



**AMERICAN TOWER®**  
CORPORATION

LETTER OF AUTHORIZATION

SITE NO: 302481

SITE NAME: Hrfr - South

ADDRESS: 289 Mountain Street, Hartford, CT  
06106

APN: 144714128

I, Margaret Robinson, Senior Counsel, US Tower Division on behalf of American Tower\*, operator of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize Network Building + Consulting, its successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment on the Tower Facility located at the above address. This installation shall not affect adjoining lands and will occur only within the area leased by American Tower.

American Tower understands that the application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installation. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit Network Building + Consulting to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installation of telecommunications equipment without the prior written approval of American Tower.

Signature: \_\_\_\_\_

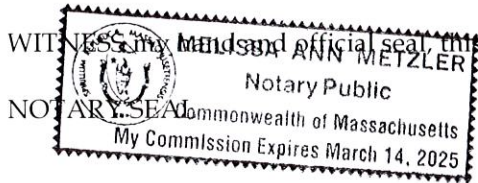
Margaret Robinson, Senior Counsel  
US Tower Division

**NOTARY BLOCK**

COMMONWEALTH OF MASSACHUSETTS  
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel of American Tower (Tower Facility owner and/or operator), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESSETH my hand and official seal, this 10<sup>th</sup> day of July, 2019.



Notary Public   
My Commission Expires: March 14, 2025

\* American Tower as used herein is defined as American Tower Corporation and any of its affiliates or subsidiaries.

NB+C, LLC  
3 Lookout Terrace  
Chester, NY 10918  
Agent for American Tower Corporation  
**Dori Gilbert – Project Manager**  
**845-401-5291**  
**[dgilbert@nbcllc.com](mailto:dgilbert@nbcllc.com)**

August 22, 2019

Melanie A. Bachman  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

**Regarding:** Notice of Exempt Modification  
**Facility Address:** 289 Mountain Street, Hartford CT 06106  
**Facility Coordinates (Lat.)** 41.726600  
**(Long)** -72.708200  
**Applicant:** American Tower Corporation

Dear Ms. Bachman:

This letter is in response to the rejection letter dated 8/8/2019 that our previous submission was denied due to a failing structural analysis. I have now included the passing structural analysis with the resubmission of the original package. Details of the original submission are below. We have also mailed this revision package to those CC'd on this letter.

American Tower Corporation, Inc. (ATC) currently maintains a 110' wireless telecommunication tower facility at the above referenced address., parcel ID 144-714-129 in the Town of Hartford. The property is owned by Metropolitan District Bureau of Public Works. American Tower Corporation, Inc (ATC) now intends to within the leased area perform the following tower modification:

- Install (4) plate reinforcements at the 75' to 87' elevation on the tower.
- Install (4) plate reinforcements at the 0' to 20' elevation on the tower.

This tower facility was approved by the Connecticut Siting Council via Docket# 40 on May 15, 1984. This proposed tower reinforcement is within the existing, approved compound space on the existing tower, this modification request complies with the conditions of the original Tower Approval.

Please accept this letter, as notification pursuant to Regulations of Connecticut State Agencies @16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. @16-50j-72(b)(2). IN

accordance with R.C.S.A. @16-50j-73. A copy of this letter is being sent to, Aimee Chambers – Director of Planning, for the City of Hartford, as well as the property owner and tower owner.

## ATTACHMENT A

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 installation of the reinforcement plates will not increase radio frequency emissions at the facility to the 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.

For the foregoing reasons, American Tower Corporation (ATC) 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,

Dori Gilbert  
Project Manager-NB&C LLC.

### Attachments

Cc:

Aimee Chambers – Director of Planning, City of Hartford  
American Tower Corporation (ATC) –tower owner  
Metropolitan District Bureau of Public Works –property owner

NB+C, LLC  
3 Lookout Terrace  
Chester, NY 10918  
Agent for American Tower Corporation  
**Dori Gilbert – Project Manager**  
**845-401-5291**  
**[dgilbert@nbcllc.com](mailto:dgilbert@nbcllc.com)**

July 29, 2019

Melanie A. Bachman  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

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Cc:

Luke Bronin – Mayor, City of Hartford  
Aimee Chambers – Director of Planning, City of Hartford  
American Tower Corporation (ATC) –tower owner  
Metropolitan District Bureau of Public Works –property owner



**AMERICAN TOWER®**  
**A.T. ENGINEERING SERVICE, PLLC**  
 3500 REGENCY PARKWAY  
 SUITE 100  
 CARY, NC 27518  
 PHONE: (919) 468-0112  
 COA: PEC.0001553

# 302481 - HRFR - SOUTH, CONNECTICUT

110 FT MONOPOLE MODIFICATIONS



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THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OR SERVICE ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER. THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. TITLE TO THESE DOCUMENTS SHALL REMAIN THE PROPERTY OF AMERICAN TOWER WHETHER OR NOT THE PROJECT IS EXECUTED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION ON FILE WITH AMERICAN TOWER.

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER:  
 302481  
 ATC SITE NAME:  
 HRFR - SOUTH  
 CONNECTICUT  
 SITE ADDRESS:  
 289 MOUNTAIN STREET  
 HARTFORD, CT 06106

### AS-BUILT SIGN-OFF

DESCRIPTION	SIGNATURE	DATE
CONTRACTOR NAME		
CONTRACTOR REPRESENTATIVE (PRINT NAME)		
CONTRACTOR REPRESENTATIVE (SIGNATURE)		
REDEVELOPMENT P.M. (PRINT NAME)		
REDEVELOPMENT P.M. (SIGNATURE)		

PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET	SHEET TITLE	REV.
ATC PROJECT NUMBER: OAA739695_C6_06  CUSTOMER: AT&T MOBILITY  CUSTOMER SITE NAME: HARTFORD SOUTH  CUSTOMER SITE NUMBER: CT1011  SITE ADDRESS: 289 MOUNTAIN STREET HARTFORD, CT 06106  DATE: 02/25/19  GEOGRAPHIC COORDINATES: 41.72656944 -72.70816944	THE MODIFICATIONS PRESENTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED UNDER ENGINEERING PROJECT NUMBER OAA739695_C3_04 DATED 01/18/19. SATISFACTORY COMPLETION OF THE WORK INDICATED ON THESE DRAWINGS WILL RESULT IN THE STRUCTURE MEETING THE REQUIREMENTS OF THE SPECIFICATIONS UNDER WHICH THE STRUCTURAL WAS COMPLETED.	B-1	BILL OF MATERIALS	0
		IGN	IBC GENERAL NOTES	0
		SIC	SPECIAL INSPECTION CHECKLIST	0
		C-101	SITE PLAN	0
		A-1	MODIFICATION PROFILE	0
		A-2	PLATE REINFORCEMENT INSTALLATION DETAILS [EL: 0'-0" TO 20'-0"]	0
		A-3	PLATE REINFORCEMENT INSTALLATION DETAILS [EL: 75'-0"± TO 87'-0"±]	0
		FPSB	FLAT PLATE STEP BOLT BRACKET FABRICATION & INSTALLATION DETAILS	0
		F-1	PLATE REINFORCEMENT FABRICATION DETAILS	0

DRAWN BY:	MJS
APPROVED BY:	RDB/IPD
DATE DRAWN:	02/25/19
ATC JOB NO:	OAA739695_C6_06

COVER

SHEET NUMBER:	REVISION:
<b>COVER</b>	<b>0</b>

## BILL OF MATERIALS

QUANTITY REQUIRED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTION	LENGTH	SHEET LIST	PART WEIGHT	WEIGHT (lb)	NOTES
<b>PLATE REINFORCEMENT MATERIAL &amp; HARDWARE</b>								
4	4	302481-1	PL 1 1/4" X 6"	20'-0"	A-2, F-1	535.9	2144	
4	4	302481-2	PL 1 1/4" X 5"	12'-0"	A-3, F-1	268.0	1072	
18	23	FPSB	FLAT PLATE STEP BOLT WELDMENT	0'-7 1/4"	FPSB	2.0	46	
140	147	NG-1438-1875-A 490	NEXGEN2 BLIND BOLT ASSEMB., M20 W/ SPRING SLEEVE, A490	----	----	----	----	ALLFASTENERS - 2NG2048
<b>TOTAL WEIGHT (lb)      3,262</b>								



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DRAWN BY:	MJS
APPROVED BY:	RDB/IPD
DATE DRAWN:	02/25/19
ATC JOB NO:	OAA739695_C6_06

BILL OF MATERIALS

SHEET NUMBER:	<b>B-1</b>	REVISION:	<b>0</b>
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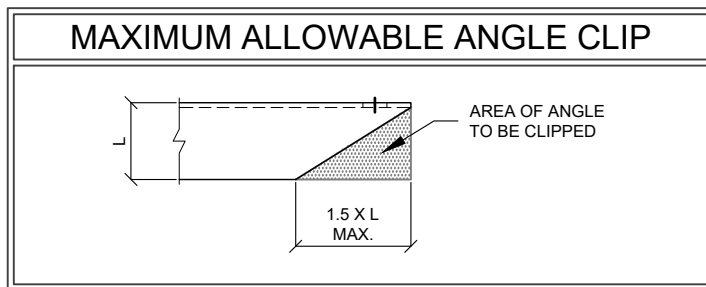
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**GENERAL**

- ALL WORK TO BE COMPLETED PER APPLICABLE LOCAL, STATE, FEDERAL CODES AND ORDINANCES AND COMPLY WITH ATC MASTER SPECIFICATIONS FOR WIRELESS TOWER SITES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL REQUIRED PERMITS.
- ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
- ANY SUBSTITUTIONS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- ANY MANUFACTURED DESIGN ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER ANSI/TIA-322 AND ANSI/ASSE A10.48, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
- CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

**STRUCTURAL STEEL**

- ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
- ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
- ALL U-BOLTS SHALL BE ASTM A36 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
- FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
- ALL FIELD CUT SURFACES, FIELD DRILLED HOLES & GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
- ALL STRUCTURAL STEEL EMBEDDED IN THE CONCRETE SHALL BE APPLIED WITH (2) BRUSHED COATS OF POLYGUARD CA-14 MASTIC OR EQUIVALENT. REFER TO THE MANUFACTURER SPECIFICATIONS FOR SURFACE PREPARATION AND APPLICATION. APPLICATION OF POLYGUARD 400 WRAP IS NOT ESSENTIAL.
- CONTRACTOR SHALL PERFORM WORK ON ONLY ONE (1) TOWER FACE AND REPLACE/REINFORCE ONE (1) BOLT/MEMBER AT A TIME.
- ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.



**PAINT**

- AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1L.

**WELDING**

- ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
- ALL WELDS SHALL BE INSPECTED VISUALLY. IF DIRECTED BY ENGINEER OF RECORD, 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
- INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
- ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
- ALL WELDING ON LATTICE TOWERS SHALL BE DONE WITH E70XX ELECTRODES. ALL WELDING ON POLE STRUCTURES SHALL BE DONE WITH E80XX ELECTRODES UNLESS NOTED OTHERWISE.
- PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

**BOLT TIGHTENING PROCEDURE**

- STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC SPECIFICATIONS.
- FLANGE BOLTS SHALL BE INSTALLED AND TIGHTENED USING DIRECT TENSION INDICATING (DTI) SQUIRTER WASHERS. DTI SQUIRTER WASHERS ARE TO BE INSTALLED AND ORIENTED / TIGHTENED PER MANUFACTURER SPECIFICATIONS TO ACHIEVE DESIRED LEVEL OF BOLT PRE-TENSION.
- IN LIEU OF USING DTI SQUIRTER WASHERS, FLANGE BOLTS MAY BE TIGHTENED USING AISC / RCSC "TURN-OF-THE-NUT" METHOD, PENDING APPROVAL BY THE ENGINEER OF RECORD (EOR). TIGHTEN FLANGE BOLTS USING THE CHART BELOW:

**BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS**

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS UP TO AND INCLUDING 5.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT

**BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS**

1/2"	BOLTS 2.25 TO 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

- SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS", LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

**8.2.1 TURN-OF-NUT PRETENSIONING**

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

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

ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.

**APPLICABLE CODES AND STANDARDS**

- ANSI/TIA: STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, 222-H EDITION.
- 2018 CONNECTICUT STATE BUILDING CODE.
- 2015 INTERNATIONAL BUILDING CODE.
- ACI 318: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 318-02.
- CRSI: CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.
- AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
- AWS: AMERICAN WELDING SOCIETY D1.1, STRUCTURAL WELDING CODE, LATEST EDITION.

**SPECIAL INSPECTION**

- A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH IBC 2015, SECTION 1704 AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
  - STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELD ONLY)
  - HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 EXTENSION FLANGE BOLTS TO BE TIGHTENED PER "TURN-OF-THE-NUT" METHOD)
- THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER IN ACCORDANCE WITH IBC 2015, SECTION 1704, UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT THE SPECIAL INSPECTIONS.

**AMERICAN TOWER®**  
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DRAWN BY:	MJS
APPROVED BY:	RDB/IPD
DATE DRAWN:	02/25/19
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**IBC GENERAL NOTES**

SHEET NUMBER:	REVISION:
<b>IGN</b>	<b>0</b>



**MODIFICATION INSPECTION NOTES**

THE SPECIAL INSPECTION (SI) PROCEDURE IS INTENDED TO CONFIRM THAT CONSTRUCTION AND INSTALLATION MEETS ENGINEERING DESIGN, ATC PROCEDURES AND ATC STANDARD SPECIFICATIONS FOR WIRELESS TOWER SITES.

TO ENSURE THAT THE REQUIREMENTS OF THE SI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR AND THE INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED FROM AMERICAN TOWER CORPORATION (ATC). IT IS EXPECTED THAT EACH PARTY WILL PROACTIVELY REACH OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR AMERICAN TOWER POINT OF CONTACT.

**SPECIAL INSPECTOR**

THE SPECIAL INSPECTOR IS REQUIRED TO CONTACT THE GENERAL CONTRACTOR AS SOON AS RECEIVING A PO FROM ATC. UPON RECEIVING A PO FROM ATC THE SPECIAL INSPECTOR AT A MINIMUM MUST:

- REVIEW THE REQUIREMENTS OF THE SI CHECKLIST.
- WORK WITH THE GENERAL CONTRACTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- ANY CONCERNS WITH THE SCOPE OF WORK OR PROJECT COMMITMENT MUST BE RELAYED TO THE ATC POINT OF CONTACT IMMEDIATELY.

THE SPECIAL INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR INSPECTION AND TEST REPORTS, REVIEWING THESE DOCUMENTS FOR ADHERENCE TO CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE SI REPORT TO AMERICAN TOWER CORPORATION.

**GENERAL CONTRACTOR**

THE GENERAL CONTRACTOR IS REQUIRED TO CONTACT THE SI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE SI CHECKLIST.
- WORK WITH THE SI TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.

THE GENERAL CONTRACTOR SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE SI CHECKLIST.

**SPECIAL INSPECTION CHECKLIST**

INSPECTION DOCUMENT	DESCRIPTION	INSPECTION TESTING REQUIRED	RESPONSIBILITY	SI REVIEW REQUIRED			INSPECTION FREQUENCY	
				PRE CX	DURING CX	POST CX	PERIODIC	CONTINUOUS
SPECIAL INSPECTION FIELD WORK & REPORT	DOCUMENTATION AND SITE VISIT CONDUCTED BY AN ATC APPROVED SPECIAL INSPECTOR AS REQUIRED BY ATC AND OTHER AUTHORITIES HAVING JURISDICTION. INSPECTION PARAMETERS TO FOLLOW ATC'S STANDARD SPECIFICATION FOR WIRELESS TOWER SITES.	✓	SI			✓		
ENGINEERING ASSEMBLY DRAWINGS	GC SHALL SUBMIT DRAWINGS TO SI FOR INCLUSION IN SI REPORT	✓	GC	✓				
FABRICATED MATERIAL VERIFICATION & INSPECTION	MTR AND OR MILL CERTIFICATIONS FOR SUPPLIED MATERIALS GC SHALL SUPPLY SI WITH REPORTS TO BE INCLUDED IN SI REPORT WHEN REQUIRED BY ATC	✓	SI	✓				
CERTIFIED WELD INSPECTION	INSPECTION AND REPORT OF STRUCTURAL WELDING PERFORMED DURING PROJECT COMPLETED BY A CWI AND INCLUDED WITHIN SI REPORT	✓	GC / TA	✓	✓	✓	✓	
FOUNDATION INSPECTION & VERIFICATION	VISUAL OBSERVATION AND APPROVAL OF FOUNDATION EXCAVATION, REBAR PLACEMENT, CASING/SHORING/FORMING PLACEMENT, AND ANCHOR TEMPLATE AND ANCHOR PLACEMENT - TO BE SI APPROVED PRIOR TO CONCRETE POUR AND DOCUMENTED IN THE SI REPORT		SI					
ANCHOR, ROCK ANCHOR OR HELICAL PULL-OUT TEST	PULL TESTING OF INSTALLED ANCHORS TO BE COMPLETED AND DOCUMENTED IN SI REPORT		GC / TA					
CONCRETE INSPECTION & VERIFICATION	CONCRETE MIX DESIGN, SLUMP TEST, COMPRESSIVE TESTING, AND SAMPLE GATHERING TECHNIQUES ARE TO BE PROVIDED FOR INCLUSION IN THE SI REPORT. SI SHALL VERIFY CONCRETE PLACEMENT AS REQUIRED BY THE DESIGN DOCUMENTS (INSPECTION FREQUENCY IS MARKED CONTINUOUS)		GC / TA					
DYWIDAG PLACEMENT/ANCHOR BOLT EMBEDMENT - EPOXY/GROUT INSTALL	ANCHOR/BAR EMBEDMENT, HOLE SIZE, EPOXY/GROUT TYPE, INSTALLATION TEMPERATURE AND INSTALLATION SHALL BE VERIFIED BY THE SI AND INCLUDED IN THE SI REPORT		GC / SI					
BASE PLATE GROUT INSPECTION & VERIFICATION	BASE PLATE GROUTING TYPE AND PLACEMENT SHALL BE CONFIRMED BY THE SI AND INCLUDED IN THE SI REPORT		GC / SI					
EARTHWORK INSPECTION & VERIFICATION	EXCAVATION, FILL, SLOPE, GRADE AND OTHER EARTHWORK REQUIREMENTS PER PLANS SHALL BE VERIFIED BY THE SI AND INCLUDED IN THE SI REPORT		GC / TA					
COMPACTION VERIFICATION	CONTRACTOR SHALL PROVIDE AN INDEPENDENT THIRD PARTY CERTIFIED INSPECTION WHICH PROVIDES TEST RESULTS FOR COMPACTION TEST OF SOILS IN PLACE TO ASTM STANDARDS.		GC / TA					
GROUND TESTING & VERIFICATION	GC SHALL PROVIDE DOCUMENTATION SHOWING THAT THE GROUNDING SYSTEM SHALL HAVE A MEASURED RESISTANCE TO THE GROUND OF NOT MORE THAN THE RECOMMENDED 10 OHMS. PER THE ATC CONSTRUCTION SPECIFICATION UNDER SECTION 2.15 THIS DOCUMENTATION MUST BE AN INDEPENDENT CERTIFICATION.		GC					
STEEL CONSTRUCTION INSPECTION & VERIFICATION	VISUAL OBSERVATION AND APPROVAL OF STEEL CONSTRUCTION TO BE PERFORMED BY THE SI. INSPECTION TO INCLUDE VERIFICATION OF NEW CONSTRUCTION OR MODIFICATION OF EXISTING CONSTRUCTION PER ENGINEERED PLANS. DETAILED VERIFICATION SHALL BE INCLUDED IN SI REPORT.	✓	SI			✓	✓	
ON-SITE COLD GALVANIZING VERIFICATION	SI SHALL VERIFY WITH GC ALL COLD GALVANIZATION TYPE AND APPLICATION AND INCLUDE SUMMARY IN SI REPORT	✓	GC			✓	✓	
GUY WIRE TENSIONING & TOWER ALIGNMENT REPORT	GC SHALL PROVIDE SI EVIDENCE OF PROPER GUY TENSIONING AND TOWER PLUMB PER PLANS. SI SHALL VERIFY AND INCLUDE PLUMB AND TENSION REPORTING IN SI REPORT.		GC					
GC AS-BUILT DRAWINGS WITH CONSTRUCTION RED-LINES	GC SHALL SUBMIT "AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS TO SI FOR APPROVAL/REVIEW AND INCLUSION IN SI REPORT	✓	GC			✓		
SI AS-BUILT DRAWINGS WITH INSPECTION RED-LINES (AS REQUIRED)	SI SHALL SUBMIT "AS-BUILT" DRAWINGS INDICATING ANY APPROVED CHANGES TO ENGINEERED PLANS WITHIN SI REPORT	✓	SI			✓		
TIA INSPECTION	SI SHALL COMPLETE TIA INSPECTION AND PROVIDE SEPARATE TIA INSPECTION DOCUMENTATION TO ATC CM		SI					
PHOTOGRAPHS	PHOTOGRAPHIC EVIDENCE OF SPECIAL INSPECTION, ON SITE REMEDIATION, AND ITEMS FAILING INSPECTION & REQUIRING FOLLOW UP TO BE INCLUDED WITHIN THE SI REPORT. COMPLETE PHOTO LOG IS TO BE SUBMITTED WITHIN SI REPORT.	✓	GC / SI			✓		

NOTE: SPECIAL INSPECTIONS ARE INTENDED TO BE A COLLABORATIVE EFFORT BETWEEN GC AND SI. WHENEVER POSSIBLE GC IS TO PROVIDE SI WITH PHOTOGRAPHIC OR OTHER ACCEPTABLE EVIDENCE OF PROPER INSTALLATION IF PERIODIC INSPECTION FREQUENCY IS ACCEPTABLE. THE GC AND SI SHALL WORK TO COMPILE EVIDENCE OF PROPER CONSTRUCTION AND LIMIT THE NUMBER OF SI SITE VISITS REQUIRED.

TABLE KEY:  
 SI - ATC APPROVED SPECIAL INSPECTOR  
 GC - GENERAL CONTRACTOR  
 TA - 3RD PARTY TESTING AGENCY  
 CX - CONSTRUCTION  
 CM - CONSTRUCTION MANAGER  
 ATC - AMERICAN TOWER CORPORATION



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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MJS	02/25/19

ATC SITE NUMBER:

302481

ATC SITE NAME:

HRFR - SOUTH

CONNECTICUT

SITE ADDRESS:

289 MOUNTAIN STREET  
 HARTFORD, CT 06106

DRAWN BY:	MJS
APPROVED BY:	RDB/IPD
DATE DRAWN:	02/25/19
ATC JOB NO:	OAA739695_C6_06

**SPECIAL INSPECTION CHECKLIST**

SHEET NUMBER: **SIC** REVISION: **0**

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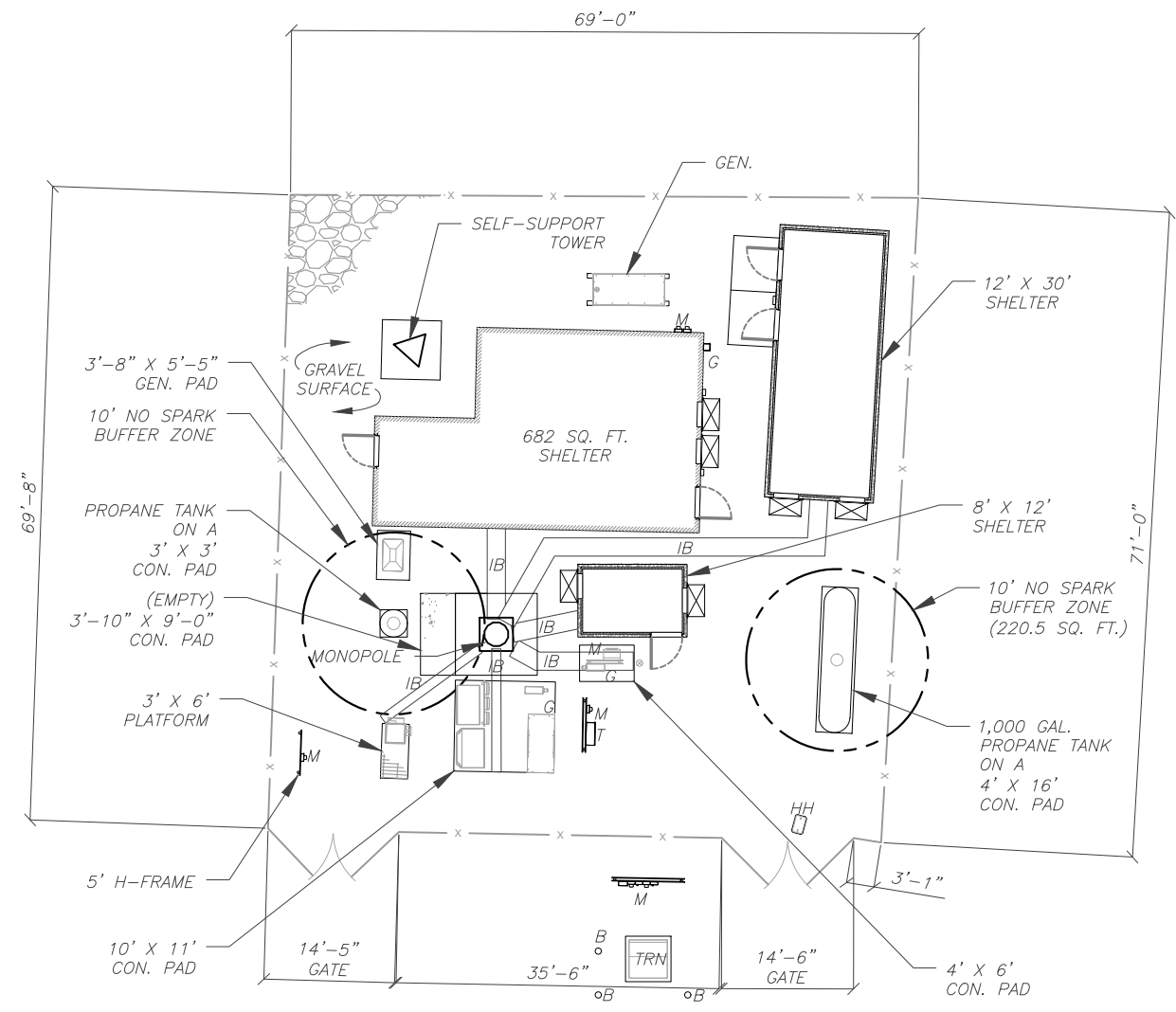
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ATC JOB NO:	OAA739695_C6_06

**SITE PLAN**

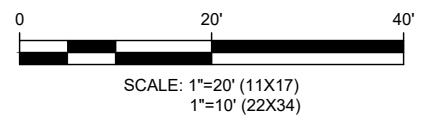
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<b>C-101</b>	<b>0</b>

**LEGEND**

- ⊗ GROUNDING TEST WELL
- AV, AV AIR VENT
- ATS AUTOMATIC TRANSFER SWITCH
- B BOLLARD
- C CABINET
- CS COAX SHROUD
- CSC CELL SITE CABINET
- D DISCONNECT
- E ELECTRICAL
- F FIBER
- GEN GENERATOR
- G GENERATOR RECEPTACLE
- HH, V HAND HOLE, VAULT
- HFC HYDROGEN FUEL CELL
- HSM HYDROGEN STORAGE MATERIAL
- IB ICE BRIDGE
- K KENTROX BOX
- LC LIGHTING CONTROL
- LPG LIQUID PROPANE GAS
- M METER
- OHW OVERHEAD WIRE
- P POWER
- PB PULL BOX
- PP POWER POLE
- T TELCO
- TRN TRANSFORMER
- PROPERTY LINE
- - - ADJACENT PROPERTY LINE
- - - LEASE AREA
- - - EASEMENT
- - - WOOD FENCE
- - - WIRE FENCE
- - - METAL FENCE
- - - GUARD RAIL
- - - CHAINLINK FENCE
- - - ROAD (DIRT)
- - - ROAD (STONE)
- - - ROAD (PAVED)



**1 SITE PLAN**



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**ADDITIONAL TOWER INFORMATION:**

1. PRE-MOD MAPPING WAS COMPLETED FOR THIS PROJECT.

**AT&T MOBILITY**  
EL: 102.0' [PROPOSED]

EL: 110.0'  
[TOP OF STRUCTURE]

SECTION 4

EL: 100.0'

SECTION 3

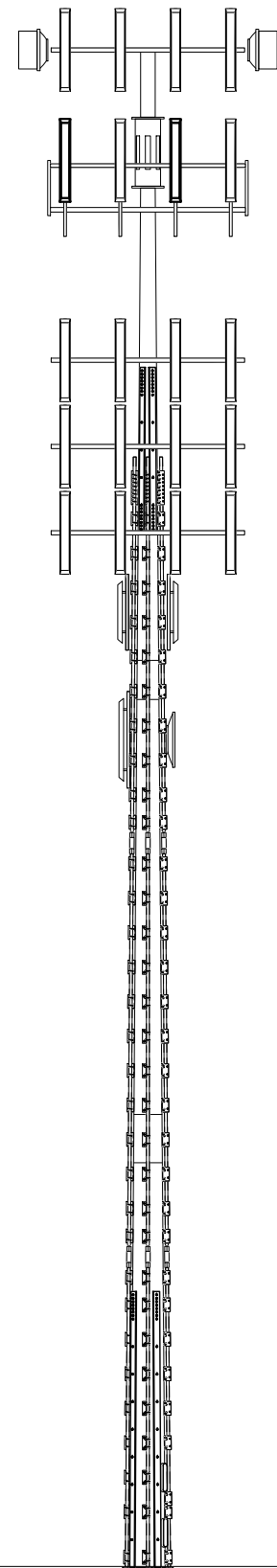
EL: 65.8'

SECTION 2

EL: 32.8'

SECTION 1

EL: 0.0'  
[BOTTOM OF STRUCTURE]



MOUNTS MAY REQUIRE SUPPORT AND RE-MOUNTING DURING INSTALLATION. SEE PHOTO AND NOTE BELOW.

INSTALL (4) PLATE REINFORCEMENT [PL 1 1/4" X 5"] FROM EL: 75.0'± TO 87.0'±. SEE SHEET A-3 FOR INSTALLATION DETAILS.

INSTALL (4) PLATE REINFORCEMENT [PL 1 1/4" X 6"] FROM EL: 0.0' TO 20.0'. SEE SHEET A-2 FOR INSTALLATION DETAILS.



**POSSIBLE MODIFICATION INTERFERENCE**  
EL: 75'-0"± TO 87'-0"±

**TOWER ELEVATION VIEW**

**NOTES:**

1. PROPOSED AT&T MOBILITY COAX TO BE INSTALLED INSIDE MONOPOLE.
2. CONTACT AMERICAN TOWER FIELD OPERATIONS WHEN EXISTING EQUIPMENT INTERFERES WITH INSTALLATION OF MODIFICATIONS. ONCE APPROVED, EXISTING EQUIPMENT MAY BE TEMPORARILY MOVED DURING INSTALLATION & REINSTALLED TO THE ORIGINAL HEIGHT & LOCATION BY CONTRACTOR POST COMPLETION OF MODIFICATIONS.



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DRAWN BY:	MJS
APPROVED BY:	RDB/IPD
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**MODIFICATION PROFILE**

SHEET NUMBER:

**A-1**

REVISION:

**0**



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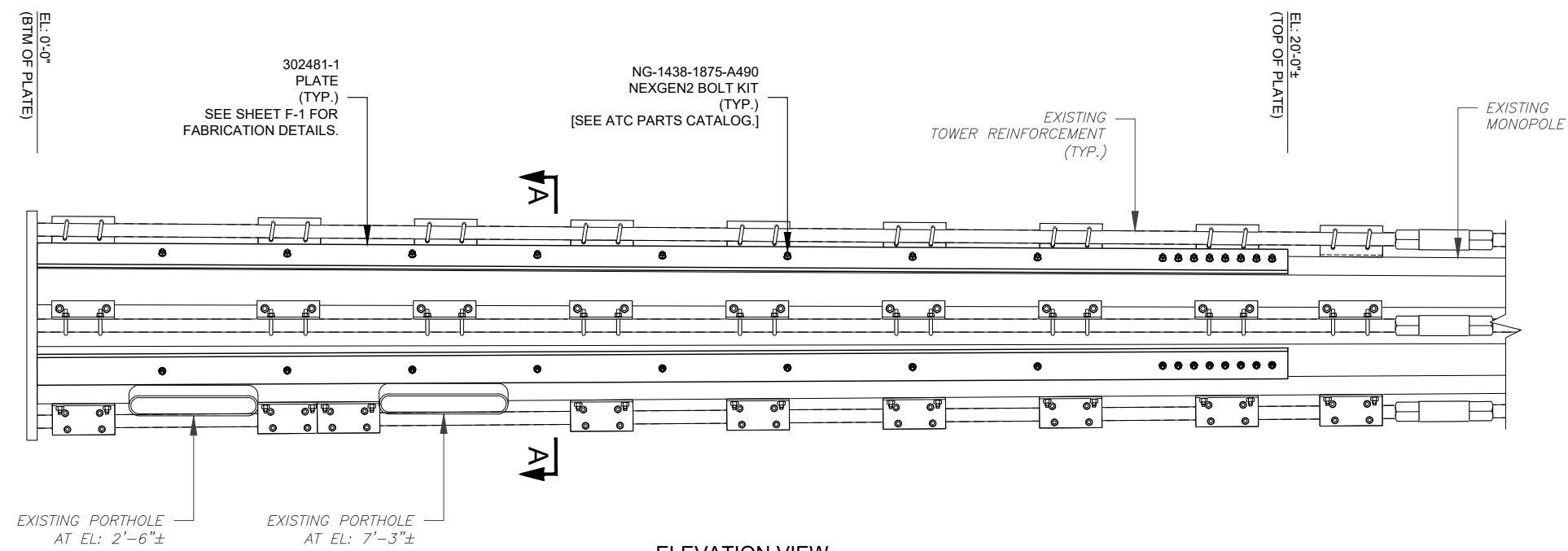
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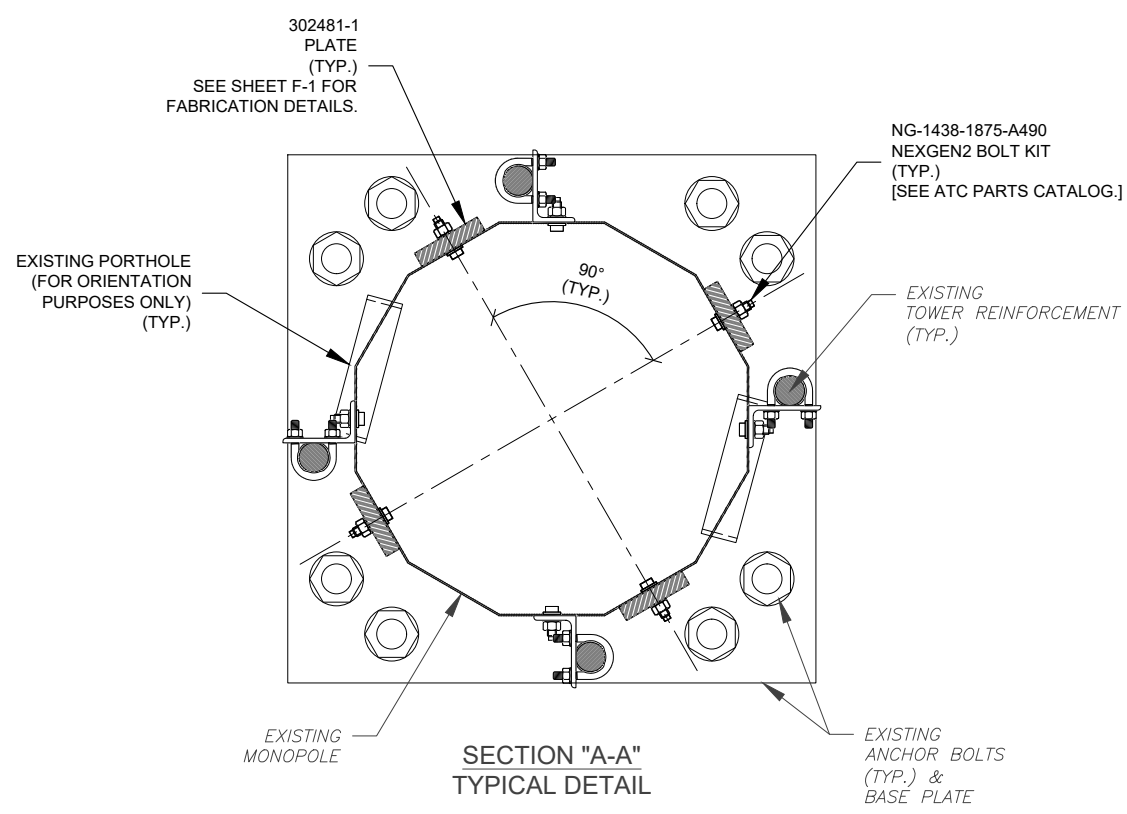
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**PLATE REINFORCEMENT  
 INSTALLATION DETAILS**  
 [EL: 0'-0" TO 20'-0"]

