STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

July 16, 2019

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, NJ 07430

RE: **EM-T-MOBILE-069-190624 –** T-Mobile notice of intent to modify an existing telecommunications facility located at 246 East Franklin Street, Danielson (Killingly), Connecticut.

Dear Mr. Richers:

The Connecticut Siting Council (Council) is in receipt of your correspondence of July 11, 2019 submitted in response to the Council's June 24, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

file copy

Kyle Richers

From: Nwankwo, Ifeanyi <Ifeanyi.Nwankwo@ct.gov>
Sent: Friday, July 12, 2019 12:21 PM
To: 'Kyle Richers'
Cc: CSC-DL Siting Council; 'Dan Reid'; 'Jennifer Dupont'
Subject: RE: Council Incomplete Letter for EM-T-MOBILE-069-190624-EastFranklinSt-Killingly CT11315C

Hi Kyle,
Good Afternoon, and thank you for your email. Please provide one hard copy of the response to the incomplete request for the request to be rendered complete and processed.
Thank you.

Best Regards
Ifeanyichukwu Nwankwo
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051
P: 860.827.2941 | F: 860.827.2950 | E: Ifeanyi.Nwankwo@ct.gov

www.ct.gov/csc

Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.

From: Kyle Richers [mailto:krichers@transcendwireless.com]
Sent: Thursday, July 11, 2019 4:29 PM
To: Robidoux, Evan
Cc: CSC-DL Siting Council; 'Dan Reid'; 'Jennifer Dupont'
Subject: RE: Council Incomplete Letter for EM-T-MOBILE-069-190624-EastFranklinSt-Killingly CT11315C

Good Afternoon,

Please see our response to the comments in the correspondence letter:

1. That is correct that the drawings indicate (5) antennas and the structural analysis indicates (6) antennas. The reason for this discrepancy is T-Mobile has the reserved entitlements for (1) additional antenna (for a total of 6), and the tower owner SBA typically has the reserved rights included in the loading analysis. The drawings are accurate in that only (5) will be installed. If the structural analysis definitely requires revision to reflect (5), we can accommodate, but I just wanted to provide that explanation.

2. The drawings have been updated to reflect the T-Arm mounts as indicated on the mount analysis and structural analysis. The revised drawings are attached.
3. The updated MA is attached.
4. The reason for the Emissions Report only showing (3) antennas is because the other (2) will be shut off following the proposed installation. The (2) EMS antennas will be affectively dummy antennas, and so the report does not depict them as they are not emitting anything. Let us know if this is acceptable.

Thanks,

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
908-447-4716
krichers@transcendwireless.com

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Wednesday, June 26, 2019 10:39 AM
To: 'Kyle Richers' <krichers@transcendwireless.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council Incomplete Letter for EM-T-MOBILE-069-190624-EastFranklinSt-Killingly

Please see the attached correspondence.

Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

WIRELESS COMMUNICATIONS FACILITY

PLAINFIELD/I-395_1

SITE ID: CT11315C

246 EAST FRANKLIN STREET

DANIELSON, CT 06239

T-MOBILE RF CONFIGURATION

94G_1xAIR

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   - A. REMOVE (2) PANEL ANTENNAS.
   - B. INSTALL (3) PANEL ANTENNAS.
   - C. REMOVE (4) TMAs.
   - D. INSTALL (3) TMAs.
   - E. INSTALL (6) DIPLEXERS AT GRADE.
   - F. INSTALL NEW UNISTRUT FRAME AT GRADE.
   - G. ROTATE ANTENNA MOUNTS TO ACCOMMODATE NEW AZIMUTHS.
   - H. INSTALL (1) BBU CABINET ON EXISTING CONCRETE PAD.

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." 2016 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 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 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 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 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.
19. CONTRACTOR SHALL COMPLY WITH OWNERS 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

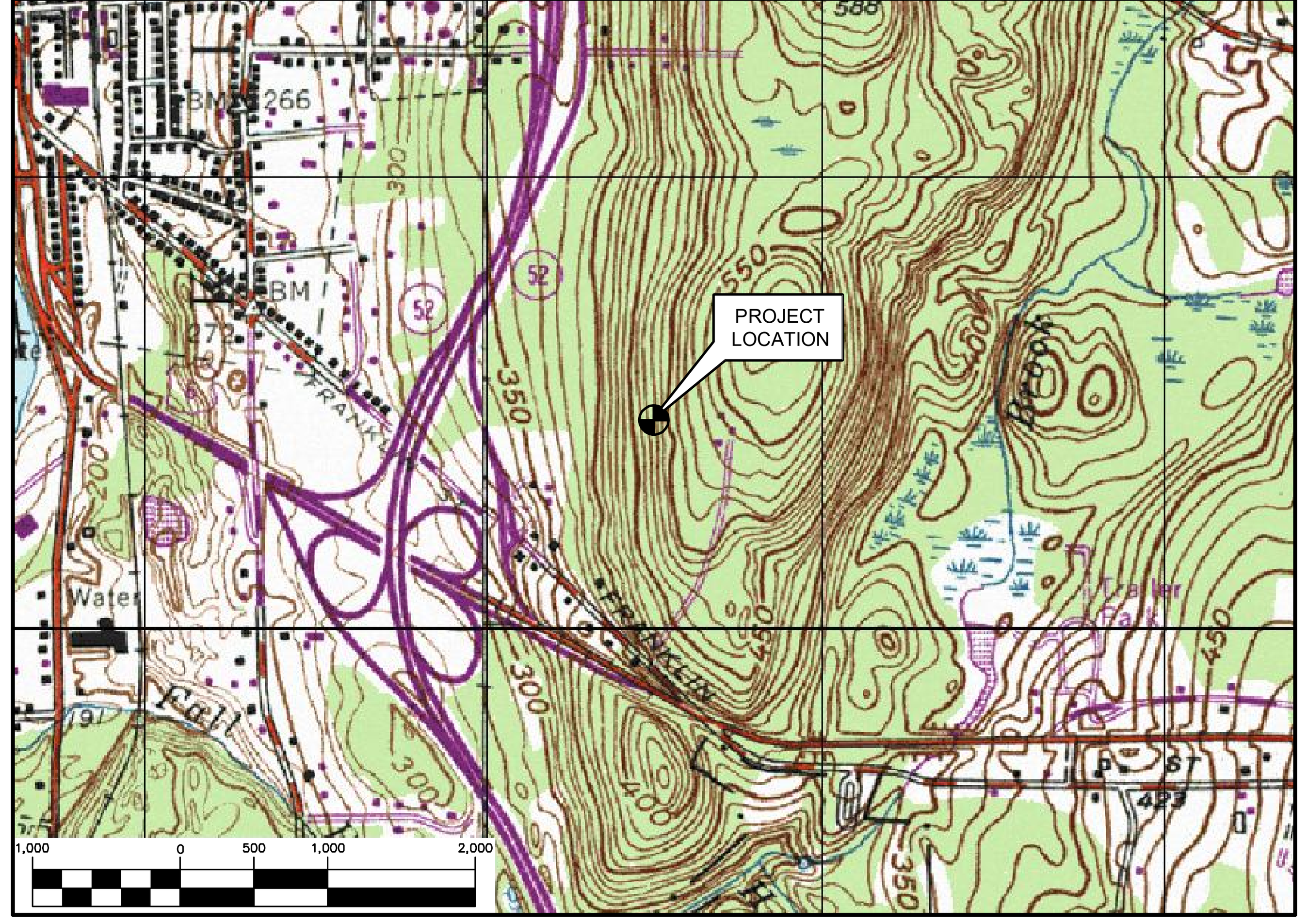
TO: 246 EAST FRANKLIN STREET
DANIELSON, CT 06239

1.	HEAD SOUTHEAST ON W NEWBERRY RD TOWARD GRIFFIN RD S.	0.10 MI.
2.	TURN LEFT ONTO GRIFFIN RD S.	0.60 MI.
3.	TURN RIGHT ONTO DAY HILL RD.	3.60 MI.
4.	USE THE RIGHT LANE TO MERGE ONTO I-91 S VIA THE RAMP TO HARTFORD.	0.40 MI.
5.	MERGE ONTO I-91 S.	3.60 MI.
6.	TAKE EXIT 35A FOR I-291 TOWARD MANCHESTER.	0.60 MI.
7.	CONTINUE ONTO I-291 E.	5.60 MI.
8.	USE THE LEFT LANE TO MERGE ONTO I-84 E TOWARD BOSTON.	15.40 MI.
9.	TAKE EXIT 69 FOR CT-74 TOWARD U.S. 44/WILLINGTON/PUTNAM.	0.30 MI.
10.	TURN RIGHT ONTO CT-74 E.	0.60 MI.
11.	TURN LEFT TO STAY ON CT-74 E.	6.90 MI.
12.	TURN LEFT ONTO U.S. 44 E.	11.90 MI.
13.	CONTINUE STRAIGHT ONTO CT-101 E.	4.80 MI.
14.	TURN RIGHT ONTO THE INTERSTATE 395 S RAMP TO NORWICH.	0.20 MI.
15.	MERGE ONTO I-395 S.	3.30 MI.
16.	TAKE EXIT 37A TO MERGE ONTO U.S. 6 E TOWARD PROVIDENCE.	0.80 MI.
17.	SHARP LEFT ONTO E FRANKLIN ST.	0.10 MI.

