Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

HAND DELIVERED

April 30, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 617 South Orange Road, Orange (owner, Town of Orange)

Dear Ms. Bachman:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS transmissions. Moreover, LTE will utilize additional radio frequencies newly-licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, AT&T respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 830-0380 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Steven L. Levine
Real Estate Consultant

cc: James M. Zeoli, 1st Selectman, Town of Orange

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

617 South Orange Road, Orange
Site Number 5101
Prior Decisions: Local Zoning; Ex Mods 9/03, 7/06, 3/11, 6/13

Tower Owner/Manager: Town of Orange

Lease Area: The existing fenced compound (See attached site plan, Drawing A-1.) is the area leased by the Town of Orange to AT&T in 2000. (See attached lease exhibit L-1.) Since all proposed equipment modifications will take place either on the tower structure or on AT&T's existing equipment pad, the proposed changes will not extend either AT&T's lease area or the overall site boundaries.

Equipment configuration: Monopole

Current and/or approved:
Low Profile Platform at 177 ft
Six PowerWave 7770 antennas @ 177 ft c.l.
Three KMW AM-X-CD-14-65-00T-RET antennas @ 177 ft c.l.
Six PowerWave TMA's @ 177 ft
Six remote radio heads @ 177 ft
One surge arrestor @ 177 ft
Twelve lines 1 5/8 inch coax
One fiber cable and two DC control cables
Outdoor radio equipment on concrete pad
Diesel Generator on concrete pad

Proposed modifications:
Remove existing platform, antennas, and all associated equipment from the 177 ft level.
Remove six lines 1 5/8 coax. (Six to remain)
Install the recommended structural modifications.
Install one Commscope MTC3607R antenna platform @ 177 ft level.
Install nine Andrews SBNHH-1D65A antennas @ 177 ft c.l.
Re-install three PowerWave 7770 antennas @ 177 ft c.l.
Install three CCI TMA's @ 177 ft.
Install 18 remote radio heads and six associated A2 modules @ 177 ft.
Install three Raycap DC6-48-60-18-8F surge arrestors @ 177 ft.
Install four additional DC control cables.

Power Density:

Calculations for AT&T's current operations at the site indicate a radio frequency electromagnetic radiation power density, measured at the tower base, of approximately 52.3 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency

electromagnetic radiation power density for AT&T's planned operations would be approximately 50.5 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							45.57
AT&T GSM *	177	880 - 894	6	296	0.0204	0.5867	3.47
AT&T GSM *	177	1900 Band	3	427	0.0147	1.0000	1.47
AT&T UMTS *	177	1900 Band	1	500	0.0057	1.0000	0.57
AT&T LTE *	177	740	1	500	0.0057	0.4933	1.16
Total *							**52.3%**

* Per CSC records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							45.57
AT&T LTE	177	700 Band	1	500	0.0057	0.4667	1.23
AT&T LTE	177	1900 Band	1	500	0.0057	1.0000	0.57
AT&T LTE	177	2300 Band	1	500	0.0057	1.0000	0.57
AT&T UMTS	177	880 - 894	2	500	0.0115	0.5867	1.96
AT&T UMTS	177	1900 Band	1	500	0.0057	1.0000	0.57
Total							**50.5%**

* Per CSC records

Structural information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed equipment modifications upon completion of recommended structural modifications described in attachments hereto. (GPD Group, 3/4/14)

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	SOUTH ORANGE CENTER ROAD ORANGE, CT 06477
LATTITUDE:	41° 15' 20" N
LONGITUDE:	73° 0' 39" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
(P) USE:	TELECOMMUNICATIONS FACILITY
NOC#	800-832-6662

at&t

SITE NUMBER: CT5101
SITE NAME: ORANGE SOUTH

DRAWING INDEX

		REV
T-1	TITLE SHEET	2
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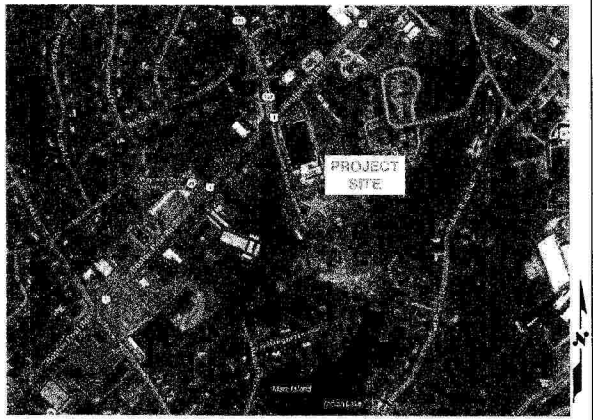
COMMONWEALTH OF MASSACHUSETTS
MARC R. CHRETIEN
CIVIL
No. 40313
REGISTERED PROFESSIONAL ENGINEER

DIRECTIONS & VICINITY MAP

1. HEAD EAST ON COCHITUATE RD TOWARD BURR ST 285 FT
2. TAKE THE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON TOLL ROAD 0.6 MI
3. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE 38.3 MI
4. TAKE EXIT 9 TO MERGE ONTO I-84 TOWARD US-20/HARTFORD/NEW YORK CITY PARTIAL TOLL ROAD ENTERING CONNECTICUT 41.7 MI
5. KEEP LEFT TO CONTINUE ON CT-15 S, FOLLOW SIGNS FOR I-91 S/CHARTER OAK BRIDGE/N Y. CITY 1.1 MI
6. CONTINUE ONTO CT-15 S/US-5 S 0.8 MI
7. TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NEW YORK CITY 36.6 MI
8. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 95 S/N.Y. CITY AND MERGE ONTO I-95 S 5.7 MI
9. TAKE EXIT 41 FOR MARSH HILL RD TOWARD ORANGE 0.3 MI
10. TURN RIGHT ONTO MARSH HILL RD 0.3 MI
11. CONTINUE ONTO LAMBERT RD 0.3 MI
12. TURN LEFT ONTO BOSTON POST RD 0.5 MI
13. TURN LEFT ONTO S ORANGE CENTER RD 0.2 MI



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

UNDERGROUND SERVICE ALERT

CALL TOLL FREE
1-888-344-7233
72 HOURS BEFORE YOU DIG

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development
Surveying - Telecommunications
500 NORTH BROADWAY
EAST PROVIDENCE, RI 02914
PH. 401-434-5101
FAX. 401-435-3311

SAI COMMUNICATIONS
27 NORTHWESTERN DRIVE
SALEM, NH 03079

SITE NUMBER: CT5101
SITE NAME:
ORANGE SOUTH
SOUTH ORANGE CENTER ROAD
ORANGE, CT 06477
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

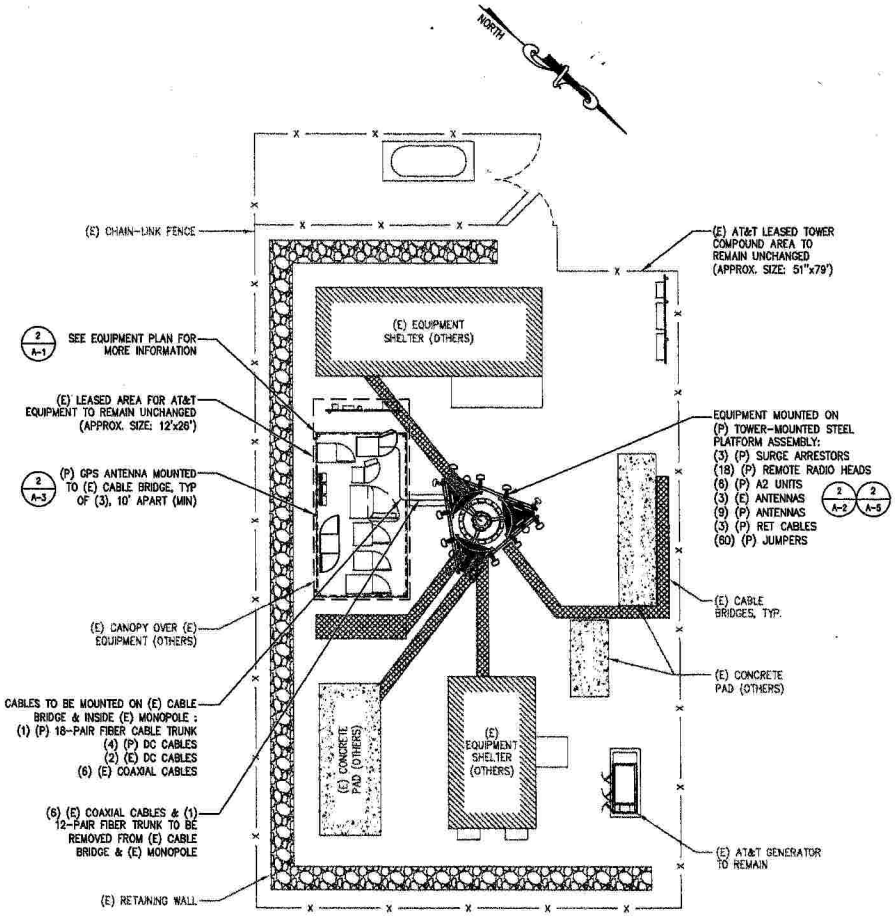
NO.	DATE	REVISIONS	BY	CHK	APP'D
2	4/15/14	LTE 2C UPDATED	MER	MRC	MRC
1	3/14/14	LTE 2C UPDATED	MER	MRC	MRC
0	1/23/14	LTE 2C UPDATED	MER	MRC	MRC
A	1/8/14	LTE 2C ISSUED FOR REVIEW	MER	MRC	MRC

SCALE: AS SHOWN | DESIGNED BY: MRC | DRAWN BY: MER

AT&T

TITLE SHEET

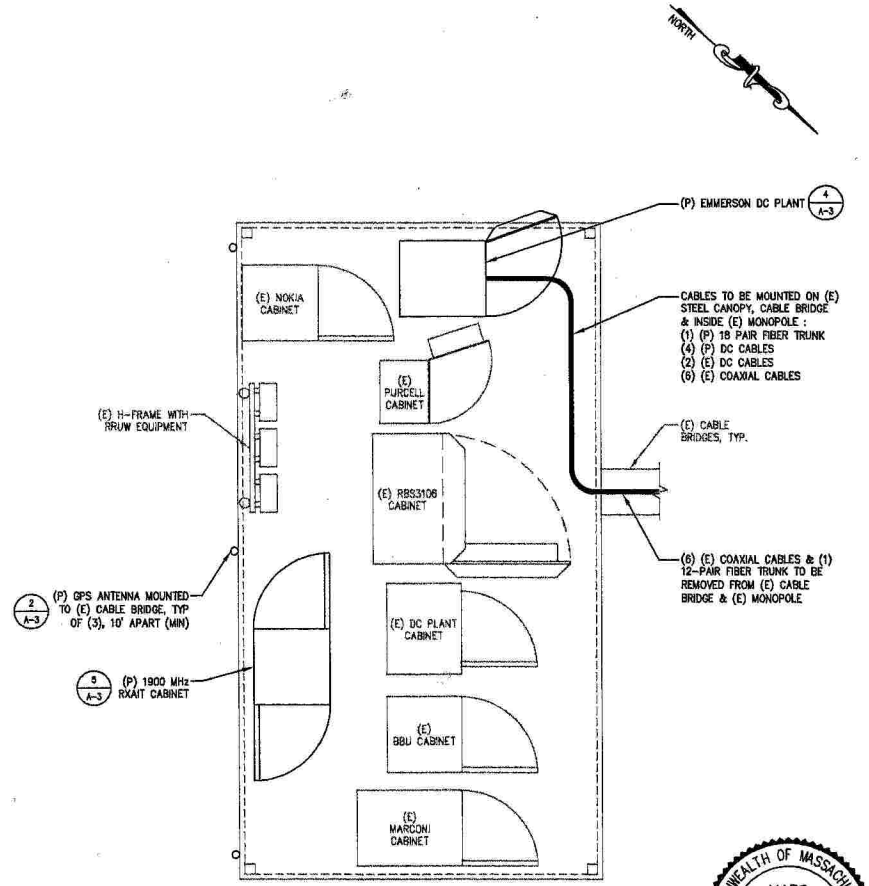
JOB NUMBER	DRAWING NUMBER	REV
5101 LTE 2C	T-1	2



1 A-1 COMPOUND PLAN

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

0' 4' 8' 16' 24'



2 A-1 EQUIPMENT PLAN

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

0' 1' 2' 4' 6'

COMMONWEALTH OF MASSACHUSETTS
MARC R. CHRETIEN
CIVIL
No. 40313
REGISTERED PROFESSIONAL ENGINEER

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development
Surveying - Telecommunications
500 NORTH BROADWAY
EAST PROVIDENCE, RI 02914
PH: 401-434-2300
FAX: 401-433-6284

SAI COMMUNICATIONS
27 NORTHWESTERN DRIVE
SALEM, NH 03079

SITE NUMBER: CT5101
SITE NAME:
ORANGE SOUTH
SOUTH ORANGE CENTER ROAD
ORANGE, CT 06477
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

NO.	DATE	REVISIONS	BY	CHK	APP'D
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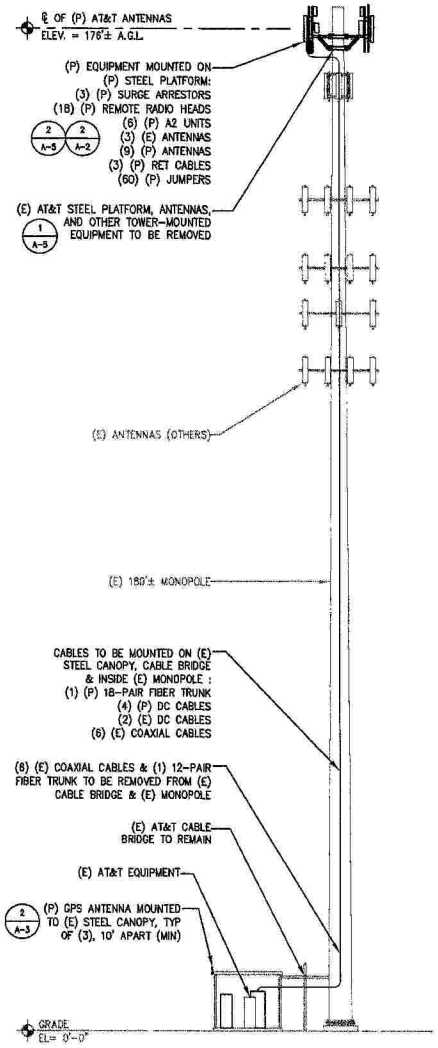
1	3/14/14	LTE 2C UPDATED	MER	MRC	MRC
0	1/23/14	LTE 2C UPDATED	MER	MRC	MRC
A	1/8/14	LTE 2C ISSUED FOR REVIEW	MER	MRC	MRC

SCALE: AS SHOWN | DESIGNED BY: MRC | DRAWN BY: MER

AT&T

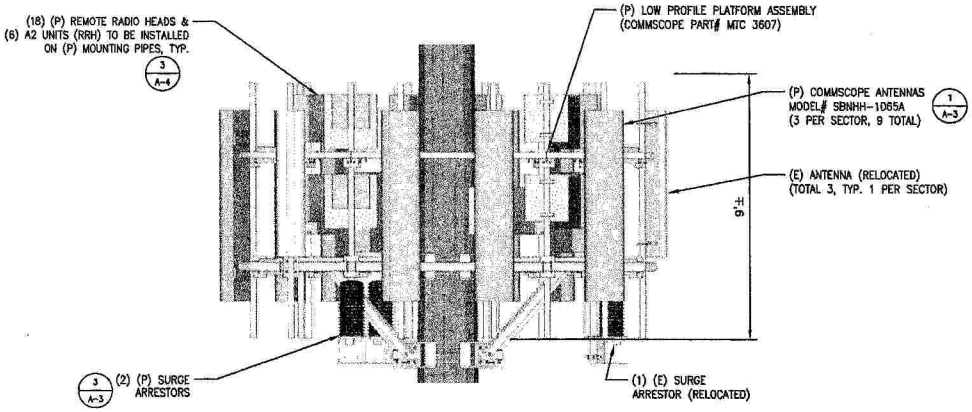
COMPOUND PLAN & EQUIPMENT PLAN

JOB NUMBER	DRAWING NUMBER	REV
5101 LTE 2C	A-1	2



1 A-2 ELEVATION
SCALE: 3/32" = 1'-0"

0' 5'4" 10'8" 21'4" 32'0"



2 A-2 ANTENNA SIDE VIEW
SCALE: N.T.S.

COMMONWEALTH OF MASSACHUSETTS
MARC R. CHRETIEN
CIVIL
No. 40313
REGISTERED PROFESSIONAL ENGINEER

Marc R. Chretien

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SAI COMMUNICATIONS
27 NORTHWESTERN DRIVE
SALEM, NH 03079

SITE NUMBER: CT5101
SITE NAME:
ORANGE SOUTH
SOUTH ORANGE CENTER ROAD
ORANGE, CT 06477
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

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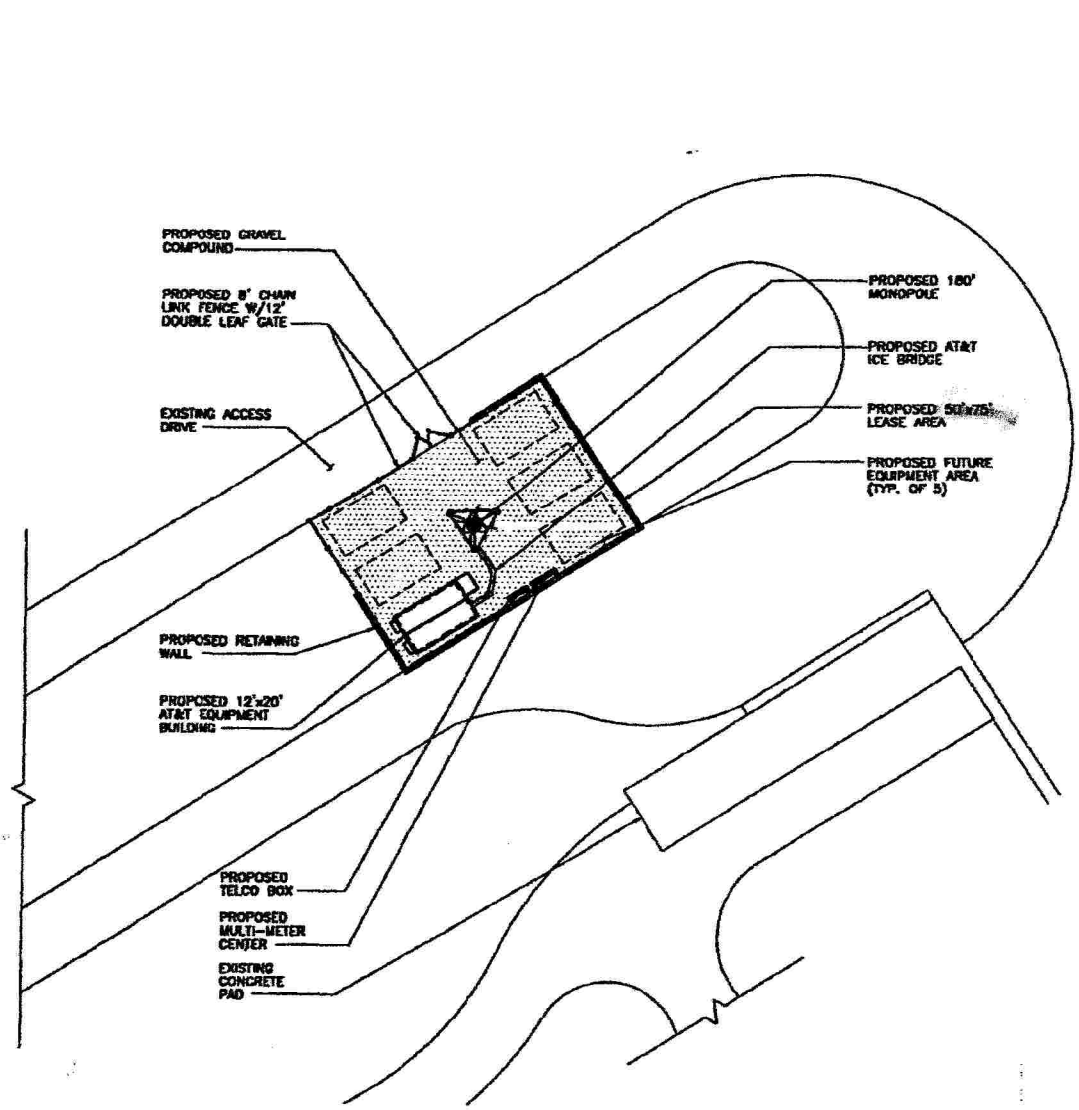
SCALE: AS SHOWN | DESIGNED BY: MRC | DRAWN BY: MER

AT&T

ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
5101 LTE 2C	A-2	2



1 / L-1 **SITE PLAN**
SCALE: 1"=50'

0 25 50 100

SITE ID NO: CT-101	BRS Brainar Woodward Clyde A-E-S 500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT 1-(860)-529-8862	AT&T WIRELESS PCS, LLC. UNMANNED WIRELESS COMMUNICATION EQUIPMENT SITE	Dwg. No. L-1
Designed by:		SITE ADDRESS: ORANGE TRANSFER STATION SOUTH ORANGE CENTER ROAD ORANGE, CONNECTICUT	REV. / DATE: / DESCRIPTION
Drawn by: BMS			Scale: AS SHOWN / Date: 08-31-00
Checked by:			Job No: F301924.07 / File No. L-1 / Dwg. 1 of 2

SAI Communications
27 Northwestern Drive
Salem, NH 03079
(503) 961-1313

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
Kevin Clements
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-3546
kclements@gpdgroup.com

GPD# 2014723.13.16326.02
March 4, 2014

STRUCTURAL ANALYSIS REPORT WITH MODIFICATION DESIGN

AT&T DESIGNATION:	Site USID:	16326
	Site FA:	10071197
	Client #:	CT5101
	Site Name:	ORANGE TRANSFER STATION
	AT&T Project:	Mod LTE2C AIR 11/6/2013
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F & 2003 IBC, 2005 CTBC & ASCE 7-05** **90-mph (fastest-mile) with 0" ice** **37-mph (fastest-mile) with 0.75" ice**
SITE DATA:		**617 South Orange Center Rd., Orange, CT 06477, New Haven County** **Latitude 41° 15' 19.98" N, Longitude 73° 0' 39.2" W** **Market: New England** **180' Rohn Monopole**

Mr. Edward Onessimo,

GPD is pleased to submit this Rigorous Structural Analysis Report with Modification Drawings to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	90.8%	Pass
Foundation Ratio with Proposed Equipment:	24.1%	Pass

Note: In order for this analysis results to be valid for the proposed, existing, and reserved loading in Appendix A the modifications referenced in the design by GPD (Project #: 2014723.13.16326.02, dated 3/4/2014) must be installed.

We at GPD appreciate the opportunity of providing our continuing professional services to you and SAI Communications. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,

STATE OF CONNECTICUT
JOHN N. KABAK
28336
LICENSED
PROFESSIONAL ENGINEER

John N. Kabak, P.E.
Connecticut #: 28336

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the modified structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to SAI Communications. This report was commissioned by Mr. Edward Onessimo of SAI Communications.

Modifications designed by GPD (Project #: 2014723.13.16326.02, dated 3/4/2014) have been considered in this analysis.

The proposed coax shall be installed internal to the pole in order for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	88.9%	Pass
Anchor Rods	90.8%	Pass
Base Plate	55.3%	Pass
Foundation	24.1%	Pass

ANALYSIS METHOD

tnxTower (Version 6.1.4.1), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Equipment Modification Form	AT&T Internal Loading Document, dated 12/10/2013	Siterra
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Geotechnical Report	WEI Project #: 2010-1056, dated 03/31/2010	Siterra
Previous Structural Analysis	GPD Project #: 2013723.13.16326.01, dated 1/6/2014	Siterra
Foundation Mapping	WEI Project #: 2010-1056, dated 03/31/2010	Siterra
Modification Drawings	GPD Project #: 2014723.13.16326.02, dated 3/4/2014	GPD

ASSUMPTIONS

This rigorous structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. All existing loading was obtained from the previous structural analysis by GPD (Project #: 2014723.13.16326.01, dated 1/6/2014), site photos, and the provided Equipment Summary Form and is assumed to be accurate.
12. The proposed coax shall be installed internal to the pole in order for the analysis results to be valid.
13. The proposed Tower Mounted Amplifiers are assumed to be installed behind the antennas for the purpose of this analysis.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD Group should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Rigorous Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

Tower Analysis Summary Form

General Info

Site Name	ORANGE TRANSFER STATION
Site Number	16326
FA Number	10071197
Date of Analysis	March 4, 2014
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	180'	
Tower Manufacturer	Rohn	
Tower Model	n/a	
Tower Design	n/a	
Foundation Design	n/a	
Geotech Report	WEI Project #: 2010-1056	03/31/2010
Modification Drawings	GPD Project #: 2013723.13.16326.02	3/4/2014
Previous Structural Analysis	GPD Project #: 2013723.13.16326.01	1/7/2014
Foundation Mapping	WEI Project #: 2010-1056	03/31/2010

Design Parameters

Design Code Used	TIA/EIA-222-F, 2003 IBC 2005 CTBC & ASCE 7-05
Location of Tower (County, State)	New Haven, CT
Basic Wind Speed (mph)	90 (fastest-mile)
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	88.9%
Tower Base (%)	90.8%
Foundation (%)	24.1%
Foundation Adequate?	Yes

Modifications designed by GPD (Project #: 2014723.13.16326.02, dated 3/4/2014) have been considered in this analysis.

