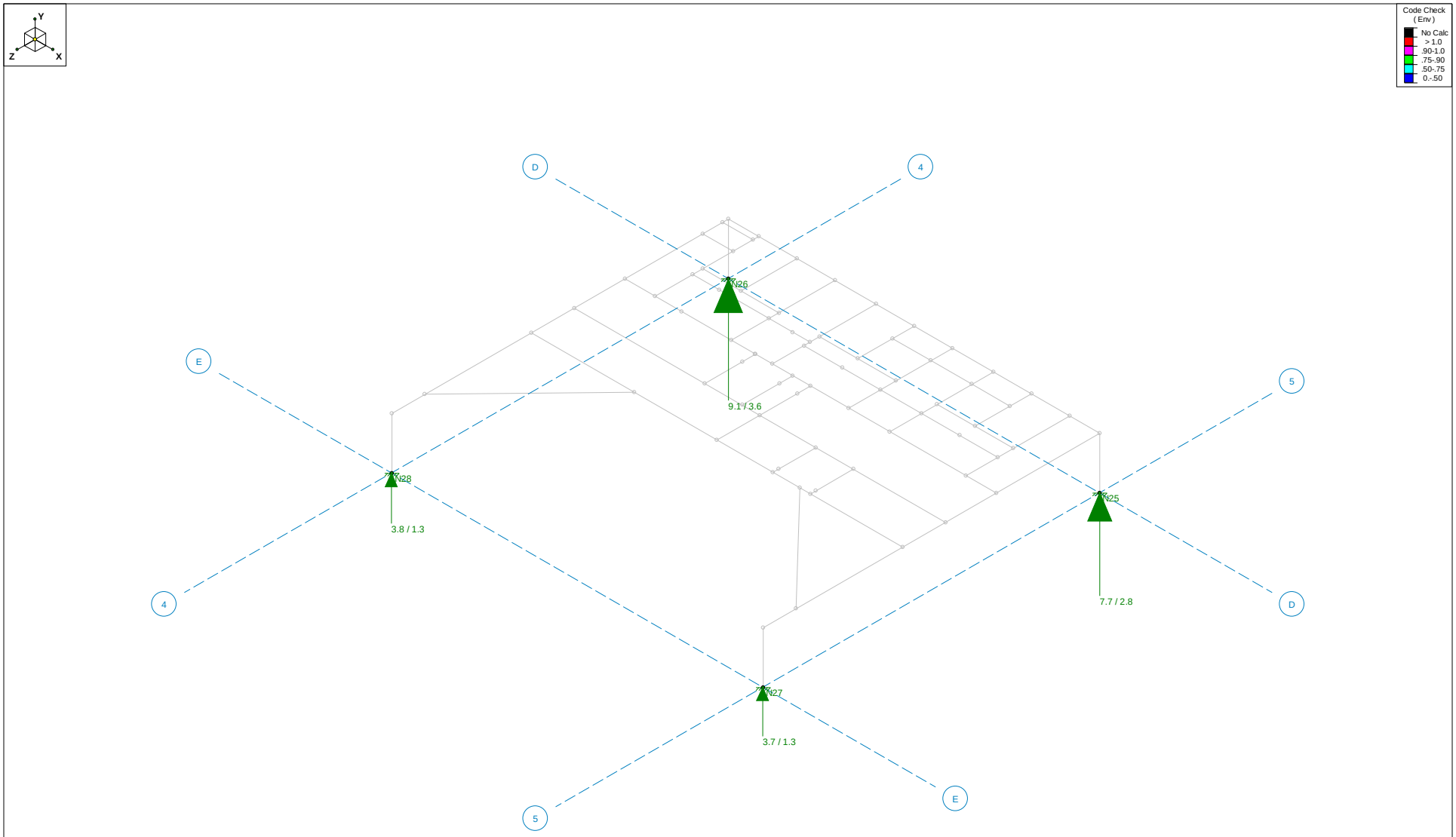
Envelope AISC 14th(360-10): ASD Steel Code Checks

