From: Mayo, Rachel <rmayo@RC.com>
Sent: Friday, October 1, 2021 9:29 AM
To: Bachman, Melanie <Melanie.Bachman@ct.gov>; CSC-DL Siting Council <Siting.Council@ct.gov>
Cc: Baldwin, Kenneth <KBALDWIN@RC.com>; alex.tyurin@verizonwireless.com; Mayo, Rachel <rmayo@RC.com>
Subject: RE: EM-VER-047-210817 - 50 Plantation Road, East Windsor, CT re Incomplete Exempt Mod Filing

Good morning, Please see the attached Revised Structural Report in response to the council's incomplete letter. This report better clarifies the information needed.

Please let us know if you have any questions or need additional information.

Thank you

Rachel A. Mayo
Land Use Analyst

Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103
Direct 860.275.8213 | Fax 860.275.8299
rmayo@rc.com | Bio | V-Card

ALL-POINTS TECHNOLOGY CORPORATION

September 30, 2021 (Rev 1)

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Attn: Mr. David Vivian

Re: Structural Analysis Report
Verizon Site I.D.: South Windsor North CT – LSub6 – Carrier Add
50 Plantation Road
East Windsor, CT 06016

Project/Location Code:	20171646071/469756
VZW FUZE I.D.:	16560063
APT Filing No.	CT141_12500

Dear Mr. Vivian,

All-Points Technology Corp. (APT), a professional engineering corporation licensed in the State of Connecticut, performed a structural analysis of the above existing 133-ft± high elevated water reservoir to support a proposed antenna and appurtenance modification.

Details of the proposed antenna and appurtenance modification are included within the table on the following page. Reference is made to the Construction Drawings prepared by this office, marked Rev 0, dated 07/07/21.

The following information was utilized in the preparation of this assessment:

- Construction Drawings prepared by APT, marked Rev1, dated 11/06/2020
- Tank Reinforcement Drawings, prepared by APT, marked Rev0, dated 07/09/20.
- Structural Modification Design Report, prepared by APT, dated 07/09/20.
- SK-S1 - Foundation Reinforcement Details, marked Rev1, dated 06/08/21.
- SK-S2 & S3 – Reinforcement Details, marked Rev1, dated 06/30/21.

The structural analysis has been prepared in accordance with the following design standards:

- ASCE/SEI 7-10 – Minimum Design Loads for Buildings and Other Structures
- AISC - American Institute of Steel Construction Manual of Steel Construction, 14th Ed.
- IBC 2015 - as amended by the 2018 Connecticut State Building Code.
- ANSI/TIA-222-H – Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures

Design Criteria:

- Load Case 1: 125 mph (3-sec gust), Ultimate Wind Speed
- Load Case 2: 125 mph (3-sec gust), Ultimate Wind Speed 0.9 x Dead Load
- Structure Class II
- Exposure Category C
- Topographic Category 1

Note: Risk Category II used. (Water tank no longer in service).

The analysis consists was conducted utilizing the following equipment inventory (proposed equipment indicated in **bold** text):

Carrier	Antenna and Appurtenance Make/Model	Elevation	Status	Mount Type	Coax/Feed-Line
Clearwire	(2) 3-ft Dia. Microwave Dishes (Dragonwave A-ANT-23-G-2.5 est.)	125'±	E	(3) Pipe Mounts	(3) 1-1/4 RF Hyrbriflex, (2) 1/2", (2) 2-1/4" Innerduct
Clearwire	(3) Fiber Boxes	124'±	E		
Clearwire	(3) Argus LLPX310R-V4 panel antennas	119'±	E		
Clearwire	(3) Remote Radio Units	116'±	E		
Sprint	(2) RFS APVX9ERR18-C-A20, (1) RFS APVXSPP18-C-A20, (3) ALU 800 MHz 2x50W RRHs & (3) ALU 1900MHz 4x40W RRHs	121'±	E	(3) Pipe Mounts	
Clearwire	(1) Fiber Box	109'±	E	Catwalk Rail	n/a
MetroPCS/ T-Mobile	(3) RFS APXV18-206517S-C panel antennas	119'±	E	(3) Pipe Mounts	(6) 1-5/8
AT&T	(6) Powerwave 7770 panel antennas, (2) Powerwave P65-17-XLH-RR panel antennas, (1) KMW AM-X-CD-16-65-00T-RET panel antenna (12) Powerwave LGP 21401 TMAs, (3) Ericsson RRUS-11, (3) Ericsson RRUS-12 and (3) Raycap DC2 Surge Suppressors (est.)	112 - 113'±	E	(3) Pipe Mounts (shared with Clearwire & MetroPCS/T-Mobile)	(12) 1-5/8", (2) 5/8" & (1) 3/8" fiber/DC cables (est.)
Verizon	**(3) Commscope NHHSS-65B-R2B, (3) Commscope NHH-65B-R2B panel antennas, (3) Samsung MT6407-77A antennas (3) Samsung B5/B13 RRH-BR04C Remote Radio Heads (RRHs), (3) Samsung B2/B66A RRH-BR049 RRHs, (3) Samsung CBRS RT4401-48A RRHs (3) Raycap RHSDC-3315-PF-48 Over Voltage Protection Boxes (OVPs)**	**102'/94'**	**P**	**Custom Pipe Mounts Attached to Exist. Tank Legs**	**(3) 6x12 Low Inductance Hybrid Fiber Cables (Routed within Southwest Built-Up Lattice Leg Channels)**
Clearwire	One (1) Fiber Box	10'±	E	Leg	*n/a*

Analysis Results:

The analysis was conducted in accordance with the criteria outlined above, with the aforementioned existing and proposed equipment loading. The following table summarizes the results of the analysis:

Component	Usage (%)
New Sway Rods	94%
Reinforced Wing Plates	97%
Anchor Bolts	58%

Notes:
1. ASTM A36 steel grade used for the basis of the new sway rod design.
2. Existing anchor bolts include 1/8" corrosion allowance.
3. Anchor bolt usage includes (1) new ¾"dia. anchor bolt per leg.
4. Assumes reservoir no longer used for water storage.
5. Reinforced gusset plates (Pin bearing on plate controls).

Base Foundation:

Evaluation of the existing foundation system was limited to a global stability check with the existing and proposed loading. The existing foundation geometry was established through field investigation conducted by APT during May 2017, and during construction of the new build project during June 2021. Subgrade conditions were based on presumptive soil parameters per TIA-222-H Section 9.4, and Table F-1 (Annex F) & IBC 2015.

The calculated leg and base reactions with the above noted loading are as follows:

Load Effect	Calculated Base Reactions	Usage
Axial	74 k	n/a
Shear	70 k	n/a
Overturning Moment	5291 ft-k	n/a
Leg Uplift	95 k	0.75<1.0 (PASS)

1 kip = 1,000lbs

Conclusions:

Successful completion of the reinforcements detailed within the attached drawings, will result in a host structure that meet the requirements of the 2015 International Building Code, as amended by the 2018 Connecticut State Building Code.

Sincerely,
All-Points Technology Corp., P.C.

Michael S. Trodden, P.E.
Sr. Structural Engineer

Prepared by:
All-Points Technology Corp., P.C.

Jason R. Mead
Department Manager –
Structural Services

Limitations:

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. All members are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Installing antenna mounts.
4. Extending tower/structure.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Calculations

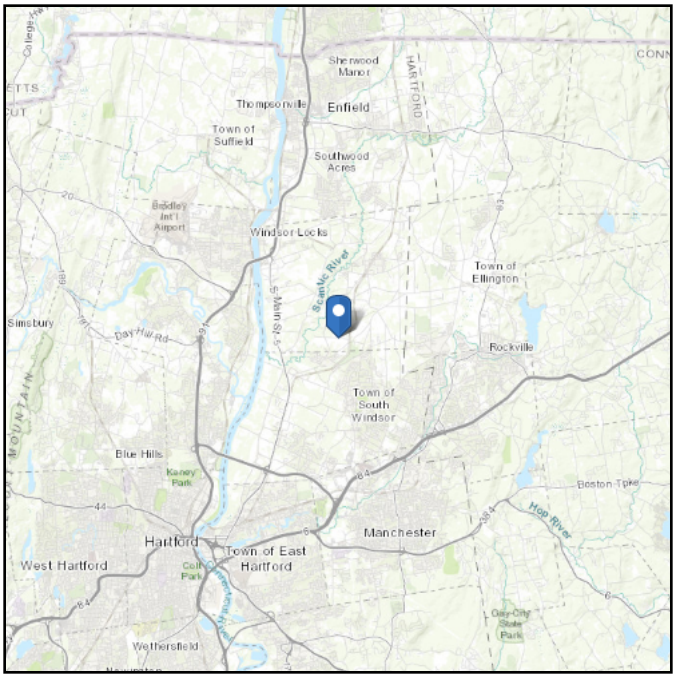
(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load** (psf)	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions**[1]		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
East Hampton	30	0.177	0.062	120	130	140	93	101	108			Yes
East Hartford	30	0.180	0.064	115	125	135	89	97	105			Yes
East Haven	30	0.182	0.062	120	130	140	93	101	108		Type B	Yes
East Lyme	30	0.164	0.059	125	135	145	97	105	112	Type B	Type A	Yes
Easton	30	0.215	0.066	110	120	130	85	93	101			Yes
East Windsor	35	0.177	0.064	115	125	135	89	97	105			Yes
Ellington	35	0.176	0.064	115	125	135	89	97	105			Yes
Enfield	35	0.176	0.065	110	125	130	85	97	101			Yes
Essex	30	0.168	0.059	120	135	145	93	105	112		Type A	Yes
Fairfield	30	0.215	0.065	115	125	135	89	97	105		Type B	Yes
Farmington	35	0.183	0.064	115	125	135	89	97	105			Yes
Franklin	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Glastonbury	30	0.180	0.063	115	125	135	89	97	105			Yes
Goshen	40	0.181	0.065	105	115	125	81	89	97			
Granby	35	0.176	0.065	110	120	130	85	93	101			Yes
Greenwich	30	0.259	0.070	110	120	130	85	93	101			Yes
Griswold	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Groton	30	0.160	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Guilford	30	0.176	0.061	120	130	140	93	101	108		Type B	Yes
Haddam	30	0.175	0.061	120	130	140	93	101	108			Yes
Hamden	30	0.185	0.063	115	125	135	89	97	105			Yes
Hampton	35	0.172	0.062	120	130	140	93	101	108			Yes
Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
Hartland	40	0.175	0.065	110	120	125	85	93	97			Yes
Harwinton	35	0.183	0.065	110	120	130	85	93	101			Yes
Hebron	30	0.177	0.063	120	130	140	93	101	108			Yes
Kent	40	0.188	0.065	105	115	120	81	89	93			
Killingly	40	0.171	0.062	120	130	140	93	101	108			Yes
Killingworth	30	0.173	0.061	120	130	140	93	101	108			Yes
Lebanon	30	0.173	0.062	120	130	140	93	101	108			Yes
Ledyard	30	0.163	0.059	125	135	145	97	105	112		Type A	Yes
Lisbon	30	0.169	0.061	125	135	145	97	105	112		Type A	Yes
Litchfield	40	0.184	0.065	110	120	125	85	93	97			Yes
Lyme	30	0.164	0.059	125	135	145	97	105	112		Type A	Yes
Madison	30	0.173	0.060	120	130	140	93	101	108		Type B	Yes
Manchester	30	0.178	0.064	115	125	135	89	97	105			Yes
Mansfield	35	0.173	0.062	120	130	140	93	101	108			Yes
Marlborough	30	0.177	0.062	120	130	140	93	101	108			Yes
Meriden	30	0.183	0.063	115	125	135	89	97	105			Yes
Middlebury	35	0.191	0.064	110	120	130	85	93	101			Yes
Middlefield	30	0.181	0.063	115	125	135	89	97	105			Yes
Middletown	30	0.180	0.063	115	130	135	89	101	105			Yes
Milford	30	0.194	0.063	115	125	135	89	97	105		Type B	Yes
Monroe	30	0.205	0.065	110	120	130	85	93	101			Yes

ASCE 7 Hazards Report

Address:
50 Plantation Rd
Broad Brook, Connecticut
06016

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 158.08 ft (NAVD 88)
Latitude: 41.87543
Longitude: -72.564799



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Wed Jul 14 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

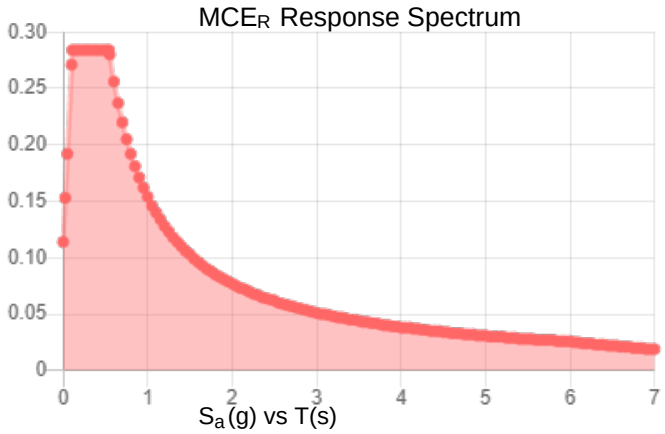
Seismic

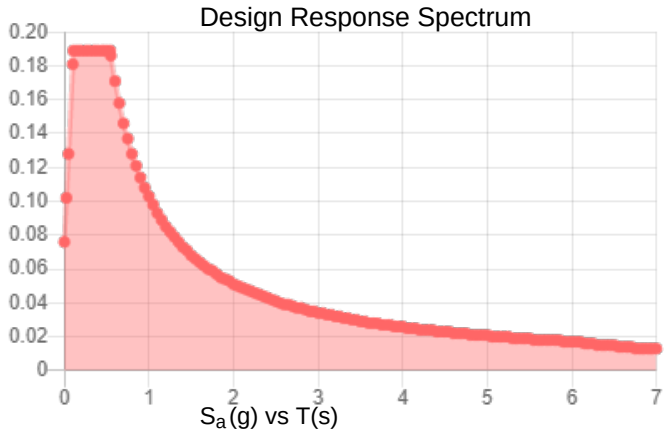
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.189
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.088
S_{MS} :	0.284	PGA_M :	0.141
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Jul 14 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

All-Points Technology Corporation
Consulting Engineers
3 Saddlebrook Drive,
Killingworth, CT 06419
Ph. 860-663-1697
Fax. 860-663-0935

