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

May 14, 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 28 Brewer Drive, Bloomfield (owner, Crown Castle)

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.

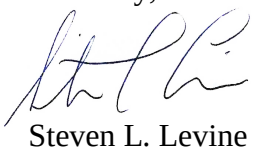
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

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: Louie Chapman, Jr., Town Manager, Town of Bloomfield

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

28 Brewer Drive, Bloomfield, CT
Site Number 1193
Exempt Modifications 3/98, 10/03, 2/08, 5/12, 3/14

Tower Owner/Manager: Crown Castle

Lease Area: The Brewer Drive cell site was approved by local zoning ca. 1996 as a Sprint PCS site, and SNET received Council approval to collocate there in 1998. The attached exhibit from SNET's sublease depicts the limits of Sprint's 100 ft x 100 ft lease area and SNET's sublease. SNET's lease area was re-configured for CSC approval and construction, but it remained wholly within the 100 x 100 ft overall site boundaries. Since all proposed equipment modifications will occur either on the existing tower structure or within AT&T's existing equipment shelter, the proposed modifications will not extend either AT&T's lease area or the overall site boundaries.

Equipment configuration: Monopole

Current and/or approved:
Equipment platform @ 100 ft a.g.l.
Three KMW AM-X-CD-16-65-00T-RET antennas @ 100 ft c.l.
Two KMW AM-X-CD-14-65-00T-RET antenna @ 100 ft c.l.
Two PowerWave P65-17-XLH-RR antennas @ 100 ft c.l.
Two PowerWave 7770 antennas @ 100 ft
Six TMA's @ 100 ft
One surge arrestor @ 100 ft
Six remote radio heads @ 100 ft
Twelve runs 7/8 inch coax
One fiber cable and two DC control cables
Equipment shelter
Diesel Generator on concrete pad

Planned Modifications:
Remove existing platform and all associated AT&T equipment from the 100 ft level.
Remove six runs 7/8 inch coax.
Install recommended structural modifications.
Install one Commscope MTC3607R antenna platform @ 100 ft level.
Install three KMW AM-X-CD-16-65-00T-RET antennas @ 100 ft c.l.
Install three CCI HPA-65R-BUU-H6 antennas @ 100 ft c.l.
Install three CCI HPA-65R-BUU-H8 antennas @ 100 ft c.l
Install three Andrew SBNHH-1D65A antennas @ 100 ft c.l.
Install three CCI DTMABP7819VG12A TMA's @ 100 ft.
Install 18 remote radio heads and six associated A2 modules @ 100 ft.
Install three Raycap DC6-48-60-18-8F surge arrestors @ 100 ft.
Install four additional DC control cables.

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 86.6 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 61.2 % 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 *							45.85
AT&T LTE *	100	700 Band	1	1615	0.0581	0.4893	11.87
AT&T GSM *	100	880 - 894	1	647	0.0233	0.5867	3.97
AT&T GSM *	100	1900 Band	4	813	0.1169	1.0000	11.69
AT&T UMTS *	100	880 - 894	2	565	0.0406	0.5867	6.93
AT&T UMTS *	100	1900 Band	2	875	0.0629	1.0000	6.29
Total							**86.6%**

***** 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 *							45.85
AT&T LTE	100	700 Band	1	500	0.0180	0.4667	3.85
AT&T LTE	100	1900 Band	1	500	0.0180	1.0000	1.80
AT&T LTE	100	2300 Band	1	500	0.0180	1.0000	1.80
AT&T UMTS	100	880 - 894	2	500	0.0360	0.5867	6.13
AT&T UMTS	100	1900 Band	1	500	0.0180	1.0000	1.80
Total							**61.2%**

***** Per CSC records

Structural information:

The attached structural analysis (Paul J. Ford and Co., 3/21/14) demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed equipment modifications upon completion of the recommended structural modifications described in the attachments hereto.

PROJECT INFORMATION

SCOPE OF WORK:	REPLACE (6) EXISTING ANTENNAS WITH (9) PROPOSED ANTENNAS ON EXISTING MONOPOLE. INSTALL ADDITIONAL SUPPORTING EQUIPMENT IN SHELTER AND ON TOWER. INSTALL A DIESEL GENERATOR AT GRADE.
SITE ADDRESS:	28 BREWER DRIVE BLOOMFIELD, CT 06002
LATITUDE:	41° 50' 6.6" N (NAD 83)*
LONGITUDE:	72° 44' 28.11" (NAD 83)* *PER HANDHELD GPS
JURISDICTION:	TOWN OF BLOOMFIELD
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
NAME OF APPLICANT:	AT&T MOBILITY 550 COCHITUATE ROAD SUITES 13 & 14 FRAMINGHAM, MA 01701
TOWER OWNER: TOWER NUMBER:	CROWN CASTLE 876329

DRAWING INDEX

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T01	TITLE SHEET	2
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E01	GROUNDING DETAILS	2
E02	RISER DIAGRAM & DETAILS	2

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

STRUCTURAL NOTE:

1. AS REQUIRED UNDER TIA/EIA 222G – STANDARD, SAI COMMUNICATIONS SHALL PROVIDE A STRUCTURAL ANALYSIS OF THE TOWER PREPARED BY A LICENSED CONNECTICUT STRUCTURAL ENGINEER CERTIFYING THAT, THE EXISTING TOWER AND ANY REQUIRED IMPROVEMENTS AND REINFORCEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, SUPPORTS AND APPURTENANCES AND COMPLIES WITH THE CURRENT CONNECTICUT STATE BUILDING CODE AND EIA/TIA CRITERIA. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

CONTACT & UTILITY INFORMATION

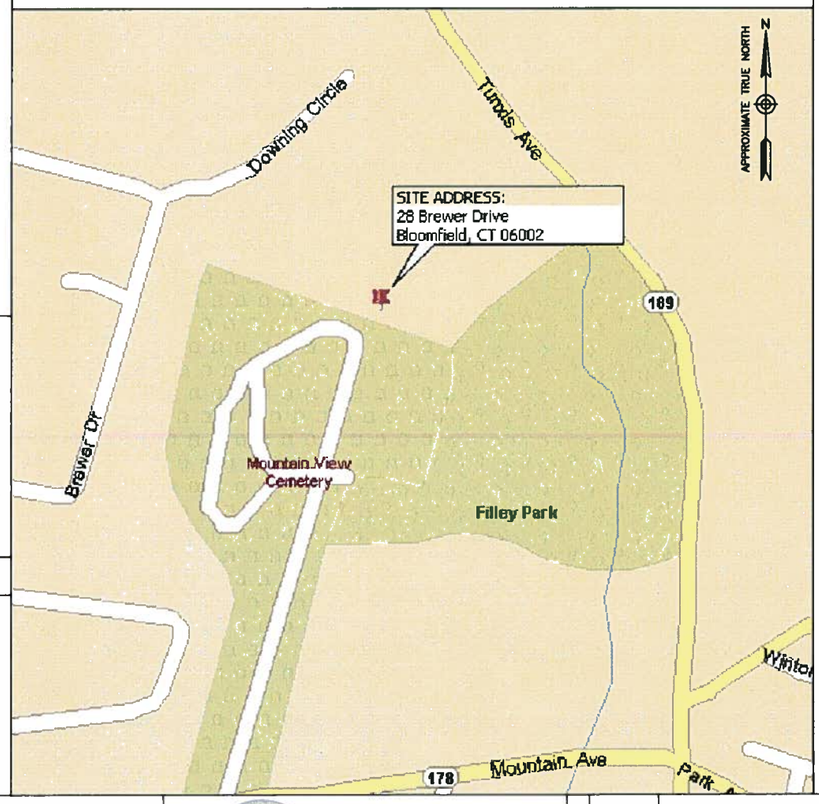
CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	DAMIAN SCHMALZ	DEWBERRY	(617) 531-0823
SAC:	WARREN KELLEHER	SAI COMMUNICATIONS	(603) 203-8228
CONST.:	BRIAN GIBBS	SAI COMMUNICATIONS	(603) 315-9017
UTILITIES			
POWER:		CONNECTICUT LIGHT & POWER	(860) 286-2000
TELCO:		AT&T	(888) 944-0447

at&t Mobility

SITE NAME: BLOOMFIELD
SITE NUMBER: CT1193

VICINITY MAP

DIRECTIONS: FROM FRAMINGHAM, MA: TAKE I-90 W. TAKE EXIT 9 TO MERGE ONTO I-84 TOWARD RT-20/HARTFORD. TAKE EXIT 61 TO MERGE ONTO I-291 W. TAKE EXIT 1 FOR RT-218 W TOWARD BLOOMFIELD. TURN LEFT ONTO RT-218 W/PUTNAM HWY. SLIGHT RIGHT ONTO MAPLE AVE. CONTINUE ONTO BROWN STREET. TURN RIGHT ONTO DOWNING CIRCLE. TURN RIGHT ONTO BREWER DRIVE. THE SITE WILL BE ON THE LEFT.



APPLICABLE BUILDING CODES AND STANDARDS

CONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARD NOTES, SYMBOLS AND DETAILS (SEE DRAWING INDEX FOR STANDARD NOTES AND DETAILS INCLUDED WITH TYPICAL DRAWING PACKAGE). CONTRACTOR WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE:
INTERNATIONAL BUILDING CODE (IBC 2009)

ELECTRICAL CODE:
NATIONAL ELECTRICAL CODE (NEC 2011)

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS.
AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

Dewberry
Dewberry Engineers Inc.
280 SUMMER ST.
10TH FLOOR
BOSTON, MA 02210
PHONE: 617.695.3400
FAX: 617.695.3310

SAI
27 NORTHWESTERN DRIVE
SALEM, NH 03079

BLOOMFIELD
SITE NO. CT1193

28 BREWER DRIVE
BLOOMFIELD, CT
06002

at&t Mobility
550 COCHITUATE ROAD
SUITES 13 & 14
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	05/12/14	ISSUED FOR CONSTRUCTION	DAS	DAS	BBR
1	05/01/14	ISSUED FOR REVIEW	DAS	DAS	PPB
0	01/24/14	ISSUED FOR REVIEW	DAS	DAS	PPB

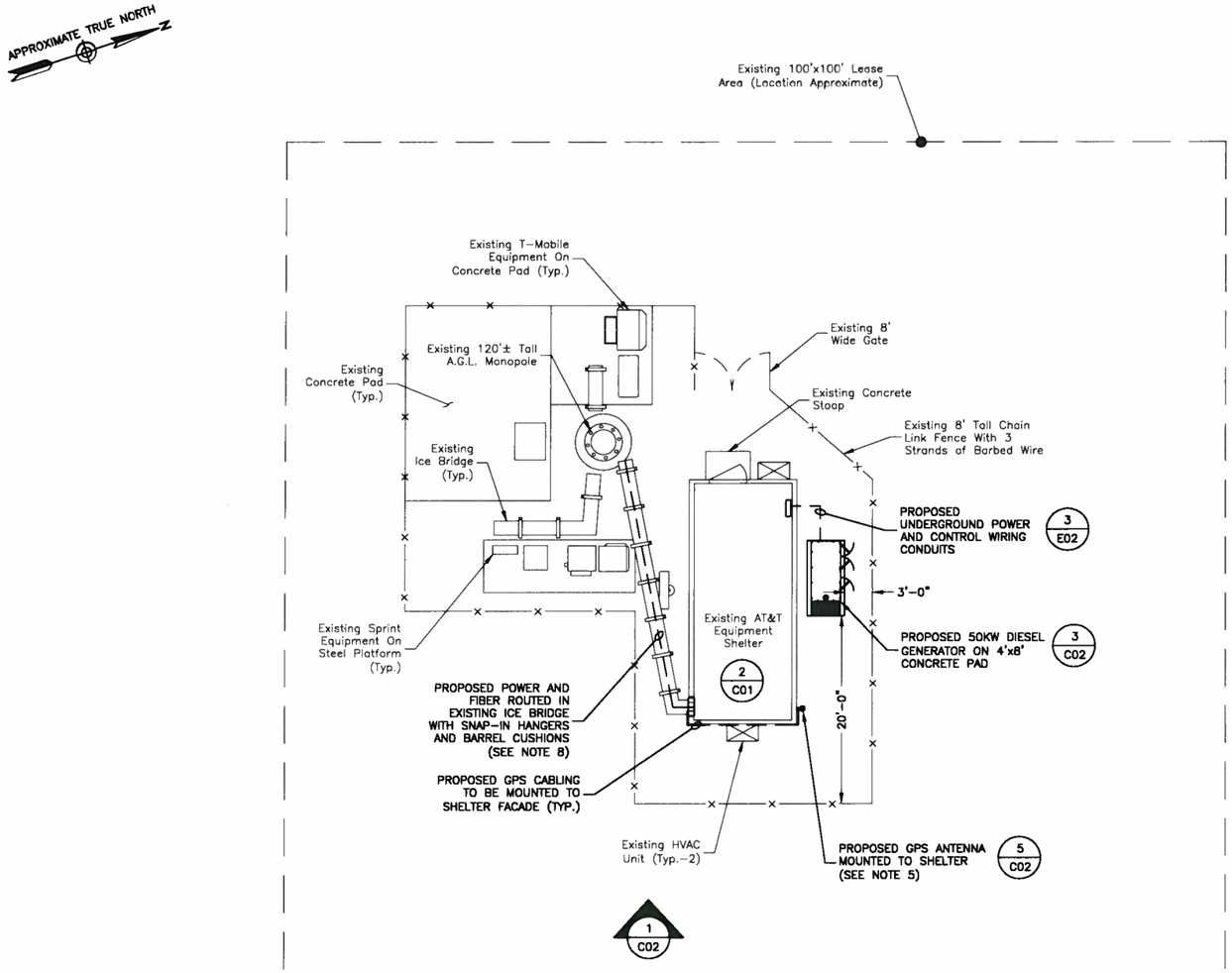
SCALE: AS SHOWN | DESIGNED BY: DAS | DRAWN BY: SCA

STATE OF CONNECTICUT
BENJAMIN B. REVETTE
PROFESSIONAL ENGINEER

AT&T MOBILITY
FRAMINGHAM, MA 01701

TITLE SHEET

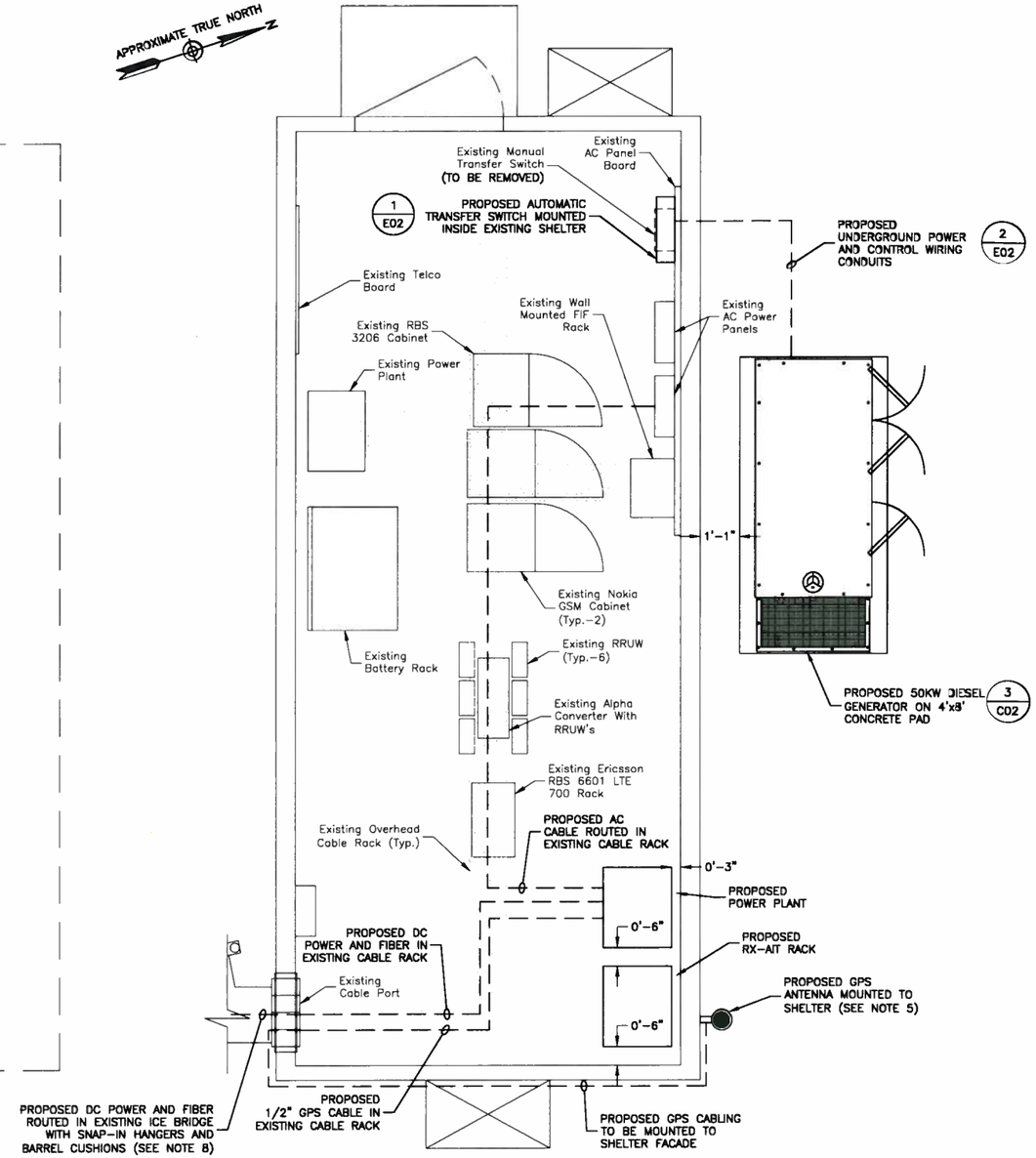
DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50059547	T01	2



PROPOSED SITE PLAN 1

SCALE: 1/16"=1' FOR 11"x17"
1/8"=1' FOR 22"x34"

0' 4' 8' 16'



PROPOSED SHELTER PLAN 2

SCALE: 1"=4' FOR 11"x17"
1"=2' FOR 22"x34"

0' 2' 4'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS (BY OTHERS).
3. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
4. NOT ALL INFORMATION SHOWN FOR CLARITY.
5. PROPOSED GPS ANTENNA TO BE MOUNTED A MINIMUM OF 10' FROM EXISTING GPS ANTENNA.
6. ANCHOR EACH PROPOSED CABINET WITH APPROPRIATE HARDWARE, AS SPECIFIED BY THE MANUFACTURER.
7. INSTALL NEW CONDUIT/CABLING ON EXISTING ICE BRIDGE, CABLE TRAY, OR CABLE RACK. DO NOT CREATE ANY TRIP HAZARDS.
8. VERIFY SPACE AVAILABLE FOR PROPOSED CABLES. (6) LINES OF COAX TO BE REMOVED AND (6) TO REMAIN.

Dewberry®
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10TH FLOOR
BOSTON, MA 02210
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FAX: 617.695.3310

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STATE OF CONNECTICUT
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PROPOSED SITE & SHELTER PLANS

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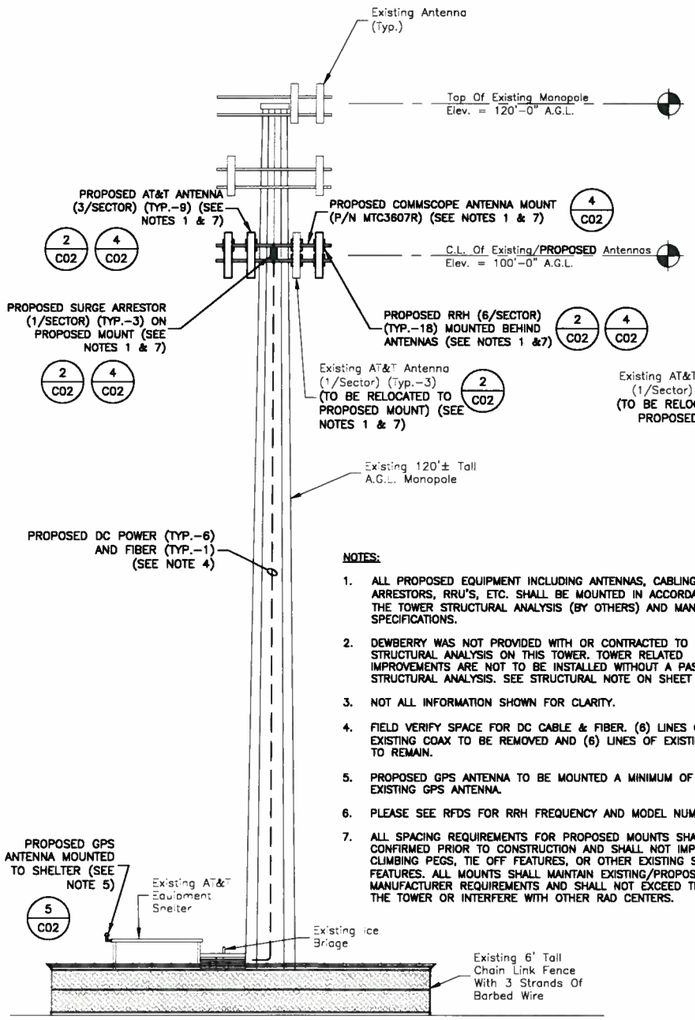
50019239/50059547	C01	2

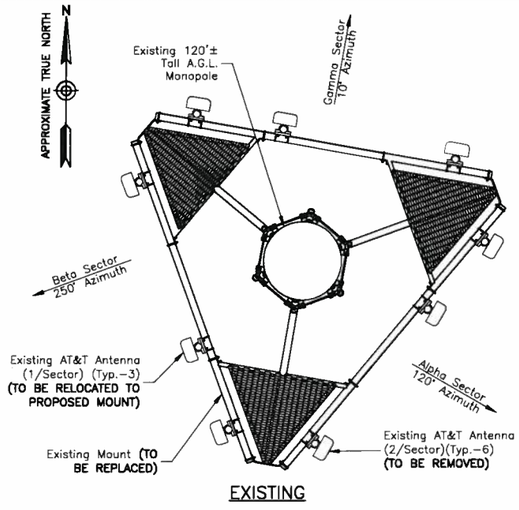


NOTES:

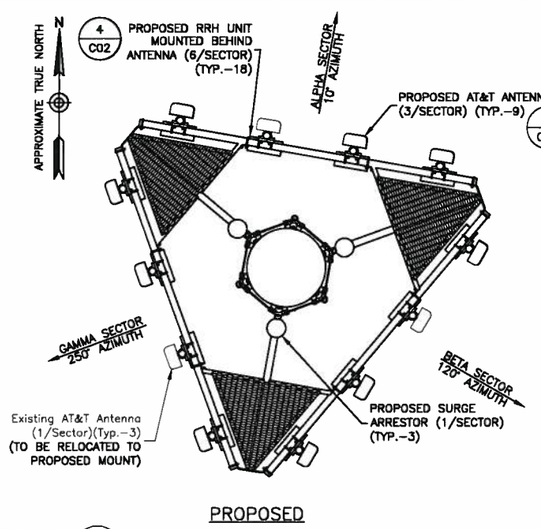
1. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, CABLING, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS (BY OTHERS) AND MANUFACTURER SPECIFICATIONS.
2. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
3. NOT ALL INFORMATION SHOWN FOR CLARITY.
4. FIELD VERIFY SPACE FOR DC CABLE & FIBER. (6) LINES OF EXISTING COAX TO BE REMOVED AND (6) LINES OF EXISTING COAX TO REMAIN.
5. PROPOSED GPS ANTENNA TO BE MOUNTED A MINIMUM OF 10' FROM EXISTING GPS ANTENNA.
6. PLEASE SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER.
7. ALL SPACING REQUIREMENTS FOR PROPOSED MOUNTS SHALL BE CONFIRMED PRIOR TO CONSTRUCTION AND SHALL NOT IMPEDE CLIMBING PEGS, TIE OFF FEATURES, OR OTHER EXISTING SAFETY FEATURES. ALL MOUNTS SHALL MAINTAIN EXISTING/PROPOSED MANUFACTURER REQUIREMENTS AND SHALL NOT EXCEED THE TOP OF THE TOWER OR INTERFERE WITH OTHER RAD CENTERS.

PROPOSED ELEVATION 1

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"
0' 10' 20'



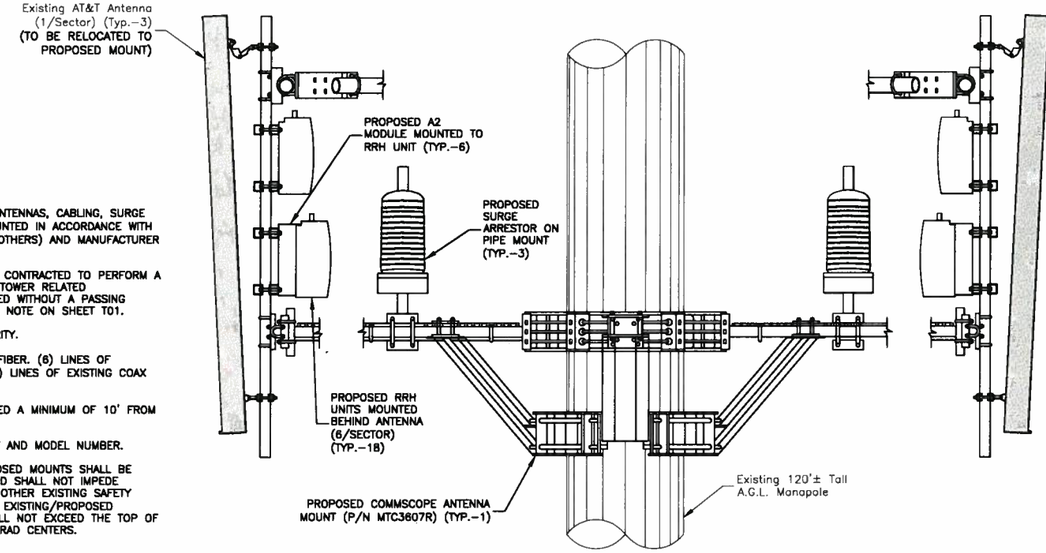
EXISTING



PROPOSED

ANTENNA ORIENTATION PLAN 2

SCALE: N.T.S.



NOTES:

1. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS (BY OTHERS) AND MANUFACTURER SPECIFICATIONS.
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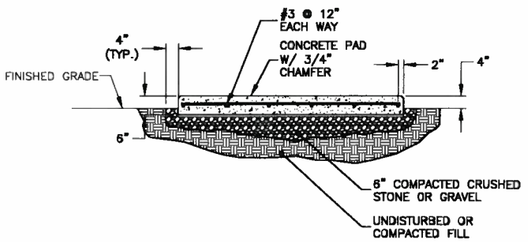
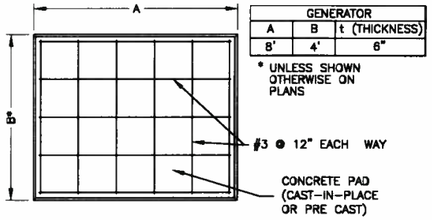
3. PLEASE SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER.
4. ALL SPACING REQUIREMENTS FOR PROPOSED MOUNTS SHALL BE CONFIRMED PRIOR TO CONSTRUCTION AND SHALL NOT IMPEDE CLIMBING PEGS, TIE OFF FEATURES, OR OTHER EXISTING SAFETY FEATURES. ALL MOUNTS SHALL MAINTAIN EXISTING/PROPOSED MANUFACTURER REQUIREMENTS AND SHALL NOT EXCEED THE TOP OF THE TOWER OR INTERFERE WITH OTHER RAD CENTERS.

PROPOSED ANTENNA MOUNTING DETAIL 4

SCALE: N.T.S.





GENERATOR		
A	B	t (THICKNESS)
8'	4'	6"

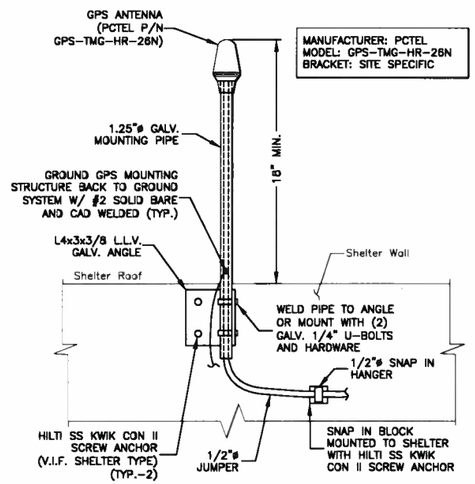
* UNLESS SHOWN OTHERWISE ON PLANS

NOTES:

1. USE GALVANIZED HILTI EXPANSION ANCHORS OR APPROVED EQUAL FOR EQUIPMENT ANCHORAGE.
2. VERIFY THE SIZE OF THE GENERATOR WITH THE SUPPLIER.
3. FOR SIZE AND LOCATION OF ANCHORS AND OTHER REQUIREMENT, SEE EQUIPMENT VENDOR DRAWINGS.

OUTDOOR PAD FOR MINOR EQUIPMENT 3

SCALE: N.T.S.



NOTES:

1. GROUND ANTENNAS AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND AT&T STANDARDS.
2. FIELD LOCATE GPS ANTENNA A MINIMUM OF 10' HORIZONTALLY FROM EXISTING GPS ANTENNA.
3. SEAL ALL WALL PENETRATIONS WITH SILICONE SEALANT.

GPS ANTENNA DETAIL 5

SCALE: N.T.S.

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STATE OF CONNECTICUT
BENJAMIN B. REVETTE
LICENSED PROFESSIONAL ENGINEER

AT&T MOBILITY
FRAMINGHAM, MA 01701

PROPOSED ELEVATION & CONSTRUCTION DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50019239/50059547	C02	2

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **March 21, 2014**

Steve Tuttle
Crown Castle
8 Parkmeadow Drive
Pittsford, NY 14534

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
mscroggy@pjfweb.com

Subject: **Structural Modification Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1193
	Carrier Site Name:	Bloomfield-Sprint
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	249649
	Crown Castle Work Order Number:	727661
	Crown Castle Application Number:	203982 Rev. 12
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-2485 BP B
Site Data:	**28 Brewer Dr., BLOOMFIELD, Hartford County, CT** **Latitude *41° 50' 6.57"*, Longitude *-72° 44' 28.2"*** **120 Foot - Monopole Tower**	

Dear Steve Tuttle,

Paul J Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 626483, in accordance with application 203982, revision 12.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.0 inch ice thickness and 50 mph under service loads.

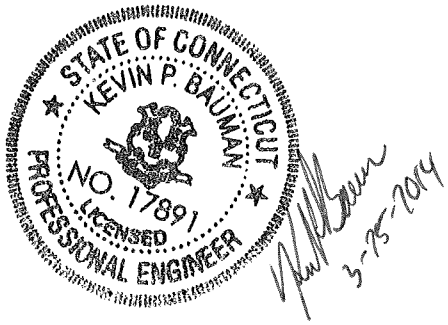
All modifications and equipment proposed in this report shall be installed in accordance with the proposed referenced drawings (#4594532) and the attached drawings for the determined available structural capacity to be effective.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Morgan Scroggy, E.I.
Structural Designer BKK

tnxTower Report - version 6.1.4.1



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **March 21, 2014**

Steve Tuttle
Crown Castle
8 Parkmeadow Drive
Pittsford, NY 14534

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
mscroggy@pjfweb.com

Subject: Structural Modification Report

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1193
	Carrier Site Name:	Bloomfield-Sprint
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	249649
	Crown Castle Work Order Number:	727661
	Crown Castle Application Number:	203982 Rev. 12
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-2485 BP B
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Respectfully submitted by:

Morgan Scroggy, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ROHN in January of 1998. The tower was originally designed for a wind speed of 70 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.0 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	3	andrew	SBNHH-1D65A w/ Mount Pipe	4	3/4	-
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	com comp inc.	DTMABP7819VG12A			
		3	ericsson	RRUS 11-700			
		6	ericsson	RRUS 12-B2			
		6	ericsson	RRUS A2 MODULE			
		3	ericsson	RRUS-11 800MHz			
		3	ericsson	WCS RRUS-32-B30			
		2	raycap	DC6-48-60-18-8F			
	99.0	4	ericsson	RRUS E2 B29			
		1	commscope	MTC3607R Platform			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
118.0	120.0	3	alcatel lucent	TD-RRH8x20-25	1	5/8	2
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	kathrein	840 10054 w/ Mount Pipe	3 6 2	1-1/4 5/16 1/2	1
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	samsung telecom	WIMAX DAP HEAD			
	118.0	1	tower mounts	Platform Mount [LP 301-1]			
	116.0	1	dragonwave	A-ANT-18G-1-C			
		1	dragonwave	A-ANT-18G-2-C			
		2	dragonwave	HORIZON COMPACT			
		3	rfs celwave	IBC1900BB-1			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	rfs celwave	IBC1900HG-2A			
114.0	115.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	114.0	1	tower mounts	Pipe Mount [PM 601-3]			2
	113.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			1
107.0	108.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	107.0	1	tower mounts	Platform Mount [LP 712-1]	18	1-5/8	1
99.0	100.0	2	kmw comm	AM-X-CD-14-65-00T-RET w/ Mount Pipe	-	-	3
		3		AM-X-CD-16-65-00T-RET w/ Mount Pipe	1 2 6	3/8 3/4 7/8	1
		3	powerwave technologies	7770.00 w/ Mount Pipe	6	7/8	3
		2		P65-17-XLH-RR w/ Mount Pipe			
	99.0	3	com comp inc.	DTMABP7819VG12A			
		6	ericsson	RRUS-11			
		6	powerwave technologies	LGP13519			
		1	tower mounts	Platform Mount [LP 501-1]			
		1	raycap	DC6-48-60-18-8F	-	-	1
59.0	63.0	1	decibel	DB536	1	7/8	1
	59.0	1	tower mounts	Side Arm Mount [SO 702-1]			
48.0	50.0	1	lucent	KS24019-L112A	2	1/2	1
		1	unknown	GPS			
	48.0	1	tower mounts	Pipe Mount [PM 601-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed, Not Included in this SA

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 08/09/96	1529722	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 34738SW, 10/11/96	1616549	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, 34738SW, 10/17/96	2158527	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Semaan, CT03XC076, 08/25/03	-	Semaan
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 080063.01, 01/18/08	2205450	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B&T, 79582, 11/03/08	2343687	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2011111.27, 05/31/11	2917489	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, No. 37513-2485 BP, 3/10/14	4594532	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

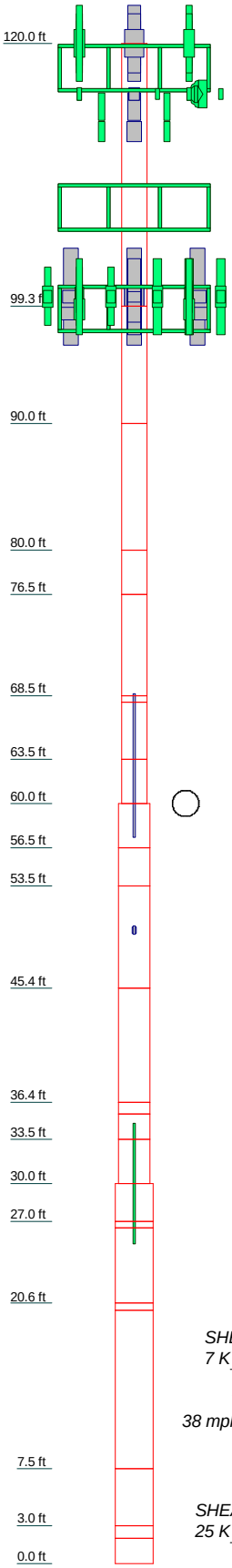
1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was reinforced in conformance with the referenced modification drawings.
5) The bridge stiffeners carry the entire load through the flange connection at 30'.
6) The existing "cut down" TS14x10 at 60' act as bridge stiffeners and carry the entire load through the flange connection.
7) Monopole will be reinforced in conformance with the referenced proposed modification drawing dated 3/10/14 (CCI sites #4594532).
8) Monopole will be reinforced in conformance with the attached proposed modification drawings.