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT INFORMATION

SITE NAME:	PLAINFIELD/I-395_1
SITE ID:	CT11315C
SITE ADDRESS:	246 EAST FRANKLIN STREET DANIELSON, CT 06239
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:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-47'-44.98" N LONGITUDE: 71°-52'-13.28" W GROUND ELEVATION: 481'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	07/10/19	TJL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	06/10/19	LGL	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT TIMOTHY J. LYNN No. 29336 LICENSED PROFESSIONAL ENGINEER

Transcend Wireless

CENTEK engineering
Centered on Solutions℠
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63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

PLAINFIELD/I-395_1

SITE ID: CT11315C

246 EAST FRANKLIN STREET
DANIELSON, CT 06239

DATE:	09/13/18
SCALE:	AS NOTED
JOB NO.	18127.04

TITLE SHEET

T-1

Sheet No. 1 of 5

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90–105 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 101 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. 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.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. 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. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. 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.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

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.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	07/10/19	TJL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	06/10/19	TJL	LGL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile

Transcend Wireless

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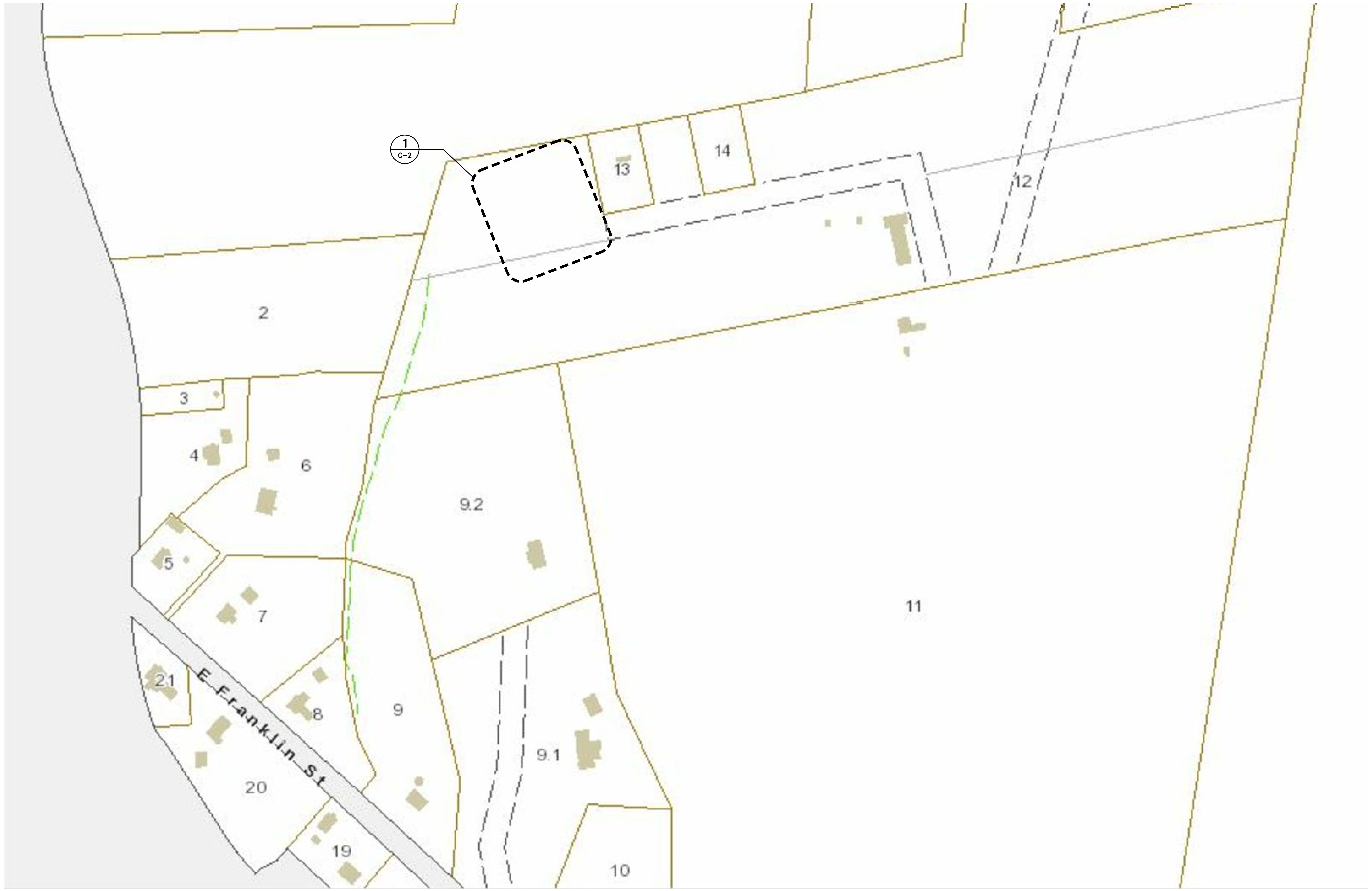
T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
PLAINFIELD/I-395_1
SITE ID: CT11315C
246 EAST FRANKLIN STREET
DANIELSON, CT 06239

DATE: 09/13/18
SCALE: AS NOTED
JOB NO. 18127.04

DESIGN BASIS AND SITE NOTES

N-1



1
C-1
SITE LOCATION PLAN
SCALE: 1" = 100'

APPROX. NORTH

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	07/10/19	TJL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	06/10/19	LGL	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT TIMOTHY J. LYNN No. 29336 LICENSED PROFESSIONAL ENGINEER

T-Mobile

Transcend Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

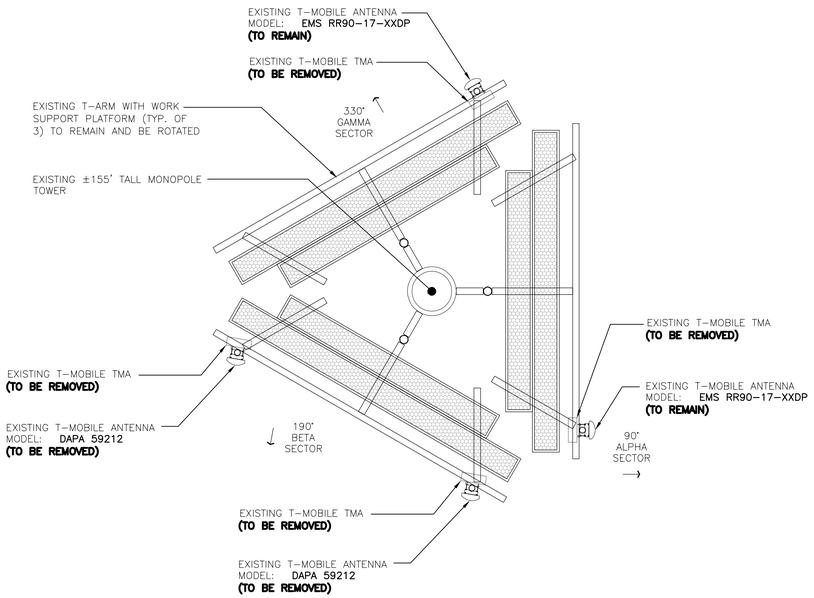
T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
PLAINFIELD/I-395_1
SITE ID: CT11315C
246 EAST FRANKLIN STREET
DANIELSON, CT 06239