Subject: **Antenna & Appurtenance Area Calculations**

Project: **Verizon - South Windsor North CT - LSub6**

Prepared: **07.09.21** Revised: APT Job No. **CT141_12500**

Antenna and Appurtenance Area Calculations

Height	Carrier/Equipment	Item Quantity	Dimensions H (in)	W (in	D (in)	Item Area (ft2) (ea)	Aspect Ratio	Flat or Round	Cf	CfAa	Shielding Factor	Rotational Area Factor	Total CfAa (ft2)	Adjusted Net CfAa (ft2)	Weight (ea) (lbs)	Weight (Total) (lbs)
94.00	Prop. Verizon LSub6 Antennas	2.00	35.1	16.1	5.5	3.92	2.18	FLAT	1.32	5.18	1.00	0.70	10.36	7.25	87.1	174.20
94.00	Prop. Verizon LSub6 Antennas	1.00	35.1	16.1	5.5	3.92	2.18	FLAT	1.32	5.18	1.00	1.00	5.18	5.18	87.1	87.10
102.00	Prop. Verizon Panel Antennas	4.00	72.0	11.9	7.1	5.95	6.05	FLAT	1.38	8.24	1.00	0.70	32.94	23.06	60.0	240.00
102.00	Prop. Verizon Panel Antennas	2.00	72.0	11.9	7.1	5.95	6.05	FLAT	1.38	8.24	1.00	1.00	16.47	16.47	60.0	120.00
94.00	Prop. Verizon B2/B66A RRH BR049	2.00	15.0	15.0	10.0	1.56	1.00	FLAT	1.30	2.03	1.00	0.70	4.06	2.84	97.5	195.00
94.00	Prop. Verizon B2/B66A RRH BR049	1.00	15.0	15.0	10.0	1.56	1.00	FLAT	1.30	2.03	1.00	1.00	2.03	2.03	97.5	97.50
94.00	Prop. Verizon B5/B13 RRH BR04C	2.00	15.0	15.0	8.1	1.56	1.00	FLAT	1.30	2.03	1.00	0.70	4.06	2.84	82.0	164.00
94.00	Prop. Verizon B5/B13 RRH BR04C	1.00	15.0	15.0	8.1	1.56	1.00	FLAT	1.30	2.03	1.00	1.00	2.03	2.03	82.0	82.00
94.00	Prop. Verizon Samsung CBRS RT44001-48A RRH	2.00	10.6	8.9	3.0	0.66	1.19	FLAT	1.30	0.85	1.00	0.70	1.71	1.20	11.0	22.00
94.00	Prop. Verizon Samsung CBRS RT44001-48A RRH	1.00	1.0	1.0	1.0	0.01	1.00	FLAT	1.30	0.01	1.00	1.00	0.01	0.01	11.0	11.00
102.00	Prop. Verizon 6OVP	2.00	29.5	16.5	12.6	3.38	1.79	FLAT	1.31	4.44	1.00	0.70	8.88	6.21	32.0	64.00
102.00	Prop. Verizon 6OVP	1.00	29.5	16.5	12.6	3.38	1.79	FLAT	1.31	4.44	1.00	1.00	4.44	4.44	32.0	32.00
98.00	Prop. Verizon Pipe Mounts (For Ant + RRHs)	6.00	180.0	3.5	3.5	4.38	51.43	ROUND	1.20	5.25	1.00	1.00	31.50	31.50	115.0	690.00
98.00	Prop. Verizon Mounts	3.00				3.00			1.40	4.20	1.00	1.00	12.60	12.60	80.0	240.00
												Subtotal	**136.27**	**117.67**		**2218.80**
112.00	Exist. AT&T Panel Antennas (KMW AM-X-CD-16-65-00T-RET)	1.00	72.0	11.8	5.9	5.90	6.10	FLAT	1.39	8.17	1.00	0.70	8.17	5.72	48.5	48.50
112.00	Exist. AT&T Panel Antennas (Powerwave P65-17-XLH-RR)	1.00	96.0	12.0	6.0	8.00	8.00	FLAT	1.43	11.47	1.00	1.00	11.47	11.47	62.0	62.00
112.00	Exist. AT&T Panel Antennas (Powerwave P65-17-XLH-RR)	1.00	96.0	12.0	6.0	8.00	8.00	FLAT	1.43	11.47	1.00	0.70	11.47	8.03	62.0	62.00
112.50	Exist. AT&T Panel Antennas (Powerwave 7770)	4.00	55.0	11.0	5.0	4.20	5.00	FLAT	1.37	5.74	1.00	0.70	22.97	16.08	39.0	156.00
112.50	Exist. AT&T Panel Antennas (Powerwave 7770)	2.00	55.0	11.0	5.0	4.20	5.00	FLAT	1.37	5.74	1.00	1.00	11.48	11.48	39.0	78.00
113.50	Exist. AT&T TMAs (Powerwave LGP21401)	4.00	14.4	9.2	2.6	0.92	1.57	FLAT	1.31	1.20	1.00	1.00	4.82	4.82	14.1	56.40
113.50	Exist. AT&T TMAs (Powerwave LGP21401)	8.00	14.4	9.2	2.6	0.92	1.57	FLAT	1.31	1.20	1.00	0.70	9.64	6.75	14.1	112.80
113.50	Exist. AT&T RRUs (Ericcson RRUS 11)	2.00	19.7	17.0	7.2	2.33	1.16	FLAT	1.30	3.03	1.00	0.70	6.06	4.24	50.0	100.00
113.50	Exist. AT&T RRUs (Ericcson RRUS 11)	1.00	19.7	17.0	7.2	2.33	1.16	FLAT	1.30	3.03	1.00	1.00	3.03	3.03	50.0	50.00
113.50	Exist. AT&T RRUs (Ericcson RRUS 12)	2.00	20.4	18.5	7.5	2.62	1.10	FLAT	1.30	3.41	1.00	0.70	6.82	4.78	50.0	100.00
113.50	Exist. AT&T RRUs (Ericcson RRUS 12)	1.00	20.4	18.5	7.5	2.62	1.10	FLAT	1.30	3.41	1.00	1.00	3.41	3.41	50.0	50.00
113.50	Exist. AT&T SA (DC2-48-60-09E, est.)	2.00	10.4	6.3	10.8	0.46	1.65	ROUND	1.31	0.60	1.00	0.70	1.19	0.84	16.0	32.00
113.50	Exist. AT&T SA (DC2-48-60-09E, est.)	1.00	10.4	6.3	10.8	0.46	1.65	ROUND	1.31	0.60	1.00	1.00	0.60	0.60	16.0	16.00
												Subtotal	**101.13**	**81.23**		**923.70**
119.00	MetroPCS/T-Mobile Panel Antennas (RFS APXV18-206517S-C)	2.00	72.0	6.8	3.2	3.40	10.59	FLAT	1.52	5.17	1.00	0.70	10.33	7.23	26.4	52.80
119.00	MetroPCS/T-Mobile Panel Antennas (RFS APXV18-206517S-C)	1.00	72.0	6.8	3.2	3.40	10.59	FLAT	1.52	5.17	1.00	1.00	5.17	5.17	26.4	26.40
												Subtotal	**15.50**	**12.40**		**79.20**
121.00	Exist. Sprint Panel Antennas (RFS APXV Series)	2.00	72.0	11.8	7.0	5.90	6.10	FLAT	1.39	8.17	1.00	0.70	16.34	11.44	57.0	114.00
121.00	Exist. Sprint Panel Antennas (RFS APXV Series)	1.00	72.0	11.8	7.0	5.90	6.10	FLAT	1.39	8.17	1.00	1.00	8.17	8.17	57.0	57.00
115.50	Exist. Sprint RRHs (800 MHz RRH)	2.00	15.7	13.0	9.8	1.42	1.21	FLAT	1.30	1.85	1.00	0.70	3.70	2.59	53.0	106.00
115.50	Exist. Sprint RRHs (800 MHz RRH)	1.00	15.7	13.0	9.8	1.42	1.21	FLAT	1.30	1.85	1.00	1.00	1.85	1.85	53.0	53.00
112.50	Exist. Sprint RRHs (1900 MHz RRH)	2.00	25.0	11.1	11.4	1.93	2.25	FLAT	1.32	2.55	1.00	0.70	5.09	3.56	60.0	120.00
112.50	Exist. Sprint RRHs (1900 MHz RRH)	1.00	25.0	11.1	11.4	1.93	2.25	FLAT	1.32	2.55	1.00	1.00	2.55	2.55	60.0	60.00
												Subtotal	**37.70**	**30.16**		**510.00**
10.00	Exist. CW Fiber Box (14"x14"x8")	1.00	14.0	8.0	17.0	0.78	1.75	FLAT	1.31	1.02	1.00	1.00	1.02	1.02	18.0	18.00
109.00	Exist. CW Fiber Box (14"x14"x8")	1.00	14.0	14.0	8.0	1.36	1.00	FLAT	1.30	1.77	1.00	1.00	1.77	1.77	18.0	18.00
119.00	Exist. CW Panel Antennas (ArgusLLPX310R-V4)	2.00	42.1	11.8	4.5	3.46	3.57	FLAT	1.34	4.64	1.00	0.70	9.28	6.50	28.7	57.40
119.00	Exist. CW Panel Antennas (ArgusLLPX310R-V4)	1.00	42.1	11.8	4.5	3.46	3.57	FLAT	1.34	4.64	1.00	1.00	4.64	4.64	28.7	28.70
116.00	Exist. CW RRHs (17"x14" Est)	2.00	17.0	14.0	7.0	1.65	1.21	FLAT	1.30	2.15	1.00	0.70	4.31	3.02	50.0	100.00
116.00	Exist. CW RRHs (17"x14" Est)	1.00	17.0	14.0	7.0	1.65	1.21	FLAT	1.30	2.15	1.00	1.00	2.15	2.15	50.0	50.00
124.00	Exist. CW Fiber Boxes (12"x12"x6" est.)	2.00	12.0	6.0	12.0	0.50	2.00	FLAT	1.32	0.66	1.00	0.70	1.32	0.92	16.0	32.00
124.00	Exist. CW Fiber Boxes (12"x12"x6" est.)	1.00	12.0	6.0	12.0	0.50	2.00	FLAT	1.32	0.66	1.00	1.00	0.66	0.66	16.0	16.00
125.00	Exist. CW MW Dishe (A-ANT-23-G-2.5)	1.00	35.0	35.0	16.8	8.51	1.00	FLAT	1.30	11.06	1.00	1.00	11.06	11.06	47.6	47.60
125.00	Exist. CW MW Dishe (A-ANT-23-G-2.5)	1.00	35.0	35.0	16.8	8.51	1.00	FLAT	1.30	11.06	1.00	0.70	11.06	7.74	47.6	47.60
												Subtotal	**47.27**	**39.48**		**415.30**
117.00	Exist. AT&T/CW Exposed Pipe Mounts (P3x20' est.)	3.00	3.5	108.0	7.0	2.63	0.03	ROUND	0.70	1.84	1.00	1.00	5.51	5.51	151.6	454.80
	Exist. AT&T Exposed Pipe Mounts (P3x20' est.)	3.00	3.5	86.0	9.8	2.09	0.04	ROUND	0.70	1.46	1.00	1.00	4.39	4.39	151.6	454.80
	Exist. AT&T/Metro Exposed Pipe Mounts (P3x20' est.)	3.00	3.5	68.0	11.4	1.65	0.05	ROUND	0.70	1.16	1.00	1.00	3.47	3.47	151.6	454.80
	Exist. AT&T Exposed Pipe Mounts (P2.5x20' est.)	3.00	3.0	46.0	3.0	0.96	15.33	ROUND	0.99	0.94	1.00	1.00	2.83	2.83	115.8	347.40
	Exist. Sprint Exposed Pipe Mounts (P3x20' est.)	3.00	3.5	60.0	3.5	1.46	17.14	ROUND	1.03	1.50	1.00	1.00	4.49	4.49	151.6	454.80
												Subtotal	**20.69**	**20.69**		**2166.60**
															Total Sum Weight	**6313.60**

Designer Comments:

(1) Existing TMA's and RRU's considered not shielded from wind by antenna(s).

All-Points Technology Corporation

Consulting Engineers
3 Saddlebrook Drive,
Killingworth, CT 06419
Ph. 860-663-1697
Fax. 860-663-0935

Subject: **Water Reservoir Wind Load Calculations**

Project: **Verizon - South Windsor North CT - LSub6**

Prepared: **07.09.21** Revised: **CT141_12500**

nk Wind Load Distribution (ASCE 7-10) Tank Empty

Due to the height of the structure, the analytical method is required.

Ultimate Wind Speed (3 Sec Gust), V =	125 mph	Appendix N 2018 CSBC
Risk Category =	II	**Note: Structure no longer utlized as a water tank and is empty.**
Exposure Catergory =	C	2015 IBC Section 1609.4.3
Base Tower Cross-Section =	SQ	Enter 'SQ' for Square, 'T' for Triangle)

Terrain Exposure Constants:

Topographic Factor, Kzt =	1.00	ASCE 7-10	Sec. 26.8.2	
Wind Directionality Factor, Kd =	0.85 Tower	ASCE 7-10	Table 26.6-1	
	0.95 Standpipe/Reservoir			
3-Sec Gust Speed Power Law Exponent α =	9.5	ASCE 7-10	Table 26.9-1	
Nominal Height of the Atmospheric Boundary Layer (zg) =	900	ASCE 7-10	Table 26.9-1	
Gust Response Factor, G (Tank) =	0.85	ASCE 7-10	Sec. 26.9.1	
K_{zmin} =	0.85	ASCE 7-10		
Velocity Pressure at height z, qz =	**qz =0.00256 Kz Kzt Kd V^2**	ASCE 7-10	[Eq. 29.3-1]	Sec. 29.3.2
Design Wind Load, P	**F = qzGCfAf ≥ 10psf**	ASCE 7-10	[Eq. 29.5-1]	Sec. 29.8

Water Tower Wind Load Calculation - Support Tower

Component	Top of Section Elevation (ft)	Bottom of Section Elevation (ft)	Δh (ft)	Outside Width at Top (ft)	Outside Width at Bottom (ft)	Aleg (ft^2)	Agirts (ft^2)	A_F (ft^2)	A_R (Sway Rods) (ft^2)	A_G (ft^2)
Support Tower	**109**	**74**	35	**14.85**	**21.77**	**100.00**	**0.00**	100.00	**9.13**	640.85
Support Tower	**74**	**37**	37	21.77	**29.09**	**104.65**	**14.02**	118.67	**10.45**	940.91
Support Tower	**37**	**0**	37	29.09	**36.41**	**104.65**	**18.83**	123.48	**11.61**	1211.75
		Sub-total	109							

z bar (ft)	Kz	qz	e	C_F	R_R	D_F	D_R	D_FA_F	$D_RA_RR_R$	A_E (ft^2)	F (kips)	OTM (ft-kips)
91.5	1.24	42.23	0.170	3.111	0.585	1.00	1.00	100.00	5.34	105.34	11.77	1076.52
55.5	1.12	38.01	0.137	3.266	0.580	1.00	1.00	118.67	6.06	124.73	13.16	730.46
18.5	0.89	30.16	0.111	3.392	0.576	1.00	1.00	123.48	6.69	130.17	11.32	209.44
											36	2016

Water Tower Wind Load Calculation - Stand Pipe, Reservoir and Appurtenances

Component	Top of Section Elevation (ft)	Bottom of Section (ft)	Δh (ft)	Depth (ft)	Diameter (ft^2)	A_F (ft^2)	A_R (ft^2)	z bar (ft)	Kz	qz	C_F	F (kips)	OTM (ft-kips)
Stand-Pipe	**100**	**74**	26		**3.00**		78.00	87.0	1.23	46.70	**0.70**	2.17	188.58
Stand-Pipe	**74**	**37**	37		**3.00**		111.00	55.5	1.12	42.49	**0.70**	2.81	155.74
Stand-Pipe	**37**	**0**	37		**3.00**		111.00	18.5	0.89	33.71	**0.70**	2.23	41.19
Ladder	**112.5**	**74**	38.5	**0.2**		7.70		93.3	1.25	42.40	**2.00**	0.56	51.76
Ladder	**74**	**37**	37	**0.2**		7.40		55.5	1.12	38.01	**2.00**	0.48	26.54
Ladder	**37**	**0**	37	**0.2**		7.40		18.5	0.89	30.16	**2.00**	0.38	7.02
Dome Bulb	**109**	**100**	9				**133.00**	104.5	1.28	48.54	**0.50**	2.74	286.73
Reservoir Cylinder	**127**	**109**	18		**19.00**		342.00	118.0	1.31	49.80	**0.50**	7.24	854.12
Reservoir Ladder	**129**	**109**	20	**0.2**		4.00		119.0	1.31	44.64	**2.00**	0.30	36.12
Exposed Catwalk	**112**	**109**	3			**4.00**		110.5	1.29	43.95	**2.00**	0.30	33.02
Cone Roof	**132.5**	**125.67**	6.83				**88.20**	129.1	1.34	50.75	**0.50**	1.90	245.56
Finial	**134.3**	**133.3**	1		**0.67**		0.67	133.8	1.35	45.75	**0.50**	0.01	1.74
												21.11	1928.11

Water Tower Wind Load Calculation - Antennas & Appurtenances

Component	Top of Section Elevation (ft)	Bottom of Section Elevation (ft)	z bar (ft)	Kz	qz	C_FA_a (from Equip. Worksheet) (ft^2)	F (kips)	OTM (ft-kips)
Exposed Coaxial Cables	**112**	**74**	93.0	1.25	47.36	15.05	0.61	56.34
Exposed Coaxial Cables	**74**	**37**	55.5	1.12	42.49	14.65	0.53	29.37
Exposed Coaxial Cables	**37**	**10**	23.5	0.93	35.46	10.69	0.32	7.57
CW MW Dishes	**125**	**125**	125.0	1.33	45.10	18.80	0.72	90.09
CW Fiber Boxes	**124**	**124**	124.0	1.32	45.02	1.58	0.06	7.50
Sprint Panels	**121**	**121**	121.0	1.32	44.79	19.61	0.75	90.35
CW Panels	**119**	**119**	119.0	1.31	44.64	11.14	0.42	50.27
MetroPCS/T-Mobile Panels	**119**	**119**	119.0	1.31	44.64	12.40	0.47	55.99
Exposed Pipe Mounts	**117**	**117**	117.0	1.31	49.71	20.69	0.87	102.29
CW RRHs	**116**	**116**	116.0	1.31	44.40	5.17	0.20	22.64
Sprint 800 MHz RRHs	**115.5**	**115.5**	115.5	1.30	44.36	4.44	0.17	19.34
Sprint 1900 MHz RRHs	**112.5**	**112.5**	112.5	1.30	44.11	6.11	0.23	25.77
AT&T RRUs, TMAs & SA	**113.5**	**113.5**	113.5	1.30	44.19	28.45	1.07	121.32
AT&T Panels	**112.5**	**112.5**	112.5	1.30	44.11	27.56	1.03	116.26
AT&T Panels	**112**	**112**	112.0	1.30	44.07	25.21	0.94	105.78
CW Fiber Boxes	**109**	**109**	109.0	1.29	43.82	1.77	0.07	7.18
Prop. Verizon Pipe Mounts	**98**	**98**	98.0	1.26	47.89	31.50	1.28	125.66
Prop. Verizon Mounts	**98**	**98**	98.0	1.26	42.85	12.60	0.46	44.97
Prop. Verizon Panels & OVPs	**102**	**102**	102.0	1.27	43.21	50.18	1.84	187.99
Prop. Verizon Panels & RRHs	**94**	**94**	94.0	1.25	42.47	23.37	0.84	79.31
CW Fiber Box	**10**	**10**	10.0	0.85	28.90	1.02	0.03	0.25
						342.00	12.91	1346.25

Total Axial Force Above Grade (P) = **74.3** kips (Gross tank material weight minus stand pipe & 1/2 spider rods + equipment weight used for foundation analysis)

Horizontal Force at Level 3 without Antennas	**19.7**
Horizontal Force at Level 3 with Antennas	**31.5**
Horizontal Force at Level 2 Girts without Antennas	**35.2**
Horizontal Force at Level 2 Girts with Antennas	**47.5**
Horizontal Force at Level 1 Girts without Antennas	**50.4**
Horizontal Force at Level 1 Girts with Antennas	**63.1**

Base Shear (Water Tank) =	**57.4**	kips
Base Shear (Water Tank + Antennas) =	**70.3**	kips
OTM (Water Tank) =	**3944.5**	(ft-kips)
OTM (Water Tank + Antennas) =	**5290.8**	(ft-kips)
Overturning % Increase =	**34.1%**	
If >10% check anchor bolts		
Shear % Increase =	**22.5%**	
If >10% check bracing		

All-Points Technology Corporation
Consulting Engineers
3 Saddlebrook Drive,
Killingworth, CT 06419
Ph. 860-663-1697
Fax. 860-663-0935

Subject: **Sway Bracing & Anchor Bolt Analysis**

Project: **Verizon - South Windsor North CT - LSub6**

Prepared: **07.09.21** Revised: APT Job No. **CT141_12500**

Sway Rod X - Bracing Analysis at Level 1 (0 to 37-ft ± AGL)		
X Bracing Rod Dia. (in)	1.5	New
Rod Yield Stress, Fy (psi)	36,000	**ASTM A307 USED**
Rod Tensile Stress, Fu (psi)	60,000	**ASTM A307 USED**
Angle of Sway Rod From Ground Plane (degrees)	50	
Un-threaded Portion Area (in^2)	1.767	(Nominal area, Ag)
Available Tension Strength (Turnbuckle)	52.50	kips (1 1/2" dia. UNC/4UN Class 2B)
Available Tension Strength (Clevis)	52.50	kips (#4, UNC Class 2B)
Available Tension Strength in Un-threaded Rod	57.26	(0.90*Fy*Ag)
Available Tension Strength in Threaded Rod	59.64	(0.75*75*Fu*Ag)
Net Ultimate Shear Force (one side)	63.12	kips
Ultimate Tension Force in Sway Rod	49.10	kips
Usage (Tension)	**0.94**	<1.0 OK

Assumes only one sway rod is engaged per side.