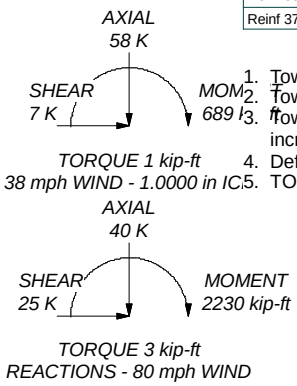
4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 99.25	Pole	P24x1/4	1	-6.21	589.19	48.2	Pass
L2	99.25 - 90	Pole	RPS 24" x 0.4346"	2	-11.76	923.57	63.8	Pass
L3	90 - 80	Pole	P24x3/8	3	-13.11	934.94	99.7	Pass
L4	80 - 76.5	Pole	RPS 24" x 0.62517"	4	-13.80	1212.06	88.8	Pass
L5	76.5 - 68.5	Pole	RPS 24" x 0.82933"	5	-15.75	1593.35	87.4	Pass
L6	68.5 - 68	Pole	RPS 24" x 1.09914"	6	-15.90	2085.24	69.2	Pass
L7	68 - 63.5	Pole	RPS 24" x 0.81655"	7	-16.99	1798.92	87.9	Pass
L8	63.5 - 60	Pole	RPS 24" x 1.13718"	8	-18.10	2216.54	79.6	Pass
L9	60 - 56.5	Pole	RPS 30" x 0.90733"	9	-19.25	2335.32	63.3	Pass
L10	56.5 - 53.5	Pole	RPS 30" x 0.55714"	10	-19.90	1565.42	98.4	Pass
L11	53.5 - 45.417	Pole	RPS 30" x 0.70939"	11	-22.09	1981.85	91.7	Pass
L12	45.417 - 36.417	Pole	RPS 30" x 0.86453"	12	-24.89	2402.48	89.0	Pass
L13	36.417 - 35.5	Pole	RPS 30" x 1.02443"	13	-25.22	2831.21	77.5	Pass
L14	35.5 - 33.5	Pole	RPS 30" x 0.86188"	14	-25.84	2395.96	93.5	Pass
L15	33.5 - 30	Pole	RPS 30" x 1.23648"	15	-27.32	3145.60	76.9	Pass
L16	30 - 27	Pole	RPS 36" x 0.7835"	16	-29.96	2484.77	81.9	Pass
L17	27 - 26.5	Pole	RPS 36" x 0.97892"	17	-30.17	3088.15	67.1	Pass
L18	26.5 - 20.583	Pole	RPS 36" x 0.81422"	18	-32.21	2583.53	86.4	Pass
L19	20.583 - 20	Pole	RPS 36" x 1.06207"	19	-32.47	3343.43	68.2	Pass
L20	20 - 7.5	Pole	RPS 36" x 0.8638"	20	-37.05	2733.17	96.6	Pass
L21	7.5 - 3	Pole	RPS 36" x 0.90824"	21	-38.78	2867.75	97.3	Pass
L22	3 - 2	Pole	RPS 36" x 0.90824"	22	-39.16	2867.75	98.4	Pass
L23	2 - 0	Pole	RPS 36" x 0.94668"	23	-39.96	2932.48	98.6	Pass
							Summary	
						Pole (L3)	99.7	Pass
						RATING =	**99.7**	**Pass**

Section	Size	Length (ft)	Grade	Weight (K)
1	P24x1/4	20.75	A36M-42	1.3
2	RPS 24" x 0.4346"	9.25	Reinf 35.89 ksi	1.0
3	P24x3/8	10.00	A36M-42	0.9
4	24" x 0.6251"	3.50	Reinf 33.01 ksi	0.5
5		8.00	Reinf 33.00 ksi	1.6
6		0.50		0.1
7		4.50		0.9
8		3.50		1.0
9		3.50		1.0
10		3.00		0.5
11		8.08		1.8
12		9.00	Reinf 37.96 ksi	2.4
13		0.92	Reinf 37.97 ksi	0.3
14		2.00		0.5
15		3.50		1.3
16		8.00		0.9
17		0.50		0.2
18		5.92		1.8
19		0.58		0.2
20	RPS 36" x 0.5824	12.50	Reinf 35.84 ksi	4.1
21		4.50	Reinf 35.81 ksi	1.5
22		1.00		0.3
23		2.00	Reinf 35.81 ksi	0.7
	RPS 36" x 0.8645			25.1





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVTM14-C-120 w/ Mount Pipe	118	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
APXVTM14-C-120 w/ Mount Pipe	118		
APXVTM14-C-120 w/ Mount Pipe	118	(3) SBNHH-1D65A w/ Mount Pipe	99
TD-RRH8x20-25	118	RRUS 11-700	99
TD-RRH8x20-25	118	RRUS 11-700	99
TD-RRH8x20-25	118	RRUS 11-700	99
APXV9ERR18-C-A20 w/ Mount Pipe	118	(2) RRUS 12-B2	99
APXVSPP18-C-A20 w/ Mount Pipe	118	(2) RRUS 12-B2	99
APXVSPP18-C-A20 w/ Mount Pipe	118	(2) RRUS 12-B2	99
IBC1900HG-2A	118	(2) RRUS A2 MODULE	99
IBC1900HG-2A	118	(2) RRUS A2 MODULE	99
IBC1900HG-2A	118	(2) RRUS A2 MODULE	99
IBC1900BB-1	118	DTMABP7819VG12A	99
IBC1900BB-1	118	DTMABP7819VG12A	99
IBC1900BB-1	118	DTMABP7819VG12A	99
840 10054 w/ Mount Pipe	118	RRUS-11 800MHz	99
840 10054 w/ Mount Pipe	118	RRUS-11 800MHz	99
840 10054 w/ Mount Pipe	118	RRUS-11 800MHz	99
WIMAX DAP HEAD	118	DC6-48-60-18-8F	99
WIMAX DAP HEAD	118	DC6-48-60-18-8F	99
WIMAX DAP HEAD	118	(2) RRUS E2 B29	99
(2) HORIZON COMPACT	118	RRUS E2 B29	99
Platform Mount [LP 301-1]	118	RRUS E2 B29	99
A-ANT-18G-1-C	118	WCS RRUS-32-B30	99
A-ANT-18G-2-C	118	WCS RRUS-32-B30	99
PCS 1900MHz 4x45W-65MHz	114	WCS RRUS-32-B30	99
PCS 1900MHz 4x45W-65MHz	114	AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
800MHz 2X50W RRH W/FILTER	114	AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
800MHz 2X50W RRH W/FILTER	114	AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
800MHz 2X50W RRH W/FILTER	114	DC6-48-60-18-8F	99
Pipe Mount [PM 601-3]	114	Commscope MTC3607R Platform Mount	99
PCS 1900MHz 4x45W-65MHz	114	(3) HPA-65R-BUU-H8 w/ Mount Pipe	99
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107	(3) HPA-65R-BUU-H6 w/ Mount Pipe	99
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107	DB536	59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	Side Arm Mount [SO 702-1]	59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	Pipe Mount [PM 601-1]	48
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	GPS	48
		KS24019-L112A	48
KRY 112 144/1	107	Bridge Stiffener (114.5" x 12.5" x 1.25")	30
KRY 112 144/1	107	Bridge Stiffener (114.5" x 12.5" x 1.25")	30
KRY 112 144/1	107	Bridge Stiffener (114.5" x 12.5" x 1.25")	30
Platform Mount [LP 712-1]	107		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36M-42	42 ksi	60 ksi	Reinf 37.96 ksi	38 ksi	48 ksi
Reinf 35.89 ksi	36 ksi	45 ksi	Reinf 37.97 ksi	38 ksi	48 ksi
Reinf 33.01 ksi	33 ksi	42 ksi	Reinf 35.20 ksi	35 ksi	44 ksi
Reinf 33.00 ksi	33 ksi	42 ksi	Reinf 35.84 ksi	36 ksi	45 ksi
Reinf 32.97 ksi	33 ksi	42 ksi	Reinf 35.85 ksi	36 ksi	45 ksi
Reinf 37.82 ksi	38 ksi	48 ksi	Reinf 35.86 ksi	36 ksi	45 ksi
Reinf 33.93 ksi	34 ksi	43 ksi	Reinf 35.81 ksi	36 ksi	45 ksi
Reinf 35.21 ksi	35 ksi	45 ksi	Reinf 35.17 ksi	35 ksi	44 ksi
Reinf 37.98 ksi	38 ksi	48 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.7%

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job:	***Existing 120 ft. Monopole / Mtn. View Cem. (Filley Park)***		
Project:	***PJF: 37513-2485 BP B / BU876329***		
Client: Crown Castle USA	Drawn by: Morgan Scroggy	App'd:	
Code: TIA/EIA-222-F	Date: 03/27/14	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2013\37513-2485 BU 876329\WO 727661 BU 876329 - 7702\37513-2485 BP B New Reinforcing.eri		Dwg No. E-1	

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

BU NUMBER; SITE NAME

BU #876329: MTN. VIEW CEM.

APP: 203982 REV. 12; WO: 727661

SITE ADDRESS

28 BREWER DRIVE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

PROJECT NOTES

1. DETAILED FIELD INFORMATION REGARDING INTERFERENCES AND/OR EXISTING FIELD CONDITIONS MAY BE AVAILABLE ON CROWN'S CCISITES AND FROM CONTRACTOR'S PRE-MOD MAPPING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND COORDINATE WITH THE AVAILABLE SOURCES OF INFORMATION ABOVE AND WITH THE PROJECT PLANS BEFORE PROCEEDING WITH THE WORK. CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO PAUL J. FORD AND COMPANY AND CROWN CASTLE FIELD PERSONNEL BEFORE PROCEEDING WITH THE WORK.

2. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL STRUCTURAL BOLTS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

4. (A.) DTI'S REQUIRED: ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAILS ON SHEET S-3 FOR REQUIREMENTS ON THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

   (B.) EFFECTIVE 5/30/2012: UNTIL FURTHER NOTICE, CROWN CASTLE WILL ACCEPT AJAX BOLTS TIGHTENED USING AISC "TURN-OF-NUT" METHOD. INSTALLERS SHALL FOLLOW CROWN GUIDELINES FOR AISC "TURN-OF-NUT" METHOD AND ALSO PROVIDE COMPLETE INSPECTION DOCUMENTATION IN THE PMI. PRIOR TO STARTING WORK, CONTRACTOR SHALL CONSULT WITH CROWN ENGINEERING TO DETERMINE WHETHER THIS POLICY IS STILL IN PLACE.

   (C.) REQUIREMENT EFFECTIVE 04/20/2013, PER CROWN CASTLE DIRECTIVE: ANY AND ALL STRUCTURAL BOLTS THAT ARE TIGHTENED TO THE PRETENSIONED CONDITION USING THE AISC "TURN-OF-NUT" TENSIONING PROCEDURE (NON-TENSION CONTROLLED ['NON-TC'] BOLTS AND/OR BOLTS WITHOUT DTI'S INSTALLED) SHALL BE INSPECTED ONSITE BY AN INDEPENDENT THIRD-PARTY BOLT INSPECTOR, AS APPROVED BY CROWN. **THIS INSPECTION IS REQUIRED TO BE AN ONSITE FIELD INSPECTION.** THE THIRD-PARTY BOLT INSPECTOR SHALL FOLLOW THE PUBLISHED CROWN CASTLE INSPECTION PROCEDURE "MI NON-TC BOLT INSPECTION", DATED APRIL 2013. THE THIRD-PARTY BOLT INSPECTOR SHALL PREPARE A FULLY DOCUMENTED BOLT INSPECTION REPORT, AS SPECIFIED BY CROWN, AND SHALL SUBMIT A COPY OF THE BOLT INSPECTION REPORT TO THE MI INSPECTOR, THE EOR, AND TO CROWN CASTLE.

PROJECT CONTACTS:

MONOPOLE OWNER:
CROWN CASTLE
8 PARKMEADOW DRIVE, PITTSFORD, NY 14534
TSA: STEVE TUTTLE
PH: (585) 899-3445
MOD PM: ROY PYPTIUK AT ROY.PYPTIUK@CROWNCASTLE.COM

STRUCTURAL ENGINEER OF RECORD (EOR):
PAUL J. FORD AND COMPANY
250 EAST BROAD STREET, SUITE 600
COLUMBUS, OHIO 43215-3708
CONTACT: MORGAN SCROGGY AT MSCROGGY@PJFWEB.COM
PHONE: 614-221-6679

DESIGN STANDARD

THIS REINFORCEMENT DESIGN IS BASED UPON THE REQUIREMENTS OF THE TIA/EIA-222-F-1996 STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, USING A DESIGN BASIC WIND SPEED OF 80 MPH (3-SEC GUST) WITH NO ICE, 38 MPH WITH 1 INCH ICE AND 50 MPH SERVICE LOADS, EXPOSURE CATEGORY C.

REFER TO THE POLE DESIGN AND ANTENNA LOADING DOCUMENTED IN THE PJF STRUCTURAL ANALYSIS FOR THIS SITE (PJF#37513-2485 B), DATED 3-21-2014.

THIS PROJECT INCLUDES THE FOLLOWING REINFORCING ELEMENTS:

SHAFT REINFORCING
FIELD WELDED ANCHOR BRACKETS
POST INSTALLED ANCHOR RODS
BOLTED FLANGE JUMP

SHEET INDEX

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BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B	ISSUE DATE OF PERMIT B : 3-21-2014
DRAWN BY: S.S.	
CHECKED BY: M.L.S.	
APPROVED BY: BKK	T-1
DATE: 3-21-2014	

CROWN CASTLE PROJECT: BU #876329: MTN. VIEW CEM.; BLOOMFIELD, CT
MONOPOLE RETROFIT PROJECT MASTER NOTES DOCUMENT (REV. 2, 1/22/2009)

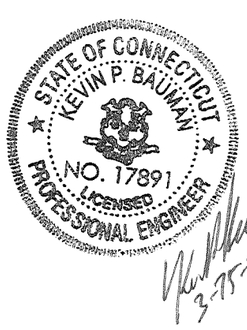
A. GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION. THESE DRAWINGS WERE PREPARED FROM INFORMATION AND DOCUMENTS PROVIDED TO PAUL J. FORD & COMPANY BY CROWN CASTLE. THIS INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY PAUL J. FORD & COMPANY FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. ANY DISCREPANCIES AND/OR CHANGES BETWEEN THE INFORMATION CONTAINED IN THESE DRAWINGS AND THE ACTUAL VERIFIED SITE CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF CROWN CASTLE AND PAUL J. FORD & COMPANY SO THAT ANY CHANGES AND/OR ADJUSTMENTS, IF NECESSARY, CAN BE MADE TO THE DESIGN AND DRAWINGS.
2. THE EXISTING UNREINFORCED MONOPOLE STRUCTURE DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE ANTENNA AND PLATFORM LOADS SHOWN ON THESE DRAWINGS AT THE REQUIRED MINIMUM TIA/EIA-222-F BASIC WIND SPEEDS. DO NOT INSTALL ANY ADDITIONAL OR NEW ANTENNA AND PLATFORM LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN PROPERLY AND ADEQUATELY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO INSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT. IMPORTANT CUTTING, WELDING AND SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES FROM CROWN CASTLE. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY 'CUTTING AND WELDING PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT".
5. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
6. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY THE INSPECTION/TESTING AGENCY. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
7. ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED, AND/OR RELOCATED, AND/OR REPLACED AND RE-INSTALLED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH THE OWNER, TESTING AGENCY, AND ENGINEER.
11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS. IN NO CASE SHALL ANY NEW AND/OR ADDITIONAL PLATFORMS AND/OR ANTENNAS AND/OR COAX CABLES AND/OR OTHER EQUIPMENT BE INSTALLED ON THE MONOPOLE UNTIL THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF ALL OF THE REQUIRED STRUCTURAL REINFORCING SYSTEM COMPONENTS.

B. (SECTION NOT USED)

C. SPECIAL INSPECTION AND TESTING

1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY THE OWNER'S REPRESENTATIVE AND THE OWNER'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY. REFER TO CROWN CASTLE DOCUMENT ENG-SOW-10066 FOR SPECIFICATION.
2. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY THE OWNER FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
   (A.) ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
   (B.) THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES FOR THE OWNER. THE TESTING AGENCY SHALL INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CWI). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.
   A. GENERAL:
      (1.) PERFORM PERIODIC ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY OWNER IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.
   B. FOUNDATIONS, CONCRETE, AND SOIL PREPARATION - (NOT REQUIRED)
   C. CONCRETE TESTING PER ACI - (NOT REQUIRED)
   D. STRUCTURAL STEEL
      (1.) CHECK THE STEEL ON THE JOB WITH THE PLANS.
      (2.) CHECK MILL CERTIFICATIONS.
      (3.) CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
      (4.) INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
      (5.) CALL FOR LABORATORY TEST REPORTS WHEN IN DOUBT.
      (6.) CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
      (7.) CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
      (8.) CHECK BOLT TIGHTENING ACCORDING TO AISC "TURN OF THE NUT" METHOD.
   E. WELDING:
      (1.) VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS, NOT DEEMED PREQUALIFIED, IN ACCORDANCE WITH AWS D1.1.
      (2.) INSPECT FIELD WELDED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND IN ACCORDANCE WITH AWS D1.1.
      (3.) APPROVE FIELD WELDING SEQUENCE.
         (A.) A PROGRAM OF THE APPROVED SEQUENCES SHALL BE SUBMITTED TO THE OWNER BEFORE WELDING BEGINS. NO CHANGE IN APPROVED SEQUENCES MAY BE MADE WITHOUT PERMISSION FROM THE OWNER.
      (4.) INSPECT WELDED CONNECTIONS AS FOLLOWS AND IN ACCORDANCE WITH AWS D1.1:
         (A.) INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE AND WORKING CONDITIONS.
         (B.) VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS.
         (C.) INSPECT PREHEATING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.1.
         (D.) VISUALLY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1.1.
         (E.) SPOT TEST AT LEAST ONE FILLET WELD OF EACH MEMBER USING MAGNETIC PARTICLE OR DYE PENETRANT.
         (F.) INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED PLANS.
         (G.) VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
         (H.) REVIEW THE REPORTS BY TESTING LABS.
         (I.) CHECK TO SEE THAT WELDS ARE CLEAN AND FREE FROM SLAG.
         (J.) INSPECT RUST PROTECTION OF WELDS AS PER SPECIFICATIONS.
         (K.) CHECK THAT DEFECTIVE WELDS ARE CLEARLY MARKED AND HAVE BEEN ADEQUATELY REPAIRED.
   F. SPECIAL INSPECTION OF EXISTING SHAFT-TO-FLANGE WELD CONNECTIONS: - (NOT REQUIRED)
   G. REPORTS:
      (1.) COMPILE AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO THE OWNER.
6. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES AND PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO THE OWNER'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT THE OWNER'S REVIEW AND SPECIFIC WRITTEN CONSENT. THE OWNER RESERVES THE RIGHT TO DETERMINE WHAT IS AN ACCEPTABLE RESOLUTION OF DISCREPANCIES AND PROBLEMS.
7. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO THE OWNER. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
8. RESPONSIBILITY: THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.



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D. STRUCTURAL STEEL

1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:

A. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
- (A.) "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
- (B.) "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
- (C.) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (PARAGRAPH 4.2.1 SPECIFICALLY EXCLUDED).

B. BY THE AMERICAN WELDING SOCIETY (AWS):
- (A.) "STRUCTURAL WELDING CODE - STEEL D1.1."
- (B.) "SYMBOLS FOR WELDING AND NON-DESTRUCTIVE TESTING"

2. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M20 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO THE OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN.) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH-UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
8. UNLESS OTHERWISE NOTED, ALL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH ASTM A123. SEE SECTION J FOR FURTHER NOTES AND FOR EXCEPTIONS (IF ANY).
9. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE OWNER'S APPROVED TESTING AGENCY. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO PERFORM THEIR DUTIES FOR THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE TESTING AGENCY IN THEIR TESTING EFFORTS.
10. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
11. FIELD CUTTING OF STEEL:
- (A.) PRIOR TO ANY FIELD CUTTING, THE CONTRACTOR SHALL MARK THE CUT OUTLINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS.
- (B.) ANY REQUIRED CUTS IN THE STEEL SHALL BE CAREFULLY CUT BY MECHANICAL METHODS SUCH AS DRILLING, SAW CUTTING, AND GRINDING. THE CONTRACTOR IS RESPONSIBLE TO PREVENT ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, DURING THE CUTTING WORK. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
- (C.) ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.

E. BASE PLATE GROUT - (NOT REQUIRED)

F. FOUNDATION WORK - (NOT REQUIRED)

G. CAST-IN-PLACE CONCRETE - (NOT REQUIRED)

H. EPOXY GROUTED REINFORCING ANCHOR RODS

1. UNLESS OTHERWISE NOTED, REINFORCING ANCHOR RODS SHALL BE 150 KSI ALL-THREAD BAR CONFORMING TO ASTM A722. RECOMMENDED MANUFACTURERS/SUPPLIERS OF 150 KSI ALL-THREAD BAR ARE WILLIAMS FORM ENGINEERING CORPORATION AND DYWIDAG SYSTEMS INTERNATIONAL.
2. ALL REINFORCING ANCHOR RODS SHALL BE HOT DIP GALVANIZED PER ASTM A153. ALTERNATIVELY, ALL REINFORCING ANCHOR RODS MAY BE EPOXY COATED PER ASTM A775.
3. THE CORE-DRILLED HOLES IN THE CONCRETE FOR THE ANCHOR RODS SHALL BE CLEAN AND DRY, AND OTHERWISE PROPERLY PREPARED ACCORDING TO THE ANCHOR ROD AND EPOXY MANUFACTURERS' INSTRUCTIONS, PRIOR TO PLACEMENT OF ANCHOR RODS AND EPOXY. CONTRACTOR SHALL FOLLOW ALL ANCHOR ROD AND EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF RODS, EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
4. ULTRABOND 1, HILTI HIT RE-500 OR ANCHORTITE EPOXY SHALL BE USED TO ANCHOR THE 150 KSI ALL-THREAD BAR IN THE DRILL HOLES. IF CONTRACTOR WISHES TO USE A DIFFERENT EPOXY, A REQUEST INCLUDING THE EPOXY TECHNICAL DATA SHEET(S) SHALL BE SUBMITTED TO PAUL J FORD AND COMPANY FOR REVIEW PRIOR TO CONSTRUCTION. AS NOTED ABOVE, FOLLOW ALL EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
5. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN INSTALLED AND ALL EPOXY AND GROUT HAVE CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED PRIOR TO TESTING), ALL REINFORCING ANCHOR RODS SHALL BE LOAD TESTED PER CROWN CASTLE ENGINEERING DOCUMENT #ENG-PRC-10119. REFER TO THE NEW ANCHOR & BRACKET DETAIL ON FOLLOWING DRAWING SHEETS FOR SPECIFIED ANCHOR ROD PROOF LOAD.
6. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN SUCCESSFULLY LOAD TESTED AND APPROVED AND BASE PLATE / BEARING PLATE GROUT HAS CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED AFTER TESTING), CONTRACTOR SHALL TIGHTEN ALL HEAVY HEX ANCHOR NUTS TO SNUG TIGHT PLUS 1/8 TURN OF NUT.

I. TOUCH UP OF GALVANIZING

1. THE CONTRACTOR SHALL TOUCH UP ANY AND/OR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. **GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.**
2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. THE OWNER'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
3. THE OWNER'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE INADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

J. HOT DIP GALVANIZING

1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING.
3. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES AS REQUIRED.
4. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

K. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
2. THE MONOPOLE REINFORCING SYSTEM INDICATED IN THESE DOCUMENTS USES REINFORCING COMPONENTS THAT INVOLVE FIELD WELDING STEEL MEMBERS TO THE EXISTING GALVANIZED STEEL POLE STRUCTURE. THESE FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. **ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE CONNECTED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT THE OWNER REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.**
3. THE OWNER SHALL REFER TO TIA/EIA-222-F-1996, SECTION 14 AND ANNEX E FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY THE OWNER BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. **PAUL J. FORD & COMPANY RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT.** ACCORDING TO TIA/EIA-222-F-1996 SECTION 14.1, NOTE 1: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

STATE OF CONNECTICUT
KEVIN P. BAUMAN
NO. 17891
LICENSED PROFESSIONAL ENGINEER

3-25-2014

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street · Suite 600 · Columbus, Ohio 43215
(614) 221-6679 www.pjfweb.com

CROWN CASTLE
8 PARKMEADOW DRIVE, PITTSFORD, NY 14534
PH: (585) 899-3445 FAX: (585) 899-3449

BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B	ISSUE DATE OF PERMIT B : 3-21-2014
DRAWN BY: S.S.	
CHECKED BY: M.L.S.	
APPROVED BY: BKK	S-2
DATE: 3-21-2014	

AJAX BOLT NOTE SHEET: REV. 1.4, 5-20-2013

NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAIL BELOW FOR THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

4. ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. DTI'S SHALL BE THE SQUIRTER® STYLE, MADE TO ASTM F959 LATEST REVISION; AND HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A HARDNESS OF RC 38 OR HIGHER.

NOTES FOR AJAX M20 'ONE-SIDE' BOLTS WITH DIRECT TENSION INDICATORS (DTI'S):

DTI'S REQUIRED: DTI'S SHALL BE "SELF-INDICATING" SQUIRTER® STYLE DTI'S MADE WITH SILICONE EMBEDDED IN THEM, INSPECTED BY MEANS OF THE VISUAL EJECTION OF SILICONE AS THE DTI PROTRUSIONS COMPRESS. SQUIRTER® DTI'S SHALL BE CALIBRATED PER MANUFACTURER'S INSTRUCTIONS PRIOR TO USE.

THE DIRECT TENSION INDICATOR (DTI) WASHERS SHALL BE THE "SQUIRTER® STYLE" AS MANUFACTURED BY:

APPLIED BOLTING TECHNOLOGY PRODUCTS, INC.
1413 ROCKINGHAM ROAD BELLOWS FALLS, VERMONT, USA 05101
PHONE 1-800-552-1999
WEBSITE: WWW.APPLIEDBOLTING.COM

DISTRIBUTORS OF SQUIRTER® DTI'S:
HTTP://WWW.APPLIEDBOLTING.COM/APPLIED-BOLTING-DISTRIBUTORS.HTML

DTI: USE DIRECT TENSION INDICATOR (DTI) WASHERS COMPATIBLE WITH 20 MM (M20) NOMINAL A325 BOLTS FOR THE AJAX M20 BOLTS. DTI'S SHALL NOT BE HOT-DIP GALVANIZED. DTI'S SHALL BE MECHANICALLY GALVANIZED (MG) BY THE COLD MECHANICAL PROCESS ONLY AS PROVIDED BY THE DTI MANUFACTURER.

HARDENED WASHERS REQUIRED: USE A HARDENED WASHER FOR A 20 MM (M20) NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLTS. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF RC 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY GALVANIZED BY THE COLD MECHANICAL PROCESS. ALTERNATIVELY, CORRECTLY MADE HOT DIP GALVANIZED HARDENED FLAT WASHERS HAVING A MINIMUM HARDNESS OF RC 38 CAN BE USED; CONTRACTOR SHALL PROVIDE DOCUMENTATION OF WASHER SPECIFICATION AND HARDNESS.

NUT LUBRICATION REQUIRED: PROPERLY LUBRICATE THE THREADS OF THE NUT OF THE AJAX BOLT SO THAT IT CAN BE PROPERLY TIGHTENED WITHOUT GALLING AND/OR LOCKING UP ON THE BOLT THREADS. CONTRACTOR SHALL FOLLOW DTI MANUFACTURER INSTRUCTIONS FOR PROPER LUBRICATION AND TIGHTENING.

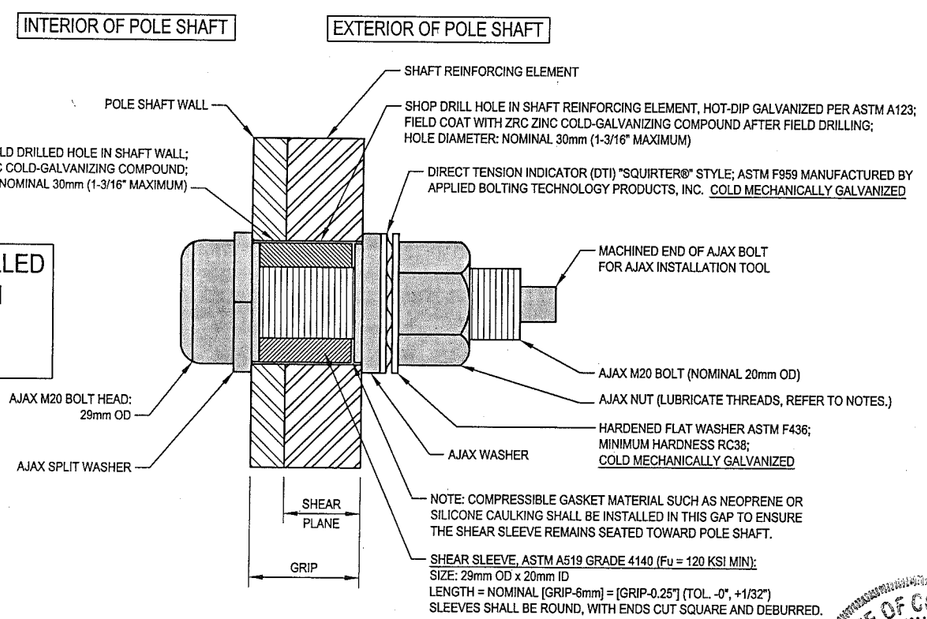
NOTE: COMPLETELY COMPRESSED DTI'S SHOWING NO VISIBLE REMAINING GAP ARE ACCEPTABLE. DTI WASHERS SHALL BE PLACED DIRECTLY AGAINST THE OUTER AJAX WASHER WITH THE DTI BUMPS FACING AWAY FROM THE AJAX WASHER. PLACE A HARDENED WASHER BETWEEN THE DTI AND THE AJAX NUT. THE DTI BUMPS SHALL BEAR AGAINST THE UNDERSIDE OF A HARDENED FLAT WASHER, NEVER DIRECTLY AGAINST THE NUT.

CONTRACTOR SHALL FOLLOW DTI MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION, LUBRICATION, TIGHTENING AND INSPECTION.

INSPECTION REQUIRED: ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: ALL AJAX BOLTS, AJAX SPLIT WASHERS, AJAX WASHERS, AJAX NUTS, AND SHEAR SLEEVES SHALL BE HOT DIP GALVANIZED PER ASTM A123 OR A153 AS APPROPRIATE. SHEAR SLEEVES MAY BE COLD GALVANIZED OR ZINC PLATED.



TYPICAL AJAX BOLT DETAIL 1/S-3

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MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

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37513-2485 B PERMIT.DWG

POLE SPECIFICATIONS	
POLE SHAPE TYPE:	ROUND
TAPER:	N/A
SHAFT STEEL:	A36M-42
BASE PL STEEL:	A36
ANCHOR RODS:	1 1/2"ø ASTM A354

SHAFT SECTION DATA					
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN)	
				@ TOP	@ BOTTOM
1	30.00	0.2500		24.000	24.000
2	30.00	0.3750		24.000	24.000
3	30.00	0.3750		30.000	30.000
4	30.00	0.3750		36.000	36.000
NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES					

* EXISTING MOUNTS MAY NEED TO BE ADJUSTED, MOVED AND/OR TEMPORARILY SUPPORTED DURING THE INSTALLATION OF SHAFT REINFORCING

MODIFICATIONS:

(A) INSTALL NEW ANCHOR RODS AND BRACKETS AT BASE PLATE. SEE SHEET S-5 & S-6.

(B) INSTALL NEW SHAFT REINFORCING. SEE CHART.

(C) INSTALL JUMP PLATE AT EL. 90'. SEE SHEET S-7.

NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	FLAT # / DEGREE SEPARATION	CMRP 65 KSI CATALOG PART NUMBER	ELEMENT	ELEMENT LENGTH	ELEMENT QUANTITY	MINIMUM AJAX BOLTS PER ELEMENT	MINIMUM TOTAL AJAX BOLT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	ESTIMATED TOTAL STEEL WEIGHT
1' - 0"	8' - 6"	65.5 & 204.5	(CUSTOM)	1-1/4" x 3-3/4"	7' - 6"	2	12	24	4	4	20"	191 LBS.
3' - 0"	8' - 6"	22.5 & 247.5	(CUSTOM)	1-1/4" x 3-3/4"	5' - 6"	2	10	20	4	4	20"	140 LBS.
18' - 6"	28' - 6"	45, 135, 225 & 315	CCI-SFP-04510010	1" x 4-1/2"	10' - 0"	4	16	64	6	6	20"	612 LBS.
34' - 6"	54' - 6"	22.5, 112.5, 202.5 & 292.5	CCI-SFP-04007520	3/4" x 4"	20' - 0"	4	21	84	4	4	16"	817 LBS.
62' - 6"	77' - 6"	45, 135, 225 & 315	CCI-SFP-04007515	3/4" x 4"	15' - 0"	4	17	68	4	4	16"	612 LBS.
90' - 6"	100' - 6"	0, 90, 180 & 270	CCI-SFP-04007510 (CUSTOM)	3/4" x 4"	10' - 0"	4	14	56	6	4	16"	408 LBS.
								316				2780 LBS.

