



10 INDUSTRIAL AVENUE,
SUITE 3
MAHWAH, NJ 07430
PHONE: 201.684.0055
FAX: 201.684.0066

May 19, 2020

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

Notice of Exempt Modification
992 Northrop Road, Wallingford CT
Latitude: 41.48938889
Longitude: -72.76833333
T-Mobile site: CT11054A /L600

Dear Ms. Bachman:

T-Mobile currently maintains (6) antennas at the 141 foot level of the existing 150 -foot monopole located at 992 Northrop Road in Wallingford CT. The monopole is owned by American Tower and the underlying property is owned by AT&T Wireless PCS Inc. T-Mobile now intends to add (3) 600/700 MHz antennas at the 141foot level of the tower with proposed mount modifications as per the attached mount analysis.

Planned Modifications:

Remove

(2) 1-5/8" coax

Remove and Replace:

RRUs:

(3) Ericsson RRUS 11 B12 (REMOVE) – (3) Ericsson Radio 4449 B12, B71 (REPLACE)

Existing to Remain:

Antennas/TMAs/RRUs/coax:

(3) AIR 21 B4A B12P-B5P

(3) AIR 21 B4P B2A

(3) KRY 112 144/1

(10) 1-5/8" coax

(1) 1-1/4" Hybrid

Install New:

Antennas:

(3) RFS APXVAARR24_43-U-NA20 - 600 MHz / 700 MHz

Coax Cables:

(2) 1-5/8" hybrid

This facility was approved by the Wallingford Planning and Zoning Commission on June 13, 1994, with no known conditions that would restrict exempt modifications. A copy of the original facility approval is attached.

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 The Honorable William W. Dickinson, Jr., Mayor, and Kacie Hand, Town Planner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Elizabeth Jamieson

Elizabeth Jamieson
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
860-605-7808
EJamieson@TranscendWireless.com

cc:

The Honorable William W. Dickinson, Jr., Mayor
Kacie Hand, Town Planner
American Tower Corp, Tower Owner
AT&T Wireless PCS Inc., Property Owner

Exhibit A

Original Facility Approval



Town of Wallingford, Connecticut

407-94

SPECIAL PERMIT

ISSUED TO:

NAME SMART SMR OF NEW YORK

ADDRESS 575 Corporate Drive, Suite 402, Mahwah, NJ 07430

ISSUED FOR: 1,650 sq. ft. mobile radio transmission facility

163 ft. radio tower

OWNER OF PROPERTY Anthony D. Autorino

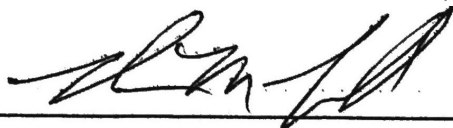
LEGAL DESCRIPTION OF PROPERTY 1000
990 Northrup Road

CONDITIONS OF PERMIT:

1. Mr. Costello's comments concerning the "T" driveway
2. _____
3. _____
4. _____

DATE APPROVED BY PZC June 13, 1994

WALLINGFORD PLANNING AND ZONING COMMISSION

BY 

ASSISTANT TOWN PLANNER

PUBLIC HEARINGS

1. Special Permit/SMART/SMR/Northrup - #407-94 (continued)

The applicant requested a special permit to install a telecommunications tower at 990 Northrup Road in Wallingford. The application is for a 150 ft. monopole with 13 ft. width antennas on top for an overall height of 163 ft.

Ms. Bogle presented the company's history. SMART SMR is building a telecommunications system throughout New York, New Jersey, and Connecticut. This system will provide digital communication by combining dispatch, interconnect, paging, and data transmission into one system. This is a dishless system which travels over the radio waves. In order for this system to operate it must have a line of sight from the transmitter to the receiver. This is why it is necessary to have a height of 150 ft. The system will cover Wallingford, Meriden, North Haven, and Rocky Hill.

This system is categorized as a public utility which requires a special permit. Towers are exempt under the regulations from having a variance.

The present site is near a parking lot occupied for Double A Transportation, Inc. This site is not suitable to build on because of the setback requirements. The site meets all the setbacks for this facility and enables the property to be developed without asking for any variances.

Ms. Bogle presented the criteria used by the applicant when looking for an appropriate site for the tower in order to provide sufficient coverage. They did investigate the possibility of putting the antenna on top of a hotel near the site. However, it would not allow adequate coverage for the area due to the rolling nature of the topography. Ms. Bogle presented the Commission with photographs to give them an idea of the structure, as well as the existing parcel.

Ms. Bogle stated in response to Ms. Bush's letter to Bristol-Myers Squibb (Attachment 1A), the applicant has to file a report with the FAA and notices are sent to surrounding airports. She did not foresee any special conditions that would be specified by the FAA for their request. The helicopters at Bristol-Myers are taking off straight up in the air and the applicant has not had a problem even being located adjacent to a helipad.

She stated it has been her experience that they would not have to light or stripe the pole because of its height. Additional photographs were distributed to the Commission showing other facilities the applicant has built in Connecticut (185 ft. in height).

Ms. Bogle stated the foundation for the tower will be 2,520 sq. ft. and the monopole will be on a 15' x 15' foundation. She spoke to the Water/Sewer Division because it is a watershed area. She was informed that this use did not contribute nor inhibit the watershed and therefore, was appropriate for the area.

Ms. Bogle addressed Mr. Costello's comments (Attachment 1B) stating the plans will reflect his request to configure the driveway off Northrop Road to improve sight distance to the north.

Exhibit B

Property card

AT&T WIRELESS PCS INC	UTILITIES	STRT./ROAD	LOCATION	DESCRIPTION	CURRENT ASSESSMENT	PREVIOUS ASSESSMENTS (HISTORY)
AT&T WIRELESS PCS INC C/O AT&T MOBILITY 575 MOROSGO DR SUITE 13-F WEST TOWER ATLANTA, GA 30324 Additional Owners:	1 Level	2 Public Water	1 Paved	5 Industrial	UTIL BLDG UTIL OUTBL	4-2 4-3
Other ID: 009001003004	SUPPLEMENTAL DATA		P/Z MAP # ENG MAP # TC MAP # Town Line? IND PARKS II	ASSOC PID#	86,700	60,700
Census: 009001003004	P/Z MAP # ENG MAP # TC MAP # Town Line? IND PARKS II		ASSOC PID#	60,700	60,700	60,700
Record Lot GIS ID: 54/10/4	ASSOC PID#		60,700	60,700	60,700	60,700

VISION
 6148
 WALLINGFORD, CT

Year	Type	Description	Amount	Code	Description	Number	Amount	Comm. Int.
EXEMPTIONS								
OTHER ASSESSMENTS								
ASSESSING NEIGHBORHOOD								
NOTES								
PREFAB EQUIPMENT BLDG								
VALUED @ \$36000								
NO LAND - CELL TOWER ONLY								
4 ANTENNA SITES								

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2017	4-2	58,700	2016	4-2	58,700	2015	4-2	58,700
2017	4-3	2,000	2016	4-3	2,000	2015	4-3	2,000
Total:		60,700	Total:		60,700	Total:		60,700

Appraised Bldg. Value (Card)	Appraised XF (B) Value (Bldg)	Appraised OB (L) Value (Bldg)	Appraised Land Value (Bldg)	Special Land Value	Total Appraised Parcel Value	Valuation Method:
36,300	0	2,800	0	0	86,700	C
Adjustment:						
Net Total Appraised Parcel Value						

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments	Date	Type	IS	ID	Ca.	Purpose/Result
30441	04/25/2016	CM	Commercial	25,000	08/26/2016	100		CHANGE 3 ANTENNA	08/26/2016	02		KC	63	Permit Check - No Measu
30289	03/09/2016	CM	Commercial	15,000	08/26/2016	100		ATTACH ANTENNAE	09/27/2013	02		TH	63	Permit Check - No Measu
27905	07/18/2013	CM	Commercial	15,000	09/27/2013	100		T-MOBILE- REPL EXN	07/11/2013	02		TH	63	Permit Check - No Measu
27658	05/13/2013	CM	Commercial	15,000	07/11/2013	100		RENOVATE TEL CAB	10/07/2012	03		KC	46	Photo
12503	01/10/2000	CM	Commercial	73,000		100		CELL TOWER EQUIP	05/17/2010	03		DT	29	Field Review

LAND LINE VALUATION SECTION

B Use # Code	Use Description	Zone	D Front	Depth	Units	Unit Price	I Factor	S.A. Disc	C Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing	S Adj Fact	Adj. Unit Price	Land Value
1	4310 TELL REL TW	M196	IX		0 SF	0.00	1.0000	0	1.0000	1.00	0.00			.00	0.00	0

Total Card Land Units: 0.00 AC Parcel Total Land Area: 0 AC																
Total Land Value: 0																

CONSTRUCTION DETAIL

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd	Ch	Description	Element	Cd	Ch	Description
Style	406		Telephone Building				
Model	96		Ind/Comm				
Grade	C						
Stories	1						
Occupancy	1						
Exterior Wall 1	22		Precast Panel				
Exterior Wall 2							
Roof Structure	01		Flat				
Roof Cover	04		Tar & Gravel				
Interior Wall 1	01		Minim/Masonry				
Interior Wall 2							
Interior Floor 1	03		Concr-Finished				
Interior Floor 2							
Heating Fuel	04		Electric				
Heating Type	03		Hot Air-no Duc				
AC Type	02		Heat Pump				
Bldg Use	4310		TEL REL TW M96				
Total Rooms							
Total Bedrms							
Total Baths							
Heat/AC	01		Heat/AC Pkgs				
Frame Type	03		Masonry				
Baths/Plumbing	00		None				
Ceiling/Wall	00		None				
Rooms/Prtns	01		Light				
Wall Height	10						
% Conn Wall							

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B Units	Unit Price	Yr	Code	Dp Rt	Chd	%Chd	Apr Value

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	288	288	288	175.70	50,602

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value

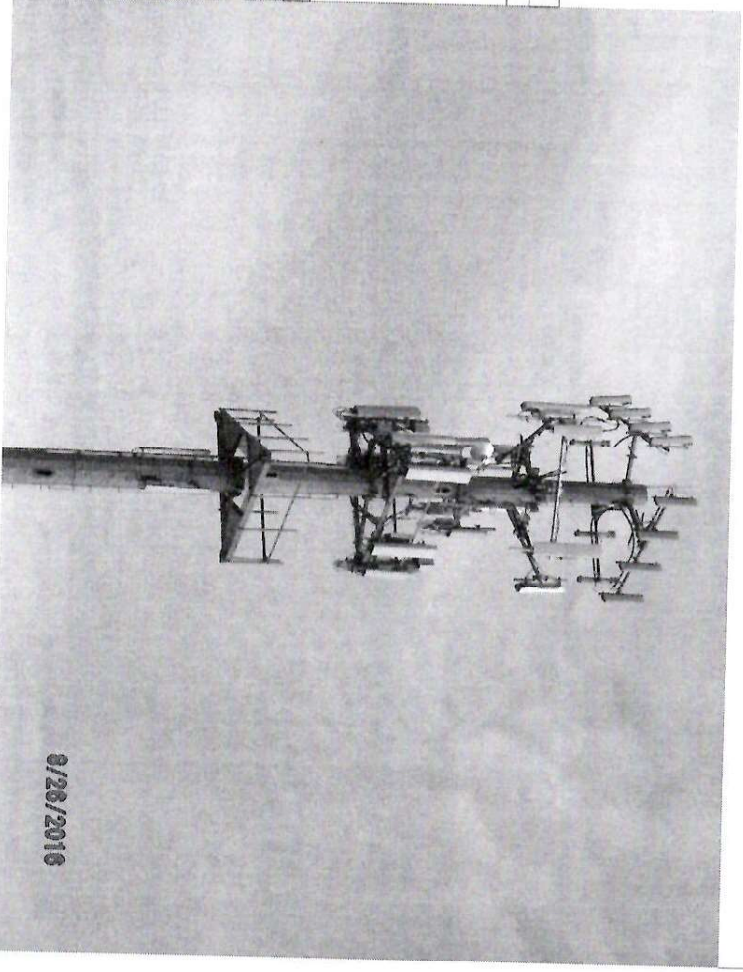
Code	Description	Percentage
4310	TEL REL TW M96	100

COST/MARKET VALUATION

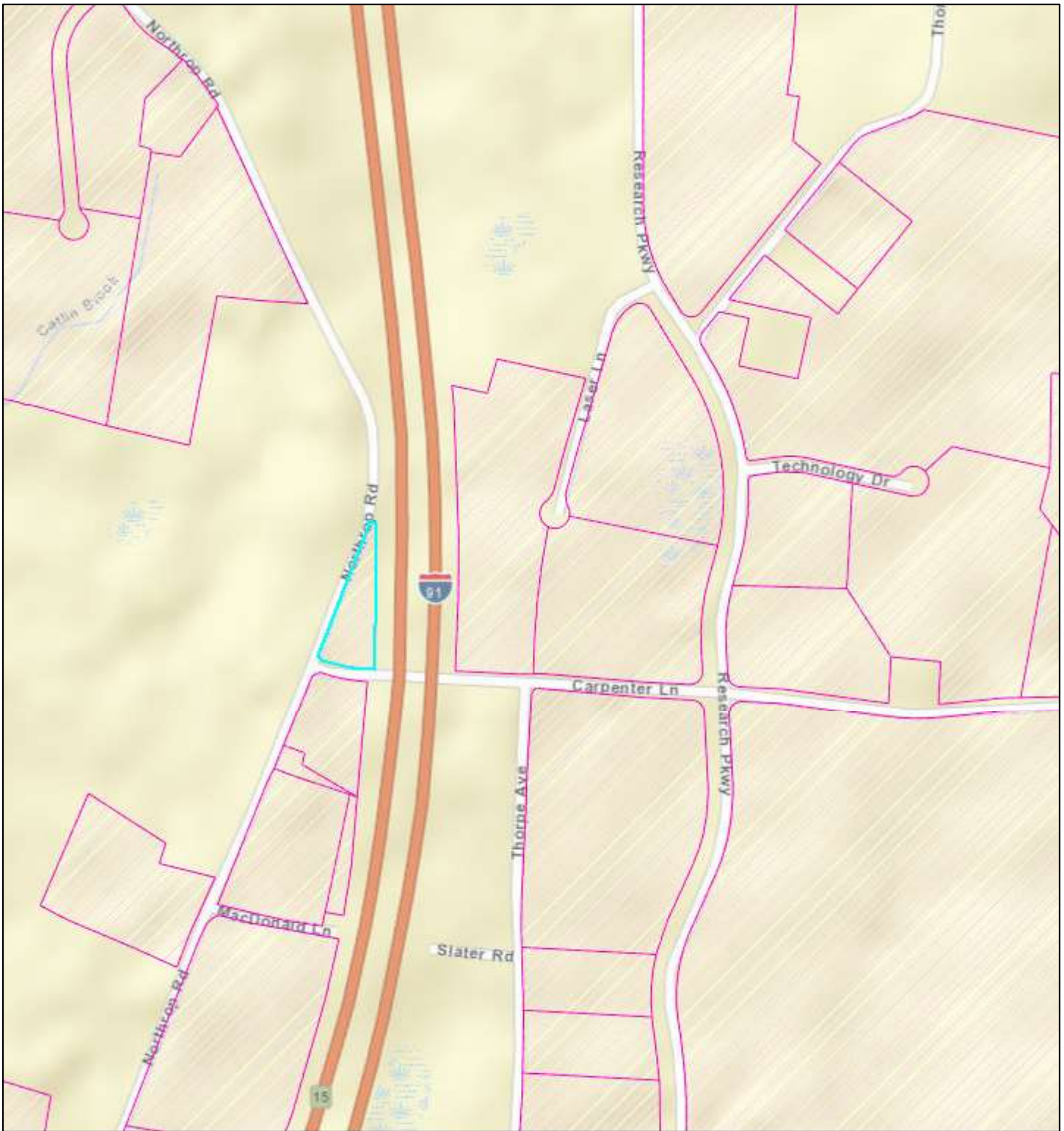
Adj. Base Rate:	175.70
Net Other Adj:	50,602
Replace Cost	0.00
AYB	50,602
	2009

Dep Code	A
Remodel Rating	
Year Remodeled	
Dep %	6

Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Status	
% Complete	
Overall % Cond	94
Apprais Val	47,600
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	

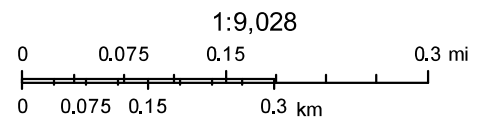


Town of Wallingford, CT



3 / 12 / 2018 9 : 48 : 24 PM

 Lot Boundaries



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Exhibit C

Construction Drawings

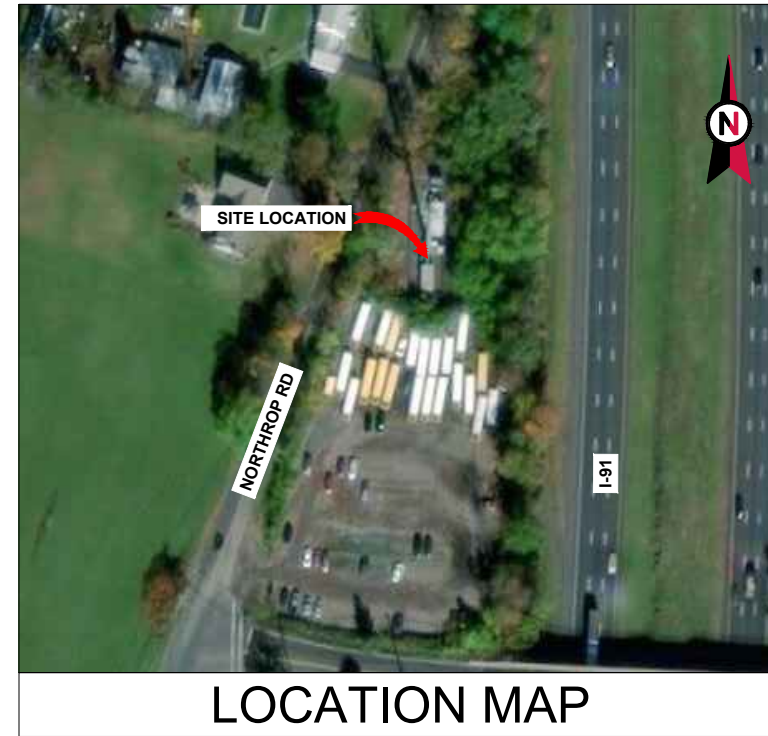


VICINITY MAP



AMERICAN TOWER®

ATC SITE NAME: PARSONAGE HILL AKA WALLIN
 ATC SITE NUMBER: 302538
 T-MOBILE SITE ID: CT11054A
 SITE ADDRESS: 922 NORTHROP ROAD WALLINGFORD, CT 06492



LOCATION MAP

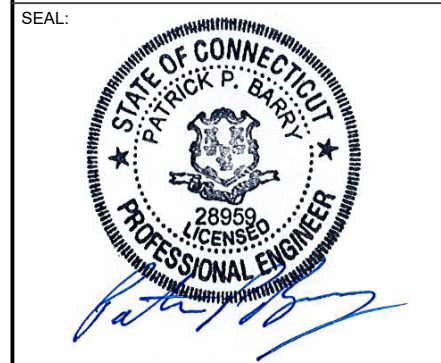
**T-MOBILE L600 ANTENNA AMENDMENT
 67D02C CONFIGURATION**

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

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	FOR CONSTRUCTION	LR	07/24/19
1	MA & CONFIG UPDATE	LR	08/20/19

ATC SITE NUMBER:
302538
 ATC SITE NAME:
PARSONAGE HILL AKA WALLIN
 SITE ADDRESS:
 922 NORTHROP ROAD
 WALLINGFORD, CT 06492



Authorized by "EOR"
 Aug 20 2019 5:26 PM
 P-Mobile design

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	07/24/19
ATC JOB NO:	12927186

TITLE SHEET
 SHEET NUMBER:
G-001
 REVISION:
1

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. 1. INTERNATIONAL BUILDING CODE (IBC) 2. NATIONAL ELECTRIC CODE (NEC) 3. LOCAL BUILDING CODE 4. CITY/COUNTY ORDINANCES	<u>SITE ADDRESS:</u> 922 NORTHROP ROAD WALLINGFORD, CT 06492 COUNTY: NEW HAVEN <u>1A CERTIFICATE SUMMARY:</u> LATITUDE: 41° 29' 21.65" N LONGITUDE: 72° 46' 05.7" W GROUND ELEVATION: 383' AMSL TOWER HEIGHT: 152' AGL HIGHEST APPURTENANCE: 160' AGL	THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW: REMOVE (3) RRUs AND (2) 1-5/8" COAX CABLES INSTALL (3) NEW PANELS, (3) RRUs, AND (2) 1-5/8" HYBRID CABLES EXISTING (6) PANELS, (3) TTAs, (1) 1-1/4" HYBRID CABLE AND (10) 1-5/8" COAX CABLES TO REMAIN	SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
	<u>PROJECT TEAM</u> <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 <u>ENGINEER:</u> ATC TOWER SERVICES, LLC 3500 REGENCY PKWY STE 100 CARY, NC 27518 <u>PROPERTY OWNER:</u> SPECTRA SITE COMMUNICATION INC 2002 ANNAPOLIS MALL RD ANNAPOLIS, MD 21401	<u>PROJECT NOTES</u> 1. THE FACILITY IS UNMANNED. 2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE. 3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE. 4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED. 5. HANDICAP ACCESS IS NOT REQUIRED.	G-001	TITLE SHEET	1	08/20/19	LR
			G-002	GENERAL NOTES	0	07/24/19	LR
	<u>UTILITY COMPANIES</u> POWER COMPANY: WALLING ELECTRIC 24HR EMEFRGENCIES PHONE: (203) 2655-5055 TELEPHONE COMPANY: FRONTIER COMMUNICATIONS PHONE: (800) 376-6843	<u>PROJECT LOCATION DIRECTIONS</u> FROM HARTFORD I-91 SOUTH: GO TO EXIT 15, RIGHT AT OFF RAMP AND THEN RIGHT AGAIN ONTO NORTHROP ROAD - FOLLOW TO SITE	C-101	DETAILED SITE PLAN & TOWER ELEVATION	1	08/20/19	LR
C-501			ANTENNA INFORMATION & SCHEDULE	1	08/20/19	LR	
C-502			GROUNDING DETAILS	1	07/24/19	LR	
R-601			SUPPLEMENTAL				
		R-602	SUPPLEMENTAL				
		R-603	SUPPLEMENTAL				
		R-604	SUPPLEMENTAL				



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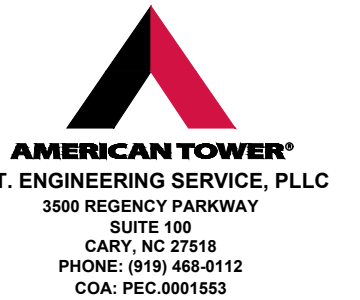
GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSIEIA/TIA-222, AND COMPLY WITH ATC MASTER SPECIFICATIONS.
2. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
4. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
5. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
6. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
9. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
10. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE WIRELESS REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
12. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE WIRELESS CONSTRUCTION MANAGER.
13. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
14. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE WIRELESS REP IMMEDIATELY.
15. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
16. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
17. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH LANDLORD AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
18. CONTRACTOR SHALL FURNISH T-MOBILE WIRELESS WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
19. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
20. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE WIRELESS SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
24. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
25. CONTRACTOR SHALL NOTIFY T-MOBILE WIRELESS REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

27. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
28. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE WIRELESS REP. ANY WORK FOUND BY THE T-MOBILE WIRELESS REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
29. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
 - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
 - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
 - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
 - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
 - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. 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.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND 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 MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
 - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
 - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
 - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
 - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
 - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
 - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
 - G. PRIOR TO FIELD WELDING GALVANIZING 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.



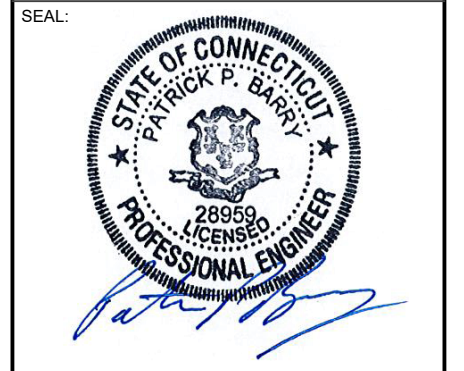
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0	FOR CONSTRUCTION	LR	07/24/19

ATC SITE NUMBER:
302538

ATC SITE NAME:
PARSONAGE HILL AKA WALLIN

SITE ADDRESS:
 922 NORTHRUP ROAD
 WALLINGFORD, CT 06492



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DATE DRAWN:	07/24/19
ATC JOB NO:	12927186

GENERAL NOTES

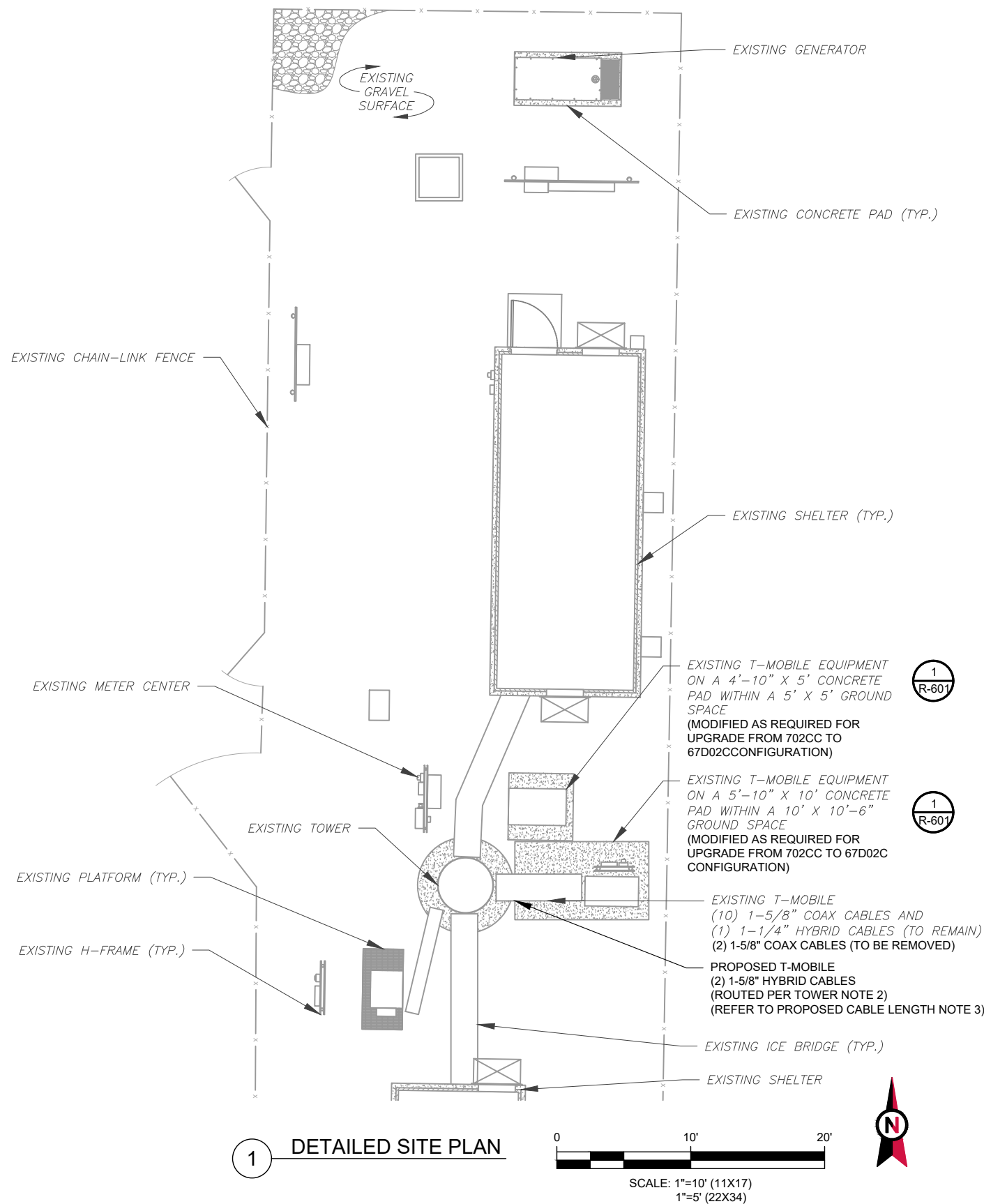
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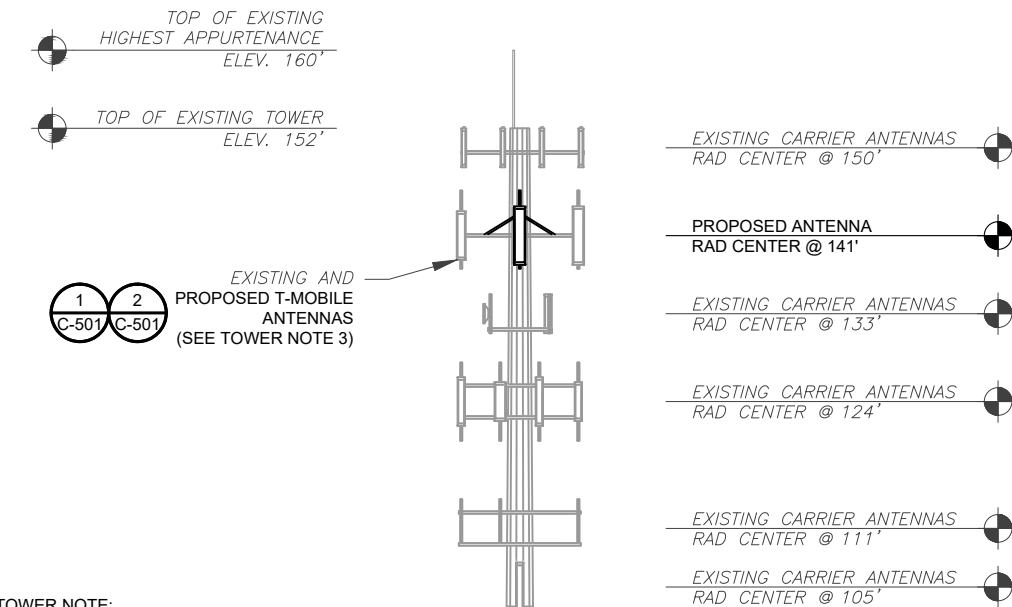
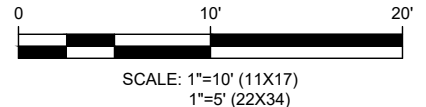
SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3. THIS PROJECT INCLUDES NO INSTALL OR MODIFICATION AT GRADE.

