Robinson+Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts

November 27, 2018

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-110-170210 – Cellco Partnership d/b/a Verizon Wireless**
21 East Main Street (a/k/a 1 Central Square), Plainville, Connecticut

Dear Ms. Bachman:

On March 6, 2017, the Siting Council acknowledged receipt of the above-referenced notice of intent to modify the existing Cellco Partnership d/b/a Verizon Wireless ("Cellco") telecommunications facility at 21 East Main Street in Plainville, Connecticut. These modifications involved the replacement of antennas and remote radio heads.

As a condition of the approval, Cellco was required to provide the Council with a letter stating that it had complied with the recommendations made in the Hudson Design Group (HDG) Structural Analysis Report dated January 16, 2017 (the "January 16, 2017 Report"), a copy of which was attached to the EM-VER-110-170210 filing. The January 16, 2017 Report, however, assumed that certain tower modifications described in a Centek Engineering Structural Analysis Report dated April 16, 2015 (the "Centek Report") were completed. The Centek Report was attached to a prior Cellco exempt modification filing in 2015 (EM-VER-110-150609).

In preparation for the construction of the modifications approved in EM-VER-110-170210, HDG discovered that the structural modifications described in the 2015 Centek Report had not been completed. After learning this, Cellco asked HDG to re-run its structural analysis report for the same EM-VER-110-170210 improvements. The new HDG Report, dated May 16, 2017, determined that certain structural modifications to the tower would be required to accommodate Cellco's proposed modifications. A copy of the May 16, 2017 Report (with modification drawings) is attached. Also attached is a Professional Engineer's Tower

Robinson+Cole

Modification Certification letter dated November 21, 2018, verifying that the tower modifications described in the May 16, 2017 Report were completed.

If you have any questions please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Attachment
Copy to:
Tim Parks

HUDSON
Design Group LLC

November 21, 2018

verizon

20 Alexander Drive
Wallingford, CT 06492

RE: Tower Modification Certification

Project:	Route 372 Plainville, CT 06062
Verizon Site Name:	Plainville 3 CT
Engineer:	Hudson Design Group, LLC
CSC Exempt Mod Reference No.:	EM-VER-110-170210

To Whom it May Concern:

Hudson Design Group LLC (HDG) is providing this 'Tower Modification Certification' with regard to the structural components at the above referenced project.

The following are the basis for substantiating compliance with the tower modification documents prepared by HDG:

- Review of Tower Structural Analysis prepared by HDG dated May, 16 2017.
- Review of Structural drawings prepared by HDG dated December 8, 2017.
- Field verification by HDG on July 17, 2018 of the completed modifications.

The structural analysis prepared by HDG demonstrates the monopole will not exceed 100 percent of the post construction structural rating. The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above. This certification is not a review of the adequacy or effectiveness of the modification/reinforcement.

Please feel free to contact our office should you have any questions.
Respectfully Submitted,

Hudson Design Group LLC

STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Michael Cabral
Structural Dept. Head

Daniel P. Hamm, P.E.
Principal

STRUCTURAL ANALYSIS REPORT

For

PLAINVILLE 3 CT

1 CENTRAL SQUARE
PLAINVILLE, CT

81-ft Monopole

Prepared for:

verizon

99 East River Road, 9th Floor
East Hartford, CT 06108

Dated: May 16, 2017

Prepared by:

Hudson
Design Group LLC

1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

5/16/2017

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the 81' monopole supporting the existing and proposed Verizon's antennas located at elevation 81' & 82' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of Verizon's existing and proposed antennas listed below.

Record drawings of the existing monopole prepared by Engineered Endeavors Inc., dated November 20, 2002, were available for our use. The previous structural analysis report prepared by Centek Engineering, dated April 6, 2015, was also available and obtained for our use.

CONCLUSION SUMMARY:

HDG performed structural analysis of the existing monopole with the following proposed modifications:

1. **Add (6) steel reinforcing plates to the existing monopole from El.0' to El.30' and from El.37.5' to El.47.5'.**
2. **Add (4) 2 1/4" diameter anchor Bolts.**

Based on our evaluation, we have determined that the existing monopole with proposed modifications **IS IN CONFORMANCE** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **93.7%** - (Pole section L3 from EL.30.0' to EL.37.55' Controlling).

Hudson Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
VERIZON	(3) APX75-866514 Antennas	81'	Steel Platform
VERIZON	(3) BXA-70063-4CF Antennas	82'	Steel Platform
VERIZON	DB-T1-6Z-8AB-0Z	81'	Steel Platform
VERIZON	***(6) SBNHH-1D65B Antennas***	81'	Steel Platform
VERIZON	***(3) RRH 2X60-700U***	81'	Steel Platform
VERIZON	***(3) RRH 2X60 PCS***	81'	Steel Platform
VERIZON	***(3) RRH 2X90 AWS***	81'	Steel Platform
VERIZON	***DB-T1-6Z-8AB-0Z***	81'	Steel Platform
	20' Dipole	62.5'	Steel Platform
	(2) 4' Omni	62.5'	Steel Platform
	10' Omni	62.5'	Steel Platform
	(3) 10' Dipole	42.5'	Steel Platform
	(2) 3' Yagi	42.5'	Steel Platform
	10' Omni	42.5'	Steel Platform

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(12) 1 1/4" Cables	81'	Inside Monopole
VERIZON	(1) Fiber Cable	81'	Inside Monopole
VERIZON	***(1) Fiber Cable***	81'	Inside Monopole

Proposed VERIZON Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	90.3 %	47.55 – 81	PASS	
Pole Section-L2	77.6 %	37.55 – 47.55	PASS	
Pole Section-L3	**93.7 %**	30 – 37.55	PASS	**Controlling**
Pole Section-L4	89.1 %	0 – 30	PASS	

Hudson Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Hartford
   Wind Load: 105 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 81' & 82'

Calculations and referenced documents are attached

ASSUMPTIONS:

1. The monopole dimensions, member sizes and material strength are as indicated in the record drawings of the monopole prepared by Engineered Endeavors Inc., dated November 20, 2002.

2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Centek Engineering, dated April 6, 2015. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

6. The foundation of the monopole was not checked due to lack of information. As-built foundation drawings and geotechnical report would be required to determine whether the foundation is capable of supporting the proposed loadings.