	Me...	Sha...	Code Ch...	Lo...	LC	Shear...	Loc...	Dir	LC	Pnc/om [k]	Pnt/om [k]	Mnyy/om...	Mnzz/o...	Cb	Eqn
1	M1	W1...	.472	8.9...	13	.119	0	y	16	144.352	164.91	14.677	66.826	1.03	H1-1b
2	M2	W1...	.499	8.9...	15	.462	0	y	15	144.352	164.91	14.677	66.826	1.042	H1-1b
3	M3	HS...	.077	0	8	.012	0	z	8	263.612	268.287	45.449	45.449	1.668	H1-1b
4	M4	HS...	.073	0	8	.012	0	z	6	263.612	268.287	45.449	45.449	1.675	H1-1b
5	M5	HS...	.104	0	5	.017	0	y	7	263.612	268.287	45.449	45.449	1.625	H1-1b
6	M6	HS...	.100	0	5	.017	0	y	5	263.612	268.287	45.449	45.449	1.673	H1-1b
7	M7	W1...	.365	8.7...	14	.078	0	y	14	141.464	164.91	14.677	66.826	1	H1-1b
8	M8	W1...	.439	8.7...	14	.135	0	y	16	141.464	164.91	14.677	66.826	1.007	H1-1b
9	M9	W8...	.246	4.1...	8	.055	6	y	16	94.7	113.389	8.371	30.539	1.533	H1-1b
10	M10	C8...	.045	1.2...	5	.025	0	y	14	59.123	72.647	2.231	17.299	1.381	H1-1b
11	M11	W8...	.268	4.1...	8	.052	0	y	16	110.79	113.389	8.371	30.539	1.075	H1-1b
12	M12	W8...	.092	4.1...	8	.023	6	y	16	110.79	113.389	8.371	30.539	1.61	H1-1b
13	M13	C8...	.068	1.2...	6	.024	0	y	14	63.737	72.647	2.231	17.299	1.629	H1-1b
14	M14	W8...	.273	3.8...	13	.116	6	y	14	110.79	113.389	8.371	30.539	1.043	H1-1b
15	M15	W8...	.306	3.8...	16	.121	3.8...	y	16	110.731	113.389	8.371	30.539	2.554	H1-1b
16	M16	W8...	.271	3.8...	16	.115	6	y	16	94.7	113.389	8.371	30.539	2.359	H1-1b
17	M17	C8...	.001	1.6...	8	.002	3.25	y	6	59.123	72.647	2.231	17.299	1.136	H1-1b
18	M18	L4X...	.177	1.75	7	.030	0	y	5	59.339	61.653	2.926	6.578	2.309	H2-1
19	M19	L4X...	.209	0	5	.031	1.6...	y	6	59.339	61.653	2.926	6.578	2.069	H2-1
20	M20	W8...	.018	2.2...	13	.010	0	y	16	102.846	113.389	8.371	30.539	1.146	H1-1b
21	M21	W8...	.066	2.2...	6	.012	0	y	14	102.846	113.389	8.371	30.539	1.275	H1-1b
22	M22	W8...	.049	2.2...	6	.014	4.4...	y	14	102.846	113.389	8.371	30.539	1.275	H1-1b
23	M23	L4X...	.314	2.2...	8	.024	0	z	16	48.319	61.653	2.926	6.578	1.296	H2-1
24	M24	L4X...	.034	1.1...	16	.012	0	z	16	57.458	61.653	2.926	6.578	1.124	H2-1
25	M25	L4X...	.017	1.1...	16	.006	2.2...	z	13	58.009	61.653	2.926	6.578	1.136	H2-1
26	M26	L4X...	.034	1.1...	16	.006	0	z	3	57.458	61.653	2.926	6.578	1.145	H2-1
27	M27	L4X...	.016	1.1...	3	.012	2.2...	z	16	58.009	61.653	2.926	6.578	1.136	H2-1
28	M31	W1...	.465	10....	16	.061	21.5	y	16	88.662	124.551	4.741	42.989	1.038	H1-1b
29	M32	W8...	.185	2.4...	13	.056	0	y	16	57.218	88.623	4.071	21.87	1.352	H1-1b
30	M33	W8...	.236	5.3...	14	.058	0	y	14	75.665	88.623	4.071	21.87	1.044	H1-1b
31	M34	W8...	.292	6.7...	16	.058	10....	y	16	18.878	88.623	4.071	10.87	1.145	H1-1b
32	M35	W8...	.022	0	8	.007	0	y	16	29.637	88.623	4.071	15.419	1.136	H1-1b*
33	M36	W8...	.011	4.29	8	.007	0	y	16	29.637	88.623	4.071	15.419	1.136	H1-1b
34	M37	L4X...	.149	.764	6	.031	0	y	7	34.42	41.605	2.088	4.468	1.359	H2-1
35	M38	L4X...	.154	.764	5	.036	0	y	5	34.42	41.605	2.088	4.468	1.356	H2-1
36	M39	L4X...	.098	.336	7	.049	0	y	7	35.379	41.605	2.088	4.468	1.477	H2-1
37	M40	L4X...	.099	.31	8	.051	0	y	8	35.379	41.605	2.088	4.468	1.481	H2-1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
FJP	CT11334A	Oct 8, 2020 at 4:52 PM
20074.67	Member Unity Check	CT11334A_Equipment Platform_1_Rev.1.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution
Y-direction Reaction Units are k and k-ft (Enveloped)

Centek Engineering		
FJP	CT11334A	Oct 8, 2020 at 4:53 PM
20074.67	Platform Reactions to Host Building Columns	CT11334A_Equipment Platform_1_Rev.1.r3d

CENTEK engineering
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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: **Existing Construction Floor by Floor Column Loads and Capacities**

Project: **CT11334A | Stamford-3/Hope St**

Prepared: **10/8/2020** Revision: **2** **Job No.** 20074.67

Loads Carried by Interior Column D-4 Below Risa-3D Node N26

Summary of Floor Dead Loads			**Summary of Roof Dead Loads**	
Assume 8" concrete slab, ave. 16"∅	125		Assume 8" concrete slab, ave. 16"∅	125
concrete columns, and 8'x8' drop panels			concrete columns, and 8'x8' drop panels	
Interior non-bearing partitions	10		Roofing	5
Finish floor and ceiling	5		Insulation	2
M/E/P	5		M/E/P	5
Subtotal Floor Dead Loads	**145**	psf	**Subtotal Roof Dead Loads**	**137**
			Roof Live (Snow) Load	**30**
Heavy Manufacturing Live Load	**250**	psf		
			Special Loading at Roof Level:	
Area Tributary to Column: [(21.5 * (20.1] =	**430**	**S.F.**	None	**0** lbs
			None	**0** lbs