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 08/07/19, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT



1 DETAILED SITE PLAN



- TOWER NOTE:**
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
 2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
 3. ESTIMATED LENGTH OF PROPOSED CABLE IS 171'. ESTIMATED LENGTH OF CABLE IS CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES).
 4. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATIONS.
 5. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

2 TOWER ELEVATION
SCALE: NOT TO SCALE

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1	MA & CONFIG UPDATE	LR	08/20/19

ATC SITE NUMBER:
302538

ATC SITE NAME:
PARSONAGE HILL AKA WALLIN

SITE ADDRESS:
 922 NORTHRUP ROAD
 WALLINGFORD, CT 06492

SEAL:

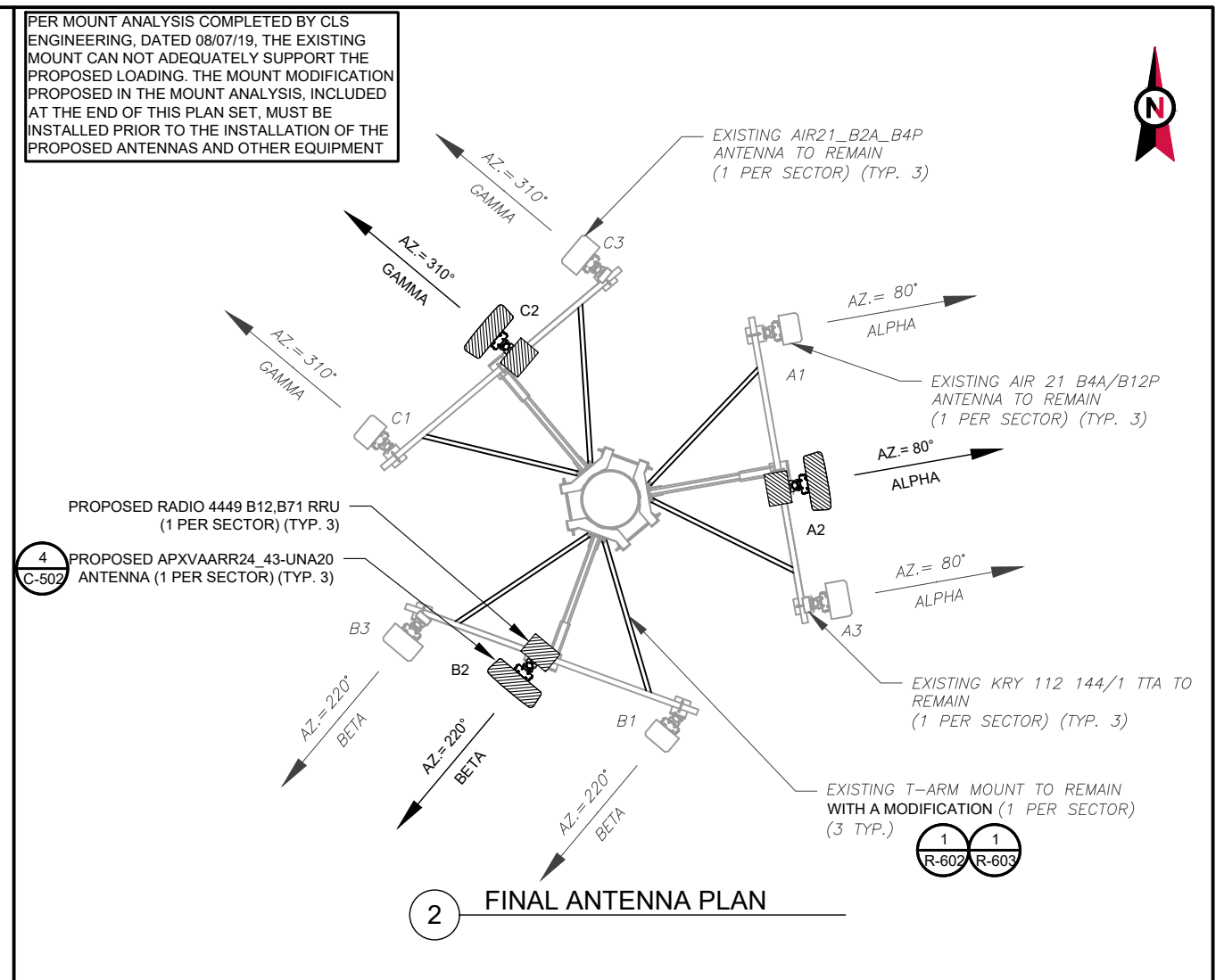
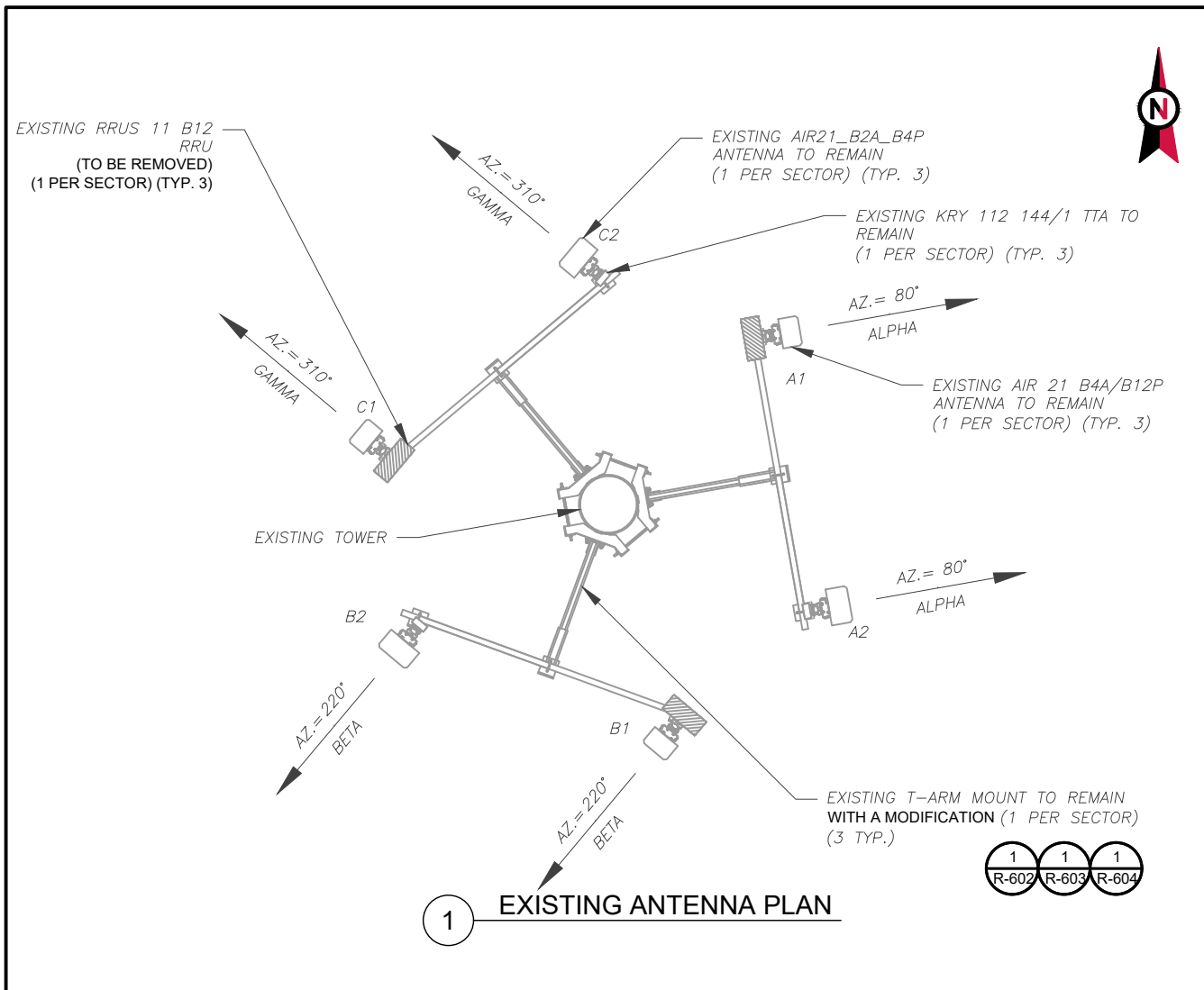
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DATE DRAWN:	07/24/19
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DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER: C-101	REVISION: 1
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PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 08/07/19, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT

EXISTING ANTENNA / EQUIPMENT SCHEDULE							
SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	AIR 21 B4A/B12P	141'-0"	80°	0°	2°	RRUS11 B12
ALPHA	A2	AIR21_B2A_B4P	141'-0"	80°	0°	7°	KRY 112 144/1
BETA	B1	AIR 21 B4A/B12P	141'-0"	220°	0°	2°	RRUS11 B12
BETA	B2	AIR21_B2A_B4P	141'-0"	220°	0°	7°	KRY 112 144/1
GAMMA	C1	AIR 21 B4A/B12P	141'-0"	310°	0°	2°	RRUS11 B12
GAMMA	C2	AIR21_B2A_B4P	141'-0"	310°	0°	7°	KRY 112 144/1

- NOTES**
- BASED ON APPROVED ATC APPLICATION 12927186, DATED 04/02/19. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
 - ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIG OR MOUNT CONFIG. CONTRACTOR TO VERIFY MOUNT CONFIG HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (EQUIP) (I.E. CLEARANCES, MOUNT PIPE, SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
 - ALL PROPOSED EQUIP INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH ATC'S CM.
 - CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
 - POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).

FINAL ANTENNA / EQUIPMENT SCHEDULE							
SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	AIR 21 B4A/B12P	141'-0"	80°	0°	2°	-
ALPHA	A2	APXVAARR24_43-U-NA20	141'-0"	80°	0°	-	RADIO 4449 B12-B71
ALPHA	A3	AIR21_B2A_B4P	141'-0"	80°	0°	7°	KRY 112 144/1
BETA	B1	AIR 21 B4A/B12P	141'-0"	220°	0°	2°	-
BETA	B2	APXVAARR24_43-U-NA20	141'-0"	220°	0°	-	RADIO 4449 B12-B71
BETA	B3	AIR21_B2A_B4P	141'-0"	220°	0°	7°	KRY 112 144/1
GAMMA	C1	AIR 21 B4A/B12P	141'-0"	310°	0°	2°	-
GAMMA	C2	APXVAARR24_43-U-NA20	141'-0"	310°	0°	-	RADIO 4449 B12-B71
GAMMA	C3	AIR21_B2A_B4P	141'-0"	310°	0°	7°	KRY 112 144/1

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY			STATUS ABBREVIATIONS	
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS	RMV: TO BE REMOVED	RMN: TO REMAIN
-	-	(10) 1-5/8"	(1) 1-1/4"	RMN	REL: TO BE RELOCATED	DSC: TO BE DISCONNECTED & REMAIN
-	-	(2) 1-5/8"	-	RMV	ADD: TO BE ADDED	

3 ANTENNA SCHEDULE

PROPOSED FIBER DISTRIBUTION/OVP BOX		PROPOSED CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(2) 1-5/8"	ADD
-	-	(10) 1-5/8"	(1) 1-1/4"	RMN

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1	MA & CONFIG UPDATE	LR	08/20/19

ATC SITE NUMBER:
302538

ATC SITE NAME:
PARSONAGE HILL AKA WALLIN

SITE ADDRESS:
922 NORTHRUP ROAD
WALLINGFORD, CT 06492

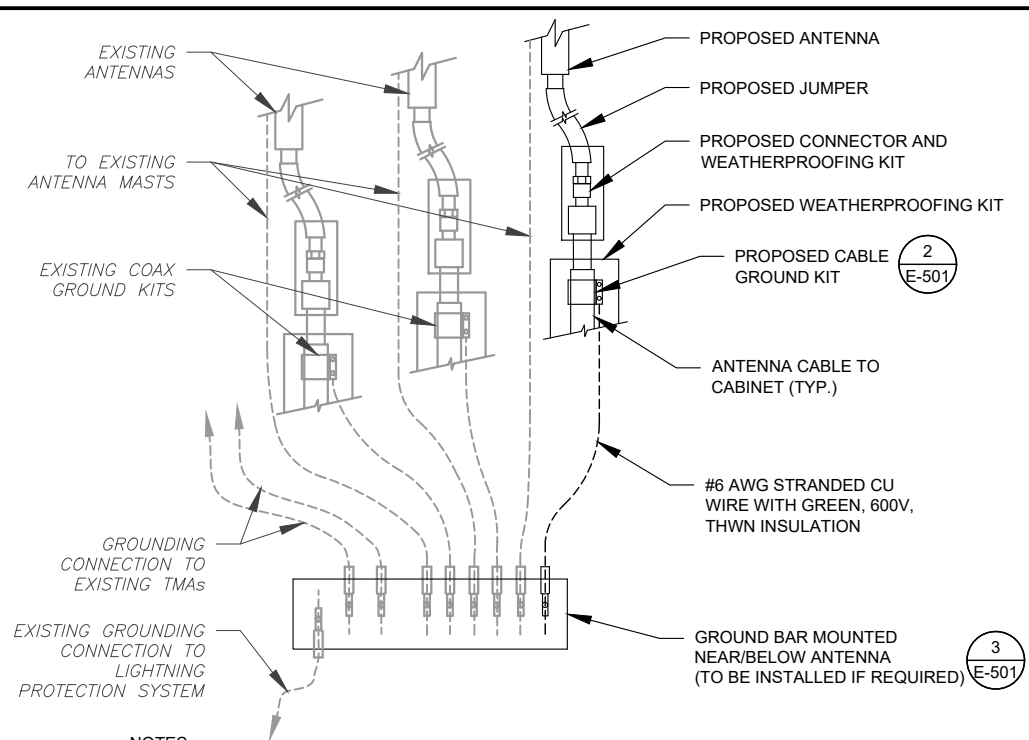
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DATE DRAWN:	07/24/19
ATC JOB NO:	12927186

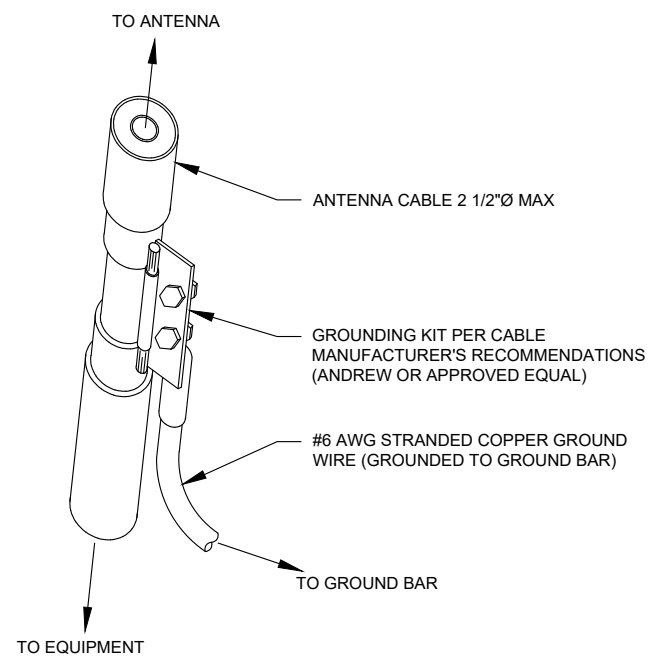
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-501	1



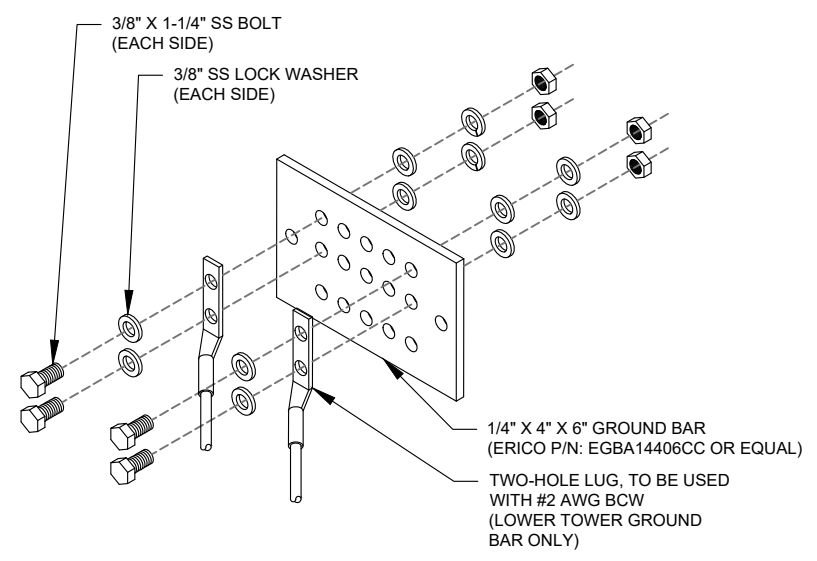
- NOTES:**
1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
 2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



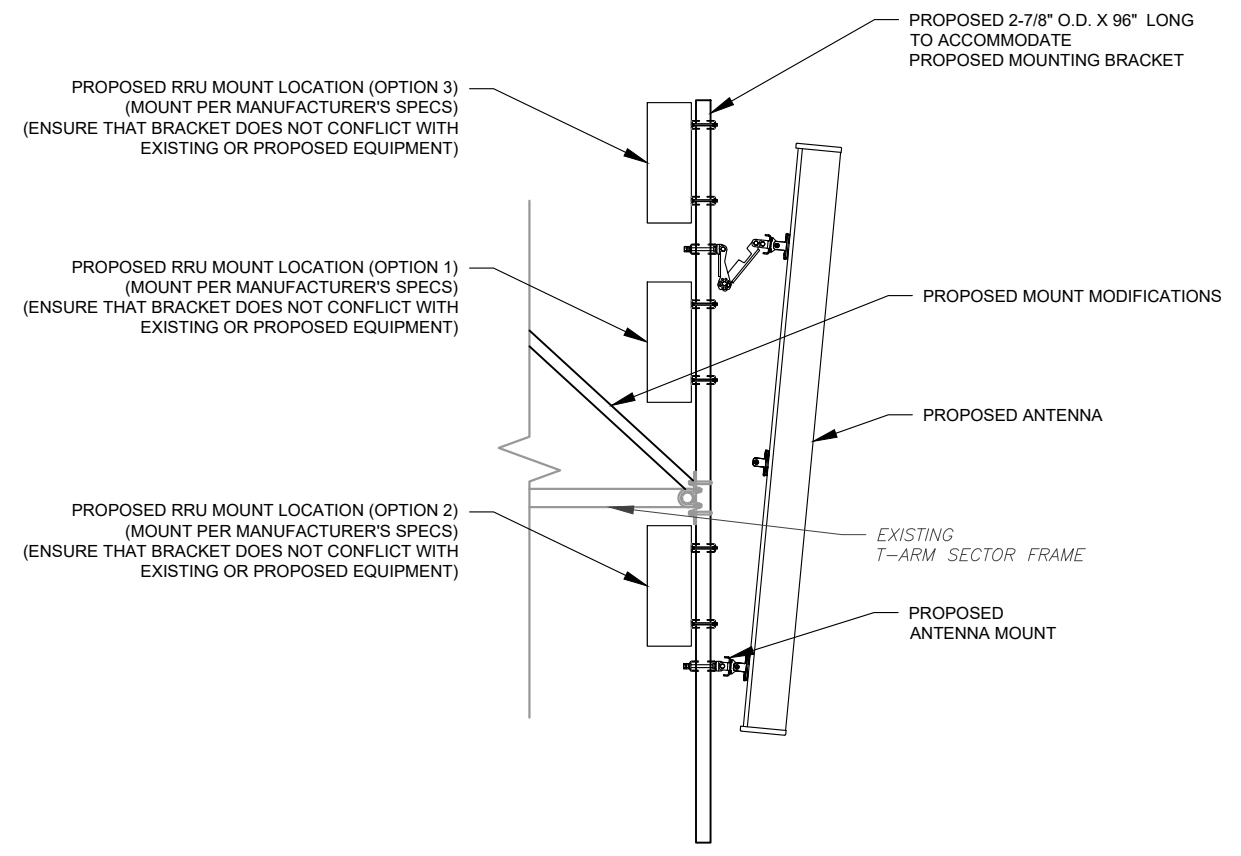
- GROUND KIT NOTES:**
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL
SCALE: NOT TO SCALE



- GROUND BAR NOTES:**
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
 2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL
SCALE: NOT TO SCALE



4 PROPOSED ANTENNA & RRU MOUNTING DETAIL - TYPICAL
SCALE: NOT TO SCALE

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GROUNDING DETAILS

SHEET NUMBER:	REVISION:
C-502	0

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RAN Template: 67D02C Outdoor	A&L Template: 67D02C_2xAIR+1OP	Power System Template: Custom
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CT11054A_L600_2.1_draft

Section 5 - RAN Equipment

Existing RAN Equipment		
Template: 7020c		
Enclosure	1	2
Enclosure Type	RB8 6102	RB8 3106
Baseband	DUW30 (x2) DUG20 DUS41	
Hybrid Cable System	Ericsson 9x18 HCS "Select Length"	
Multiplexer	XMU L700	
Radio	RU801 B4 (x6)	

Proposed RAN Equipment		
Template: 67D02C Outdoor		
Enclosure	1	2
Enclosure Type	RB8 6102	RB8 3106
Baseband	DUW30 U2100 DUW30 U1900 DUG20 G1900 BB 6630 L2100 L700 L600 BB 6630 N600 (DARK)	
Hybrid Cable System	Ericsson 9x18 HCS "Select Length" Ericsson 6x12 HCS "Select Length & AWG" (x2)	
Radio	RU801 B4 (x6) U2100	

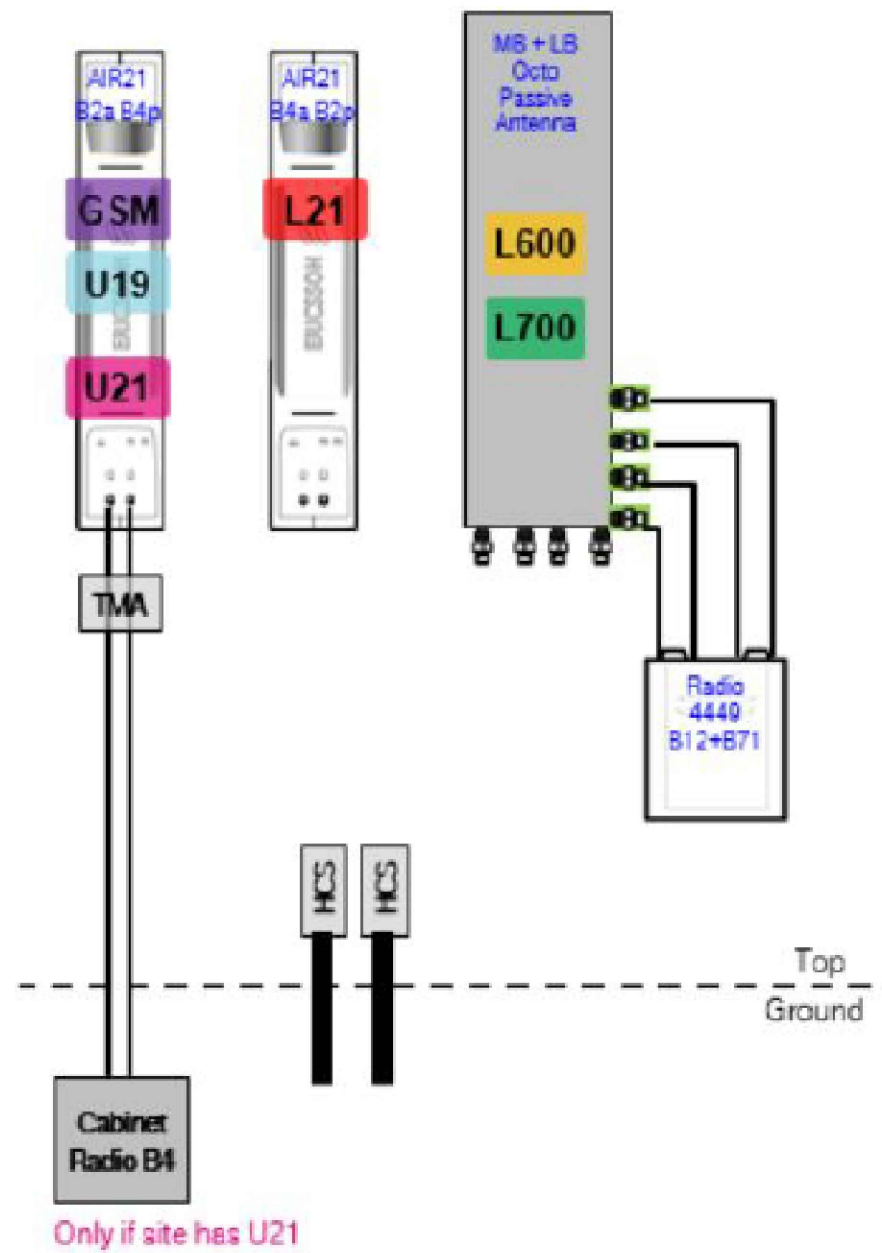
RAN Scope of Work:

Replace DUS41 with (1) BB6630 for L2100, L700, and L600.
 Add (1) BB6630 for future 5G N600.
 Remove XMU.
 Add (2) 6X12 HCS.
 Metro at 105 feet. T-Mobile at 145 and 139
 1 Existing 9X18 HCS Hybrid and 12 Coax Lines. Remove 2 Coaxial Lines in Total from Site.

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

Section 3 - Proposed Template Images

67D02C.JPG



Only if site has U21

Notes:

2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

SUPPLEMENTAL

SHEET NUMBER: R-601
REVISION: 0

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.



Mount Analysis of Existing T-Arms for American Tower on behalf of T-Mobile
302538 - Parsonage Hill Aka Wallin
Project #: 12927186
 T-Mobile Site ID: CT11054A
 Program: L600

CLS Engineering PLLC Project #41124-12927186-01-MA-R2
 August 6, 2019

MOUNT DESCRIPTION	Existing T-Arms at 140 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 141 ft AGL (Eccentricity of ~1 ft)
SITE DESCRIPTION	150 ft Monopole
SITE ADDRESS	922 Northrop Road Wallingford CT 06492-1910, New Haven County
GPS COORDINATES	41.48934722, -72.76825278
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 0.75" Ice

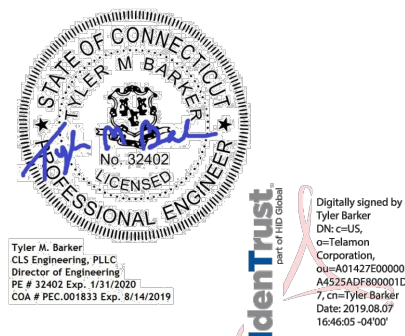
■ ANALYSIS RESULT: **Pass (Conditional)**

MEMBER USAGE	66%	Pass
CONNECTION USAGE	94%	Pass
COLLAR USAGE	75%	Pass

Modifications are proposed to bring mounts into compliance; see conclusion for details.
New mount pipes are required for final loading configuration; see conclusion for details.

Prepared by:
 Sean Rock, E.I.

Reviewed and Approved by:
 Tyler M. Barker, P.E.



■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **CONDITIONALLY PASS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- Install (1) Site Pro 1 SP219-96H, 2-7/8" Pipe Mount Kit at each sector (3 total) as shown in following sketch.
- Install (1) Site Pro 1 PRK-SFS-L Support Rail Vertical Reinforcement Kit at existing face horizontal member as shown in the following sketches. Collar to be installed flush with existing monopole at a height of ±3.5 ft. above the centerline of existing platform mount collar. Field-cut proposed members as required. Maintain minimum bolt edge distance.

See following sketches and Site Pro 1 assembly drawings for additional details.

1 MOUNT ANALYSIS CONCLUSION

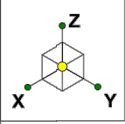
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SUPPLEMENTAL

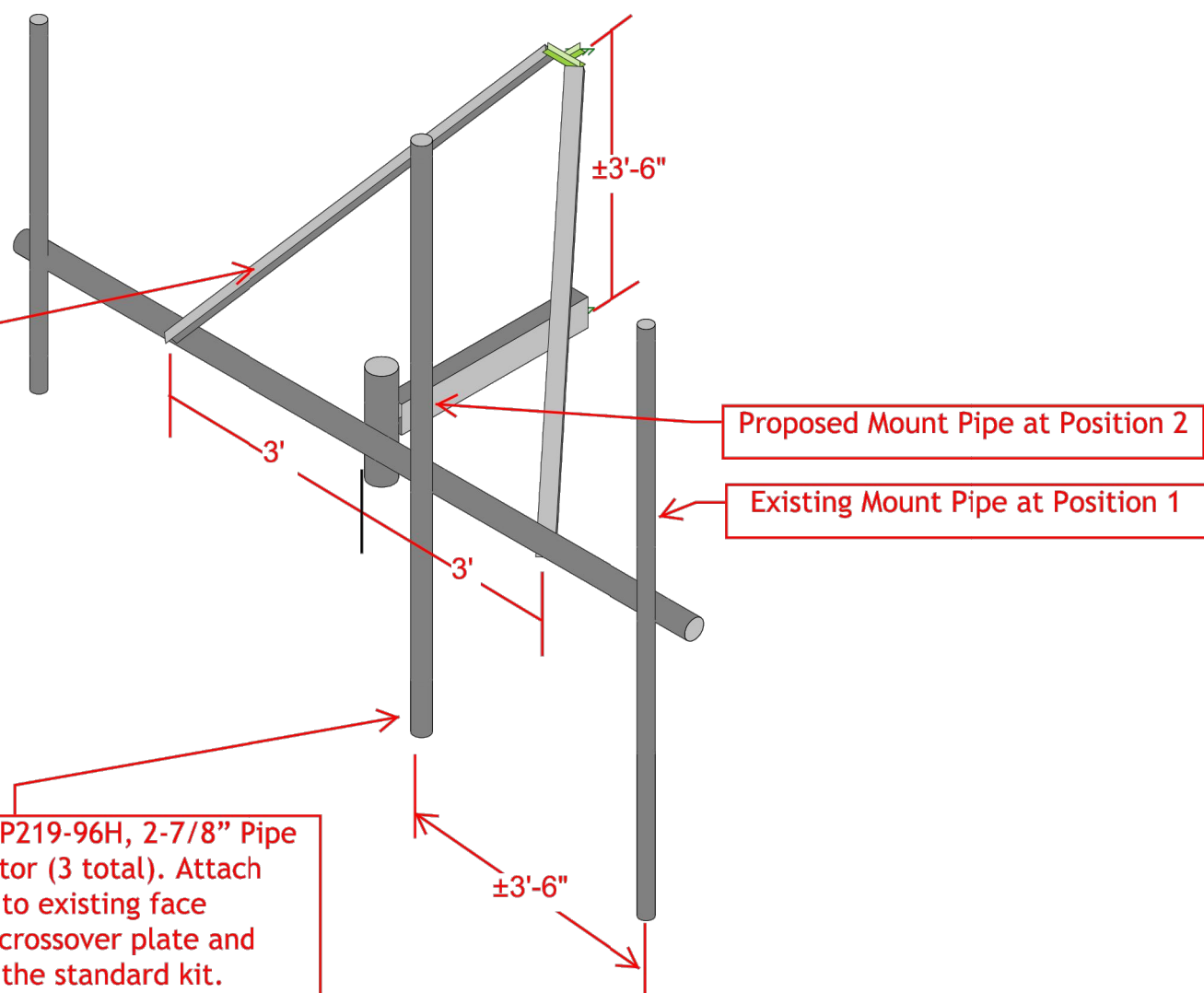
SHEET NUMBER: R-602	REVISION: 0
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Install (1) Site Pro 1 PRK-SFS-L Support Rail Vertical Reinforcement Kit at existing face horizontal member as shown in the following sketches. Collar to be installed flush with existing monopole at a height of ± 3.5 ft. above the centerline of existing platform mount collar. Field-cut proposed members as required. Maintain minimum bolt edge distance.

Install (1) Site Pro 1 SP219-96H, 2-7/8" Pipe Mount Kit at each sector (3 total). Attach proposed mount pipe to existing face horizontal pipe using crossover plate and hardware included in the standard kit.