Sway Rod X - Bracing Analysis at Level 2 (37 to 74-ft ± AGL)		
X Bracing Rod Dia. (in)	1.5	New
Rod Yield Stress, Fy (psi)	36,000	**ASTM A307 USED**
Rod Tensile Stress, Fu (psi)	60,000	**ASTM A307 USED**
Angle of Sway Rod From Ground Plane (degrees)	59	
Un-threaded Portion Area (in^2)	1.767	(Nominal area, Ag)
Available Tension Strength (Turnbuckle)	52.50	kips (1 1/2" dia. UNC/4UN Class 2B)
Available Tension Strength (Clevis)	52.50	kips (#4, UNC Class 2B)
Available Tension Strength in Un-threaded Rod	57.26	(0.90*Fy*Ag)
Available Tension Strength in Threaded Rod	59.64	(0.75*75*Fu*Ag)
Net Ultimate Shear Force	47.51	kips
Ultimate Tension Force in Sway Rod	46.12	kips
Usage (Tension)	**0.88**	<1.0 OK

Assumes only one sway rod is engaged per side.

Sway Rod X - Bracing Analysis at Level 3 (74 to 109-ft ± AGL)		
X Bracing Rod Dia. (in)	1.375	New
Rod Yield Stress, Fy (psi)	36,000	**ASTM A307 USED**
Rod Tensile Stress, Fu (psi)	60,000	**ASTM A307 USED**
Angle of Sway Rod From Ground Plane (degrees)	66	
Un-threaded Portion Area (in^2)	1.485	(Nominal area, Ag)
Available Tension Strength (Turnbuckle)	43.50	kips (1 3/8" dia. UNC/4UN Class 2B)
Available Tension Strength (Clevis)	45.00	kips (#3-1/2, UNC Class 2B)
Available Tension Strength in Un-threaded Rod	48.11	(0.90*Fy*Ag)
Available Tension Strength in Threaded Rod	50.12	(0.75*75*Fu*Ag)
Net Ultimate Shear Force	31.47	kips
Ultimate Tension Force in Sway Rod	38.69	kips
Usage (Tension)	**0.89**	<1.0 OK

Assumes only one sway rod is engaged per side.

Anchor Bolt Analysis		
Anchor Rod Dia. (in)	1.375	1.5" dia. Bolts. 1/8" corrosion allowance used
Number of Exist. Anchor Bolts Per Leg	2	
Number of Legs	4	(Assumes central standpipe takes no shell DL)
Leg Circle Diameter (in)	594	Field verified
Bolt Tensile Stress (psi)	60,000	**ASTM A7-39 used (tank built circa 1946)**
Number of Threads per Inch	6	
Bolt Area (in^2)	1.485	(Gross area, Ag)
Net Bolt Area (in^2)	1.155	(Net Area, An)
Net Ultimate Uplift Tension Force Per Bolt	45.08	kips, (0.9DL + 1.0WL)
Total Ultimate Base Wind Shear	70.27	kips, (x1.0WL)
Ultimate Shear Per Leg	17.57	kips, (x1.0 WL)
Shear Per Anchor Bolt	8.78	kips, (x1.0 WL)
Available Bolt Tension Strength	50.19	kips
Available Bolt Shear Strength	30.14	kips
Additional Anchor Tension Strength	10.51	kips
Additional Anchor Shear Strength	19.02	kips
Usage	**0.58**	<1.0 OK

Note: Anchor bolt usage includes installation of (1) new 3/4" dia. anchor bolt per leg.

Sway Rod X - Base Wing Plate Connection Analysis (AISC 14th Ed. Sec D5)		
Gussett Plate Thickness	0.375	Existing
Plate Yield Stress, Fy (psi)	33,000	**ASTM A7-39 used (tank built circa 1946)**
Plate Tensile Stress, Fu (psi)	60,000	**ASTM A7-39 used (tank built circa 1946)**
beff	1.380	in
b	1.950	in
Asf	2.488	in^2
a	2.380	in
d	1.875	in
Apb	0.703	in^2
Ultimate Force in Direction of Rod	49.10	kips
Available Tension Strength at Pin (Net)	46.58	kips
Available Long Shear Strength at Pin	67.18	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	84.87	kips
Usage	**1.57**	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	**0.97**	<1.0 OK

Sway Rod X - Gusset Plate Connection Analysis (37 ± AGL) (AISC 14th Ed. Sec D5)		
Gussett Plate Thickness	0.375	Existing (Assumed, V.I.F.)
Plate Yield Stress, Fy (psi)	33,000	**ASTM A7-39 used (tank built circa 1946)**
Plate Tensile Stress, Fu (psi)	60,000	**ASTM A7-39 used (tank built circa 1946)**
beff	1.380	in
b	2.960	in
Asf	2.511	in^2
a	2.410	in
d	1.875	in
Apb	0.703	in^2
Ultimate Force in Direction of Rod	49.10	kips
Available Tension Strength at Pin (Net)	46.58	kips
Available Long Shear Strength at Pin	67.79	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	95.78	kips
Usage	**1.57**	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	**0.97**	<1.0 OK

Sway Rod X - Gusset Plate Connection Analysis (74 ± AGL) (AISC 14th Ed. Sec D5)		
Gussett Plate Thickness	0.375	Existing (Assumed, V.I.F.)
Plate Yield Stress, Fy (psi)	33,000	**ASTM A7-39 used (tank built circa 1946)**
Plate Tensile Stress, Fu (psi)	60,000	**ASTM A7-39 used (tank built circa 1946)**
beff	1.380	in
b	2.380	in
Asf	2.488	in^2
a	2.380	in
d	1.875	in
Apb	0.703	in^2
Ultimate Force in Direction of Rod	46.12	kips
Available Tension Strength at Pin (Net)	46.58	kips
Available Long Shear Strength at Pin	67.18	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	80.75	kips
Usage	**1.47**	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	**0.92**	<1.0 OK

Sway Rod X - Gusset Plate Connection Analysis (109 ± AGL) (AISC 14th Ed. Sec D5)		
Gussett Plate Thickness	0.375	Existing (Assumed, V.I.F.)
Plate Yield Stress, Fy (psi)	33,000	**ASTM A7-39 used (tank built circa 1946)**
Plate Tensile Stress, Fu (psi)	60,000	**ASTM A7-39 used (tank built circa 1946)**
beff	1.380	in
b	2.060	in
Asf	2.376	in^2
a	2.230	in
d	1.875	in
Apb	0.703	in^2
Ultimate Force in Direction of Rod	38.69	kips
Available Tension Strength at Pin (Net)	46.58	kips
Available Long Shear Strength at Pin	64.14	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	90.10	kips
Usage	**1.24**	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	**0.79**	<1.0 OK

All-Points Technology Corporation
Consulting Engineers
3 Saddlebrook Drive,
Killingworth, CT 06419
Ph. 860-663-1697
Fax. 860-663-0935

Subject: **Existing Built-Up Column, Lacing Bar and Girt Analysis**

Project: **Verizon - South Windsor North CT - LSub6**

Prepared: **07.09.21** Revised: APT Job No. **CT141_12500**

Lattice Column & Lacing Bar Analysis

Column Steel Yield Strength	33	ksi, ASTM A7-39 (tank built circa 1946)
Column Area	12.095	in^2
Lacing Bar Thickness	0.375	in
Lacing Bar Depth	2.25	in
Column Moment of Inertia, Ixx	257.41	in^4 (Calculated Externally)
Column Moment of Inertia, Iyy	286.94	in^4 (Calculated Externally)
Column Radius of Gyration, rxx	4.613	in (Calculated Externally)
Column Radius of Gyration, ryy	4.871	in (Calculated Externally)
Column Unbraced Length	445.200	in
Column Effective Length Factor, K	1.000	
Channel Flange Slenderness Ratio	5.868	(Calculated Externally)
Channel Web Slenderness Ratio	34.57	(Calculated Externally)
Lacing Plate Slenderness Ratio	6.00	(Calculated Externally)
Slenderness Parameters		
b/t ≤ 0.56(E/Fy)^2	16.60	Channel Flange - Unstiffened Element
h/tw ≤ 1.49(E/Fy)^2	44.17	Channel Web - Stiffened Element
b/t ≤ 0.45(E/Fy)^2	13.34	Lacing Plate - Unstiffened Element
Column Slenderness Ratio, KL/r	96.51	if < 200, OK
Column Elastic Buckling Stress, Fe	30.73	ksi
Fcr	21.05	ksi
Column Design Compressive Strength, ∅Pn	229.17	kips
Ultimate Compressive Force, Pu	129.17	kips, (1.2DL + 1.0WL) Tank Empty No longer used to store water.
Built-Up Column Usage	**0.56**	if <=1.0, OK
Length of Angle Chord Between Lacing Bars, la	16.38	in
Channel, ryy	0.797	in (Calculated Externally)
75% of Column KL/r	72.38	
La/rz	20.55	< 75% Column KL/r, OK
Length of Lacing Between Channel Chords, Lb	11.31	in
Radius of Gyration of Bar, rb	0.108	
lb/rb	104.51	if < 140, OK
Bar Elastic Buckling Stress, Fe	26.20	ksi
Fcr	19.48	ksi
Lacing Bar Design Compressive Strength, ∅Pn bar	16.44	kips
Required Shearing Strength on Each Face of Latticed Column	2.29	kips, (2% Built-Up Column Compression Strength)
Axial Force in Lacing Bar	3.24	kips, if < Lacing Bar
Lacing Bar Usage	**0.20**	if <=1.0, OK

Built-Up Girt Analysis - Level 1 - 37-ft+/- (C7x9.8 Toe Up Over C6x8.2 Vert, est.)

Girt Steel Yield Strength	33	ksi, ASTM A7-39 (tank built circa 1946)
Built-Up Girt Area	5.226	in^2
Moment of Inertia, Ixx	30.86	in^4 (Calculated Externally)
Moment of Inertia, Iyy	22.01	in^4 (Calculated Externally)
Radius of Gyration, rxx	2.430	in (Calculated Externally)
Radius of Gyration, ryy	2.052	in (Calculated Externally)
Unbraced Length	332.180	in
Effective Length Factor, K	1.000	
Lower Channel Flange Slenderness Ratio	5.598	(Calculated Externally)
Lower Channel Web Slenderness Ratio	21.88	(Calculated Externally)
Upper Channel Flange Slenderness Ratio	5.710	(Calculated Externally)
Upper Channel Web Slenderness Ratio	25.00	(Calculated Externally)
Slenderness Parameters		
b/t ≤ 0.56(E/Fy)^2	16.60	Channel Flange - Unstiffened Element
h/tw ≤ 1.49(E/Fy)^2	44.17	Channel Web - Stiffened Element
Slenderness Ratio, KL/r	161.88	if < 200, OK
Elastic Buckling Stress, Fe	10.92	ksi
Fcr	9.58	ksi
Design Compressive Strength, ∅Pn	45.05	kips
Ultimate Compressive Force, Pu	31.56	kips, (1.0WL)/Two Sides - Tank Empty No longer used to store water.
Lower Built-Up Girt Usage	**0.70**	if <=1.0, OK

Built-Up Girt Analysis - Level 2 - 74-ft+/- (C6x8.2 Toe Up Over C6x8.2 Vert, est.)

Girt Steel Yield Strength	33	ksi, ASTM A7-39 (tank built circa 1946)
Built-Up Girt Area	4.76	in^2
Moment of Inertia, Ixx	29.11	in^4 (Calculated Externally)
Moment of Inertia, Iyy	13.90	in^4 (Calculated Externally)
Radius of Gyration, rxx	2.473	in (Calculated Externally)
Radius of Gyration, ryy	1.709	in (Calculated Externally)
Unbraced Length	244.300	in
Effective Length Factor, K	1.000	
Lower Channel Flange Slenderness Ratio	5.710	(Calculated Externally)
Lower Channel Web Slenderness Ratio	25.00	(Calculated Externally)
Upper Channel Flange Slenderness Ratio	5.710	(Calculated Externally)
Upper Channel Web Slenderness Ratio	25.00	(Calculated Externally)
Slenderness Parameters		
b/t ≤ 0.56(E/Fy)^2	16.60	Channel Flange - Unstiffened Element
h/tw ≤ 1.49(E/Fy)^2	44.17	Channel Web - Stiffened Element
Slenderness Ratio, KL/r	142.95	if < 200, OK
Elastic Buckling Stress, Fe	14.01	ksi
Fcr	12.28	ksi
Design Compressive Strength, ∅Pn	52.62	kips
Ultimate Compressive Force, Pu	23.75	kips, (1.0WL)/Two Sides - Tank Empty No longer used to store water.
Lower Built-Up Girt Usage	**0.45**	if <=1.0, OK

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141_12500
Site Name:	South Windsor North CT
Date:	07.09.21

Use (1) 3/4" DIA. Threaded Rod set in Hilti RE-500 Epoxy w/ 12" min. embedment

T_{allow} =	23070	lbs	
V_{allow} =	49690	lbs	
Anchor Quantity =	1.0		
f_{AN} =	0.69		*<< Spacing Reduction Factor, 10"*
f_{RN} =	0.66		*<< Edge Distance Reduction Factor, 18"*
f_{Av} =	0.58		*<< Spacing Reduction Factor, 10"*
f_{RV} =	0.66		*<< Edge Distance Reduction Factor, 18" (Parallel)*
f_{RV} =	0.74		*<< Edge Distance Reduction Factor, 18" (Perpendicular)*
f_{HV} =	1.00		*<< Concrete Thickness Reduction Factor*
LRFD Factor =	1		

Capacities:

T_{allow} =	10506.1	lbs	
V_{allow} =	19021.3	lbs	*(Parallel)*
V_{allow} =	21326.9	lbs	*(Perpendicular)*

General Section Property Calculator

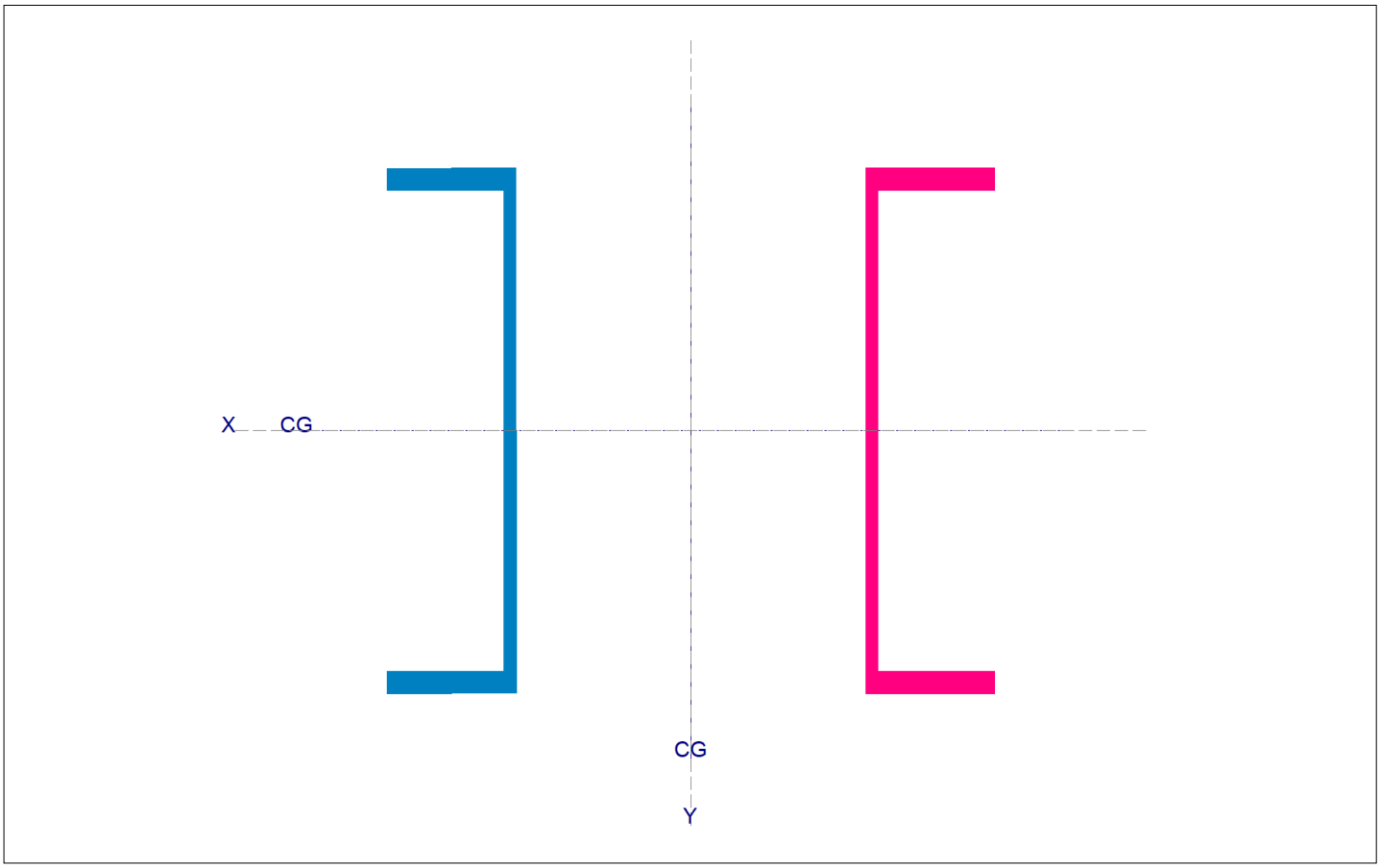
Lic. # : KW-06006315 ALL-POINTS TECHNOLOGY CORP.

