



445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

September 27, 2016

OVERNIGHT DELIVERY AND EMAIL

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

Re: PE1133-CING-20160829 - New Cingular Wireless PCS, LLC sub-petition for a declaratory ruling for approval of an eligible facility request for modifications to an existing telecommunications facility located at 500 Queen Street, Southington, CT

Dear Acting Executive Director Bachman:

Thank you for your letter of September 26, 2016 ("Approval Letter") regarding the captioned Eligible Facilities Request. In satisfaction of condition number 1 in the Approval Letter enclosed please find a stamped and signed Structural Modification Report and associated drawings ("Report") prepared by Paul J. Ford & Company dated September 21, 2016. Specifically, the Report confirms that the reinforcements will comply with ANSI/TIA-222-G and the modifications will be completed using that standard.

Should you have any questions please do not hesitate to contact me. Thank you for your consideration in this matter.

Very truly yours,

A handwritten signature in black ink, appearing to read 'D. Laub', is written over a horizontal line.

Daniel M. Laub

Enclosure

cc: Honorable Michael Riccio, Town Council Chairman, Town of Southington
Gary Brumback, Town Manager, Town of Southington
Robert Phillips, Director of Planning & Community Development, Town of Southington
AT&T



Date: September 21, 2016

Andrew Bazinet
Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

Paul J. Ford and Company
250 East Broad St, Suite 600
Columbus, OH 43215
614.221.6679

Subject: Structural Modification Report

Carrier Designation: AT&T Mobility Co-Locate
Carrier Site Number: CTL05251
Carrier Site Name: Southington Industrial

Crown Castle Designation: Crown Castle BU Number: 821898
Crown Castle Site Name: Southington Industrial
Crown Castle JDE Job Number: 389544
Crown Castle Work Order Number: 1301247
Crown Castle Application Number: 357137 Rev. 11

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37516-2615.005.7700

Site Data: 500 Queen St, Southington, Hartford County, CT
Latitude 41° 37' 48.54", Longitude -72° 52' 29.98"
94 Foot - Monopole Tower

Dear Andrew Bazinet,

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 948578, in accordance with application 357137, revision 11.

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:

LC4.5: Modified Structure w/ Existing + Proposed Equipment
Note: See Table I and Table II for the proposed and existing loading, respectively.

Sufficient Capacity

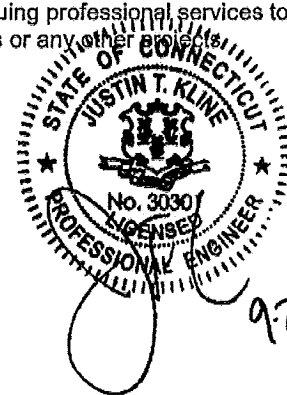
This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with 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:


Thomas J. Dehnke, PE
Project Designer
tdehnke@pjfweb.com





Date: **September 21, 2016**

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3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

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Respectfully submitted by:

Thomas J. Dehnke, EI
Project Designer
tdehnke@pjfweb.com

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1) INTRODUCTION

This tower is a 94 ft Monopole tower designed by UNKNOWN in August of 2003. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

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
88.0	89.0	3	kathrein	80010891	12 (l)	7/8	--
	84.0	6	kaelus	TMA2117F00V1-1			
88.0	88.0	1	--	40" Dia x 12' Concealment	--	--	--
77.0	77.0	1	--	40" Dia x 10' Concealment	--	--	--

Table 2 - Existing 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
77.0	78.0	2	andrew	AM-X-CD-16-65-00T-RET	6 (l)	1-5/8	1
		2	cci antennas	DTMABP7819VG12A			
	77.0	1	andrew	SBNH-1D6565C			
		1	cci antennas	DTMABP7819VG12A			
		1	--	36" Dia x 10' Concealment			

Notes:

- 1) Existing Equipment
- 2) Equipment to be Removed
- (l) Coax mounted internally and shielded from the wind. See coax layout in Appendix B.

Table 3 - Design 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)
--	--	--	--	--	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 11/24/2008	5688074	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	URS, 36928485.00000, 03/02/2009	5688077	CCISITES
4-TOWER MAPPING	TEP, 61471_33415, 06/15/2015	5688078	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PJF, 31903-0050, 08/18/2003	5688078	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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) For proposed modifications: monopole will be modified in conformance with the attached proposed modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	94 - 82	Pole	P5.563x0.241"	1	-0.75	126.93	42.8	Pass
L2	82 - 72	Pole	Pipe 5.563" x 0.699"	2	-2.65	336.46	59.0	Pass
L3	72 - 40	Pole	P26x0.25	3	-6.58	617.06	33.8	Pass
L4	40 - 0	Pole	P26x0.312	4	-11.20	793.13	67.5	Pass
							Summary	
						Pole (L4)	67.5	Pass
						RATING =	67.5	Pass

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	41.8	Pass
1	Base Plate	0	39.8	Pass
1	Base Foundation Soil Interaction	0	11.2	Pass
1	Base Foundation Structural Steel	0	3.1	Pass
1	Flange Connection	40	94.1	Pass
1	Flange Connection	72	52.0	Pass
1	Flange Connection	82	20.2	Pass

Structure Rating (max from all components) =	94.1%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity

4.1) Recommendations

The monopole and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the proposed modifications per the attached drawings.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- Basic wind speed of 97.00 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.0000 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.00 pcf.
- A wind speed of 50.00 mph is used in combination with ice.
- Temperature drop of 50.00 °F.
- Deflections calculated using a wind speed of 60.00 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile
 Include Bolts In Member Capacity
 Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt.
 Autocalc Torque Arm Areas
 Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption
 <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	94.0000-82.0000	12.0000	P5.563x0.241	A53-B-35 (35 ksi)	
L2	82.0000-72.0000	10.0000	Pipe 5.563" x 0.699"	A53-B-35 (35 ksi)	
L3	72.0000-40.0000	32.0000	P26x0.25	A53-B-35 (35 ksi)	
L4	40.0000-0.0000	40.0000	P26x0.312	A53-B-35 (35 ksi)	

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight
						ft ² /ft	plf	
LDF5-50A(7/8")	C	No	Inside Pole	82.0000 - 0.0000	12	No Ice	0.0000	0.33
						1/2" Ice	0.0000	0.33
						1" Ice	0.0000	0.33
**								
LDF7-50A(1-5/8")	C	No	Inside Pole	77.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment t °	Placement ft	C _{AA}		Weight
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	K
**									
**									
80010891	A	From Leg	4.0000	0.0000	88.0000	No Ice	0.0000	0.0000	0.08
						1/2" Ice	0.0000	0.0000	0.14
						1" Ice	0.0000	0.0000	0.21
80010891	B	From Leg	4.0000	0.0000	88.0000	No Ice	0.0000	0.0000	0.08
						1/2" Ice	0.0000	0.0000	0.14
						1" Ice	0.0000	0.0000	0.21
80010891	C	From Leg	4.0000	0.0000	88.0000	No Ice	0.0000	0.0000	0.08
						1/2" Ice	0.0000	0.0000	0.14
						1" Ice	0.0000	0.0000	0.21
(2) TMA2117F00V1-1	A	From Leg	4.0000	0.0000	88.0000	No Ice	0.0000	0.0000	0.02
						1/2" Ice	0.0000	0.0000	0.02
						1" Ice	0.0000	0.0000	0.03
(2) TMA2117F00V1-1	B	From Leg	4.0000	0.0000	88.0000	No Ice	0.0000	0.0000	0.02
						1/2" Ice	0.0000	0.0000	0.02
						1" Ice	0.0000	0.0000	0.03
(2) TMA2117F00V1-1	C	From Leg	4.0000	0.0000	88.0000	No Ice	0.0000	0.0000	0.02
						1/2" Ice	0.0000	0.0000	0.02
						1" Ice	0.0000	0.0000	0.03
**									
AM-X-CD-16-65-00T-RET	A	From Leg	4.0000	0.0000	77.0000	No Ice	0.0000	0.0000	0.05
						1/2" Ice	0.0000	0.0000	0.09
						1" Ice	0.0000	0.0000	0.15
AM-X-CD-16-65-00T-RET	B	From Leg	4.0000	0.0000	77.0000	No Ice	0.0000	0.0000	0.05
						1/2" Ice	0.0000	0.0000	0.09
						1" Ice	0.0000	0.0000	0.15
SBNH-1D6565C	C	From Leg	4.0000	0.0000	77.0000	No Ice	0.0000	0.0000	0.07
						1/2" Ice	0.0000	0.0000	0.13
						1" Ice	0.0000	0.0000	0.21
DTMABP7819VG12A	A	From Leg	4.0000	0.0000	77.0000	No Ice	0.0000	0.0000	0.02
						1/2" Ice	0.0000	0.0000	0.03
						1" Ice	0.0000	0.0000	0.04
DTMABP7819VG12A	B	From Leg	4.0000	0.0000	77.0000	No Ice	0.0000	0.0000	0.02
						1/2" Ice	0.0000	0.0000	0.03
						1" Ice	0.0000	0.0000	0.04
DTMABP7819VG12A	C	From Leg	4.0000	0.0000	77.0000	No Ice	0.0000	0.0000	0.02
						1/2" Ice	0.0000	0.0000	0.03
						1" Ice	0.0000	0.0000	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
						1" Ice			
** Canister Load1	C	None		0.0000	94.0000	No Ice 1/2" Ice	12.0000 24.6000 25.2000	12.0000 24.6000 25.2000	0.13 0.27 0.43
Canister Load2	C	None		0.0000	82.0000	1" Ice No Ice 1/2" Ice	22.0000 45.1000 46.2000	22.0000 42.1000 46.2000	0.94 1.22 1.49
Canister Load3	C	None		0.0000	72.0000	1" Ice No Ice 1/2" Ice	10.0000 20.5000 21.0000	10.0000 20.5000 21.0000	0.82 0.94 1.07
**									

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 94.0000-82.0000	88.0000	1.232	28.19	5.563	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L2 82.0000-72.0000	77.0000	1.198	27.41	4.636	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L3 72.0000-40.0000	56.2422	1.121	25.59	69.333	A	0.000	69.333	69.333	100.00	0.000	0.000
					B	0.000	69.333	100.00	0.000	0.000	
					C	0.000	69.333	100.00	0.000	0.000	
L4 40.0000-0.0000	20.7218	0.909	20.96	86.667	A	0.000	86.667	86.667	100.00	0.000	0.000
					B	0.000	86.667	100.00	0.000	0.000	
					C	0.000	86.667	100.00	0.000	0.000	

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 94.0000-82.0000	88.0000	1.232	7.49	2.2061	9.975	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
L2 82.0000-72.0000	77.0000	1.198	7.28	2.1768	8.264	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000	0.00	0.000	0.000	
						C	0.000	0.000	0.00	0.000	0.000	
L3 72.0000-40.0000	56.2422	1.121	6.80	2.1095	80.584	A	0.000	80.584	80.584	100.00	0.000	0.000
						B	0.000	80.584	100.00	0.000	0.000	
						C	0.000	80.584	100.00	0.000	0.000	
L4 40.0000-0.0000	20.7218	0.909	5.57	1.9091	99.394	A	0.000	99.394	99.394	100.00	0.000	0.000
						B	0.000	99.394	100.00	0.000	0.000	
						C	0.000	99.394	100.00	0.000	0.000	

Tower Pressure - Service

$G_H = 1.100$

Section Elevation	z	K_z	q_z	A_G	F a c e	A_F	A_R	A_{leg}	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
L1 94.0000- 82.0000	88.0000	1.232	9.65	5.563	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L2 82.0000- 72.0000	77.0000	1.198	9.38	4.636	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000	0.00	0.000	0.000	
					C	0.000	0.000	0.00	0.000	0.000	
L3 72.0000- 40.0000	56.2422	1.121	8.76	69.333	A	0.000	69.333	69.333	100.00	0.000	0.000
					B	0.000	69.333	69.333	100.00	0.000	0.000
					C	0.000	69.333	69.333	100.00	0.000	0.000
L4 40.0000- 0.0000	20.7218	0.909	7.18	86.667	A	0.000	86.667	86.667	100.00	0.000	0.000
					B	0.000	86.667	86.667	100.00	0.000	0.000
					C	0.000	86.667	86.667	100.00	0.000	0.000