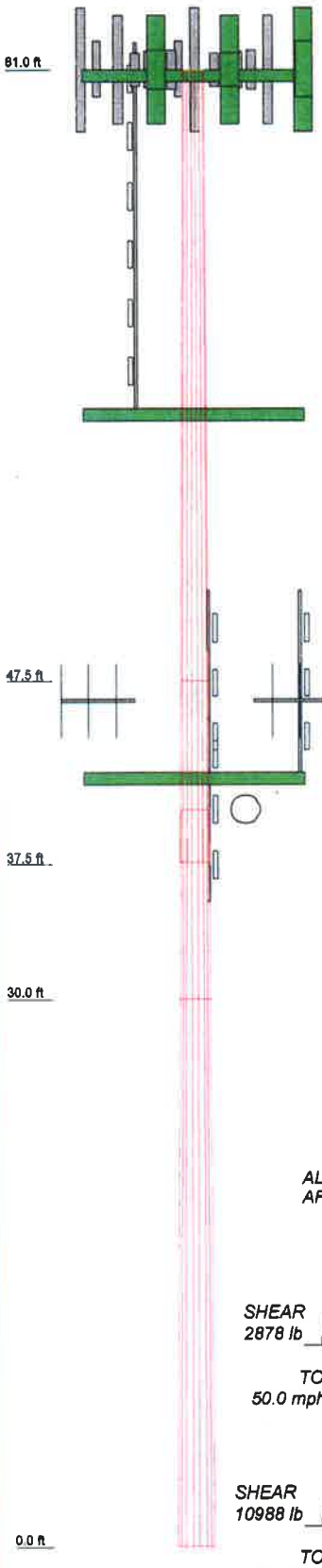
Hudson Design Group LLC

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs and distribution box be mounted on the existing steel platform supported by the monopole.

Hudson Design Group LLC

CALCULATIONS



Section	1	2	3	4
Length (ft)	33.45	10.00	10.45	30.00
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.2500	0.2500	0.3125
Socket Length (ft)		2.90		
Top Dia (in)	13.0000	17.7500	18.2582	19.7400
Bot Dia (in)	17.7500	19.1700	19.7400	24.0000
Grade	A572-65			
Weight (lb)	1028.8	491.7	529.0	2182.8

Total Weight: 4232.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063-4CF-EDIN w/mount pipe	82	RRH2x60 PCS	81
BXA-70063-4CF-EDIN w/mount pipe	82	RRH2x60 PCS	81
BXA-70063-4CF-EDIN w/mount pipe	82	RRH2x60 PCS	81
APX75-866514 w/mount pipe	81	RRH 2X90 AWS	81
PIROD 13' Low Profile Platform (VERIZON - existing)	81	RRH 2X90 AWS	81
APX75-866514 w/mount pipe	81	RRH 2X90 AWS	81
APX75-866514 w/mount pipe	81	RFS DB-T1-6Z-8AB-0Z	81
RFS DB-T1-6Z-8AB-0Z	81	PIROD 13' Low Profile Platform	62.5
SBNHH-1D65B w/ Mount Pipe (VERIZON - proposed)	81	20' Dipole	62.5
SBNHH-1D65B w/ Mount Pipe	81	Omni 2"x4'	62.5
SBNHH-1D65B w/ Mount Pipe	81	Omni 2"x4'	62.5
SBNHH-1D65B w/ Mount Pipe	81	Omni 3"x10'	62.5
SBNHH-1D65B w/ Mount Pipe	81	PIROD 13' Low Profile Platform	42.5
SBNHH-1D65B w/ Mount Pipe	81	10' Dipole	42.5
RRH2x60-700	81	10' Dipole	42.5
RRH2x60-700	81	10' Dipole	42.5
RRH2x60-700	81	3' Yagi antenna	42.5
		Omni 3"x10'	42.5
		3' Yagi antenna	42.5

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 93.7%

ALL REACTIONS ARE FACTORED

AXIAL 30093 lb

SHEAR 2878 lb *MOMENT 220141 lb-ft*

TORQUE 1082 lb-ft
50.0 mph WIND - 1.0000 in ICE

AXIAL 12898 lb

SHEAR 10988 lb *MOMENT 747406 lb-ft*

TORQUE 3422 lb-ft
REACTIONS - 105.0 mph WIND

Hudson Design Group LLC
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North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: *PLAINVILLE 3 CT*		
Project: *81 ft Monopole*		
Client: VERIZON	Drawn by: kw	App'd:
Code: TIA-222-G	Date: 05/16/17	Scale: NTS
Path:		Dwg No. E-1

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Job	Page
PLAINVILLE 3 CT	1 of 8
Project	**Date**
81 ft Monopole	15:13:15 05/16/17
Client	**Designed by**
VERIZON	kw

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.
Basic wind speed of 105.0 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56.0 pcf.
A wind speed of 50.0 mph is used in combination with ice.
Temperature drop of 50.0 °F.
Deflections calculated using a wind speed of 60.0 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.

Tapered Pole Section Geometry

Section	*Elevation* ft	*Section Length* ft	*Splice Length* ft	*Number of Sides*	*Top Diameter* in	*Bottom Diameter* in	*Wall Thickness* in	*Bend Radius* in	*Pole Grade*
L1	81.00-47.55	33.45	0.00	18	13.0000	17.7500	0.1875	0.7500	A572-65 (65 ksi)
L2	47.55-37.55	10.00	2.90	18	17.7500	19.1700	0.2500	1.0000	A572-65 (65 ksi)
L3	37.55-30.00	10.45	0.00	18	18.2582	19.7400	0.2500	1.0000	A572-65 (65 ksi)
L4	30.00-0.00	30.00		18	19.7400	24.0000	0.3125	1.2500	A572-65 (65 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
1 1/4 (VERIZON - existing)	A	No	Inside Pole	81.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
1 5/8 Fiber Cable	A	No	Inside Pole	81.00 - 0.00	1	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
********								
1 5/8 Fiber Cable	A	No	Inside Pole	81.00 - 0.00	1	No Ice	0.00	1.04