			Existing Building Dead and Live Loads							Existing Columns			Proposed Platform Total Loads				
Floor (Roof)	**Ref.**	**Area Trib.**	**Uniform Floor/Roof Loads (Lbs)**				**Accum.**		**Adjusted**	**Column**	**Column**	**Col. Cap.**	**Additional**	**% Increase**	**Accum.**		
Level	**Elev.**	**to Col.**	**Dead Load**	**Special D.L.**	**Live Load**	**Total Load**	**Total (Lbs)**	**L.L. Red.**	**Total (Lbs)**	**Size**	**Area (S.I.)**	**(Lbs)**	**Load**	**Above Exist.**	**Total (Lbs)**	**Results**	**Capacity**
Roof Level		430	58,910	0	12,900	71,810	71,810	N/A	71,810	16"x16"	256	365,000	9,100	12.7%	80,910	Col. Okay	
7th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
6th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
5th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
4th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	48.5%
3rd Floor		430	62,350		107,500	169,850	241,660	0	241,660	20"x20"	400	550,000	9,100	3.8%	250,760	Col. Okay	
2nd Floor		430	62,350		107,500	169,850	411,510	43,000	368,510	24"x24"	576	805,000	9,100	2.5%	377,610	Col. Okay	
1st Floor		430	62,350		107,500	169,850	581,360	64,500	516,860	28"x28"	784	1,085,000	9,100	1.8%	525,960	Col. Okay	
Totals			245,960	0	335,400	581,360											

Comments:

Floor and roof dead loads are based on field measurements.

Floor Live Loads used in calculations are provided in the building code. Live load reduction = 20% of accummulated floor load for columns supporting 2 or more floors.

Existing reinforced concrete columns are based on f'c = 4.0 ksi and fy = 60.0 ksi with minimum (1.12% or less) vertical reinforcement. Column sizes were field measured.

Existing columns capacity is based on an assumed 1 percent eccentricity and are fully braced at each level.

Refer to Enercalc computations for column capacities.

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63-2 North Branford Road P: (203) 488-0580
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Subject: **Existing Construction Floor by Floor Column Loads and Capacities**

Project: **CT11334A | Stamford-3/Hope St**

Prepared: **10/8/2020** Revision: **2** **Job No.** 20074.67

Loads Carried by Interior Column D-5 Below Risa-3D Node N25

Summary of Floor Dead Loads			**Summary of Roof Dead Loads**	
Assume 8" concrete slab, ave. 16"∅	125		Assume 8" concrete slab, ave. 16"∅	125
concrete columns, and 8'x8' drop panels			concrete columns, and 8'x8' drop panels	
Interior non-bearing partitions	10		Roofing	5
Finish floor and ceiling	5		Insulation	2
M/E/P	5		M/E/P	5
Subtotal Floor Dead Loads	**145**	psf	**Subtotal Roof Dead Loads**	**137**
			Roof Live (Snow) Load	**30**
Heavy Manufacturing Live Load	**250**	psf		
			Special Loading at Roof Level:	
Area Tributary to Column: [(21.5 * (20.1] =	**430**	**S.F.**	None	**0** lbs
			None	**0** lbs

			Existing Building Dead and Live Loads							Existing Columns			Proposed Platform Total Loads				
Floor (Roof)	**Ref.**	**Area Trib.**	**Uniform Floor/Roof Loads (Lbs)**				**Accum.**		**Adjusted**	**Column**	**Column**	**Col. Cap.**	**Additional**	**% Increase**	**Accum.**		
Level	**Elev.**	**to Col.**	**Dead Load**	**Special D.L.**	**Live Load**	**Total Load**	**Total (Lbs)**	**L.L. Red.**	**Total (Lbs)**	**Size**	**Area (S.I.)**	**(Lbs)**	**Load**	**Above Exist.**	**Total (Lbs)**	**Results**	**Capacity**
Roof Level		430	58,910	0	12,900	71,810	71,810	N/A	71,810	16"x16"	256	365,000	7,700	10.72%	79,510	Col. Okay	48.3%
7th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
6th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
5th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
4th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
3rd Floor		430	62,350		107,500	169,850	241,660	0	241,660	20"x20"	400	550,000	7,700	3.2%	249,360	Col. Okay	
2nd Floor		430	62,350		107,500	169,850	411,510	43,000	368,510	24"x24"	576	805,000	7,700	2.1%	376,210	Col. Okay	
1st Floor		430	62,350		107,500	169,850	581,360	64,500	516,860	28"x28"	784	1,085,000	7,700	1.5%	524,560	Col. Okay	
Totals			245,960	0	335,400	581,360											

Comments:

Floor and roof dead loads are based on field measurements.

Floor Live Loads used in calculations are provided in the building code. Live load reduction = 20% of accummulated floor load for columns supporting 2 or more floors.

Existing reinforced concrete columns are based on f'c = 4.0 ksi and fy = 60.0 ksi with minimum (1.12% or less) vertical reinforcement. Column sizes were field measured.