Load Combinations

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

Comb. No.	Description
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	94 - 82	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-2.97	0.01	-0.00
			Max. Mx	20	-0.75	7.57	-0.00
			Max. My	14	-0.75	0.00	-7.57
			Max. Vy	20	-0.65	4.99	-0.00
			Max. Vx	14	0.65	0.00	-4.99
			Max. Torque	12			0.00
L2	82 - 72	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.33	0.46	-0.26
			Max. Mx	20	-2.65	25.41	-0.05
			Max. My	14	-2.65	0.09	-25.37
			Max. Vy	20	-1.78	18.33	-0.05
			Max. Vx	14	1.78	0.09	-18.30
			Max. Torque	38			0.01
L3	72 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.17	0.44	-0.25
			Max. Mx	20	-6.58	128.96	-0.05
			Max. My	14	-6.58	0.09	-128.92
			Max. Vy	20	-4.17	128.96	-0.05
			Max. Vx	14	4.17	0.09	-128.92
			Max. Torque	38			0.01
L4	40 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.31	0.41	-0.24
			Max. Mx	20	-11.20	333.91	-0.05
			Max. My	14	-11.20	0.09	-333.87
			Max. Vy	20	-5.95	333.91	-0.05
			Max. Vx	14	5.95	0.09	-333.87
			Max. Torque	38			0.01

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	94 - 82	6.469	47	0.8493	0.0001
L2	82 - 72	4.493	47	0.6589	0.0000
L3	72 - 40	3.380	47	0.3466	0.0000
L4	40 - 0	1.270	47	0.2631	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
94.0000	Canister Load1	47	6.469	0.8493	0.0001	4233
88.0000	80010891	47	5.419	0.7784	0.0001	3527
82.0000	Canister Load2	47	4.493	0.6589	0.0000	2021
77.0000	AM-X-CD-16-65-00T-RET	47	3.881	0.5030	0.0000	2707
72.0000	Canister Load3	47	3.380	0.3466	0.0000	4943

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	94 - 82	30.320	20	3.9779	0.0007
L2	82 - 72	21.074	18	3.0847	0.0005
L3	72 - 40	15.867	18	1.6272	0.0001
L4	40 - 0	5.961	18	1.2356	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
94.0000	Canister Load1	20	30.320	3.9779	0.0007	909
88.0000	80010891	20	25.410	3.6441	0.0006	757
82.0000	Canister Load2	18	21.074	3.0847	0.0005	433
77.0000	AM-X-CD-16-65-00T-RET	18	18.212	2.3570	0.0003	581
72.0000	Canister Load3	18	15.867	1.6272	0.0001	1066

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	94 - 82 (1)	P5.563x0.241	12.000	0.0000	0.0	4.0294	-0.75	126.93	0.006
L2	82 - 72 (2)	Pipe 5.563" x 0.699"	10.000	0.0000	0.0	10.681	-2.65	336.46	0.008
L3	72 - 40 (3)	P26x0.25	32.000	0.0000	0.0	20.224	-6.58	617.06	0.011
L4	40 - 0 (4)	P26x0.312	40.000	0.0000	0.0	25.178	-11.20	793.13	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	94 - 82 (1)	P5.563x0.241	7.57	17.93	0.422	0.00	17.93	0.000
L2	82 - 72 (2)	Pipe 5.563" x 0.699"	25.43	43.71	0.582	0.00	43.71	0.000
L3	72 - 40 (3)	P26x0.25	128.97	394.32	0.327	0.00	394.32	0.000
L4	40 - 0 (4)	P26x0.312	333.92	505.75	0.660	0.00	505.75	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	94 - 82 (1)	P5.563x0.241	0.65	63.46	0.010	0.00	26.98	0.000
L2	82 - 72 (2)	Pipe 5.563" x 0.699"	1.76	168.23	0.010	0.00	60.85	0.000
L3	72 - 40 (3)	P26x0.25	4.17	308.53	0.014	0.00	655.75	0.000
L4	40 - 0 (4)	P26x0.312	5.95	396.57	0.015	0.00	838.85	0.000

Pole Interaction Design Data

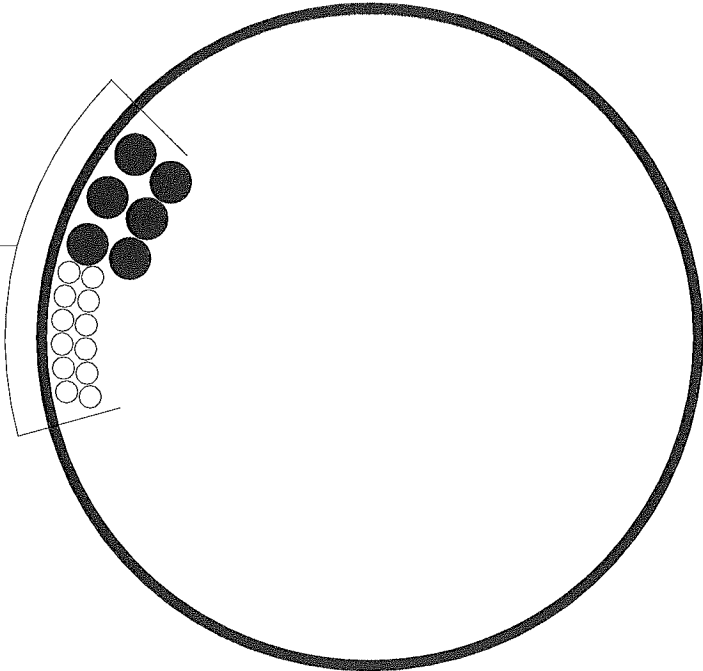
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	94 - 82 (1)	0.006	0.422	0.000	0.010	0.000	0.428	1.000	4.8.2 ✓
L2	82 - 72 (2)	0.008	0.582	0.000	0.010	0.000	0.590	1.000	4.8.2 ✓
L3	72 - 40 (3)	0.011	0.327	0.000	0.014	0.000	0.338	1.000	4.8.2 ✓
L4	40 - 0 (4)	0.014	0.660	0.000	0.015	0.000	0.675	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	94 - 82	Pole	P5.563x0.241	1	-0.75	126.93	42.8	Pass	
L2	82 - 72	Pole	Pipe 5.563" x 0.699"	2	-2.65	336.46	59.0	Pass	
L3	72 - 40	Pole	P26x0.25	3	-6.58	617.06	33.8	Pass	
L4	40 - 0	Pole	P26x0.312	4	-11.20	793.13	67.5	Pass	
							Summary		
							Pole (L4)	67.5	Pass
							RATING =	67.5	Pass

APPENDIX B
BASE LEVEL DRAWING

(PROPOSED)
(12) 7/8" TO 88 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 77 FT LEVEL



APPENDIX C

ADDITIONAL CALCULATIONS

Program Version 7.0.5.1 - 2/1/2016 File:G:/TOWER/375_Crown_Castle/2016/37516-2615_821898_Southington Industrial/37516-2615.005.7700_SDD_1301247/37516-2615.005.7700 - Concealment.eri

Section	4	P26x0.312	40.0000	3.4	6.2
Size	3	P26x0.25	32.0000	2.2	
Length (ft)	2	Pipe 5.563" x 0.689"	10.0000	0.4	
Grade	1	P5.563x0.241	12.0000	0.2	
Weight (K)	A53-B-35				

94.0 ft

82.0 ft

72.0 ft

40.0 ft

0.0 ft

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Canister Load1	94	SBNH-1D6565C	77
80010891	88	DTMABP7819VG12A	77
80010891	88	DTMABP7819VG12A	77
(2) TMA2117F00V1-1	88	DTMABP7819VG12A	77
(2) TMA2117F00V1-1	88	AM-X-CD-16-65-00T-RET	77
(2) TMA2117F00V1-1	88	AM-X-CD-16-65-00T-RET	77
80010891	88	Canister Load3	72
Canister Load2	82		

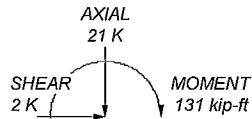
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi			

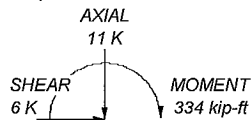
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 67.5%

ALL REACTIONS
ARE FACTORED



TORQUE 0 kip-ft
50.00 mph WIND - 1.0000 in ICE



TORQUE 0 kip-ft
REACTIONS - 97.00 mph WIND



Paul J. Ford and Company
250 East Broad St, Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX:

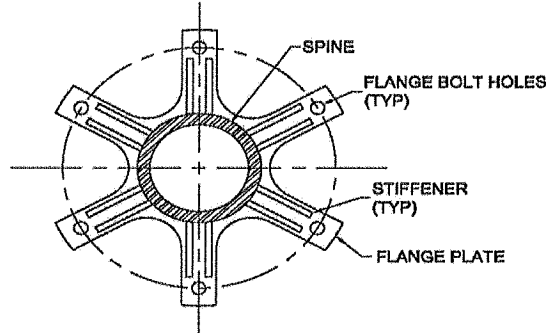
Job: 82-Ft Concealment Pole / Southington Industrial		
Project: 37516-2615 / BU# 821898		
Client: Crown Castle	Drawn by: TDehnke	App'd:
Code: TIA-222-G	Date: 09/22/16	Scale: NTS
Path:		Dwg No. E-1

CCI Flagpole Tool



Site Data	
BU#:	
Site Name:	
App #:	

Code	
Code:	TIA-222-G
Ice Thickness:	1 in
Windspeed (V):	97 mph
Ice Wind Speed (V):	50 mph
Exposure Category:	C
Topographic Feature:	N/A
Structure Class:	II



FLANGE PLATE
(TYPE 3: SOLIDITY RATIO 0.5)

Tower Information	
Total Tower Height:	94 ft
Base Tower Height:	72 ft
Total Canister Length:	22 ft
Number of Canister Assembly Sections:	2

Canister Section Number *:	Canister Assembly Length (ft):	Canister Assembly Diameter (in):	Number of Sides Canister Section	Plate Type:	Mating Flange Plate Thickness (in)**:	Mating Flange Plate Diameter (in):	Solidity Ratio	Plate Weight (Kip):	Canister Weight (Kip)
1	12	40	Round	3	2.00	40	0.5	0.713	0.251
2	10	40	Round	3	2.00	40	0.5	0.713	0.209

* Sections are numbered from the top of the tower down

** Mating Flange Plate Thickness at the bottom of canister section

Flag on Tower:	No
----------------	----

Truck Ball on Tower:	No
----------------------	----

Geometry : Base Tower + Spine			
-------------------------------	--	--	--

37516-2615.001.7805.eri (last saved 07/25 2:46 pm)

Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material	Delete
94	12		0	5.563	5.563	0.241	n/a	A53-B-35	[x]
82	10		0	5.563	5.563	0.699	n/a	A53-B-35	[x]
72	32		0	26	26	0.25	n/a	A53-B-35	[x]
40	40		0	26	26	0.312	n/a	A53-B-35	[x]

Discrete Loads : $C_F A_F$ for Canister Assembly								
Canister Loading	Apply $C_F A_F$ at Elevation(z) (ft)	$C_F A_F$ No Ice (ft ²)	$C_F A_F$ 1/2" Ice (ft ²)	$C_F A_F$ 1" Ice (ft ²)	$C_F A_F$ 2" Ice (ft ²)	$C_F A_F$ 4" Ice (ft ²)	Canister Assembly Weight No Ice (Kip)	Canister Assembly Weight 1/2" Ice (Kip)
Canister Load 1	94	12.000	24.600	25.200	26.400	28.800	0.126	0.274
Canister Load 2	82	22.000	45.100	46.200	48.400	52.800	0.943	1.215
Canister Load 3	72	10.000	20.500	21.000	22.000	24.000	0.817	0.941

Deflection Check Required:	Yes	Import Deflection Results
3% Spine Deflection Check		
Allowable (3%) Horizontal Spine Deflection (inches)	Actual Deflection *** (inches)	Sufficient/ Insufficient
7.920	3.089	Sufficient

*** Relative deflection under service level wind speed

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

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	
Site Name:	
App #:	
Pole Manufacturer:	Other

Reactions		
Mu:	334	ft-kips
Axial, Pu:	11	kips
Shear, Vu:	6	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	8	
Diam:	1.625	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	105	ksi
Bolt Circle:	30.5	in

If No stiffeners, Criteria: AISC LRFD <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/η): 68.6 Kips
 Allowable Axial, $\Phi * F_u * A_{net}$: 164.0 Kips
 Anchor Rod Stress Ratio: 41.8% **Pass**

Non-Rigid
AISC LRFD
$\phi * T_n$

Plate Data		
Diam:	35	in
Thick:	1.5	in
Grade:	50	ksi
Single-Rod B-eff:	10.21	in

Base Plate Results

Base Plate Stress: 17.9 ksi
 Allowable Plate Stress: 45.0 ksi
 Base Plate Stress Ratio: 39.8% **Pass**