NOTES:

1.) AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.

2.) ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.

3.) ALL REINFORCING SHALL BE ASTM A572 GR. 65.

4.) WELDS ARE ASSUMED E80XX OR GREATER. TERMINATION WELDS SHALL BE 3/8" FILLET WELDS.

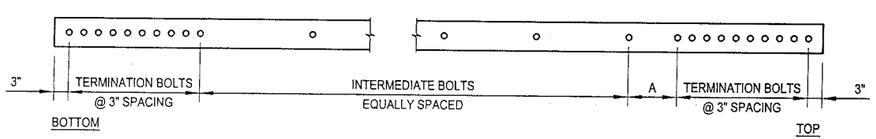
5.) HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.

6.) ALL SHIMS SHALL BE ASTM A-36.

SPLICE PLATE INSTALLATION CHART

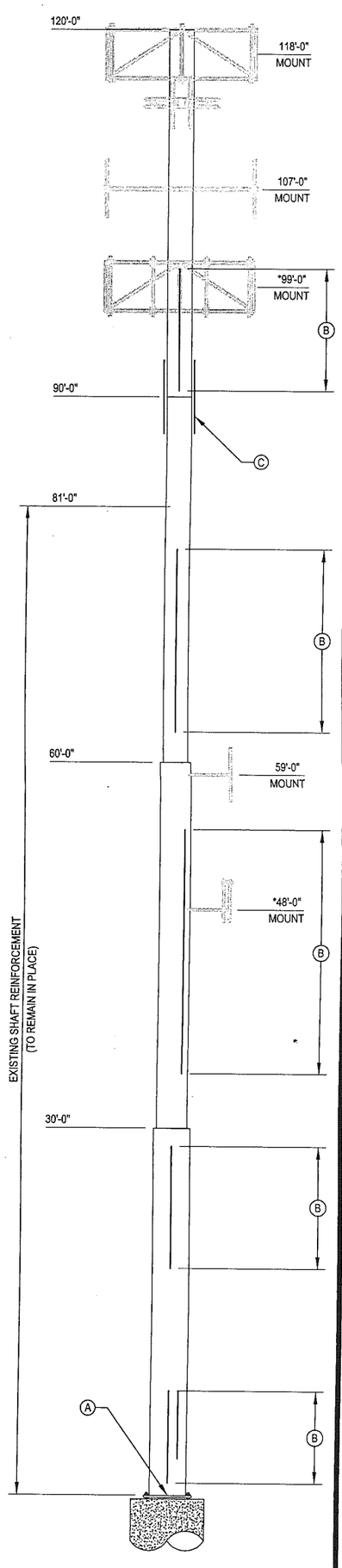
ELEVATION	FLAT PLATE THICKNESS	FLAT PLATE WIDTH	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	WELD LENGTH PER SIDE	TOTAL WELD LENGTH	AJAX BOLTS PER SPLICE*	TOTAL STEEL WEIGHT
3'-0"	1.25"	3"	2'-7"	2	-	-	8	66 LBS.
								66 LBS.

*** BOLTS INCLUDED IN THE TOTAL QUANTITY LISTED IN THE FLAT PLATE INSTALLATION CHART.**



CUSTOM BOLTED BAR DETAIL

NOTE: "A" DIMENSION MAY VARY, NOT TO EXCEED MAXIMUM INTERMEDIATE BOLT SPACING



POLE ELEVATION 1 / S-4

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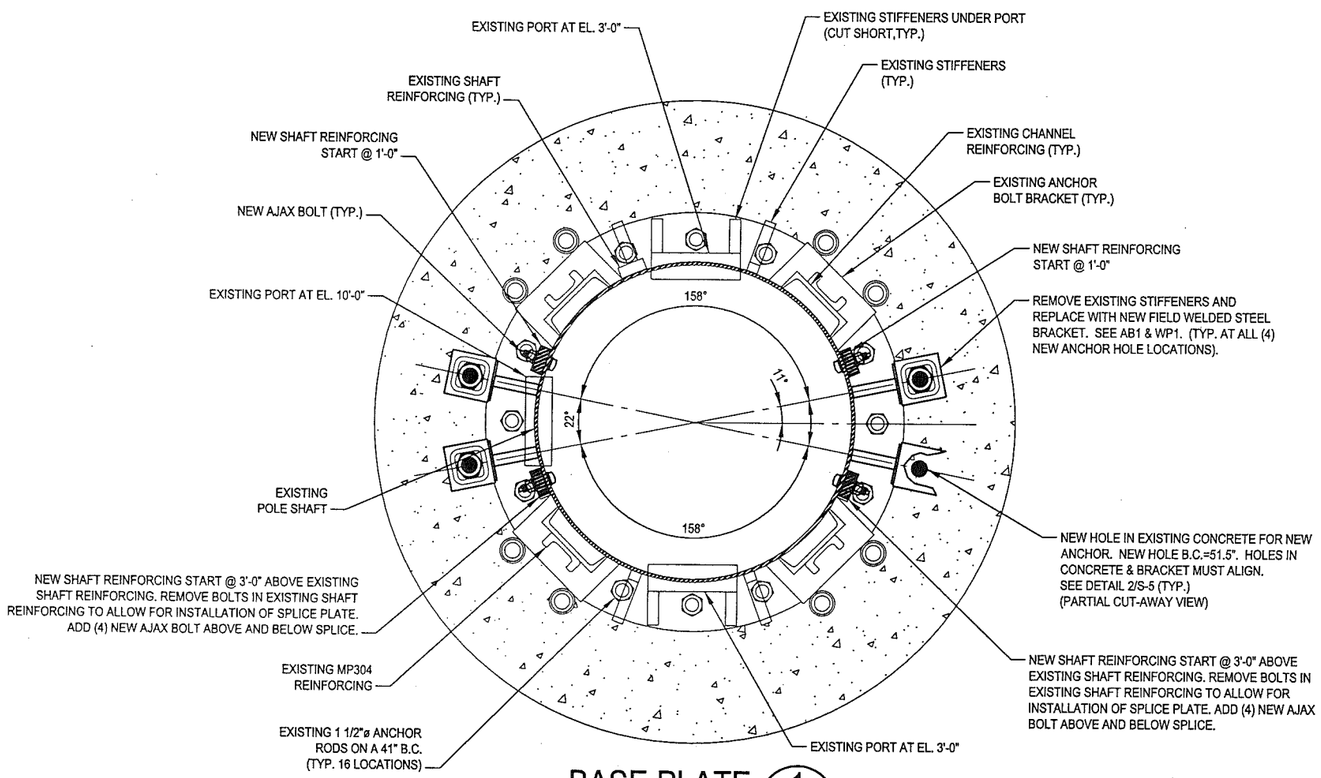
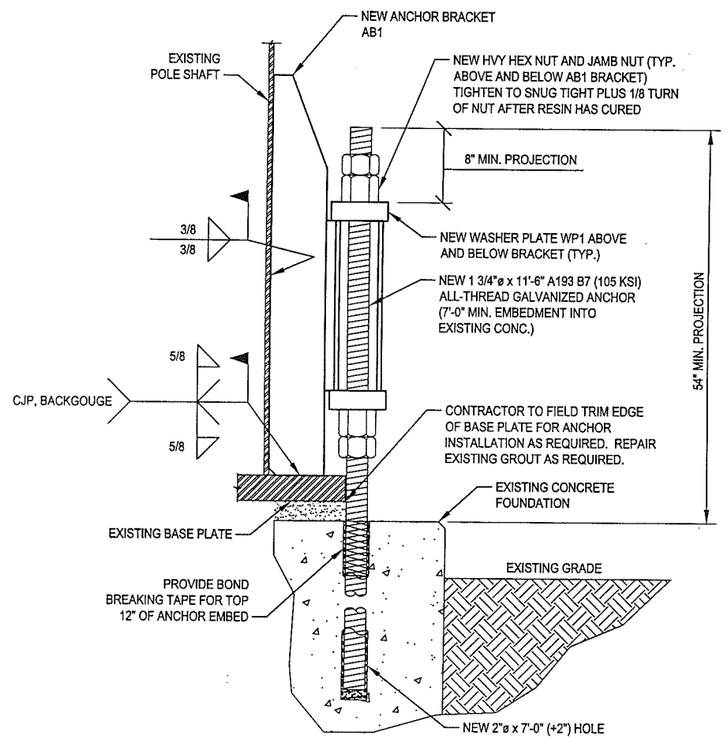
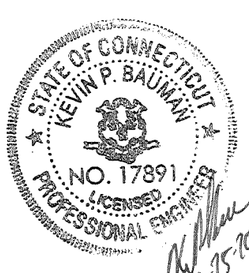


BASE PLATE 1 / S-5



NEW ANCHOR ROD REINFORCING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. ONCE ALL RESIN HAS CURED, ALL NEW ANCHOR ROD REINFORCING SHALL BE PROOF LOADED TO 111 KIPS. ONCE THE PROOF LOAD HAS BEEN RELEASED, TIGHTEN NUT TO SNUG TIGHT CONDITION. TIGHTEN HEAVY HEX NUT TO SNUG TIGHT PLUS 1/8 TURN OF NUT. REFER TO SHEET S-2, SECTION H FOR ADDITIONAL INFORMATION.

NEW ANCHOR & BRACKET DETAIL 2 / S-5



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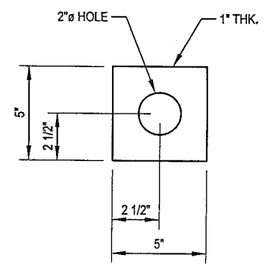
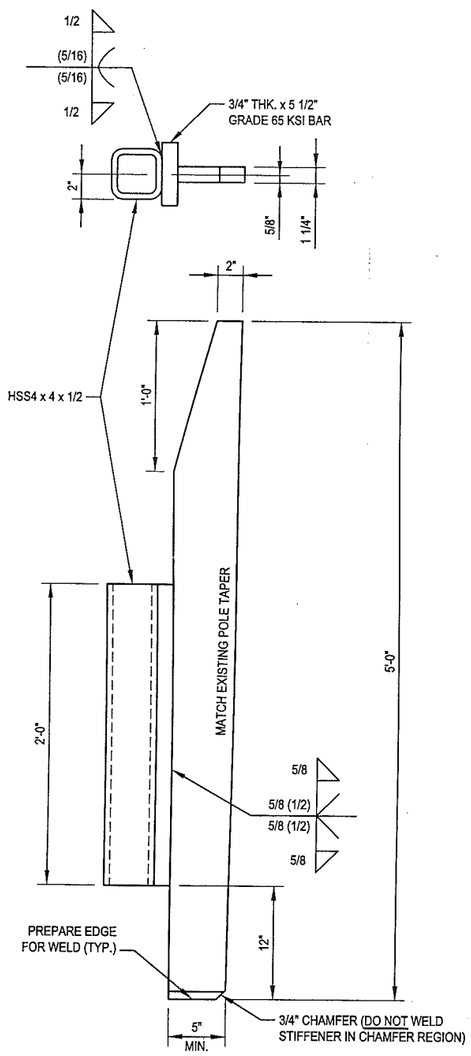


WASHER PLATE MK~WP1

(8 REQUIRED) (Fy = 50 KSI)



ANCHOR BRACKET MK~AB1

(4 REQUIRED) (TUBE Fy = 46 KSI) (STIFFENER Fy = 65 KSI)

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37513-2485 B PERMIT.DWG

		Jump Plate Size		Unbraced Length					Filler Plate Size					
Level	QNTY	Width	ThK	Maximum Bolt Spacing at Flange (Lmax)	Jump Plate Length	Jump Weight	Bottom Bolts	Top Bolts	Width	Thk	Sft Plt Thk	Filler Plate Length	Filler Weight	Weld Length
90'	4	4.00"	0.75"	12"	30"	163	6		5.00"	4.00"	0	21"	476	168"
-	-	-	-	-	-	-		6	5.00"	3.25"	0	21"	387	168"
					Total Jump Wt.	163	lbs					Total Jump Wt.	863	lbs
												Total Steel Weight	1026	lbs
												Total Weld Length	336"	in
												Total AJAX bolts	48	

Distance from Pole to edge of Flange: 4.0 in

NOTES:

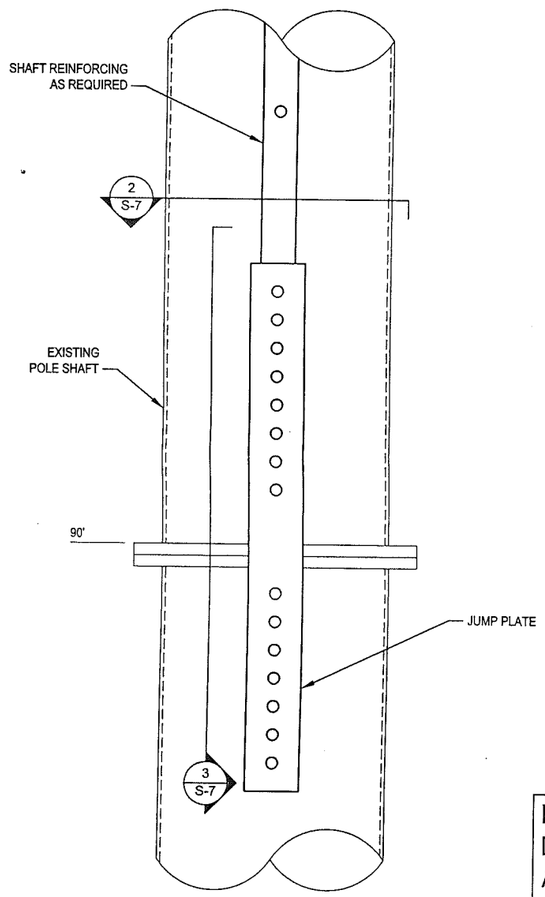
1.) AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.

2.) ALL NEW FLANGE JUMP STEEL REINFORCING SHALL BE COLD GALVANIZED AS FOLLOWS:
APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.

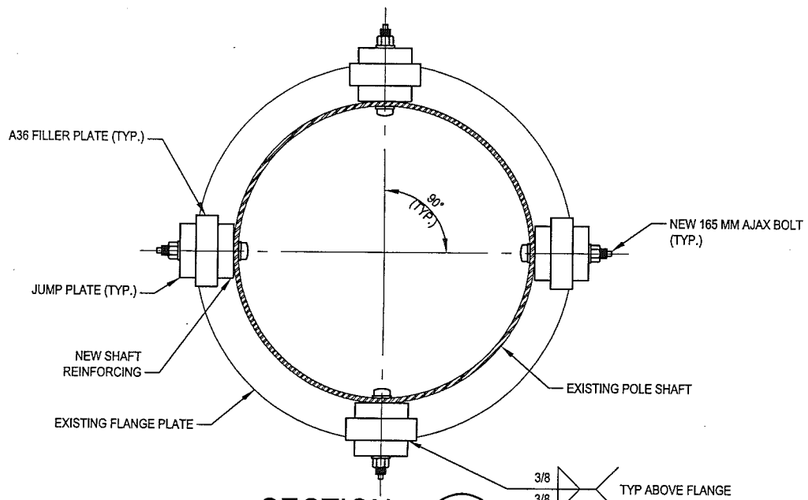
3.) ALL FILLER BARS SHALL BE ASTM A36 GR. 36

3.) ALL FLANGE JUMP BARS SHALL BE ASTM A572 (GRADE 65 or as specified on the DESIGN DRAWINGS) (Min. Fy = 65 ksi, Min. Fu = 80ksi).

4.) HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.

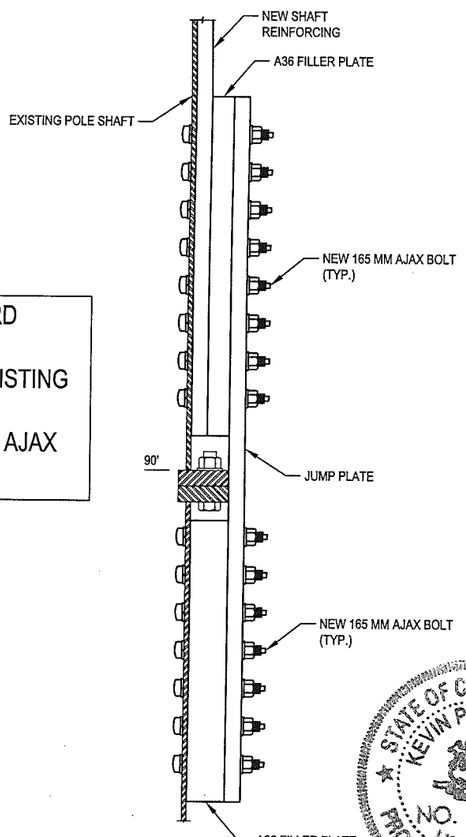


PARTIAL ELEVATION 1 S-7



SECTION 2 S-7
EL. 90'

BOLTED FLANGE JUMP STANDARD DETAILS. CONTRACTOR TO SEE ATTACHED DOCUMENTS FOR EXISTING POLE INFORMATION AND SHAFT REINFORCING SIZES, INCLUDING AJAX QUANTITIES.



SECTION 2 S-7

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MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) 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 (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS..

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI 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 MI REPORT TO CROWN.

GENERAL CONTRACTOR

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

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

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AN DENG-SOW-10007.

RECOMMENDATIONS

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

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI 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 MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN 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.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, 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.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN 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 MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

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

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

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

PHOTOGRAPHS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI 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

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
	PRE-CONSTRUCTION
X	MI CHECKLIST DRAWINGS
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
	CONSTRUCTION
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
X	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
X	THIRD PARTY ONSITE INSPECTION OF BOLT PRETENSION PER CROWN REQUIREMENTS
X	INSPECTION OF AJAX BOLTS AND DTI'S PER REQUIREMENTS ON SHEET S-3
ADDITIONAL TESTING AND INSPECTIONS:	
	POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
X	THIRD PARTY ONSITE BOLT INSPECTION REPORT
X	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

STATE OF CONNECTICUT
KEVIN P. BAUMAN
NO. 17891
LICENSED
PROFESSIONAL ENGINEER
3-25-2014

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street · Suite 600 · Columbus, Ohio 43215
(614) 221-6679 www.pjfweb.com

CROWN CASTLE
8 PARKMEADOW DRIVE, PITTSFORD, NY 14534
PH: (585) 899-3445 FAX: (585) 899-3449

BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B	ISSUE DATE OF PERMIT B : 3-21-2014
DRAWN BY: S.S.	
CHECKED BY: M.L.S.	
APPROVED BY: BKH	S-8
DATE: 3-21-2014	

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

May 14, 2014

Honorable Louie Chapman, Jr.
Town Manager, Town of Bloomfield
Town Hall 800 Bloomfield Ave.
Bloomfield, CT 06002

Re: Existing Telecommunications Facility – 28 Brewer Drive, Bloomfield

Dear Mr. Chapman:

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

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **March 21, 2014**

Steve Tuttle
Crown Castle
8 Parkmeadow Drive
Pittsford, NY 14534

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
mscroggy@pjfweb.com

Subject: **Structural Modification Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1193
	Carrier Site Name:	Bloomfield-Sprint
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	249649
	Crown Castle Work Order Number:	727661
	Crown Castle Application Number:	203982 Rev. 12
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37513-2485 BP B
Site Data:	**28 Brewer Dr., BLOOMFIELD, Hartford County, CT** **Latitude *41° 50' 6.57"*, Longitude *-72° 44' 28.2"*** **120 Foot - Monopole Tower**	

Dear Steve Tuttle,

Paul J Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 626483, in accordance with application 203982, revision 12.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.0 inch ice thickness and 50 mph under service loads.

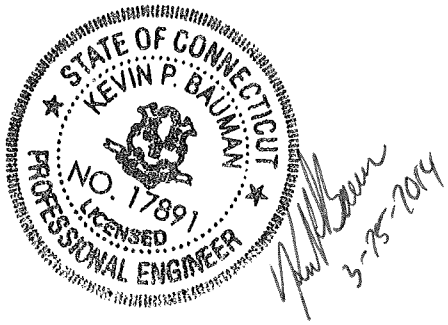
All modifications and equipment proposed in this report shall be installed in accordance with the proposed referenced drawings (#4594532) and the attached drawings for the determined available structural capacity to be effective.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Morgan Scroggy, E.I.
Structural Designer BKK

tnxTower Report - version 6.1.4.1



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **March 21, 2014**

Steve Tuttle
Crown Castle
8 Parkmeadow Drive
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Respectfully submitted by:

Morgan Scroggy, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ROHN in January of 1998. The tower was originally designed for a wind speed of 70 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.0 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	3	andrew	SBNHH-1D65A w/ Mount Pipe	4	3/4	-
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	com comp inc.	DTMABP7819VG12A			
		3	ericsson	RRUS 11-700			
		6	ericsson	RRUS 12-B2			
		6	ericsson	RRUS A2 MODULE			
		3	ericsson	RRUS-11 800MHz			
		3	ericsson	WCS RRUS-32-B30			
		2	raycap	DC6-48-60-18-8F			
	99.0	4	ericsson	RRUS E2 B29			
		1	commscope	MTC3607R Platform			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
118.0	120.0	3	alcatel lucent	TD-RRH8x20-25	1	5/8	2
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	kathrein	840 10054 w/ Mount Pipe	3 6 2	1-1/4 5/16 1/2	1
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	samsung telecom	WIMAX DAP HEAD			
	118.0	1	tower mounts	Platform Mount [LP 301-1]			
	116.0	1	dragonwave	A-ANT-18G-1-C			
		1	dragonwave	A-ANT-18G-2-C			
		2	dragonwave	HORIZON COMPACT			
		3	rfs celwave	IBC1900BB-1			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	rfs celwave	IBC1900HG-2A			
114.0	115.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	114.0	1	tower mounts	Pipe Mount [PM 601-3]			2
	113.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			1
107.0	108.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	107.0	1	tower mounts	Platform Mount [LP 712-1]	18	1-5/8	1
99.0	100.0	2	kmw comm	AM-X-CD-14-65-00T-RET w/ Mount Pipe	-	-	3
		3		AM-X-CD-16-65-00T-RET w/ Mount Pipe	1 2 6	3/8 3/4 7/8	1
		3	powerwave technologies	7770.00 w/ Mount Pipe	6	7/8	3
		2		P65-17-XLH-RR w/ Mount Pipe			
	99.0	3	com comp inc.	DTMABP7819VG12A			
		6	ericsson	RRUS-11			
		6	powerwave technologies	LGP13519			
		1	tower mounts	Platform Mount [LP 501-1]			
		1	raycap	DC6-48-60-18-8F	-	-	1
59.0	63.0	1	decibel	DB536	1	7/8	1
	59.0	1	tower mounts	Side Arm Mount [SO 702-1]			
48.0	50.0	1	lucent	KS24019-L112A	2	1/2	1
		1	unknown	GPS			
	48.0	1	tower mounts	Pipe Mount [PM 601-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed, Not Included in this SA

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 08/09/96	1529722	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 34738SW, 10/11/96	1616549	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, 34738SW, 10/17/96	2158527	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Semaan, CT03XC076, 08/25/03	-	Semaan
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 080063.01, 01/18/08	2205450	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B&T, 79582, 11/03/08	2343687	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2011111.27, 05/31/11	2917489	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, No. 37513-2485 BP, 3/10/14	4594532	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was reinforced in conformance with the referenced modification drawings.
5) The bridge stiffeners carry the entire load through the flange connection at 30'.
6) The existing "cut down" TS14x10 at 60' act as bridge stiffeners and carry the entire load through the flange connection.
7) Monopole will be reinforced in conformance with the referenced proposed modification drawing dated 3/10/14 (CCI sites #4594532).
8) Monopole will be reinforced in conformance with the attached proposed modification drawings.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 99.25	Pole	P24x1/4	1	-6.21	589.19	48.2	Pass
L2	99.25 - 90	Pole	RPS 24" x 0.4346"	2	-11.76	923.57	63.8	Pass
L3	90 - 80	Pole	P24x3/8	3	-13.11	934.94	99.7	Pass
L4	80 - 76.5	Pole	RPS 24" x 0.62517"	4	-13.80	1212.06	88.8	Pass
L5	76.5 - 68.5	Pole	RPS 24" x 0.82933"	5	-15.75	1593.35	87.4	Pass
L6	68.5 - 68	Pole	RPS 24" x 1.09914"	6	-15.90	2085.24	69.2	Pass
L7	68 - 63.5	Pole	RPS 24" x 0.81655"	7	-16.99	1798.92	87.9	Pass
L8	63.5 - 60	Pole	RPS 24" x 1.13718"	8	-18.10	2216.54	79.6	Pass
L9	60 - 56.5	Pole	RPS 30" x 0.90733"	9	-19.25	2335.32	63.3	Pass
L10	56.5 - 53.5	Pole	RPS 30" x 0.55714"	10	-19.90	1565.42	98.4	Pass
L11	53.5 - 45.417	Pole	RPS 30" x 0.70939"	11	-22.09	1981.85	91.7	Pass
L12	45.417 - 36.417	Pole	RPS 30" x 0.86453"	12	-24.89	2402.48	89.0	Pass
L13	36.417 - 35.5	Pole	RPS 30" x 1.02443"	13	-25.22	2831.21	77.5	Pass
L14	35.5 - 33.5	Pole	RPS 30" x 0.86188"	14	-25.84	2395.96	93.5	Pass
L15	33.5 - 30	Pole	RPS 30" x 1.23648"	15	-27.32	3145.60	76.9	Pass
L16	30 - 27	Pole	RPS 36" x 0.7835"	16	-29.96	2484.77	81.9	Pass
L17	27 - 26.5	Pole	RPS 36" x 0.97892"	17	-30.17	3088.15	67.1	Pass
L18	26.5 - 20.583	Pole	RPS 36" x 0.81422"	18	-32.21	2583.53	86.4	Pass
L19	20.583 - 20	Pole	RPS 36" x 1.06207"	19	-32.47	3343.43	68.2	Pass
L20	20 - 7.5	Pole	RPS 36" x 0.8638"	20	-37.05	2733.17	96.6	Pass
L21	7.5 - 3	Pole	RPS 36" x 0.90824"	21	-38.78	2867.75	97.3	Pass
L22	3 - 2	Pole	RPS 36" x 0.90824"	22	-39.16	2867.75	98.4	Pass
L23	2 - 0	Pole	RPS 36" x 0.94668"	23	-39.96	2932.48	98.6	Pass
							Summary	
						Pole (L3)	99.7	Pass
						RATING =	**99.7**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	0	95.3	Pass
1	Base Plate	0	83.1	Pass
1	Base Foundation – Steel	0	91.1	Pass
1,3	Base Foundation Soil Interaction	0	42.1	Pass
1	Flange Connection	30	78.7	Pass
1	Flange Connection	60	79.5	Pass
1	Flange Connection	90	54.5	Pass

Structure Rating (max from all components) =	99.7%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Worst case scenario between existing and post installed anchors.
3) Foundation Analysis Notes: According to the procedures prescribed and agreed to by the Crown Castle Engineering Foundation Committee, held in January 2010, the existing caisson foundation was analyzed using the methodology in the software 'PLS-Caisson' (Version 8.10, or newer, by Power Line Systems, Inc.). Per the methods in PLS-Caisson, the soil reactions of cohesive soils are calculated using 8CD independent of the depth of the soil layer. The depth of soil to be ignored at the top of the caisson is the greater of the geotechnical report's recommendation, the frost depth of the site or half of the caisson diameter.

4.1) Recommendations

- Install modifications per the proposed referenced drawings dated 3/10/14 (#4594532)
- Install modifications per the attached drawings

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 80 mph.
3) Nominal ice thickness of 1.0000 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

Section	*Elevation*	*Section Length*	*Pole Size*	*Pole Grade*
	ft	*ft*		
L1	120.00-99.25	20.75	P24x1/4	A36M-42 (42 ksi)
L2	99.25-90.00	9.25	RPS 24" x 0.4346"	Reinf 35.89 ksi (36 ksi)
L3	90.00-80.00	10.00	P24x3/8	A36M-42 (42 ksi)
L4	80.00-76.50	3.50	RPS 24" x 0.62517"	Reinf 33.01 ksi (33 ksi)
L5	76.50-68.50	8.00	RPS 24" x 0.82933"	Reinf 33.00 ksi (33 ksi)
L6	68.50-68.00	0.50	RPS 24" x 1.09914"	Reinf 32.97 ksi (33 ksi)
L7	68.00-63.50	4.50	RPS 24" x 0.81655"	Reinf 37.82 ksi (38 ksi)
L8	63.50-60.00	3.50	RPS 24" x 1.13718"	Reinf 33.93 ksi (34 ksi)
L9	60.00-56.50	3.50	RPS 30" x 0.90733"	Reinf 35.21 ksi (35 ksi)
L10	56.50-53.50	3.00	RPS 30" x 0.55714"	Reinf 37.98 ksi (38 ksi)

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade
L11	53.50-45.42	8.08	RPS 30" x 0.70939"	Reinf 37.96 ksi (38 ksi)
L12	45.42-36.42	9.00	RPS 30" x 0.86453"	Reinf 37.96 ksi (38 ksi)
L13	36.42-35.50	0.92	RPS 30" x 1.02443"	Reinf 37.96 ksi (38 ksi)
L14	35.50-33.50	2.00	RPS 30" x 0.86188"	Reinf 37.97 ksi (38 ksi)
L15	33.50-30.00	3.50	RPS 30" x 1.23648"	Reinf 35.20 ksi (35 ksi)
L16	30.00-27.00	3.00	RPS 36" x 0.7835"	Reinf 35.84 ksi (36 ksi)
L17	27.00-26.50	0.50	RPS 36" x 0.97892"	Reinf 35.85 ksi (36 ksi)
L18	26.50-20.58	5.92	RPS 36" x 0.81422"	Reinf 35.89 ksi (36 ksi)
L19	20.58-20.00	0.58	RPS 36" x 1.06207"	Reinf 35.86 ksi (36 ksi)
L20	20.00-7.50	12.50	RPS 36" x 0.8638"	Reinf 35.84 ksi (36 ksi)
L21	7.50-3.00	4.50	RPS 36" x 0.90824"	Reinf 35.81 ksi (36 ksi)
L22	3.00-2.00	1.00	RPS 36" x 0.90824"	Reinf 35.81 ksi (36 ksi)
L23	2.00-0.00	2.00	RPS 36" x 0.94668"	Reinf 35.17 ksi (35 ksi)

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
HB058-M12-XXXF(5/8")	C	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.24
						1/2" Ice	0.00	0.24
						1" Ice	0.00	0.24
						2" Ice	0.00	0.24
						4" Ice	0.00	0.24
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	118.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
						2" Ice	0.00	1.08
						4" Ice	0.00	1.08
***								
ATCB-B01-001(5/16)	C	No	Inside Pole	118.00 - 0.00	6	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						2" Ice	0.00	0.07
						4" Ice	0.00	0.07
FSJ4-50B(1/2")	C	No	Inside Pole	118.00 - 0.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
						2" Ice	0.00	0.14
						4" Ice	0.00	0.14
2" Conduit	C	No	Inside Pole	118.00 - 0.00	2	No Ice	0.00	0.95
						1/2" Ice	0.00	0.95
						1" Ice	0.00	0.95
						2" Ice	0.00	0.95
						4" Ice	0.00	0.95
***								
AL7-50(1 5/8)	C	No	CaAa (Out Of Face)	107.00 - 0.00	2	No Ice	0.20	0.52
						1/2" Ice	0.30	2.02
						1" Ice	0.40	4.14
						2" Ice	0.60	10.20
						4" Ice	1.00	29.65
AL7-50(1 5/8)	C	No	CaAa (Out Of Face)	107.00 - 0.00	4	No Ice	0.00	0.52
						1/2" Ice	0.00	2.02

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	4.14
						2" Ice	0.00	10.20
						4" Ice	0.00	29.65
FLC 158-50J(1-5/8")	C	No	Inside Pole	107.00 - 0.00	12	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
						2" Ice	0.00	0.92
						4" Ice	0.00	0.92
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	CaAa (Out Of Face)	107.00 - 0.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	2.37
						1" Ice	0.00	4.28
						2" Ice	0.00	9.93
						4" Ice	0.00	28.56
***								
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	99.00 - 0.00	4	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
FB-L98B-002-75000(3/8")	C	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	99.00 - 0.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
LDF5-50A(7/8")	C	No	Inside Pole	99.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
***								
LDF5-50A(7/8")	C	No	CaAa (Out Of Face)	59.00 - 0.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	1.30
						1" Ice	0.00	2.88
						2" Ice	0.00	7.88
						4" Ice	0.00	25.20
***								
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	48.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
						2" Ice	0.00	6.58
						4" Ice	0.00	22.78
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	48.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
						2" Ice	0.00	6.58
						4" Ice	0.00	22.78
***								
C8x18.75	C	No	CaAa (Out Of Face)	33.50 - 0.00	2	No Ice	0.42	0.00
						1/2" Ice	0.53	0.00
						1" Ice	0.64	0.00
						2" Ice	0.87	0.00
						4" Ice	1.31	0.00
C8x11.5 brace	C	No	CaAa (Out Of Face)	70.00 - 33.50	2	No Ice	0.42	0.00
						1/2" Ice	0.53	0.00
						1" Ice	0.64	0.00
						2" Ice	0.87	0.00
						4" Ice	1.31	0.00
***								
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	77.50 - 70.00	2	No Ice	0.13	0.00
						1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00
						2" Ice	0.57	0.00
						4" Ice	1.01	0.00
3/4" Flat	C	No	CaAa (Out Of	100.50 - 90.50	2	No Ice	0.13	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Reinforcement			Face)			1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00
						2" Ice	0.57	0.00
						4" Ice	1.01	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.13 7.66 8.18 9.26 11.53	4.96 5.75 6.47 8.01 11.41	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.72 5.01 5.32 5.95 7.31	1.70 1.92 2.15 2.62 3.68	0.07 0.10 0.13 0.20 0.40
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	7.47 8.66 9.56 11.39 15.53	0.09 0.16 0.24 0.42 0.94
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice	8.50 9.15 9.77	6.95 8.13 9.02	0.08 0.15 0.23

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
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
IBC1900HG-2A	A	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
IBC1900HG-2A	B	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
IBC1900HG-2A	C	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
IBC1900BB-1	A	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
IBC1900BB-1	B	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
IBC1900BB-1	C	From Leg	4.00 0.00 -2.00	0.0000	118.00	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
*									
840 10054 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice	5.41	2.39	0.05
						1/2" Ice	5.83	2.92	0.09
						1" Ice	6.26	3.47	0.13
						2" Ice	7.16	4.61	0.23
						4" Ice	9.09	7.32	0.53
840 10054 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice	5.41	2.39	0.05
						1/2" Ice	5.83	2.92	0.09
						1" Ice	6.26	3.47	0.13
						2" Ice	7.16	4.61	0.23
						4" Ice	9.09	7.32	0.53
840 10054 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice	5.41	2.39	0.05
						1/2" Ice	5.83	2.92	0.09
						1" Ice	6.26	3.47	0.13
						2" Ice	7.16	4.61	0.23
						4" Ice	9.09	7.32	0.53
WIMAX DAP HEAD	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
						4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	B	From Leg	4.00	0.0000	118.00	No Ice	1.80	0.78	0.03