DESCRIPTION: Built -Up Latticed Column Section Properties

Final Section Properties

Total Area	:	12.095 in^2	Ixx	:	257.406 in^4	Sxx : - Y	: 42.901 in^3
			Iyy	:	286.937 in^4	Sxx : +Y	: 42.901 in^3
Calculated final C.G. distance from Datum :						Syy : - X	: 41.345 in^3
X cg Dist.	:	0.0 in	Zxx	:	50.929 in^3	Syy : +X	: 41.345 in^3
Y cg Dist.	:	0.0 in	Zyy	:	57.914 in^3		
Edge Distances from CG. :						r xx	: 4.613 in
+X	:	6.940 in	+Y	:	6.0 in	r yy	: 4.871 in
-X	:	-6.940 in	-Y	:	in		

Rotation of All Components @ Angle : 0.00 deg CCW



Rectangular & Circular Shapes

Rectangular Shape : 1	Height =	0.000 in	Width =	0.000 in	Rotation =	0 deg CCW
	Area =	0.000 in^2	Xcg =	0.000 in		
			Ycg =	0.000 in		

General Section Property Calculator

Lic. # : KW-06006315 ALL-POINTS TECHNOLOGY CORP.

DESCRIPTION: Built -Up Latticed Column Section Properties

Rectangular Shape : 2

Height =	0.000 in	Width =	0.000 in	Rotation =	0 deg CCW
Area =	0.000 in^2	Xcg =	0.000 in		
		Ycg =	0.000 in		

Steel Shapes

C12x20.7 : 1

Area =	6.047 in^2	Rotation =	180 deg CCW
		Xcg =	-4.698 in
		Ycg =	0.000 in

C12x20.7 : 2

Area =	6.047 in^2	Rotation =	0 deg CCW
		Xcg =	4.698 in
		Ycg =	0.000 in

Title Block Line 1
You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 9 JUL 2020, 10:22PM

General Section Property Calculator

File: Lattice Column & Girt Section Properties.ec6

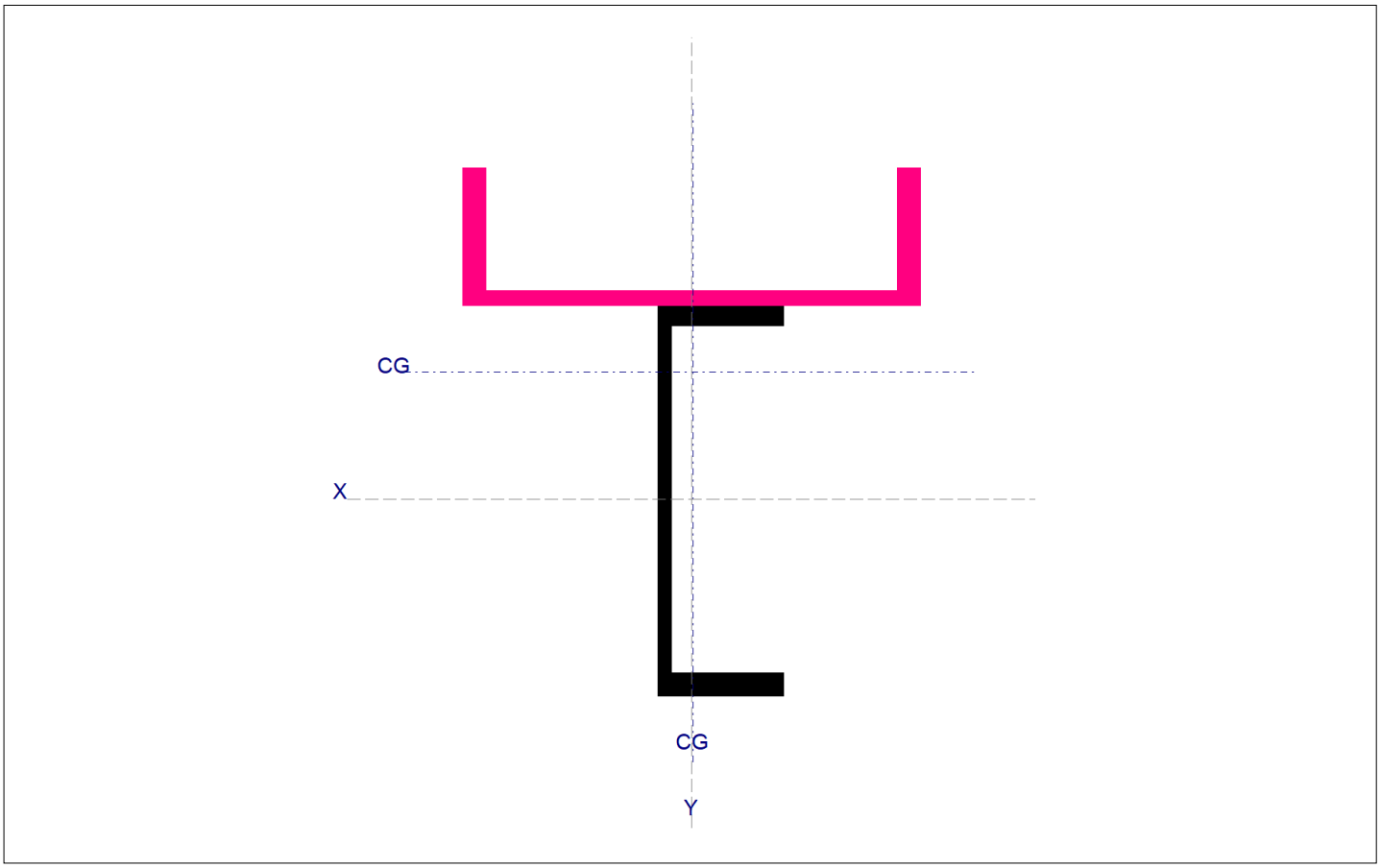
Lic. # : KW-06006315
ALL-POINTS TECHNOLOGY CORP.

DESCRIPTION: Existing Level 1 Horz Girt Section Properties

Final Section Properties

Total Area	:	5.226 in^2	Ixx	:	30.862 in^4	Sxx : - Y	: 6.234 in^3
			Iyy	:	22.007 in^4	Sxx : +Y	: 9.952 in^3
Calculated final C.G. distance from Datum :						Syy : - X	: 6.219 in^3
X cg Dist.	:	0.02912 in	Zxx	:	8.80 in^3	Syy : +X	: 6.323 in^3
Y cg Dist.	:	1.950 in	Zyy	:	8.289 in^3		
Edge Distances from CG. :						r xx	: 2.430 in
+X	:	3.480 in	+Y	:	3.101 in	r yy	: 2.052 in
-X	:	-3.539 in	-Y	:	in		

Rotation of All Components @ Angle : 0.00 deg CCW



Steel Shapes

C6x8.2 : 1	Area =	2.380 in^2	Rotation =	0 deg CCW	
			Xcg =	0.000 in	
			Ycg =	0.000 in	
C7x9.8 : 2	Area =	2.846 in^2	Rotation =	90 deg CCW	
			Xcg =	0.000 in	
			Ycg =	3.512 in	

Title Block Line 1
You can change this area using the "Settings" menu item and then using the "Printing & Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 9 JUL 2020, 10:23PM

General Section Property Calculator

File: Lattice Column & Girt Section Properties.ec6

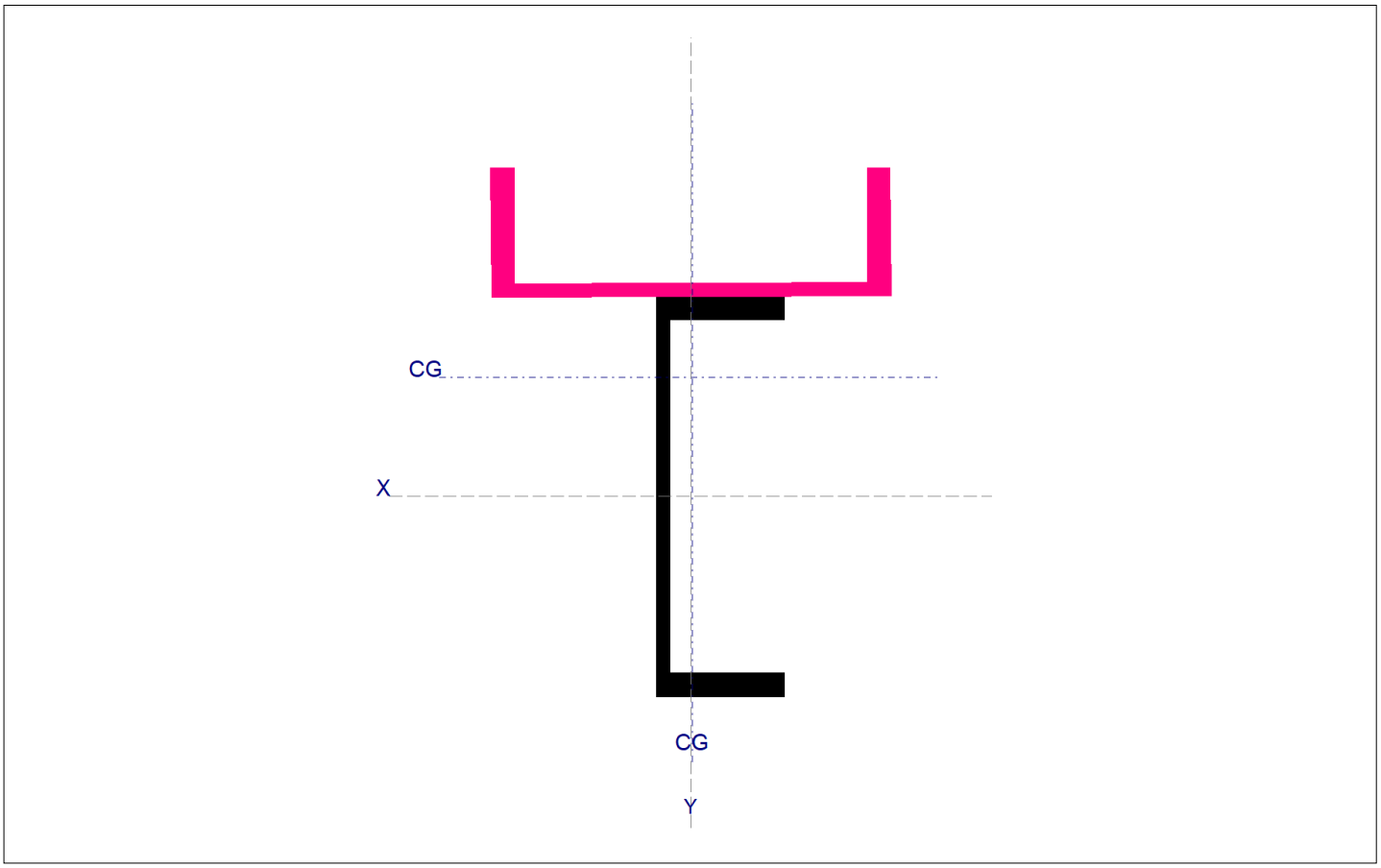
Lic. # : KW-06006315
ALL-POINTS TECHNOLOGY CORP.

DESCRIPTION: Existing Level 2 Horz Girt Section Properties

Final Section Properties

Total Area	:	4.760 in^2	Ixx	:	29.111 in^4	Sxx : - Y	: 6.080 in^3
			Iyy	:	13.899 in^4	Sxx : +Y	: 9.324 in^3
Calculated final C.G. distance from Datum :						Syy : - X	: 4.570 in^3
X cg Dist.	:	0.03198 in	Zxx	:	8.510 in^3	Syy : +X	: 4.668 in^3
Y cg Dist.	:	1.788 in	Zyy	:	6.288 in^3		
Edge Distances from CG. :						r xx	: 2.473 in
+X	:	2.978 in	+Y	:	3.122 in	r yy	: 1.709 in
-X	:	-3.042 in	-Y	:	in		

Rotation of All Components @ Angle : 0.00 deg CCW



Steel Shapes

C6x8.2 : 1	Area =	2.380 in^2	Rotation =	0 deg CCW	
			Xcg =	0.000 in	
			Ycg =	0.000 in	
C6x8.2 : 2	Area =	2.380 in^2	Rotation =	90 deg CCW	
			Xcg =	0.000 in	
			Ycg =	3.512 in	

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141NB7760
Site Name:	South Windsor North CT
Date:	7/10/2020
Sheet:	of

Use (1) 3/4" DIA. Threaded Rod set in Hilti RE-500 Epoxy w/ 12" min. embedment

T_{allow} =	23070	lbs
V_{allow} =	49690	lbs
Anchor Quantity =	1.0	

f_{AN} =	0.69	*<< Spacing Reduction Factor, 10"*
f_{RN} =	0.66	*<< Edge Distance Reduction Factor, 18"*
f_{Av} =	0.58	*<< Spacing Reduction Factor, 10"*
f_{RV} =	0.66	*<< Edge Distance Reduction Factor, 18" (Parallel)*
f_{RV} =	0.74	*<< Edge Distance Reduction Factor, 18" (Perpendicular)*
f_{HV} =	1.00	*<< Concrete Thickness Reduction Factor*
LRFD Factor	1	

Reductions per Table 36 Hilti Anchor Fastening Technical Guide (19th edition)

Capacities:

T_{allow} =	10506.1	lbs	
V_{allow} =	19021.3	lbs	*(Parallel)*
V_{allow} =	21326.9	lbs	*(Perpendicular)*

ALL-POINTS TECHNOLOGY CORPORATION
3 Saddlebrook Drive,
Killingworth, CT 06419
PH: 860-663-1697: FAX: 860-663-0935

Elevated Reservoir Foundation Analysis:

Note: Structure no longer utilized as a water tank and is empty.

Max Reactions:

Un-factored Base Axial Load =	$P := 74.3 \cdot kip$	(User Input)	(Un-factored Axial Load = Tank Self Weight + Wireless Equip DL - Stand Pipe & 1/2 x Spider Rod DL)
Ultimate Base Shear Load =	$V := 70.3 \cdot kip$	(User Input)	
Ultimate Base Moment =	$M := 5291 \cdot ft \cdot kip$	(User Input)	

Load Factors:

Dead Load Factor =	$DL_{f1} := 0.9$	
Dead Load Factor =	$DL_{f2} := 1.2$	
Wind Load Factor =	$WL_f := 1.0$	

Foundation Data:

Foundation data obtained by field investigation during June 2017 and June 2021.