Existing columns capacity is based on an assumed 1 percent eccentricity and are fully braced at each level.

Refer to Enercalc computations for column capacities.

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Subject: **Existing Construction Floor by Floor Column Loads and Capacities**

Project: **CT11334A | Stamford-3/Hope St**

Prepared: **10/8/2020** Revision: **2** **Job No.** 20074.67

Loads Carried by Interior Column E-4 Below Risa-3D Node N28

Summary of Floor Dead Loads						**Summary of Roof Dead Loads**												
Assume 8" concrete slab, ave. 16"∅			125			Assume 8" concrete slab, ave. 16"∅			125								
concrete columns, and 8'x8' drop panels						concrete columns, and 8'x8' drop panels												
Interior non-bearing partitions			10			Roofing			5									
Finish floor and ceiling			5			Insulation			2									
M/E/P			5			M/E/P			5									
Subtotal Floor Dead Loads			**145**	psf		**Subtotal Roof Dead Loads**			**137**									
Roof Live (Snow) Load									**30**									
Heavy Manufacturing Live Load			**250**	psf		**Special Loading at Roof Level:**												
Area Tributary to Column: [(21.5 * (20.1] =			**430**	**S.F.**		None						**0**	lbs					
						None						**0**	lbs					

			Existing Building Dead and Live Loads							Existing Columns			Proposed Platform Total Loads				
Floor (Roof)	**Ref.**	**Area Trib.**	**Uniform Floor/Roof Loads (Lbs)**				**Accum.**		**Adjusted**	**Column**	**Column**	**Col. Cap.**	**Additional**	**% Increase**	**Accum.**		
Level	**Elev.**	**to Col.**	**Dead Load**	**Special D.L.**	**Live Load**	**Total Load**	**Total (Lbs)**	**L.L. Red.**	**Total (Lbs)**	**Size**	**Area (S.I.)**	**(Lbs)**	**Load**	**Above Exist.**	**Total (Lbs)**	**Results**	**Capacity**
Roof Level		430	58,910	0	12,900	71,810	71,810	N/A	71,810	16"x16"	256	365,000	3,800	5.3%	75,610	Col. Okay	48.0%
7th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
6th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
5th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
4th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
3rd Floor		430	62,350		107,500	169,850	241,660	0	241,660	20"x20"	400	550,000	3,800	1.6%	245,460	Col. Okay	
2nd Floor		430	62,350		107,500	169,850	411,510	43,000	368,510	24"x24"	576	805,000	3,800	1.0%	372,310	Col. Okay	
1st Floor		430	62,350		107,500	169,850	581,360	64,500	516,860	28"x28"	784	1,085,000	3,800	0.7%	520,660	Col. Okay	
Totals			245,960	0	335,400	581,360											

Comments:

Floor and roof dead loads are based on field measurements.

Floor Live Loads used in calculations are provided in the building code. Live load reduction = 20% of accummulated floor load for columns supporting 2 or more floors.

Existing reinforced concrete columns are based on f'c = 4.0 ksi and fy = 60.0 ksi with minimum (1.12% or less) vertical reinforcement. Column sizes were field measured.

Existing columns capacity is based on an assumed 1 percent eccentricity and are fully braced at each level.

Refer to Enercalc computations for column capacities.

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Branford, CT 06405 F: (203) 488-8587

Subject: **Existing Construction Floor by Floor Column Loads and Capacities**

Project: **CT11334A | Stamford-3/Hope St**

Prepared: **10/8/2020** Revision: **2** **Job No.** 20074.67

Loads Carried by Interior Column E-5 Below Risa-3D Node N27

Summary of Floor Dead Loads		**Summary of Roof Dead Loads**	
Assume 8" concrete slab, ave. 16"∅	125	Assume 8" concrete slab, ave. 16"∅	125
concrete columns, and 8'x8' drop panels		concrete columns, and 8'x8' drop panels	
Interior non-bearing partitions	10	Roofing	5
Finish floor and ceiling	5	Insulation	2
M/E/P	5	M/E/P	5
Subtotal Floor Dead Loads	**145** psf	**Subtotal Roof Dead Loads**	**137**
		Roof Live (Snow) Load	**30**
Heavy Manufacturing Live Load	**250** psf		
		Special Loading at Roof Level:	
Area Tributary to Column: [(21.5 * (20.1] =	**430** **S.F.**	None	**0** lbs
		None	**0** lbs

			Existing Building Dead and Live Loads							Existing Columns			Proposed Platform Total Loads				
Floor (Roof)	**Ref.**	**Area Trib.**	**Uniform Floor/Roof Loads (Lbs)**				**Accum.**		**Adjusted**	**Column**	**Column**	**Col. Cap.**	**Additional**	**% Increase**	**Accum.**		
Level	**Elev.**	**to Col.**	**Dead Load**	**Special D.L.**	**Live Load**	**Total Load**	**Total (Lbs)**	**L.L. Red.**	**Total (Lbs)**	**Size**	**Area (S.I.)**	**(Lbs)**	**Load**	**Above Exist.**	**Total (Lbs)**	**Results**	**Capacity**
Roof Level		430	58,910	0	12,900	71,810	71,810	N/A	71,810	16"x16"	256	365,000	3,700	5.2%	75,510	Col. Okay	
7th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
6th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
5th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	
4th Floor			0		0	0	71,810	0	71,810					0.0%	71,810	Col. N.G.	48.0%
3rd Floor		430	62,350		107,500	169,850	241,660	0	241,660	20"x20"	400	550,000	3,700	1.5%	245,360	Col. Okay	
2nd Floor		430	62,350		107,500	169,850	411,510	43,000	368,510	24"x24"	576	805,000	3,700	1.0%	372,210	Col. Okay	
1st Floor		430	62,350		107,500	169,850	581,360	64,500	516,860	28"x28"	784	1,085,000	3,700	0.7%	520,560	Col. Okay	
Totals			245,960	0	335,400	581,360											

Comments:

Floor and roof dead loads are based on field measurements.