Flexural Check

Non-Rigid
AISC LRFD
$\phi * F_y$
Y.L. Length: 15.00

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

n/a

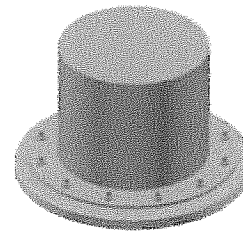
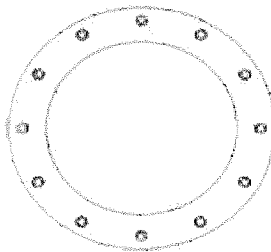
Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: n/a
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	26	in
Thick:	0.3125	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi
Reinf. Fillet Weld	0	"0" if None



* 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

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

Site Data

BU#: _____
 Site Name: _____
 App #: _____

Manufacturer:

Reactions

Moment:	128.97	ft-kips
Axial:	6.58	kips
Shear:	4.17	kips
Exterior Flange Run, T+Q:		kips

Exterior Flange Run, T+Q: _____ kips

Elevation: feet

Bolt Data

Qty:	8			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:	100	<-- Disregard	Bolt Fty:	44.00
N/A:	75	<-- Disregard		
Circle:	22	in		

Interior Flange Bolt Results

Maximum Bolt Tension: 34.4 Kips, Ext. T=Interior T
 Allowable Tension: 46.1 Kips
 Bolt Stress Ratio: 74.6% **Pass**

Plate Data

Plate Outer Diam:	25.375	in
Plate Inner Diam:	18	in (Hole @ Ctr)
Thick:	1	in
Grade:	50	ksi
Effective Width:	7.75	in

Interior Flange Plate Results

Flexural Check
 Controlling Bolt Axial Force: 36.0 Kips, Ext. C= Interior C
 Plate Stress: 47.0 ksi
 Allowable Plate Stress: 50.0 ksi
 Plate Stress Ratio: 94.1% **Pass**

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

n/a

Stiffener Results

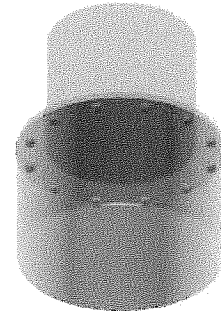
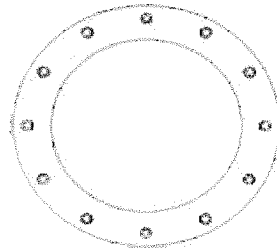
Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data

Pole OuterDiam:	26	in
Thick:	0.3125	in
Pole Inner Diam:	25.375	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi



Stress Increase Factor

ASIF: 1.333

* 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

Job Number:
 Engineer:
 Site Name:
 Site Number:

Page: 1 of 1
 Date: 9/22/2016
 Version: v1.1.
 Effective: 6/3/2015

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CODE: TIA-222-G
 ASIF: 1.00

72 FT CONCEALMENT FLANGE CONNECTION CALCULATIONS

BOLT INFORMATION

Qty:	6.00	ea.
Diameter:	1.00	in.
Specification:	A325	
Bolt Fy	90	ksi
Bolt Fu	120	ksi
Bolt Circle:	20.0	in.

FLANGE REACTIONS

Moment (Mu):	25.43	kip*ft
Axial (Pu):	2.65	kips
Shear (Vu):	1.76	kips
Elevation:	72.00	ft
Max Ratio:	105%	

CONCEALMENT FLANGE INFORMATION

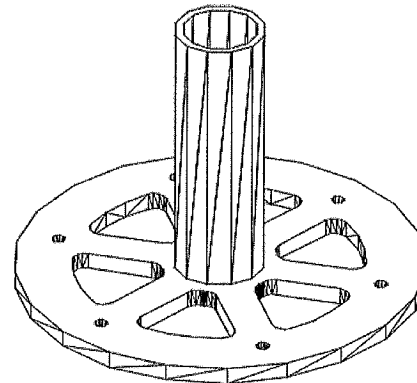
Spoke Thickness (t):	2.50	in.
Spoke Width (w):	3.00	in.
Steel Grade (Fy):	36	ksi

CONCEALMENT SPINE INFORMATION

Diameter:	5.56	in.
Thickness:	0.70	in.
Steel Grade (Fy):	35	ksi

STIFFENER INFORMATION

Configuration:	0	No Stiffeners
Weld Size:	0.375	in.
Width:	5.00	in.
Height:	5.00	in.
Thickness:	0.50	in.
Notch:	0.50	in.
Steel Grade:	36	ksi
Weld Strength:	70	ksi



FLANGE CONNECTION RESULTS

Flange Bolts: 19.2% Passing

BASE POLE INFORMATION

Pole Diameter:	26.00	in.
Pole Thickness:	0.250	in.

BASE POLE FLANGE INFORMATION

Connected to:	Monopole	
Weld Type:	Groove	
Weld Size:	0.25	in.
Weld Strength:	70	ksi
Weld Length*:	13.35	in.
Spoke Thickness (t):	2.5	in.
Spoke Width (w):	3	in.
Steel Grade (Fy):	36	ksi

Concealment Flange Plate: 52.0% Passing

Base Pole Flange Plate: 19.2% Passing

Base Pole Flange Weld: 20.2% Passing

	in. (Override)
2.50	in. (Override)
	in. (Override)
36.00	ksi (Override)

*Assumes a tributary length of the pole diameter based on the number of bolts.

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

Site Data	
BU#:	
Site Name:	
App #:	

Reactions		
Mu	7.57	ft-kips
Axial, Pu:	0.75	kips
Shear, Vu:	0.65	kips
Elevation:	82	feet

Bolt Threads:	
X-Excluded	
$\phi V_n = \phi(0.55 A_b F_u)$	
$\phi = 0.75, \phi V_n$ (kips):	21.87

Pole Manufacturer:	Other
--------------------	-------

If No stiffeners, Criteria: TIA G <-Only Applicable to Unstiffened Cases

Bolt Data			
Qty:	6		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	
N/A:	55	<-- Disregard	
Circle (in.):	9.75		

Flange Bolt Results		Rigid	
Bolt Tension Capacity, $\phi T_n, B1$:	30.06 kips	ϕT_n	
Adjusted ϕT_n (due to $V_u = V_u / Q_t$), B:	30.06 kips	$\phi T_n [(1 - (V_u / \phi V_n)^2)^{0.5}]$	
Max Bolt directly applied Tu:	6.09 Kips		
Min. PL "tc" for B cap. w/o Pry:	1.165 in		
Min PL "treq" for actual T w/ Pry:	0.400 in		
Min PL "t1" for actual T w/o Pry:	0.524 in		
T allowable w/o Prying:	30.06 kips $\alpha' < 0$ case		
Prying Force, q:	0.00 kips		
Total Bolt Tension = Tu + q:	6.09 kips		
Non-Prying Bolt Stress Ratio, Tu/B:	20.2% Pass		

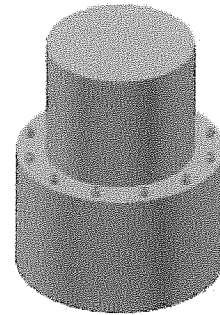
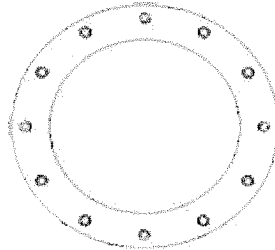
Plate Data		
Diam:	13.75	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.91	in

Exterior Flange Plate Results		Flexural Check		Rigid	
Compression Side Plate Stress:	2.0 ksi			TIA G	
Allowable Plate Stress:	32.4 ksi			ϕF_y	
Compression Plate Stress Ratio:	6.1% Pass			Comp. Y.L. Length:	8.01
No Prying					
Tension Side Stress Ratio, $(treq/t)^2$:	4.0% Pass				

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

n/a
Stiffener Results
 Horizontal Weld : n/a
 Vertical Weld : n/a
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: n/a
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: n/a
 Plate Comp. (AISC Bracket): n/a
Pole Results
 Pole Punching Shear Check: n/a

Pole Data		
Diam:	5.5625	in
Thick:	0.241	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi
Reinf. Fillet Weld	0	"0" if None



* 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

foundation loads

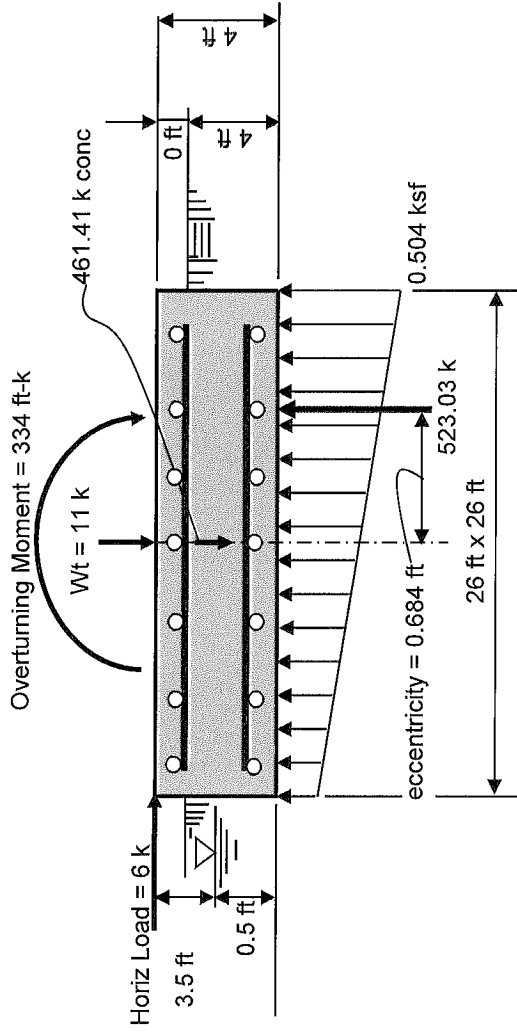
Limit states Tower or Pole Weight = 11 kips
 limit states total horizontal force = 6 kips
 limit states overturning moment = 334 ft-kips

soil properties

Safety factor against overturning = 1
 Soil Density = 100 pcf
 Ultimate soil bearing = 6 ksf
 Depth to water table = 3.5 ft

mat dimensions

depth to bottom of footing = 4 ft
 Footing thickness = 4 ft
 Footing Width = 26 ft
 Footing Length = 26 ft
 Tower/Pole Center Offset = 0 ft



Volume of concrete = 100.15 yd³
 Rebar = (152) #8 bars by 25.5 ft long
 reinforcing steel = (38) #8 @ 8.27 in o.c. ea way top and bottom

Summary of analysis results

Overturning Moment: (Stress Ratio = 0.07)

Calculated Ultimate Overturning Moment = 358 ft-kips
 Resisting Moment = 5099.5 ft-kips
 Factor of Safety against overturning = 14.245 > 1 okay

Rebar strength = $F_y = 60$ (ksi)
 minimum cover over rebar = 3 inches

Soil Bearing

(Stress Ratio = 0.112) < **CONTROLLING CRITERIA**
 Limit States Maximum Net Soil Bearing = 4.5 ksf
 Calculated limit states Soil Bearing Pressure = 0.504 ksf < 4.5 ksf okay

Bending Moment

(Stress Ratio = 0.031)
 Ultimate Bending Moment Resistance = 5762 ft-kips
 Calculated Ultimate Bending Moment = 179 ft-kips < 5762 ft-kips okay

Bending Shear

(Stress Ratio = 0.014)
 Ultimate Bending Shear Resistance = 1459 kips
 Calculated Ultimate Bending Shear = 21 kips < 1459 kips okay

MODIFICATION OF AN EXISTING 72' MONOPOLE STEALTH CING-20806W-02 BU #821898; SOUTHINGTON INDUSTRIAL

500 QUEEN ST
SOUTHINGTON, CONNECTICUT 06489
HARTFORD COUNTY
LAT: 41° 37' 48.54"; LONG: -72° 52' 29.98"
APP: 357137 REV. 11; WO: 1301247

PROJECT CONTACTS
STRUCTURE OWNER:
CROWN CASTLE
MOD PM: JAMES DONAHUE AT
JAMES.DONAHUE.VENDOR@CROWNCastle.COM
PH: (781) 771-1111
MOD CMT: JASON D'AMICO AT JASON.DAMICO@CROWNCastle.COM
PH: (860) 209-0104
ENGINEER OF RECORD:
PJMIDD@JFMWEB.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
REMOVAL OF EXISTING CONCEALMENT BULKHEADS & SHROUDS
INSTALLATION OF NEW CONCEALMENT SPINE, BULKHEADS & SHROUDS
PAINT MODIFICATIONS TO MATCH EXISTING POLE
INSTALL MISSING PORT COVERS
REPLACE INSTALLED FLANGE BOLT
INSTALL CONCEALMENT REINFORCING SOLUTIONS PER CROWN CASTLE
DOC OPS-PRC-10127

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
T-2	MI CHECKLIST
S-1	GENERAL NOTES
S-2	MONOPOLE PROFILE
S-3	PORT COVER & FLANGE DETAILS
S-4	CONCEALMENT ELEVATION DETAILS
S-5	CONCEALMENT FLANGE DETAILS
S-6	CONCEALMENT BULKHEAD DETAILS

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CONNECTICUT BUILDING CODE
ULTIMATE WIND SPEED (3-SECOND GUST)	125 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	97 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	C
	ft-z
	1.0

THE ASSOCIATED FALLING SA WO NUMBER FOR THIS PROJECT IS 1274798
ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.