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
			0.00			1/2"	1.99	0.92	0.04
			2.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	C	From Leg	4.00	0.0000	118.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			2.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
(2) HORIZON COMPACT	B	From Leg	4.00	0.0000	118.00	No Ice	0.84	0.43	0.01
			0.00			1/2"	0.97	0.52	0.02
			-2.00			Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
						4" Ice			
Platform Mount [LP 301-1]	C	None		0.0000	118.00	No Ice	30.10	30.10	1.59
						1/2"	40.80	40.80	2.03
						Ice	51.50	51.50	2.47
						1" Ice	72.90	72.90	3.35
						2" Ice	115.70	115.70	5.11
						4" Ice			
***									
Pipe Mount [PM 601-3]	C	None		0.0000	114.00	No Ice	4.39	4.39	0.20
						1/2"	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice	8.75	8.75	0.36
						2" Ice	13.11	13.11	0.53
						4" Ice			
***									
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00	0.0000	114.00	No Ice	2.71	2.61	0.06
			0.00			1/2"	2.95	2.85	0.08
			1.00			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00	0.0000	114.00	No Ice	2.71	2.61	0.06
			0.00			1/2"	2.95	2.85	0.08
			1.00			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00	0.0000	114.00	No Ice	2.71	2.61	0.06
			0.00			1/2"	2.95	2.85	0.08
			1.00			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00	0.0000	114.00	No Ice	2.40	2.25	0.06
			0.00			1/2"	2.61	2.46	0.09
			-1.00			Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00	0.0000	114.00	No Ice	2.40	2.25	0.06
			0.00			1/2"	2.61	2.46	0.09
			-1.00			Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00	0.0000	114.00	No Ice	2.40	2.25	0.06
			0.00			1/2"	2.61	2.46	0.09
			-1.00			Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17

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 4" Ice	4.34	4.15	0.34
***									
Platform Mount [LP 712-1]	C	None		0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	24.53 29.94 35.35 46.17 67.81	1.34 1.65 1.96 2.58 3.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.82 7.34 7.85 8.92 11.17	5.63 6.47 7.25 8.85 12.28	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	A	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	B	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	C	From Leg	4.00 0.00 1.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
***									
(3) HPA-65R-BUU-H8 w/	A	From Leg	4.00	0.0000	99.00	No Ice	13.53	9.58	0.10

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
Mount Pipe			0.00 1.00			1/2" Ice 1" Ice 2" Ice 4" Ice	14.34 15.14 16.71 19.95	11.05 12.50 14.75 19.46	0.20 0.30 0.55 1.22
(3) HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	8.11 9.30 10.21 12.17 16.35	0.08 0.16 0.25 0.46 1.02
(3) SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.25 6.71 7.18 8.15 10.20	5.05 5.72 6.43 7.93 11.21	0.06 0.11 0.17 0.31 0.70
RRUS 11-700	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
RRUS 11-700	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
RRUS 11-700	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
(2) RRUS 12-B2	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	1.48 1.67 1.86 2.27 3.20	0.06 0.08 0.11 0.17 0.34
(2) RRUS 12-B2	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	1.48 1.67 1.86 2.27 3.20	0.06 0.08 0.11 0.17 0.34
(2) RRUS 12-B2	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	1.48 1.67 1.86 2.27 3.20	0.06 0.08 0.11 0.17 0.34
(2) RRUS A2 MODULE	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.87 2.05 2.24 2.66 3.58	0.42 0.53 0.65 0.91 1.54	0.02 0.03 0.04 0.08 0.18
(2) RRUS A2 MODULE	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.87 2.05 2.24 2.66 3.58	0.42 0.53 0.65 0.91 1.54	0.02 0.03 0.04 0.08 0.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) RRUS A2 MODULE	C	From Leg	4.00	0.00	0.0000	99.00	No Ice	1.87	0.42	0.02
			0.00				1/2" Ice	2.05	0.53	0.03
			1.00				1" Ice	2.24	0.65	0.04
							2" Ice	2.66	0.91	0.08
							4" Ice	3.58	1.54	0.18
DTMABP7819VG12A	A	From Leg	4.00	0.00	0.0000	99.00	No Ice	1.14	0.39	0.02
			0.00				1/2" Ice	1.28	0.49	0.03
			1.00				1" Ice	1.44	0.59	0.04
							2" Ice	1.77	0.83	0.06
							4" Ice	2.54	1.41	0.14
DTMABP7819VG12A	B	From Leg	4.00	0.00	0.0000	99.00	No Ice	1.14	0.39	0.02
			0.00				1/2" Ice	1.28	0.49	0.03
			1.00				1" Ice	1.44	0.59	0.04
							2" Ice	1.77	0.83	0.06
							4" Ice	2.54	1.41	0.14
DTMABP7819VG12A	C	From Leg	4.00	0.00	0.0000	99.00	No Ice	1.14	0.39	0.02
			0.00				1/2" Ice	1.28	0.49	0.03
			1.00				1" Ice	1.44	0.59	0.04
							2" Ice	1.77	0.83	0.06
							4" Ice	2.54	1.41	0.14
RRUS-11 800MHz	A	From Leg	4.00	0.00	0.0000	99.00	No Ice	2.94	1.52	0.05
			0.00				1/2" Ice	3.17	1.69	0.08
			1.00				1" Ice	3.41	1.88	0.10
							2" Ice	3.91	2.27	0.16
							4" Ice	5.02	3.16	0.32
RRUS-11 800MHz	B	From Leg	4.00	0.00	0.0000	99.00	No Ice	2.94	1.52	0.05
			0.00				1/2" Ice	3.17	1.69	0.08
			1.00				1" Ice	3.41	1.88	0.10
							2" Ice	3.91	2.27	0.16
							4" Ice	5.02	3.16	0.32
RRUS-11 800MHz	C	From Leg	4.00	0.00	0.0000	99.00	No Ice	2.94	1.52	0.05
			0.00				1/2" Ice	3.17	1.69	0.08
			1.00				1" Ice	3.41	1.88	0.10
							2" Ice	3.91	2.27	0.16
							4" Ice	5.02	3.16	0.32
DC6-48-60-18-8F	B	From Leg	4.00	0.00	0.0000	99.00	No Ice	2.57	2.57	0.02
			0.00				1/2" Ice	2.80	2.80	0.04
			1.00				1" Ice	3.04	3.04	0.07
							2" Ice	3.54	3.54	0.13
							4" Ice	4.66	4.66	0.30
DC6-48-60-18-8F	C	From Leg	4.00	0.00	0.0000	99.00	No Ice	2.57	2.57	0.02
			0.00				1/2" Ice	2.80	2.80	0.04
			1.00				1" Ice	3.04	3.04	0.07
							2" Ice	3.54	3.54	0.13
							4" Ice	4.66	4.66	0.30
(2) RRUS E2 B29	A	From Leg	4.00	0.00	0.0000	99.00	No Ice	3.67	1.49	0.06
			0.00				1/2" Ice	3.93	1.67	0.08
			0.00				1" Ice	4.19	1.87	0.11
							2" Ice	4.75	2.28	0.17
							4" Ice	5.96	3.21	0.35
RRUS E2 B29	B	From Leg	4.00	0.00	0.0000	99.00	No Ice	3.67	1.49	0.06
			0.00				1/2" Ice	3.93	1.67	0.08
			0.00				1" Ice	4.19	1.87	0.11
							2" Ice	4.75	2.28	0.17
								5.96	3.21	0.35

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			
RRUS E2 B29	C	From Leg	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	0.06 0.08 0.11 0.17 0.35
WCS RRUS-32-B30	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.87 4.15 4.44 5.06 6.38	2.76 3.02 3.29 3.85 5.08	0.08 0.10 0.14 0.21 0.41
WCS RRUS-32-B30	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.87 4.15 4.44 5.06 6.38	2.76 3.02 3.29 3.85 5.08	0.08 0.10 0.14 0.21 0.41
WCS RRUS-32-B30	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.87 4.15 4.44 5.06 6.38	2.76 3.02 3.29 3.85 5.08	0.08 0.10 0.14 0.21 0.41
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
DC6-48-60-18-8F	A	From Leg	4.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.80 3.04 3.54 4.66	2.57 2.80 3.04 3.54 4.66	0.02 0.04 0.07 0.13 0.30
Commscope MTC3607R Platform Mount	C	None		0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	38.88 51.76 64.64 90.40 141.92	38.88 51.76 64.64 90.40 141.92	2.50 3.20 3.90 5.30 8.10
***									
DB536	A	From Leg	4.00 0.00 4.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.83 3.99 5.16 7.08 9.94	2.83 3.99 5.16 7.08 9.94	0.02 0.04 0.06 0.14 0.40
Side Arm Mount [SO 702-1]	A	None		0.0000	59.00	No Ice 1/2" Ice	1.00 1.00 1.00	1.43 2.05 2.67	0.03 0.04 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice	1.00	3.91	0.07
							2" Ice	1.00	6.39	0.12
							4" Ice			
***										
GPS	A	From Leg	4.00	0.00	0.0000	48.00	No Ice	0.17	0.17	0.00
			0.00	2.00			1/2" Ice	0.24	0.24	0.00
							1" Ice	0.31	0.31	0.00
							2" Ice	0.48	0.48	0.01
							4" Ice	0.92	0.92	0.05
KS24019-L112A	A	From Leg	4.00	0.00	0.0000	48.00	No Ice	0.16	0.16	0.01
			0.00	2.00			1/2" Ice	0.22	0.22	0.01
							1" Ice	0.30	0.30	0.01
							2" Ice	0.48	0.48	0.02
							4" Ice	0.95	0.95	0.06
Pipe Mount [PM 601-1]	A	None			0.0000	48.00	No Ice	3.00	0.90	0.07
							1/2" Ice	3.74	1.12	0.08
							1" Ice	4.48	1.34	0.09
							2" Ice	5.96	1.78	0.12
							4" Ice	8.92	2.66	0.18
***										
Bridge Stiffener (114.5" x 12.5" x 1.25")	A	None			0.0000	30.00	No Ice	1.99	14.63	0.55
							1/2" Ice	3.07	15.36	0.61
							1" Ice	4.16	16.09	0.67
							2" Ice	6.37	17.57	0.83
							4" Ice	9.72	20.78	1.25
Bridge Stiffener (114.5" x 12.5" x 1.25")	B	None			0.0000	30.00	No Ice	0.00	0.00	0.55
							1/2" Ice	0.00	0.00	0.61
							1" Ice	0.00	0.00	0.67
							2" Ice	0.00	0.00	0.83
							4" Ice	0.00	0.00	1.25
Bridge Stiffener (114.5" x 12.5" x 1.25")	C	None			0.0000	30.00	No Ice	0.00	0.00	0.55
							1/2" Ice	0.00	0.00	0.61
							1" Ice	0.00	0.00	0.67
							2" Ice	0.00	0.00	0.83
							4" Ice	0.00	0.00	1.25

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-18G-1-C	B	Paraboloid w/Radome	From Leg	4.00	0.00	-6.0000		118.00	1.27	No Ice	1.28	0.02
				0.00	-2.00					1/2" Ice	4.01	0.04
										1" Ice	4.30	0.05
										2" Ice	4.88	0.07
										4" Ice	6.04	0.11
A-ANT-18G-2-C	B	Paraboloid w/Shroud (HP)	From Leg	4.00	0.00	20.0000		118.00	2.17	No Ice	3.72	0.03
				0.00	-2.00					1/2" Ice	4.01	0.04
										1" Ice	4.30	0.05
										2" Ice	4.88	0.07
										4" Ice	6.04	0.11
***												

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 120.00-99.25	109.63	1.409	23	41.500	A	0.000	41.500	41.500	100.00	0.000	0.000
					B	0.000	41.500		100.00	0.000	0.000
					C	0.000	41.500		100.00	0.000	3.350
L2 99.25-90.00	94.63	1.351	22	18.500	A	0.000	18.500	18.500	100.00	0.000	0.000
					B	0.000	18.500		100.00	0.000	0.000
					C	0.000	18.500		100.00	0.000	5.813
L3 90.00-80.00	85.00	1.31	21	20.000	A	0.000	20.000	20.000	100.00	0.000	0.000
					B	0.000	20.000		100.00	0.000	0.000
					C	0.000	20.000		100.00	0.000	3.920
L4 80.00-76.50	78.25	1.28	21	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	1.622
L5 76.50-68.50	72.50	1.252	21	16.000	A	0.000	16.000	16.000	100.00	0.000	0.000
					B	0.000	16.000		100.00	0.000	0.000
					C	0.000	16.000		100.00	0.000	6.024
L6 68.50-68.00	68.25	1.231	20	1.000	A	0.000	1.000	1.000	100.00	0.000	0.000
					B	0.000	1.000		100.00	0.000	0.000
					C	0.000	1.000		100.00	0.000	0.617
L7 68.00-63.50	65.75	1.218	20	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	5.554
L8 63.50-60.00	61.75	1.196	20	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	4.320
L9 60.00-56.50	58.25	1.176	19	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.320
L10 56.50-53.50	55.00	1.157	19	7.500	A	0.000	7.500	7.500	100.00	0.000	0.000
					B	0.000	7.500		100.00	0.000	0.000
					C	0.000	7.500		100.00	0.000	3.703
L11 53.50-45.42	49.46	1.123	18	20.208	A	0.000	20.208	20.208	100.00	0.000	0.000
					B	0.000	20.208		100.00	0.000	0.000
					C	0.000	20.208		100.00	0.000	9.977
L12 45.42-36.42	40.92	1.063	17	22.500	A	0.000	22.500	22.500	100.00	0.000	0.000
					B	0.000	22.500		100.00	0.000	0.000
					C	0.000	22.500		100.00	0.000	11.109
L13 36.42-35.50	35.96	1.025	17	2.293	A	0.000	2.293	2.293	100.00	0.000	0.000
					B	0.000	2.293		100.00	0.000	0.000
					C	0.000	2.293		100.00	0.000	1.132
L14 35.50-33.50	34.50	1.013	17	5.000	A	0.000	5.000	5.000	100.00	0.000	0.000
					B	0.000	5.000		100.00	0.000	0.000
					C	0.000	5.000		100.00	0.000	2.469
L15 33.50-30.00	31.75	1	16	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.320
L16 30.00-27.00	28.50	1	16	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	3.703
L17 27.00-26.50	26.75	1	16	1.500	A	0.000	1.500	1.500	100.00	0.000	0.000
					B	0.000	1.500		100.00	0.000	0.000
					C	0.000	1.500		100.00	0.000	0.617
L18 26.50-20.58	23.54	1	16	17.751	A	0.000	17.751	17.751	100.00	0.000	0.000
					B	0.000	17.751		100.00	0.000	0.000
					C	0.000	17.751		100.00	0.000	7.303
L19 20.58-20.00	20.29	1	16	1.749	A	0.000	1.749	1.749	100.00	0.000	0.000
					B	0.000	1.749		100.00	0.000	0.000
					C	0.000	1.749		100.00	0.000	0.720
L20 20.00-7.50	13.75	1	16	37.500	A	0.000	37.500	37.500	100.00	0.000	0.000
					B	0.000	37.500		100.00	0.000	0.000
					C	0.000	37.500		100.00	0.000	15.429
L21 7.50-3.00	5.25	1	16	13.500	A	0.000	13.500	13.500	100.00	0.000	0.000
					B	0.000	13.500		100.00	0.000	0.000
					C	0.000	13.500		100.00	0.000	5.554

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L22 3.00-2.00	2.50	1	16	3.000	A	0.000	3.000	3.000	100.00	0.000	0.000
					B	0.000	3.000		100.00	0.000	0.000
					C	0.000	3.000		100.00	0.000	1.234
L23 2.00-0.00	1.00	1	16	6.000	A	0.000	6.000	6.000	100.00	0.000	0.000
					B	0.000	6.000		100.00	0.000	0.000
					C	0.000	6.000		100.00	0.000	2.469

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-99.25	109.63	1.409	5	1.1550	45.494	A	0.000	45.494	45.494	100.00	0.000	0.000
						B	0.000	45.494		100.00	0.000	0.000
						C	0.000	45.494		100.00	0.000	7.573
L2 99.25-90.00	94.63	1.351	5	1.1347	20.249	A	0.000	20.249	20.249	100.00	0.000	0.000
						B	0.000	20.249		100.00	0.000	0.000
						C	0.000	20.249		100.00	0.000	14.425
L3 90.00-80.00	85.00	1.31	5	1.1202	21.867	A	0.000	21.867	21.867	100.00	0.000	0.000
						B	0.000	21.867		100.00	0.000	0.000
						C	0.000	21.867		100.00	0.000	8.401
L4 80.00-76.50	78.25	1.28	5	1.1092	7.647	A	0.000	7.647	7.647	100.00	0.000	0.000
						B	0.000	7.647		100.00	0.000	0.000
						C	0.000	7.647		100.00	0.000	3.668
L5 76.50-68.50	72.50	1.252	5	1.0991	17.465	A	0.000	17.465	17.465	100.00	0.000	0.000
						B	0.000	17.465		100.00	0.000	0.000
						C	0.000	17.465		100.00	0.000	13.449
L6 68.50-68.00	68.25	1.231	4	1.0911	1.091	A	0.000	1.091	1.091	100.00	0.000	0.000
						B	0.000	1.091		100.00	0.000	0.000
						C	0.000	1.091		100.00	0.000	1.078
L7 68.00-63.50	65.75	1.218	4	1.0862	9.815	A	0.000	9.815	9.815	100.00	0.000	0.000
						B	0.000	9.815		100.00	0.000	0.000
						C	0.000	9.815		100.00	0.000	9.682
L8 63.50-60.00	61.75	1.196	4	1.0781	7.629	A	0.000	7.629	7.629	100.00	0.000	0.000
						B	0.000	7.629		100.00	0.000	0.000
						C	0.000	7.629		100.00	0.000	7.507
L9 60.00-56.50	58.25	1.176	4	1.0706	9.374	A	0.000	9.374	9.374	100.00	0.000	0.000
						B	0.000	9.374		100.00	0.000	0.000
						C	0.000	9.374		100.00	0.000	7.484
L10 56.50-53.50	55.00	1.157	4	1.0632	8.032	A	0.000	8.032	8.032	100.00	0.000	0.000
						B	0.000	8.032		100.00	0.000	0.000
						C	0.000	8.032		100.00	0.000	6.397
L11 53.50-45.42	49.46	1.123	4	1.0498	21.622	A	0.000	21.622	21.622	100.00	0.000	0.000
						B	0.000	21.622		100.00	0.000	0.000
						C	0.000	21.622		100.00	0.000	17.142
L12 45.42-36.42	40.92	1.063	4	1.0261	24.039	A	0.000	24.039	24.039	100.00	0.000	0.000
						B	0.000	24.039		100.00	0.000	0.000
						C	0.000	24.039		100.00	0.000	18.908
L13 36.42-35.50	35.96	1.025	4	1.0104	2.447	A	0.000	2.447	2.447	100.00	0.000	0.000
						B	0.000	2.447		100.00	0.000	0.000
						C	0.000	2.447		100.00	0.000	1.914
L14 35.50-33.50	34.50	1.013	4	1.0053	5.335	A	0.000	5.335	5.335	100.00	0.000	0.000
						B	0.000	5.335		100.00	0.000	0.000
						C	0.000	5.335		100.00	0.000	4.167
L15 33.50-30.00	31.75	1	4	1.0000	9.333	A	0.000	9.333	9.333	100.00	0.000	0.000
						B	0.000	9.333		100.00	0.000	0.000
						C	0.000	9.333		100.00	0.000	7.276
L16 30.00-27.00	28.50	1	4	1.0000	9.500	A	0.000	9.500	9.500	100.00	0.000	0.000
						B	0.000	9.500		100.00	0.000	0.000
						C	0.000	9.500		100.00	0.000	6.236
L17 27.00-26.50	26.75	1	4	1.0000	1.583	A	0.000	1.583	1.583	100.00	0.000	0.000
						B	0.000	1.583		100.00	0.000	0.000
						C	0.000	1.583		100.00	0.000	1.039

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L18 26.50-20.58	23.54	1	4	1.0000	18.737	A	0.000	18.737	18.737	100.00	0.000	0.000
						B	0.000	18.737		100.00	0.000	0.000
						C	0.000	18.737		100.00	0.000	12.300
L19 20.58-20.00	20.29	1	4	1.0000	1.846	A	0.000	1.846	1.846	100.00	0.000	0.000
						B	0.000	1.846		100.00	0.000	0.000
						C	0.000	1.846		100.00	0.000	1.212
L20 20.00-7.50	13.75	1	4	1.0000	39.583	A	0.000	39.583	39.583	100.00	0.000	0.000
						B	0.000	39.583		100.00	0.000	0.000
						C	0.000	39.583		100.00	0.000	25.985
L21 7.50-3.00	5.25	1	4	1.0000	14.250	A	0.000	14.250	14.250	100.00	0.000	0.000
						B	0.000	14.250		100.00	0.000	0.000
						C	0.000	14.250		100.00	0.000	9.355
L22 3.00-2.00	2.50	1	4	1.0000	3.167	A	0.000	3.167	3.167	100.00	0.000	0.000
						B	0.000	3.167		100.00	0.000	0.000
						C	0.000	3.167		100.00	0.000	2.079
L23 2.00-0.00	1.00	1	4	1.0000	6.333	A	0.000	6.333	6.333	100.00	0.000	0.000
						B	0.000	6.333		100.00	0.000	0.000
						C	0.000	6.333		100.00	0.000	4.158

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-99.25	109.63	1.409	9	41.500	A	0.000	41.500	41.500	100.00	0.000	0.000
					B	0.000	41.500		100.00	0.000	0.000
					C	0.000	41.500		100.00	0.000	3.350
L2 99.25-90.00	94.63	1.351	9	18.500	A	0.000	18.500	18.500	100.00	0.000	0.000
					B	0.000	18.500		100.00	0.000	0.000
					C	0.000	18.500		100.00	0.000	5.813
L3 90.00-80.00	85.00	1.31	8	20.000	A	0.000	20.000	20.000	100.00	0.000	0.000
					B	0.000	20.000		100.00	0.000	0.000
					C	0.000	20.000		100.00	0.000	3.920
L4 80.00-76.50	78.25	1.28	8	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	1.622
L5 76.50-68.50	72.50	1.252	8	16.000	A	0.000	16.000	16.000	100.00	0.000	0.000
					B	0.000	16.000		100.00	0.000	0.000
					C	0.000	16.000		100.00	0.000	6.024
L6 68.50-68.00	68.25	1.231	8	1.000	A	0.000	1.000	1.000	100.00	0.000	0.000
					B	0.000	1.000		100.00	0.000	0.000
					C	0.000	1.000		100.00	0.000	0.617
L7 68.00-63.50	65.75	1.218	8	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	5.554
L8 63.50-60.00	61.75	1.196	8	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	4.320
L9 60.00-56.50	58.25	1.176	8	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.320
L10 56.50-53.50	55.00	1.157	7	7.500	A	0.000	7.500	7.500	100.00	0.000	0.000
					B	0.000	7.500		100.00	0.000	0.000
					C	0.000	7.500		100.00	0.000	3.703
L11 53.50-45.42	49.46	1.123	7	20.208	A	0.000	20.208	20.208	100.00	0.000	0.000
					B	0.000	20.208		100.00	0.000	0.000
					C	0.000	20.208		100.00	0.000	9.977
L12 45.42-36.42	40.92	1.063	7	22.500	A	0.000	22.500	22.500	100.00	0.000	0.000
					B	0.000	22.500		100.00	0.000	0.000
					C	0.000	22.500		100.00	0.000	11.109
L13 36.42-35.50	35.96	1.025	7	2.293	A	0.000	2.293	2.293	100.00	0.000	0.000
					B	0.000	2.293		100.00	0.000	0.000
					C	0.000	2.293		100.00	0.000	1.132

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L14 35.50-33.50	34.50	1.013	6	5.000	A	0.000	5.000	5.000	100.00	0.000	0.000
					B	0.000	5.000		100.00	0.000	0.000
					C	0.000	5.000		100.00	0.000	2.469
L15 33.50-30.00	31.75	1	6	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	4.320
L16 30.00-27.00	28.50	1	6	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	3.703
L17 27.00-26.50	26.75	1	6	1.500	A	0.000	1.500	1.500	100.00	0.000	0.000
					B	0.000	1.500		100.00	0.000	0.000
					C	0.000	1.500		100.00	0.000	0.617
L18 26.50-20.58	23.54	1	6	17.751	A	0.000	17.751	17.751	100.00	0.000	0.000
					B	0.000	17.751		100.00	0.000	0.000
					C	0.000	17.751		100.00	0.000	7.303
L19 20.58-20.00	20.29	1	6	1.749	A	0.000	1.749	1.749	100.00	0.000	0.000
					B	0.000	1.749		100.00	0.000	0.000
					C	0.000	1.749		100.00	0.000	0.720
L20 20.00-7.50	13.75	1	6	37.500	A	0.000	37.500	37.500	100.00	0.000	0.000
					B	0.000	37.500		100.00	0.000	0.000
					C	0.000	37.500		100.00	0.000	15.429
L21 7.50-3.00	5.25	1	6	13.500	A	0.000	13.500	13.500	100.00	0.000	0.000
					B	0.000	13.500		100.00	0.000	0.000
					C	0.000	13.500		100.00	0.000	5.554
L22 3.00-2.00	2.50	1	6	3.000	A	0.000	3.000	3.000	100.00	0.000	0.000
					B	0.000	3.000		100.00	0.000	0.000
					C	0.000	3.000		100.00	0.000	1.234
L23 2.00-0.00	1.00	1	6	6.000	A	0.000	6.000	6.000	100.00	0.000	0.000
					B	0.000	6.000		100.00	0.000	0.000
					C	0.000	6.000		100.00	0.000	2.469

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service

Comb. No.	Description
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 99.25	23.459	38	1.7047	0.0092
L2	99.25 - 90	16.173	38	1.6088	0.0081
L3	90 - 80	13.144	38	1.5067	0.0064
L4	80 - 76.5	10.208	38	1.2801	0.0043
L5	76.5 - 68.5	9.293	38	1.2155	0.0039
L6	68.5 - 68	7.367	38	1.0775	0.0031
L7	68 - 63.5	7.255	38	1.0699	0.0031
L8	63.5 - 60	6.290	38	0.9749	0.0026
L9	60 - 56.5	5.598	38	0.9139	0.0024
L10	56.5 - 53.5	4.943	38	0.8736	0.0022
L11	53.5 - 45.417	4.412	38	0.8153	0.0020
L12	45.417 - 36.417	3.147	38	0.6754	0.0015
L13	36.417 - 35.5	2.013	38	0.5237	0.0011
L14	35.5 - 33.5	1.914	38	0.5093	0.0010
L15	33.5 - 30	1.709	38	0.4718	0.0009
L16	30 - 27	1.381	38	0.4222	0.0008
L17	27 - 26.5	1.128	38	0.3837	0.0007
L18	26.5 - 20.583	1.088	38	0.3784	0.0007
L19	20.583 - 20	0.667	38	0.2998	0.0005
L20	20 - 7.5	0.631	38	0.2935	0.0005
L21	7.5 - 3	0.091	38	0.1145	0.0002
L22	3 - 2	0.014	38	0.0463	0.0001
L23	2 - 0	0.006	38	0.0306	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	APXVTM14-C-120 w/ Mount Pipe	38	22.744	1.6975	0.0092	26893
116.00	A-ANT-18G-1-C	38	22.030	1.6902	0.0091	26893
114.00	Pipe Mount [PM 601-3]	38	21.317	1.6827	0.0091	22411
107.00	Platform Mount [LP 712-1]	38	18.844	1.6528	0.0088	10343
99.00	(3) HPA-65R-BUU-H8 w/ Mount Pipe	38	16.089	1.6071	0.0080	6163
59.00	DB536	38	5.407	0.9026	0.0024	3889
48.00	GPS	38	3.525	0.7175	0.0017	3325
30.00	Bridge Stiffener (114.5" x 12.5" x 1.25")	38	1.381	0.4222	0.0008	4186

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 99.25	59.899	13	4.3563	0.0236
L2	99.25 - 90	41.308	13	4.1098	0.0206
L3	90 - 80	33.578	13	3.8496	0.0163
L4	80 - 76.5	26.083	13	3.2713	0.0110
L5	76.5 - 68.5	23.746	13	3.1064	0.0098

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L6	68.5 - 68	18.829	13	2.7539	0.0079
L7	68 - 63.5	18.542	13	2.7345	0.0078
L8	63.5 - 60	16.078	13	2.4918	0.0067
L9	60 - 56.5	14.309	13	2.3360	0.0061
L10	56.5 - 53.5	12.634	13	2.2331	0.0057
L11	53.5 - 45.417	11.278	13	2.0842	0.0051
L12	45.417 - 36.417	8.046	13	1.7265	0.0039
L13	36.417 - 35.5	5.148	13	1.3389	0.0027
L14	35.5 - 33.5	4.894	13	1.3021	0.0026
L15	33.5 - 30	4.369	13	1.2062	0.0024
L16	30 - 27	3.531	13	1.0794	0.0020
L17	27 - 26.5	2.884	13	0.9812	0.0018
L18	26.5 - 20.583	2.781	13	0.9675	0.0018
L19	20.583 - 20	1.705	13	0.7666	0.0013
L20	20 - 7.5	1.613	13	0.7504	0.0013
L21	7.5 - 3	0.231	13	0.2927	0.0005
L22	3 - 2	0.037	13	0.1183	0.0002
L23	2 - 0	0.016	13	0.0783	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	APXVTM14-C-120 w/ Mount Pipe	13	58.075	4.3377	0.0235	10703
116.00	A-ANT-18G-1-C	13	56.253	4.3188	0.0234	10703
114.00	Pipe Mount [PM 601-3]	13	54.435	4.2994	0.0233	8919
107.00	Platform Mount [LP 712-1]	13	48.124	4.2225	0.0226	4115
99.00	(3) HPA-65R-BUU-H8 w/ Mount Pipe	13	41.093	4.1055	0.0206	2447
59.00	DB536	13	13.821	2.3072	0.0060	1527
48.00	GPS	13	9.013	1.8343	0.0042	1304
30.00	Bridge Stiffener (114.5" x 12.5" x 1.25")	13	3.531	1.0794	0.0020	1639

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	120 - 99.25 (1)	P24x1/4	20.75	0.00	0.0	23.696	18.6532	-6.21	442.00	0.014
L2	99.25 - 90 (2)	RPS 24" x 0.4346"	9.25	0.00	0.0	21.534	32.1747	-11.76	692.85	0.017
L3	90 - 80 (3)	P24x3/8	10.00	0.00	0.0	25.200	27.8325	-13.11	701.38	0.019
L4	80 - 76.5 (4)	RPS 24" x 0.62517"	3.50	0.00	0.0	19.806	45.9089	-13.80	909.27	0.015
L5	76.5 - 68.5 (5)	RPS 24" x 0.82933"	8.00	0.00	0.0	19.800	60.3693	-15.75	1195.31	0.013
L6	68.5 - 68 (6)	RPS 24" x 1.09914"	0.50	0.00	0.0	19.782	79.0778	-15.90	1564.32	0.010
L7	68 - 63.5 (7)	RPS 24" x 0.81655"	4.50	0.00	0.0	22.692	59.4718	-16.99	1349.53	0.013
L8	63.5 - 60 (8)	RPS 24" x 1.13718"	3.50	0.00	0.0	20.358	81.6787	-18.10	1662.82	0.011
L9	60 - 56.5 (9)	RPS 30" x 0.90733"	3.50	0.00	0.0	21.126	82.9275	-19.25	1751.93	0.011
L10	56.5 - 53.5 (10)	RPS 30" x 0.55714"	3.00	0.00	0.0	22.788	51.5340	-19.90	1174.36	0.017
L11	53.5 - 45.417 (11)	RPS 30" x 0.70939"	8.08	0.00	0.0	22.776	65.2775	-22.09	1486.76	0.015
L12	45.417 - 36.417 (12)	RPS 30" x 0.86453"	9.00	0.00	0.0	22.776	79.1320	-24.89	1802.31	0.014
L13	36.417 - 35.5 (13)	RPS 30" x 1.02443"	0.92	0.00	0.0	22.776	93.2533	-25.22	2123.94	0.012
L14	35.5 - 33.5 (14)	RPS 30" x 0.86188"	2.00	0.00	0.0	22.782	78.8966	-25.84	1797.42	0.014
L15	33.5 - 30 (15)	RPS 30" x 1.23648"	3.50	0.00	0.0	21.120	111.732	-27.32	2359.79	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
							0			
L16	30 - 27 (16)	RPS 36" x 0.7835"	3.00	0.00	0.0	21.504	86.6832	-29.96	1864.04	0.016
L17	27 - 26.5 (17)	RPS 36" x 0.97892"	0.50	0.00	0.0	21.510	107.703 0	-30.17	2316.69	0.013
L18	26.5 - 20.583 (18)	RPS 36" x 0.81422"	5.92	0.00	0.0	21.534	90.0034	-32.21	1938.13	0.017
L19	20.583 - 20 (19)	RPS 36" x 1.06207"	0.58	0.00	0.0	21.516	116.574 0	-32.47	2508.20	0.013
L20	20 - 7.5 (20)	RPS 36" x 0.8638"	12.50	0.00	0.0	21.504	95.3494	-37.05	2050.39	0.018
L21	7.5 - 3 (21)	RPS 36" x 0.90824"	4.50	0.00	0.0	21.486	100.128 0	-38.78	2151.35	0.018
L22	3 - 2 (22)	RPS 36" x 0.90824"	1.00	0.00	0.0	21.486	100.128 0	-39.16	2151.35	0.018
L23	2 - 0 (23)	RPS 36" x 0.94668"	2.00	0.00	0.0	21.102	104.251 0	-39.96	2199.91	0.018