Envelope Only Solution

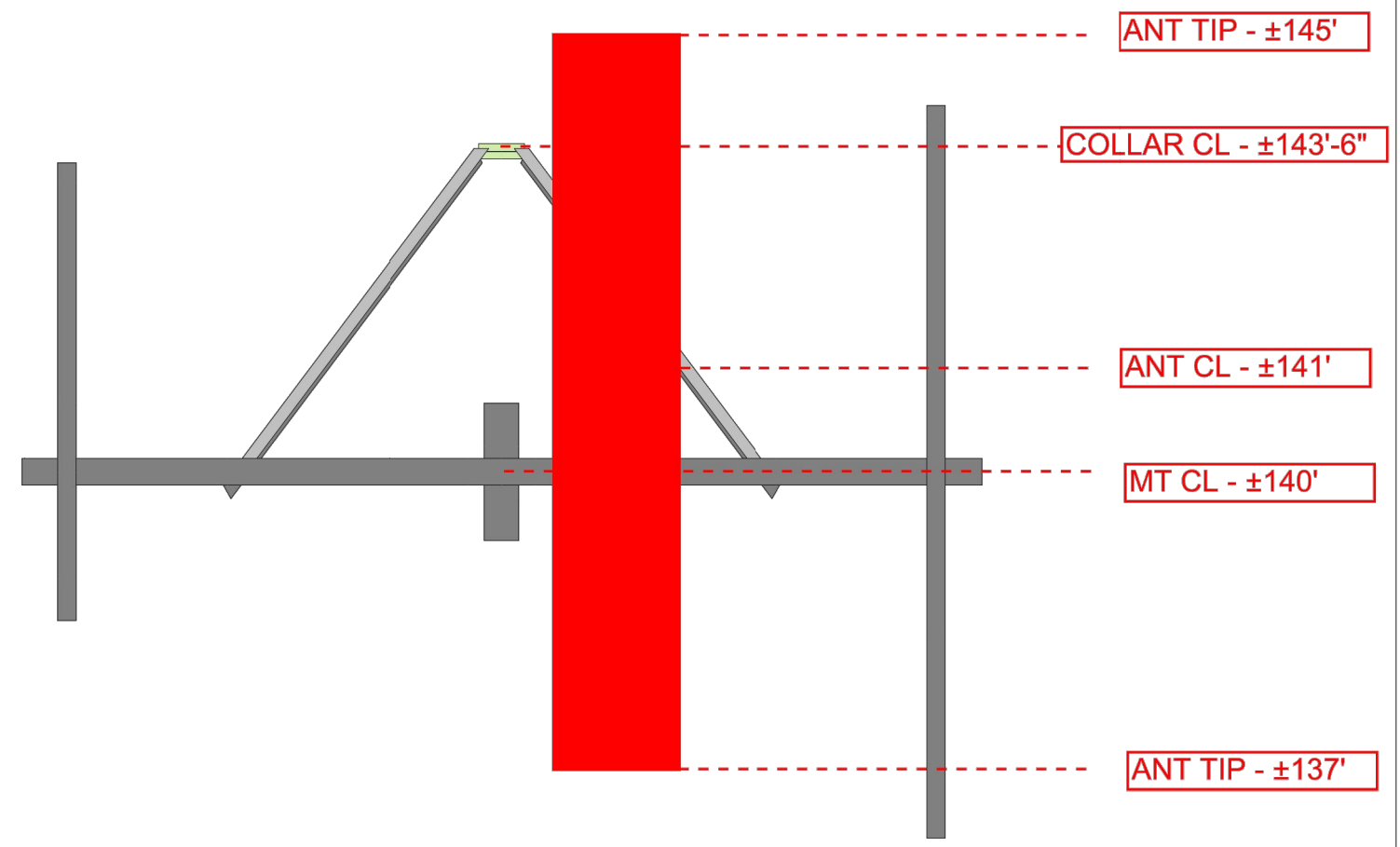
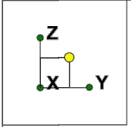
CLS	41124-12927186-Parsonage Hill Aka Wallin Installation Sketch - Isometric View	SK - 0
SMR		July 8, 2019 at 4:20 PM
41124-12927186-01-MA-R1		41124-12927186-01-MA-R1.r3d

1 MOUNT MODIFICATIONS
SCALE: NOT TO SCALE

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONSTRUCTION.

SUPPLEMENTAL

SHEET NUMBER: R-603
REVISION: 0



Envelope Only Solution

CLS	41124-12927186-Parsonage Hill Aka Wallin Installation Sketch - Elevation Sketch	SK - 0
SMR		July 8, 2019 at 4:21 PM
41124-12927186-01-MA-R1		41124-12927186-01-MA-R1.r3d

1 MOUNT MODIFICATIONS
SCALE: NOT TO SCALE

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONSTRUCTION.

SUPPLEMENTAL

SHEET NUMBER: R-604	REVISION: 0
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Exhibit D

Structural Analysis Report



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 150 ft Monopole
ATC Site Name : Parsonage Hill Aka Wallin, CT
ATC Asset Number : 302538
Engineering Number : 12927186_C3_04
Proposed Carrier : T-MOBILE
Carrier Site Name : Wallingford/I-91/X15/G
Carrier Site Number : CT11054A
Site Location : 922 Northrop Road
Wallingford, CT 06492-1910
41.489300,-72.768300
County : New Haven
Date : April 24, 2020
Max Usage : 96%
Result : Pass

Prepared By:
Hussam Al Tahan, E.I.
Structural Engineer I

Hussam Al Tahan

Reviewed By:



Authorized by "EOR"
24 Apr 2020 05:05:34

cosign

COA: PEC.0001553



Table of Contents

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Valmont Drawing #DC1776A, dated June 29, 1994
Foundation Drawing	SAC Engineering, Valmont Order #11715-94, dated July 21, 1994
Geotechnical Report	AET Project #91294, dated July 8, 1994
Mounty Analysis	CLS Engineering PLLC Project #41124-12927186-01-MA-R2, dated August 6, 2019

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.

Basic Wind Speed:	97 mph (3-Second Gust, V_{asd}) / 125 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.18$, $S_1 = 0.06$
Site Class:	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 you have any questions or require additional information, please contact American Tower via email at 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. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
150.0	2	DragonWave Horizon Compact	Platform with Handrails (Site Pro 1 RMQP-496-HK)	(4) 1 1/4" Hybriflex Cable (2) 1/2" Coax (2) 2" conduit (12) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	1	DragonWave A-ANT-11G-2-C			
	6	Alcatel-Lucent RRH2x50-08			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	1	DragonWave A-ANT-18G-2-C			
	3	Commscope NNVV-65B-R4			
	3	RFS APXVTM14-ALU-I20			
141.0	3	Ericsson AIR 21, 1.3 M, B2A B4P	T-Arms	(1) 1 1/4" Hybriflex Cable (10) 1 5/8" Coax	T-MOBILE
	3	Ericsson KRY 112 144/1			
	3	Ericsson AIR 21 B4A/B12P-B5P 6FT			
124.0	6	Powerwave Allgon LGP21401	Platform with Handrails SitePro PRK-SFS and SitePro HRK-14-HD	(3) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (2) 3" conduit	AT&T MOBILITY
	2	Raycap DC6-48-60-18-8F ("Squid")			
	3	Ericsson RRUS 4478 B14 (15")			
	1	Raycap DC6-48-60-18-8C			
	3	Ericsson RRUS-11 (50 lbs.)			
	3	Ericsson RRUS 32 B66A			
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS 32 B30			
	3	Powerwave Allgon 7770.00			
	6	CCI OPA-65R-LCUU-H6			
3	Kathrein Scala 80010965				
111.0	-	-	Empty Platform w/Handrails	-	Other
105.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
141.0	3	Ericsson RRUS 11 B12	-	(2) 1 5/8" Coax	T-MOBILE

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
141.0	3	Ericsson Radio 4449 B12,B71	T-Arms w/ Reinforcement	(2) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
	3	RFS APXVAARR24_43-U-NA20			

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

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	90%	Pass
Shaft	91%	Pass
Base Plate	25%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,567.2	4,815.7	4,190.3	87%
Shear (Kips)	30.5	41.1	39.3	96%

* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
150.0	DragonWave A-ANT-18G-2-C	CLEARWIRE CORPORATION	2.230	1.459
	DragonWave A-ANT-11G-2-C			
141.0	Ericsson Radio 4449 B12,B71	T-MOBILE	2.001	1.452
	RFS APXVAARR24_43-U-NA20			

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



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:

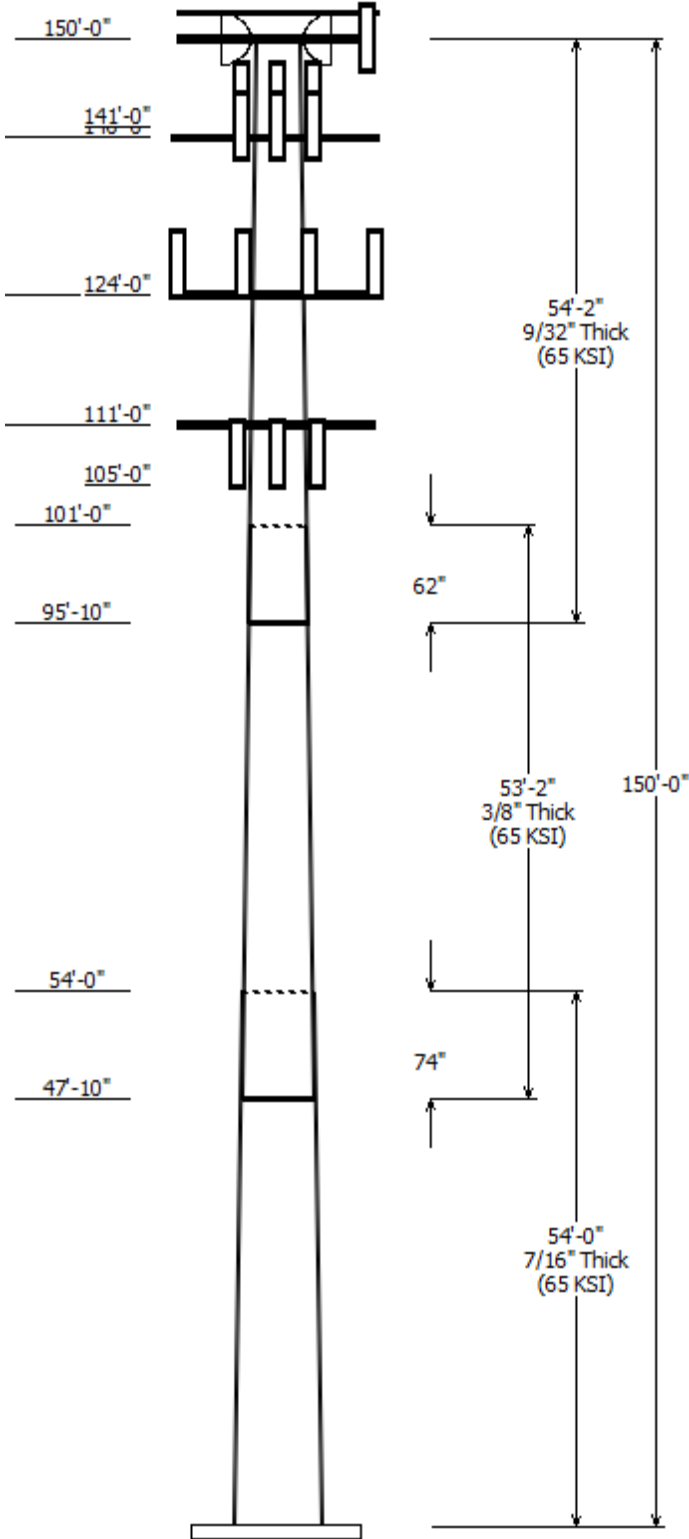
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.



Job Information	
Client : T-MOBILE	Code: ANSI/TIA-222-G
Pole : 302538	
Location : Parsonage Hill Aka Wallin, CT	
Description :	Struct Class : II
Shape : 12 Sides	Exposure : C
Height : 150.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.18200@in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Across Top	Flats Bottom				
1	54.000	39.77	49.60	0.438		0.000	12 Sides 65
2	53.167	31.96	41.64	0.375	Slip Joint	74.000	12 Sides 65
3	54.167	23.61	33.47	0.281	Slip Joint	62.000	12 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
150.000	150.000	1	Site Pro 1 RMQP-496-HK
150.000	150.000	3	Commscope NNVV-65B-R4
150.000	150.000	3	RFS APXVTM14-ALU-I20
150.000	150.000	1	DragonWave A-ANT-18G-2-C
150.000	150.000	3	Alcatel-Lucent TD-RRH8x20-25
150.000	150.000	3	Alcatel-Lucent 1900 MHz 4X45
150.000	150.000	6	Alcatel-Lucent RRH2x50-08
150.000	150.000	1	DragonWave A-ANT-11G-2-C
150.000	150.000	2	DragonWave Horizon Compact
141.000	145.000	3	Ericsson AIR 21 B4A/B12P-B5P
141.000	141.000	3	Ericsson AIR 21, 1.3 M, B2A B4
141.000	140.000	3	Ericsson KRY 112 144/1
141.000	141.000	3	RFS APXVAARR24_43-U-NA20
141.000	141.000	3	Ericsson Radio 4449 B12,B71
140.000	140.000	3	Round T-Arm w/
124.000	124.000	1	Flat Platform w/Handrails Site
124.000	127.000	3	Kathrein Scala 80010965
124.000	127.000	6	CCI OPA-65R-LCUU-H6
124.000	127.000	3	Powerwave Allgon 7770.00
124.000	127.000	3	Ericsson RRUS 32 B30
124.000	124.000	3	Ericsson RRUS 32 B2
124.000	127.000	3	Ericsson RRUS 32 B66A
124.000	127.000	3	Ericsson RRUS-11 (50 lbs.)
124.000	127.000	1	Raycap DC6-48-60-18-8C
124.000	127.000	3	Ericsson RRUS 4478 B14 (15")
124.000	127.000	2	Raycap DC6-48-60-18-8F
124.000	127.000	6	Powerwave Allgon LGP21401
111.000	111.000	1	Empty Flat Platform w/ Handrai
105.000	109.000	3	RFS APXV18-206517S-C

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From 0.000	To 105.0	1 5/8" Coax	No
0.000	124.0	0.39" (10mm)	No
0.000	124.0	0.78" (19.7mm) 8	No
0.000	124.0	1 5/8" Coax	No
0.000	124.0	3" conduit	No
0.000	141.0	1 1/4" Hybriflex	No
0.000	141.0	1 5/8" (1.63"-	No
0.000	141.0	1 5/8" Coax	No

0.000	150.0	1 1/4" Hybriflex	No
0.000	150.0	1/2" Coax	No
0.000	150.0	2" conduit	No
0.000	150.0	5/16" (0.31"-	No

Load Cases

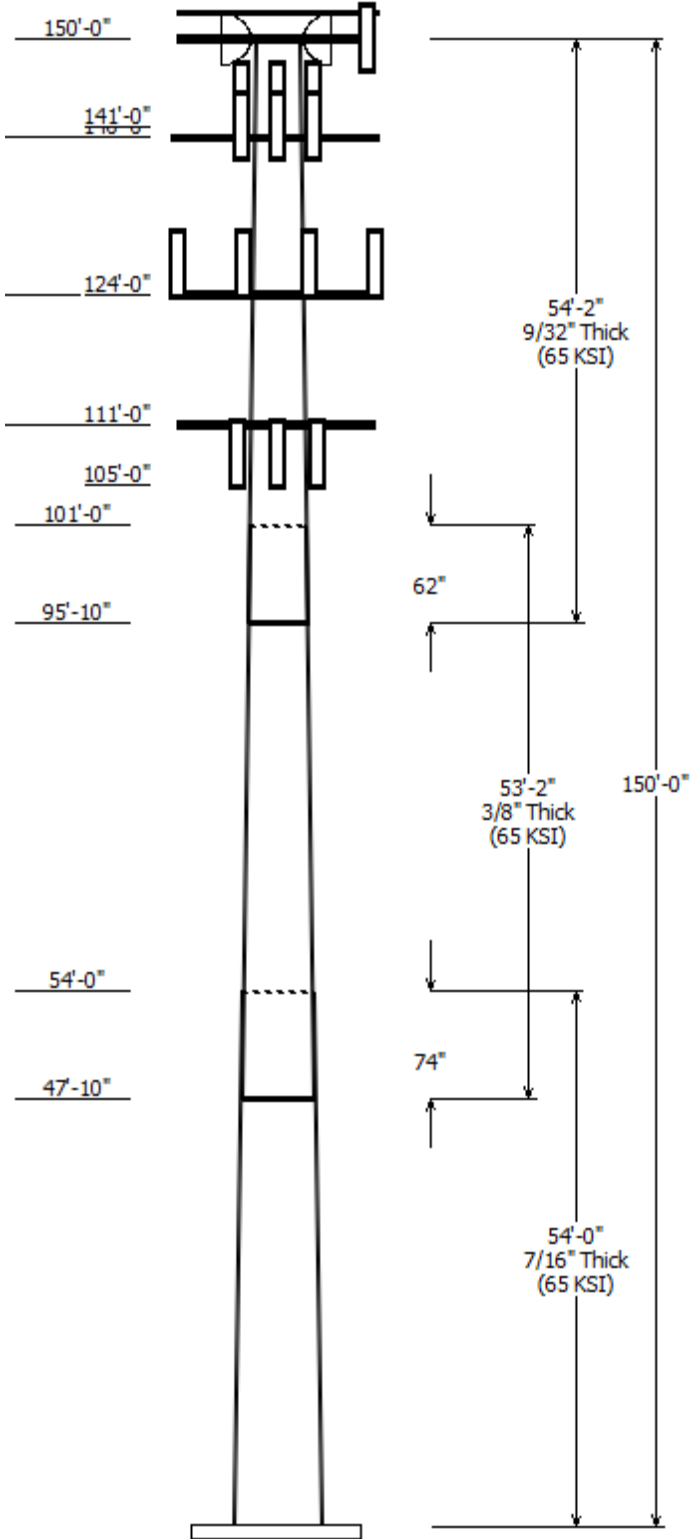
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

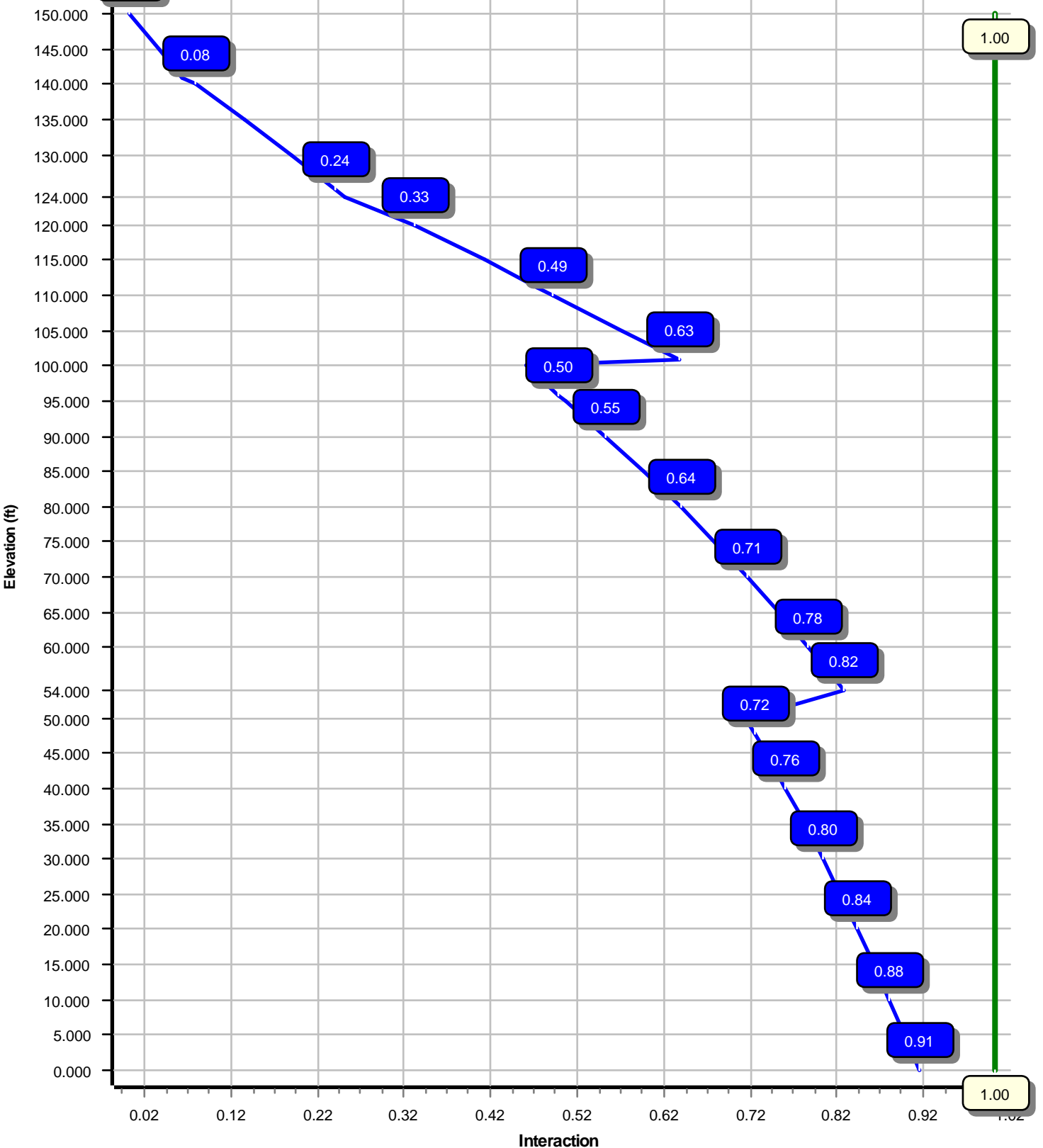
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	4190.33	39.31	53.82
0.9D + 1.6W	4127.88	39.28	40.34
1.2D + 1.0Di + 1.0Wi	1043.68	8.90	93.40
(1.2 + 0.2Sds) * DL + E ELFM	172.11	1.35	53.85
(1.2 + 0.2Sds) * DL + E EMAM	270.47	2.15	53.85
(0.9 - 0.2Sds) * DL + E ELFM	168.75	1.35	37.44
(0.9 - 0.2Sds) * DL + E EMAM	264.99	2.15	37.44
1.0D + 1.0W	889.50	8.41	44.92

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	150.00	26.757	1.459
1.0D + 1.0W	150.00	26.757	1.459



Load Case : 1.2D + 1.6W
Max Ratio 91.30% at 0.0 ft



Site Number: 302538

Code: ANSI/TIA-222-G

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Site Name: Parsonage Hill Aka Wallin, CT

Engineering Number: 12927186_C3_04

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Customer: T-MOBILE

Analysis Parameters

Location :	New Haven County, CT	Height (ft) :	150
Code :	ANSI/TIA-222-G	Base Diameter (in) :	49.60
Shape :	12 Sides	Top Diameter (in) :	23.61
Pole Type :	Taper	Taper (in/ft) :	0.182
Pole Manufacturer :	Valmont	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	C	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method: Equivalent Modal Analysis & Equivalent Lateral Force Methods

Site Class: D - Stiff Soil

Period Based on Rayleigh Method (sec): 2.69

T_L (sec):	6	p :	1	C_s :	0.030
S_s :	0.182	S_1 :	0.063	C_s Max:	0.030
F_a :	1.600	F_v :	2.400	C_s Min:	0.030
S_{ds} :	0.194	S_{d1} :	0.101		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302538

Code: ANSI/TIA-222-G

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Site Name: Parsonage Hill Aka Wallin, CT

Engineering Number: 12927186_C3_04

4/24/2020 4:13:43 PM

Customer: T-MOBILE

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 ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	54.000	0.4375	65		0.00	11,454	49.60	0.00	69.26	21365.7	27.70	113.37	39.77	54.00	55.41	10942.9	21.68	90.91	0.182000
2-12	53.167	0.3750	65	Slip	74.00	7,958	41.64	47.83	49.83	10833.0	27.08	111.05	31.96	101.00	38.15	4860.0	20.16	85.25	0.182000
3-12	54.167	0.2813	65	Slip	62.00	4,717	33.47	95.83	30.06	4226.0	29.21	119.01	23.61	150.00	21.13	1468.0	19.82	83.95	0.182000
Shaft Weight						24,130													

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
150.00	DragonWave Horizon Compact	2	0.75	0.000	10.60	0.721	0.50	33.09	1.290	0.50
150.00	Alcatel-Lucent RRH2x50-08	6	0.75	0.000	52.90	1.701	0.50	112.18	2.564	0.50
150.00	Alcatel-Lucent 1900 MHz 4X45	3	0.75	0.000	60.00	2.322	0.67	140.62	3.403	0.67
150.00	Alcatel-Lucent TD-RRH8x20-25	3	0.75	0.000	70.00	4.046	0.61	164.54	5.374	0.61
150.00	DragonWave A-ANT-18G-2-C	1	1.00	0.000	27.10	4.688	1.00	124.72	5.962	1.00
150.00	DragonWave A-ANT-11G-2-C	1	1.00	0.000	27.00	4.688	1.00	124.49	5.962	1.00
150.00	RFS APXVTM14-ALU-I20	3	0.75	0.000	56.20	6.342	0.66	193.95	8.521	0.66
150.00	Commscope NNVV-65B-R4	3	0.75	0.000	77.40	12.271	0.64	328.77	15.076	0.64
150.00	Site Pro 1 RMQP-496-HK	1	1.00	0.000	2,448.70	27.200	1.00	4,035.78	51.653	1.00
141.00	Ericsson KRY 112 144/1	3	0.80	-1.000	11.00	0.351	0.50	21.71	0.755	0.50
141.00	Ericsson Radio 4449 B12,B71	3	0.80	0.000	74.00	1.639	0.50	129.74	2.479	0.50
141.00	Ericsson AIR 21, 1.3 M, B2A B4P	3	0.80	0.000	83.00	6.049	0.71	228.29	8.201	0.71
141.00	Ericsson AIR 21 B4A/B12P-B5P	3	0.80	4.000	110.00	10.607	0.69	340.93	13.594	0.69
141.00	RFS APXVAARR24_43-U-NA20	3	0.80	0.000	127.90	20.243	0.63	518.73	23.935	0.63
140.00	Round T-Arm w/ Reinforcement	3	0.75	0.000	464.00	9.700	0.67	849.33	17.890	0.67
124.00	Powerwave Allgon LGP21401	6	0.75	3.000	14.10	1.104	0.50	38.59	1.805	0.50
124.00	Raycap DC6-48-60-18-8F	2	0.75	3.000	31.80	1.470	1.00	92.36	2.156	1.00
124.00	Ericsson RRUS 4478 B14 (15")	3	0.75	3.000	59.40	1.650	0.50	108.18	2.482	0.50
124.00	Raycap DC6-48-60-18-8C	1	0.75	3.000	16.00	2.030	1.00	73.14	2.775	1.00
124.00	Ericsson RRUS-11 (50 lbs.)	3	0.75	3.000	50.00	2.566	0.67	116.91	3.594	0.67
124.00	Ericsson RRUS 32 B66A	3	0.75	3.000	50.70	2.720	0.67	122.64	3.862	0.67
124.00	Ericsson RRUS 32 B2	3	0.75	0.000	53.00	2.743	0.67	125.19	3.891	0.67
124.00	Ericsson RRUS 32 B30	3	0.75	3.000	60.00	2.743	0.67	132.21	3.891	0.67
124.00	Powerwave Allgon 7770.00	3	0.75	3.000	35.00	5.508	0.65	166.79	6.542	0.65
124.00	CCI OPA-65R-LCUU-H6	6	0.75	3.000	73.00	9.658	0.66	272.77	12.379	0.66
124.00	Kathrein Scala 80010965	3	0.75	3.000	97.60	13.814	0.62	359.29	16.808	0.62
124.00	Flat Platform w/Handrails	1	1.00	0.000	3,000.00	49.620	1.00	5,092.46	73.711	1.00
111.00	Empty Flat Platform w/ Handrails	1	1.00	0.000	2,000.00	42.400	1.00	3,381.23	62.783	1.00
105.00	RFS APXV18-206517S-C	3	1.00	4.000	26.40	5.160	0.68	115.82	7.443	0.68
Totals	Num Loadings:29			82		13,140.40		28,114.89		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind Carrier
0.00	150.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	N CLEARWIRE
0.00	150.00	2	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	N CLEARWIRE
0.00	150.00	2	2" conduit	2.38	3.65	N	0	0.00	0.00	0	N CLEARWIRE
0.00	150.00	12	5/16" (0.31"-7.9mm)	0.31	0.05	N	0	0.00	0.00	0	N CLEARWIRE
0.00	141.00	1	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	N T-MOBILE
0.00	141.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	N T-MOBILE
0.00	141.00	10	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N T-MOBILE
0.00	124.00	3	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	N AT&T MOBILITY

Site Number: 302538

Code: ANSI/TIA-222-G

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Site Name: Parsonage Hill Aka Wallin, CT

Engineering Number: 12927186_C3_04

4/24/2020 4:13:43 PM

Customer: T-MOBILE

0.00	124.00	6	0.78" (19.7mm)	8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	124.00	12	1 5/8" Coax		1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	124.00	2	3" conduit		3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	105.00	6	1 5/8" Coax		1.98	0.82	N	0	0.00	0.00	0	0.00	N	METRO PCS INC

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.4375	49.600	69.257	21,365.7	27.70	113.37	74.5	832.2	0.0	0.0
5.00		0.4375	48.690	67.975	20,201.1	27.14	111.29	75.1	801.5	0.0	1,167.4
10.00		0.4375	47.780	66.693	19,079.5	26.58	109.21	75.7	771.4	0.0	1,145.6
15.00		0.4375	46.870	65.412	18,000.3	26.03	107.13	76.3	741.9	0.0	1,123.8
20.00		0.4375	45.960	64.130	16,962.6	25.47	105.05	76.9	713.0	0.0	1,102.0
25.00		0.4375	45.050	62.848	15,965.5	24.91	102.97	77.5	684.6	0.0	1,080.2
30.00		0.4375	44.140	61.566	15,008.3	24.35	100.89	78.2	656.9	0.0	1,058.4
35.00		0.4375	43.230	60.284	14,090.2	23.80	98.81	78.8	629.7	0.0	1,036.6
40.00		0.4375	42.320	59.002	13,210.3	23.24	96.73	79.4	603.0	0.0	1,014.8
45.00		0.4375	41.410	57.720	12,367.8	22.68	94.65	80.0	577.0	0.0	992.9
47.83	Bot - Section 2	0.4375	40.894	56.993	11,906.6	22.37	93.47	80.3	562.5	0.0	553.0
50.00		0.4375	40.500	56.438	11,561.9	22.12	92.57	80.6	551.5	0.0	783.8
54.00	Top - Section 1	0.3750	40.522	48.477	9,973.0	26.27	108.06	76.1	475.5	0.0	1,427.0
55.00		0.3750	40.340	48.257	9,838.0	26.14	107.57	76.2	471.1	0.0	164.6
60.00		0.3750	39.430	47.159	9,181.1	25.49	105.15	76.9	449.8	0.0	811.7
65.00		0.3750	38.520	46.060	8,554.2	24.84	102.72	77.6	429.0	0.0	793.0
70.00		0.3750	37.610	44.961	7,956.5	24.19	100.29	78.3	408.7	0.0	774.3
75.00		0.3750	36.700	43.862	7,387.3	23.54	97.87	79.0	388.9	0.0	755.6
80.00		0.3750	35.790	42.763	6,845.9	22.89	95.44	79.7	369.5	0.0	736.9
85.00		0.3750	34.880	41.665	6,331.6	22.24	93.01	80.5	350.7	0.0	718.2
90.00		0.3750	33.970	40.566	5,843.7	21.59	90.59	81.2	332.3	0.0	699.5
95.00		0.3750	33.060	39.467	5,381.6	20.94	88.16	81.9	314.5	0.0	680.8
95.83	Bot - Section 3	0.3750	32.908	39.284	5,307.0	20.83	87.76	81.9	311.5	0.0	111.7
100.00		0.3750	32.150	38.368	4,944.5	20.29	85.73	81.9	297.1	0.0	971.8
101.00	Top - Section 2	0.2813	32.530	29.206	3,876.9	28.31	115.66	73.8	230.2	0.0	229.8
105.00		0.2813	31.802	28.546	3,620.2	27.62	113.07	74.6	219.9	0.0	393.0
110.00		0.2813	30.892	27.722	3,315.7	26.75	109.84	75.5	207.3	0.0	478.7
111.00		0.2813	30.710	27.557	3,256.9	26.58	109.19	75.7	204.9	0.0	94.1
115.00		0.2813	29.982	26.898	3,028.7	25.88	106.60	76.5	195.1	0.0	370.6
120.00		0.2813	29.072	26.074	2,758.7	25.02	103.37	77.4	183.3	0.0	450.6
124.00		0.2813	28.344	25.415	2,554.7	24.32	100.78	78.2	174.1	0.0	350.4
125.00		0.2813	28.162	25.250	2,505.3	24.15	100.13	78.4	171.9	0.0	86.2
130.00		0.2813	27.252	24.426	2,267.9	23.28	96.90	79.3	160.8	0.0	422.6
135.00		0.2813	26.342	23.602	2,046.0	22.42	93.66	80.3	150.0	0.0	408.6
140.00		0.2813	25.432	22.777	1,839.1	21.55	90.43	81.2	139.7	0.0	394.5
141.00		0.2813	25.250	22.613	1,799.5	21.38	89.78	81.4	137.7	0.0	77.2
145.00		0.2813	24.522	21.953	1,646.6	20.68	87.19	81.9	129.7	0.0	303.3
150.00		0.2813	23.612	21.129	1,468.0	19.82	83.95	81.9	120.1	0.0	366.5
24,129.8											