Top Width of Frustrum Pyramid =	$W_{top} := 67.3 \ in$	(User Input)	
Bot Width of Frustrum Pyramid =	$W_{bot} := 127.43 \ in$	(User Input)	
Top Area of Frustrum Pyramid =	$B_{1top} := 4509.5 \ in^2$	(User Input)	
Bot Area of Frustrum Pyramid =	$B_{2bot} := 16396 \ in^2$	(User Input)	
Overall Depth of Pyramid =	$D_f := 74 \ in$	(User Input)	
Base Thickness =	$T_{base} := 0.00 \cdot in$	(User Input)	
Base Width =	$W_{base} := 0.00 \cdot in$	(User Input)	
Height of Foundation Above Grade =	$T_{ext} := 4.00 \cdot in$	(User Input)	
Depth to Water Table =	$D_{wt} := 99 \cdot ft$	(User Input)	Note: Set Dwt to a value greater than total depth of footing if water table does not affect footing.
Water Tank Leg Circle Diameter =	$D_{circle} := 594.00 \cdot in$	(User Input)	
Number of Legs =	$N_{leg} := 4.00$	(User Input)	
Depth to Base of Foundation from Grade =	$D_{base} := D_f + T_{base} - T_{ext} = 5.833 \ ft$		

Material Data:

Concrete Compressive Strength =	$f_c := 3000 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$F_y := 40000 \ psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Ultimate Soil Bearing Capacity =	$q_s := 8000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 110 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$D_n := 6 \ in$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Coefficient of Friction Beween Concrete =	$\mu := 0.45$	(User Input)	
Coefficient of Lateral Soil Pressure =	$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$		
Adjusted Concrete Unit Weight =	$\gamma_c = 150 \ pcf$		
Adjusted Soil Unit Weight =	$\gamma_s = 110 \ pcf$		

ALL-POINTS TECHNOLOGY CORPORATION
3 Saddlebrook Drive,
Killingworth, CT 06419
PH: 860-663-1697: FAX: 860-663-0935

Determine Maximum Uplift and Compression Forces at Leg:

Factored Shear Force per Leg = $V_{leg} := \left(\frac{V \cdot WL_f}{N_{leg}}\right) = 17.575$ **kip**

Factored Max Leg Uplift Force = $U_{plift} := \left(\frac{WL_f \cdot (4 \cdot M)}{N_{leg} \cdot D_{circle}}\right) - \left(\frac{DL_{f1} \cdot P}{N_{leg}}\right) = 90.17$ **kip**

Factored Max Leg Compression Force = $C_{ompression} := \left(\frac{WL_f \cdot (4 \cdot M)}{N_{leg} \cdot D_{circle}}\right) + \left(\frac{DL_{f2} \cdot P}{N_{leg}}\right) = 129.18$ **kip**

Calculate Foundation Volume:

Volume of Frustum Pyramid Concrete Foundation = $V_{Frutstum} := \frac{1}{3} \cdot D_f \cdot \left(B_{1top} + B_{2bot} + \sqrt{B_{1top} \cdot B_{2bot}}\right) = 421.16$ **ft**^{3}

Gross Volume of Conc = $V_{conc} := V_{Frutstum} = 421.16$ **ft**^{3}

Volume of Frustum Pyramid Below Grade (Minus Depth to Neglect) = $V_{Frutstumnet} := \frac{1}{3} \cdot (D_{base}) \cdot \left(B_{1top} + B_{2bot} + \sqrt{B_{1top} \cdot B_{2bot}}\right) = 398.4$ **ft**^{3}

Net Volume of Conc = $V_{concnet} := V_{Frutstumnet} = 398.4$ **ft**^{3}

Stability of Footing:

Cross-Sectional Area of Resisting Soil at Base of Foundation = $B_1 := B_{2bot} = 113.861$ **ft**^{2}

Cross-Sectional Area of Resisting Soil at Top of Foundation (Minus Depth to Neglect) = $B_2 := 302.98$ **ft**^{2}

Volume of Resisting Soil = $V_{Soil} := \frac{1}{3} \cdot \left((D_{base}) \cdot \left(B_1 + B_2 + \sqrt{B_1 \cdot B_2}\right)\right) - V_{concnet} = 773.28$ **ft**^{3}

Weight of Concrete = $Wt_{conc} := V_{conc} \cdot \gamma_c = 63.17$ **kip**

Weight of Resisting Soil = $Wt_{soil} := V_{Soil} \cdot \gamma_s = 85.06$ **kip**

Total Resisting Weight of Soil & Conc = $Wt_{Total} := (DL_{f1} \cdot Wt_{conc} + 0.75\ Wt_{soil}) = 120.65$ **kip**

Uplift Interaction Ratio = $Usage := \left(\frac{U_{plift}}{Wt_{Total}}\right) = 0.75$

$UsageCheck := \text{if}\left(\frac{U_{plift}}{Wt_{Total}} \leq 1.05, \text{“Okay”}, \text{“No Good”}\right)$

$UsageCheck = \text{“Okay”}$

Appendix B

Reference Information

verizon fuze | RFDS

EAST > North East > New England > New England West > SOUTH WINDSOR NORTH CT - water tank

Brauer, Mark - mark.brauer2@verizonwireless.com - 5/6/2021 9:28:39

Project Details

Carrier Aggregation:	false
MPT Id:	
eCIP-0:	false
Project Name:	5G L-Sub6 - Carrier Add
FUZE Project ID:	16560063
Designed Sector Carrier 4G:	15
Designed Sector Carrier 5G:	3
Additional Sector Carrier 4G:	N/A
Additional Sector Carrier 5G:	N/A
SiteTraker Project Id:	
FP Solution Type & Tech Type:	MODIFICATION;5G_L-Sub6-Prep
Suffix:	

Location Information

Site ID:	2578557
E-NodeB ID:	0068554,068554
PSLC:	469756
Switch Name:	
Tower Owner:	
Tower Type:	
Site Type:	MACRO
Street Address:	50 Plantation road
City:	East Windsor
State:	CT
Zip Code:	06016
County:	Hartford
Latitude:	41.87565194 / 41° 52' 32.347" N
Longitude:	-72.56482972 / 72° 33' 53.387" W

RFDS Project Scope: Sub 6 add
CBRS add

Antenna Summary

Added

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
LTE	5G	LTE				COMMSCOPE	NHH-65B-R2B	102	105	20(A) 140(B) 260(C)	true	true	PHYSICAL	3
LTE	5G		LTE	5G		COMMSCOPE	NHHSS-65B-R2B	102	105	20(A) 140(B) 260(C)	true	true	PHYSICAL	3
					5G	Samsung	MT6407-77A	94	95.5	20(A) 140(B) 260(C)	false	false	PHYSICAL	3

Removed

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
LTE	5G		LTE			COMMSCOPE	NNHH-65B-R4	102	105	20(A) 140(B) 260(C)	false	false	PHYSICAL	3
		LTE				COMMSCOPE	NNHH-65B-R4	94	97	20(A) 140(B) 260(C)	false	false	PHYSICAL	3

Retained

700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity

No data available.

Added: 9 **Removed:** 6 **Retained:** 0

Equipment Summary

Added

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Mount	Tower							Commscope	BASMNT-SBS-1-2			PHYSICAL	3
RRU	Tower					LTE		Samsung	CBRS RRH - RT4401-48A			PHYSICAL	3
RRU	Tower						5G	Samsung	MT6407-77A			PHYSICAL	3

Removed

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity

No data available.

Retained

Equipment Type	Location	700	850	1900	AWS	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
RRU	Tower			LTE	LTE			Samsung	B2/B66A RRH-BR049 (RFV01U-D1A)			PHYSICAL	3
RRU	Tower	LTE	5G					Samsung	B5/B13 RRH-BR04C (RFV01U-D2A)			PHYSICAL	3
Hybrid Cable	Tower											PHYSICAL	3
OVP Box	Tower											PHYSICAL	3

Service Info

700 MHz LTE		0002			5GLS	
Sector	**01**	**02**	**03**	**01**	**02**	**03**
Azimuth	20	140	260	20	140	260
Cell / ENode B ID	068554	068554	068554	068554	068554	068554
Antenna Model	NNHH-65B-R4	NNHH-65B-R4	NNHH-65B-R4	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	102	102	102	102	102	102
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	4	2	4	4	2	4
Tip Height	105	105	105	105	105	105
Regulatory Power	68.01	65.85	68.01	73.6	71.26	73.6
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4	4,4	4,4
Position						
Transmitter Id	1967093	1967283	1967288	10225856	10225859	10225862
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

850 MHz 5GNR		0002			5GLS	
Sector	**0001**	**0002**	**0003**	**0001**	**0002**	**0003**
Azimuth	20	140	260	20	140	260
Cell / ENode B ID	0068554	0068554	0068554	0068554	0068554	0068554
Antenna Model	NNHH-65B-R4	NNHH-65B-R4	NNHH-65B-R4	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	102	102	102	102	102	102
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	4	2	4	4	2	4
Tip Height	105	105	105	105	105	105
Regulatory Power	324.8	316.68	324.8	306.07	290.63	289.96
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)	B5/B13 RRH-BR04C (RFV01U-D2A)
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4	4,4	4,4
Position						
Transmitter Id	10225644	10225645	10225646	10225853	10225854	10225855
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

1900 MHz LTE		0002			5GLS	
Sector	**01**	**02**	**03**	**01**	**02**	**03**
Azimuth	20	140	260	20	140	260
Cell / ENode B ID	068554	068554	068554	068554	068554	068554
Antenna Model	NNHH-65B-R4	NNHH-65B-R4	NNHH-65B-R4	NHH-65B-R2B	NHH-65B-R2B	NHH-65B-R2B
Antenna Make	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	94	94	94	102	102	102
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	2	2	2	2	2	2
Tip Height	97	97	97	105	105	105
Regulatory Power	224.16	224.16	224.16	267.15	267.15	267.15
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4	4,4	4,4
Position						
Transmitter Id	1967095	1967285	1967290	10225857	10225860	10225863
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

2100 MHz LTE

	0002			5GLS		
Sector	**01**	**02**	**03**	**01**	**02**	**03**
Azimuth	20	140	260	20	140	260
Cell / ENode B ID	068554	068554	068554	068554	068554	068554
Antenna Model	NNHH-65B-R4	NNHH-65B-R4	NNHH-65B-R4	NHHSS-65B-R2B	NHHSS-65B-R2B	NHHSS-65B-R2B
Antenna Make	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE	COMMSCOPE
Antenna Centerline(Ft)	102	102	102	102	102	102
Mechanical Down-Tilt(Deg.)	0	0	0	0	0	0
Electrical Down-Tilt	2	2	2	0	0	0
Tip Height	105	105	105	105	105	105
Regulatory Power	103.64	103.64	103.64	143.06	143.06	143.06
Total ERP (W)						
TMA Make						
TMA Model						
RRU Make	Samsung	Samsung	Samsung	Samsung	Samsung	Samsung
RRU Model	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)	B2/B66A RRH-BR049 (RFV01U-D1A)
Number of Tx, Rx Lines	4,4	4,4	4,4	4,4	4,4	4,4
Position						
Transmitter Id	1967233	1967286	1967291	10225858	10225861	10225864
Source	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API	ATOLL_API

CBRS 3_5 GHz

	5GLS		
Sector	**19**	**20**	**21**
Azimuth	20	140	260
Cell / ENode B ID	068554	068554	068554
Antenna Model	NHHSS-65B-R2BT4	NHHSS-65B-R2BT4	NHHSS-65B-R2BT4
Antenna Make	CommScope	CommScope	CommScope
Antenna Centerline(Ft)	102	102	102
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	4	4	4
Tip Height	105	105	105
Regulatory Power	12.78	12.78	12.78
Total ERP (W)			
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A	CBRS RRH - RT4401-48A
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	10225935	10225936	10225937
Source	ATOLL_API	ATOLL_API	ATOLL_API

nL-Sub6

	5GLS		
Sector	**0001**	**0002**	**0003**
Azimuth	20	140	260
Cell / ENode B ID	0068554	0068554	0068554
Antenna Model	MT6407-77A	MT6407-77A	MT6407-77A
Antenna Make	Samsung	Samsung	Samsung
Antenna Centerline(Ft)	94	94	94
Mechanical Down-Tilt(Deg.)	0	0	0
Electrical Down-Tilt	6	6	6
Tip Height	95.5	95.5	95.5
Regulatory Power	751.94	751.94	751.94
Total ERP (W)			
TMA Make			
TMA Model			
RRU Make	Samsung	Samsung	Samsung
RRU Model	MT6407-77A	MT6407-77A	MT6407-77A
Number of Tx, Rx Lines	4,4	4,4	4,4
Position			
Transmitter Id	10225971	10225972	10225973
Source	ATOLL_API	ATOLL_API	ATOLL_API

Service Comments

Callsigns Per Antenna

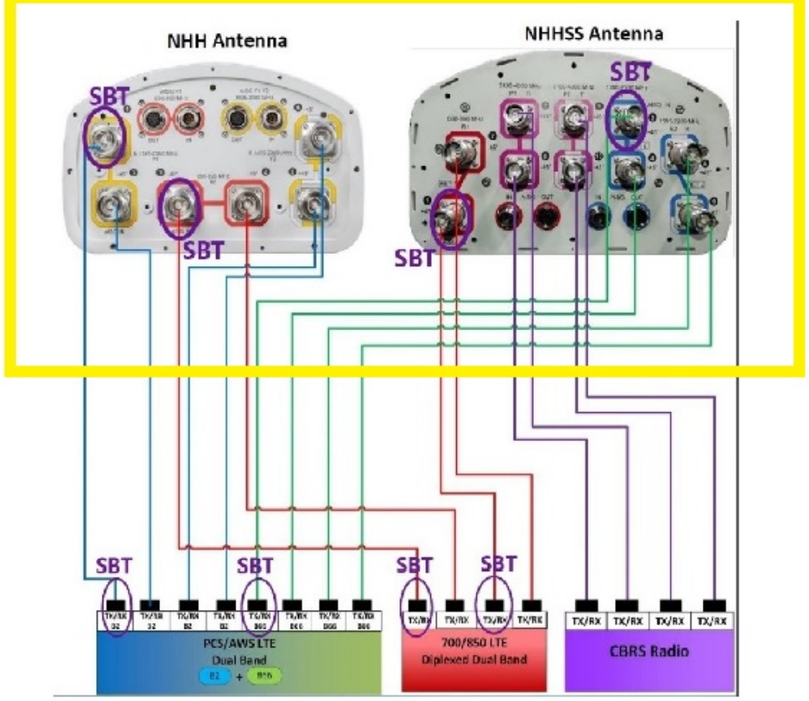
Sector	Antenna Ma	Antenna Mo	Ant CL Height AGL	Tip Height	Azimuth (TI	Electrical Tilt	Mechanical Tilt	Gain	Beamwidth	Regulatory Power	Callsigns						
											700	850	1900	2100	28 GHz	31 GHz	39 GHz
No data available.																	

Callsigns

Callsign	Market	Radio Code	Market Number	Block	State	County	Licensee Name	Wholly Owned	Total MHZ	Freq Range 1	Freq Range 2	Freq Range 3	Freq Range 4	Regulatory Power	Threshold (W)	POPs/Sq Mi	Status	Action	Approved for Insvc
WQJQ689	Northeast	WU	REA001	C	CT	Hartford	Cellco Partnership	Yes	22.000	746.000-757.000	776.000-787.000	.000-.000	.000-.000	73.6	1000	1216.19	Active	added	Yes
KNKA404	Hartford-New Britain-Bristol, CT	CL	CMA032	A	CT	Hartford	Cellco Partnership	Yes	25.000	824.000-835.000	869.000-880.000	845.000-846.500	890.000-891.500	306.07	400	1216.19	Active	added	Yes
WPOJ730	Hartford, CT	CW	BTA184	C	CT	Hartford	Cellco Partnership	Yes	15.000	1895.000-1902.500	1975.000 1982.500	.000-.000	.000-.000	267.15	1640	1216.19	Active	added	Yes
KNLH251	Hartford, CT	CW	BTA184	F	CT	Hartford	Cellco Partnership	Yes	10.000	1890.000-1895.000	1970.000 1975.000	.000-.000	.000-.000	267.15	1640	1216.19	Active	added	Yes
CBRS_CALL	UNLICENSE	3.5 GHz	UNLICENSE	UNLICENSE	CT	Hartford	UNLICENSE	UNLICENSE	UNLICENSE	UNLICENSED-UNLICEI	UNLICENSED-UNLICEI	UNLICENSED-UNLICEI	UNLICENSED-UNLICEI	12.78		1216.19	Active	added	No
WRLD515	D09003 - Hartford, CT	PL	D09003	0	CT	Hartford	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	12.78		.00	Active	added	Yes
WRLD514	D09003 - Hartford, CT	PL	D09003	0	CT	Hartford	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	12.78		.00	Active	added	Yes
WRLD513	D09003 - Hartford, CT	PL	D09003	0	CT	Hartford	Verizon Wireless Network Procure LP	Yes	100.000	3550.000-3650.000	.000-.000	.000-.000	.000-.000	12.78		.00	Active	added	Yes
WQGB276	Hartford-New Britain-Bristol, CT	AW	CMA032	A	CT	Hartford	Cellco Partnership	Yes	20.000	1710.000 1720.000	2110.000 2120.000	.000-.000	.000-.000	143.06	1640	1216.19	Active	added	Yes
WQGA906	New York-No. New Jer.-Long Island, NY-NJ-CT-PA-MA-	AW	BEA010	B	CT	Hartford	Cellco Partnership	Yes	20.000	1720.000 1730.000	2120.000-2130.000	.000-.000	.000-.000	143.06	1640	1216.19	Active	added	Yes
WPOH943	Hartford, CT	LD	BTA184	A	CT	Hartford	Cellco Partnership	Yes	300.000	29100.000-29250.000	31075.000-31225.000	.000-.000	.000-.000			1216.19	Active		No
WPLM398	Hartford, CT	LD	BTA184	B	CT	Hartford	Cellco Partnership	Yes	150.000	31000.000-31075.000	31225.000-31300.000	.000-.000	.000-.000			1216.19	Active		No
WRBA708	Hartford, CT	UU	BTA184	L1	CT	Hartford	Cellco Partnership	Yes	325.000	27500.000-27600.000	27700.000-27925.000	.000-.000	.000-.000			1216.19	Active		Yes
WRBA709	Hartford, CT	UU	BTA184	L2	CT	Hartford	Cellco Partnership	Yes	325.000	27925.000-28050.000	28150.000-28350.000	.000-.000	.000-.000			1216.19	Active		Yes