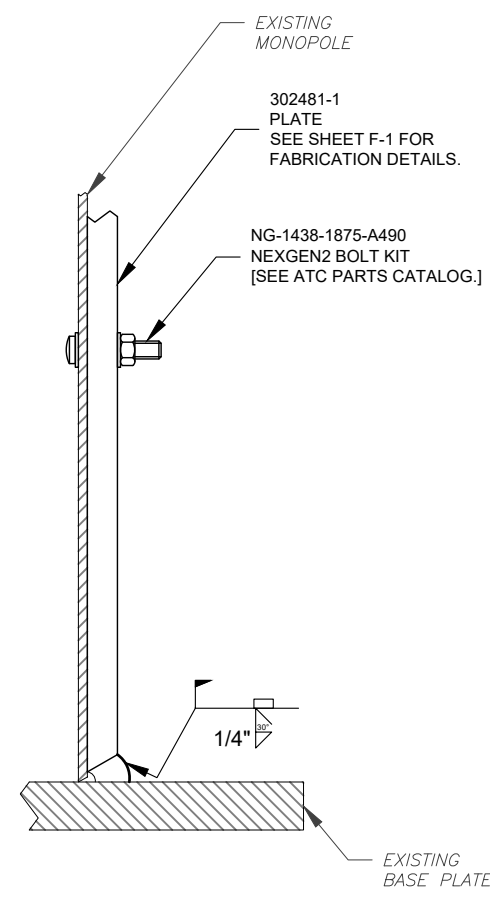
SHEET NUMBER:  
**A-2**  
 REVISION:  
**0**



**ELEVATION VIEW  
 REINFORCEMENT PLATE INSTALLATION DETAIL**



**SECTION "A-A"  
 TYPICAL DETAIL**



**FLANGE PLATE WELD DETAIL  
 TYPICAL DETAIL**

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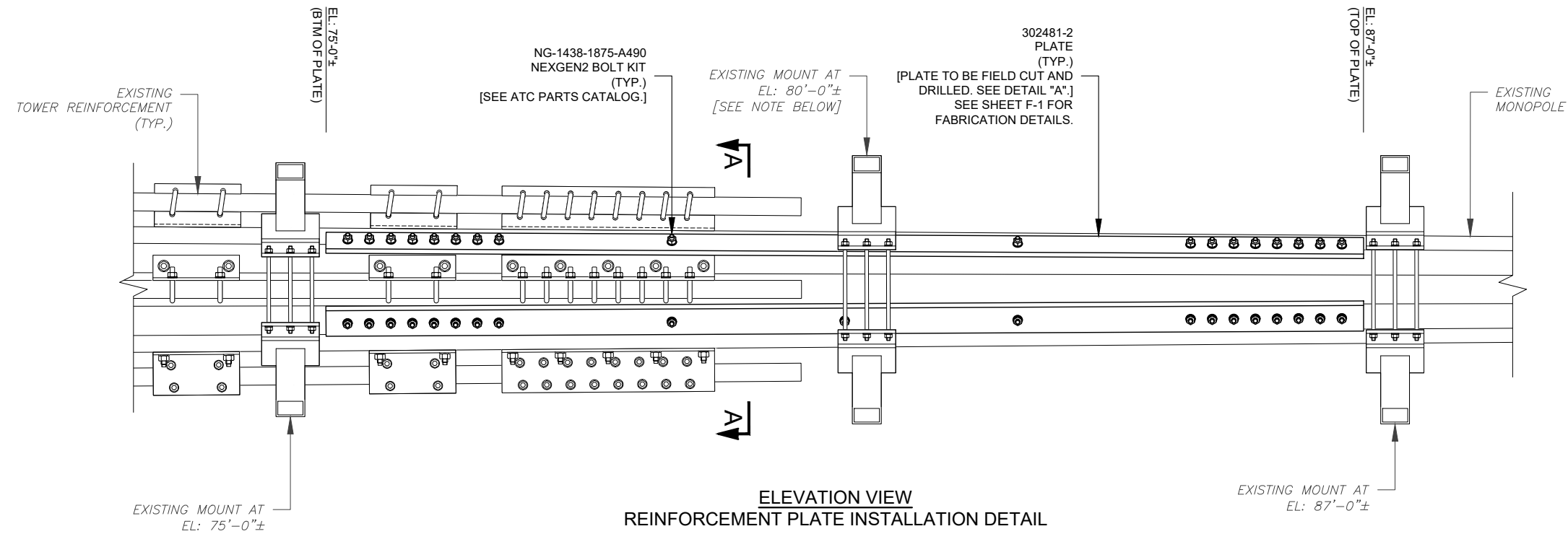
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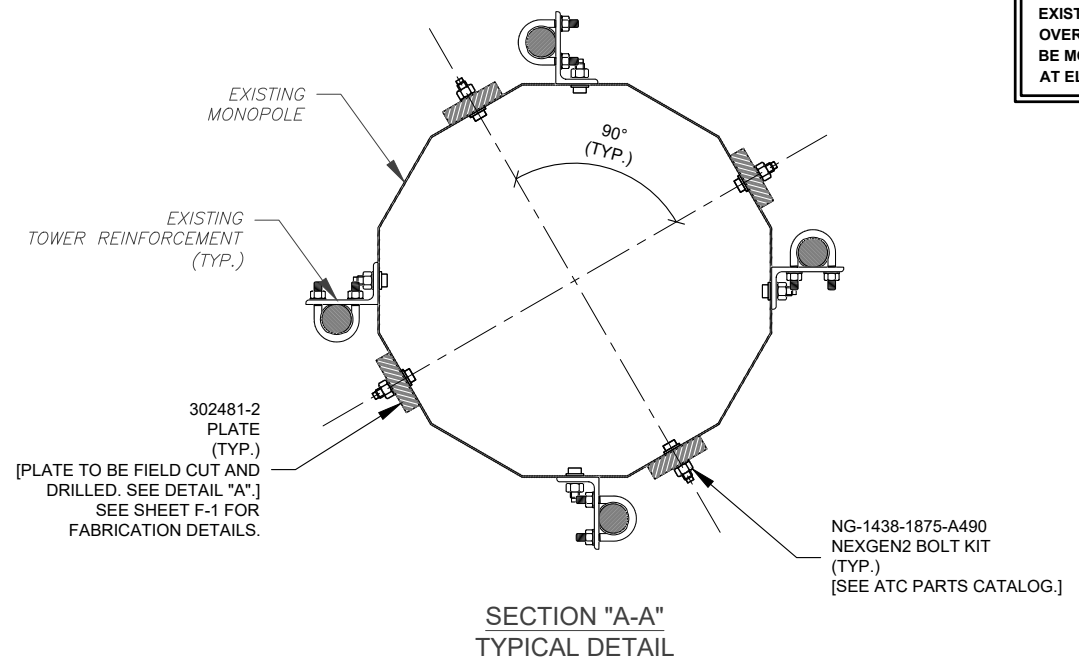
**PLATE REINFORCEMENT  
 INSTALLATION DETAILS**  
 [EL: 75'-0"± TO 87'-0"±]

SHEET NUMBER:  
**A-3**  
 REVISION:  
**0**



**ELEVATION VIEW  
 REINFORCEMENT PLATE INSTALLATION DETAIL**

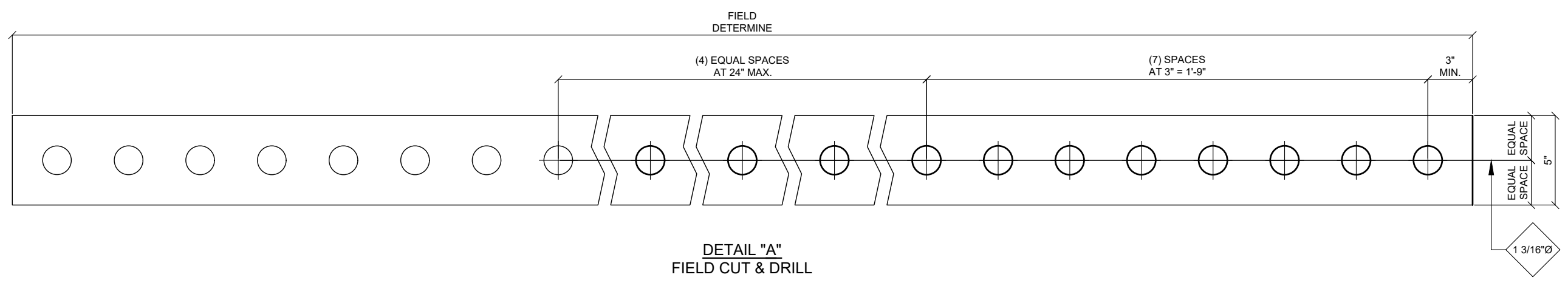
**NOTE:**  
 CONTRACTOR TO INSTALL FLAT PLATE REINFORCEMENT UNDERNEATH EXISTING MOUNT AT EL: 80'-0"±. LOOSEN EXISTING MOUNT AND REATTACH OVER PROPOSED PLATE REINFORCEMENT. MOUNT AT EL: 87'-0"± IS NOT TO BE MOVED. CONTRACTOR TO FIELD CUT PLATE FOR FIT BETWEEN MOUNTS AT EL: 75'-0"± AND EL: 87'-0"±.



**SECTION "A-A"  
 TYPICAL DETAIL**



**MODIFICATION OBSTRUCTION  
 EL: 80'-0"±**



**DETAIL "A"  
 FIELD CUT & DRILL**

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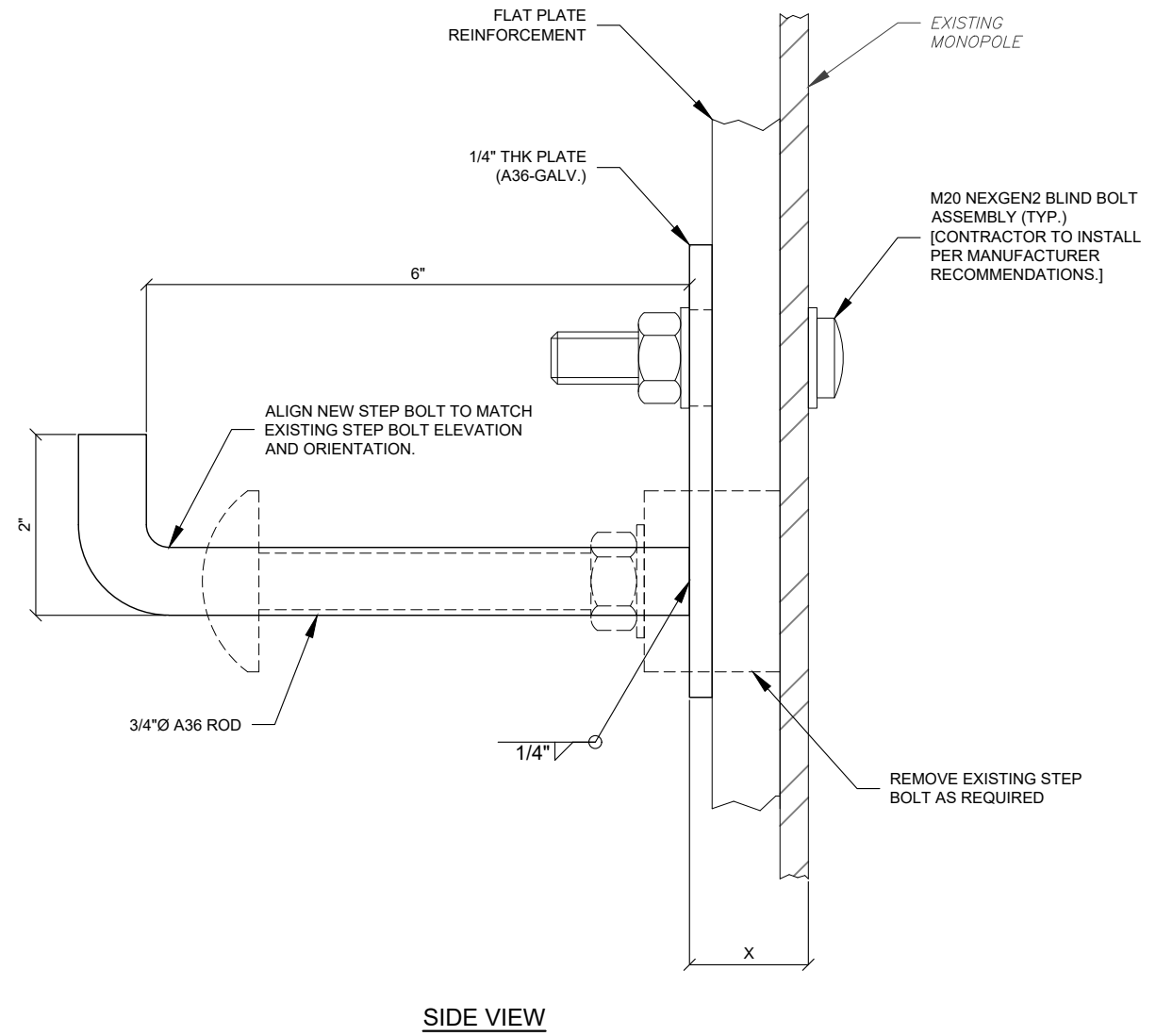
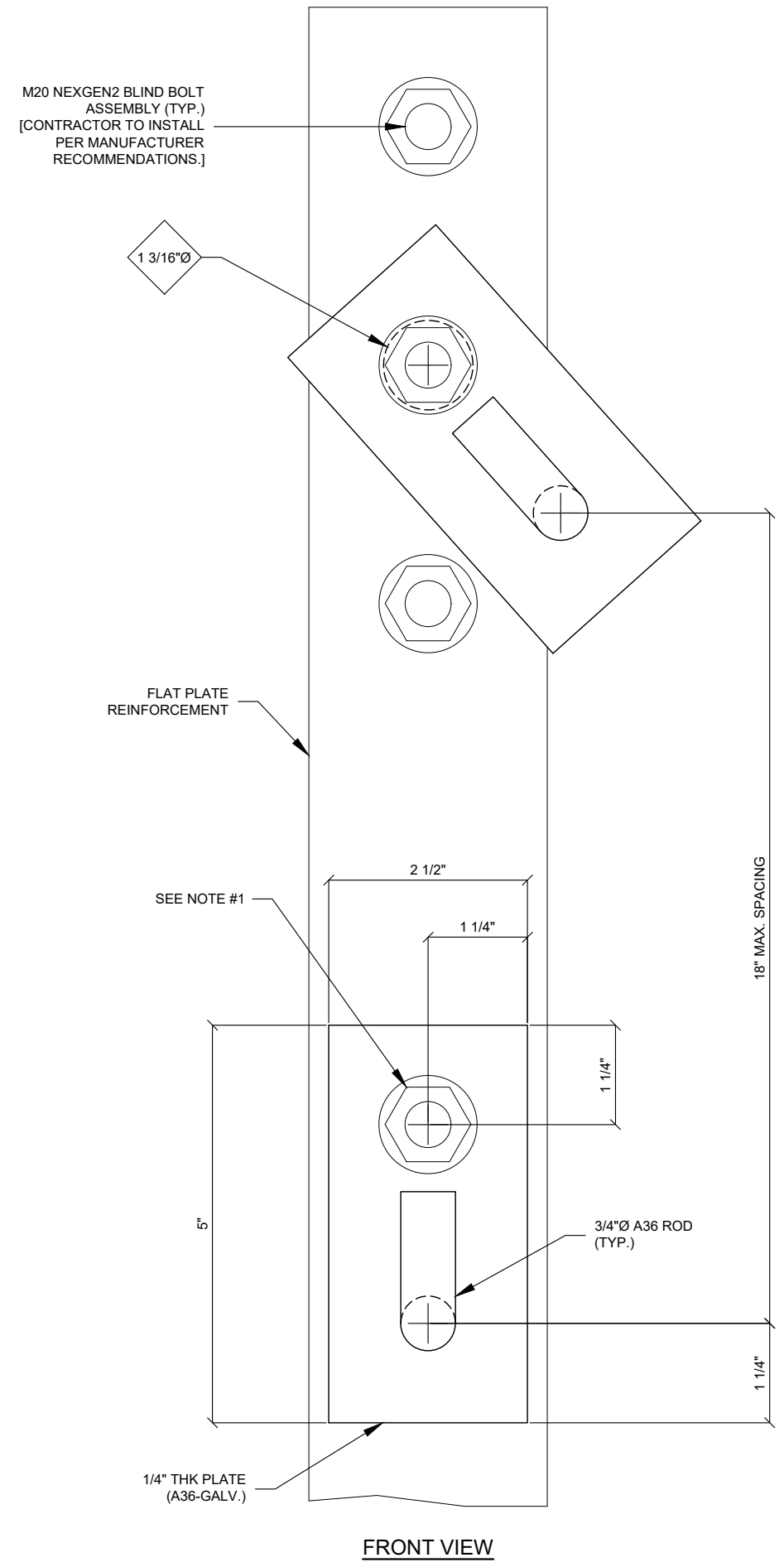
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APPROVED BY:	RDB/IPD
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ATC JOB NO:	OAA739695_C6_06

**FLAT PLATE STEP BOLT BRACKET FABRICATION & INSTALLATION DETAILS**

SHEET NUMBER: **FPSB** REVISION: **0**



NEXGEN 2 BLIND BOLT CHART	
NEXGEN2 BOLT SIZE	MAXIMUM GRIP (X)
M20 X 95MM	2 3/16"
M20 X 135MM	3 11/16"
M20 X 165MM	4 15/16"
M20 X 250MM	8 5/16"

- NOTES:**
- BLIND BOLT LENGTHS TO BE VERIFIED PRIOR TO FLAT BAR AND STEP BOLT INSTALLATION. USE NEXGEN2 BLIND BOLT CHART.
  - STEP PEG SPACING IS NOT TO EXCEED 15" MAX. STAGGERED OR 30" MAX. ON ANY SINGLE SIDE OF THE FLAT PLATE.

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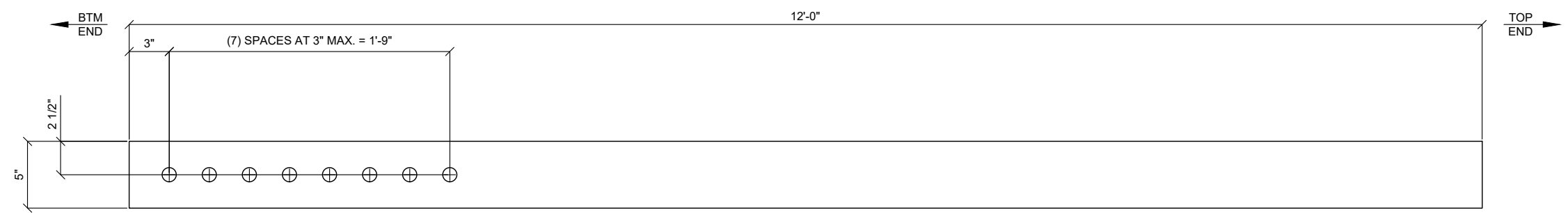
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 289 MOUNTAIN STREET  
 HARTFORD, CT 06106

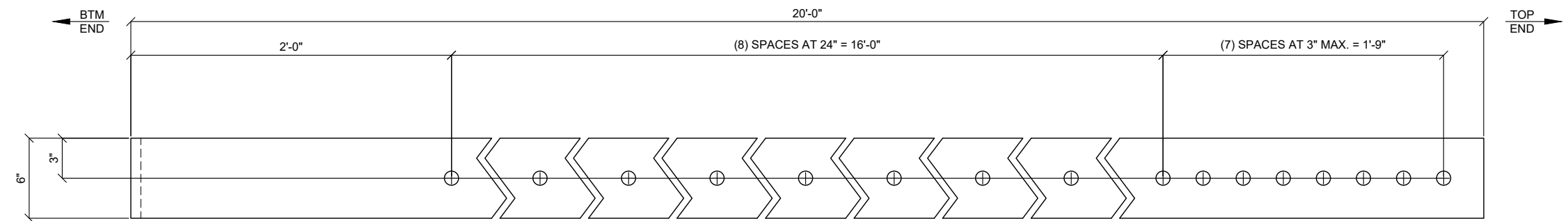
DRAWN BY:	MJS
APPROVED BY:	RDB/IPD
DATE DRAWN:	02/25/19
ATC JOB NO:	OAA739695_C6_06

**PLATE REINFORCEMENT  
 FABRICATION DETAILS**

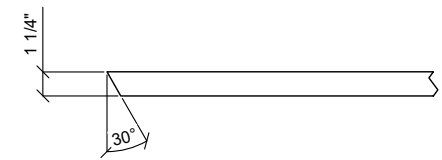
SHEET NUMBER: **F-1**      REVISION: **0**



**302481-2  
 PLATE**



**302481-1  
 PLATE**



**SECTION "A-A"  
 TYPICAL DETAIL**

PART NO.	DESCRIPTION	LENGTH	NOTES	BLK WT	GALV WT
302481-2	PL 1 1/4" X 5"	12'-0"		255.2#	268.0#
302481-1	PL 1 1/4" X 6"	20'-0"		510.4#	535.9#
<b>MATERIAL: A572 GR 65</b>		<b>FINISH: GALVANIZED</b>		<b>HOLES: 1 3/16"Ø</b>	

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**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 110 ft Monopole  
**ATC Site Name** : Hrfr - South, CT  
**ATC Site Number** : 302481  
**Engineering Number** : OAA739695\_C3\_04  
**Proposed Carrier** : AT&T Mobility  
**Carrier Site Name** : Hartford South  
**Carrier Site Number** : CT1011  
**Site Location** : 289 Mountain Road  
Hartford, CT 06106-4121  
41.726600,-72.708200  
**County** : HARTFORD  
**Date** : January 18, 2019  
**Max Usage** : 124%  
**Result** : Fail

Prepared By:  
Adam Pittman  
Structural Engineer II

Reviewed By:

*Adam Pittman*

**COA: PEC.0001553**





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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 110 ft monopole to reflect the change in loading by AT&T Mobility.

## Supporting Documents

<b>Tower Drawings</b>	Mapped by Smith Cullum Site #CT-0017(A), dated June 6, 2001
<b>Foundation Drawing</b>	Girard & Co Engineering Job #39902, dated April 29, 1988
<b>Geotechnical Report</b>	TEP Project #071162.01, dated July 23, 2007
<b>Modifications</b>	ATC Project #42719232, dated January 12, 2009 ATC Project #43595333, dated July 1, 2009 ATC Project #43930034, dated September 15, 2009 ATC Project #44662232, dated March 30, 2010

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	118 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1"1/2 radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 3
<b>Topographic Category:</b>	4
<b>Crest Height (H):</b>	36 ft
<b>Spectral Response:</b>	$S_s = 0.18, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure does not meet the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report after the modifications listed below are completed:

- Reinforce Shaft from 75-85'
- Reinforce Dwydag from 0 -15' and at the termination at 77'

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
110.0	112.0	1	12" x 12" Junction Box	Side Arms	(3) 1/2" Coax (3) 1 5/8" Fiber (1) 2" Conduit	Clearwire
		6	Alcatel-Lucent RRH2x50-08			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Nokia 2.5G MAA - AAHC(64T64R)			
		3	Commscope NNVV-65B-R4			
	110.0	3	DragonWave Horizon Compact			
		1	DragonWave A-ANT-23G-1-C			
		2	DragonWave A-ANT-11G-2.5-C			
100.0	102.0	6	Powerwave 7020.00 Dual Band RET	Sabre C10857001C 12' V-Boom Frames	(12) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3" Conduit	AT&T Mobility
		6	CCI TPX-070821			
		6	Powerwave LGP21401			
		2	Raycap DC6-48-60-18-8F(32.8 lbs)			
		3	Ericsson RRUS 4478 B5			
		3	Ericsson RRUS 4478 B14			
		3	Ericsson RRUS-11 (50 lbs.)			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS-32 (77 lbs)			
		3	Powerwave 7770.00			
		2	Quintel QS66512-2			
		2	CCI OPA-65R-LCUU-H6			
		1	CCI OPA-65R-LCUU-H8 (92.7")			
1	CCI TPA-65R-LCUUUU-H8					
87.0	87.0	3	Kathrein Smart Bias Tee	Low Profile Platform	(18) 1 5/8" Coax (1) 1.58" Hybrid	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	Ericsson KRY 112 489/1			
		3	Ericsson Radio 4449 B12,B71			
		3	RFS APX16DWV-16DWV-S-E-ACU			
		3	Ericsson AIR32 B66Aa/B2a			
		3	Ericsson Air 3246 B66			
		3	Commscope LNX-6514DS-A1M			
3	RFS APXVAARR24_43-U-NA20					
80.0	80.0	3	Nokia AirScale RRH 4T4R B5 160W AHCA	Low Profile Platform	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent B25 RRH4x30			
		3	Alcatel-Lucent B13 RRH4x30-4R			
		3	Alcatel-Lucent B66A RRH 4x45			
		1	Raycap RVZDC-6627-PF-48			
		6	Antel BXA-171063-12CF-EDIN-5			
		4	Antel BXA-70063-6CF-EDIN-2			
75.0	75.0	1	Scala 840 10212	Stand Offs	(1) 7/8" Coax	Town Of West Hartford
		1	TX RX Systems 421-86A-10-18-12-N			
70.0	70.0	3	RFS APXV18-206517S-C	Side Arms	(6) 1 5/8" Coax	Metro PCS
60.0	60.0	1	Radio/ODU	Stand Off	(2) 0.41" LMR-400 (1) 7/8" Coax	Town Of West Hartford
		1	Scala 840 10212			
		1	Radio Waves SP2-4.7			



**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	100.0	1	-	Platform w/ handrails	-	AT&T Mobility

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	102.0	6	Kaelus DBCT108F1V92-1	Sabre C10857001C 12' V-Boom Frames	(2) 0.78" 8 AWG 6	AT&T Mobility
		1	Raycap DC6-48-60-0-8F (24" Height)			
		3	Ericsson RRUS 4426 B66			
		2	Kathrein 80010965			
		1	Kathrein 80010966			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	44%	Pass
Shaft	124%	Fail
Base Plate	86%	Pass
Flanges	41%	Pass
Reinforcement	108%	Fail
Termination Bolts	110%	Fail

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,878.7	97%
Axial (Kips)	39.6	14%
Shear (Kips)	25.0	100%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
110.0	DragonWave A-ANT-23G-1-C	Clearwire Corporatio	2.011	1.936
	DragonWave A-ANT-11G-2.5-C			
	DragonWave A-ANT-11G-2.5-C			
100.0	Kaelus DBCT108F1V92-1	AT&T Mobility	1.676	1.888
	Raycap DC6-48-60-0-8F (24" Height)			
	Ericsson RRUS 4426 B66			
	Kathrein Scala 80010965			
60.0	Kathrein Scala 80010966	Town of West Hartfor	0.642	1.150

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



## Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

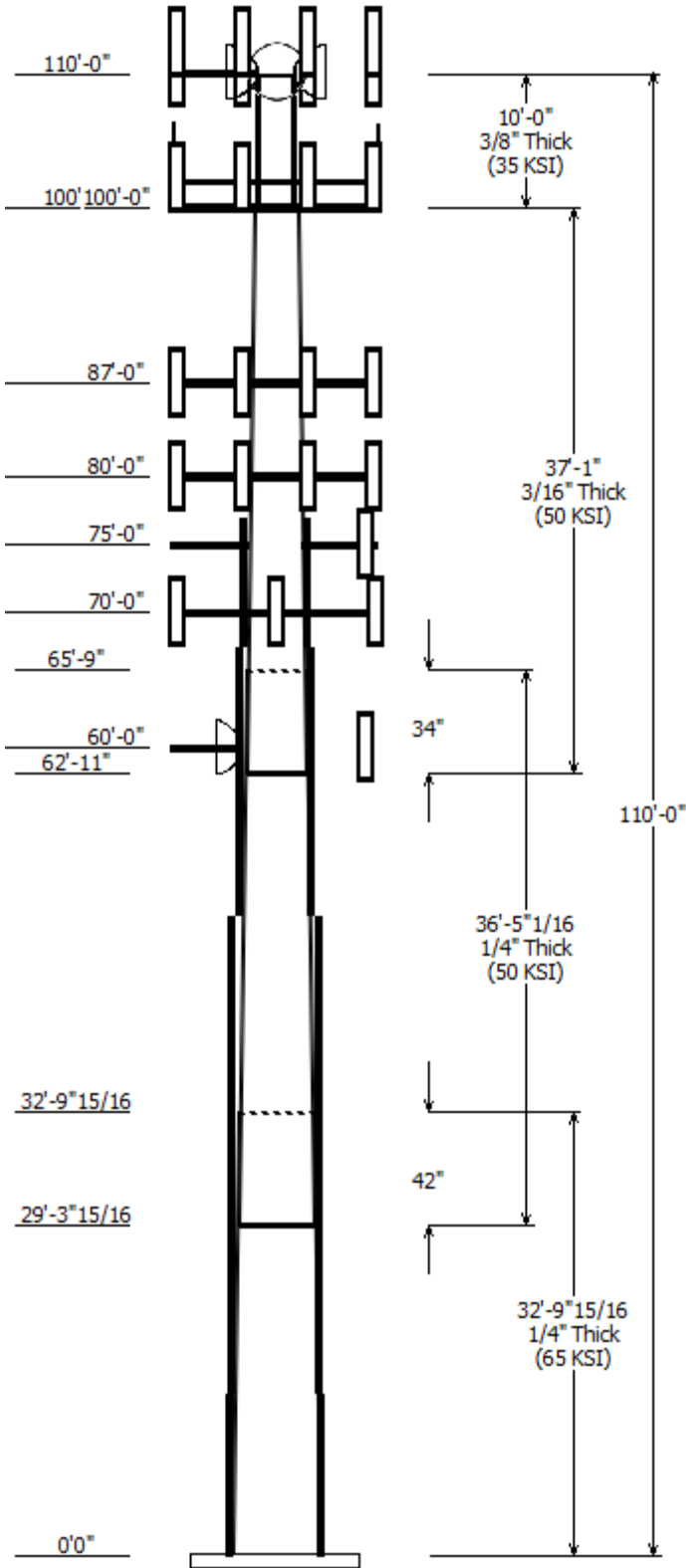
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

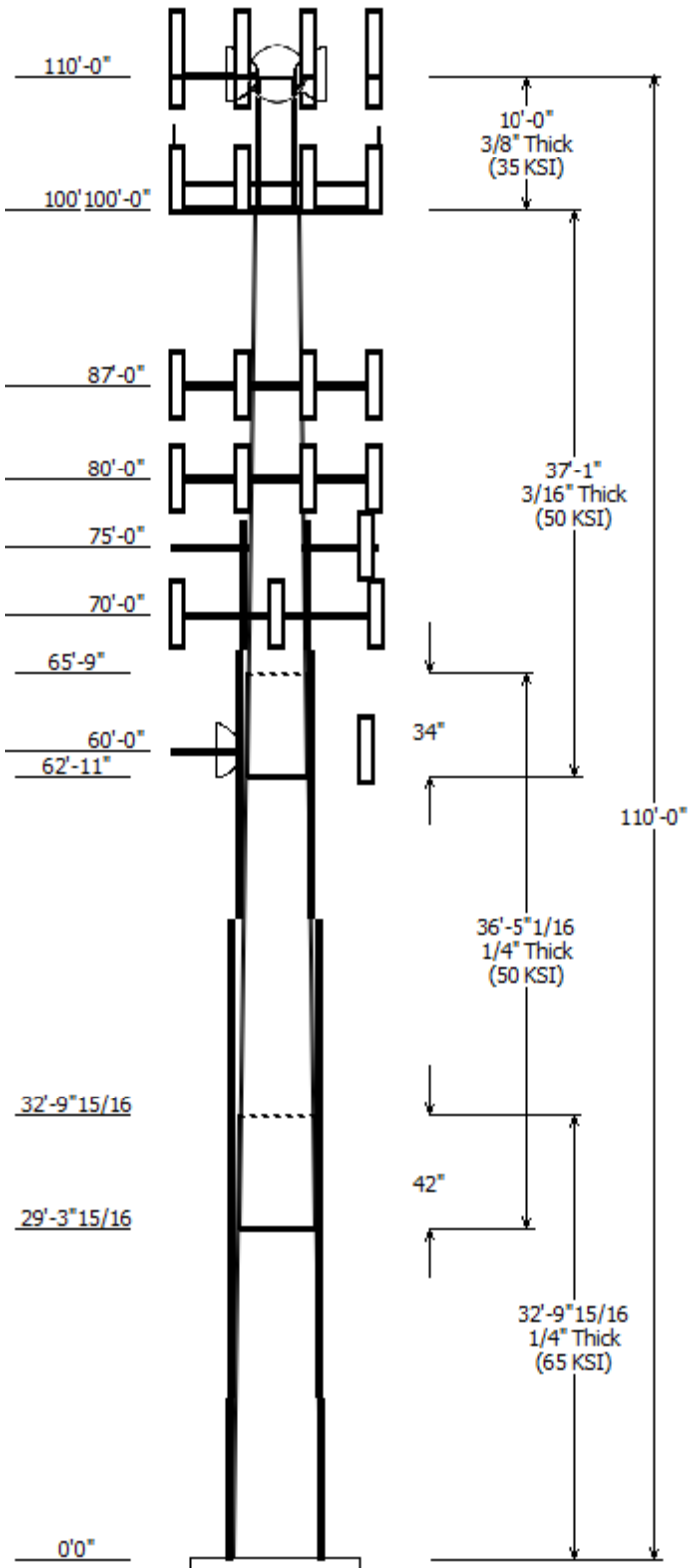
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Job Information	
Pole : 302481	Code: ANSI/TIA-222-H
Location : Hrfr - South, CT	
Description : 110 ft ITT Meyer Monopole	
Client : AT&T MOBILITY	Risk Category : II
Shape : 12 Sides	Exposure : B
Height : 110.00 (ft)	Topo Method : Method 3
Base Elev (ft): 0.00	Topographic Category : 4
Taper: 0.16400@in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade (ksi)
		Top	Bottom				
1	32.830	24.62	30.00	0.250		0.000	12 Sides 65
2	36.420	19.73	25.69	0.250	Slip Joint	42.000	12 Sides 50
3	37.083	14.50	20.57	0.188	Slip Joint	34.000	12 Sides 50
4	10.000	12.75	12.75	0.375	Butt Joint	0.000	Round 35

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
110.000	112.000	3	Nokia 2.5G MAA -
110.000	112.000	3	Commscope NNVV-65B-R4
110.000	110.000	1	Side Arms
110.000	112.000	3	Alcatel-Lucent 1900 MHz 4X45
110.000	112.000	6	Alcatel-Lucent RRH2x50-08
110.000	110.000	1	DragonWave A-ANT-11G-2.5-C
110.000	110.000	3	DragonWave Horizon Compact
110.000	110.000	1	DragonWave A-ANT-23G-1-C
110.000	110.000	1	DragonWave A-ANT-11G-2.5-C
110.000	112.000	1	12" x 12" Junction Box
100.000	100.000	3	Sabre C10857001C 12' V-Boom
100.000	102.000	3	Ericsson RRUS-32 (77 lbs)
100.000	102.000	1	Kathrein Scala 80010966
100.000	102.000	2	Kathrein Scala 80010965
100.000	102.000	6	Kaelus DBCT108F1V92-1
100.000	102.000	3	Ericsson RRUS 4478 B14
100.000	102.000	3	Ericsson RRUS 4478 B5
100.000	102.000	3	Ericsson RRUS 4426 B66
100.000	102.000	1	Raycap DC6-48-60-0-8F (24" Hei
100.000	102.000	6	CCI TPX-070821
100.000	102.000	1	CCI TPA-65R-LCUUUU-H8
100.000	102.000	2	Quintel QS66512-2
100.000	102.000	3	Ericsson RRUS 32 B2
100.000	102.000	6	Powerwave Allgon 7020.00
100.000	102.000	3	Ericsson RRUS-11 (50 lbs.)
100.000	102.000	1	CCI OPA-65R-LCUU-H8 (92.7")
100.000	102.000	2	CCI OPA-65R-LCUU-H6
100.000	102.000	2	Raycap DC6-48-60-18-8F(32.8 lb
100.000	102.000	3	Powerwave Allgon 7770.00
100.000	102.000	6	Powerwave Allgon LGP21401
87.000	87.000	3	RFS APXVAARR24_43-U-NA20
87.000	87.000	3	Ericsson Air 3246 B66
87.000	87.000	3	Ericsson Radio 4449 B12,B71
87.000	87.000	3	Kathrein Smart Bias Tee
87.000	87.000	1	Flat Low Profile Platform
87.000	87.000	3	Commscope LNX-6514DS-A1M
87.000	87.000	3	RFS APX16DWV-16DWV-S-E-
87.000	87.000	3	Ericsson KRY 112 489/1
87.000	87.000	3	Ericsson KRY 112 144/1
87.000	87.000	3	Ericsson AIR32 B66Aa/B2a
80.000	80.000	4	Antel BXA-70063-6CF-EDIN-2
80.000	80.000	6	Antel BXA-171063-12CF-EDIN-5
80.000	80.000	1	Raycap RVZDC-6627-PF-48
80.000	80.000	3	Nokia AirScale RRR 4T4R B5 160



80.000	80.000	3	Alcatel-Lucent B66A RRH 4x45
80.000	80.000	3	Alcatel-Lucent B13 RRH4x30-4R
80.000	80.000	3	Alcatel-Lucent B25 RRH4x30
80.000	80.000	1	Round Low Profile Platform
75.000	75.000	2	Stand Offs
75.000	75.000	1	TX RX Systems 421-86A-10-18-
75.000	75.000	1	Scala 840 10212
70.000	70.000	3	RFS APXV18-206517S-C
70.000	70.000	3	Round Side Arms
60.000	60.000	1	Radio Waves SP2-4.7
60.000	60.000	1	Radio/ODU
60.000	60.000	1	Stand Off
60.000	60.000	1	Scala 840 10212

