NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

August 5, 2016

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

RE: Notice of Exempt Modification
525 Orange Center Road, Orange CT 06477
Latitude: 41.27362722
Longitude: -72.0188367
T-Mobile Site#: CT11412A_L1900

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 121-foot level of the existing 160-foot monopole at 525 Orange Center Road, Orange CT 06477. The tower is owned by the Town of Orange. The property is owned by the Town of Orange. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 1900/2100 MHz antenna and add (1) hybrid cable. The new antennas would be installed at the 121-foot level of the tower.

Planned Modifications:

Remove: NONE

Remove and Replace:
(3)AIR21 B4A /B2P (REMOVE) - (3)AIR32 B66Aa/B2a **(REPLACE)**

Install New: (1) 1-5/8" Hybrid Cable

Existing to Remain:
(3)AIR21 B2A /B4P
(3) Commscope LNX-6515 Antenna
(3) RRUS11 B12
(3) Twin TMA
(12) 1-5/8" Coax
(1) 1-5/8" Hybrid

This facility was approved by the Town of Orange PZC. File No. – .

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman James Zeoli, Elected Official for the Town of Orange, as well as the property owner and the tower owner.

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

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

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

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

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

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

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

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

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: James Zeoli- First Selectman - as elected official
Town of Orange - as tower owner
Town of Orange - as property owner

Exhibit A

Town of Orange, Connecticut

Zoning Department

TOWN HALL
617 ORANGE CENTER ROAD
ORANGE, CONNECTICUT 06477-2499

PHONE: (203) 891-4743
FAX: (203) 891-2185
www.orange-ct.gov

June 27, 2016

Denise Sabo
Northeast Site Solutions
54 Main Street, Unit 3
Sturbridge, MA 01566

RE: **525 Orange Center Road, Cell Tower.**

Dear Ms. Sabo:

In response to your inquiry regarding the telecommunication tower located at **(525 Orange Center Road)**, I was unable to find the original zoning approval. Please accept this letter as notice that we the Town of **(Orange)** does not have the original tower approval as requested.

If you have any questions or concerns please feel free to contact me at 203 891-4743.

Very truly yours

Paul Dinice
Zoning Administrator &
Enforcement Officer

Exhibit B

Property Location: 525 ORANGE CENTER RD | MAP ID: 41/ 5/ 16/ / | Bldg Name: | State Use: 201E

Vision ID: 2185 | Account #360800 | Bldg #: 1 of 2 | Sec #: 1 of 1 | Card 1 of 3 | Print Date: 06/13/2016 09:26

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
ORANGE TOWN OF	1 Level	2 Water	1 Paved	1 Average
HIGH PLAINS CENTER		7 Septic	1 Public	3 3
617 ORANGE CENTER RD				0 N/A
ORANGE, CT 06477				
Additional Owners:				

SUPPLEMENTAL DATA			
Other ID:	41-5-16	CB	
Class	Exempt	DM	
Type	Commercial	Builder's lo	
Nbhd	Town	SFLA	52282
Zoning	Residential	Lot Size	28
Census	1572		
GIS ID: 41-5-16		ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
EX COM LN	21	5,506,500	3,854,600
EX COM BL	22	4,106,800	2,874,800
EX CM OTB	25	499,300	349,600
VAC RS LN	5-1	0	0
		Total	10,112,600	7,079,000

6108
Orange, CT

VISION

RECORD OF OWNERSHIP

	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
ORANGE TOWN OF	284/1100	06/29/1983	Q		0	00

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2015	21	3,854,600	2015	21	3,854,600	2014	21	3,854,600
2015	22	2,874,800	2015	22	2,874,800	2014	22	2,874,800
2015	25	349,600	2015	25	349,600	2014	25	349,600
2015	5-1	0	2015	5-1	0	2014	5-1	0
		Total: 7,079,000			Total: 7,079,000			Total: 7,079,000

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	3,530,000
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	425,400
Appraised Land Value (Bldg)	5,506,500
Special Land Value	0
Total Appraised Parcel Value	10,112,600
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	**10,112,600**

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
1653	08/26/2015	BP	Permit	2,000		0		INSTALL NEW CEILIN
441	07/31/2012	BP	Permit	2,245		100		TEMP TENT 7/26-8/6/1
418	07/06/2012	BP	Permit	500	08/09/2012	100		ADD (8X8) TO EXISTIN
398	06/25/2012	BP	Permit	1,500		100		SET UP FOR BOY SCO
387	06/14/2012	BP	Permit	2,000		100		ERECT TENT FOR 2 M
248	01/19/2012	BP	Permit	10,000	08/09/2012	100		REPLACE ANTENNAE
220	12/06/2011	BP	Permit	15,000	08/09/2012	100		MODIFICATION TO E

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
08/09/2012			ES	00	Measure & Listed

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.		C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing	S Adj Fact	Adj. Unit Price	Land Value
1	201E	Exempt Comm	RES				20.00 AC	162,000.00	1.0000	C		1.00	C20	1.75	POWER LINES	PL1	.95		5,386,500
1	201E	Exempt Comm	RES				8.00 AC	15,000.00	1.0000	0		1.00		0.00			1.00		120,000

Total Card Land Units: 28.00 AC | Parcel Total Land Area: 28 AC | Total Land Value: 5,506,500

Property Location: 525 ORANGE CENTER RD **MAP ID:** 41/ 5/ 16/ / **Bldg Name:** **State Use:** 201E

Vision ID: 2185 **Account #** 360800 **Bldg #:** 1 of 2 **Sec #:** 1 of 1 **Card** 1 of 3 **Print Date:** 06/13/2016 09:26

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	90		School
Model	94		Comm/Ind
Grade	10		C+
Stories	1		
Occupancy	1		
Exterior Wall 1	04		Brick/Masonry
Exterior Wall 2			
Roof Structure	13		Flat Stl Truss
Roof Cover	1		BU Comp
Interior Wall 1	02		Paint
Interior Wall 2			
Interior Floor 1	05		Vinyl
Interior Floor 2	08		Ceramic Tile
Heating Fuel	03		Gas
HVAC	05		Hot Water
Ceilings	11		Susp Accous
Partitions	2		Typical
Bldg Use	201E		Exempt Comm
Full Baths	0		
Half Baths	0		
Total Fixtures	70		
% Sprinkler	0		
Elevator	0		
Basement	1		Slab
Foundation	1		Concrete
Park Spaces	150		
Frame Type	2		Fire Resistant
Footprint			
Wall Height	10		
Bldg Adj	2.5		

CONSTRUCTION DETAIL (CONTINUED)

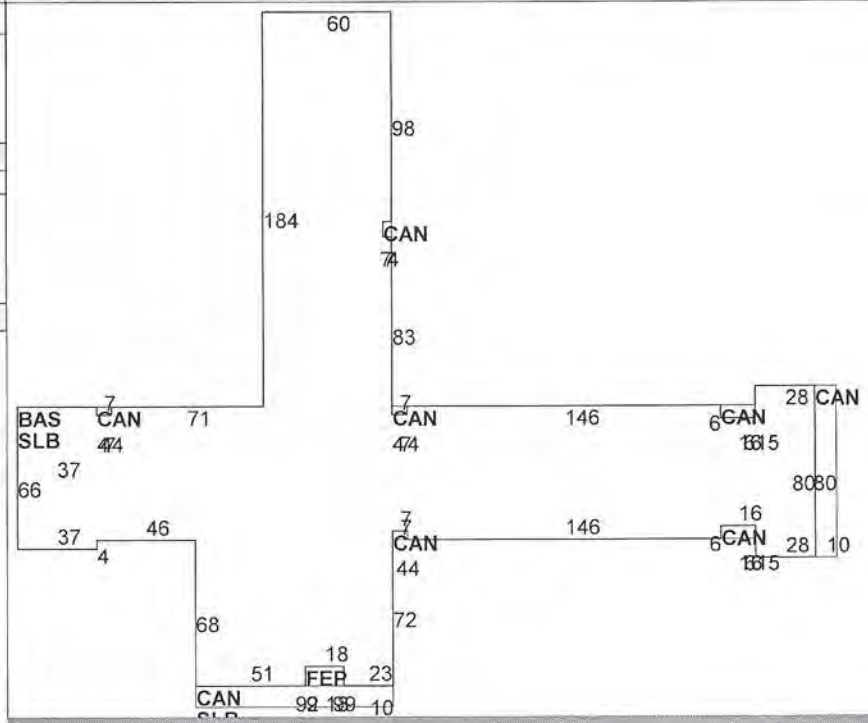
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
201E	Exempt Comm	100

COST/MARKET VALUATION

Adj. Base Rate:	120.03
AYB	1955
Dep Code	G
Remodel Rating	
Year Remodeled	1960
Dep %	28
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	72
Apprais Val	3,530,000
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



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

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
FGR1	Garage			L	4,410	25.00	1992	3		3	50	55,100
FOP	Open sided Por			L	140	18.00	1992	3		3	50	1,300
FGR1	Garage			L	5,670	25.00	1993	3		3	50	70,900
GAZ	Gazebo			L	1,500	24.00	1999	2		2	75	32,400
FGR1	Garage			L	480	25.00	1955	4		5	20	1,900
SHD7	Cell Shed			L	240	75.00	1955	3		2	75	13,500
CNP	Canopy			L	1,236	14.00	1985	3		2	75	13,000
TEN	Tennis Court			L	2	10,000.00	1985	3		2	75	15,000
FGR1	Garage			L	4,410	25.00	2007	3		2	75	82,700

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	40,546	40,546			
CAN	Canopy	0	2,024			
FEP	Finished Enclosed Porch	0	162			
SLB	Slab	0	41,466			
	Ttl. Gross Liv/Lease Area:	40,546	84,198			

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

1:5316
1"=443'

6/13/2016 9:32:04 AM

Exhibit C

T-MOBILE NORTHEAST LLC

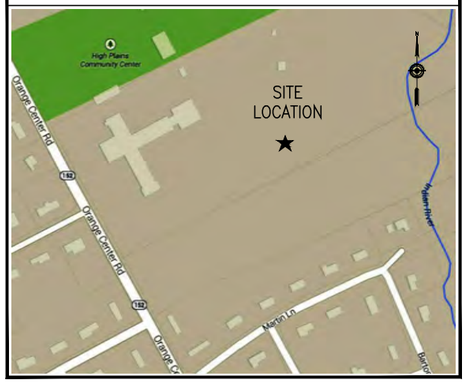
SITE #: CT11412A

SITE NAME: HIGH PLAINS COMMUNITY CENTER

SITE ADDRESS:
525 ORANGE CENTER RD
ORANGE, CT 06477

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(792DB CONFIGURATION)

VICINITY MAP



DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

WWW.CBYD.COM

CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING

SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC	– RED	SEWER	– GREEN
GAS/OIL	– YELLOW	SURVEY	– PINK
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
17. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT–REV2 MONOPOLE" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T-MOBILE SITE ID CT11412A", DATED MAY 25, 2016.