DATE:	09/13/18
SCALE:	AS NOTED
JOB NO.	18127.04

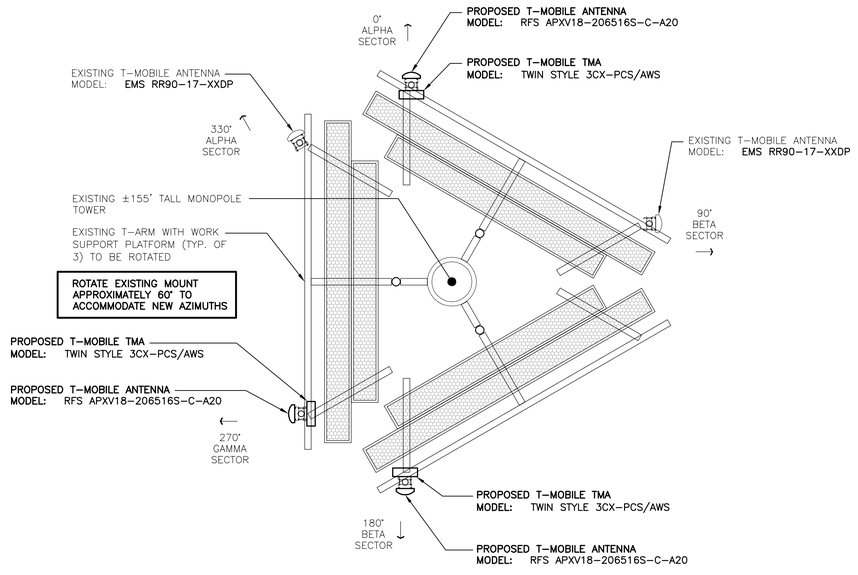
SITE LOCATION PLAN

C-1

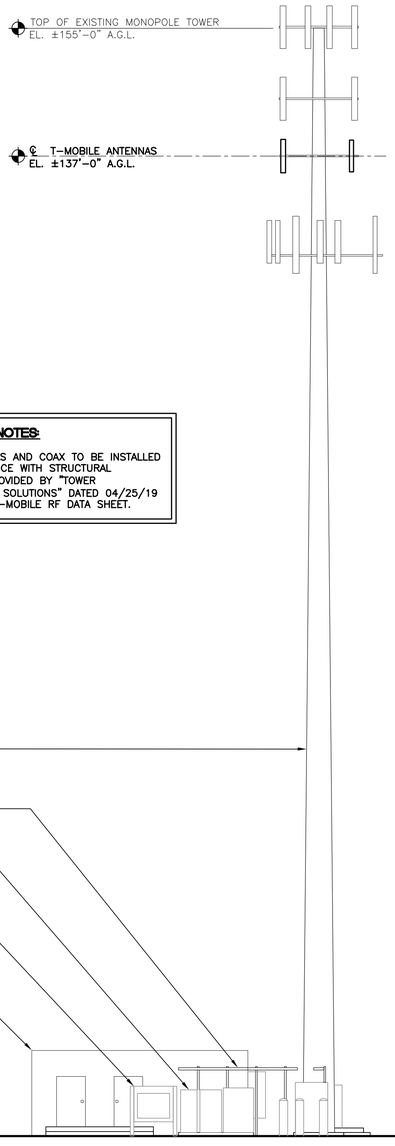
Sheet No. 3 of 6



3 C-2 **EXISTING ANTENNA MOUNTING CONFIGURATION**
SCALE: 3/8" = 1' **137' ELEVATION** TRUE NORTH

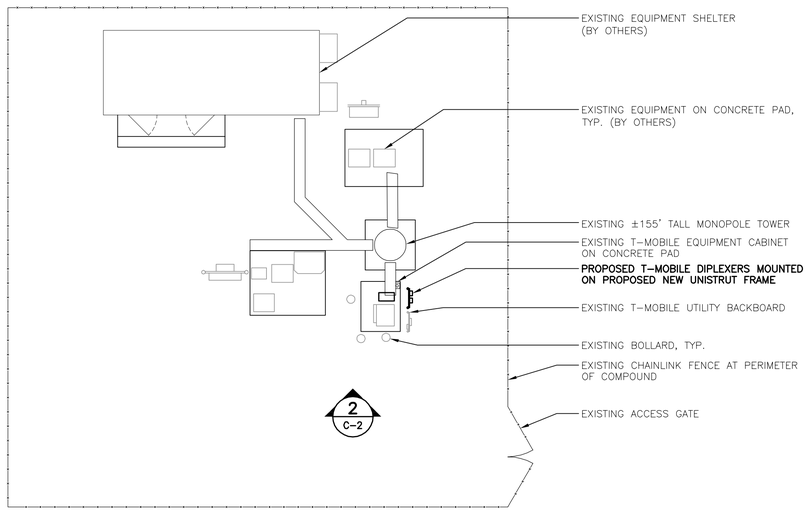


4 C-2 **PROPOSED ANTENNA MOUNTING CONFIGURATION**
SCALE: 3/8" = 1' **137' ELEVATION** TRUE NORTH



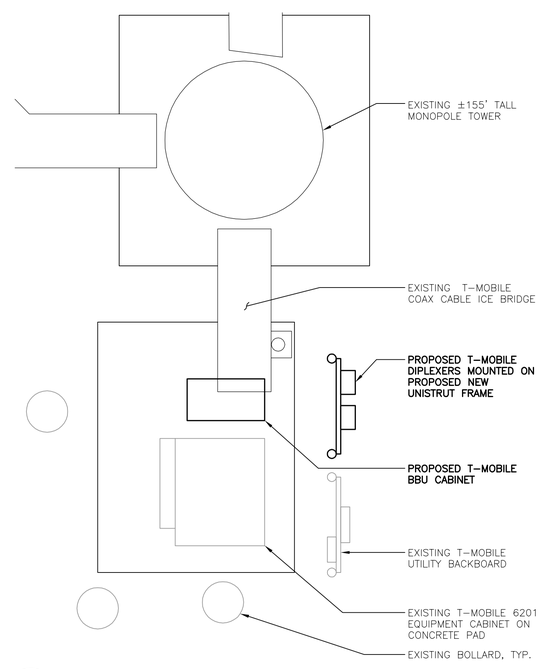
STRUCTURAL NOTES:

1. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY "TOWER ENGINEERING SOLUTIONS" DATED 04/25/19 AND FINAL T-MOBILE RF DATA SHEET.

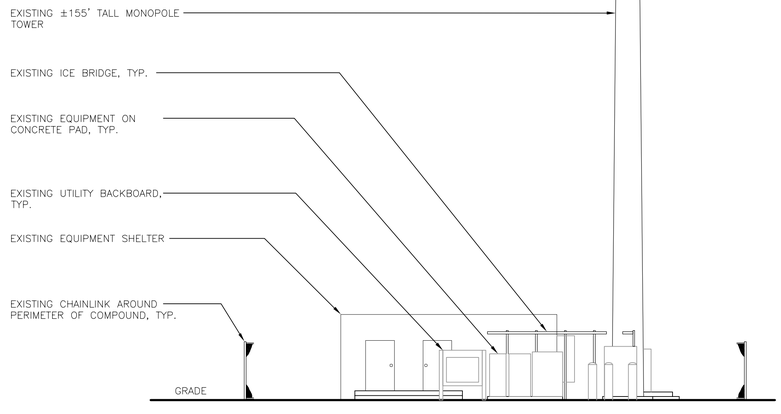


1 C-2 **COMPOUND PLAN**
SCALE: 1" = 10' TRUE NORTH

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



1 C-2 **COMPOUND PLAN**
SCALE: 1" = 10'



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

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	07/10/19	TJL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	06/10/19	LGL	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile
Transcend Wireless

CENTEK engineering
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(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