Steel Yield Strength (ksi)

Pole	65
Tower Base	60
Anchor Rods	75

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
AT&T Mobility	177	177	6	Panel	Powerwave	7770.00	20/150/270	1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
AT&T Mobility	177	177	3	Panel	KMW	AM-X-CD-14-65-00T-RET	20/150/270			on same mount	2	Power Cable	7/8"	Internal
AT&T Mobility	177	177	6	TMA	Powerwave	LGP21401				on same mount	1	Fiber Cable	3/8"	Internal
AT&T Mobility	177	177	6	RRU	Ericsson	RRUS 11				on same mount				
AT&T Mobility	177	177	1	Surge	Raycap	DC6-48-60-18-8F				on same mount				
Unknown	165	165	3	Panel	Unknown	5' Panel		3	Unknown	Pipe Mount	6	Unknown	1-5/8"	External
T-Mobile	148	148	6	Panel	RFS Celwave	APX16PV-16PVL		1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
T-Mobile	148	148	6	TMA	Powerwave	LGP21401				on same mount				
Nextel	137	137	12	Panel	Decibel	844G45VTZASX		1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
Sprint	125	127.4	6	Panel	RFS Celwave	APXVSPP18-C-A20	10/120/255	1	Unknown	12' LP Platform	6	Unknown	1-5/8"	Internal
Sprint	125	127.4	3	RRU	Alcatel Lucent	1900MHz RRH				on same mount	3	Unknown	1-1/4"	Internal
Sprint	125	127.4	3	RRU	Alcatel Lucent	800 MHZ RRH				on same mount				
Sprint	125	127.4	3	RRU	Alcatel Lucent	800 External Notch Filter				on same mount				
Clearwire	125	127	3	Panel	Argus	LLPX310R	50/150/250			on same mount	6	Unknown	5/16"	Internal
Clearwire	125	127	3	RRU	Samsung	FDD R6 RRH				on same mount	3	RET Cable	1/4"	Internal
Clearwire	125	127	2	Dish	Dragonwave	A-ANT-23G-2-C	50/150			on same mount	2	Unknown	1/2"	Internal
Clearwire	125	127	2	ODU	Dragonwave	Horizon DUO				on same mount	2	Conduit	2"	Internal
Verizon	115	117	3	Panel	Swedcom	SLCP 2X6015	40/120/280	1	Unknown	14' LP Platform	12	Unknown	1-5/8"	Internal
Verizon	115	117	3	Panel	Antel	BXA-70063/4CF	40/120/280			on same mount	6	Unknown	1-5/8"	External
Verizon	115	117	6	Panel	Antel	BXA-171063/12BF	40/120/280			on same mount	1	Fiber cable	1-5/8"	Internal
Verizon	115	115	3	RRU	Ericsson	RRH 2x40 AWS				on same mount				
Verizon	115	115	1	Box	RFS	DB-T1-6Z-8AB-0Z				on same mount				
Verizon	115	115	1	GPS	Unknown	GPS				on same mount				
Sprint	60	60	1	GPS	PCTEL	GPS-TMG-HR-26NCM		1	Unknown	Standoff	1	Unknown	1/2"	Internal

Note: (3) 7770.00 Antennas, (3) AM-X-CD-14-65-00T-RET Antennas, (6) LGP21401 TMA's, (6) RRUS 11 RRU's, (6) 1-5/8" coax and the existing platform at 177' shall be removed prior to the installation of the proposed loading and were not considered in this analysis.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
AT&T Mobility	177	177	9	Panel	Andrew	SBNHH-1D65A	20/120/230	1	Commscope	MTC3607R Platform w/ rails	4	Power Cable	7/8"	Internal
AT&T Mobility	177	177	3	TMA	CCI	DTMABP7819VG12A-BP				on the same mount				
AT&T Mobility	177	177	6	RRU	Ericsson	RRUS 11				on the same mount				
AT&T Mobility	177	177	6	RRU	Ericsson	RRUS 12				on the same mount				
AT&T Mobility	177	177	3	RRU	Ericsson	RRUS E2				on the same mount				
AT&T Mobility	177	177	3	RRU	Ericsson	RRUS 32				on the same mount				
AT&T Mobility	177	177	6	Module	Ericsson	KRC 161 286-1 (A-2 module)				on the same mount				
AT&T Mobility	177	177	2	Surge	Raycap	DC6-48-60-18-8F				on the same mount				

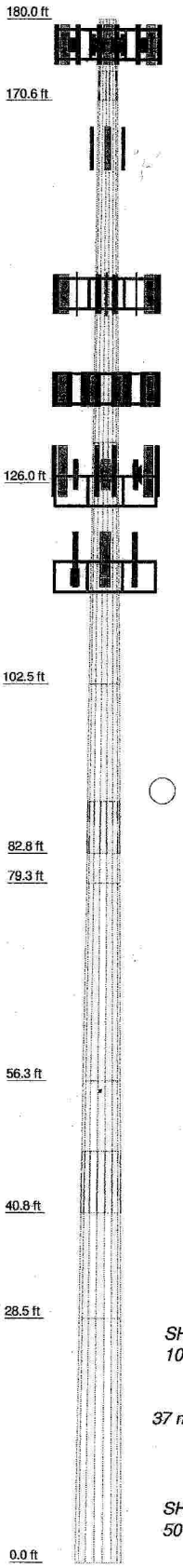
Note: The proposed loading shall be in addition to the remaining existing/reserved loading at the same elevation. The proposed coax shall be installed internal to the pole in order for the analysis results to be valid.

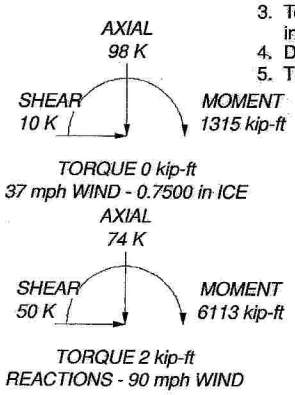
Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.

Section	1	2	3	4	5	6	7	8	9
Length (ft)	9.42	48.00	28.25	19.75	9.50	23.00	15.50	19.50	28.50
Number of Sides	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3125	0.6368	0.6885	0.6912	0.7172	0.7554	0.7176
Socket Length (ft)	3.42	4.75		6.00			7.25		
Top Dia (in)	24.0000	25.0581	34.8903	41.6389	44.2987	46.5680	52.0623	53.2831	57.9415
Bot Dia (in)	26.2500	36.5250	41.6389	46.3570	48.5680	52.0623	55.7650	57.9415	64.7500
Grade	A572-65			43.437044ksi		43.479409ksi	43.94073ksi	43.987416ksi	44.063816ksi 44.186183ksi
Weight (K)	0.5	4.0	3.6	5.7	3.1	8.1	6.2	8.5	13.2

52.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
MTC3607R Platform w/Rails	177	MTS 12.5' LP Platform	137
7770.00 w/Mount Pipe	177	(4) 844G45VTZASX w/Mount Pipe	137
7770.00 w/Mount Pipe	177	(4) 844G45VTZASX w/Mount Pipe	137
7770.00 w/Mount Pipe	177	(4) 844G45VTZASX w/Mount Pipe	137
(3) SBNHH-1D65A w/ Mount Pipe	177	Valmont 12' Hatched LP Platform	125
(3) SBNHH-1D65A w/ Mount Pipe	177	(2) APXVSPP18-C-A20 w/ Mount Pipe	125
(3) SBNHH-1D65A w/ Mount Pipe	177	(2) APXVSPP18-C-A20 w/ Mount Pipe	125
DTMABP7819VG12A	177	(2) APXVSPP18-C-A20 w/ Mount Pipe	125
DTMABP7819VG12A	177	1900MHz RRH	125
DTMABP7819VG12A	177	1900MHz RRH	125
(2) RRUS 11	177	1900MHz RRH	125
(2) RRUS 11	177	800 MHZ RRH	125
(2) RRUS 11	177	800 MHZ RRH	125
(2) RRUS 12	177	800 MHZ RRH	125
(2) RRUS 12	177	800 External Notch Filter	125
(2) RRUS 12	177	800 External Notch Filter	125
RRUS E2	177	800 External Notch Filter	125
RRUS E2	177	LLPX310R w/ Mount Pipe	125
RRUS E2	177	LLPX310R w/ Mount Pipe	125
RRUS 32	177	LLPX310R w/ Mount Pipe	125
RRUS 32	177	FDD R6 RRH	125
RRUS 32	177	FDD R6 RRH	125
(2) KRC 161 286-1 (A-2 module)	177	FDD R6 RRH	125
(2) KRC 161 286-1 (A-2 module)	177	Horizon DUO	125
(2) KRC 161 286-1 (A-2 module)	177	Horizon DUO	125
DC6-48-60-18-8F Surge Suppression Unit	177	A-ANT-23G-2-C	125
		A-ANT-23G-2-C	125
DC6-48-60-18-8F Surge Suppression Unit	177	SLCP 2X6015 w/ mount pipe	115
		SLCP 2X6015 w/ mount pipe	115
DC6-48-60-18-8F Surge Suppression Unit	177	BXA-70063/4CF w/ Mount Pipe	115
		BXA-70063/4CF w/ Mount Pipe	115
Collar Mount (GPD)	177	BXA-70063/4CF w/ Mount Pipe	115
5 s.f. Panel Antenna w/Mount Pipe	165	(2) BXA-171063/12BF w/ 6' mount pipe	115
5 s.f. Panel Antenna w/Mount Pipe	165	(2) BXA-171063/12BF w/ 6' mount pipe	115
5 s.f. Panel Antenna w/Mount Pipe	165	(2) BXA-171063/12BF w/ 6' mount pipe	115
MTS 12.5' LP Platform	148	RRH 2x40 AWS	115
(2) APX16PV-16PVL w/ Mount Pipe	148	RRH 2x40 AWS	115
(2) APX16PV-16PVL w/ Mount Pipe	148	RRH 2x40 AWS	115
(2) APX16PV-16PVL w/ Mount Pipe	148	DB-T1-6Z-8AB-0Z	115
(2) LGP21401	148	GPS	115
(2) LGP21401	148	Summit 14' LP Platform	115
(2) LGP21401	148	SLCP 2X6015 w/ mount pipe	115
Pipe Mount 5'x2.375"	148	GPS-TMG-HR-26NCM	60
Pipe Mount 5'x2.375"	148	2' Standoff - Flat (GPD)	60
Pipe Mount 5'x2.375"	148		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	43.987416ksi	44 ksi	59 ksi
43.437044ksi	43 ksi	58 ksi	44.063616ksi	44 ksi	59 ksi
43.479409ksi	43 ksi	58 ksi	44.186183ksi	44 ksi	59 ksi
43.94073ksi	44 ksi	59 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 88.9%

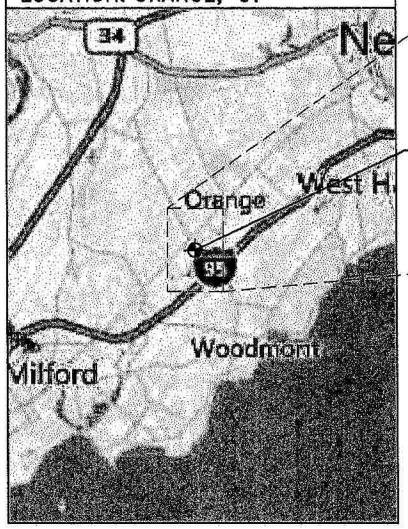
GPD
Consulting Engineers
520 South Main Street, Suite 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-3709

Job: 16326 (CT5101) ORANGE TRANSFER STATION		
Project: 2014723.13.16326.02		
Client: SAI Ciommunications	Drawn by: Teveslage	App'd:
Code: TIA/EIA-222-F	Date: 03/04/14	Scale: NTS
Path:		Dwg No. E-1

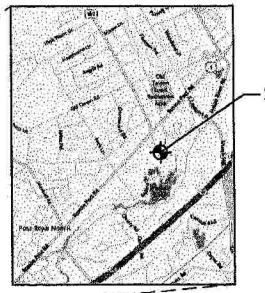
ORANGE TRANSFER STATION
USID #: 16326
CLIENT #: CT5101

180' ROHN MONOPOLE

LOCATION: ORANGE, CT



SITE



SITE

AERIAL VIEW

SITE

PROJECT SUMMARY	
TOWER OWNER:	AT&T TOWERS
TOWER TYPE:	MONOPOLE
GOVERNING CODE:	TIA/EIA-222-F, 2003 IBC, 2005 CTBC, & ASCE 7-05
LATITUDE:	41° 15' 19.98" N
LONGITUDE:	73° 0' 39.20" W
OWNER CONTACT:	MR. EDWARD ONESSIMO 27 NORTHWESTERN DRIVE SALEM, NH 03079 (603) 961-1313
ENGINEER CONTACT:	MR. JIBRIL SHEHU 520 SOUTH MAIN STREET, SUITE 2531 AKRON, OH 44311 (330) 572-2216

PROJECT OVERVIEW:
THE LISTED DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER BY REINFORCING THE TOWER SHAFT AS WELL AS INSTALLING NEW ANCHOR RODS WITH BRACKETS TO THE TOWER BASE.

DRAWING INDEX

T-01 TITLE SHEET
N-01 PROJECT NOTES
S-01 TOWER ELEVATION & MODIFICATION SCHEDULE
S-02 MODIFICATION DETAILS & SECTIONS
S-03 ADDITIONAL DETAILS & SECTIONS
S-04 ADDITIONAL DETAILS & SECTIONS
S-05 ADDITIONAL DETAILS
MI-01 MODIFICATION INSPECTION CHECKLIST

INTEGRATED BY:

SAI communications

GPD GROUP
Gbud, Pyle, Schomer, Burns & DeHaven, Inc.
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2049 Fax: 330.572.2101
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at&t

REV.	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

TITLE SHEET

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
2014723.13.16326.02

T-01

GENERAL NOTES

1. THE MODIFICATIONS REPRESENTED WITHIN THESE DRAWINGS ARE BASED ON A STRUCTURAL ANALYSIS REPORT BY GPD GROUP (PROJECT #: 2013723.13.16326.01, DATED JANUARY 6, 2014). ALL MODIFICATIONS MUST BE INSTALLED TO BRING THE TOWER INTO CONFORMANCE WITH TIA/EIA-222-F, 2003 IBC, 2005 CTBC, AND ASCE 7-05.
2. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222-F, 2003 IBC, 2005 CTBC, ASCE 7-05, AWS, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
3. ALL TOWER INFORMATION WAS OBTAINED IN THE FORM OF A PREVIOUS STRUCTURAL ANALYSIS BY BLACK & VEATCH (PROJECT #: 176850, DATED DECEMBER 4, 2013). CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED TOWER DOCUMENTS.
4. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD GROUP. **CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW, SEE CONTRACTOR NOTES.**
5. MANUFACTURER TOLERANCES, FIELD ADJUSTMENTS, INCORRECT STACKING, AND TEMPERATURE CAN CAUSE DIMENSION DISCREPANCIES. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS. ALL FIELD MEASUREMENTS MUST BE REPORTED TO ENGINEER.
6. ALL NEW STEEL SHALL BE HOT DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
7. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZRC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
8. CAULKING SHALL BE PROVIDED AROUND PERIMETER OF ANY AND ALL MODIFICATION MEMBERS TO ENSURE COMPLETE SEAL BETWEEN EXISTING STRUCTURE AND REINFORCING MEMBERS. SEALANT IS TO BE EXTERIOR GRADE, PAINTABLE SILICONE CAULKING AS MANUFACTURED BY DOW AND ACCEPTABLE TO GPD.
9. LOADINGS:

   WIND LOADS:

   FASTEST MILE WIND SPEED (PER: TIA/EIA-222-F, 2003 IBC, 2005 CTBC, & ASCE 7-05) 90 MPH
   (NEW HAVEN COUNTY, CONNECTICUT)

   ICE LOADS:

   3/4" RADIAL BASE ICE
   FASTEST MILE WIND SPEED (CONCURRENT W/ ICE) 37 MPH

10. STRUCTURAL STEEL:

    SPECIFICATIONS (LATEST EDITION OF AISC)

    MATERIALS

PLATES	ASTM A572 (GR 50)
ANCHOR ROD BRACKETS	ASTM A572 (GR 50)
ONE-SIDED BOLTS	AJAX M20 (GR PC8.8) W/ HIGH STRENGTH SLEEVE (Fu=120 KSI)
ANCHOR RODS	ASTM F1554 (GR 105)
PIPE	ASTM A53-B (42 KSI)
NUTS	ASTM A194 (GR 2H)
WELDS	E70XX
EPOXY	HILTI HIT-RE 500-SD (ICC #: ESR-2322)
HOT DIPPED GALVANIZING	ASTM A123
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

11. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
12. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA/EIA-222-F SECTION 1.1.3 REQUIREMENTS.
13. ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
14. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
15. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
16. THE ENGINEER (GPD GROUP) SHALL MAKE POST INSTALLATION OBSERVATION FOR TOWER. CONTRACTOR SHALL COORDINATE W/ENGINEER (GPD GROUP) WITHIN 72 HOURS AFTER 100% COMPLETION OF THE TOWER MODIFICATION INSTALLATION. INSTALLATION OF PROPOSED LOADING WITHOUT ENGINEER APPROVAL IS PROHIBITED. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS, AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

STATE OF CONNECTICUT JOHN N. KARAM PROFESSIONAL ENGINEER

CONTRACTOR NOTES

1. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND GPD GROUP THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND GPD GROUP ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND GPD GROUP.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, GPD GROUP SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.
4. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.
6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. SEE GENERAL NOTES #4 AND #5 THIS SHEET.
7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
8. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
9. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
10. **WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH). CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER SHORING, TEMPORARY GLOBAL TOWER SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.**
11. ALL MODIFICATIONS PERFORMED ON THIS TOWER SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF TIA-1019-A CONSTRUCTION STANDARDS.
12. ALL MANUFACTURERS HARDWARE AND ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY. DEVIATION FROM THE INSTRUCTIONS IS UNACCEPTABLE AND REQUIRES WRITTEN APPROVAL FROM ENGINEER.

WELD NOTES

1. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL PERFORM A NONDESTRUCTIVE TEST ON THE EXISTING BASE PERIMETER WELD TO INSURE ITS STRUCTURAL INTEGRITY IN ACCORDANCE WITH D1.1 & D1.1M: 2008 STRUCTURAL WELDING CODE STEEL. IF ANY FLAWS ARE DISCOVERED, THE PROJECT SHALL BE PUT ON HOLD UNTIL REMEDIES TO CORRECT THE DEFICIENCIES ARE DESIGNED AND INSTALLED. THE TOWER OWNER AND THE ENGINEER SHALL BE CONTACTED IMMEDIATELY UPON A FAILING NONDESTRUCTIVE TESTING RESULT.
2. **CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING A THIRD PARTY CERTIFIED WELD INSPECTOR (CWI) THROUGHOUT THE ENTIRETY OF THE PROJECT. A PASSING CWI REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.**
3. WELDING CERTIFICATES MUST BE PROVIDED TO CWI AND GPD GROUP PRIOR TO WELDING CONTRACTOR BEGINNING WORK ON SITE. CERTIFICATE WILL BE ASKED FOR AS PART OF INSPECTION PROCESS. ALL WELDING SHOULD BE PERFORMED BY AN AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES AND IN ACCORDANCE WITH ANSI/AWS D1.1 AND ANSI Z 49.1 OR LATEST EDITIONS.
4. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.
5. INSTALL 3000' (NFPA 701) FIRE BLANKET AROUND ALL COAX.
6. MORE SPLATTER AND SPARKS SHALL BE ANTICIPATED GIVEN THE PREVIOUSLY GALV. SURFACE.
7. **COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM ALL WELDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH WELDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING IS BEING PERFORMED.**
8. CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING ON A GALVANIZED SURFACE. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC IT DOES NOT PROVIDE A STRUCTURAL WELD.
9. FUMES CREATED FROM WELDING ON A PREVIOUSLY GALV. SURFACE CAN BE HAZARDOUS.
10. PRIOR TO WELDING, ALL SURFACES SHALL BE PROPERLY GROUND TO REMOVE GALVANIZING.
11. ALL FIELD WELDS SHALL BE TOUCHED UP WITH A GALVANIZING PAINT REPAIR (ZRC OR APPROVED EQUIVALENT).
12. WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. A MINIMUM OF 500 GAL. OF WATER SHALL BE PROVIDED. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, A MINIMUM OF SIX (6) 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).
13. CLEAN OUT ALL DEBRIS THROUGHOUT MONOPOLE AND MONOPOLE BASE PRIOR TO WELDING.
14. WHERE ACCESS PERMITS, THE INTERIOR OF THE MP SHAFTS, IN ANY AREA AFFECTED BY ANY WELDING, SHALL BE SOLVENT CLEANED AND TOUCHED UP WITH TWO COATS OF COLD GALVANIZED PAINT. PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE PMI INSPECTOR.