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
(VERIZON - proposed)						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
********								
7/8	A	No	Inside Pole	62.00 - 0.00	4	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
7/8	A	No	Inside Pole	42.00 - 0.00	6	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PiROD 13' Low Profile Platform	A	None		0.0000	81.00	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1765.00
(VERIZON - existing)						1" Ice	24.50	24.50	2230.00
APX75-866514 w/mount pipe	A	From Face	3.00	0.0000	81.00	No Ice	9.95	6.61	67.20
			-6.00			1/2" Ice	10.58	7.94	138.60
			0.00			1" Ice	11.20	9.12	218.69
APX75-866514 w/mount pipe	B	From Face	3.00	0.0000	81.00	No Ice	9.95	6.61	67.20
			-6.00			1/2" Ice	10.58	7.94	138.60
			0.00			1" Ice	11.20	9.12	218.69
APX75-866514 w/mount pipe	C	From Face	3.00	0.0000	81.00	No Ice	9.95	6.61	67.20
			-6.00			1/2" Ice	10.58	7.94	138.60
			0.00			1" Ice	11.20	9.12	218.69
BXA-70063-4CF-EDIN w/mount pipe	A	From Face	3.00	0.0000	82.00	No Ice	5.41	3.70	28.25
			6.00			1/2" Ice	5.86	4.32	70.71
			0.00			1" Ice	6.32	4.94	118.98
BXA-70063-4CF-EDIN w/mount pipe	B	From Face	3.00	0.0000	82.00	No Ice	5.41	3.70	28.25
			6.00			1/2" Ice	5.86	4.32	70.71
			0.00			1" Ice	6.32	4.94	118.98
BXA-70063-4CF-EDIN w/mount pipe	C	From Face	3.00	0.0000	82.00	No Ice	5.41	3.70	28.25
			6.00			1/2" Ice	5.86	4.32	70.71
			0.00			1" Ice	6.32	4.94	118.98
RFS DB-T1-6Z-8AB-0Z	A	From Face	2.00	0.0000	81.00	No Ice	4.80	2.00	44.00
			0.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
**********									
SBNHH-1D65B w/ Mount Pipe	A	From Face	3.00	0.0000	81.00	No Ice	8.42	7.09	66.55
			-2.00			1/2" Ice	8.98	8.27	135.68
(VERIZON - proposed)			0.00			1" Ice	9.50	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	A	From Face	3.00	0.0000	81.00	No Ice	8.42	7.09	66.55
			2.00			1/2" Ice	8.98	8.27	135.68
			0.00			1" Ice	9.50	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	B	From Face	3.00	0.0000	81.00	No Ice	8.42	7.09	66.55
			-2.00			1/2" Ice	8.98	8.27	135.68
			0.00			1" Ice	9.50	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	B	From Face	3.00	0.0000	81.00	No Ice	8.42	7.09	66.55
			2.00			1/2" Ice	8.98	8.27	135.68
			0.00			1" Ice	9.50	9.17	212.84
SBNHH-1D65B w/ Mount	C	From Face	3.00	0.0000	81.00	No Ice	8.42	7.09	66.55

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Job	Page
PLAINVILLE 3 CT	3 of 8
Project	**Date**
81 ft Monopole	15:13:15 05/16/17
Client	**Designed by**
VERIZON	kw

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 lb
Pipe			-2.00			1/2" Ice	8.98	8.27	135.68
			0.00			1" Ice	9.50	9.17	212.84
SBNHH-1D65B w/ Mount Pipe	C	From Face	3.00	0.0000	81.00	No Ice	8.42	7.09	66.55
			2.00			1/2" Ice	8.98	8.27	135.68
			0.00			1" Ice	9.50	9.17	212.84
RRH2x60-700	A	From Face	2.00	0.0000	81.00	No Ice	3.50	1.82	60.00
			-6.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
RRH2x60-700	B	From Face	2.00	0.0000	81.00	No Ice	3.50	1.82	60.00
			-6.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
RRH2x60-700	C	From Face	2.00	0.0000	81.00	No Ice	3.50	1.82	60.00
			-6.00			1/2" Ice	3.76	2.05	82.72
			0.00			1" Ice	4.03	2.29	109.06
RRH2x60 PCS	A	From Face	2.00	0.0000	81.00	No Ice	2.15	1.35	55.00
			-2.00			1/2" Ice	2.34	1.50	72.75
			0.00			1" Ice	2.54	1.67	93.35
RRH2x60 PCS	B	From Face	2.00	0.0000	81.00	No Ice	2.15	1.35	55.00
			-2.00			1/2" Ice	2.34	1.50	72.75
			0.00			1" Ice	2.54	1.67	93.35
RRH2x60 PCS	C	From Face	2.00	0.0000	81.00	No Ice	2.15	1.35	55.00
			-2.00			1/2" Ice	2.34	1.50	72.75
			0.00			1" Ice	2.54	1.67	93.35
RRH 2X90 AWS	A	From Face	2.00	0.0000	81.00	No Ice	2.66	1.59	64.00
			2.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
RRH 2X90 AWS	B	From Face	2.00	0.0000	81.00	No Ice	2.66	1.59	64.00
			2.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
RRH 2X90 AWS	C	From Face	2.00	0.0000	81.00	No Ice	2.66	1.59	64.00
			2.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
RFS DB-T1-6Z-8AB-0Z	B	From Face	2.00	0.0000	81.00	No Ice	4.80	2.00	44.00
			0.00			1/2" Ice	5.07	2.19	80.13
			0.00			1" Ice	5.35	2.39	120.22
**********									
PiROD 13' Low Profile Platform	A	None		0.0000	62.50	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1765.00
						1" Ice	24.50	24.50	2230.00
20' Dipole	A	From Face	3.00	0.0000	62.50	No Ice	8.00	8.00	60.00
			0.00			1/2" Ice	10.04	10.04	115.61
			10.00			1" Ice	12.10	12.10	184.01
Omni 2"x4'	A	From Face	3.00	0.0000	62.50	No Ice	0.79	0.79	15.00
			0.00			1/2" Ice	1.03	1.03	21.34
			3.00			1" Ice	1.28	1.28	30.48
Omni 2"x4'	A	From Face	3.00	0.0000	62.50	No Ice	0.79	0.79	15.00
			0.00			1/2" Ice	1.03	1.03	21.34
			3.00			1" Ice	1.28	1.28	30.48
Omni 3"x10'	B	From Face	3.00	0.0000	62.50	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.03	4.03	41.79
			5.00			1" Ice	5.03	5.03	70.14
********									
PiROD 13' Low Profile Platform	A	None		0.0000	42.50	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1765.00
						1" Ice	24.50	24.50	2230.00
10' Dipole	B	From Face	3.00	0.0000	42.50	No Ice	4.00	4.00	25.00
			5.00			1/2" Ice	4.97	4.97	53.13

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Job	Page
PLAINVILLE 3 CT	4 of 8
Project	**Date**
81 ft Monopole	15:13:15 05/16/17
Client	**Designed by**
VERIZON	kw