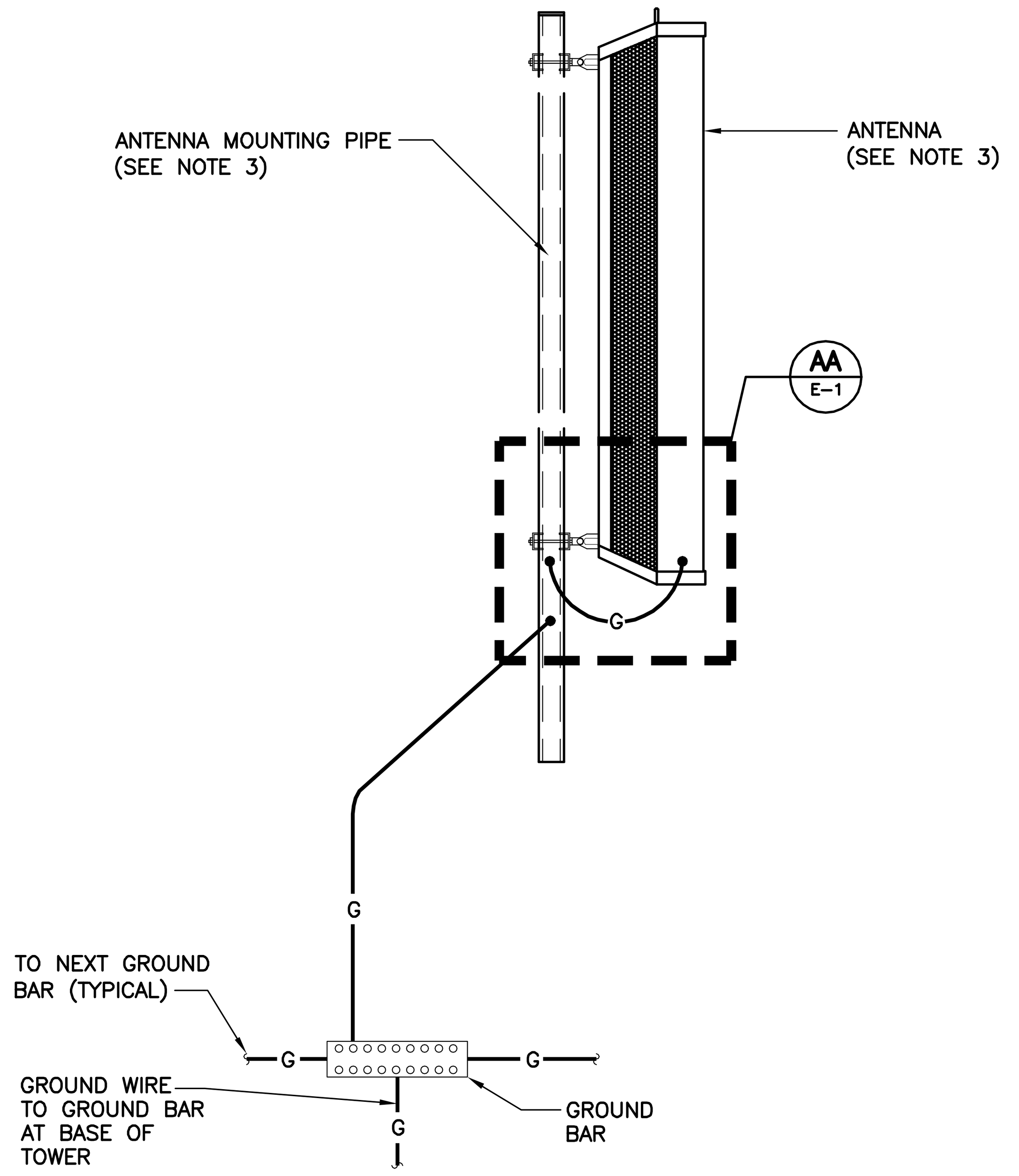
T-MOBILE NORTHEAST LLC
WIRELESS COMMUNICATIONS FACILITY
PLAINFIELD/I-395_1
SITE ID: CT11315C
246 EAST FRANKLIN STREET
DANIELSON, CT 06239

DATE: 09/13/18
SCALE: AS NOTED
JOB NO. 18127.04

PLAN, ELEVATION & ANTENNA MOUNTING CONFIGURATION

C-2

Sheet No. 4 of 5

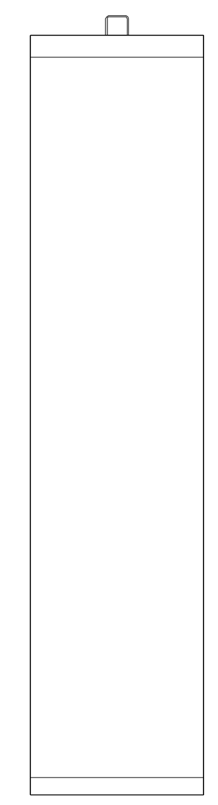


NOTES:

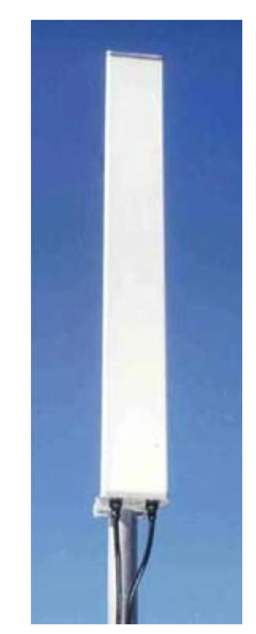
1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 / E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NONE



FRONT



RFS ANTENNA

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXV18-206516S-C-A20	53.1"L x 6.9"W x 3.15"D	18.7 LBS.

2 / E-1 PROPOSED ANTENNA DETAIL

SCALE: NONE

ATMA4P4DBP-1A20

TOWER MOUNTED AMPLIFIER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: ATMA4P4DBP-1A20	11.2"L x 8.0"W x 4.9"D	15.9 LBS.

NOTES:

1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

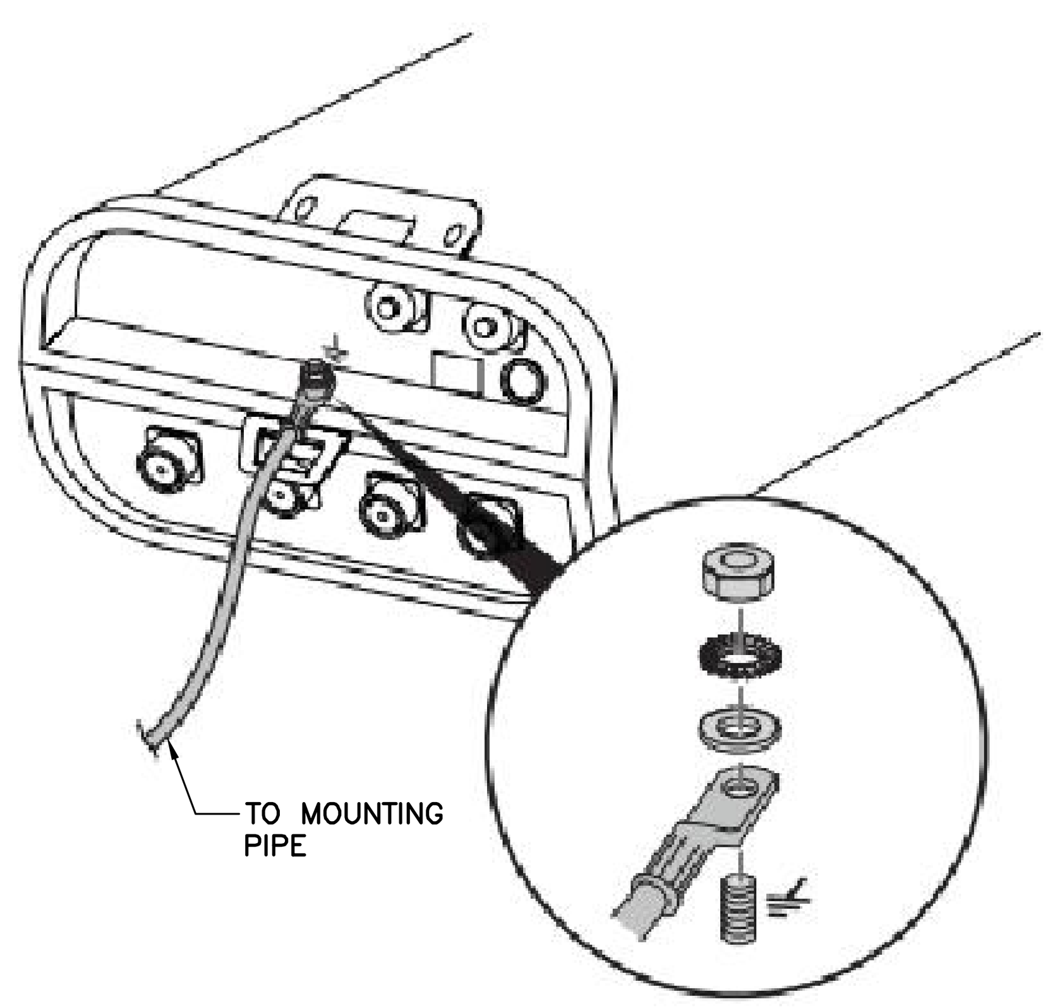
3 / E-1 PROPOSED TMA DETAIL

SCALE: NONE

Specifications	
Maximum Battery Size	190Ah
Maximum Number of Batteries	4
Internal Circuit Breaker Rating (Optional)	200 Amperes Max
Input Circuit Breaker Rating	200 Amperes Max
Input Connections	1/4" inch 2 hole 5/8 inch Spacing
Expansion	Modular / Stringable
Temp Control	Direct Contact Heater Mat Convection Cooled
Local Safety Ground Connection	1/4" inch 2 hole 5/8 inch Spacing
Enclosure Rating	Outdoor
Access Restriction	Front Hatch 5/32 Allen
Dimensions Height Width Depth	Body 32.245" 14.040" 26.306"
Unit Weight / Shipping Weight	60 lbs / 65 lbs
Paint	Almond Powder Coat
Construction	Aluminum