WRHD609	New York, NY	UU	PEA001	M1	CT	Hartford	Straight Path um, LLC	Yes	100.000	37600.000-37700.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD610	New York, NY	UU	PEA001	M10	CT	Hartford	Straight Path um, LLC	Yes	100.000	38500.000-38600.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD611	New York, NY	UU	PEA001	M2	CT	Hartford	Straight Path um, LLC	Yes	100.000	37700.000-37800.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD612	New York, NY	UU	PEA001	M3	CT	Hartford	Straight Path um, LLC	Yes	100.000	37800.000-37900.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD613	New York, NY	UU	PEA001	M4	CT	Hartford	Straight Path um, LLC	Yes	100.000	37900.000-38000.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD614	New York, NY	UU	PEA001	M5	CT	Hartford	Straight Path um, LLC	Yes	100.000	38000.000-38100.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD615	New York, NY	UU	PEA001	M6	CT	Hartford	Straight Path um, LLC	Yes	100.000	38100.000-38200.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD616	New York, NY	UU	PEA001	M7	CT	Hartford	Straight Path um, LLC	Yes	100.000	38200.000-38300.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD617	New York, NY	UU	PEA001	M8	CT	Hartford	Straight Path um, LLC	Yes	100.000	38300.000-38400.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD618	New York, NY	UU	PEA001	M9	CT	Hartford	Straight Path um, LLC	Yes	100.000	38400.000-38500.000	.000-.000	.000-.000	.000-.000			1216.19	Active		Yes
WRHD619	New York, NY	UU	PEA001	N1	CT	Hartford	Straight Path um, LLC	Yes	100.000	38600.000-38700.000	.000-.000	.000-.000	.000-.000			1216.19	Active		No
PEND1050	Northeast	CC	REA001	A	CT	Hartford	Cellco Partnership	Yes	100.000	3700.000-3800.000	.000-.000	.000-.000	.000-.000			1216.19	Active		No

Upper level with SBS bracket

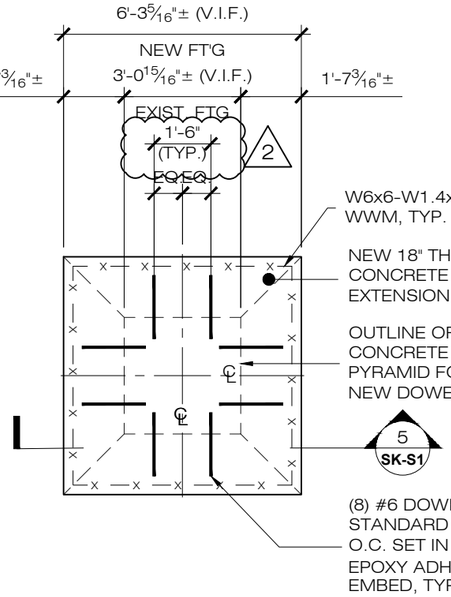


Sub 6

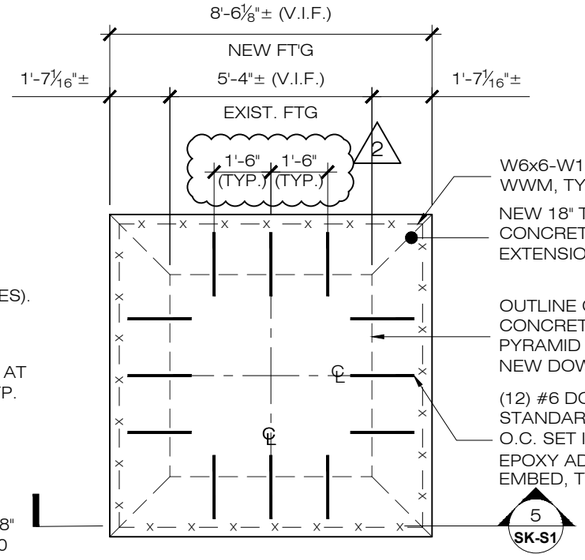
Lower level

NOTE:

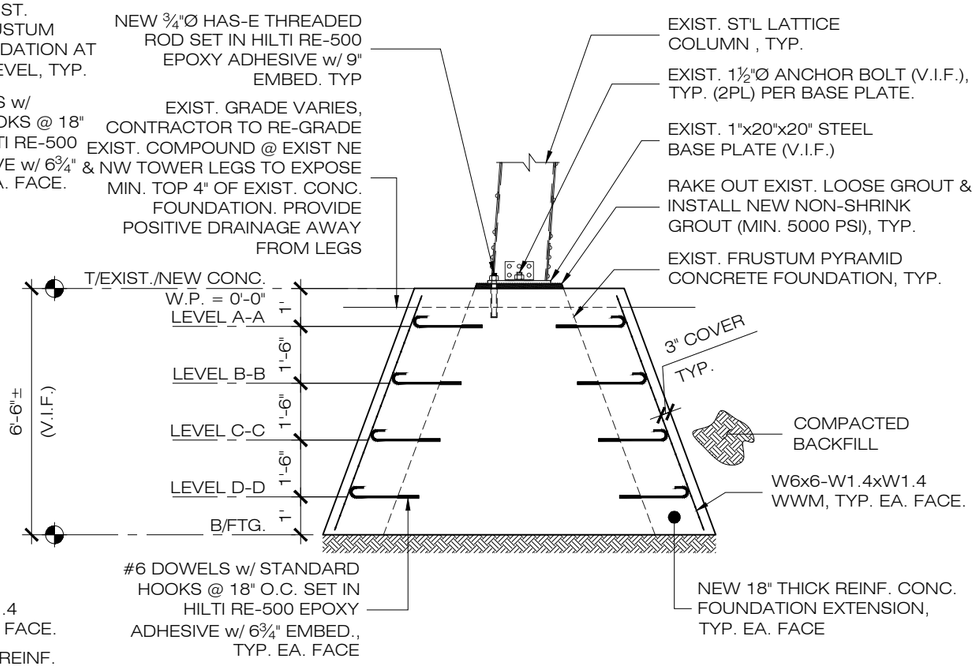
REFER TO REINFORCEMENT DESIGN DRAWINGS PREPARED BY ALL-POINTS TECHNOLOGY, P.C. MARKED REV0, DATED JULY 09, 2020 FOR ADDITIONAL INFORMATION NOT SHOWN HEREIN.



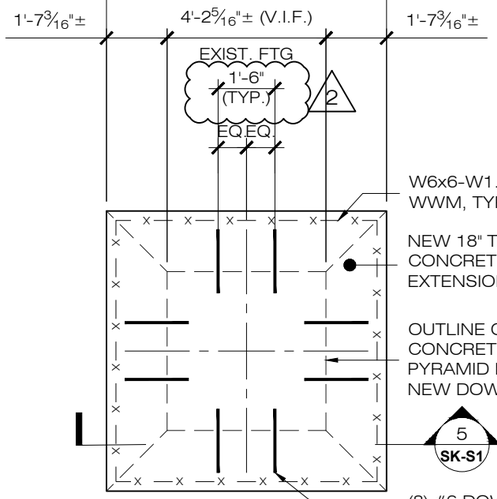
1 FND. REINF. PLAN A-A
SK-S1 SCALE : ¼" = 1'-0"



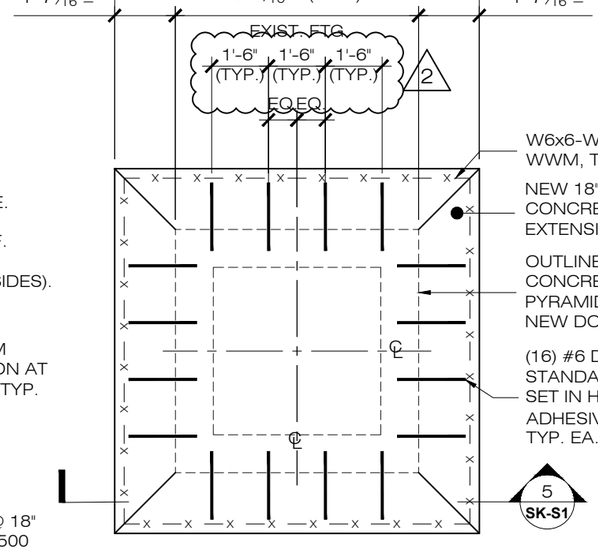
3 FND. REINF. PLAN C-C
SK-S1 SCALE : ¼" = 1'-0"



5 TYP. CONC. FND. REINF. SECTION
SK-S1 SCALE : ¼ " = 1'-0"



2 FND. REINF. PLAN B-B
SK-S1 SCALE : ¼" = 1'-0"



4 FND. REINF. PLAN D-D
SK-S1 SCALE : ¼" = 1'-0"

REVISIONS:
-REV0: 04/27/21: FOR CONSTRUCTION: JRM
-REV1: 06/08/21: REV. FOR CONSTRUCTION: JRM
-REV2:
-REV3:
-REV4:
-REV5:

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

SHEET NUMBER: SK-S1

SOUTH WINDSOR NORTH CT
50 PLANTATION ROAD
EAST WINDSOR, CT 06016

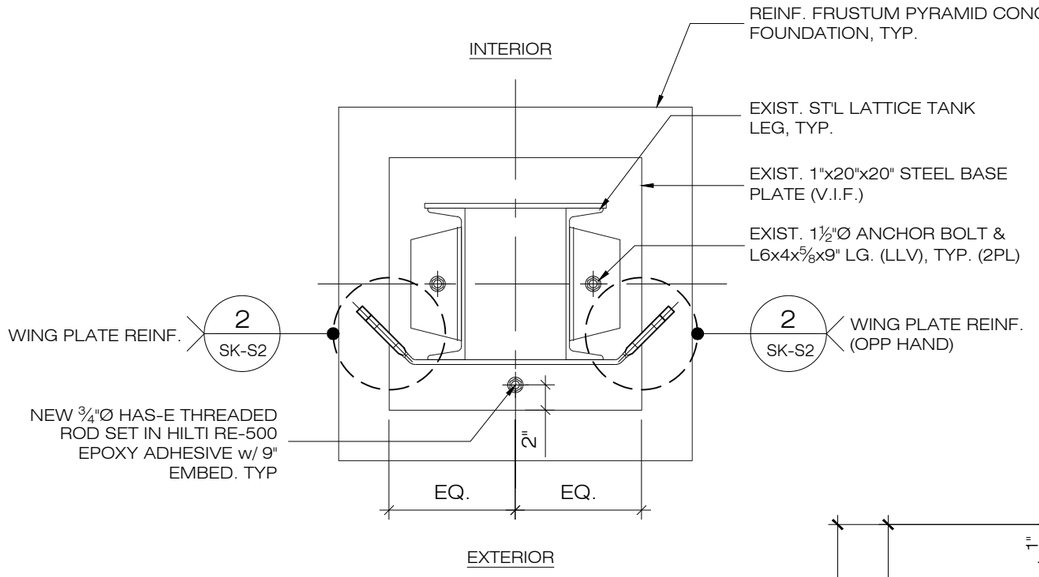
VZW FUZE ID: 2132728 VZW
VZW PROJECT CODE: 20171645681 LC: 469756 CM: BM

APT FILING NUMBER: CT141NB7760

FOUNDATION REINF. DETAILS

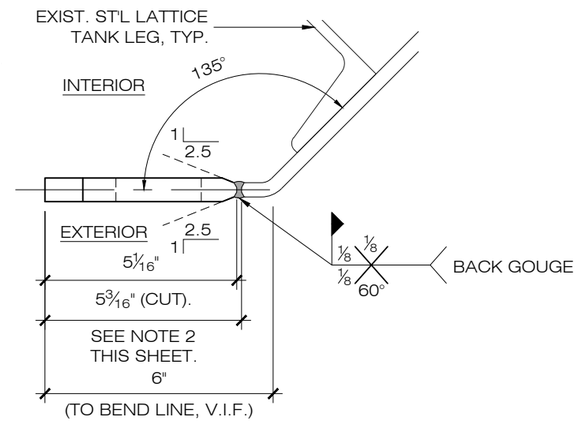
DATE OF DV: 04/27/21 DRAWN BY: JM
DATE: 04/26/21 CHECKED BY: JRM

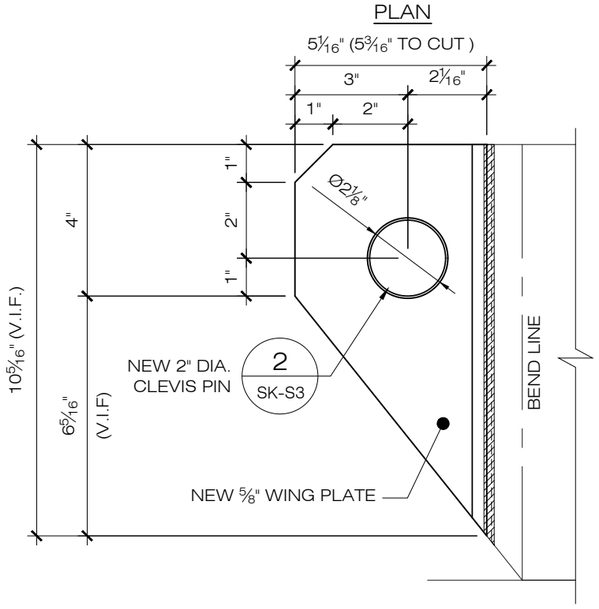
Cellco Partnership d/b/a verizon



BASE WING PLATE REINF. (TYP ALL LEGS)

1 SK-S2 SCALE : 1" = 1'-0"





ELEVATION

BASE WING PLATE DETAILS (TYP ALL LEGS)

2 SK-S2 SCALE : 3" = 1'-0"

NOTES:

1. REFER TO REINFORCEMENT DESIGN DRAWINGS PREPARED BY ALL-POINTS TECHNOLOGY, P.C. MARKED REV0, DATED JULY 09, 2020 FOR ADDITIONAL INFORMATION PERTAINING TO NEW SWAY ROD HARDWARE NOT SHOWN HEREIN.
2. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.
3. CUT & REMOVE PORTION OF EXIST. CORRODED ⅜" WING PLATE AS SHOWN (VERIFY EXTENT OF CORROSION AT EXIST. PIN CONNECTION W/ EOR PRIOR TO CUTTING.
4. ALL WELDS SHALL BE INSPECTED PER AWS D1.1/D1.1M.
5. ALL CJP WELDS SHALL BE INSPECTED PER AWS D1.1/D1.1M UTILIZING RADIOGRAPHIC TESTING (RT), OR ULTRASONIC TESTING (UT) PROCEDURES.

REVISIONS:
-REV0: 06/30/21: FOR CONSTRUCTION: JRM
-REV1:
-REV2:
-REV3:
-REV4:
-REV5:

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

SHEET NUMBER: **SK-S2**

SOUTH WINDSOR NORTH CT
50 PLANTATION ROAD
EAST WINDSOR, CT 06016

VZW FUZE ID: 2132728 VZW VZW
VZW PROJECT CODE: 20171645681 LC: 469756 CM: BM

APT FILING NUMBER: CT141NB7760

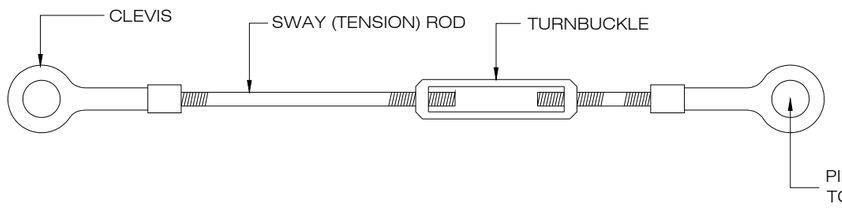
REINFORCEMENT DETAILS

DRAWN BY: JRM
CHECKED BY: MST
DATE OF DV: N/A
DATE: 04/26/21

Cellco Partnership d/b/a verizon

NOTES:

1. REFER TO REINFORCEMENT DESIGN DRAWINGS PREPARED BY ALL-POINTS TECHNOLOGY, P.C. MARKED REV0, DATED JULY 09, 2020 FOR ADDITIONAL INFORMATION PERTAINING TO NEW SWAY ROD HARDWARE NOT SHOWN HEREIN.
2. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.
3. BORING OF THE EXIST. PIN HOLES MAY BE REQUIRED TO ACCOMMODATE NEW PINS. CONTRACTOR TO VERIFY IN FIELD.
4. ALL WELDS SHALL BE INSPECTED PER AWS D1.1/D1.1M.
5. ALL CJP WELDS SHALL BE INSPECTED PER AWS D1.1/D1.1M UTILIZING RADIOGRAPHIC TESTING (RT), OR ULTRASONIC TESTING (UT) PROCEDURES.