Floor Live Loads used in calculations are provided in the building code. Live load reduction = 20% of accummulated floor load for columns supporting 2 or more floors.

Existing reinforced concrete columns are based on f'c = 4.0 ksi and fy = 60.0 ksi with minimum (1.12% or less) vertical reinforcement. Column sizes were field measured.

Existing columns capacity is based on an assumed 1 percent eccentricity and are fully braced at each level.

Refer to Enercalc computations for column capacities.

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Section 1 - Site Information

Site ID: CT11334A
Status: Draft
Version: 4
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 8/17/2020 8:0:48 PM
Last Modified By: Dominic.Kallas2@T-Mobile.com

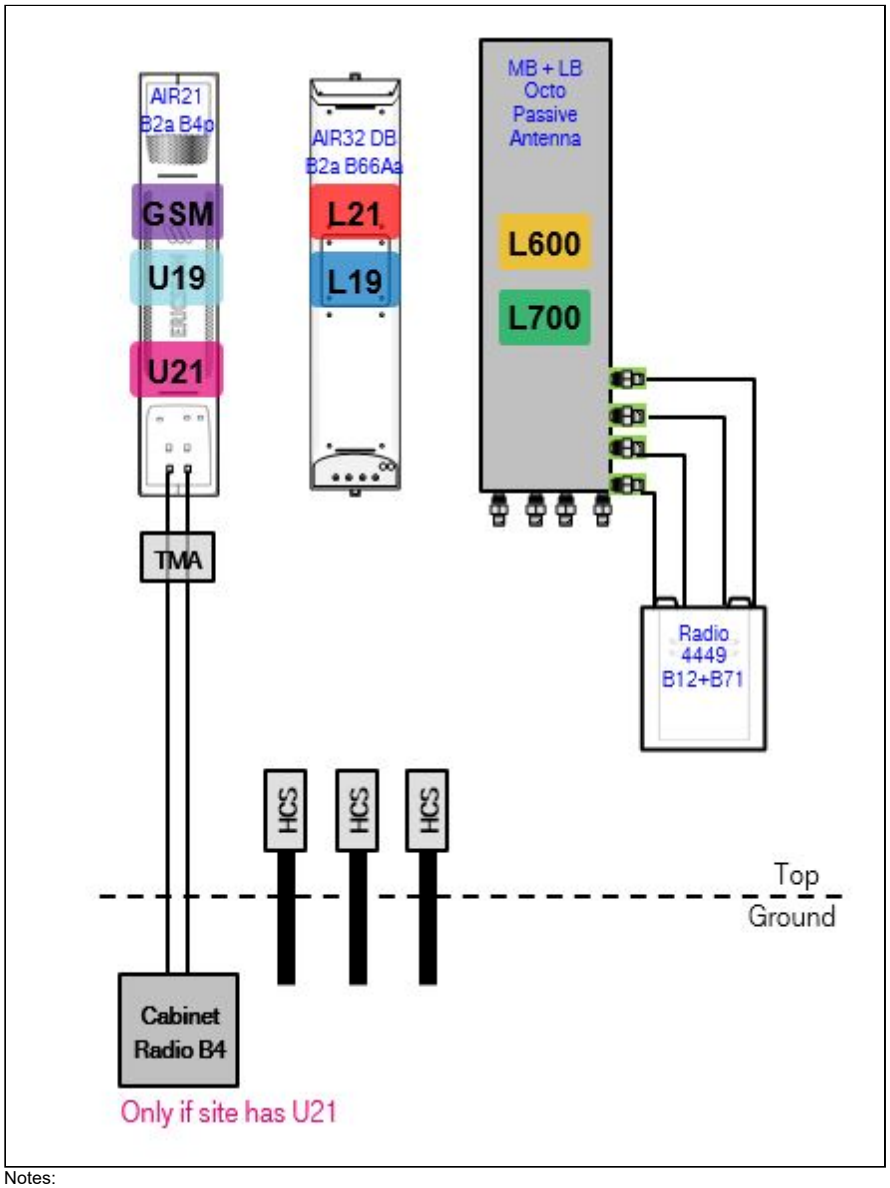
Site Name: Stamford-3/Hope St
Site Class: Watertank
Site Type: Structure Non Building
Plan Year: 2020
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: <undefined>

Latitude: 41.07548400
Longitude: -73.51914100
Address: 652 Glenbrook Road
City, State: Stamford, CT
Region: NORTHEAST

RAN Template: 67D5A997DB Outdoor			AL Template: 67D5997DB_2xAIR+1OP (U21 Market)	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 6	**TMA Count:** 3	**RRU Count:** 6