ANCHOR ROD NOTES

1. CONTRACTOR SHALL INSTALL RODS AND BRACKETS AT LOCATIONS INDICATED ON DRAWINGS.
2. CONTRACTOR SHALL VERIFY THAT TOWER IS PLUMB PRIOR TO THE INSTALLATION OF ANY TOWER MODIFICATIONS.
3. CONTRACTOR SHALL PROVIDE TOP AND BOTTOM HEAVY HEX NUTS FOR PROPOSED ANCHOR RODS. TOP CONNECTION SHALL BE DOUBLE NUTTED.
4. CARE SHALL BE TAKEN DURING INSTALLATION OF ANCHOR RODS SO THAT EXISTING REINFORCING STEEL AND OR ANCHOR BOLTS ARE NOT DAMAGED. CONTACT ENGINEER IMMEDIATELY IF REINFORCING ENCOUNTERED. CONTRACTOR SHALL NONDESTRUCTIVELY DETERMINE LOCATION AND SIZE OF EXISTING REINFORCING STEEL PRIOR TO INSTALLATION OF ANCHOR RODS. EXISTING REINFORCEMENT INDICATED ON DRAWINGS IS ILLUSTRATIVE. ACTUAL QUANTITY AND LOCATION OF REINFORCEMENT MIGHT DIFFER FROM THAT INDICATED ON THE DRAWINGS. ANCHOR TEMPLATES MAY BE ENCOUNTERED DURING DRILLING PROCESS, AND MAY BE DRILLED THROUGH.
5. EACH ANCHOR ROD TO BE TESTED SHALL BE PROOF LOADED TO A MAXIMUM OF 99 KIPS. PULL TESTING RESULTS SHALL BE SUPPLIED TO THE TOWER OWNER AND THE ENGINEER OF RECORD (GPD GROUP) FOR REFERENCE IN THE POST INSTALLATION OBSERVATION REPORT.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PAUSE CONSTRUCTION AT A POINT WHERE THE ANCHOR RODS CAN BE EFFECTIVELY TESTED. CONSTRUCTION MAY CONTINUE AFTER TESTING IS COMPLETE.
7. HALF OR A MINIMUM OF 4 (WHICHEVER IS GREATER) NEW ANCHOR RODS SHALL BE TESTED.
8. COMPLETE RECORDS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE TEST. MAXIMUM LOAD INCREMENT SHALL BE 15% OF THE PROOF LOAD.
9. PULL TESTING SHALL BE IN ACCORDANCE WITH ASTM E488M-10.
10. IF A DISPLACEMENT GREATER THAN 0.01 INCHES, MEASURED FROM THE BASE LINE, REMAINS AFTER THE FIRST TEST CYCLE, FURTHER TESTS SHALL BE PERFORMED UP TO A MAXIMUM OF 3 TEST CYCLES TO DETERMINE IF ANCHOR ROD MOVEMENT CONTINUES TO ACCUMULATE. TOTAL RESIDUAL MOVEMENT SHALL NOT EXCEED 0.05 INCHES. INCREMENTAL RESIDUAL MOVEMENTS RECORDED FROM EACH TEST CYCLE MUST BE DECREASING IN VALUE AND STABILIZE TO A VALUE NO MORE THAN 0.01 INCHES. ANCHORS NOT MEETING THE TOTAL RESIDUAL MOVEMENT AND/OR THE INCREMENTAL RESIDUAL MOVEMENT LIMITATIONS SHALL BE CONSIDERED TO HAVE FAILED THE TEST.
11. INSTALLATION OF GROUT AND/OR BOTTOM NUT FLUSH TO BASE PLATE IS PROHIBITED PRIOR TO COMPLETION OF ANCHOR ROD PULL TEST.
12. NEW ANCHOR RODS TO BE HOT DIPPED GALVANIZED TO A MINIMUM OF 3" BELOW THE CONCRETE SURFACE.
13. THE ADHESIVE ANCHOR SYSTEM USED FOR POST-INSTALLED ANCHORAGE TO CONCRETE SHALL CONFORM TO THE MOST RECENTLY PUBLISHED ACI 355.4, ACCEPTANCE CRITERIA FOR QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE AND COMMENTARY. THE ANCHOR SYSTEM SHALL BE ONE OF THE FOLLOWING:
    A. HILTI HIT-RE 500-SD EPOXY
    B. AN ENGINEER APPROVED EQUAL MEETING ACI 355.4 AND THE MINIMUM BOND STRESS VALUES BELOW. BULK MIXED ADHESIVES ARE NOT PERMITTED.
14. THE ADHESIVE ANCHORS SELECTED FROM THE PARAGRAPH ABOVE SHALL BE SUPPLIED AS AN ENTIRE SYSTEM. THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE NEW ADHESIVE CARTRIDGE, A CLEAN MIXING NOZZLE, EXTENSION TUBE, A DISPENSING GUN, AND ALL MANUFACTURER RECOMMENDED SUPPLIES FOR PROPERLY CLEANING THE HOLE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL EQUIPMENT REQUIRED FOR INSTALLATION OF THE ADHESIVE ANCHOR SYSTEM.
15. ANCHORAGE DESIGN IS IN ACCORDANCE WITH APPENDIX D OF ACI 318-11. FOR ADHESIVE ANCHORS, THE FOLLOWING MINIMUM VALUES FOR BOND STRESS WERE ASSUMED FOR THE DESIGN USING THE ABOVE ADHESIVE ANCHOR ASSEMBLIES:
    A. UNCRACKED CONCRETE BOND STRESS (BASED ON HAMMER DRILLING):
       Tuncr = 1624 PSI
16. ALL-THREADED ROD TO BE USED IN ADHESIVE ANCHOR ASSEMBLIES SHALL CONFORM TO THE ASTM SPECIFICATIONS REPRESENTED WITHIN THESE DRAWINGS. THREADS SHALL BE UNC COARSE THREADS, UNLESS NOTED OTHERWISE. COMPATIBLE NUTS AND WASHERS SHALL BE FURNISHED WITH ALL THE ALL-THREAD ROD CONSIDERED PART OF THE ASSEMBLY. THE COST OF HARDWARE SHALL BE CONSIDERED INCIDENTAL TO THE ADHESIVE ANCHOR ASSEMBLY.
17. NUTS, WASHERS, AND OTHER HARDWARE USED WITH AN ALL-THREADED BAR ADHESIVE ANCHOR SYSTEM SHALL HAVE A MATERIAL OR AN ALLOY DESIGNATION THAT MATCHES THE ALL-THREAD MATERIAL/ALLOY. GALVANIZED ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. ELECTROPLATE GALVANIZING IS NOT ACCEPTABLE. DISSIMILAR METAL ASSEMBLIES SHALL BE SEPARATED BY NYLON, EPDM, OR OTHER APPROVED NON-METALLIC WASHERS.
18. REINFORCING BARS TO BE USED IN ADHESIVE ANCHOR ASSEMBLIES SHALL CONFORM TO ASTM A615, A706, OR A995.
19. EMBEDMENT DEPTH AND ANCHOR PROJECTION (STICK-OUT) FROM CONCRETE SURFACE SHALL BE AS SHOWN ON THE DRAWING OR DETAIL FOR THE PARTICULAR ANCHOR OR ANCHOR GROUP BEING INSTALLED. ABSENT OF ANY INFORMATION THE MINIMUM STICK-OUT SHALL BE 12".
20. ADHESIVES SHALL BE STORED AND INSTALLED AT THE SERVICE TEMPERATURE RANGES RECOMMENDED BY THE MANUFACTURER.
21. ADHESIVE ANCHORS SHALL BE INSTALLED BY QUALIFIED PERSONNEL TRAINED TO INSTALL ADHESIVE ANCHORS IN ACCORDANCE WITH THE SPECIFICATIONS. POST-INSTALLED ADHESIVE ANCHORS SHALL BE INSTALLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII).
22. INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED TO SUPPORT SUSTAINED TENSION LOADS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM. THESE ANCHORS ARE DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALL-OUT. THESE ANCHORS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION BY AN INSPECTOR SPECIALLY APPROVED FOR THAT PURPOSE BY THE BUILDING OFFICIAL.
23. THE INSTALLERS QUALIFICATIONS SHALL BE SUBMITTED AND APPROVED IN ACCORDANCE WITH THE SPECIFICATIONS.
24. INSTALLED ADHESIVE ANCHORS SHALL BE SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES. UNLESS SHOWN OTHERWISE WITHIN THE DRAWINGS, ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE SURFACE. ANCHORS DISPLACED PRIOR TO ADHESIVE CURING SHALL BE CONSIDERED DAMAGED AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.
25. REINFORCING BARS OR ALL-THREADED BARS SHALL NOT BE BENT AFTER BEING ADHESIVELY EMBEDDED IN HARDENED, SOUND CONCRETE, UNLESS PERMITTED BY THE ENGINEER.

MODIFICATION PLATE NOTES

1. CONTRACTOR SHALL INSTALL PLATES, STIFFENERS, AND BRACKETS AT LOCATIONS PER PLAN VIEW.
2. USE AJAX BOLTS WITH CORRECT SLEEVE LENGTHS PER DETAILS. BOLT THREADS SHALL NOT BE IN THE SHEAR PLANE.
3. ALL HOLES DRILLED IN POLE SHALL BE SOLVENT CLEANED AND TOUCHED UP WITH ZRC ZINC RICH COLD GALVANIZING PAINT.
4. CONTRACTOR SHALL VERIFY MONOPOLE IS SET PROPERLY AND HAS BEEN JACKED INTO ITS FINAL RESTING POSITION BEFORE FINAL CRITICAL FIELD MEASUREMENTS ARE VERIFIED AND BEFORE ORDERING MATERIAL. ANY OBJECTS/STEP BOLTS THAT PREVENT TOWER FROM SITTING PROPERLY SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.
5. SHIM PLATES ARE TO BE USED BELOW SLIP JOINT AS REQUIRED.
6. AJAX BOLTS SHALL BE TIGHTENED PER AISC "SNUG-TIGHT CONDITION".
7. **FINAL SHOP DRAWINGS MUST BE SENT TO DESIGN ENGINEER FOR FINAL APPROVAL PRIOR TO FABRICATION.**
8. CONTRACTOR SHALL VERIFY THAT TOWER IS PLUMB PRIOR TO THE INSTALLATION OF ANY TOWER MODIFICATIONS.

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REV.	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

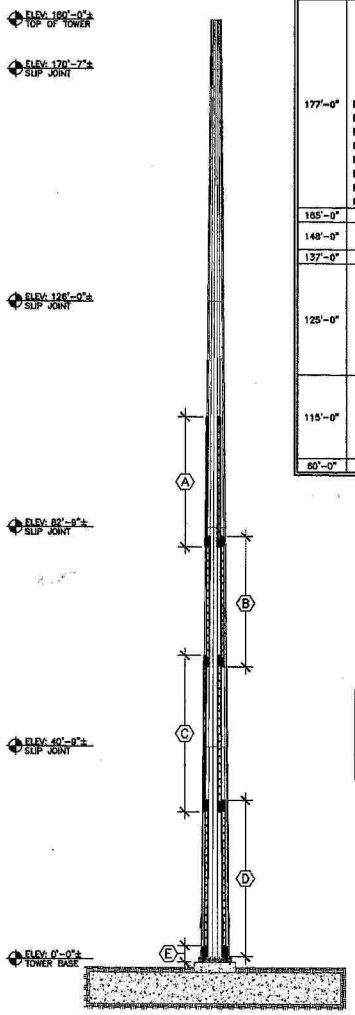
PROJECT NOTES

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JB	TRE

JOB NO.
2014723.13.1632[illegible]

N-01



TOWER ELEVATION

3/32"=1'-0"

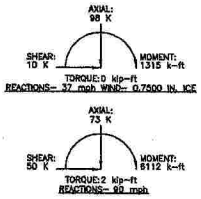
ANTENNA SCHEDULE

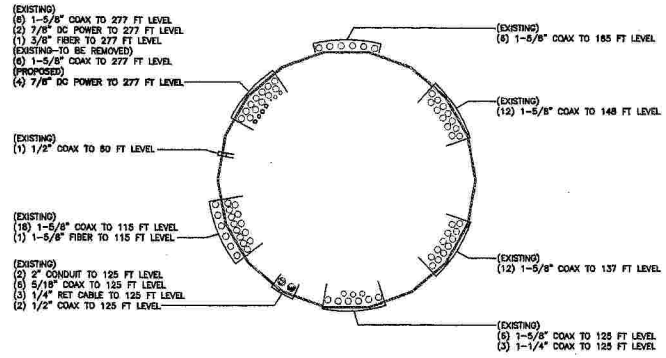
ELEVATION	STATUS	ANTENNA	MOUNT	COAX
177'-0"	EXISTING	(3) 7770.00	(1) 12.5' LP PLATFORM	(6) 1-5/8"
	EXISTING	(1) DC6-48-60-18-8F		(2) 7/8" DC
	EXISTING			(1) 3/8" FIBER
	REMOVE	(3) 7770.00		(6) 1-5/8"
	REMOVE	(3) AM-X-CD-14-65-00T-RET		
	REMOVE	(6) LGP21401 TMAS		
	REMOVE	(6) RRUS 11		
	PROPOSED	(9) S8NHH-1D65A	(1) MTC3607R PLATFORM W/ RAILS	(4) 7/8" DC
	PROPOSED	(3) DTMABP7819VG12A-BP TMAS		
	PROPOSED	(6) RRUS 11		
	PROPOSED	(6) RRUS 12		
	PROPOSED	(3) RRUS E2		
	PROPOSED	(3) RRUS 32		
	PROPOSED	(6) KRC 161 2B5-1 (A-2 MODULE)		
	PROPOSED	(2) DC6-48-60-18-8F		
165'-0"	EXISTING	(3) 5' PANEL	(3) PIPE MOUNTS	(6) 1-5/8"
148'-0"	EXISTING	(6) APX16PV-16PVL	(1) 12.5' LP PLATFORM	(12) 1-5/8"
	EXISTING	(6) LGP21401 TMAS		
137'-0"	EXISTING	(12) 844046VTZASX	(1) 12.5' LP PLATFORM	(12) 1-5/8"
125'-0"	EXISTING	(6) APXVSPP18-C-A20	(1) 12' LP PLATFORM	(6) 1-5/8"
	EXISTING	(3) 1900MHz RRH		(3) 1-1/4"
	EXISTING	(3) 800MHz RRH		
	EXISTING	(3) 800 EXTERNAL NOTCH FILTER		
	EXISTING	(3) LLPX310R		(6) 5/16"
	EXISTING	(3) FDD R6 RRH		(3) 1/4" RET
	EXISTING	(2) A-ANT-230-2-C		(2) 1/2"
	EXISTING	(2) HORIZON DUO		(2) 2" CONDUIT
115'-0"	EXISTING	(3) SLCP 2X6615	(1) 14' LP PLATFORM	(18) 1-5/8"
	EXISTING	(3) BXA-70063/4CF		(1) 1-5/8" FIBER
	EXISTING	(6) BXA-171063/12BF		
	EXISTING	(3) RRH 2x40 AWS		
	EXISTING	(1) DB-T1-6Z-8AB-0Z		
	EXISTING	(1) GPS		
80'-0"	EXISTING	(1) GPS-TMG-HR-26NCM	(1) STANDOFF	(1) 1/2"

MODIFICATION SCHEDULE

SYMBOL	ELEVATION	MEMBER TYPE	EXISTING MEMBER	NEW MEMBER	NOTES
A	79'-0"± TO 104'-0"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 7"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 4/S-03, 5/S-04, AND 9/S-05 FOR MORE INFORMATION.
B	56'-0"± TO 81'-0"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 8"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 3/S-03, 4/S-03, AND 8/S-05 FOR MORE INFORMATION.
C	28'-3"± TO 56'-3"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 8"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 2/S-03, 3/S-03, AND 7/S-05 FOR MORE INFORMATION.
D	0'-6"± TO 30'-6"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 9"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 1/S-02, 2/S-03, AND 6/S-05 FOR MORE INFORMATION.
E	0'-0"± TO 2'-6"±	ANCHOR RODS	(20) 2-1/4"ø ANCHOR RODS	(4) 1-3/4"ø ANCHOR RODS W/ BRACKETS	INSTALL NEW ANCHOR RODS WITH BRACKETS TO THE EXISTING TOWER BASE. SEE DETAIL 1/S-02 AS WELL AS SECTIONS A/S-02 AND F/S-04 FOR MORE INFORMATION.

NOTE: FLAT NUMBERS DEPICTED IN THIS DRAWING MAY VARY FROM THE NUMBERING IN THE FIELD. CONTRACTOR MAY ADJUST FLAT NUMBERS TO MATCH EXISTING FIELD CONDITIONS. MODIFICATIONS SHALL BE INSTALLED IN THE APPROPRIATE ORIENTATION AND/OR LOCATION REGARDLESS OF THE NUMBERING SHOWN ON THE DRAWINGS.





COAX LAYOUT

N.T.S.

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REV.	DATE	DESCRIPTION

STATE OF CONNECTICUT
JOHN N. KARAK
PROFESSIONAL ENGINEER

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

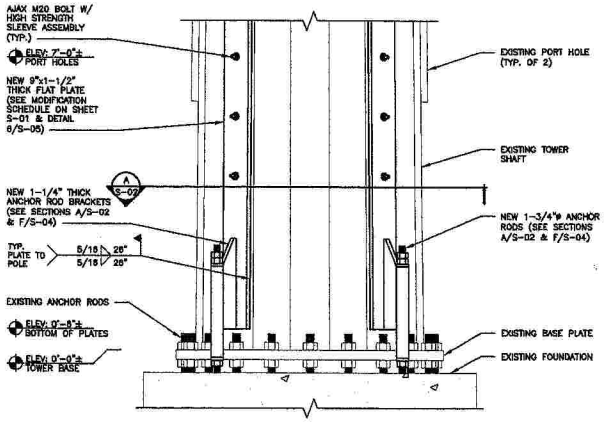
TOWER ELEVATION & MODIFICATION SCHEDULE

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

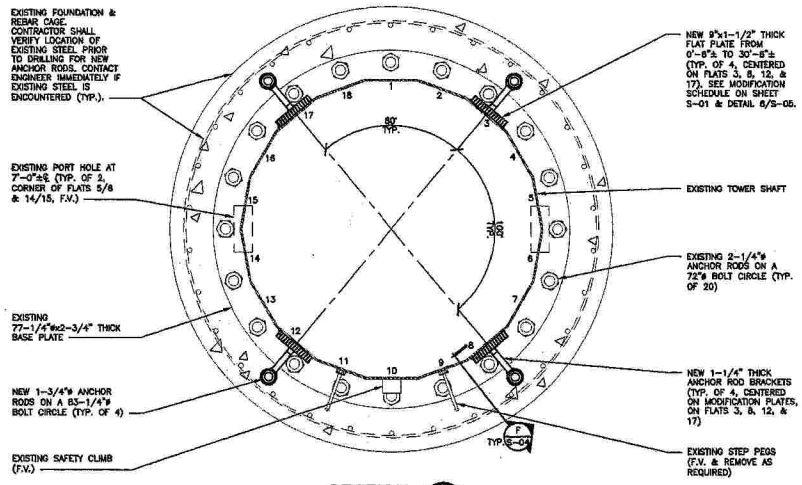
PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
2014723.13.1632602

S-01

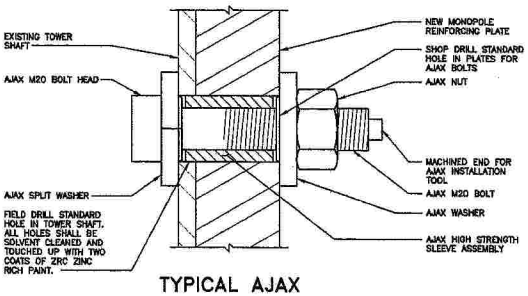


DETAIL 1 S-02
3/4"=1'-0"



SECTION A S-02
1"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.



TYPICAL AJAX BOLT DETAIL
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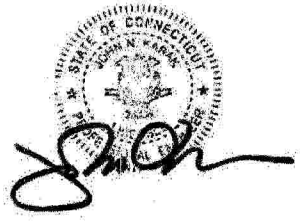

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REV.	DATE	DESCRIPTION

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ORANGE, CT 06477

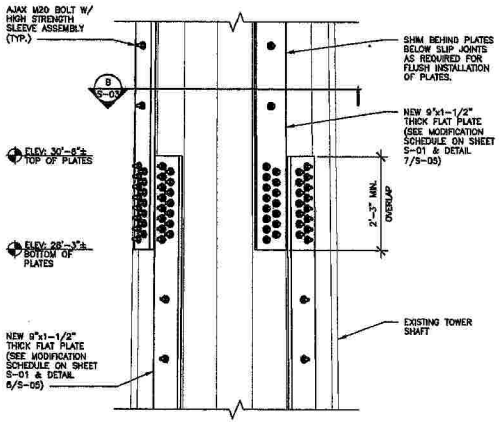
MODIFICATION DETAILS & SECTIONS

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

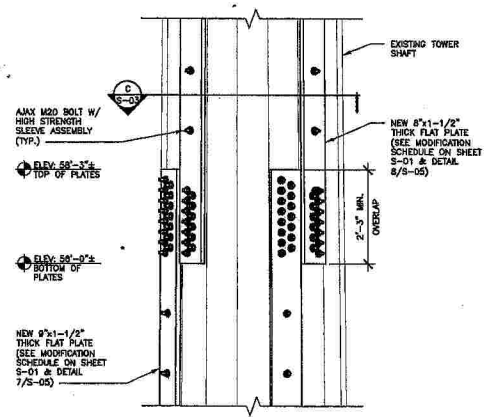
PROJECT MANAGER	DESIGNER
JB	TRE

JOB NO.
2014723.13.16326.02

S-02



DETAIL 2 S-03
3/4"=1'-0"



DETAIL 3 S-03
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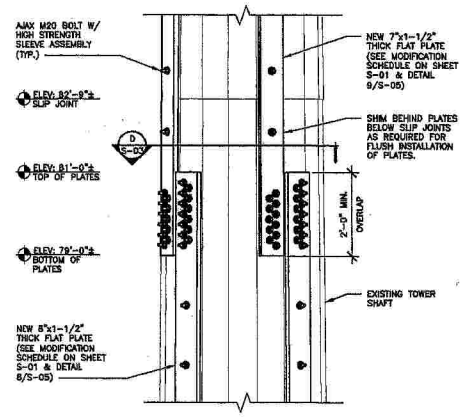

DETAIL 4 S-03
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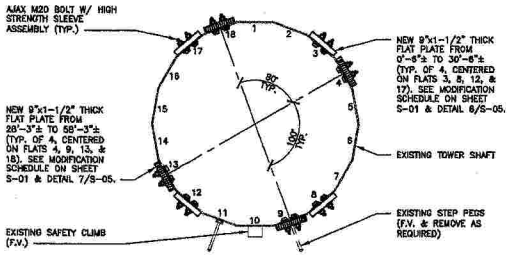

SECTION B S-03
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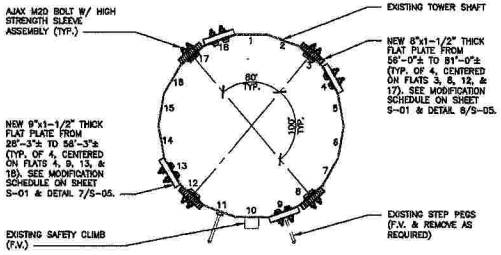

SECTION C S-03
3/4"=1'-0"

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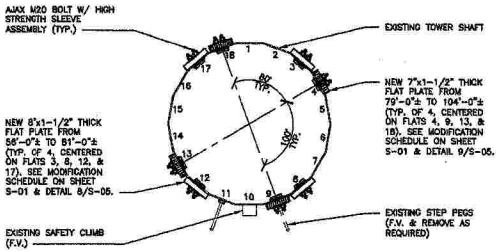

SECTION D S-03
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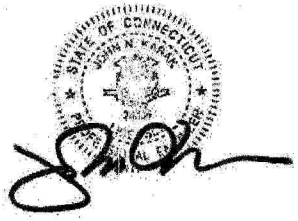

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ADDITIONAL DETAILS & SECTIONS

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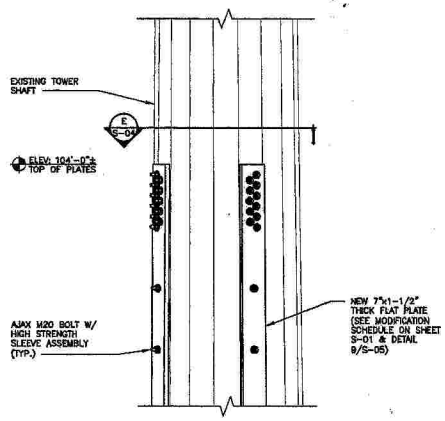
CONSTRUCTION	-
RECORD	-

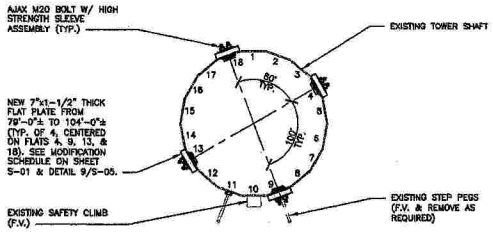
PROJECT MANAGER	DESIGNER
JB	TRE

JOB NO.
2014723.13.16326.02

S-03

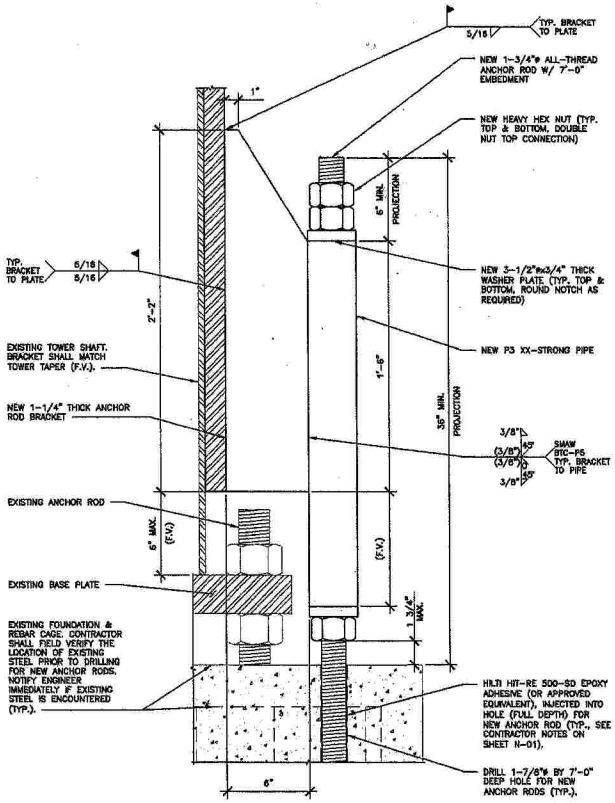


DETAIL 5 S-04
3/4"=1'-0"



SECTION E S-04
3/4"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.



SECTION F S-04
3"=1'-0"

NOTE: FIELD VERIFY ALL CRITICAL DISTANCES PRIOR TO ORDERING MATERIAL & PROVIDE SHOP DRAWINGS TO ENGINEER.