Load Case: 1.2D + 1.6W	97 mph with No Ice	24 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

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		362.9	0.0					0.0	0.0	362.9	0.0	0.0	0.0
5.00		719.0	1,400.9					0.0	349.6	719.0	1,750.5	0.0	0.0
10.00		705.6	1,374.7					0.0	349.6	705.6	1,724.3	0.0	0.0
15.00		703.0	1,348.6					0.0	349.6	703.0	1,698.1	0.0	0.0
20.00		719.0	1,322.4					0.0	349.6	719.0	1,672.0	0.0	0.0
25.00		739.0	1,296.2					0.0	349.6	739.0	1,645.8	0.0	0.0
30.00		752.6	1,270.1					0.0	349.6	752.6	1,619.6	0.0	0.0
35.00		761.6	1,243.9					0.0	349.6	761.6	1,593.4	0.0	0.0
40.00		766.9	1,217.7					0.0	349.6	766.9	1,567.3	0.0	0.0
45.00		602.5	1,191.5					0.0	349.6	602.5	1,541.1	0.0	0.0
47.83	Bot - Section 2	388.0	663.6					0.0	198.1	388.0	861.7	0.0	0.0
50.00		483.2	940.5					0.0	151.5	483.2	1,092.0	0.0	0.0
54.00	Top - Section 1	391.6	1,712.4					0.0	279.6	391.6	1,992.1	0.0	0.0
55.00		468.5	197.5					0.0	69.9	468.5	267.4	0.0	0.0
60.00		778.4	974.0					0.0	349.6	778.4	1,323.6	0.0	0.0
65.00		773.3	951.6					0.0	349.6	773.3	1,301.2	0.0	0.0
70.00		767.0	929.2					0.0	349.6	767.0	1,278.7	0.0	0.0
75.00		759.4	906.7					0.0	349.6	759.4	1,256.3	0.0	0.0
80.00		750.7	884.3					0.0	349.6	750.7	1,233.9	0.0	0.0
85.00		741.0	861.9					0.0	349.6	741.0	1,211.4	0.0	0.0
90.00		730.4	839.4					0.0	349.6	730.4	1,189.0	0.0	0.0
95.00		422.3	817.0					0.0	349.6	422.3	1,166.6	0.0	0.0
95.83	Bot - Section 3	361.7	134.0					0.0	58.3	361.7	192.2	0.0	0.0
100.00		373.6	1,166.1					0.0	291.3	373.6	1,457.4	0.0	0.0
101.00	Top - Section 2	356.5	275.8					0.0	69.9	356.5	345.7	0.0	0.0
105.00	Appurtenance(s)	634.6	471.6	546.4	0.0	2,185.5	95.0	0.0	279.6	1,180.9	846.3	0.0	0.0
110.00		419.1	574.4					0.0	320.0	419.1	894.4	0.0	0.0
111.00	Appurtenance(s)	343.0	112.9	2,209.2	0.0	0.0	2,400.0	0.0	64.0	2,552.2	2,576.9	0.0	0.0
115.00		609.7	444.7					0.0	256.0	609.7	700.8	0.0	0.0
120.00		599.1	540.8					0.0	320.0	599.1	860.8	0.0	0.0
124.00	Appurtenance(s)	328.3	420.5	6,950.3	0.0	12,250.3	5,783.2	0.0	256.0	7,278.7	6,459.7	0.0	0.0
125.00		385.6	103.4					0.0	29.5	385.6	133.0	0.0	0.0
130.00		633.2	507.1					0.0	147.7	633.2	654.8	0.0	0.0
135.00		616.9	490.3					0.0	147.7	616.9	638.0	0.0	0.0
140.00	Appurtenance(s)	364.2	473.5	800.0	0.0	0.0	1,670.4	0.0	147.7	1,164.2	2,291.6	0.0	0.0
141.00	Appurtenance(s)	295.8	92.7	3,340.9	0.0	3,849.6	1,461.2	0.0	29.5	3,636.7	1,583.5	0.0	0.0
145.00		523.1	364.0					0.0	58.6	523.1	422.5	0.0	0.0
150.00	Appurtenance(s)	287.1	439.8	4,279.3	0.0	0.0	4,358.6	0.0	73.2	4,566.4	4,871.6	0.0	0.0
Totals:										39,543.0	53,915.1	0.00	0.00

Load Case: 1.2D + 1.6W

97 mph with No Ice

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

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	-53.82	-39.31	0.00	-4,190.33	0.00	4,190.33	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.913
5.00	-51.89	-38.84	0.00	-3,993.78	0.00	3,993.78	4,595.29	2,297.65	9,142.89	4,515.33	0.15	-0.27	0.896
10.00	-49.98	-38.36	0.00	-3,799.61	0.00	3,799.61	4,545.11	2,272.56	8,870.98	4,381.04	0.58	-0.55	0.879
15.00	-48.11	-37.87	0.00	-3,607.82	0.00	3,607.82	4,493.53	2,246.77	8,600.18	4,247.31	1.30	-0.82	0.860
20.00	-46.27	-37.35	0.00	-3,418.49	0.00	3,418.49	4,440.55	2,220.28	8,330.66	4,114.20	2.31	-1.10	0.842
25.00	-44.46	-36.79	0.00	-3,231.76	0.00	3,231.76	4,386.17	2,193.08	8,062.58	3,981.80	3.61	-1.38	0.822
30.00	-42.69	-36.20	0.00	-3,047.83	0.00	3,047.83	4,330.38	2,165.19	7,796.08	3,850.19	5.21	-1.66	0.802
35.00	-40.94	-35.59	0.00	-2,866.82	0.00	2,866.82	4,273.19	2,136.59	7,531.34	3,719.45	7.10	-1.94	0.781
40.00	-39.24	-34.96	0.00	-2,688.87	0.00	2,688.87	4,214.59	2,107.30	7,268.52	3,589.65	9.28	-2.22	0.759
45.00	-37.59	-34.44	0.00	-2,514.07	0.00	2,514.07	4,154.60	2,077.30	7,007.76	3,460.87	11.75	-2.50	0.736
47.83	-36.66	-34.10	0.00	-2,416.49	0.00	2,416.49	4,119.98	2,059.99	6,860.98	3,388.38	13.28	-2.66	0.722
50.00	-35.49	-33.68	0.00	-2,342.60	0.00	2,342.60	4,093.20	2,046.60	6,749.23	3,333.19	14.52	-2.78	0.712
54.00	-33.44	-33.27	0.00	-2,207.89	0.00	2,207.89	3,318.39	1,659.20	5,491.78	2,712.18	16.95	-3.01	0.825
55.00	-33.09	-32.89	0.00	-2,174.63	0.00	2,174.63	3,309.51	1,654.75	5,452.02	2,692.55	17.58	-3.06	0.818
60.00	-31.65	-32.21	0.00	-2,010.18	0.00	2,010.18	3,264.25	1,632.12	5,253.88	2,594.69	20.95	-3.37	0.785
65.00	-30.23	-31.51	0.00	-1,849.15	0.00	1,849.15	3,217.59	1,608.79	5,056.96	2,497.44	24.64	-3.67	0.750
70.00	-28.85	-30.81	0.00	-1,691.61	0.00	1,691.61	3,169.52	1,584.76	4,861.43	2,400.88	28.64	-3.96	0.714
75.00	-27.50	-30.10	0.00	-1,537.57	0.00	1,537.57	3,120.06	1,560.03	4,667.43	2,305.07	32.94	-4.25	0.676
80.00	-26.19	-29.38	0.00	-1,387.09	0.00	1,387.09	3,069.19	1,534.59	4,475.14	2,210.10	37.53	-4.53	0.637
85.00	-24.91	-28.66	0.00	-1,240.18	0.00	1,240.18	3,016.92	1,508.46	4,284.71	2,116.06	42.42	-4.80	0.595
90.00	-23.66	-27.94	0.00	-1,096.88	0.00	1,096.88	2,963.24	1,481.62	4,096.29	2,023.00	47.59	-5.07	0.551
95.00	-22.47	-27.47	0.00	-957.19	0.00	957.19	2,909.11	1,454.55	3,911.32	1,931.65	53.02	-5.32	0.504
95.83	-22.26	-27.14	0.00	-934.31	0.00	934.31	2,895.61	1,447.80	3,874.90	1,913.67	53.96	-5.36	0.496
100.00	-20.78	-26.67	0.00	-821.24	0.00	821.24	2,828.11	1,414.06	3,695.36	1,825.00	58.71	-5.55	0.458
101.00	-20.42	-26.32	0.00	-794.57	0.00	794.57	1,940.77	970.39	2,581.63	1,274.97	59.88	-5.60	0.634
105.00	-19.61	-25.13	0.00	-687.10	0.00	687.10	1,916.40	958.20	2,491.16	1,230.29	64.64	-5.77	0.569
110.00	-18.70	-24.67	0.00	-561.44	0.00	561.44	1,884.66	942.33	2,378.55	1,174.68	70.81	-6.02	0.489
111.00	-16.36	-21.89	0.00	-536.76	0.00	536.76	1,878.15	939.07	2,356.11	1,163.59	72.08	-6.07	0.471
115.00	-15.66	-21.26	0.00	-449.19	0.00	449.19	1,851.53	925.76	2,266.63	1,119.40	77.23	-6.24	0.410
120.00	-14.82	-20.61	0.00	-342.87	0.00	342.87	1,816.99	908.49	2,155.56	1,064.55	83.85	-6.43	0.331
124.00	-9.21	-12.66	0.00	-248.17	0.00	248.17	1,788.35	894.17	2,067.42	1,021.02	89.28	-6.55	0.248
125.00	-9.10	-12.28	0.00	-235.51	0.00	235.51	1,781.05	890.52	2,045.49	1,010.19	90.65	-6.58	0.238
130.00	-8.51	-11.59	0.00	-174.14	0.00	174.14	1,743.70	871.85	1,936.59	956.41	97.59	-6.69	0.187
135.00	-7.93	-10.91	0.00	-116.21	0.00	116.21	1,704.95	852.48	1,829.01	903.28	104.64	-6.78	0.133
140.00	-5.79	-9.48	0.00	-61.66	0.00	61.66	1,664.80	832.40	1,722.91	850.88	111.76	-6.85	0.076
141.00	-4.65	-5.69	0.00	-48.33	0.00	48.33	1,656.61	828.30	1,701.88	840.49	113.19	-6.85	0.060
145.00	-4.29	-5.12	0.00	-25.59	0.00	25.59	1,618.18	809.09	1,613.39	796.79	118.93	-6.88	0.035
150.00	0.00	-4.57	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	126.13	-6.89	0.000

Load Case: 0.9D + 1.6W	97 mph with No Ice (Reduced DL)	24 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :0.90		
Wind Load Factor :1.60		

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		362.9	0.0					0.0	0.0	362.9	0.0	0.0	0.0
5.00		719.0	1,050.7					0.0	262.2	719.0	1,312.9	0.0	0.0
10.00		705.6	1,031.1					0.0	262.2	705.6	1,293.2	0.0	0.0
15.00		703.0	1,011.4					0.0	262.2	703.0	1,273.6	0.0	0.0
20.00		719.0	991.8					0.0	262.2	719.0	1,254.0	0.0	0.0
25.00		739.0	972.2					0.0	262.2	739.0	1,234.3	0.0	0.0
30.00		752.6	952.5					0.0	262.2	752.6	1,214.7	0.0	0.0
35.00		761.6	932.9					0.0	262.2	761.6	1,195.1	0.0	0.0
40.00		766.9	913.3					0.0	262.2	766.9	1,175.4	0.0	0.0
45.00		602.5	893.6					0.0	262.2	602.5	1,155.8	0.0	0.0
47.83	Bot - Section 2	388.0	497.7					0.0	148.6	388.0	646.3	0.0	0.0
50.00		483.2	705.4					0.0	113.6	483.2	819.0	0.0	0.0
54.00	Top - Section 1	391.6	1,284.3					0.0	209.7	391.6	1,494.0	0.0	0.0
55.00		468.5	148.1					0.0	52.4	468.5	200.6	0.0	0.0
60.00		778.4	730.5					0.0	262.2	778.4	992.7	0.0	0.0
65.00		773.3	713.7					0.0	262.2	773.3	975.9	0.0	0.0
70.00		767.0	696.9					0.0	262.2	767.0	959.0	0.0	0.0
75.00		759.4	680.1					0.0	262.2	759.4	942.2	0.0	0.0
80.00		750.7	663.2					0.0	262.2	750.7	925.4	0.0	0.0
85.00		741.0	646.4					0.0	262.2	741.0	908.6	0.0	0.0
90.00		730.4	629.6					0.0	262.2	730.4	891.7	0.0	0.0
95.00		422.3	612.7					0.0	262.2	422.3	874.9	0.0	0.0
95.83	Bot - Section 3	361.7	100.5					0.0	43.7	361.7	144.2	0.0	0.0
100.00		373.6	874.6					0.0	218.5	373.6	1,093.1	0.0	0.0
101.00	Top - Section 2	356.5	206.9					0.0	52.4	356.5	259.3	0.0	0.0
105.00	Appurtenance(s)	634.6	353.7	546.4	0.0	2,185.5	71.3	0.0	209.7	1,180.9	634.7	0.0	0.0
110.00		419.1	430.8					0.0	240.0	419.1	670.8	0.0	0.0
111.00	Appurtenance(s)	343.0	84.6	2,209.2	0.0	0.0	1,800.0	0.0	48.0	2,552.2	1,932.7	0.0	0.0
115.00		609.7	333.5					0.0	192.0	609.7	525.6	0.0	0.0
120.00		599.1	405.6					0.0	240.0	599.1	645.6	0.0	0.0
124.00	Appurtenance(s)	328.3	315.4	6,950.3	0.0	12,250.3	4,337.4	0.0	192.0	7,278.7	4,844.8	0.0	0.0
125.00		385.6	77.6					0.0	22.2	385.6	99.7	0.0	0.0
130.00		633.2	380.3					0.0	110.8	633.2	491.1	0.0	0.0
135.00		616.9	367.7					0.0	110.8	616.9	478.5	0.0	0.0
140.00	Appurtenance(s)	364.2	355.1	800.0	0.0	0.0	1,252.8	0.0	110.8	1,164.2	1,718.7	0.0	0.0
141.00	Appurtenance(s)	295.8	69.5	3,340.9	0.0	3,849.6	1,095.9	0.0	22.2	3,636.7	1,187.6	0.0	0.0
145.00		523.1	273.0					0.0	43.9	523.1	316.9	0.0	0.0
150.00	Appurtenance(s)	287.1	329.9	4,279.3	0.0	0.0	3,269.0	0.0	54.9	4,566.4	3,653.7	0.0	0.0
Totals:										39,543.0	40,436.3	0.00	0.00

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

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	-40.34	-39.28	0.00	-4,127.88	0.00	4,127.88	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.897
5.00	-38.85	-38.74	0.00	-3,931.50	0.00	3,931.50	4,595.29	2,297.65	9,142.89	4,515.33	0.14	-0.27	0.879
10.00	-37.38	-38.20	0.00	-3,737.82	0.00	3,737.82	4,545.11	2,272.56	8,870.98	4,381.04	0.57	-0.54	0.862
15.00	-35.94	-37.65	0.00	-3,546.83	0.00	3,546.83	4,493.53	2,246.77	8,600.18	4,247.31	1.28	-0.81	0.843
20.00	-34.52	-37.08	0.00	-3,358.57	0.00	3,358.57	4,440.55	2,220.28	8,330.66	4,114.20	2.27	-1.08	0.824
25.00	-33.13	-36.47	0.00	-3,173.18	0.00	3,173.18	4,386.17	2,193.08	8,062.58	3,981.80	3.55	-1.36	0.805
30.00	-31.76	-35.84	0.00	-2,990.82	0.00	2,990.82	4,330.38	2,165.19	7,796.08	3,850.19	5.12	-1.63	0.784
35.00	-30.42	-35.19	0.00	-2,811.62	0.00	2,811.62	4,273.19	2,136.59	7,531.34	3,719.45	6.98	-1.91	0.763
40.00	-29.11	-34.52	0.00	-2,635.68	0.00	2,635.68	4,214.59	2,107.30	7,268.52	3,589.65	9.12	-2.18	0.741
45.00	-27.85	-33.98	0.00	-2,463.08	0.00	2,463.08	4,154.60	2,077.30	7,007.76	3,460.87	11.55	-2.46	0.719
47.83	-27.14	-33.63	0.00	-2,366.81	0.00	2,366.81	4,119.98	2,059.99	6,860.98	3,388.38	13.06	-2.61	0.705
50.00	-26.25	-33.18	0.00	-2,293.96	0.00	2,293.96	4,093.20	2,046.60	6,749.23	3,333.19	14.27	-2.73	0.695
54.00	-24.70	-32.78	0.00	-2,161.23	0.00	2,161.23	3,318.39	1,659.20	5,491.78	2,712.18	16.66	-2.95	0.805
55.00	-24.42	-32.38	0.00	-2,128.45	0.00	2,128.45	3,309.51	1,654.75	5,452.02	2,692.55	17.28	-3.01	0.798
60.00	-23.31	-31.66	0.00	-1,966.58	0.00	1,966.58	3,264.25	1,632.12	5,253.88	2,594.69	20.59	-3.30	0.765
65.00	-22.22	-30.95	0.00	-1,808.26	0.00	1,808.26	3,217.59	1,608.79	5,056.96	2,497.44	24.21	-3.60	0.731
70.00	-21.17	-30.22	0.00	-1,653.54	0.00	1,653.54	3,169.52	1,584.76	4,861.43	2,400.88	28.13	-3.89	0.696
75.00	-20.14	-29.50	0.00	-1,502.42	0.00	1,502.42	3,120.06	1,560.03	4,667.43	2,305.07	32.34	-4.17	0.659
80.00	-19.14	-28.77	0.00	-1,354.94	0.00	1,354.94	3,069.19	1,534.59	4,475.14	2,210.10	36.85	-4.44	0.620
85.00	-18.16	-28.04	0.00	-1,211.09	0.00	1,211.09	3,016.92	1,508.46	4,284.71	2,116.06	41.64	-4.71	0.579
90.00	-17.22	-27.32	0.00	-1,070.87	0.00	1,070.87	2,963.24	1,481.62	4,096.29	2,023.00	46.71	-4.97	0.535
95.00	-16.32	-26.86	0.00	-934.30	0.00	934.30	2,909.11	1,454.55	3,911.32	1,931.65	52.04	-5.21	0.490
95.83	-16.15	-26.52	0.00	-911.92	0.00	911.92	2,895.61	1,447.80	3,874.90	1,913.67	52.95	-5.25	0.482
100.00	-15.04	-26.07	0.00	-801.43	0.00	801.43	2,828.11	1,414.06	3,695.36	1,825.00	57.61	-5.44	0.445
101.00	-14.77	-25.72	0.00	-775.36	0.00	775.36	1,940.77	970.39	2,581.63	1,274.97	58.75	-5.49	0.616
105.00	-14.17	-24.54	0.00	-670.29	0.00	670.29	1,916.40	958.20	2,491.16	1,230.29	63.42	-5.66	0.553
110.00	-13.48	-24.08	0.00	-547.61	0.00	547.61	1,884.66	942.33	2,378.55	1,174.68	69.46	-5.90	0.474
111.00	-11.78	-21.37	0.00	-523.52	0.00	523.52	1,878.15	939.07	2,356.11	1,163.59	70.70	-5.94	0.457
115.00	-11.26	-20.74	0.00	-438.05	0.00	438.05	1,851.53	925.76	2,266.63	1,119.40	75.74	-6.11	0.398
120.00	-10.63	-20.11	0.00	-334.34	0.00	334.34	1,816.99	908.49	2,155.56	1,064.55	82.23	-6.29	0.320
124.00	-6.61	-12.34	0.00	-241.67	0.00	241.67	1,788.35	894.17	2,067.42	1,021.02	87.55	-6.41	0.241
125.00	-6.54	-11.96	0.00	-229.32	0.00	229.32	1,781.05	890.52	2,045.49	1,010.19	88.89	-6.44	0.231
130.00	-6.10	-11.28	0.00	-169.54	0.00	169.54	1,743.70	871.85	1,936.59	956.41	95.68	-6.55	0.181
135.00	-5.68	-10.62	0.00	-113.13	0.00	113.13	1,704.95	852.48	1,829.01	903.28	102.58	-6.64	0.129
140.00	-4.10	-9.27	0.00	-60.01	0.00	60.01	1,664.80	832.40	1,722.91	850.88	109.55	-6.70	0.073
141.00	-3.35	-5.52	0.00	-46.89	0.00	46.89	1,656.61	828.30	1,701.88	840.49	110.95	-6.71	0.058
145.00	-3.09	-4.96	0.00	-24.82	0.00	24.82	1,618.18	809.09	1,613.39	796.79	116.57	-6.73	0.033
150.00	0.00	-4.57	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	123.62	-6.74	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice	24 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance 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		75.6	0.0					0.0	0.0	75.6	0.0	0.0	0.0
5.00		150.2	1,775.1					0.0	349.6	150.2	2,124.6	0.0	0.0
10.00		148.1	1,785.8					0.0	349.6	148.1	2,135.4	0.0	0.0
15.00		148.1	1,773.7					0.0	349.6	148.1	2,123.3	0.0	0.0
20.00		151.9	1,754.2					0.0	349.6	151.9	2,103.8	0.0	0.0
25.00		156.5	1,730.8					0.0	349.6	156.5	2,080.4	0.0	0.0
30.00		159.7	1,705.1					0.0	349.6	159.7	2,054.6	0.0	0.0
35.00		162.0	1,677.6					0.0	349.6	162.0	2,027.2	0.0	0.0
40.00		163.5	1,648.9					0.0	349.6	163.5	1,998.5	0.0	0.0
45.00		128.7	1,619.3					0.0	349.6	128.7	1,968.9	0.0	0.0
47.83	Bot - Section 2	82.9	905.3					0.0	198.1	82.9	1,103.3	0.0	0.0
50.00		103.4	1,127.9					0.0	151.5	103.4	1,279.4	0.0	0.0
54.00	Top - Section 1	83.8	2,054.6					0.0	279.6	83.8	2,334.3	0.0	0.0
55.00		100.5	283.1					0.0	69.9	100.5	353.0	0.0	0.0
60.00		167.2	1,395.0					0.0	349.6	167.2	1,744.6	0.0	0.0
65.00		166.5	1,366.8					0.0	349.6	166.5	1,716.4	0.0	0.0
70.00		165.5	1,338.2					0.0	349.6	165.5	1,687.8	0.0	0.0
75.00		164.3	1,309.3					0.0	349.6	164.3	1,658.8	0.0	0.0
80.00		162.8	1,280.0					0.0	349.6	162.8	1,629.6	0.0	0.0
85.00		161.1	1,250.5					0.0	349.6	161.1	1,600.0	0.0	0.0
90.00		159.3	1,220.7					0.0	349.6	159.3	1,570.2	0.0	0.0
95.00		92.2	1,190.7					0.0	349.6	92.2	1,540.2	0.0	0.0
95.83	Bot - Section 3	79.1	196.2					0.0	58.3	79.1	254.5	0.0	0.0
100.00		81.7	1,476.2					0.0	291.3	81.7	1,767.5	0.0	0.0
101.00	Top - Section 2	78.2	350.0					0.0	69.9	78.2	420.0	0.0	0.0
105.00	Appurtenance(s)	139.4	763.0	130.9	0.0	523.5	442.5	0.0	279.6	270.3	1,485.1	0.0	0.0
110.00		92.2	930.3					0.0	320.0	92.2	1,250.3	0.0	0.0
111.00	Appurtenance(s)	75.7	183.8	543.2	0.0	0.0	5,781.2	0.0	64.0	618.9	6,029.1	0.0	0.0
115.00		134.8	722.9					0.0	256.0	134.8	978.9	0.0	0.0
120.00		132.9	879.9					0.0	320.0	132.9	1,199.9	0.0	0.0
124.00	Appurtenance(s)	73.0	686.4	1,586.5	0.0	2,645.1	16,290.3	0.0	256.0	1,659.5	17,232.7	0.0	0.0
125.00		86.0	169.7					0.0	29.5	86.0	199.2	0.0	0.0
130.00		141.6	828.9					0.0	147.7	141.6	976.6	0.0	0.0
135.00		138.5	803.2					0.0	147.7	138.5	950.9	0.0	0.0
140.00	Appurtenance(s)	82.0	777.4	245.0	0.0	0.0	4,218.4	0.0	147.7	327.0	5,143.5	0.0	0.0
141.00	Appurtenance(s)	66.9	153.2	697.8	0.0	816.0	5,179.4	0.0	29.5	764.7	5,362.1	0.0	0.0
145.00		118.6	599.9					0.0	58.6	118.6	658.5	0.0	0.0
150.00	Appurtenance(s)	65.2	725.5	1,080.3	0.0	0.0	11,866.5	0.0	73.2	1,145.5	12,665.2	0.0	0.0
Totals:										8,923.62	93,408.3	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

24 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance 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	-93.40	-8.90	0.00	-1,043.68	0.00	1,043.68	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.245
5.00	-91.27	-8.86	0.00	-999.16	0.00	999.16	4,595.29	2,297.65	9,142.89	4,515.33	0.04	-0.07	0.241
10.00	-89.12	-8.82	0.00	-954.85	0.00	954.85	4,545.11	2,272.56	8,870.98	4,381.04	0.14	-0.14	0.238
15.00	-86.99	-8.77	0.00	-910.77	0.00	910.77	4,493.53	2,246.77	8,600.18	4,247.31	0.32	-0.21	0.234
20.00	-84.87	-8.71	0.00	-866.92	0.00	866.92	4,440.55	2,220.28	8,330.66	4,114.20	0.58	-0.28	0.230
25.00	-82.78	-8.65	0.00	-823.36	0.00	823.36	4,386.17	2,193.08	8,062.58	3,981.80	0.91	-0.35	0.226
30.00	-80.72	-8.58	0.00	-780.12	0.00	780.12	4,330.38	2,165.19	7,796.08	3,850.19	1.31	-0.42	0.221
35.00	-78.68	-8.50	0.00	-737.25	0.00	737.25	4,273.19	2,136.59	7,531.34	3,719.45	1.79	-0.49	0.217
40.00	-76.68	-8.41	0.00	-694.77	0.00	694.77	4,214.59	2,107.30	7,268.52	3,589.65	2.34	-0.56	0.212
45.00	-74.70	-8.34	0.00	-652.71	0.00	652.71	4,154.60	2,077.30	7,007.76	3,460.87	2.97	-0.64	0.207
47.83	-73.59	-8.29	0.00	-629.09	0.00	629.09	4,119.98	2,059.99	6,860.98	3,388.38	3.36	-0.68	0.204
50.00	-72.31	-8.23	0.00	-611.14	0.00	611.14	4,093.20	2,046.60	6,749.23	3,333.19	3.67	-0.71	0.201
54.00	-69.97	-8.16	0.00	-578.23	0.00	578.23	3,318.39	1,659.20	5,491.78	2,712.18	4.29	-0.77	0.234
55.00	-69.61	-8.11	0.00	-570.07	0.00	570.07	3,309.51	1,654.75	5,452.02	2,692.55	4.45	-0.78	0.233
60.00	-67.86	-8.01	0.00	-529.53	0.00	529.53	3,264.25	1,632.12	5,253.88	2,594.69	5.32	-0.86	0.225
65.00	-66.13	-7.91	0.00	-489.47	0.00	489.47	3,217.59	1,608.79	5,056.96	2,497.44	6.26	-0.94	0.217
70.00	-64.44	-7.80	0.00	-449.93	0.00	449.93	3,169.52	1,584.76	4,861.43	2,400.88	7.29	-1.02	0.208
75.00	-62.77	-7.69	0.00	-410.92	0.00	410.92	3,120.06	1,560.03	4,667.43	2,305.07	8.40	-1.10	0.198
80.00	-61.14	-7.57	0.00	-372.47	0.00	372.47	3,069.19	1,534.59	4,475.14	2,210.10	9.59	-1.17	0.188
85.00	-59.53	-7.45	0.00	-334.60	0.00	334.60	3,016.92	1,508.46	4,284.71	2,116.06	10.86	-1.25	0.178
90.00	-57.96	-7.33	0.00	-297.33	0.00	297.33	2,963.24	1,481.62	4,096.29	2,023.00	12.20	-1.32	0.167
95.00	-56.41	-7.24	0.00	-260.68	0.00	260.68	2,909.11	1,454.55	3,911.32	1,931.65	13.61	-1.38	0.154
95.83	-56.16	-7.19	0.00	-254.64	0.00	254.64	2,895.61	1,447.80	3,874.90	1,913.67	13.86	-1.40	0.152
100.00	-54.39	-7.09	0.00	-224.70	0.00	224.70	2,828.11	1,414.06	3,695.36	1,825.00	15.10	-1.45	0.142
101.00	-53.97	-7.03	0.00	-217.60	0.00	217.60	1,940.77	970.39	2,581.63	1,274.97	15.40	-1.46	0.199
105.00	-52.48	-6.78	0.00	-188.95	0.00	188.95	1,916.40	958.20	2,491.16	1,230.29	16.65	-1.51	0.181
110.00	-51.23	-6.69	0.00	-155.06	0.00	155.06	1,884.66	942.33	2,378.55	1,174.68	18.27	-1.58	0.159
111.00	-45.22	-5.93	0.00	-148.38	0.00	148.38	1,878.15	939.07	2,356.11	1,163.59	18.60	-1.59	0.152
115.00	-44.24	-5.80	0.00	-124.67	0.00	124.67	1,851.53	925.76	2,266.63	1,119.40	19.95	-1.64	0.135
120.00	-43.04	-5.67	0.00	-95.66	0.00	95.66	1,816.99	908.49	2,155.56	1,064.55	21.70	-1.69	0.114
124.00	-25.86	-3.50	0.00	-70.35	0.00	70.35	1,788.35	894.17	2,067.42	1,021.02	23.13	-1.72	0.083
125.00	-25.66	-3.42	0.00	-66.85	0.00	66.85	1,781.05	890.52	2,045.49	1,010.19	23.49	-1.73	0.081
130.00	-24.69	-3.26	0.00	-49.74	0.00	49.74	1,743.70	871.85	1,936.59	956.41	25.32	-1.77	0.066
135.00	-23.74	-3.10	0.00	-33.43	0.00	33.43	1,704.95	852.48	1,829.01	903.28	27.18	-1.79	0.051
140.00	-18.61	-2.62	0.00	-17.91	0.00	17.91	1,664.80	832.40	1,722.91	850.88	29.07	-1.81	0.032
141.00	-13.28	-1.69	0.00	-14.48	0.00	14.48	1,656.61	828.30	1,701.88	840.49	29.45	-1.81	0.025
145.00	-12.62	-1.55	0.00	-7.74	0.00	7.74	1,618.18	809.09	1,613.39	796.79	30.97	-1.82	0.018
150.00	0.00	-1.15	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	32.88	-1.82	0.000