Section 2 - Existing Template Images

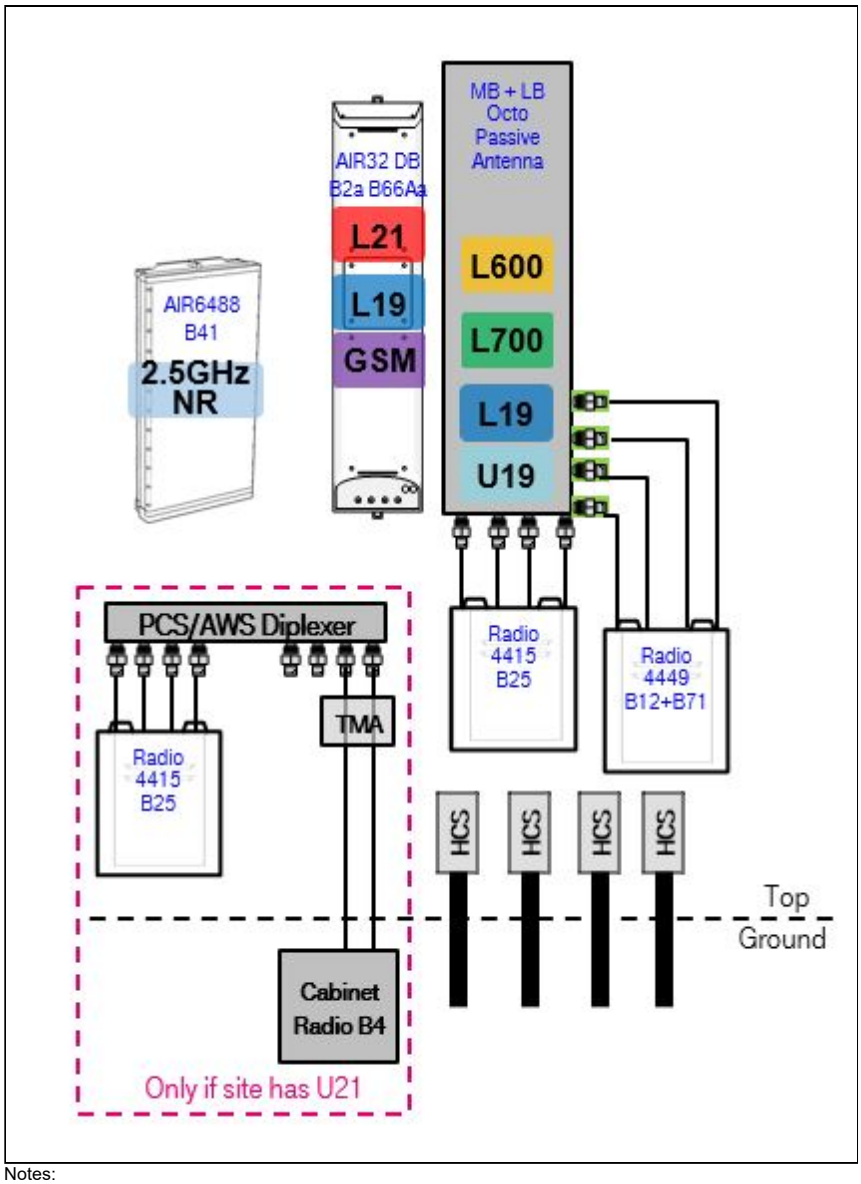
67D92DB_2xAIR+1OP.JPG



Notes:

Section 3 - Proposed Template Images

67D5997DB_2xAIR+1OP.JPG



Notes:

Section 4 - Siteplan Images

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RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92DB Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	Ancillary Equipment (Ericsson)
Baseband	DUW30 (U1900 (DECOMMISSIONED)); DUW30 (U2100); DUG20 (G1900); BB 6630 (L2100, L1900); BB 6630 (L700, L600, N600)	
Hybrid Cable System		Ericsson 6x12 HCS 6AWG 40m **(x 2)**; Ericsson 6x12 HCS 4AWG 60m
Radio	RU22 **(x 6)** (U2100)	

Proposed RAN Equipment

Template: 67D5A997DB Outdoor

Enclosure	1	2	3	4
Enclosure Type	RBS 6131	Ancillary Equipment (Ericsson)	Enclosure 6160	B160
Baseband	DUW30; DUW30 (U2100); DUG20 (G1900); BB 6630 (L2100, L1900); BB 6630 (L700, L600, N600)		BB 6630 (L2500); BB 6648 (N2500)	
Hybrid Cable System		Ericsson 6x12 HCS 6AWG 40m **(x 2)**; Ericsson 6x12 HCS 4AWG 60m	PSU 4813	
Radio	RU22 **(x 6)** (U2100)			

RAN Scope of Work:

Generator is installed at site.

Add (1) Enclosure 6160.

Add (1) Battery Cabinet B160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) BB6630 for L2500 to new Enclosure 6160.

Add (1) BB6648 for N2500 to new Enclosure 6160.

Add (1) PSU 4813 to new Enclosure 6160.

Existing: (12) Coaxial Lines; (3) 6X12 HCS

Remove (6) Coaxial Lines for new total of (6) Coaxial Lines.