Linear Appurtenance			
Elev (ft)			
From	To	Description	Exposed To Wind
0.000	60.000	0.41" LMR-400	Yes
0.000	60.000	7/8" Coax	Yes
0.000	70.000	1 5/8" Coax	Yes
0.000	75.000	7/8" Coax	Yes
0.000	80.000	1 5/8" Coax	Yes
0.000	80.000	1 5/8" Hybriflex	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	87.000	1 5/8" Coax	Yes
0.000	87.000	1.58" Hybrid	Yes
0.000	100.0	0.39" Fiber Trunk	No
0.000	100.0	0.78" 8 AWG 6	No
0.000	100.0	0.78" 8 AWG 6	No
0.000	100.0	1 5/8" Coax	No
0.000	100.0	1 5/8" Coax	Yes
0.000	100.0	3" Conduit	No
0.000	110.0	1 5/8" (1.63"-	Yes
0.000	110.0	1/2" Coax	Yes
0.000	110.0	2" Conduit	Yes

Load Cases	
1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	1878.66	24.97	34.57
0.9D + 1.0W	1847.63	24.94	25.90
1.2D + 1.0Di + 1.0Wi	649.68	8.64	68.10
1.2D + 1.0Ev + 1.0Eh	79.82	0.87	34.53
0.9D - 1.0Ev + 1.0Eh	78.13	0.87	23.90
1.0D + 1.0W	482.80	6.46	28.88

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	60.00	7.699	1.150
1.0D + 1.0W	110.00	24.126	1.936

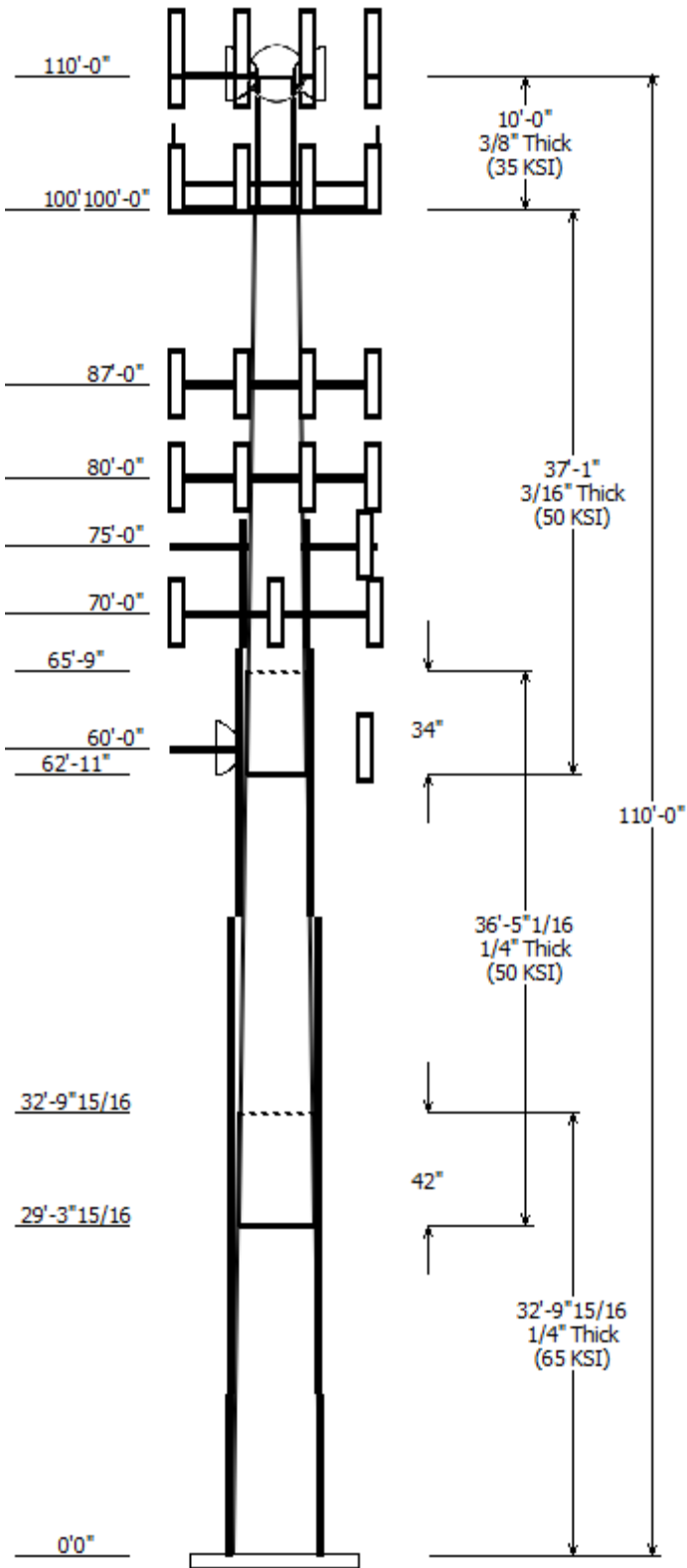


1.0D + 1.0W  
1.0D + 1.0W

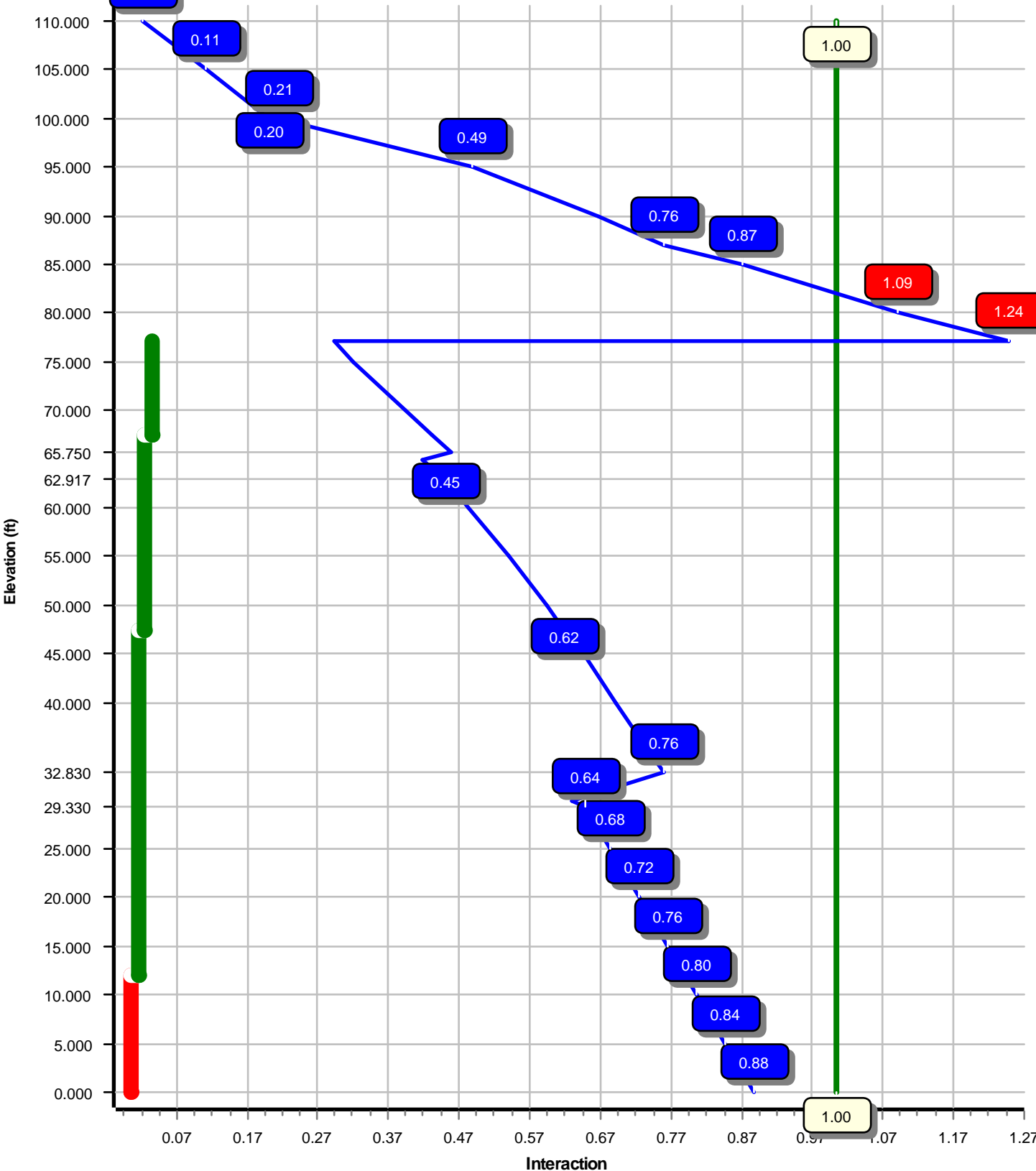
110.00  
110.00

24.126  
24.126

1.936  
1.936



Load Case : 1.2D + 1.0W  
Max Ratio 124.47% at 77.0 ft



Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

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Customer: AT&T MOBILITY

Analysis Parameters

Location :	HARTFORD County, CT	Height (ft) :	110
Code :	ANSI/TIA-222-H	Base Diameter (in) :	30.00
Shape :	12 Sides. Sect 4: Round	Top Diameter (in) :	12.75
Pole Type :	Custom	Taper (in/ft) :	0.164
Pole Manufacturer :	ITT Meyer	Rotation (deg) :	0.00
Kd :	0.95	Ke :	0.99

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	118 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 3	Operational Wind Speed:	60 mph
Topographic Category:	4	Design Ice Thickness:	1.50 in
Crest Height:	36 ft		

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.39		
$T_L$ (sec):	6	$p$ :	1
$S_s$ :	0.192	$S_1$ :	0.055
$F_a$ :	1.600	$F_v$ :	2.400
$S_{ds}$ :	0.205	$S_{d1}$ :	0.088
		$C_s$ :	0.030
		$C_s$ Max:	0.030
		$C_s$ Min:	0.030

Load Cases

1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

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Customer: AT&T MOBILITY

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	32.830	0.2500	65		0.00	2,434	30.00	0.00	23.95	2705.5	29.47	120.00	24.62	32.83	19.62	1487.9	23.71	98.50	0.163750
2-12	36.420	0.2500	50	Slip	42.00	2,241	25.69	29.33	20.49	1693.2	24.86	102.79	19.73	65.75	15.68	759.9	18.47	78.93	0.163750
3-12	37.083	0.1875	50	Slip	34.00	1,322	20.57	62.92	12.31	652.8	26.72	109.72	14.50	100.00	8.64	225.9	18.04	77.33	0.163750
4-R	10.000	0.3750	35	Butt	0.00	496	12.75	100.00	14.58	279.3	0.00	34.00	12.75	110.00	14.58	279.3	0.00	34.00	0.000000
Shaft Weight						6,493													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
110.00	12" x 12" Junction Box	1	0.000	2.000	10.00	1.200	0.50
110.00	Alcatel-Lucent 1900 MHz 4X45 R	3	0.000	2.000	60.00	2.320	0.67
110.00	Alcatel-Lucent RRH2x50-08	6	0.000	2.000	52.90	1.700	0.50
110.00	Commscope NNVV-65B-R4	3	0.000	2.000	77.40	12.270	0.64
110.00	DragonWave A-ANT-11G-2.5-C	1	0.000	0.000	47.60	8.670	1.00
110.00	DragonWave A-ANT-11G-2.5-C	1	0.000	0.000	47.60	8.670	1.00
110.00	DragonWave A-ANT-23G-1-C	1	0.000	0.000	15.00	1.610	1.00
110.00	DragonWave Horizon Compact	3	0.000	0.000	10.60	0.840	0.50
110.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.000	2.000	103.60	4.200	0.64
110.00	Side Arms	1	0.000	0.000	560.00	8.500	0.67
100.00	CCI OPA-65R-LCUU-H6	2	0.000	2.000	73.00	9.660	0.66
100.00	CCI OPA-65R-LCUU-H8 (92.7")	1	0.000	2.000	88.00	12.750	0.67
100.00	CCI TPA-65R-LCUUUU-H8	1	0.000	2.000	81.60	13.300	0.69
100.00	CCI TPX-070821	6	0.000	2.000	7.50	0.550	0.50
100.00	Ericsson RRUS 32 B2	3	0.000	2.000	53.00	2.740	0.67
100.00	Ericsson RRUS 4426 B66	3	0.000	2.000	48.40	1.650	0.50
100.00	Ericsson RRUS 4478 B14	3	0.000	2.000	59.40	2.020	0.67
100.00	Ericsson RRUS 4478 B5	3	0.000	2.000	59.90	1.840	0.50
100.00	Ericsson RRUS-11 (50 lbs.)	3	0.000	2.000	50.00	2.570	0.67
100.00	Ericsson RRUS-32 (77 lbs)	3	0.000	2.000	77.00	3.310	0.50
100.00	Kaelus DBCT108F1V92-1	6	0.000	2.000	13.90	0.740	0.50
100.00	Kathrein Scala 80010965	2	0.000	2.000	97.60	13.810	0.62
100.00	Kathrein Scala 80010966	1	0.000	2.000	114.60	17.360	0.63
100.00	Powerwave Allgon 7020.00 Dual	6	0.000	2.000	2.20	0.400	0.50
100.00	Powerwave Allgon 7770.00	3	0.000	2.000	35.00	5.510	0.65
100.00	Powerwave Allgon LGP21401	6	0.000	2.000	14.10	1.100	0.50
100.00	Quintel QS66512-2	2	0.000	2.000	111.00	8.130	0.74
100.00	Raycap DC6-48-60-0-8F (24" Hei	1	0.000	2.000	32.80	1.280	1.00
100.00	Raycap DC6-48-60-18-8F(32.8 lb	2	0.000	2.000	32.80	1.280	1.00
100.00	Sabre C10857001C 12' V-Boom	3	0.000	0.000	300.00	14.400	0.67
87.00	Commscope LNX-6514DS-A1M	3	0.000	0.000	38.80	8.170	0.69
87.00	Ericsson Air 3246 B66	3	0.000	0.000	180.00	7.940	0.69
87.00	Ericsson AIR32 B66Aa/B2a	3	0.000	0.000	132.20	6.510	0.71
87.00	Ericsson KRY 112 144/1	3	0.000	0.000	11.00	0.410	0.50
87.00	Ericsson KRY 112 489/1	3	0.000	0.000	15.40	0.650	0.50
87.00	Ericsson Radio 4449 B12,B71	3	0.000	0.000	74.00	1.640	0.50
87.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
87.00	Kathrein Smart Bias Tee	3	0.000	0.000	3.30	0.090	0.50
87.00	RFS APX16DWV-16DWV-S-E-ACU	3	0.000	0.000	39.60	6.080	0.60
87.00	RFS APXVAARR24_43-U-NA20	3	0.000	0.000	127.90	20.240	0.63
80.00	Alcatel-Lucent B13 RRH4x30-4R	3	0.000	0.000	57.80	2.140	0.67
80.00	Alcatel-Lucent B25 RRH4x30	3	0.000	0.000	53.00	2.120	0.67
80.00	Alcatel-Lucent B66A RRH 4x45	3	0.000	0.000	67.00	2.580	0.67
80.00	Antel BXA-171063-12CF-EDIN-5	6	0.000	0.000	12.80	4.800	0.72
80.00	Antel BXA-70063-6CF-EDIN-2	4	0.000	0.000	17.00	7.570	0.66
80.00	Nokia AirScale RRH 4T4R B5 160	3	0.000	0.000	35.30	1.290	0.50
80.00	Raycap RVZDC-6627-PF-48	1	0.000	0.000	32.00	3.780	0.67

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

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Customer: AT&T MOBILITY

80.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
75.00	Scala 840 10212	1	0.000	0.000	6.70	2.170	0.63
75.00	Stand Offs	2	0.000	0.000	75.00	2.500	1.00
75.00	TX RX Systems 421-86A-10-18-	1	0.000	0.000	15.00	2.220	0.67
70.00	RFS APXV18-206517S-C	3	0.000	0.000	26.40	5.170	0.68
70.00	Round Side Arms	3	0.000	0.000	100.00	4.000	0.67
60.00	Radio Waves SP2-4.7	1	0.000	0.000	22.00	5.230	0.82
60.00	Radio/ODU	1	0.000	0.000	30.00	1.600	0.50
60.00	Scala 840 10212	1	0.000	0.000	6.70	2.170	0.63
60.00	Stand Off	1	0.000	0.000	75.00	2.500	1.00
Totals	Num Loadings:57	149			11339.80		

Linear Appurtenance Properties Load Case Azimuth (deg) : 320

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To	Carrier
0.00	110.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N 1	0.25	0.25	0	0.00	Y	Clearwire
0.00	110.00	3	1/2" Coax	0.63	0.15	N 2	0.25	0.25	90	0.25	Y	Clearwire
0.00	110.00	1	2" Conduit	2.38	3.65	N 1	0.25	0.25	90	0.25	Y	Clearwire
0.00	100.00	2	0.39" Fiber Trunk	0.39	0.06	N 0	0.00	0.00		0.25	N	AT&T Mobility
0.00	100.00	4	0.78" 8 AWG 6	0.78	0.59	N 0	0.25	0.25		0.25	N	AT&T Mobility
0.00	100.00	2	0.78" 8 AWG 6	0.78	0.59	N 0	0.25	0.25	0	0.25	N	AT&T Mobility
0.00	100.00	6	1 5/8" Coax	1.98	0.82	N 0	0.25	0.25		0.25	N	AT&T Mobility
0.00	100.00	6	1 5/8" Coax	1.98	0.82	N 3	0.25	0.25	50	0.25	Y	AT&T Mobility
0.00	100.00	1	3" Conduit	3.50	7.58	N 0	0.25	0.25		0.25	N	AT&T Mobility
0.00	87.00	18	1 5/8" Coax	1.98	0.82	N 5	0.25	0.25	220	0.25	Y	T-Mobile
0.00	87.00	1	1.58" Hybrid	1.58	1.61	N 1	0.25	0.25	210	0.00	Y	T-Mobile
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N 1	0.25	0.25	270	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N 1	0.25	0.25	180	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N 1	0.25	0.25	90	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N 1	0.25	0.25	0	0.00	Y	--
0.00	80.00	12	1 5/8" Coax	1.98	0.82	N 6	0.25	0.25	130	0.25	Y	Verizon Wireless
0.00	80.00	2	1 5/8" Hybriflex	1.98	1.30	N 1	0.25	0.25	130	0.25	Y	Verizon Wireless
0.00	75.00	1	7/8" Coax	1.09	0.33	N 1	0.25	0.25	120	0.25	Y	Town of West
0.00	70.00	6	1 5/8" Coax	1.98	0.82	N 3	0.25	0.25	140	0.25	Y	Metro PCS
0.00	60.00	2	0.41" LMR-400	0.41	0.07	N 2	0.25	0.25	120	1.09	Y	Town of West
0.00	60.00	1	7/8" Coax	1.09	0.33	N 1	0.25	0.25	120	0.25	Y	Town of West

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Intermediate Connections		Connectors	Continuation?	
					Description	Spacing (in)	Len (in)			
0.00	12.00	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	39.0	3.31	5/8" A36 U-Bolt	No
12.00	47.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
47.50	67.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
67.50	77.04	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)	Additional Reinforcing		
												Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	Weight (lb)
0.00		0.2500	30.000	23.949	2,705.5	29.47	120.00	72.6	174.2	0.0	0.0	19.64	3,462	0.0
5.00		0.2500	29.181	23.290	2,488.2	28.60	116.72	73.5	164.7	0.0	401.9	19.64	3,308	334.0
10.00		0.2500	28.362	22.631	2,282.9	27.72	113.45	74.5	155.5	0.0	390.6	19.64	3,157	334.0
12.00	Reinf. Top Reinf	0.2500	28.035	22.367	2,204.0	27.37	112.14	74.9	151.9	0.0	153.1	19.64	3,098	133.6
15.00		0.2500	27.544	21.971	2,089.2	26.84	110.18	75.4	146.5	0.0	226.3	19.64	3,010	200.4
20.00		0.2500	26.725	21.312	1,906.7	25.96	106.90	76.4	137.8	0.0	368.2	19.64	2,866	334.0
25.00		0.2500	25.906	20.653	1,735.2	25.09	103.63	77.4	129.4	0.0	357.0	19.64	2,726	334.0
29.33	Bot - Section 2	0.2500	25.197	20.083	1,595.3	24.33	100.79	78.2	122.3	0.0	300.1	19.64	2,607	289.2
30.00		0.2500	25.087	19.994	1,574.4	24.21	100.35	78.3	121.2	0.0	92.3	19.64	2,672	44.8
32.83	Top - Section 1	0.2500	25.124	20.024	1,581.3	24.25	100.50	62.7	121.6	0.0	385.4	19.64	2,595	189.0
35.00		0.2500	24.769	19.738	1,514.5	23.87	99.07	63.0	118.1	0.0	146.8	19.64	2,537	145.0
40.00		0.2500	23.950	19.078	1,367.8	22.99	95.80	63.0	110.3	0.0	330.2	19.64	2,405	334.0
45.00		0.2500	23.131	18.419	1,230.9	22.11	92.53	63.0	102.8	0.0	319.0	19.64	2,277	334.0
47.50	Reinf. Top Reinf	0.2500	22.722	18.090	1,166.0	21.67	90.89	63.0	99.1	0.0	155.3	19.64	2,214	167.0
50.00		0.2500	22.313	17.760	1,103.4	21.23	89.25	63.0	95.5	0.0	152.5	19.64	2,152	167.0
55.00		0.2500	21.494	17.101	985.1	20.36	85.97	63.0	88.5	0.0	296.6	19.64	2,031	334.0
60.00		0.2500	20.675	16.442	875.5	19.48	82.70	63.0	81.8	0.0	285.4	19.64	1,913	334.0
62.92	Bot - Section 3	0.2500	20.197	16.058	815.5	18.97	80.79	63.0	78.0	0.0	161.3	19.64	1,846	194.8
65.00		0.2500	19.856	15.783	774.4	18.60	79.43	63.0	75.3	0.0	199.4	19.64	1,850	139.2
65.75	Top - Section 2	0.1875	20.108	12.027	609.2	26.06	107.25	61.4	58.5	0.0	70.9	19.64	1,833	50.1
67.50	Reinf. Top Reinf	0.1875	19.822	11.854	583.3	25.65	105.72	61.7	56.8	0.0	71.1	19.64	1,794	116.9
70.00		0.1875	19.413	11.607	547.6	25.06	103.53	62.1	54.5	0.0	99.8	19.64	1,738	167.0
75.00		0.1875	18.594	11.113	480.6	23.89	99.17	63.0	49.9	0.0	193.3	19.64	1,629	334.0
77.04	Reinf. Top	0.1875	18.259	10.911	454.8	23.41	97.38	63.0	48.1	0.0	76.5	19.64	1,586	136.4
80.00		0.1875	17.775	10.618	419.2	22.72	94.80	63.0	45.6	0.0	108.4			
85.00		0.1875	16.956	10.124	363.4	21.55	90.43	63.0	41.4	0.0	176.5			
87.00		0.1875	16.629	9.926	342.5	21.08	88.69	63.0	39.8	0.0	68.2			
90.00		0.1875	16.138	9.630	312.7	20.38	86.07	63.0	37.4	0.0	99.8			
95.00		0.1875	15.319	9.135	267.0	19.21	81.70	63.0	33.7	0.0	159.6			
100.0	Top - Section 3	0.1875	14.500	8.641	225.9	18.04	77.33	63.0	30.1	0.0	151.2			
100.0	Bot - Section 4	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
105.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
110.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
											6,492.7			5,146.3

<b>Load Case: 1.2D + 1.0W</b>	<b>118 mph with No Ice</b>	<b>23 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.20		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		507.2	0.0					0.0	0.0	507.2	0.0	0.0	0.0
5.00		947.5	482.2					40.1	788.0	987.6	1,270.2	0.0	0.0
10.00		602.6	468.8					36.1	788.0	638.7	1,256.8	0.0	0.0
12.00	Reinf. Top Reinf	393.5	183.7					13.4	315.2	406.8	498.9	0.0	0.0
15.00		588.6	271.6					19.0	472.8	607.6	744.4	0.0	0.0
20.00		687.9	441.9					29.3	788.0	717.2	1,229.9	0.0	0.0
25.00		600.0	428.4					26.8	788.0	626.7	1,216.4	0.0	0.0
29.33	Bot - Section 2	310.7	360.1					22.4	682.4	333.1	1,042.5	0.0	0.0
30.00		213.1	110.8					3.4	105.6	216.4	216.4	0.0	0.0
32.83	Top - Section 1	300.2	462.4					14.3	446.0	314.5	908.4	0.0	0.0
35.00		419.4	176.2					10.8	342.0	430.2	518.2	0.0	0.0
40.00		505.3	396.2					25.0	788.0	530.3	1,184.3	0.0	0.0
45.00		318.1	382.8					90.4	788.0	408.5	1,170.8	0.0	0.0
47.50	Reinf. Top Reinf	205.6	186.3					45.6	394.0	251.3	580.4	0.0	0.0
50.00		299.5	183.0					46.0	394.0	345.5	577.0	0.0	0.0
55.00		388.1	355.9					93.1	788.0	481.2	1,143.9	0.0	0.0
60.00	Appurtenance(s)	298.2	342.4	312.8	0.0	0.0	160.4	94.9	788.0	705.8	1,290.9	0.0	0.0
62.92	Bot - Section 3	184.9	193.5					56.2	458.0	241.1	651.5	0.0	0.0
65.00		104.5	239.3					40.6	327.2	145.1	566.5	0.0	0.0
65.75	Top - Section 2	91.0	85.1					14.7	117.8	105.7	202.9	0.0	0.0
67.50	Reinf. Top Reinf	152.9	85.3					34.3	274.8	187.1	360.2	0.0	0.0
70.00	Appurtenance(s)	263.3	119.8	580.8	0.0	0.0	455.0	49.4	392.6	893.6	967.4	0.0	0.0
75.00	Appurtenance(s)	243.2	231.9	278.8	0.0	0.0	206.0	100.6	755.7	622.6	1,193.7	0.0	0.0
77.04	Reinf. Top	167.7	91.8					41.8	307.8	209.5	399.6	0.0	0.0
80.00	Appurtenance(s)	275.6	130.0	2,463.5	0.0	0.0	2,779.3	61.4	208.8	2,800.4	3,118.2	0.0	0.0
85.00		226.9	211.7					51.3	278.3	278.1	490.0	0.0	0.0
87.00	Appurtenance(s)	123.0	81.9	3,861.3	0.0	0.0	4,039.9	20.0	111.3	4,004.3	4,233.1	0.0	0.0
90.00		191.2	119.8					7.5	108.0	198.7	227.8	0.0	0.0
95.00		231.0	191.6					13.0	180.1	243.9	371.6	0.0	0.0
100.00	Top - Section 3	172.5	181.5	4,333.0	0.0	7,052.3	3,864.1	13.4	180.1	4,518.9	4,225.6	0.0	0.0
105.00		119.7	297.7					6.0	53.6	125.7	351.2	0.0	0.0
110.00	Appurtenance(s)	60.2	297.7	2,198.6	0.0	2,558.8	2,102.9	6.1	53.6	2,264.8	2,454.1	0.0	0.0
Totals:										25,348.0	34,662.7	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

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Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0W

118 mph with No Ice

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-34.57	-24.97	0.00	-1,878.66	0.00	1,878.66	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.885
5.00	-33.13	-24.22	0.00	-1,753.81	0.00	1,753.81	1,541.15	408.73	1,115.51	908.35	0.23	-0.42	0.844
10.00	-31.76	-23.73	0.00	-1,632.71	0.00	1,632.71	1,517.03	397.17	1,053.29	868.61	0.89	-0.83	0.804
12.00	-31.18	-23.43	0.00	-1,585.26	0.00	1,585.26	1,507.06	392.54	1,028.90	852.76	1.28	-1.00	0.787
12.00	-31.18	-23.43	0.00	-1,585.26	0.00	1,585.26	1,507.06	392.54	1,028.90	852.76	1.28	-1.00	0.787
15.00	-30.32	-22.98	0.00	-1,514.98	0.00	1,514.98	1,491.77	385.60	992.85	829.06	1.99	-1.25	0.763
20.00	-28.95	-22.44	0.00	-1,400.08	0.00	1,400.08	1,465.38	374.03	934.19	789.74	3.52	-1.66	0.722
25.00	-27.61	-21.95	0.00	-1,287.90	0.00	1,287.90	1,437.85	362.47	877.32	750.71	5.47	-2.06	0.681
29.33	-26.51	-21.67	0.00	-1,192.86	0.00	1,192.86	1,413.10	352.45	829.52	717.20	7.50	-2.40	0.645
30.00	-26.25	-21.50	0.00	-1,178.34	0.00	1,178.34	1,409.19	350.90	822.24	712.04	7.84	-2.46	0.627
32.83	-25.29	-21.23	0.00	-1,117.49	0.00	1,117.49	1,130.07	270.32	634.36	571.86	9.36	-2.67	0.757
35.00	-24.69	-20.89	0.00	-1,071.41	0.00	1,071.41	1,119.12	266.46	616.37	558.15	10.62	-2.84	0.735
40.00	-23.41	-20.45	0.00	-966.95	0.00	966.95	1,081.75	257.56	575.90	521.31	13.78	-3.20	0.689
45.00	-22.18	-20.07	0.00	-864.72	0.00	864.72	1,044.38	248.66	536.82	485.73	17.32	-3.54	0.641
47.50	-21.56	-19.84	0.00	-814.55	0.00	814.55	1,025.69	244.21	517.79	468.42	19.22	-3.71	0.617
47.50	-21.56	-19.84	0.00	-814.55	0.00	814.55	1,025.69	244.21	517.79	468.42	19.22	-3.71	0.617
50.00	-20.92	-19.55	0.00	-764.95	0.00	764.95	1,007.01	239.76	499.10	451.41	21.21	-3.88	0.591
55.00	-19.71	-19.09	0.00	-667.20	0.00	667.20	969.64	230.87	462.76	418.35	25.44	-4.19	0.537
60.00	-18.41	-18.36	0.00	-571.74	0.00	571.74	932.27	221.97	427.79	386.54	29.98	-4.48	0.480
62.92	-17.74	-18.11	0.00	-518.18	0.00	518.18	910.47	216.78	408.02	368.57	32.77	-4.65	0.447
65.00	-17.16	-17.94	0.00	-480.44	0.00	480.44	894.90	213.07	394.19	355.99	34.82	-4.76	0.414
65.75	-16.95	-17.84	0.00	-466.99	0.00	466.99	664.38	162.37	305.14	269.42	35.57	-4.80	0.454
67.50	-16.57	-17.66	0.00	-435.76	0.00	435.76	658.03	160.03	296.43	262.98	37.35	-4.88	0.428
67.50	-16.57	-17.66	0.00	-435.76	0.00	435.76	658.03	160.03	296.43	262.98	37.35	-4.88	0.428
70.00	-15.63	-16.73	0.00	-391.63	0.00	391.63	648.81	156.70	284.20	253.83	39.94	-5.01	0.390
75.00	-14.46	-16.04	0.00	-307.98	0.00	307.98	629.79	150.02	260.52	235.80	45.29	-5.22	0.317
77.04	-14.06	-15.82	0.00	-275.23	0.00	275.23	618.65	147.30	251.14	227.38	47.54	-5.30	0.289
77.04	-14.06	-15.82	0.00	-275.23	0.00	275.23	618.65	147.30	251.14	227.38	47.54	-5.30	1.245
80.00	-11.12	-12.82	0.00	-228.44	0.00	228.44	602.07	143.35	237.86	215.29	50.86	-5.41	1.088
85.00	-10.57	-12.57	0.00	-164.37	0.00	164.37	574.04	136.68	216.24	195.61	56.89	-6.07	0.867
87.00	-6.75	-8.17	0.00	-139.23	0.00	139.23	562.83	134.01	207.88	188.00	59.48	-6.31	0.756
90.00	-6.50	-7.99	0.00	-114.73	0.00	114.73	546.01	130.00	195.65	176.87	63.54	-6.63	0.664
95.00	-6.11	-7.74	0.00	-74.80	0.00	74.80	517.98	123.33	176.08	159.08	70.71	-7.06	0.486
100.00	-2.47	-2.73	0.00	-29.06	0.00	29.06	489.95	116.66	157.55	142.23	78.26	-7.35	0.210
100.00	-2.47	-2.73	0.00	-29.06	0.00	29.06	459.24	137.77	149.89	150.79	78.26	-7.35	0.198
105.00	-2.14	-2.57	0.00	-15.39	0.00	15.39	459.24	137.77	149.89	150.79	86.02	-7.49	0.107
110.00	0.00	-2.26	0.00	-2.56	0.00	2.56	459.24	137.77	149.89	150.79	93.87	-7.54	0.017



**Load Case:** 0.9D + 1.0W 118 mph with No Ice (Reduced DL) 23 Iterations

Gust Response Factor :1.10  
 Dead Load Factor :0.90  
 Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		507.2	0.0					0.0	0.0	507.2	0.0	0.0	0.0
5.00		947.5	361.7					40.1	591.0	987.6	952.7	0.0	0.0
10.00		602.6	351.6					36.1	591.0	638.7	942.6	0.0	0.0
12.00	Reinf. Top Reinf	393.5	137.8					13.4	236.4	406.8	374.2	0.0	0.0
15.00		588.6	203.7					19.0	354.6	607.6	558.3	0.0	0.0
20.00		687.9	331.4					29.3	591.0	717.2	922.4	0.0	0.0
25.00		600.0	321.3					26.8	591.0	626.7	912.3	0.0	0.0
29.33	Bot - Section 2	310.7	270.1					22.4	511.8	333.1	781.9	0.0	0.0
30.00		213.1	83.1					3.4	79.2	216.4	162.3	0.0	0.0
32.83	Top - Section 1	300.2	346.8					14.3	334.5	314.5	681.3	0.0	0.0
35.00		419.4	132.1					10.8	256.5	430.2	388.6	0.0	0.0
40.00		505.3	297.2					25.0	591.0	530.3	888.2	0.0	0.0
45.00		318.1	287.1					90.4	591.0	408.5	878.1	0.0	0.0
47.50	Reinf. Top Reinf	205.6	139.8					45.6	295.5	251.3	435.3	0.0	0.0
50.00		299.5	137.2					46.0	295.5	345.5	432.7	0.0	0.0
55.00		388.1	266.9					93.1	591.0	481.2	857.9	0.0	0.0
60.00	Appurtenance(s)	298.2	256.8	312.8	0.0	0.0	120.3	94.9	591.0	705.8	968.2	0.0	0.0
62.92	Bot - Section 3	184.9	145.1					56.2	343.5	241.1	488.7	0.0	0.0
65.00		104.5	179.5					40.6	245.4	145.1	424.8	0.0	0.0
65.75	Top - Section 2	91.0	63.8					14.7	88.3	105.7	152.2	0.0	0.0
67.50	Reinf. Top Reinf	152.9	64.0					34.3	206.1	187.1	270.1	0.0	0.0
70.00	Appurtenance(s)	263.3	89.8	580.8	0.0	0.0	341.3	49.4	294.4	893.6	725.5	0.0	0.0
75.00	Appurtenance(s)	243.2	173.9	278.8	0.0	0.0	154.5	100.6	566.8	622.6	895.2	0.0	0.0
77.04	Reinf. Top	167.7	68.9					41.8	230.8	209.5	299.7	0.0	0.0
80.00	Appurtenance(s)	275.6	97.5	2,463.5	0.0	0.0	2,084.5	61.4	156.6	2,800.4	2,338.6	0.0	0.0
85.00		226.9	158.8					51.3	208.7	278.1	367.5	0.0	0.0
87.00	Appurtenance(s)	123.0	61.4	3,861.3	0.0	0.0	3,029.9	20.0	83.5	4,004.3	3,174.8	0.0	0.0
90.00		191.2	89.8					7.5	81.0	198.7	170.9	0.0	0.0
95.00		231.0	143.7					13.0	135.0	243.9	278.7	0.0	0.0
100.00	Top - Section 3	172.5	136.1	4,333.0	0.0	7,052.3	2,898.1	13.4	135.0	4,518.9	3,169.2	0.0	0.0
105.00		119.7	223.2					6.0	40.2	125.7	263.4	0.0	0.0
110.00	Appurtenance(s)	60.2	223.2	2,198.6	0.0	2,558.8	1,577.2	6.1	40.2	2,264.8	1,840.6	0.0	0.0
<b>Totals:</b>										25,348.0	25,997.0	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