SITE INFORMATION

SITE NUMBER:	CT11412A
SITE NAME:	HIGH PLAINS COMMUNITY CENTER
SITE ADDRESS:	525 ORANGE CENTER RD ORANGE, CT 06477
LAT./LONG.:	N 41.27362722 / W –73.0188367
JURISDICTION:	TOWN OF ORANGE, CT
PROPERTY OWNER:	JAMES ZEOLI, FIRST SELECTMAN EMAIL: JZEOLI@ORANGE–CT.GOV ANN PETTI, ADMINISTRATIVE ASSISTANT TOWN OF ORANGE FIRST SELECTMAN'S OFFICE ORANGE TOWN HALL 617 ORANGE CENTER ROAD ORANGE, CT 06477 PHONE– 203–891–4737 FAX – 203–891–2185 APETTI@ORANGE–CT.GOV

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT
2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B USE GROUP: N/A

PROJECT SUB–CONTRACTORS

APPLICANT:	T–MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692–7100
PROJECT MANAGER	LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434–5237
A&E:	ATLANTIS DESIGN GROUP INC. 54 JACQUELINE ROAD, SUITE #7 WALTHAM, MA 02452 (617)–852–3611

SHEET INDEX

SHEET	DESCRIPTION
T–1	TITLE SHEET
N–1	GENERAL AND ELECTRICAL NOTES
A–1	SITE LAYOUT AND SITE PLAN
A–2	ELEVATION
A–3	ANTENNA DETAILS
E–1	GROUNDING AND COAX/FIBER DIAGRAM
E–2	GROUNDING DETAILS

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/09/16	ISSUED FOR REVIEW	A
06/13/16	FINAL CD	0
07/26/16	REVISION	1
08/02/16	FINAL CD	2

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11412A
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11167
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NUMBER
CT11412A
SITE NAME
HIGH PLAINS
COMMUNITY CENTER
SITE ADDRESS
525 ORANGE CENTER RD
ORANGE, CT 06477

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
   B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
   C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
   D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
   E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
   F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
   A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
   B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
   A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
   B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
   C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
   D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
   E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:
   A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
   A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
   B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
   A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
   B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
   C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
   D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
   E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
   F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
   G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
   H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
   J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
   K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.
   L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
   M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
   N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
   O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
   P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
   A. GENERAL ELECTRIC COMPANY
   B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
   A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
   B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
   A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
   A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

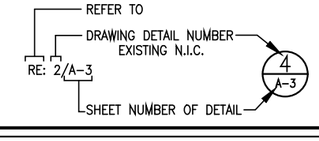
INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ARCHITECTURAL SYMBOLS

STORAGE
38
3

DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

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Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/09/16	ISSUED FOR REVIEW	A
06/13/16	FINAL CD	0
07/26/16	REVISION	1
08/02/16	FINAL CD	2

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

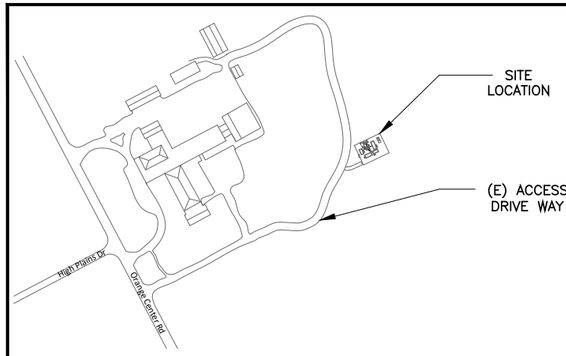
PROJECT NO:	CT11412A
DRAWN BY:	FG
CHECKED BY:	KM

PROFESSIONAL SEAL

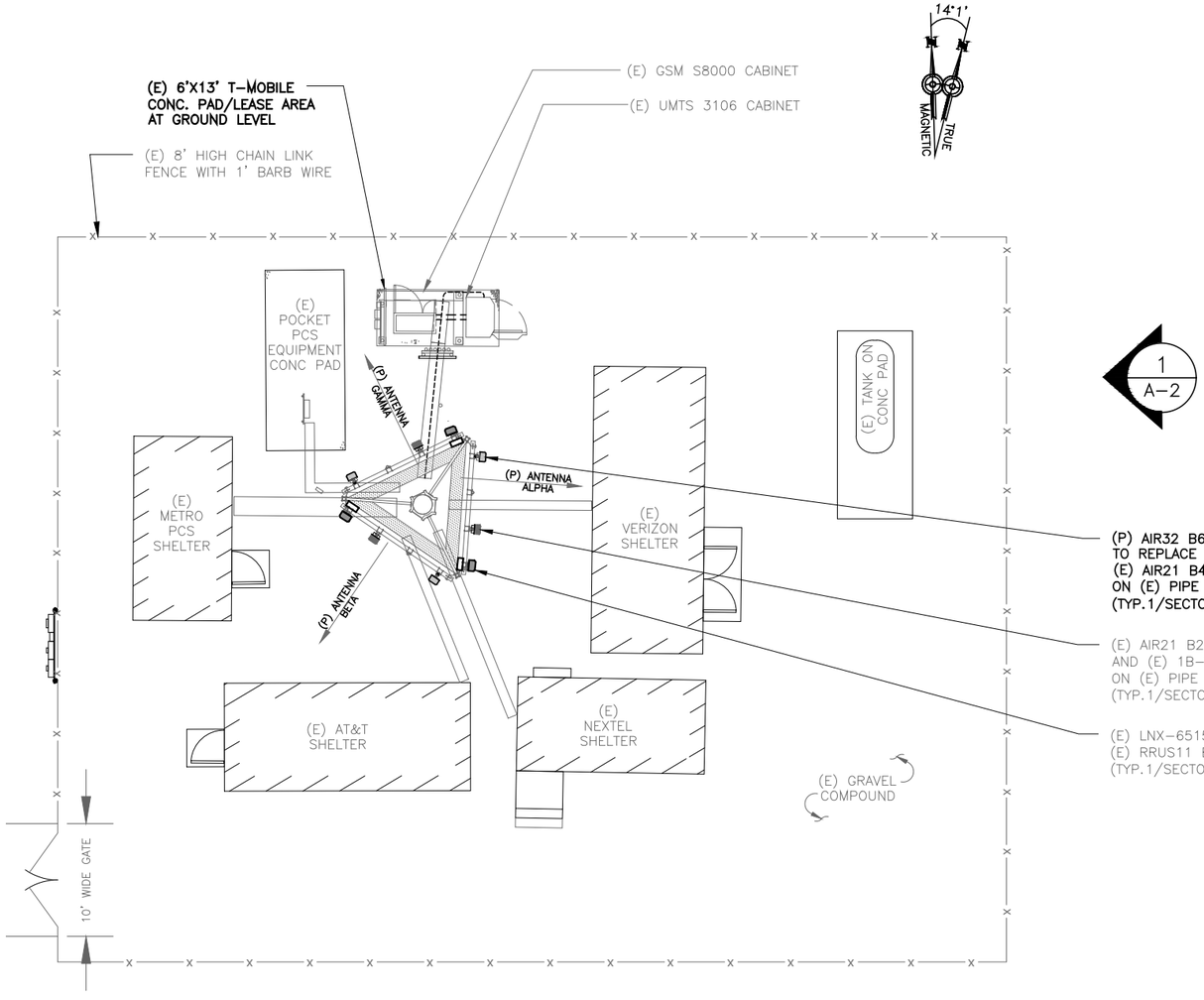
SITE NUMBER
CT11412A
SITE NAME
HIGH PLAINS COMMUNITY CENTER
SITE ADDRESS
525 ORANGE CENTER RD
ORANGE, CT 06477

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

SHEET NUMBER
N-1



KEY PLAN 1/A-1
N.T.S.



(P) AIR32 B66Aa/B2a ANTENNA TO REPLACE (E) AIR21 B4A/B2P ANTENNA ON (E) PIPE MOUNT (TYP.1/SECTOR , TOTAL OF 3) — 2/A-3, 3/A-3

(E) AIR21 B2A/B4P ANTENNA AND (E) 1B-TWIN AWS TMA ON (E) PIPE MAST (TYP.1/SECTOR , TOTAL OF 3)

(E) LNX-6515DS-A1M ANTENNA AND (E) RRUS11 B12 ON (E) PIPE MAST (TYP.1/SECTOR , TOTAL OF 3)

1/A-2

ROOF PLAN 2/A-1
SCALE: 1/16" = 1'-0" (11x17)

0 16 32 48
SCALE 1"=16' (11x17)
1"=8' (24x36)

STRUCTURAL REFERENCE

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT-REV2 MONOPOLE" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T-MOBILE SITE ID CT11412A", DATED MAY 25, 2016.

GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS DESIGN GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.

2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.

3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.

4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.

5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.

6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.

7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- BOARD ON BOARD FENCE
- DECIDUOUS TREES/SHRUBS
- EVERGREEN TREES/SHRUBS
- TREE LINE
- UTILITY POLE
- (E) EXISTING
- (N) NEW
- (P) PROPOSED
- (F) FUTURE
- PROP. LTE ANTENNA
- PROP. UMTS/GSM ANTENNA
- EX. GSM ANTENNA
- EX. UMTS ANTENNA

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SUBMITTALS

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PROJECT NO:	CT11412A
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT · HOSSEIN VAHEDI · NO. ARI. 11162 · LICENSED ARCHITECT
PROFESSIONAL SEAL

SITE NUMBER
CT11412A
SITE NAME
HIGH PLAINS COMMUNITY CENTER
SITE ADDRESS
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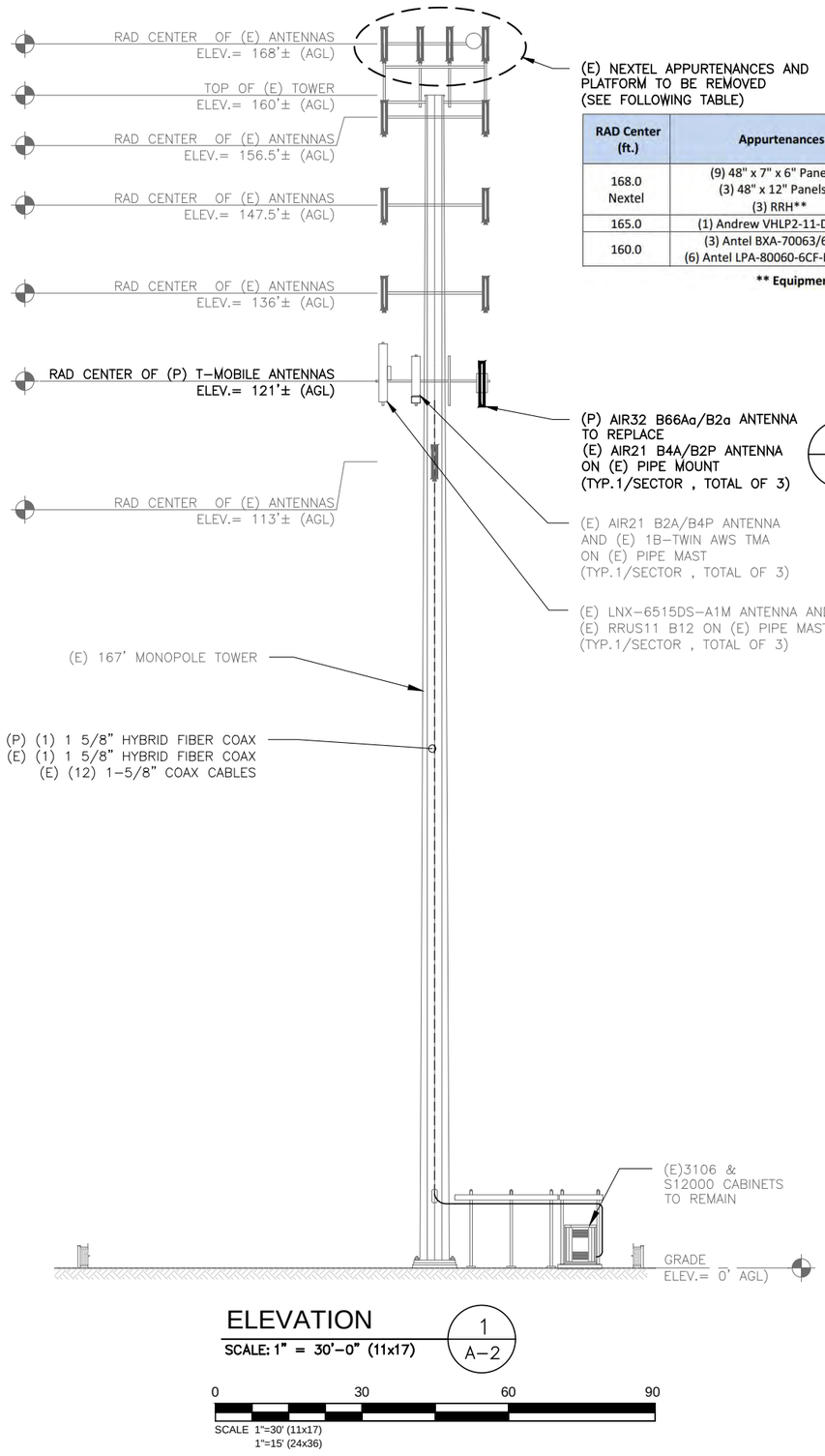
ORANGE, CT 06477

SHEET TITLE
SITE PLAN

SHEET NUMBER
A-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT–REV2 MONOPOLE" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T–MOBILE SITE ID CT11412A", DATED MAY 25, 2016.