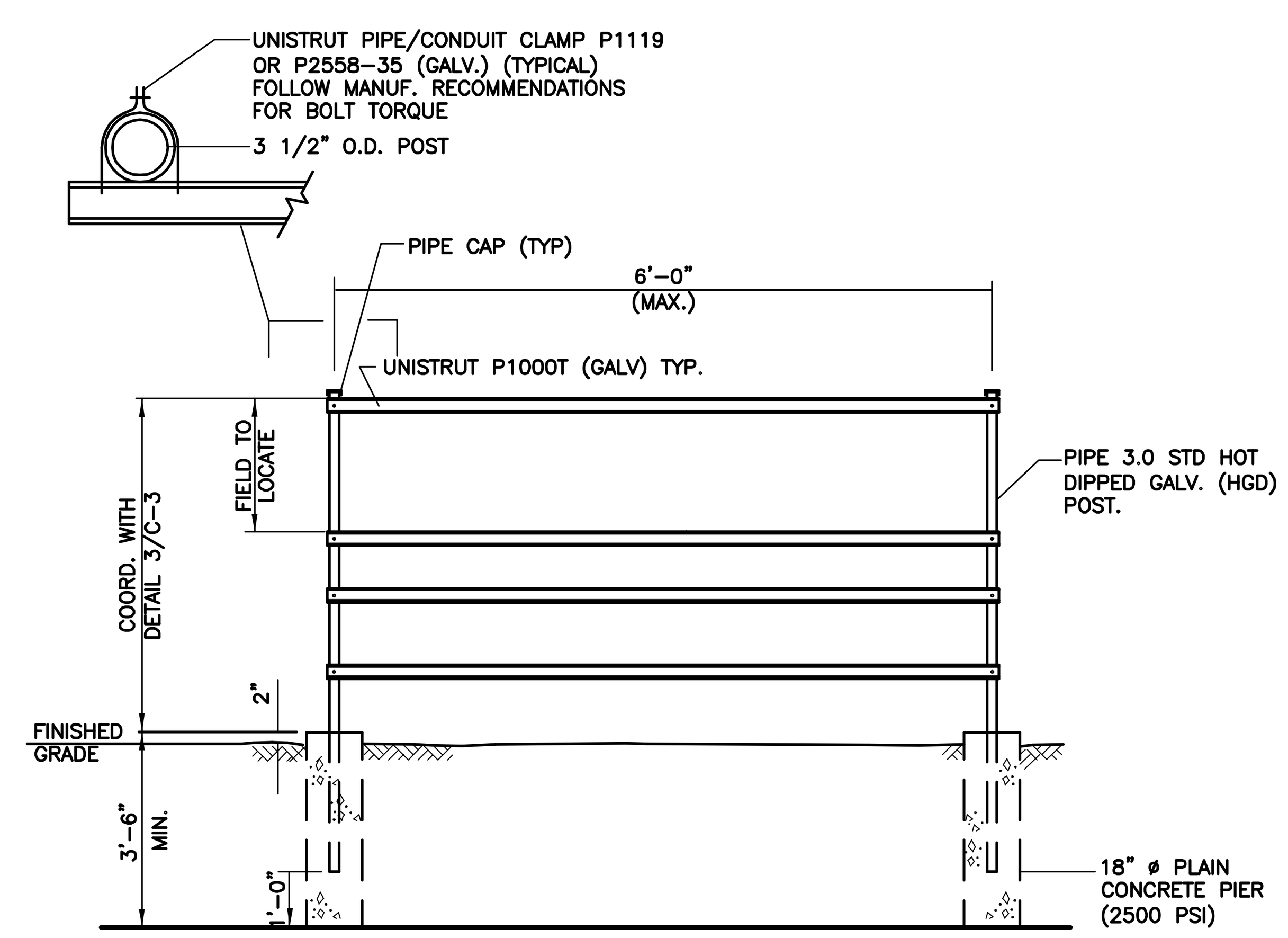
4 / E-1 BATTERY CABINET DETAIL

NOT TO SCALE



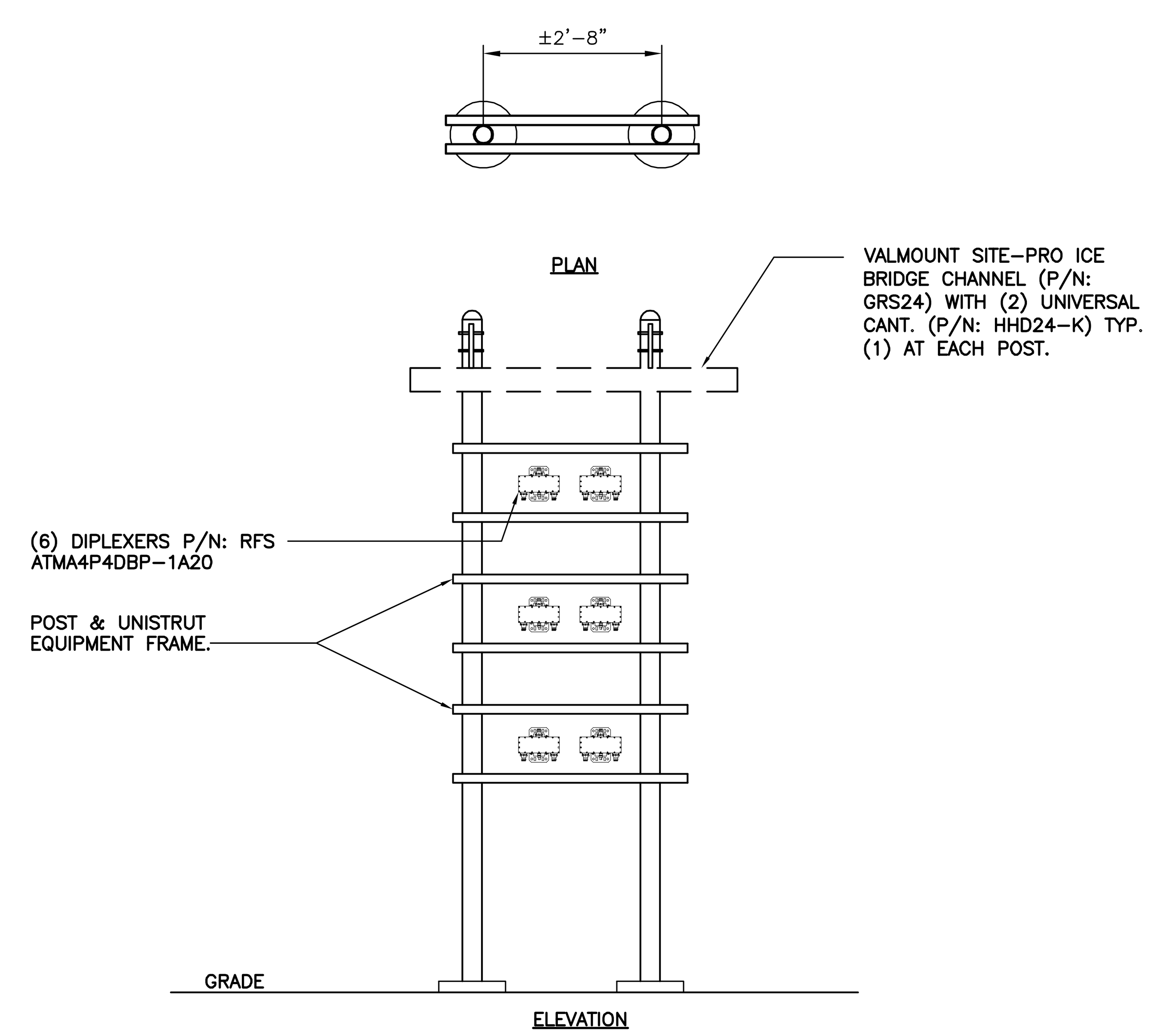
AA / E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NONE



5 / E-1 PROPOSED EQUIPMENT MOUNTING FRAME DETAIL

SCALE: NOT TO SCALE

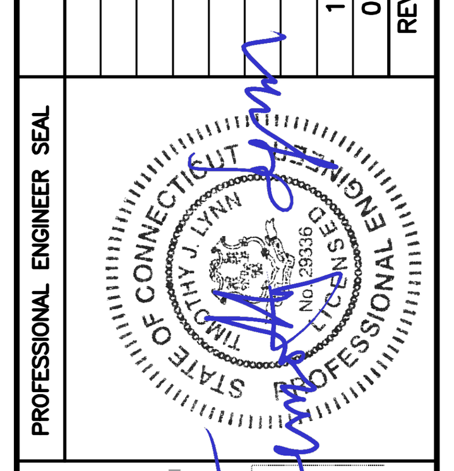


6 / E-1 RRU MOUNTING CONFIG.