1/23/2019 3:05:27 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.0W

118 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-25.90	-24.94	0.00	-1,847.63	0.00	1,847.63	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.867
5.00	-24.78	-24.12	0.00	-1,722.95	0.00	1,722.95	1,541.15	408.73	1,115.51	908.35	0.22	-0.41	0.826
10.00	-23.73	-23.59	0.00	-1,602.34	0.00	1,602.34	1,517.03	397.17	1,053.29	868.61	0.87	-0.82	0.786
12.00	-23.28	-23.26	0.00	-1,555.16	0.00	1,555.16	1,507.06	392.54	1,028.90	852.76	1.25	-0.98	0.770
12.00	-23.28	-23.26	0.00	-1,555.16	0.00	1,555.16	1,507.06	392.54	1,028.90	852.76	1.25	-0.98	0.770
15.00	-22.61	-22.77	0.00	-1,485.37	0.00	1,485.37	1,491.77	385.60	992.85	829.06	1.95	-1.23	0.746
20.00	-21.55	-22.18	0.00	-1,371.51	0.00	1,371.51	1,465.38	374.03	934.19	789.74	3.46	-1.63	0.705
25.00	-20.52	-21.66	0.00	-1,260.60	0.00	1,260.60	1,437.85	362.47	877.32	750.71	5.37	-2.02	0.664
29.33	-19.68	-21.36	0.00	-1,166.83	0.00	1,166.83	1,413.10	352.45	829.52	717.20	7.36	-2.36	0.628
30.00	-19.48	-21.18	0.00	-1,152.52	0.00	1,152.52	1,409.19	350.90	822.24	712.04	7.70	-2.41	0.611
32.83	-18.74	-20.90	0.00	-1,092.57	0.00	1,092.57	1,130.07	270.32	634.36	571.86	9.19	-2.62	0.738
35.00	-18.28	-20.53	0.00	-1,047.22	0.00	1,047.22	1,119.12	266.46	616.37	558.15	10.42	-2.78	0.715
40.00	-17.30	-20.06	0.00	-944.55	0.00	944.55	1,081.75	257.56	575.90	521.31	13.52	-3.13	0.671
45.00	-16.36	-19.68	0.00	-844.24	0.00	844.24	1,044.38	248.66	536.82	485.73	16.98	-3.47	0.624
47.50	-15.89	-19.44	0.00	-795.05	0.00	795.05	1,025.69	244.21	517.79	468.42	18.85	-3.64	0.599
47.50	-15.89	-19.44	0.00	-795.05	0.00	795.05	1,025.69	244.21	517.79	468.42	18.85	-3.64	0.599
50.00	-15.40	-19.13	0.00	-746.44	0.00	746.44	1,007.01	239.76	499.10	451.41	20.79	-3.80	0.574
55.00	-14.48	-18.67	0.00	-650.77	0.00	650.77	969.64	230.87	462.76	418.35	24.94	-4.10	0.522
60.00	-13.50	-17.95	0.00	-557.42	0.00	557.42	932.27	221.97	427.79	386.54	29.39	-4.39	0.466
62.92	-12.99	-17.70	0.00	-505.08	0.00	505.08	910.47	216.78	408.02	368.57	32.11	-4.55	0.433
65.00	-12.56	-17.54	0.00	-468.21	0.00	468.21	894.90	213.07	394.19	355.99	34.12	-4.65	0.401
65.75	-12.40	-17.43	0.00	-455.06	0.00	455.06	664.38	162.37	305.14	269.42	34.86	-4.69	0.440
67.50	-12.11	-17.24	0.00	-424.55	0.00	424.55	658.03	160.03	296.43	262.98	36.59	-4.78	0.415
67.50	-12.11	-17.24	0.00	-424.55	0.00	424.55	658.03	160.03	296.43	262.98	36.59	-4.78	0.415
70.00	-11.42	-16.33	0.00	-381.44	0.00	381.44	648.81	156.70	284.20	253.83	39.12	-4.90	0.377
75.00	-10.54	-15.65	0.00	-299.81	0.00	299.81	629.79	150.02	260.52	235.80	44.37	-5.11	0.306
77.04	-10.24	-15.43	0.00	-267.85	0.00	267.85	618.65	147.30	251.14	227.38	46.57	-5.19	0.279
77.04	-10.24	-15.43	0.00	-267.85	0.00	267.85	618.65	147.30	251.14	227.38	46.57	-5.19	1.206
80.00	-8.08	-12.49	0.00	-222.19	0.00	222.19	602.07	143.35	237.86	215.29	49.81	-5.29	1.053
85.00	-7.65	-12.23	0.00	-159.76	0.00	159.76	574.04	136.68	216.24	195.61	55.70	-5.94	0.838
87.00	-4.88	-7.94	0.00	-135.30	0.00	135.30	562.83	134.01	207.88	188.00	58.24	-6.17	0.732
90.00	-4.68	-7.75	0.00	-111.48	0.00	111.48	546.01	130.00	195.65	176.87	62.21	-6.47	0.642
95.00	-4.38	-7.50	0.00	-72.72	0.00	72.72	517.98	123.33	176.08	159.08	69.21	-6.89	0.469
100.00	-1.79	-2.64	0.00	-28.15	0.00	28.15	489.95	116.66	157.55	142.23	76.58	-7.18	0.202
100.00	-1.79	-2.64	0.00	-28.15	0.00	28.15	459.24	137.77	149.89	150.79	76.58	-7.18	0.191
105.00	-1.54	-2.48	0.00	-14.97	0.00	14.97	459.24	137.77	149.89	150.79	84.16	-7.32	0.103
110.00	0.00	-2.26	0.00	-2.56	0.00	2.56	459.24	137.77	149.89	150.79	91.83	-7.36	0.017

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice	23 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		98.3	0.0					0.0	0.0	98.3	0.0	0.0	0.0
5.00		181.8	800.7					125.6	1,474.9	307.4	2,275.6	0.0	0.0
10.00		113.5	798.8					177.1	1,516.2	290.6	2,315.0	0.0	0.0
12.00	Reinf. Top Reinf	72.0	315.3					66.0	608.5	137.9	923.8	0.0	0.0
15.00		104.8	465.6					94.3	912.8	199.1	1,378.4	0.0	0.0
20.00		118.6	755.0					166.0	1,518.7	284.7	2,273.7	0.0	0.0
25.00		99.5	730.3					165.6	1,513.7	265.1	2,244.0	0.0	0.0
29.33	Bot - Section 2	50.3	613.0					140.9	1,306.7	191.2	1,919.7	0.0	0.0
30.00		33.7	150.3					21.6	201.9	55.3	352.3	0.0	0.0
32.83	Top - Section 1	47.5	626.3					91.9	851.9	139.5	1,478.2	0.0	0.0
35.00		65.9	299.8					69.4	652.4	135.3	952.3	0.0	0.0
40.00		89.7	671.4					163.4	1,500.9	253.1	2,172.2	0.0	0.0
45.00		65.8	648.1					168.2	1,498.5	234.0	2,146.6	0.0	0.0
47.50	Reinf. Top Reinf	43.1	316.6					85.9	748.7	129.0	1,065.3	0.0	0.0
50.00		63.5	310.9					87.1	748.4	150.6	1,059.4	0.0	0.0
55.00		83.2	602.9					177.9	1,496.4	261.1	2,099.3	0.0	0.0
60.00	Appurtenance(s)	64.6	580.7	75.5	0.0	0.0	461.7	183.0	1,496.5	323.1	2,538.9	0.0	0.0
62.92	Bot - Section 3	40.4	329.6					110.5	856.0	150.9	1,185.6	0.0	0.0
65.00		22.9	336.7					80.7	611.7	103.6	948.4	0.0	0.0
65.75	Top - Section 2	20.0	120.0					29.4	220.2	49.3	340.2	0.0	0.0
67.50	Reinf. Top Reinf	33.7	165.7					68.2	514.0	101.8	679.7	0.0	0.0
70.00	Appurtenance(s)	58.2	232.5	141.6	0.0	0.0	698.9	99.0	734.5	298.8	1,665.9	0.0	0.0
75.00	Appurtenance(s)	54.0	449.1	66.9	0.0	0.0	532.7	193.9	1,365.2	314.8	2,347.0	0.0	0.0
77.04	Reinf. Top	37.9	179.2					81.0	553.1	118.8	732.3	0.0	0.0
80.00	Appurtenance(s)	56.7	253.7	627.6	0.0	0.0	5,471.9	119.1	564.8	803.4	6,290.5	0.0	0.0
85.00		47.8	412.5					134.7	637.4	182.5	1,049.9	0.0	0.0
87.00	Appurtenance(s)	33.3	160.9	886.3	0.0	0.0	8,107.4	49.5	247.4	969.1	8,515.7	0.0	0.0
90.00		52.2	235.4					45.0	212.2	97.1	447.6	0.0	0.0
95.00		63.5	375.9					76.8	354.1	140.3	730.0	0.0	0.0
100.00	Top - Section 3	58.3	357.6	1,067.5	0.0	1,523.1	9,267.1	79.0	354.8	1,204.7	9,979.5	0.0	0.0
105.00		54.4	446.7					43.0	152.2	97.4	598.9	0.0	0.0
110.00	Appurtenance(s)	27.3	447.3	489.0	0.0	540.7	4,805.6	43.5	152.7	559.9	5,405.5	0.0	0.0
<b>Totals:</b>										<b>8,647.79</b>	<b>68,111.4</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

1/23/2019 3:05:33 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.50 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-68.10	-8.64	0.00	-649.68	0.00	649.68	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.325
5.00	-65.80	-8.49	0.00	-606.49	0.00	606.49	1,541.15	408.73	1,115.51	908.35	0.08	-0.14	0.310
10.00	-63.48	-8.30	0.00	-564.03	0.00	564.03	1,517.03	397.17	1,053.29	868.61	0.31	-0.29	0.295
12.00	-62.54	-8.24	0.00	-547.42	0.00	547.42	1,507.06	392.54	1,028.90	852.76	0.44	-0.35	0.289
12.00	-62.54	-8.24	0.00	-547.42	0.00	547.42	1,507.06	392.54	1,028.90	852.76	0.44	-0.35	0.289
15.00	-61.15	-8.15	0.00	-522.70	0.00	522.70	1,491.77	385.60	992.85	829.06	0.69	-0.43	0.280
20.00	-58.86	-7.99	0.00	-481.94	0.00	481.94	1,465.38	374.03	934.19	789.74	1.22	-0.57	0.265
25.00	-56.60	-7.83	0.00	-441.98	0.00	441.98	1,437.85	362.47	877.32	750.71	1.89	-0.71	0.250
29.33	-54.67	-7.67	0.00	-408.09	0.00	408.09	1,413.10	352.45	829.52	717.20	2.59	-0.83	0.236
30.00	-54.32	-7.66	0.00	-402.95	0.00	402.95	1,409.19	350.90	822.24	712.04	2.71	-0.85	0.230
32.83	-52.83	-7.56	0.00	-381.28	0.00	381.28	1,130.07	270.32	634.36	571.86	3.23	-0.92	0.277
35.00	-51.87	-7.49	0.00	-364.89	0.00	364.89	1,119.12	266.46	616.37	558.15	3.66	-0.98	0.268
40.00	-49.69	-7.30	0.00	-327.46	0.00	327.46	1,081.75	257.56	575.90	521.31	4.75	-1.10	0.251
45.00	-47.54	-7.09	0.00	-290.97	0.00	290.97	1,044.38	248.66	536.82	485.73	5.97	-1.22	0.233
47.50	-46.47	-6.98	0.00	-273.25	0.00	273.25	1,025.69	244.21	517.79	468.42	6.62	-1.27	0.224
47.50	-46.47	-6.98	0.00	-273.25	0.00	273.25	1,025.69	244.21	517.79	468.42	6.62	-1.27	0.224
50.00	-45.40	-6.87	0.00	-255.79	0.00	255.79	1,007.01	239.76	499.10	451.41	7.30	-1.33	0.214
55.00	-43.30	-6.64	0.00	-221.42	0.00	221.42	969.64	230.87	462.76	418.35	8.75	-1.43	0.194
60.00	-40.76	-6.30	0.00	-188.23	0.00	188.23	932.27	221.97	427.79	386.54	10.30	-1.53	0.174
62.92	-39.57	-6.15	0.00	-169.85	0.00	169.85	910.47	216.78	408.02	368.57	11.25	-1.58	0.162
65.00	-38.63	-6.04	0.00	-157.04	0.00	157.04	894.90	213.07	394.19	355.99	11.95	-1.62	0.150
65.75	-38.29	-5.99	0.00	-152.51	0.00	152.51	664.38	162.37	305.14	269.42	12.21	-1.63	0.164
67.50	-37.61	-5.89	0.00	-142.03	0.00	142.03	658.03	160.03	296.43	262.98	12.81	-1.66	0.155
67.50	-37.61	-5.89	0.00	-142.03	0.00	142.03	658.03	160.03	296.43	262.98	12.81	-1.66	0.155
70.00	-35.94	-5.58	0.00	-127.29	0.00	127.29	648.81	156.70	284.20	253.83	13.69	-1.70	0.142
75.00	-33.60	-5.22	0.00	-99.39	0.00	99.39	629.79	150.02	260.52	235.80	15.51	-1.77	0.116
77.04	-32.87	-5.10	0.00	-88.73	0.00	88.73	618.65	147.30	251.14	227.38	16.28	-1.80	0.107
77.04	-32.87	-5.10	0.00	-88.73	0.00	88.73	618.65	147.30	251.14	227.38	16.28	-1.80	0.445
80.00	-26.60	-4.16	0.00	-73.65	0.00	73.65	602.07	143.35	237.86	215.29	17.40	-1.83	0.387
85.00	-25.55	-4.00	0.00	-52.87	0.00	52.87	574.04	136.68	216.24	195.61	19.44	-2.04	0.316
87.00	-17.07	-2.75	0.00	-44.87	0.00	44.87	562.83	134.01	207.88	188.00	20.31	-2.12	0.269
90.00	-16.62	-2.67	0.00	-36.63	0.00	36.63	546.01	130.00	195.65	176.87	21.67	-2.22	0.238
95.00	-15.89	-2.53	0.00	-23.28	0.00	23.28	517.98	123.33	176.08	159.08	24.08	-2.36	0.177
100.00	-5.97	-0.92	0.00	-9.09	0.00	9.09	489.95	116.66	157.55	142.23	26.60	-2.45	0.076
100.00	-5.97	-0.92	0.00	-9.09	0.00	9.09	459.24	137.77	149.89	150.79	26.60	-2.45	0.073
105.00	-5.38	-0.80	0.00	-4.52	0.00	4.52	459.24	137.77	149.89	150.79	29.19	-2.49	0.042
110.00	0.00	-0.56	0.00	-0.54	0.00	0.54	459.24	137.77	149.89	150.79	31.81	-2.50	0.004

<b>Load Case:</b> 1.0D + 1.0W	Serviceability 60 mph	22 Iterations
Gust Response Factor :1.10		
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		131.1	0.0					0.0	0.0	131.1	0.0	0.0	0.0
5.00		245.0	401.9					10.4	656.7	255.3	1,058.5	0.0	0.0
10.00		155.8	390.6					9.3	656.7	165.1	1,047.3	0.0	0.0
12.00	Reinf. Top Reinf	101.7	153.1					3.5	262.7	105.2	415.8	0.0	0.0
15.00		152.2	226.3					4.9	394.0	157.1	620.3	0.0	0.0
20.00		177.9	368.2					7.6	656.7	185.4	1,024.9	0.0	0.0
25.00		155.1	357.0					6.9	656.7	162.0	1,013.7	0.0	0.0
29.33	Bot - Section 2	80.3	300.1					5.8	568.7	86.1	868.8	0.0	0.0
30.00		55.1	92.3					0.9	88.0	56.0	180.3	0.0	0.0
32.83	Top - Section 1	77.6	385.4					3.7	371.7	81.3	757.0	0.0	0.0
35.00		108.4	146.8					2.8	285.0	111.2	431.8	0.0	0.0
40.00		130.6	330.2					6.5	656.7	137.1	986.9	0.0	0.0
45.00		82.3	319.0					23.4	656.7	105.6	975.7	0.0	0.0
47.50	Reinf. Top Reinf	53.2	155.3					11.8	328.3	65.0	483.6	0.0	0.0
50.00		77.4	152.5					11.9	328.3	89.3	480.8	0.0	0.0
55.00		100.3	296.6					24.1	656.7	124.4	953.2	0.0	0.0
60.00	Appurtenance(s)	77.1	285.4	80.9	0.0	0.0	133.7	24.5	656.7	182.5	1,075.7	0.0	0.0
62.92	Bot - Section 3	47.8	161.3					14.5	381.7	62.3	543.0	0.0	0.0
65.00		27.0	199.4					10.5	272.7	37.5	472.0	0.0	0.0
65.75	Top - Section 2	23.5	70.9					3.8	98.1	27.3	169.1	0.0	0.0
67.50	Reinf. Top Reinf	39.5	71.1					8.9	229.0	48.4	300.1	0.0	0.0
70.00	Appurtenance(s)	68.1	99.8	150.2	0.0	0.0	379.2	12.8	327.2	231.0	806.2	0.0	0.0
75.00	Appurtenance(s)	62.9	193.3	72.1	0.0	0.0	171.7	26.0	629.7	161.0	994.7	0.0	0.0
77.04	Reinf. Top	43.4	76.5					10.8	256.5	54.2	333.0	0.0	0.0
80.00	Appurtenance(s)	71.3	108.4	636.9	0.0	0.0	2,316.1	15.9	174.0	724.0	2,598.5	0.0	0.0
85.00		58.7	176.5					13.3	231.9	71.9	408.3	0.0	0.0
87.00	Appurtenance(s)	31.8	68.2	998.3	0.0	0.0	3,366.6	5.2	92.8	1,035.3	3,527.6	0.0	0.0
90.00		49.4	99.8					1.9	90.0	51.4	189.8	0.0	0.0
95.00		59.8	159.6					3.4	150.0	63.2	309.7	0.0	0.0
100.00	Top - Section 3	48.1	151.2	1,120.3	0.0	1,823.3	3,220.1	3.5	150.0	1,171.9	3,521.4	0.0	0.0
105.00		37.7	248.0					1.5	44.6	39.3	292.7	0.0	0.0
110.00	Appurtenance(s)	18.9	248.0	568.4	0.0	661.6	1,752.4	1.6	44.6	588.9	2,045.1	0.0	0.0
Totals:										6,567.41	28,885.5	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

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Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-28.88	-6.46	0.00	-482.80	0.00	482.80	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.234
5.00	-27.81	-6.26	0.00	-450.49	0.00	450.49	1,541.15	408.73	1,115.51	908.35	0.06	-0.11	0.223
10.00	-26.75	-6.13	0.00	-419.19	0.00	419.19	1,517.03	397.17	1,053.29	868.61	0.23	-0.21	0.212
12.00	-26.33	-6.04	0.00	-406.94	0.00	406.94	1,507.06	392.54	1,028.90	852.76	0.33	-0.26	0.208
12.00	-26.33	-6.04	0.00	-406.94	0.00	406.94	1,507.06	392.54	1,028.90	852.76	0.33	-0.26	0.208
15.00	-25.71	-5.92	0.00	-388.81	0.00	388.81	1,491.77	385.60	992.85	829.06	0.51	-0.32	0.201
20.00	-24.67	-5.77	0.00	-359.21	0.00	359.21	1,465.38	374.03	934.19	789.74	0.90	-0.43	0.191
25.00	-23.65	-5.64	0.00	-330.34	0.00	330.34	1,437.85	362.47	877.32	750.71	1.41	-0.53	0.180
29.33	-22.78	-5.57	0.00	-305.91	0.00	305.91	1,413.10	352.45	829.52	717.20	1.93	-0.62	0.170
30.00	-22.59	-5.52	0.00	-302.17	0.00	302.17	1,409.19	350.90	822.24	712.04	2.01	-0.63	0.166
32.83	-21.83	-5.45	0.00	-286.54	0.00	286.54	1,130.07	270.32	634.36	571.86	2.40	-0.69	0.200
35.00	-21.40	-5.36	0.00	-274.71	0.00	274.71	1,119.12	266.46	616.37	558.15	2.73	-0.73	0.194
40.00	-20.40	-5.24	0.00	-247.91	0.00	247.91	1,081.75	257.56	575.90	521.31	3.54	-0.82	0.182
45.00	-19.42	-5.14	0.00	-221.69	0.00	221.69	1,044.38	248.66	536.82	485.73	4.45	-0.91	0.170
47.50	-18.94	-5.09	0.00	-208.83	0.00	208.83	1,025.69	244.21	517.79	468.42	4.93	-0.95	0.163
47.50	-18.94	-5.09	0.00	-208.83	0.00	208.83	1,025.69	244.21	517.79	468.42	4.93	-0.95	0.163
50.00	-18.45	-5.01	0.00	-196.12	0.00	196.12	1,007.01	239.76	499.10	451.41	5.45	-1.00	0.156
55.00	-17.49	-4.89	0.00	-171.08	0.00	171.08	969.64	230.87	462.76	418.35	6.53	-1.08	0.142
60.00	-16.42	-4.70	0.00	-146.62	0.00	146.62	932.27	221.97	427.79	386.54	7.70	-1.15	0.128
62.92	-15.87	-4.64	0.00	-132.90	0.00	132.90	910.47	216.78	408.02	368.57	8.41	-1.19	0.119
65.00	-15.40	-4.60	0.00	-123.24	0.00	123.24	894.90	213.07	394.19	355.99	8.94	-1.22	0.110
65.75	-15.23	-4.57	0.00	-119.79	0.00	119.79	664.38	162.37	305.14	269.42	9.13	-1.23	0.120
67.50	-14.93	-4.52	0.00	-111.79	0.00	111.79	658.03	160.03	296.43	262.98	9.59	-1.25	0.114
67.50	-14.93	-4.52	0.00	-111.79	0.00	111.79	658.03	160.03	296.43	262.98	9.59	-1.25	0.114
70.00	-14.13	-4.29	0.00	-100.48	0.00	100.48	648.81	156.70	284.20	253.83	10.25	-1.28	0.104
75.00	-13.13	-4.11	0.00	-79.05	0.00	79.05	629.79	150.02	260.52	235.80	11.63	-1.34	0.085
77.04	-12.80	-4.05	0.00	-70.66	0.00	70.66	618.65	147.30	251.14	227.38	12.21	-1.36	0.077
77.04	-12.80	-4.05	0.00	-70.66	0.00	70.66	618.65	147.30	251.14	227.38	12.21	-1.36	0.332
80.00	-10.21	-3.29	0.00	-58.67	0.00	58.67	602.07	143.35	237.86	215.29	13.06	-1.39	0.290
85.00	-9.80	-3.22	0.00	-42.24	0.00	42.24	574.04	136.68	216.24	195.61	14.61	-1.56	0.234
87.00	-6.30	-2.10	0.00	-35.79	0.00	35.79	562.83	134.01	207.88	188.00	15.28	-1.62	0.202
90.00	-6.11	-2.05	0.00	-29.50	0.00	29.50	546.01	130.00	195.65	176.87	16.32	-1.70	0.178
95.00	-5.80	-1.99	0.00	-19.24	0.00	19.24	517.98	123.33	176.08	159.08	18.16	-1.81	0.132
100.00	-2.32	-0.71	0.00	-7.48	0.00	7.48	489.95	116.66	157.55	142.23	20.11	-1.89	0.057
100.00	-2.32	-0.71	0.00	-7.48	0.00	7.48	459.24	137.77	149.89	150.79	20.11	-1.89	0.055
105.00	-2.02	-0.66	0.00	-3.95	0.00	3.95	459.24	137.77	149.89	150.79	22.10	-1.92	0.031
110.00	0.00	-0.59	0.00	-0.66	0.00	0.66	459.24	137.77	149.89	150.79	24.13	-1.94	0.004

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.05
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.09
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.39
Redundancy Factor ( $\rho$ ):	1.00
Seismic Force Distribution Exponent (k):	1.94
Total Unfactored Dead Load:	28.89 k
Seismic Base Shear (E):	0.87 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
31	107.50	293	2,588	0.023	20	363
30	102.50	293	2,359	0.021	18	363
29	97.50	301	2,203	0.020	17	374
28	92.50	310	2,045	0.018	16	384
27	88.50	190	1,150	0.010	9	236
26	86.00	161	923	0.008	7	200
25	82.50	408	2,159	0.019	17	507
24	78.52	282	1,356	0.012	10	350
23	76.02	333	1,502	0.013	12	413
22	72.50	823	3,385	0.030	26	1,021
21	68.75	427	1,584	0.014	12	530
20	66.62	300	1,047	0.009	8	372
19	65.37	169	569	0.005	4	210
18	63.96	472	1,522	0.014	12	586
17	61.46	543	1,620	0.014	13	674
16	57.50	942	2,470	0.022	19	1,169
15	52.50	953	2,094	0.019	16	1,183
14	48.75	481	915	0.008	7	597
13	46.25	484	831	0.007	6	600
12	42.50	976	1,422	0.013	11	1,211
11	37.50	987	1,128	0.010	9	1,225
10	33.91	432	406	0.004	3	536
9	31.41	757	613	0.005	5	939
8	29.66	180	131	0.001	1	224
7	27.16	869	531	0.005	4	1,078

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

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Customer: AT&T MOBILITY

6	22.50	1,014	429	0.004	3	1,258
5	17.50	1,025	266	0.002	2	1,272
4	13.50	620	97	0.001	1	770
3	11.00	416	44	0.000	0	516
2	7.50	1,047	52	0.000	0	1,300
1	2.50	1,059	6	0.000	0	1,314
DragonWave Horizon C	110.00	32	294	0.003	2	39
12" x 12" Junction B	110.00	10	92	0.001	1	12
DragonWave A-ANT-23G	110.00	15	139	0.001	1	19
Alcatel-Lucent RRH2x	110.00	317	2,934	0.026	23	394
Alcatel-Lucent 1900	110.00	180	1,664	0.015	13	223
Nokia 2.5G MAA - AAH	110.00	311	2,873	0.026	22	386
Side Arms	110.00	560	5,177	0.046	40	695
DragonWave A-ANT-11G	110.00	48	440	0.004	3	59
DragonWave A-ANT-11G	110.00	48	440	0.004	3	59
Commscope NNVV-65B-R	110.00	232	2,146	0.019	17	288
Powerwave Allgon 702	100.00	13	101	0.001	1	16
CCI TPX-070821	100.00	45	346	0.003	3	56
Kaelus DBCT108F1V92-	100.00	83	641	0.006	5	103
Powerwave Allgon LGP	100.00	85	650	0.006	5	105
Raycap DC6-48-60-18-	100.00	66	504	0.004	4	81
Raycap DC6-48-60-0-8	100.00	33	252	0.002	2	41
Ericsson RRUS 4426 B	100.00	145	1,115	0.010	9	180
Ericsson RRUS 4478 B	100.00	180	1,380	0.012	11	223
Ericsson RRUS 4478 B	100.00	178	1,369	0.012	11	221
Ericsson RRUS-11 (50	100.00	150	1,152	0.010	9	186
Ericsson RRUS 32 B2	100.00	159	1,221	0.011	9	197
Ericsson RRUS-32 (77	100.00	231	1,774	0.016	14	287
Powerwave Allgon 777	100.00	105	807	0.007	6	130
Quintel QS66512-2	100.00	222	1,705	0.015	13	275
CCI OPA-65R-LCUU-H6	100.00	146	1,122	0.010	9	181
CCI OPA-65R-LCUU-H8	100.00	88	676	0.006	5	109
CCI TPA-65R-LCUUUU-H	100.00	82	627	0.006	5	101
Kathrein Scala 80010	100.00	195	1,499	0.013	12	242
Sabre C10857001C 12'	100.00	900	6,913	0.062	53	1,117
Kathrein Scala 80010	100.00	115	880	0.008	7	142
Kathrein Smart Bias	87.00	10	58	0.001	0	12
Ericsson KRY 112 144	87.00	33	193	0.002	1	41
Ericsson KRY 112 489	87.00	46	271	0.002	2	57
Ericsson Radio 4449	87.00	222	1,301	0.012	10	275
RFS APX16DWV-16DWV-S	87.00	119	696	0.006	5	147
Ericsson AIR32 B66Aa	87.00	397	2,324	0.021	18	492
Ericsson Air 3246 B6	87.00	540	3,165	0.028	24	670
Commscope LNX-6514DS	87.00	116	682	0.006	5	144
RFS APXVAARR24_43-U-	87.00	384	2,249	0.020	17	476
Flat Low Profile Pla	87.00	1,500	8,791	0.078	68	1,861
Nokia AirScale RRH 4	80.00	106	527	0.005	4	131
Alcatel-Lucent B25 R	80.00	159	792	0.007	6	197
Alcatel-Lucent B13 R	80.00	173	863	0.008	7	215
Alcatel-Lucent B66A	80.00	201	1,001	0.009	8	249
Raycap RVZDC-6627-PF	80.00	32	159	0.001	1	40
Antel BXA-171063-12C	80.00	77	382	0.003	3	95
Antel BXA-70063-6CF-	80.00	68	339	0.003	3	84
Round Low Profile PI	80.00	1,500	7,469	0.067	58	1,861
Scala 840 10212	75.00	7	29	0.000	0	8
TX RX Systems 421-86	75.00	15	66	0.001	1	19
Stand Offs	75.00	150	659	0.006	5	186
Round Side Arms	70.00	300	1,153	0.010	9	372
RFS APXV18-206517S-C	70.00	79	304	0.003	2	98
Radio/ODU	60.00	30	85	0.001	1	37
Scala 840 10212	60.00	7	19	0.000	0	8
Stand Off	60.00	75	214	0.002	2	93
Radio Waves SP2-4.7	60.00	22	63	0.001	0	27



Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

1/23/2019 3:05:38 PM

Customer: AT&T MOBILITY

28,886

112,235

1.000

867

35,846

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
31	107.50	293	2,588	0.023	20	251
30	102.50	293	2,359	0.021	18	251
29	97.50	301	2,203	0.020	17	259
28	92.50	310	2,045	0.018	16	266
27	88.50	190	1,150	0.010	9	163
26	86.00	161	923	0.008	7	138
25	82.50	408	2,159	0.019	17	351
24	78.52	282	1,356	0.012	10	243
23	76.02	333	1,502	0.013	12	286
22	72.50	823	3,385	0.030	26	707
21	68.75	427	1,584	0.014	12	367
20	66.62	300	1,047	0.009	8	258
19	65.37	169	569	0.005	4	145
18	63.96	472	1,522	0.014	12	406
17	61.46	543	1,620	0.014	13	466
16	57.50	942	2,470	0.022	19	809
15	52.50	953	2,094	0.019	16	819
14	48.75	481	915	0.008	7	413
13	46.25	484	831	0.007	6	415
12	42.50	976	1,422	0.013	11	838
11	37.50	987	1,128	0.010	9	848
10	33.91	432	406	0.004	3	371
9	31.41	757	613	0.005	5	650
8	29.66	180	131	0.001	1	155
7	27.16	869	531	0.005	4	746
6	22.50	1,014	429	0.004	3	871
5	17.50	1,025	266	0.002	2	880
4	13.50	620	97	0.001	1	533
3	11.00	416	44	0.000	0	357
2	7.50	1,047	52	0.000	0	900
1	2.50	1,059	6	0.000	0	909
DragonWave Horizon C	110.00	32	294	0.003	2	27
12" x 12" Junction B	110.00	10	92	0.001	1	9
DragonWave A-ANT-23G	110.00	15	139	0.001	1	13
Alcatel-Lucent RRH2x	110.00	317	2,934	0.026	23	273
Alcatel-Lucent 1900	110.00	180	1,664	0.015	13	155
Nokia 2.5G MAA - AAH	110.00	311	2,873	0.026	22	267
Side Arms	110.00	560	5,177	0.046	40	481
DragonWave A-ANT-11G	110.00	48	440	0.004	3	41
DragonWave A-ANT-11G	110.00	48	440	0.004	3	41
Commscope NNVV-65B-R	110.00	232	2,146	0.019	17	199
Powerwave Allgon 702	100.00	13	101	0.001	1	11
CCI TPX-070821	100.00	45	346	0.003	3	39
Kaelus DBCT108F1V92-	100.00	83	641	0.006	5	72
Powerwave Allgon LGP	100.00	85	650	0.006	5	73
Raycap DC6-48-60-18-	100.00	66	504	0.004	4	56
Raycap DC6-48-60-0-8	100.00	33	252	0.002	2	28
Ericsson RRUS 4426 B	100.00	145	1,115	0.010	9	125
Ericsson RRUS 4478 B	100.00	180	1,380	0.012	11	154
Ericsson RRUS 4478 B	100.00	178	1,369	0.012	11	153
Ericsson RRUS-11 (50	100.00	150	1,152	0.010	9	129
Ericsson RRUS 32 B2	100.00	159	1,221	0.011	9	137
Ericsson RRUS-32 (77	100.00	231	1,774	0.016	14	198
Powerwave Allgon 777	100.00	105	807	0.007	6	90
Quintel QS66512-2	100.00	222	1,705	0.015	13	191

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

1/23/2019 3:05:38 PM

Customer: AT&T MOBILITY

CCI OPA-65R-LCUU-H6	100.00	146	1,122	0.010	9	125
CCI OPA-65R-LCUU-H8	100.00	88	676	0.006	5	76
CCI TPA-65R-LCUUUU-H	100.00	82	627	0.006	5	70
Kathrein Scala 80010	100.00	195	1,499	0.013	12	168
Sabre C10857001C 12'	100.00	900	6,913	0.062	53	773
Kathrein Scala 80010	100.00	115	880	0.008	7	98
Kathrein Smart Bias	87.00	10	58	0.001	0	9
Ericsson KRY 112 144	87.00	33	193	0.002	1	28
Ericsson KRY 112 489	87.00	46	271	0.002	2	40
Ericsson Radio 4449	87.00	222	1,301	0.012	10	191
RFS APX16DWV-16DWV-S	87.00	119	696	0.006	5	102
Ericsson AIR32 B66Aa	87.00	397	2,324	0.021	18	341
Ericsson Air 3246 B6	87.00	540	3,165	0.028	24	464
Commscope LNX-6514DS	87.00	116	682	0.006	5	100
RFS APXVAARR24_43-U-	87.00	384	2,249	0.020	17	330
Flat Low Profile Pla	87.00	1,500	8,791	0.078	68	1,289
Nokia AirScale RRH 4	80.00	106	527	0.005	4	91
Alcatel-Lucent B25 R	80.00	159	792	0.007	6	137
Alcatel-Lucent B13 R	80.00	173	863	0.008	7	149
Alcatel-Lucent B66A	80.00	201	1,001	0.009	8	173
Raycap RVZDC-6627-PF	80.00	32	159	0.001	1	27
Antel BXA-171063-12C	80.00	77	382	0.003	3	66
Antel BXA-70063-6CF-	80.00	68	339	0.003	3	58
Round Low Profile PI	80.00	1,500	7,469	0.067	58	1,289
Scala 840 10212	75.00	7	29	0.000	0	6
TX RX Systems 421-86	75.00	15	66	0.001	1	13
Stand Offs	75.00	150	659	0.006	5	129
Round Side Arms	70.00	300	1,153	0.010	9	258
RFS APXV18-206517S-C	70.00	79	304	0.003	2	68
Radio/ODU	60.00	30	85	0.001	1	26
Scala 840 10212	60.00	7	19	0.000	0	6
Stand Off	60.00	75	214	0.002	2	64
Radio Waves SP2-4.7	60.00	22	63	0.001	0	19
		28,886	112,235	1.000	867	24,814

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-34.53	-0.87	0.00	-79.82	0.00	79.82	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.049
5.00	-33.23	-0.88	0.00	-75.46	0.00	75.46	1,541.15	408.73	1,115.51	908.35	0.01	-0.02	0.047
10.00	-32.72	-0.89	0.00	-71.05	0.00	71.05	1,517.03	397.17	1,053.29	868.61	0.04	-0.04	0.046
12.00	-31.95	-0.89	0.00	-69.28	0.00	69.28	1,507.06	392.54	1,028.90	852.76	0.05	-0.04	0.045
12.00	-31.95	-0.89	0.00	-69.28	0.00	69.28	1,507.06	392.54	1,028.90	852.76	0.05	-0.04	0.045
15.00	-30.67	-0.90	0.00	-66.60	0.00	66.60	1,491.77	385.60	992.85	829.06	0.09	-0.05	0.044
20.00	-29.42	-0.90	0.00	-62.12	0.00	62.12	1,465.38	374.03	934.19	789.74	0.15	-0.07	0.042
25.00	-28.34	-0.90	0.00	-57.61	0.00	57.61	1,437.85	362.47	877.32	750.71	0.24	-0.09	0.040
29.33	-28.11	-0.91	0.00	-53.70	0.00	53.70	1,413.10	352.45	829.52	717.20	0.33	-0.11	0.038
30.00	-27.17	-0.90	0.00	-53.09	0.00	53.09	1,409.19	350.90	822.24	712.04	0.34	-0.11	0.037
32.83	-26.64	-0.90	0.00	-50.54	0.00	50.54	1,130.07	270.32	634.36	571.86	0.41	-0.12	0.045
35.00	-25.41	-0.90	0.00	-48.58	0.00	48.58	1,119.12	266.46	616.37	558.15	0.46	-0.13	0.044
40.00	-24.20	-0.89	0.00	-44.10	0.00	44.10	1,081.75	257.56	575.90	521.31	0.60	-0.14	0.042
45.00	-23.60	-0.89	0.00	-39.65	0.00	39.65	1,044.38	248.66	536.82	485.73	0.76	-0.16	0.040
47.50	-23.00	-0.88	0.00	-37.43	0.00	37.43	1,025.69	244.21	517.79	468.42	0.84	-0.16	0.038
47.50	-23.00	-0.88	0.00	-37.43	0.00	37.43	1,025.69	244.21	517.79	468.42	0.84	-0.16	0.038
50.00	-21.82	-0.87	0.00	-35.23	0.00	35.23	1,007.01	239.76	499.10	451.41	0.93	-0.17	0.037
55.00	-20.65	-0.85	0.00	-30.90	0.00	30.90	969.64	230.87	462.76	418.35	1.12	-0.19	0.034
60.00	-19.81	-0.83	0.00	-26.66	0.00	26.66	932.27	221.97	427.79	386.54	1.32	-0.20	0.031
62.92	-19.23	-0.82	0.00	-24.23	0.00	24.23	910.47	216.78	408.02	368.57	1.45	-0.21	0.030
65.00	-19.02	-0.82	0.00	-22.52	0.00	22.52	894.90	213.07	394.19	355.99	1.54	-0.21	0.028
65.75	-18.64	-0.81	0.00	-21.91	0.00	21.91	664.38	162.37	305.14	269.42	1.57	-0.22	0.031
67.50	-18.11	-0.80	0.00	-20.49	0.00	20.49	658.03	160.03	296.43	262.98	1.65	-0.22	0.030
67.50	-18.11	-0.80	0.00	-20.49	0.00	20.49	658.03	160.03	296.43	262.98	1.65	-0.22	0.030
70.00	-16.62	-0.76	0.00	-18.50	0.00	18.50	648.81	156.70	284.20	253.83	1.77	-0.23	0.027
75.00	-16.00	-0.74	0.00	-14.72	0.00	14.72	629.79	150.02	260.52	235.80	2.01	-0.24	0.023
77.04	-15.65	-0.73	0.00	-13.22	0.00	13.22	618.65	147.30	251.14	227.38	2.11	-0.24	0.022
77.04	-15.65	-0.73	0.00	-13.22	0.00	13.22	618.65	147.30	251.14	227.38	2.11	-0.24	0.083
80.00	-12.27	-0.61	0.00	-11.07	0.00	11.07	602.07	143.35	237.86	215.29	2.26	-0.24	0.072
85.00	-12.07	-0.61	0.00	-8.01	0.00	8.01	574.04	136.68	216.24	195.61	2.54	-0.28	0.062
87.00	-7.65	-0.43	0.00	-6.80	0.00	6.80	562.83	134.01	207.88	188.00	2.66	-0.29	0.050
90.00	-7.27	-0.41	0.00	-5.52	0.00	5.52	546.01	130.00	195.65	176.87	2.84	-0.30	0.045
95.00	-6.89	-0.39	0.00	-3.46	0.00	3.46	517.98	123.33	176.08	159.08	3.17	-0.32	0.035
100.00	-2.54	-0.16	0.00	-1.49	0.00	1.49	489.95	116.66	157.55	142.23	3.52	-0.34	0.016
100.00	-2.54	-0.16	0.00	-1.49	0.00	1.49	459.24	137.77	149.89	150.79	3.52	-0.34	0.015
105.00	-2.17	-0.14	0.00	-0.69	0.00	0.69	459.24	137.77	149.89	150.79	3.88	-0.34	0.009
110.00	0.00	-0.13	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	4.24	-0.35	0.000