RAD Center (ft.)	Appurtenances	Mount	Feed Lines*
168.0 Nextel	(9) 48" x 7" x 6" Panels** (3) 48" x 12" Panels** (3) RRH**	Platform w/ Handrails**	(9) 1-5/8"** (6) 5/8"**
165.0	(1) Andrew VHLP2-11-DW1**		(2) 5/8"**
160.0	(3) Antel BXA-70063/6CF** (6) Antel LPA-80060-6CF-EDIN-4**		(12) 2"**

** Equipment to be removed

ELEVATION

1 A–2

SCALE: 1" = 30'–0" (11x17)

0 30 60 90

SCALE 1"=30' (11x17)
1"=15' (24x36)

T-MOBILE NORTHEAST, LLC
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54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/09/16	ISSUED FOR REVIEW	A
06/13/16	FINAL CD	0
07/25/16	REVISION	1
08/02/16	FINAL CD	2

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11412A
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT HOSSEIN VAHEDI NO. ARI. 11162 LICENSED ARCHITECT

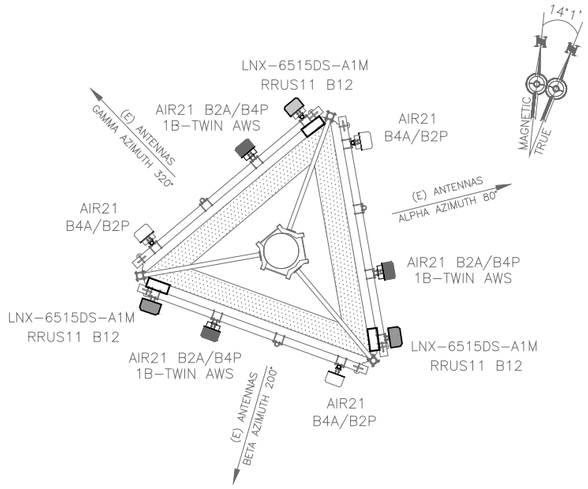
PROFESSIONAL SEAL

SITE NUMBER
CT11412A
SITE NAME
HIGH PLAINS COMMUNITY CENTER
SITE ADDRESS
525 ORANGE CENTER RD
ORANGE, CT 06477

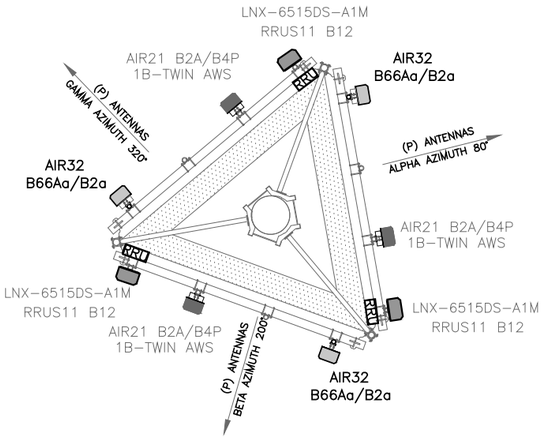
SHEET TITLE
ELEVATION AND ANTENNA DETAILS

SHEET NUMBER
A-2

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT–REV2 MONOPOLE" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T–MOBILE SITE ID CT11412A", DATED MAY 25, 2016.



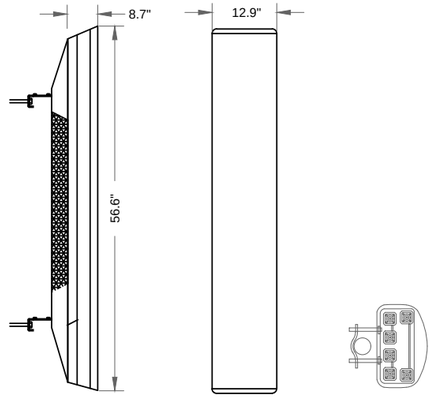
EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

PROPOSED ANTENNA CONFIGURATION (1 / A–3)

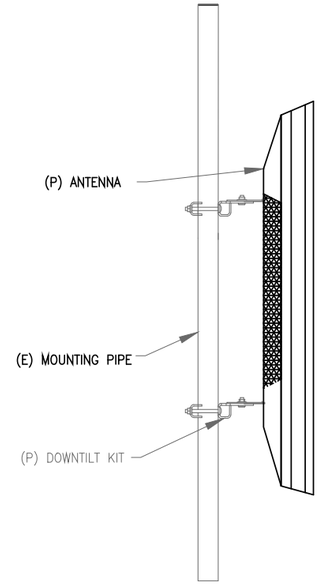
SCALE: N.T.S.



MANUFACTURER: ERICSSON
MODEL NO.:ERICSSON AIR32 AIR32 B66Aa/B2a
DIMENSIONS – HxWxD, (IN) 56.6"x12.9"x8.7"

ERICSSON AIR32 B66Aa/B2a ANTENNA DETAILS (2 / A–3)

SCALE: N.T.S



ANTENNA MOUNT DETAILS (3 / A–3)

SCALE: N.T.S

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RF MAN.			
ZONING			
OPS			
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SITE AC.			

PROJECT NO:	CT11412A
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STATE OF CONNECTICUT
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LICENSED ARCHITECT

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SITE NUMBER
CT11412A
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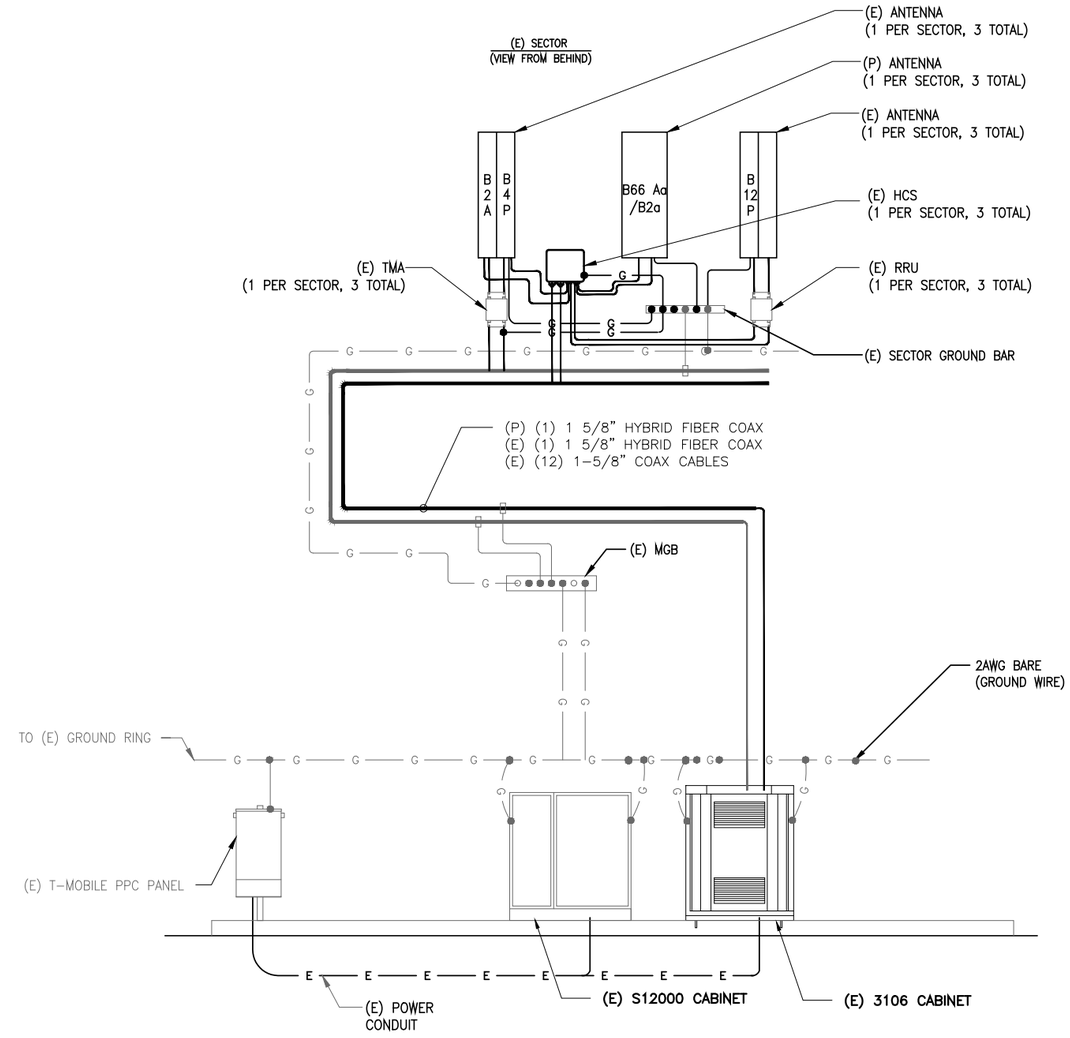
SITE ADDRESS
525 ORANGE CENTER RD
ORANGE, CT 06477

SHEET TITLE
ANTENNA PLAN AND DETAILS

SHEET NUMBER
A-3

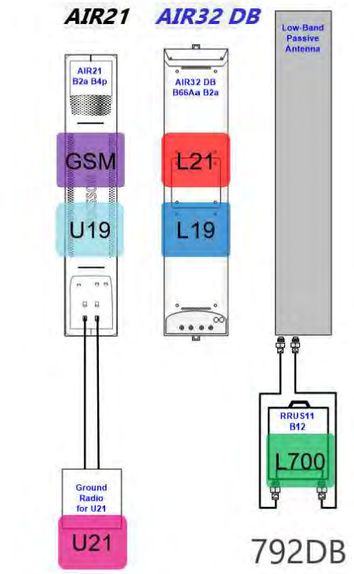
NOTES:

A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".
E. GROUND HCS BOX W/ #2AWG GROUNDING CONDUCTOR ATTACHED TO GOOD GROUND AS DIRECT AND SHORT AS POSSIBLE. USE GREEN STRANDED INSULATED CONDUCTOR TO CONNECT TO BUSSBAR/GROUND HALO OR BARE TINNED SOLID COPPER CONDUCTOR TO CONNECT TO GROUND RING.



GROUNDING DIAGRAM — 1 / E-1

SCALE: N.T.S



TRUNK FIBER NOTES:

1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO ⅞" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN ¾" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
11. MAXIMUM HANGER SPACING 3FT (0.9 M).

HYBRID FIBER/POWER JUMPER NOTES:

1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A ⅜" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN ¾" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

792DB CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM — 2 / E-1

SCALE: N.T.S

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Phone number: 617-852-3611
Fax Number : 781-742-2247

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08/02/16	FINAL CD	2

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11412A
DRAWN BY:	FG
CHECKED BY:	KM

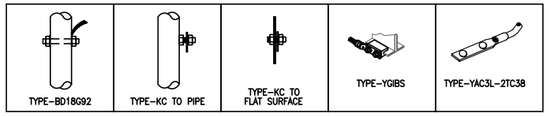
STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NUMBER
CT11412A
SITE NAME
HIGH PLAINS COMMUNITY CENTER
SITE ADDRESS
525 ORANGE CENTER RD
ORANGE, CT 06477

SHEET TITLE
GROUNDING AND ONE LINE DIAGRAM
COAX/FIBER DIAGRAM

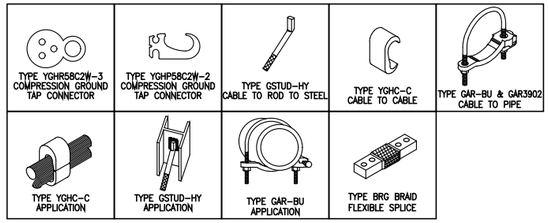
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 E-2

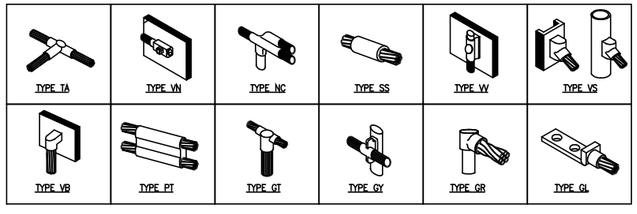
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 E-2

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 E-2

SCALE: N.T.S

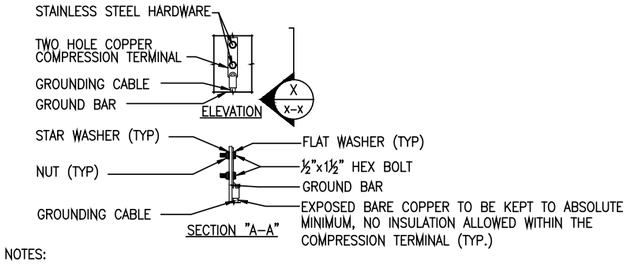
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A	A, C, OR D	A	
MASTER GROUND BAR	C	A	A				
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D				
GROUND RING	C		C				C