MODIFICATION OF AN EXISTING 72'
MONOPOLE
BU #821898; SOUTHINGTON INDUSTRIAL
SOUTHINGTON, CONNECTICUT

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6879 www.pauljford.com
PH: (683) 370-4789
CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK NY 12085

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PROJECT No: 37516-2916005.7700
DRAWN BY: B.M.S.
DESIGNED BY: T.A.D.
CHECKED BY:
DATE: 8-17-2018

TITLE SHEET

T-1

CONTRACTOR'S ATTENTION: This document and the data contained herein, is proprietary to J.F. Ford and Company, Inc. and the information contained herein is not to be used for any purpose other than the intended use for the specific project.

J.F. FORD & COMPANY
 250 Broad St., Ste 600
 Columbus, OH 43215
 Phone 614.221.6579
 www.jfford.com

CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12085
 PH: (518) 370-8789

MONOPOLE
 BU #821898, SOUTHWINGTON INDUSTRIAL
 SOUTHWINGTON, CONNECTICUT

MODIFICATION OF AN EXISTING 72'

PROJECT NO: 37516-2815051700
 DRAWN BY: B.M.S.
 CHECKED BY: J.J.D.
 DESIGNED BY:
 DATE: 9-21-2018

M I CHECKLIST

T-2

CONSTRUCTION INSTALLATION INSPECTIONS AND TESTING REQUIRED COMPLETED BY EOR	REPORT ITEM
X	PRE-CONSTRUCTION MI CHECKLIST DRAWINGS
X	EOR REVIEW
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
X	FABRICATOR USE INSPECTION
X	POST REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
NA	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE SLOUT VERIFICATION
NA	CONTRACTORS CERTIFIED WELD INSPECTION
NA	EARTHWORK PROVIDE PHOTO DOCUMENTATION OF EXCAVATION
X	QUALITY AND COMPACTON
NA	ON SITE COLD QUANTIZING VERIFICATION
NA	SOIL WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
NA	INTEGRAL/ROCK ANCHOR INSTALLER'S DRILLING AND INSTALLATION LOGS AND CALC DOCUMENTS
POST-CONSTRUCTION	
X	MI INSPECTOR REVIEW OR RECORD DRAWINGS
NA	POST INSTALLED ANCHOR ROD TARGET TENSION LOAD TESTING
NA	REFER TO MICROPIER/ROCK ANCHOR NOTES FOR SPECIAL INSPECTION AND TESTING REQUIREMENTS.
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS: FACT TIA INSPECTION PER CROWN CASTLE DOC 09S-SOWM1017	
NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PMI REPORT	
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PMI REPORT	

- 3. INSPECTION AND TESTING:**
- ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY CROWN CASTLE'S REPRESENTATIVE AND CROWN CASTLE'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY.
 - INSPECTION REPORTS WHICH ARE FURNISHED BY OTHERS ARE STILL REQUIRED WHEN THE EOR PERFORMS OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT AN ADDITIONAL COST.
 - AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED AND RETAINED FOR THE SOLE PURPOSE OF INSPECTION, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
 - ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES.
 - THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERFERENCE TO AND WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
 - THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES AND SHALL SUBMIT TESTS ON THIS BASIS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSURE WITH THE FOLLOWING TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR INSPECTORS (CWI, INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR THE SERVICE TO BE PERFORMED):
 - PERFORM PERIODIC ON-SITE INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY CROWN CASTLE AND THE EOR IMMEDIATELY WHEN CONDITIONS AND/OR DEFICIENCIES ARE OBSERVED.
 - FOUNDATIONS AND SOIL PREPARATION (NOT REQUIRED)
 - STRUCTURAL STEEL
 - CHECK STEEL ON THE JOB WITH THE PLANS.
 - CHECK ALL CERTIFICATIONS CALL FOR LABORATORY TEST REPORTS WHEN MILL CERTIFICATION IS IN QUESTION.
 - CHECK GRADE OF STEEL MEMBERS AND BOLTS FOR COMPLIANCE WITH DRAWINGS.
 - SPECIAL INSPECTIONS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE ABC
 - SPECIAL INSPECTIONS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURRED HOLES.
 - CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
 - CHECK THAT BOLTS ARE SHIPMENT QUALITY.
 - CHECK THAT BOLTS ARE SHIPMENT QUALITY.
 - PRIOR TO ANY FIELD CUTTING THE CONTRACTOR SHALL MARK THE CUTOUT LINES ON THE STEEL AND THE INSPECTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS. THE INSPECTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
 - VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS NOT DEBARRED/PROHIBITED IN ACCORDANCE WITH AWS D1.
 - VERIFY FIELD WELDING CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND WITH AWS D1.
 - APPROVE FIELD WELDING SEQUENCE
 - A PROGRAM OF THE APPROVED SEQUENCES SHALL BE SUBMITTED TO CROWN CASTLE BEFORE WELDING BEGINS. NO CHANGE IN APPROVED SEQUENCES MAY BE MADE WITHOUT PERMISSION FROM CROWN CASTLE.
 - INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE, AND WORKING CONDITIONS
 - VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS
 - VERIFY WELDING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.
 - VERIFY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO BE USED FOR THIS PROJECT.
 - INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED DRAWINGS.
 - VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
 - REWORK:
 - IF THE INSPECTION PLAN OUT, REWORK SHALL BE DAILY INSPECTION REPORTS TO CROWN CASTLE CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTORS PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES OR PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO CROWN CASTLE FOR REVIEW AND APPROVAL. CROWN CASTLE RESERVES THE RIGHT TO DETERMINE WHETHER OR NOT A REVISION IS ACCEPTABLE.
 - AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED. PRIOR TO CONTINUING CONSTRUCTION, THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTORS CONTRACTUAL OR STATUTORY OBLIGATIONS. THE TESTING AGENCY WILL NOT PLACE THE CONTRACTORS QUALITY CONTROL PERSONNEL.
- 4. MODIFICATION INSPECTION NOTES:**
- GENERAL
 - IF THE MODIFICATION INSPECTION (MI) IS VISUAL INSPECTION OF COVER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS, THE MI REPORT SHALL BE SUBMITTED TO CROWN CASTLE WITHIN 10 BUSINESS DAYS OF THE MODIFICATION. DRAWINGS, AS DESCRIBED IN THE MI REPORT, SHALL BE PROVIDED TO THE MI INSPECTOR AND WORKMANSHIP ONLY, AND IS NOT A REVIEW OF THE MODIFICATION. THE MI INSPECTOR SHALL NOT BE RESPONSIBLE FOR THE MODIFICATION DESIGN, CONSTRUCTION, OR THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RELATES WITH THE EOR AT ALL TIMES.
 - ALL WORK SHALL BE CONDUCTED BY A CROWN CASTLE ENGINEERING (ENDORSE) OR ENGINEERING SERVICE (ENDORSE) THAT IS APPROVED TO PERFORM BUILT WORK FOR CROWN CASTLE.
 - THE MI INSPECTOR SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES AND SHALL SUBMIT TESTS ON THIS BASIS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSURE WITH THE FOLLOWING TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR INSPECTORS (CWI, INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR THE SERVICE TO BE PERFORMED):
 - PERFORM PERIODIC ON-SITE INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON-SITE. AGENCY SHALL NOTIFY CROWN CASTLE AND THE EOR IMMEDIATELY WHEN CONDITIONS AND/OR DEFICIENCIES ARE OBSERVED.
 - FOUNDATIONS AND SOIL PREPARATION (NOT REQUIRED)
 - STRUCTURAL STEEL
 - CHECK STEEL ON THE JOB WITH THE PLANS.
 - CHECK ALL CERTIFICATIONS CALL FOR LABORATORY TEST REPORTS WHEN MILL CERTIFICATION IS IN QUESTION.
 - CHECK GRADE OF STEEL MEMBERS AND BOLTS FOR COMPLIANCE WITH DRAWINGS.
 - SPECIAL INSPECTIONS SHALL BE FIELD INSPECTED ACCORDING TO THE REQUIREMENTS OF THE ABC
 - SPECIAL INSPECTIONS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURRED HOLES.
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 - CHECK THAT BOLTS ARE SHIPMENT QUALITY.
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 - PRIOR TO ANY FIELD CUTTING THE CONTRACTOR SHALL MARK THE CUTOUT LINES ON THE STEEL AND THE INSPECTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS. THE INSPECTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
 - VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS NOT DEBARRED/PROHIBITED IN ACCORDANCE WITH AWS D1.
 - VERIFY FIELD WELDING CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND WITH AWS D1.
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 - VERIFY WELDING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.
 - VERIFY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO BE USED FOR THIS PROJECT.
 - INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED DRAWINGS.
 - VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
 - REWORK:
 - IF THE INSPECTION PLAN OUT, REWORK SHALL BE DAILY INSPECTION REPORTS TO CROWN CASTLE CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTORS PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES OR PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO CROWN CASTLE FOR REVIEW AND APPROVAL. CROWN CASTLE RESERVES THE RIGHT TO DETERMINE WHETHER OR NOT A REVISION IS ACCEPTABLE.
 - AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED. PRIOR TO CONTINUING CONSTRUCTION, THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTORS CONTRACTUAL OR STATUTORY OBLIGATIONS. THE TESTING AGENCY WILL NOT PLACE THE CONTRACTORS QUALITY CONTROL PERSONNEL.
- 5. GENERAL CONTRACTOR:**
- CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MODIFICATION
 - REVIEW THE REQUIREMENTS OF THE MI CHECKLIST.
 - WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING BETTER UNDERSTAND ALL INSPECTION AND TESTING (ESOU) REQUIREMENTS.
 - THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOWM1007.
- 6. RECOMMENDATIONS:**
- THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
 - MINIMUM OF 48 HOURS 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 IT MAY BE NECESSARY TO INSTALL ALL COVER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTIONS 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 CORRECTIONS MADE IMMEDIATELY. THE GC AND MI INSPECTOR SHALL BE RESPONSIBLE TO CONDUCT THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL, WHEN THE INSPECTORS ARE ON-SITE.
 - CANCELLATION OR DELAYS IN SCHEDULE (EN)
 - IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, EITHER PARTY CANCELS OR DELAYS, CROWN CASTLE SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INITIATED BY EITHER PARTY FOR ANY TIME PERIOD EXCEEDING 30 DAYS. THE GC AND MI INSPECTOR SHALL BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INITIATED BY EITHER PARTY FOR ANY TIME PERIOD EXCEEDING 30 DAYS. THE GC AND MI INSPECTOR SHALL BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INITIATED BY EITHER PARTY FOR ANY TIME PERIOD EXCEEDING 30 DAYS. THE GC AND MI INSPECTOR SHALL BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INITIATED BY EITHER PARTY FOR ANY TIME PERIOD EXCEEDING 30 DAYS.
- 7. MODIFICATION INSPECTION:**
- IF THE MODIFICATION INSPECTION WOULD FALL THE MI (PAID) WITH THE GC SHALL WORK WITH CROWN CASTLE TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
 - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT OR WITH CROWN CASTLE'S APPROVAL. THE GC MAY WORK WITH THE EOR TO RE-EVALUATE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.
 - IF THE MODIFICATION INSPECTION WOULD FALL THE MI (PAID) WITH THE GC SHALL WORK WITH CROWN CASTLE TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
 - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT OR WITH CROWN CASTLE'S APPROVAL. THE GC MAY WORK WITH THE EOR TO RE-EVALUATE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.
- 8. PHOTOGRAPHS:**
- THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS AT A MINIMUM ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
 - GENERAL AREA SITE CONDITION
 - PHOTOGRAPHS DURING THE REINFORCEMENT/ MODIFICATION CONSTRUCTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - WELD PREPARATION
 - WELD CONNECTIONS
 - BOLT INSTALLATION AND TORQUE
 - FINAL INSTALLER CONDITION
 - FINAL INSPECTION CONDITION
 - POST CONSTRUCTION REPAIR
 - POST CONSTRUCTION PHOTOGRAPHS
 - FINAL FIELD CONDITION
 - PHOTOS OF ELVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.
 - THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOWM1007.