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-23.90	-0.87	0.00	-78.13	0.00	78.13	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.045
5.00	-23.00	-0.88	0.00	-73.78	0.00	73.78	1,541.15	408.73	1,115.51	908.35	0.01	-0.02	0.043
10.00	-22.65	-0.88	0.00	-69.40	0.00	69.40	1,517.03	397.17	1,053.29	868.61	0.04	-0.04	0.042
12.00	-22.11	-0.88	0.00	-67.64	0.00	67.64	1,507.06	392.54	1,028.90	852.76	0.05	-0.04	0.041
12.00	-22.11	-0.88	0.00	-67.64	0.00	67.64	1,507.06	392.54	1,028.90	852.76	0.05	-0.04	0.041
15.00	-21.23	-0.89	0.00	-64.99	0.00	64.99	1,491.77	385.60	992.85	829.06	0.08	-0.05	0.040
20.00	-20.36	-0.89	0.00	-60.56	0.00	60.56	1,465.38	374.03	934.19	789.74	0.15	-0.07	0.038
25.00	-19.62	-0.89	0.00	-56.12	0.00	56.12	1,437.85	362.47	877.32	750.71	0.23	-0.09	0.036
29.33	-19.46	-0.89	0.00	-52.28	0.00	52.28	1,413.10	352.45	829.52	717.20	0.32	-0.10	0.035
30.00	-18.81	-0.89	0.00	-51.68	0.00	51.68	1,409.19	350.90	822.24	712.04	0.33	-0.11	0.034
32.83	-18.44	-0.88	0.00	-49.18	0.00	49.18	1,130.07	270.32	634.36	571.86	0.40	-0.11	0.041
35.00	-17.59	-0.88	0.00	-47.26	0.00	47.26	1,119.12	266.46	616.37	558.15	0.45	-0.12	0.040
40.00	-16.75	-0.87	0.00	-42.87	0.00	42.87	1,081.75	257.56	575.90	521.31	0.59	-0.14	0.037
45.00	-16.34	-0.87	0.00	-38.52	0.00	38.52	1,044.38	248.66	536.82	485.73	0.74	-0.15	0.035
47.50	-15.92	-0.86	0.00	-36.36	0.00	36.36	1,025.69	244.21	517.79	468.42	0.82	-0.16	0.034
47.50	-15.92	-0.86	0.00	-36.36	0.00	36.36	1,025.69	244.21	517.79	468.42	0.82	-0.16	0.034
50.00	-15.11	-0.84	0.00	-34.21	0.00	34.21	1,007.01	239.76	499.10	451.41	0.91	-0.17	0.033
55.00	-14.30	-0.83	0.00	-30.00	0.00	30.00	969.64	230.87	462.76	418.35	1.09	-0.18	0.030
60.00	-13.71	-0.81	0.00	-25.87	0.00	25.87	932.27	221.97	427.79	386.54	1.29	-0.20	0.028
62.92	-13.31	-0.80	0.00	-23.51	0.00	23.51	910.47	216.78	408.02	368.57	1.41	-0.20	0.026
65.00	-13.16	-0.79	0.00	-21.84	0.00	21.84	894.90	213.07	394.19	355.99	1.50	-0.21	0.025
65.75	-12.91	-0.79	0.00	-21.25	0.00	21.25	664.38	162.37	305.14	269.42	1.54	-0.21	0.027
67.50	-12.54	-0.77	0.00	-19.87	0.00	19.87	658.03	160.03	296.43	262.98	1.61	-0.21	0.026
67.50	-12.54	-0.77	0.00	-19.87	0.00	19.87	658.03	160.03	296.43	262.98	1.61	-0.21	0.026
70.00	-11.51	-0.73	0.00	-17.94	0.00	17.94	648.81	156.70	284.20	253.83	1.73	-0.22	0.024
75.00	-11.07	-0.72	0.00	-14.27	0.00	14.27	629.79	150.02	260.52	235.80	1.96	-0.23	0.020
77.04	-10.83	-0.71	0.00	-12.81	0.00	12.81	618.65	147.30	251.14	227.38	2.06	-0.23	0.019
77.04	-10.83	-0.71	0.00	-12.81	0.00	12.81	618.65	147.30	251.14	227.38	2.06	-0.23	0.074
80.00	-8.49	-0.59	0.00	-10.72	0.00	10.72	602.07	143.35	237.86	215.29	2.21	-0.24	0.064
85.00	-8.35	-0.59	0.00	-7.76	0.00	7.76	574.04	136.68	216.24	195.61	2.47	-0.27	0.054
87.00	-5.30	-0.41	0.00	-6.58	0.00	6.58	562.83	134.01	207.88	188.00	2.59	-0.28	0.044
90.00	-5.03	-0.40	0.00	-5.34	0.00	5.34	546.01	130.00	195.65	176.87	2.77	-0.30	0.039
95.00	-4.77	-0.38	0.00	-3.35	0.00	3.35	517.98	123.33	176.08	159.08	3.09	-0.31	0.030
100.00	-1.76	-0.16	0.00	-1.44	0.00	1.44	489.95	116.66	157.55	142.23	3.43	-0.33	0.014
100.00	-1.76	-0.16	0.00	-1.44	0.00	1.44	459.24	137.77	149.89	150.79	3.43	-0.33	0.013
105.00	-1.50	-0.13	0.00	-0.67	0.00	0.67	459.24	137.77	149.89	150.79	3.77	-0.33	0.008
110.00	0.00	-0.13	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	4.13	-0.34	0.000

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C3\_04

1/23/2019 3:05:39 PM

Customer: AT&T MOBILITY

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	24.97	0.00	34.57	0.00	0.00	1878.66	77.04	1.24
0.9D + 1.0W	24.94	0.00	25.90	0.00	0.00	1847.63	77.04	1.21
1.2D + 1.0Di + 1.0Wi	8.64	0.00	68.10	0.00	0.00	649.68	77.04	0.44
1.2D + 1.0Ev + 1.0Eh	0.87	0.00	34.53	0.00	0.00	79.82	77.04	0.08
0.9D - 1.0Ev + 1.0Eh	0.87	0.00	23.90	0.00	0.00	78.13	77.04	0.07
1.0D + 1.0W	6.46	0.00	28.88	0.00	0.00	482.80	77.04	0.33

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Applied (kips)	phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	12.0	(4) SOL-#20 All Thre	384.9	15.0	16.8	0.0	12.0	0	0	0.0	12.0	0	0	340.5	315.5	1.079
12.0	47.5	(4) SOL-#20 All Thre	432.1	13.0	16.8	0.0	12.0	0	0	0.0	12.0	0	0	316.2	330.5	0.957
47.5	67.5	(4) SOL-#20 All Thre	491.8	14.8	16.8	0.0	12.0	0	0	0.0	12.0	0	0	215.6	330.5	0.652
67.5	77.0	(4) SOL-#20 All Thre	491.8	14.8	16.8	100.7	12.0	9	7	0.0	12.0	0	0	148.2	330.5	0.449

Site Name: Hrfr-South, CT  
 Site Number: 302481  
 Engineering Number: OAA739695  
 Engineer: adam.pittman  
 Date: 1/23/2019

**Design Base Loads (Factored) - Design per TIA-222-G Standard**

Moment (Overturning) ( $M_u$ ): 1878.7 k-ft  
 Shear ( $V_u$ ): 25.0 k  
 Axial ( $P_u$ ): 34.6 k

Tower Type (GT / SST / MP):

MP

Length / Width of Block:	6.0	9.0 ft
Thickness of Block:	6.0	ft
Block Height Above Ground:	0.5	ft
Depth Below Ground Surface to Water Table (w):	99.0	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil:	125.0	pcf
Unit Weight of Water:	62.4	pcf
Ultimate Compressive Bearing Pressure:	10000	psf
Capacity Increase (Due to Transient Loads):	1.00	
Pullout Angle:	30.0	degrees
Rod Diameter:	1.00	in
Rod Ultimate Strength:	105	ksi
Original Rod Net Area:	0.76	in <sup>2</sup>
New Rod Net Area:	0.78	in <sup>2</sup>
Number of Rods:	18	
Diameter of Cored Hole:	2.00	in
Ultimate Grout / Rock Interface Bond Strength:	200	psi
Ultimate Grout / Rock Anchor Interface Bond Strength:	600	psi
Overall Rod Embedment Length:	72	in
Rod Exposure Above Lock Off Nut in Foundation:	60	in
Rod Embedment Circle:	96	in
Free Stress Length:	0	in
Soil / Concrete Friction Coefficient:	0.44	
Rock Anchor Design Plastic or Elastic:	Elastic	
Ignore Pullout Weight Resistance (Y/N):	Y	
Volume of Concrete:	324.0	ft <sup>3</sup>
Compressive Bearing Resistance:	424.1	k
Soil Strength Reduction Factor ( $\phi_s$ ):	0.75	
Factored Nominal Moment Capacity per Leg ( $\phi_s M_n$ ):	2096.4	k
Factored Nominal Uplift Capacity per Leg ( $\phi_s T_n$ ):	1147.0	k
Factored Nominal Compressive Capacity per Leg ( $\phi_s P_n$ ):	318.1	k
Factored Nominal Shear Capacity per Leg ( $\phi_s V_n$ ):	660.0	k
$M_u$ :	2028.5	k-ft
$T_u$ :	0.0	k
$P_u$ :	43.5	k
$V_u$ :	25.0	k
$T_u / \phi_s T_n + M_u / \phi_s M_n$ :	<b>0.97</b>	<b>Result: OK</b>
$P_u / \phi_s P_n$ :	<b>0.14</b>	<b>Result: OK</b>
$V_u / \phi_s V_n$ :	<b>0.04</b>	<b>Result: OK</b>

## Caisson Strength Capacity

Concrete Compressive Strength ( $f'_c$ ):	3000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in <sup>2</sup>
# of Vertical Steel Rebars:	78 Minimum # of vertical rebar met
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in <sup>2</sup>
Horizontal Tie / Stirrup Spacing:	11.0 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	60 ksi
Rod Bearing Plate Diameter:	8.0 in
Rod Bearing Plate Thickness:	1.0 in
Anchor Bearing Plate Yield Strength:	36 ksi
Anchor Rod Nut Diameter:	2.02 in
Rebar Cage Diameter:	82.0 in
Strength Bending/Tension Reduction Factor ( $\phi_B$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_V$ ):	0.75 ACI318-05 - 9.3.2.3
Strength Compression/Bearing Reduction Factor ( $\phi_{P/B}$ ):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	2028.5 k-ft
Factored Nominal Moment Capacity ( $\phi_B M_n$ ):	21953.2 k-ft - ACI318-05 - 10.2
$M_u/\phi_B M_n$ :	<b>0.09 Result: OK</b>
Design Shear ( $V_u$ ):	505.2 k
Factored Nominal Shear Capacity ( $\phi_V V_n$ ):	502.8 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$ :	<b>1.00 Result: Acceptable Overstress</b>
Design Tension ( $T_u$ ):	0.0 k
Factored Nominal Tension Capacity ( $\phi_T T_n$ ):	6570.7 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$ :	<b>0.00 Result: OK</b>
Design Compression ( $P_u$ ):	34.6 k
Factored Nominal Compression Capacity ( $\phi_P P_n$ ):	6161.7 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$ :	<b>0.01 Result: OK</b>



## Base Plate & Anchor Rod Analysis

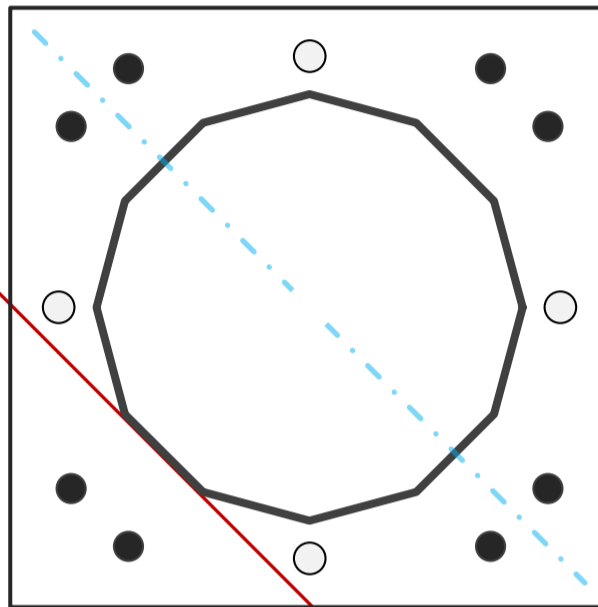
Pole Dimensions		
Number of Sides	12	-
Diameter	30	in
Thickness	0.25	in
Orientation Offset		°

Base Reactions		
Moment, Mu	1878.7	k-ft
Axial, Pu	34.6	k
Shear, Vu	25.0	k
Neutral Axis	135	°

Report Capacities		
Component	Capacity	Result
Base Plate	86%	Pass
Anchor Rods	44%	Pass
Dwyidag	64%	Pass

Base Plate		
Shape	Square	-
Width	44	in
Thickness	2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	0	in
Orientation Offset		°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	1489.9	k
Bending Stress, φMn	1726.7	k

Dwyidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, φ	2.5	in
Bracket Type	Angle	-
Circle	36.88	in
Orientation Offset	0	°
Applied Force, Pu	249.4	k
Dwyidag Bar, φPn	392.7	k



Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, φ	2 1/4	in
Bolt Circle	44	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	111.7	k
Anchor Rods, φPn	259.8	k



# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	25.0	813.6	0.43
Anchor Rod Forces	25.0	813.6	0.43
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1065.0	0.57
Stiffener Forces	0.0	0.0	0.00

## Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in <sup>2</sup>	in <sup>2</sup>	in <sup>4</sup>	#	in <sup>4</sup>
Pole	23.0996	1.9250	0.0403		2556.06
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		3345.94
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	44	in
Thickness, t	2	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	32.187	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	44	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	111.7	k
Applied Shear, Vu	0.8	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.430	OK
Interaction Capacity	0.436	OK

External Base Plate		
Chord Length AA	31.975	in
Additional AA	0.000	in
Section Modulus, Z	31.975	in <sup>3</sup>
Applied Moment, Mu	1489.9	k-ft
Bending Capacity, φMn	1726.7	k-ft
Capacity, Mu/φMn	0.863	OK
Chord Length AB	30.908	in
Additional AB	0.000	in
Section Modulus, Z	30.908	in <sup>3</sup>
Applied Moment, Mu	1370.7	k-ft
Bending Capacity, φMn	1669.0	k-ft
Capacity, Mu/φMn	0.821	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Dywidag Reinforcement		
Dywidag Quantity, N	4	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	36.88	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	249.4	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.635	OK

Base/Flange Plate	Plate Type	<b>Flange @ 100.0 ft</b>
	Pole Diameter	12.75 in
	Pole Thickness	0.375 in
	Plate Diameter	28.5 in
	Plate Thickness	1.5 in
	Plate Fy	36 ksi
	Weld Length	0.25 in
	$\phi_s$ Resistance	60.83 k-in
	Applied	24.91 k-in
	Stiffeners	#

Code Rev. **G**

Date 1/23/2019  
 Engineer adam.pittman  
 Site # 302481  
 Carrier AT&T MOBILITY

Moment 29.1 k-ft  
 Axial 2.5 k

Required Flange Thickness:

**0.96 in** OK

Bolts	#	12
	Bolt Circle	26 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.0625 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	$\phi_s$ Resistance	54.52 k
	Applied	4.26 k
Reinforcement	#	0
Extra Bolts	#	0

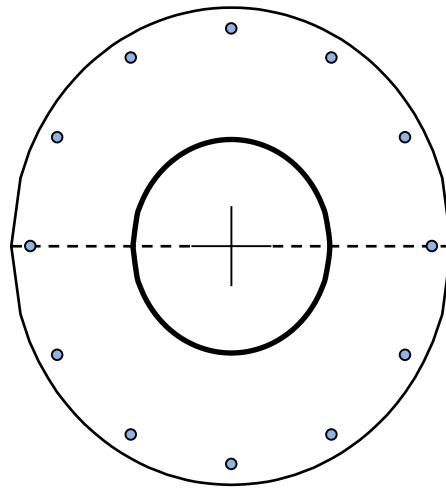


Plate Stress Ratio:  
**0.41** (Pass)

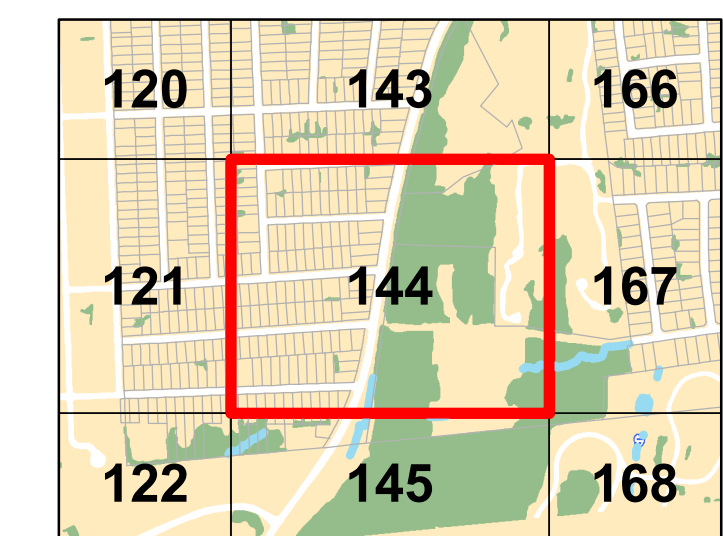
Bolt Stress Ratio:  
**0.08** (Pass)



# City of Hartford Assessor Map

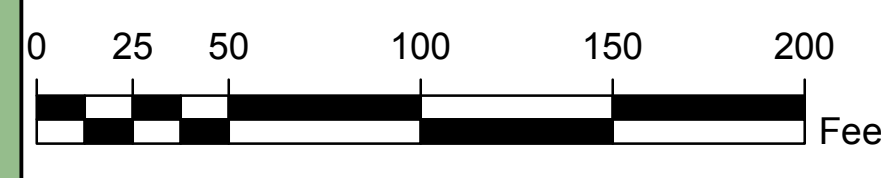
### Legend

- Parcel ID
- Duplicate Parcel ID
- Exempt ID
- Building ID
- Parcels
- Tax Map Grid
- City Boundary Line
- Building
- Foundation
- Greenhouse
- Cement Pad
- Deck
- Patio
- Pool
- Tunnel
- Trail
- Railroad
- Fence
- Ruins
- Coniferous Tree
- Deciduous Tree
- Hedge and Brush
- Treeline
- 161507165 Parcel ID
- 7500 sf or Ac Parcel Area
- 88 Street Address
- 11-19 Condo Lot Range
- 11D Condo Unit
- Driveway and Parking Lot Paved
- Driveway and Parking Lot Unpaved
- Sidewalk
- Stairs and Ramps
- Runway
- Bridge
- Road Edge Paved
- Road Edge Unpaved
- Wharf and Pier
- Tank
- Golf Course
- Fairway
- Green
- Sand Trap
- Tea
- Swamp
- Water
- River or Stream



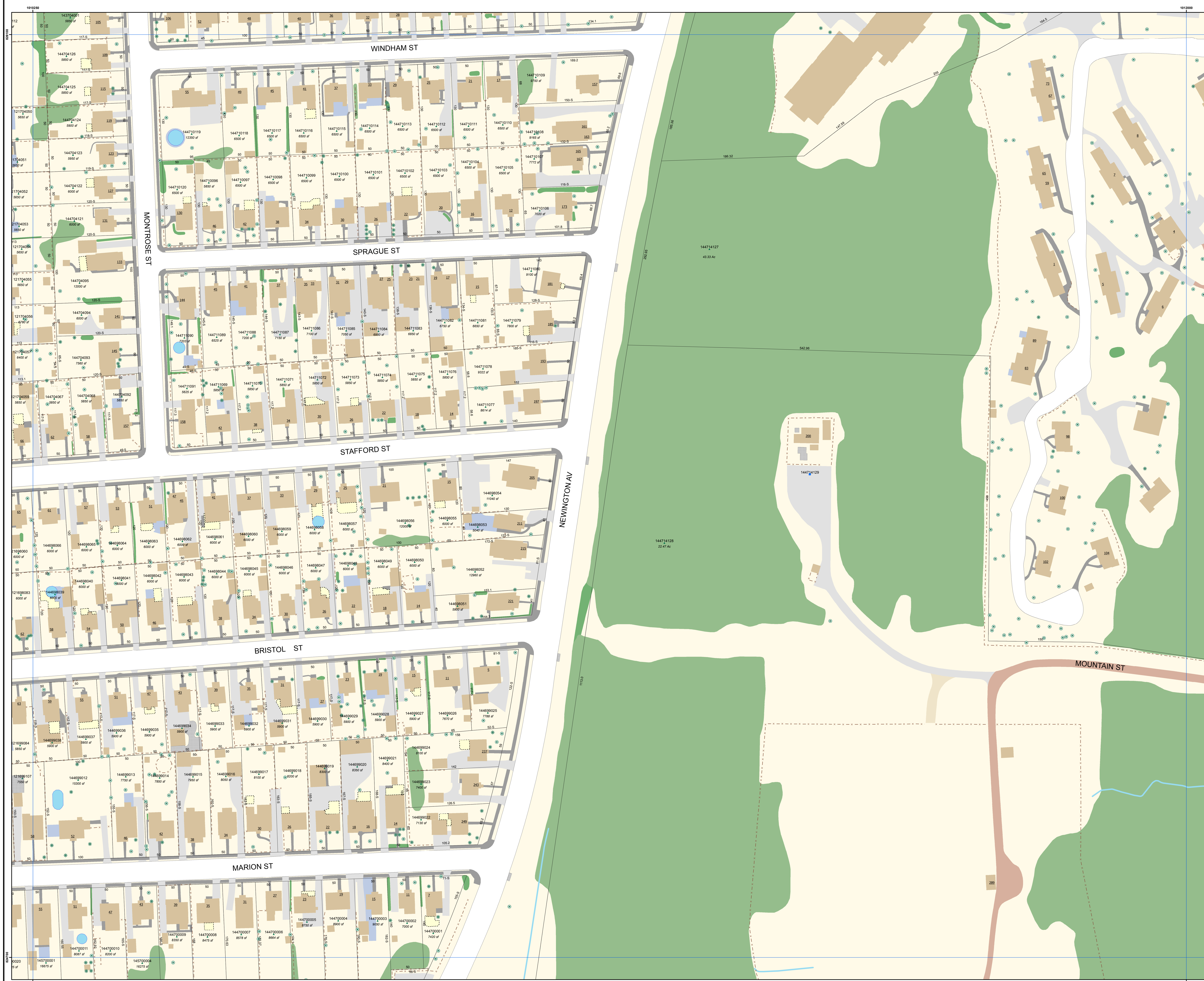
**DISCLAIMER:**  
 The planimetric information depicted on this map was compiled by The Sanborn Map Company and is based on an aerial flight performed in April 2015. In addition, the City's GIS staff has been updating limited planimetric features based on information on file in various City departments. The parcel and property information depicted on this map has been compiled from recorded deeds, maps, assessor records, and other public records on file in the City of Hartford. The intent of this map is to depict a graphical representation of real property information relative to the planimetric features for the City of Hartford and is subject to change as a more accurate survey may disclose.  
 The City of Hartford and the mapping company assume no legal responsibility for the information contained in this data.  
 THIS MAP IS NOT TO BE USED FOR THE TRANSFER OF PROPERTY.  
 Horizontal Datum: Connecticut State Plane Coordinates (NAD 83 feet)

Date: October 16, 2016



1 inch = 50 feet

## Map Sheet 144



# Unofficial Property Record Card - Hartford, CT

## General Property Data

Parcel ID 144-714-129	Account Number
Prior Parcel ID	
Property Owner SPRINGWHICH CELLULAR TOWER HOLDINGS LLC	Property Location 289-H MOUNTAIN ST
Mailing Address 909 CHESTNUT, RM 36-M-1 AT & T MOBILITY LLC City ST LOUIS	Property Use OTHER UTILTY Most Recent Sale Date 7/7/2003 Legal Reference 04797-0166 Grantor METROPOLITAN DISTRICT BUREAU OF
Mailing State MO Zip 63101	Sale Price 0
ParcelZoning CAMP	Land Area 0.000 acres

## Current Property Assessment

Card 1 Value	Building Value 18,970	Xtra Features Value 0	Land Value 0	Total Value 18,970
--------------	-----------------------	-----------------------	--------------	--------------------

## Building Description

Building Style MFG/PROCESS	Foundation Type Concrete	Flooring Type COMBINATION
# of Living Units 0	Frame Type Wood Frame	Basement Floor N/A
Year Built 1984	Roof Structure FLAT	Heating Type N/A
Building Grade Good	Roof Cover Membrane	Heating Fuel N/A
Building Condition N/A	Siding Brick	Air Conditioning 0%
Finished Area (SF) 682	Interior Walls DRYWALL	# of Bsmt Garages 0
Number Rooms 0	# of Bedrooms 0	# of Full Baths 0
# of 3/4 Baths 0	# of 1/2 Baths 0	# of Other Fixtures 0

## Legal Description

## Narrative Description of Property

This property contains 0.000 acres of land mainly classified as OTHER UTILTY with a(n) MFG/PROCESS style building, built about 1984 , having Brick exterior and Membrane roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

## Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted.



**AMERICAN TOWER®**  
CORPORATION

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## Post Modification Structural Analysis Report

**Structure** : 110 ft Monopole  
**ATC Site Name** : Hrfr - South, CT  
**ATC Site Number** : 302481  
**Engineering Number** : OAA739695\_C4\_07  
**Proposed Carrier** : AT&T MOBILITY  
**Carrier Site Name** : Hartford South  
**Carrier Site Number** : CT1011  
**Site Location** : 289 Mountain Street  
Hartford, CT 06106-4121  
41.726600,-72.708200  
**County** : Hartford  
**Date** : March 25, 2019  
**Max Usage** : 99%  
**Result** : Pass

Prepared By:  
Adam Pittman  
Structural Engineer II

Reviewed By:

*Adam Pittman*

**COA: PEC.0001553**



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Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 110 ft monopole to reflect the change in loading by AT&T MOBILITY.

## Supporting Documents

<b>Tower Drawings</b>	Mapped by Smith Cullum Site #CT-0017(A), dated June 6, 2001
<b>Foundation Drawing</b>	Girard & Co Engineering Job #39902, dated April 29, 1988
<b>Geotechnical Report</b>	TEP Project #071162.01, dated July 23, 2007
<b>Modifications</b>	ATC Project #42719232, dated January 12, 2009 ATC Project #43595333, dated July 1, 2009 ATC Project #43930034, dated September 15, 2009 ATC Project #44662232, dated March 30, 2010 ATC Job #OAA739695_C6_06, dated February 25, 2019(Pending)

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	118 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1"1/2 radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 3
<b>Topographic Category:</b>	4
<b>Crest Height (H):</b>	36 ft
<b>Spectral Response:</b>	$S_s = 0.18, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report. If the pending modifications cited in the supporting documents table are not completed, the results of this analysis are no longer valid, and AT&T Mobility should contact American Tower's Site Manager for further direction on how to proceed.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
112.0	3	Nokia 2.5G MAA - AAHC(64T64R)	T-Arm	(3) 1 5/8" (1.63"-41.3mm) Fiber (2) 2" conduit (3) 1/2" Coax	CLEARWIRE CORPORATION
	3	Commscope NNVV-65B-R4			
	6	Alcatel-Lucent RRH2x50-08			
	1	Generic 12" x 12" Junction Box			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
110.0	3	DragonWave Horizon Compact			
	1	DragonWave A-ANT-23G-1-C			
	2	DragonWave A-ANT-11G-2.5-C			
	1	Generic 12" x 12" Junction Box			
102.0	2	CCI OPA-65R-LCUU-H6			
	1	CCI OPA-65R-LCUU-H8 (92.7")			
	2	Quintel QS66512-2			
	3	Powerwave Allgon 7770.00			
	3	Ericsson RRUS-32 (77 lbs)			
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS-11 (50 lbs.)			
	2	Raycap DC6-48-60-18-8F(32.8 lbs)			
	6	Powerwave Allgon LGP21401			
	1	CCI TPA-65R-LCUUUU-H8			
	6	Powerwave Allgon 7020.00 Dual Band RET			
90.0	3	Kathrein Scala Smart Bias Tee	Low Profile Platform	(3) 1 1/4" (1.25"-31.8mm) Fiber (18) 1 5/8" Coax	T-MOBILE
	3	RFS APXVAARR24_43-U-NA20			
	3	Ericsson Air 3246 B66			
	3	Ericsson AIR32 B66Aa/B2a			
	3	Ericsson Radio 4449 B12,B71			
	3	Ericsson KRY 112 489/1			
	3	Ericsson KRY 112 144/1			
80.0	3	Nokia AirScale RRH 4T4R B5 160W AHCA	T-Arm	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Alcatel-Lucent B25 RRH4x30			
	6	Commscope JAHH-65B-R3B (63.3 lb)			
	4	Amphenol Antel BXA-70063-6CF-EDIN-2			
	6	Amphenol Antel BXA-171063-12CF-EDIN-5			
	1	Raycap RVZDC-6627-PF-48			
	3	Alcatel-Lucent B66A RRH 4x45			
3	Alcatel-Lucent B13 RRH4x30-4R				
77.0	1	Scala 840 10212	Flush	(1) 7/8" Coax	TOWN OF WEST HARTFORD
	1	TX RX Systems 421-86A-10-18-12-N			
70.0	3	RFS APXV18-206517S-C	Leg	(6) 1 5/8" Coax	METRO PCS INC
60.0	1	Generic Radio/ODU	Leg/Flush	(2) 0.41" (10.3mm) LMR-400 (1) 1/4" Coax (1) 7/8" Coax	TOWN OF WEST HARTFORD
	1	Scala 840 10212			
	1	Radio Waves SP2-4.7 w/ Radome			
	1	Radio Waves SP2-4.7			





**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
102.0	6	Kaelus DBCT108F1V92-1	Sector Frame	(2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	1	Raycap DC6-48-60-0-8F (24" Height)			
	3	Ericsson RRUS 4426 B66			
	3	Ericsson RRUS 4478 B5			
	3	Ericsson RRUS 4478 B14			
	2	Kathrein Scala 80010965			
	1	Kathrein Scala 80010966			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

### Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	45%	Pass
Shaft	91%	Pass
Base Plate	89%	Pass
Flanges	52%	Pass
Reinforcement	95%	Pass

### Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,938.0	99%
Axial (Kips)	92.6	15%
Shear (Kips)	26.2	4%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

### Deflection and Sway\*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
110.0	DragonWave A-ANT-23G-1-C	CLEARWIRE CORPORATIO	1.695	1.641
	DragonWave A-ANT-11G-2.5-C			
102.0	Kaelus DBCT108F1V92-1	AT&T MOBILITY	1.467	1.614
	Raycap DC6-48-60-0-8F (24" Height)			
	Ericsson RRUS 4426 B66			
	Ericsson RRUS 4478 B5			
	Ericsson RRUS 4478 B14			
	Kathrein Scala 80010965			
Kathrein Scala 80010966				
60.0	Radio Waves SP2-4.7 w/ Radome	TOWN OF WEST HARTFOR	0.517	1.019
	Radio Waves SP2-4.7			

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



## Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

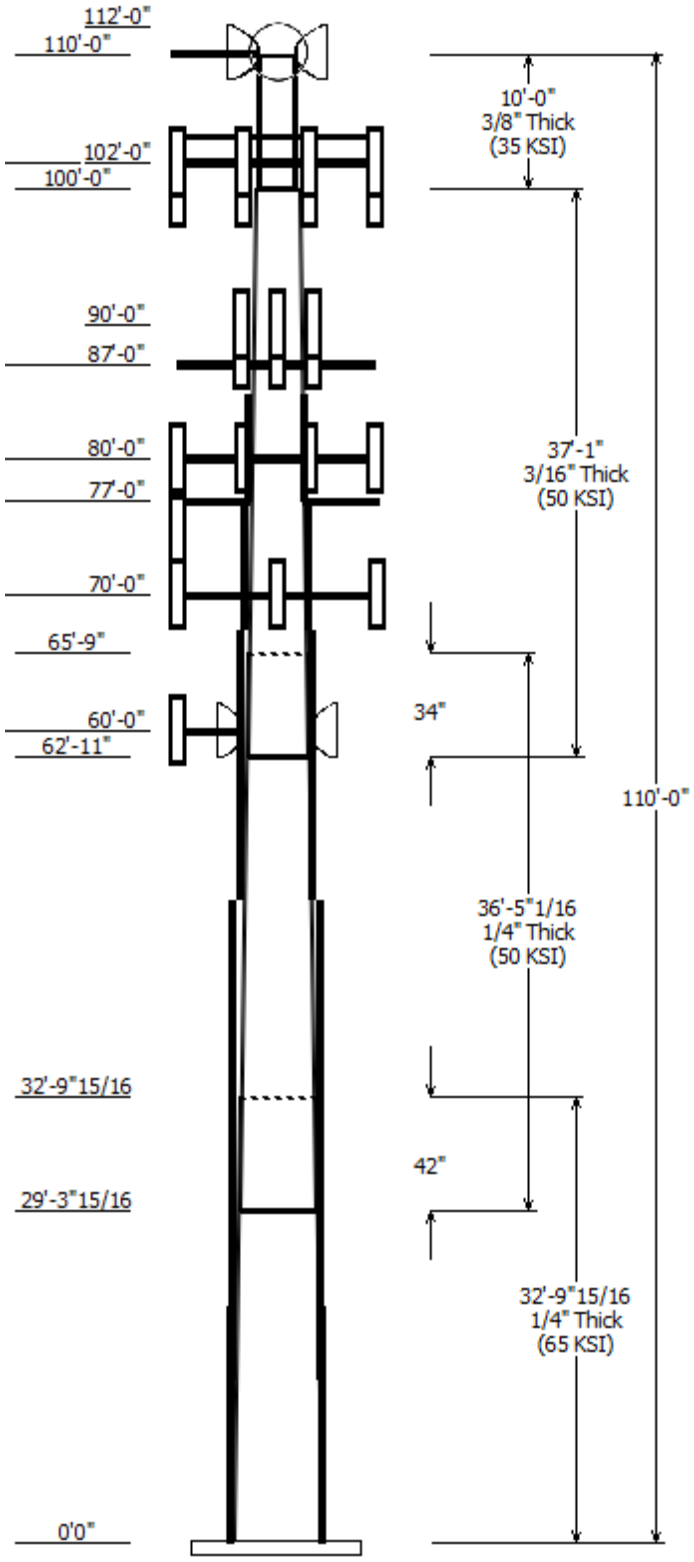
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