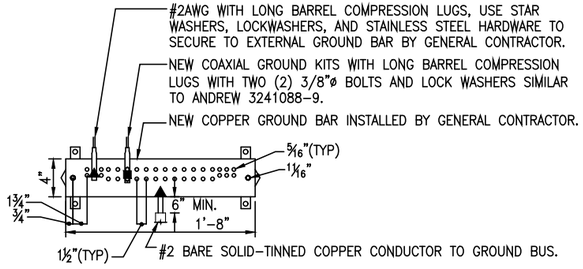
GROUNDING TERMINATION MATRIX

7 E-2

SCALE: N.T.S



NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

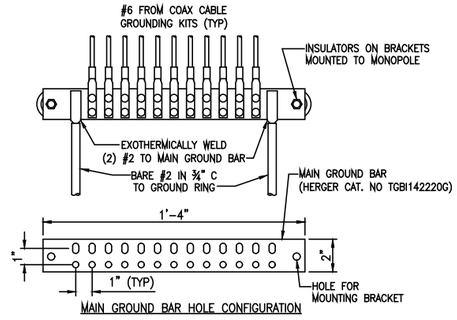


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 E-2

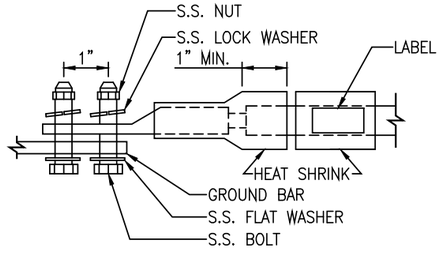
SCALE: N.T.S



GROUND BAR DETAIL

5 E-2

SCALE: N.T.S



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. ⅜"ø OR LARGER.
3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

GROUND BAR DETAIL

6 E-2

SCALE: N.T.S

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Phone number: 617-852-3611
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DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO: CT11412A
DRAWN BY: FG
CHECKED BY: KM

STATE OF CONNECTICUT HOSSEIN VAHEDI NO. ARI. 11467 LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NUMBER
CT11412A
SITE NAME
HIGH PLAINS COMMUNITY CENTER
SITE ADDRESS
525 ORANGE CENTER RD
ORANGE, CT 06477

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit D

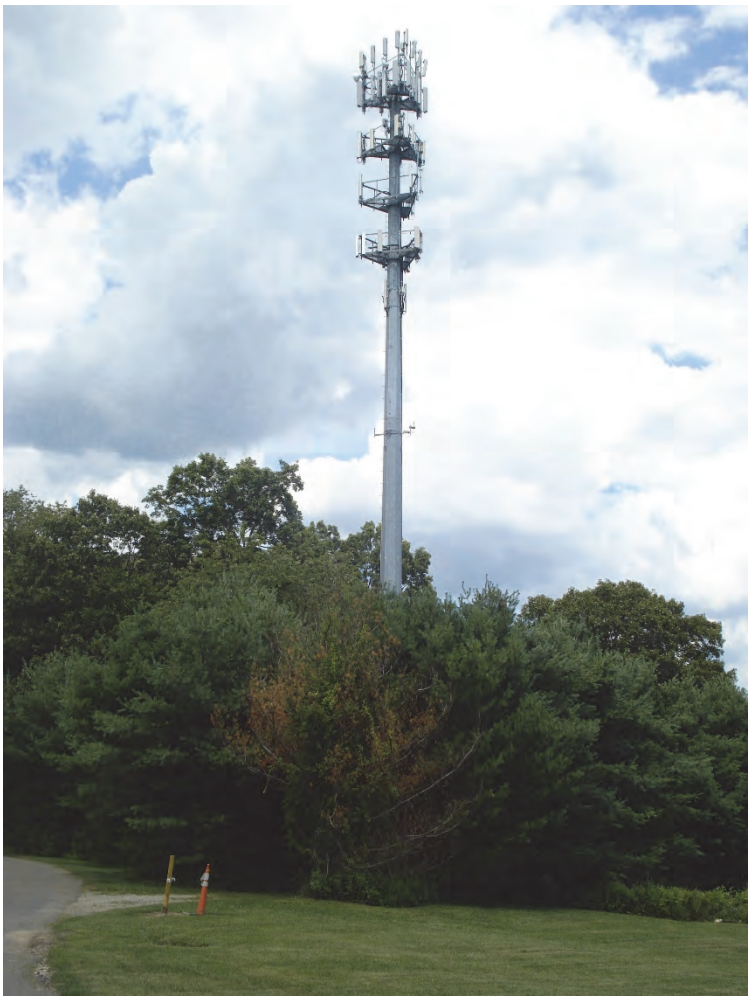
STRUCTURAL ANALYSIS REPORT - REV. 2
MONOPOLE

ATLANTIS DESIGN GROUP, INC.

Prepared For:

T-Mobile

35 Griffin Road South
Bloomfield, CT 06002



Site ID: CT11412A
Site Name: Orange/Town High Plains
525 Orange Center Road
Orange, CT 06477

May 25, 2016

Submitted By:
Atlantis Design Group, Inc.
54 Jacqueline Road, Suite #7
Waltham, Massachusetts 02452
Phone: 617-852-3611

Prepared For:

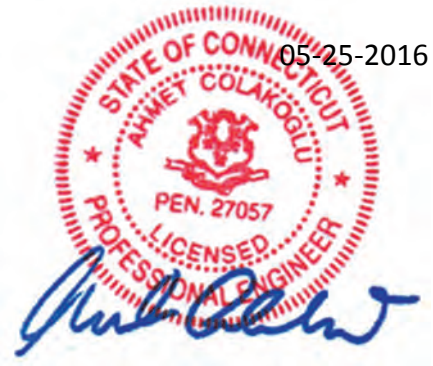
35 Griffin Road South
Bloomfield, CT 06002

RESULT: PASS

Site ID: CT11412A
Site Name: Orange/Town High Plains
525 Orange Center Road
Orange, CT 06477

Prepared By:

Destek Engineering, LLC
Professional Engineering Corporation
License # PEC 001429



05-25-2016

Ahmet Colakoglu, P.E.
Connecticut Professional Engineer
License No: 27057

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 160 feet tall Valmont monopole, located at 525 Orange Center Road, Orange, CT 06477, for additions and alterations proposed by T-Mobile.

The structural analysis is based on the following documentation provided to Destek Engineering, LLC (Destek):

- RFDS provided by T-Mobile, dated 4/19/2016.
- Structural Analysis Report prepared by Destek Engineering, LLC, dated 8/18/2014.

1.1 STRUCTURE

The structure is a 160 ft Valmont monopole consisting of slip-jointed 12-sided bent plate tubes. Flat-to-flat dimensions range from 1'-9" at the top to 5'-4" at the base. The monopole tower is attached to the foundation with a base plate and anchor bolts. It is formed by the following sections:

Section Length (Feet)	Lap Splice (Inches)	Shaft Thickness (Inches)	Top Diameter (Inches)	Bottom Diameter (Inches)	Yield Strength (ksi)
34	0.00	0.1875	20.5300	29.5310	65
40	0.00	0.3125	29.5310	39.5156	65
49	0.00	0.3750	39.5156	52.0872	65
37	-	0.5000	52.0872	61.5800	65

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

Sector	RAD Center (ft.)	Appurtenances	Mount	Feed Lines*
Alpha	121	(1) LNX6515DS-A1M (1) AIR21 B2A/B4P (1) AIR21 B4A/B2P (1) TMA - 1B - Twin AWS (1) RRUS11 B12	(1) Low Profile Platform	(12) 1-5/8" (1) 1-5/8" Hybrid
Beta	121	(1) LNX6515DS-A1M (1) AIR21 B2A/B4P (1) AIR21 B4A/B2P (1) TMA - 1B - Twin AWS (1) RRUS11 B12		
Gamma	121	(1) LNX6515DS-A1M (1) AIR21 B2A/B4P (1) AIR21 B4A/B2P (1) TMA - 1B - Twin AWS (1) RRUS11 B12		

***Feed lines inside monopole shaft.**

Proposed and Final Configuration of T-Mobile Appurtenances:

Sector	RAD Center (ft.)	Appurtenances	Mount	Feed Lines*
Alpha	121	(1) AIR21 B2A/B4P (1) AIR32 B66Aa/B2a (1) LNX 6515DS-A1M (1) TMA - 1B - Twin AWS (1) RRUS11 B12	(1) Low Profile Platform	(12) 1-5/8" (2) 1-5/8" Hybrid
Beta	121	(1) AIR21 B2A/B4P (1) AIR32 B66Aa/B2a (1) LNX 6515DS-A1M (1) TMA - 1B - Twin AWS (1) RRUS11 B12		
Gamma	121	(1) AIR21 B2A/B4P (1) AIR32 B66Aa/B2a (1) LNX 6515DS-A1M (1) TMA - 1B - Twin AWS (1) RRUS11 B12		

***Feed lines inside monopole shaft.**

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

Existing and Remaining Appurtenances by Others:

RAD Center (ft.)	Appurtenances	Mount	Feed Lines*
168.0 Nextel	(9) 48" x 7" x 6" Panels (3) 48" x 12" Panels (3) RRH	Platform w/ Handrails	(9) 1-5/8" (6) 5/8"
165.0	(1) Andrew VHLP2-11-DW1		(2) 5/8"
160.0	(3) Antel BXA-70063/6CF (6) Antel LPA-80060-6CF-EDIN-4		(12) 2"
156.5	(3) 17" x 6" x 7" TMA	Platform w/ Handrails	(2) 3/4"
148.5 AT&T	(1) 12" OD x 24" Tall Cylinder		(1) 3/8" Fiber
147.5	(6) Powerwave RA21-7770.00 (3) Powerwave P65-16-XLH-RR (6) 14" x 9" x 2-3/4" TMA		(12) 1-5/8"
136.0 Sprint	(3) APXVSPP 18-C-A20 (3) 800 MHz RRH w/ Notch Filter (3) 1900 MHz RRH (3) RFS APXVTM14-C-120 (3) Alcatel Lucent TD-RRHX20	Platform w/ Handrails	(3) 1-1/4" Hybriflex (1) 1-1/4" Fiber
115.5	Exalt FCC10	---	(2) 1/2"
113.0	(3) 72" x 7" Panels	Pipe	(6) 2"
83.5	(1) GPS	Side Arm	(1) 5/8"

***Feed lines inside monopole shaft.**

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

3.0 CODES AND LOADING

The monopole was analyzed per *TIA/EIA-222-G*. The following wind loading was used in compliance with the standard for Orange, CT:

- Basic wind speed 110 mph without ice (W)
- Basic wind speed 50 mph with 3/4" radial escalating ice (W_i)
- Structure Class II
- Topographic Category 1
- Exposure Category B

The following load combinations were used with wind blowing at 0°, 60°, and 90°, measured from a line normal to the face of the tower.

- $D + W_0$
- $D + W_i + I$

D: Dead Load
W_0: Wind Load without ice
W_i: Wind Load with ice
I: Ice Gravity Load

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached to the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Destek to generate an additional structural analysis.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

5.0 ANALYSIS AND ASSUMPTIONS

The structure is considered to have adequate strength for the proposed loading if the existing structural members that will be used to support the proposed equipment are structurally adequate per the applicable Code criteria or if the additions or alterations to the existing structure do not increase the force in any structural element by more than 5%, in accordance with the applicable referenced Code.