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	120 - 99.25 (1)	P24x1/4	135.29	14.812	23.696	0.625	0.00	0.000	23.696	0.000
L2	99.25 - 90 (2)	RPS 24" x 0.4346"	303.59	19.567	23.687	0.826	0.00	0.000	23.687	0.000
L3	90 - 80 (3)	P24x3/8	486.94	36.101	27.720	1.302	0.00	0.000	27.720	0.000
L4	80 - 76.5 (4)	RPS 24" x 0.62517"	552.35	25.349	21.787	1.164	0.00	0.000	21.787	0.000
L5	76.5 - 68.5 (5)	RPS 24" x 0.82933"	704.84	25.020	21.780	1.149	0.00	0.000	21.780	0.000
L6	68.5 - 68 (6)	RPS 24" x 1.09914"	714.52	19.802	21.760	0.910	0.00	0.000	21.760	0.000
L7	68 - 63.5 (7)	RPS 24" x 0.81655"	802.46	28.885	24.961	1.157	0.00	0.000	24.961	0.000
L8	63.5 - 60 (8)	RPS 24" x 1.13718"	871.95	23.469	22.394	1.048	0.00	0.000	22.394	0.000
L9	60 - 56.5 (9)	RPS 30" x 0.90733"	943.30	19.334	23.239	0.832	0.00	0.000	23.239	0.000
L10	56.5 - 53.5 (10)	RPS 30" x 0.55714"	1005.0 0	32.383	25.067	1.292	0.00	0.000	25.067	0.000
L11	53.5 - 45.417 (11)	RPS 30" x 0.70939"	1175.0 3	30.195	25.054	1.205	0.00	0.000	25.054	0.000
L12	45.417 - 36.417 (12)	RPS 30" x 0.86453"	1370.5 5	29.355	25.054	1.172	0.00	0.000	25.054	0.000
L13	36.417 - 35.5 (13)	RPS 30" x 1.02443"	1390.7 8	25.548	25.054	1.020	0.00	0.000	25.054	0.000
L14	35.5 - 33.5 (14)	RPS 30" x 0.86188"	1435.1 0	30.824	25.060	1.230	0.00	0.000	25.060	0.000
L15	33.5 - 30 (15)	RPS 30" x 1.23648"	1513.2 8	23.530	23.232	1.013	0.00	0.000	23.232	0.000
L16	30 - 27 (16)	RPS 36" x 0.7835"	1582.2 6	25.420	23.654	1.075	0.00	0.000	23.654	0.000
L17	27 - 26.5 (17)	RPS 36" x 0.97892"	1593.8 2	20.833	23.661	0.880	0.00	0.000	23.661	0.000
L18	26.5 - 20.583 (18)	RPS 36" x 0.81422"	1731.9 7	26.845	23.687	1.133	0.00	0.000	23.687	0.000
L19	20.583 - 20 (19)	RPS 36" x 1.06207"	1745.7 2	21.180	23.668	0.895	0.00	0.000	23.668	0.000
L20	20 - 7.5 (20)	RPS 36" x 0.8638"	2045.8 2	30.014	23.654	1.269	0.00	0.000	23.654	0.000
L21	7.5 - 3 (21)	RPS 36" x 0.90824"	2156.2 1	30.198	23.635	1.278	0.00	0.000	23.635	0.000
L22	3 - 2 (22)	RPS 36" x 0.90824"	2180.9 0	30.544	23.635	1.292	0.00	0.000	23.635	0.000
L23	2 - 0 (23)	RPS 36" x 0.94668"	2230.4 6	30.066	23.212	1.295	0.00	0.000	23.212	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	120 - 99.25 (1)	P24x1/4	9.13	0.978	16.800	0.058	0.28	0.015	11.901	0.001
L2	99.25 - 90 (2)	RPS 24" x 0.4346"	18.08	1.124	14.356	0.078	2.85	0.092	14.356	0.006
L3	90 - 80 (3)	P24x3/8	18.60	1.336	16.800	0.080	2.82	0.105	16.800	0.006
L4	80 - 76.5 (4)	RPS 24" x 0.62517"	18.80	0.819	13.204	0.062	2.81	0.064	13.204	0.005
L5	76.5 - 68.5 (5)	RPS 24" x 0.82933"	19.34	0.641	13.200	0.049	2.77	0.049	13.200	0.004
L6	68.5 - 68 (6)	RPS 24" x 1.09914"	19.38	0.490	13.188	0.037	2.77	0.038	13.188	0.003
L7	68 - 63.5 (7)	RPS 24" x 0.81655"	19.72	0.663	15.128	0.044	2.74	0.049	15.128	0.003
L8	63.5 - 60 (8)	RPS 24" x 1.13718"	20.00	0.490	13.572	0.036	2.71	0.036	13.572	0.003
L9	60 - 56.5 (9)	RPS 30" x 0.90733"	20.46	0.493	14.084	0.035	2.93	0.030	14.084	0.002
L10	56.5 - 53.5 (10)	RPS 30" x 0.55714"	20.69	0.803	15.192	0.053	2.90	0.047	15.192	0.003
L11	53.5 - 45.417 (11)	RPS 30" x 0.70939"	21.41	0.656	15.184	0.043	2.85	0.037	15.184	0.002
L12	45.417 - 36.417 (12)	RPS 30" x 0.86453"	22.05	0.557	15.184	0.037	2.78	0.030	15.184	0.002
L13	36.417 - 35.5 (13)	RPS 30" x 1.02443"	22.11	0.474	15.184	0.031	2.77	0.025	15.184	0.002
L14	35.5 - 33.5 (14)	RPS 30" x 0.86188"	22.23	0.564	15.188	0.037	2.75	0.030	15.188	0.002
L15	33.5 - 30 (15)	RPS 30" x 1.23648"	22.46	0.402	14.080	0.029	2.73	0.021	14.080	0.002
L16	30 - 27 (16)	RPS 36" x 0.7835"	23.11	0.533	14.336	0.037	2.70	0.022	14.336	0.002
L17	27 - 26.5 (17)	RPS 36" x 0.97892"	23.15	0.430	14.340	0.030	2.69	0.018	14.340	0.001
L18	26.5 - 20.583 (18)	RPS 36" x 0.81422"	23.57	0.524	14.356	0.036	2.64	0.020	14.356	0.001
L19	20.583 - 20 (19)	RPS 36" x 1.06207"	23.60	0.405	14.344	0.028	2.63	0.016	14.344	0.001
L20	20 - 7.5 (20)	RPS 36" x 0.8638"	24.41	0.512	14.336	0.036	2.52	0.019	14.336	0.001
L21	7.5 - 3 (21)	RPS 36" x 0.90824"	24.68	0.493	14.324	0.034	2.48	0.017	14.324	0.001
L22	3 - 2 (22)	RPS 36" x 0.90824"	24.73	0.494	14.324	0.034	2.47	0.017	14.324	0.001
L23	2 - 0 (23)	RPS 36" x 0.94668"	24.85	0.477	14.068	0.034	2.45	0.017	14.068	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 99.25 (1)	0.014	0.625	0.000	0.058	0.001	0.643 ✔	1.333	H1-3+VT ✔
L2	99.25 - 90 (2)	0.017	0.826	0.000	0.078	0.006	0.850 ✔	1.333	H1-3+VT ✔
L3	90 - 80 (3)	0.019	1.302	0.000	0.080	0.006	1.328 ✔	1.333	H1-3+VT ✔
L4	80 - 76.5 (4)	0.015	1.164	0.000	0.062	0.005	1.183 ✔	1.333	H1-3+VT ✔
L5	76.5 - 68.5 (5)	0.013	1.149	0.000	0.049	0.004	1.165 ✔	1.333	H1-3+VT ✔
L6	68.5 - 68 (6)	0.010	0.910	0.000	0.037	0.003	0.922 ✔	1.333	H1-3+VT ✔
L7	68 - 63.5 (7)	0.013	1.157	0.000	0.044	0.003	1.172 ✔	1.333	H1-3+VT ✔
L8	63.5 - 60 (8)	0.011	1.048	0.000	0.036	0.003	1.060 ✔	1.333	H1-3+VT ✔
L9	60 - 56.5 (9)	0.011	0.832	0.000	0.035	0.002	0.844 ✔	1.333	H1-3+VT ✔
L10	56.5 - 53.5 (10)	0.017	1.292	0.000	0.053	0.003	1.312 ✔	1.333	H1-3+VT ✔
L11	53.5 - 45.417 (11)	0.015	1.205	0.000	0.043	0.002	1.222 ✔	1.333	H1-3+VT ✔

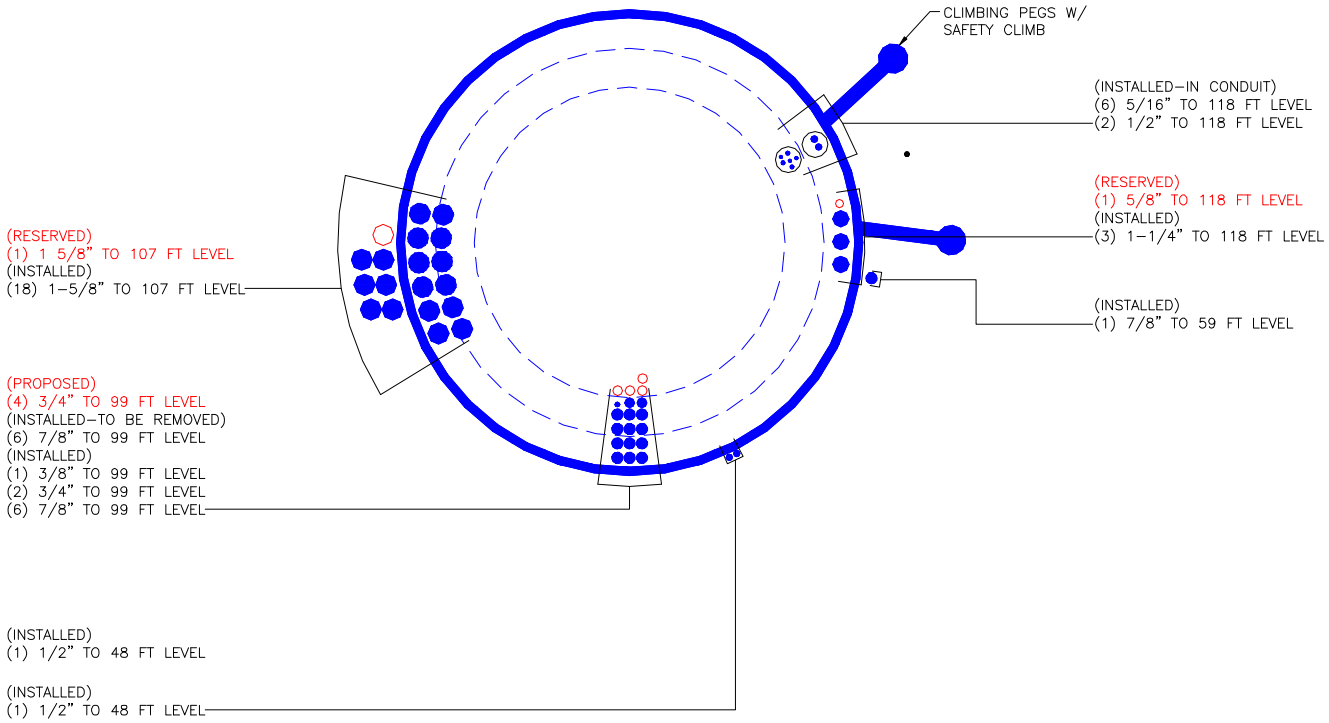
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L12	45.417 - 36.417 (12)	0.014	1.172	0.000	0.037	0.002	1.187 ✔	1.333	H1-3+VT ✔
L13	36.417 - 35.5 (13)	0.012	1.020	0.000	0.031	0.002	1.033 ✔	1.333	H1-3+VT ✔
L14	35.5 - 33.5 (14)	0.014	1.230	0.000	0.037	0.002	1.246 ✔	1.333	H1-3+VT ✔
L15	33.5 - 30 (15)	0.012	1.013	0.000	0.029	0.002	1.025 ✔	1.333	H1-3+VT ✔
L16	30 - 27 (16)	0.016	1.075	0.000	0.037	0.002	1.092 ✔	1.333	H1-3+VT ✔
L17	27 - 26.5 (17)	0.013	0.880	0.000	0.030	0.001	0.894 ✔	1.333	H1-3+VT ✔
L18	26.5 - 20.583 (18)	0.017	1.133	0.000	0.036	0.001	1.151 ✔	1.333	H1-3+VT ✔
L19	20.583 - 20 (19)	0.013	0.895	0.000	0.028	0.001	0.909 ✔	1.333	H1-3+VT ✔
L20	20 - 7.5 (20)	0.018	1.269	0.000	0.036	0.001	1.288 ✔	1.333	H1-3+VT ✔
L21	7.5 - 3 (21)	0.018	1.278	0.000	0.034	0.001	1.297 ✔	1.333	H1-3+VT ✔
L22	3 - 2 (22)	0.018	1.292	0.000	0.034	0.001	1.312 ✔	1.333	H1-3+VT ✔
L23	2 - 0 (23)	0.018	1.295	0.000	0.034	0.001	1.315 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	120 - 99.25	Pole	P24x1/4	1	-6.21	589.19	48.2	Pass
L2	99.25 - 90	Pole	RPS 24" x 0.4346"	2	-11.76	923.57	63.8	Pass
L3	90 - 80	Pole	P24x3/8	3	-13.11	934.94	99.7	Pass
L4	80 - 76.5	Pole	RPS 24" x 0.62517"	4	-13.80	1212.06	88.8	Pass
L5	76.5 - 68.5	Pole	RPS 24" x 0.82933"	5	-15.75	1593.35	87.4	Pass
L6	68.5 - 68	Pole	RPS 24" x 1.09914"	6	-15.90	2085.24	69.2	Pass
L7	68 - 63.5	Pole	RPS 24" x 0.81655"	7	-16.99	1798.92	87.9	Pass
L8	63.5 - 60	Pole	RPS 24" x 1.13718"	8	-18.10	2216.54	79.6	Pass
L9	60 - 56.5	Pole	RPS 30" x 0.90733"	9	-19.25	2335.32	63.3	Pass
L10	56.5 - 53.5	Pole	RPS 30" x 0.55714"	10	-19.90	1565.42	98.4	Pass
L11	53.5 - 45.417	Pole	RPS 30" x 0.70939"	11	-22.09	1981.85	91.7	Pass
L12	45.417 - 36.417	Pole	RPS 30" x 0.86453"	12	-24.89	2402.48	89.0	Pass
L13	36.417 - 35.5	Pole	RPS 30" x 1.02443"	13	-25.22	2831.21	77.5	Pass
L14	35.5 - 33.5	Pole	RPS 30" x 0.86188"	14	-25.84	2395.96	93.5	Pass
L15	33.5 - 30	Pole	RPS 30" x 1.23648"	15	-27.32	3145.60	76.9	Pass
L16	30 - 27	Pole	RPS 36" x 0.7835"	16	-29.96	2484.77	81.9	Pass
L17	27 - 26.5	Pole	RPS 36" x 0.97892"	17	-30.17	3088.15	67.1	Pass
L18	26.5 - 20.583	Pole	RPS 36" x 0.81422"	18	-32.21	2583.53	86.4	Pass
L19	20.583 - 20	Pole	RPS 36" x 1.06207"	19	-32.47	3343.43	68.2	Pass
L20	20 - 7.5	Pole	RPS 36" x 0.8638"	20	-37.05	2733.17	96.6	Pass
L21	7.5 - 3	Pole	RPS 36" x 0.90824"	21	-38.78	2867.75	97.3	Pass
L22	3 - 2	Pole	RPS 36" x 0.90824"	22	-39.16	2867.75	98.4	Pass
L23	2 - 0	Pole	RPS 36" x 0.94668"	23	-39.96	2932.48	98.6	Pass
							Summary	
						Pole (L3)	99.7	Pass
						RATING =	**99.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

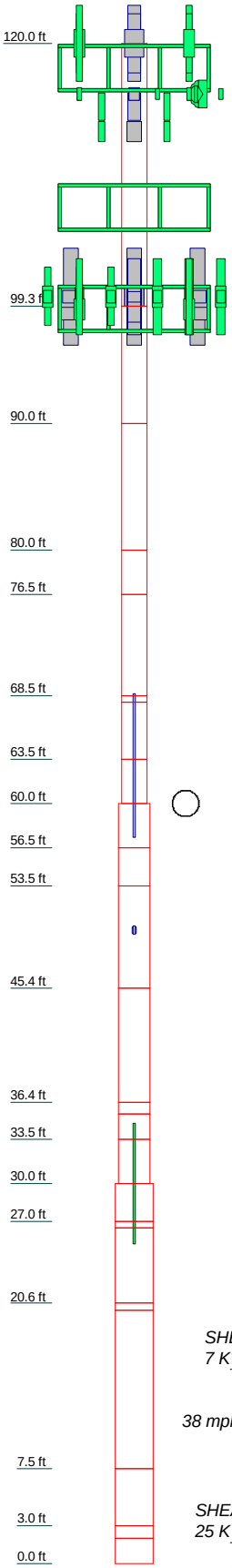

CLIMBING PEGS W/
SAFETY CLIMB
(INSTALLED–IN CONDUIT)
(6) 5/16" TO 118 FT LEVEL
(2) 1/2" TO 118 FT LEVEL
(RESERVED)
(1) 5/8" TO 118 FT LEVEL
(INSTALLED)
(3) 1–1/4" TO 118 FT LEVEL
(INSTALLED)
(1) 7/8" TO 59 FT LEVEL
(RESERVED)
(1) 1 5/8" TO 107 FT LEVEL
(INSTALLED)
(18) 1–5/8" TO 107 FT LEVEL
(PROPOSED)
(4) 3/4" TO 99 FT LEVEL
(INSTALLED–TO BE REMOVED)
(6) 7/8" TO 99 FT LEVEL
(INSTALLED)
(1) 3/8" TO 99 FT LEVEL
(2) 3/4" TO 99 FT LEVEL
(6) 7/8" TO 99 FT LEVEL
(INSTALLED)
(1) 1/2" TO 48 FT LEVEL
(INSTALLED)
(1) 1/2" TO 48 FT LEVEL

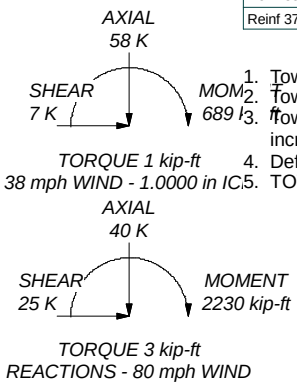
APPENDIX C

ADDITIONAL CALCULATIONS

Program Version 6.1.4.1 - 12/17/2013 File:G:/TOWER/375_Crown_Castle/2013/37513-2485 BU 876329/WO 727661 BU 876329 - 7702/37513-2485 BP B New Reinforcing.eri

Section	Size	Length (ft)	Grade	Weight (K)
1	P24x1/4	20.75	A36M-42	1.3
2	RPS 24" x 0.4346"	9.25	Reinf 35.89 ksi	1.0
3	P24x3/8	10.00	A36M-42	0.9
4	24" x 0.6251"	3.50	Reinf 33.01 ksi	0.5
5		8.00	Reinf 33.00 ksi	1.6
6		0.50		0.1
7		4.50		0.9
8		3.50		1.0
9		3.50		1.0
10		3.00		0.5
11		8.08		1.8
12		9.00	Reinf 37.96 ksi	2.4
13		0.92	Reinf 37.97 ksi	0.3
14		2.00		0.5
15		3.50		1.3
16		8.00		0.9
17		0.50		0.2
18		5.92		1.8
19		0.58		0.2
20	RPS 36" x 0.5824	12.50	Reinf 35.84 ksi	4.1
21		4.50	Reinf 35.81 ksi	1.5
22		1.00		0.3
23		2.00	Reinf 35.81 ksi	0.7
	RPS 36" x 0.8645			25.1





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVTM14-C-120 w/ Mount Pipe	118	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
APXVTM14-C-120 w/ Mount Pipe	118		
APXVTM14-C-120 w/ Mount Pipe	118	(3) SBNHH-1D65A w/ Mount Pipe	99
TD-RRH8x20-25	118	RRUS 11-700	99
TD-RRH8x20-25	118	RRUS 11-700	99
TD-RRH8x20-25	118	RRUS 11-700	99
APXV9ERR18-C-A20 w/ Mount Pipe	118	(2) RRUS 12-B2	99
APXVSPP18-C-A20 w/ Mount Pipe	118	(2) RRUS 12-B2	99
APXVSPP18-C-A20 w/ Mount Pipe	118	(2) RRUS 12-B2	99
IBC1900HG-2A	118	(2) RRUS A2 MODULE	99
IBC1900HG-2A	118	(2) RRUS A2 MODULE	99
IBC1900HG-2A	118	(2) RRUS A2 MODULE	99
IBC1900BB-1	118	DTMABP7819VG12A	99
IBC1900BB-1	118	DTMABP7819VG12A	99
IBC1900BB-1	118	DTMABP7819VG12A	99
840 10054 w/ Mount Pipe	118	RRUS-11 800MHz	99
840 10054 w/ Mount Pipe	118	RRUS-11 800MHz	99
840 10054 w/ Mount Pipe	118	RRUS-11 800MHz	99
WIMAX DAP HEAD	118	DC6-48-60-18-8F	99
WIMAX DAP HEAD	118	DC6-48-60-18-8F	99
WIMAX DAP HEAD	118	(2) RRUS E2 B29	99
(2) HORIZON COMPACT	118	RRUS E2 B29	99
Platform Mount [LP 301-1]	118	RRUS E2 B29	99
A-ANT-18G-1-C	118	WCS RRUS-32-B30	99
A-ANT-18G-2-C	118	WCS RRUS-32-B30	99
PCS 1900MHz 4x45W-65MHz	114	WCS RRUS-32-B30	99
PCS 1900MHz 4x45W-65MHz	114	AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
800MHz 2X50W RRH W/FILTER	114	AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
800MHz 2X50W RRH W/FILTER	114	AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
800MHz 2X50W RRH W/FILTER	114	DC6-48-60-18-8F	99
Pipe Mount [PM 601-3]	114	Commscope MTC3607R Platform Mount	99
PCS 1900MHz 4x45W-65MHz	114	(3) HPA-65R-BUU-H8 w/ Mount Pipe	99
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107	(3) HPA-65R-BUU-H6 w/ Mount Pipe	99
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107	DB536	59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	Side Arm Mount [SO 702-1]	59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	Pipe Mount [PM 601-1]	48
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107	GPS	48
		KS24019-L112A	48
KRY 112 144/1	107	Bridge Stiffener (114.5" x 12.5" x 1.25")	30
KRY 112 144/1	107	Bridge Stiffener (114.5" x 12.5" x 1.25")	30
KRY 112 144/1	107	Bridge Stiffener (114.5" x 12.5" x 1.25")	30
Platform Mount [LP 712-1]	107		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36M-42	42 ksi	60 ksi	Reinf 37.96 ksi	38 ksi	48 ksi
Reinf 35.89 ksi	36 ksi	45 ksi	Reinf 37.97 ksi	38 ksi	48 ksi
Reinf 33.01 ksi	33 ksi	42 ksi	Reinf 35.20 ksi	35 ksi	44 ksi
Reinf 33.00 ksi	33 ksi	42 ksi	Reinf 35.84 ksi	36 ksi	45 ksi
Reinf 32.97 ksi	33 ksi	42 ksi	Reinf 35.85 ksi	36 ksi	45 ksi
Reinf 37.82 ksi	38 ksi	48 ksi	Reinf 35.86 ksi	36 ksi	45 ksi
Reinf 33.93 ksi	34 ksi	43 ksi	Reinf 35.81 ksi	36 ksi	45 ksi
Reinf 35.21 ksi	35 ksi	45 ksi	Reinf 35.17 ksi	35 ksi	44 ksi
Reinf 37.98 ksi	38 ksi	48 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.7%

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Job:	***Existing 120 ft. Monopole / Mtn. View Cem. (Filley Park)***		
Project:	***PJF: 37513-2485 BP B / BU876329***		
Client: Crown Castle USA	Drawn by: Morgan Scroggy	App'd:	
Code: TIA/EIA-222-F	Date: 03/27/14	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2013\37513-2485 BU 876329\WO 727661 BU 876329 - 7702\37513-2485 BP B New Reinforcing.eri		Dwg No. E-1	

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v4.4 - Effective 7-12-13

Date: 3/27/2014
PJF Project: 37513-2485 BP B
Client Ref. # 876329
Site Name: MTN. VIEW CEM. (FILLEY PARK)
Description: 90' Flange
Owner: CCI
Engineer: MLS

Asymmetric Bolt Analysis

Moment =	304	k-ft	TIA Ref.	F	Location =	Flange Plate		
Axial =	11.8	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	18.1	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	25							

**** For Flange Plates: Prying action is not considered in the bolt loads. ****

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.000	A325	92	120	0.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
2	1.000	A325	92	120	18.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
3	1.000	A325	92	120	36.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
4	1.000	A325	92	120	54.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
5	1.000	A325	92	120	72.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
6	1.000	A325	92	120	90.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
7	1.000	A325	92	120	108.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
8	1.000	A325	92	120	126.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
9	1.000	A325	92	120	144.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
10	1.000	A325	92	120	162.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
11	1.000	A325	92	120	180.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
12	1.000	A325	92	120	198.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
13	1.000	A325	92	120	216.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
14	1.000	A325	92	120	234.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
15	1.000	A325	92	120	252.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
16	1.000	A325	92	120	270.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
17	1.000	A325	92	120	288.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
18	1.000	A325	92	120	306.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
19	1.000	A325	92	120	324.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
20	1.000	A325	92	120	342.0	29.00	0.00	0.79	13.06	12.39	12.39	0.00	46.08	26.9%
21	0.000				0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
22	0.000	CCI 4 x 0.75 (65 ksi)	65	80	0.0	32.75	3.00	3.00	56.17	53.62	56.17	103.13	103.13	54.5%
23	0.000	CCI 4 x 0.75 (65 ksi)	65	80	90.0	32.75	3.00	3.00	56.17	53.62	56.17	103.13	103.13	54.5%
24	0.000	CCI 4 x 0.75 (65 ksi)	65	80	180.0	32.75	3.00	3.00	56.17	53.62	56.17	103.13	103.13	54.5%
25	0.000	CCI 4 x 0.75 (65 ksi)	65	80	270.0	32.75	3.00	3.00	56.17	53.62	56.17	103.13	103.13	54.5%
								27.71						

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data	
BU#:	*876329*
Site Name:	
App #:	

Reactions adjusted for bolted bridge stiffeners

Reactions		
Moment:	153.8	ft-kips
Axial:	6.7	kips
Shear:	10.2	kips
Elevation:	90	feet

Pole Manufacturer:	Rohn

If No stiffeners, Criteria: AISC ASD <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	29		

Plate Data		
Diam:	32	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	24	in
Thick:	0.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results — Rigid (Service, ASD; Fty*ASIF)

Bolt Tension Capacity, **B**:	46.07	kips	
Max Bolt directly applied T:	12.39	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	2.018	in	
Min PL "treq" for actual **T w/ Pry**:	0.799	in	
Min PL "t1" for actual **T w/o Pry**:	1.047	in	
T allowable with Prying:	35.75	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	12.39	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	26.9%	**Pass**	

Exterior Flange Plate Results — Flexural Check — Rigid (Service ASD; 0.75*Fy*ASIF; Comp. Y.L. Length: 16.28)

Compression Side Plate Stress:	Rohn/Pirod,	OK
Allowable Plate Stress:	36.0	ksi
Compression Plate Stress Ratio:	Rohn/Pirod,	OK
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	28.4%	**Pass**

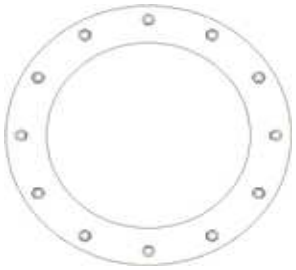
n/a

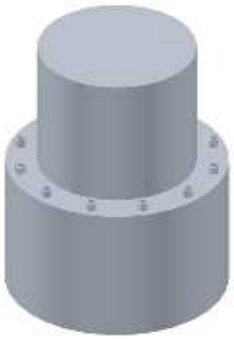
Stiffener Results — N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

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v4.1 - Effective 7-3-12

Date: 3/27/2014
PJF Project: 37513-2485 BP A (60' Flange)
Client Ref. # 876329
Site Name: MTN. View Cem. (Filley Park)
Description: 60' Flange
Owner: CCI
Engineer: MLS

Asymmetric Bolt Analysis

Moment =	871.95	k-ft	TIA Ref.	F		Location =	Flange Plate	
Axial =	18.10	kips	ASIF =	1.3333		η =	N/A	for BP, Rev. G Sect. 4.9.9
Shear =	20.00	kips	Max Ratio =	100.0%		Threads =	N/A	for FP, Rev. G
Anchor Qty =	4							

**** For Flange Plates: Prying action is not considered in the bolt loads. ****

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	0.000				0.0	46.19	8.00	8.00	231.07	222.02	231.07	290.77	290.77	79.5%
2	0.000				90.0	46.19	8.00	8.00	231.07	222.02	231.07	290.77	290.77	79.5%
3	0.000				180.0	46.19	8.00	8.00	231.07	222.02	231.07	290.77	290.77	79.5%
4	0.000				270.0	46.19	8.00	8.00	231.07	222.02	231.07	290.77	290.77	79.5%
								32.00						

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v2.0, Effective Date: 1-12-12

Date: 3/27/2014
Project No: 37513-2485
Site Name: Site Name
Site Number/BUN: 876329
Description: 30' Flange
Owner: CCI
Engineer: MLS

Welded Bridge Stiffener Analysis per TIA/EIA-222-F & AISC 9th Ed. (Green)

General Parameters and Loading:

Flange Elevation:	30.00	ft
TIA Reference Standard:	TIA/EIA-222-F	
AISC Manual:	9th Ed. (Green)	
Method:	ASD	
ASD Stress Increase, ASIF:	1.333333333	
Moment, Mf:	1513.3	k-ft
Axial, Pf:	27.3	kips
Shear, Vf:	22.5	kips

Pole Parameters:

	Upper Pole	Lower Pole	
Pole Diameter, Dp:	30.00	36.00	in
Pole Thickness, tp:	0.3750	0.3750	in
Pole Fy:	42	42	ksi
Pole Fu:	60	60	ksi
Flange Diameter, Df:	47.00	47.00	in

Bridge Stiffener Parameters:

	Stiffener Type 1	Stiffener Type 2	
Qty. Stiffeners:	4	0	
Upper Weld Length, L1:	54.25	0.00	in
Lower Weld Length, L2:	54.25	0.00	in
Weld Size, w:	0.3750	0.0000	in
Electrode:	E80	E70	
Effective Stiffener Width, Ws:	8.00	0.00	in
Stiffener Thickness, ts:	1.25	0.00	in
Notch, n:	0.50	0.00	in
Stiffener Fy:	65	0	ksi
Stiffener Fu:	80	0	ksi
Unbraced Length, L:	6.00	0.00	in
K:	1.00	0.00	
Stiffener Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	0	degrees
Stiffener Circle:	56.00	47.00	in = Df + 2 n + Ws
Upper Eccentricity, e1:	13.00	8.50	in = (Df - Dp) / 2 + n + Ws / 2
Lower Eccentricity, e2:	10.00	5.50	in = (Df - Dp) / 2 + n + Ws / 2

Flange Bolt Parameters:

Number of Bolt Circles: (1) Bolt Circle

	Bolt Circle 1	Bolt Circle 2	
Qty. Bolts:	0	0	
Bolt Diameter:	1.50	0.00	in
Bolt Circle:	41.00	0.00	in
Bolt Spacing:	Symmetric	Symmetric	
Start Angle, for Symmetric:	0	0	degrees
Bolt Area, Ag:	0.0000	0.0000	in
Max. Tension:	0.00	0.00	kips
Max. Net Tension:	0.00	0.00	kips
Max. Net Compression:	0.00	0.00	kips
Moment to Bolt Circle:	0.00	0.00	k-ft
Axial to Bolt Circle:	0.00	0.00	kips
Shear to Bolt Circle:	0.00	0.00	kips
Equivalent Bolt Circle:	0.00	0.00	in

Weld Analysis per AISC Table XIX & pg. 4-72:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	0	Num. of Sixteenths in Weld
a:	0.2396	0.0000	= e1 / L1
k:	0	0	
C:	1.2870	0.0000	Tabulated Cofficient
C1:	1.1400	1.0000	Coefficient for Electrode
ASIF:	1.3333	1.3333	
Stiffener Axial, Ps:	331.2	0.0	kips
Allowable Axial, Pa:	636.7	0.0	kips = ASIF C C1 D L
Ratio:	52.0%	0.0%	

Lower Pole	Stiffener Type 1	Stiffener Type 2	
D:	6	0	Num. of Sixteenths in Weld
a:	0.1843	0.0000	= e2 / L2
k:	0	0	
C:	1.4276	0.0000	Tabulated Cofficient
C1:	1.1400	1.0000	Coefficient for Electrode
ASIF:	1.3333	1.3333	
Stiffener Axial, Ps:	331.2	0.0	kips
Allowable Axial, Pa:	706.3	0.0	kips = ASIF C C1 D L
Ratio:	46.9%	0.0%	

Pole Analysis per AISC Sect. F4:

Upper Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, P:	331.2	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fv:	3.1	0.0	kips/in= P / (2 L1)
Section Modulus, S:	981.0	0.0	in^2 = $L1^2$ / 3
Bending Stress, fb:	4.4	0.0	kips/in = P e1 / S
Combined Stress, f:	5.3	0.0	kips/in = $(fv^2 + fb^2)^{1/2}$
ASIF:	1.3333	0.0000	
Allowable Stress, F:	8.4	0.0	kips/in = ASIF (0.4 Fy) tp
Ratio:	63.7%	0.0%	

Lower Pole	Stiffener Type 1	Stiffener Type 2	
Stiffener Axial, P:	331.2	0.0	kips
Effective Throat, te:	0.2651	0.0000	in = 0.707 w
Shear Stress, fv:	3.1	0.0	ksi = P / (2 L2)
Section Modulus, S:	981.0	0.0	in^2 = $L2^2$ / 3
Bending Stress, fb:	3.4	0.0	ksi = P e2 / S
Combined Stress, f:	4.6	0.0	kips/in = $(fv^2 + fb^2)^{1/2}$
ASIF:	1.3333	0.0000	
Allowable Stress, F:	8.4	0.0	kips/in = ASIF (0.4 Fy) tp
Ratio:	54.2%	0.0%	

Stiffener 1 Analysis per AISC Sect. D1, E2, F1.2 & App. B

	Stiffener Type 1	
Gross Area, Ag:	10.0000	in^2
Net Area, An:	10.0000	in^2
Stiffener Axial, P:	331.2	kips
Stiffener Stress, f:	33.1	ksi = P / Ag
b:	17.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	13.6000	in
Q, Where Qa = 1.0:	0.8499	= Qa 1.340 - 0.00447 (b / ts) $Fy^{1/2}$
r:	0.3608	in^3
K L / r:	16.6277	
ASIF:	1.3333	
Allowable Axial, Fa:	42.07	ksi = ASIF Q [1 - (K L / r) / 2 Cc^2] Fy / [5/3 + 3(K L / r) / 8 Cc' - (K L / r)^3 / 8 Cc^3]
ASIF:	1.3333	
Allowable Bending, Fb:	44.19	ksi = ASIF 0.6 Fy Q
ASIF:	1.3333	
Allowable Net Tension, Ft:	53.33	ksi = ASIF 0.5 Fu
Ratio:	78.7%	