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral ft / Vert ft*	*Azimuth Adjustment °*	*Placement ft*		*C_AA_A Front ft^2*	*C_AA_A Side ft^2*	*Weight lb*
			5.00			1" Ice	5.57	5.57	87.92
10' Dipole	B	From Face	3.00	0.0000	42.50	No Ice	4.00	4.00	25.00
			-5.00			1/2" Ice	4.97	4.97	53.13
			5.00			1" Ice	5.57	5.57	87.92
10' Dipole	B	From Face	3.00	0.0000	42.50	No Ice	4.00	4.00	25.00
			-5.00			1/2" Ice	4.97	4.97	53.13
			-2.00			1" Ice	5.57	5.57	87.92
3' Yagi antenna	B	From Face	3.00	0.0000	42.50	No Ice	0.70	0.35	10.00
			0.00			1/2" Ice	0.95	0.48	36.35
			4.00			1" Ice	1.21	0.63	66.52
Omni 3"x10'	A	From Face	3.00	0.0000	42.50	No Ice	3.00	3.00	20.00
			5.00			1/2" Ice	4.03	4.03	41.79
			8.00			1" Ice	5.03	5.03	70.14
3' Yagi antenna	A	From Face	3.00	0.0000	42.50	No Ice	0.70	0.35	10.00
			0.00			1/2" Ice	0.95	0.48	36.35
			4.00			1" Ice	1.21	0.63	66.52

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

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Comb. No.	*Description*
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Pole	Max. Vert	27	30092.97	0.00	2853.84
	Max. H_x	21	9673.15	10987.55	0.00
	Max. H_z	2	12897.54	-0.00	10851.49
	Max. M_x	2	737116.67	-0.00	10851.49
	Max. M_z	8	747254.31	-10987.55	0.00
	Max. Torsion	8	3422.37	-10987.55	0.00
	Min. Vert	19	9673.15	9515.50	-5425.75
	Min. H_x	9	9673.15	-10987.55	0.00
	Min. H_z	14	12897.54	-0.00	-10851.49
	Min. M_x	14	-735238.58	-0.00	-10851.49
	Min. M_z	20	-747405.42	10987.55	0.00
	Min. Torsion	20	-3422.28	10987.55	0.00

Tower Mast Reaction Summary

Load Combination	*Vertical lb*	*Shear$_x$ lb*	*Shear$_z$ lb*	*Overturning Moment, M_x lb-ft*	*Overturning Moment, M_z lb-ft*	*Torque lb-ft*
Dead Only	10747.95	-0.00	-0.00	-770.40	63.25	0.01
1.2 Dead+1.6 Wind 0 deg - No Ice	12897.54	0.00	-10851.49	-737116.67	72.71	121.41
0.9 Dead+1.6 Wind 0 deg - No Ice	9673.15	0.00	-10851.49	-724702.01	51.90	123.25
1.2 Dead+1.6 Wind 30 deg - No Ice	12897.54	5493.78	-9397.67	-638447.03	-373660.91	-1609.76
0.9 Dead+1.6 Wind 30 deg - No Ice	9673.15	5493.78	-9397.67	-627667.40	-367493.94	-1598.37
1.2 Dead+1.6 Wind 60 deg - No Ice	12897.54	9515.50	-5425.75	-368941.86	-647180.83	-2906.40
0.9 Dead+1.6 Wind 60 deg - No	9673.15	9515.50	-5425.75	-362623.30	-636492.92	-2888.56

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Job	Page
PLAINVILLE 3 CT	6 of 8
Project	**Date**
81 ft Monopole	15:13:15 05/16/17
Client	**Designed by**
VERIZON	kw

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice						
1.2 Dead+1.6 Wind 90 deg - No Ice	12897.54	10987.55	-0.00	-888.66	-747254.31	-3422.37
0.9 Dead+1.6 Wind 90 deg - No Ice	9673.15	10987.55	-0.00	-651.95	-734919.06	-3402.92
1.2 Dead+1.6 Wind 120 deg - No Ice	12897.54	9515.50	5425.75	367139.37	-647138.34	-3022.53
0.9 Dead+1.6 Wind 120 deg - No Ice	9673.15	9515.50	5425.75	361301.37	-636462.45	-3006.60
1.2 Dead+1.6 Wind 150 deg - No Ice	12897.54	5493.78	9397.67	636594.15	-373618.39	-1814.68
0.9 Dead+1.6 Wind 150 deg - No Ice	9673.15	5493.78	9397.67	626309.35	-367463.44	-1806.52
1.2 Dead+1.6 Wind 180 deg - No Ice	12897.54	0.00	10851.49	735238.58	72.74	-121.33
0.9 Dead+1.6 Wind 180 deg - No Ice	9673.15	0.00	10851.49	723325.87	51.92	-123.20
1.2 Dead+1.6 Wind 210 deg - No Ice	12897.54	-5493.78	9397.67	636596.79	373765.26	1604.33
0.9 Dead+1.6 Wind 210 deg - No Ice	9673.15	-5493.78	9397.67	626311.25	367568.29	1592.96
1.2 Dead+1.6 Wind 240 deg - No Ice	12897.54	-9515.50	5425.75	367142.03	647288.04	2900.85
0.9 Dead+1.6 Wind 240 deg - No Ice	9673.15	-9515.50	5425.75	361303.29	636569.35	2883.09
1.2 Dead+1.6 Wind 270 deg - No Ice	12897.54	-10987.55	-0.00	-888.61	747405.42	3422.28
0.9 Dead+1.6 Wind 270 deg - No Ice	9673.15	-10987.55	-0.00	-651.93	735026.99	3402.85
1.2 Dead+1.6 Wind 300 deg - No Ice	12897.54	-9515.50	-5425.75	-368944.45	647330.52	3027.98
0.9 Dead+1.6 Wind 300 deg - No Ice	9673.15	-9515.50	-5425.75	-362625.18	636599.82	3011.99
1.2 Dead+1.6 Wind 330 deg - No Ice	12897.54	-5493.78	-9397.67	-638449.65	373807.75	1820.16
0.9 Dead+1.6 Wind 330 deg - No Ice	9673.15	-5493.78	-9397.67	-627669.29	367598.78	1811.97
1.2 Dead+1.0 Ice+1.0 Temp	30092.97	-0.01	-0.11	-7052.85	48.32	0.46
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	30092.97	-0.00	-2853.84	-220141.30	46.76	-29.36
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	30092.97	1438.84	-2471.41	-191611.03	-107616.28	-566.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	30092.97	2492.15	-1426.87	-113607.32	-186425.50	-951.15
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	30092.97	2877.78	-0.01	-7059.01	-215243.58	-1081.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	30092.97	2492.15	1426.87	99481.57	-186415.06	-921.23
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	30092.97	1438.84	2471.41	177473.18	-107605.70	-514.43
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	30092.97	-0.00	2853.83	205999.48	47.14	30.33
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	30092.97	-1438.84	2471.41	177475.28	107701.20	567.06
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	30092.97	-2492.15	1426.87	99483.77	186512.61	951.97
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	30092.97	-2877.78	-0.01	-7058.73	215341.83	1081.90
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	30092.97	-2492.15	-1426.87	-113609.03	186522.66	922.22
1.2 Dead+1.0 Wind 330	30092.97	-1438.84	-2471.41	-191612.85	107711.11	515.45