The structure was analyzed by utilizing tnxTower, a non-linear 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

6.0 RESULTS AND CONCLUSION

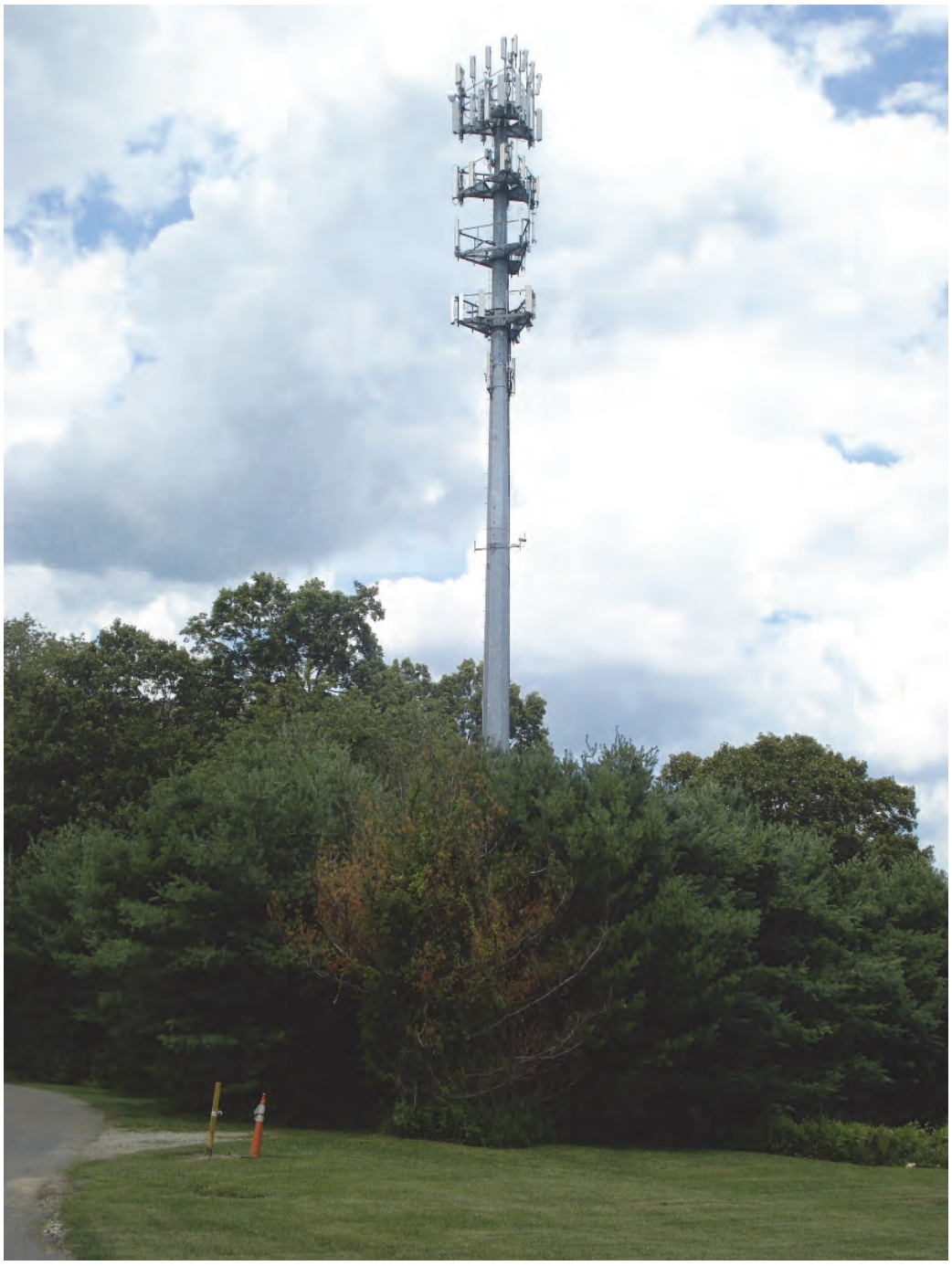
Based on an analysis per *TIA/EIA-222-G*, the existing tower has **adequate** structural capacity for the proposed modifications by T-Mobile. For the aforementioned load combinations and as a maximum, the monopole shaft is stressed to **97.7%** of capacity. The foundation has **adequate** capacity for the proposed loading by T-Mobile. For the aforementioned load combinations and as a maximum, the foundation is stressed to **87.1%** of capacity.

Therefore, the proposed additions and alterations by T-Mobile **can** be implemented as intended and with the conditions outlined in this report.

Should you have any questions about this report, please contact us at (770) 693-0835.

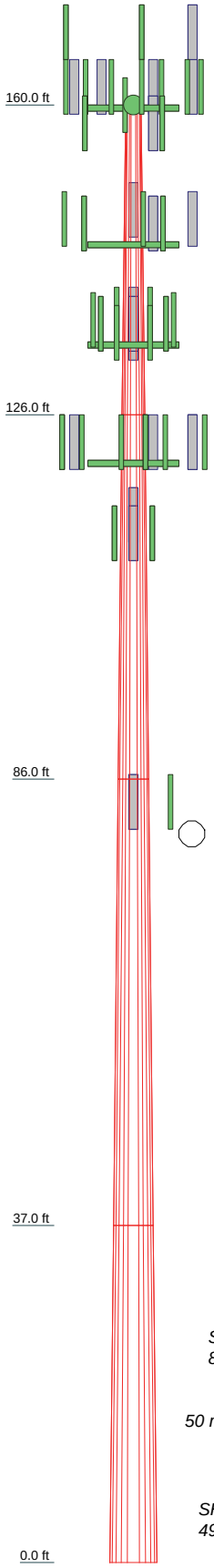
DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

APPENDIX A
PICTURES & CALCULATIONS



Existing Monopole

Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	34.00	12	0.1875	20.5300	29.5310	A572-65	1.7
2	40.00	12	0.3125	29.5310	39.5156		4.7
3	49.00	12	0.3750	39.5156	52.0872		9.1
4	37.00	12	0.5000	52.0872	61.5800		11.4
							27.0



ALL REACTIONS ARE FACTORED

AXIAL 85 K

SHEAR 8 K

MOMENT 1020 kip-ft

TORQUE 8 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 56 K

SHEAR 49 K

MOMENT 5442 kip-ft

TORQUE 40 kip-ft
REACTIONS - 110 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Angle Platform W/ Handrails	160	APXVTM14-C-120	136
48"x12"x4" Panel	160	APXVTM14-C-120	136
48"x12"x4" Panel	160	APXVTM14-C-120	136
48"x12"x4" Panel	160	TD-RRH8X20	136
RRH	160	TD-RRH8X20	136
RRH	160	TD-RRH8X20	136
RRH	160	1900 MHz RRH	135
BXA-70063/6CF	160	1900 MHz RRH	135
BXA-70063/6CF	160	1900 MHz RRH	135
BXA-70063/6CF	160	APXVSPP-18-C-A20	134
LPA-80060-6CF-EDIN-4	160	APXVSPP-18-C-A20	134
LPA-80060-6CF-EDIN-4	160	APXVSPP-18-C-A20	134
LPA-80060-6CF-EDIN-4	160	Angle Platform W/ Handrails	134
LPA-80060-6CF-EDIN-4	160	AIR32 B66Aa/B2a	121
LPA-80060-6CF-EDIN-4	160	AIR32 B66Aa/B2a	121
LPA-80060-6CF-EDIN-4	160	dd B4 TMA	121
17"X16"X7" TMA	160	dd B4 TMA	121
17"X16"X7" TMA	160	dd B4 TMA	121
17"X16"X7" TMA	160	RRUS 11	121
VHLP2-11-2WH	160	RRUS 11	121
14"X9"X2.75" TMA	156	RRUS 11	121
14"X9"X2.75" TMA	156	Angle Platform W/ Handrails	121
14"X9"X2.75" TMA	156	LNX-6515DS-A1M	121
14"X9"X2.75" TMA	156	LNX-6515DS-A1M	121
14"X9"X2.75" TMA	156	LNX-6515DS-A1M	121
14"X9"X2.75" TMA	156	ERICSSON AIR 21 B2A B4P	121
12" ODx24" Tall Cylinder	148.5	ERICSSON AIR 21 B2A B4P	121
P65-16XLH-RR	145.5	ERICSSON AIR 21 B2A B4P	121
P65-16XLH-RR	145.5	AIR32 B66Aa/B2a	121
P65-16XLH-RR	145.5	ExploreAirRelaxxxFCC	115
RA21-7770.00	145	Antenna Pipe Mount	115
RA21-7770.00	145	72"x7" Panel	113
RA21-7770.00	145	Antenna Pipe Mount	113
RA21-7770.00	145	Antenna Pipe Mount	113
RA21-7770.00	145	Antenna Pipe Mount	113
RA21-7770.00	145	72"x7" Panel	113
Angle Platform W/ Handrails	145	72"x7" Panel	113
800 MHz w/ Notch Filter	137	GPS	83.5
800 MHz w/ Notch Filter	137	Pipe Side Arm	83.5
800 MHz w/ Notch Filter	137	Pipe Side Arm	83.5

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 110 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 97.7%

Destek Engineering, LLC
1281 Kennestone Circle, Ste. 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: **CT11412A**		
Project: **CT11412A**		
Client: T-Mobile	Drawn by: Ahmet Colakoglu	App'd:
Code: TIA-222-G	Date: 05/25/16	Scale: NTS
Path: Z:\Projects\2016\64 - Atlantis Design Group\037 - CT11412A\Calcs\tnxTower\Rev G (Rev. 2)\CT11412A Monopole - Rev G.eri		Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 110 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Custom ice parameters have been used.
* Ice thickness multiplier: 2.000.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r	√	All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	160.00-126.00	34.00	0.00	12	20.5300	29.5310	0.1875	0.7500	A572-65 (65 ksi)
L2	126.00-86.00	40.00	0.00	12	29.5310	39.5156	0.3125	1.2500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	86.00-37.00	49.00	0.00	12	39.5156	52.0872	0.3750	1.5000	(65 ksi) A572-65
L4	37.00-0.00	37.00		12	52.0872	61.5800	0.5000	2.0000	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.2542	12.2818	648.7182	7.2826	10.6345	61.0011	1314.4789	6.0447	4.9995	26.664
	30.5727	17.7161	1947.0578	10.5050	15.2971	127.2832	3945.2669	8.7193	7.4118	39.53
L2	30.5727	29.4011	3203.8014	10.4602	15.2971	209.4391	6491.7703	14.4703	7.0768	22.646
	40.9096	39.4481	7738.4339	14.0347	20.4691	378.0548	15680.1650	19.4152	9.7527	31.209
L3	40.9096	47.2623	9241.7779	14.0123	20.4691	451.4994	18726.3475	23.2611	9.5852	25.56
	53.9246	62.4425	21313.3704	18.5130	26.9812	789.9350	43186.6668	30.7323	12.9544	34.545
L4	53.9246	83.0554	28212.2481	18.4682	26.9812	1045.6273	57165.6635	40.8773	12.6194	25.239
	63.7523	98.3388	46828.3560	21.8666	31.8984	1468.0453	94886.9451	48.3994	15.1634	30.327

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 160.00-126.00				1	1	1			
L2 126.00-86.00				1	1	1			
L3 86.00-37.00				1	1	1			
L4 37.00-0.00				1	1	1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615
Anchor bolt size	2.2500 in
Number of bolts	24
Embedment length	24.0000 in
f'_c	4 ksi
Grout space	2.0000 in
Base plate grade	A572-60
Base plate thickness	3.2500 in
Bolt circle diameter	69.8300 in
Outer diameter	75.8300 in
Inner diameter	60.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
2" Coax	C	Surface Ar (CaAa)	122.00 - 0.00	1	1	0.000 0.000	2.0000		1.04
1/2"	C	Surface Ar (CaAa)	115.00 - 0.00	2	2	0.000 0.000	0.5800		0.25
**********									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
**********								
**********								
5/8"	C	No	Inside Pole	160.00 - 0.00	8	No Ice	0.00	0.40
						1/2" Ice	0.00	0.40
						1" Ice	0.00	0.40
2" Coax	C	No	Inside Pole	160.00 - 0.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
3/4"	C	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.38
						1/2" Ice	0.00	0.38
						1" Ice	0.00	0.38
3/8"	C	No	Inside Pole	148.00 - 0.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
1-5/8"	C	No	Inside Pole	148.00 - 0.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
2" Coax	C	No	Inside Pole	122.00 - 0.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
2" Coax	C	No	Inside Pole	122.00 - 0.00	5	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
2" Coax	C	No	Inside Pole	113.00 - 0.00	6	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
5/8"	C	No	Inside Pole	83.50 - 0.00	1	No Ice	0.00	0.40
						1/2" Ice	0.00	0.40
						1" Ice	0.00	0.40
**********								
1-1/4" Hybrid	C	No	Inside Pole	136.00 - 0.00	3	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
1-1/4"	C	No	Inside Pole	136.00 - 0.00	1	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-126.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.86
L2	126.00-86.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.564	0.000	2.14
L3	86.00-37.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.484	0.000	2.84
L4	37.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	11.692	0.000	2.15

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-126.00	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.86
L2	126.00-86.00	A	1.685	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	35.747	0.000	2.57
L3	86.00-37.00	A	1.595	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	52.081	0.000	3.43
L4	37.00-0.00	A	1.412	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	36.269	0.000	2.52

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.00-126.00	0.0000	0.0000	0.0000	0.0000
L2	126.00-86.00	0.0000	0.3752	0.0000	0.9106
L3	86.00-37.00	0.0000	0.4376	0.0000	1.0874
L4	37.00-0.00	0.0000	0.4413	0.0000	1.0881