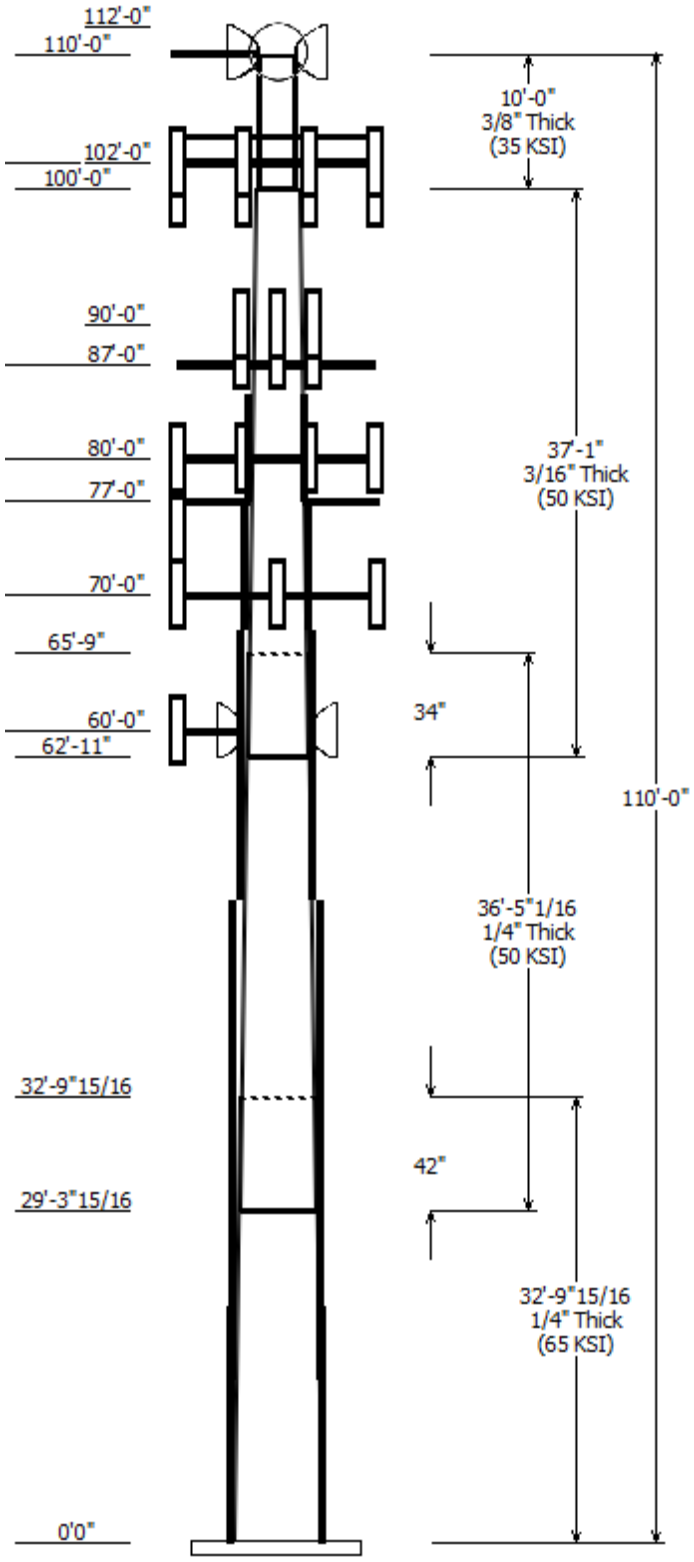
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Job Information	
Pole : 302481	Code: ANSI/TIA-222-H
Location : Hrfr - South, CT	
Description : 110 ft ITT Meyer Monopole	
Client : AT&T MOBILITY	Risk Category : II
Shape : 12 Sides	Exposure : B
Height : 110.00 (ft)	Topo Method : Method 3
Base Elev (ft): 0.00	Topographic Category : 4
Taper: 0.16400@in/ft)	

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Joint Type	Overlap Length (in)	Steel Grade
		Across Flats Top	Across Flats Bottom			
1	32.830	24.62	30.00	0.250	0.000	12 Sides 65
2	36.420	19.73	25.69	0.250 Slip Joint	42.000	12 Sides 50
3	37.083	14.50	20.57	0.188 Slip Joint	34.000	12 Sides 50
4	10.000	12.75	12.75	0.375 Butt Joint	0.000	Round 35

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
112.000	112.000	3	Commscope NNVV-65B-R4
112.000	112.000	3	Nokia 2.5G MAA -
112.000	112.000	3	Alcatel-Lucent 1900 MHz 4X45
112.000	112.000	6	Alcatel-Lucent RRH2x50-08
112.000	112.000	1	Generic 12" x 12" Junction Box
110.000	110.000	1	Generic Flat Side Arm
110.000	110.000	2	DragonWave A-ANT-11G-2.5-C
110.000	110.000	1	DragonWave A-ANT-23G-1-C
110.000	110.000	3	DragonWave Horizon Compact
102.000	102.000	3	Generic Round Sector Frame
102.000	102.000	1	Kathrein Scala 80010966
102.000	102.000	2	Kathrein Scala 80010965
102.000	100.000	1	CCI TPA-65R-LCUUUU-H8
102.000	100.000	1	CCI OPA-65R-LCUU-H8 (92.7")
102.000	100.000	2	CCI OPA-65R-LCUU-H6
102.000	100.000	2	Quintel QS66512-2
102.000	100.000	3	Powerwave Allgon 7770.00
102.000	100.000	3	Ericsson RRUS-32 (77 lbs)
102.000	100.000	3	Ericsson RRUS 32 B2
102.000	100.000	3	Ericsson RRUS-11 (50 lbs.)
102.000	102.000	3	Ericsson RRUS 4478 B14
102.000	102.000	3	Ericsson RRUS 4478 B5
102.000	102.000	3	Ericsson RRUS 4426 B66
102.000	100.000	2	Raycap DC6-48-60-18-8F(32.8 lb
102.000	102.000	1	Raycap DC6-48-60-0-8F (24" Hei
102.000	100.000	6	Powerwave Allgon LGP21401
102.000	102.000	6	Kaelus DBCT108F1V92-1
102.000	100.000	6	CCI TPX-070821
102.000	102.000	6	Powerwave Allgon 7020.00
90.000	90.000	3	RFS APXVAARR24_43-U-NA20
90.000	90.000	3	Ericsson Air 3246 B66
90.000	86.000	3	Ericsson AIR32 B66Aa/B2a
90.000	90.000	3	Ericsson Radio 4449 B12,B71
90.000	90.000	3	Ericsson KRY 112 489/1
90.000	90.000	3	Ericsson KRY 112 144/1
90.000	86.000	3	Kathrein Scala Smart Bias Tee
87.000	87.000	1	Flat Low Profile Platform
80.000	80.000	1	Round Low Profile Platform
80.000	80.000	6	Commscope JAHH-65B-R3B
80.000	80.000	4	Amphenol Antel BXA-70063-
80.000	80.000	6	Amphenol Antel BXA-171063-
80.000	80.000	1	Raycap RVZDC-6627-PF-48
80.000	80.000	3	Alcatel-Lucent B66A RRH 4x45
80.000	80.000	3	Alcatel-Lucent B13 RRH4x30-4R



80.000	80.000	3	Alcatel-Lucent B25 RRH4x30
80.000	80.000	3	Nokia AirScale RRR 4T4R B5 160
77.000	77.000	2	Stand Offs
77.000	75.000	1	TX RX Systems 421-86A-10-18-
77.000	75.000	1	Scala 840 10212
70.000	70.000	3	Round Side Arms
70.000	70.000	3	RFS APXV18-206517S-C
60.000	60.000	1	Stand Off
60.000	60.000	1	Radio Waves SP2-4.7
60.000	60.000	1	Radio Waves SP2-4.7 w/
60.000	60.000	1	Scala 840 10212
60.000	60.000	1	Generic Radio/ODU

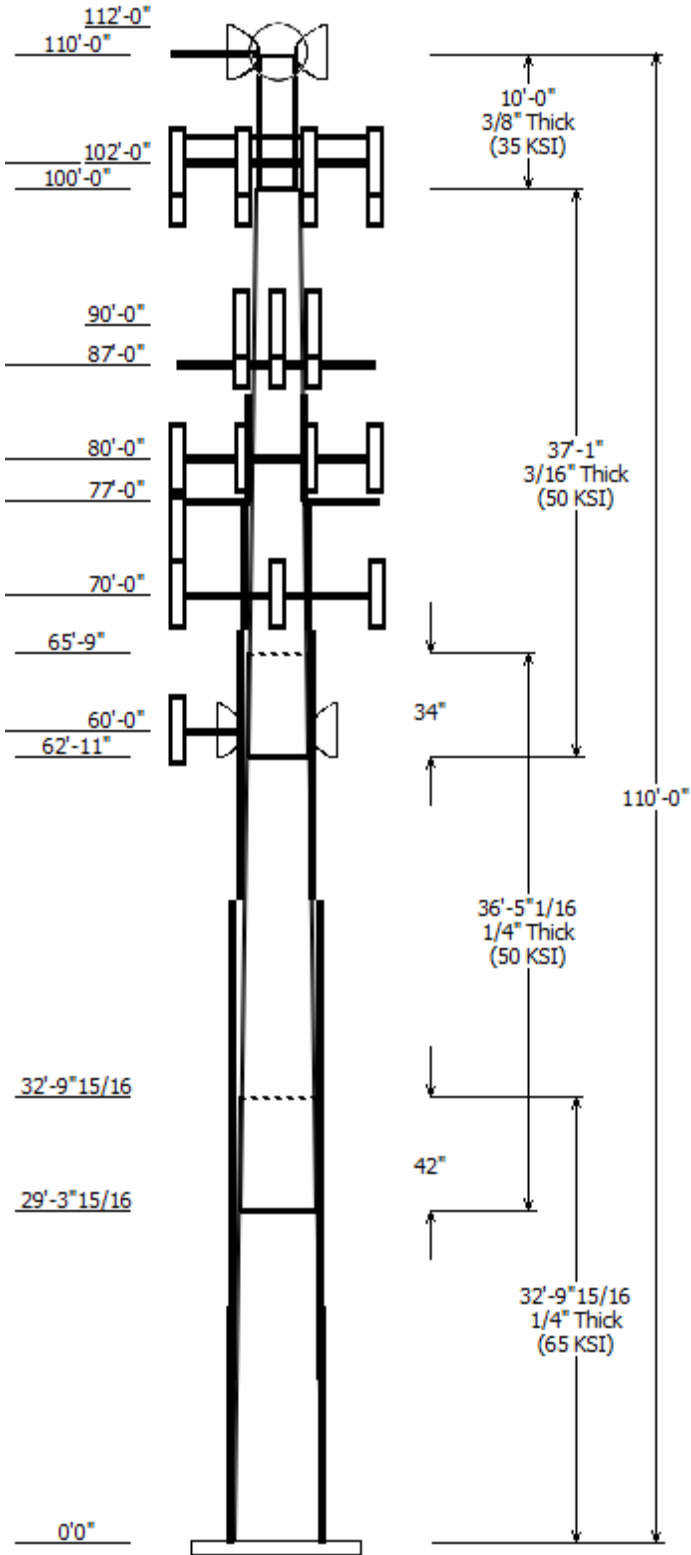
Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	60.000	0.41" (10.3mm)	Yes
0.000	60.000	1/4" Coax	No
0.000	60.000	7/8" Coax	Yes
0.000	70.000	1 5/8" Coax	Yes
0.000	77.000	7/8" Coax	Yes
0.000	80.000	1 5/8" Coax	Yes
0.000	80.000	1 5/8" Hybriflex	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	90.000	1 1/4" (1.25"-	No
0.000	90.000	1 5/8" Coax	Yes
0.000	102.0	0.39" (10mm)	No
0.000	102.0	0.78" (19.7mm) 8	No
0.000	102.0	0.78" (19.7mm) 8	No
0.000	102.0	1 5/8" Coax	Yes
0.000	102.0	1 5/8" Coax	Yes
0.000	102.0	1 5/8" Coax	No
0.000	102.0	3" conduit	No
0.000	110.0	1/2" Coax	Yes
0.000	110.0	2" conduit	No
0.000	112.0	1 5/8" (1.63"-	No
0.000	112.0	2" conduit	No

Load Cases	
1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

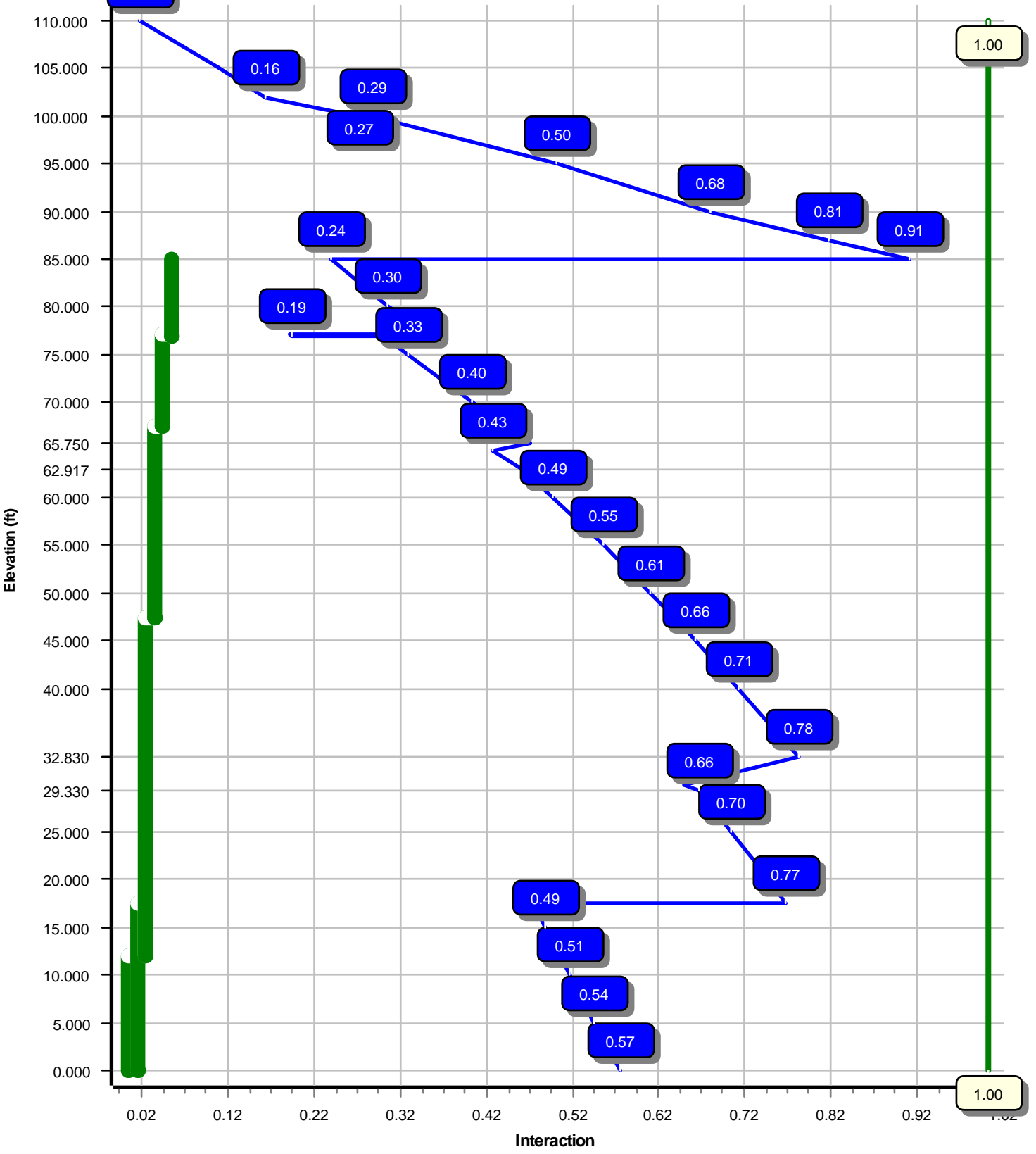
Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	1938.02	26.17	39.73
0.9D + 1.0W	1909.81	26.14	29.78
1.2D + 1.0Di + 1.0Wi	707.68	9.28	92.55
1.2D + 1.0Ev + 1.0Eh	80.81	0.92	37.73
0.9D - 1.0Ev + 1.0Eh	79.49	0.92	26.25
1.0D + 1.0W	498.76	6.80	33.16

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

1.0D + 1.0W	60.00	6.200	1.019
1.0D + 1.0W	60.00	6.200	1.019
1.0D + 1.0W	110.00	20.339	1.641
1.0D + 1.0W	110.00	20.339	1.641



Load Case : 1.2D + 1.0W  
Max Ratio 90.94% at 85.0 ft



Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	110
Code :	ANSI/TIA-222-H	Base Diameter (in) :	30.00
Shape :	12 Sides, Sect 4: Round	Top Diameter (in) :	12.75
Pole Type :	Custom	Taper (in/ft) :	0.164
Pole Manufacturer :	ITT Meyer	Rotation (deg) :	0.00
Kd :	0.95	Ke :	0.99

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	118 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 3	Operational Wind Speed:	60 mph
Topographic Category:	4	Design Ice Thickness:	1.50 in
Crest Height:	36 ft	HMSL:	286.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.27		
$T_L$ (sec):	6	$p$ :	1
$S_s$ :	0.180	$S_1$ :	0.060
$F_a$ :	1.600	$F_v$ :	2.400
$S_{ds}$ :	0.192	$S_{d1}$ :	0.096
		$C_s$ :	0.030
		$C_s$ Max:	0.030
		$C_s$ Min:	0.030

Load Cases

1.2D + 1.0W	118 mph with No Ice
0.9D + 1.0W	118 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph



Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	32.830	0.2500	65		0.00	2,434	30.00	0.00	23.95	2705.5	29.47	120.00	24.62	32.83	19.62	1487.9	23.71	98.50	0.163750
2-12	36.420	0.2500	50	Slip	42.00	2,241	25.69	29.33	20.49	1693.2	24.86	102.79	19.73	65.75	15.68	759.9	18.47	78.93	0.163750
3-12	37.083	0.1875	50	Slip	34.00	1,322	20.57	62.92	12.31	652.8	26.72	109.72	14.50	100.00	8.64	225.9	18.04	77.33	0.163750
4-R	10.000	0.3750	35	Butt	0.00	496	12.75	100.00	14.58	279.3	0.00	34.00	12.75	110.00	14.58	279.3	0.00	34.00	0.000000
Shaft Weight						6,493													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
112.00	Generic 12" x 12" Junction Box	1	0.80	0.000	10.00	1.200	0.50	50.59	1.907	0.50
112.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.700	0.50	110.65	2.540	0.50
112.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.320	0.50	138.53	3.372	0.50
112.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.80	0.000	103.60	4.200	0.50	213.45	5.506	0.50
112.00	Commscope NNVV-65B-R4	3	0.80	0.000	77.40	12.270	0.64	322.25	15.002	0.64
110.00	DragonWave Horizon Compact	3	0.80	0.000	10.60	0.720	0.50	32.51	1.274	0.50
110.00	DragonWave A-ANT-23G-1-C	1	1.00	0.000	15.00	1.610	1.00	49.43	2.348	1.00
110.00	Generic Flat Side Arm	1	1.00	0.000	560.00	8.500	1.00	1,016.19	15.424	1.00
110.00	DragonWave A-ANT-11G-2.5-C	2	1.00	0.000	47.60	8.670	1.00	220.25	10.353	1.00
102.00	Powerwave Allgon 7020.00 Dual	6	0.80	0.000	2.20	0.340	0.50	12.11	0.738	0.50
102.00	CCI TPX-070821	6	0.80	-2.000	7.50	0.470	0.50	19.26	0.936	0.50
102.00	Kaelus DBCT108F1V92-1	6	0.80	0.000	13.90	0.630	0.50	38.31	1.157	0.50
102.00	Powerwave Allgon LGP21401	6	0.80	-2.000	14.10	1.100	0.50	38.30	1.790	0.50
102.00	Raycap DC6-48-60-0-8F (24"	1	0.80	0.000	32.80	1.470	0.50	136.69	2.147	0.50
102.00	Raycap DC6-48-60-18-8F(32.8	2	0.80	-2.000	32.80	1.470	0.50	92.64	2.147	0.50
102.00	Ericsson RRUS 4426 B66	3	0.80	0.000	48.40	1.650	0.50	91.70	2.474	0.50
102.00	Ericsson RRUS 4478 B5	3	0.80	0.000	59.90	1.840	0.50	113.53	2.709	0.50
102.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.020	0.50	118.93	2.935	0.50
102.00	Ericsson RRUS-11 (50 lbs.)	3	0.80	-2.000	50.00	2.570	0.50	116.12	3.588	0.50
102.00	Ericsson RRUS 32 B2	3	0.80	-2.000	53.00	2.740	0.50	124.34	3.873	0.50
102.00	Ericsson RRUS-32 (77 lbs)	3	0.80	-2.000	77.00	3.310	0.50	171.34	4.554	0.50
102.00	Powerwave Allgon 7770.00	3	0.80	-2.000	35.00	5.510	0.65	164.90	6.529	0.65
102.00	Quintel QS66512-2	2	0.80	-2.000	111.00	8.130	0.74	304.30	10.833	0.74
102.00	CCI OPA-65R-LCUU-H6	2	0.80	-2.000	73.00	9.660	0.66	270.42	12.349	0.66
102.00	CCI OPA-65R-LCUU-H8 (92.7")	1	0.80	-2.000	88.00	12.750	0.67	328.84	16.239	0.67
102.00	CCI TPA-65R-LCUUUU-H8	1	0.80	-2.000	81.60	13.300	0.69	350.08	16.922	0.69
102.00	Kathrein Scala 80010965	2	0.80	0.000	97.60	13.810	0.72	356.20	16.768	0.72
102.00	Generic Round Sector Frame	3	0.75	0.000	300.00	14.400	0.67	656.79	30.456	0.67
102.00	Kathrein Scala 80010966	1	0.80	0.000	114.60	17.360	0.69	426.07	20.938	0.69
90.00	Kathrein Scala Smart Bias Tee	3	0.80	-4.000	3.30	0.080	0.50	6.46	0.280	0.50
90.00	Ericsson KRY 112 144/1	3	0.80	0.000	11.00	0.350	0.50	21.35	0.739	0.50
90.00	Ericsson KRY 112 489/1	3	0.80	0.000	15.40	0.560	0.50	32.31	1.066	0.50
90.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.640	0.50	127.85	2.452	0.50
90.00	Ericsson AIR32 B66Aa/B2a	3	0.80	-4.000	132.20	6.510	0.71	285.70	8.617	0.71
90.00	Ericsson Air 3246 B66	3	0.80	0.000	180.00	7.940	0.69	2,780.69	10.121	0.69
90.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.240	0.63	505.47	23.807	0.63
87.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,122.12	44.432	1.00
80.00	Nokia AirScale RRH 4T4R B5	3	0.80	0.000	35.30	1.290	0.50	72.89	2.012	0.50
80.00	Alcatel-Lucent B25 RRH4x30	3	0.80	0.000	53.00	2.120	0.50	110.71	3.069	0.50
80.00	Alcatel-Lucent B13 RRH4x30-4R	3	0.80	0.000	57.80	2.140	0.50	123.74	3.095	0.50
80.00	Alcatel-Lucent B66A RRH 4x45	3	0.80	0.000	67.00	2.580	0.50	135.00	3.659	0.50
80.00	Raycap RVZDC-6627-PF-48	1	0.80	0.000	32.00	3.780	0.50	136.83	5.044	0.50
80.00	Amphenol Antel BXA-171063-	6	0.80	0.000	12.80	4.790	0.50	104.33	7.045	0.50
80.00	Amphenol Antel BXA-70063-6CF-	4	0.80	0.000	17.00	7.570	0.66	158.47	10.207	0.66
80.00	Commscope JAHH-65B-R3B	6	0.80	0.000	63.30	9.110	0.69	256.71	11.761	0.69
80.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,119.34	40.053	1.00
77.00	Scala 840 10212	1	0.90	-2.000	6.70	2.170	0.50	54.65	3.198	0.50

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

77.00	TX RX Systems 421-86A-10-18-	1	0.90	-2.000	15.00	2.220	0.67	59.70	3.163	0.67
77.00	Stand Offs	2	1.00	0.000	75.00	2.500	1.00	109.92	3.431	1.00
70.00	Round Side Arms	3	1.00	0.000	100.00	4.000	0.67	146.40	5.988	0.67
70.00	RFS APXV18-206517S-C	3	0.80	0.000	26.40	5.160	0.68	114.56	7.410	0.68
60.00	Generic Radio/ODU	1	1.00	0.000	30.00	1.600	0.50	78.52	2.398	0.50
60.00	Scala 840 10212	1	1.00	0.000	6.70	2.170	0.50	54.36	3.191	0.50
60.00	Stand Off	1	1.00	0.000	75.00	2.500	1.00	109.70	3.739	1.00
60.00	Radio Waves SP2-4.7 w/ Radome	1	1.00	0.000	26.00	2.710	1.00	104.98	3.469	1.00
60.00	Radio Waves SP2-4.7	1	1.00	0.000	22.00	5.230	0.82	74.56	6.699	0.82
Totals	Num Loadings:56	150			11,510.40			34,274.62		

Linear Appurtenance Properties Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	112.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	2	0.25	0.25	0	0.00	N	CLEARWIRE
0.00	112.00	1	2" conduit	2.38	3.65	N	1	0.25	0.25	0	0.00	N	CLEARWIRE
0.00	110.00	3	1/2" Coax	0.63	0.15	N	2	0.25	0.25	90	0.25	Y	CLEARWIRE
0.00	110.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	102.00	2	0.39" (10mm) Fiber	0.39	0.06	N	2	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	2	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	2	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	12	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	50	0.25	Y	AT&T MOBILITY
0.00	102.00	6	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	50	0.25	Y	AT&T MOBILITY
0.00	102.00	6	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	102.00	1	3" conduit	3.50	7.58	N	1	0.25	0.25	0	0.00	N	AT&T MOBILITY
0.00	90.00	3	1 1/4" (1.25"- 31.8mm)	1.25	1.05	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	90.00	18	1 5/8" Coax	1.98	0.82	N	5	0.25	0.25	220	0.25	Y	T-MOBILE
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	270	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	180	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	90	0.00	Y	--
0.00	81.00	1	#20 DYWIDAG	4.00	0.00	N	1	0.25	0.25	0	0.00	Y	--
0.00	80.00	12	1 5/8" Coax	1.98	0.82	N	6	0.25	0.25	130	0.25	Y	VERIZON WIRELESS
0.00	80.00	2	1 5/8" Hybriflex	1.98	1.30	N	1	0.25	0.25	130	0.25	Y	VERIZON WIRELESS
0.00	77.00	1	7/8" Coax	1.09	0.33	N	1	0.25	0.25	120	0.25	Y	TOWN OF WEST
0.00	70.00	6	1 5/8" Coax	1.98	0.82	N	3	0.25	0.25	140	0.25	Y	METRO PCS INC
0.00	60.00	2	0.41" (10.3mm) LMR-	0.41	0.07	N	2	0.25	0.25	120	1.09	Y	TOWN OF WEST
0.00	60.00	1	1/4" Coax	0.34	0.06	N	0	0.00	0.00	0	0.00	N	TOWN OF WEST
0.00	60.00	1	7/8" Coax	1.09	0.33	N	1	0.25	0.25	120	0.25	Y	TOWN OF WEST

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	12.00	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	39.0	3.31	5/8" A36 U-Bolt	No
0.00	17.50	4	PL PL 6 x 1.25	59	0.00	AJAX M20 Class	24.0	3.00	AJAX M20 Class	No
12.00	47.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
47.50	67.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
67.50	77.04	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
77.00	85.00	4	PL PL 5" x 1.25"	56	0.00	AJAX M20 Class	24.0	3.00	AJAX M20 Class	No

**Segment Properties** (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)	Additional Reinforcing		
												Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	Weight (lb)
0.00		0.2500	30.000	23.949	2,705.5	29.47	120.00	72.6	174.2	0.0	0.0	49.64	7,171	0.0
5.00		0.2500	29.181	23.290	2,488.2	28.60	116.72	73.5	164.7	0.0	401.9	49.64	6,828	844.0
10.00		0.2500	28.362	22.631	2,282.9	27.72	113.45	74.5	155.5	0.0	390.6	49.64	6,492	844.0
12.00	Reinf. Top Reinf	0.2500	28.035	22.367	2,204.0	27.37	112.14	74.9	151.9	0.0	153.1	49.64	6,361	337.6
15.00		0.2500	27.544	21.971	2,089.2	26.84	110.18	75.4	146.5	0.0	226.3	49.64	6,166	506.4
17.50	Reinf. Top	0.2500	27.134	21.642	1,996.6	26.40	108.54	75.9	142.1	0.0	185.5	49.64	6,006	422.0
20.00		0.2500	26.725	21.312	1,906.7	25.96	106.90	76.4	137.8	0.0	182.7	19.64	2,866	167.0
25.00		0.2500	25.906	20.653	1,735.2	25.09	103.63	77.4	129.4	0.0	357.0	19.64	2,726	334.0
29.33	Bot - Section 2	0.2500	25.197	20.083	1,595.3	24.33	100.79	78.2	122.3	0.0	300.1	19.64	2,607	289.2
30.00		0.2500	25.087	19.994	1,574.4	24.21	100.35	78.3	121.2	0.0	92.3	19.64	2,672	44.8
32.83	Top - Section 1	0.2500	25.124	20.024	1,581.3	24.25	100.50	62.7	121.6	0.0	385.4	19.64	2,595	189.0
35.00		0.2500	24.769	19.738	1,514.5	23.87	99.07	63.0	118.1	0.0	146.8	19.64	2,537	145.0
40.00		0.2500	23.950	19.078	1,367.8	22.99	95.80	63.0	110.3	0.0	330.2	19.64	2,405	334.0
45.00		0.2500	23.131	18.419	1,230.9	22.11	92.53	63.0	102.8	0.0	319.0	19.64	2,277	334.0
47.50	Reinf. Top Reinf	0.2500	22.722	18.090	1,166.0	21.67	90.89	63.0	99.1	0.0	155.3	19.64	2,214	167.0
50.00		0.2500	22.313	17.760	1,103.4	21.23	89.25	63.0	95.5	0.0	152.5	19.64	2,152	167.0
55.00		0.2500	21.494	17.101	985.1	20.36	85.97	63.0	88.5	0.0	296.6	19.64	2,031	334.0
60.00		0.2500	20.675	16.442	875.5	19.48	82.70	63.0	81.8	0.0	285.4	19.64	1,913	334.0
62.92	Bot - Section 3	0.2500	20.197	16.058	815.5	18.97	80.79	63.0	78.0	0.0	161.3	19.64	1,846	194.8
65.00		0.2500	19.856	15.783	774.4	18.60	79.43	63.0	75.3	0.0	199.4	19.64	1,850	139.2
65.75	Top - Section 2	0.1875	20.108	12.027	609.2	26.06	107.25	61.4	58.5	0.0	70.9	19.64	1,833	50.1
67.50	Reinf. Top Reinf	0.1875	19.822	11.854	583.3	25.65	105.72	61.7	56.8	0.0	71.1	19.64	1,794	116.9
70.00		0.1875	19.413	11.607	547.6	25.06	103.53	62.1	54.5	0.0	99.8	19.64	1,738	167.0
75.00		0.1875	18.594	11.113	480.6	23.89	99.17	63.0	49.9	0.0	193.3	19.64	1,629	334.0
77.00	Reinf Bottom	0.1875	18.266	10.915	455.4	23.42	97.42	63.0	48.2	0.0	75.0	19.64	1,587	133.6
77.04	Reinf. Top	0.1875	18.259	10.911	454.8	23.41	97.38	63.0	48.1	0.0	1.5	44.64	2,803	6.3
80.00		0.1875	17.775	10.618	419.2	22.72	94.80	63.0	45.6	0.0	108.4	25.00	1,158	252.1
85.00	Reinf. Top	0.1875	16.956	10.124	363.4	21.55	90.43	63.0	41.4	0.0	176.5	25.00	1,063	426.0
87.00		0.1875	16.629	9.926	342.5	21.08	88.69	63.0	39.8	0.0	68.2			
90.00		0.1875	16.138	9.630	312.7	20.38	86.07	63.0	37.4	0.0	99.8			
95.00		0.1875	15.319	9.135	267.0	19.21	81.70	63.0	33.7	0.0	159.6			
100.0	Top - Section 3	0.1875	14.500	8.641	225.9	18.04	77.33	63.0	30.1	0.0	151.2			
100.0	Bot - Section 4	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
102.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	99.2			
105.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	148.8			
110.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
											6,492.7			7,612.9

<b>Load Case:</b> 1.2D + 1.0W	118 mph with No Ice	23 Iterations
Gust Response Factor :1.10		
Dead Load Factor :1.20		
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		496.2	0.0					0.0	0.0	496.2	0.0	0.0	0.0
5.00		914.7	482.2					219.9	1,490.6	1,134.6	1,972.8	0.0	0.0
10.00		568.7	468.8					198.9	1,490.6	767.5	1,959.3	0.0	0.0
12.00	Reinf. Top Reinf	359.6	183.7					74.7	596.2	434.4	780.0	0.0	0.0
15.00		371.4	271.6					107.6	894.3	479.0	1,165.9	0.0	0.0
17.50	Reinf. Top	313.7	222.6					86.0	745.3	399.7	967.9	0.0	0.0
20.00		429.3	219.2					83.0	439.3	512.2	658.5	0.0	0.0
25.00		494.4	428.4					158.2	878.6	652.6	1,307.0	0.0	0.0
29.33	Bot - Section 2	249.5	360.1					130.0	760.8	379.5	1,120.9	0.0	0.0
30.00		167.3	110.8					19.6	117.7	187.0	228.5	0.0	0.0
32.83	Top - Section 1	235.7	462.4					82.2	497.3	317.8	959.7	0.0	0.0
35.00		325.7	176.2					62.5	381.3	388.2	557.5	0.0	0.0
40.00		440.0	396.2					142.6	878.6	582.6	1,274.8	0.0	0.0
45.00		319.4	382.8					141.2	878.6	460.6	1,261.4	0.0	0.0
47.50	Reinf. Top Reinf	206.4	186.3					70.3	439.3	276.6	625.6	0.0	0.0
50.00		300.5	183.0					70.1	439.3	370.6	622.3	0.0	0.0
55.00		389.3	355.9					140.0	878.6	529.2	1,234.5	0.0	0.0
60.00	Appurtenance(s)	299.1	342.4	398.7	0.0	0.0	191.6	140.0	878.6	837.7	1,412.6	0.0	0.0
62.92	Bot - Section 3	185.4	193.5					81.8	510.6	267.2	704.2	0.0	0.0
65.00		104.8	239.3					58.5	364.8	163.3	604.0	0.0	0.0
65.75	Top - Section 2	91.2	85.1					21.1	131.3	112.3	216.4	0.0	0.0
67.50	Reinf. Top Reinf	153.2	85.3					49.3	306.4	202.5	391.7	0.0	0.0
70.00	Appurtenance(s)	263.9	119.8	581.5	0.0	0.0	455.0	70.6	437.7	916.0	1,012.5	0.0	0.0
75.00		242.3	231.9					141.8	845.9	384.0	1,077.8	0.0	0.0
77.00	Reinf Bottom	69.4	89.9	260.7	0.0	-164.7	206.0	57.0	338.4	387.0	634.3	0.0	0.0
77.04	Reinf. Top	100.1	1.9					1.2	11.3	101.2	13.1	0.0	0.0
80.00	Appurtenance(s)	260.4	130.0	3,248.0	0.0	0.0	3,235.1	84.9	564.6	3,593.3	3,929.8	0.0	0.0
85.00	Reinf. Top	224.7	211.7					144.0	879.7	368.7	1,091.4	0.0	0.0
87.00	Appurtenance(s)	155.5	81.9	946.9	0.0	0.0	1,800.0	42.2	147.4	1,144.6	2,029.3	0.0	0.0
90.00	Appurtenance(s)	239.6	119.8	2,113.0	0.0	-1,620.8	1,957.7	64.7	221.1	2,417.4	2,298.5	0.0	0.0
95.00		289.2	191.6					35.4	261.0	324.6	452.6	0.0	0.0
100.00	Top - Section 3	171.6	181.5					36.1	261.0	207.7	442.5	0.0	0.0
102.00	Appurtenance(s)	65.3	119.1	4,272.4	0.0	-4,307.0	3,864.1	14.7	104.4	4,352.4	4,087.6	0.0	0.0
105.00		96.0	178.6					0.0	45.3	96.0	223.9	0.0	0.0
110.00	Appurtenance(s)	60.2	297.7	1,074.8	0.0	0.0	842.4	0.0	75.5	1,135.0	1,215.5	0.0	0.0
Totals:										25,379.2	38,534.3	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