STATE OF CONNECTICUT
JOHN N. KARAS
LICENSED PROFESSIONAL ENGINEER

GPD GROUP.
Gilsan, Pelli, Schorsch, Santo & Delaware, Inc.
520 South Main Street, Suite 2531
Akron, OH 44311
330.375.1505 Fax 330.375.1506
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at&t

REV	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

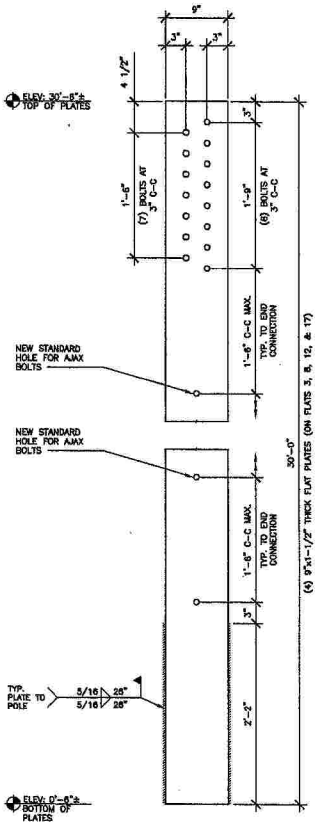
ADDITIONAL DETAILS & SECTIONS

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

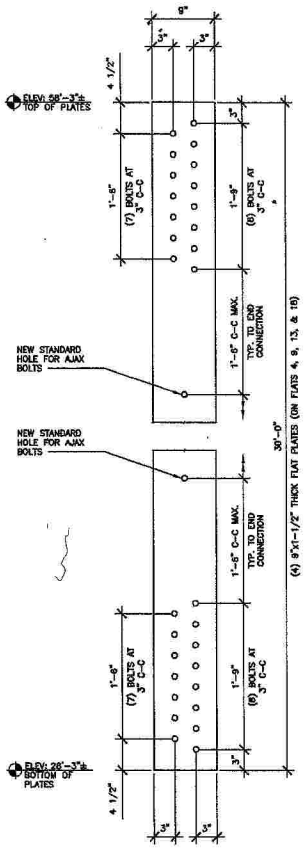
PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
2014723.13.16326.02

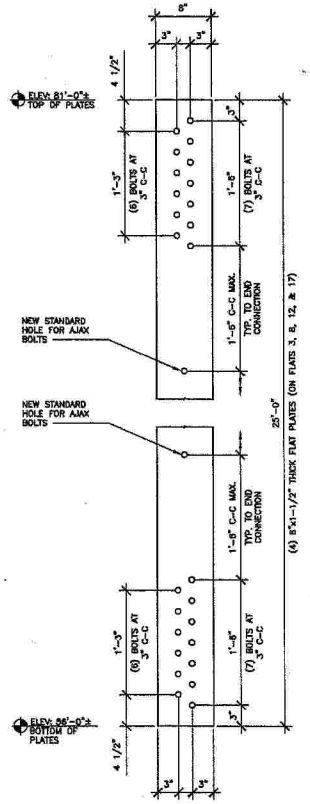
S-04



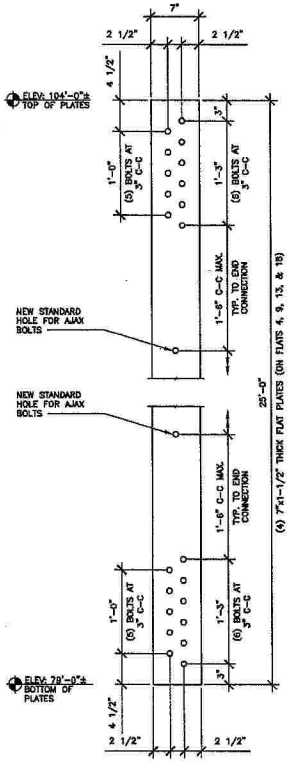
DETAIL 6 (S-05)
1-1/2"=1'-0"



DETAIL 7 (S-05)
1-1/2"=1'-0"



DETAIL 8 (S-05)
1-1/2"=1'-0"



DETAIL 9 (S-05)
1-1/2"=1'-0"

STATE OF CONNECTICUT
JOHN N. KARAN
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330.572.2100 Fax 330.572.2101
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REV.	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
817 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

ADDITIONAL DETAILS

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
2014723.13.16326.02

S-05

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MODIFICATION INSPECTION REPORT
– DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MODIFICATION INSPECTION REPORT

STANDARD MODIFICATION DOCUMENTATION REQUIREMENTS

CONSTRUCTION PROCESS			REPORT ITEM	STAMPED REPORT REQUIRED
BEFORE	DURING	AFTER		
X	–	–	• SHOP DRAWINGS	
X	–	–	• MATERIAL TEST REPORT (ALL MODIFICATION MATERIALS)	
X	–	–	• PACKING SLIPS	
			• PHOTOS:	
X	–	–	• PRE-CONSTRUCTION PHOTOS (COMPOUND, ACCESS DRIVE, ROAD ENTRANCE, TOWER)	
–	X	–	• DURING CONSTRUCTION	
–	–	X	• POST CONSTRUCTION	
–	–	–	• BASE PLATE GROUT VERIFICATION	
–	–	X	• ON SITE COLD GALVANIZING VERIFICATION	
–	–	X	• GC AS-BUILT DRAWINGS	
–	–	X	• LIEN RELEASE (GPD SERVICES ONLY)	

WELDING: FABRICATION & ONSITE

CONSTRUCTION PROCESS			REPORT ITEM	STAMPED REPORT REQUIRED
BEFORE	DURING	AFTER		
–	X	–	• NDT – ALL FULL PEN OR WELDS >5/16"	AWS
–	–	X	• VISUAL INSPECTION IN ACCRODANCE WITH ANSI/AWS D1.1	AWS
X	–	–	• NDT – MONOPOLE EXISTING PERIMETER BASE WELD	AWS
X	X	X	• ELECTRODE VERIFICATION – ONSITE PHOTO OF ELECTRODE STRENGTH	
X	–	–	• WELDER'S CERTIFICATIONS	
–	–	X	• 3RD PARTY CERTIFIED WELD INSPECTORS REPORT	AWS

ANCHOR RODS

CONSTRUCTION PROCESS			REPORT ITEM	STAMPED REPORT REQUIRED
BEFORE	DURING	AFTER		
–	X	–	• EPOXY OBSERVATION	ENGINEER
–	X	–	• HOLE DEPTH VERIFICATION – ONSITE PHOTO OF TAPE MEASURE	
–	X	–	• HOLE CLEANOUT PHOTO – ONSITE PHOTOS OF CLEANOUT PROCESS	
–	X	–	• EPOXY VERIFICATION– ONISTE PHOTO OF EPOXY LABEL	
X	–	–	• EPOXY PACKING SLIP	
			• ANCHOR ROD PULL TEST:	
–	–	X	• BY 3RD PARTY	ENGINEER
			• BY CONTRACTOR W/ 3RD PARTY INSPECTOR	ENGINEER

MODIFICATION INSPECTION NOTES:

GENERAL NOTES

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD.

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MODIFICATION INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD AT ALL TIMES.

3. **TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. CONTACT LISTED ON THE TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.**

MODIFICATION INSPECTOR

1. THE MODIFICATION INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSPECTION TO:

   – REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
   – WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
   – DISCUSS ANY SITE SPECIFIC INSPECTIONS OR CONCERNS

2. THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MODIFICATION INSPECTION REPORT.

GENERAL CONTRACTOR

1. THE GC IS REQUIRED TO CONTACT THE MODIFICATION INSPECTOR AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO:

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

2. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MODIFICATION INSPECTION REPORT:

– IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MODIFICATION INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION TO BE CONDUCTED.
– THE GC AND MODIFICATION INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
– WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
– IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
– WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MODIFICATION INSPECTION. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MODIFICATION INSPECTION CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS

1. **IF THE GC AND MODIFICATION INSPECTOR AGREE TO A DATE ON WHICH THE MODIFICATION INSPECTION WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, THE TOWER OWNER SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.**

FAILING INSPECTION CORRECTIONS

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MODIFICATION INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

   – CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MODIFICATION INSPECTION.
   – OR, WITH TOWER OWNER'S APPROVAL, THE GC MAY WORK WITH THE ENGINEER OF RECORD TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

VERIFICATION INSPECTIONS

1. TOWER OWNER RESERVES THE RIGHT TO CONDUCT A VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MODIFICATION INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

2. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MODIFICATION INSPECTION" OR "PASS AS NOTED MODIFICATION INSPECTION" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS ARE TO BE TAKEN AND INCLUDED IN THE MODIFICATION INSPECTION REPORT:

   – PRE-CONSTRUCTION GENERAL SITE CONDITION
   – PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION:
     • RAW MATERIALS
     • PHOTOS OF ALL CRITICAL DETAILS
     • FOUNDATION MODIFICATIONS
     • WELD PREPARATION
     • BOLT INSTALLATION AND TORQUE
     • FINAL INSTALLED CONDITION
     • SURFACE COATING REPAIR
   – POST CONSTRUCTION PHOTOGRAPHS:
     • FINAL INFIELD CONDITION
   – ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF MODIFICATIONS.

2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

GPD GROUP.
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Akron, OH 44311
330.572.2100 Fax 330.572.2101
GeorgeP@Gpd.Gpd.com, Burns & Deitshaver, Inc.-2004

at&t

REV.	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

MODIFICATION INSPECTION CHECKLIST

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO. 2014723.13.16326.02

MI-01

Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

April 30, 2014

Honorable James M. Zeoli
1st Selectman, Town of Orange
Town Hall 617 Orange Center Rd.
Orange, CT 06477

Re: Existing Telecommunications Facility – 617 Orange Center Road, Orange

Dear Mr. Zeoli:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The enclosed Notice fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council's procedures, please contact the undersigned at 860-830-0380 or Ms. Melanie Bachman, Acting Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure

SAI Communications
27 Northwestern Drive
Salem, NH 03079
(503) 961-1313

Kevin Clements
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-3546
kclements@gpdgroup.com

GPD# 2014723.13.16326.02
March 4, 2014

STRUCTURAL ANALYSIS REPORT WITH MODIFICATION DESIGN

AT&T DESIGNATION:	**Site USID:**	**16326**
	Site FA:	**10071197**
	Client #:	**CT5101**
	Site Name:	**ORANGE TRANSFER STATION**
	AT&T Project:	**Mod LTE2C AIR 11/6/2013**
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F & 2003 IBC, 2005 CTBC & ASCE 7-05** **90-mph (fastest-mile) with 0" ice** **37-mph (fastest-mile) with 0.75" ice**
SITE DATA:		**617 South Orange Center Rd., Orange, CT 06477, New Haven County** **Latitude 41° 15' 19.98" N, Longitude 73° 0' 39.2" W** **Market: New England** **180' Rohn Monopole**

Mr. Edward Onessimo,

GPD is pleased to submit this Rigorous Structural Analysis Report with Modification Drawings to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	90.8%	Pass
Foundation Ratio with Proposed Equipment:	24.1%	Pass

Note: In order for this analysis results to be valid for the proposed, existing, and reserved loading in Appendix A the modifications referenced in the design by GPD (Project #: 2014723.13.16326.02, dated 3/4/2014) must be installed.

We at GPD appreciate the opportunity of providing our continuing professional services to you and SAI Communications. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,

STATE OF CONNECTICUT
JOHN N. KABAK
28336
LICENSED
PROFESSIONAL ENGINEER

John N. Kabak, P.E.
Connecticut #: 28336

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the modified structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to SAI Communications. This report was commissioned by Mr. Edward Onessimo of SAI Communications.

Modifications designed by GPD (Project #: 2014723.13.16326.02, dated 3/4/2014) have been considered in this analysis.

The proposed coax shall be installed internal to the pole in order for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	88.9%	Pass
Anchor Rods	90.8%	Pass
Base Plate	55.3%	Pass
Foundation	24.1%	Pass

ANALYSIS METHOD

tnxTower (Version 6.1.4.1), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Equipment Modification Form	AT&T Internal Loading Document, dated 12/10/2013	Siterra
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Geotechnical Report	WEI Project #: 2010-1056, dated 03/31/2010	Siterra
Previous Structural Analysis	GPD Project #: 2013723.13.16326.01, dated 1/6/2014	Siterra
Foundation Mapping	WEI Project #: 2010-1056, dated 03/31/2010	Siterra
Modification Drawings	GPD Project #: 2014723.13.16326.02, dated 3/4/2014	GPD

ASSUMPTIONS

This rigorous structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. All existing loading was obtained from the previous structural analysis by GPD (Project #: 2014723.13.16326.01, dated 1/6/2014), site photos, and the provided Equipment Summary Form and is assumed to be accurate.
12. The proposed coax shall be installed internal to the pole in order for the analysis results to be valid.
13. The proposed Tower Mounted Amplifiers are assumed to be installed behind the antennas for the purpose of this analysis.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD Group should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Rigorous Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	ORANGE TRANSFER STATION
Site Number	16326
FA Number	10071197
Date of Analysis	March 4, 2014
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	180'	
Tower Manufacturer	Rohn	
Tower Model	n/a	
Tower Design	n/a	
Foundation Design	n/a	
Geotech Report	WEI Project #: 2010-1056	03/31/2010
Modification Drawings	GPD Project #: 2013723.13.16326.02	3/4/2014
Previous Structural Analysis	GPD Project #: 2013723.13.16326.01	1/7/2014
Foundation Mapping	WEI Project #: 2010-1056	03/31/2010

Design Parameters

Design Code Used	TIA/EIA-222-F, 2003 IBC
	2005 CTBC & ASCE 7-05
Location of Tower (County, State)	New Haven, CT
Basic Wind Speed (mph)	90 (fastest-mile)
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	88.9%
Tower Base (%)	90.8%
Foundation (%)	24.1%
Foundation Adequate?	Yes

Modifications designed by GPD (Project #: 2014723.13.16326.02, dated 3/4/2014) have been considered in this analysis.

Steel Yield Strength (ksi)

Pole	65
Tower Base	60
Anchor Rods	75

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
AT&T Mobility	177	177	6	Panel	Powerwave	7770.00	20/150/270	1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
AT&T Mobility	177	177	3	Panel	KMW	AM-X-CD-14-65-00T-RET	20/150/270			on same mount	2	Power Cable	7/8"	Internal
AT&T Mobility	177	177	6	TMA	Powerwave	LGP21401				on same mount	1	Fiber Cable	3/8"	Internal
AT&T Mobility	177	177	6	RRU	Ericsson	RRUS 11				on same mount				
AT&T Mobility	177	177	1	Surge	Raycap	DC6-48-60-18-8F				on same mount				
Unknown	165	165	3	Panel	Unknown	5' Panel		3	Unknown	Pipe Mount	6	Unknown	1-5/8"	External
T-Mobile	148	148	6	Panel	RFS Celwave	APX16PV-16PVL		1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
T-Mobile	148	148	6	TMA	Powerwave	LGP21401				on same mount				
Nextel	137	137	12	Panel	Decibel	844G45VTZASX		1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
Sprint	125	127.4	6	Panel	RFS Celwave	APXVSPP18-C-A20	10/120/255	1	Unknown	12' LP Platform	6	Unknown	1-5/8"	Internal
Sprint	125	127.4	3	RRU	Alcatel Lucent	1900MHz RRH				on same mount	3	Unknown	1-1/4"	Internal
Sprint	125	127.4	3	RRU	Alcatel Lucent	800 MHZ RRH				on same mount				
Sprint	125	127.4	3	RRU	Alcatel Lucent	800 External Notch Filter				on same mount				
Clearwire	125	127	3	Panel	Argus	LLPX310R	50/150/260			on same mount	6	Unknown	5/16"	Internal
Clearwire	125	127	3	RRU	Samsung	FDD R6 RRH				on same mount	3	RET Cable	1/4"	Internal
Clearwire	125	127	2	Dish	Dragonwave	A-ANT-23G-2-C	50/150			on same mount	2	Unknown	1/2"	Internal
Clearwire	125	127	2	ODU	Dragonwave	Horizon DUO				on same mount	2	Conduit	2"	Internal
Verizon	115	117	3	Panel	Swedcom	SLCP 2X6015	40/120/280	1	Unknown	14' LP Platform	12	Unknown	1-5/8"	Internal
Verizon	115	117	3	Panel	Antel	BXA-70063/4CF	40/120/280			on same mount	6	Unknown	1-5/8"	External
Verizon	115	117	6	Panel	Antel	BXA-171063/12BF	40/120/280			on same mount	1	Fiber cable	1-5/8"	Internal
Verizon	115	115	3	RRU	Ericsson	RRH 2x40 AWS				on same mount				
Verizon	115	115	1	Box	RFS	DB-T1-6Z-8AB-0Z				on same mount				
Verizon	115	115	1	GPS	Unknown	GPS				on same mount				
Sprint	60	60	1	GPS	PCTEL	GPS-TMG-HR-26NCM		1	Unknown	Standoff	1	Unknown	1/2"	Internal

Note: (3) 7770.00 Antennas, (3) AM-X-CD-14-65-00T-RET Antennas, (6) LGP21401 TMA's, (6) RRUS 11 RRU's, (6) 1-5/8" coax and the existing platform at 177' shall be removed prior to the installation of the proposed loading and were not considered in this analysis.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
AT&T Mobility	177	177	9	Panel	Andrew	SBNHH-1D65A	20/120/230	1	Commscope	MTC3607R Platform w/ rails	4	Power Cable	7/8"	Internal
AT&T Mobility	177	177	3	TMA	CCI	DTMABP7819VG12A-BP				on the same mount				
AT&T Mobility	177	177	6	RRU	Ericsson	RRUS 11				on the same mount				
AT&T Mobility	177	177	6	RRU	Ericsson	RRUS 12				on the same mount				
AT&T Mobility	177	177	3	RRU	Ericsson	RRUS E2				on the same mount				
AT&T Mobility	177	177	3	RRU	Ericsson	RRUS 32				on the same mount				
AT&T Mobility	177	177	6	Module	Ericsson	KRC 161 286-1 (A-2 module)				on the same mount				
AT&T Mobility	177	177	2	Surge	Raycap	DC6-48-60-18-8F				on the same mount				

Note: The proposed loading shall be in addition to the remaining existing/reserved loading at the same elevation. The proposed coax shall be installed internal to the pole in order for the analysis results to be valid.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.

APPENDIX B

tnxTower Output File

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Basic wind speed of 90 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 37 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

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 klf
Safety Line 3/8	C	No	CaAa (Out Of Face)	180.00 - 8.00	1	No Ice	0.04	0.000
						1/2" Ice	0.14	0.001
						1" Ice	0.24	0.001
						2" Ice	0.44	0.002
						4" Ice	0.84	0.004
5/8" Step Bolts	C	No	CaAa (Out Of Face)	180.00 - 8.00	1	No Ice	0.04	0.001
						1/2" Ice	0.14	0.002
						1" Ice	0.24	0.003
						2" Ice	0.44	0.007
						4" Ice	0.84	0.023
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	177.00 - 8.00	6	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
7/8" DC Power Cable	C	No	Inside Pole	177.00 - 8.00	6	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
3/8" Fiber Cable	C	No	Inside Pole	177.00 - 8.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
						2" Ice	0.00	0.000
						4" Ice	0.00	0.000
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	104.00 - 8.00	6	No Ice	0.00	0.001
						1/2" Ice	0.00	0.002
						1" Ice	0.00	0.004
						2" Ice	0.00	0.011
						4" Ice	0.00	0.030
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	165.00 - 104.00	5	No Ice	0.00	0.001
						1/2" Ice	0.00	0.002
						1" Ice	0.00	0.004

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						2" Ice	0.00	0.011
						4" Ice	0.00	0.030
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	165.00 - 104.00	1	No Ice	0.20	0.001
						1/2" Ice	0.30	0.002
						1" Ice	0.40	0.004
						2" Ice	0.60	0.011
						4" Ice	1.00	0.030
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	148.00 - 8.00	12	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	137.00 - 8.00	12	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	125.00 - 8.00	6	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
1-1/4" Hybrid Cable	C	No	Inside Pole	125.00 - 8.00	3	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
2" Flex Conduit	C	No	Inside Pole	125.00 - 8.00	2	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
						2" Ice	0.00	0.000
						4" Ice	0.00	0.000
9207 (5/16")	C	No	Inside Pole	125.00 - 8.00	6	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
						2" Ice	0.00	0.000
						4" Ice	0.00	0.000
RET Cable	C	No	Inside Pole	125.00 - 8.00	3	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
						2" Ice	0.00	0.000
						4" Ice	0.00	0.000
LDF4-50A (1/2 FOAM)	C	No	Inside Pole	125.00 - 8.00	2	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
						2" Ice	0.00	0.000
						4" Ice	0.00	0.000
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	115.00 - 8.00	12	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	115.00 - 104.00	1	No Ice	0.20	0.001
						1/2" Ice	0.30	0.002
						1" Ice	0.40	0.004
						2" Ice	0.60	0.011
						4" Ice	1.00	0.030
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	115.00 - 104.00	5	No Ice	0.00	0.001
						1/2" Ice	0.00	0.002
						1" Ice	0.00	0.004
						2" Ice	0.00	0.011

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						4" Ice	0.00	0.030
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	104.00 - 8.00	6	No Ice	0.00	0.001
						1/2" Ice	0.00	0.002
						1" Ice	0.00	0.004
						2" Ice	0.00	0.011
						4" Ice	0.00	0.030
1-5/8" Fiber Cable	C	No	Inside Pole	115.00 - 8.00	1	No Ice	0.00	0.001
						1/2" Ice	0.00	0.001
						1" Ice	0.00	0.001
						2" Ice	0.00	0.001
						4" Ice	0.00	0.001
LDF4P-50A (1/2 FOAM)	C	No	Inside Pole	60.00 - 8.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
						2" Ice	0.00	0.000
						4" Ice	0.00	0.000

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
MTC3607R Platform w/Rails	C	None		0.000	177.00	No Ice	30.10	30.10	1.589
						1/2" Ice	40.80	40.80	2.029
						1" Ice	51.50	51.50	2.470
						2" Ice	72.90	72.90	3.351
						4" Ice	115.70	115.70	5.114
7770.00 w/Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	20.000	177.00	No Ice	5.88	4.10	0.062
						1/2" Ice	6.31	4.73	0.109
						1" Ice	6.75	5.37	0.162
						2" Ice	7.66	6.70	0.290
						4" Ice	9.58	9.87	0.654
7770.00 w/Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	177.00	No Ice	5.88	4.10	0.062
						1/2" Ice	6.31	4.73	0.109
						1" Ice	6.75	5.37	0.162
						2" Ice	7.66	6.70	0.290
						4" Ice	9.58	9.87	0.654
7770.00 w/Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	-10.000	177.00	No Ice	5.88	4.10	0.062
						1/2" Ice	6.31	4.73	0.109
						1" Ice	6.75	5.37	0.162
						2" Ice	7.66	6.70	0.290
						4" Ice	9.58	9.87	0.654
(3) SBNHH-1D65A w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	-10.000	177.00	No Ice	6.57	5.19	0.061
						1/2" Ice	7.09	5.96	0.115
						1" Ice	7.59	6.70	0.175
						2" Ice	8.64	8.28	0.319
						4" Ice	10.86	11.64	0.726
(3) SBNHH-1D65A w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	-10.000	177.00	No Ice	6.57	5.19	0.061
						1/2" Ice	7.09	5.96	0.115
						1" Ice	7.59	6.70	0.175
						2" Ice	8.64	8.28	0.319
						4" Ice	10.86	11.64	0.726
(3) SBNHH-1D65A w/ Mount Pipe	C	From Centroid-Le	4.00 0.000	-10.000	177.00	No Ice	6.57	5.19	0.061
						1/2" Ice	7.09	5.96	0.115

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
		g	0.000			1" Ice	7.59	6.70	0.175
						2" Ice	8.64	8.28	0.319
						4" Ice	10.86	11.64	0.726
DTMABP7819VG12A	A	From Centroid-Leg	4.00 0.000 0.000	0.000	177.00	No Ice	0.00	0.44	0.019
						1/2" Ice	0.00	0.56	0.026
						1" Ice	0.00	0.69	0.035
						2" Ice	0.00	0.97	0.059
						4" Ice	0.00	1.63	0.139
DTMABP7819VG12A	B	From Centroid-Leg	4.00 0.000 0.000	0.000	177.00	No Ice	0.00	0.44	0.019
						1/2" Ice	0.00	0.56	0.026
						1" Ice	0.00	0.69	0.035
						2" Ice	0.00	0.97	0.059
						4" Ice	0.00	1.63	0.139
DTMABP7819VG12A	C	From Centroid-Leg	4.00 0.000 0.000	0.000	177.00	No Ice	0.00	0.44	0.019
						1/2" Ice	0.00	0.56	0.026
						1" Ice	0.00	0.69	0.035
						2" Ice	0.00	0.97	0.059
						4" Ice	0.00	1.63	0.139
(2) RRUS 11	A	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.25	1.37	0.051
						1/2" Ice	3.49	1.55	0.071
						1" Ice	3.74	1.74	0.095
						2" Ice	4.27	2.14	0.153
						4" Ice	5.43	3.04	0.313
(2) RRUS 11	B	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.25	1.37	0.051
						1/2" Ice	3.49	1.55	0.071
						1" Ice	3.74	1.74	0.095
						2" Ice	4.27	2.14	0.153
						4" Ice	5.43	3.04	0.313
(2) RRUS 11	C	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.25	1.37	0.051
						1/2" Ice	3.49	1.55	0.071
						1" Ice	3.74	1.74	0.095
						2" Ice	4.27	2.14	0.153
						4" Ice	5.43	3.04	0.313
(2) RRUS 12	A	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.67	1.49	0.058
						1/2" Ice	3.93	1.67	0.081
						1" Ice	4.19	1.87	0.108
						2" Ice	4.75	2.28	0.171
						4" Ice	5.96	3.21	0.344
(2) RRUS 12	B	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.67	1.49	0.058
						1/2" Ice	3.93	1.67	0.081
						1" Ice	4.19	1.87	0.108
						2" Ice	4.75	2.28	0.171
						4" Ice	5.96	3.21	0.344
(2) RRUS 12	C	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.67	1.49	0.058
						1/2" Ice	3.93	1.67	0.081
						1" Ice	4.19	1.87	0.108
						2" Ice	4.75	2.28	0.171
						4" Ice	5.96	3.21	0.344
RRUS E2	A	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.67	1.49	0.058
						1/2" Ice	3.93	1.67	0.081
						1" Ice	4.19	1.87	0.108
						2" Ice	4.75	2.28	0.171
						4" Ice	5.96	3.21	0.344
RRUS E2	B	From Leg	1.00 0.000 0.000	0.000	177.00	No Ice	3.67	1.49	0.058
						1/2" Ice	3.93	1.67	0.081
						1" Ice	4.19	1.87	0.108
						2" Ice	4.75	2.28	0.171