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Job	Page
PLAINVILLE 3 CT	7 of 8
Project	**Date**
81 ft Monopole	15:13:15 05/16/17
Client	**Designed by**
VERIZON	kw

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	10747.95	0.00	-1981.48	-134339.31	64.08	20.82
Dead+Wind 30 deg - Service	10747.95	1003.16	-1716.01	-116445.54	-67737.81	-300.76
Dead+Wind 60 deg - Service	10747.95	1737.52	-990.74	-67560.47	-117373.12	-541.67
Dead+Wind 90 deg - Service	10747.95	2006.32	-0.00	-781.06	-135539.82	-637.36
Dead+Wind 120 deg - Service	10747.95	1737.53	990.74	65996.72	-117370.27	-562.27
Dead+Wind 150 deg - Service	10747.95	1003.16	1716.01	114882.98	-67737.59	-336.59
Dead+Wind 180 deg - Service	10747.95	0.00	1981.48	132774.42	64.08	-20.79
Dead+Wind 210 deg - Service	10747.95	-1003.16	1716.01	114883.06	67865.79	300.58
Dead+Wind 240 deg - Service	10747.95	-1737.53	990.74	65996.80	117498.54	541.48
Dead+Wind 270 deg - Service	10747.95	-2006.32	-0.00	-781.05	135668.15	637.37
Dead+Wind 300 deg - Service	10747.95	-1737.52	-990.74	-67560.54	117501.40	562.49
Dead+Wind 330 deg - Service	10747.95	-1003.16	-1716.01	-116445.61	67866.01	336.82

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-10747.95	0.00	0.00	10747.95	0.00	0.000%
2	0.00	-12897.54	-10851.49	-0.00	12897.54	10851.49	0.000%
3	0.00	-9673.15	-10851.49	-0.00	9673.15	10851.49	0.000%
4	5493.78	-12897.54	-9397.67	-5493.78	12897.54	9397.67	0.000%
5	5493.78	-9673.15	-9397.67	-5493.78	9673.15	9397.67	0.000%
6	9515.50	-12897.54	-5425.75	-9515.50	12897.54	5425.75	0.000%
7	9515.50	-9673.15	-5425.75	-9515.50	9673.15	5425.75	0.000%
8	10987.55	-12897.54	0.00	-10987.55	12897.54	0.00	0.000%
9	10987.55	-9673.15	0.00	-10987.55	9673.15	0.00	0.000%
10	9515.50	-12897.54	5425.75	-9515.50	12897.54	-5425.75	0.000%
11	9515.50	-9673.15	5425.75	-9515.50	9673.15	-5425.75	0.000%
12	5493.78	-12897.54	9397.67	-5493.78	12897.54	-9397.67	0.000%
13	5493.78	-9673.15	9397.67	-5493.78	9673.15	-9397.67	0.000%
14	0.00	-12897.54	10851.49	-0.00	12897.54	-10851.49	0.000%
15	0.00	-9673.15	10851.49	-0.00	9673.15	-10851.49	0.000%
16	-5493.78	-12897.54	9397.67	5493.78	12897.54	-9397.67	0.000%
17	-5493.78	-9673.15	9397.67	5493.78	9673.15	-9397.67	0.000%
18	-9515.50	-12897.54	5425.75	9515.50	12897.54	-5425.75	0.000%
19	-9515.50	-9673.15	5425.75	9515.50	9673.15	-5425.75	0.000%
20	-10987.55	-12897.54	0.00	10987.55	12897.54	0.00	0.000%
21	-10987.55	-9673.15	0.00	10987.55	9673.15	0.00	0.000%
22	-9515.50	-12897.54	-5425.75	9515.50	12897.54	5425.75	0.000%
23	-9515.50	-9673.15	-5425.75	9515.50	9673.15	5425.75	0.000%
24	-5493.78	-12897.54	-9397.67	5493.78	12897.54	9397.67	0.000%
25	-5493.78	-9673.15	-9397.67	5493.78	9673.15	9397.67	0.000%
26	0.00	-30092.97	0.00	0.01	30092.97	0.11	0.000%
27	0.00	-30092.97	-2853.71	0.00	30092.97	2853.84	0.000%
28	1438.83	-30092.97	-2471.38	-1438.84	30092.97	2471.41	0.000%
29	2492.12	-30092.97	-1426.85	-2492.15	30092.97	1426.87	0.000%
30	2877.65	-30092.97	0.00	-2877.78	30092.97	0.01	0.000%
31	2492.12	-30092.97	1426.85	-2492.15	30092.97	-1426.87	0.000%
32	1438.83	-30092.97	2471.38	-1438.84	30092.97	-2471.41	0.000%
33	0.00	-30092.97	2853.71	0.00	30092.97	-2853.83	0.000%
34	-1438.83	-30092.97	2471.38	1438.84	30092.97	-2471.41	0.000%
35	-2492.12	-30092.97	1426.85	2492.15	30092.97	-1426.87	0.000%
36	-2877.65	-30092.97	0.00	2877.78	30092.97	0.01	0.000%
37	-2492.12	-30092.97	-1426.85	2492.15	30092.97	1426.87	0.000%
38	-1438.83	-30092.97	-2471.38	1438.84	30092.97	2471.41	0.000%

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Job	Page
PLAINVILLE 3 CT	8 of 8
Project	**Date**
81 ft Monopole	15:13:15 05/16/17
Client	**Designed by**
VERIZON	kw