1. GENERAL NOTES
 1.1. THE MONOPOLE STRUCTURE IN ITS EXISTING CONDITION DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE PROPOSED AND EXISTING LOADS FROM THE ATTACHED STRUCTURAL MODIFICATION REPORT AT THE REQUIRED MINIMUM WIND SPEEDS. DO NOT INSTALL ANY NEW LOADS UNTIL THE MONOPOLE REINFORCING THESE DRAWINGS WERE PREPARED FROM INFORMATION PROVIDED BY CROWN CASTLE. THE INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY THE ENGINEER OF RECORD (EOR) FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES SHOWN ON THESE DRAWINGS AND REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND CROWN CASTLE BEFORE PROCEEDING WITH THE WORK. ANY WORK PERFORMED WITHOUT A PRE-FABRICATION MAPPING IS DONE AT THE RISK OF THE GENERAL CONTRACTOR AND/OR THE FABRICATOR.

1.2. AND/OR GREATER QUANTITIES, STRENGTH OR SIZE INDICATED BY THESE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY SHALL BE USED.

1.3. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN SUCCESSFULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

1.4. ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. CONTRACTOR SHALL SUBMIT ALL CONSTRUCTION MEANS AND METHODS TO THE EOR AND CROWN CASTLE FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. THE EOR AND CROWN CASTLE SHALL BE RESPONSIBLE FOR REVIEWING AND APPROVING THE CONSTRUCTION MEANS AND METHODS. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

1.5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

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2. STRUCTURAL STEEL
 2.1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:
 2.1.1. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
 2.1.1.1. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS;
 2.1.1.2. SPECIFICATION FOR HIGH STRENGTH BOLTS;
 2.1.1.3. CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES;
 2.1.2. BY THE AMERICAN WELDING SOCIETY (AWS):
 2.1.2.1. STRUCTURAL WELDING CODE - STEEL D1.1;
 2.1.2.2. STRUCTURAL WELDING CODE - STEEL D1.1.1;
 2.1.2.3. STRUCTURAL WELDING CODE - STEEL D1.1.2;
 2.1.2.4. STRUCTURAL WELDING CODE - STEEL D1.1.3;
 2.1.2.5. STRUCTURAL WELDING CODE - STEEL D1.1.4;
 2.1.2.6. STRUCTURAL WELDING CODE - STEEL D1.1.5;
 2.1.2.7. STRUCTURAL WELDING CODE - STEEL D1.1.6;
 2.1.2.8. STRUCTURAL WELDING CODE - STEEL D1.1.7;
 2.1.2.9. STRUCTURAL WELDING CODE - STEEL D1.1.8;
 2.1.2.10. STRUCTURAL WELDING CODE - STEEL D1.1.9;
 2.1.2.11. STRUCTURAL WELDING CODE - STEEL D1.1.10;
 2.1.2.12. STRUCTURAL WELDING CODE - STEEL D1.1.11;
 2.1.2.13. STRUCTURAL WELDING CODE - STEEL D1.1.12;
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 2.1.2.98. STRUCTURAL WELDING CODE - STEEL D1.1.97;
 2.1.2.99. STRUCTURAL WELDING CODE - STEEL D1.1.98;
 2.1.3. 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. CONTRACTOR SHALL CONFORM TO THE LATEST REISSUED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE EXACTLY AS NOTED OTHERWISE ON THE DRAWINGS.
 2.4. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDER'S CERTIFICATION AND QUALIFICATION RECORDS TO THE EOR AND CROWN CASTLE FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 2.5. STRUCTURAL STEEL PLATES SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION NOTES REGARDING TOUCH UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
 2.6. FIELD WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
 2.7. IMPORTANT CUTTING AND WELDING 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. PER THE 12-21-2005 CROWN CASTLE DIRECTIVE, ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY CUTTING AND WELDING SAFETY GUIDELINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.
 2.8. INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
 2.9. 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. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.
 2.10. WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. CONTRACTOR TO AVOID 90 DEGREE CORNERS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS.

3. BASE PLATE BROU... (NOT REQUIRED)

4. FOUNDATION WORK... (NOT REQUIRED)

5. DISTANCE CONCRETE... (NOT REQUIRED)

6. EPOXY GROUTED REINFORCING ANCHOR BOLDS... (NOT REQUIRED)

7. TOUCH UP OF GALVANIZING

7.1. THE CONTRACTOR SHALL TOUCH UP ANY AND ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRASIONED DURING DRILLING AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZINC COLD GALVANIZING COMPOUND. FULL THICKNESS RECOAT SHALL BE 1.5 MILS. (1.5 MILS. APPLY PER ZINC MANUFACTURER'S RECOMMENDED PROCEDURES. CONTACT ZINC AT 1-800-87-5272 FOR PRODUCT INFORMATION.)

7.2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. CONTRACTOR SHALL APPLY ZINC GALVANIZING COMPOUND TO ALL FIELD WELDS AND TOUCH-UP COATING SHALL BE 1.5 MILS. (1.5 MILS. APPLY PER ZINC MANUFACTURER'S RECOMMENDED PROCEDURES. CONTACT ZINC AT 1-800-87-5272 FOR PRODUCT INFORMATION.)

7.3. CROWN CASTLES TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZINC 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.

8. HOT DIP GALVANIZING

8.1. HOT DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A153, AS APPROPRIATE.

8.2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING. DRILL OR PUNCH HOLE AND/OR DRAINAGE HOLES WITH EOR APPROVAL OF LOCATIONS.

8.3. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

9. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

9.1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY CROWN CASTLE, CROWN CASTLE WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.

9.2. REINFORCING PREVENTIVE COATINGS SUCH AS THE ZINC GALVANIZING COMPOUND SPECIFIED HEREON, THE VOLTAGE TAP MOUNTED AND COVERED WITH REINFORCED POLE SYSTEM IS DEPENDANT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. ANY CORROSION, DAMAGE TO FATIGUE, FRACTURE, AND/OR DETRIORATION OF THESE WELDS AND/OR THE EXISTING GALVANIZED STEEL, SHALL BE IMMEDIATELY REPORTED TO THE TESTING AGENCY. THE TESTING AGENCY SHALL INVESTIGATE AND DETERMINE THE NECESSARY MAINTENANCE AND REPAIRS NECESSARY TO PREVENT FAILURE OF THE STRUCTURE AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.

9.3. CROWN CASTLE SHALL REFER TO TABLE 22-118B, SECTION 14 AND ANNEX E FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION SHALL BE DETERMINED BY THE TESTING AGENCY. THE TESTING AGENCY SHALL BE RESPONSIBLE FOR DETERMINING THE INSPECTION FREQUENCY BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. THE EOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

9.4. CROWN CASTLE SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

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9.11. CROWN CASTLE SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

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10. FIELD WIND MINIMUM REQUIREMENTS

10.1. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.

10.2. FOR NEW BASE STIFFENERS (INCLUDES OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY NDE. FOR NEW BASE STIFFENERS (INCLUDES OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLER WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLER WELDS SHALL BE 100% INSPECTED BY UT, BUT MAY BE LIMITED TO A HEIGHT OF 16".

10.3. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GS SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENGS-04-10033, "TOWER WELDING INSPECTION AND TESTING PROCEDURES". NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN CASTLE IMMEDIATELY IF ANY GROSS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING INSPECTIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.

10.4. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.5. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.6. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.7. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.8. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

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10.11. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.12. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.13. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.14. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.15. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.16. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.17. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.18. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.19. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.20. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.21. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.22. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.23. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.24. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.25. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10.26. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

11. GENERAL NOTES

11.1. THE MONOPOLE STRUCTURE IN ITS EXISTING CONDITION DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE PROPOSED AND EXISTING LOADS FROM THE ATTACHED STRUCTURAL MODIFICATION REPORT AT THE REQUIRED MINIMUM WIND SPEEDS. DO NOT INSTALL ANY NEW LOADS UNTIL THE MONOPOLE REINFORCING THESE DRAWINGS WERE PREPARED FROM INFORMATION PROVIDED BY CROWN CASTLE. THE INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY THE ENGINEER OF RECORD (EOR) FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES SHOWN ON THESE DRAWINGS AND REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND CROWN CASTLE BEFORE PROCEEDING WITH THE WORK. ANY WORK PERFORMED WITHOUT A PRE-FABRICATION MAPPING IS DONE AT THE RISK OF THE GENERAL CONTRACTOR AND/OR THE FABRICATOR.

11.2. AND/OR GREATER QUANTITIES, STRENGTH OR SIZE INDICATED BY THESE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY SHALL BE USED.

11.3. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN SUCCESSFULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

11.4. ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. CONTRACTOR SHALL SUBMIT ALL CONSTRUCTION MEANS AND METHODS TO THE EOR AND CROWN CASTLE FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. THE EOR AND CROWN CASTLE SHALL BE RESPONSIBLE FOR REVIEWING AND APPROVING THE CONSTRUCTION MEANS AND METHODS. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

11.5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

11.6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

11.7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

11.8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

11.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND/OR APPROVALS FOR THE WORK.

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PJF PAUL J. FORD & COMPANY
 250 E Broad St, Ste 600-Columbus, OH 43215
 Phone 614.221.6579 www.pauljford.com
CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12065
 Ph: (609) 370-4765

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT No: 37516-2616065.7700
 DRAWN BY: B.M.S.
 DESIGNED BY: T.J.D.
 CHECKED BY:
 DATE: 8-11-2018

MONOPOLE PROFILE

S-2

SHAFT SECTION DATA

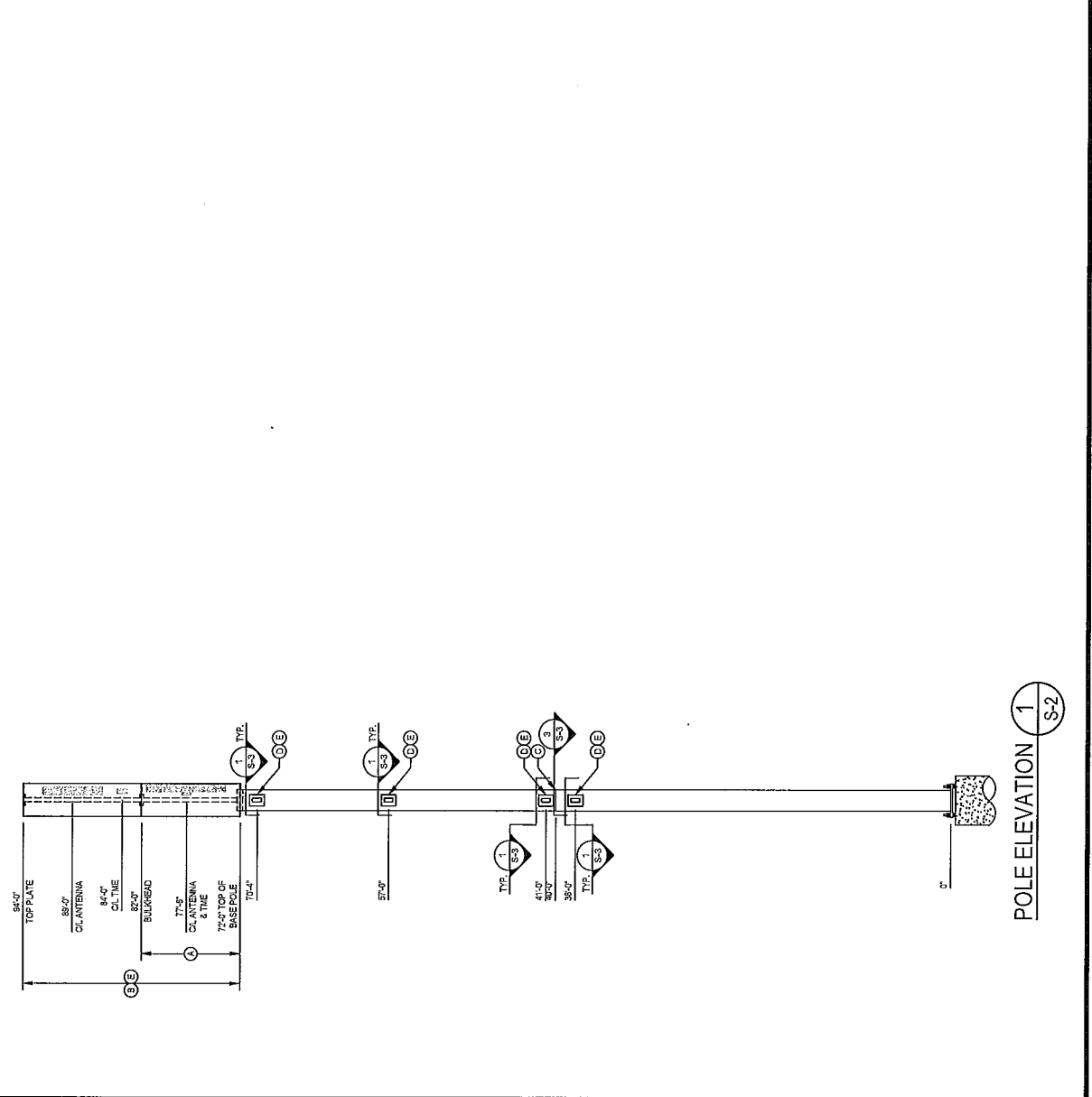
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	SAP SPlice (IN)	DIAMETER ACROSS FLATS (IN)		POLE GRADE SHAPE
				@ TOP	@ BOTTOM	
1	32.00	0.2500		26.000	26.000	53 ROUND
2	40.00	0.3125		26.000	26.000	53 ROUND