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
						4" Ice	5.96	3.21	0.344
RRUS E2	C	From Leg	1.00	0.000	177.00	No Ice	3.67	1.49	0.058
			0.000			1/2" Ice	3.93	1.67	0.081
			0.000			1" Ice	4.19	1.87	0.108
						2" Ice	4.75	2.28	0.171
						4" Ice	5.96	3.21	0.344
RRUS 32	A	From Leg	1.00	0.000	177.00	No Ice	3.87	2.76	0.077
			0.000			1/2" Ice	4.15	3.02	0.105
			0.000			1" Ice	4.44	3.29	0.136
						2" Ice	5.06	3.85	0.211
						4" Ice	6.38	5.08	0.412
RRUS 32	B	From Leg	1.00	0.000	177.00	No Ice	3.87	2.76	0.077
			0.000			1/2" Ice	4.15	3.02	0.105
			0.000			1" Ice	4.44	3.29	0.136
						2" Ice	5.06	3.85	0.211
						4" Ice	6.38	5.08	0.412
RRUS 32	C	From Leg	1.00	0.000	177.00	No Ice	3.87	2.76	0.077
			0.000			1/2" Ice	4.15	3.02	0.105
			0.000			1" Ice	4.44	3.29	0.136
						2" Ice	5.06	3.85	0.211
						4" Ice	6.38	5.08	0.412
(2) KRC 161 286-1 (A-2 module)	A	From Leg	1.00	0.000	177.00	No Ice	1.87	0.43	0.021
			0.000			1/2" Ice	2.05	0.54	0.031
			0.000			1" Ice	2.24	0.66	0.044
						2" Ice	2.66	0.92	0.077
						4" Ice	3.58	1.55	0.177
(2) KRC 161 286-1 (A-2 module)	B	From Leg	1.00	0.000	177.00	No Ice	1.87	0.43	0.021
			0.000			1/2" Ice	2.05	0.54	0.031
			0.000			1" Ice	2.24	0.66	0.044
						2" Ice	2.66	0.92	0.077
						4" Ice	3.58	1.55	0.177
(2) KRC 161 286-1 (A-2 module)	C	From Leg	1.00	0.000	177.00	No Ice	1.87	0.43	0.021
			0.000			1/2" Ice	2.05	0.54	0.031
			0.000			1" Ice	2.24	0.66	0.044
						2" Ice	2.66	0.92	0.077
						4" Ice	3.58	1.55	0.177
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	1.00	0.000	177.00	No Ice	1.47	1.47	0.019
			0.000			1/2" Ice	1.67	1.67	0.037
			0.000			1" Ice	1.88	1.88	0.057
						2" Ice	2.33	2.33	0.105
						4" Ice	3.38	3.38	0.239
DC6-48-60-18-8F Surge Suppression Unit	B	From Leg	1.00	0.000	177.00	No Ice	1.47	1.47	0.019
			0.000			1/2" Ice	1.67	1.67	0.037
			0.000			1" Ice	1.88	1.88	0.057
						2" Ice	2.33	2.33	0.105
						4" Ice	3.38	3.38	0.239
DC6-48-60-18-8F Surge Suppression Unit	C	From Leg	1.00	0.000	177.00	No Ice	1.47	1.47	0.019
			0.000			1/2" Ice	1.67	1.67	0.037
			0.000			1" Ice	1.88	1.88	0.057
						2" Ice	2.33	2.33	0.105
						4" Ice	3.38	3.38	0.239
Collar Mount (GPD)	C	From Leg	0.50	0.000	177.00	No Ice	2.14	2.14	0.190
			0.000			1/2" Ice	2.35	2.35	0.247
			0.000			1" Ice	2.57	2.57	0.304
						2" Ice	2.99	2.99	0.419
						4" Ice	3.83	3.83	0.647
5 s.f. Panel Antenna w/Mount	A	From Leg	1.00	0.000	165.00	No Ice	5.24	4.20	0.062

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
Pipe			0.000			1/2" Ice	5.77	5.07	0.106
			0.000			1" Ice	6.29	5.81	0.156
						2" Ice	7.36	7.35	0.280
						4" Ice	9.62	10.63	0.650
5 s.f. Panel Antenna w/Mount Pipe	B	From Leg	1.00	0.000	165.00	No Ice	5.24	4.20	0.062
			0.000			1/2" Ice	5.77	5.07	0.106
			0.000			1" Ice	6.29	5.81	0.156
						2" Ice	7.36	7.35	0.280
						4" Ice	9.62	10.63	0.650
5 s.f. Panel Antenna w/Mount Pipe	C	From Leg	1.00	0.000	165.00	No Ice	5.24	4.20	0.062
			0.000			1/2" Ice	5.77	5.07	0.106
			0.000			1" Ice	6.29	5.81	0.156
						2" Ice	7.36	7.35	0.280
						4" Ice	9.62	10.63	0.650
MTS 12.5' LP Platform	C	None		0.000	148.00	No Ice	14.66	14.66	1.250
						1/2" Ice	18.87	18.87	1.481
						1" Ice	23.08	23.08	1.713
						2" Ice	31.50	31.50	2.175
						4" Ice	48.34	48.34	3.101
(2) APX16PV-16PVL w/ Mount Pipe	A	From Centroid-Leg	4.00	0.000	148.00	No Ice	6.79	3.05	0.062
			0.000			1/2" Ice	7.23	3.65	0.106
			0.000			1" Ice	7.68	4.27	0.156
						2" Ice	8.60	5.55	0.276
						4" Ice	10.54	8.43	0.627
(2) APX16PV-16PVL w/ Mount Pipe	B	From Centroid-Leg	4.00	0.000	148.00	No Ice	6.79	3.05	0.062
			0.000			1/2" Ice	7.23	3.65	0.106
			0.000			1" Ice	7.68	4.27	0.156
						2" Ice	8.60	5.55	0.276
						4" Ice	10.54	8.43	0.627
(2) APX16PV-16PVL w/ Mount Pipe	C	From Centroid-Leg	4.00	0.000	148.00	No Ice	6.79	3.05	0.062
			0.000			1/2" Ice	7.23	3.65	0.106
			0.000			1" Ice	7.68	4.27	0.156
						2" Ice	8.60	5.55	0.276
						4" Ice	10.54	8.43	0.627
(2) LGP21401	A	From Centroid-Leg	4.00	0.000	148.00	No Ice	0.00	0.23	0.014
			0.000			1/2" Ice	0.00	0.31	0.021
			0.000			1" Ice	0.00	0.40	0.030
						2" Ice	0.00	0.61	0.055
						4" Ice	0.00	1.12	0.135
(2) LGP21401	B	From Centroid-Leg	4.00	0.000	148.00	No Ice	0.00	0.23	0.014
			0.000			1/2" Ice	0.00	0.31	0.021
			0.000			1" Ice	0.00	0.40	0.030
						2" Ice	0.00	0.61	0.055
						4" Ice	0.00	1.12	0.135
(2) LGP21401	C	From Centroid-Leg	4.00	0.000	148.00	No Ice	0.00	0.23	0.014
			0.000			1/2" Ice	0.00	0.31	0.021
			0.000			1" Ice	0.00	0.40	0.030
						2" Ice	0.00	0.61	0.055
						4" Ice	0.00	1.12	0.135
Pipe Mount 5'x2.375"	A	From Centroid-Leg	4.00	0.000	148.00	No Ice	1.19	1.19	0.022
			0.000			1/2" Ice	1.50	1.50	0.031
			0.000			1" Ice	1.81	1.81	0.044
						2" Ice	2.46	2.46	0.080
						4" Ice	3.92	3.92	0.200
Pipe Mount 5'x2.375"	B	From Centroid-Leg	4.00	0.000	148.00	No Ice	1.19	1.19	0.022
			0.000			1/2" Ice	1.50	1.50	0.031
			0.000			1" Ice	1.81	1.81	0.044

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" Ice	2.46	2.46	0.080
						4" Ice	3.92	3.92	0.200
Pipe Mount 5'x2.375"	C	From Centroid-Leg	4.00 0.000 0.000	0.000	148.00	No Ice	1.19	1.19	0.022
						1/2" Ice	1.50	1.50	0.031
						1" Ice	1.81	1.81	0.044
						2" Ice	2.46	2.46	0.080
						4" Ice	3.92	3.92	0.200
MTS 12.5' LP Platform	C	None		0.000	137.00	No Ice	14.66	14.66	1.250
						1/2" Ice	18.87	18.87	1.481
						1" Ice	23.08	23.08	1.713
						2" Ice	31.50	31.50	2.175
						4" Ice	48.34	48.34	3.101
(4) 844G45VTZASX w/Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	137.00	No Ice	7.71	5.63	0.041
						1/2" Ice	8.44	6.73	0.102
						1" Ice	9.04	7.54	0.170
						2" Ice	10.29	9.21	0.331
						4" Ice	12.93	12.75	0.780
(4) 844G45VTZASX w/Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	137.00	No Ice	7.71	5.63	0.041
						1/2" Ice	8.44	6.73	0.102
						1" Ice	9.04	7.54	0.170
						2" Ice	10.29	9.21	0.331
						4" Ice	12.93	12.75	0.780
(4) 844G45VTZASX w/Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	137.00	No Ice	7.71	5.63	0.041
						1/2" Ice	8.44	6.73	0.102
						1" Ice	9.04	7.54	0.170
						2" Ice	10.29	9.21	0.331
						4" Ice	12.93	12.75	0.780
Valmont 12' Hatched LP Platform	C	None		0.000	125.00	No Ice	24.53	24.53	1.335
						1/2" Ice	29.94	29.94	1.646
						1" Ice	35.35	35.35	1.957
						2" Ice	46.17	46.17	2.579
						4" Ice	67.81	67.81	3.823
(2) APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 2.400	10.000	125.00	No Ice	8.26	6.71	0.079
						1/2" Ice	8.81	7.66	0.144
						1" Ice	9.36	8.49	0.217
						2" Ice	10.50	10.20	0.390
						4" Ice	12.88	13.98	0.873
(2) APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	8.26	6.71	0.079
						1/2" Ice	8.81	7.66	0.144
						1" Ice	9.36	8.49	0.217
						2" Ice	10.50	10.20	0.390
						4" Ice	12.88	13.98	0.873
(2) APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 2.400	15.000	125.00	No Ice	8.26	6.71	0.079
						1/2" Ice	8.81	7.66	0.144
						1" Ice	9.36	8.49	0.217
						2" Ice	10.50	10.20	0.390
						4" Ice	12.88	13.98	0.873
1900MHz RRH	A	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	2.91	3.80	0.044
						1/2" Ice	3.14	4.06	0.075
						1" Ice	3.39	4.34	0.110
						2" Ice	3.91	4.91	0.192
						4" Ice	5.05	6.15	0.407
1900MHz RRH	B	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	2.91	3.80	0.044
						1/2" Ice	3.14	4.06	0.075
						1" Ice	3.39	4.34	0.110
						2" Ice	3.91	4.91	0.192
						4" Ice	5.05	6.15	0.407

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
1900MHz RRH	C	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	2.91	3.80	0.044
						1/2" Ice	3.14	4.06	0.075
						1" Ice	3.39	4.34	0.110
						2" Ice	3.91	4.91	0.192
						4" Ice	5.05	6.15	0.407
800 MHZ RRH	A	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	2.49	2.07	0.053
						1/2" Ice	2.71	2.27	0.074
						1" Ice	2.93	2.48	0.098
						2" Ice	3.41	2.93	0.157
						4" Ice	4.46	3.93	0.318
800 MHZ RRH	B	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	2.49	2.07	0.053
						1/2" Ice	2.71	2.27	0.074
						1" Ice	2.93	2.48	0.098
						2" Ice	3.41	2.93	0.157
						4" Ice	4.46	3.93	0.318
800 MHZ RRH	C	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	2.49	2.07	0.053
						1/2" Ice	2.71	2.27	0.074
						1" Ice	2.93	2.48	0.098
						2" Ice	3.41	2.93	0.157
						4" Ice	4.46	3.93	0.318
800 External Notch Filter	A	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	0.77	0.37	0.011
						1/2" Ice	0.89	0.46	0.017
						1" Ice	1.02	0.56	0.024
						2" Ice	1.30	0.79	0.045
						4" Ice	1.97	1.34	0.114
800 External Notch Filter	B	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	0.77	0.37	0.011
						1/2" Ice	0.89	0.46	0.017
						1" Ice	1.02	0.56	0.024
						2" Ice	1.30	0.79	0.045
						4" Ice	1.97	1.34	0.114
800 External Notch Filter	C	From Centroid-Leg	4.00 0.000 2.400	0.000	125.00	No Ice	0.77	0.37	0.011
						1/2" Ice	0.89	0.46	0.017
						1" Ice	1.02	0.56	0.024
						2" Ice	1.30	0.79	0.045
						4" Ice	1.97	1.34	0.114
LLPX310R w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 2.000	50.000	125.00	No Ice	5.40	3.59	0.069
						1/2" Ice	5.86	4.19	0.115
						1" Ice	6.34	4.80	0.168
						2" Ice	7.33	6.13	0.290
						4" Ice	9.48	9.15	0.637
LLPX310R w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 2.000	30.000	125.00	No Ice	5.40	3.59	0.069
						1/2" Ice	5.86	4.19	0.115
						1" Ice	6.34	4.80	0.168
						2" Ice	7.33	6.13	0.290
						4" Ice	9.48	9.15	0.637
LLPX310R w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 2.000	20.000	125.00	No Ice	5.40	3.59	0.069
						1/2" Ice	5.86	4.19	0.115
						1" Ice	6.34	4.80	0.168
						2" Ice	7.33	6.13	0.290
						4" Ice	9.48	9.15	0.637
FDD R6 RRH	A	From Centroid-Leg	4.00 0.000 2.000	50.000	125.00	No Ice	1.80	0.78	0.033
						1/2" Ice	1.99	0.92	0.045
						1" Ice	2.18	1.07	0.058
						2" Ice	2.59	1.39	0.094
						4" Ice	3.51	2.14	0.201
FDD R6 RRH	B	From Centroid-Le	4.00 0.000	30.000	125.00	No Ice	1.80	0.78	0.033
						1/2" Ice	1.99	0.92	0.045

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
		g	2.000			1" Ice	2.18	1.07	0.058
						2" Ice	2.59	1.39	0.094
						4" Ice	3.51	2.14	0.201
FDD R6 RRH	C	From Centroid-Le	4.00 0.000	20.000	125.00	No Ice 1/2" Ice	1.80 1.99	0.78 0.92	0.033 0.045
		g	2.000			1" Ice	2.18	1.07	0.058
						2" Ice	2.59	1.39	0.094
						4" Ice	3.51	2.14	0.201
Horizon DUO	A	From Centroid-Le	4.00 0.000	50.000	125.00	No Ice 1/2" Ice	0.55 0.65	0.34 0.43	0.007 0.012
		g	2.000			1" Ice	0.76	0.52	0.018
						2" Ice	1.00	0.73	0.036
						4" Ice	1.60	1.25	0.097
Horizon DUO	B	From Centroid-Le	4.00 0.000	30.000	125.00	No Ice 1/2" Ice	0.55 0.65	0.34 0.43	0.007 0.012
		g	2.000			1" Ice	0.76	0.52	0.018
						2" Ice	1.00	0.73	0.036
						4" Ice	1.60	1.25	0.097
Summit 14' LP Platform	C	None		0.000	115.00	No Ice	23.10	23.10	2.100
						1/2" Ice	26.80	26.80	2.500
						1" Ice	30.50	30.50	2.900
						2" Ice	55.00	55.00	3.300
						4" Ice	75.00	75.00	5.100
SLCP 2X6015 w/ mount pipe	A	From Centroid-Le	4.00 0.000	40.000	115.00	No Ice 1/2" Ice	10.66 11.33	9.94 11.26	0.056 0.146
		g	2.000			1" Ice	11.98	12.31	0.244
						2" Ice	13.31	14.40	0.471
						4" Ice	16.08	18.80	1.078
SLCP 2X6015 w/ mount pipe	B	From Centroid-Le	4.00 0.000	0.000	115.00	No Ice 1/2" Ice	10.66 11.33	9.94 11.26	0.056 0.146
		g	2.000			1" Ice	11.98	12.31	0.244
						2" Ice	13.31	14.40	0.471
						4" Ice	16.08	18.80	1.078
SLCP 2X6015 w/ mount pipe	C	From Centroid-Le	4.00 0.000	40.000	115.00	No Ice 1/2" Ice	10.66 11.33	9.94 11.26	0.056 0.146
		g	2.000			1" Ice	11.98	12.31	0.244
						2" Ice	13.31	14.40	0.471
						4" Ice	16.08	18.80	1.078
BXA-70063/4CF w/ Mount Pipe	A	From Centroid-Le	4.00 0.000	40.000	115.00	No Ice 1/2" Ice	5.65 6.20	3.87 4.67	0.032 0.076
		g	2.000			1" Ice	6.72	5.34	0.127
						2" Ice	7.80	6.79	0.250
						4" Ice	10.08	10.00	0.611
BXA-70063/4CF w/ Mount Pipe	B	From Centroid-Le	4.00 0.000	0.000	115.00	No Ice 1/2" Ice	5.65 6.20	3.87 4.67	0.032 0.076
		g	2.000			1" Ice	6.72	5.34	0.127
						2" Ice	7.80	6.79	0.250
						4" Ice	10.08	10.00	0.611
BXA-70063/4CF w/ Mount Pipe	C	From Centroid-Le	4.00 0.000	40.000	115.00	No Ice 1/2" Ice	5.65 6.20	3.87 4.67	0.032 0.076
		g	2.000			1" Ice	6.72	5.34	0.127
						2" Ice	7.80	6.79	0.250
						4" Ice	10.08	10.00	0.611
(2) BXA-171063/12BF w/ 6' mount pipe	A	From Centroid-Le	4.00 0.000	40.000	115.00	No Ice 1/2" Ice	4.74 5.19	5.00 5.93	0.037 0.080
		g	2.000			1" Ice	5.64	6.74	0.130
						2" Ice	6.57	8.42	0.256

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
						4" Ice	8.58	11.96	0.636
(2) BXA-171063/12BF w/ 6' mount pipe	B	From Centroid-Leg	4.00 0.000 2.000	0.000	115.00	No Ice	4.74	5.00	0.037
						1/2" Ice	5.19	5.93	0.080
						1" Ice	5.64	6.74	0.130
						2" Ice	6.57	8.42	0.256
						4" Ice	8.58	11.96	0.636
(2) BXA-171063/12BF w/ 6' mount pipe	C	From Centroid-Leg	4.00 0.000 2.000	40.000	115.00	No Ice	4.74	5.00	0.037
						1/2" Ice	5.19	5.93	0.080
						1" Ice	5.64	6.74	0.130
						2" Ice	6.57	8.42	0.256
						4" Ice	8.58	11.96	0.636
RRH 2x40 AWS	A	From Centroid-Leg	4.00 0.000 0.000	40.000	115.00	No Ice	3.76	2.23	0.048
						1/2" Ice	4.03	2.46	0.074
						1" Ice	4.30	2.69	0.103
						2" Ice	4.88	3.19	0.173
						4" Ice	6.14	4.28	0.363
RRH 2x40 AWS	B	From Centroid-Leg	4.00 0.000 0.000	40.000	115.00	No Ice	3.76	2.23	0.048
						1/2" Ice	4.03	2.46	0.074
						1" Ice	4.30	2.69	0.103
						2" Ice	4.88	3.19	0.173
						4" Ice	6.14	4.28	0.363
RRH 2x40 AWS	C	From Centroid-Leg	4.00 0.000 0.000	40.000	115.00	No Ice	3.76	2.23	0.048
						1/2" Ice	4.03	2.46	0.074
						1" Ice	4.30	2.69	0.103
						2" Ice	4.88	3.19	0.173
						4" Ice	6.14	4.28	0.363
DB-T1-6Z-8AB-0Z	C	From Centroid-Leg	4.00 0.000 0.000	40.000	115.00	No Ice	5.60	2.33	0.044
						1/2" Ice	5.92	2.56	0.080
						1" Ice	6.24	2.79	0.120
						2" Ice	6.91	3.28	0.213
						4" Ice	8.37	4.37	0.455
GPS	C	From Centroid-Leg	4.00 0.000 0.000	0.000	115.00	No Ice	0.17	0.17	0.001
						1/2" Ice	0.24	0.24	0.004
						1" Ice	0.32	0.32	0.008
						2" Ice	0.51	0.51	0.020
						4" Ice	1.02	1.02	0.062
GPS-TMG-HR-26NCM	C	From Face	2.00 0.000 0.000	0.000	60.00	No Ice	0.16	0.16	0.001
						1/2" Ice	0.21	0.21	0.002
						1" Ice	0.28	0.28	0.005
						2" Ice	0.44	0.44	0.014
						4" Ice	0.86	0.86	0.052
2' Standoff - Flat (GPD)	C	From Face	1.00 0.000 0.000	0.000	60.00	No Ice	1.96	4.21	0.053
						1/2" Ice	3.08	5.88	0.076
						1" Ice	4.20	7.55	0.099
						2" Ice	6.44	10.89	0.144
						4" Ice	10.92	17.57	0.234

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-23G-2-C	A	Paraboloid w/o Radome	From Centroid -Leg	4.00 0.000 2.000	50.000		125.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.012 0.021 0.029 0.045 0.078
A-ANT-23G-2-C	B	Paraboloid w/o Radome	From Centroid -Leg	4.00 0.000 2.000	30.000		125.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.012 0.021 0.029 0.045 0.078

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.00	MTC3607R Platform w/Rails	36	26.5741	1.474	0.002	21150
165.00	5 s.f. Panel Antenna w/Mount Pipe	36	22.9178	1.442	0.001	10877
148.00	MTS 12.5' LP Platform	36	18.0261	1.311	0.001	6571
137.00	MTS 12.5' LP Platform	36	15.1286	1.188	0.001	5230
127.00	A-ANT-23G-2-C	36	12.7331	1.059	0.001	4627
125.00	Valmont 12' Hatched LP Platform	36	12.2846	1.032	0.001	4595
115.00	Summit 14' LP Platform	36	10.1998	0.898	0.001	4443
60.00	GPS-TMG-HR-26NCM	36	2.7114	0.428	0.000	6698

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	180 - 170.58	Pole	TP26.25x24x0.1875	1	-3.349	781.069	7.8	Pass
L2	170.58 - 126	Pole	TP36.525x25.0581x0.25	2	-10.979	1449.597	63.5	Pass
L3	126 - 102.5	Pole	TP41.6389x34.8903x0.3125	3	-21.430	2130.974	88.4	Pass
L4	102.5 - 82.75	Pole	TP46.357x41.6389x0.6368	4	*	*	74.1*	Pass
L5	82.75 - 79.25	Pole	TP46.568x44.2987x0.6885	5	*	*	75.4*	Pass
L6	79.25 - 56.25	Pole	TP52.0623x46.568x0.6912	6	*	*	82.3*	Pass
L7	56.25 - 40.75	Pole	TP55.765x52.0623x0.7172	7	*	*	81.3*	Pass
L8	40.75 - 28.5	Pole	TP57.9415x53.2831x0.7554	8	*	*	82.5*	Pass
L9	28.5 - 0	Pole	TP64.75x57.9415x0.7176	9	*	*	88.9*	Pass

Summary	ELC:	Existing + Proposed + Future
Pole (L9)	88.9*	Pass
Rating =	88.9*	Pass

*See Appendix C for reinforced monopole capacities.