Stiffener 2 Analysis per AISC Sect. D1, E2, F1.2 & App. B

	Stiffener Type 2	
Gross Area, Ag:	0.0000	in^2
Net Area, An:	0.0000	in^2
Stiffener Axial, P:	0.0	kips
Stiffener Stress, f:	0.0	ksi = P / Ag
b:	0.0000	in = (Df - Dp) / 2 + n + Ws, Upper Pole
b / ts:	0.0000	in
Q, Where Qa = 1.0:	0.0000	
r:	0.0000	in^3
K L / r:	0.0000	
ASIF:	0.0000	
Allowable Axial, Fa:	0.00	ksi = ASIF [1 - (K L / r) / 2 Cc^2] Fy / [5/3 + 3(K L / r) / 8 Cc - (K L / r)^3 / 8 Cc^3]
ASIF:	0.0000	
Allowable Bending, Fb:	0.00	ksi = ASIF 0.6 Fy
ASIF:	0.0000	
Allowable Net Tension, Ft:	0.00	ksi = ASIF 0.5 Fu
Ratio:	0.0%	

Analysis Summary:

Bridge Stiffener Type 1
Weld Analysis Ratio: 52.0% PASS
Pole Analysis Ratio: 63.7% PASS
Stiffener Analysis Ratio: 78.7% PASS

Bridge Stiffener Type 2
Weld Analysis Ratio: 0.0% PASS
Pole Analysis Ratio: 0.0% PASS
Stiffener Analysis Ratio: 0.0% PASS

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v4.1 - Effective 7-3-12

Date: 3/27/2014
PJF Project: 37513-2485 BP B
Client Ref. # 876329
Site Name: MTN. View CEM. (Filley Park)
Description: 120' Pole
Owner: CCI
Engineer: MLS

Asymmetric Anchor Rod Analysis

Moment =	2230	k-ft	TIA Ref.	F	Location =	Base Plate		
Axial =	40.0	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	25.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	30							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.500	A354 Gr BC	109	125	0.0	41.00	0.00	1.77	60.99	58.23	58.23	0.00	97.19	59.9%
2	1.500	A354 Gr BC	109	125	22.5	41.00	0.00	1.77	67.09	64.34	64.34	0.00	97.19	66.2%
3	1.500	A354 Gr BC	109	125	45.0	41.00	0.00	1.77	79.90	77.14	77.14	0.00	97.19	79.4%
4	1.500	A354 Gr BC	109	125	67.5	41.00	0.00	1.77	90.89	88.13	88.13	0.00	97.19	90.7%
5	1.500	A354 Gr BC	109	125	90.0	41.00	0.00	1.77	95.06	92.31	92.31	0.00	97.19	95.0%
6	1.500	A354 Gr BC	109	125	112.5	41.00	0.00	1.77	90.89	88.13	88.13	0.00	97.19	90.7%
7	1.500	A354 Gr BC	109	125	135.0	41.00	0.00	1.77	79.90	77.14	77.14	0.00	97.19	79.4%
8	1.500	A354 Gr BC	109	125	157.5	41.00	0.00	1.77	67.09	64.34	64.34	0.00	97.19	66.2%
9	1.500	A354 Gr BC	109	125	180.0	41.00	0.00	1.77	60.99	58.23	58.23	0.00	97.19	59.9%
10	1.500	A354 Gr BC	109	125	202.5	41.00	0.00	1.77	67.09	64.34	64.34	0.00	97.19	66.2%
11	1.500	A354 Gr BC	109	125	225.0	41.00	0.00	1.77	79.90	77.14	77.14	0.00	97.19	79.4%
12	1.500	A354 Gr BC	109	125	247.5	41.00	0.00	1.77	90.89	88.13	88.13	0.00	97.19	90.7%
13	1.500	A354 Gr BC	109	125	270.0	41.00	0.00	1.77	95.06	92.31	92.31	0.00	97.19	95.0%
14	1.500	A354 Gr BC	109	125	292.5	41.00	0.00	1.77	90.89	88.13	88.13	0.00	97.19	90.7%
15	1.500	A354 Gr BC	109	125	315.0	41.00	0.00	1.77	79.90	77.14	77.14	0.00	97.19	79.4%
16	1.500	A354 Gr BC	109	125	337.5	41.00	0.00	1.77	67.09	64.34	64.34	0.00	97.19	66.2%
17	1.375	Williams R71	127.7	150	35.8	49.88	0.00	1.68	85.70	83.09	83.09	100.00	100.00	83.1%
18	1.375	Williams R71	127.7	150	54.2	49.88	0.00	1.68	97.90	95.28	95.28	100.00	100.00	95.3%
19	1.375	Williams R71	127.7	150	125.8	49.88	0.00	1.68	97.90	95.28	95.28	100.00	100.00	95.3%
20	1.375	Williams R71	127.7	150	144.2	49.88	0.00	1.68	85.70	83.09	83.09	100.00	100.00	83.1%
21	1.375	Williams R71	127.7	150	215.8	49.88	0.00	1.68	85.70	83.09	83.09	100.00	100.00	83.1%
22	1.375	Williams R71	127.7	150	234.2	49.88	0.00	1.68	97.90	95.28	95.28	100.00	100.00	95.3%
23	1.375	Williams R71	127.7	150	305.8	49.88	0.00	1.68	97.90	95.28	95.28	100.00	100.00	95.3%
24	1.375	Williams R71	127.7	150	324.2	49.88	0.00	1.68	85.70	83.09	83.09	100.00	100.00	83.1%
25					0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
26	1.750	A193 Gr B7	105	125	11.0	51.50	0.00	2.41	106.48	102.73	102.73	0.00	132.29	77.7%
27	1.750	A193 Gr B7	105	125	169.0	51.50	0.00	2.41	106.48	102.73	102.73	0.00	132.29	77.7%
28	1.750	A193 Gr B7	105	125	191.0	51.50	0.00	2.41	106.48	102.73	102.73	0.00	132.29	77.7%
29	1.750	A193 Gr B7	105	125	349.0	51.50	0.00	2.41	106.48	102.73	102.73	0.00	132.29	77.7%
30	0.000				0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
								51.32						

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#:	*876329*
Site Name:	*MTN View CEM (Filley Park*
App #:	
Pole Manufacturer:	*Other*

Reactions			Moment adjusted to account for post installed anchor rods.
Moment:	1280.4	ft-kips	
Axial:	22	kips	
Shear:	13.8	kips	

Anchor Rod Data		
Qty:	16	
Diam:	1.5	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi
Bolt Circle:	41	in

Plate Data		
Diam:	47	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	7.07	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0.5	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.75	in
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	20.5	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

			Stiffened
Maximum Rod Tension:	92.3	Kips	Service, ASD
Allowable Tension:	97.2	Kips	Fty*ASIF
Anchor Rod Stress Ratio:	95.0%	Pass	

Base Plate Results

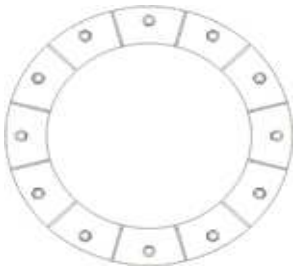
	Flexural Check		Stiffened
Base Plate Stress:	29.9	ksi	Service, ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	83.1%	Pass	Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld :	43.9%	Pass
Vertical Weld:	22.5%	Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	6.8%	Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	44.4%	Pass
Plate Comp. (AISC Bracket):	41.2%	Pass

Pole Results

Pole Punching Shear Check:	8.0%	Pass



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Job Number: 37513-2485 BP B
Site Number: 876329
Site Name: MTN. View CEM. (Filley Park)

By: MLS
Date: 3/27/2014

DRILLED PIER SOIL AND STEEL ANALYSIS - TIA/EIA-222-F

Unfactored Base Reactions from RISA

	Comp. (+)	Tension (-)	
Moment, M =	2230.0		k-ft
Shear, V =	25.0		kips
Axial Load, P =	40.0		kips
OTM =	2242.5	0.0	k-ft @ Ground

Safety Factors / Load Factors / Φ Factors

Tower Type =	Monopole DP
ACI Code =	ACI 318-02
Seismic Design Category =	D
Reference Standard =	TIA/EIA-222-F
Use 1.3 Load Factor?	Yes
Load Factor =	1.30

Drilled Pier Parameters

Diameter =	6	ft
Height Above Grade =	0.5	ft
Depth Below Grade =	25	ft
fc' =	3	ksi
εc =	0.003	in/in
Mat Ftdn. Cap Width =		ft
Mat Ftdn. Cap Length =		ft
Depth Below Grade =		ft

	Safety Factor	Φ Factor
Soil Lateral Resistance =	2.00	0.75
Skin Friction =	2.00	0.75
End Bearing =	2.00	0.75
Concrete Wt. Resist Uplift =	1.25	

Load Combinations Checked per TIA/EIA-222-F

1. Ult. Skin Friction/2.00 + Ult. End Bearing/2.00
 + Effective Soil Wt. - Buoyant Conc. Wt. ≥ Comp.
2. Ult. Skin Friction/2.00 + Buoyant Conc. Wt./1.25 ≥ Uplift
3. Ult. Skin Friction/1.50 + Buoyant Conc. Wt./1.50 ≥ Uplift

Steel Parameters

Number of Bars =	24	
Rebar Size =	#9	
Rebar Fy =	60	ksi
Rebar MOE =	29000	ksi
Tie Size =	#5	
Side Clear Cover to Ties =	3	in

Soil Parameters

Water Table Depth =	15.00	ft
Depth to Ignore Soil =	3.00	ft
Depth to Full Cohesion =	0	ft
Full Cohesion Starts at?	Ground	

Above Full Cohesion Lateral Resistance = 4(Cohesion)(Dia)(H)
Below Full Cohesion Lateral Resistance = 8(Cohesion)(Dia)(H)

Direct Embed Pole Shaft Parameters

Dia @ Grade =		in
Dia @ Depth Below Grade =		in
Number of Sides =		
Thickness =		in
Fy =		ksi
Backfill Condition =		

Maximum Capacity Ratios

Maximum Soil Ratio =	100.0%
Maximum Steel Ratio =	100.0%

Define Soil Layers

Note: Cohesion = Undrained Shear Strengh = Unconfined Compressive Strength / 2

Layer	Thickness ft	Unit Weight pcf	Cohesion psf	Friction Angle degrees	Soil Type	Ultimate End Bearing psf	Comp. Ult. Skin Friction psf	Tension Ult. Skin Friction psf	Depth ft
1	15	135		36	Sand	8000			15
2	15	137.4		36	Sand	8000			30
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Soil Results: Overturning

Depth to COR =	17.62	ft, from Grade	Shear, V =	25.00	kips
Bending Moment, M =	2683.05	k-ft, from COR	Resisting Shear, Va =	59.42	kips
Resisting Moment, Ma =	6377.36	k-ft, from COR			

MOMENT RATIO = 42.1% OK **SHEAR RATIO = 42.1% OK**

Soil Results: Uplift

Uplift, T =	0.00	kips
Allowable Uplift Cap., Ta =	72.40	kips

UPLIFT RATIO = 0.0% OK

Soil Results: Compression

Compression, C =	40.00	kips
Allowable Comp. Cap., Ca =	101.05	kips

COMPRESSION RATIO = 39.6% OK

Steel Results (ACI 318-02):

Minimum Steel Area =	13.57	sq in	Axial Load, P =	63.33	kips @ 5.00 ft Below Grade
Actual Steel Area =	24.00	sq in	Moment, M =	2353.06	k-ft @ 5.00 ft Below Grade
			Allowable Moment, Ma =	2583.27	k-ft
Allowable Min Axial, Pa =	-996.92	kips, Where Ma = 0 k-ft			
Allowable Max Axial, Pa =	4704.45	kips, Where Ma = 0 k-ft			

MOMENT RATIO = 91.1% OK

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *876329*
Site Name: *MTN. View CEM. (Filley Park)*
App #:

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties

Concrete:

Pier Diameter =	6.0	ft
Concrete Area =	4071.5	in^2

Reinforcement:

Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =	5.30	ft
Vert. Cage Diameter =	63.62	in
Vertical Bar Size =	9	
Bar Diameter =	1.13	in
Bar Area =	1	in^2
Number of Bars =	24	
As Total=	24	in^2
A s/ Aconc, Rho:	0.0059	0.59%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.59%	**OK**

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	6115.79	kips
at Mu=(ϕ=0.65)Mn=	3187.43	ft-kips
Max Tu, (φ=0.9) Tn =	1296	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	2353.06	ft-kips **(* Note)**
Max. Service Shaft P:	63.33	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	**Shaft Factored Loads**		
1.30	Mu:	3058.978	ft-kips
1.30	Pu:	82.329	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code=	2002	

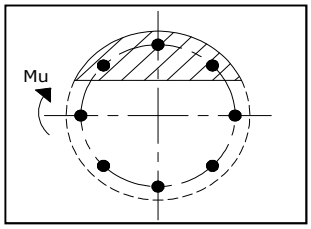
Seismic Properties

Seismic Design Category =	D	
Seismic Risk =	**High**	

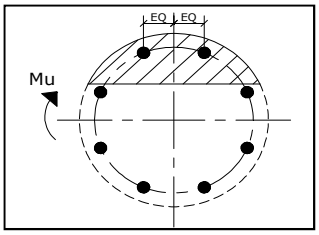
Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **2**



Case 1



Case 2

Dist. From Edge to Neutral Axis:	**12.16**	in
Extreme Steel Strain, ϵt:	**0.0137**	
	ϵt > 0.0050, Tension Controlled	
Reduction Factor,φ:	**0.900**	

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	82.33	kips
Drilled Shaft Moment Capacity, φMn:	**3358.26**	ft-kips
Drilled Shaft Superimposed Mu:	**3058.98**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**91.1%**

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

BU NUMBER; SITE NAME

BU #876329: MTN. VIEW CEM.

APP: 203982 REV. 12; WO: 727661

SITE ADDRESS

28 BREWER DRIVE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

PROJECT NOTES

1. DETAILED FIELD INFORMATION REGARDING INTERFERENCES AND/OR EXISTING FIELD CONDITIONS MAY BE AVAILABLE ON CROWN'S CCISITES AND FROM CONTRACTOR'S PRE-MOD MAPPING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND COORDINATE WITH THE AVAILABLE SOURCES OF INFORMATION ABOVE AND WITH THE PROJECT PLANS BEFORE PROCEEDING WITH THE WORK. CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO PAUL J. FORD AND COMPANY AND CROWN CASTLE FIELD PERSONNEL BEFORE PROCEEDING WITH THE WORK.

2. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL STRUCTURAL BOLTS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

4. (A.) DTI'S REQUIRED: ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAILS ON SHEET S-3 FOR REQUIREMENTS ON THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

   (B.) EFFECTIVE 5/30/2012: UNTIL FURTHER NOTICE, CROWN CASTLE WILL ACCEPT AJAX BOLTS TIGHTENED USING AISC "TURN-OF-NUT" METHOD. INSTALLERS SHALL FOLLOW CROWN GUIDELINES FOR AISC "TURN-OF-NUT" METHOD AND ALSO PROVIDE COMPLETE INSPECTION DOCUMENTATION IN THE PMI. PRIOR TO STARTING WORK, CONTRACTOR SHALL CONSULT WITH CROWN ENGINEERING TO DETERMINE WHETHER THIS POLICY IS STILL IN PLACE.

   (C.) REQUIREMENT EFFECTIVE 04/20/2013, PER CROWN CASTLE DIRECTIVE: ANY AND ALL STRUCTURAL BOLTS THAT ARE TIGHTENED TO THE PRETENSIONED CONDITION USING THE AISC "TURN-OF-NUT" TENSIONING PROCEDURE (NON-TENSION CONTROLLED ['NON-TC'] BOLTS AND/OR BOLTS WITHOUT DTI'S INSTALLED) SHALL BE INSPECTED ONSITE BY AN INDEPENDENT THIRD-PARTY BOLT INSPECTOR, AS APPROVED BY CROWN. **THIS INSPECTION IS REQUIRED TO BE AN ONSITE FIELD INSPECTION.** THE THIRD-PARTY BOLT INSPECTOR SHALL FOLLOW THE PUBLISHED CROWN CASTLE INSPECTION PROCEDURE "MI NON-TC BOLT INSPECTION", DATED APRIL 2013. THE THIRD-PARTY BOLT INSPECTOR SHALL PREPARE A FULLY DOCUMENTED BOLT INSPECTION REPORT, AS SPECIFIED BY CROWN, AND SHALL SUBMIT A COPY OF THE BOLT INSPECTION REPORT TO THE MI INSPECTOR, THE EOR, AND TO CROWN CASTLE.

PROJECT CONTACTS:

MONOPOLE OWNER:
CROWN CASTLE
8 PARKMEADOW DRIVE, PITTSFORD, NY 14534
TSA: STEVE TUTTLE
PH: (585) 899-3445
MOD PM: ROY PYPTIUK AT ROY.PYPTIUK@CROWNCASTLE.COM

STRUCTURAL ENGINEER OF RECORD (EOR):
PAUL J. FORD AND COMPANY
250 EAST BROAD STREET, SUITE 600
COLUMBUS, OHIO 43215-3708
CONTACT: MORGAN SCROGGY AT MSCROGGY@PJFWEB.COM
PHONE: 614-221-6679

DESIGN STANDARD

THIS REINFORCEMENT DESIGN IS BASED UPON THE REQUIREMENTS OF THE TIA/EIA-222-F-1996 STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, USING A DESIGN BASIC WIND SPEED OF 80 MPH (3-SEC GUST) WITH NO ICE, 38 MPH WITH 1 INCH ICE AND 50 MPH SERVICE LOADS, EXPOSURE CATEGORY C.

REFER TO THE POLE DESIGN AND ANTENNA LOADING DOCUMENTED IN THE PJF STRUCTURAL ANALYSIS FOR THIS SITE (PJF#37513-2485 B), DATED 3-21-2014.

THIS PROJECT INCLUDES THE FOLLOWING REINFORCING ELEMENTS:

SHAFT REINFORCING
FIELD WELDED ANCHOR BRACKETS
POST INSTALLED ANCHOR RODS
BOLTED FLANGE JUMP

SHEET INDEX

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street · Suite 600 · Columbus, Ohio 43215
(614) 221-6679 www.pjfweb.com

CROWN CASTLE
8 PARKMEADOW DRIVE, PITTSFORD, NY 14534
PH: (585) 899-3445 FAX: (585) 899-3449

BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B	ISSUE DATE OF PERMIT B : 3-21-2014
DRAWN BY: S.S.	
CHECKED BY: M.L.S.	
APPROVED BY: BKK	T-1
DATE: 3-21-2014	

CROWN CASTLE PROJECT: BU #876329: MTN. VIEW CEM.; BLOOMFIELD, CT
MONOPOLE RETROFIT PROJECT MASTER NOTES DOCUMENT (REV. 2, 1/22/2009)

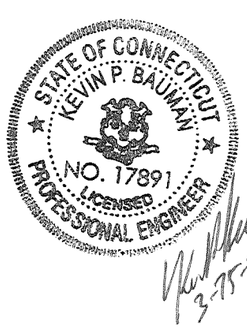
A. GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION. THESE DRAWINGS WERE PREPARED FROM INFORMATION AND DOCUMENTS PROVIDED TO PAUL J. FORD & COMPANY BY CROWN CASTLE. THIS INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY PAUL J. FORD & COMPANY FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. ANY DISCREPANCIES AND/OR CHANGES BETWEEN THE INFORMATION CONTAINED IN THESE DRAWINGS AND THE ACTUAL VERIFIED SITE CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF CROWN CASTLE AND PAUL J. FORD & COMPANY SO THAT ANY CHANGES AND/OR ADJUSTMENTS, IF NECESSARY, CAN BE MADE TO THE DESIGN AND DRAWINGS.
2. THE EXISTING UNREINFORCED MONOPOLE STRUCTURE DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE ANTENNA AND PLATFORM LOADS SHOWN ON THESE DRAWINGS AT THE REQUIRED MINIMUM TIA/EIA-222-F BASIC WIND SPEEDS. DO NOT INSTALL ANY ADDITIONAL OR NEW ANTENNA AND PLATFORM LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN PROPERLY AND ADEQUATELY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO INSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT. IMPORTANT CUTTING, WELDING AND SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES FROM CROWN CASTLE. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY 'CUTTING AND WELDING PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT".
5. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
6. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY THE INSPECTION/TESTING AGENCY. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
7. ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED, AND/OR RELOCATED, AND/OR REPLACED AND RE-INSTALLED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH THE OWNER, TESTING AGENCY, AND ENGINEER.
11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS. IN NO CASE SHALL ANY NEW AND/OR ADDITIONAL PLATFORMS AND/OR ANTENNAS AND/OR COAX CABLES AND/OR OTHER EQUIPMENT BE INSTALLED ON THE MONOPOLE UNTIL THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF ALL OF THE REQUIRED STRUCTURAL REINFORCING SYSTEM COMPONENTS.

B. (SECTION NOT USED)

C. SPECIAL INSPECTION AND TESTING

1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY THE OWNER'S REPRESENTATIVE AND THE OWNER'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY. REFER TO CROWN CASTLE DOCUMENT ENG-SOW-10066 FOR SPECIFICATION.
2. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY THE OWNER FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
   (A.) ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
   (B.) THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES FOR THE OWNER. THE TESTING AGENCY SHALL INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CWI). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.
   A. GENERAL:
      (1.) PERFORM PERIODIC ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY OWNER IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.
   B. FOUNDATIONS, CONCRETE, AND SOIL PREPARATION - (NOT REQUIRED)
   C. CONCRETE TESTING PER ACI - (NOT REQUIRED)
   D. STRUCTURAL STEEL
      (1.) CHECK THE STEEL ON THE JOB WITH THE PLANS.
      (2.) CHECK MILL CERTIFICATIONS.
      (3.) CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
      (4.) INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
      (5.) CALL FOR LABORATORY TEST REPORTS WHEN IN DOUBT.
      (6.) CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
      (7.) CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
      (8.) CHECK BOLT TIGHTENING ACCORDING TO AISC "TURN OF THE NUT" METHOD.
   E. WELDING:
      (1.) VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS, NOT DEEMED PREQUALIFIED, IN ACCORDANCE WITH AWS D1.1.
      (2.) INSPECT FIELD WELDED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND IN ACCORDANCE WITH AWS D1.1.
      (3.) APPROVE FIELD WELDING SEQUENCE.
         (A.) A PROGRAM OF THE APPROVED SEQUENCES SHALL BE SUBMITTED TO THE OWNER BEFORE WELDING BEGINS. NO CHANGE IN APPROVED SEQUENCES MAY BE MADE WITHOUT PERMISSION FROM THE OWNER.
      (4.) INSPECT WELDED CONNECTIONS AS FOLLOWS AND IN ACCORDANCE WITH AWS D1.1:
         (A.) INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE AND WORKING CONDITIONS.
         (B.) VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS.
         (C.) INSPECT PREHEATING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.1.
         (D.) VISUALLY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1.1.
         (E.) SPOT TEST AT LEAST ONE FILLET WELD OF EACH MEMBER USING MAGNETIC PARTICLE OR DYE PENETRANT.
         (F.) INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED PLANS.
         (G.) VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
         (H.) REVIEW THE REPORTS BY TESTING LABS.
         (I.) CHECK TO SEE THAT WELDS ARE CLEAN AND FREE FROM SLAG.
         (J.) INSPECT RUST PROTECTION OF WELDS AS PER SPECIFICATIONS.
         (K.) CHECK THAT DEFECTIVE WELDS ARE CLEARLY MARKED AND HAVE BEEN ADEQUATELY REPAIRED.
   F. SPECIAL INSPECTION OF EXISTING SHAFT-TO-FLANGE WELD CONNECTIONS: - (NOT REQUIRED)
   G. REPORTS:
      (1.) COMPILE AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO THE OWNER.
6. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES AND PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO THE OWNER'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT THE OWNER'S REVIEW AND SPECIFIC WRITTEN CONSENT. THE OWNER RESERVES THE RIGHT TO DETERMINE WHAT IS AN ACCEPTABLE RESOLUTION OF DISCREPANCIES AND PROBLEMS.
7. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO THE OWNER. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
8. RESPONSIBILITY: THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.



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BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B	ISSUE DATE OF PERMIT B : 3-21-2014
DRAWN BY: S.S.	
CHECKED BY: M.L.S.	
APPROVED BY: PJFK	S-1
DATE: 3-21-2014	

D. STRUCTURAL STEEL

1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:

A. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
- (A.) "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
- (B.) "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
- (C.) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (PARAGRAPH 4.2.1 SPECIFICALLY EXCLUDED).

B. BY THE AMERICAN WELDING SOCIETY (AWS):
- (A.) "STRUCTURAL WELDING CODE - STEEL D1.1."
- (B.) "SYMBOLS FOR WELDING AND NON-DESTRUCTIVE TESTING"

2. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M20 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO THE OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN.) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH-UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
8. UNLESS OTHERWISE NOTED, ALL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH ASTM A123. SEE SECTION J FOR FURTHER NOTES AND FOR EXCEPTIONS (IF ANY).
9. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE OWNER'S APPROVED TESTING AGENCY. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO PERFORM THEIR DUTIES FOR THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE TESTING AGENCY IN THEIR TESTING EFFORTS.
10. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
11. FIELD CUTTING OF STEEL:
- (A.) PRIOR TO ANY FIELD CUTTING, THE CONTRACTOR SHALL MARK THE CUT OUTLINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS.
- (B.) ANY REQUIRED CUTS IN THE STEEL SHALL BE CAREFULLY CUT BY MECHANICAL METHODS SUCH AS DRILLING, SAW CUTTING, AND GRINDING. THE CONTRACTOR IS RESPONSIBLE TO PREVENT ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, DURING THE CUTTING WORK. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
- (C.) ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.

E. BASE PLATE GROUT - (NOT REQUIRED)

F. FOUNDATION WORK - (NOT REQUIRED)

G. CAST-IN-PLACE CONCRETE - (NOT REQUIRED)

H. EPOXY GROUTED REINFORCING ANCHOR RODS

1. UNLESS OTHERWISE NOTED, REINFORCING ANCHOR RODS SHALL BE 150 KSI ALL-THREAD BAR CONFORMING TO ASTM A722. RECOMMENDED MANUFACTURERS/SUPPLIERS OF 150 KSI ALL-THREAD BAR ARE WILLIAMS FORM ENGINEERING CORPORATION AND DYWIDAG SYSTEMS INTERNATIONAL.
2. ALL REINFORCING ANCHOR RODS SHALL BE HOT DIP GALVANIZED PER ASTM A153. ALTERNATIVELY, ALL REINFORCING ANCHOR RODS MAY BE EPOXY COATED PER ASTM A775.
3. THE CORE-DRILLED HOLES IN THE CONCRETE FOR THE ANCHOR RODS SHALL BE CLEAN AND DRY, AND OTHERWISE PROPERLY PREPARED ACCORDING TO THE ANCHOR ROD AND EPOXY MANUFACTURERS' INSTRUCTIONS, PRIOR TO PLACEMENT OF ANCHOR RODS AND EPOXY. CONTRACTOR SHALL FOLLOW ALL ANCHOR ROD AND EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF RODS, EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
4. ULTRABOND 1, HILTI HIT RE-500 OR ANCHORTITE EPOXY SHALL BE USED TO ANCHOR THE 150 KSI ALL-THREAD BAR IN THE DRILL HOLES. IF CONTRACTOR WISHES TO USE A DIFFERENT EPOXY, A REQUEST INCLUDING THE EPOXY TECHNICAL DATA SHEET(S) SHALL BE SUBMITTED TO PAUL J FORD AND COMPANY FOR REVIEW PRIOR TO CONSTRUCTION. AS NOTED ABOVE, FOLLOW ALL EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
5. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN INSTALLED AND ALL EPOXY AND GROUT HAVE CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED PRIOR TO TESTING), ALL REINFORCING ANCHOR RODS SHALL BE LOAD TESTED PER CROWN CASTLE ENGINEERING DOCUMENT #ENG-PRC-10119. REFER TO THE NEW ANCHOR & BRACKET DETAIL ON FOLLOWING DRAWING SHEETS FOR SPECIFIED ANCHOR ROD PROOF LOAD.
6. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN SUCCESSFULLY LOAD TESTED AND APPROVED AND BASE PLATE / BEARING PLATE GROUT HAS CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED AFTER TESTING), CONTRACTOR SHALL TIGHTEN ALL HEAVY HEX ANCHOR NUTS TO SNUG TIGHT PLUS 1/8 TURN OF NUT.

I. TOUCH UP OF GALVANIZING

1. THE CONTRACTOR SHALL TOUCH UP ANY AND/OR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. **GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.**
2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. THE OWNER'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
3. THE OWNER'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE INADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

J. HOT DIP GALVANIZING

1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING.
3. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES AS REQUIRED.
4. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

K. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
2. THE MONOPOLE REINFORCING SYSTEM INDICATED IN THESE DOCUMENTS USES REINFORCING COMPONENTS THAT INVOLVE FIELD WELDING STEEL MEMBERS TO THE EXISTING GALVANIZED STEEL POLE STRUCTURE. THESE FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. **ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE CONNECTED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT THE OWNER REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.**
3. THE OWNER SHALL REFER TO TIA/EIA-222-F-1996, SECTION 14 AND ANNEX E FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY THE OWNER BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. **PAUL J. FORD & COMPANY RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT.** ACCORDING TO TIA/EIA-222-F-1996 SECTION 14.1, NOTE 1: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

STATE OF CONNECTICUT
KEVIN P. BAUMAN
NO. 17891
LICENSED PROFESSIONAL ENGINEER

3-25-2014

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APPROVED BY: BKK	S-2
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AJAX BOLT NOTE SHEET: REV. 1.4, 5-20-2013

NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAIL BELOW FOR THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

4. ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. DTI'S SHALL BE THE SQUIRTER® STYLE, MADE TO ASTM F959 LATEST REVISION; AND HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A HARDNESS OF RC 38 OR HIGHER.

NOTES FOR AJAX M20 'ONE-SIDE' BOLTS WITH DIRECT TENSION INDICATORS (DTI'S):

DTI'S REQUIRED: DTI'S SHALL BE "SELF-INDICATING" SQUIRTER® STYLE DTI'S MADE WITH SILICONE EMBEDDED IN THEM, INSPECTED BY MEANS OF THE VISUAL EJECTION OF SILICONE AS THE DTI PROTRUSIONS COMPRESS. SQUIRTER® DTI'S SHALL BE CALIBRATED PER MANUFACTURER'S INSTRUCTIONS PRIOR TO USE.

THE DIRECT TENSION INDICATOR (DTI) WASHERS SHALL BE THE "SQUIRTER® STYLE" AS MANUFACTURED BY:

APPLIED BOLTING TECHNOLOGY PRODUCTS, INC.
1413 ROCKINGHAM ROAD BELLOWS FALLS, VERMONT, USA 05101
PHONE 1-800-552-1999
WEBSITE: WWW.APPLIEDBOLTING.COM

DISTRIBUTORS OF SQUIRTER® DTI'S:
HTTP://WWW.APPLIEDBOLTING.COM/APPLIED-BOLTING-DISTRIBUTORS.HTML

DTI: USE DIRECT TENSION INDICATOR (DTI) WASHERS COMPATIBLE WITH 20 MM (M20) NOMINAL A325 BOLTS FOR THE AJAX M20 BOLTS. DTI'S SHALL NOT BE HOT-DIP GALVANIZED. DTI'S SHALL BE MECHANICALLY GALVANIZED (MG) BY THE COLD MECHANICAL PROCESS ONLY AS PROVIDED BY THE DTI MANUFACTURER.

HARDENED WASHERS REQUIRED: USE A HARDENED WASHER FOR A 20 MM (M20) NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLTS. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF RC 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY GALVANIZED BY THE COLD MECHANICAL PROCESS. ALTERNATIVELY, CORRECTLY MADE HOT DIP GALVANIZED HARDENED FLAT WASHERS HAVING A MINIMUM HARDNESS OF RC 38 CAN BE USED; CONTRACTOR SHALL PROVIDE DOCUMENTATION OF WASHER SPECIFICATION AND HARDNESS.

NUT LUBRICATION REQUIRED: PROPERLY LUBRICATE THE THREADS OF THE NUT OF THE AJAX BOLT SO THAT IT CAN BE PROPERLY TIGHTENED WITHOUT GALLING AND/OR LOCKING UP ON THE BOLT THREADS. CONTRACTOR SHALL FOLLOW DTI MANUFACTURER INSTRUCTIONS FOR PROPER LUBRICATION AND TIGHTENING.

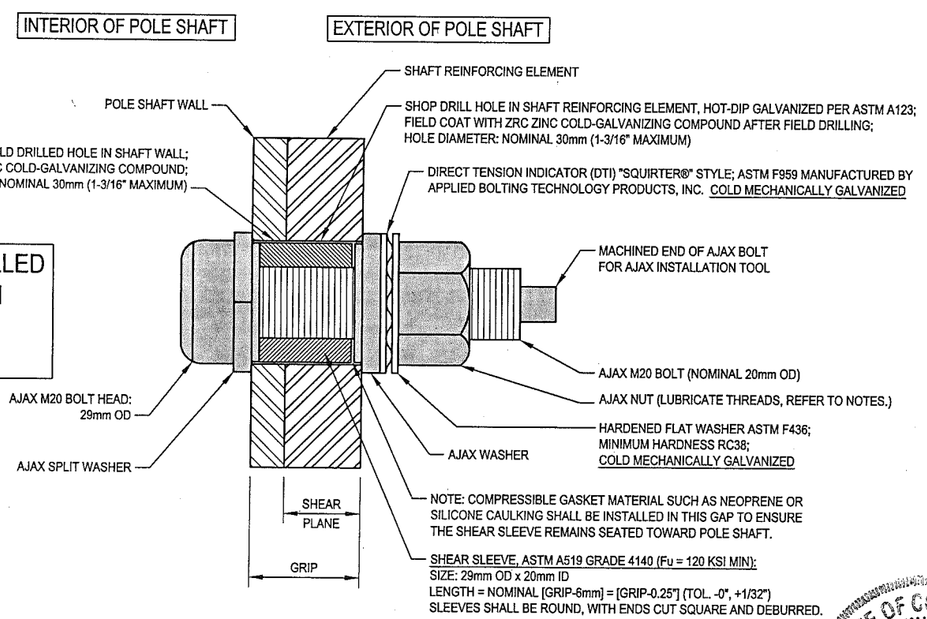
NOTE: COMPLETELY COMPRESSED DTI'S SHOWING NO VISIBLE REMAINING GAP ARE ACCEPTABLE. DTI WASHERS SHALL BE PLACED DIRECTLY AGAINST THE OUTER AJAX WASHER WITH THE DTI BUMPS FACING AWAY FROM THE AJAX WASHER. PLACE A HARDENED WASHER BETWEEN THE DTI AND THE AJAX NUT. THE DTI BUMPS SHALL BEAR AGAINST THE UNDERSIDE OF A HARDENED FLAT WASHER, NEVER DIRECTLY AGAINST THE NUT.