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	1	2" Coax	86.00 - 122.00	1.0000	1.0000
L2	2	1/2"	86.00 - 115.00	1.0000	1.0000
L3	1	2" Coax	37.00 - 86.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	2	1/2"	37.00 - 86.00	1.0000	1.0000
L4	1	2" Coax	0.00 - 37.00	1.0000	1.0000
L4	2	1/2"	0.00 - 37.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Angle Platform W/ Handrails	C	From Leg	3.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	36.00 41.50 54.00	42.40 48.40 54.40	2.00 2.45 2.90
48"x12"x4" Panel	A	From Leg	4.00 6.50 8.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	5.60 5.60 6.40	2.09 2.39 2.69	0.06 0.09 0.12
48"x12"x4" Panel	B	From Leg	4.00 6.50 8.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	5.60 5.60 6.40	2.09 2.39 2.69	0.06 0.09 0.12
48"x12"x4" Panel	C	From Leg	4.00 6.50 8.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	5.60 5.60 6.40	2.09 2.39 2.69	0.06 0.09 0.12
RRH	A	From Leg	4.00 6.50 8.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.73 2.96 3.19	1.45 1.64 1.83	0.06 0.08 0.10
RRH	B	From Leg	4.00 6.50 8.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.73 2.96 3.19	1.45 1.64 1.83	0.06 0.08 0.10
RRH	C	From Leg	4.00 6.50 8.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.73 2.96 3.19	1.45 1.64 1.83	0.06 0.08 0.10
BXA-70063/6CF	A	From Leg	4.00 2.17 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	7.73 8.27 8.81	4.04 4.48 4.92	0.01 0.06 0.10
BXA-70063/6CF	B	From Leg	4.00 2.17 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	7.73 8.27 8.81	4.04 4.48 4.92	0.01 0.06 0.10
BXA-70063/6CF	C	From Leg	4.00 2.17 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	7.73 8.27 8.81	4.04 4.48 4.92	0.01 0.06 0.10
LPA-80060-6CF-EDIN-4	A	From Leg	4.00 6.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.52 6.98 7.44	6.75 7.23 7.71	0.02 0.07 0.12
LPA-80060-6CF-EDIN-4	A	From Leg	4.00 -6.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.52 6.98 7.44	6.75 7.23 7.71	0.02 0.07 0.12
LPA-80060-6CF-EDIN-4	B	From Leg	4.00 6.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.52 6.98 7.44	6.75 7.23 7.71	0.02 0.07 0.12
LPA-80060-6CF-EDIN-4	B	From Leg	4.00 -6.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.52 6.98 7.44	6.75 7.23 7.71	0.02 0.07 0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
LPA-80060-6CF-EDIN-4	C	From Leg	4.00 6.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.52 6.98 7.44	6.75 7.23 7.71	0.02 0.07 0.12
LPA-80060-6CF-EDIN-4	C	From Leg	4.00 -6.50 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.52 6.98 7.44	6.75 7.23 7.71	0.02 0.07 0.12
17"X16"X7" TMA	A	From Leg	4.00 -3.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.64 2.86 3.08	1.16 1.32 1.48	0.03 0.05 0.07
17"X16"X7" TMA	B	From Leg	4.00 -3.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.64 2.86 3.08	1.16 1.32 1.48	0.03 0.05 0.07
17"X16"X7" TMA	C	From Leg	4.00 -3.50 2.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.64 2.86 3.08	1.16 1.32 1.48	0.03 0.05 0.07
**********									
Angle Platform W/ Handrails	C	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	36.00 41.50 47.00	42.40 48.40 54.40	2.00 2.45 2.90
14"X9"X2.75" TMA	A	From Leg	4.00 2.17 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.23 1.38 1.53	0.37 0.49 0.61	0.01 0.02 0.03
14"X9"X2.75" TMA	A	From Leg	4.00 2.17 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.23 1.38 1.53	0.37 0.49 0.61	0.01 0.02 0.03
14"X9"X2.75" TMA	B	From Leg	4.00 2.17 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.23 1.38 1.53	0.37 0.49 0.61	0.01 0.02 0.03
14"X9"X2.75" TMA	B	From Leg	4.00 2.17 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.23 1.38 1.53	0.37 0.49 0.61	0.01 0.02 0.03
14"X9"X2.75" TMA	C	From Leg	4.00 2.17 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.23 1.38 1.53	0.37 0.49 0.61	0.01 0.02 0.03
14"X9"X2.75" TMA	C	From Leg	4.00 2.17 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.23 1.38 1.53	0.37 0.49 0.61	0.01 0.02 0.03
RA21-7770.00	A	From Leg	4.00 2.17 2.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.79 7.28 7.77	3.51 3.90 4.29	0.04 0.07 0.11
RA21-7770.00	A	From Leg	4.00 2.17 2.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.79 7.28 7.77	3.51 3.90 4.29	0.04 0.07 0.11
RA21-7770.00	B	From Leg	4.00 2.17 2.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.79 7.28 7.77	3.51 3.90 4.29	0.04 0.07 0.11
RA21-7770.00	B	From Leg	4.00 2.17 2.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.79 7.28 7.77	3.51 3.90 4.29	0.04 0.07 0.11
RA21-7770.00	C	From Leg	4.00 2.17 2.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.79 7.28 7.77	3.51 3.90 4.29	0.04 0.07 0.11
RA21-7770.00	C	From Leg	4.00 2.17 2.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	6.79 7.28 7.77	3.51 3.90 4.29	0.04 0.07 0.11
P65-16XLH-RR	A	From Leg	4.00 6.50	0.0000	145.50	No Ice 1/2" Ice	8.40 8.95	4.70 5.15	0.05 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			1" Ice	9.50	5.60	0.15
P65-16XLH-RR	B	From Leg	4.00	0.0000	145.50	No Ice	8.40	4.70	0.05
			6.50			1/2" Ice	8.95	5.15	0.10
			2.00			1" Ice	9.50	5.60	0.15
P65-16XLH-RR	C	From Leg	4.00	0.0000	145.50	No Ice	8.40	4.70	0.05
			6.50			1/2" Ice	8.95	5.15	0.10
			2.00			1" Ice	9.50	5.60	0.15
12" ODx24" Tall Cylinder	A	From Leg	0.00	0.0000	148.50	No Ice	1.60	1.60	0.02
			0.00			1/2" Ice	1.81	1.81	0.04
			0.00			1" Ice	2.02	2.02	0.06
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Angle Platform W/ Handrails	C	From Leg	3.00	0.0000	134.00	No Ice	36.00	42.40	2.00
			0.00			1/2" Ice	41.50	48.40	2.45
			0.00			1" Ice	47.00	54.40	2.90
APXVSPP-18-C-A20	A	From Leg	4.00	0.0000	134.00	No Ice	8.26	5.28	0.06
			0.00			1/2" Ice	8.81	5.74	0.11
			2.40			1" Ice	9.36	6.20	0.16
APXVSPP-18-C-A20	B	From Leg	4.00	0.0000	134.00	No Ice	8.26	5.28	0.06
			0.00			1/2" Ice	8.81	5.74	0.11
			2.40			1" Ice	9.36	6.20	0.16
APXVSPP-18-C-A20	C	From Leg	4.00	0.0000	134.00	No Ice	8.26	5.28	0.06
			0.00			1/2" Ice	8.81	5.74	0.11
			2.40			1" Ice	9.36	6.20	0.16
800 MHz w/ Notch Filter	A	From Leg	1.00	0.0000	137.00	No Ice	2.49	2.91	0.06
			0.00			1/2" Ice	2.71	3.14	0.09
			0.00			1" Ice	2.93	3.37	0.11
800 MHz w/ Notch Filter	B	From Leg	1.00	0.0000	137.00	No Ice	2.49	2.91	0.06
			0.00			1/2" Ice	2.71	3.14	0.09
			0.00			1" Ice	2.93	3.37	0.11
800 MHz w/ Notch Filter	C	From Leg	1.00	0.0000	137.00	No Ice	2.49	2.91	0.06
			0.00			1/2" Ice	2.71	3.14	0.09
			0.00			1" Ice	2.93	3.37	0.11
1900 MHz RRH	A	From Leg	1.00	0.0000	135.00	No Ice	2.73	1.45	0.04
			0.00			1/2" Ice	2.96	1.64	0.06
			0.00			1" Ice	3.19	1.83	0.08
1900 MHz RRH	B	From Leg	1.00	0.0000	135.00	No Ice	2.73	1.45	0.04
			0.00			1/2" Ice	2.96	1.64	0.06
			0.00			1" Ice	3.19	1.83	0.08
1900 MHz RRH	C	From Leg	1.00	0.0000	135.00	No Ice	2.73	1.45	0.04
			0.00			1/2" Ice	2.96	1.64	0.06
			0.00			1" Ice	3.19	1.83	0.08
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ERICSSON AIR 21 B2A B4P	A	From Leg	4.00	0.0000	121.00	No Ice	6.09	4.30	0.09
			6.50			1/2" Ice	6.46	4.65	0.13
			2.00			1" Ice	6.84	5.00	0.18
ERICSSON AIR 21 B2A B4P	B	From Leg	4.00	0.0000	121.00	No Ice	6.09	4.30	0.09
			-6.50			1/2" Ice	6.46	4.65	0.13
			2.00			1" Ice	6.84	5.00	0.18
ERICSSON AIR 21 B2A B4P	C	From Leg	4.00	0.0000	121.00	No Ice	6.09	4.30	0.09
			6.50			1/2" Ice	6.46	4.65	0.13
			2.00			1" Ice	6.84	5.00	0.18
LNX-6515DS-A1M	A	From Leg	4.00	0.0000	121.00	No Ice	11.45	7.70	0.05
			-6.50			1/2" Ice	12.06	8.29	0.12
			2.00			1" Ice	12.69	8.89	0.19
LNX-6515DS-A1M	B	From Leg	4.00	0.0000	121.00	No Ice	11.45	7.70	0.05
			6.50			1/2" Ice	12.06	8.29	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			1" Ice	12.69	8.89	0.19
LNX-6515DS-A1M	C	From Leg	4.00	0.0000	121.00	No Ice	11.45	7.70	0.05
			-6.50			1/2" Ice	12.06	8.29	0.12
			2.00			1" Ice	12.69	8.89	0.19
AIR32 B66Aa/B2a	A	From Leg	4.00	0.0000	121.00	No Ice	7.10	4.79	0.13
			2.17			1/2" Ice	7.55	5.21	0.18
			2.00			1" Ice	8.02	5.65	0.23
AIR32 B66Aa/B2a	B	From Leg	4.00	0.0000	121.00	No Ice	7.10	4.79	0.13
			2.17			1/2" Ice	7.55	5.21	0.18
			2.00			1" Ice	8.02	5.65	0.23
AIR32 B66Aa/B2a	C	From Leg	4.00	0.0000	121.00	No Ice	7.10	4.79	0.13
			2.17			1/2" Ice	7.55	5.21	0.18
			2.00			1" Ice	8.02	5.65	0.23
dd B4 TMA	A	From Leg	4.00	0.0000	121.00	No Ice	0.57	0.47	0.02
			6.50			1/2" Ice	0.72	0.64	0.03
			2.00			1" Ice	0.88	0.81	0.04
dd B4 TMA	B	From Leg	4.00	0.0000	121.00	No Ice	0.57	0.47	0.02
			6.50			1/2" Ice	0.72	0.64	0.03
			2.00			1" Ice	0.88	0.81	0.04
dd B4 TMA	C	From Leg	4.00	0.0000	121.00	No Ice	0.57	0.47	0.02
			6.50			1/2" Ice	0.72	0.64	0.03
			2.00			1" Ice	0.88	0.81	0.04
RRUS 11	A	From Leg	4.00	0.0000	121.00	No Ice	2.78	1.19	0.05
			6.50			1/2" Ice	2.99	1.33	0.07
			2.00			1" Ice	3.21	1.49	0.10
RRUS 11	B	From Leg	4.00	0.0000	121.00	No Ice	2.78	1.19	0.05
			6.50			1/2" Ice	2.99	1.33	0.07
			2.00			1" Ice	3.21	1.49	0.10
RRUS 11	C	From Leg	4.00	0.0000	121.00	No Ice	2.78	1.19	0.05
			6.50			1/2" Ice	2.99	1.33	0.07
			2.00			1" Ice	3.21	1.49	0.10
Angle Platform W/ Handrails	C	From Leg	3.00	0.0000	121.00	No Ice	36.00	42.40	2.00
			0.00			1/2" Ice	41.50	48.40	2.45
			0.00			1" Ice	47.00	54.40	2.90
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ExploreAirRelaxxxFCC	A	From Leg	0.00	0.0000	115.00	No Ice	0.82	0.38	0.01
			0.00			1/2" Ice	0.95	0.49	0.02
			0.00			1" Ice	1.08	0.60	0.03
Antenna Pipe Mount	A	From Leg	0.00	0.0000	115.00	No Ice	0.87	0.87	0.01
			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
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Antenna Pipe Mount	A	From Leg	1.00	0.0000	113.00	No Ice	0.87	0.87	0.01
			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
Antenna Pipe Mount	B	From Leg	1.00	0.0000	113.00	No Ice	0.87	0.87	0.01
			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
Antenna Pipe Mount	C	From Leg	1.00	0.0000	113.00	No Ice	0.87	0.87	0.01
			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
72"x7" Panel	A	From Leg	1.00	0.0000	113.00	No Ice	5.27	2.95	0.04
			0.00			1/2" Ice	5.74	3.38	0.07
			0.00			1" Ice	6.21	3.81	0.10
72"x7" Panel	B	From Leg	1.00	0.0000	113.00	No Ice	5.27	2.95	0.04
			0.00			1/2" Ice	5.74	3.38	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	6.21	3.81	0.10
72"x7" Panel	C	From Leg	1.00	0.0000	113.00	No Ice	5.27	2.95	0.04
			0.00			1/2" Ice	5.74	3.38	0.07
			0.00			1" Ice	6.21	3.81	0.10
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GPS	A	From Leg	3.00	0.0000	83.50	No Ice	0.50	0.50	0.01
			0.00			1/2" Ice	0.63	0.63	0.02
			0.00			1" Ice	0.76	0.76	0.02
Pipe Side Arm	A	From Leg	3.00	0.0000	83.50	No Ice	1.77	5.20	0.15
			0.00			1/2" Ice	2.00	5.50	0.17
			0.00			1" Ice	2.23	5.80	0.20
Pipe Side Arm	B	From Leg	3.00	0.0000	83.50	No Ice	1.77	5.20	0.15
			0.00			1/2" Ice	2.00	5.50	0.17
			0.00			1" Ice	2.23	5.80	0.20
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APXVTM14-C-120	A	From Leg	3.00	0.0000	136.00	No Ice	6.53	3.38	0.05
			0.00			1/2" Ice	6.96	3.72	0.09
			0.00			1" Ice	7.39	4.06	0.13
APXVTM14-C-120	B	From Leg	3.00	0.0000	136.00	No Ice	6.53	3.38	0.05
			0.00			1/2" Ice	6.96	3.72	0.09
			0.00			1" Ice	7.39	4.06	0.13
APXVTM14-C-120	C	From Leg	3.00	0.0000	136.00	No Ice	6.53	3.38	0.05
			0.00			1/2" Ice	6.96	3.72	0.09
			0.00			1" Ice	7.39	4.06	0.13
TD-RRH8X20	A	From Leg	3.00	0.0000	136.00	No Ice	4.32	1.41	0.07
			0.00			1/2" Ice	4.60	1.61	0.09
			0.00			1" Ice	4.88	1.81	0.11
TD-RRH8X20	B	From Leg	3.00	0.0000	136.00	No Ice	4.32	1.41	0.07
			0.00			1/2" Ice	4.60	1.61	0.09
			0.00			1" Ice	4.88	1.81	0.11
TD-RRH8X20	C	From Leg	3.00	0.0000	136.00	No Ice	4.32	1.41	0.07
			0.00			1/2" Ice	4.60	1.61	0.09
			0.00			1" Ice	4.88	1.81	0.11
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-11-2WH	C	Paraboloid w/o Radome	From Face	4.00	0.0000		160.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.05
				0.00					1" Ice	4.30	0.07