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	07/10/19	TJL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	06/10/19	LGL	TJL	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



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SITE ID: CT11315C
246 EAST FRANKLIN STREET
DANIELSON, CT 06239

DATE:	09/13/18
SCALE:	AS NOTED
JOB NO.	18127.04

TYPICAL ELECTRICAL DETAILS

E-1

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

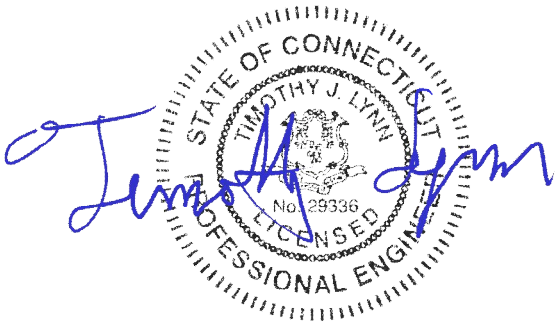
Antenna Mount Analysis

T-Mobile Site #: CT11315C

246 East Franklin Street
Danielson, CT

Centek Project No. 18127.04

~~Date: August 20, 2018~~
Rev 1: July 11, 2019



Max Stress Ratio = 24.9%

Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

SECTION 1 – REPORT

- ANTENNA AND APPURTENANCE SUMMARY
- STRUCTURE LOADING
- CONCLUSION

SECTION 2 – CALCULATIONS

- WIND LOAD ON APPURTENANCES
- RISA3D OUTPUT REPORT

SECTION 3 – REFERENCE MATERIALS (NOT INCLUDED WITHIN REPORT)

- RF DATA SHEET, DATED 6/26/2018

CENTEK engineering

Centered on Solutions℠

July 11, 2019

Mr. Dan Reid
Transcend Wireless
10 Industrial Ave
Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11315C
246 East Franklin Street
Danielson, CT 06239

Centek Project No. 18127.04

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the existing mount, consisting of three (3) 14-ft T-Arms to support the equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

- T-Mobile:
  T-Arms: Three (3) RFS APXV18-206516S-C panel antennas, three (3) EMS RR90-17-XXDP panel antennas and three (3) TMAs mounted on three (3) T-Arms with a RAD center elevation of 137-ft +/- AGL.

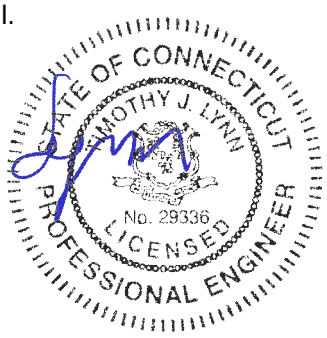
The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 101 mph for Danielson (Killingly) as required in Appendix N of the 2018 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the subject antenna mount has sufficient capacity to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer



Section 2 - Calculations

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

Subject: TIA-222-G Loads

Location: Danielson, CT

Rev. 0: 8/20/18

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 18127.04

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed: $V := 101$ mph (User Input - 2016 CSBC Appendix N)

Basic Wind Speed with Ice: $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = $Structure\_Type := Pole$ (User Input)

Structure Category = $SC := II$ (User Input)

Exposure Category = $Exp := B$ (User Input)

Structure Height = $h := 155$ ft (User Input)

Height to Center of Antennas = $z_{AT\&T} := 137$ ft (User Input)

Radial Ice Thickness = $t_i := 1.00$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H = 1.1$ (User Input)

Output

Wind Direction Probability Factor = $K_d := \begin{cases} 0.95 & \text{if } Structure\_Type = Pole \\ 0.85 & \text{if } Structure\_Type = Lattice \end{cases} = 0.95$ (Per Table 2-2 of TIA-222-G)

Importance Factors = $I_{Wind} := \begin{cases} 0.87 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \end{cases} = 1$ (Per Table 2-3 of TIA-222-G)

$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.00 & \text{if } SC = 3 \end{cases} = 1$

$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \end{cases} = 1$

$K_{iz} := \left(\frac{z_{AT\&T}}{33}\right)^{0.1} = 1.153$

$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.306$

Velocity Pressure Coefficient Antennas = $Kz_{AT\&T} := 2.01\left(\left(\frac{z_{AT\&T}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.081$

Velocity Pressure w/o Ice Antennas = $qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V^2 \cdot I_{Wind} = 26.824$

Velocity Pressure with Ice Antennas = $qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V_i^2 \cdot I_{Wind} = 6.574$

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

Subject:	TIA-222-G Loads
Location:	Danielson, CT
Rev. 0: 8/20/18	Prepared by: T.J.L. Checked by: C.F.C. Job No. 18127.04

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS APXV18-206516S-C		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 53.1$	in	(User Input)
Antenna Width =	$W_{ant} := 6.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 20$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 7.7$		
Antenna Force Coefficient =	$Ca_{ant} = 1.42$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 2.5$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 107$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.2$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 49$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 4.6$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 47$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.1$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 32$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 20$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1154$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4003$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 130$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 130$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	EMS RR90-17-XXDP		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56$	in	(User Input)
Antenna Width =	$W_{ant} := 8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 2.75$	in	(User Input)
Antenna Weight =	$WT_{ant} := 15$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 7.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.4$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 129$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 44$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 5.3$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 54$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 3.1$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 31$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 15$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 1232$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4396$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 142$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 142$	lbs

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model =	TMA			
TMA Shape =	Flat		(User Input)	
TMA Height =	$L_{TMA} := 7.7$	in	(User Input)	
TMA Width =	$W_{TMA} := 7.5$	in	(User Input)	
TMA Thickness =	$T_{TMA} := 3.4$	in	(User Input)	
TMA Weight =	$WT_{TMA} := 11$	lbs	(User Input)	
Number of TMA's =	$N_{TMA} := 1$		(User Input)	
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1$			
TMA Force Coefficient =	$Ca_{TMA} = 1.2$			

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMAF} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.4$	sf
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAF} = 14$	lbs
Surface Area for One TMA =	$SA_{TMAS} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.2$	sf
Total TMA Wind Force =	$F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAS} = 6$	lbs

Wind Load (with ice)