CONTRACTOR SHALL FOLLOW DTI MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION, LUBRICATION, TIGHTENING AND INSPECTION.

INSPECTION REQUIRED: ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: ALL AJAX BOLTS, AJAX SPLIT WASHERS, AJAX WASHERS, AJAX NUTS, AND SHEAR SLEEVES SHALL BE HOT DIP GALVANIZED PER ASTM A123 OR A153 AS APPROPRIATE. SHEAR SLEEVES MAY BE COLD GALVANIZED OR ZINC PLATED.



TYPICAL AJAX BOLT DETAIL 1/S-3

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APPROVED BY: BKK	S-3
DATE: 3-21-2014	

37513-2485 B PERMIT.DWG

POLE SPECIFICATIONS	
POLE SHAPE TYPE:	ROUND
TAPER:	N/A
SHAFT STEEL:	A36M-42
BASE PL STEEL:	A36
ANCHOR RODS:	1 1/2"ø ASTM A354

SHAFT SECTION DATA					
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN)	
				@ TOP	@ BOTTOM
1	30.00	0.2500		24.000	24.000
2	30.00	0.3750		24.000	24.000
3	30.00	0.3750		30.000	30.000
4	30.00	0.3750		36.000	36.000
NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES					

* EXISTING MOUNTS MAY NEED TO BE ADJUSTED, MOVED AND/OR TEMPORARILY SUPPORTED DURING THE INSTALLATION OF SHAFT REINFORCING

MODIFICATIONS:

(A) INSTALL NEW ANCHOR RODS AND BRACKETS AT BASE PLATE. SEE SHEET S-5 & S-6.

(B) INSTALL NEW SHAFT REINFORCING. SEE CHART.

(C) INSTALL JUMP PLATE AT EL. 90'. SEE SHEET S-7.

NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	FLAT # / DEGREE SEPARATION	CMRP 65 KSI CATALOG PART NUMBER	ELEMENT	ELEMENT LENGTH	ELEMENT QUANTITY	MINIMUM AJAX BOLTS PER ELEMENT	MINIMUM TOTAL AJAX BOLT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	ESTIMATED TOTAL STEEL WEIGHT
1' - 0"	8' - 6"	65.5 & 204.5	(CUSTOM)	1-1/4" x 3-3/4"	7' - 6"	2	12	24	4	4	20"	191 LBS.
3' - 0"	8' - 6"	22.5 & 247.5	(CUSTOM)	1-1/4" x 3-3/4"	5' - 6"	2	10	20	4	4	20"	140 LBS.
18' - 6"	28' - 6"	45, 135, 225 & 315	CCI-SFP-04510010	1" x 4-1/2"	10' - 0"	4	16	64	6	6	20"	612 LBS.
34' - 6"	54' - 6"	22.5, 112.5, 202.5 & 292.5	CCI-SFP-04007520	3/4" x 4"	20' - 0"	4	21	84	4	4	16"	817 LBS.
62' - 6"	77' - 6"	45, 135, 225 & 315	CCI-SFP-04007515	3/4" x 4"	15' - 0"	4	17	68	4	4	16"	612 LBS.
90' - 6"	100' - 6"	0, 90, 180 & 270	CCI-SFP-04007510 (CUSTOM)	3/4" x 4"	10' - 0"	4	14	56	6	4	16"	408 LBS.
								316				2780 LBS.

NOTES:

1.) AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.

2.) ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.

3.) ALL REINFORCING SHALL BE ASTM A572 GR. 65.

4.) WELDS ARE ASSUMED E80XX OR GREATER. TERMINATION WELDS SHALL BE 3/8" FILLET WELDS.

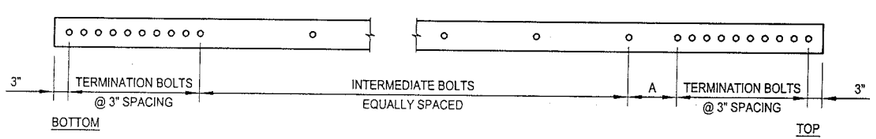
5.) HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.

6.) ALL SHIMS SHALL BE ASTM A-36.

SPLICE PLATE INSTALLATION CHART

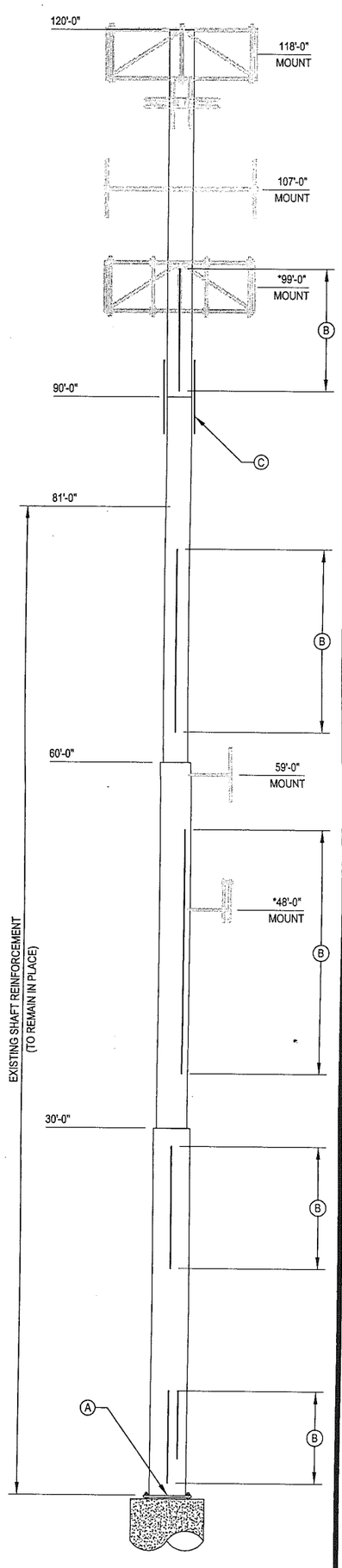
ELEVATION	FLAT PLATE THICKNESS	FLAT PLATE WIDTH	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	WELD LENGTH PER SIDE	TOTAL WELD LENGTH	AJAX BOLTS PER SPLICE*	TOTAL STEEL WEIGHT
3'-0"	1.25"	3"	2'-7"	2	-	-	8	66 LBS.
								66 LBS.

*** BOLTS INCLUDED IN THE TOTAL QUANTITY LISTED IN THE FLAT PLATE INSTALLATION CHART.**



CUSTOM BOLTED BAR DETAIL

NOTE: "A" DIMENSION MAY VARY, NOT TO EXCEED MAXIMUM INTERMEDIATE BOLT SPACING



POLE ELEVATION 1 / S-4

STATE OF CONNECTICUT KEVIN P. BAUMAN NO. 17894 LICENSED PROFESSIONAL ENGINEER

3-25-2014

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street · Suite 600 · Columbus, Ohio 43215
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CROWN CASTLE
8 PARKMEADOW DRIVE, PITTSFORD, NY 14534
PH: (585) 899-3445 FAX: (585) 899-3449

BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B	ISSUE DATE OF PERMIT B : 3-21-2014
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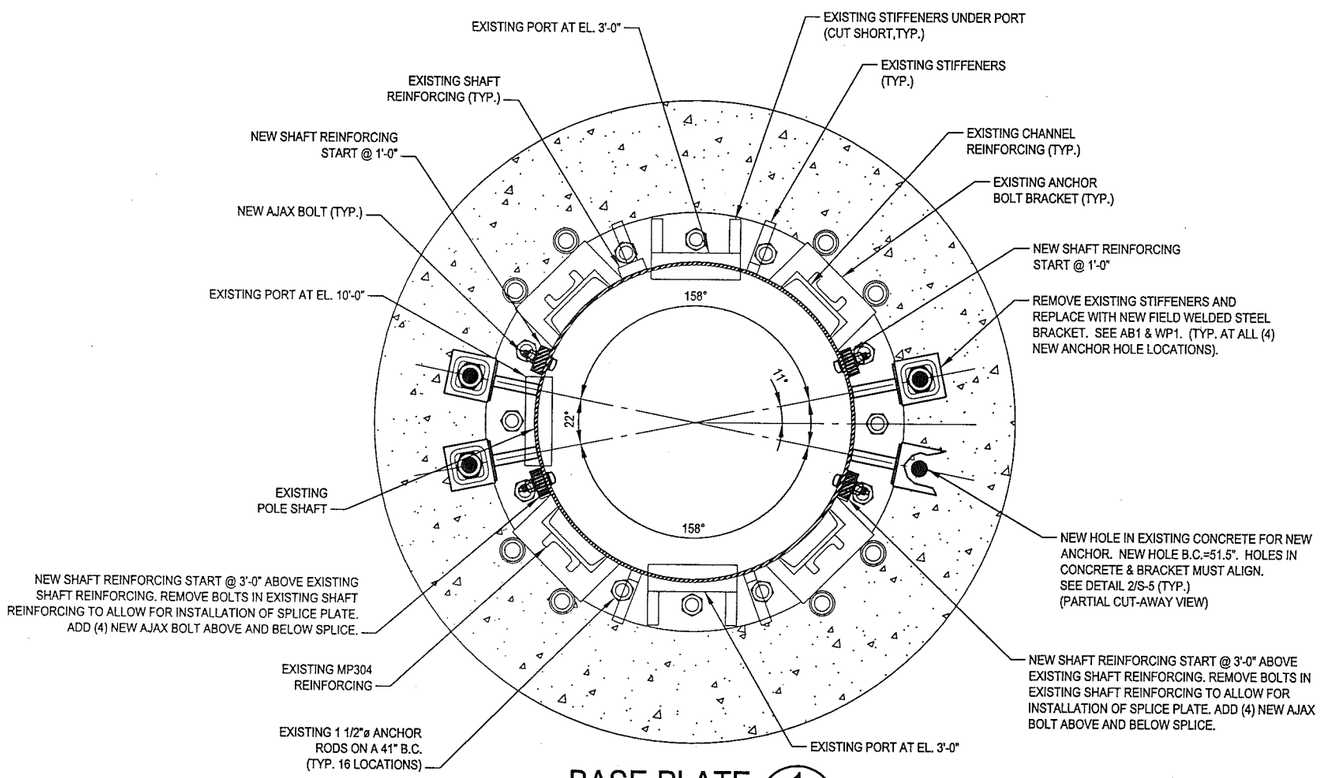
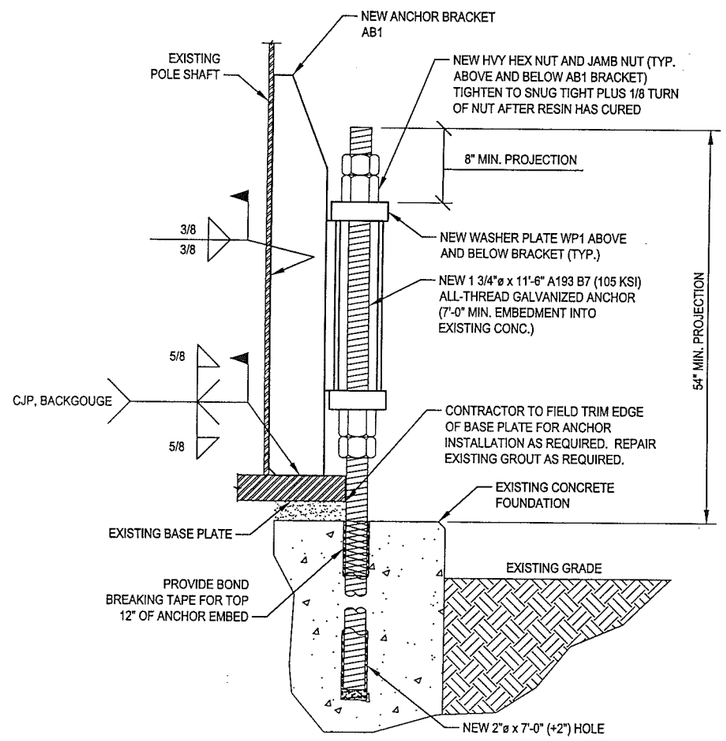
CHECKED BY: M.L.S.	
APPROVED BY: BKK	S-4
DATE: 3-21-2014	

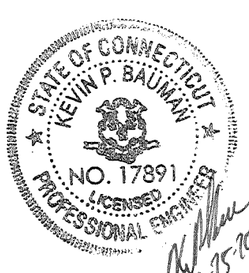


BASE PLATE 1 / S-5



NEW ANCHOR ROD REINFORCING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. ONCE ALL RESIN HAS CURED, ALL NEW ANCHOR ROD REINFORCING SHALL BE PROOF LOADED TO 111 KIPS. ONCE THE PROOF LOAD HAS BEEN RELEASED, TIGHTEN NUT TO SNUG TIGHT CONDITION. TIGHTEN HEAVY HEX NUT TO SNUG TIGHT PLUS 1/8 TURN OF NUT. REFER TO SHEET S-2, SECTION H FOR ADDITIONAL INFORMATION.

NEW ANCHOR & BRACKET DETAIL 2 / S-5



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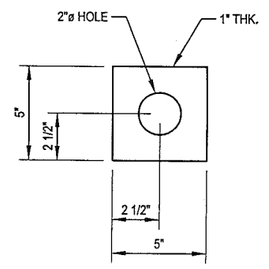
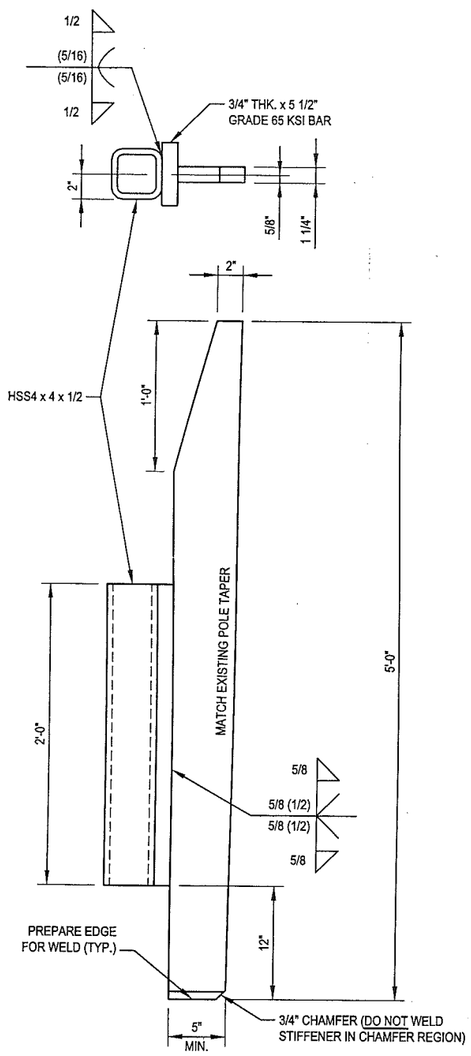


WASHER PLATE MK~WP1

(8 REQUIRED) (Fy = 50 KSI)



ANCHOR BRACKET MK~AB1

(4 REQUIRED) (TUBE Fy = 46 KSI) (STIFFENER Fy = 65 KSI)

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		Jump Plate Size		Unbraced Length					Filler Plate Size					
Level	QNTY	Width	ThK	Maximum Bolt Spacing at Flange (Lmax)	Jump Plate Length	Jump Weight	Bottom Bolts	Top Bolts	Width	Thk	Sft Plt Thk	Filler Plate Length	Filler Weight	Weld Length
90'	4	4.00"	0.75"	12"	30"	163	6		5.00"	4.00"	0	21"	476	168"
-	-	-	-	-	-	-		6	5.00"	3.25"	0	21"	387	168"
					Total Jump Wt.	163	lbs					Total Jump Wt.	863	lbs
												Total Steel Weight	1026	lbs
												Total Weld Length	336"	in
												Total AJAX bolts	48	

Distance from Pole to edge of Flange: 4.0 in

NOTES:

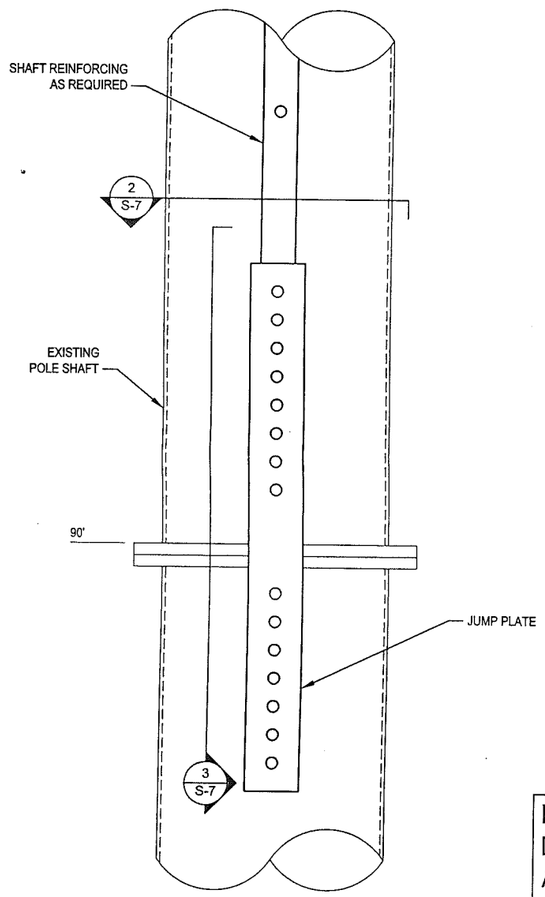
1.) AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.

2.) ALL NEW FLANGE JUMP STEEL REINFORCING SHALL BE COLD GALVANIZED AS FOLLOWS:
APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.

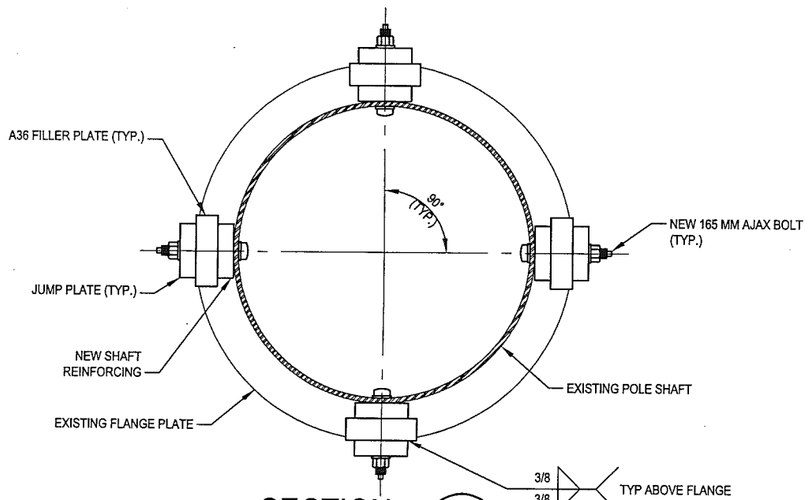
3.) ALL FILLER BARS SHALL BE ASTM A36 GR. 36

3.) ALL FLANGE JUMP BARS SHALL BE ASTM A572 (GRADE 65 or as specified on the DESIGN DRAWINGS) (Min. Fy = 65 ksi, Min. Fu = 80ksi).

4.) HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.

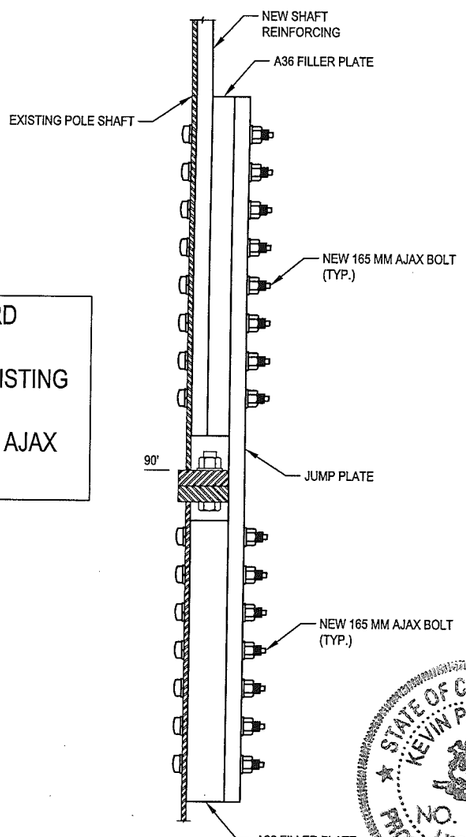


PARTIAL ELEVATION 1 S-7



SECTION 2 S-7
EL. 90'

BOLTED FLANGE JUMP STANDARD DETAILS. CONTRACTOR TO SEE ATTACHED DOCUMENTS FOR EXISTING POLE INFORMATION AND SHAFT REINFORCING SIZES, INCLUDING AJAX QUANTITIES.



SECTION 2 S-7

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MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) 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 (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS..

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI 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 MI REPORT TO CROWN.

GENERAL CONTRACTOR

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

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

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AN DENG-SOW-10007.

RECOMMENDATIONS

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

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI 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 MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN 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.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, 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.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN 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 MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

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

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

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

PHOTOGRAPHS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI 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

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
	PRE-CONSTRUCTION
X	MI CHECKLIST DRAWINGS
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
	CONSTRUCTION
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
X	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
X	THIRD PARTY ONSITE INSPECTION OF BOLT PRETENSION PER CROWN REQUIREMENTS
X	INSPECTION OF AJAX BOLTS AND DTI'S PER REQUIREMENTS ON SHEET S-3
ADDITIONAL TESTING AND INSPECTIONS:	
	POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
X	THIRD PARTY ONSITE BOLT INSPECTION REPORT
X	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

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BLOOMFIELD, CT
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37513-2485 B PERMIT.DWG

MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

BU NUMBER; SITE NAME

BU #876329: MTN. VIEW CEM.

APP: 203982 REV. 12; WO: 727661

SITE ADDRESS

28 BREWER DRIVE
BLOOMFIELD, CT 06002
HARTFORD COUNTY

PROJECT NOTES

1. DETAILED FIELD INFORMATION REGARDING INTERFERENCES AND/OR EXISTING FIELD CONDITIONS MAY BE AVAILABLE ON CROWN'S CCISITES AND FROM CONTRACTOR'S PRE-MOD MAPPING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND COORDINATE WITH THE AVAILABLE SOURCES OF INFORMATION ABOVE AND WITH THE PROJECT PLANS BEFORE PROCEEDING WITH THE WORK. CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO PAUL J. FORD AND COMPANY AND CROWN CASTLE FIELD PERSONNEL BEFORE PROCEEDING WITH THE WORK.

2. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL STRUCTURAL BOLTS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

4. (A.) DTI'S REQUIRED: ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAILS ON SHEET S-3 FOR REQUIREMENTS ON THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

   (B.) EFFECTIVE 5/30/2012: UNTIL FURTHER NOTICE, CROWN CASTLE WILL ACCEPT AJAX BOLTS TIGHTENED USING AISC "TURN-OF-NUT" METHOD. INSTALLERS SHALL FOLLOW CROWN GUIDELINES FOR AISC "TURN-OF-NUT" METHOD AND ALSO PROVIDE COMPLETE INSPECTION DOCUMENTATION IN THE PMI. PRIOR TO STARTING WORK, CONTRACTOR SHALL CONSULT WITH CROWN ENGINEERING TO DETERMINE WHETHER THIS POLICY IS STILL IN PLACE.

   (C.) REQUIREMENT EFFECTIVE 04/20/2013, PER CROWN CASTLE DIRECTIVE: ANY AND ALL STRUCTURAL BOLTS THAT ARE TIGHTENED TO THE PRETENSIONED CONDITION USING THE AISC "TURN-OF-NUT" TENSIONING PROCEDURE (NON-TENSION CONTROLLED ['NON-TC'] BOLTS AND/OR BOLTS WITHOUT DTI'S INSTALLED) SHALL BE INSPECTED ONSITE BY AN INDEPENDENT THIRD-PARTY BOLT INSPECTOR, AS APPROVED BY CROWN. **THIS INSPECTION IS REQUIRED TO BE AN ONSITE FIELD INSPECTION.** THE THIRD-PARTY BOLT INSPECTOR SHALL FOLLOW THE PUBLISHED CROWN CASTLE INSPECTION PROCEDURE "MI NON-TC BOLT INSPECTION", DATED APRIL 2013. THE THIRD-PARTY BOLT INSPECTOR SHALL PREPARE A FULLY DOCUMENTED BOLT INSPECTION REPORT, AS SPECIFIED BY CROWN, AND SHALL SUBMIT A COPY OF THE BOLT INSPECTION REPORT TO THE MI INSPECTOR, THE EOR, AND TO CROWN CASTLE.

PROJECT CONTACTS:

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STRUCTURAL ENGINEER OF RECORD (EOR):
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DESIGN STANDARD

THIS REINFORCEMENT DESIGN IS BASED UPON THE REQUIREMENTS OF THE TIA/EIA-222-F-1996 STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, USING A DESIGN BASIC WIND SPEED OF 80 MPH (3-SEC GUST) WITH NO ICE, 38 MPH WITH 1 INCH ICE AND 50 MPH SERVICE LOADS, EXPOSURE CATEGORY C.

REFER TO THE POLE DESIGN AND ANTENNA LOADING DOCUMENTED IN THE PJF STRUCTURAL ANALYSIS FOR THIS SITE (PJF#37513-2485 B), DATED 3-21-2014.

THIS PROJECT INCLUDES THE FOLLOWING REINFORCING ELEMENTS:

SHAFT REINFORCING
FIELD WELDED ANCHOR BRACKETS
POST INSTALLED ANCHOR RODS
BOLTED FLANGE JUMP

SHEET INDEX

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BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B
DRAWN BY: S.S.
CHECKED BY: M.L.S.
APPROVED BY:
DATE: 3-21-2014

ISSUE DATE OF PERMIT B : 3-21-2014

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CROWN CASTLE PROJECT: BU #876329: MTN. VIEW CEM.; BLOOMFIELD, CT
MONOPOLE RETROFIT PROJECT MASTER NOTES DOCUMENT (REV. 2, 1/22/2009)

A. GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION. THESE DRAWINGS WERE PREPARED FROM INFORMATION AND DOCUMENTS PROVIDED TO PAUL J. FORD & COMPANY BY CROWN CASTLE. THIS INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY PAUL J. FORD & COMPANY FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. ANY DISCREPANCIES AND/OR CHANGES BETWEEN THE INFORMATION CONTAINED IN THESE DRAWINGS AND THE ACTUAL VERIFIED SITE CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF CROWN CASTLE AND PAUL J. FORD & COMPANY SO THAT ANY CHANGES AND/OR ADJUSTMENTS, IF NECESSARY, CAN BE MADE TO THE DESIGN AND DRAWINGS.
2. THE EXISTING UNREINFORCED MONOPOLE STRUCTURE DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE ANTENNA AND PLATFORM LOADS SHOWN ON THESE DRAWINGS AT THE REQUIRED MINIMUM TIA/EIA-222-F BASIC WIND SPEEDS. DO NOT INSTALL ANY ADDITIONAL OR NEW ANTENNA AND PLATFORM LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN PROPERLY AND ADEQUATELY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO INSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT. IMPORTANT CUTTING, WELDING AND SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES FROM CROWN CASTLE. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY 'CUTTING AND WELDING PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT".
5. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
6. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY THE INSPECTION/TESTING AGENCY. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
7. ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED, AND/OR RELOCATED, AND/OR REPLACED AND RE-INSTALLED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH THE OWNER, TESTING AGENCY, AND ENGINEER.
11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS. IN NO CASE SHALL ANY NEW AND/OR ADDITIONAL PLATFORMS AND/OR ANTENNAS AND/OR COAX CABLES AND/OR OTHER EQUIPMENT BE INSTALLED ON THE MONOPOLE UNTIL THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF ALL OF THE REQUIRED STRUCTURAL REINFORCING SYSTEM COMPONENTS.

B. (SECTION NOT USED)

C. SPECIAL INSPECTION AND TESTING

1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY THE OWNER'S REPRESENTATIVE AND THE OWNER'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY. REFER TO CROWN CASTLE DOCUMENT ENG-SOW-10066 FOR SPECIFICATION.
2. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY THE OWNER FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
   (A.) ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
   (B.) THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES FOR THE OWNER. THE TESTING AGENCY SHALL INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CWI). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.

A. GENERAL:
   (1.) PERFORM PERIODIC ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY OWNER IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.

B. FOUNDATIONS, CONCRETE, AND SOIL PREPARATION - (NOT REQUIRED)

C. CONCRETE TESTING PER ACI - (NOT REQUIRED)

D. STRUCTURAL STEEL
   (1.) CHECK THE STEEL ON THE JOB WITH THE PLANS.
   (2.) CHECK MILL CERTIFICATIONS.
   (3.) CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
   (4.) INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
   (5.) CALL FOR LABORATORY TEST REPORTS WHEN IN DOUBT.
   (6.) CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
   (7.) CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
   (8.) CHECK BOLT TIGHTENING ACCORDING TO AISC "TURN OF THE NUT" METHOD.

E. WELDING:
   (1.) VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS, NOT DEEMED PREQUALIFIED, IN ACCORDANCE WITH AWS D1.1.
   (2.) INSPECT FIELD WELDED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND IN ACCORDANCE WITH AWS D1.1.
   (3.) APPROVE FIELD WELDING SEQUENCE.
      (A.) A PROGRAM OF THE APPROVED SEQUENCES SHALL BE SUBMITTED TO THE OWNER BEFORE WELDING BEGINS. NO CHANGE IN APPROVED SEQUENCES MAY BE MADE WITHOUT PERMISSION FROM THE OWNER.
   (4.) INSPECT WELDED CONNECTIONS AS FOLLOWS AND IN ACCORDANCE WITH AWS D1.1:
      (A.) INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE AND WORKING CONDITIONS.
      (B.) VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS.
      (C.) INSPECT PREHEATING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.1.
      (D.) VISUALLY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1.1.
      (E.) SPOT TEST AT LEAST ONE FILLET WELD OF EACH MEMBER USING MAGNETIC PARTICLE OR DYE PENETRANT.
      (F.) INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED PLANS.
      (G.) VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
      (H.) REVIEW THE REPORTS BY TESTING LABS.
      (I.) CHECK TO SEE THAT WELDS ARE CLEAN AND FREE FROM SLAG.
      (J.) INSPECT RUST PROTECTION OF WELDS AS PER SPECIFICATIONS.
      (K.) CHECK THAT DEFECTIVE WELDS ARE CLEARLY MARKED AND HAVE BEEN ADEQUATELY REPAIRED.

F. SPECIAL INSPECTION OF EXISTING SHAFT-TO-FLANGE WELD CONNECTIONS: - (NOT REQUIRED)

G. REPORTS:
   (1.) COMPILE AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO THE OWNER.

6. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES AND PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO THE OWNER'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT THE OWNER'S REVIEW AND SPECIFIC WRITTEN CONSENT. THE OWNER RESERVES THE RIGHT TO DETERMINE WHAT IS AN ACCEPTABLE RESOLUTION OF DISCREPANCIES AND PROBLEMS.
7. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO THE OWNER. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
8. RESPONSIBILITY: THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.

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D. STRUCTURAL STEEL

1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:

A. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (**AISC**):
- (A.) "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
- (B.) "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
- (C.) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (PARAGRAPH 4.2.1 SPECIFICALLY EXCLUDED).

B. BY THE AMERICAN WELDING SOCIETY (**AWS**):
- (A.) "STRUCTURAL WELDING CODE - STEEL D1.1."
- (B.) "SYMBOLS FOR WELDING AND NON-DESTRUCTIVE TESTING"

2. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M20 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO THE OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN.) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH-UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
8. UNLESS OTHERWISE NOTED, ALL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH ASTM A123. SEE SECTION J FOR FURTHER NOTES AND FOR EXCEPTIONS (IF ANY).
9. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE OWNER'S APPROVED TESTING AGENCY. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO PERFORM THEIR DUTIES FOR THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE TESTING AGENCY IN THEIR TESTING EFFORTS.
10. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
11. FIELD CUTTING OF STEEL:
- (A.) PRIOR TO ANY FIELD CUTTING, THE CONTRACTOR SHALL MARK THE CUT OUTLINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS.
- (B.) ANY REQUIRED CUTS IN THE STEEL SHALL BE CAREFULLY CUT BY MECHANICAL METHODS SUCH AS DRILLING, SAW CUTTING, AND GRINDING. THE CONTRACTOR IS RESPONSIBLE TO PREVENT ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, DURING THE CUTTING WORK. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
- (C.) ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.

E. BASE PLATE GROUT - (NOT REQUIRED)

F. FOUNDATION WORK - (NOT REQUIRED)

G. CAST-IN-PLACE CONCRETE - (NOT REQUIRED)

H. EPOXY GROUTED REINFORCING ANCHOR RODS

1. UNLESS OTHERWISE NOTED, REINFORCING ANCHOR RODS SHALL BE 150 KSI ALL-THREAD BAR CONFORMING TO ASTM A722. RECOMMENDED MANUFACTURERS/SUPPLIERS OF 150 KSI ALL-THREAD BAR ARE WILLIAMS FORM ENGINEERING CORPORATION AND DYWIDAG SYSTEMS INTERNATIONAL.
2. ALL REINFORCING ANCHOR RODS SHALL BE HOT DIP GALVANIZED PER ASTM A153. ALTERNATIVELY, ALL REINFORCING ANCHOR RODS MAY BE EPOXY COATED PER ASTM A775.
3. THE CORE-DRILLED HOLES IN THE CONCRETE FOR THE ANCHOR RODS SHALL BE CLEAN AND DRY, AND OTHERWISE PROPERLY PREPARED ACCORDING TO THE ANCHOR ROD AND EPOXY MANUFACTURERS' INSTRUCTIONS, PRIOR TO PLACEMENT OF ANCHOR RODS AND EPOXY. CONTRACTOR SHALL FOLLOW ALL ANCHOR ROD AND EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF RODS, EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
4. ULTRABOND 1, HILTI HIT RE-500 OR ANCHORTITE EPOXY SHALL BE USED TO ANCHOR THE 150 KSI ALL-THREAD BAR IN THE DRILL HOLES. IF CONTRACTOR WISHES TO USE A DIFFERENT EPOXY, A REQUEST INCLUDING THE EPOXY TECHNICAL DATA SHEET(S) SHALL BE SUBMITTED TO PAUL J FORD AND COMPANY FOR REVIEW PRIOR TO CONSTRUCTION. AS NOTED ABOVE, FOLLOW ALL EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
5. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN INSTALLED AND ALL EPOXY AND GROUT HAVE CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED PRIOR TO TESTING), ALL REINFORCING ANCHOR RODS SHALL BE LOAD TESTED PER CROWN CASTLE ENGINEERING DOCUMENT #ENG-PRC-10119. REFER TO THE NEW ANCHOR & BRACKET DETAIL ON FOLLOWING DRAWING SHEETS FOR SPECIFIED ANCHOR ROD PROOF LOAD.
6. ONCE THE REINFORCING ANCHOR RODS HAVE BEEN SUCCESSFULLY LOAD TESTED AND APPROVED AND BASE PLATE / BEARING PLATE GROUT HAS CURED (IF BASE PLATE AND/OR BEARING PLATES HAVE BEEN GROUTED AFTER TESTING), CONTRACTOR SHALL TIGHTEN ALL HEAVY HEX ANCHOR NUTS TO SNUG TIGHT PLUS 1/8 TURN OF NUT.