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

TOWER MODIFICATION SCHEDULE

ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
A	REMOVE EXISTING CONCEALMENT SPINE AND INSTALL NEW CONCEALMENT SPINE BULKHEADS AND SERVOIDS	S-2
B	72 TO 82'	S-4 TO S-6
C	40'	S-3
D	38'-4" 57'-4" & 70'-4"	S-3
E	38'-4" 57'-4" 70'-4" & 72 TO 84'	S-2
F	72 TO 84'	S-4 TO S-6

- EXISTING CONCEALMENT TO BE REMOVED AND REPLACED WITH THE NEW CONCEALMENT.
- NEW CONCEALMENT IS TO BE BOLTED TO TOP FLANGE OF EXISTING BASE POLE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO FABRICATION AND INSTALLATION.
- CONTRACTOR SHALL SEND PAUL J. FORD & COMPANY THE FABRICATION DRAWINGS FOR APPROVAL PRIOR TO MANUFACTURING.
- CONTRACTOR TO COORDINATE EQUIPMENT SHUT DOWN AND CONCEALMENT REMOVAL WITH CROWN CASTLE PROJECT PM AND CARRIERS. CONTRACTOR TO PROVIDE SCHEDULE THAT MINIMIZES DOWN TIME FOR CUSTOMER SYSTEMS. TEMPORARY POLES OR COWS MAY BE REQUIRED DURING THE INSTALLATION OF THE NEW CONCEALMENT AND MODIFICATIONS.



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 Phone 614.221.6679 www.paulford.com

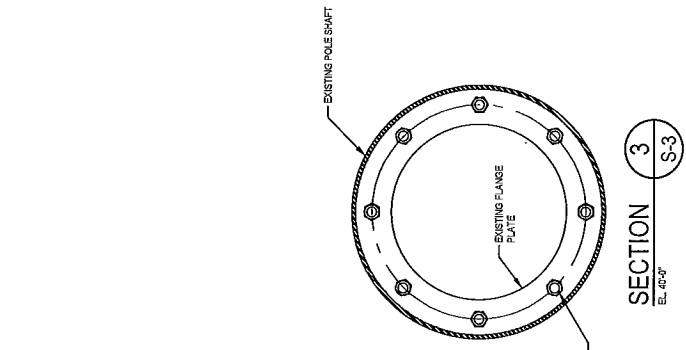
CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12065
 PH. (518) 370-4166

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT No: 37816-2515003.7700
 DRAWN BY: B.M.S.
 DESIGNED BY: T.J.D.
 CHECKED BY:
 DATE: 9-21-2018

PORT COVER & FLANGE DETAILS

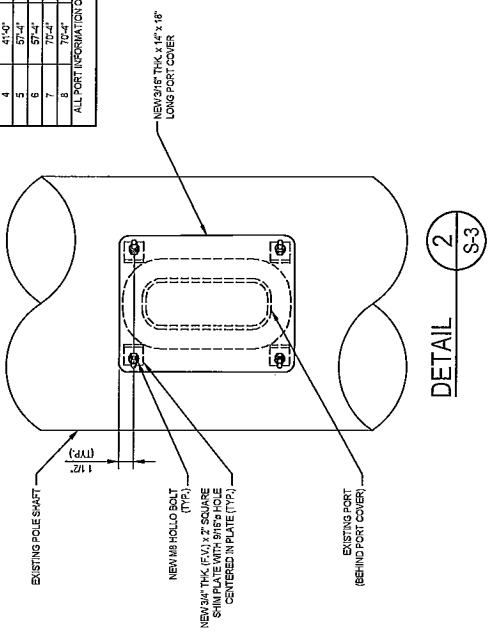
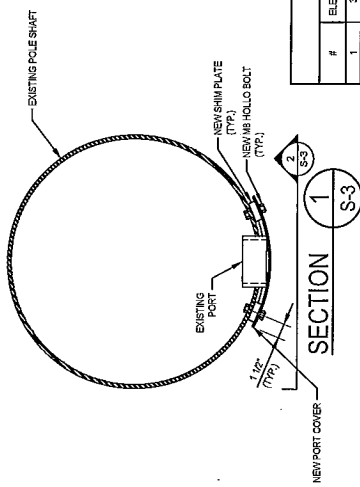
S-3



PORT INFORMATION

#	ELEVATION	WIDTH	HEIGHT	PROJECTION	DIRECTION
1	38'-0"	5 1/8"	11 1/4"	1/2"	SW
2	38'-0"	5 1/8"	11 1/4"	1/2"	NE
3	41'-0"	5 1/8"	11 1/4"	1/2"	SW
4	41'-0"	5 1/8"	11 1/4"	1/2"	NE
5	57'-4"	5 1/8"	11 1/4"	1/2"	NW
6	57'-4"	5 1/8"	11 1/4"	1/2"	SE
7	70'-4"	5 1/8"	11 1/4"	1/2"	SW
8	70'-4"	5 1/8"	11 1/4"	1/2"	NE

ALL PORT INFORMATION OBTAINED FROM THE TOP MAPPING JOB # 6171_28416, 28426 & 28432.



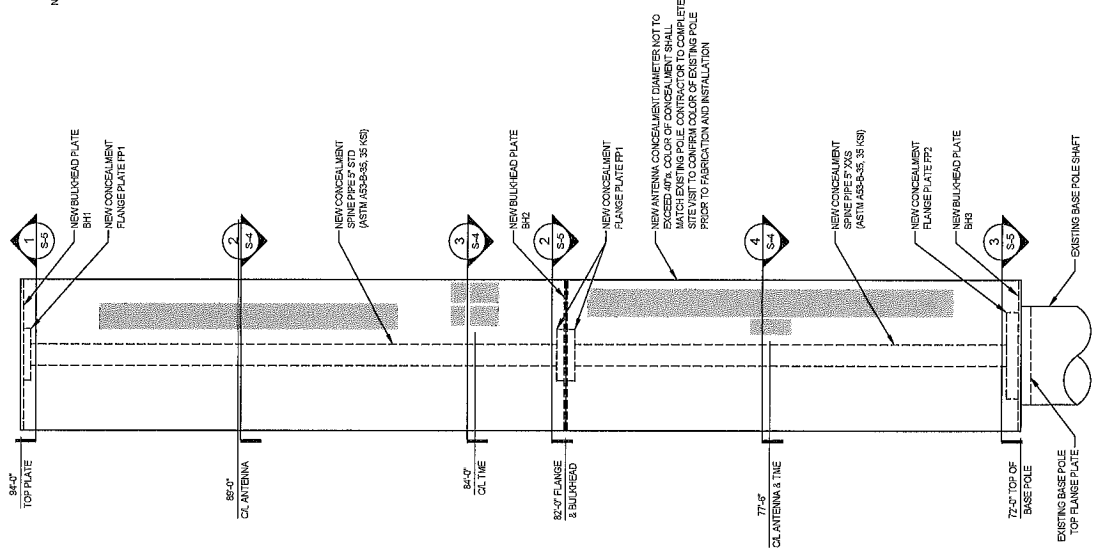
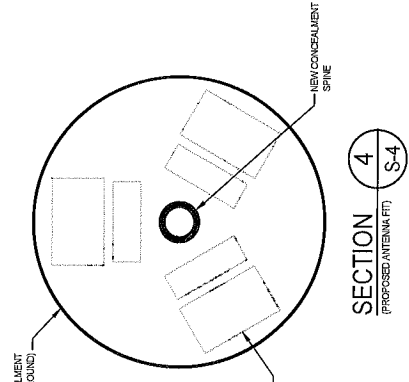
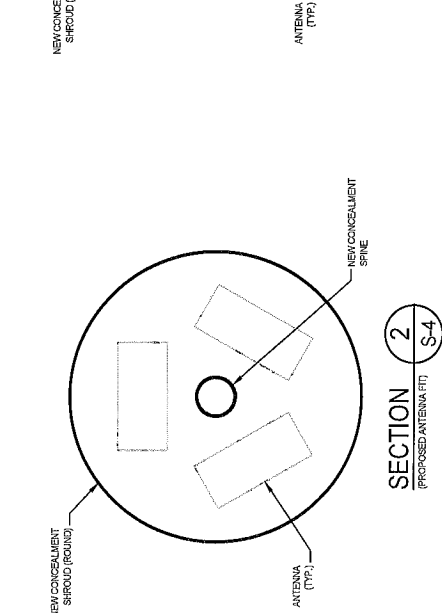
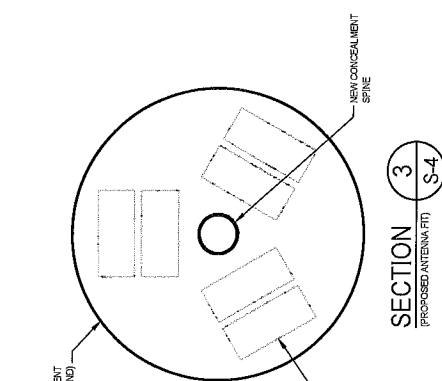
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 250 E Broad St, Ste 600 - Columbus, OH 43215
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 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12085
 PH: (518) 370-4765

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT No. 37519-2516-02-770
 DRAWN BY: B.M.S.
 T.A.D.
 DESIGNED BY:
 CHECKED BY:
 DATE: 9-3-2018

CONCEALMENT ELEVATION DETAILS
S-4



Antenna Model	Quantity	Antenna Centerline Elev., ft	Height, ft	Depth, in	Width, in	Conc. Model	Quantity	Elevation, ft	Nominal Diameter, ft	Actual Diameter, ft
80010893	3	80	78.5	6.7	14.8	11E-SHA	13	82	1.58"	1.58"
7AAG117E-00V-1	6	84	12.48	5	11.81	11E-SHA	6	77	1.58"	1.58"
AAAX-CD-16-65-101-RE1	2	86.4	96.4	7.1	11.9	NOT COAX LAYOUT AND FIT IS THEORETICAL. ACTUAL LAYOUT AND FIT MAY VARY PENDING EXISTING CONDITIONS.				
DTMA-892813V-01-2A	2	77.5	10.63	3.28	11.02					
SEN-11-105455	1		96.4	7.1	11.9					
DTMA-892813V-01-2A	1		10.63	3.78	11.02					

NOTE: ALL ANTENNA DIMENSIONS HAVE BEEN PROVIDED BY CROWN CASTLE. A 1" MARGIN BETWEEN THE SPINE AND ANTENNA HAS BEEN ASSUMED.