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
39	0.00	-10747.95	-1981.48	-0.00	10747.95	1981.48	0.000%
40	1003.16	-10747.95	-1716.01	-1003.16	10747.95	1716.01	0.000%
41	1737.52	-10747.95	-990.74	-1737.52	10747.95	990.74	0.000%
42	2006.32	-10747.95	0.00	-2006.32	10747.95	0.00	0.000%
43	1737.52	-10747.95	990.74	-1737.53	10747.95	-990.74	0.000%
44	1003.16	-10747.95	1716.01	-1003.16	10747.95	-1716.01	0.000%
45	0.00	-10747.95	1981.48	-0.00	10747.95	-1981.48	0.000%
46	-1003.16	-10747.95	1716.01	1003.16	10747.95	-1716.01	0.000%
47	-1737.52	-10747.95	990.74	1737.53	10747.95	-990.74	0.000%
48	-2006.32	-10747.95	0.00	2006.32	10747.95	0.00	0.000%
49	-1737.52	-10747.95	-990.74	1737.52	10747.95	990.74	0.000%
50	-1003.16	-10747.95	-1716.01	1003.16	10747.95	1716.01	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	81 - 47.55	16.7313	48	1.8241	0.0154
L2	47.55 - 37.55	5.7076	48	1.1527	0.0103
L3	40.45 - 30	4.1240	48	0.9756	0.0088
L4	30 - 0	2.2363	48	0.7158	0.0057

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
82.00	BXA-70063-4CF-EDIN w/mount pipe	48	16.7313	1.8241	0.0154	10616
81.00	PiROD 13' Low Profile Platform	48	16.7313	1.8241	0.0154	10616
62.50	PiROD 13' Low Profile Platform	48	10.0923	1.4790	0.0128	2868
42.50	PiROD 13' Low Profile Platform	48	4.5540	1.0273	0.0093	2477

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	81 - 47.55	Pole	TP17.75x13x0.1875	1	-5554.55	776523.00	90.3	Pass
L2	47.55 - 37.55	Pole	TP19.17x17.75x0.25	2	-7793.10	1091120.00	77.6	Pass
L3	37.55 - 30	Pole	TP19.74x18.2582x0.25	3	-9010.57	1149000.00	93.7	Pass
L4	30 - 0	Pole	TP24x19.74x0.3125	4	-12879.00	1745560.00	89.1	Pass
							Summary	
						Pole (L3)	93.7	Pass
						RATING =	**93.7**	**Pass**

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#: *0*
Site Name: *Plainville 3 CT*
App #: *0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	32	in

Plate Data		
Diam:	38	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	9.52	in

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

Pole Data		
Diam:	24	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	747	ft-kips
Axial, Pu:	13	kips
Shear, Vu:	11	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Results

		Non-Rigid
Max Rod (Cu+ Vu/ń):	144.5 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	55.6% **Pass**	

Base Plate Results Flexural Check

		Non-Rigid
Base Plate Stress:	45.0 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	83.3% **Pass**	Y.L. Length: 21.17

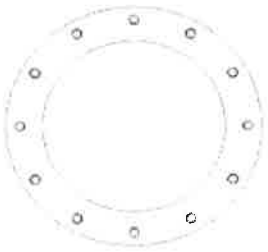
n/a

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



* 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

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE (2012 IBC, 2015 CT SUPP.), ASCE 7-10, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT. ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DIJ. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-20 AND OR HY-150 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS 1, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTION CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS[1]
REQUIRED	MATERIAL SPECIFICATIONS REPORT[2]
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
REQUIRED	PACKING SLIPS[3]
ADDITIONAL TESTING AND INSPECTIONS: FIELD VERIFY PROPOSED PLATES WITH OBSTRUCTIONS.	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
REQUIRED	HIGH STRENGTH BOLT INSPECTIONS
REQUIRED	HIGH WIND ZONE INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
REQUIRED	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE GROUT VERIFICATION
REQUIRED	PULL TEST FOR ANCHORS
REQUIRED	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
REQUIRED	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING & INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS[4]
REQUIRED	POST INSTALLED ANCHOR ROD PULL-OUT TESTING REPORT
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS: POST MODIFICATIONS, CLIMB AND INSPECTION	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CAT B 120MPH OR CAT C, D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINT. ENGINEER OF RECORD TO APPROVE.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

NOTE:
AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC.
DATED: JANUARY 16, 2017

DESIGN EXHIBIT

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	12/8/17	ADDED SPLICE DETAIL	SLY
1	12/7/17	REVISED PER COMMENTS	SLY
0	06/22/17	ISSUED FOR REVIEW	JR