DC and Fiber Pairs on each HCS to be allocated among A&L equipment on that sector.

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Section 6 - A&L Equipment

Existing Template: 67D92DB_2xAIR+1OP
Proposed Template: 67D5997DB_2xAIR+1OP (U21 Market)

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro										
Antenna	1		2				3				4
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)				Occupied Mount (Placeholder)
Azimuth	60		60				60				
M. Tilt	0		0				0				
Height	85		85				85				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Active Tech.	G1900	U2100	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600			
Dark Tech.											
Restricted Tech.											
Decomm. Tech.	U1900										
E. Tilt											
Cables		Generic Feeder Coax **(x2)** Coax Jumper **(x2)**					Coax Jumper **(x2)**	Coax Jumper **(x2)**			
TMAs		Generic Twin Style 1B - AWS (AtAntenna)									
Diplexers / Combiners											
Radio							Radio 4449 B71+B85 (At Antenna)				
Sector Equipment											

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro										
Antenna	1		2				3				4
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)				Occupied Mount (Placeholder)
Azimuth	60		60				60				
M. Tilt	0		0				0				
Height	85		85				85				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Active Tech.	L2500 N2500	L2500 N2500	L2100	L2100	G1900 L1900	L1900	L700 L600 N600	L700 L600 N600	L1900	U2100 L1900	
Dark Tech.											
Restricted Tech.											
Decomm. Tech.											
E. Tilt											
Cables							Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)** Generic Feeder Coax **(x2)**	
TMAs										Generic Twin Style 1B - AWS (AtAntenna)	
Diplexers / Combiners									Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	SHARED Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	
Radio							Radio 4449 B71+B85 (AtAntenna)	SHARED Radio 4449 B71+B85 (AtAntenna)	Radio 4415 B25 (AtAntenna)	SHARED Radio 4415 B25 (AtAntenna)	
Sector Equipment											

Unconnected Equipment:

Scope of Work:

Remove AIR21 B2A/B4P from Position 1.

Install AIR6449 B41 for L2500 and N2500 in Position 1.

Move GSM to AIR32 DB in Position 2. GSM will share B2 Radios with L1900 1st Carrier.

Add (1) PCS/AWS 8:4 diplexer to Position 3 at antenna, and connect its four output ports to the Mid-Band ports of the Octo antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to Position 3 near antenna, and connect its ports to the four PCS input ports of the diplexer.

Move coaxial lines and AWS TMA for U2100 to Position 3, and connect them to two AWS input ports of the diplexer.

Make sure to install metal caps on all empty ports of PCS/AWS diplexer for load balancing.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Sector 2 (Existing) view from behind

Coverage Type	A - Outdoor Macro										
Antenna	1		2				3				4
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)				Occupied Mount (Placeholder)
Azimuth	170		170				170				
M. Tilt	0		0				0				
Height	85		85				85				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Active Tech.	G1900	U2100	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600			
Dark Tech.											
Restricted Tech.											
Decomm. Tech.	U1900										
E. Tilt											
Cables		Generic Feeder Coax **(x2)** Coax Jumper **(x2)**					Coax Jumper **(x2)**	Coax Jumper **(x2)**			
TMAs		Generic Twin Style 1B - AWS (AtAntenna)									
Diplexers / Combiners											
Radio							Radio 4449 B71+B85 (AtAntenna)				
Sector Equipment											

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro										
Antenna	1		2				3				4
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)				Occupied Mount (Placeholder)
Azimuth	170		170				170				
M. Tilt	0		0				0				
Height	85		85				85				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Active Tech.	L2500 N2500	L2500 N2500	L2100	L2100	G1900 L1900	L1900	L700 L600 N600	L700 L600 N600	L1900	U2100 L1900	
Dark Tech.											
Restricted Tech.											
Decomm. Tech.											
E. Tilt											
Cables							Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)** Generic Feeder Coax **(x2)**	
TMAs										Generic Twin Style 1B - AWS (AtAntenna)	
Diplexers / Combiners									Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	SHARED Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	
Radio							Radio 4449 B71+B85 (AtAntenna)	SHARED Radio 4449 B71+B85 (AtAntenna)	Radio 4415 B25 (AtAntenna)	SHARED Radio 4415 B25 (AtAntenna)	
Sector Equipment											

Unconnected Equipment:

Scope of Work:

Remove AIR21 B2A/B4P from Position 1.

Install AIR6449 B41 for L2500 and N2500 in Position 1.

Move GSM to AIR32 DB in Position 2. GSM will share B2 Radios with L1900 1st Carrier.

Add (1) PCS/AWS 8:4 diplexer to Position 3 at antenna, and connect its four output ports to the Mid-Band ports of the Octo antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to Position 3 near antenna, and connect its ports to the four PCS input ports of the diplexer.

Move coaxial lines and AWS TMA for U2100 to Position 3, and connect them to two AWS input ports of the diplexer.