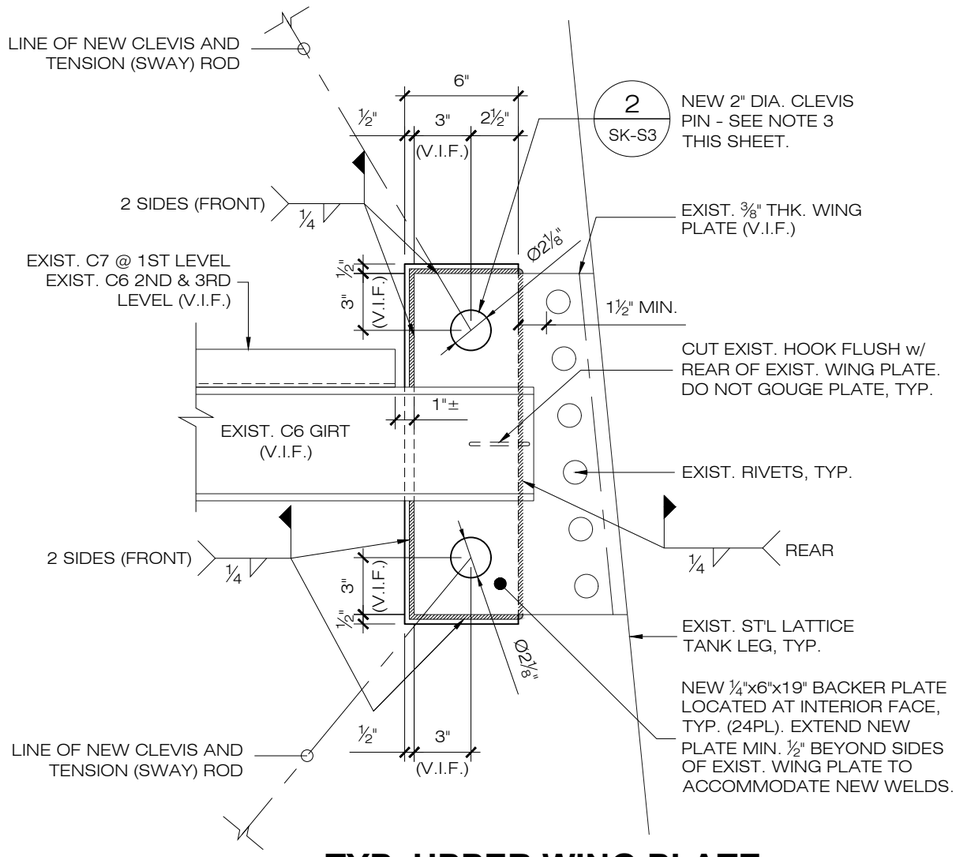
ROD REPLACEMENT SCHEDULE:

SECTION	OVERALL ROD LENGTH (PIN TO PIN)	TURNBUCKLE (CL TO CL PIN AT BOT)	TOTAL LENGTH	ROD SIZE	CLEVIS	GRIP	TURNBUCKLE SIZE	PIN SIZE	QTY
S3	37'-0"±	5'-1½"	296'±	1 3/8"	#3½	1"	1 3/8"	2"	8
S2	41'-9½"±	5'-1½"	334.4'±	1 1/2"	#4	1"	1 1/2"	2"	8
S1	45'-11"±	6'-1"	367.4'±	1 1/2"	#4	1"	1 1/2"	2"	8

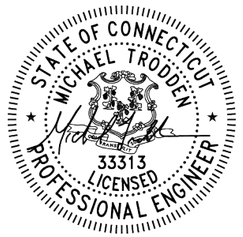
* SWAY ROD LENGTHS NOTED ABOVE ARE ESTIMATED. CONTRACTOR SHALL VERIFY IN FIELD.

POTENTIAL SOURCES / MANUFACTURERS
PORTLAND BOLT (OR) [PORTLANDBOLTING.COM]
CLEVELAND CITY FORGE (OH) [CLEVELANDCITYFORGE.COM]
FABSCO CORP. (IL) [FABSCOCORP.COM]
ATLANTIC BOLT INC. (NC) [ATLANTICBOLTING.COM]

2 SWAY ROD DETAIL
SK-S3 SCALE : 1½" = 1'-0"



TYP. UPPER WING PLATE REINF. DETAIL (24PL)
1 SK-S3 SCALE : 1½" = 1'-0"



REVISIONS:
-REV0: 06/30/21: FOR CONSTRUCTION: JRM
-REV1:
-REV2:
-REV3:
-REV4:
-REV5:

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

SHEET NUMBER: SK-S3

SOUTH WINDSOR NORTH CT
50 PLANTATION ROAD
EAST WINDSOR, CT 06016

VZW FUZE ID: 2132728 VZW
VZW PROJECT CODE: 20171645681 LC: 469756 CM: BM

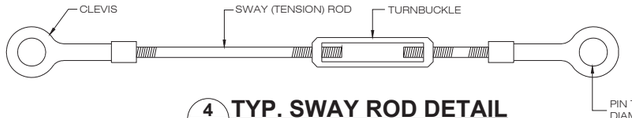
APT FILING NUMBER: CT141NB7760

REINFORCEMENT DETAILS

DRAWN BY: JRM CHECKED BY: MST

DATE OF DV: N/A DATE: 04/26/21

Cellco Partnership d/b/a verizon



4 S-1 TYP. SWAY ROD DETAIL

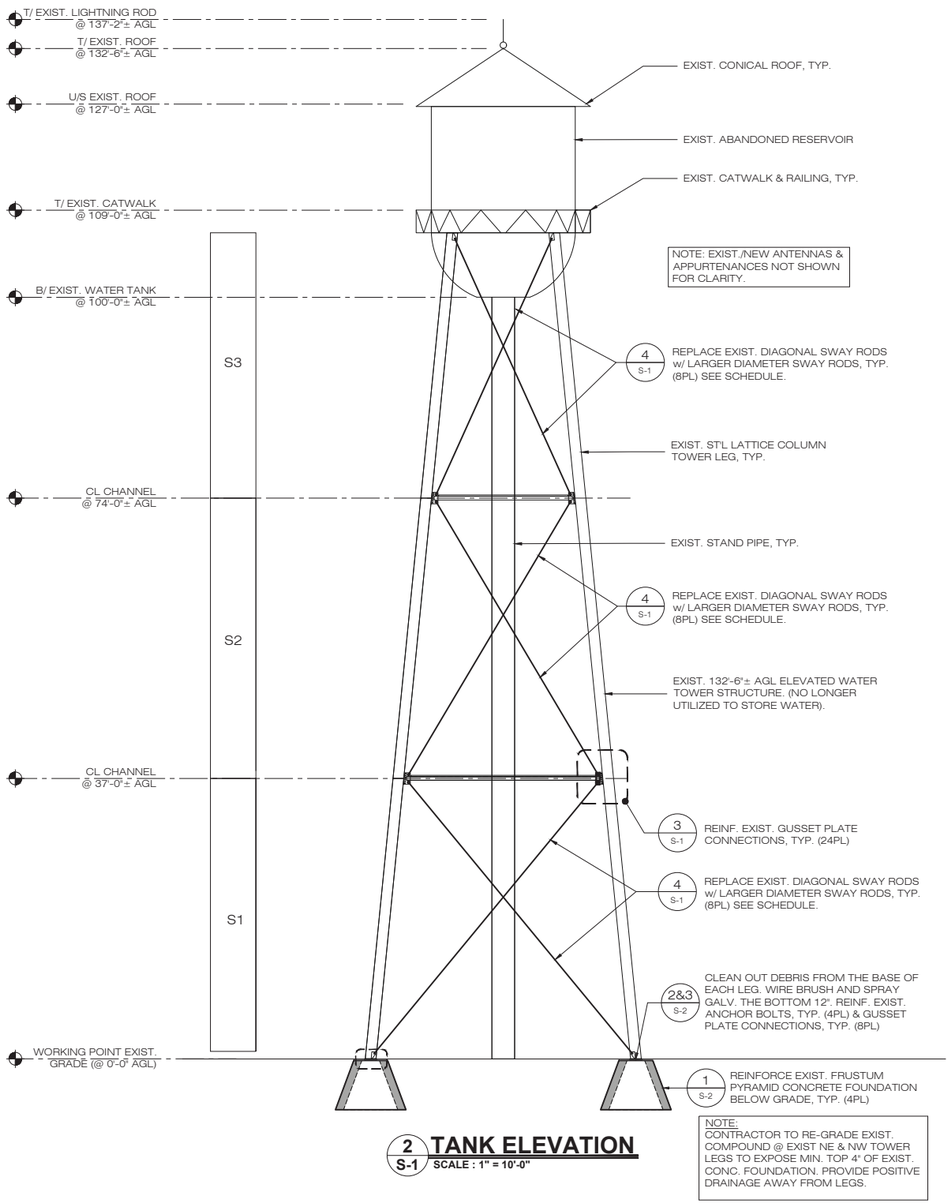
SCALE : 1 1/2" = 1'-0"

ROD REPLACEMENT SCHEDULE:

SECTION	ROD LENGTH	TOTAL LENGTH	ROD SIZE	CLEVIS	TURNBUCKLE SIZE	QTY
S3	37'-0"±	296'±	1 3/8"	#4 1" GRIP	1 3/8"	8
S2	42'-0"±	340'±	1 1/2"	#4 1" GRIP	1 1/2"	8
S1	46'-6"±	372'±	1 1/2"	#4 1" GRIP	1 1/2"	8

* SWAY ROD LENGTHS NOTED ABOVE ARE ESTIMATED. CONTRACTOR SHALL VERIFY IN FIELD.

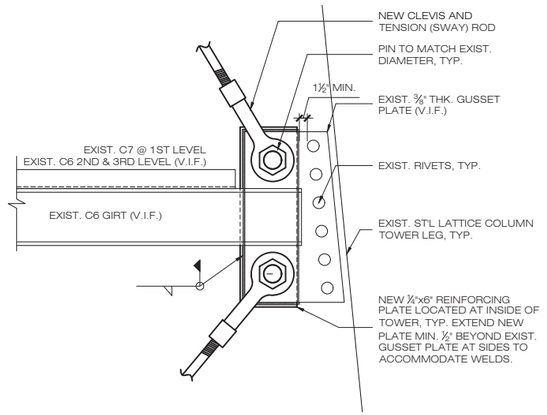
POTENTIAL SOURCES / MANUFACTURERS
CLEVELAND CITY FORGE (OH) [CLEVELANDCITYFORGE.COM]
FABSCO CORP. (IL) [FABSCOCORP.COM]
ATLANTIC BOLT INC. (NC) [ATLANTICBOLTING.COM]
PORTLAND BOLT (OR) [PORTLANDBOLTING.COM]



2 S-1 TANK ELEVATION

SCALE : 1" = 10'-0"

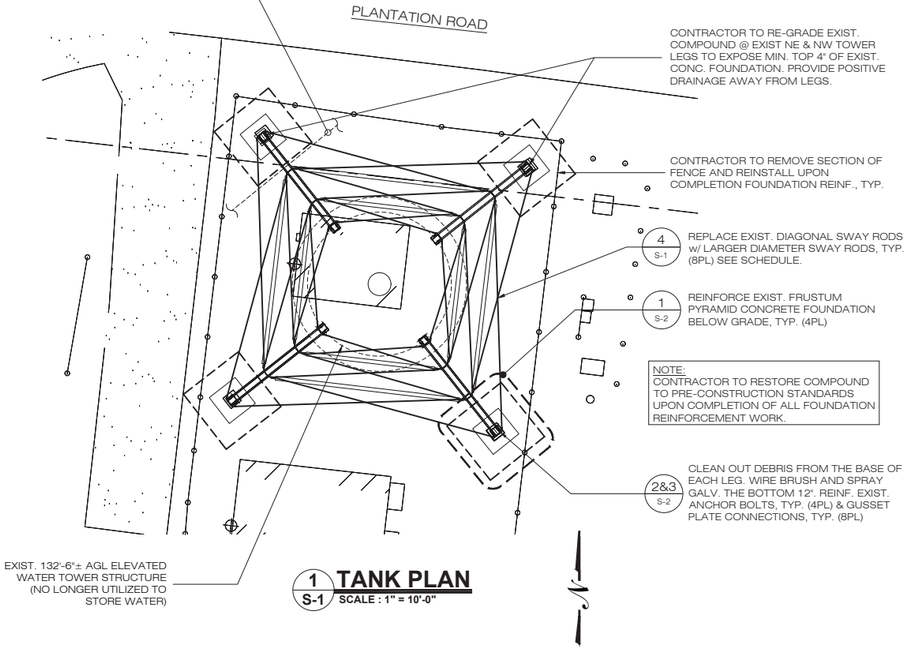
NOTE:
CONTRACTOR TO RE-GRADE EXIST. COMPOUND @ EXIST NE & NW TOWER LEGS TO EXPOSE MIN. TOP 4" OF EXIST. CONC. FOUNDATION. PROVIDE POSITIVE DRAINAGE AWAY FROM LEGS.



3 S-1 CONNECTION DETAIL

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

EXCAVATION & TRENCHING NOTES:
1. CONTRACTOR SHALL ENGAGE THE SERVICES OF AN UNDERGROUND UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND CONDUITS & EQUIPMENT IN THE TRENCHING AREA TO AVOID ANY DAMAGE.
2. HAND EXCAVATE WITHIN 5' OF EXIST. UNDERGROUND UTILITIES (V.I.F.) MAINTAIN 18" MIN. CLEARANCE.
3. CONTRACTOR TO COORDINATE TRENCHING OPERATIONS w/ OWNER AND/OR MANAGEMENT COMPANY SO AS TO MINIMIZE DISRUPTIONS TO THE EXIST. PROPERTY OPERATIONS.



1 S-1 TANK PLAN

SCALE : 1" = 10'-0"

GENERAL NOTES:

1. COORDINATE WORK TO MINIMIZE DISRUPTION OF EXISTING FACILITIES.
2. WORK MUST BE PERFORMED BY COMPETENT AND QUALIFIED WORKERS WITH EXPERIENCE PERTINENT TO THE TASKS INDICATED HEREIN.
3. WORK TO BE ACCOMPLISHED ON ONE BRACING BAY AT A TIME, REPLACING DIAGONAL SWAY BRACING ONE MEMBER AT A TIME IN 15-MPH OR LESS WIND CONDITIONS. PROVIDE SHORING OR TEMPORARY BRACING AS REQUIRED TO COMPLETE THE WORK.
4. WORK MAY REQUIRE TEMPORARY RELOCATION OF UTILITIES/HANGERS.
5. VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO FABRICATION. BRING ANY DISCREPANCIES TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PORTION OF THE WORK.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS & METHODS AS WELL AS PROTECTING EXISTING LINES AND FACILITIES FROM WELDING AND CONSTRUCTION DAMAGE.
7. DETAILS SHOWN ON ANY DRAWING ARE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL:

1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION AND ALL APPLICABLE BUILDING CODES.
2. WELD IN ACCORDANCE WITH AWS D1.1 USING CERTIFIED WELDERS AND E70XX ELECTRODES.
3. MATERIALS:

SWAY ROD	ASTM A307
CLEVIS	ASTM A668 CLASS A
TURNBUCKLES	ASTM A668 CLASS C

4. BOLTS SHALL HAVE GALVANIZED LOCK WASHER OR PAL NUT; ANCO NUTS ARE NOT PERMITTED.
5. ANCHOR BOLTS SHALL BE TIGHTENED USING THE "TURN OF THE NUT" METHOD SPECIFIED BY AISC.
6. HOT-DIP GALVANIZE STEEL MEMBERS AND WELDMENTS PER ASTM D123 AFTER FABRICATION.
7. COLD GALVANIZE ANY FIELD CUT, WELDED, OR DRILLED SURFACES. TOUCH-UP ALL DAMAGED GALVANIZED STEEL WITH ZINC RICH/COLD GALV, (ZINGA®, ZRC® OR APPROVED EQUAL, IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. TOUCH-UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.
8. EXERCISE EXTREME CAUTION DURING FIELD WELDING OPERATIONS. THOROUGHLY PROTECT EXISTING EQUIPMENT AND FEED LINES PRIOR TO WELDING.
9. ALL SWAY RODS SHALL BE SNUG TIGHT.

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	07/09/20	FOR REVIEW: JRM
1		
2		
3		
4		
5		
6		

STATE OF CONNECTICUT
MICHAEL S. TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: PLANTATION PROPERTIES, LLC
ADDRESS: P.O. BOX 542 BROAD BROOK, CT 06016-0542

SOUTH WINDSOR NORTH CT

SITE ADDRESS: 50 PLANTATION ROAD EAST WINDSOR, CT 06016

APT FILING NUMBER: CT141NB7760

DRAWN BY: DRA
DATE: 07/09/20 CHECKED BY: JRM

VZW PROJECT CODE: 20171645681
VZW LOCATION CODE: 469756
VZW FUZE ID: 2132728

SHEET TITLE:
TANK REINFORCEMENT PLAN, DETAILS & NOTES

SHEET NUMBER:
S-1

DESIGN BASIS:

GOVERNING CODES/DESIGN STANDARDS:

2015 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2018 CONNECTICUT STATE BUILDING CODE/ASCE 7-10

DESIGN CRITERIA:

RISK CATEGORY:	II	(IBC 2015 TABLE 1604.5)

WIND LOADS:

ULTIMATE BASIC WIND SPEED, V_{ULT}: (3-SECOND GUST)	125 MPH	(2018 CSBC APPENDIX N)
NOMINAL BASIC WIND SPEED, V_{asd}: (3-SECOND GUST)	97 MPH	(2018 CSBC APPENDIX N)
EXPOSURE CATEGORY	C	(2015 IBC SEC. 1609.4.3)

SEISMIC LOAD:

SITE CLASS:	D	(2015 IBC SEC. 1613.2)
MCE GROUND MOTION (PERIOD = 0.2S), S_s :	0.178	(2015 IBC FIG. 1613.3.1(1))
MCE GROUND MOTION (PERIOD = 1.0S) S_s :	0.064	(2015 IBC FIG. 1613.3.1(2))
SEISMIC DESIGN CATEGORY:	B	(2015 IBC SEC. 1613.3.5)

01 GENERAL:

ABBREVIATIONS USED IN THESE SPECIFICATIONS INCLUDE THE FOLLOWING:

ACI	AMERICAN CONCRETE INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWS	AMERICAN WELDING SOCIETY
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN STANDARDS AND TESTING METHODS
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
ICC-ES	INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
UL	UNDERWRITERS LABORATORIES
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

EVERY INDIVIDUAL TRADE, DISCIPLINE, AND CONTRACTOR SHALL INCLUDE THESE GENERAL SPECIFICATIONS.