SITE NAME:
PLAINVILLE 3 CT

SITE ADDRESS:
ROUTE 372
PLAINVILLE, CT 06062

SHEET TITLE
STRUCTURAL NOTES AND SPECIAL INSPECTION

SHEET NUMBER
S-1

NOTE:
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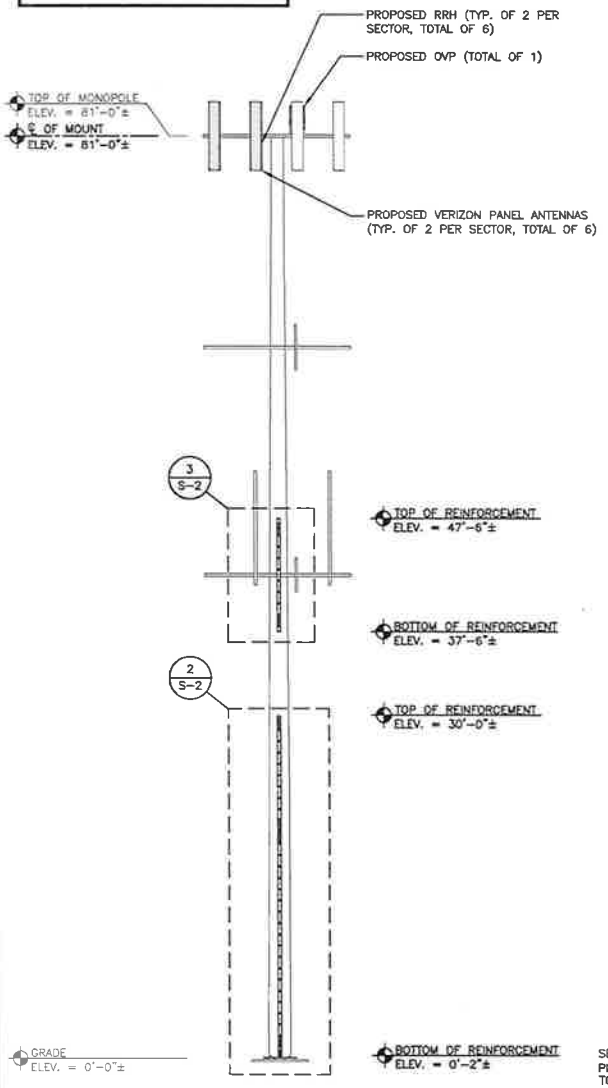
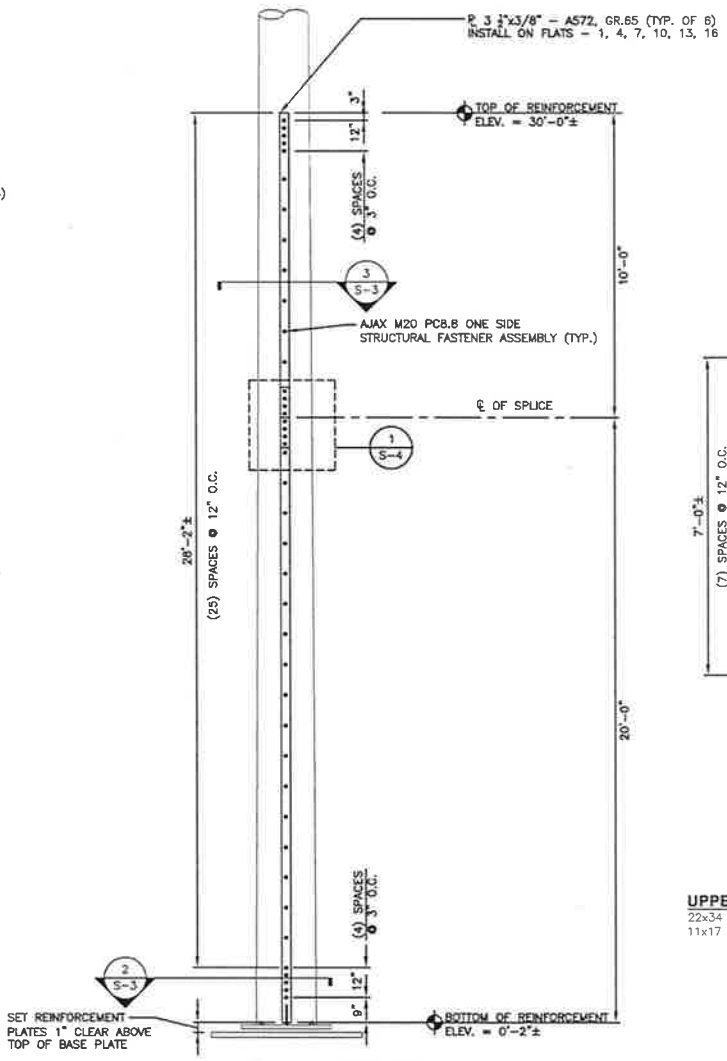
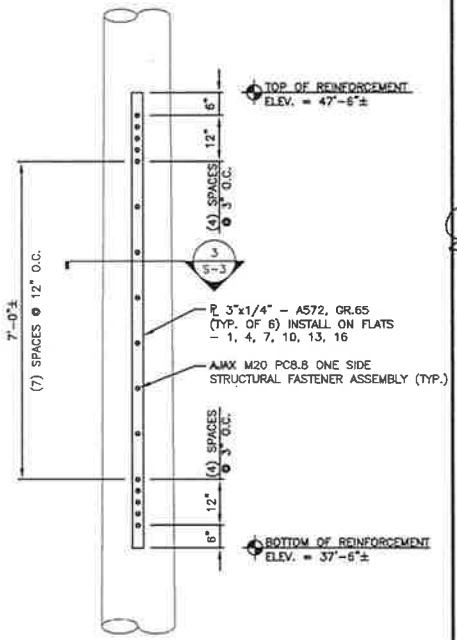


ELEVATION 1 S-2
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
GRAPHIC SCALE 0 2'-8" 5'-4" 10'-8" 16'-0"



LOWER REINFORCEMENT 2 S-2
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
GRAPHIC SCALE 0 8" 1'-4" 2'-8" 4'-0"



UPPER REINFORCEMENT 3 S-2
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
GRAPHIC SCALE 0 8" 1'-4" 2'-8" 4'-0"

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SHEET TITLE
STRUCTURAL MODIFICATION ELEVATIONS

SHEET NUMBER
S-2

NOTE:
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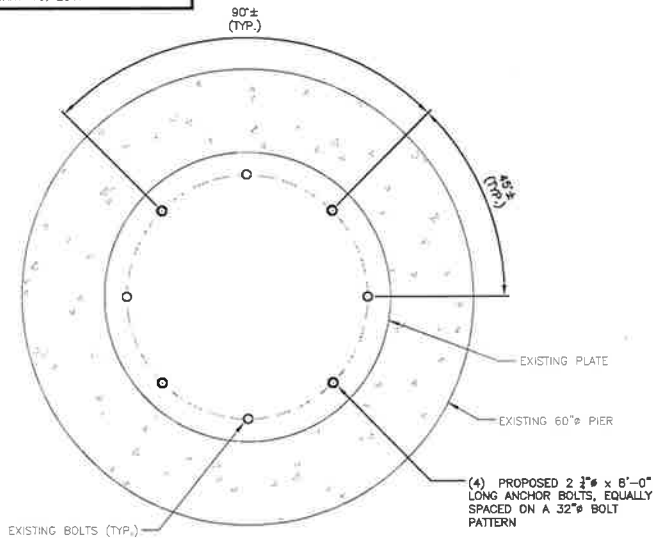
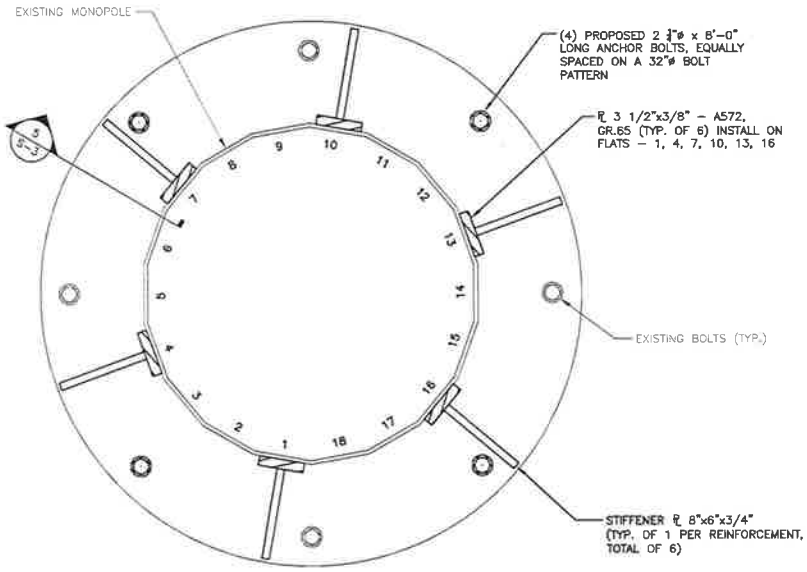
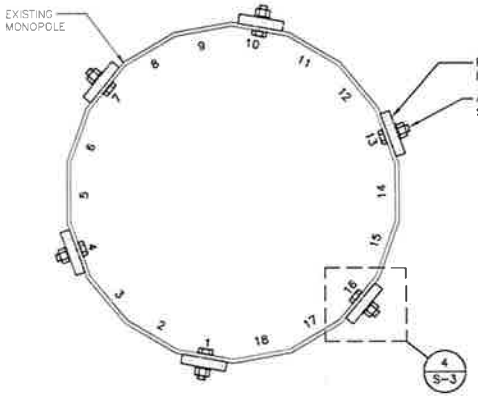