APPENDIX C

Reinforced Monopole Calculations

Reinforced Monopole Calculations
16326 (CT5101) ORANGE TRANSFER STATION
2014723.13.16326.02

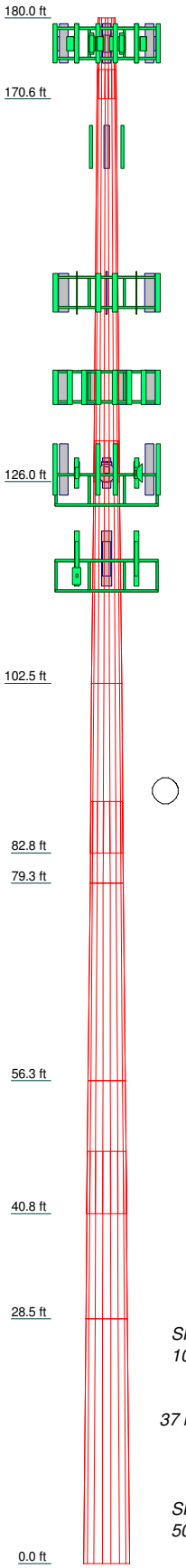
Code =	TIA/EIA-222-F
AISF=	1.333
Max Capacity=	1.05
# of Sides =	18

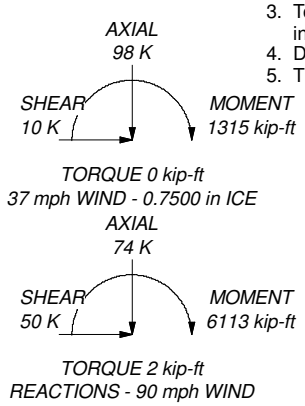
Geometry									Reactions				Capacities		
Shape	Quantity	Section	Elevation (ft)	Pole Flat-Flat (In)	Wall t (in)	Fy (ksi)	K	Conn.Spacing (in)	Moment (k-ft)	Axial (k)	Shear (k)	Torsion (k-ft)	Pole	Reinforcment	Pass/Fail
Plate 7 x 1.5	4	L4	82.75	46.36	0.3125	65	0.8	18	2503.68	31.83	39.91	0.98	51.4%	74.1%	74.1%
Plate 7 x 1.5	4	L5	79.25	46.57	0.375	65	0.8	18	2118.59	41.74	41.14	0.97	52.3%	75.4%	75.4%
Plate 8 x 1.5	4	L6	56.25	52.06	0.375	65	0.8	18	3479.78	45.63	43.92	0.39	57.8%	82.3%	82.3%
Plate 9 x 1.5	4	L7	40.75	55.77	0.375	65	0.8	18	3845.50	58.55	44.78	0.38	57.2%	81.3%	81.3%
Plate 9 x 1.5	4	L8	28.5	57.94	0.4375	65	0.8	18	4739.94	58.55	46.86	0.37	58.2%	82.5%	82.5%
Plate 9 x 1.5	4	L9	0	64.75	0.4375	65	0.8	18	6112.76	73.49	49.54	0.36	62.9%	88.9%	88.9%

APPENDIX D

Tower Elevation Drawing

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	9.42	18	0.1875	3.42	24.0000	26.2500	A572-65	0.5
2	48.00	18	0.2500	4.75	25.0581	36.5250	A572-65	4.0
3	28.25	18	0.3125	7.25	34.8903	41.6389	A572-65	3.6
4	19.75	18	0.6368	6.00	41.6389	46.3570	43.437044ksi	5.7
5	9.50	18	0.6885	7.25	44.2987	46.5680	43.479409ksi	3.1
6	23.00	18	0.6912	7.25	46.5680	52.0623	43.94073ksi	8.1
7	15.50	18	0.7172	7.25	52.0623	55.7650	43.987416ksi	6.2
8	19.50	18	0.7554	7.25	53.2831	57.9415	44.063616ksi	8.5
9	28.50	18	0.7176	7.25	57.9415	64.7500	44.186183ksi	13.2
								52.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
MTC3607R Platform w/Rails	177	MTS 12.5' LP Platform	137
7770.00 w/Mount Pipe	177	(4) 844G45VTZASX w/Mount Pipe	137
7770.00 w/Mount Pipe	177	(4) 844G45VTZASX w/Mount Pipe	137
7770.00 w/Mount Pipe	177	(4) 844G45VTZASX w/Mount Pipe	137
(3) SBNHH-1D65A w/ Mount Pipe	177	Valmont 12' Hatched LP Platform	125
(3) SBNHH-1D65A w/ Mount Pipe	177	(2) APXVSPP18-C-A20 w/ Mount Pipe	125
(3) SBNHH-1D65A w/ Mount Pipe	177	(2) APXVSPP18-C-A20 w/ Mount Pipe	125
DTMABP7819VG12A	177	(2) APXVSPP18-C-A20 w/ Mount Pipe	125
DTMABP7819VG12A	177	1900MHz RRH	125
DTMABP7819VG12A	177	1900MHz RRH	125
(2) RRUS 11	177	1900MHz RRH	125
(2) RRUS 11	177	800 MHZ RRH	125
(2) RRUS 11	177	800 MHZ RRH	125
(2) RRUS 12	177	800 MHZ RRH	125
(2) RRUS 12	177	800 External Notch Filter	125
(2) RRUS 12	177	800 External Notch Filter	125
RRUS E2	177	800 External Notch Filter	125
RRUS E2	177	LLPX310R w/ Mount Pipe	125
RRUS E2	177	LLPX310R w/ Mount Pipe	125
RRUS 32	177	LLPX310R w/ Mount Pipe	125
RRUS 32	177	FDD R6 RRH	125
RRUS 32	177	FDD R6 RRH	125
(2) KRC 161 286-1 (A-2 module)	177	FDD R6 RRH	125
(2) KRC 161 286-1 (A-2 module)	177	Horizon DUO	125
(2) KRC 161 286-1 (A-2 module)	177	Horizon DUO	125
DC6-48-60-18-8F Surge Suppression Unit	177	A-ANT-23G-2-C	125
		A-ANT-23G-2-C	125
DC6-48-60-18-8F Surge Suppression Unit	177	SLCP 2X6015 w/ mount pipe	115
		SLCP 2X6015 w/ mount pipe	115
DC6-48-60-18-8F Surge Suppression Unit	177	BXA-70063/4CF w/ Mount Pipe	115
		BXA-70063/4CF w/ Mount Pipe	115
Collar Mount (GPD)	177	BXA-70063/4CF w/ Mount Pipe	115
5 s.f. Panel Antenna w/Mount Pipe	165	(2) BXA-171063/12BF w/ 6' mount pipe	115
5 s.f. Panel Antenna w/Mount Pipe	165	(2) BXA-171063/12BF w/ 6' mount pipe	115
5 s.f. Panel Antenna w/Mount Pipe	165	(2) BXA-171063/12BF w/ 6' mount pipe	115
MTS 12.5' LP Platform	148	RRH 2x40 AWS	115
(2) APX16PV-16PVL w/ Mount Pipe	148	RRH 2x40 AWS	115
(2) APX16PV-16PVL w/ Mount Pipe	148	RRH 2x40 AWS	115
(2) APX16PV-16PVL w/ Mount Pipe	148	DB-T1-6Z-8AB-0Z	115
(2) LGP21401	148	GPS	115
(2) LGP21401	148	Summit 14' LP Platform	115
(2) LGP21401	148	SLCP 2X6015 w/ mount pipe	115
Pipe Mount 5'x2.375"	148	GPS-TMG-HR-26NCM	60
Pipe Mount 5'x2.375"	148	2' Standoff - Flat (GPD)	60
Pipe Mount 5'x2.375"	148		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	43.987416ksi	44 ksi	59 ksi
43.437044ksi	43 ksi	58 ksi	44.063616ksi	44 ksi	59 ksi
43.479409ksi	43 ksi	58 ksi	44.186183ksi	44 ksi	59 ksi
43.94073ksi	44 ksi	59 ksi			

TOWER DESIGN NOTES

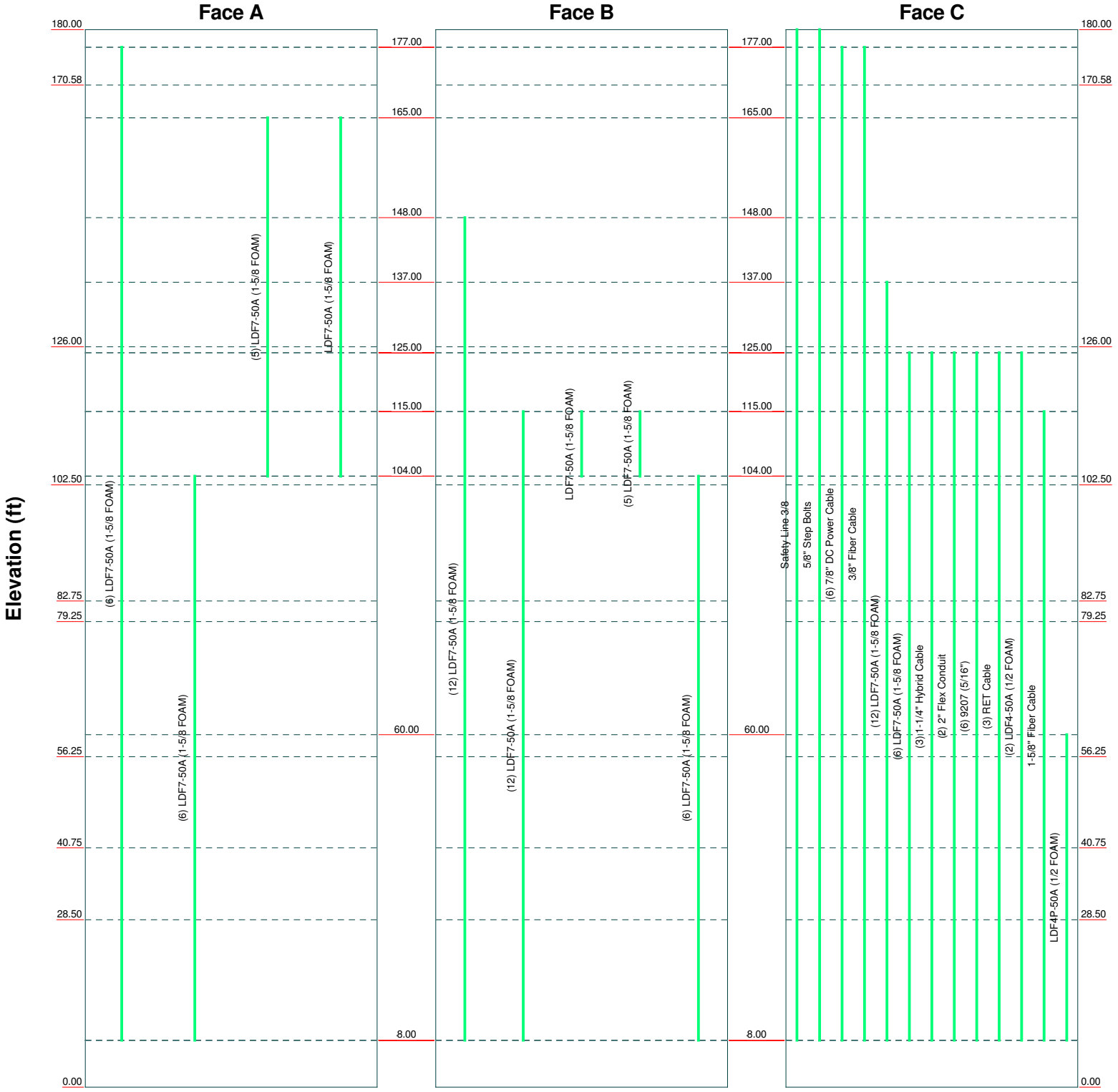
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 88.9%

GPD
Consulting Engineers
520 South Main Street, Suite 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-3709

Job: 16326 (CT5101) ORANGE TRANSFER STATION			
Project: 2014723.13.16326.02			
Client: SAI Ciommunications	Drawn by: Teveslage	App'd:	
Code: TIA/EIA-222-F	Date: 03/04/14	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
0' - 180'

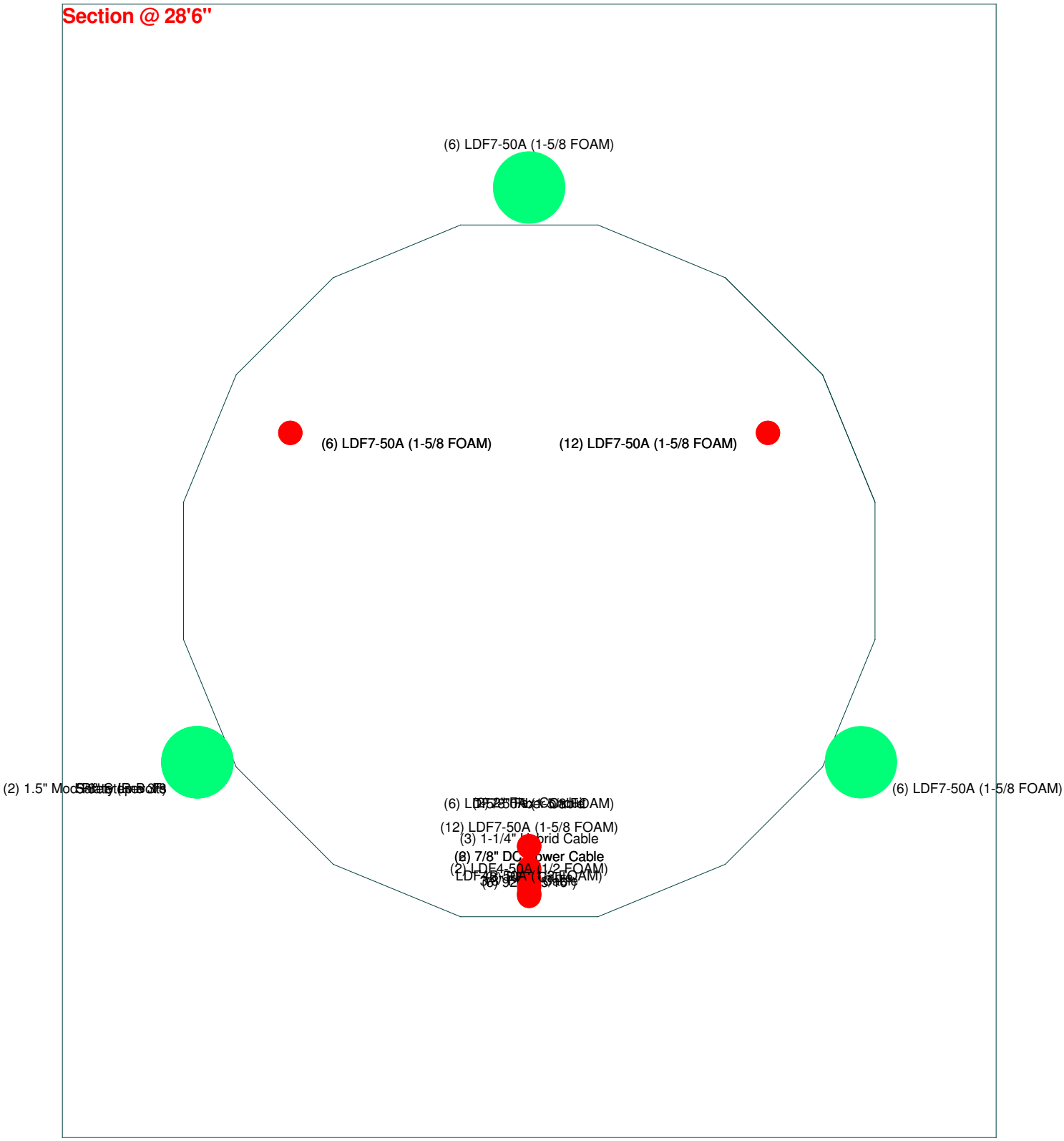
Round | Flat | App In Face | App Out Face | Truss Leg



GPD 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-3709 Consulting Engineers	Job: **16326 (CT5101) ORANGE TRANSFER STATION**		
	Project: **2014723.13.16326.02**		
	Client: SAI Ciommunications	Drawn by: Teveslage	App'd:
	Code: TIA/EIA-222-F	Date: 03/04/14	Scale: NTS
	Path:		Dwg No. E-7

Feed Line Plan
28'6"

Round Flat App In Face App Out Face



GPD 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-3709 Consulting Engineers	Job: **16326 (CT5101) ORANGE TRANSFER STATION**		
	Project: **2014723.13.16326.02**		
	Client: SAI Ciommunications	Drawn by: Teveslage	App'd:
	Code: TIA/EIA-222-F	Date: 03/04/14	Scale: NTS
	Path:		Dwg No. E-7

APPENDIX E

Anchor Rod & Base Plate Analysis

Anchor Rod and Base Plate Stresses
16326 (CT5101) ORANGE TRANSFER STATION
2014723.13.16326.02

*Overturning Moment =	5413.70	k*ft
Axial Force =	66.25	k
Shear Force =	44.77	k

Acceptable Stress Ratio =	105.0%

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of anchor rod forces used in the analysis below.

Anchor Rods		
Number of Rods =	20	
Type =	Upset Rod	
Rod Yield Strength (Fy) =	75	ksi
ASIF =	1.333	
Rod Circle =	72	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in^2
Max Tension on Rod =	177.06	kips
Max Compression on Rod =	183.68	kips
Allow. Rod Force =	195.00	kips
Anchor Rod Capacity =	**90.8%**	**OK**

Base Plate		
Location =	External	
Plate Strength (F_y) =	60	ksi
Outside Diameter =	77.25	in
Plate Thickness =	2.75	in
wcalc =	31.49	in
wmax =	49.75	in
w =	31.49	in
S =	39.69	in^3
fb =	33.19	ksi
Fb =	60	ksi
BP Capacity =	**55.3%**	**OK**

Stiffeners		
Configuration =	None	

Pole		
Pole Diameter =	64.75	in
Number of Sides =	18	
Thickness =	0.4375	in
Pole Yield Strength =	65	ksi

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD GROUP
Engineers • Architects • Planners

Job #: 2014723.13.16326.02
Sheet No 1 Of 1

Calculated By: TRE Date: 3/4/2014
Checked By: Date:

MODIFIED ANCHOR ROD CALCULATIONS

Moment from RISA (M) =	6113.00	kip-ft	Code	TIA/EIA-222-F				
Axial from RISA (P) =	74	kip	ASIF =	1.33				
Shear from RISA (V) =	50.00	kip	Allowable Stress Ratio =	100%				
Inner Bolt Diameter =	2.25	in						
Number Inner Bolts (N_{inner}) =	20		Inner Bolt Circle (BC_{inner}) =	72	in			
Inner Bolt Area (A_{inner}) =	3.25	in^2	Total Area ($A_{tot.in}$) =	65.00	in^2	Axial, Inner Bolts ($P*\eta_{in}$) =	66.25	kips
Inner Bolt MOI ($I_{o.inner}$) =	1.26	in^4	Percent Total Area (η_{in}) =	89.5%		Shear, Inner Bolts ($P*\eta_{in}$) =	44.77	kips
Outer Bolt Diameter =	1.75	in						
Number Outer Bolts (N_{outer}) =	4		Outer Bolt Circle (BC_{outer}) =	85	in			
Outer Bolt Area (A_{outer}) =	1.90	in^2	Total Area ($A_{tot.out}$) =	7.60	in^2	Axial, Outer Bolts ($P*\eta_{out}$) =	7.75	kips
Outer Bolt MOI ($I_{o.outer}$) =	0.46	in^4	Percent Total Area (η_{out}) =	10.5%		Axial, Outer Bolts ($P*\eta_{out}$) =	5.23	kips

I_{inner} =	42145.16	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{outer} =	5443.99	$in.^4$	From CAD
I_{tot} =	47589.15	$in.^4$	$(I_{inner} + I_{outer})$
F_{inner} =	183.7	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} + P*\eta_{in}/N_{inner})$
F_{outer} =	126.4	kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} + P*\eta_{out}/N_{outer})$
Rnt.outer / Ω=	159.6	kips	

Modified Anchor Rod Rating
% = 59.4% OK

APPENDIX F

Foundation Analysis

Mat Foundation Analysis
16326 (CT5101) ORANGE TRANSFER STATION
2014723.13.16326.02

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Round
Reinforcing Known	No
Max Capacity	1

Tower Reactions		
Moment, M	6113	k-ft
Axial, P	74	k
Shear, V	50	k

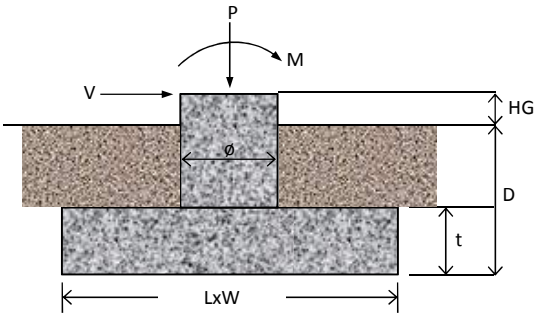
Pad & Pier Geometry		
Pier Diameter, ø	8	ft
Pad Length, L	48	ft
Pad Width, W	48	ft
Pad Thickness, t	6	ft
Depth, D	7	ft
Height Above Grade, HG	1	ft

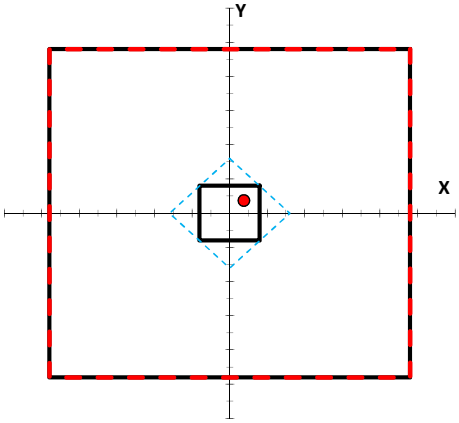
Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	3	ksi
Clear Cover	3	in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 8	
Pad Quantity Per Layer		
Pier Rebar Size	# 8	
Pier Quantity of Rebar		

Soil Properties		
Soil Type	Granular	
Soil Unit Weight	120	pcf
Angle of Friction, ø	32	°
Bearing Type	Net	
Ultimate Bearing	12	ksf
Water Table Depth	7	ft
Frost Depth	3	ft

Bearing Summary			Load Case
Qxmax	1.40	ksf	1D+1W
Qymax	1.40	ksf	1D+1W
Qmax @ 45°	1.55	ksf	1D+1W
$Q_{(all)\ Gross}$	6.42	ksf	
Controlling Capacity	**24.1%**	**Pass**	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	9.10	≥1.5	1D+1W
FS(ot)y	9.10	≥1.5	1D+1W
Controlling Capacity	**16.5%**	**Pass**	





GPD Mat Foundation Analysis - V1.02

APPENDIX G

Modification Drawings

ORANGE TRANSFER STATION

USID #: 16326

CLIENT #: CT5101

180' ROHN MONOPOLE

LOCATION: ORANGE, CT

AERIAL VIEW

PROJECT SUMMARY

TOWER OWNER:	AT&T TOWERS
TOWER TYPE:	MONOPOLE
GOVERNING CODE:	TIA/EIA-222-F, 2003 IBC, 2005 CTBC, & ASCE 7-05
LATITUDE:	41° 15' 19.98" N
LONGITUDE:	73° 0' 39.20" W
OWNER CONTACT:	MR. EDWARD ONESSIMO 27 NORTHWESTERN DRIVE SALEM, NH 03079 (503) 961-1313
ENGINEER CONTACT:	MR. JIBRIL SHEHU 520 SOUTH MAIN STREET, SUITE 2531 AKRON, OH 44311 (330) 572-2216

PROJECT OVERVIEW:

THE LISTED DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER BY REINFORCING THE TOWER SHAFT AS WELL AS INSTALLING NEW ANCHOR RODS WITH BRACKETS TO THE TOWER BASE.

DRAWING INDEX

T-01 TITLE SHEET
N-01 PROJECT NOTES
S-01 TOWER ELEVATION & MODIFICATION SCHEDULE
S-02 MODIFICATION DETAILS & SECTIONS
S-03 ADDITIONAL DETAILS & SECTIONS
S-04 ADDITIONAL DETAILS & SECTIONS
S-05 ADDITIONAL DETAILS
MI-01 MODIFICATION INSPECTION CHECKLIST

INTEGRATED BY:

SAI communications

GPD GROUP.
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

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at&t

REV.	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

TITLE SHEET

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
2014723.13.16326.02

T-01

GENERAL NOTES

1. THE MODIFICATIONS REPRESENTED WITHIN THESE DRAWINGS ARE BASED ON A STRUCTURAL ANALYSIS REPORT BY GPD GROUP (PROJECT #: 2013723.13.16326.01, DATED JANUARY 6, 2014). ALL MODIFICATIONS MUST BE INSTALLED TO BRING THE TOWER INTO CONFORMANCE WITH TIA/EIA–222–F, 2003 IBC, 2005 CTBC, AND ASCE 7–05.

2. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA–222–F, 2003 IBC, 2005 CTBC, ASCE 7–05, AWS, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

3. ALL TOWER INFORMATION WAS OBTAINED IN THE FORM OF A PREVIOUS STRUCTURAL ANALYSIS BY BLACK & VEATCH (PROJECT #: 176850, DATED DECEMBER 4, 2013). CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED TOWER DOCUMENTS.

4. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD GROUP. **CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW, SEE CONTRACTOR NOTES.**

5. MANUFACTURER TOLERANCES, FIELD ADJUSTMENTS, INCORRECT STACKING, AND TEMPERATURE CAN CAUSE DIMENSION DISCREPANCIES. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS. ALL FIELD MEASUREMENTS MUST BE REPORTED TO ENGINEER.

6. ALL NEW STEEL SHALL BE HOT DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

7. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZRC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).

8. CAULKING SHALL BE PROVIDED AROUND PERIMETER OF ANY AND ALL MODIFICATION MEMBERS TO ENSURE COMPLETE SEAL BETWEEN EXISTING STRUCTURE AND REINFORCING MEMBERS. SEALANT IS TO BE EXTERIOR GRADE, PAINTABLE SILICONE CAULKING AS MANUFACTURED BY DOW AND ACCEPTABLE TO GPD.

9. LOADINGS:

   WIND LOADS:

   FASTEST MILE WIND SPEED (PER: TIA/EIA–222–F, 2003 IBC, 2005 CTBC, & ASCE 7–05) 90 MPH
   (NEW HAVEN COUNTY, CONNECTICUT)

   ICE LOADS:

   3/4" RADIAL BASE ICE
   FASTEST MILE WIND SPEED (CONCURRENT W/ ICE) 37 MPH

10. STRUCTURAL STEEL:

    SPECIFICATIONS (LATEST EDITION OF AISC)

    MATERIALS

PLATES	ASTM A572 (GR 50)
ANCHOR ROD BRACKETS	ASTM A572 (GR 50)
ONE–SIDED BOLTS	AJAX M20 (GR PC8.8) W/ HIGH STRENGTH SLEEVE (Fu=120 KSI)
ANCHOR RODS	ASTM F1554 (GR 105)
PIPE	ASTM A53–B (42 KSI)
NUTS	ASTM A194 (GR 2H)
WELDS	E70XX
EPOXY	HILTI HIT–RE 500–SD (ICC #: ESR–2322)
HOT DIPPED GALVANIZING	ASTM A123
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

11. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.

12. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA/EIA–222–F SECTION 1.1.3 REQUIREMENTS.

13. ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE–DESIGN COSTS AND COSTS TO SUB–CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.

14. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

15. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

16. THE ENGINEER (GPD GROUP) SHALL MAKE POST INSTALLATION OBSERVATION FOR TOWER. CONTRACTOR SHALL COORDINATE W/ENGINEER (GPD GROUP) WITHIN 72 HOURS AFTER 100% COMPLETION OF THE TOWER MODIFICATION INSTALLATION. INSTALLATION OF PROPOSED LOADING WITHOUT ENGINEER APPROVAL IS PROHIBITED. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS, AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

CONTRACTOR NOTES

1. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND GPD GROUP THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND GPD GROUP ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND GPD GROUP.

2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, GPD GROUP SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.

3. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.

4. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.

6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. SEE GENERAL NOTES #4 AND #5 THIS SHEET.

7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T–BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

8. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

9. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

10. **WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10–MPH). CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER SHORING, TEMPORARY GLOBAL TOWER SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.**

11. ALL MODIFICATIONS PERFORMED ON THIS TOWER SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF TIA–1019–A CONSTRUCTION STANDARDS.

12. ALL MANUFACTURERS HARDWARE AND ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY. DEVIATION FROM THE INSTRUCTIONS IS UNACCEPTABLE AND REQUIRES WRITTEN APPROVAL FROM ENGINEER.

WELD NOTES

1. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL PERFORM A NONDESTRUCTIVE TEST ON THE EXISTING BASE PERIMETER WELD TO INSURE ITS STRUCTURAL INTEGRITY IN ACCORDANCE WITH D1.1 & D1.1M: 2006 STRUCTURAL WELDING CODE STEEL. IF ANY FLAWS ARE DISCOVERED, THE PROJECT SHALL BE PUT ON HOLD UNTIL REMEDIES TO CORRECT THE DEFICIENCIES ARE DESIGNED AND INSTALLED. THE TOWER OWNER AND THE ENGINEER SHALL BE CONTACTED IMMEDIATELY UPON A FAILING NONDESTRUCTIVE TESTING RESULT.

2. **CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING A THIRD PARTY CERTIFIED WELD INSPECTOR (CWI) THROUGHOUT THE ENTIRETY OF THE PROJECT. A PASSING CWI REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.**

3. WELDING CERTIFICATES MUST BE PROVIDED TO CWI AND GPD GROUP PRIOR TO WELDING CONTRACTOR BEGINNING WORK ON SITE. CERTIFICATE WILL BE ASKED FOR AS PART OF INSPECTION PROCESS. ALL WELDING SHOULD BE PERFORMED BY AN AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES AND IN ACCORDANCE WITH ANSI/AWS D1.1 AND ANSI Z 49.1 OR LATEST EDITIONS.

4. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

5. INSTALL 3000° (NFPA 701) FIRE BLANKET AROUND ALL COAX.

6. MORE SPLATTER AND SPARKS SHALL BE ANTICIPATED GIVEN THE PREVIOUSLY GALV. SURFACE.

7. **COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM ALL WELDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH WELDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING IS BEING PERFORMED.**

8. CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING ON A GALVANIZED SURFACE. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC IT DOES NOT PROVIDE A STRUCTURAL WELD.

9. FUMES CREATED FROM WELDING ON A PREVIOUSLY GALV. SURFACE CAN BE HAZARDOUS.

10. PRIOR TO WELDING, ALL SURFACES SHALL BE PROPERLY GROUND TO REMOVE GALVANIZING.

11. ALL FIELD WELDS SHALL BE TOUCHED UP WITH A GALVANIZING PAINT REPAIR (ZRC OR APPROVED EQUIVALENT).

12. WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. A MINIMUM OF 500 GAL. OF WATER SHALL BE PROVIDED. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, A MINIMUM OF SIX (6) 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).

13. CLEAN OUT ALL DEBRIS THROUGHOUT MONOPOLE AND MONOPOLE BASE PRIOR TO WELDING.

14. WHERE ACCESS PERMITS, THE INTERIOR OF THE MP SHAFTS, IN ANY AREA AFFECTED BY ANY WELDING, SHALL BE SOLVENT CLEANED AND TOUCHED UP WITH TWO COATS OF COLD GALVANIZED PAINT. PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE PMI INSPECTOR.

ANCHOR ROD NOTES

1. CONTRACTOR SHALL INSTALL RODS AND BRACKETS AT LOCATIONS INDICATED ON DRAWINGS.

2. CONTRACTOR SHALL VERIFY THAT TOWER IS PLUMB PRIOR TO THE INSTALLATION OF ANY TOWER MODIFICATIONS.

3. CONTRACTOR SHALL PROVIDE TOP AND BOTTOM HEAVY HEX NUTS FOR PROPOSED ANCHOR RODS. TOP CONNECTION SHALL BE DOUBLE NUTTED.

4. CARE SHALL BE TAKEN DURING INSTALLATION OF ANCHOR RODS SO THAT EXISTING REINFORCING STEEL AND OR ANCHOR BOLTS ARE NOT DAMAGED. CONTACT ENGINEER IMMEDIATELY IF REINFORCING ENCOUNTERED. CONTRACTOR SHALL NONDESTRUCTIVELY DETERMINE LOCATION AND SIZE OF EXISTING REINFORCING STEEL PRIOR TO INSTALLATION OF ANCHOR RODS. EXISTING REINFORCEMENT INDICATED ON DRAWINGS IS ILLUSTRATIVE. ACTUAL QUANTITY AND LOCATION OF REINFORCEMENT MIGHT DIFFER FROM THAT INDICATED ON THE DRAWINGS. ANCHOR TEMPLATES MAY BE ENCOUNTERED DURING DRILLING PROCESS, AND MAY BE DRILLED THROUGH.

5. EACH ANCHOR ROD TO BE TESTED SHALL BE PROOF LOADED TO A MAXIMUM OF 99 KIPS. PULL TESTING RESULTS SHALL BE SUPPLIED TO THE TOWER OWNER AND THE ENGINEER OF RECORD (GPD GROUP) FOR REFERENCE IN THE POST INSTALLATION OBSERVATION REPORT.

6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PAUSE CONSTRUCTION AT A POINT WHERE THE ANCHOR RODS CAN BE EFFECTIVELY TESTED. CONSTRUCTION MAY CONTINUE AFTER TESTING IS COMPLETE.

7. HALF OR A MINIMUM OF 4 (WHICHEVER IS GREATER) NEW ANCHOR RODS SHALL BE TESTED.

8. COMPLETE RECORDS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE TEST. MAXIMUM LOAD INCREMENT SHALL BE 15% OF THE PROOF LOAD.

9. PULL TESTING SHALL BE IN ACCORDANCE WITH ASTM E488M–10.

10. IF A DISPLACEMENT GREATER THAN 0.01 INCHES, MEASURED FROM THE BASE LINE, REMAINS AFTER THE FIRST TEST CYCLE, FURTHER TESTS SHALL BE PERFORMED UP TO A MAXIMUM OF 3 TEST CYCLES TO DETERMINE IF ANCHOR ROD MOVEMENT CONTINUES TO ACCUMULATE. TOTAL RESIDUAL MOVEMENT SHALL NOT EXCEED 0.05 INCHES. INCREMENTAL RESIDUAL MOVEMENTS RECORDED FROM EACH TEST CYCLE MUST BE DECREASING IN VALUE AND STABILIZE TO A VALUE NO MORE THAN 0.01 INCHES. ANCHORS NOT MEETING THE TOTAL RESIDUAL MOVEMENT AND/OR THE INCREMENTAL RESIDUAL MOVEMENT LIMITATIONS SHALL BE CONSIDERED TO HAVE FAILED THE TEST.

11. INSTALLATION OF GROUT AND/OR BOTTOM NUT FLUSH TO BASE PLATE IS PROHIBITED PRIOR TO COMPLETION OF ANCHOR ROD PULL TEST.

12. NEW ANCHOR RODS TO BE HOT DIPPED GALVANIZED TO A MINIMUM OF 3" BELOW THE CONCRETE SURFACE.

13. THE ADHESIVE ANCHOR SYSTEM USED FOR POST–INSTALLED ANCHORAGE TO CONCRETE SHALL CONFORM TO THE MOST RECENTLY PUBLISHED ACI 355.4, ACCEPTANCE CRITERIA FOR QUALIFICATION OF POST–INSTALLED ADHESIVE ANCHORS IN CONCRETE AND COMMENTARY. THE ANCHOR SYSTEM SHALL BE ONE OF THE FOLLOWING:

    A. HILTI HIT–RE 500–SD EPOXY

    B. AN ENGINEER APPROVED EQUAL MEETING ACI 355.4 AND THE MINIMUM BOND STRESS VALUES BELOW. BULK MIXED ADHESIVES ARE NOT PERMITTED.

14. THE ADHESIVE ANCHORS SELECTED FROM THE PARAGRAPH ABOVE SHALL BE SUPPLIED AS AN ENTIRE SYSTEM. THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE NEW ADHESIVE CARTRIDGE, A CLEAN MIXING NOZZLE, EXTENSION TUBE, A DISPENSING GUN, AND ALL MANUFACTURER RECOMMENDED SUPPLIES FOR PROPERLY CLEANING THE HOLE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL EQUIPMENT REQUIRED FOR INSTALLATION OF THE ADHESIVE ANCHOR SYSTEM.

15. ANCHORAGE DESIGN IS IN ACCORDANCE WITH APPENDIX D OF ACI 318–11. FOR ADHESIVE ANCHORS, THE FOLLOWING MINIMUM VALUES FOR BOND STRESS WERE ASSUMED FOR THE DESIGN USING THE ABOVE ADHESIVE ANCHOR ASSEMBLIES:

    A. UNCRACKED CONCRETE BOND STRESS (BASED ON HAMMER DRILLING):
       Tuncr = 1624 PSI

16. ALL–THREADED ROD TO BE USED IN ADHESIVE ANCHOR ASSEMBLIES SHALL CONFORM TO THE ASTM SPECIFICATIONS REPRESENTED WITHIN THESE DRAWINGS. THREADS SHALL BE UNC COARSE THREADS, UNLESS NOTED OTHERWISE. COMPATIBLE NUTS AND WASHERS SHALL BE FURNISHED WITH ALL THE ALL–THREAD ROD CONSIDERED PART OF THE ASSEMBLY. THE COST OF HARDWARE SHALL BE CONSIDERED INCIDENTAL TO THE ADHESIVE ANCHOR ASSEMBLY.

17. NUTS, WASHERS, AND OTHER HARDWARE USED WITH AN ALL–THREADED BAR ADHESIVE ANCHOR SYSTEM SHALL HAVE A MATERIAL OR AN ALLOY DESIGNATION THAT MATCHES THE ALL–THREAD MATERIAL/ALLOY. GALVANIZED ASSEMBLIES SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. ELECTROPLATE GALVANIZING IS NOT ACCEPTABLE. DISSIMILAR METAL ASSEMBLIES SHALL BE SEPARATED BY NYLON, EPDM, OR OTHER APPROVED NON–METALLIC WASHERS.

18. REINFORCING BARS TO BE USED IN ADHESIVE ANCHOR ASSEMBLIES SHALL CONFORM TO ASTM A615, A706, OR A995.

19. EMBEDMENT DEPTH AND ANCHOR PROJECTION (STICK–OUT) FROM CONCRETE SURFACE SHALL BE AS SHOWN ON THE DRAWING OR DETAIL FOR THE PARTICULAR ANCHOR OR ANCHOR GROUP BEING INSTALLED. ABSENT OF ANY INFORMATION THE MINIMUM STICK–OUT SHALL BE 12".

20. ADHESIVES SHALL BE STORED AND INSTALLED AT THE SERVICE TEMPERATURE RANGES RECOMMENDED BY THE MANUFACTURER.

21. ADHESIVE ANCHORS SHALL BE INSTALLED BY QUALIFIED PERSONNEL TRAINED TO INSTALL ADHESIVE ANCHORS IN ACCORDANCE WITH THE SPECIFICATIONS. POST–INSTALLED ADHESIVE ANCHORS SHALL BE INSTALLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII).

22. INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED TO SUPPORT SUSTAINED TENSION LOADS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM. THESE ANCHORS ARE DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALL–OUT. THESE ANCHORS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION BY AN INSPECTOR SPECIALLY APPROVED FOR THAT PURPOSE BY THE BUILDING OFFICIAL.

23. THE INSTALLERS QUALIFICATIONS SHALL BE SUBMITTED AND APPROVED IN ACCORDANCE WITH THE SPECIFICATIONS.

24. INSTALLED ADHESIVE ANCHORS SHALL BE SECURELY FIXED IN–PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES. UNLESS SHOWN OTHERWISE WITHIN THE DRAWINGS, ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE SURFACE. ANCHORS DISPLACED PRIOR TO ADHESIVE CURING SHALL BE CONSIDERED DAMAGED AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.

25. REINFORCING BARS OR ALL–THREADED BARS SHALL NOT BE BENT AFTER BEING ADHESIVELY EMBEDDED IN HARDENED, SOUND CONCRETE, UNLESS PERMITTED BY THE ENGINEER.

MODIFICATION PLATE NOTES

1. CONTRACTOR SHALL INSTALL PLATES, STIFFENERS, AND BRACKETS AT LOCATIONS PER PLAN VIEW.

2. USE AJAX BOLTS WITH CORRECT SLEEVE LENGTHS PER DETAILS. BOLT THREADS SHALL NOT BE IN THE SHEAR PLANE.

3. ALL HOLES DRILLED IN POLE SHALL BE SOLVENT CLEANED AND TOUCHED UP WITH ZRC ZINC RICH COLD GALVANIZING PAINT.

4. CONTRACTOR SHALL VERIFY MONOPOLE IS SET PROPERLY AND HAS BEEN JACKED INTO ITS FINAL RESTING POSITION BEFORE FINAL CRITICAL FIELD MEASUREMENTS ARE VERIFIED AND BEFORE ORDERING MATERIAL. ANY OBJECTS/STEP BOLTS THAT PREVENT TOWER FROM SITTING PROPERLY SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.

5. SHIM PLATES ARE TO BE USED BELOW SLIP JOINT AS REQUIRED.

6. AJAX BOLTS SHALL BE TIGHTENED PER AISC "SNUG–TIGHT CONDITION".

7. **FINAL SHOP DRAWINGS MUST BE SENT TO DESIGN ENGINEER FOR FINAL APPROVAL PRIOR TO FABRICATION.**

8. CONTRACTOR SHALL VERIFY THAT TOWER IS PLUMB PRIOR TO THE INSTALLATION OF ANY TOWER MODIFICATIONS.

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REV.	DATE	DESCRIPTION

16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

PROJECT NOTES

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
2014723.13.16326.02

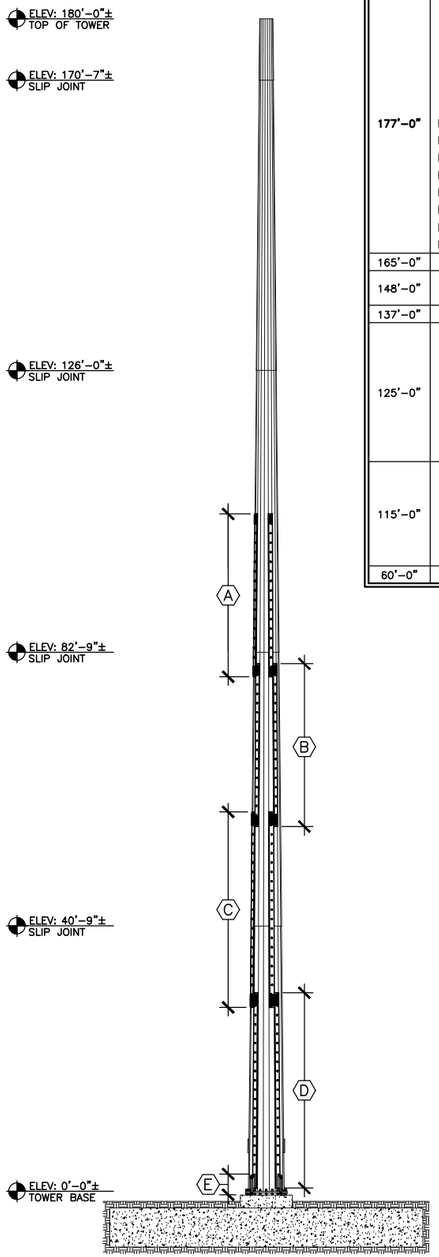
N-01

ANTENNA SCHEDULE

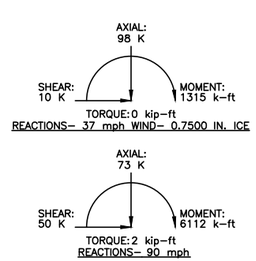
ELEVATION	STATUS	ANTENNA	MOUNT	COAX
177'-0"	EXISTING	(3) 7770.00	(1) 12.5' LP PLATFORM	(6) 1-5/8"
	EXISTING	(1) DC6-48-60-18-8F		(2) 7/8" DC
	EXISTING			(1) 3/8" FIBER
	REMOVE	(3) 7770.00		(6) 1-5/8"
	REMOVE	(3) AM-X-CD-14-65-00T-RET		
	REMOVE	(6) LGP21401 TMAS		
	REMOVE	(6) RRUS 11		
	PROPOSED	**(9) SBNHH-1D65A**	**(1) MTC3607R PLATFORM W/ RAILS**	**(4) 7/8" DC**
	PROPOSED	**(3) DTMABP7819VG12A-BP TMAS**		
	PROPOSED	**(6) RRUS 11**		
	PROPOSED	**(6) RRUS 12**		
	PROPOSED	**(3) RRUS E2**		
	PROPOSED	**(3) RRUS 32**		
	PROPOSED	**(6) KRC 161 286-1 (A-2 MODULE)**		
	PROPOSED	**(2) DC6-48-60-18-8F**		
165'-0"	EXISTING	(3) 5' PANEL	(3) PIPE MOUNTS	(6) 1-5/8"
148'-0"	EXISTING	(6) APX16PV-16PVL	(1) 12.5' LP PLATFORM	(12) 1-5/8"
	EXISTING	(6) LGP21401 TMAS		
137'-0"	EXISTING	(12) 844G45VTZASX	(1) 12.5' LP PLATFORM	(12) 1-5/8"
125'-0"	EXISTING	(6) APXVSPP18-C-A20	(1) 12' LP PLATFORM	(6) 1-5/8"
	EXISTING	(3) 1900MHz RRH		(3) 1-1/4"
	EXISTING	(3) 800MHz RRH		
	EXISTING	(3) 800 EXTERNAL NOTCH FILTER		
	EXISTING	(3) LLPX310R		(6) 5/16"
	EXISTING	(3) FDD R6 RRH		(3) 1/4" RET
	EXISTING	(2) A-ANT-23G-2-C		(2) 1/2"
	EXISTING	(2) HORIZON DUO		(2) 2" CONDUIT
115'-0"	EXISTING	(3) SLCP 2X6015	(1) 14' LP PLATFORM	(18) 1-5/8"
	EXISTING	(3) BXA-70063/4CF		(1) 1-5/8" FIBER
	EXISTING	(6) BXA-171063/12BF		
	EXISTING	(3) RRH 2x40 AWS		
	EXISTING	(1) DB-T1-6Z-8AB-0Z		
	EXISTING	(1) GPS		
60'-0"	EXISTING	(1) GPS-TMG-HR-26NCM	(1) STANDOFF	(1) 1/2"

MODIFICATION SCHEDULE

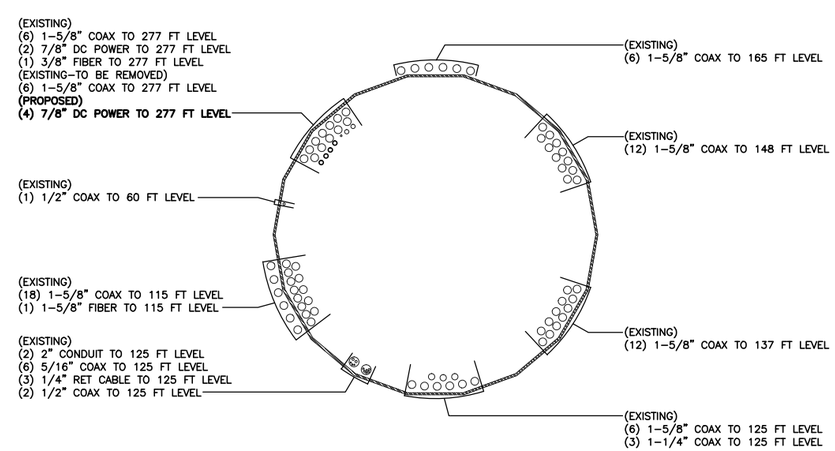
SYMBOL	ELEVATION	MEMBER TYPE	EXISTING MEMBER	NEW MEMBER	NOTES
A	79'-0"± TO 104'-0"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 7"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 4/S-03, 5/S-04, AND 9/S-05 FOR MORE INFORMATION.
B	56'-0"± TO 81'-0"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 8"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 3/S-03, 4/S-03, AND 8/S-05 FOR MORE INFORMATION.
C	28'-3"± TO 58'-3"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 9"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 2/S-03, 3/S-03, AND 7/S-05 FOR MORE INFORMATION.
D	0'-6"± TO 30'-6"±	TOWER SHAFT	18-SIDED MONOPOLE	(4) 9"x1-1/2" THICK FLAT PLATES	INSTALL NEW FLAT PLATE REINFORCING TO THE EXISTING TOWER. SEE DETAILS 1/S-02, 2/S-03, AND 6/S-05 FOR MORE INFORMATION.
E	0'-0"± TO 2'-8"±	ANCHOR RODS	(20) 2-1/4"ø ANCHOR RODS	(4) 1-3/4"ø ANCHOR RODS W/ BRACKETS	INSTALL NEW ANCHOR RODS WITH BRACKETS TO THE EXISTING TOWER BASE. SEE DETAIL 1/S-02 AS WELL AS SECTIONS A/S-02 AND F/S-04 FOR MORE INFORMATION.



NOTE: FLAT NUMBERS DEPICTED IN THIS DRAWING MAY VARY FROM THE NUMBERING IN THE FIELD. CONTRACTOR MAY ADJUST FLAT NUMBERS TO MATCH EXISTING FIELD CONDITIONS. MODIFICATIONS SHALL BE INSTALLED IN THE APPROPRIATE ORIENTATION AND/OR LOCATION REGARDLESS OF THE NUMBERING SHOWN ON THE DRAWINGS.



TOWER ELEVATION
3/32"=1'-0"



NORTH

COAX LAYOUT
N.T.S.