3/25/2019 4:52:36 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0W

118 mph with No Ice

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-39.73	-26.17	0.00	-1,938.02	0.00	1,938.02	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.572
5.00	-37.64	-25.21	0.00	-1,807.17	0.00	1,807.17	1,541.15	408.73	1,115.51	908.35	0.15	-0.27	0.543
10.00	-35.61	-24.54	0.00	-1,681.14	0.00	1,681.14	1,517.03	397.17	1,053.29	868.61	0.58	-0.54	0.515
12.00	-34.78	-24.18	0.00	-1,632.06	0.00	1,632.06	1,507.06	392.54	1,028.90	852.76	0.82	-0.64	0.503
12.00	-34.78	-24.18	0.00	-1,632.06	0.00	1,632.06	1,507.06	392.54	1,028.90	852.76	0.82	-0.64	0.503
15.00	-33.56	-23.77	0.00	-1,559.52	0.00	1,559.52	1,491.77	385.60	992.85	829.06	1.28	-0.80	0.487
17.50	-32.54	-23.43	0.00	-1,500.09	0.00	1,500.09	1,478.72	379.82	963.30	809.36	1.74	-0.93	0.473
17.50	-32.54	-23.43	0.00	-1,500.09	0.00	1,500.09	1,478.72	379.82	963.30	809.36	1.74	-0.93	0.765
20.00	-31.78	-23.06	0.00	-1,441.51	0.00	1,441.51	1,465.38	374.03	934.19	789.74	2.26	-1.06	0.744
25.00	-30.34	-22.58	0.00	-1,326.22	0.00	1,326.22	1,437.85	362.47	877.32	750.71	3.60	-1.48	0.702
29.33	-29.15	-22.27	0.00	-1,228.44	0.00	1,228.44	1,413.10	352.45	829.52	717.20	5.11	-1.83	0.665
30.00	-28.88	-22.15	0.00	-1,213.52	0.00	1,213.52	1,409.19	350.90	822.24	712.04	5.37	-1.89	0.646
32.83	-27.85	-21.89	0.00	-1,150.84	0.00	1,150.84	1,130.07	270.32	634.36	571.86	6.56	-2.11	0.781
35.00	-27.21	-21.61	0.00	-1,103.33	0.00	1,103.33	1,119.12	266.46	616.37	558.15	7.56	-2.28	0.758
40.00	-25.83	-21.14	0.00	-995.27	0.00	995.27	1,081.75	257.56	575.90	521.31	10.14	-2.65	0.711
45.00	-24.50	-20.73	0.00	-889.57	0.00	889.57	1,044.38	248.66	536.82	485.73	13.11	-3.00	0.661
47.50	-23.82	-20.49	0.00	-837.74	0.00	837.74	1,025.69	244.21	517.79	468.42	14.73	-3.18	0.635
47.50	-23.82	-20.49	0.00	-837.74	0.00	837.74	1,025.69	244.21	517.79	468.42	14.73	-3.18	0.635
50.00	-23.14	-20.19	0.00	-786.51	0.00	786.51	1,007.01	239.76	499.10	451.41	16.44	-3.35	0.609
55.00	-21.83	-19.70	0.00	-685.57	0.00	685.57	969.64	230.87	462.76	418.35	20.12	-3.67	0.553
60.00	-20.40	-18.85	0.00	-587.06	0.00	587.06	932.27	221.97	427.79	386.54	24.13	-3.97	0.494
62.92	-19.67	-18.59	0.00	-532.07	0.00	532.07	910.47	216.78	408.02	368.57	26.61	-4.14	0.459
65.00	-19.06	-18.40	0.00	-493.35	0.00	493.35	894.90	213.07	394.19	355.99	28.44	-4.25	0.426
65.75	-18.83	-18.30	0.00	-479.55	0.00	479.55	664.38	162.37	305.14	269.42	29.11	-4.29	0.467
67.50	-18.42	-18.10	0.00	-447.52	0.00	447.52	658.03	160.03	296.43	262.98	30.70	-4.38	0.441
67.50	-18.42	-18.10	0.00	-447.52	0.00	447.52	658.03	160.03	296.43	262.98	30.70	-4.38	0.441
70.00	-17.43	-17.16	0.00	-402.27	0.00	402.27	648.81	156.70	284.20	253.83	33.03	-4.51	0.402
75.00	-16.34	-16.74	0.00	-316.45	0.00	316.45	629.79	150.02	260.52	235.80	37.87	-4.73	0.327
77.00	-15.73	-16.31	0.00	-282.97	0.00	282.97	618.88	147.35	251.33	227.55	39.87	-4.81	0.299
77.04	-15.72	-16.22	0.00	-282.29	0.00	282.29	618.65	147.30	251.14	227.38	39.91	-4.81	0.190
77.04	-15.72	-16.22	0.00	-282.29	0.00	282.29	618.65	147.30	251.14	227.38	39.91	-4.81	0.358
80.00	-12.08	-12.33	0.00	-234.32	0.00	234.32	602.07	143.35	237.86	215.29	42.92	-4.88	0.303
85.00	-11.00	-11.89	0.00	-172.66	0.00	172.66	574.04	136.68	216.24	195.61	48.13	-5.06	0.238
85.00	-11.00	-11.89	0.00	-172.66	0.00	172.66	574.04	136.68	216.24	195.61	48.13	-5.06	0.909
87.00	-9.04	-10.60	0.00	-148.87	0.00	148.87	562.83	134.01	207.88	188.00	50.26	-5.13	0.814
90.00	-6.92	-8.03	0.00	-117.06	0.00	117.06	546.01	130.00	195.65	176.87	53.59	-5.46	0.678
95.00	-6.45	-7.71	0.00	-76.90	0.00	76.90	517.98	123.33	176.08	159.08	59.55	-5.90	0.500
100.00	-6.01	-7.47	0.00	-38.37	0.00	38.37	489.95	116.66	157.55	142.23	65.90	-6.21	0.286
100.00	-6.01	-7.47	0.00	-38.37	0.00	38.37	459.24	137.77	149.89	150.79	65.90	-6.21	0.270
102.00	-2.42	-2.70	0.00	-23.42	0.00	23.42	459.24	137.77	149.89	150.79	68.51	-6.29	0.161
105.00	-2.20	-2.59	0.00	-15.31	0.00	15.31	459.24	137.77	149.89	150.79	72.47	-6.34	0.107
110.00	0.00	-2.33	0.00	-2.38	0.00	2.38	459.24	137.77	149.89	150.79	79.13	-6.39	0.016

<b>Load Case:</b> 0.9D + 1.0W	118 mph with No Ice (Reduced DL)	23 Iterations
Gust Response Factor :1.10		
Dead Load Factor :0.90		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		496.2	0.0					0.0	0.0	496.2	0.0	0.0	0.0
5.00		914.7	361.7					219.9	1,117.9	1,134.6	1,479.6	0.0	0.0
10.00		568.7	351.6					198.9	1,117.9	767.5	1,469.5	0.0	0.0
12.00	Reinf. Top Reinf	359.6	137.8					74.7	447.2	434.4	585.0	0.0	0.0
15.00		371.4	203.7					107.6	670.8	479.0	874.4	0.0	0.0
17.50	Reinf. Top	313.7	167.0					86.0	559.0	399.7	725.9	0.0	0.0
20.00		429.3	164.4					83.0	329.5	512.2	493.9	0.0	0.0
25.00		494.4	321.3					158.2	658.9	652.6	980.2	0.0	0.0
29.33	Bot - Section 2	249.5	270.1					130.0	570.6	379.5	840.7	0.0	0.0
30.00		167.3	83.1					19.6	88.3	187.0	171.4	0.0	0.0
32.83	Top - Section 1	235.7	346.8					82.2	372.9	317.8	719.8	0.0	0.0
35.00		325.7	132.1					62.5	286.0	388.2	418.1	0.0	0.0
40.00		440.0	297.2					142.6	658.9	582.6	956.1	0.0	0.0
45.00		319.4	287.1					141.2	658.9	460.6	946.0	0.0	0.0
47.50	Reinf. Top Reinf	206.4	139.8					70.3	329.5	276.6	469.2	0.0	0.0
50.00		300.5	137.2					70.1	329.5	370.6	466.7	0.0	0.0
55.00		389.3	266.9					140.0	658.9	529.2	925.8	0.0	0.0
60.00	Appurtenance(s)	299.1	256.8	398.7	0.0	0.0	143.7	140.0	658.9	837.7	1,059.5	0.0	0.0
62.92	Bot - Section 3	185.4	145.1					81.8	383.0	267.2	528.1	0.0	0.0
65.00		104.8	179.5					58.5	273.6	163.3	453.0	0.0	0.0
65.75	Top - Section 2	91.2	63.8					21.1	98.5	112.3	162.3	0.0	0.0
67.50	Reinf. Top Reinf	153.2	64.0					49.3	229.8	202.5	293.8	0.0	0.0
70.00	Appurtenance(s)	263.9	89.8	581.5	0.0	0.0	341.3	70.6	328.3	916.0	759.4	0.0	0.0
75.00		242.3	173.9					141.8	634.4	384.0	808.4	0.0	0.0
77.00	Reinf Bottom	69.4	67.5	260.7	0.0	-164.7	154.5	57.0	253.8	387.0	475.8	0.0	0.0
77.04	Reinf. Top	100.1	1.4					1.2	8.5	101.2	9.8	0.0	0.0
80.00	Appurtenance(s)	260.4	97.5	3,248.0	0.0	0.0	2,426.3	84.9	423.5	3,593.3	2,947.3	0.0	0.0
85.00	Reinf. Top	224.7	158.8					144.0	659.7	368.7	818.6	0.0	0.0
87.00	Appurtenance(s)	155.5	61.4	946.9	0.0	0.0	1,350.0	42.2	110.5	1,144.6	1,521.9	0.0	0.0
90.00	Appurtenance(s)	239.6	89.8	2,113.0	0.0	-1,620.8	1,468.3	64.7	165.8	2,417.4	1,723.9	0.0	0.0
95.00		289.2	143.7					35.4	195.7	324.6	339.4	0.0	0.0
100.00	Top - Section 3	171.6	136.1					36.1	195.7	207.7	331.9	0.0	0.0
102.00	Appurtenance(s)	65.3	89.3	4,272.4	0.0	-4,307.0	2,898.1	14.7	78.3	4,352.4	3,065.7	0.0	0.0
105.00		96.0	133.9					0.0	34.0	96.0	167.9	0.0	0.0
110.00	Appurtenance(s)	60.2	223.2	1,074.8	0.0	0.0	631.8	0.0	56.6	1,135.0	911.7	0.0	0.0
Totals:										25,379.2	28,900.7	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

Load Case: 0.9D + 1.0W

118 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-29.78	-26.14	0.00	-1,909.81	0.00	1,909.81	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.562
5.00	-28.19	-25.14	0.00	-1,779.09	0.00	1,779.09	1,541.15	408.73	1,115.51	908.35	0.15	-0.27	0.533
10.00	-26.65	-24.44	0.00	-1,653.40	0.00	1,653.40	1,517.03	397.17	1,053.29	868.61	0.57	-0.53	0.504
12.00	-26.01	-24.06	0.00	-1,604.52	0.00	1,604.52	1,507.06	392.54	1,028.90	852.76	0.81	-0.63	0.493
12.00	-26.01	-24.06	0.00	-1,604.52	0.00	1,604.52	1,507.06	392.54	1,028.90	852.76	0.81	-0.63	0.493
15.00	-25.09	-23.64	0.00	-1,532.33	0.00	1,532.33	1,491.77	385.60	992.85	829.06	1.26	-0.79	0.477
17.50	-24.31	-23.28	0.00	-1,473.24	0.00	1,473.24	1,478.72	379.82	963.30	809.36	1.71	-0.92	0.463
17.50	-24.31	-23.28	0.00	-1,473.24	0.00	1,473.24	1,478.72	379.82	963.30	809.36	1.71	-0.92	0.749
20.00	-23.72	-22.87	0.00	-1,415.04	0.00	1,415.04	1,465.38	374.03	934.19	789.74	2.23	-1.05	0.728
25.00	-22.61	-22.35	0.00	-1,300.68	0.00	1,300.68	1,437.85	362.47	877.32	750.71	3.54	-1.45	0.686
29.33	-21.71	-22.02	0.00	-1,203.93	0.00	1,203.93	1,413.10	352.45	829.52	717.20	5.02	-1.80	0.649
30.00	-21.49	-21.88	0.00	-1,189.18	0.00	1,189.18	1,409.19	350.90	822.24	712.04	5.28	-1.85	0.631
32.83	-20.71	-21.60	0.00	-1,127.27	0.00	1,127.27	1,130.07	270.32	634.36	571.86	6.45	-2.07	0.762
35.00	-20.20	-21.29	0.00	-1,080.39	0.00	1,080.39	1,119.12	266.46	616.37	558.15	7.43	-2.24	0.739
40.00	-19.15	-20.79	0.00	-973.92	0.00	973.92	1,081.75	257.56	575.90	521.31	9.97	-2.60	0.692
45.00	-18.13	-20.37	0.00	-869.96	0.00	869.96	1,044.38	248.66	536.82	485.73	12.88	-2.95	0.644
47.50	-17.62	-20.12	0.00	-819.05	0.00	819.05	1,025.69	244.21	517.79	468.42	14.47	-3.12	0.618
47.50	-17.62	-20.12	0.00	-819.05	0.00	819.05	1,025.69	244.21	517.79	468.42	14.47	-3.12	0.618
50.00	-17.09	-19.79	0.00	-768.75	0.00	768.75	1,007.01	239.76	499.10	451.41	16.15	-3.29	0.592
55.00	-16.09	-19.30	0.00	-669.78	0.00	669.78	969.64	230.87	462.76	418.35	19.76	-3.60	0.538
60.00	-15.02	-18.45	0.00	-573.31	0.00	573.31	932.27	221.97	427.79	386.54	23.69	-3.89	0.480
62.92	-14.47	-18.18	0.00	-519.50	0.00	519.50	910.47	216.78	408.02	368.57	26.12	-4.06	0.446
65.00	-14.00	-18.00	0.00	-481.62	0.00	481.62	894.90	213.07	394.19	355.99	27.91	-4.17	0.413
65.75	-13.83	-17.90	0.00	-468.12	0.00	468.12	664.38	162.37	305.14	269.42	28.57	-4.21	0.453
67.50	-13.52	-17.70	0.00	-436.80	0.00	436.80	658.03	160.03	296.43	262.98	30.13	-4.29	0.427
67.50	-13.52	-17.70	0.00	-436.80	0.00	436.80	658.03	160.03	296.43	262.98	30.13	-4.29	0.427
70.00	-12.78	-16.77	0.00	-392.56	0.00	392.56	648.81	156.70	284.20	253.83	32.41	-4.42	0.389
75.00	-11.97	-16.35	0.00	-308.73	0.00	308.73	629.79	150.02	260.52	235.80	37.15	-4.63	0.317
77.00	-11.51	-15.93	0.00	-276.03	0.00	276.03	618.88	147.35	251.33	227.55	39.11	-4.71	0.289
77.04	-11.50	-15.84	0.00	-275.37	0.00	275.37	618.65	147.30	251.14	227.38	39.15	-4.71	0.184
77.04	-11.50	-15.84	0.00	-275.37	0.00	275.37	618.65	147.30	251.14	227.38	39.15	-4.71	0.347
80.00	-8.84	-12.03	0.00	-228.52	0.00	228.52	602.07	143.35	237.86	215.29	42.09	-4.78	0.293
85.00	-8.03	-11.61	0.00	-168.36	0.00	168.36	574.04	136.68	216.24	195.61	47.19	-4.96	0.230
85.00	-8.03	-11.61	0.00	-168.36	0.00	168.36	574.04	136.68	216.24	195.61	47.19	-4.96	0.882
87.00	-6.57	-10.36	0.00	-145.14	0.00	145.14	562.83	134.01	207.88	188.00	49.28	-5.02	0.790
90.00	-5.02	-7.83	0.00	-114.06	0.00	114.06	546.01	130.00	195.65	176.87	52.54	-5.34	0.658
95.00	-4.67	-7.51	0.00	-74.90	0.00	74.90	517.98	123.33	176.08	159.08	58.37	-5.77	0.484
100.00	-4.34	-7.28	0.00	-37.38	0.00	37.38	489.95	116.66	157.55	142.23	64.59	-6.07	0.276
100.00	-4.34	-7.28	0.00	-37.38	0.00	37.38	459.24	137.77	149.89	150.79	64.59	-6.07	0.260
102.00	-1.75	-2.63	0.00	-22.82	0.00	22.82	459.24	137.77	149.89	150.79	67.14	-6.15	0.156
105.00	-1.59	-2.51	0.00	-14.95	0.00	14.95	459.24	137.77	149.89	150.79	71.02	-6.21	0.103
110.00	0.00	-2.33	0.00	-2.38	0.00	2.38	459.24	137.77	149.89	150.79	77.54	-6.25	0.016

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.50 in Radial Ice	23 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		104.4	0.0					0.0	0.0	104.4	0.0	0.0	0.0
5.00		193.9	800.8					121.1	2,217.7	314.9	3,018.5	0.0	0.0
10.00		121.8	799.1					229.8	2,259.3	351.6	3,058.4	0.0	0.0
12.00	Reinf. Top Reinf	77.7	315.4					85.3	905.8	163.0	1,221.3	0.0	0.0
15.00		80.6	465.9					121.6	1,358.8	202.2	1,824.7	0.0	0.0
17.50	Reinf. Top	68.5	381.9					101.6	1,131.6	170.1	1,513.5	0.0	0.0
20.00		94.5	375.8					100.4	824.5	194.9	1,200.3	0.0	0.0
25.00		109.7	730.8					195.1	1,645.3	304.8	2,376.1	0.0	0.0
29.33	Bot - Section 2	55.7	613.4					162.9	1,420.7	218.5	2,034.1	0.0	0.0
30.00		37.6	150.4					24.8	219.6	62.4	370.0	0.0	0.0
32.83	Top - Section 1	53.0	626.6					104.8	926.4	157.8	1,553.0	0.0	0.0
35.00		73.8	300.0					79.3	709.5	153.0	1,009.6	0.0	0.0
40.00		100.6	671.8					184.8	1,632.5	285.4	2,304.3	0.0	0.0
45.00		73.8	648.5					187.9	1,630.0	261.7	2,278.6	0.0	0.0
47.50	Reinf. Top Reinf	48.2	316.8					95.2	814.4	143.4	1,131.2	0.0	0.0
50.00		71.0	311.1					96.1	814.1	167.1	1,125.2	0.0	0.0
55.00		93.1	603.2					195.1	1,627.8	288.2	2,231.0	0.0	0.0
60.00	Appurtenance(s)	72.5	581.0	97.4	0.0	0.0	613.8	199.1	1,627.8	369.1	2,822.5	0.0	0.0
62.92	Bot - Section 3	45.5	329.8					118.2	932.3	163.6	1,262.1	0.0	0.0
65.00		25.8	336.8					85.4	666.2	111.2	1,003.0	0.0	0.0
65.75	Top - Section 2	22.6	120.0					30.9	239.8	53.5	359.9	0.0	0.0
67.50	Reinf. Top Reinf	38.1	165.8					72.0	559.8	110.1	725.6	0.0	0.0
70.00	Appurtenance(s)	66.2	232.6	153.1	0.0	0.0	1,237.9	103.9	799.9	323.1	2,270.4	0.0	0.0
75.00		61.1	449.2					185.0	1,495.9	246.1	1,945.1	0.0	0.0
77.00	Reinf Bottom	17.5	175.6	65.3	0.0	-42.7	540.2	75.3	598.8	158.2	1,314.6	0.0	0.0
77.04	Reinf. Top	25.4	3.6					1.6	16.6	27.0	20.2	0.0	0.0
80.00	Appurtenance(s)	66.4	253.8	860.3	0.0	0.0	9,618.4	112.7	944.5	1,039.4	10,816.7	0.0	0.0
85.00	Reinf. Top	55.8	412.6					109.7	1,279.0	165.5	1,691.6	0.0	0.0
87.00	Appurtenance(s)	35.9	161.0	289.4	0.0	0.0	3,922.1	40.8	299.5	366.2	4,382.6	0.0	0.0
90.00	Appurtenance(s)	53.7	235.5	476.7	0.0	-390.6	13,237.2	62.0	449.6	592.4	13,922.2	0.0	0.0
95.00		63.6	376.0					58.7	487.6	122.3	863.6	0.0	0.0
100.00	Top - Section 3	42.0	357.6					60.9	488.3	103.0	845.9	0.0	0.0
102.00	Appurtenance(s)	27.1	178.6	1,129.4	0.0	-1,025.6	12,368.8	26.5	195.5	1,183.0	12,742.9	0.0	0.0
105.00		43.6	268.1					2.3	60.4	45.9	328.5	0.0	0.0
110.00	Appurtenance(s)	27.4	447.4	272.7	0.0	0.0	2,446.1	3.8	100.8	303.9	2,994.2	0.0	0.0
Totals:										9,026.80	88,561.3	0.00	0.00



Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.50 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

**Calculated Forces**

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-92.55	-9.28	0.00	-707.68	0.00	707.68	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.224
5.00	-89.52	-9.12	0.00	-661.27	0.00	661.27	1,541.15	408.73	1,115.51	908.35	0.05	-0.10	0.213
10.00	-86.45	-8.86	0.00	-615.68	0.00	615.68	1,517.03	397.17	1,053.29	868.61	0.21	-0.20	0.203
12.00	-85.22	-8.77	0.00	-597.96	0.00	597.96	1,507.06	392.54	1,028.90	852.76	0.30	-0.24	0.198
12.00	-85.22	-8.77	0.00	-597.96	0.00	597.96	1,507.06	392.54	1,028.90	852.76	0.30	-0.24	0.198
15.00	-83.39	-8.63	0.00	-571.66	0.00	571.66	1,491.77	385.60	992.85	829.06	0.47	-0.29	0.192
17.50	-81.87	-8.52	0.00	-550.08	0.00	550.08	1,478.72	379.82	963.30	809.36	0.64	-0.34	0.187
17.50	-81.87	-8.52	0.00	-550.08	0.00	550.08	1,478.72	379.82	963.30	809.36	0.64	-0.34	0.305
20.00	-80.66	-8.46	0.00	-528.78	0.00	528.78	1,465.38	374.03	934.19	789.74	0.83	-0.39	0.297
25.00	-78.26	-8.33	0.00	-486.47	0.00	486.47	1,437.85	362.47	877.32	750.71	1.32	-0.54	0.280
29.33	-76.22	-8.19	0.00	-450.41	0.00	450.41	1,413.10	352.45	829.52	717.20	1.87	-0.67	0.266
30.00	-75.84	-8.19	0.00	-444.92	0.00	444.92	1,409.19	350.90	822.24	712.04	1.97	-0.69	0.259
32.83	-74.28	-8.11	0.00	-421.75	0.00	421.75	1,130.07	270.32	634.36	571.86	2.40	-0.77	0.313
35.00	-73.26	-8.07	0.00	-404.16	0.00	404.16	1,119.12	266.46	616.37	558.15	2.77	-0.84	0.304
40.00	-70.94	-7.91	0.00	-363.84	0.00	363.84	1,081.75	257.56	575.90	521.31	3.72	-0.97	0.286
45.00	-68.66	-7.72	0.00	-324.30	0.00	324.30	1,044.38	248.66	536.82	485.73	4.80	-1.10	0.267
47.50	-67.52	-7.63	0.00	-305.00	0.00	305.00	1,025.69	244.21	517.79	468.42	5.40	-1.16	0.257
47.50	-67.52	-7.63	0.00	-305.00	0.00	305.00	1,025.69	244.21	517.79	468.42	5.40	-1.16	0.257
50.00	-66.39	-7.54	0.00	-285.94	0.00	285.94	1,007.01	239.76	499.10	451.41	6.02	-1.23	0.247
55.00	-64.15	-7.33	0.00	-248.23	0.00	248.23	969.64	230.87	462.76	418.35	7.37	-1.34	0.226
60.00	-61.33	-6.98	0.00	-211.58	0.00	211.58	932.27	221.97	427.79	386.54	8.84	-1.45	0.203
62.92	-60.06	-6.84	0.00	-191.22	0.00	191.22	910.47	216.78	408.02	368.57	9.74	-1.51	0.190
65.00	-59.06	-6.73	0.00	-176.97	0.00	176.97	894.90	213.07	394.19	355.99	10.41	-1.55	0.177
65.75	-58.70	-6.69	0.00	-171.93	0.00	171.93	664.38	162.37	305.14	269.42	10.66	-1.57	0.194
67.50	-57.97	-6.60	0.00	-160.22	0.00	160.22	658.03	160.03	296.43	262.98	11.24	-1.60	0.184
67.50	-57.97	-6.60	0.00	-160.22	0.00	160.22	658.03	160.03	296.43	262.98	11.24	-1.60	0.184
70.00	-55.71	-6.27	0.00	-143.73	0.00	143.73	648.81	156.70	284.20	253.83	12.09	-1.64	0.169
75.00	-53.76	-6.02	0.00	-112.37	0.00	112.37	629.79	150.02	260.52	235.80	13.85	-1.72	0.141
77.00	-52.45	-5.83	0.00	-100.33	0.00	100.33	618.88	147.35	251.33	227.55	14.58	-1.75	0.130
77.04	-52.43	-5.82	0.00	-100.09	0.00	100.09	618.65	147.30	251.14	227.38	14.60	-1.75	0.147
77.04	-52.43	-5.82	0.00	-100.09	0.00	100.09	618.65	147.30	251.14	227.38	14.60	-1.75	0.147
80.00	-41.65	-4.48	0.00	-82.88	0.00	82.88	602.07	143.35	237.86	215.29	15.69	-1.78	0.124
85.00	-39.96	-4.29	0.00	-60.49	0.00	60.49	574.04	136.68	216.24	195.61	17.59	-1.84	0.100
85.00	-39.96	-4.29	0.00	-60.49	0.00	60.49	574.04	136.68	216.24	195.61	17.59	-1.84	0.380
87.00	-35.59	-3.83	0.00	-51.91	0.00	51.91	562.83	134.01	207.88	188.00	18.37	-1.86	0.340
90.00	-21.69	-2.82	0.00	-40.43	0.00	40.43	546.01	130.00	195.65	176.87	19.57	-1.98	0.269
95.00	-20.82	-2.71	0.00	-26.35	0.00	26.35	517.98	123.33	176.08	159.08	21.73	-2.13	0.206
100.00	-19.98	-2.60	0.00	-12.80	0.00	12.80	489.95	116.66	157.55	142.23	24.02	-2.23	0.131
100.00	-19.98	-2.60	0.00	-12.80	0.00	12.80	459.24	137.77	149.89	150.79	24.02	-2.23	0.129
102.00	-7.29	-0.92	0.00	-7.61	0.00	7.61	459.24	137.77	149.89	150.79	24.97	-2.26	0.066
105.00	-6.96	-0.86	0.00	-4.86	0.00	4.86	459.24	137.77	149.89	150.79	26.39	-2.28	0.047
110.00	0.00	-0.58	0.00	-0.56	0.00	0.56	459.24	137.77	149.89	150.79	28.79	-2.29	0.004

<b>Load Case: 1.0D + 1.0W</b>	<b>Serviceability 60 mph</b>	<b>22 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		128.3	0.0					0.0	0.0	128.3	0.0	0.0	0.0
5.00		236.5	401.9					67.0	1,242.1	303.5	1,644.0	0.0	0.0
10.00		147.0	390.6					58.1	1,242.1	205.1	1,632.8	0.0	0.0
12.00	Reinf. Top Reinf	93.0	153.1					21.3	496.9	114.3	650.0	0.0	0.0
15.00		96.0	226.3					30.1	745.3	126.1	971.6	0.0	0.0
17.50	Reinf. Top	81.1	185.5					23.7	621.1	104.8	806.6	0.0	0.0
20.00		111.0	182.7					22.5	366.1	133.5	548.8	0.0	0.0
25.00		127.8	357.0					42.1	732.1	169.9	1,089.1	0.0	0.0
29.33	Bot - Section 2	64.5	300.1					33.9	634.0	98.4	934.1	0.0	0.0
30.00		43.3	92.3					5.1	98.1	48.3	190.4	0.0	0.0
32.83	Top - Section 1	60.9	385.4					21.2	414.4	82.2	799.7	0.0	0.0
35.00		84.2	146.8					16.2	317.8	100.4	464.6	0.0	0.0
40.00		113.7	330.2					36.9	732.1	150.6	1,062.4	0.0	0.0
45.00		82.6	319.0					36.5	732.1	119.1	1,051.1	0.0	0.0
47.50	Reinf. Top Reinf	53.4	155.3					18.2	366.1	71.5	521.4	0.0	0.0
50.00		77.7	152.5					18.1	366.1	95.8	518.6	0.0	0.0
55.00		100.6	296.6					36.2	732.1	136.8	1,028.7	0.0	0.0
60.00	Appurtenance(s)	77.3	285.4	103.1	0.0	0.0	159.7	36.2	732.1	216.6	1,177.2	0.0	0.0
62.92	Bot - Section 3	47.9	161.3					21.1	425.5	69.1	586.8	0.0	0.0
65.00		27.1	199.4					15.1	304.0	42.2	503.4	0.0	0.0
65.75	Top - Section 2	23.6	70.9					5.5	109.4	29.0	180.3	0.0	0.0
67.50	Reinf. Top Reinf	39.6	71.1					12.7	255.3	52.4	326.4	0.0	0.0
70.00	Appurtenance(s)	68.2	99.8	150.4	0.0	0.0	379.2	18.2	364.7	236.8	843.7	0.0	0.0
75.00		62.6	193.3					36.7	704.9	99.3	898.2	0.0	0.0
77.00	Reinf Bottom	17.9	75.0	67.4	0.0	-42.6	171.7	14.7	282.0	100.1	528.6	0.0	0.0
77.04	Reinf. Top	25.9	1.5					0.3	9.4	26.2	10.9	0.0	0.0
80.00	Appurtenance(s)	67.3	108.4	839.8	0.0	0.0	2,695.9	21.9	470.5	929.0	3,274.8	0.0	0.0
85.00	Reinf. Top	58.1	176.5					37.2	733.1	95.3	909.5	0.0	0.0
87.00	Appurtenance(s)	40.2	68.2	244.8	0.0	0.0	1,500.0	10.9	122.8	295.9	1,691.0	0.0	0.0
90.00	Appurtenance(s)	62.0	99.8	546.3	0.0	-419.1	1,631.4	16.7	184.2	625.0	1,915.4	0.0	0.0
95.00		74.9	159.6					9.1	217.5	84.0	377.1	0.0	0.0
100.00	Top - Section 3	46.2	151.2					9.3	217.5	55.5	368.7	0.0	0.0
102.00	Appurtenance(s)	20.6	99.2	1,104.6	0.0	-1,113.6	3,220.1	3.8	87.0	1,129.0	3,406.3	0.0	0.0
105.00		30.2	148.8					0.0	37.7	30.2	186.6	0.0	0.0
110.00	Appurtenance(s)	18.9	248.0	277.9	0.0	0.0	702.0	0.0	62.9	296.8	1,012.9	0.0	0.0
Totals:									6,601.33	32,111.9	0.00	0.00	

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-33.16	-6.80	0.00	-498.76	0.00	498.76	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.151
5.00	-31.51	-6.53	0.00	-464.75	0.00	464.75	1,541.15	408.73	1,115.51	908.35	0.04	-0.07	0.143
10.00	-29.87	-6.35	0.00	-432.08	0.00	432.08	1,517.03	397.17	1,053.29	868.61	0.15	-0.14	0.136
12.00	-29.22	-6.25	0.00	-419.38	0.00	419.38	1,507.06	392.54	1,028.90	852.76	0.21	-0.17	0.133
12.00	-29.22	-6.25	0.00	-419.38	0.00	419.38	1,507.06	392.54	1,028.90	852.76	0.21	-0.17	0.133
15.00	-28.24	-6.14	0.00	-400.62	0.00	400.62	1,491.77	385.60	992.85	829.06	0.33	-0.21	0.128
17.50	-27.43	-6.05	0.00	-385.26	0.00	385.26	1,478.72	379.82	963.30	809.36	0.45	-0.24	0.125
17.50	-27.43	-6.05	0.00	-385.26	0.00	385.26	1,478.72	379.82	963.30	809.36	0.45	-0.24	0.203
20.00	-26.87	-5.95	0.00	-370.14	0.00	370.14	1,465.38	374.03	934.19	789.74	0.58	-0.27	0.197
25.00	-25.78	-5.82	0.00	-340.40	0.00	340.40	1,437.85	362.47	877.32	750.71	0.93	-0.38	0.186
29.33	-24.84	-5.73	0.00	-315.23	0.00	315.23	1,413.10	352.45	829.52	717.20	1.31	-0.47	0.176
30.00	-24.64	-5.70	0.00	-311.39	0.00	311.39	1,409.19	350.90	822.24	712.04	1.38	-0.48	0.171
32.83	-23.84	-5.63	0.00	-295.26	0.00	295.26	1,130.07	270.32	634.36	571.86	1.69	-0.54	0.207
35.00	-23.37	-5.55	0.00	-283.05	0.00	283.05	1,119.12	266.46	616.37	558.15	1.94	-0.59	0.200
40.00	-22.30	-5.43	0.00	-255.28	0.00	255.28	1,081.75	257.56	575.90	521.31	2.61	-0.68	0.188
45.00	-21.25	-5.32	0.00	-228.15	0.00	228.15	1,044.38	248.66	536.82	485.73	3.37	-0.77	0.175
47.50	-20.72	-5.26	0.00	-214.85	0.00	214.85	1,025.69	244.21	517.79	468.42	3.78	-0.82	0.168
47.50	-20.72	-5.26	0.00	-214.85	0.00	214.85	1,025.69	244.21	517.79	468.42	3.78	-0.82	0.168
50.00	-20.20	-5.18	0.00	-201.71	0.00	201.71	1,007.01	239.76	499.10	451.41	4.22	-0.86	0.161
55.00	-19.16	-5.05	0.00	-175.83	0.00	175.83	969.64	230.87	462.76	418.35	5.17	-0.94	0.147
60.00	-17.99	-4.83	0.00	-150.58	0.00	150.58	932.27	221.97	427.79	386.54	6.20	-1.02	0.132
62.92	-17.40	-4.76	0.00	-136.49	0.00	136.49	910.47	216.78	408.02	368.57	6.84	-1.06	0.123
65.00	-16.89	-4.72	0.00	-126.57	0.00	126.57	894.90	213.07	394.19	355.99	7.31	-1.09	0.114
65.75	-16.71	-4.69	0.00	-123.04	0.00	123.04	664.38	162.37	305.14	269.42	7.48	-1.10	0.124
67.50	-16.39	-4.64	0.00	-114.83	0.00	114.83	658.03	160.03	296.43	262.98	7.89	-1.12	0.117
67.50	-16.39	-4.64	0.00	-114.83	0.00	114.83	658.03	160.03	296.43	262.98	7.89	-1.12	0.117
70.00	-15.54	-4.40	0.00	-103.23	0.00	103.23	648.81	156.70	284.20	253.83	8.49	-1.16	0.107
75.00	-14.64	-4.29	0.00	-81.25	0.00	81.25	629.79	150.02	260.52	235.80	9.73	-1.21	0.088
77.00	-14.12	-4.18	0.00	-72.67	0.00	72.67	618.88	147.35	251.33	227.55	10.24	-1.24	0.080
77.04	-14.11	-4.16	0.00	-72.50	0.00	72.50	618.65	147.30	251.14	227.38	10.25	-1.24	0.050
77.04	-14.11	-4.16	0.00	-72.50	0.00	72.50	618.65	147.30	251.14	227.38	10.25	-1.24	0.094
80.00	-10.85	-3.16	0.00	-60.20	0.00	60.20	602.07	143.35	237.86	215.29	11.03	-1.25	0.080
85.00	-9.94	-3.05	0.00	-44.39	0.00	44.39	574.04	136.68	216.24	195.61	12.37	-1.30	0.063
85.00	-9.94	-3.05	0.00	-44.39	0.00	44.39	574.04	136.68	216.24	195.61	12.37	-1.30	0.245
87.00	-8.26	-2.73	0.00	-38.29	0.00	38.29	562.83	134.01	207.88	188.00	12.91	-1.32	0.219
90.00	-6.35	-2.07	0.00	-30.11	0.00	30.11	546.01	130.00	195.65	176.87	13.77	-1.40	0.182
95.00	-5.97	-1.98	0.00	-19.78	0.00	19.78	517.98	123.33	176.08	159.08	15.30	-1.52	0.136
100.00	-5.60	-1.92	0.00	-9.87	0.00	9.87	489.95	116.66	157.55	142.23	16.93	-1.59	0.081
100.00	-5.60	-1.92	0.00	-9.87	0.00	9.87	459.24	137.77	149.89	150.79	16.93	-1.59	0.078
102.00	-2.23	-0.70	0.00	-6.03	0.00	6.03	459.24	137.77	149.89	150.79	17.61	-1.61	0.045
105.00	-2.05	-0.66	0.00	-3.93	0.00	3.93	459.24	137.77	149.89	150.79	18.63	-1.63	0.031
110.00	0.00	-0.60	0.00	-0.62	0.00	0.62	459.24	137.77	149.89	150.79	20.34	-1.64	0.004

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.27
Redundancy Factor ( $\rho$ ):	1.00
Seismic Force Distribution Exponent (k):	1.88
Total Unfactored Dead Load:	33.16 k
Seismic Base Shear (E):	0.99 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
34	107.50	311	2,079	0.022	22	385
33	103.50	187	1,162	0.012	12	231
32	101.00	186	1,107	0.012	12	231
31	97.50	369	2,051	0.022	22	457
30	92.50	377	1,900	0.020	20	467
29	88.50	284	1,317	0.014	14	352
28	86.00	191	839	0.009	9	237
27	82.50	910	3,695	0.039	39	1,126
26	78.52	579	2,143	0.023	23	717
25	77.02	11	39	0.000	0	14
24	76.00	357	1,242	0.013	13	442
23	72.50	898	2,861	0.030	30	1,112
22	68.75	465	1,339	0.014	14	575
21	66.62	326	887	0.009	9	404
20	65.37	180	473	0.005	5	223
19	63.96	503	1,266	0.013	13	623
18	61.46	587	1,369	0.014	14	727
17	57.50	1,017	2,094	0.022	22	1,260
16	52.50	1,029	1,784	0.019	19	1,274
15	48.75	519	782	0.008	8	642
14	46.25	521	712	0.008	7	646
13	42.50	1,051	1,225	0.013	13	1,302
12	37.50	1,062	978	0.010	10	1,316
11	33.91	465	354	0.004	4	575
10	31.41	800	527	0.006	6	990