Make sure to install metal caps on all empty ports of PCS/AWS diplexer for load balancing.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro										
Antenna	1		2				3				4
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)				Occupied Mount (Placeholder)
Azimuth	300		300				300				
M. Tilt	0		0				0				
Height	85		85				85				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Active Tech.	G1900	U2100	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600			
Dark Tech.											
Restricted Tech.											
Decomm. Tech.	U1900										
E. Tilt											
Cables		Generic Feeder Coax **(x2)** Coax Jumper **(x2)**					Coax Jumper **(x2)**	Coax Jumper **(x2)**			
TMAs		Generic Twin Style 1B - AWS (AtAntenna)									
Diplexers / Combiners											
Radio							Radio 4449 B71+B85 (AtAntenna)				
Sector Equipment											

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro										
Antenna	1		2				3				4
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)				Occupied Mount (Placeholder)
Azimuth	300		300				300				
M. Tilt	0		0				0				
Height	85		85				85				
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Active Tech.	L2500 N2500	L2500 N2500	L2100	L2100	G1900 L1900	L1900	L700 L600 N600	L700 L600 N600	L1900	U2100 L1900	
Dark Tech.											
Restricted Tech.											
Decomm. Tech.											
E. Tilt											
Cables							Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)**	Coax Jumper **(x2)** Generic Feeder Coax **(x2)**	
TMAs										Generic Twin Style 1B - AWS (AtAntenna)	
Diplexers / Combiners									Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	SHARED Commscope - SDX1926Q-43 (E14F05P86) (AtAntenna)	
Radio							Radio 4449 B71+B85 (AtAntenna)	SHARED Radio 4449 B71+B85 (AtAntenna)	Radio 4415 B25 (AtAntenna)	SHARED Radio 4415 B25 (AtAntenna)	
Sector Equipment											

Unconnected Equipment:

Scope of Work:

Remove AIR21 B2A/B4P from Position 1.

Install AIR6449 B41 for L2500 and N2500 in Position 1.

Move GSM to AIR32 DB in Position 2. GSM will share B2 Radios with L1900 1st Carrier.

Add (1) PCS/AWS 8:4 diplexer to Position 3 at antenna, and connect its four output ports to the Mid-Band ports of the Octo antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to Position 3 near antenna, and connect its ports to the four PCS input ports of the diplexer.

Move coaxial lines and AWS TMA for U2100 to Position 3, and connect them to two AWS input ports of the diplexer.

Make sure to install metal caps on all empty ports of PCS/AWS diplexer for load balancing.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A997DB Outdoor	67D5997DB_2xAIR+1OP (U21 Market)

CT11334A_Anchor_4_draft

Print Name: Preliminary (RFDS_for_Scoping)
PORs: Anchor_Phase 3

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

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Proposed Power Systems Equipment

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11334A

Stamford-3/Hope St
652 Glenbrook Road
Stamford, Connecticut 06906

February 9, 2021

EBI Project Number: 6221000529

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**51.30%**

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

February 9, 2021

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

Emissions Analysis for Site: CT11334A - Stamford-3/Hope St

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **652 Glenbrook Road** in **Stamford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 652 Glenbrook Road in Stamford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antenna mounting height centerline of the proposed antennas is 85 feet above ground level (AGL).

14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

15) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	85 feet	Height (AGL):	85 feet	Height (AGL):	85 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A1 MPE %:	**19.15%**	Antenna B1 MPE %:	**19.15%**	Antenna C1 MPE %:	**19.15%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	85 feet	Height (AGL):	85 feet	Height (AGL):	85 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A2 MPE %:	**6.39%**	Antenna B2 MPE %:	**6.39%**	Antenna C2 MPE %:	**6.39%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	85 feet	Height (AGL):	85 feet	Height (AGL):	85 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A3 MPE %:	**8.30%**	Antenna B3 MPE %:	**8.30%**	Antenna C3 MPE %:	**8.30%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	33.84%
Metro PCS	2.41%
Clearwire	0.24%
Sprint	10.49%
AT&T	4.32%
Site Total MPE % :	51.30%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	33.84%
T-Mobile Sector B Total:	33.84%
T-Mobile Sector C Total:	33.84%
Site Total MPE % :	51.30%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2500 MHz LTE	1	19238.94	85.0	95.73	2500 MHz LTE	1000	9.57%
T-Mobile 2500 MHz NR	1	19238.94	85.0	95.73	2500 MHz NR	1000	9.57%
T-Mobile 1900 MHz GSM	4	1028.30	85.0	20.47	1900 MHz GSM	1000	2.05%
T-Mobile 1900 MHz LTE	2	2056.61	85.0	20.47	1900 MHz LTE	1000	2.05%
T-Mobile 2100 MHz LTE	2	2307.55	85.0	22.96	2100 MHz LTE	1000	2.30%
T-Mobile 600 MHz LTE	2	591.73	85.0	5.89	600 MHz LTE	400	1.47%
T-Mobile 600 MHz NR	1	1577.94	85.0	7.85	600 MHz NR	400	1.96%
T-Mobile 700 MHz LTE	2	648.82	85.0	6.46	700 MHz LTE	467	1.38%
T-Mobile 1900 MHz LTE	2	2203.69	85.0	21.93	1900 MHz LTE	1000	2.19%
T-Mobile 2100 MHz UMTS	2	1294.56	85.0	12.88	2100 MHz UMTS	1000	1.29%
						Total:	**33.84%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	33.84%
Sector B:	33.84%
Sector C:	33.84%
T-Mobile Maximum MPE % (Sector A):	33.84%
Site Total:	51.30%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **51.30%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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