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 126	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-24.74	43.84	-25.78
			Max. Mx	20	-10.43	514.60	-3.97
			Max. My	14	-10.30	13.85	-521.04
			Max. Vy	20	-21.90	514.60	-3.97
			Max. Vx	2	-22.71	34.29	495.23
			Max. Torque	12			-30.25
L2	126 - 86	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.50	62.23	-37.47
			Max. Mx	20	-22.55	1734.84	15.89
			Max. My	14	-22.44	-1.42	-1773.36
			Max. Vy	20	-34.18	1734.84	15.89
			Max. Vx	2	-35.21	69.86	1741.82
			Max. Torque	12			-42.05
L3	86 - 37	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.67	63.16	-39.29
			Max. Mx	20	-38.58	3620.03	43.65
			Max. My	14	-38.54	-29.24	-3700.49
			Max. Vy	20	-42.45	3620.03	43.65
			Max. Vx	2	-43.38	98.75	3674.35
			Max. Torque	12			-41.81
L4	37 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.13	63.48	-40.55
			Max. Mx	20	-55.81	5293.08	64.06
			Max. My	14	-55.81	-49.87	-5404.25
			Max. Vy	20	-48.14	5293.08	64.06
			Max. Vx	2	-49.07	119.53	5381.68
			Max. Torque	12			-40.37

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	85.13	-0.00	0.00
	Max. H_x	20	55.83	48.12	0.55
	Max. H_z	3	41.88	0.55	49.04
	Max. M_x	2	5381.68	0.55	49.04
	Max. M_z	8	5223.36	-48.12	-0.55
	Max. Torsion	24	39.85	24.49	42.79
	Min. Vert	21	41.88	48.12	0.55
	Min. H_x	9	41.88	-48.12	-0.55
	Min. H_z	15	41.88	-0.55	-48.93
	Min. M_x	14	-5404.25	-0.55	-48.93
	Min. M_z	20	-5293.08	48.12	0.55
	Min. Torsion	12	-40.34	-24.58	-42.62

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	46.53	0.00	-0.00	16.85	29.00	-0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 0 deg - No Ice	55.83	-0.55	-49.04	-5381.68	119.53	-33.91
0.9 Dead+1.6 Wind 0 deg - No Ice	41.88	-0.55	-49.04	-5339.26	109.47	-33.81
1.2 Dead+1.6 Wind 30 deg - No Ice	55.83	23.54	-42.24	-4623.73	-2513.42	-18.91
0.9 Dead+1.6 Wind 30 deg - No Ice	41.88	23.54	-42.24	-4588.02	-2500.30	-18.85
1.2 Dead+1.6 Wind 60 deg - No Ice	55.83	41.38	-24.23	-2639.45	-4474.59	1.49
0.9 Dead+1.6 Wind 60 deg - No Ice	41.88	41.38	-24.23	-2621.28	-4444.14	1.48
1.2 Dead+1.6 Wind 90 deg - No Ice	55.83	48.12	0.55	105.38	-5223.36	21.47
0.9 Dead+1.6 Wind 90 deg - No Ice	41.88	48.12	0.55	99.17	-5186.26	21.40
1.2 Dead+1.6 Wind 120 deg - No Ice	55.83	41.98	24.93	2783.09	-4566.64	35.72
0.9 Dead+1.6 Wind 120 deg - No Ice	41.88	41.98	24.93	2753.24	-4535.26	35.61
1.2 Dead+1.6 Wind 150 deg - No Ice	55.83	24.58	42.62	4720.04	-2675.22	40.34
0.9 Dead+1.6 Wind 150 deg - No Ice	41.88	24.58	42.62	4673.12	-2660.44	40.23
1.2 Dead+1.6 Wind 180 deg - No Ice	55.83	0.55	48.93	5404.25	-49.88	33.94
0.9 Dead+1.6 Wind 180 deg - No Ice	41.88	0.55	48.93	5351.34	-58.22	33.85
1.2 Dead+1.6 Wind 210 deg - No Ice	55.83	-23.63	42.07	4635.95	2598.51	18.43
0.9 Dead+1.6 Wind 210 deg - No Ice	41.88	-23.63	42.07	4589.87	2566.81	18.39
1.2 Dead+1.6 Wind 240 deg - No Ice	55.83	-41.43	23.97	2636.72	4552.22	-1.80
0.9 Dead+1.6 Wind 240 deg - No Ice	41.88	-41.43	23.97	2608.35	4503.26	-1.79
1.2 Dead+1.6 Wind 270 deg - No Ice	55.83	-48.12	-0.55	-64.06	5293.08	-21.49
0.9 Dead+1.6 Wind 270 deg - No Ice	41.88	-48.12	-0.55	-68.54	5237.55	-21.44
1.2 Dead+1.6 Wind 300 deg - No Ice	55.83	-41.93	-25.19	-2785.83	4628.42	-35.44
0.9 Dead+1.6 Wind 300 deg - No Ice	41.88	-41.93	-25.19	-2766.19	4578.73	-35.34
1.2 Dead+1.6 Wind 330 deg - No Ice	55.83	-24.49	-42.79	-4707.86	2729.47	-39.85
0.9 Dead+1.6 Wind 330 deg - No Ice	41.88	-24.49	-42.79	-4671.32	2696.48	-39.73
1.2 Dead+1.0 Ice+1.0 Temp	85.13	0.00	-0.00	40.55	63.48	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	85.13	-0.09	-8.44	-932.47	77.21	-6.67
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	85.13	4.06	-7.27	-796.60	-398.06	-3.76
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	85.13	7.13	-4.17	-439.56	-751.47	0.20
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	85.13	8.29	0.09	54.31	-885.83	4.12
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	85.13	7.23	4.28	536.98	-766.44	6.93
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	85.13	4.23	7.33	886.60	-424.29	7.87

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	85.13	0.09	8.42	1010.61	49.95	6.67
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	85.13	-4.08	7.24	872.99	527.85	3.67
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	85.13	-7.14	4.13	513.38	879.99	-0.27
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	85.13	-8.29	-0.09	27.05	1013.01	-4.12
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	85.13	-7.22	-4.33	-463.17	892.26	-6.88
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	85.13	-4.21	-7.36	-810.23	548.82	-7.79
Dead+Wind 0 deg - Service	46.53	-0.09	-8.16	-878.17	43.16	-5.74
Dead+Wind 30 deg - Service	46.53	3.92	-7.03	-752.51	-393.09	-3.20
Dead+Wind 60 deg - Service	46.53	6.88	-4.03	-423.72	-717.99	0.25
Dead+Wind 90 deg - Service	46.53	8.00	0.09	31.02	-842.05	3.63
Dead+Wind 120 deg - Service	46.53	6.98	4.15	474.70	-733.31	6.04
Dead+Wind 150 deg - Service	46.53	4.09	7.09	795.68	-419.92	6.82
Dead+Wind 180 deg - Service	46.53	0.09	8.14	909.03	15.10	5.74
Dead+Wind 210 deg - Service	46.53	-3.93	7.00	781.66	453.89	3.11
Dead+Wind 240 deg - Service	46.53	-6.89	3.99	450.41	777.54	-0.30
Dead+Wind 270 deg - Service	46.53	-8.00	-0.09	2.96	900.31	-3.63
Dead+Wind 300 deg - Service	46.53	-6.98	-4.19	-448.02	790.27	-5.99
Dead+Wind 330 deg - Service	46.53	-4.07	-7.12	-766.54	475.65	-6.74