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

9	29.66	190	113	0.001	1	236
8	27.16	934	468	0.005	5	1,157
7	22.50	1,089	383	0.004	4	1,349
6	18.75	549	137	0.001	1	680
5	16.25	807	154	0.002	2	999
4	13.50	972	131	0.001	1	1,203
3	11.00	650	59	0.001	1	805
2	7.50	1,633	73	0.001	1	2,022
1	2.50	1,644	9	0.000	0	2,036
Generic 12" x 12" Ju	112.00	10	72	0.001	1	12
Alcatel-Lucent RRH2x	112.00	317	2,293	0.024	24	393
Alcatel-Lucent 1900	112.00	180	1,300	0.014	14	223
Nokia 2.5G MAA - AAH	112.00	311	2,245	0.024	24	385
Commscope NNVV-65B-R	112.00	232	1,677	0.018	18	288
DragonWave Horizon C	110.00	32	222	0.002	2	39
DragonWave A-ANT-23G	110.00	15	105	0.001	1	19
Generic Flat Side Ar	110.00	560	3,910	0.041	41	694
DragonWave A-ANT-11G	110.00	95	665	0.007	7	118
Powerwave Allgon 702	102.00	13	80	0.001	1	16
CCI TPX-070821	102.00	45	273	0.003	3	56
Kaelus DBCT108F1V92-	102.00	83	505	0.005	5	103
Powerwave Allgon LGP	102.00	85	512	0.005	5	105
Raycap DC6-48-60-0-8	102.00	33	199	0.002	2	41
Raycap DC6-48-60-18-	102.00	66	397	0.004	4	81
Ericsson RRUS 4426 B	102.00	145	879	0.009	9	180
Ericsson RRUS 4478 B	102.00	180	1,088	0.011	11	223
Ericsson RRUS 4478 B	102.00	178	1,079	0.011	11	221
Ericsson RRUS-11 (50	102.00	150	909	0.010	10	186
Ericsson RRUS 32 B2	102.00	159	963	0.010	10	197
Ericsson RRUS-32 (77	102.00	231	1,399	0.015	15	286
Powerwave Allgon 777	102.00	105	636	0.007	7	130
Quintel QS66512-2	102.00	222	1,345	0.014	14	275
CCI OPA-65R-LCUU-H6	102.00	146	884	0.009	9	181
CCI OPA-65R-LCUU-H8	102.00	88	533	0.006	6	109
CCI TPA-65R-LCUUUU-H	102.00	82	494	0.005	5	101
Kathrein Scala 80010	102.00	195	1,182	0.012	12	242
Generic Round Sector	102.00	900	5,451	0.058	57	1,115
Kathrein Scala 80010	102.00	115	694	0.007	7	142
Kathrein Scala Smart	90.00	10	47	0.001	0	12
Ericsson KRY 112 144	90.00	33	158	0.002	2	41
Ericsson KRY 112 489	90.00	46	221	0.002	2	57
Ericsson Radio 4449	90.00	222	1,062	0.011	11	275
Ericsson AIR32 B66Aa	90.00	397	1,898	0.020	20	491
Ericsson Air 3246 B6	90.00	540	2,584	0.027	27	669
RFS APXVAARR24_43-U-	90.00	384	1,836	0.019	19	475
Flat Low Profile Pla	87.00	1,500	6,734	0.071	71	1,858
Nokia AirScale RRH 4	80.00	106	406	0.004	4	131
Alcatel-Lucent B25 R	80.00	159	610	0.006	6	197
Alcatel-Lucent B13 R	80.00	173	665	0.007	7	215
Alcatel-Lucent B66A	80.00	201	771	0.008	8	249
Raycap RVZDC-6627-PF	80.00	32	123	0.001	1	40
Amphenol Antel BXA-1	80.00	77	294	0.003	3	95
Amphenol Antel BXA-7	80.00	68	261	0.003	3	84
Commscope JAHH-65B-R	80.00	380	1,456	0.015	15	470
Round Low Profile PI	80.00	1,500	5,750	0.061	60	1,858
Scala 840 10212	77.00	7	24	0.000	0	8
TX RX Systems 421-86	77.00	15	54	0.001	1	19
Stand Offs	77.00	150	535	0.006	6	186
Round Side Arms	70.00	300	894	0.009	9	372
RFS APXV18-206517S-C	70.00	79	236	0.002	2	98
Generic Radio/ODU	60.00	30	67	0.001	1	37
Scala 840 10212	60.00	7	15	0.000	0	8
Stand Off	60.00	75	167	0.002	2	93
Radio Waves SP2-4.7	60.00	26	58	0.001	1	32

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

Radio Waves SP2-4.7	60.00	22	49	0.001	1	27
		33,162	94,720	1.000	995	41,068

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
34	107.50	311	2,079	0.022	22	268
33	103.50	187	1,162	0.012	12	161
32	101.00	186	1,107	0.012	12	160
31	97.50	369	2,051	0.022	22	318
30	92.50	377	1,900	0.020	20	325
29	88.50	284	1,317	0.014	14	245
28	86.00	191	839	0.009	9	165
27	82.50	910	3,695	0.039	39	784
26	78.52	579	2,143	0.023	23	499
25	77.02	11	39	0.000	0	9
24	76.00	357	1,242	0.013	13	308
23	72.50	898	2,861	0.030	30	774
22	68.75	465	1,339	0.014	14	400
21	66.62	326	887	0.009	9	281
20	65.37	180	473	0.005	5	155
19	63.96	503	1,266	0.013	13	434
18	61.46	587	1,369	0.014	14	506
17	57.50	1,017	2,094	0.022	22	877
16	52.50	1,029	1,784	0.019	19	886
15	48.75	519	782	0.008	8	447
14	46.25	521	712	0.008	7	449
13	42.50	1,051	1,225	0.013	13	906
12	37.50	1,062	978	0.010	10	915
11	33.91	465	354	0.004	4	400
10	31.41	800	527	0.006	6	689
9	29.66	190	113	0.001	1	164
8	27.16	934	468	0.005	5	805
7	22.50	1,089	383	0.004	4	938
6	18.75	549	137	0.001	1	473
5	16.25	807	154	0.002	2	695
4	13.50	972	131	0.001	1	837
3	11.00	650	59	0.001	1	560
2	7.50	1,633	73	0.001	1	1,407
1	2.50	1,644	9	0.000	0	1,416
Generic 12" x 12" Ju	112.00	10	72	0.001	1	9
Alcatel-Lucent RRH2x	112.00	317	2,293	0.024	24	273
Alcatel-Lucent 1900	112.00	180	1,300	0.014	14	155
Nokia 2.5G MAA - AAH	112.00	311	2,245	0.024	24	268
Commscope NNVV-65B-R	112.00	232	1,677	0.018	18	200
DragonWave Horizon C	110.00	32	222	0.002	2	27
DragonWave A-ANT-23G	110.00	15	105	0.001	1	13
Generic Flat Side Ar	110.00	560	3,910	0.041	41	482
DragonWave A-ANT-11G	110.00	95	665	0.007	7	82
Powerwave Allgon 702	102.00	13	80	0.001	1	11
CCI TPX-070821	102.00	45	273	0.003	3	39
Kaelus DBCT108F1V92-	102.00	83	505	0.005	5	72
Powerwave Allgon LGP	102.00	85	512	0.005	5	73
Raycap DC6-48-60-0-8	102.00	33	199	0.002	2	28
Raycap DC6-48-60-18-	102.00	66	397	0.004	4	57
Ericsson RRUS 4426 B	102.00	145	879	0.009	9	125
Ericsson RRUS 4478 B	102.00	180	1,088	0.011	11	155
Ericsson RRUS 4478 B	102.00	178	1,079	0.011	11	154
Ericsson RRUS-11 (50	102.00	150	909	0.010	10	129
Ericsson RRUS 32 B2	102.00	159	963	0.010	10	137

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

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Customer: AT&T MOBILITY

Ericsson RRUS-32 (77	102.00	231	1,399	0.015	15	199
Powerwave Allgon 777	102.00	105	636	0.007	7	90
Quintel QS66512-2	102.00	222	1,345	0.014	14	191
CCI OPA-65R-LCUU-H6	102.00	146	884	0.009	9	126
CCI OPA-65R-LCUU-H8	102.00	88	533	0.006	6	76
CCI TPA-65R-LCUUUU-H	102.00	82	494	0.005	5	70
Kathrein Scala 80010	102.00	195	1,182	0.012	12	168
Generic Round Sector	102.00	900	5,451	0.058	57	775
Kathrein Scala 80010	102.00	115	694	0.007	7	99
Kathrein Scala Smart	90.00	10	47	0.001	0	9
Ericsson KRY 112 144	90.00	33	158	0.002	2	28
Ericsson KRY 112 489	90.00	46	221	0.002	2	40
Ericsson Radio 4449	90.00	222	1,062	0.011	11	191
Ericsson AIR32 B66Aa	90.00	397	1,898	0.020	20	342
Ericsson Air 3246 B6	90.00	540	2,584	0.027	27	465
RFS APXVAARR24_43-U-	90.00	384	1,836	0.019	19	331
Flat Low Profile Pla	87.00	1,500	6,734	0.071	71	1,292
Nokia AirScale RRH 4	80.00	106	406	0.004	4	91
Alcatel-Lucent B25 R	80.00	159	610	0.006	6	137
Alcatel-Lucent B13 R	80.00	173	665	0.007	7	149
Alcatel-Lucent B66A	80.00	201	771	0.008	8	173
Raycap RVZDC-6627-PF	80.00	32	123	0.001	1	28
Amphenol Antel BXA-1	80.00	77	294	0.003	3	66
Amphenol Antel BXA-7	80.00	68	261	0.003	3	59
Commscope JAHH-65B-R	80.00	380	1,456	0.015	15	327
Round Low Profile PI	80.00	1,500	5,750	0.061	60	1,292
Scala 840 10212	77.00	7	24	0.000	0	6
TX RX Systems 421-86	77.00	15	54	0.001	1	13
Stand Offs	77.00	150	535	0.006	6	129
Round Side Arms	70.00	300	894	0.009	9	258
RFS APXV18-206517S-C	70.00	79	236	0.002	2	68
Generic Radio/ODU	60.00	30	67	0.001	1	26
Scala 840 10212	60.00	7	15	0.000	0	6
Stand Off	60.00	75	167	0.002	2	65
Radio Waves SP2-4.7	60.00	26	58	0.001	1	22
Radio Waves SP2-4.7	60.00	22	49	0.001	1	19
		33,162	94,720	1.000	995	28,573

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.73	-0.92	0.00	-80.81	0.00	80.81	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.031
5.00	-35.71	-0.92	0.00	-76.22	0.00	76.22	1,541.15	408.73	1,115.51	908.35	0.01	-0.01	0.030
10.00	-34.90	-0.93	0.00	-71.61	0.00	71.61	1,517.03	397.17	1,053.29	868.61	0.02	-0.02	0.029
12.00	-33.70	-0.93	0.00	-69.75	0.00	69.75	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.028
12.00	-33.70	-0.93	0.00	-69.75	0.00	69.75	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.028
15.00	-32.70	-0.93	0.00	-66.96	0.00	66.96	1,491.77	385.60	992.85	829.06	0.05	-0.03	0.027
17.50	-32.02	-0.93	0.00	-64.63	0.00	64.63	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.027
17.50	-32.02	-0.93	0.00	-64.63	0.00	64.63	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.044
20.00	-30.67	-0.93	0.00	-62.30	0.00	62.30	1,465.38	374.03	934.19	789.74	0.10	-0.05	0.042
25.00	-29.52	-0.94	0.00	-57.64	0.00	57.64	1,437.85	362.47	877.32	750.71	0.15	-0.06	0.040
29.33	-29.28	-0.94	0.00	-53.58	0.00	53.58	1,413.10	352.45	829.52	717.20	0.22	-0.08	0.039
30.00	-28.29	-0.94	0.00	-52.96	0.00	52.96	1,409.19	350.90	822.24	712.04	0.23	-0.08	0.038
32.83	-27.71	-0.93	0.00	-50.31	0.00	50.31	1,130.07	270.32	634.36	571.86	0.28	-0.09	0.046
35.00	-26.40	-0.93	0.00	-48.28	0.00	48.28	1,119.12	266.46	616.37	558.15	0.32	-0.10	0.044
40.00	-25.10	-0.92	0.00	-43.64	0.00	43.64	1,081.75	257.56	575.90	521.31	0.43	-0.11	0.042
45.00	-24.45	-0.92	0.00	-39.05	0.00	39.05	1,044.38	248.66	536.82	485.73	0.56	-0.13	0.040
47.50	-23.81	-0.91	0.00	-36.76	0.00	36.76	1,025.69	244.21	517.79	468.42	0.63	-0.14	0.038
47.50	-23.81	-0.91	0.00	-36.76	0.00	36.76	1,025.69	244.21	517.79	468.42	0.63	-0.14	0.038
50.00	-22.53	-0.89	0.00	-34.48	0.00	34.48	1,007.01	239.76	499.10	451.41	0.71	-0.15	0.037
55.00	-21.27	-0.87	0.00	-30.03	0.00	30.03	969.64	230.87	462.76	418.35	0.87	-0.16	0.034
60.00	-20.35	-0.85	0.00	-25.67	0.00	25.67	932.27	221.97	427.79	386.54	1.04	-0.17	0.031
62.92	-19.73	-0.84	0.00	-23.18	0.00	23.18	910.47	216.78	408.02	368.57	1.15	-0.18	0.029
65.00	-19.50	-0.84	0.00	-21.43	0.00	21.43	894.90	213.07	394.19	355.99	1.23	-0.18	0.027
65.75	-19.10	-0.83	0.00	-20.80	0.00	20.80	664.38	162.37	305.14	269.42	1.26	-0.19	0.030
67.50	-18.52	-0.81	0.00	-19.36	0.00	19.36	658.03	160.03	296.43	262.98	1.33	-0.19	0.029
67.50	-18.52	-0.81	0.00	-19.36	0.00	19.36	658.03	160.03	296.43	262.98	1.33	-0.19	0.029
70.00	-16.94	-0.77	0.00	-17.33	0.00	17.33	648.81	156.70	284.20	253.83	1.43	-0.20	0.026
75.00	-16.50	-0.75	0.00	-13.49	0.00	13.49	629.79	150.02	260.52	235.80	1.64	-0.21	0.023
77.00	-16.27	-0.75	0.00	-11.98	0.00	11.98	618.88	147.35	251.33	227.55	1.72	-0.21	0.021
77.04	-15.56	-0.72	0.00	-11.95	0.00	11.95	618.65	147.30	251.14	227.38	1.73	-0.21	0.012
77.04	-15.56	-0.72	0.00	-11.95	0.00	11.95	618.65	147.30	251.14	227.38	1.73	-0.21	0.022
80.00	-11.09	-0.56	0.00	-9.81	0.00	9.81	602.07	143.35	237.86	215.29	1.86	-0.21	0.018
85.00	-10.86	-0.55	0.00	-7.01	0.00	7.01	574.04	136.68	216.24	195.61	2.08	-0.22	0.015
85.00	-10.86	-0.55	0.00	-7.01	0.00	7.01	574.04	136.68	216.24	195.61	2.08	-0.22	0.055
87.00	-8.65	-0.46	0.00	-5.91	0.00	5.91	562.83	134.01	207.88	188.00	2.17	-0.22	0.047
90.00	-6.16	-0.35	0.00	-4.53	0.00	4.53	546.01	130.00	195.65	176.87	2.32	-0.23	0.037
95.00	-5.70	-0.33	0.00	-2.78	0.00	2.78	517.98	123.33	176.08	159.08	2.57	-0.25	0.028
100.00	-5.47	-0.32	0.00	-1.14	0.00	1.14	489.95	116.66	157.55	142.23	2.84	-0.26	0.019
100.00	-5.47	-0.32	0.00	-1.14	0.00	1.14	459.24	137.77	149.89	150.79	2.84	-0.26	0.020
102.00	-1.25	-0.08	0.00	-0.51	0.00	0.51	459.24	137.77	149.89	150.79	2.95	-0.26	0.006
105.00	-0.87	-0.06	0.00	-0.28	0.00	0.28	459.24	137.77	149.89	150.79	3.12	-0.27	0.004
110.00	0.00	-0.05	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	3.40	-0.27	0.000



Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.25	-0.92	0.00	-79.49	0.00	79.49	1,564.13	420.30	1,179.53	948.21	0.00	0.00	0.028
5.00	-24.84	-0.92	0.00	-74.90	0.00	74.90	1,541.15	408.73	1,115.51	908.35	0.01	-0.01	0.027
10.00	-24.28	-0.92	0.00	-70.30	0.00	70.30	1,517.03	397.17	1,053.29	868.61	0.02	-0.02	0.026
12.00	-23.45	-0.92	0.00	-68.45	0.00	68.45	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.025
12.00	-23.45	-0.92	0.00	-68.45	0.00	68.45	1,507.06	392.54	1,028.90	852.76	0.03	-0.03	0.025
15.00	-22.75	-0.92	0.00	-65.68	0.00	65.68	1,491.77	385.60	992.85	829.06	0.05	-0.03	0.025
17.50	-22.28	-0.92	0.00	-63.37	0.00	63.37	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.024
17.50	-22.28	-0.92	0.00	-63.37	0.00	63.37	1,478.72	379.82	963.30	809.36	0.07	-0.04	0.040
20.00	-21.34	-0.92	0.00	-61.06	0.00	61.06	1,465.38	374.03	934.19	789.74	0.09	-0.04	0.038
25.00	-20.54	-0.92	0.00	-56.44	0.00	56.44	1,437.85	362.47	877.32	750.71	0.15	-0.06	0.037
29.33	-20.37	-0.93	0.00	-52.44	0.00	52.44	1,413.10	352.45	829.52	717.20	0.21	-0.08	0.035
30.00	-19.68	-0.92	0.00	-51.82	0.00	51.82	1,409.19	350.90	822.24	712.04	0.22	-0.08	0.034
32.83	-19.28	-0.92	0.00	-49.21	0.00	49.21	1,130.07	270.32	634.36	571.86	0.27	-0.09	0.041
35.00	-18.37	-0.91	0.00	-47.21	0.00	47.21	1,119.12	266.46	616.37	558.15	0.32	-0.10	0.040
40.00	-17.46	-0.90	0.00	-42.65	0.00	42.65	1,081.75	257.56	575.90	521.31	0.43	-0.11	0.038
45.00	-17.01	-0.90	0.00	-38.14	0.00	38.14	1,044.38	248.66	536.82	485.73	0.55	-0.13	0.035
47.50	-16.56	-0.89	0.00	-35.89	0.00	35.89	1,025.69	244.21	517.79	468.42	0.62	-0.13	0.034
47.50	-16.56	-0.89	0.00	-35.89	0.00	35.89	1,025.69	244.21	517.79	468.42	0.62	-0.13	0.034
50.00	-15.68	-0.87	0.00	-33.67	0.00	33.67	1,007.01	239.76	499.10	451.41	0.69	-0.14	0.033
55.00	-14.80	-0.85	0.00	-29.31	0.00	29.31	969.64	230.87	462.76	418.35	0.85	-0.16	0.030
60.00	-14.16	-0.83	0.00	-25.05	0.00	25.05	932.27	221.97	427.79	386.54	1.02	-0.17	0.027
62.92	-13.72	-0.82	0.00	-22.62	0.00	22.62	910.47	216.78	408.02	368.57	1.12	-0.18	0.026
65.00	-13.57	-0.82	0.00	-20.91	0.00	20.91	894.90	213.07	394.19	355.99	1.20	-0.18	0.024
65.75	-13.29	-0.81	0.00	-20.29	0.00	20.29	664.38	162.37	305.14	269.42	1.23	-0.18	0.026
67.50	-12.89	-0.79	0.00	-18.88	0.00	18.88	658.03	160.03	296.43	262.98	1.30	-0.19	0.025
67.50	-12.89	-0.79	0.00	-18.88	0.00	18.88	658.03	160.03	296.43	262.98	1.30	-0.19	0.025
70.00	-11.79	-0.75	0.00	-16.90	0.00	16.90	648.81	156.70	284.20	253.83	1.40	-0.19	0.023
75.00	-11.48	-0.74	0.00	-13.16	0.00	13.16	629.79	150.02	260.52	235.80	1.60	-0.20	0.019
77.00	-11.32	-0.73	0.00	-11.69	0.00	11.69	618.88	147.35	251.33	227.55	1.69	-0.20	0.018
77.04	-10.82	-0.70	0.00	-11.66	0.00	11.66	618.65	147.30	251.14	227.38	1.69	-0.20	0.011
77.04	-10.82	-0.70	0.00	-11.66	0.00	11.66	618.65	147.30	251.14	227.38	1.69	-0.20	0.019
80.00	-7.72	-0.55	0.00	-9.57	0.00	9.57	602.07	143.35	237.86	215.29	1.82	-0.21	0.016
85.00	-7.55	-0.54	0.00	-6.84	0.00	6.84	574.04	136.68	216.24	195.61	2.04	-0.21	0.013
85.00	-7.55	-0.54	0.00	-6.84	0.00	6.84	574.04	136.68	216.24	195.61	2.04	-0.21	0.048
87.00	-6.01	-0.45	0.00	-5.76	0.00	5.76	562.83	134.01	207.88	188.00	2.13	-0.22	0.041
90.00	-4.28	-0.34	0.00	-4.42	0.00	4.42	546.01	130.00	195.65	176.87	2.27	-0.23	0.033
95.00	-3.97	-0.32	0.00	-2.71	0.00	2.71	517.98	123.33	176.08	159.08	2.52	-0.25	0.025
100.00	-3.81	-0.31	0.00	-1.12	0.00	1.12	489.95	116.66	157.55	142.23	2.78	-0.26	0.016
100.00	-3.81	-0.31	0.00	-1.12	0.00	1.12	459.24	137.77	149.89	150.79	2.78	-0.26	0.016
102.00	-0.87	-0.08	0.00	-0.50	0.00	0.50	459.24	137.77	149.89	150.79	2.89	-0.26	0.005
105.00	-0.60	-0.05	0.00	-0.27	0.00	0.27	459.24	137.77	149.89	150.79	3.05	-0.26	0.003
110.00	0.00	-0.05	0.00	0.00	0.00	0.00	459.24	137.77	149.89	150.79	3.32	-0.26	0.000

Site Number: 302481

Code: ANSI/TIA-222-H

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Site Name: Hrfr - South, CT

Engineering Number: OAA739695\_C4\_07

3/25/2019 4:52:58 PM

Customer: AT&T MOBILITY

### Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	26.17	0.00	39.73	0.00	0.00	1938.02	85.00	0.91
0.9D + 1.0W	26.14	0.00	29.78	0.00	0.00	1909.81	85.00	0.88
1.2D + 1.0Di + 1.0Wi	9.28	0.00	92.55	0.00	0.00	707.68	85.00	0.38
1.2D + 1.0Ev + 1.0Eh	0.92	0.00	37.73	0.00	0.00	80.81	85.00	0.05
0.9D - 1.0Ev + 1.0Eh	0.92	0.00	26.25	0.00	0.00	79.49	85.00	0.05
1.0D + 1.0W	6.80	0.00	33.16	0.00	0.00	498.76	85.00	0.24

Additional Steel Summary

			Intermediate Connectors				Max Member		
Elev From (ft)	Elev To (ft)	Member	VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
0.00	12.00	(4) SOL-#20 All Thread Bar	245.9	9.6	16.8	0.571	219.5	315.5	0.696
0.00	17.50	(4) PL-PL 6 x 1.25	311.7	7.5	38.3	0.195	280.0	362.0	0.773
12.00	47.50	(4) SOL-#20 All Thread Bar	446.2	13.4	16.8	0.796	313.3	330.5	0.948
47.50	67.50	(4) SOL-#20 All Thread Bar	504.2	15.1	16.8	0.900	222.0	330.5	0.672
67.50	77.04	(4) SOL-#20 All Thread Bar	504.2	15.1	16.8	0.900	152.5	330.5	0.461
77.00	85.00	(4) PL-PL 5" x 1.25"	591.4	14.2	38.3	0.371	126.3	287.7	0.439

			Upper Termination Connectors				Lower Termination Connectors					
Elev From (ft)	Elev To (ft)	Member	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	12.00	(4) SOL-#20 All Thread Bar	0.0	12.0	0	0	0.000	0.0	12.0	0	0	0.000
0.00	17.50	(4) PL-PL 6 x 1.25	239.4	38.3	7	10	0.626	0.0	38.3	0	0	0.000
12.00	47.50	(4) SOL-#20 All Thread Bar	0.0	12.0	0	0	0.000	0.0	12.0	0	0	0.000
47.50	67.50	(4) SOL-#20 All Thread Bar	0.0	12.0	0	0	0.000	0.0	12.0	0	0	0.000
67.50	77.04	(4) SOL-#20 All Thread Bar	64.7	12.0	6	7	0.771	0.0	12.0	0	0	0.000
77.00	85.00	(4) PL-PL 5" x 1.25"	0.0	38.3	0	8	0.000	0.0	38.3	0	8	0.000

Site Name: Hrfr-South, CT  
 Site Number: 302481  
 Engineering Number: OAA739695  
 Engineer: adam.pittman  
 Date: 3/25/2019

**Design Base Loads (Factored) - Design per TIA-222-G Standard**

Moment (Overturning) ( $M_u$ ): 1938.0 k-ft  
 Shear ( $V_u$ ): 26.2 k  
 Axial ( $P_u$ ): 39.7 k

Tower Type (GT / SST / MP):

MP

Length / Width of Block:	6.0	9.0 ft
Thickness of Block:	6.0	ft
Block Height Above Ground:	0.5	ft
Depth Below Ground Surface to Water Table (w):	99.0	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil:	125.0	pcf
Unit Weight of Water:	62.4	pcf
Ultimate Compressive Bearing Pressure:	10000	psf
Capacity Increase (Due to Transient Loads):	1.00	
Pullout Angle:	30.0	degrees
Rod Diameter:	1.00	in
Rod Ultimate Strength:	105	ksi
Original Rod Net Area:	0.76	in <sup>2</sup>
New Rod Net Area:	0.78	in <sup>2</sup>
Number of Rods:	18	
Diameter of Cored Hole:	2.00	in
Ultimate Grout / Rock Interface Bond Strength:	200	psi
Ultimate Grout / Rock Anchor Interface Bond Strength:	600	psi
Overall Rod Embedment Length:	72	in
Rod Exposure Above Lock Off Nut in Foundation:	60	in
Rod Embedment Circle:	96	in
Free Stress Length:	0	in
Soil / Concrete Friction Coefficient:	0.44	
Rock Anchor Design Plastic or Elastic:	Elastic	
Ignore Pullout Weight Resistance (Y/N):	Y	
Volume of Concrete:	324.0	ft <sup>3</sup>
Compressive Bearing Resistance:	424.1	k
Soil Strength Reduction Factor ( $\phi_s$ ):	0.75	
Factored Nominal Moment Capacity per Leg ( $\phi_s M_n$ ):	2108.0	k
Factored Nominal Uplift Capacity per Leg ( $\phi_s T_n$ ):	1150.8	k
Factored Nominal Compressive Capacity per Leg ( $\phi_s P_n$ ):	318.1	k
Factored Nominal Shear Capacity per Leg ( $\phi_s V_n$ ):	660.0	k
$M_u$ :	2095.0	k-ft
$T_u$ :	0.0	k
$P_u$ :	48.6	k
$V_u$ :	26.2	k
$T_u / \phi_s T_n + M_u / \phi_s M_n$ :	<b>0.99</b>	<b>Result: OK</b>
$P_u / \phi_s P_n$ :	<b>0.15</b>	<b>Result: OK</b>
$V_u / \phi_s V_n$ :	<b>0.04</b>	<b>Result: OK</b>

## Caisson Strength Capacity

Concrete Compressive Strength ( $f'_c$ ):	3000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in <sup>2</sup>
# of Vertical Steel Rebars:	78 Minimum # of vertical rebar met
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in <sup>2</sup>
Horizontal Tie / Stirrup Spacing:	11.0 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	60 ksi
Rod Bearing Plate Diameter:	8.0 in
Rod Bearing Plate Thickness:	1.0 in
Anchor Bearing Plate Yield Strength:	36 ksi
Anchor Rod Nut Diameter:	2.02 in
Rebar Cage Diameter:	82.0 in
Strength Bending/Tension Reduction Factor ( $\phi_B$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_V$ ):	0.75 ACI318-05 - 9.3.2.3
Strength Compression/Bearing Reduction Factor ( $\phi_{P/B}$ ):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	2095.0 k-ft
Factored Nominal Moment Capacity ( $\phi_B M_n$ ):	21953.2 k-ft - ACI318-05 - 10.2
$M_u/\phi_B M_n$ :	<b>0.10 Result: OK</b>
Design Shear ( $V_u$ ):	518.9 k
Factored Nominal Shear Capacity ( $\phi_V V_n$ ):	502.8 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$ :	<b>1.03 Result: Acceptable Overstress</b>
Design Tension ( $T_u$ ):	0.0 k
Factored Nominal Tension Capacity ( $\phi_T T_n$ ):	6570.7 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$ :	<b>0.00 Result: OK</b>
Design Compression ( $P_u$ ):	39.7 k
Factored Nominal Compression Capacity ( $\phi_P P_n$ ):	6161.7 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$ :	<b>0.01 Result: OK</b>



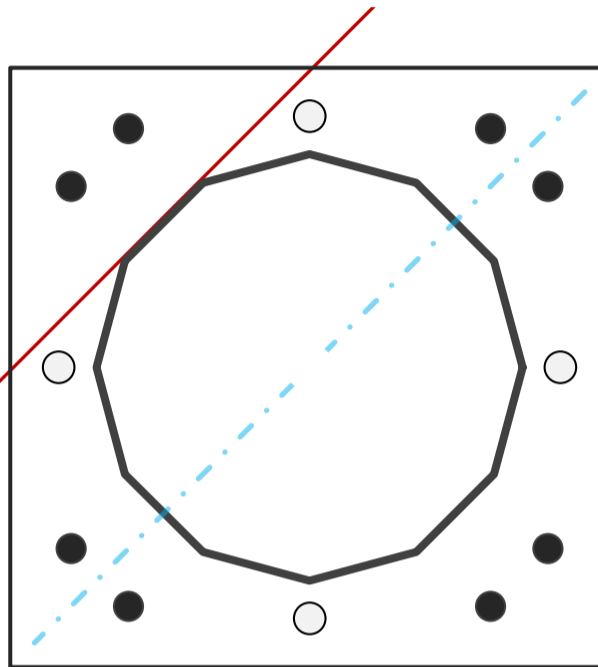
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	30	in
Thickness	0.25	in
Orientation Offset		°

Base Reactions		
Moment, Mu	1938.0	k-ft
Axial, Pu	39.7	k
Shear, Vu	26.2	k
Neutral Axis	45	°

Report Capacities		
Component	Capacity	Result
Base Plate	89%	Pass
Anchor Rods	45%	Pass
Dwyidag	66%	Pass

Base Plate		
Shape	Square	-
Width	44	in
Thickness	2	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	0	in
Orientation Offset		°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	1539.9	k
Bending Stress, $\phi Mn$	1726.7	k



Dwyidag Reinforcement		
Quantity	4	-
Bar Size	#20	in
Diameter, $\phi$	2.5	in
Bracket Type	Angle	-
Circle	36.88	in
Orientation Offset	0	°
Applied Force, Pu	257.8	k
Dwyidag Bar, $\phi Pn$	392.7	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	44	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	115.4	k
Anchor Rods, $\phi Pn$	259.8	k

# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	26.2	839.3	0.43
Anchor Rod Forces	26.2	839.3	0.43
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1098.7	0.57
Stiffener Forces	0.0	0.0	0.00

## Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in <sup>2</sup>	in <sup>2</sup>	in <sup>4</sup>	#	in <sup>4</sup>
Pole	23.0996	1.9250	0.0403		2556.06
Bolt	3.9761	3.2477	0.8393	4.5	6294.24
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		3345.94
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	44	in
Thickness, t	2	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	32.187	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	44	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	115.4	k
Applied Shear, Vu	0.8	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.444	OK
Interaction Capacity	0.450	OK

External Base Plate		
Chord Length AA	31.975	in
Additional AA	0.000	in
Section Modulus, Z	31.975	in <sup>3</sup>
Applied Moment, Mu	1539.9	k-ft
Bending Capacity, φMn	1726.7	k-ft
Capacity, Mu/φMn	0.892	OK
Chord Length AB	30.908	in
Additional AB	0.000	in
Section Modulus, Z	30.908	in <sup>3</sup>
Applied Moment, Mu	1416.7	k-ft
Bending Capacity, φMn	1669.0	k-ft
Capacity, Mu/φMn	0.849	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Dywidag Reinforcement		
Dywidag Quantity, N	4	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	36.88	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	257.8	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.657	OK

Base/Flange Plate	Plate Type	<b>Flange @ 100.0 ft</b>
	Pole Diameter	12.75 in
	Pole Thickness	0.375 in
	Plate Diameter	28.5 in
	Plate Thickness	1.5 in
	Plate Fy	36 ksi
	Weld Length	0.25 in
	$\phi_s$ Resistance	60.83 k-in
	Applied	31.55 k-in
	Stiffeners	#

Code Rev. **G**

Date **3/25/2019**  
 Engineer **adam.pittman**  
 Site # **302481**  
 Carrier **AT&T MOBILITY**

Moment **38.4 k-ft**  
 Axial **6.0 k**

Required Flange Thickness:

**1.08 in** OK

Bolts	#	<b>12</b>
	Bolt Circle	26 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.0625 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	$\phi_s$ Resistance	54.52 k
	Applied	5.40 k
Reinforcement	#	0
Extra Bolts	#	0

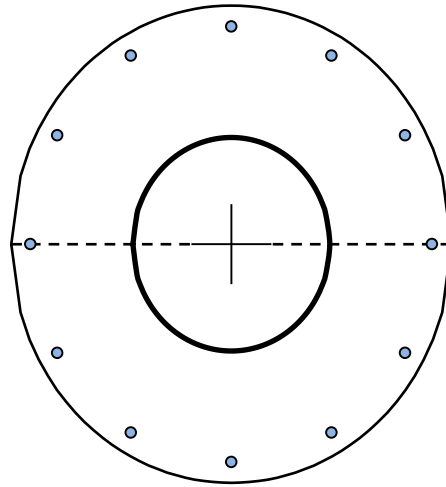


Plate Stress Ratio:  
**0.52** (Pass)

Bolt Stress Ratio:  
**0.10** (Pass)



## Margie Weber

---

**From:** TrackingUpdates@fedex.com  
**Sent:** Tuesday, August 27, 2019 10:35 AM  
**To:** Teresa Wodack  
**Subject:** FedEx Shipment 776051194365 Delivered

# Your package has been delivered

Tracking # 776051194365

Ship date:  
**Mon, 8/26/2019**

**Teresa Wodack**  
NB+C  
BLUE BELL, PA 19422  
US



**Delivered**

Delivery date:  
**Tue, 8/27/2019 10:32 am**

**Luke Bronin**  
Office of the Mayor  
550 Main Street  
Room 200  
HARTFORD, CT 06103  
US

## Shipment Facts

Our records indicate that the following package has been delivered.

**Tracking number:** [776051194365](#)

**Status:** Delivered: 08/27/2019 10:32 AM  
Signed for By: N.ACOSTA

**Reference:** 100322-302481

**Signed for by:** N.ACOSTA

**Delivery location:** HARTFORD, CT

**Delivered to:** Receptionist/Front Desk

**Service type:** FedEx 2Day®

**Packaging type:** FedEx® Pak

**Number of pieces:** 1

**Weight:** 1.00 lb.

**Special handling/Services:** Deliver Weekday

**Standard transit:** 8/28/2019 by 4:30 pm


## Margie Weber

---

**From:** TrackingUpdates@fedex.com  
**Sent:** Tuesday, August 27, 2019 10:32 AM  
**To:** Teresa Wodack  
**Subject:** FedEx Shipment 776051309846 Delivered

# Your package has been delivered


Tracking # [776051309846](#)

Ship date: <b>Mon, 8/26/2019</b>	Delivery date: <b>Tue, 8/27/2019 10:29 am</b>
<b>Teresa Wodack</b> NB+C BLUE BELL, PA 19422 US	 <b>Delivered</b>
	<b>Property Owner</b> Metropolitan District Bureau 555 Main Street HARTFORD, CT 06103 US

## Shipment Facts

Our records indicate that the following package has been delivered.

<b>Tracking number:</b>	<a href="#">776051309846</a>
<b>Status:</b>	Delivered: 08/27/2019 10:29 AM Signed for By: S.BELL
<b>Reference:</b>	100322 302481
<b>Signed for by:</b>	S.BELL
<b>Delivery location:</b>	HARTFORD, CT
<b>Delivered to:</b>	Guard/Security Station
<b>Service type:</b>	FedEx 2Day®
<b>Packaging type:</b>	FedEx® Pak
<b>Number of pieces:</b>	1
<b>Weight:</b>	1.00 lb.
<b>Special handling/Services:</b>	Deliver Weekday
<b>Standard transit:</b>	8/28/2019 by 4:30 pm

 Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 9:32 AM CDT on 08/27/2019.

## Margie Weber

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**From:** TrackingUpdates@fedex.com  
**Sent:** Tuesday, August 27, 2019 8:56 AM  
**To:** Teresa Wodack  
**Subject:** FedEx Shipment 776051222818 Delivered

## Your package has been delivered


Tracking # [776051222818](#)

Ship date: <b>Mon, 8/26/2019</b>	Delivery date: <b>Tue, 8/27/2019 8:49 am</b>	
<b>Teresa Wodack</b> NB+C BLUE BELL, PA 19422 US	 <b>Delivered</b>	<b>Aimee Chambers</b> Director of Planning 250 Constitution Plaza 4th Floor HARTFORD, CT 06103 US

### Shipment Facts

Our records indicate that the following package has been delivered.

<b>Tracking number:</b>	<a href="#">776051222818</a>
<b>Status:</b>	Delivered: 08/27/2019 08:49 AM Signed for By: D.MANAFIELD
<b>Reference:</b>	100322-302481
<b>Signed for by:</b>	D.MANAFIELD
<b>Delivery location:</b>	HARTFORD, CT
<b>Delivered to:</b>	Receptionist/Front Desk
<b>Service type:</b>	FedEx 2Day®
<b>Packaging type:</b>	FedEx® Pak
<b>Number of pieces:</b>	1
<b>Weight:</b>	1.00 lb.
<b>Special handling/Services:</b>	Deliver Weekday
<b>Standard transit:</b>	8/28/2019 by 4:30 pm

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