Load Case: 1.0D + 1.0W	Serviceability 60 mph	23 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
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		77.6	0.0					0.0	0.0	77.6	0.0	0.0	0.0
5.00		153.8	1,167.4					0.0	291.3	153.8	1,458.7	0.0	0.0
10.00		151.0	1,145.6					0.0	291.3	151.0	1,436.9	0.0	0.0
15.00		150.4	1,123.8					0.0	291.3	150.4	1,415.1	0.0	0.0
20.00		153.8	1,102.0					0.0	291.3	153.8	1,393.3	0.0	0.0
25.00		158.1	1,080.2					0.0	291.3	158.1	1,371.5	0.0	0.0
30.00		161.0	1,058.4					0.0	291.3	161.0	1,349.7	0.0	0.0
35.00		162.9	1,036.6					0.0	291.3	162.9	1,327.9	0.0	0.0
40.00		164.1	1,014.8					0.0	291.3	164.1	1,306.1	0.0	0.0
45.00		128.9	992.9					0.0	291.3	128.9	1,284.2	0.0	0.0
47.83	Bot - Section 2	83.0	553.0					0.0	165.1	83.0	718.1	0.0	0.0
50.00		103.4	783.8					0.0	126.2	103.4	910.0	0.0	0.0
54.00	Top - Section 1	83.8	1,427.0					0.0	233.0	83.8	1,660.1	0.0	0.0
55.00		100.2	164.6					0.0	58.3	100.2	222.8	0.0	0.0
60.00		166.5	811.7					0.0	291.3	166.5	1,103.0	0.0	0.0
65.00		165.5	793.0					0.0	291.3	165.5	1,084.3	0.0	0.0
70.00		164.1	774.3					0.0	291.3	164.1	1,065.6	0.0	0.0
75.00		162.5	755.6					0.0	291.3	162.5	1,046.9	0.0	0.0
80.00		160.6	736.9					0.0	291.3	160.6	1,028.2	0.0	0.0
85.00		158.5	718.2					0.0	291.3	158.5	1,009.5	0.0	0.0
90.00		156.3	699.5					0.0	291.3	156.3	990.8	0.0	0.0
95.00		90.4	680.8					0.0	291.3	90.4	972.1	0.0	0.0
95.83	Bot - Section 3	77.4	111.7					0.0	48.6	77.4	160.2	0.0	0.0
100.00		79.9	971.8					0.0	242.7	79.9	1,214.5	0.0	0.0
101.00	Top - Section 2	76.3	229.8					0.0	58.3	76.3	288.1	0.0	0.0
105.00	Appurtenance(s)	135.8	393.0	116.9	0.0	467.6	79.2	0.0	233.0	252.7	705.3	0.0	0.0
110.00		89.7	478.7					0.0	266.7	89.7	745.4	0.0	0.0
111.00	Appurtenance(s)	73.4	94.1	472.7	0.0	0.0	2,000.0	0.0	53.3	546.1	2,147.4	0.0	0.0
115.00		130.4	370.6					0.0	213.4	130.4	584.0	0.0	0.0
120.00		128.2	450.6					0.0	266.7	128.2	717.3	0.0	0.0
124.00	Appurtenance(s)	70.3	350.4	1,487.1	0.0	2,621.1	4,819.3	0.0	213.4	1,557.3	5,383.1	0.0	0.0
125.00		82.5	86.2					0.0	24.6	82.5	110.8	0.0	0.0
130.00		135.5	422.6					0.0	123.1	135.5	545.7	0.0	0.0
135.00		132.0	408.6					0.0	123.1	132.0	531.7	0.0	0.0
140.00	Appurtenance(s)	77.9	394.5	171.2	0.0	0.0	1,392.0	0.0	123.1	249.1	1,909.6	0.0	0.0
141.00	Appurtenance(s)	63.3	77.2	714.8	0.0	823.7	1,217.7	0.0	24.6	778.1	1,319.5	0.0	0.0
145.00		111.9	303.3					0.0	48.8	111.9	352.1	0.0	0.0
150.00	Appurtenance(s)	61.4	366.5	915.6	0.0	0.0	3,632.2	0.0	61.0	977.0	4,059.7	0.0	0.0
Totals:										8,460.67	44,929.2	0.00	0.00

Site Number: 302538

Code: ANSI/TIA-222-G

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Site Name: Parsonage Hill Aka Wallin, CT

Engineering Number: 12927186_C3_04

4/24/2020 4:13:55 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

23 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

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	-44.92	-8.41	0.00	-889.50	0.00	889.50	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.201
5.00	-43.46	-8.30	0.00	-847.48	0.00	847.48	4,595.29	2,297.65	9,142.89	4,515.33	0.03	-0.06	0.197
10.00	-42.01	-8.18	0.00	-806.00	0.00	806.00	4,545.11	2,272.56	8,870.98	4,381.04	0.12	-0.12	0.193
15.00	-40.59	-8.07	0.00	-765.08	0.00	765.08	4,493.53	2,246.77	8,600.18	4,247.31	0.28	-0.17	0.189
20.00	-39.19	-7.95	0.00	-724.72	0.00	724.72	4,440.55	2,220.28	8,330.66	4,114.20	0.49	-0.23	0.185
25.00	-37.81	-7.83	0.00	-684.95	0.00	684.95	4,386.17	2,193.08	8,062.58	3,981.80	0.77	-0.29	0.181
30.00	-36.45	-7.70	0.00	-645.81	0.00	645.81	4,330.38	2,165.19	7,796.08	3,850.19	1.10	-0.35	0.176
35.00	-35.12	-7.56	0.00	-607.32	0.00	607.32	4,273.19	2,136.59	7,531.34	3,719.45	1.51	-0.41	0.172
40.00	-33.81	-7.42	0.00	-569.51	0.00	569.51	4,214.59	2,107.30	7,268.52	3,589.65	1.97	-0.47	0.167
45.00	-32.52	-7.31	0.00	-532.40	0.00	532.40	4,154.60	2,077.30	7,007.76	3,460.87	2.49	-0.53	0.162
47.83	-31.80	-7.24	0.00	-511.69	0.00	511.69	4,119.98	2,059.99	6,860.98	3,388.38	2.82	-0.56	0.159
50.00	-30.88	-7.14	0.00	-496.01	0.00	496.01	4,093.20	2,046.60	6,749.23	3,333.19	3.08	-0.59	0.156
54.00	-29.22	-7.06	0.00	-467.44	0.00	467.44	3,318.39	1,659.20	5,491.78	2,712.18	3.59	-0.64	0.181
55.00	-28.99	-6.97	0.00	-460.38	0.00	460.38	3,309.51	1,654.75	5,452.02	2,692.55	3.73	-0.65	0.180
60.00	-27.89	-6.83	0.00	-425.51	0.00	425.51	3,264.25	1,632.12	5,253.88	2,594.69	4.44	-0.71	0.173
65.00	-26.80	-6.67	0.00	-391.39	0.00	391.39	3,217.59	1,608.79	5,056.96	2,497.44	5.23	-0.78	0.165
70.00	-25.73	-6.52	0.00	-358.01	0.00	358.01	3,169.52	1,584.76	4,861.43	2,400.88	6.07	-0.84	0.157
75.00	-24.67	-6.37	0.00	-325.39	0.00	325.39	3,120.06	1,560.03	4,667.43	2,305.07	6.98	-0.90	0.149
80.00	-23.64	-6.22	0.00	-293.54	0.00	293.54	3,069.19	1,534.59	4,475.14	2,210.10	7.96	-0.96	0.141
85.00	-22.63	-6.06	0.00	-262.45	0.00	262.45	3,016.92	1,508.46	4,284.71	2,116.06	9.00	-1.02	0.132
90.00	-21.64	-5.91	0.00	-232.13	0.00	232.13	2,963.24	1,481.62	4,096.29	2,023.00	10.09	-1.07	0.122
95.00	-20.66	-5.81	0.00	-202.57	0.00	202.57	2,909.11	1,454.55	3,911.32	1,931.65	11.24	-1.13	0.112
95.83	-20.50	-5.74	0.00	-197.73	0.00	197.73	2,895.61	1,447.80	3,874.90	1,913.67	11.44	-1.13	0.110
100.00	-19.29	-5.65	0.00	-173.81	0.00	173.81	2,828.11	1,414.06	3,695.36	1,825.00	12.45	-1.18	0.102
101.00	-19.00	-5.57	0.00	-168.16	0.00	168.16	1,940.77	970.39	2,581.63	1,274.97	12.70	-1.19	0.142
105.00	-18.29	-5.32	0.00	-145.41	0.00	145.41	1,916.40	958.20	2,491.16	1,230.29	13.71	-1.22	0.128
110.00	-17.55	-5.22	0.00	-118.82	0.00	118.82	1,884.66	942.33	2,378.55	1,174.68	15.02	-1.27	0.110
111.00	-15.41	-4.63	0.00	-113.60	0.00	113.60	1,878.15	939.07	2,356.11	1,163.59	15.29	-1.28	0.106
115.00	-14.83	-4.50	0.00	-95.07	0.00	95.07	1,851.53	925.76	2,266.63	1,119.40	16.38	-1.32	0.093
120.00	-14.11	-4.36	0.00	-72.57	0.00	72.57	1,816.99	908.49	2,155.56	1,064.55	17.79	-1.36	0.076
124.00	-8.77	-2.68	0.00	-52.49	0.00	52.49	1,788.35	894.17	2,067.42	1,021.02	18.94	-1.39	0.056
125.00	-8.66	-2.60	0.00	-49.81	0.00	49.81	1,781.05	890.52	2,045.49	1,010.19	19.23	-1.39	0.054
130.00	-8.11	-2.45	0.00	-36.83	0.00	36.83	1,743.70	871.85	1,936.59	956.41	20.70	-1.42	0.043
135.00	-7.59	-2.31	0.00	-24.58	0.00	24.58	1,704.95	852.48	1,829.01	903.28	22.20	-1.44	0.032
140.00	-5.68	-2.01	0.00	-13.04	0.00	13.04	1,664.80	832.40	1,722.91	850.88	23.71	-1.45	0.019
141.00	-4.38	-1.20	0.00	-10.20	0.00	10.20	1,656.61	828.30	1,701.88	840.49	24.01	-1.45	0.015
145.00	-4.03	-1.08	0.00	-5.40	0.00	5.40	1,618.18	809.09	1,613.39	796.79	25.23	-1.46	0.009
150.00	0.00	-0.98	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	26.76	-1.46	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	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):	2.69
Redundancy Factor (ρ):	1.00
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	44.93 k
Seismic Base Shear (E):	1.35 k

Load Case (1.2 + 0.2Sds) * DL + E ELFM

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
37	147.50	428	9,301	0.023	31	530
36	143.00	352	7,200	0.018	24	436
35	140.50	102	2,010	0.005	7	126
34	137.50	518	9,787	0.024	33	641
33	132.50	532	9,334	0.023	31	659
32	127.50	546	8,871	0.022	30	676
31	124.50	111	1,718	0.004	6	137
30	122.00	564	8,391	0.021	28	698
29	117.50	717	9,904	0.025	33	889
28	113.00	584	7,457	0.018	25	723
27	110.50	147	1,800	0.004	6	183
26	107.50	745	8,614	0.021	29	923
25	103.00	626	6,642	0.016	22	776
24	100.50	288	2,910	0.007	10	357
23	97.92	1,215	11,644	0.029	39	1,505
22	95.42	160	1,459	0.004	5	198
21	92.50	972	8,318	0.021	28	1,204
20	87.50	991	7,586	0.019	25	1,227
19	82.50	1,010	6,871	0.017	23	1,251
18	77.50	1,028	6,176	0.015	21	1,274
17	72.50	1,047	5,503	0.014	18	1,297
16	67.50	1,066	4,855	0.012	16	1,320
15	62.50	1,084	4,236	0.010	14	1,343

14	57.50	1,103	3,647	0.009	12	1,366
13	54.50	223	662	0.002	2	276
12	52.00	1,660	4,489	0.011	15	2,057
11	48.92	910	2,178	0.005	7	1,127
10	46.42	718	1,547	0.004	5	890
9	42.50	1,284	2,320	0.006	8	1,591
8	37.50	1,306	1,837	0.005	6	1,618
7	32.50	1,328	1,403	0.003	5	1,645
6	27.50	1,350	1,021	0.003	3	1,672
5	22.50	1,371	694	0.002	2	1,699
4	17.50	1,393	427	0.001	1	1,726
3	12.50	1,415	221	0.001	1	1,753
2	7.50	1,437	81	0.000	0	1,780
1	2.50	1,459	9	0.000	0	1,807
DragonWave Horizon C	150.00	21	477	0.001	2	26
Alcatel-Lucent RRH2x	150.00	317	7,142	0.018	24	393
Alcatel-Lucent 1900	150.00	180	4,050	0.010	14	223
Alcatel-Lucent TD-RR	150.00	210	4,725	0.012	16	260
DragonWave A-ANT-18G	150.00	27	610	0.002	2	34
DragonWave A-ANT-11G	150.00	27	608	0.002	2	33
RFS APXVTM14-ALU-I20	150.00	169	3,794	0.009	13	209
Commscope NNVV-65B-R	150.00	232	5,225	0.013	17	288
Site Pro 1 RMQP-496-	150.00	2,449	55,096	0.136	184	3,034
Ericsson KRY 112 144	141.00	33	656	0.002	2	41
Ericsson Radio 4449	141.00	222	4,414	0.011	15	275
Ericsson AIR 21, 1.3	141.00	249	4,950	0.012	17	308
Ericsson AIR 21 B4A/	141.00	330	6,561	0.016	22	409
RFS APXVAARR24_43-U-	141.00	384	7,628	0.019	25	475
Round T-Arm w/ Reinf	140.00	1,392	27,283	0.068	91	1,724
Powerwave Allgon LGP	124.00	85	1,301	0.003	4	105
Raycap DC6-48-60-18-	124.00	64	978	0.002	3	79
Ericsson RRUS 4478 B	124.00	178	2,740	0.007	9	221
Raycap DC6-48-60-18-	124.00	16	246	0.001	1	20
Ericsson RRUS-11 (50	124.00	150	2,306	0.006	8	186
Ericsson RRUS 32 B66	124.00	152	2,339	0.006	8	188
Ericsson RRUS 32 B2	124.00	159	2,445	0.006	8	197
Ericsson RRUS 32 B30	124.00	180	2,768	0.007	9	223
Powerwave Allgon 777	124.00	105	1,614	0.004	5	130
CCI OPA-65R-LCUU-H6	124.00	438	6,735	0.017	22	543
Kathrein Scala 80010	124.00	293	4,502	0.011	15	363
Flat Platform w/Hand	124.00	3,000	46,128	0.114	154	3,716
Empty Flat Platform	111.00	2,000	24,642	0.061	82	2,478
RFS APXV18-206517S-C	105.00	79	873	0.002	3	98
		44,929	403,952	1.000	1,348	55,660

Load Case (0.9 - 0.2Sds) * DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
37	147.50	428	9,301	0.023	31	368
36	143.00	352	7,200	0.018	24	303
35	140.50	102	2,010	0.005	7	88
34	137.50	518	9,787	0.024	33	446
33	132.50	532	9,334	0.023	31	458
32	127.50	546	8,871	0.022	30	470
31	124.50	111	1,718	0.004	6	95
30	122.00	564	8,391	0.021	28	486
29	117.50	717	9,904	0.025	33	618
28	113.00	584	7,457	0.018	25	503
27	110.50	147	1,800	0.004	6	127

26	107.50	745	8,614	0.021	29	642
25	103.00	626	6,642	0.016	22	539
24	100.50	288	2,910	0.007	10	248
23	97.92	1,215	11,644	0.029	39	1,046
22	95.42	160	1,459	0.004	5	138
21	92.50	972	8,318	0.021	28	837
20	87.50	991	7,586	0.019	25	853
19	82.50	1,010	6,871	0.017	23	869
18	77.50	1,028	6,176	0.015	21	885
17	72.50	1,047	5,503	0.014	18	902
16	67.50	1,066	4,855	0.012	16	918
15	62.50	1,084	4,236	0.010	14	934
14	57.50	1,103	3,647	0.009	12	950
13	54.50	223	662	0.002	2	192
12	52.00	1,660	4,489	0.011	15	1,430
11	48.92	910	2,178	0.005	7	784
10	46.42	718	1,547	0.004	5	618
9	42.50	1,284	2,320	0.006	8	1,106
8	37.50	1,306	1,837	0.005	6	1,125
7	32.50	1,328	1,403	0.003	5	1,144
6	27.50	1,350	1,021	0.003	3	1,162
5	22.50	1,371	694	0.002	2	1,181
4	17.50	1,393	427	0.001	1	1,200
3	12.50	1,415	221	0.001	1	1,219
2	7.50	1,437	81	0.000	0	1,237
1	2.50	1,459	9	0.000	0	1,256
DragonWave Horizon C	150.00	21	477	0.001	2	18
Alcatel-Lucent RRH2x	150.00	317	7,142	0.018	24	273
Alcatel-Lucent 1900	150.00	180	4,050	0.010	14	155
Alcatel-Lucent TD-RR	150.00	210	4,725	0.012	16	181
DragonWave A-ANT-18G	150.00	27	610	0.002	2	23
DragonWave A-ANT-11G	150.00	27	608	0.002	2	23
RFS APXVTM14-ALU-I20	150.00	169	3,794	0.009	13	145
Commscope NNVV-65B-R	150.00	232	5,225	0.013	17	200
Site Pro 1 RMQP-496-	150.00	2,449	55,096	0.136	184	2,109
Ericsson KRY 112 144	141.00	33	656	0.002	2	28
Ericsson Radio 4449	141.00	222	4,414	0.011	15	191
Ericsson AIR 21, 1.3	141.00	249	4,950	0.012	17	214
Ericsson AIR 21 B4A/	141.00	330	6,561	0.016	22	284
RFS APXVAARR24_43-U-	141.00	384	7,628	0.019	25	330
Round T-Arm w/ Reinf	140.00	1,392	27,283	0.068	91	1,199
Powerwave Allgon LGP	124.00	85	1,301	0.003	4	73
Raycap DC6-48-60-18-	124.00	64	978	0.002	3	55
Ericsson RRUS 4478 B	124.00	178	2,740	0.007	9	153
Raycap DC6-48-60-18-	124.00	16	246	0.001	1	14
Ericsson RRUS-11 (50	124.00	150	2,306	0.006	8	129
Ericsson RRUS 32 B66	124.00	152	2,339	0.006	8	131
Ericsson RRUS 32 B2	124.00	159	2,445	0.006	8	137
Ericsson RRUS 32 B30	124.00	180	2,768	0.007	9	155
Powerwave Allgon 777	124.00	105	1,614	0.004	5	90
CCI OPA-65R-LCUU-H6	124.00	438	6,735	0.017	22	377
Kathrein Scala 80010	124.00	293	4,502	0.011	15	252
Flat Platform w/Hand	124.00	3,000	46,128	0.114	154	2,584
Empty Flat Platform	111.00	2,000	24,642	0.061	82	1,722
RFS APXV18-206517S-C	105.00	79	873	0.002	3	68
		44,929	403,952	1.000	1,348	38,692

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

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	-53.85	-1.35	0.00	-172.11	0.00	172.11	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.049
5.00	-52.07	-1.36	0.00	-165.35	0.00	165.35	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.01	0.048
10.00	-50.32	-1.37	0.00	-158.54	0.00	158.54	4,545.11	2,272.56	8,870.98	4,381.04	0.02	-0.02	0.047
15.00	-48.59	-1.38	0.00	-151.68	0.00	151.68	4,493.53	2,246.77	8,600.18	4,247.31	0.05	-0.03	0.047
20.00	-46.89	-1.39	0.00	-144.79	0.00	144.79	4,440.55	2,220.28	8,330.66	4,114.20	0.10	-0.05	0.046
25.00	-45.22	-1.39	0.00	-137.86	0.00	137.86	4,386.17	2,193.08	8,062.58	3,981.80	0.15	-0.06	0.045
30.00	-43.58	-1.39	0.00	-130.91	0.00	130.91	4,330.38	2,165.19	7,796.08	3,850.19	0.22	-0.07	0.044
35.00	-41.96	-1.39	0.00	-123.95	0.00	123.95	4,273.19	2,136.59	7,531.34	3,719.45	0.30	-0.08	0.043
40.00	-40.37	-1.39	0.00	-116.99	0.00	116.99	4,214.59	2,107.30	7,268.52	3,589.65	0.39	-0.09	0.042
45.00	-39.48	-1.39	0.00	-110.03	0.00	110.03	4,154.60	2,077.30	7,007.76	3,460.87	0.49	-0.11	0.041
47.83	-38.35	-1.39	0.00	-106.09	0.00	106.09	4,119.98	2,059.99	6,860.98	3,388.38	0.56	-0.11	0.041
50.00	-36.29	-1.37	0.00	-103.08	0.00	103.08	4,093.20	2,046.60	6,749.23	3,333.19	0.61	-0.12	0.040
54.00	-36.02	-1.37	0.00	-97.60	0.00	97.60	3,318.39	1,659.20	5,491.78	2,712.18	0.72	-0.13	0.047
55.00	-34.65	-1.36	0.00	-96.23	0.00	96.23	3,309.51	1,654.75	5,452.02	2,692.55	0.74	-0.13	0.046
60.00	-33.31	-1.35	0.00	-89.41	0.00	89.41	3,264.25	1,632.12	5,253.88	2,594.69	0.89	-0.14	0.045
65.00	-31.99	-1.34	0.00	-82.65	0.00	82.65	3,217.59	1,608.79	5,056.96	2,497.44	1.05	-0.16	0.043
70.00	-30.69	-1.33	0.00	-75.95	0.00	75.95	3,169.52	1,584.76	4,861.43	2,400.88	1.22	-0.17	0.041
75.00	-29.41	-1.31	0.00	-69.32	0.00	69.32	3,120.06	1,560.03	4,667.43	2,305.07	1.40	-0.18	0.040
80.00	-28.16	-1.29	0.00	-62.78	0.00	62.78	3,069.19	1,534.59	4,475.14	2,210.10	1.60	-0.20	0.038
85.00	-26.94	-1.26	0.00	-56.35	0.00	56.35	3,016.92	1,508.46	4,284.71	2,116.06	1.82	-0.21	0.036
90.00	-25.73	-1.24	0.00	-50.04	0.00	50.04	2,963.24	1,481.62	4,096.29	2,023.00	2.04	-0.22	0.033
95.00	-25.53	-1.23	0.00	-43.86	0.00	43.86	2,909.11	1,454.55	3,911.32	1,931.65	2.28	-0.23	0.031
95.83	-24.03	-1.19	0.00	-42.83	0.00	42.83	2,895.61	1,447.80	3,874.90	1,913.67	2.32	-0.23	0.031
100.00	-23.67	-1.18	0.00	-37.87	0.00	37.87	2,828.11	1,414.06	3,695.36	1,825.00	2.53	-0.24	0.029
101.00	-22.90	-1.16	0.00	-36.69	0.00	36.69	1,940.77	970.39	2,581.63	1,274.97	2.58	-0.25	0.041
105.00	-21.87	-1.13	0.00	-32.06	0.00	32.06	1,916.40	958.20	2,491.16	1,230.29	2.79	-0.25	0.037
110.00	-21.69	-1.12	0.00	-26.43	0.00	26.43	1,884.66	942.33	2,378.55	1,174.68	3.06	-0.27	0.034
111.00	-18.49	-1.00	0.00	-25.31	0.00	25.31	1,878.15	939.07	2,356.11	1,163.59	3.12	-0.27	0.032
115.00	-17.60	-0.97	0.00	-21.30	0.00	21.30	1,851.53	925.76	2,266.63	1,119.40	3.34	-0.28	0.029
120.00	-16.90	-0.94	0.00	-16.47	0.00	16.47	1,816.99	908.49	2,155.56	1,064.55	3.64	-0.28	0.025
124.00	-10.80	-0.65	0.00	-12.72	0.00	12.72	1,788.35	894.17	2,067.42	1,021.02	3.88	-0.29	0.018
125.00	-10.12	-0.62	0.00	-12.07	0.00	12.07	1,781.05	890.52	2,045.49	1,010.19	3.94	-0.29	0.018
130.00	-9.46	-0.59	0.00	-8.96	0.00	8.96	1,743.70	871.85	1,936.59	956.41	4.25	-0.30	0.015
135.00	-8.82	-0.55	0.00	-6.02	0.00	6.02	1,704.95	852.48	1,829.01	903.28	4.56	-0.30	0.012
140.00	-6.97	-0.45	0.00	-3.25	0.00	3.25	1,664.80	832.40	1,722.91	850.88	4.88	-0.31	0.008
141.00	-5.03	-0.33	0.00	-2.81	0.00	2.81	1,656.61	828.30	1,701.88	840.49	4.95	-0.31	0.006
145.00	-4.50	-0.30	0.00	-1.48	0.00	1.48	1,618.18	809.09	1,613.39	796.79	5.20	-0.31	0.005
150.00	0.00	-0.27	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	5.53	-0.31	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELMF

Seismic (Reduced DL) Equivalent Lateral Forces Method

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	-37.44	-1.35	0.00	-168.75	0.00	168.75	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.044
5.00	-36.20	-1.36	0.00	-162.00	0.00	162.00	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.01	0.044
10.00	-34.98	-1.36	0.00	-155.21	0.00	155.21	4,545.11	2,272.56	8,870.98	4,381.04	0.02	-0.02	0.043
15.00	-33.78	-1.37	0.00	-148.40	0.00	148.40	4,493.53	2,246.77	8,600.18	4,247.31	0.05	-0.03	0.042
20.00	-32.60	-1.37	0.00	-141.56	0.00	141.56	4,440.55	2,220.28	8,330.66	4,114.20	0.09	-0.04	0.042
25.00	-31.43	-1.37	0.00	-134.71	0.00	134.71	4,386.17	2,193.08	8,062.58	3,981.80	0.15	-0.06	0.041
30.00	-30.29	-1.37	0.00	-127.84	0.00	127.84	4,330.38	2,165.19	7,796.08	3,850.19	0.21	-0.07	0.040
35.00	-29.17	-1.37	0.00	-120.98	0.00	120.98	4,273.19	2,136.59	7,531.34	3,719.45	0.29	-0.08	0.039
40.00	-28.06	-1.37	0.00	-114.12	0.00	114.12	4,214.59	2,107.30	7,268.52	3,589.65	0.38	-0.09	0.038
45.00	-27.44	-1.37	0.00	-107.28	0.00	107.28	4,154.60	2,077.30	7,007.76	3,460.87	0.48	-0.10	0.038
47.83	-26.66	-1.36	0.00	-103.41	0.00	103.41	4,119.98	2,059.99	6,860.98	3,388.38	0.55	-0.11	0.037
50.00	-25.23	-1.35	0.00	-100.46	0.00	100.46	4,093.20	2,046.60	6,749.23	3,333.19	0.60	-0.12	0.036
54.00	-25.04	-1.35	0.00	-95.08	0.00	95.08	3,318.39	1,659.20	5,491.78	2,712.18	0.70	-0.13	0.043
55.00	-24.09	-1.33	0.00	-93.74	0.00	93.74	3,309.51	1,654.75	5,452.02	2,692.55	0.73	-0.13	0.042
60.00	-23.15	-1.32	0.00	-87.06	0.00	87.06	3,264.25	1,632.12	5,253.88	2,594.69	0.87	-0.14	0.041
65.00	-22.23	-1.31	0.00	-80.44	0.00	80.44	3,217.59	1,608.79	5,056.96	2,497.44	1.02	-0.15	0.039
70.00	-21.33	-1.29	0.00	-73.89	0.00	73.89	3,169.52	1,584.76	4,861.43	2,400.88	1.19	-0.17	0.038
75.00	-20.45	-1.28	0.00	-67.42	0.00	67.42	3,120.06	1,560.03	4,667.43	2,305.07	1.37	-0.18	0.036
80.00	-19.58	-1.25	0.00	-61.04	0.00	61.04	3,069.19	1,534.59	4,475.14	2,210.10	1.57	-0.19	0.034
85.00	-18.72	-1.23	0.00	-54.78	0.00	54.78	3,016.92	1,508.46	4,284.71	2,116.06	1.77	-0.20	0.032
90.00	-17.89	-1.20	0.00	-48.63	0.00	48.63	2,963.24	1,481.62	4,096.29	2,023.00	1.99	-0.22	0.030
95.00	-17.75	-1.20	0.00	-42.62	0.00	42.62	2,909.11	1,454.55	3,911.32	1,931.65	2.23	-0.23	0.028
95.83	-16.70	-1.16	0.00	-41.62	0.00	41.62	2,895.61	1,447.80	3,874.90	1,913.67	2.27	-0.23	0.028
100.00	-16.45	-1.15	0.00	-36.80	0.00	36.80	2,828.11	1,414.06	3,695.36	1,825.00	2.47	-0.24	0.026
101.00	-15.91	-1.13	0.00	-35.65	0.00	35.65	1,940.77	970.39	2,581.63	1,274.97	2.52	-0.24	0.036
105.00	-15.20	-1.09	0.00	-31.15	0.00	31.15	1,916.40	958.20	2,491.16	1,230.29	2.72	-0.25	0.033
110.00	-15.08	-1.09	0.00	-25.68	0.00	25.68	1,884.66	942.33	2,378.55	1,174.68	2.99	-0.26	0.030
111.00	-12.85	-0.97	0.00	-24.59	0.00	24.59	1,878.15	939.07	2,356.11	1,163.59	3.04	-0.26	0.028
115.00	-12.23	-0.94	0.00	-20.70	0.00	20.70	1,851.53	925.76	2,266.63	1,119.40	3.26	-0.27	0.025
120.00	-11.75	-0.91	0.00	-16.01	0.00	16.01	1,816.99	908.49	2,155.56	1,064.55	3.55	-0.28	0.022
124.00	-7.50	-0.64	0.00	-12.37	0.00	12.37	1,788.35	894.17	2,067.42	1,021.02	3.78	-0.28	0.016
125.00	-7.04	-0.60	0.00	-11.74	0.00	11.74	1,781.05	890.52	2,045.49	1,010.19	3.84	-0.28	0.016
130.00	-6.58	-0.57	0.00	-8.71	0.00	8.71	1,743.70	871.85	1,936.59	956.41	4.15	-0.29	0.013
135.00	-6.13	-0.54	0.00	-5.85	0.00	5.85	1,704.95	852.48	1,829.01	903.28	4.45	-0.29	0.010
140.00	-4.85	-0.43	0.00	-3.17	0.00	3.17	1,664.80	832.40	1,722.91	850.88	4.76	-0.30	0.007
141.00	-3.49	-0.32	0.00	-2.73	0.00	2.73	1,656.61	828.30	1,701.88	840.49	4.82	-0.30	0.005
145.00	-3.13	-0.29	0.00	-1.44	0.00	1.44	1,618.18	809.09	1,613.39	796.79	5.08	-0.30	0.004
150.00	0.00	-0.27	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	5.39	-0.30	0.000

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
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
Period Based on Rayleigh Method (sec):	2.69
Redundancy Factor (ρ):	1.00

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
37	147.50	428	1.828	1.667	1.025	0.327	93	530
36	143.00	352	1.718	1.191	0.842	0.260	61	436
35	140.50	102	1.658	0.970	0.752	0.225	15	126
34	137.50	518	1.588	0.742	0.654	0.187	65	641
33	132.50	532	1.475	0.441	0.513	0.130	46	659
32	127.50	546	1.366	0.222	0.397	0.080	29	676
31	124.50	111	1.302	0.123	0.338	0.054	4	137
30	122.00	564	1.250	0.057	0.294	0.035	13	698
29	117.50	717	1.160	-0.030	0.226	0.005	2	889
28	113.00	584	1.073	-0.084	0.170	-0.019	-7	723
27	110.50	147	1.026	-0.103	0.144	-0.029	-3	183
26	107.50	745	0.971	-0.116	0.117	-0.039	-20	923
25	103.00	626	0.891	-0.122	0.084	-0.049	-21	776
24	100.50	288	0.848	-0.119	0.069	-0.052	-10	357
23	97.92	1,215	0.805	-0.113	0.055	-0.053	-43	1,505
22	95.42	160	0.765	-0.104	0.044	-0.052	-6	198
21	92.50	972	0.719	-0.092	0.034	-0.048	-31	1,204
20	87.50	991	0.643	-0.068	0.020	-0.036	-24	1,227
19	82.50	1,010	0.572	-0.043	0.012	-0.019	-13	1,251
18	77.50	1,028	0.505	-0.018	0.007	0.001	1	1,274
17	72.50	1,047	0.442	0.005	0.006	0.020	14	1,297
16	67.50	1,066	0.383	0.023	0.007	0.035	25	1,320
15	62.50	1,084	0.328	0.039	0.010	0.045	33	1,343
14	57.50	1,103	0.278	0.050	0.014	0.052	38	1,366
13	54.50	223	0.250	0.055	0.017	0.054	8	276
12	52.00	1,660	0.227	0.059	0.020	0.055	61	2,057
11	48.92	910	0.201	0.063	0.023	0.055	34	1,127
10	46.42	718	0.181	0.065	0.026	0.055	27	890
9	42.50	1,284	0.152	0.068	0.030	0.055	47	1,591
8	37.50	1,306	0.118	0.070	0.035	0.054	47	1,618
7	32.50	1,328	0.089	0.071	0.039	0.053	47	1,645
6	27.50	1,350	0.064	0.072	0.041	0.051	46	1,672
5	22.50	1,371	0.043	0.070	0.042	0.050	46	1,699
4	17.50	1,393	0.026	0.067	0.040	0.047	44	1,726