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-46.53	0.00	-0.00	46.53	0.00	0.002%
2	-0.55	-55.83	-49.04	0.55	55.83	49.04	0.000%
3	-0.55	-41.88	-49.04	0.55	41.88	49.04	0.000%
4	23.54	-55.83	-42.24	-23.54	55.83	42.24	0.000%
5	23.54	-41.88	-42.24	-23.54	41.88	42.24	0.000%
6	41.38	-55.83	-24.23	-41.38	55.83	24.23	0.000%
7	41.38	-41.88	-24.23	-41.38	41.88	24.23	0.000%
8	48.12	-55.83	0.55	-48.12	55.83	-0.55	0.000%
9	48.12	-41.88	0.55	-48.12	41.88	-0.55	0.000%
10	41.98	-55.83	24.93	-41.98	55.83	-24.93	0.000%
11	41.98	-41.88	24.93	-41.98	41.88	-24.93	0.000%
12	24.58	-55.83	42.62	-24.58	55.83	-42.62	0.000%
13	24.58	-41.88	42.62	-24.58	41.88	-42.62	0.000%
14	0.55	-55.83	48.93	-0.55	55.83	-48.93	0.000%
15	0.55	-41.88	48.93	-0.55	41.88	-48.93	0.000%
16	-23.63	-55.83	42.07	23.63	55.83	-42.07	0.000%
17	-23.63	-41.88	42.07	23.63	41.88	-42.07	0.000%
18	-41.43	-55.83	23.97	41.43	55.83	-23.97	0.000%
19	-41.43	-41.88	23.97	41.43	41.88	-23.97	0.000%
20	-48.12	-55.83	-0.55	48.12	55.83	0.55	0.000%
21	-48.12	-41.88	-0.55	48.12	41.88	0.55	0.001%
22	-41.93	-55.83	-25.19	41.93	55.83	25.19	0.000%
23	-41.93	-41.88	-25.19	41.93	41.88	25.19	0.000%
24	-24.49	-55.83	-42.79	24.49	55.83	42.79	0.000%
25	-24.49	-41.88	-42.79	24.49	41.88	42.79	0.000%
26	0.00	-85.13	0.00	-0.00	85.13	0.00	0.001%
27	-0.09	-85.13	-8.44	0.09	85.13	8.44	0.001%
28	4.06	-85.13	-7.27	-4.06	85.13	7.27	0.001%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
29	7.13	-85.13	-4.18	-7.13	85.13	4.17	0.001%
30	8.29	-85.13	0.09	-8.29	85.13	-0.09	0.001%
31	7.23	-85.13	4.28	-7.23	85.13	-4.28	0.001%
32	4.23	-85.13	7.33	-4.23	85.13	-7.33	0.001%
33	0.09	-85.13	8.42	-0.09	85.13	-8.42	0.001%
34	-4.08	-85.13	7.24	4.08	85.13	-7.24	0.001%
35	-7.14	-85.13	4.13	7.14	85.13	-4.13	0.001%
36	-8.29	-85.13	-0.09	8.29	85.13	0.09	0.001%
37	-7.22	-85.13	-4.33	7.22	85.13	4.33	0.001%
38	-4.21	-85.13	-7.36	4.21	85.13	7.36	0.001%
39	-0.09	-46.53	-8.16	0.09	46.53	8.16	0.001%
40	3.92	-46.53	-7.03	-3.92	46.53	7.03	0.001%
41	6.88	-46.53	-4.03	-6.88	46.53	4.03	0.001%
42	8.01	-46.53	0.09	-8.00	46.53	-0.09	0.001%
43	6.98	-46.53	4.15	-6.98	46.53	-4.15	0.001%
44	4.09	-46.53	7.09	-4.09	46.53	-7.09	0.001%
45	0.09	-46.53	8.14	-0.09	46.53	-8.14	0.001%
46	-3.93	-46.53	7.00	3.93	46.53	-7.00	0.001%
47	-6.89	-46.53	3.99	6.89	46.53	-3.99	0.001%
48	-8.01	-46.53	-0.09	8.00	46.53	0.09	0.001%
49	-6.98	-46.53	-4.19	6.98	46.53	4.19	0.001%
50	-4.07	-46.53	-7.12	4.07	46.53	7.12	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	10	0.00000001	0.00003389
2	Yes	16	0.00000001	0.00013855
3	Yes	16	0.00000001	0.00009960
4	Yes	17	0.00000001	0.00005773
5	Yes	16	0.00000001	0.00011445
6	Yes	17	0.00000001	0.00006756
7	Yes	16	0.00000001	0.00013351
8	Yes	16	0.00000001	0.00008798
9	Yes	16	0.00000001	0.00006373
10	Yes	17	0.00000001	0.00010913
11	Yes	17	0.00000001	0.00007726
12	Yes	17	0.00000001	0.00006909
13	Yes	16	0.00000001	0.00013809
14	Yes	16	0.00000001	0.00012166
15	Yes	16	0.00000001	0.00008726
16	Yes	17	0.00000001	0.00009245
17	Yes	17	0.00000001	0.00006404
18	Yes	17	0.00000001	0.00007638
19	Yes	16	0.00000001	0.00014692
20	Yes	16	0.00000001	0.00007236
21	Yes	15	0.00000001	0.00014083
22	Yes	17	0.00000001	0.00007325
23	Yes	16	0.00000001	0.00014454
24	Yes	17	0.00000001	0.00011911
25	Yes	17	0.00000001	0.00008381
26	Yes	12	0.00000001	0.00005247
27	Yes	14	0.00000001	0.00009202
28	Yes	14	0.00000001	0.00006318
29	Yes	14	0.00000001	0.00005732

30	Yes	14	0.00000001	0.00006533
31	Yes	14	0.00000001	0.00009906
32	Yes	14	0.00000001	0.00010039
33	Yes	14	0.00000001	0.00011048
34	Yes	14	0.00000001	0.00011409
35	Yes	14	0.00000001	0.00009972
36	Yes	14	0.00000001	0.00009302
37	Yes	14	0.00000001	0.00010185
38	Yes	14	0.00000001	0.00011987
39	Yes	13	0.00000001	0.00008727
40	Yes	13	0.00000001	0.00003665
41	Yes	13	0.00000001	0.00001871
42	Yes	13	0.00000001	0.00005391
43	Yes	13	0.00000001	0.00009066
44	Yes	13	0.00000001	0.00008613
45	Yes	13	0.00000001	0.00009396
46	Yes	13	0.00000001	0.00006594
47	Yes	13	0.00000001	0.00003129
48	Yes	13	0.00000001	0.00006266
49	Yes	13	0.00000001	0.00007657
50	Yes	13	0.00000001	0.00010899

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension	Actual Allowable Ratio Bolt Compression	Actual Allowable Ratio Plate Stress	Actual Allowable Ratio Stiffener Stress	Controlling Condition	Ratio
in		in	K	K	ksi	ksi		
3.2500	24	2.2500	153.54	158.19	30.655		Bolt T	0.76
			201.29	334.14	54.000			✔
			0.76	0.47	0.57			

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	160 - 126 (1)	TP29.531x20.53x0.1875	34.00	160.00	182.8	17.7161	-10.30	119.81	0.086
L2	126 - 86 (2)	TP39.5156x29.531x0.3125	40.00	160.00	136.8	39.4481	-22.40	476.18	0.047
L3	86 - 37 (3)	TP52.0872x39.5156x0.375	49.00	160.00	103.7	62.4425	-38.53	1311.50	0.029
L4	37 - 0 (4)	TP61.58x52.0872x0.5	37.00	160.00	87.8	98.3388	-55.81	2827.14	0.020

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 126 (1)	TP29.531x20.53x0.1875	521.23	588.06	0.886	0.00	588.06	0.000
L2	126 - 86 (2)	TP39.5156x29.531x0.3125	1778.59	2003.98	0.888	0.00	2003.98	0.000
L3	86 - 37 (3)	TP52.0872x39.5156x0.375	3724.53	3971.68	0.938	0.00	3971.68	0.000
L4	37 - 0 (4)	TP61.58x52.0872x0.5	5441.87	7887.67	0.690	0.00	7887.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 126 (1)	TP29.531x20.53x0.1875	22.63	489.08	0.046	25.84	1192.41	0.022
L2	126 - 86 (2)	TP39.5156x29.531x0.3125	35.54	1254.63	0.028	41.32	4063.46	0.010
L3	86 - 37 (3)	TP52.0872x39.5156x0.375	43.66	1883.71	0.023	39.87	8053.33	0.005
L4	37 - 0 (4)	TP61.58x52.0872x0.5	49.33	3170.19	0.016	39.85	15993.75	0.002

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 126 (1)	0.086	0.886	0.000	0.046	0.022	0.977 ✔	1.000	4.8.2 ✔
L2	126 - 86 (2)	0.047	0.888	0.000	0.028	0.010	0.936 ✔	1.000	4.8.2 ✔
L3	86 - 37 (3)	0.029	0.938	0.000	0.023	0.005	0.968 ✔	1.000	4.8.2 ✔
L4	37 - 0 (4)	0.020	0.690	0.000	0.016	0.002	0.710 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 126	Pole	TP29.531x20.53x0.1875	1	-10.30	119.81	97.7	Pass
L2	126 - 86	Pole	TP39.5156x29.531x0.3125	2	-22.40	476.18	93.6	Pass
L3	86 - 37	Pole	TP52.0872x39.5156x0.375	3	-38.53	1311.50	96.8	Pass
L4	37 - 0	Pole	TP61.58x52.0872x0.5	4	-55.81	2827.14	71.0	Pass
						Summary		
						Pole (L1)	97.7	Pass
						Base Plate	76.3	Pass
						RATING =	**97.7**	**Pass**

Monopole Pier and Pad Foundation

BU # :
Site Name:
App. Number:

TIA-222 Revision: G

Design Reactions		
Shear, **S**:	49	kips
Moment, **M**:	5442	ft-kips
Tower Height, **H**:	160	ft
Tower Weight, **Wt**:	56	kips
Base Diameter, **BD**:	5.13	ft

Foundation Dimensions		
Depth, **D**:	10.5	ft
Pad Width, **W**:	25	ft
Neglected Depth, **N**:	0	ft
Thickness, **T**:	2.50	ft
Pier Diameter, **Pd**:	8.00	ft
Ext. Above Grade, **E**:	1.00	ft
BP Dist. Above Pier:	0	in.
Clear Cover, **Cc**:	2.5	in

Soil Properties		
Soil Unit Weight, **γ**:	0.125	kcf
Ult. Bearing Capacity, Bc:	16.0	ksf
Angle of Friction, **Φ**:	32	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	ksf
Base Friction, **μ**:	0.30	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	11	
Pier Rebar Quanity, **mp**:	24	24
Pad Rebar Size, **Spad**:	9	
Pad Rebar Quanity, **mpad**:	22	13
Pier Tie Size, **St**:	4	4
Tie Quanity, **mt**:	5	8

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	8	7.132	**OK**
Overturning (ft-kips)	11487.96	5442.00	**47.4%**
Shear Capacity (kips)	273.65	49.00	**17.9%**
Bearing (ksf)	12.00	3.66	**30.5%**
Pad Shear - 1-way (kips)	663.91	578.23	**87.1%**
Pad Shear - 2-way (kips)	1709.40	142.71	**8.3%**
Pad Moment Capacity (k-ft)	2581.25	1713.05	**66.4%**
Pier Moment Capacity (k-ft)	9815.92	5883.00	**59.9%**

Exhibit E

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

T-Mobile Existing Facility

Site ID: CT11412A

High Plains Community Center
525 Orange Center Rd
Orange, CT 06477

June 16, 2016

EBI Project Number: 6216002835

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	8.31 %

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

EBI Consulting
environmental | engineering | due diligence

June 16, 2016

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

Emissions Analysis for Site: **CT11412A – High Plains Community Center**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **525 Orange Center Rd, Orange, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general public 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 public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **525 Orange Center Rd, Orange, CT**, 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 manufactures supplied specifications, minus 10 dB, 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 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.

2) 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.

3) 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.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 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

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

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 manufactures supplied specifications minus 10 dB 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 AIR32 B66Aa/B2A** & **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66Aa/B2A** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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.

10) The antenna mounting height centerline of the proposed antennas is **121 feet** above ground level (AGL).

11) 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.

12) All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	121	Height (AGL):	121	Height (AGL):	121
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	2.54	Antenna B1 MPE%	2.54	Antenna C1 MPE%	2.54
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	121	Height (AGL):	121	Height (AGL):	121
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	1.90	Antenna B2 MPE%	1.90	Antenna C2 MPE%	1.90
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	121	Height (AGL):	121	Height (AGL):	121
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.50	Antenna B3 MPE%	0.50	Antenna C3 MPE%	0.50

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**4.93 %**
AT&T	0.95 %
Verizon Wireless	1.91 %
Clearwire	0.07 %
Sprint	0.45 %
Site Total MPE %:	**8.31 %**

T-Mobile Sector A Total:	4.93 %
T-Mobile Sector B Total:	4.93 %
T-Mobile Sector C Total:	4.93 %
Site Total:	8.33 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	**2**	**2,334.27**	**121**	**12.69**	**AWS - 2100 MHz**	**1000**	**1.27%**
T-Mobile 2100 MHz (AWS) LTE	**2**	**2,334.27**	**121**	**12.69**	**PCS - 1900 MHz**	**1000**	**1.27%**
T-Mobile 1900 MHz (PCS) GSM	**2**	**1,167.14**	**121**	**6.35**	**AWS - 2100 MHz**	**1000**	**0.63%**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**1,167.14**	**121**	**6.35**	**PCS - 1950 MHz**	**1000**	**0.63%**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1,167.14**	**121**	**6.35**	**PCS - 1950 MHz**	**1000**	**0.63%**
T-Mobile 700 MHz LTE	**1**	**865.21**	**121**	**2.35**	**700 MHz**	**467**	**0.50%**
							4.93%

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	4.93 %
Sector B:	4.93 %
Sector C:	4.93 %
T-Mobile Per Sector Maximum:	4.93 %
Site Total:	8.31 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.31%** of the allowable FCC established general public 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.