THE ENGINEER IS NOT RESPONSIBLE FOR NOR A GUARANTOR OF THE INSTALLING CONTRACTORS WORK, ADEQUACY OF ANY SITE COMPONENT, SUPERVISION OF ANY WORK, AND SAFETY IN, ON, OR ABOUT THE WORK SITE.

ANY REFERENCE HEREIN TO AN OR EQUAL ITEM, THAT EQUAL ITEM SHALL BE PRE-APPROVED BY THE CONSTRUCTION MANAGER BEFORE INSTALLATION

ALL TRADES SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND OTHER WORK AND CONDITIONS AS APNEWRIATE OR REQUIRED TO AVOID CONFLICTS. RESOLVE AND COORDINATE ALL CONFLICTS WITH ALL AFFECTED WORK AND SITE OPERATIONS . COORDINATION WITH THE SITE SHALL BE WITH THE OWNER, OR OWNER'S SPECIFIED REPRESENTATIVE, FOR EVERYTHING RELATED TO THE INSTALLATION OF THIS PROJECT.

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE EDITIONS OF ALL APPLICABLE CODES AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION (AHJ). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AHJ, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLAN SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLAN SHEETS, CONSTRUCTION MANAGER SHALL BE CONSULTED PRIOR TO COMMENCING ANY WORK.

CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND NEWERLY OPERATIVE AND USABLE SYSTEM THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, INSTALLATIONS, AND EQUIPMENT IN THE FIELD PRIOR TO BID, FABRICATION, AND INSTALLATION OF ANY WORK.

CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTIONS PRIOR TO CLOSING PENETRATIONS AND OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

CONTRACTOR SHALL VISIT THE SITE TO MANAGE AND GAIN APPROVAL FOR ALL TENANT DISRUPTIONS, POWER OUTAGES, WORK SCHEDULES, DEFINITION OF WORK AREA AND WORK STORAGE, NEWER BUILDINGSITE ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDINGSITE MANAGEMENT PRIOR TO ALL WORK. ANY DISRUPTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE IMPLEMENTED ONLY UPON WRITTEN APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL SAFEGUARD AGAINST CREATING ANY HAZARD AFFECTING TENANT EGRESS OR COMPROMISING SITE SECURITY MEASURES.

PRIOR TO ALL BELOW-GRADE WORK AND ANY SURFACE WORK IN A NEW AREA FOR STRUCTURES OR VEHICLES, CONTRACTOR SHALL ENGAGE A MARKOUT SERVICE TO IDENTIFY ANY UNDERGROUND STRUCTURES, CONDUITS, AND PIPELINES IN THE AREA . ALL EXISTING SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UNDERGROUND UTILITIES IDENTIFIED OR ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN DIGGING OR EXCAVATING IN ANY MANNER AROUND OR NEAR SUCH UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPAIRS, REPLACEMENT, AND ALL DAMAGES DUE TO DAMAGE OF UTILITIES BY HIS OPERATIONS.

ALL EXISTING AND NEW EQUIPMENT AND MATERIAL LOCATIONS, ROUTING, ORIENTATION, MOUNTING, SPECIFICATIONS AND GENERAL INSTALLED CHARACTERISTICS SHALL BE CONSIDERED DIAGRAMMATIC ON THE PLANS. EXACT CONDITIONS SHALL BE DETERMINED IN THE FIELD PRIOR TO ANY INSTALLATION. ANY DIFFERENCES THAT MAY CAUSE SCHEDULE, COST, OR QUALITY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR ENGINEER PRIOR TO ANY WORK.

ALL REFERENCES HEREIN TO VERIFICATION OF ANY CONDITION OF SITE, FIELD, PLANS, OR SPECIFICATIONS PRIOR TO ANY WORK SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR. ANY AND ALL ADDITIONS, MODIFICATIONS, CHANGES, REPAIR, OR DEMOLITION AS A RESULT OF FAILURE TO BRING ANY EXISTING CONDITION NEWERLY TO THE ATTENTION OF THE OWNER OR ENGINEER SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR WITHOUT DELAY, COST, OR CHANGES IN QUALITY.

ALL NOTES THIS SHEET SHALL APPLY UNLESS SPECIFICALLY NOTED OTHERWISE ON THE INCLUDED DRAWINGS OR IN SEPARATE PROJECT SPECIFICATIONS AS APPLICABLE. ALL SPECIFICATIONS SHALL BE CONSIDERED REQUIRED UNLESS APPROVED EQUAL BY THE OWNER, CONSTRUCTION MANAGER, OR ENGINEER AS APPLICABLE.

THE WORDS "PROVIDE" OR "INSTALL" SHALL MEAN FURNISH AND INSTALL.

CONTRACTOR SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF HIS WORK. ANY PATCHING SHALL MATCH EXISTING SURROUNDING AREA IN ALL RESPECTS. ALL REMOVED MATERIAL SHALL BE REMOVED FROM THE PREMISES DAILY IN AN APPROVED SAFE MANNER.

ALL SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE PROMPTLY WHEN DEEMED TO BE SURPLUS.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF HIS WORK AND NEWLY INSTALLED OR EXISTING WORK, INCLUDING PROTECTION OF THE SITE, ALL STRUCTURES, AND ALL OCCUPANTS. FURNISH, INSTALL, MAINTAIN, AND REMOVE AS APNEWRIATE, ALL APNEWRIATE BARRIERS, SAFETY GUARDS, SIGNAGE, AND SECURITY AS REQUIRED.

EVERY CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR RESPECTIVE FEES, PERMITS, INSPECTIONS, TESTING, CERTIFICATES, AND ALL MANAGEMENT OF SAME REQUIRED FOR COMPLETION OF AND LEGAL OCCUPANCY OF THE FINISHED PROJECT.

ALL CONTRACTORS SHALL PROVIDE ALL NECESSARY TOOLS, FIXTURES, SERVICES, MATERIALS, JOB AIDS, AND PERSONNEL REQUIRED FOR THE EXECUTION OF THEIR WORK.

EACH CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP BY THEM TO BE FREE OF DEFECTS AND MAINTAINED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE INSTALLATION BY THE OWNER AND ENGINEER.

ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS IN THE TRADE HAVING JURISDICTION.

ANY DEVIATION, MODIFICATION, ADDITION, OR CHANGE IN DESIGN SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE OWNER OR ENGINEER.

ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION, AND SHALL NOT PROCEED UNTIL ENGINEER APPROVAL IN WRITING IS RETURNED. EACH CONTRACTOR SHALL MAINTAIN ON JOB SITE A COMPLETE SET OF SHOP DRAWINGS WITH ANY DEVIATIONS FROM THE ORIGINAL DESIGN SHALL BE NOTED.

ALL MATERIALS AND EQUIPMENT SHALL BE NEW, WITHOUT BLEMISH OR DEFECT, AND SUITABLE AND LISTED FOR THE INSTALLATION AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS OR SPECIFICATIONS. ALL ITEMS OF EQUIPMENT OR MATERIAL THAT ARE OF ONE GENERIC TYPE SHALL BE ONE MANUFACTURER THROUGHOUT.

ALL MATERIALS, EQUIPMENT, TOOLS, AND ITEMS UNDER THE CONTRACTOR'S RESPONSIBILITY ON THE JOBSITE SHALL BE ADEQUATELY SECURED, MAINTAINED, AND PROTECTED, SO AS NOT TO BECOME DAMAGED OR CREATE ANY HAZARD TO PERSONNEL OR NEWERTY.

THE CONTRACTORS HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY THE OWNER.

CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR ALL OF HIS CREW AND INSURE THAT EVERY CREW MEMBER FOLLOWS SAVE WORK PRACTICES. SAFETY TRAINING SHALL INCLUDE, BUT NOT BE LIMITED TO, FALL PROTECTION, CONFINED SPACE ENTRY, ELECTRICAL SAFETY, AND TRENCHING/EXCAVATION SAFETY WHERE SUCH WORK IS EXECUTED OR ENCOUNTERED.

ALL TEMPORARY WORK REQUIRED OR SPECIFIED AS A PART OF THIS WORK, SHALL MEET ALL OF THE SAME REQUIREMENTS AS PERMANENT INSTALLATIONS, SHALL MEET ALL APPLICABLE CODE REQUIREMENTS, AND SHALL BE COMPLETELY REMOVED AFTER ITS PURPOSES HAVE BEEN SERVED.

ANY EXISTING UTILITY, SERVICE, STRUCTURE, EQUIPMENT, OR FIXTURE OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER.

IF ASBESTOS IS ENCOUNTERED DURING WORK EXECUTION, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND CEASE ALL ACTIVITIES IN AFFECTED AREAS UNTIL NOTIFIED BY THE CONSTRUCTION TO RESUME OPERATIONS.

EXIST. ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.

05 POST-INSTALLED ANCHORS:

THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES AND INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE ICC-ES REPORT AND MANUFACTURERS PUBLISHED INSTALLATION INSTRUCTIONS:

APPLICATION	ANCHORING SYSTEM
CONCRETE	HILTI HY 200 ADHESIVE WITH SAFE SET (HDB) SYSTEM
REBAR DOWELING	HILTI RE 500v3 ADHESIVE WITH SAFE SET (HDB) SYSTEM
SOLID GROUTED MASONRY	HILTI HY 70 ADHESIVE WITH SCREEN TUBE
HOLLOW / MULTI-WIDTH MASONRY	HILTI HY 70 ADHESIVE WITH SCREEN TUBE

ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT INCLUDING AN ICC-ES REPORT SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE, SEISMIC USE, LOAD RESISTANCE, INSTALLATION CATEGORY, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, ETC.

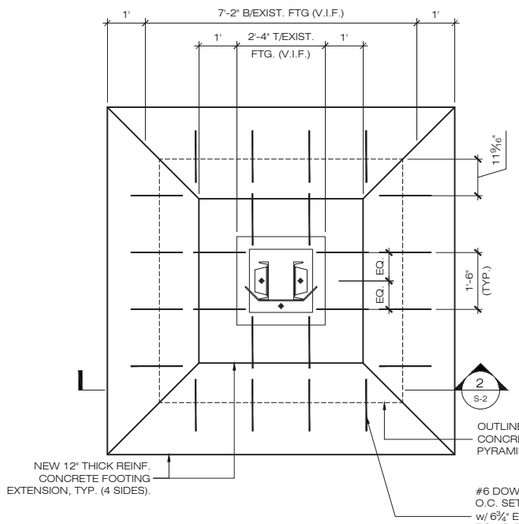
ADHESIVE ANCHORS INSTALLED IN A HORIZONTALLY OR UPWARDLY INCLINED ORIENTATION INTO CONCRETE AND SUPPORTING A SUSTAINED TENSION LOAD SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER, PER SECTION 9.2.2 OF ACI-318-14. INSTALLER SHALL BE CERTIFIED THROUGH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.

ANCHORS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND SHALL NOT TO BE INSTALLED IN MORTAR JOINTS.

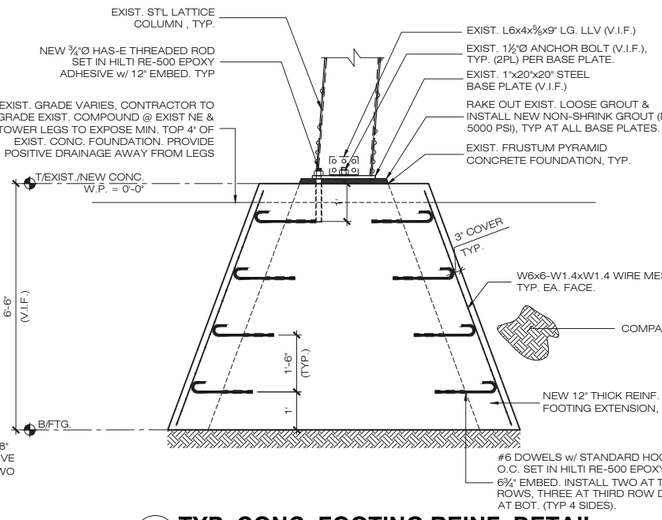
AS PER OSHA 29 CFR 1926.1153 SILICA DUST CONTROL REGULATIONS, DRILLED HOLES FOR POST INSTALLED ANCHORS IN CONCRETE AND MASONRY SHALL BE INSTALLED USING HILTI SAFE SET INSTALLATION SYSTEM WHICH COMPRISES OF A CODE APPROVED HILTI HOLLOW DRILL BIT AND VACUUM. ALTERNATE INSTALLATION METHODS ARE ALSO ALLOWED WITH AN APPROVED DUSTLESS SYSTEM THAT MAINTAINS SILICA DUST EMISSION BELOW THE PERMISSIBLE LEVELS.

CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ON-SITE ANCHOR INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. CONTRACTOR SHALL SUBMIT DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL INSTALLING ANCHORS HAVE RECEIVED THE REQUIRED TRAINING PRIOR TO THE COMMENCEMENT OF WORK.

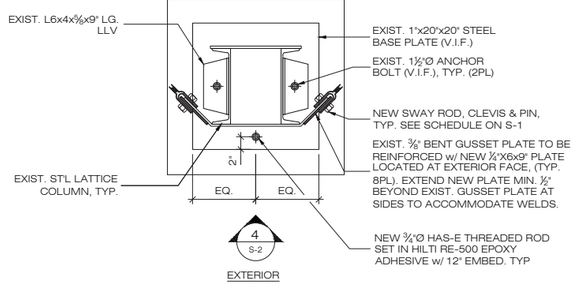
CONTINUOUS OR PERIODIC SPECIAL INSPECTION FOR POST INSTALLED ANCHORS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 4.3/4.4 OF THE ICC-ES REPORT FOR THE INDIVIDUAL ANCHOR. SPECIAL INSPECTOR SHALL BE NOTIFIED PRIOR TO COMMENCEMENT OF WORK TO COORDINATE INSPECTION EFFORTS.



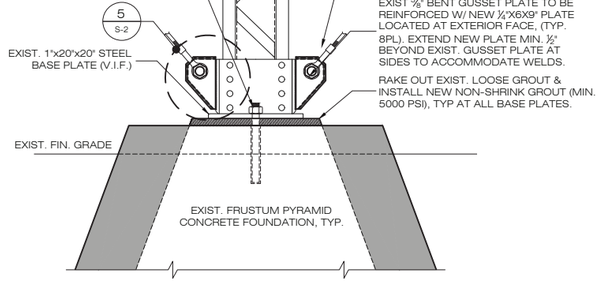
1 S-2 CONCRETE FOOTING REINF. PLAN
SCALE : ½" = 1'-0"



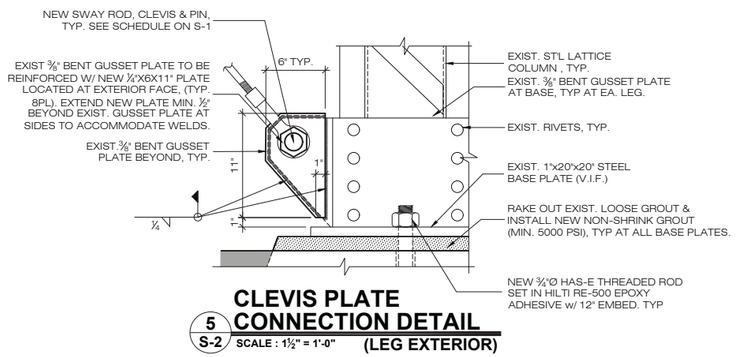
2 S-2 TYP. CONC. FOOTING REINF. DETAIL
SCALE : ½" = 1'-0"



3 S-2 BASE PLATE REINF. PLAN
SCALE : 1" = 1'-0"



4 S-2 BASE PLATE REINF. DETAIL
SCALE : ¾" = 1'-0"



5 S-2 CLEVIS PLATE CONNECTION DETAIL
SCALE : 1½" = 1'-0" (LEG EXTERIOR)

Cellco Partnership d/b/a
verizon
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	07/09/20	FOR REVIEW: JRM
1		
2		
3		
4		
5		
6		

STATE OF CONNECTICUT
MICHAEL S TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

DESIGN PROFESSIONALS OF RECORD

PROF: MICHAEL S. TRODDEN P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXT. SUITE 311 WATERFORD, CT 06385

OWNER: PLANTATION PROPERTIES, LLC
ADDRESS: P.O. BOX 542 BROAD BROOK, CT 06016-0542

SOUTH WINDSOR NORTH CT

SITE ADDRESS: 50 PLANTATION ROAD EAST WINDSOR, CT 06016

APT FILING NUMBER: CT141NB7760

DRAWN BY: DRA
DATE: 07/09/20 CHECKED BY: JRM

VZW PROJECT CODE: 20171645681
VZW LOCATION CODE: 469756
VZW FUZE ID: 2132728

SHEET TITLE:
FOUNDATION REINF. PLANS, DETAILS & NOTES

SHEET NUMBER:
S-2