3	12.50	1,415	0.013	0.059	0.034	0.043	41	1,753
2	7.50	1,437	0.005	0.044	0.025	0.034	33	1,780
1	2.50	1,459	0.001	0.018	0.010	0.016	16	1,807
DragonWave Horizon C	150.00	21	1.890	1.980	1.140	0.367	5	26
Alcatel-Lucent RRH2x	150.00	317	1.890	1.980	1.140	0.367	78	393
Alcatel-Lucent 1900	150.00	180	1.890	1.980	1.140	0.367	44	223
Alcatel-Lucent TD-RR	150.00	210	1.890	1.980	1.140	0.367	51	260
DragonWave A-ANT-18G	150.00	27	1.890	1.980	1.140	0.367	7	34
DragonWave A-ANT-11G	150.00	27	1.890	1.980	1.140	0.367	7	33
RFS APXVTM14-ALU-I20	150.00	169	1.890	1.980	1.140	0.367	41	209
Commscope NNVV-	150.00	232	1.890	1.980	1.140	0.367	57	288
Site Pro 1 RMQP-496-	150.00	2,449	1.890	1.980	1.140	0.367	599	3,034
Ericsson KRY 112 144	141.00	33	1.670	1.012	0.769	0.232	5	41
Ericsson Radio 4449	141.00	222	1.670	1.012	0.769	0.232	34	275
Ericsson AIR 21, 1.3	141.00	249	1.670	1.012	0.769	0.232	39	308
Ericsson AIR 21 B4A/	141.00	330	1.670	1.012	0.769	0.232	51	409
RFS APXVAARR24_43-U-	141.00	384	1.670	1.012	0.769	0.232	59	475
Round T-Arm w/ Reinf	140.00	1,392	1.646	0.929	0.735	0.219	203	1,724
Powerwave Allgon LGP	124.00	85	1.292	0.109	0.329	0.050	3	105
Raycap DC6-48-60-18-	124.00	64	1.292	0.109	0.329	0.050	2	79
Ericsson RRUS 4478 B	124.00	178	1.292	0.109	0.329	0.050	6	221
Raycap DC6-48-60-18-	124.00	16	1.292	0.109	0.329	0.050	1	20
Ericsson RRUS-11 (50	124.00	150	1.292	0.109	0.329	0.050	5	186
Ericsson RRUS 32 B66	124.00	152	1.292	0.109	0.329	0.050	5	188
Ericsson RRUS 32 B2	124.00	159	1.292	0.109	0.329	0.050	5	197
Ericsson RRUS 32 B30	124.00	180	1.292	0.109	0.329	0.050	6	223
Powerwave Allgon 777	124.00	105	1.292	0.109	0.329	0.050	4	130
CCI OPA-65R-LCUU-H6	124.00	438	1.292	0.109	0.329	0.050	15	543
Kathrein Scala 80010	124.00	293	1.292	0.109	0.329	0.050	10	363
Flat Platform w/Hand	124.00	3,000	1.292	0.109	0.329	0.050	101	3,716
Empty Flat Platform	111.00	2,000	1.035	-0.099	0.149	-0.027	-36	2,478
RFS APXV18-206517S-C	105.00	79	0.926	-0.121	0.098	-0.046	-2	98
		44,929	69.425	30.194	25.249	6.897	2,160	55,660

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
37	147.50	428	1.828	1.667	1.025	0.327	93	368
36	143.00	352	1.718	1.191	0.842	0.260	61	303
35	140.50	102	1.658	0.970	0.752	0.225	15	88
34	137.50	518	1.588	0.742	0.654	0.187	65	446
33	132.50	532	1.475	0.441	0.513	0.130	46	458
32	127.50	546	1.366	0.222	0.397	0.080	29	470
31	124.50	111	1.302	0.123	0.338	0.054	4	95
30	122.00	564	1.250	0.057	0.294	0.035	13	486
29	117.50	717	1.160	-0.030	0.226	0.005	2	618
28	113.00	584	1.073	-0.084	0.170	-0.019	-7	503
27	110.50	147	1.026	-0.103	0.144	-0.029	-3	127
26	107.50	745	0.971	-0.116	0.117	-0.039	-20	642
25	103.00	626	0.891	-0.122	0.084	-0.049	-21	539
24	100.50	288	0.848	-0.119	0.069	-0.052	-10	248
23	97.92	1,215	0.805	-0.113	0.055	-0.053	-43	1,046
22	95.42	160	0.765	-0.104	0.044	-0.052	-6	138
21	92.50	972	0.719	-0.092	0.034	-0.048	-31	837
20	87.50	991	0.643	-0.068	0.020	-0.036	-24	853
19	82.50	1,010	0.572	-0.043	0.012	-0.019	-13	869
18	77.50	1,028	0.505	-0.018	0.007	0.001	1	885
17	72.50	1,047	0.442	0.005	0.006	0.020	14	902

16	67.50	1,066	0.383	0.023	0.007	0.035	25	918
15	62.50	1,084	0.328	0.039	0.010	0.045	33	934
14	57.50	1,103	0.278	0.050	0.014	0.052	38	950
13	54.50	223	0.250	0.055	0.017	0.054	8	192
12	52.00	1,660	0.227	0.059	0.020	0.055	61	1,430
11	48.92	910	0.201	0.063	0.023	0.055	34	784
10	46.42	718	0.181	0.065	0.026	0.055	27	618
9	42.50	1,284	0.152	0.068	0.030	0.055	47	1,106
8	37.50	1,306	0.118	0.070	0.035	0.054	47	1,125
7	32.50	1,328	0.089	0.071	0.039	0.053	47	1,144
6	27.50	1,350	0.064	0.072	0.041	0.051	46	1,162
5	22.50	1,371	0.043	0.070	0.042	0.050	46	1,181
4	17.50	1,393	0.026	0.067	0.040	0.047	44	1,200
3	12.50	1,415	0.013	0.059	0.034	0.043	41	1,219
2	7.50	1,437	0.005	0.044	0.025	0.034	33	1,237
1	2.50	1,459	0.001	0.018	0.010	0.016	16	1,256
DragonWave Horizon C	150.00	21	1.890	1.980	1.140	0.367	5	18
Alcatel-Lucent RRH2x	150.00	317	1.890	1.980	1.140	0.367	78	273
Alcatel-Lucent 1900	150.00	180	1.890	1.980	1.140	0.367	44	155
Alcatel-Lucent TD-RR	150.00	210	1.890	1.980	1.140	0.367	51	181
DragonWave A-ANT-18G	150.00	27	1.890	1.980	1.140	0.367	7	23
DragonWave A-ANT-11G	150.00	27	1.890	1.980	1.140	0.367	7	23
RFS APXVTM14-ALU-I20	150.00	169	1.890	1.980	1.140	0.367	41	145
Commscope NNVV-	150.00	232	1.890	1.980	1.140	0.367	57	200
Site Pro 1 RMQP-496-	150.00	2,449	1.890	1.980	1.140	0.367	599	2,109
Ericsson KRY 112 144	141.00	33	1.670	1.012	0.769	0.232	5	28
Ericsson Radio 4449	141.00	222	1.670	1.012	0.769	0.232	34	191
Ericsson AIR 21, 1.3	141.00	249	1.670	1.012	0.769	0.232	39	214
Ericsson AIR 21 B4A/	141.00	330	1.670	1.012	0.769	0.232	51	284
RFS APXVAARR24_43-U-	141.00	384	1.670	1.012	0.769	0.232	59	330
Round T-Arm w/ Reinf	140.00	1,392	1.646	0.929	0.735	0.219	203	1,199
Powerwave Allgon LGP	124.00	85	1.292	0.109	0.329	0.050	3	73
Raycap DC6-48-60-18-	124.00	64	1.292	0.109	0.329	0.050	2	55
Ericsson RRUS 4478 B	124.00	178	1.292	0.109	0.329	0.050	6	153
Raycap DC6-48-60-18-	124.00	16	1.292	0.109	0.329	0.050	1	14
Ericsson RRUS-11 (50	124.00	150	1.292	0.109	0.329	0.050	5	129
Ericsson RRUS 32 B66	124.00	152	1.292	0.109	0.329	0.050	5	131
Ericsson RRUS 32 B2	124.00	159	1.292	0.109	0.329	0.050	5	137
Ericsson RRUS 32 B30	124.00	180	1.292	0.109	0.329	0.050	6	155
Powerwave Allgon 777	124.00	105	1.292	0.109	0.329	0.050	4	90
CCI OPA-65R-LCUU-H6	124.00	438	1.292	0.109	0.329	0.050	15	377
Kathrein Scala 80010	124.00	293	1.292	0.109	0.329	0.050	10	252
Flat Platform w/Hand	124.00	3,000	1.292	0.109	0.329	0.050	101	2,584
Empty Flat Platform	111.00	2,000	1.035	-0.099	0.149	-0.027	-36	1,722
RFS APXV18-206517S-C	105.00	79	0.926	-0.121	0.098	-0.046	-2	68
		44,929	69.425	30.194	25.249	6.897	2,160	38,692

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

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	-53.85	-2.15	0.00	-270.47	0.00	270.47	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.070
5.00	-52.07	-2.14	0.00	-259.71	0.00	259.71	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.02	0.069
10.00	-50.32	-2.11	0.00	-249.04	0.00	249.04	4,545.11	2,272.56	8,870.98	4,381.04	0.04	-0.04	0.068
15.00	-48.59	-2.08	0.00	-238.49	0.00	238.49	4,493.53	2,246.77	8,600.18	4,247.31	0.08	-0.05	0.067
20.00	-46.89	-2.05	0.00	-228.09	0.00	228.09	4,440.55	2,220.28	8,330.66	4,114.20	0.15	-0.07	0.066
25.00	-45.22	-2.01	0.00	-217.86	0.00	217.86	4,386.17	2,193.08	8,062.58	3,981.80	0.24	-0.09	0.065
30.00	-43.57	-1.98	0.00	-207.79	0.00	207.79	4,330.38	2,165.19	7,796.08	3,850.19	0.34	-0.11	0.064
35.00	-41.95	-1.94	0.00	-197.89	0.00	197.89	4,273.19	2,136.59	7,531.34	3,719.45	0.47	-0.13	0.063
40.00	-40.36	-1.91	0.00	-188.18	0.00	188.18	4,214.59	2,107.30	7,268.52	3,589.65	0.61	-0.15	0.062
45.00	-39.47	-1.89	0.00	-178.65	0.00	178.65	4,154.60	2,077.30	7,007.76	3,460.87	0.78	-0.17	0.061
47.83	-38.35	-1.86	0.00	-173.30	0.00	173.30	4,119.98	2,059.99	6,860.98	3,388.38	0.88	-0.18	0.060
50.00	-36.29	-1.80	0.00	-169.28	0.00	169.28	4,093.20	2,046.60	6,749.23	3,333.19	0.97	-0.19	0.060
54.00	-36.01	-1.80	0.00	-162.09	0.00	162.09	3,318.39	1,659.20	5,491.78	2,712.18	1.13	-0.20	0.071
55.00	-34.65	-1.76	0.00	-160.29	0.00	160.29	3,309.51	1,654.75	5,452.02	2,692.55	1.17	-0.21	0.070
60.00	-33.30	-1.74	0.00	-151.49	0.00	151.49	3,264.25	1,632.12	5,253.88	2,594.69	1.40	-0.23	0.069
65.00	-31.98	-1.72	0.00	-142.81	0.00	142.81	3,217.59	1,608.79	5,056.96	2,497.44	1.66	-0.25	0.067
70.00	-30.68	-1.71	0.00	-134.22	0.00	134.22	3,169.52	1,584.76	4,861.43	2,400.88	1.94	-0.28	0.066
75.00	-29.41	-1.72	0.00	-125.67	0.00	125.67	3,120.06	1,560.03	4,667.43	2,305.07	2.24	-0.30	0.064
80.00	-28.16	-1.73	0.00	-117.09	0.00	117.09	3,069.19	1,534.59	4,475.14	2,210.10	2.57	-0.32	0.062
85.00	-26.93	-1.76	0.00	-108.42	0.00	108.42	3,016.92	1,508.46	4,284.71	2,116.06	2.92	-0.35	0.060
90.00	-25.72	-1.79	0.00	-99.62	0.00	99.62	2,963.24	1,481.62	4,096.29	2,023.00	3.30	-0.37	0.058
95.00	-25.53	-1.80	0.00	-90.65	0.00	90.65	2,909.11	1,454.55	3,911.32	1,931.65	3.70	-0.39	0.056
95.83	-24.02	-1.84	0.00	-89.14	0.00	89.14	2,895.61	1,447.80	3,874.90	1,913.67	3.77	-0.40	0.055
100.00	-23.66	-1.85	0.00	-81.47	0.00	81.47	2,828.11	1,414.06	3,695.36	1,825.00	4.12	-0.42	0.053
101.00	-22.89	-1.87	0.00	-79.61	0.00	79.61	1,940.77	970.39	2,581.63	1,274.97	4.21	-0.42	0.074
105.00	-21.86	-1.90	0.00	-72.12	0.00	72.12	1,916.40	958.20	2,491.16	1,230.29	4.57	-0.44	0.070
110.00	-21.68	-1.90	0.00	-62.63	0.00	62.63	1,884.66	942.33	2,378.55	1,174.68	5.05	-0.47	0.065
111.00	-18.48	-1.93	0.00	-60.73	0.00	60.73	1,878.15	939.07	2,356.11	1,163.59	5.15	-0.47	0.062
115.00	-17.59	-1.92	0.00	-53.03	0.00	53.03	1,851.53	925.76	2,266.63	1,119.40	5.55	-0.49	0.057
120.00	-16.89	-1.91	0.00	-43.41	0.00	43.41	1,816.99	908.49	2,155.56	1,064.55	6.08	-0.51	0.050
124.00	-10.79	-1.69	0.00	-35.78	0.00	35.78	1,788.35	894.17	2,067.42	1,021.02	6.51	-0.53	0.041
125.00	-10.11	-1.66	0.00	-34.09	0.00	34.09	1,781.05	890.52	2,045.49	1,010.19	6.62	-0.53	0.039
130.00	-9.45	-1.61	0.00	-25.81	0.00	25.81	1,743.70	871.85	1,936.59	956.41	7.19	-0.55	0.032
135.00	-8.81	-1.54	0.00	-17.78	0.00	17.78	1,704.95	852.48	1,829.01	903.28	7.78	-0.56	0.025
140.00	-6.96	-1.30	0.00	-10.10	0.00	10.10	1,664.80	832.40	1,722.91	850.88	8.38	-0.57	0.016
141.00	-5.02	-1.03	0.00	-8.80	0.00	8.80	1,656.61	828.30	1,701.88	840.49	8.50	-0.58	0.013
145.00	-4.49	-0.93	0.00	-4.67	0.00	4.67	1,618.18	809.09	1,613.39	796.79	8.98	-0.58	0.009
150.00	0.00	-0.89	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	9.59	-0.58	0.000

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

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	-37.44	-2.15	0.00	-264.99	0.00	264.99	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.065
5.00	-36.20	-2.13	0.00	-254.24	0.00	254.24	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.02	0.064
10.00	-34.98	-2.10	0.00	-243.61	0.00	243.61	4,545.11	2,272.56	8,870.98	4,381.04	0.04	-0.03	0.063
15.00	-33.78	-2.06	0.00	-233.12	0.00	233.12	4,493.53	2,246.77	8,600.18	4,247.31	0.08	-0.05	0.062
20.00	-32.60	-2.03	0.00	-222.81	0.00	222.81	4,440.55	2,220.28	8,330.66	4,114.20	0.15	-0.07	0.061
25.00	-31.43	-1.99	0.00	-212.68	0.00	212.68	4,386.17	2,193.08	8,062.58	3,981.80	0.23	-0.09	0.061
30.00	-30.29	-1.95	0.00	-202.73	0.00	202.73	4,330.38	2,165.19	7,796.08	3,850.19	0.33	-0.11	0.060
35.00	-29.16	-1.91	0.00	-192.98	0.00	192.98	4,273.19	2,136.59	7,531.34	3,719.45	0.46	-0.13	0.059
40.00	-28.06	-1.87	0.00	-183.43	0.00	183.43	4,214.59	2,107.30	7,268.52	3,589.65	0.60	-0.15	0.058
45.00	-27.44	-1.85	0.00	-174.08	0.00	174.08	4,154.60	2,077.30	7,007.76	3,460.87	0.76	-0.16	0.057
47.83	-26.65	-1.82	0.00	-168.85	0.00	168.85	4,119.98	2,059.99	6,860.98	3,388.38	0.86	-0.18	0.056
50.00	-25.22	-1.76	0.00	-164.91	0.00	164.91	4,093.20	2,046.60	6,749.23	3,333.19	0.94	-0.18	0.056
54.00	-25.03	-1.75	0.00	-157.88	0.00	157.88	3,318.39	1,659.20	5,491.78	2,712.18	1.10	-0.20	0.066
55.00	-24.08	-1.72	0.00	-156.12	0.00	156.12	3,309.51	1,654.75	5,452.02	2,692.55	1.15	-0.20	0.065
60.00	-23.15	-1.69	0.00	-147.54	0.00	147.54	3,264.25	1,632.12	5,253.88	2,594.69	1.37	-0.23	0.064
65.00	-22.23	-1.67	0.00	-139.08	0.00	139.08	3,217.59	1,608.79	5,056.96	2,497.44	1.62	-0.25	0.063
70.00	-21.33	-1.66	0.00	-130.73	0.00	130.73	3,169.52	1,584.76	4,861.43	2,400.88	1.89	-0.27	0.061
75.00	-20.44	-1.66	0.00	-122.42	0.00	122.42	3,120.06	1,560.03	4,667.43	2,305.07	2.19	-0.29	0.060
80.00	-19.57	-1.68	0.00	-114.10	0.00	114.10	3,069.19	1,534.59	4,475.14	2,210.10	2.51	-0.32	0.058
85.00	-18.72	-1.71	0.00	-105.70	0.00	105.70	3,016.92	1,508.46	4,284.71	2,116.06	2.85	-0.34	0.056
90.00	-17.88	-1.74	0.00	-97.17	0.00	97.17	2,963.24	1,481.62	4,096.29	2,023.00	3.22	-0.36	0.054
95.00	-17.74	-1.75	0.00	-88.48	0.00	88.48	2,909.11	1,454.55	3,911.32	1,931.65	3.61	-0.38	0.052
95.83	-16.69	-1.79	0.00	-87.02	0.00	87.02	2,895.61	1,447.80	3,874.90	1,913.67	3.68	-0.39	0.051
100.00	-16.45	-1.80	0.00	-79.57	0.00	79.57	2,828.11	1,414.06	3,695.36	1,825.00	4.02	-0.41	0.049
101.00	-15.91	-1.82	0.00	-77.77	0.00	77.77	1,940.77	970.39	2,581.63	1,274.97	4.11	-0.41	0.069
105.00	-15.20	-1.84	0.00	-70.50	0.00	70.50	1,916.40	958.20	2,491.16	1,230.29	4.46	-0.43	0.065
110.00	-15.07	-1.85	0.00	-61.30	0.00	61.30	1,884.66	942.33	2,378.55	1,174.68	4.93	-0.45	0.060
111.00	-12.84	-1.88	0.00	-59.45	0.00	59.45	1,878.15	939.07	2,356.11	1,163.59	5.02	-0.46	0.058
115.00	-12.22	-1.87	0.00	-51.94	0.00	51.94	1,851.53	925.76	2,266.63	1,119.40	5.42	-0.48	0.053
120.00	-11.74	-1.86	0.00	-42.58	0.00	42.58	1,816.99	908.49	2,155.56	1,064.55	5.93	-0.50	0.046
124.00	-7.49	-1.66	0.00	-35.14	0.00	35.14	1,788.35	894.17	2,067.42	1,021.02	6.36	-0.52	0.039
125.00	-7.02	-1.62	0.00	-33.49	0.00	33.49	1,781.05	890.52	2,045.49	1,010.19	6.47	-0.52	0.037
130.00	-6.57	-1.58	0.00	-25.36	0.00	25.36	1,743.70	871.85	1,936.59	956.41	7.02	-0.54	0.030
135.00	-6.12	-1.51	0.00	-17.48	0.00	17.48	1,704.95	852.48	1,829.01	903.28	7.59	-0.55	0.023
140.00	-4.84	-1.28	0.00	-9.94	0.00	9.94	1,664.80	832.40	1,722.91	850.88	8.18	-0.56	0.015
141.00	-3.49	-1.02	0.00	-8.66	0.00	8.66	1,656.61	828.30	1,701.88	840.49	8.29	-0.56	0.012
145.00	-3.12	-0.92	0.00	-4.60	0.00	4.60	1,618.18	809.09	1,613.39	796.79	8.77	-0.57	0.008
150.00	0.00	-0.89	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	9.36	-0.57	0.000

Site Number: 302538

Code: ANSI/TIA-222-G

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Site Name: Parsonage Hill Aka Wallin, CT

Engineering Number: 12927186_C3_04

4/24/2020 4:13:55 PM

Customer: T-MOBILE

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 + 1.6W	39.31	0.00	53.82	0.00	0.00	4190.33	0.00	0.91
0.9D + 1.6W	39.28	0.00	40.34	0.00	0.00	4127.88	0.00	0.90
1.2D + 1.0Di + 1.0Wi	8.90	0.00	93.40	0.00	0.00	1043.68	0.00	0.24
(1.2 + 0.2Sds) * DL + E ELFM	1.35	0.00	53.85	0.00	0.00	172.11	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.15	0.00	53.85	0.00	0.00	270.47	101.00	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.35	0.00	37.44	0.00	0.00	168.75	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.15	0.00	37.44	0.00	0.00	264.99	101.00	0.07
1.0D + 1.0W	8.41	0.00	44.92	0.00	0.00	889.50	0.00	0.20



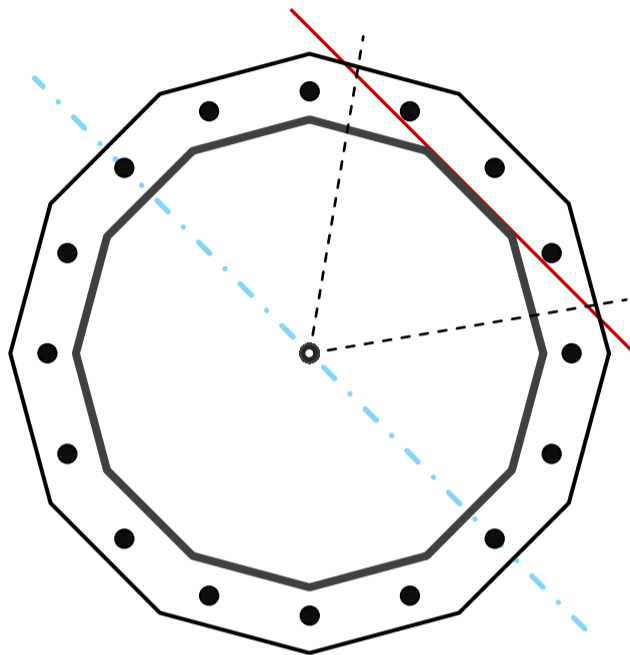
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	49.6	in
Thickness	7/16	in
Orientation Offset		°

Base Reactions		
Moment, Mu	4190.3	k-ft
Axial, Pu	53.8	k
Shear, Vu	39.3	k
Neutral Axis	315	°

Report Capacities		
Component	Capacity	Result
Base Plate	25%	Pass
Anchor Rods	90%	Pass
Dwyidag	-	-

Base Plate		
Number of Sides	12	-
Diameter, ϕ	63.85	in
Thickness	2 3/4	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	c	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	944.4	k
Bending Stress, ϕMn	3812.3	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ϕ	2 1/4	in
Bolt Circle	57.85	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	11.4	in
Orientation Offset		°
Applied Force, Pu	229.8	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	39.3	4190.3	1.00
Anchor Rod Forces	39.3	4190.3	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	66.8020	5.5668	0.3568		20186.43
Bolt	3.9761	3.2477	0.8393	4.5	20002.80
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate

Shape	12	-
Width, W	63.85	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	40.208	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods

Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	57.85	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	229.8	k
Applied Shear, Vu	1.5	k
Compressive Capacity, ϕP_n	259.8	k
Tensile Capacity, ϕR_n	0.885	OK
Interaction Capacity	0.895	OK

External Base Plate

Chord Length AA	40.448	in
Additional AA	5.500	in
Section Modulus, Z	86.870	in ³
Applied Moment, Mu	944.4	k-ft
Bending Capacity, ϕM_n	4691.0	k-ft
Capacity, Mu/ ϕM_n	0.201	OK

Chord Length AB	38.689	in
Additional AB	5.500	in
Section Modulus, Z	83.545	in ³
Applied Moment, Mu	444.3	k-ft
Bending Capacity, ϕM_n	4511.4	k-ft
Capacity, Mu/ ϕM_n	0.098	OK

Bend Line Length	37.341	in
Additional Bend Line	0.000	in
Section Modulus, Z	70.597	in ³
Applied Moment, Mu	944.4	k-ft
Bending Capacity, ϕM_n	3812.3	k-ft
Capacity, Mu/ ϕM_n	0.248	OK

Internal Base Plate

Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕM_n	0.0	k-ft
Capacity, Mu/ ϕM_n		

Exhibit E

Mount Analysis

Mount Analysis of Existing T-Arms for American Tower on behalf of T-Mobile
302538 - Parsonage Hill Aka Wallin
Project #: 12927186
T-Mobile Site ID: CT11054A
Program: L600

CLS Engineering PLLC Project #41124-12927186-01-MA-R2
 August 6, 2019

MOUNT DESCRIPTION	Existing T-Arms at 140 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 141 ft AGL (Eccentricity of ~1 ft)
SITE DESCRIPTION	150 ft Monopole
SITE ADDRESS	922 Northrop Road Wallingford CT 06492-1910, New Haven County
GPS COORDINATES	41.48934722, -72.76825278
ANALYSIS STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
LOADING CRITERIA	125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 0.75" Ice

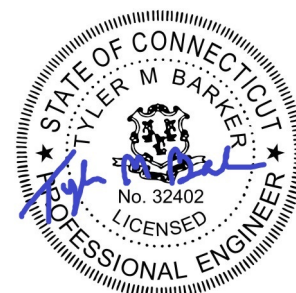
■ ANALYSIS RESULT: **Pass (Conditional)**

MEMBER USAGE	66%	Pass
CONNECTION USAGE	94%	Pass
COLLAR USAGE	75%	Pass

Modifications are proposed to bring mounts into compliance; see conclusion for details.
New mount pipes are required for final loading configuration; see conclusion for details.

Prepared by:
 Sean Rock, E.I.

Reviewed and Approved by:
 Tyler M. Barker, P.E.



Tyler M. Barker
 CLS Engineering, PLLC
 Director of Engineering
 PE # 32402 Exp. 1/31/2020
 COA # PEC.001833 Exp. 8/14/2019



Digitally signed by
 Tyler Barker
 DN: c=US,
 o=Telamon
 Corporation,
 ou=A01427E0000016
 A4525ADF800001D1
 7, cn=Tyler Barker
 Date: 2019.08.07
 16:46:05 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the existing T-Arms. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

■ STRUCTURAL DOCUMENTS PROVIDED

STRUCTURAL DATA	Site photos, dated September 27, 2018 Assembly Drawings by Site Pro 1, Part No. PRK-SFS-L, dated September 8, 2017 Assembly Drawings by Site Pro 1, Part No. SP219-xxxH, dated February 2, 2016
PREVIOUS ANALYSES	Structural Analysis by ATC, Engineering #OAA722111_C3_01, dated May 17, 2018
LOADING DATA	ATC Application, Project #12927186, dated April 2, 2019

■ ANALYSIS CRITERIA

STANDARD	2015 IBC / 2018 Connecticut State Building Code / TIA-222-G
BASIC WIND SPEED	125 mph, V_{ult} / 96.8 mph, V_{asd} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 0.75" Radial Ice (Escalating)
EXPOSURE CATEGORY	C
MAX. TOPOGRAPHIC FACTOR, K_{zt}	1.00
RISK CATEGORY	II
MAINTENANCE LIVE LOAD	L_M : 500 lb

■ FINAL EQUIPMENT

ELEVATION (ft)		ANTENNAS	
MOUNT	RAD.	#	NAME
140.0	141.0	3	Ericsson AIR 21 B4A/B12P-B5F 6FT
		3	Ericsson AIR 21, 1.3 M, B2A B4P
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 144/1
		3	RFS Celwave APXVAARR24_43-U-NA20

■ RESULTS SUMMARY

COMPONENT	PEAK USAGE	RESULT
Connections	94%	Pass
Collar Reactions	75%	Pass
Face Horizontals	66%	Pass
Mount Pipes	57%	Pass
Stand-Off Horizontals	57%	Pass
Bracing Members	11%	Pass

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **CONDITIONALLY PASS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- Install (1) Site Pro 1 SP219-96H, 2-7/8" Pipe Mount Kit at each sector (3 total) as shown in following sketch.
- Install (1) Site Pro 1 PRK-SFS-L Support Rail Vertical Reinforcement Kit at existing face horizontal member as shown in the following sketches. Collar to be installed flush with existing monopole at a height of ± 3.5 ft. above the centerline of existing platform mount collar. Field-cut proposed members as required. Maintain minimum bolt edge distance.

See following sketches and Site Pro 1 assembly drawings for additional details.

■ ASSUMPTIONS AND CONDITIONS

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, CLS Engineering PLLC should be notified immediately to revise results.

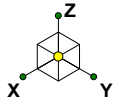
This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.