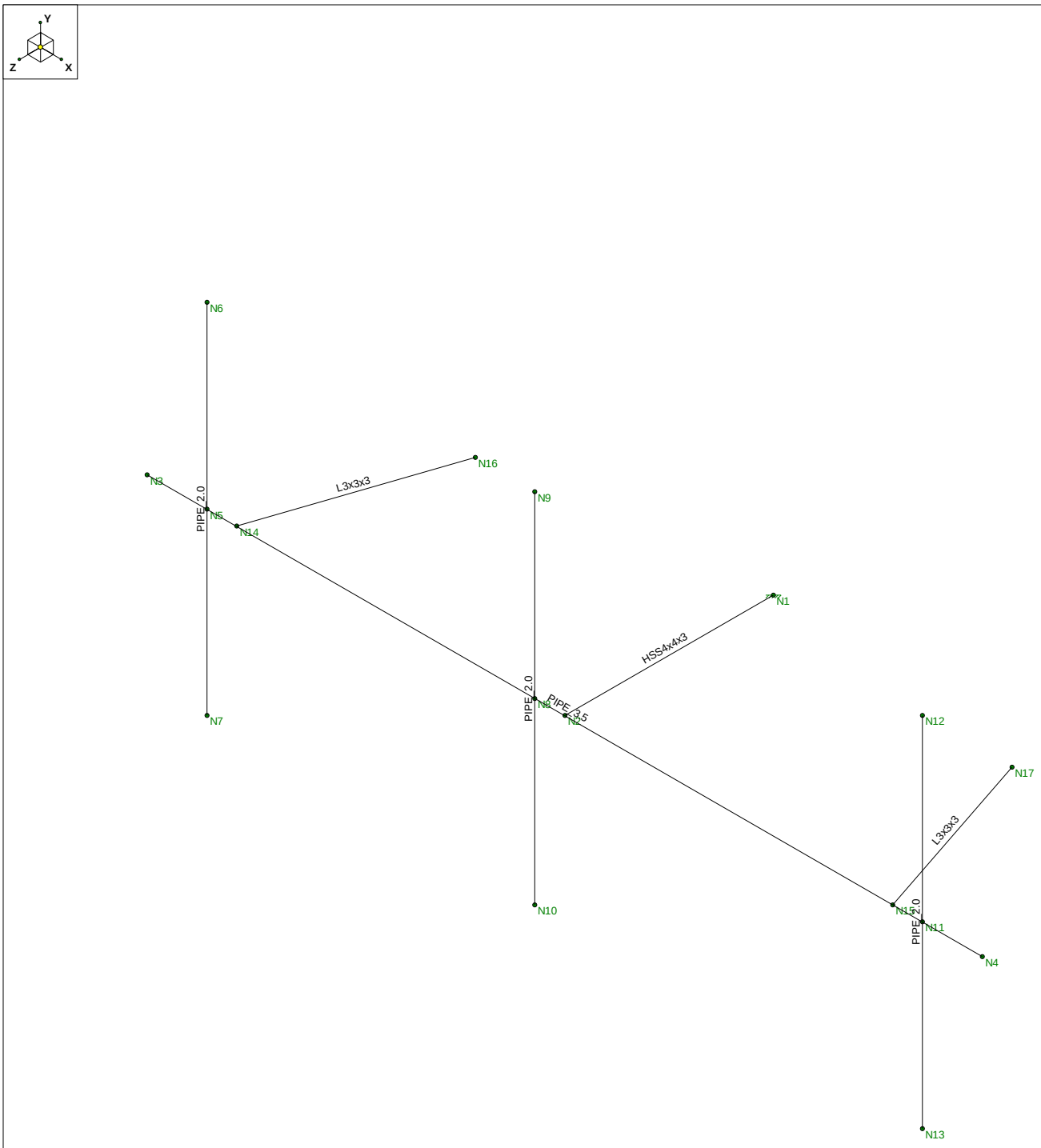
Surface Area for One TMA w/ Ice =	$SA_{ICETMAF} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz})}{144} = 1$	sf
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAF} = 9$	lbs
Surface Area for One TMA w/ Ice =	$SA_{ICETMAS} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz})}{144} = 0.7$	sf
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAS} = 6$	lbs

Gravity Load (without ice)

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

Gravity Loads (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 196$	cu in
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 998$	cu in
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 32$	lbs
Weight of Ice on All TMAs =	$W_{ICETMA} \cdot N_{TMA} = 32$	lbs



Envelope Only Solution

Centek		
TJL	CT11315C - Mount	Aug 20, 2018 at 8:34 AM
18127.04	Member Framing	Mount.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)	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): LRFD
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
	AISC 14th(360-10): ASD

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
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft^3]	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 Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Outrigger	HSS4x4x3	Beam	Tube	A500 Gr.46	Typical	2.58	6.21	6.21	10
2	Vert	PIPE_4.0	Beam	Tube	A53 Grade B	Typical	2.96	6.82	6.82	13.6
3	Horz	PIPE_3.5	Beam	Pipe	A53 Grade B	Typical	2.5	4.52	4.52	9.04
4	Antenna Mast	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
5	Walkway Support	L3x3x3	Beam	Pipe	A36 Gr.36	Typical	1.09	.948	.948	.014

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Outrigger	3.5			Lbyy						Lateral
2	M2	Horz	14			Lbyy						Lateral
3	M6	Antenna Mast	6			Lbyy						Lateral
4	M5A	Antenna Mast	6			Lbyy						Lateral
5	M6A	Antenna Mast	6			Lbyy						Lateral
6	M7	Walkway S...	3.162			Lbyy						Lateral
7	M8	Walkway S...	3.162			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N2			Outrigger	Beam	Tube	A500 Gr...	Typical
2	M2	N3	N4			Horz	Beam	Pipe	A53 Gra...	Typical
3	M6	N7	N6			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
4	M5A	N10	N9			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
5	M6A	N13	N12			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
6	M7	N14	N16			Walkway Support	Beam	Pipe	A36 Gr.36	Typical
7	M8	N15	N17			Walkway Support	Beam	Pipe	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	0	0	
2	N2	0	0	3.5	0	
3	N3	-7	0	3.5	0	
4	N4	7	0	3.5	0	
5	N5	-6	0	3.5	0	
6	N6	-6	3	3.5	0	
7	N7	-6	-3	3.5	0	
8	N8	-.5	0	3.5	0	
9	N9	-.5	3	3.5	0	
10	N10	-.5	-3	3.5	0	
11	N11	6	0	3.5	0	
12	N12	6	3	3.5	0	
13	N13	6	-3	3.5	0	
14	N14	-5.5	0	3.5	0	
15	N15	5.5	0	3.5	0	
16	N16	-4.5	0	.5	0	
17	N17	4.5	0	.5	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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Equipment Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M6A	Y	-.01	.5
2	M6A	Y	-.01	5.5
3	M6	Y	-.008	.5
4	M6	Y	-.008	5.5
5	M6A	Y	-.011	4

Member Point Loads (BLC 3 : Ice Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M6A	Y	-.065	.5
2	M6A	Y	-.065	5.5
3	M6	Y	-.071	.5
4	M6	Y	-.071	5.5
5	M6A	Y	-.032	4

Member Point Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M6A	X	.016	.5
2	M6A	X	.016	5.5
3	M6	X	.016	.5
4	M6	X	.016	5.5
5	M6A	X	.006	4

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M6A	X	.025	.5
2	M6A	X	.025	5.5
3	M6	X	.022	.5
4	M6	X	.022	5.5
5	M6A	X	.006	4

Member Point Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M6A	Z	.024	.5
2	M6A	Z	.024	5.5
3	M6	Z	.027	.5
4	M6	Z	.027	5.5

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M6A	Z	.054	.5
2	M6A	Z	.054	5.5
3	M6	Z	.065	.5
4	M6	Z	.065	5.5

Member Distributed Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.002	.002	0	0
2	M6	X	.002	.002	0	0
3	M5A	X	.002	.002	0	0
4	M6A	X	.002	.002	0	0

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.008	.008	0	0
2	M6	X	.008	.008	0	0
3	M5A	X	.008	.008	0	0
4	M6A	X	.008	.008	0	0

Member Distributed Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M2	Z	.002	.002	0	0

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M2	Z	.008	.008	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.05	-.021	.35	1.137
2	M1	Y	-.021	-.013	1.137	1.925
3	M1	Y	-.013	-.029	1.925	2.712
4	M1	Y	-.029	-.047	2.712	3.5
5	M7	Y	-.015	-.014	0	.791
6	M7	Y	-.014	-.015	.791	1.581
7	M7	Y	-.015	-.015	1.581	2.372
8	M7	Y	-.015	-.013	2.372	3.162
9	M8	Y	-.015	-.014	0	.791
10	M8	Y	-.014	-.015	.791	1.581
11	M8	Y	-.015	-.015	1.581	2.372
12	M8	Y	-.015	-.013	2.372	3.162

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1						
2	Equipment Weight	None					5		1	
3	Ice Weight	None					5			
4	Wind w/ Ice X	None					5	4		
5	Wind X	None					5	4		
6	Wind w/ Ice Z	None					4	1		
7	Wind Z	None					4	1		
8	BLC 2 Transient Area Loads	None						12		

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.2D + 1.6W (X-d..	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W (X-d..	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.2D + 1.6W (Z-d..	Yes	Y		1	1.2	2	1.2	7	1.6														
5	0.9D + 1.6W (Z-d..	Yes	Y		1	.9	2	.9	7	1.6														
6	1.2D + 1.0Di + 1....	Yes	Y		1	1.2	2	1.2	3	1	6	1												

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	N1	max	0	6	.859	3	0	3	-1.13	5	-.036	6	.22	3
2		min	-.435	1	.416	2	-.56	4	-2.574	3	-1.445	1	.072	5
3	Totals:	max	0	6	.859	3	0	3						
4		min	-.435	1	.416	2	-.56	4						