I. TOUCH UP OF GALVANIZING

1. THE CONTRACTOR SHALL TOUCH UP ANY AND/OR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. **GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.**
2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. THE OWNER'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
3. THE OWNER'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE INADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

J. HOT DIP GALVANIZING

1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING.
3. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES AS REQUIRED.
4. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

K. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
2. THE MONOPOLE REINFORCING SYSTEM INDICATED IN THESE DOCUMENTS USES REINFORCING COMPONENTS THAT INVOLVE FIELD WELDING STEEL MEMBERS TO THE EXISTING GALVANIZED STEEL POLE STRUCTURE. THESE FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. **ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE CONNECTED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT THE OWNER REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.**
3. THE OWNER SHALL REFER TO TIA/EIA-222-F-1996, SECTION 14 AND ANNEX E FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY THE OWNER BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. **PAUL J. FORD & COMPANY RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT.** ACCORDING TO TIA/EIA-222-F-1996 SECTION 14.1, NOTE 1: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

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BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No:	37513-2485 B
DRAWN BY:	S.S.
CHECKED BY:	M.L.S.
APPROVED BY:	
DATE:	3-21-2014

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AJAX BOLT NOTE SHEET: REV. 1.4, 5-20-2013

NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAIL BELOW FOR THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

4. ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. DTI'S SHALL BE THE SQUIRTER® STYLE, MADE TO ASTM F959 LATEST REVISION; AND HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A HARDNESS OF RC 38 OR HIGHER.

NOTES FOR AJAX M20 'ONE-SIDE' BOLTS WITH DIRECT TENSION INDICATORS (DTI'S):

DTI'S REQUIRED: DTI'S SHALL BE "SELF-INDICATING" SQUIRTER® STYLE DTI'S MADE WITH SILICONE EMBEDDED IN THEM, INSPECTED BY MEANS OF THE VISUAL EJECTION OF SILICONE AS THE DTI PROTRUSIONS COMPRESS. SQUIRTER® DTI'S SHALL BE CALIBRATED PER MANUFACTURER'S INSTRUCTIONS PRIOR TO USE.

THE DIRECT TENSION INDICATOR (DTI) WASHERS SHALL BE THE “SQUIRTER® STYLE” AS MANUFACTURED BY:

APPLIED BOLTING TECHNOLOGY PRODUCTS, INC.
1413 ROCKINGHAM ROAD BELLOWS FALLS, VERMONT, USA 05101
PHONE 1-800-552-1999
WEBSITE: WWW.APPLIEDBOLTING.COM

DISTRIBUTORS OF SQUIRTER® DTI'S:
HTTP://WWW.APPLIEDBOLTING.COM/APPLIED-BOLTING-DISTRIBUTORS.HTML

DTI: USE DIRECT TENSION INDICATOR (DTI) WASHERS COMPATIBLE WITH 20 MM (M20) NOMINAL A325 BOLTS FOR THE AJAX M20 BOLTS. DTI'S SHALL NOT BE HOT-DIP GALVANIZED. DTI'S SHALL BE MECHANICALLY GALVANIZED (MG) BY THE COLD MECHANICAL PROCESS ONLY AS PROVIDED BY THE DTI MANUFACTURER.

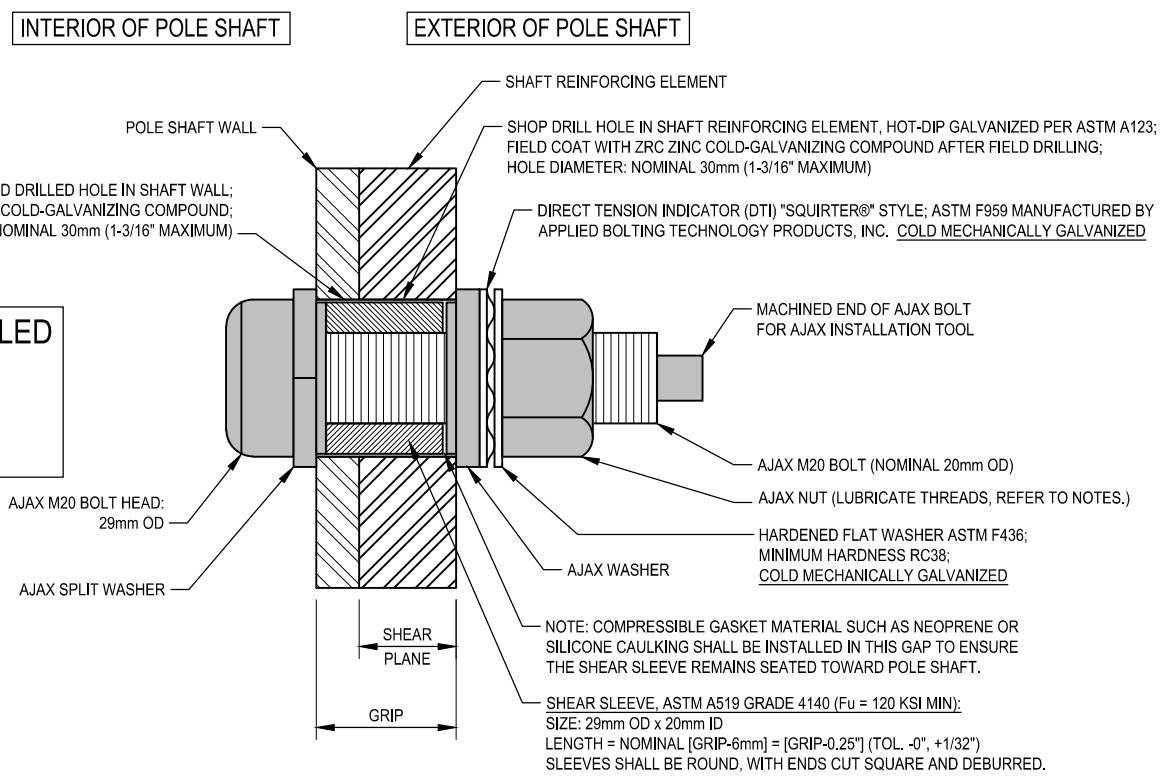
HARDENED WASHERS REQUIRED: USE A HARDENED WASHER FOR A 20 MM (M20) NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLTS. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF RC 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY GALVANIZED BY THE COLD MECHANICAL PROCESS. ALTERNATIVELY, CORRECTLY MADE HOT DIP GALVANIZED HARDENED FLAT WASHERS HAVING A MINIMUM HARDNESS OF RC 38 CAN BE USED; CONTRACTOR SHALL PROVIDE DOCUMENTATION OF WASHER SPECIFICATION AND HARDNESS.

NUT LUBRICATION REQUIRED: PROPERLY LUBRICATE THE THREADS OF THE NUT OF THE AJAX BOLT SO THAT IT CAN BE PROPERLY TIGHTENED WITHOUT GALLING AND/OR LOCKING UP ON THE BOLT THREADS. CONTRACTOR SHALL FOLLOW DTI MANUFACTURER INSTRUCTIONS FOR PROPER LUBRICATION AND TIGHTENING.

NOTE: COMPLETELY COMPRESSED DTI'S SHOWING NO VISIBLE REMAINING GAP ARE ACCEPTABLE. DTI WASHERS SHALL BE PLACED DIRECTLY AGAINST THE OUTER AJAX WASHER WITH THE DTI BUMPS FACING AWAY FROM THE AJAX WASHER. PLACE A HARDENED WASHER BETWEEN THE DTI AND THE AJAX NUT. THE DTI BUMPS SHALL BEAR AGAINST THE UNDERSIDE OF A HARDENED FLAT WASHER, NEVER DIRECTLY AGAINST THE NUT.

CONTRACTOR SHALL FOLLOW DTI MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION, LUBRICATION, TIGHTENING AND INSPECTION.

INSPECTION REQUIRED: ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.



NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: ALL AJAX BOLTS, AJAX SPLIT WASHERS, AJAX WASHERS, AJAX NUTS, AND SHEAR SLEEVES SHALL BE HOT DIP GALVANIZED PER ASTM A123 OR A153 AS APPROPRIATE. SHEAR SLEEVES MAY BE COLD GALVANIZED OR ZINC PLATED.

TYPICAL AJAX BOLT DETAIL 1/S-3

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MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

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POLE SPECIFICATIONS	
POLE SHAPE TYPE:	ROUND
TAPER:	N/A
SHAFT STEEL:	A36M-42
BASE PL STEEL:	A36
ANCHOR RODS:	1 1/2"ø ASTM A354

SHAFT SECTION DATA					
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN)	
				@ TOP	@ BOTTOM
1	30.00	0.2500		24.000	24.000
2	30.00	0.3750		24.000	24.000
3	30.00	0.3750		30.000	30.000
4	30.00	0.3750		36.000	36.000
NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES					

MODIFICATIONS:

(A) INSTALL NEW ANCHOR RODS AND BRACKETS AT BASE PLATE. SEE SHEET S-5 & S-6.

(B) INSTALL NEW SHAFT REINFORCING. SEE CHART.

(C) INSTALL JUMP PLATE AT EL. 90'. SEE SHEET S-7.

* EXISTING MOUNTS MAY NEED TO BE ADJUSTED, MOVED AND/OR TEMPORARILY SUPPORTED DURING THE INSTALLATION OF SHAFT REINFORCING

NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	FLAT # / DEGREE SEPARATION	CMRP 65 KSI CATALOG PART NUMBER	ELEMENT	ELEMENT LENGTH	ELEMENT QUANTITY	MINIMUM AJAX BOLTS PER ELEMENT	MINIMUM TOTAL AJAX BOLT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	ESTIMATED TOTAL STEEL WEIGHT
1' - 0"	8' - 6"	65.5 & 204.5	(CUSTOM)	1-1/4" x 3-3/4"	7' - 6"	2	12	24	4	4	20"	191 LBS.
3' - 0"	8' - 6"	22.5 & 247.5	(CUSTOM)	1-1/4" x 3-3/4"	5' - 6"	2	10	20	4	4	20"	140 LBS.
18' - 6"	28' - 6"	45, 135, 225 & 315	CCI-SFP-04510010	1" x 4-1/2"	10' - 0"	4	16	64	6	6	20"	612 LBS.
34' - 6"	54' - 6"	22.5, 112.5, 202.5 & 292.5	CCI-SFP-04007520	3/4" x 4"	20' - 0"	4	21	84	4	4	16"	817 LBS.
62' - 6"	77' - 6"	45, 135, 225 & 315	CCI-SFP-04007515	3/4" x 4"	15' - 0"	4	17	68	4	4	16"	612 LBS.
90' - 6"	100' - 6"	0, 90, 180 & 270	CCI-SFP-04007510 (CUSTOM)	3/4" x 4"	10' - 0"	4	14	56	6	4	16"	408 LBS.
								316				2780 LBS.

NOTES:

1.) AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.

2.) ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC -RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.

3.) ALL REINFORCING SHALL BE ASTM A572 GR. 65.

4.) WELDS ARE ASSUMED E80XX OR GREATER. TERMINATION WELDS SHALL BE 3/8" FILLET WELDS.

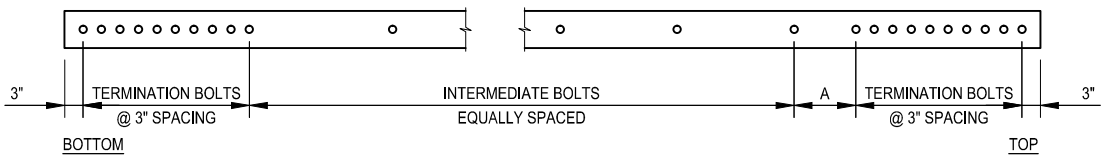
5.) HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.

6.) ALL SHIMS SHALL BE ASTM A-36.

SPLICE PLATE INSTALLATION CHART

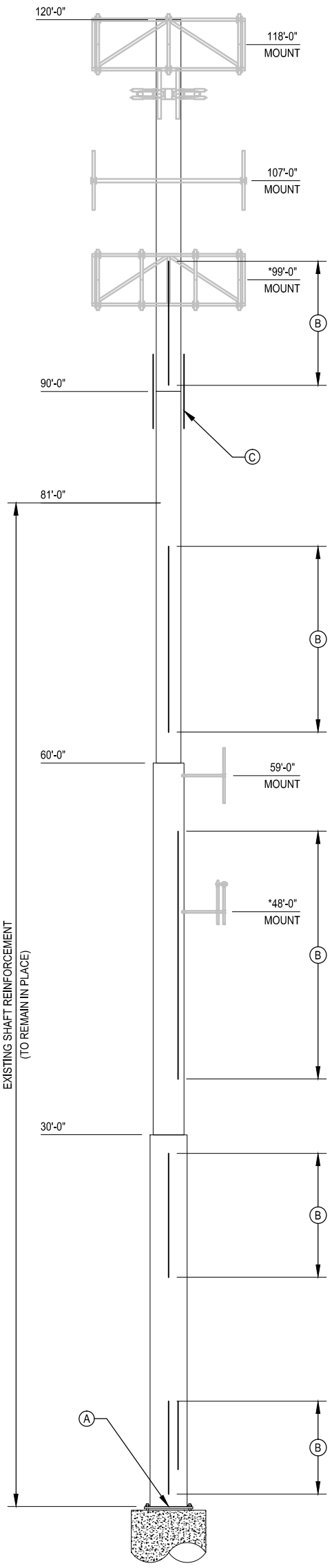
ELEVATION	FLAT PLATE THICKNESS	FLAT PLATE WIDTH	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	WELD LENGTH PER SIDE	TOTAL WELD LENGTH	AJAX BOLTS PER SPLICE*	TOTAL STEEL WEIGHT
3'-0"	1.25"	3"	2'-7"	2	-	-	8	66 LBS.
								66 LBS.

*** BOLTS INCLUDED IN THE TOTAL QUANTITY LISTED IN THE FLAT PLATE INSTALLATION CHART.**



CUSTOM BOLTED BAR DETAIL

NOTE: "A" DIMENSION MAY VARY, NOT TO EXCEED MAXIMUM INTERMEDIATE BOLT SPACING



POLE ELEVATION 1 / S-4

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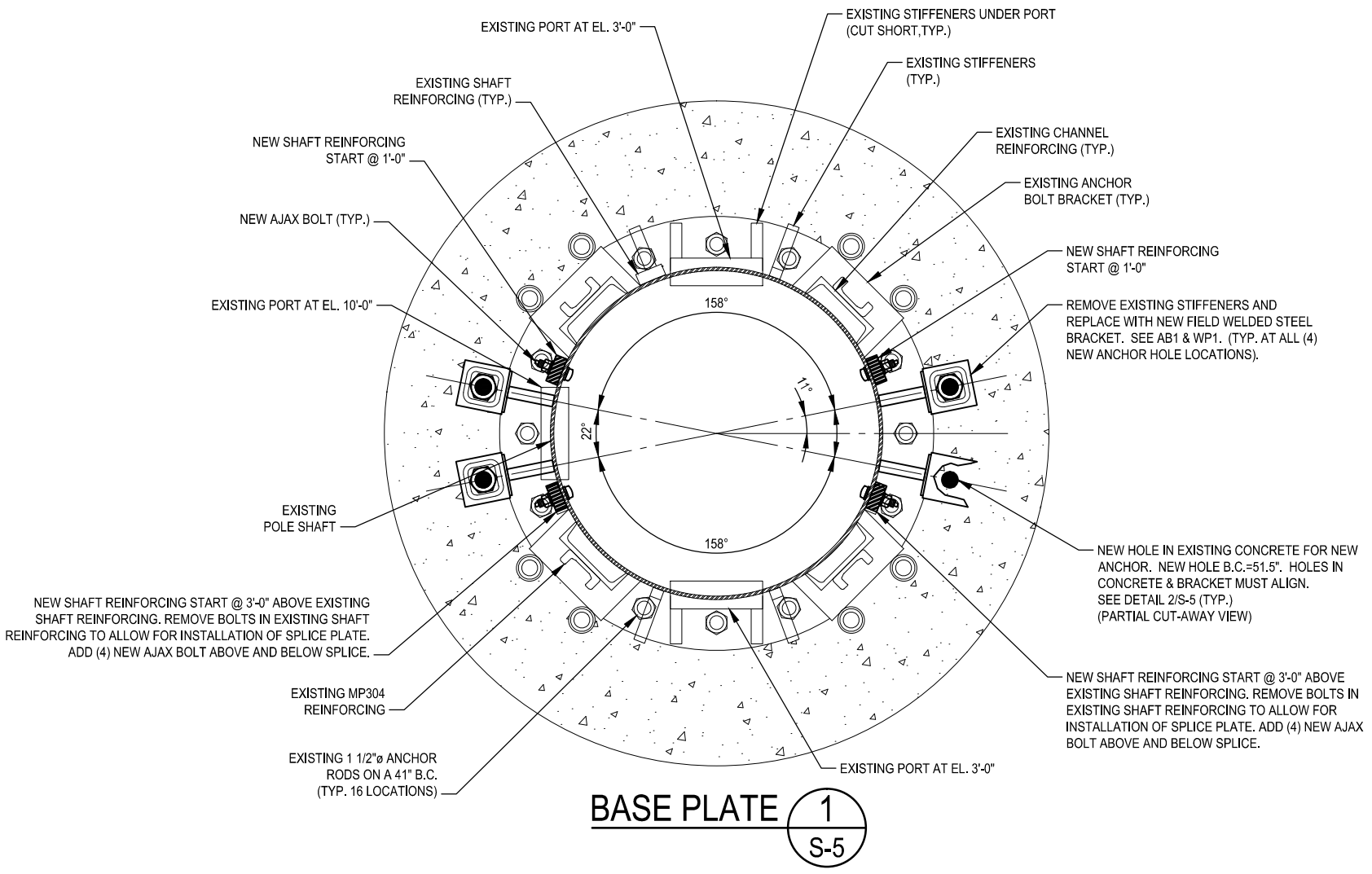
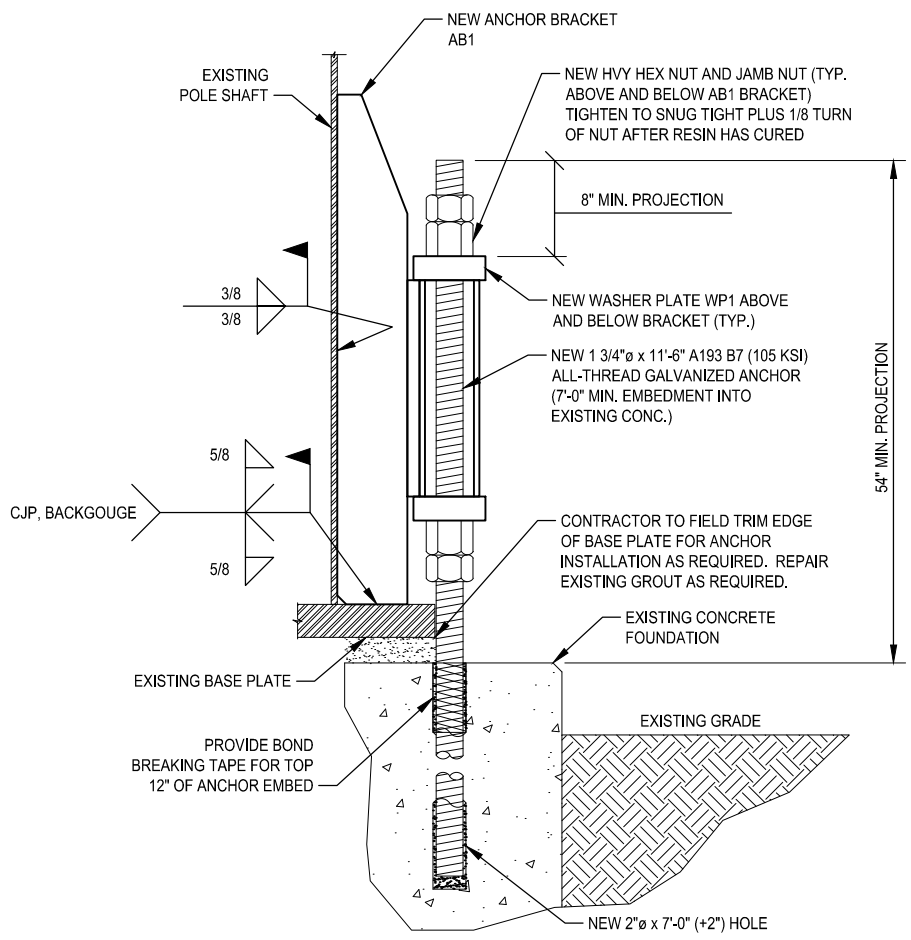


BASE PLATE 1 / S-5



NEW ANCHOR ROD REINFORCING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. ONCE ALL RESIN HAS CURED, ALL NEW ANCHOR ROD REINFORCING SHALL BE PROOF LOADED TO 111 KIPS. ONCE THE PROOF LOAD HAS BEEN RELEASED, TIGHTEN NUT TO SNUG TIGHT CONDITION. TIGHTEN HEAVY HEX NUT TO SNUG TIGHT PLUS 1/8 TURN OF NUT. REFER TO SHEET S-2, SECTION H FOR ADDITIONAL INFORMATION.

NEW ANCHOR & BRACKET DETAIL 2 / S-5

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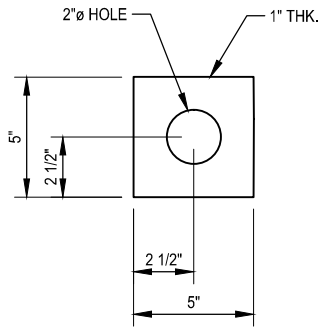
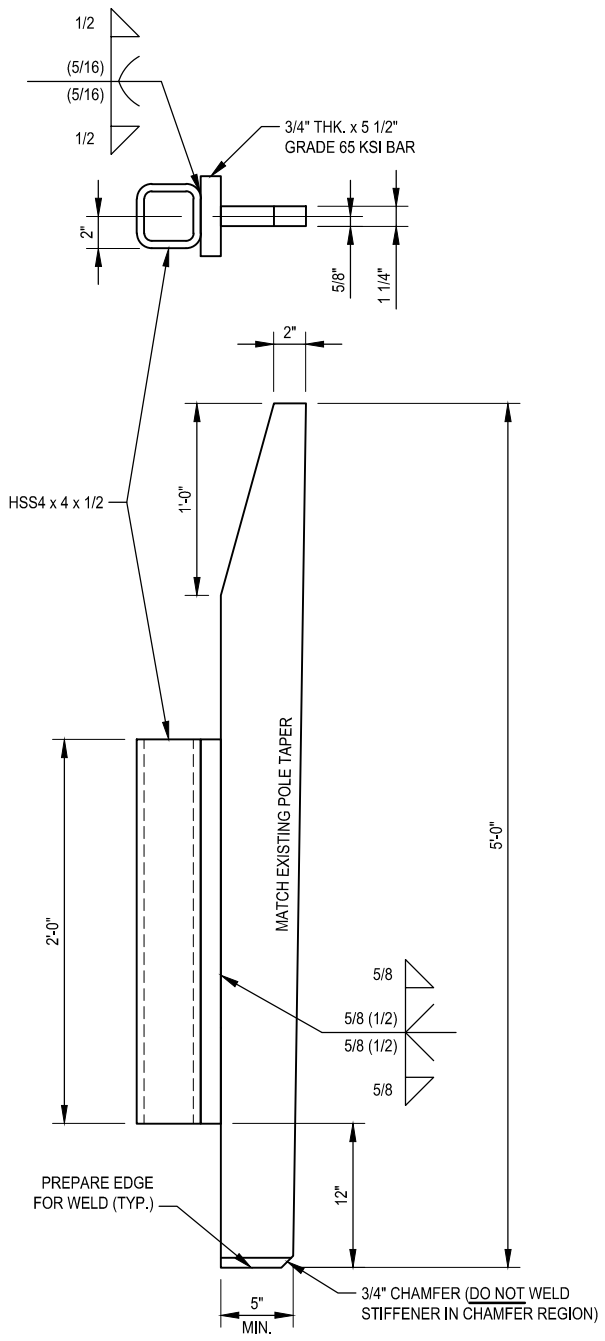


WASHER PLATE MK~WP1

(8 REQUIRED) (Fy = 50 KSI)



ANCHOR BRACKET MK~AB1

(4 REQUIRED) (TUBE Fy = 46 KSI) (STIFFENER Fy = 65 KSI)

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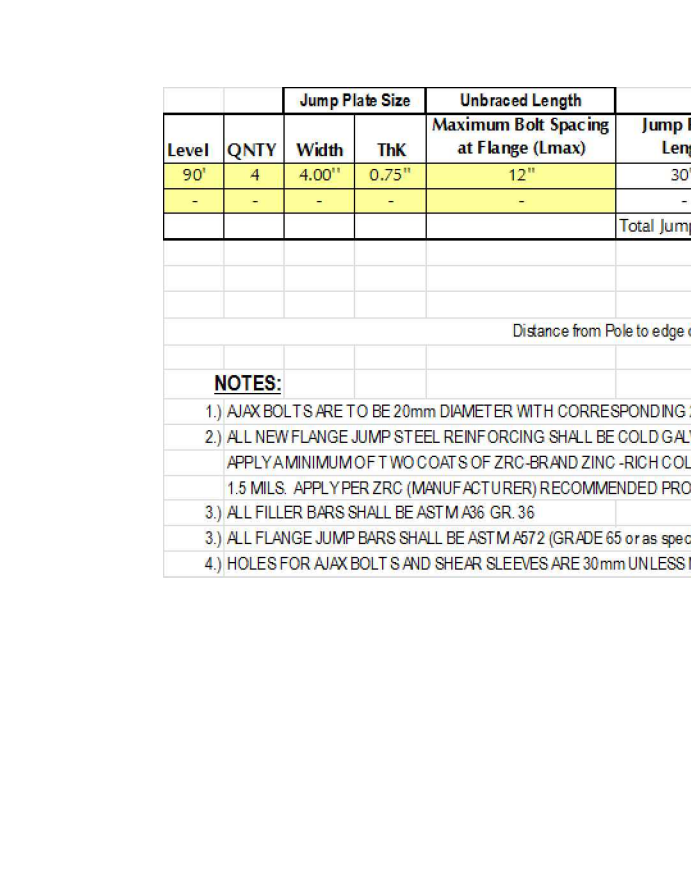
		Jump Plate Size		Unbraced Length					Filler Plate Size					
Level	QNTY	Width	ThK	Maximum Bolt Spacing at Flange (Lmax)	Jump Plate Length	Jump Weight	Bottom Bolts	Top Bolts	Width	Thk	Sft Plt Thk	Filler Plate Length	Filler Weight	Weld Length
90'	4	4.00"	0.75"	12"	30"	163	6		5.00"	4.00"	0	21"	476	168"
-	-	-	-	-	-	-		6	5.00"	3.25"	0	21"	387	168"
					Total Jump Wt.	163	lbs					Total Jump Wt.	863	lbs
												Total Steel Weight	1026	lbs
												Total Weld Length	336"	in
												Total AJAX bolts	48	

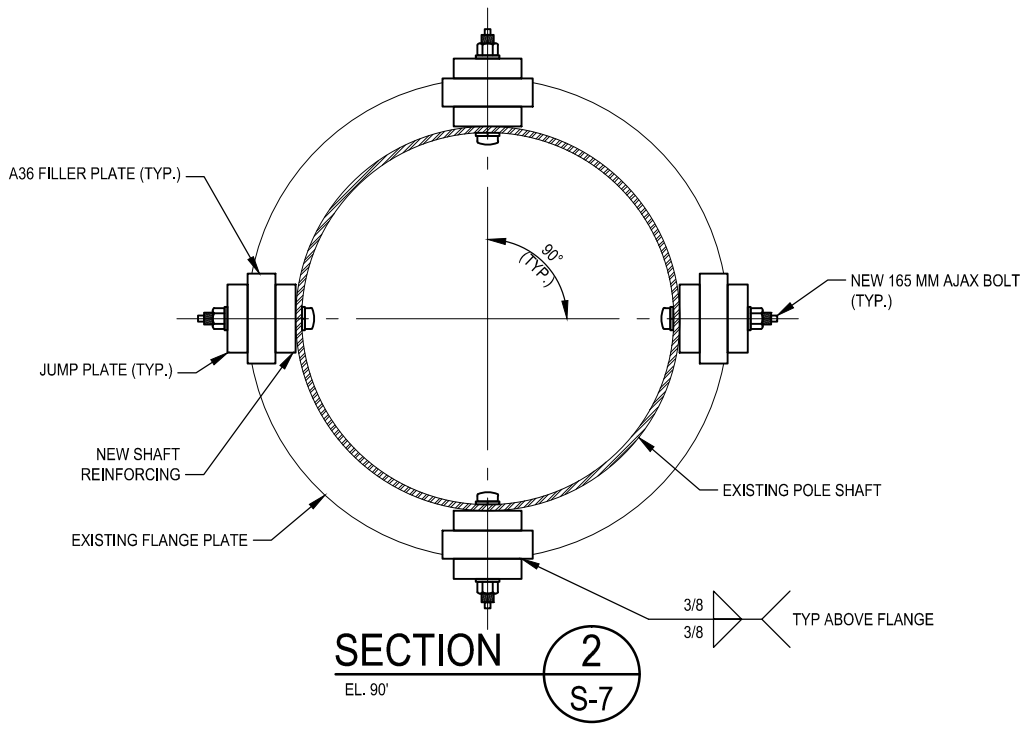
Distance from Pole to edge of Flange: 4.0 in

NOTES:

1.) AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.
2.) ALL NEW FLANGE JUMP STEEL REINFORCING SHALL BE COLD GALVANIZED AS FOLLOWS:
APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
3.) ALL FILLER BARS SHALL BE ASTM A36 GR. 36
3.) ALL FLANGE JUMP BARS SHALL BE ASTM A572 (GRADE 65 or as specified on the DESIGN DRAWINGS) (Min. Fy = 65 ksi, Min. Fu = 80ksi).
4.) HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.

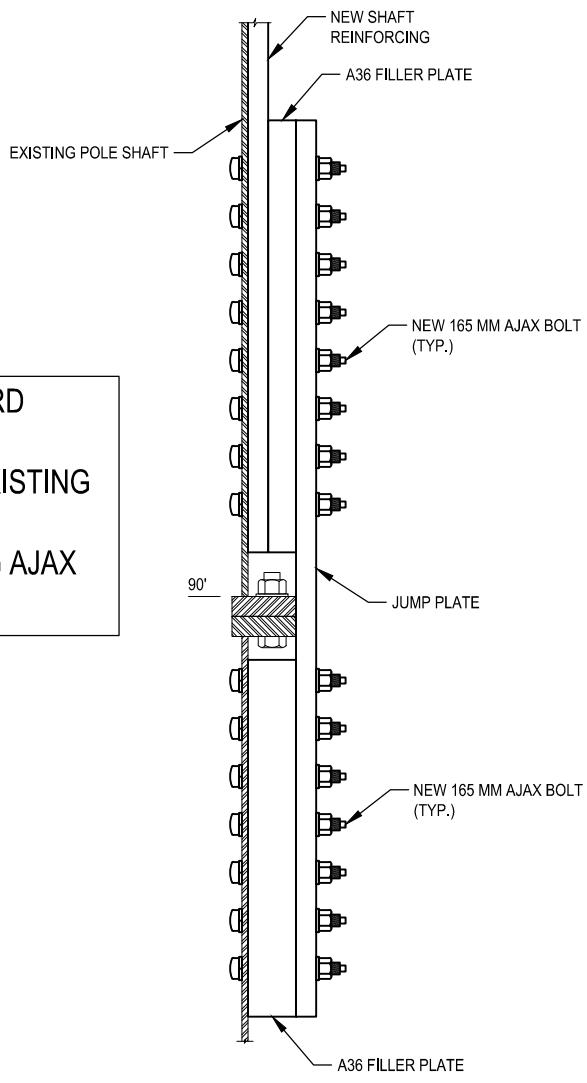


PARTIAL ELEVATION 1 S-7



SECTION 2 S-7
EL. 90'

BOLTED FLANGE JUMP STANDARD DETAILS. CONTRACTOR TO SEE ATTACHED DOCUMENTS FOR EXISTING POLE INFORMATION AND SHAFT REINFORCING SIZES, INCLUDING AJAX QUANTITIES.



SECTION 2 S-7

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MODIFICATION INSPECTION NOTES:

GENERAL
THE MODIFICATION INSPECTION (MI) 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 (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS..

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR
THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI 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 MI REPORT TO CROWN.

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

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

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AN DENG-SOW-10007.

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

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI 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 MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI
IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN 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.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, 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.

CORRECTION OF FAILING MI'S
IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN 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 MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

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

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

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

PHOTOGRAPHS
BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI 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

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWINGS
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
X	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
X	THIRD PARTY ONSITE INSPECTION OF BOLT PRETENSION PER CROWN REQUIREMENTS
X	INSPECTION OF AJAX BOLTS AND DTI'S PER REQUIREMENTS ON SHEET S-3
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
X	THIRD PARTY ONSITE BOLT INSPECTION REPORT
X	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT

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BU #876329: MTN. VIEW CEM.
BLOOMFIELD, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37513-2485 B
DRAWN BY: S.S.
CHECKED BY: M.L.S.
APPROVED BY:
DATE: 3-21-2014

ISSUE DATE OF PERMIT B : 3-21-2014

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