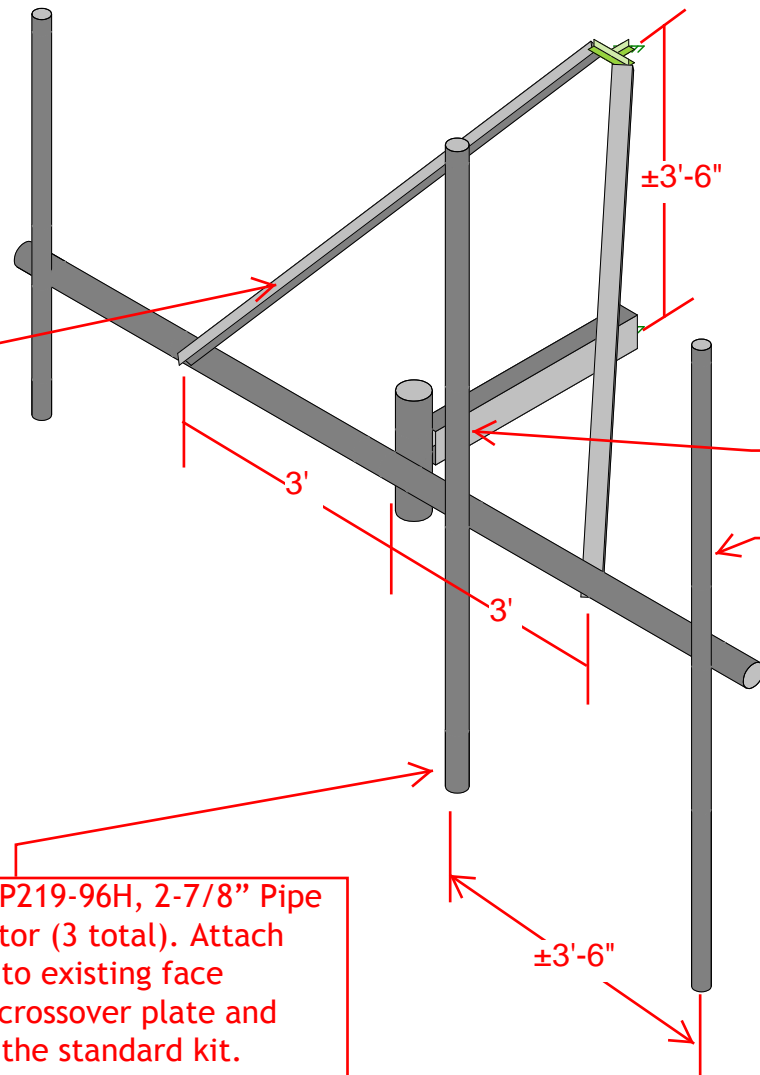
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from CLS Engineering PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. CLS Engineering PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by CLS Engineering PLLC verifies the adequacy of the primary members of the structure. CLS Engineering PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.



Install (1) Site Pro 1 PRK-SFS-L Support Rail Vertical Reinforcement Kit at existing face horizontal member as shown in the following sketches. Collar to be installed flush with existing monopole at a height of ± 3.5 ft. above the centerline of existing platform mount collar. Field-cut proposed members as required. Maintain minimum bolt edge distance.



Proposed Mount Pipe at Position 2

Existing Mount Pipe at Position 1

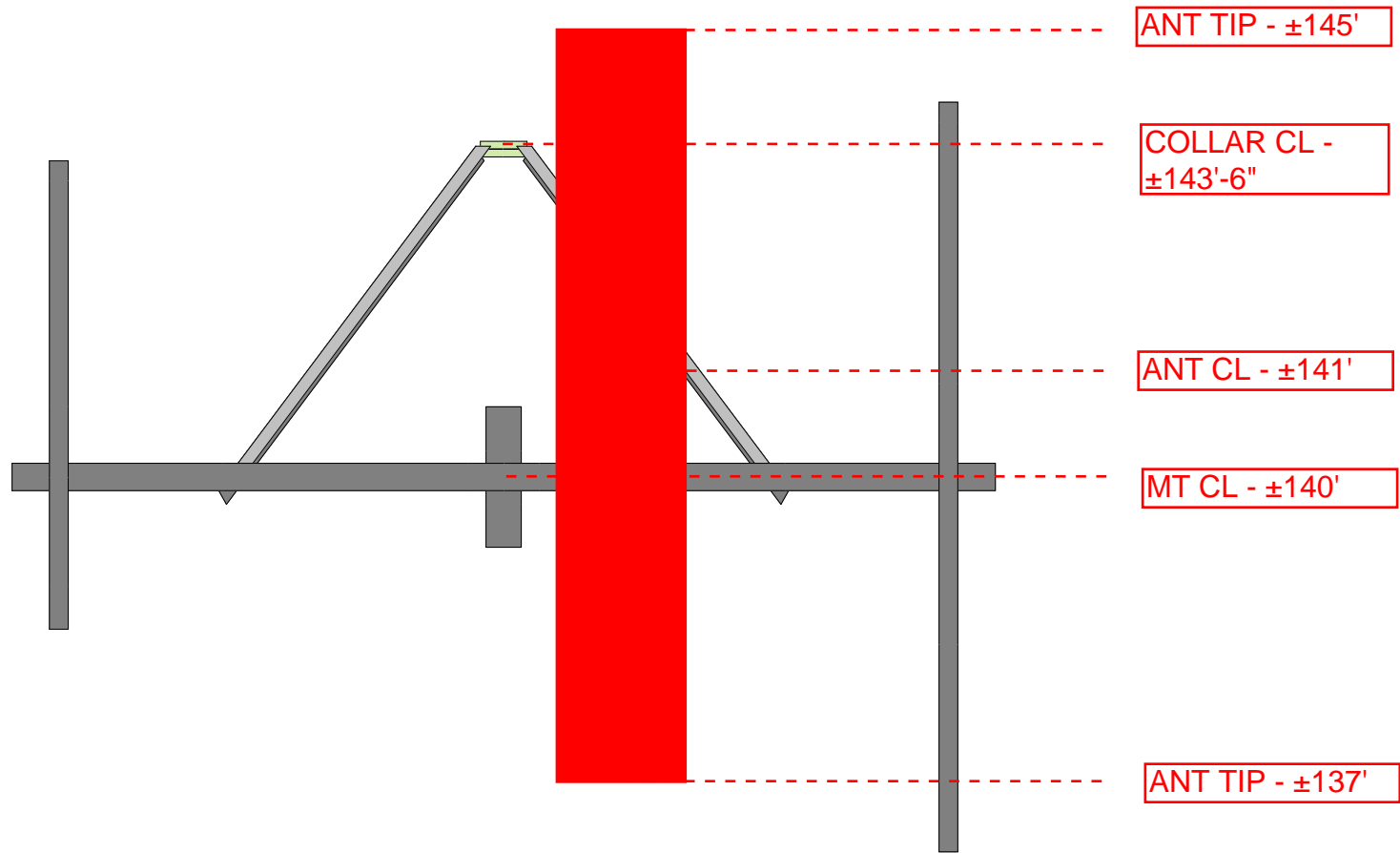
Install (1) Site Pro 1 SP219-96H, 2-7/8" Pipe Mount Kit at each sector (3 total). Attach proposed mount pipe to existing face horizontal pipe using crossover plate and hardware included in the standard kit.

Envelope Only Solution

CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Installation Sketch - Isometric View

SK - 0
July 8, 2019 at 4:20 PM
41124-12927186-01-MA-R2.r3d



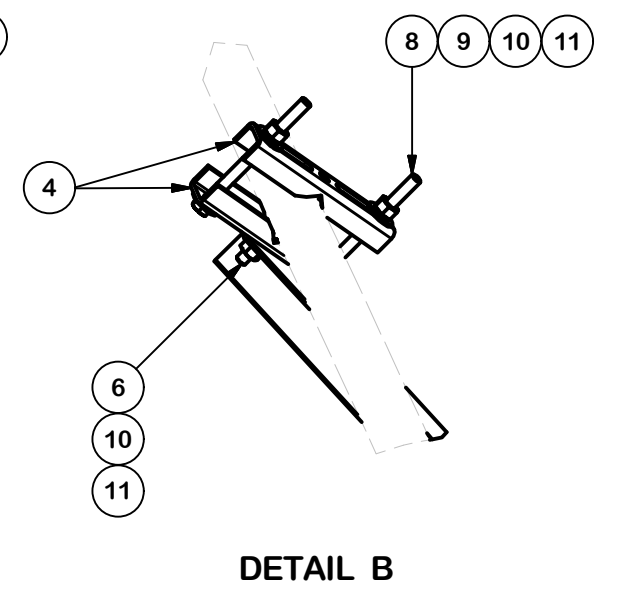
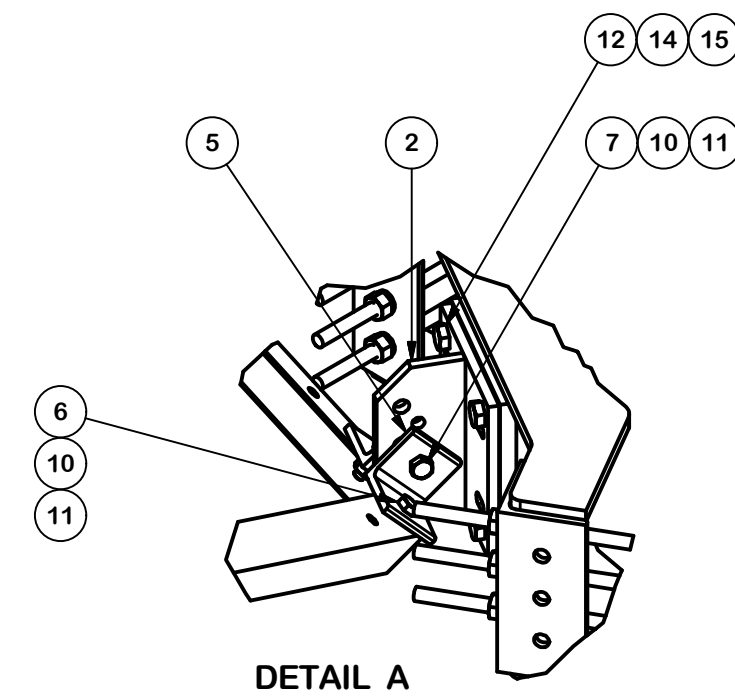
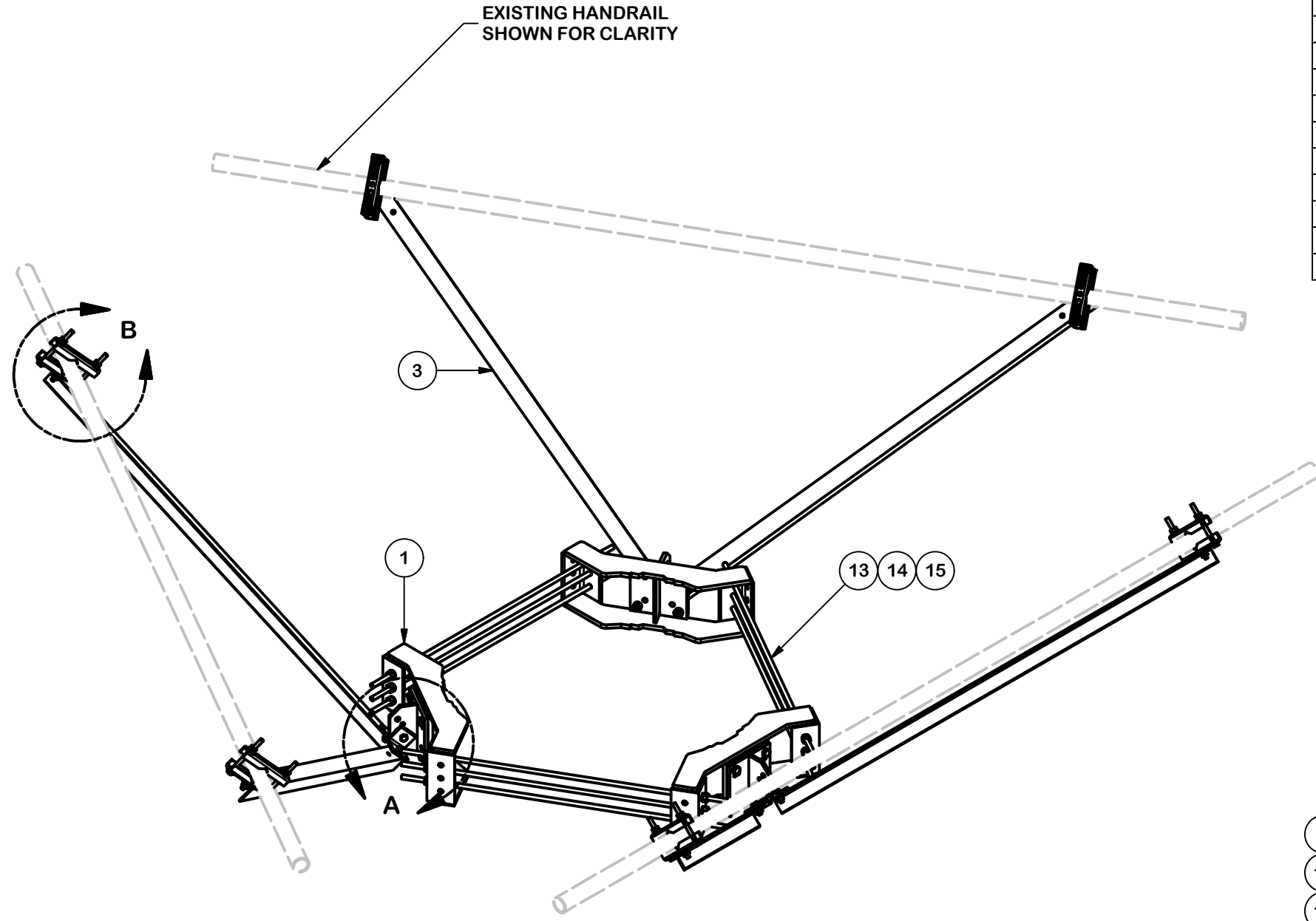
Envelope Only Solution

CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Installation Sketch - Elevation Sketch

SK - 0
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41124-12927186-01-MA-R2.r3d

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-TBW	T-BRACKET WELDMENT		13.60	40.80
3	6	X-254924	DIAGONAL ANGLE - SITE PRO 1	72 in	19.71	118.24
4	12	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	16.46
5	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	11.15
6	12	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	1.77
7	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
8	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
9	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
10	27	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.38
11	27	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.93
12	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
13	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
13	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
14	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
15	30	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.90
					TOTAL WT. #	642.04



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/25/2017


REVISION HISTORY

TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION			
HANDRAIL REINFORCEMENT KIT (LONG)			
CPD NO.	DRAWN BY	ENG. APPROVAL	
SP1	CSL3 2/23/2017	3RD PARTY	
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	02	SHOP	BMC 9/8/2017

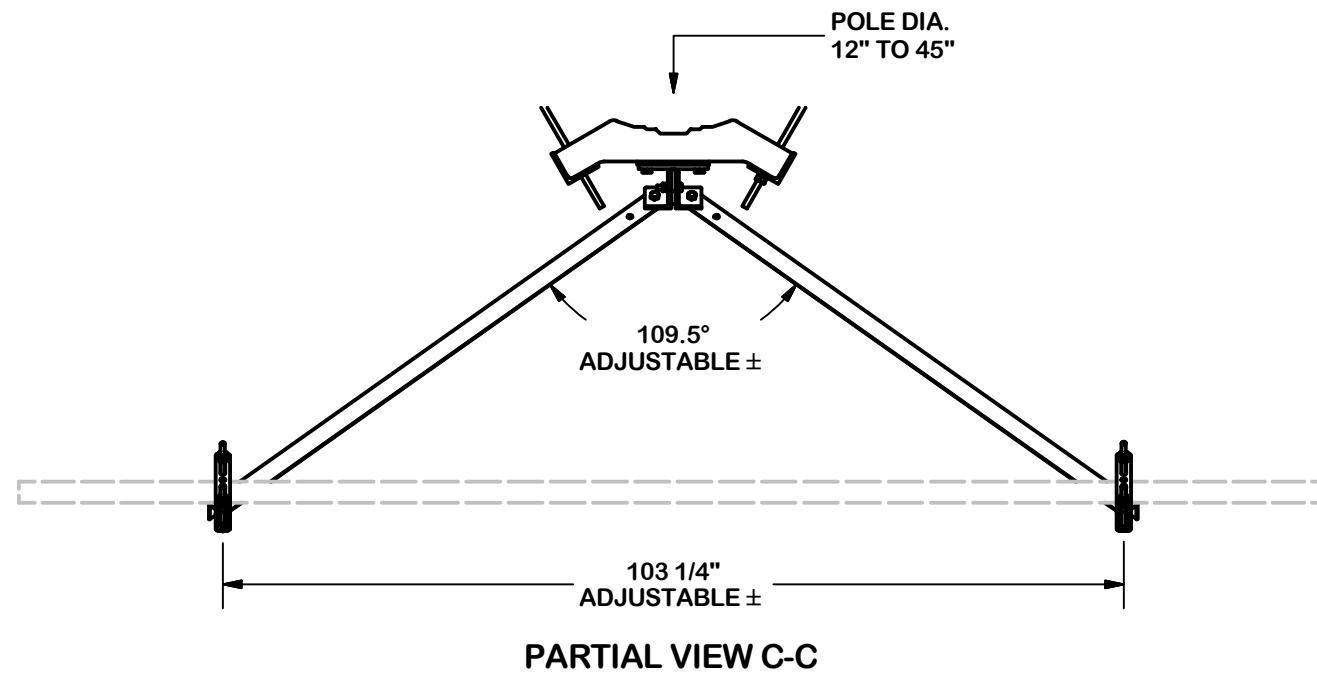


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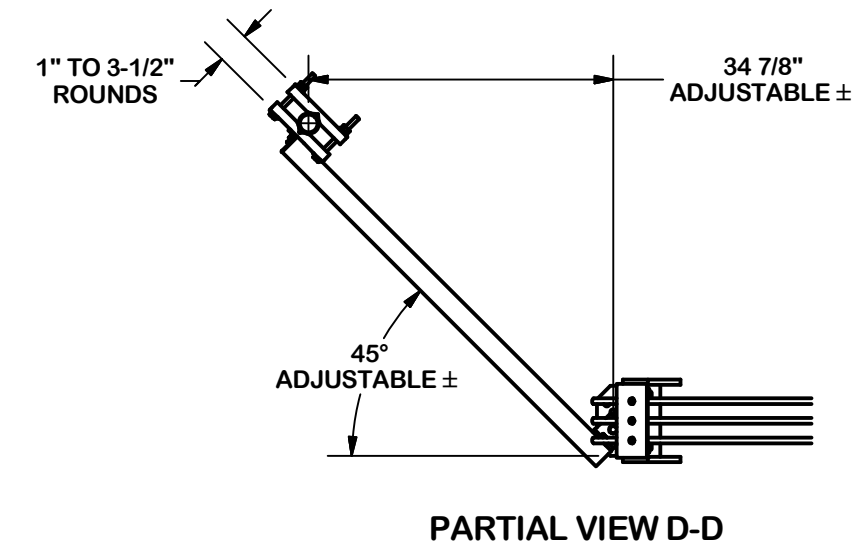
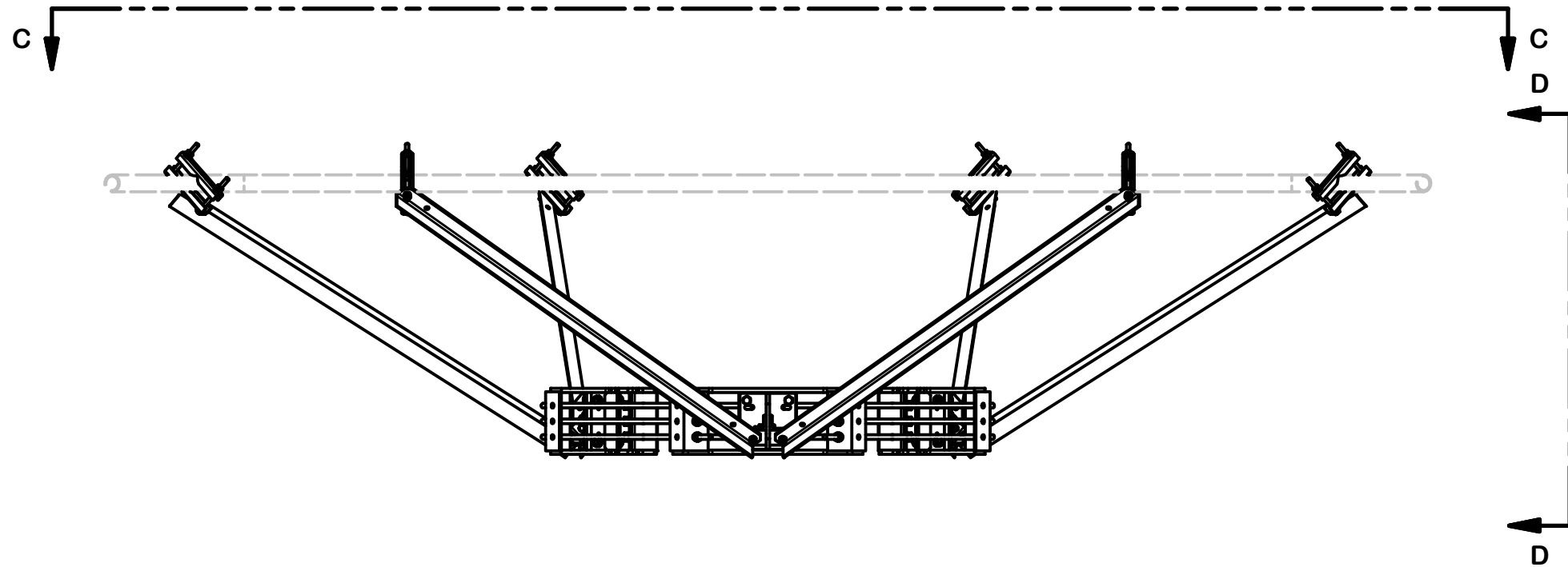
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

Engineering Support Team:
 1-888-753-7446

PART NO.	PRK-SFS-L
DWG. NO.	PRK-SFS-L



VERTICAL POSITION




REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/25/2017
REVISION HISTORY				

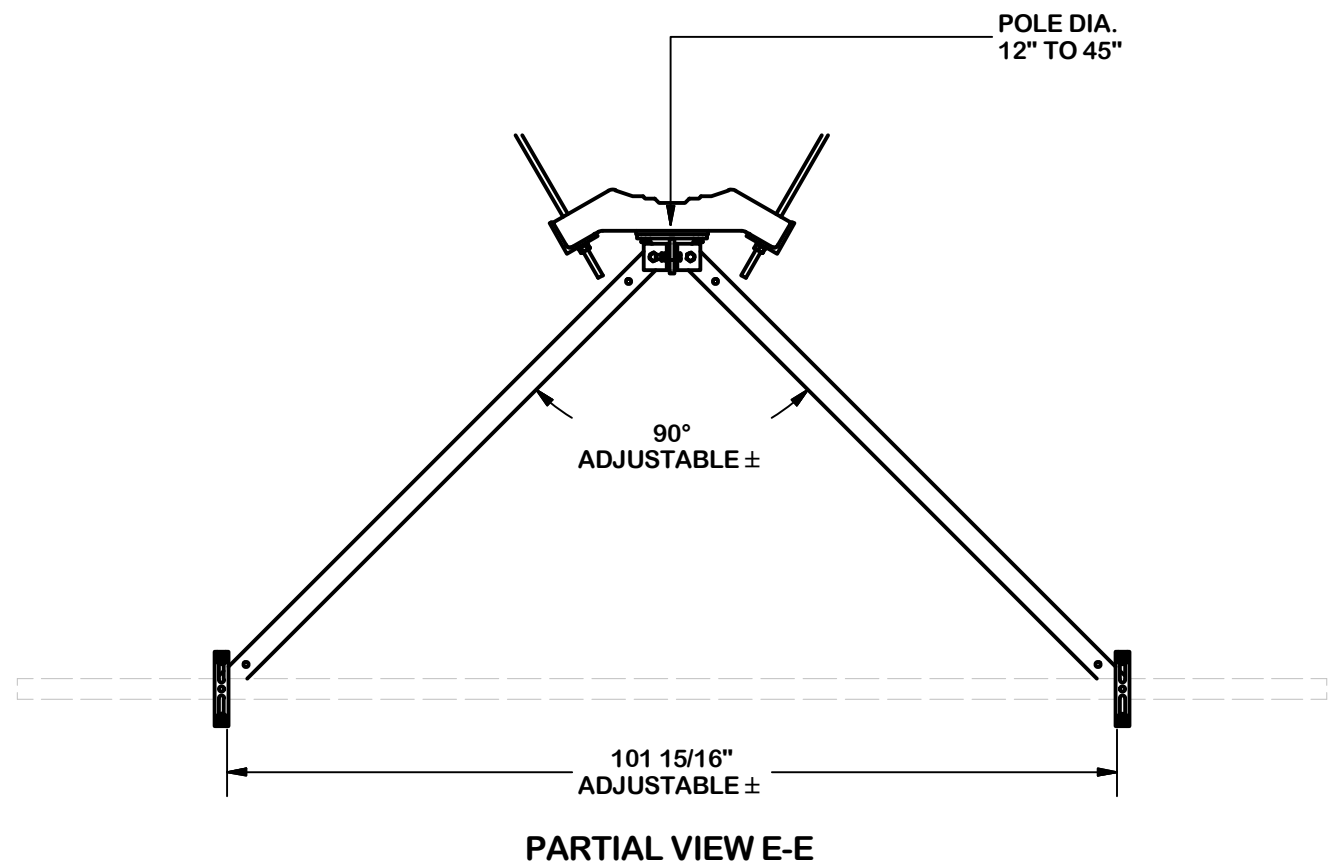
TOLERANCE NOTES

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 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

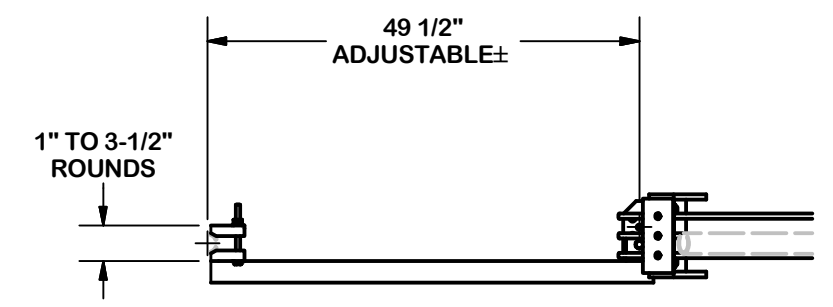
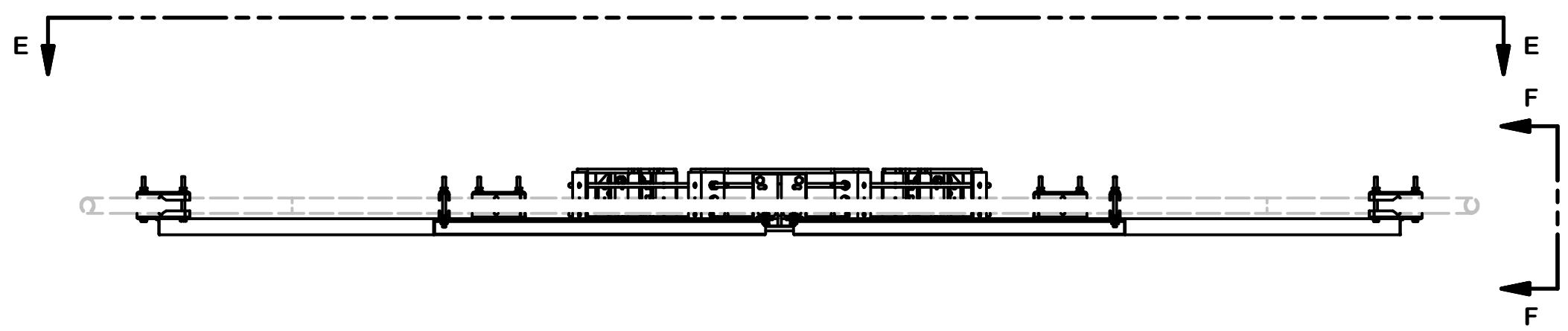
PROPRIETARY NOTE:
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DESCRIPTION			
HANDRAIL REINFORCEMENT KIT (LONG)			
CPD NO.	DRAWN BY	ENG. APPROVAL	
SP1	CSL3 2/23/2017	3RD PARTY	
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	02	SHOP	BMC 9/8/2017

 A valmont COMPANY	Engineering Support Team: 1-888-753-7446	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	PART NO.	PRK-SFS-L
DWG. NO.	PRK-SFS-L	



HORIZONTAL POSITION



PARTIAL VIEW F-F

TOLERANCE NOTES

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

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DESCRIPTION

HANDRAIL REINFORCEMENT KIT (LONG)

SITE PRO 1

Engineering Support Team:
1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

A valmont COMPANY

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/25/2017
REVISION HISTORY				

CPD NO.	DRAWN BY	ENG. APPROVAL
SP1	CSL3 2/23/2017	3RD PARTY
CLASS	DRAWING USAGE	CHECKED BY
81	SHOP	BMC 9/8/2017

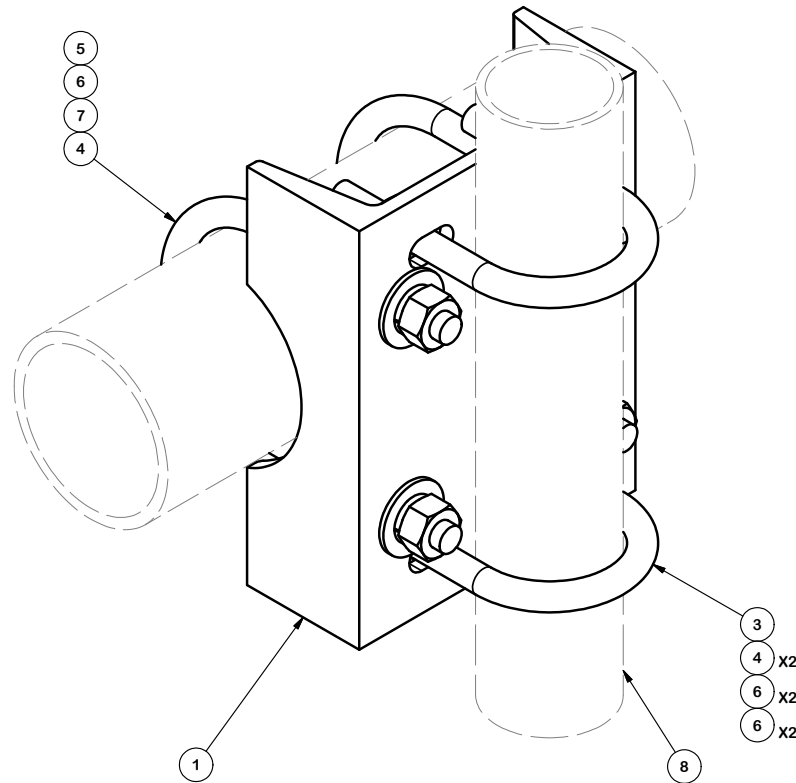
PART NO.	PRK-SFS-L
DWG. NO.	PRK-SFS-L

2-7/8" O.D. VERTICAL MOUNTING PIPES

ASSEMBLY "A"	PART NO. "B"	PART DESCRIPTION	LENGTH "C"	UNIT WT. "D"	NET WT. "E"	TOTAL WEIGHT
SP219-96H	P3096	2-7/8" DIA X 63" SCH 40 GALVANIZED PIPE	96"	49.24	49.24	62.45
SP219-120H	P30126	2-7/8" DIA X 63" SCH 40 GALVANIZED PIPE	126"	76.94	76.94	89.15

PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	8.61
3	2	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	0.51
3	2	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	1.48
4	2	X-UB1306	1/2" X 3-5/8" X 6" X 3" GALV U-BOLT		0.83	1.66
5	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
6	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
7	8	G12FW	1/2" HDG USS FLATWASHER		0.03	0.27
8	1	"B"	2-7/8" O.D. VERTICAL MOUNTING PIPES	"C"	"D"	"E"



TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION

2-7/8" PIPE MOUNT KITS



Engineering Support Team:
 1-888-753-7446

Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

A valmont COMPANY

CPD NO.	DRAWN BY	ENG. APPROVAL
CLASS	DRAWING USAGE	CHECKED BY
81	01	CUSTOMER
		BMC 2/2/2016

PART NO.	SP219-xxxH
DWG. NO.	SP219-xxxH

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	140 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	141 ft	K_d	0.95
Elevation AMSL (ft)	-	K_e	-
TIA Standard	G	K_z	1.36
Basic Wind Speed, V_{ult} (bare)	125 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	-
Design Ice Thickness, t_i	3/4 in	t_{iz}	1.73 in
Exposure Category	C	G_h	1.00
Risk Category	II	q_z (bare)	51.6 psf
Seismic Response Coeff., C_s	-	q_z (ice)	8.3 psf