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617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

TOWER ELEVATION & MODIFICATION SCHEDULE

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
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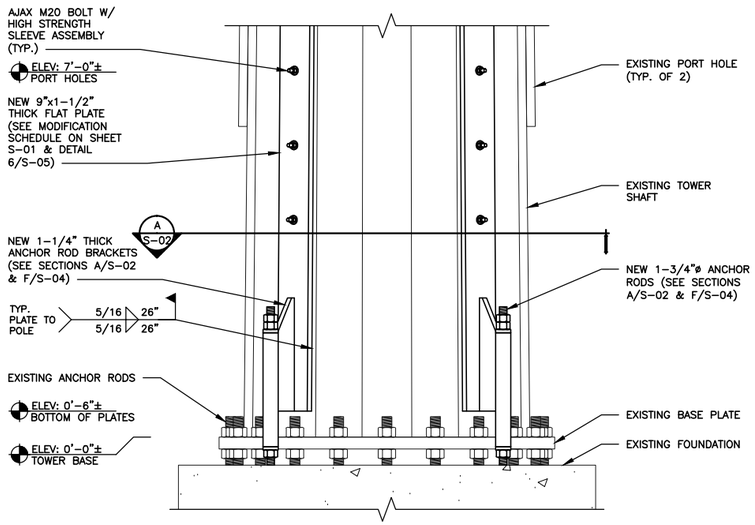
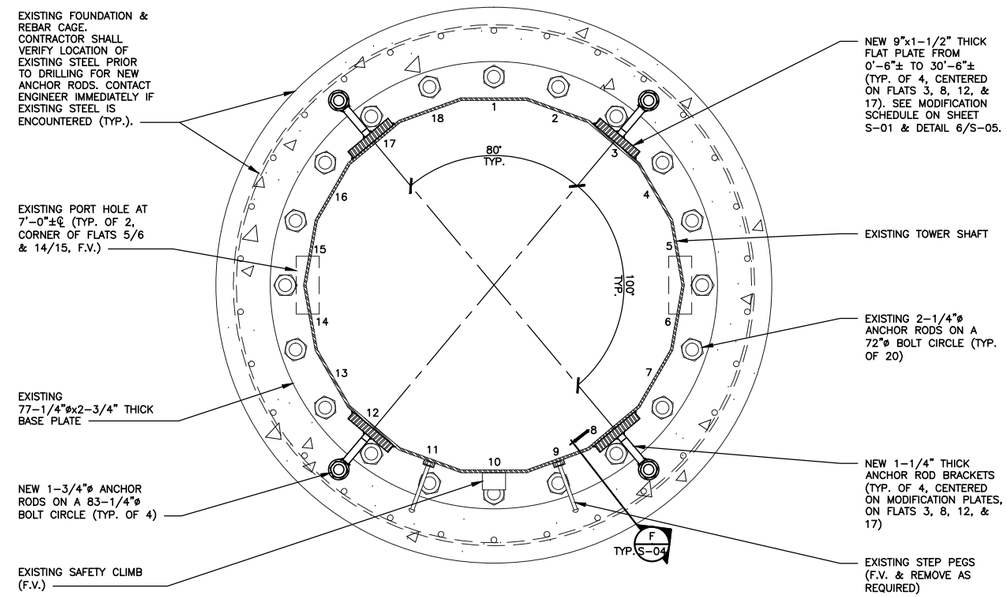
S-01

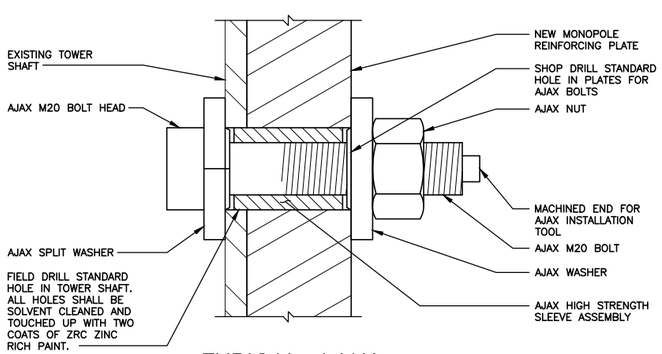


DETAIL 1 S-02
3/4"=1'-0"



SECTION A S-02
1"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.



TYPICAL AJAX BOLT DETAIL
N.T.S.

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617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

MODIFICATION DETAILS & SECTIONS

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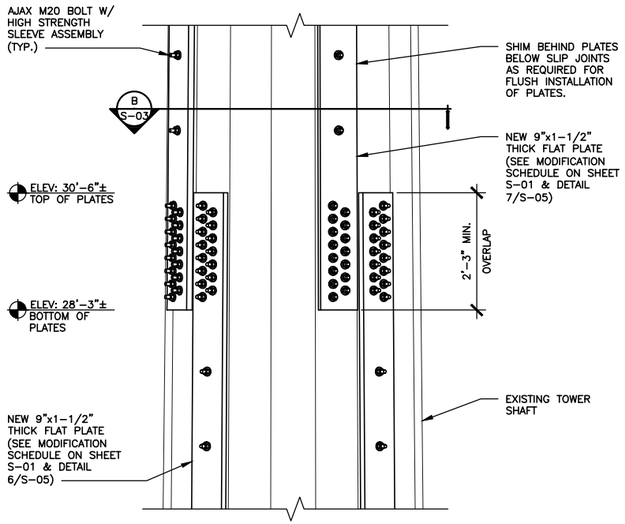
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO. 2014723.13.16326.02

S-02



DETAIL 2 S-03
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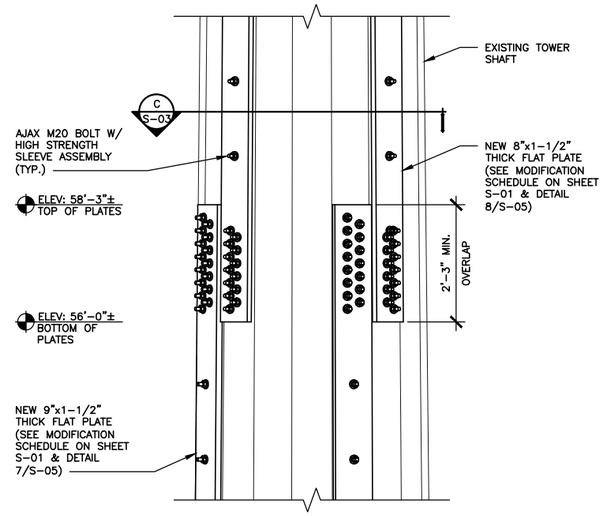
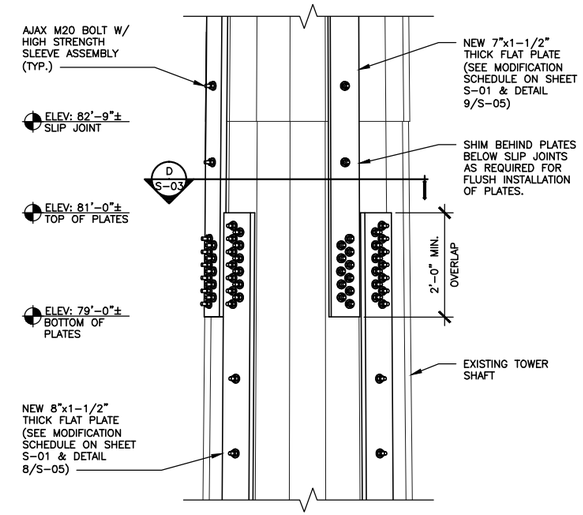
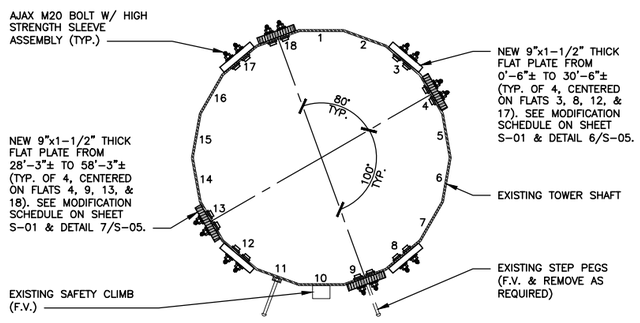


DETAIL 3 S-03
3/4"=1'-0"

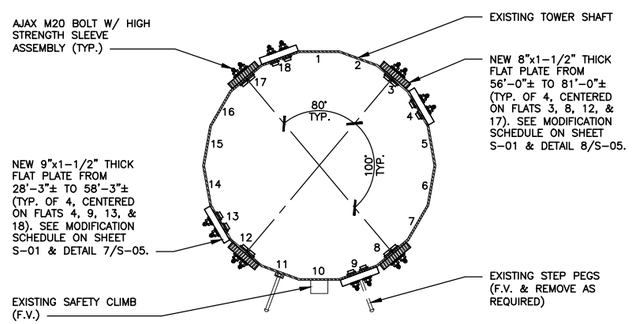


DETAIL 4 S-03
3/4"=1'-0"



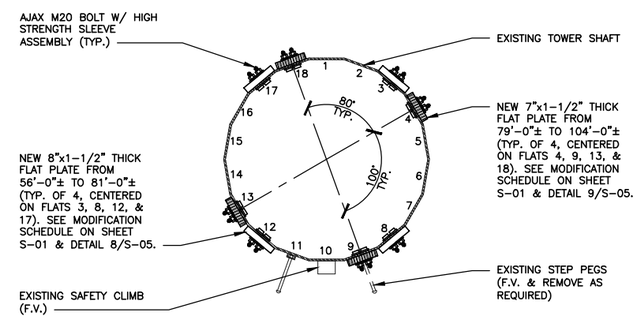
SECTION B S-03
3/4"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.



SECTION C S-03
3/4"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.



SECTION D S-03
3/4"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.

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16326 - ORANGE TRANSFER STATION
617 SOUTH ORANGE CENTER RD.
ORANGE, CT 06477

ADDITIONAL DETAILS & SECTIONS

ISSUED FOR:	
PERMIT	03/04/14
BID	-
CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
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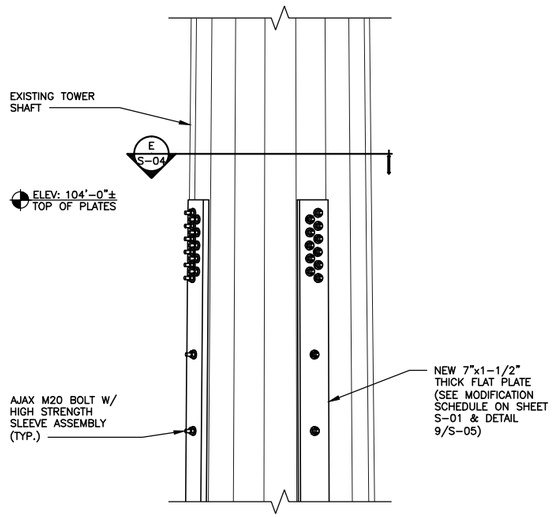
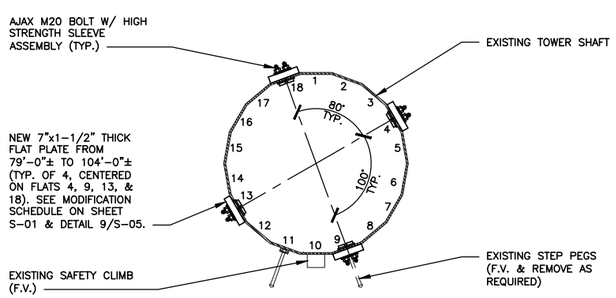
S-03

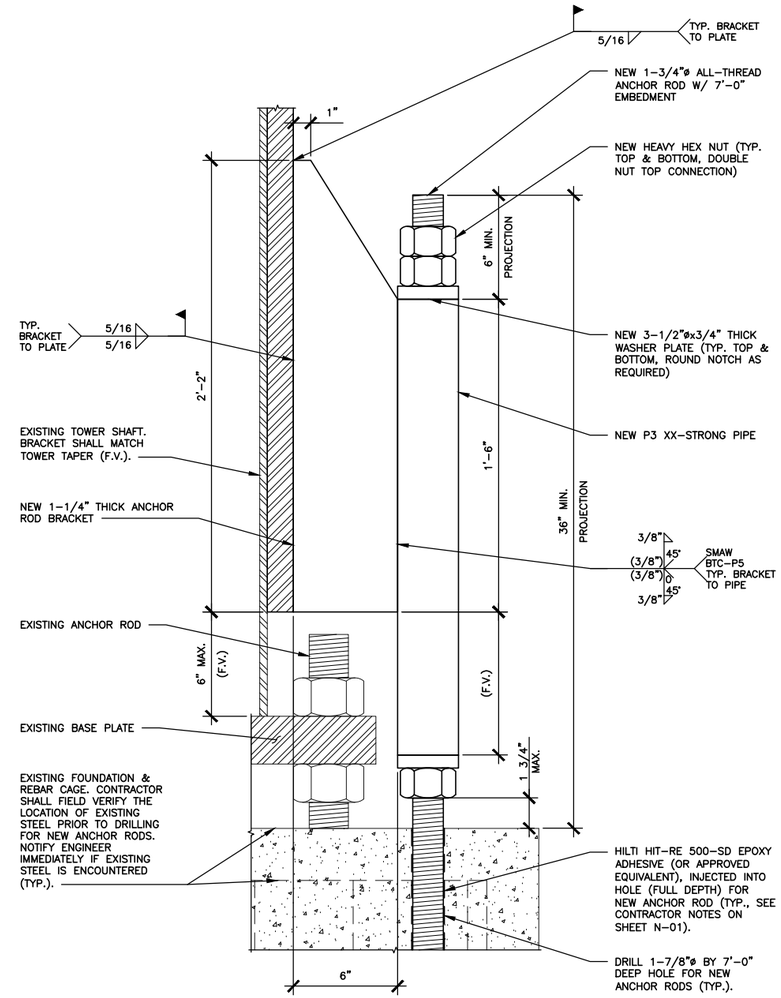


DETAIL 5 S-04
3/4"=1'-0"



SECTION E S-04
3/4"=1'-0"

NOTE: REMOVE & REPLACE EXISTING STEP PEGS & SAFETY CLIMB AS REQUIRED.



SECTION F S-04
3"=1'-0"

NOTE: FIELD VERIFY ALL CRITICAL DISTANCES PRIOR TO ORDERING MATERIAL & PROVIDE SHOP DRAWINGS TO ENGINEER.

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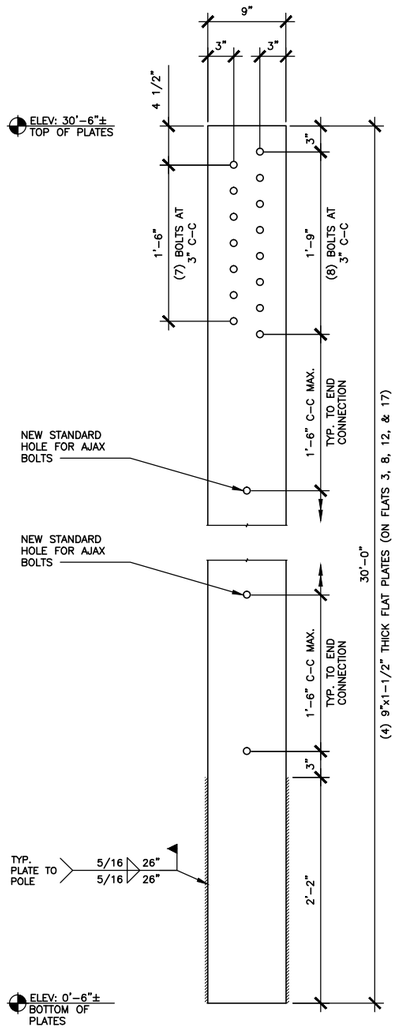
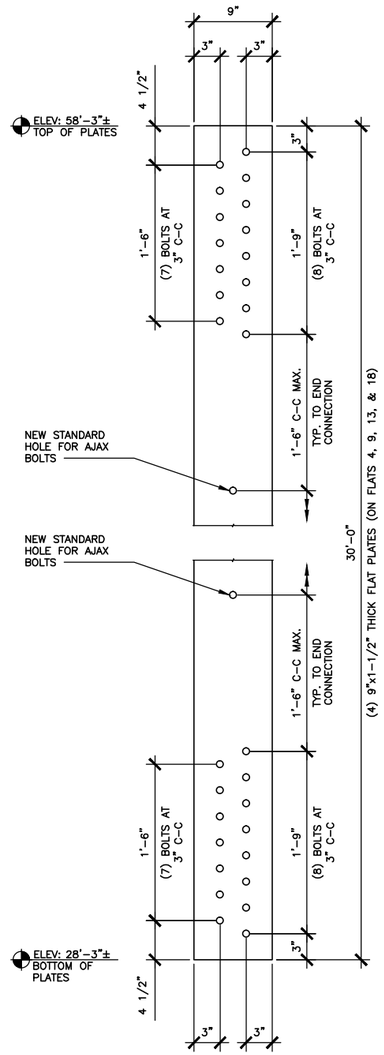
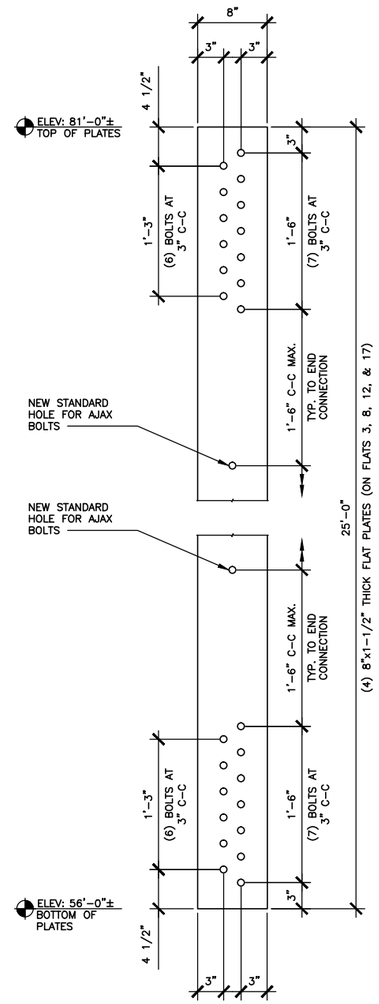
S-04



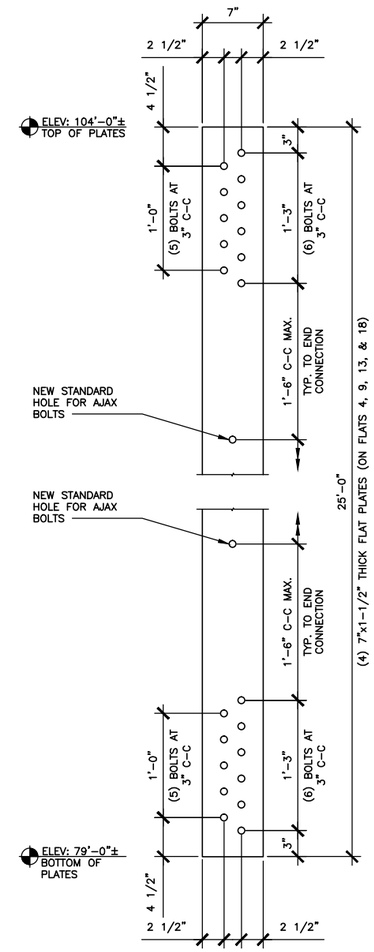
DETAIL 6
1-1/2"=1'-0"
S-05



DETAIL 7
1-1/2"=1'-0"
S-05



DETAIL 8
1-1/2"=1'-0"
S-05



DETAIL 9
1-1/2"=1'-0"
S-05

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S-05

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MODIFICATION INSPECTION REPORT
– DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MODIFICATION INSPECTION REPORT

STANDARD MODIFICATION DOCUMENTATION REQUIREMENTS

CONSTRUCTION PROCESS			REPORT ITEM	STAMPED REPORT REQUIRED
BEFORE	DURING	AFTER		
X	–	–	• SHOP DRAWINGS	
X	–	–	• MATERIAL TEST REPORT (ALL MODIFICATION MATERIALS)	
X	–	–	• PACKING SLIPS	
			• PHOTOS:	
X	–	–	• PRE–CONSTRUCTION PHOTOS (COMPOUND, ACCESS DRIVE, ROAD ENTRANCE, TOWER)	
–	X	–	• DURING CONSTRUCTION	
–	–	X	• POST CONSTRUCTION	
–	–	–	• BASE PLATE GROUT VERIFICATION	
–	–	X	• ON SITE COLD GALVANIZING VERIFICATION	
–	–	X	• GC AS–BUILT DRAWINGS	
–	–	X	• LIEN RELEASE (GPD SERVICES ONLY)	

WELDING: FABRICATION & ONSITE

CONSTRUCTION PROCESS			REPORT ITEM	STAMPED REPORT REQUIRED
BEFORE	DURING	AFTER		
–	X	–	• NDT – ALL FULL PEN OR WELDS >5/16"	AWS
–	–	X	• VISUAL INSPECTION IN ACCRODANCE WITH ANSI/AWS D1.1	AWS
X	–	–	• NDT – MONOPOLE EXISTING PERIMETER BASE WELD	AWS
X	X	X	• ELECTRODE VERIFICATION – ONSITE PHOTO OF ELECTRODE STRENGTH	
X	–	–	• WELDER'S CERTIFICATIONS	
–	–	X	• 3RD PARTY CERTIFIED WELD INSPECTORS REPORT	AWS

ANCHOR RODS

CONSTRUCTION PROCESS			REPORT ITEM	STAMPED REPORT REQUIRED
BEFORE	DURING	AFTER		
–	X	–	• EPOXY OBSERVATION	ENGINEER
–	X	–	• HOLE DEPTH VERIFICATION – ONSITE PHOTO OF TAPE MEASURE	
–	X	–	• HOLE CLEANOUT PHOTO – ONSITE PHOTOS OF CLEANOUT PROCESS	
–	X	–	• EPOXY VERIFICATION– ONISTE PHOTO OF EPOXY LABEL	
X	–	–	• EPOXY PACKING SLIP	
			• ANCHOR ROD PULL TEST:	
–	–	X	• BY 3RD PARTY	ENGINEER
			• BY CONTRACTOR W/ 3RD PARTY INSPECTOR	ENGINEER

MODIFICATION INSPECTION NOTES:

GENERAL NOTES

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD.

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MODIFICATION INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD AT ALL TIMES.

3. **TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. CONTACT LISTED ON THE TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.**

MODIFICATION INSPECTOR

1. THE MODIFICATION INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSPECTION TO:

   – REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
   – WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON–SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
   – DISCUSS ANY SITE SPECIFIC INSPECTIONS OR CONCERNS

2. THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN–FIELD INSPECTIONS, AND SUBMITTING THE MODIFICATION INSPECTION REPORT.

GENERAL CONTRACTOR

1. THE GC IS REQUIRED TO CONTACT THE MODIFICATION INSPECTOR AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO:

   – REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
   – WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON–SITE MODIFICATION INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
   – BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

2. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MODIFICATION INSPECTION REPORT:

– IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MODIFICATION INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION TO BE CONDUCTED.
– THE GC AND MODIFICATION INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
– WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON–SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE–TENSIONING OPERATIONS.
– IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
– WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON–SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MODIFICATION INSPECTION. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MODIFICATION INSPECTION CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS

1. **IF THE GC AND MODIFICATION INSPECTOR AGREE TO A DATE ON WHICH THE MODIFICATION INSPECTION WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, THE TOWER OWNER SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON–SITE, ETC.). EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.**

FAILING INSPECTION CORRECTIONS

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MODIFICATION INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

   – CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MODIFICATION INSPECTION.
   – OR, WITH TOWER OWNER'S APPROVAL, THE GC MAY WORK WITH THE ENGINEER OF RECORD TO RE–ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS–BUILT CONDITION.

VERIFICATION INSPECTIONS

1. TOWER OWNER RESERVES THE RIGHT TO CONDUCT A VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MODIFICATION INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

2. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "**PASSING MODIFICATION INSPECTION**" OR "**PASS AS NOTED MODIFICATION INSPECTION**" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS ARE TO BE TAKEN AND INCLUDED IN THE MODIFICATION INSPECTION REPORT:

   – PRE–CONSTRUCTION GENERAL SITE CONDITION
   – PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION:
     • RAW MATERIALS
     • PHOTOS OF ALL CRITICAL DETAILS
     • FOUNDATION MODIFICATIONS
     • WELD PREPARATION
     • BOLT INSTALLATION AND TORQUE
     • FINAL INSTALLED CONDITION
     • SURFACE COATING REPAIR
   – POST CONSTRUCTION PHOTOGRAPHS:
     • FINAL INFIELD CONDITION
   – ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF MODIFICATIONS.

2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

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MODIFICATION INSPECTION CHECKLIST

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PERMIT	03/04/14
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CONSTRUCTION	-
RECORD	-

PROJECT MANAGER	DESIGNER
JS	TRE

JOB NO.
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MI-01