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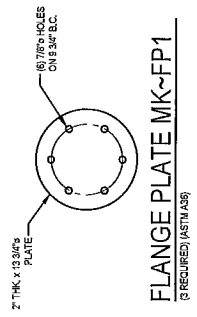
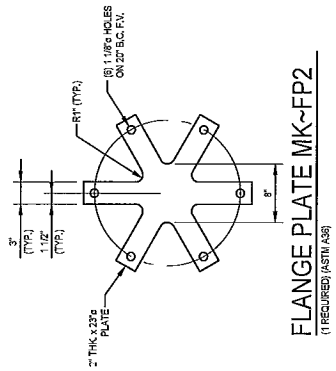
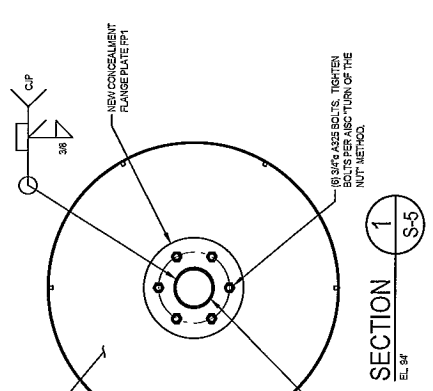
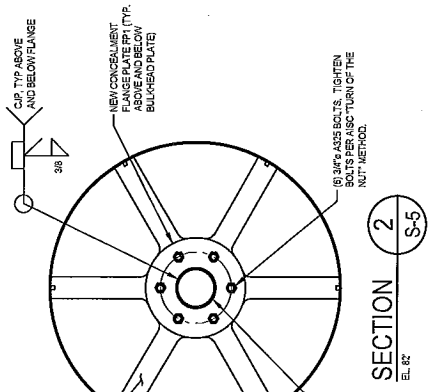
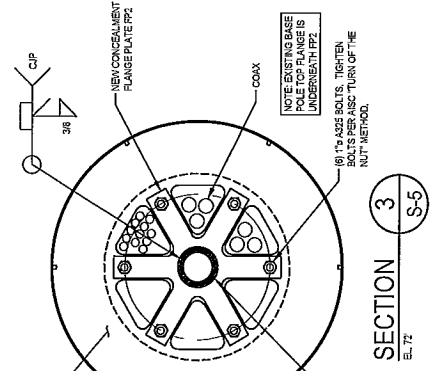
PAUL J. FORD & COMPANY
 250 E Broad St., Ste 600 Columbus, OH 43215
 Phone 614.221.6979 www.paulford.com
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 13855
 PH: (659) 370-4166

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT No. 37816-251606.770
 DRAWN BY: B.M.S.
 DESIGNED BY: T.J.D.
 CHECKED BY:
 DATE: 9-3-2016

CONCEALMENT FLANGE DETAILS

S-5



Approved by: [Signature] Paul J. Ford
 At: [Signature] Paul J. Ford
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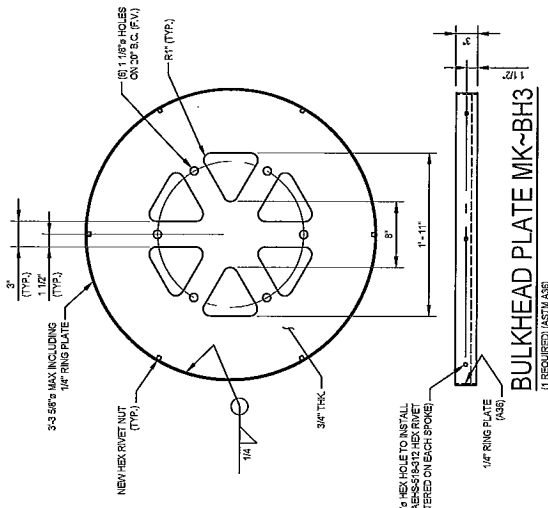
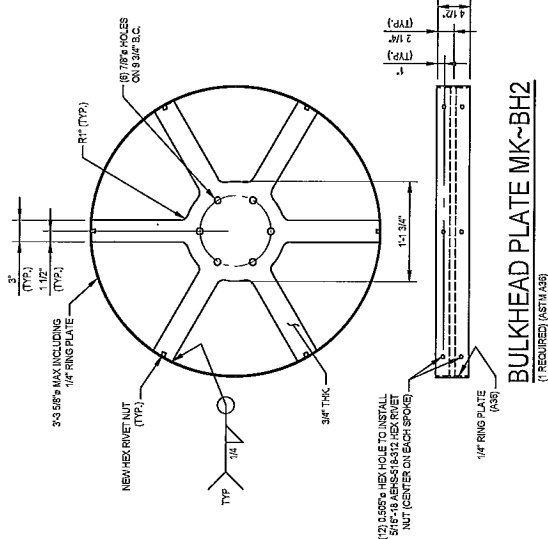
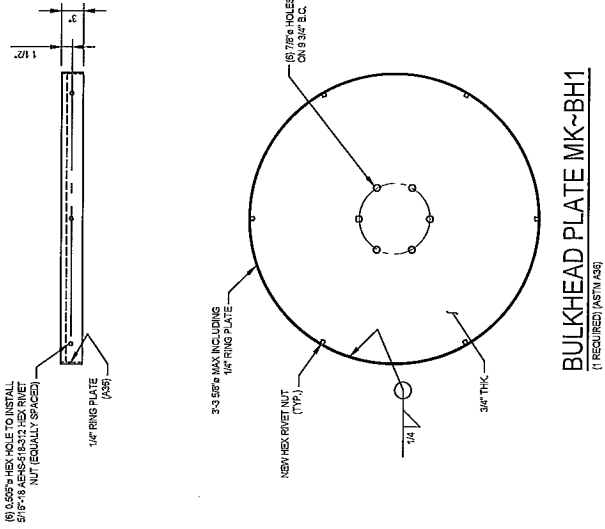
CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12065
 PH: (518) 370-4666

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWING INDUSTRIAL SOUTHWING, CONNECTICUT

PROJECT No: 37916-2516.006.7700
 DRAWN BY: B.M.S.
 DESIGNED BY: T.A.D.
 CHECKED BY:
 DATE: 5/21/2016

CONCEALMENT BULKHEAD DETAILS

S-6



MODIFICATION OF AN EXISTING 72' MONOPOLE STEALTH CING-20806W-02 BU #821898; SOUTHINGTON INDUSTRIAL

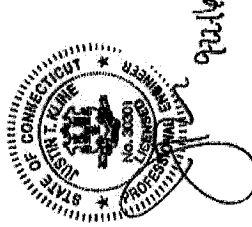
500 QUEEN ST
SOUTHINGTON, CONNECTICUT 06489
HARTFORD COUNTY
LAT: 41° 37' 48.54"; LONG: -72° 52' 29.98"
APP: 357137 REV. 11; WO: 1301247

PROJECT CONTACTS
STRUCTURE OWNER:
CROWN CASTLE
MOD PH: JAMES DONAHUE AT
JAMES.DONAHUE.VENDOR@CROWNCastle.COM
PH: (781) 774-1111
MOD CM: JASON D'AMICO AT JASON.DAMICO@CROWNCastle.COM
PH: (860) 208-0104
ENGINEER OF RECORD:
P.J.FORD@P.JFORD.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
REMOVAL OF EXISTING CONCEALMENT BULKHEADS & SHROUDS
INSTALLATION OF NEW CONCEALMENT SPINE, BULKHEADS & SHROUDS
PAINT MODIFICATIONS TO MATCH EXISTING POLE
INSTALL MISSING PORT COVERS
REPLACE INSTALLED FLANGE BOLT
INSTALL CONCEALMENT REINFORCING SOLUTIONS PER CROWN CASTLE
DOC OPS-PRC-10127

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CONNECTICUT BUILDING CODE
ULTIMATE WIND SPEED (3-SECOND GUST)	125 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	97 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	C
Kz	1.0

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
T-2	MI CHECKLIST
S-1	GENERAL NOTES
S-2	MONOPOLE PROFILE
S-3	PORT COVER & FLANGE DETAILS
S-4	CONCEALMENT ELEVATION DETAILS
S-5	CONCEALMENT FLANGE DETAILS
S-6	CONCEALMENT BULKHEAD DETAILS



THE ASSOCIATED FALLING SA WO NUMBER FOR THIS PROJECT IS: 1274788
ATTENTION: ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (860) 788-7011.

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250 E BROAD ST, S10 600-COLUMBUS, OH 43216
Phone 614.227.6879
www.pauljford.com

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 13068
PH: (865) 310-4758

MODIFICATION OF AN EXISTING 72' MONOPOLE
BU #821898; SOUTHINGTON INDUSTRIAL
SOUTHINGTON, CONNECTICUT

PROJECT NO: 2014-0516-001-0780
DRAWN BY: GALS
DESIGNED BY: T.J.D.
CHECKED BY: [Signature]
DATE: 5/24/2014

TITLE SHEET
T-1

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 250 E Broad St, Ste 600
 Hartford, CT 06103
 Phone 814.221.6878
 www.pauljford.com

CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101
 CLIFTON PARK, NY 12043
 PH: (518) 374-4769

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWING INDUSTRIAL
 SOUTHWING, CONNECTICUT

PROJECT NO: 201808000000
 DRAWN BY: EALS
 DESIGNED BY: T.J.D.
 CHECKED BY: [Signature]
 DATE: 8/20/18

MONOPOLE PROFILE

S-2

SHAFT SECTION DATA

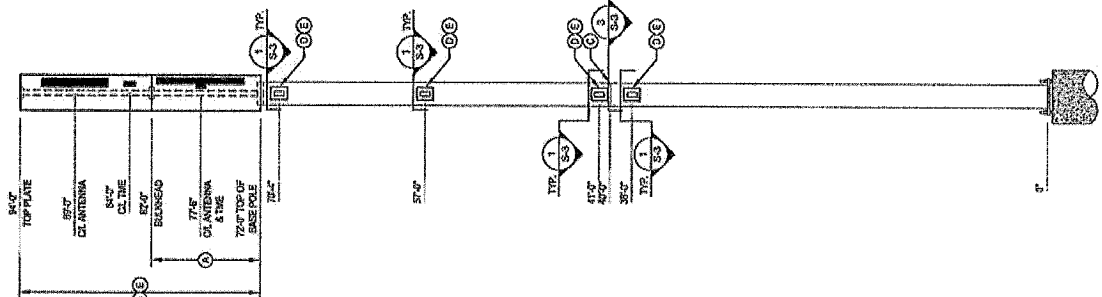
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPICE (IN)	DIMETERS ACROSS FLATS	POLE GRADE (IN)	POLE SHAPE
				@ TOP @ BOTTOM	(IN)	ROUND
1	36.00	0.5000	20.000	26.000	26.000	SS
2	40.00	0.5125	20.000	26.000	26.000	SS

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

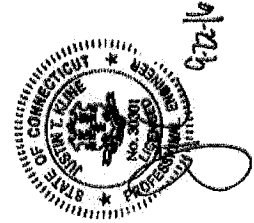
TOWER MODIFICATION SCHEDULE

ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
72' TO 84'	REMOVE EXISTING CONCEALMENT SPACE AND SPRINGS	S-2
72' TO 94'	INSTALL NEW CONCEALMENT SPRING, BEARINGS AND SHROUDS	S-4 TO S-6
47'	REPLACE EXISTING FLANGE BOLT	S-3
36'-4", 37'-4", 37'-4"	INSTALL MISSING POINT COVERS	S-3
36'-4", 37'-4", 37'-4", 70'-4", 72' TO 84'	PAINT MODIFICATIONS TO MATCH EXISTING POLE	S-2
72' TO 84'	INSTALL CONCEALMENT REINFORCING SOLUTION PER CROWN CASTLE DCL-CP-RC-SHEET	S-4 TO S-6

- EXISTING CONCEALMENT TO BE REMOVED AND REPLACED WITH THE NEW CONCEALMENT.
- NEW CONCEALMENT IS TO BE BOLTED TO TOP FLANGE OF EXISTING BASE POLE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO FABRICATION AND INSTALLATION.
- CONTRACTOR SHALL SEND PAUL J. FORD & COMPANY THE FABRICATION DRAWINGS FOR APPROVAL PRIOR TO MANUFACTURING.
- CONTRACTOR TO COORDINATE EQUIPMENT SHUT DOWN AND CONCEALMENT REMOVAL WITH CROWN CASTLE PROJECT PM AND CARRIERS. CONTRACTOR TO PROVIDE SCHEDULE THAT MINIMIZES DOWN TIME FOR CUSTOMER SYSTEMS. TEMPORARY POLES OR COWS MAY BE REQUIRED DURING THE INSTALLATION OF THE NEW CONCEALMENT AND MODIFICATIONS.