Live Loading

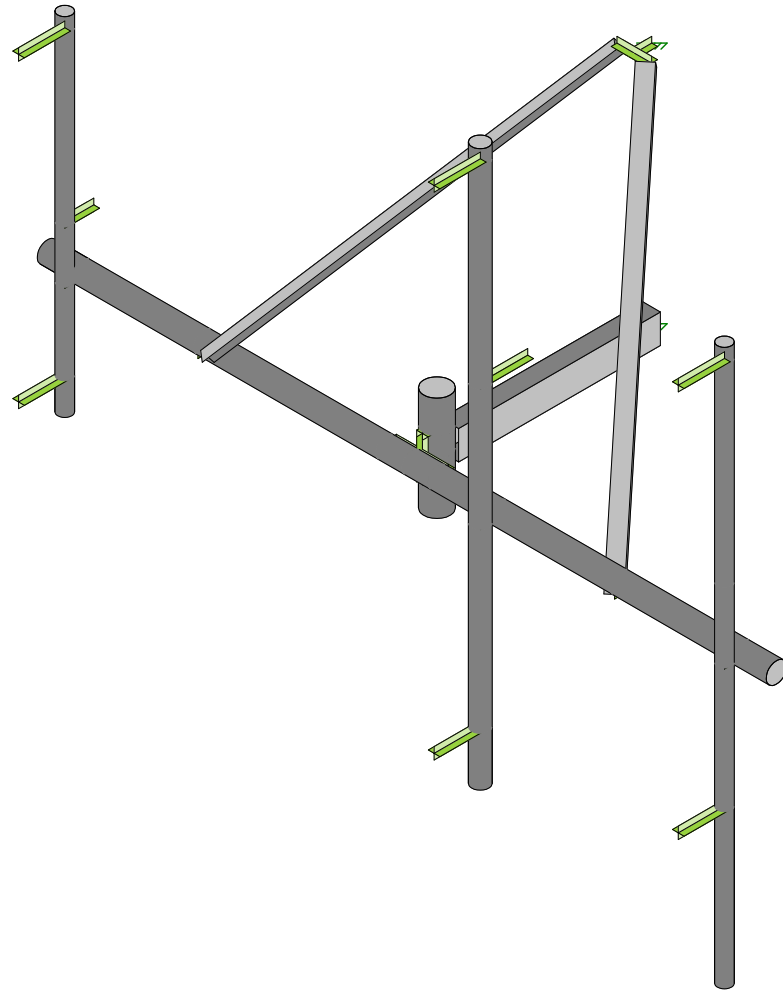
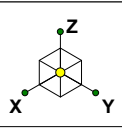
At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M2
	M3

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Face Horizontal Pipe	PIPE_3.0	16.26	5.18	11.08
MOD Mount Pipe	PIPE_2.5	13.36	4.71	9.76
Mount Pipe	PIPE_2.0	11.03	4.34	8.70
Standoff Tube	HSS5X3X6	38.72	3.04	14.45
Vertical Pipe	PIPE_4.0	20.91	5.92	13.20
MOD PRK	L2.5x2.5x3	19.36	2.81	10.16

Appurtenances

Appurtenance Model	Status	Azimuth Offset ($^\circ$, \cup)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty.	Total Qty. Override	0° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft 2)		EPA_A (Ice) (ft 2)		F_A (Bare) (lb)		F_A (Ice) (lb)		
					Front	Side			0°	1							2	N	T	N	T	N	T	N	T
AIR 21 B4A/B12P-B5F 6FT				<input type="checkbox"/>			1	3	A1	A2	78	14.8	8.6	110	Flat	260.39	10.61	6.84	13.30	9.48	493.56	318.42	99.04	70.60	
APXVAARR24_43-U-NA20				<input type="checkbox"/>			1	3	A3	A4	0	0	0	153.3	Generic	390.56	14.67	5.32	17.31	7.64	682.61	247.55	128.85	56.91	
AIR 21, 1.3 M, B2A B4P				<input type="checkbox"/>			1	3	A5	A6	56	12	8	83	Flat	145.36	6.05	4.36	8.05	6.25	281.48	202.67	59.91	46.52	
KRY 112 144/1				<input type="checkbox"/>	0.25		1	3	T1		7	6	3	11	Flat	11.02	0.09	0.18	0.21	0.56	4.07	8.14	1.54	4.20	
RADIO 4449 B12/B71				<input type="checkbox"/>	0.5		1	3	R1		15	13.2	10.4	75	Flat	59.68	0.83	1.30	1.28	2.13	38.39	60.49	9.55	15.89	

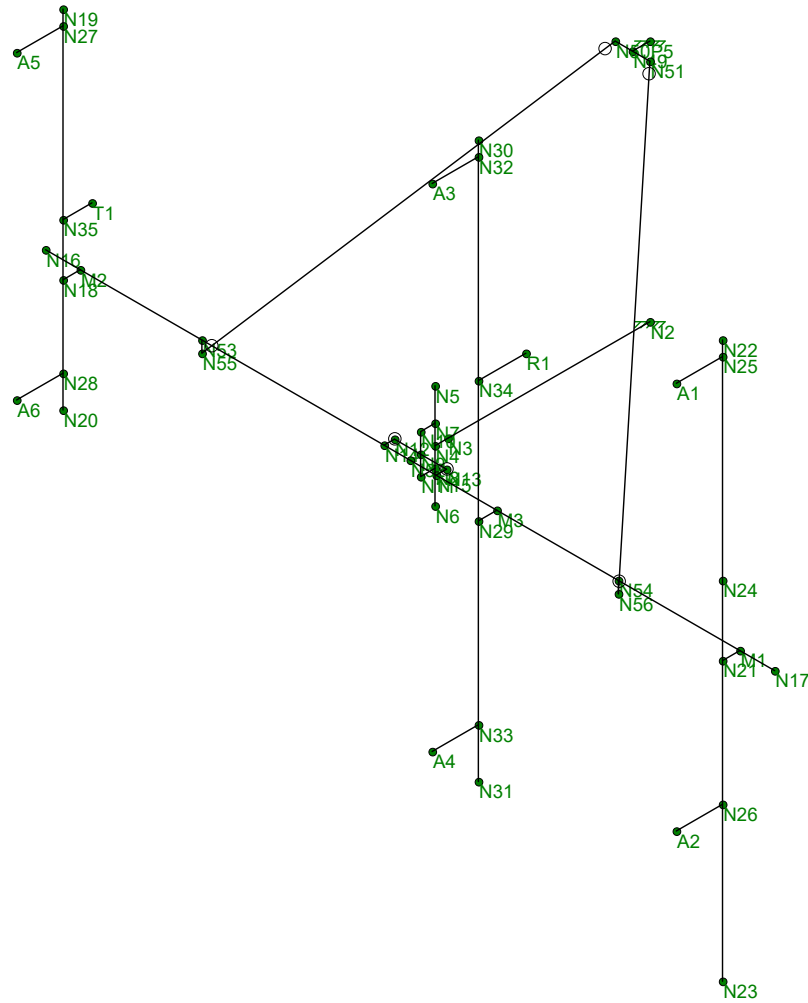
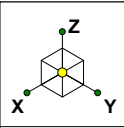


Envelope Only Solution

CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Rendered

SK - 1
Aug 6, 2019 at 1:58 PM
41124-12927186-01-MA-R2.r3d

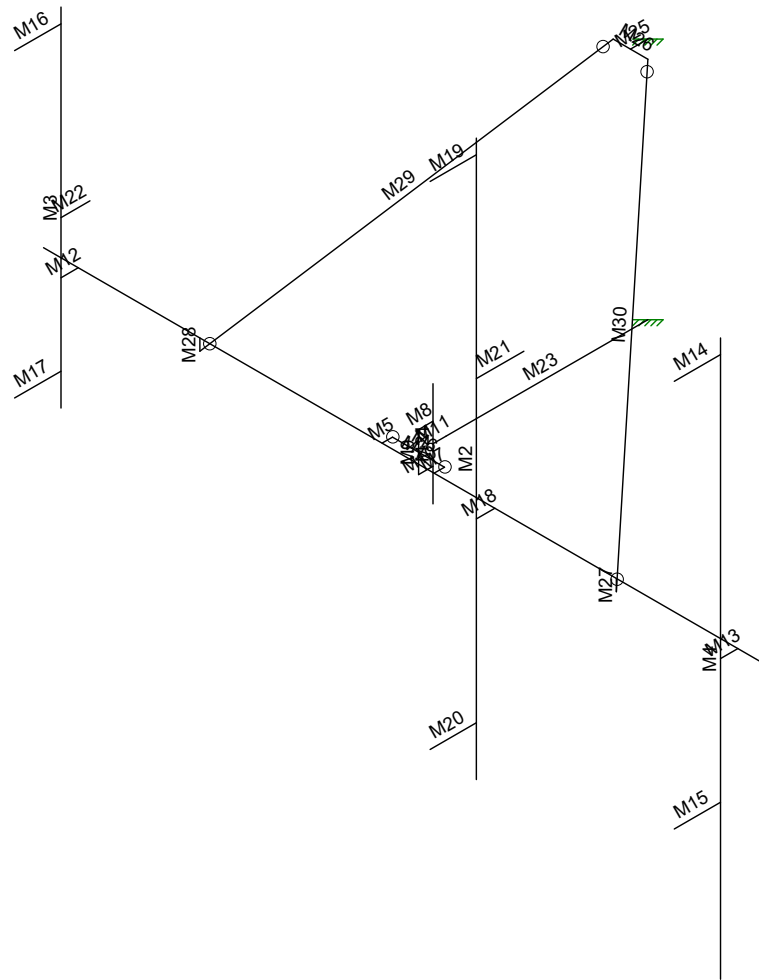
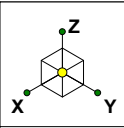


Envelope Only Solution

CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Joint Labels

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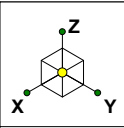


Envelope Only Solution

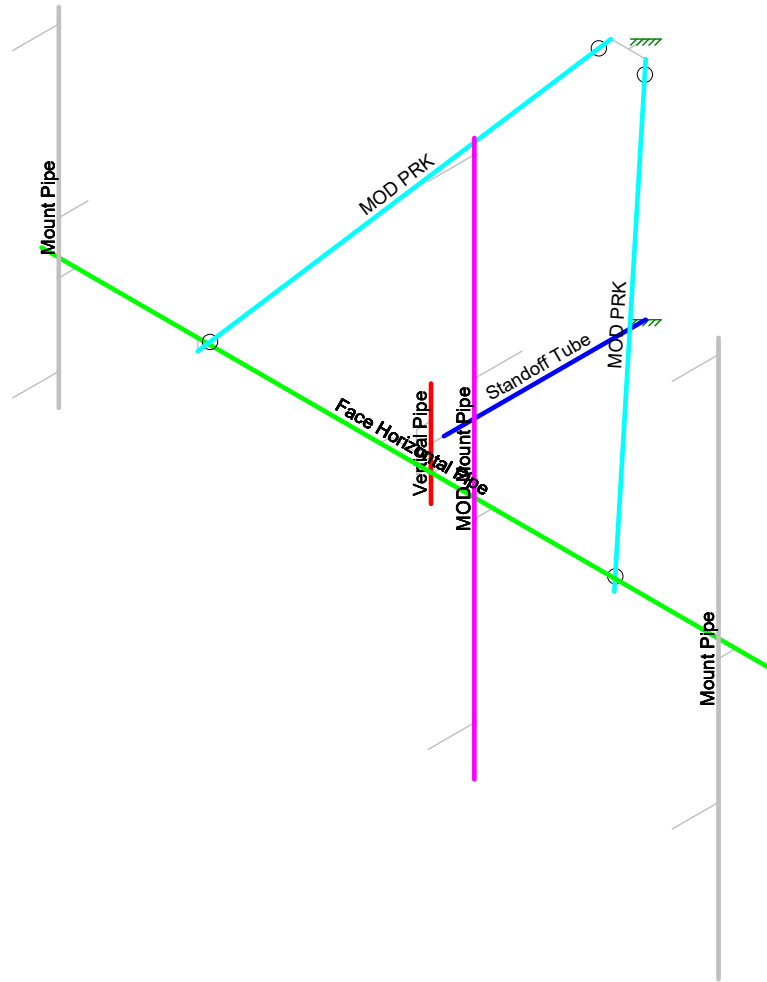
CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Member Labels

SK - 3
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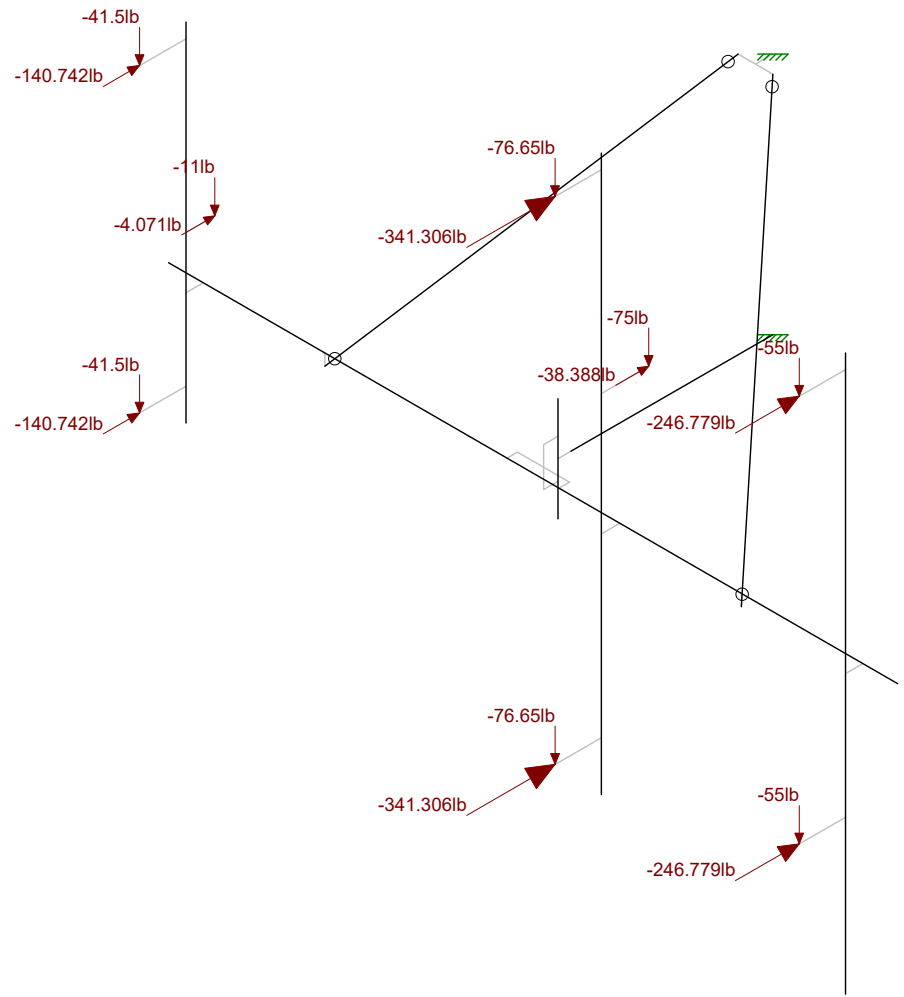
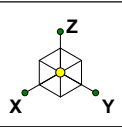


Section Sets	
Blue	Standoff Tube
Green	Face Horizontal Pipe
Red	Vertical Pipe
Grey	Mount Pipe
Purple	MOD Mount Pipe
Cyan	MOD PRK
Brown	RIGID



Envelope Only Solution

CLS	41124-12927186-Parsonage Hill Aka Wallin Section Sets	SK - 4
SMR		Aug 6, 2019 at 2:00 PM
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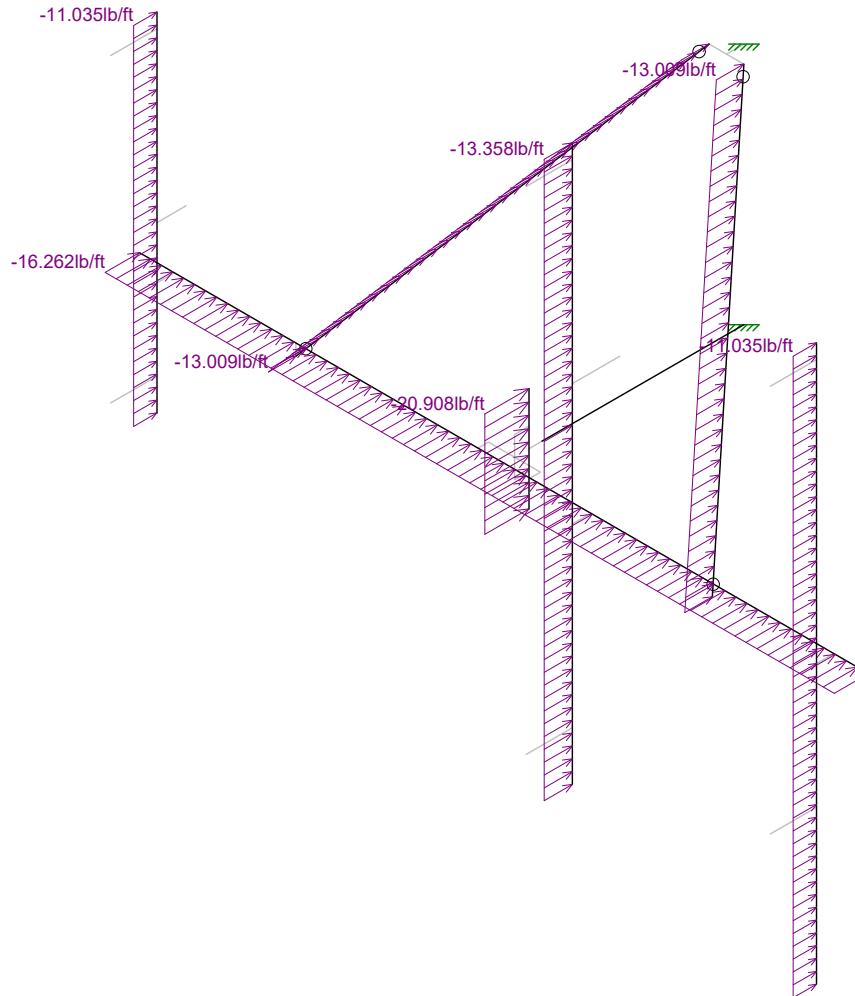
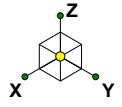


Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Joint Loads - Dead and Normal Wind

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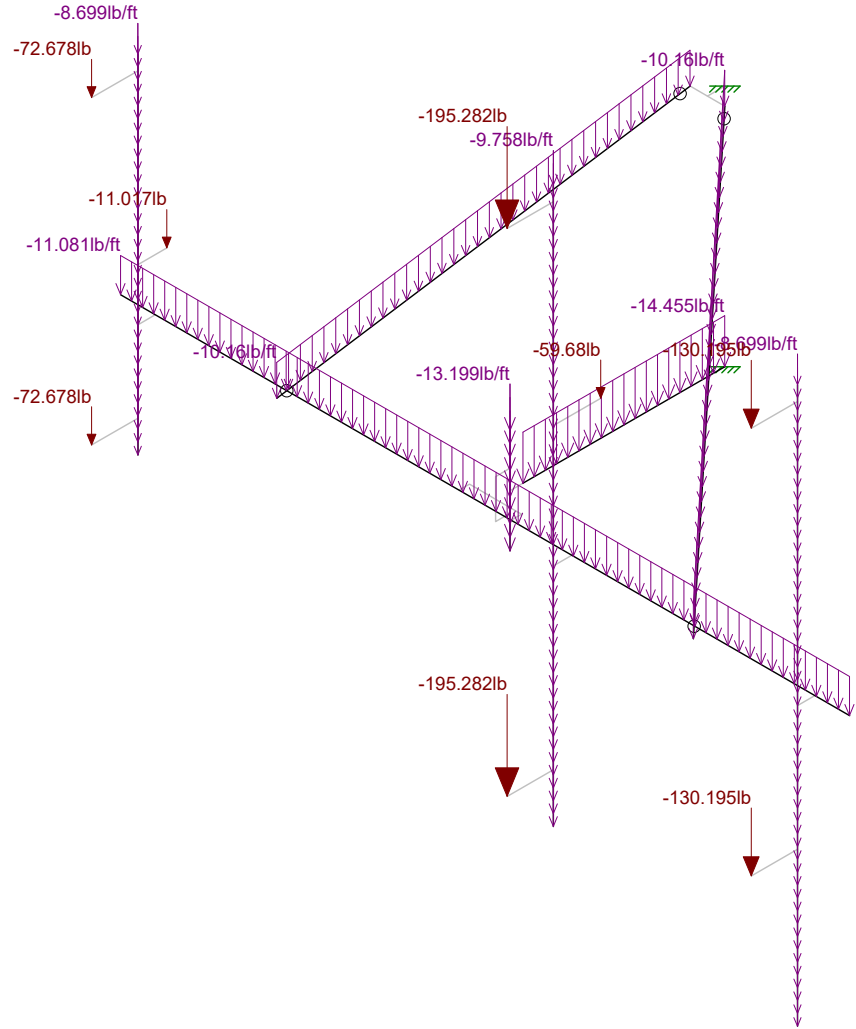
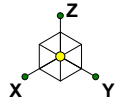


Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS
SMR
41124-12927186-01-MA-R2

41124-12927186-Parsonage Hill Aka Wallin
Distributed Load - Normal Wind

SK - 6
Aug 6, 2019 at 2:00 PM
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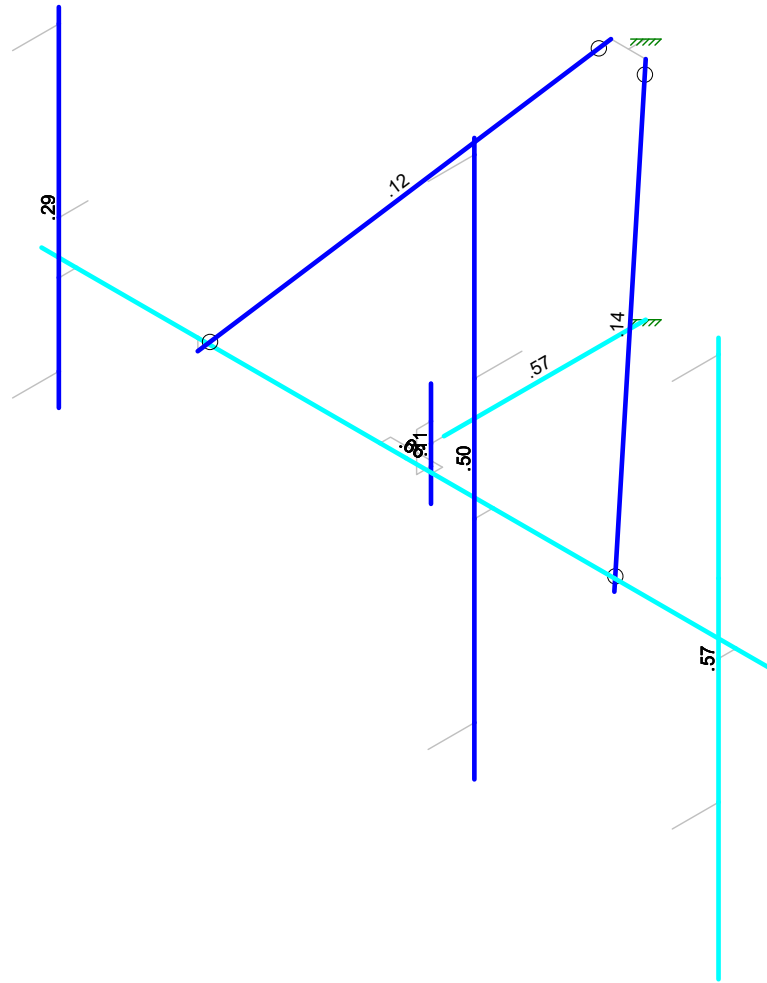
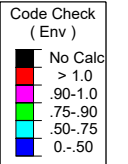
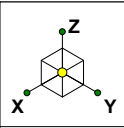


Loads: BLC 2, Ice Dead
Envelope Only Solution

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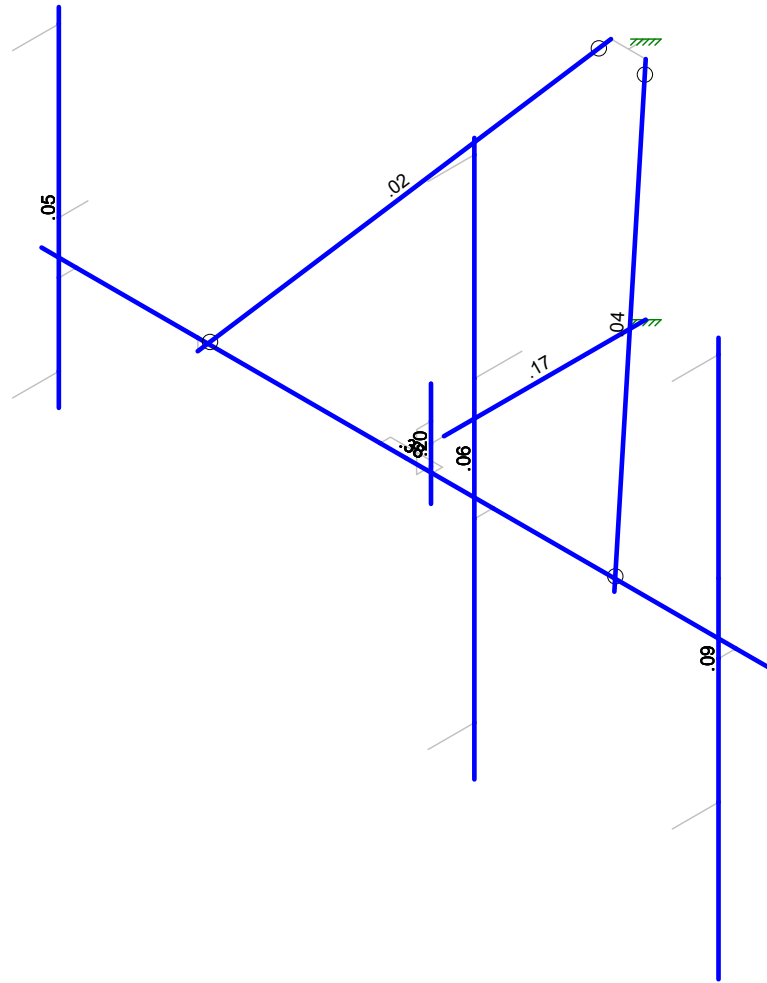
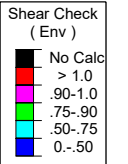
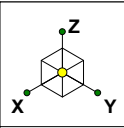
41124-12927186-Parsonage Hill Aka Wallin
Ice Dead Loads

SK - 7
Aug 6, 2019 at 2:01 PM
41124-12927186-01-MA-R2.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927186-Parsonage Hill Aka Wallin Envelope Member Unity Check Results - Bending	SK - 8
SMR		Aug 6, 2019 at 2:01 PM
41124-12927186-01-MA-R2		41124-12927186-01-MA-R2.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12927186-Parsonage Hill Aka Wallin Envelope Member Check Results - Shear	SK - 9
SMR		Aug 6, 2019 at 2:01 PM
41124-12927186-01-MA-R2		41124-12927186-01-MA-R2.r3d

BOLTED CONNECTION ROTATIONAL SLIP RESISTANCE

v. 2017.11.20

DESIGN LOADS	
Factored Moment, M_u (lb-ft)	1728

BOLT PROPERTIES	
Bolt Type	U-Bolt
# of U-Bolts	2
Hole Type	Standard
Bolt Grade	A36
Bolt Diameter, d (in)	0.5
Leg Width, W_{leg} (in)	3.5
Bolt Torque Override, T (lb-ft)	50
Bolt Pretension Stress Override (ksi)	
Bolt Ultimate Strength, F_u (ksi)	58
Specified Torque, T (lb-ft)	50.00
Clamping Force per Bolt, P_u (lb)	6000.00
Bolt Pretension Stress (ksi)	30.56
Tensile Strength per Bolt, ϕP_n (lb)	6405.90
Slip Resistance per Bolt, ϕM_n (lb-ft)	593.25
Total Slip Resistance, ϕM_n (lb-ft)	2373.00
Bolt Tensile Usage, $P_u / \phi P_n$	0.94
Connection Slip Usage, $M_u / \phi M_n$	0.73

FACTORS	
Nut Factor, K	0.20
$\phi_{(BOLT\ TENSION)}$	0.75
$\phi_{(SLIP-CRITICAL)}$	1.00
Mean Slip Coefficient, μ	0.30
Installed Pretension Ratio, D_u	1.13

Rule-of-thumb estimate

AISC 15th, J3.6

AISC 15th, J3.8

AISC 15th, J3.8

AISC 15th, J3.8

Using Torque Override

Exhibit F

Power Density/RF Emissions Report

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

T-Mobile Existing Facility

Site ID: CT11054A

Wallingford/I-91/X15/G
992 Northrop Road
Wallingford, Connecticut 06492

June 5, 2019

EBI Project Number: 6219001983

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.05%

June 5, 2019

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

Emissions Analysis for Site: CT11054A - Wallingford/I-91/X15/G

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **992 Northrop Road in Wallingford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 992 Northrop Road in Wallingford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the Ericsson AIR21 B2A_B4P for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR21 B2A_B4P for the 2100 MHz channel(s) in Sector A, the Ericsson AIR21 B2A_B4P for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR B4A/B12P for the 2100 MHz channel(s) in Sector B, the Ericsson AIR21 B2A_B4P for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz channel(s), the Ericsson AIR B4A/B12P for the 2100 MHz channel(s) in Sector C.
- 10) This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerline of the proposed antennas is 141 feet above ground level (AGL).
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B2A_B4P	Make / Model:	Ericsson AIR21 B2A_B4P	Make / Model:	Ericsson AIR21 B2A_B4P
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.35 dBd
Height (AGL):	141 feet	Height (AGL):	141 feet	Height (AGL):	141 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,226.43	ERP (W):	8,226.43	ERP (W):	8,226.43
Antenna A1 MPE %:	1.49%	Antenna B1 MPE %:	1.49%	Antenna C1 MPE %:	1.49%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz	Frequency Bands:	600 MHz / 700 MHz
Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 13.35 dBd
Height (AGL):	141 feet	Height (AGL):	141 feet	Height (AGL):	141 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	2,481.08	ERP (W):	2,481.08	ERP (W):	2,481.08
Antenna A2 MPE %:	1.04%	Antenna B2 MPE %:	1.04%	Antenna C2 MPE %:	1.04%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR B4A/B12P	Make / Model:	Ericsson AIR B4A/B12P	Make / Model:	Ericsson AIR B4A/B12P
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.85 dBd	Gain:	15.85 dBd	Gain:	15.85 dBd
Height (AGL):	141 feet	Height (AGL):	141 feet	Height (AGL):	141 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,615.10	ERP (W):	4,615.10	ERP (W):	4,615.10
Antenna A3 MPE %:	0.83%	Antenna B3 MPE %:	0.83%	Antenna C3 MPE %:	0.83%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	3.36%
AT&T	0.9%
Metro PCS	1.24%
Sprint	3.43%
Clearwire	0.12%
Site Total MPE % :	9.05%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	3.36%
T-Mobile Sector B Total:	3.36%
T-Mobile Sector C Total:	3.36%
Site Total MPE % :	9.05%

T-Mobile Maximum MPE Power Values (Sector A)							
T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz UMTS	2	1028.30	141.0	3.72	1900 MHz UMTS	1000	0.37%
T-Mobile 1900 MHz GSM	4	1028.30	141.0	7.44	1900 MHz GSM	1000	0.74%
T-Mobile 2100 MHz UMTS	2	1028.30	141.0	3.72	2100 MHz UMTS	1000	0.37%
T-Mobile 600 MHz LTE	2	591.73	141.0	2.14	600 MHz LTE	400	0.54%
T-Mobile 700 MHz LTE	2	648.82	141.0	2.35	700 MHz LTE	467	0.50%
						Total:	3.36%

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	3.36%
Sector B:	3.36%
Sector C:	3.36%
T-Mobile Maximum MPE % (Sector A):	3.36%
Site Total:	9.05%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **9.05%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Mailing Receipts/Proof of Notice