Envelope Joint Displacements

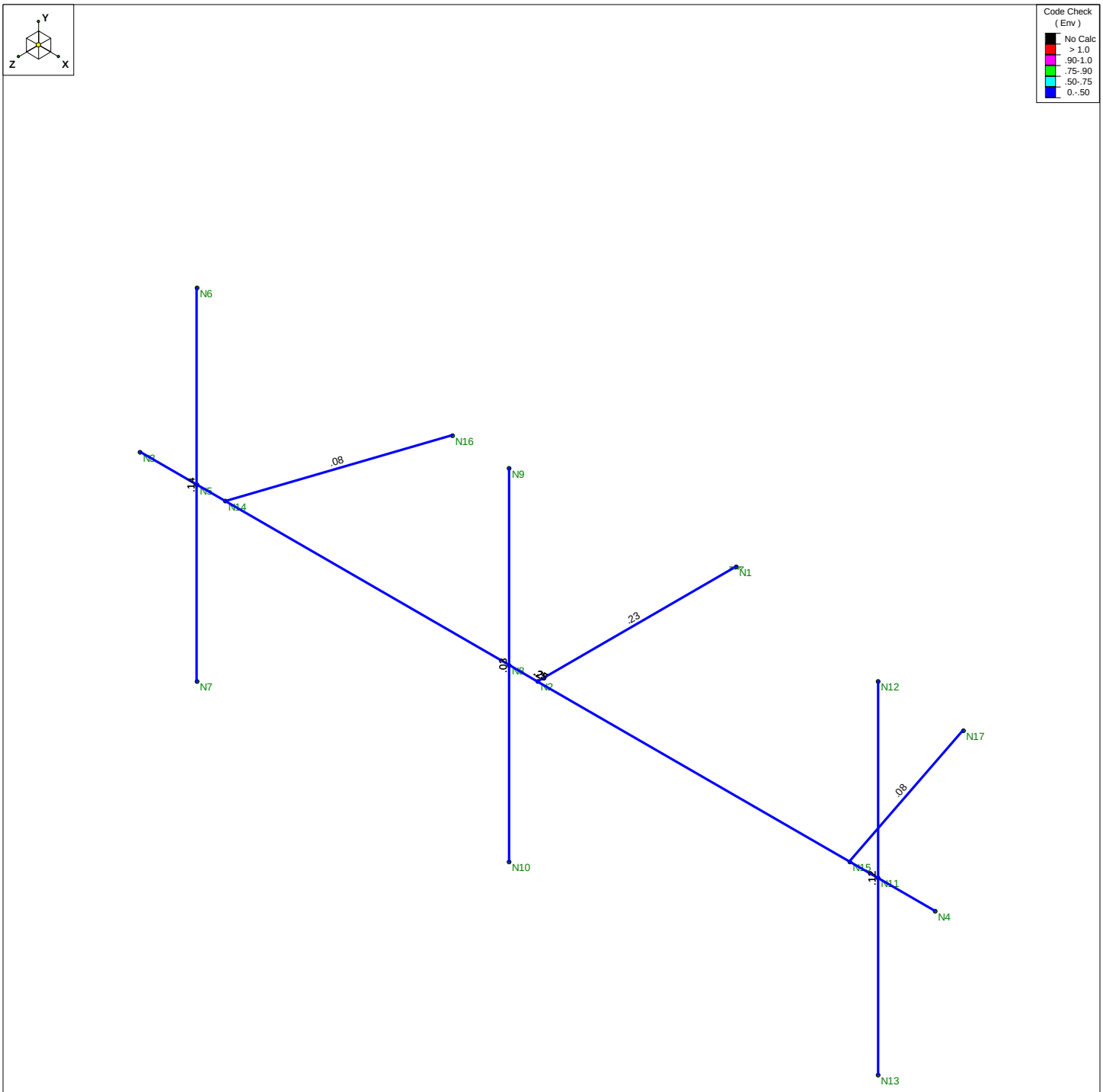
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	0	1	0	2	0	4	0	3	0	1	0	5
2		min	0	6	0	3	0	3	0	5	0	6	0	3
3	N2	max	.071	1	-.051	5	0	4	4.003e-03	3	2.481e-03	1	-3.237e-04	5
4		min	.003	6	-.121	3	0	3	1.603e-03	5	1.259e-04	6	-9.919e-04	3
5	N3	max	.071	1	-.166	2	.435	4	3.194e-03	6	6.884e-03	4	5.607e-03	6
6		min	.003	6	-.443	6	.056	3	9.97e-04	5	6.639e-04	3	1.957e-03	2
7	N4	max	.071	1	-.242	5	.259	4	3.196e-03	6	2.471e-03	1	-2.959e-03	5
8		min	.003	6	-.666	3	-.208	1	9.972e-04	5	-4.538e-03	4	-8.557e-03	3
9	N5	max	.071	1	-.142	2	.353	4	3.194e-03	6	6.881e-03	4	5.604e-03	6
10		min	.003	6	-.375	6	.048	3	9.97e-04	5	6.639e-04	3	1.955e-03	2
11	N6	max	.045	2	-.142	2	.485	4	4.548e-03	4	6.881e-03	4	5.616e-03	6
12		min	-.199	6	-.376	6	.163	3	9.996e-04	2	6.639e-04	3	2.96e-04	2
13	N7	max	.235	3	-.142	2	.401	5	3.187e-03	3	6.881e-03	4	6.163e-03	3
14		min	.087	5	-.376	6	-.067	3	-2.22e-03	5	6.639e-04	3	1.978e-03	5
15	N8	max	.071	1	-.05	2	.015	1	3.93e-03	3	2.482e-03	1	1.483e-04	6
16		min	.003	6	-.118	6	.002	6	1.548e-03	5	3.704e-04	6	7.092e-05	2
17	N9	max	.084	2	-.05	2	.145	3	3.931e-03	3	2.482e-03	1	1.484e-04	6
18		min	-.003	6	-.118	6	.064	5	1.548e-03	5	3.704e-04	6	-4.994e-04	2
19	N10	max	.091	1	-.05	2	-.041	2	3.929e-03	3	2.482e-03	1	6.789e-04	1
20		min	.008	6	-.118	6	-.14	6	1.547e-03	5	3.704e-04	6	9.919e-05	5
21	N11	max	.071	1	-.207	5	.205	4	3.196e-03	6	2.471e-03	1	-2.957e-03	5
22		min	.003	6	-.564	3	-.178	1	9.972e-04	5	-4.536e-03	4	-8.555e-03	3
23	N12	max	.344	3	-.207	5	.323	4	4.005e-03	4	2.471e-03	1	-2.959e-03	5
24		min	.122	5	-.564	3	-.142	2	9.999e-04	2	-4.536e-03	4	-9.196e-03	3
25	N13	max	.009	2	-.207	5	.239	5	3.189e-03	3	2.471e-03	1	-1.248e-03	2
26		min	-.303	6	-.564	3	-.226	1	-1.675e-03	5	-4.536e-03	4	-8.479e-03	6
27	N14	max	.071	1	-.131	2	.312	4	3.194e-03	6	6.838e-03	4	5.567e-03	6
28		min	.003	6	-.342	6	.044	3	9.969e-04	5	6.639e-04	3	1.945e-03	2
29	N15	max	.071	1	-.189	5	.177	4	3.196e-03	6	2.471e-03	1	-2.945e-03	5
30		min	.003	6	-.512	3	-.163	1	9.971e-04	5	-4.499e-03	4	-8.506e-03	3
31	N16	max	-.024	3	-.097	2	.225	5	2.079e-03	6	7.549e-03	4	5.195e-03	6
32		min	-.25	4	-.194	6	.029	3	1.605e-04	5	1.375e-03	3	1.666e-03	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
33	N17	max	.163	5	-.143	5	.13	4	2.08e-03	6	3.182e-03	1	-2.666e-03	5
34		min	-.037	1	-.329	3	-.129	2	1.603e-04	5	-3.965e-03	5	-8.134e-03	3

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

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc.....	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	M1	HSS4x4x3	.234	0	3	.049	0	y 3	101.674	106.812	12.662	12.662	1...	H1-1b
2	M2	PIPE_3.5	.249	7	6	.030	7	6	35.421	78.75	7.954	7.954	1...	H1-1b
3	M6	PIPE_2.0	.140	3	4	.011	3	4	20.867	32.13	1.872	1.872	1...	H1-1b
4	M5A	PIPE_2.0	.031	3	1	.004	3	1	20.867	32.13	1.872	1.872	1...	H1-1b
5	M6A	PIPE_2.0	.116	3	4	.009	3	1	20.867	32.13	1.872	1.872	1...	H1-1b
6	M7	L3x3x3	.085	0	4	.006	0	y 1	26.325	35.316	1.32	2.905	2...	H2-1
7	M8	L3x3x3	.085	0	1	.006	0	y 4	26.325	35.316	1.32	2.905	2...	H2-1



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
TJL	CT11315C - Mount	Aug 20, 2018 at 8:33 AM
18127.04	Unity Check	Mount.r3d