PROPOSED ANCHOR BOLT(S) PLAN 1 S-3
22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"
GRAPHIC SCALE 0 0'-4" 0'-8" 1'-4" 2'-0"



STIFFENERS PLAN 2 S-3
22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"
GRAPHIC SCALE 0 0'-2" 0'-4" 0'-8" 1'-0"



REINFORCEMENTS PLAN 3 S-3
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11x17 SCALE: 1-1/2"=1'-0"
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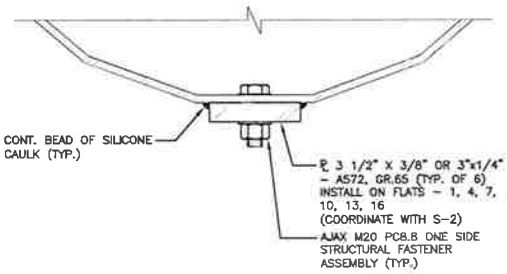

REINFORCEMENT DETAIL 4 S-3
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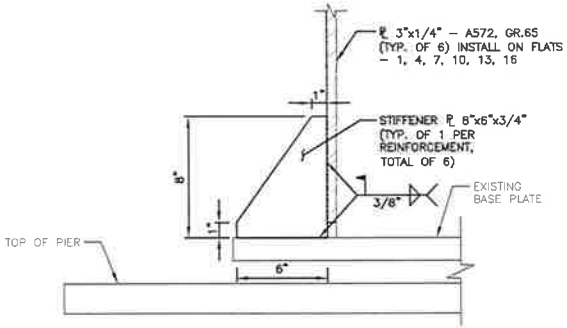
11x17 SCALE: 3"=1'-0"
GRAPHIC SCALE 0 0'-1" 0'-2" 0'-4" 0'-6"



STIFFENERS DETAIL 5 S-3
22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"
GRAPHIC SCALE 0 0'-2" 0'-4" 0'-8" 1'-0"

DESIGN EXHIBIT

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0	06/22/17	ISSUED FOR REVIEW	JR

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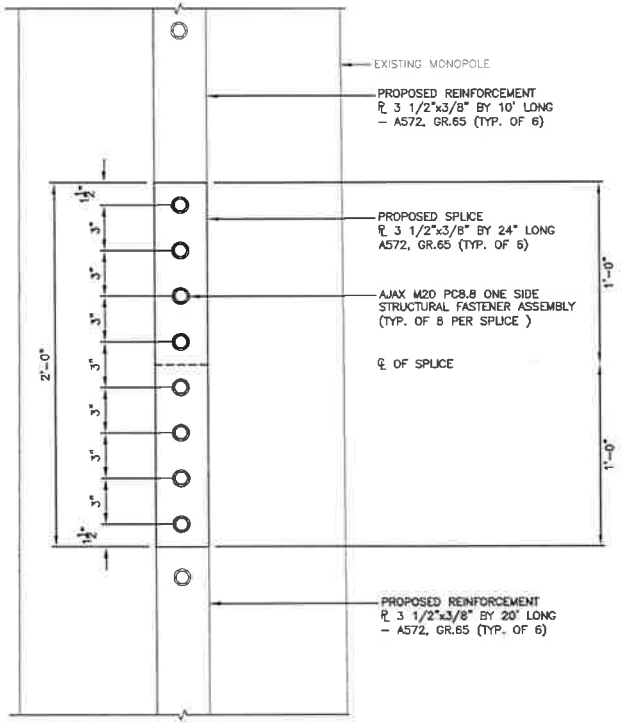
PLAINVILLE, CT 06062

SHEET TITLE
STRUCTURAL MODIFICATION DETAILS

SHEET NUMBER
S-3

DESIGN EXHIBIT

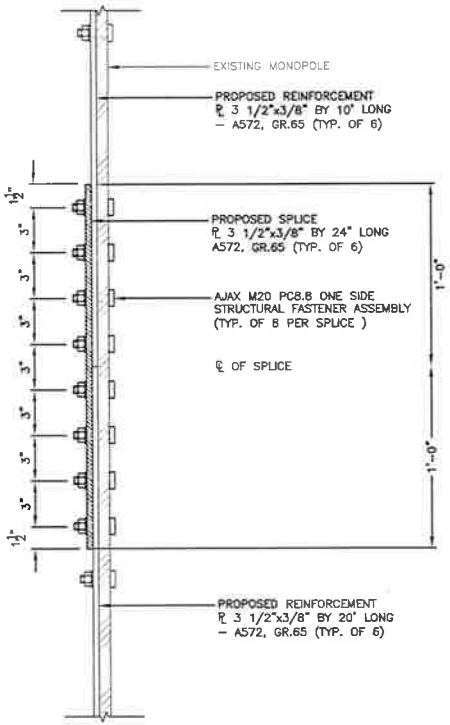


ELEVATION

SPLICE DETAIL (1 / S-4)

22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"

GRAPHIC SCALE
0 0'-2" 0'-4" 0'-8" 1'-0"



SECTION

SPLICE DETAIL (2 / S-4)

22x34 SCALE: 3"=1'-0"
11x17 SCALE: 1-1/2"=1'-0"

GRAPHIC SCALE
0 0'-2" 0'-4" 0'-8" 1'-0"

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

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1	12/7/17	REVISED PER COMMENTS	SLY
0	06/22/17	ISSUED FOR REVIEW	JR

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PLAINVILLE, CT 06062

SHEET TITLE
REINFORCEMENT
SPLICE DETAIL

SHEET NUMBER
S-4