POLE ELEVATION 1 S-2



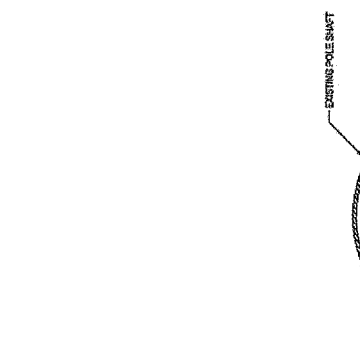
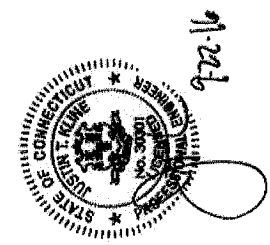
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 250 E Broad St., Ste 600, Columbus, OH 43216
 www.pauljford.com
 Phone 614.221.8979
CROWN CASTLE
 3 CONGRATIA PARK DRIVE, SUITE 101, CLAYTON PARK, NY 12555
 PH: (845) 370-4768

MODIFICATION OF AN EXISTING 72" MONOPOLE
 BU #821898, SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT No: 2715-010-0101702
 DRAWN BY: B.M.S.
 DESIGNED BY: T.L.D.
 CHECKED BY: [Signature]
 DATE: 03/10/16

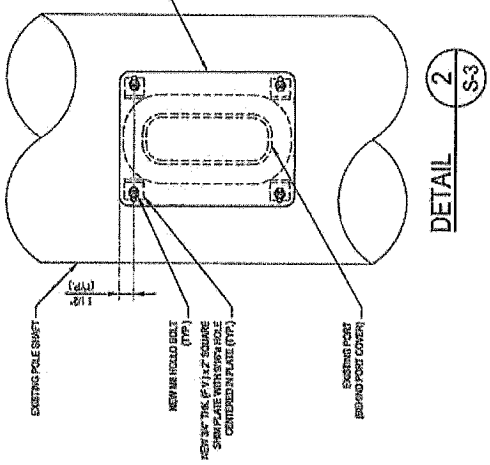
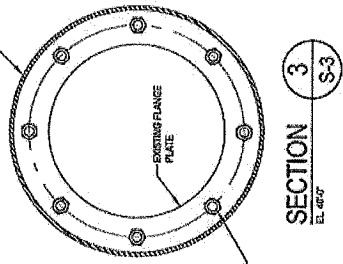
PORT COVER & FLANGE DETAILS
S-3



PORT INFORMATION

#	ELEVATION	WIDTH	HEIGHT	PROJECTION	DIRECTION
1	28'-0"	5'-0"	11'-0"	5/2"	SW
2	28'-0"	5'-0"	11'-0"	5/2"	NE
3	41'-0"	5'-0"	11'-0"	5/2"	SW
4	41'-0"	5'-0"	11'-0"	5/2"	NE
5	54'-0"	5'-0"	11'-0"	5/2"	SW
6	54'-0"	5'-0"	11'-0"	5/2"	NE
7	70'-0"	5'-0"	11'-0"	5/2"	SW
8	70'-0"	5'-0"	11'-0"	5/2"	NE

ALL PORT INFORMATION OBTAINED FROM THE TSP AMPERING, JOB #821, 2/16/15.
 DATE: 02-18-2015.



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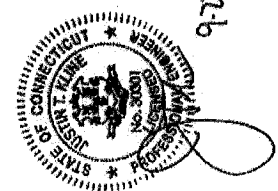
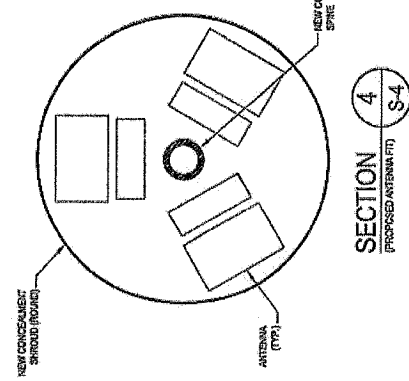
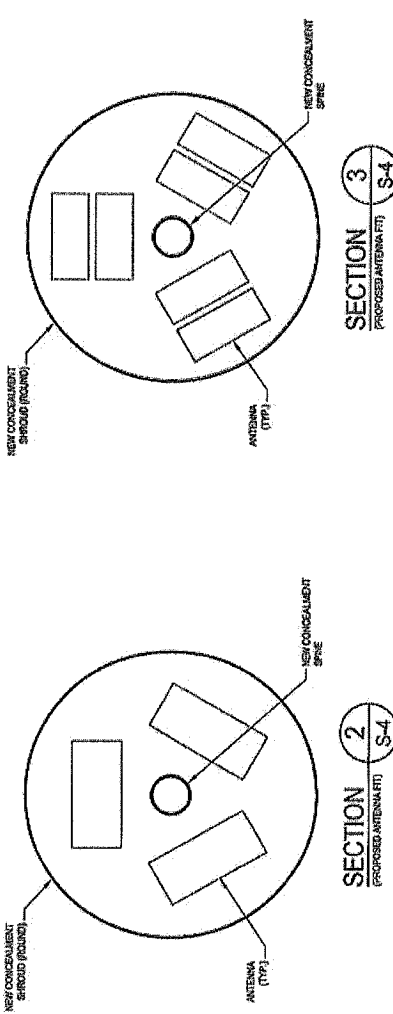
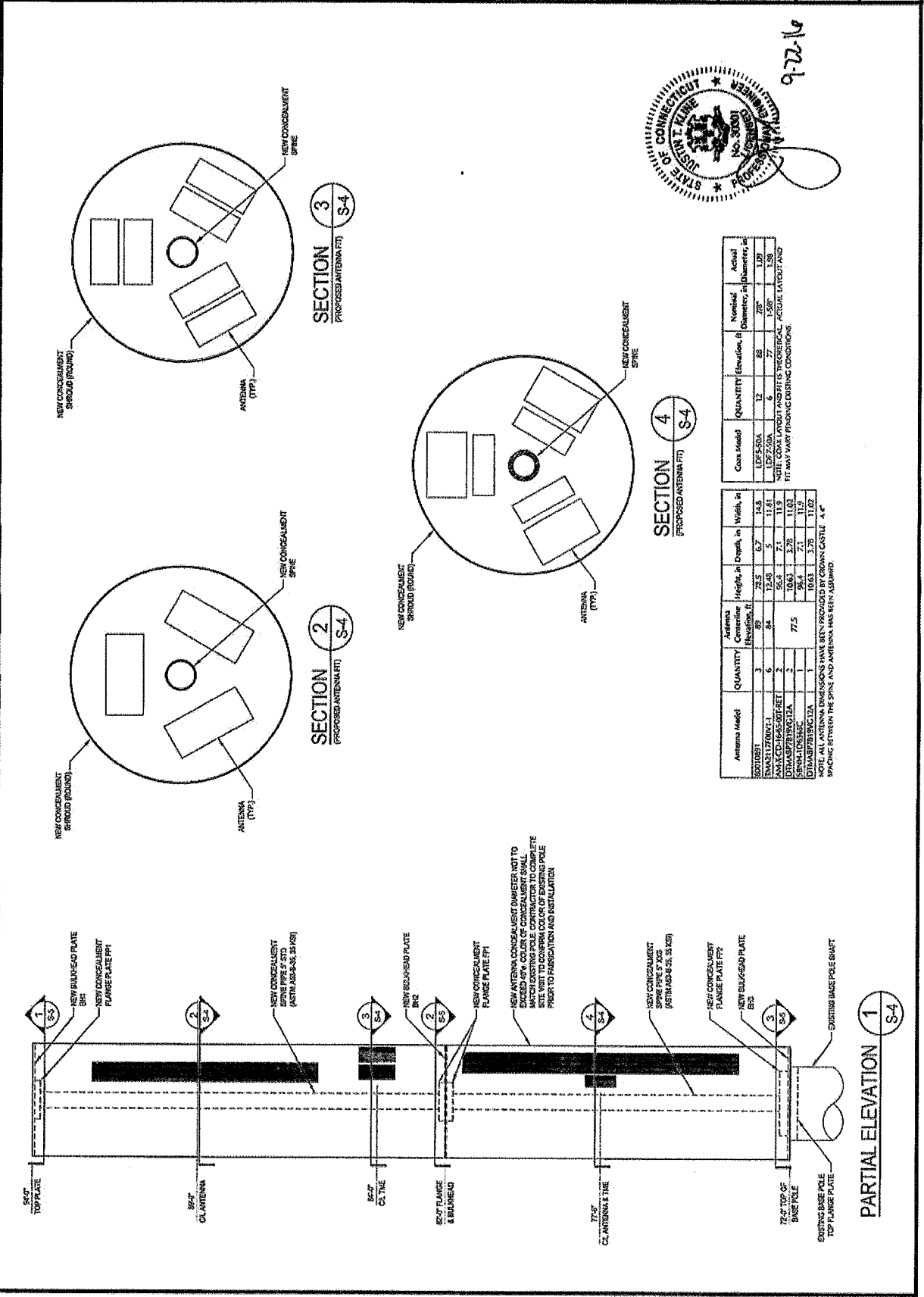
CROWN CASTLE
 A CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12068
 PH: (518) 370-4769

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898: SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT No: 2014-201503770
 DRAWN BY: B.M.S.
 DESIGNED BY: L.A.C.
 CHECKED BY: B.S.10116
 DATE: 9-22-16

CONCEALMENT ELEVATION DETAILS

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Antenna Model	QUANTITY	Antenna Configuration Height, ft	Height, in	Depth, in	Width, in	Coax Model	QUANTITY	Elevation, ft	Nominal Diameter, in	Actual Diameter, in
80010081	3	85	73.5	6.7	14.8	LDPE-50A	12	88	7.875	1.00
3MARS1700MKT1	6	84	12.48	5	11.61	LDPE-50A	6	77	1.588	1.58
MAX-CD-1645-50T-RET	3		56.5	7.1	11.9					
DIMAS-SPR-300-22A	3		106.3	3.28	11.03					
UTMA-167-300-22A	1		106.3	3.18	11.2					
			106.3	3.18	11.2					

NOTE: ALL ANTENNA DIMENSIONS HAVE BEEN PROVIDED BY CROWN CASTLE. ALL SPACING BETWEEN THE SPINE AND ANTENNA HAS BEEN ASSUMED.

PARTIAL ELEVATION 1

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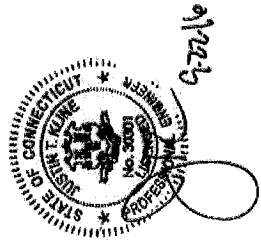
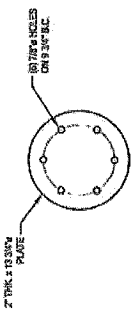
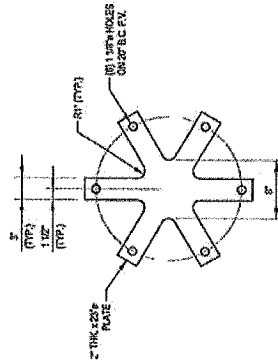
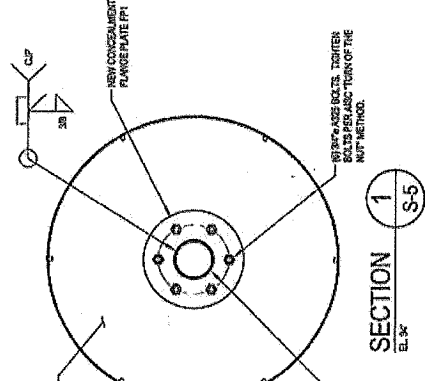
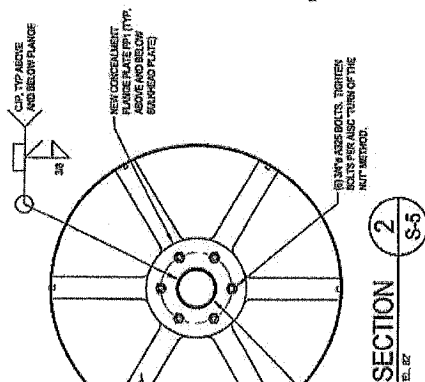
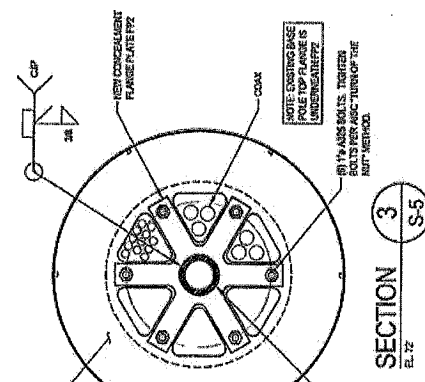
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PJF PAUL J. FORD & COMPANY
 250 E Broad St., Ste 600, Collins, OH 43218
 Phone 614.221.6879
 www.pauljford.com
CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 12065
 PH: (518) 378-4766

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT NO:	307161802007700
DRAWN BY:	BIMS
CHECKED BY:	T.J.D.
DATE:	5/20/15

CONCEALMENT FLANGE DETAILS
S-5



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PJF PAUL J. FORD & COMPANY
 250 E Broad St, Ste 600 Columbus, OH 43215
 Phone 614.221.0879 www.pauljford.com
CROWN CASTLE
 3 CORPORATE PARK DRIVE, SUITE 101, CLIFTON PARK, NY 13065
 P# (485) 316-4166

MODIFICATION OF AN EXISTING 72' MONOPOLE
 BU #821898; SOUTHWINGTON INDUSTRIAL SOUTHWINGTON, CONNECTICUT

PROJECT NO: S216-BH-005770
 DRAWN BY: B.M.S.
 DESIGNED BY: T.J.D.
 CHECKED BY: [Signature]
 DATE: 3/21/2016

CONCEALMENT
 BULKHEAD
 DETAILS

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