

August 27, 2020

Via Electronic Mail

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

Re: **Request of Cellco Partnership d/b/a Verizon Wireless for an Order to Approve the Shared Use of an Existing Tower at 50 Plantation Road, East Windsor, Connecticut**

Dear Attorney Bachman:

Pursuant to Connecticut General Statutes (“C.G.S.”) §16-50aa, as amended, Cellco Partnership d/b/a Verizon Wireless (“Cellco”) hereby requests an order from the Siting Council (“Council”) to approve the shared use of an existing telecommunications tower on an 0.74-acre parcel at 50 Plantation Road in East Windsor, Connecticut (the “Property”). The Property is owned by Plantation Properties LLC (the “Property Owner”). The tower, a former water tank now used exclusively for telecommunications purposes, is also owned by Plantation Properties, LLC. Cellco identifies this site as its “South Windsor North Facility”.

The existing 132.5-foot tower was constructed in 1947 and, according to information presented in TS-CING-047-060405, was first used for telecommunications purposes by Sprint in 1996. On April 12, 2006, the Council, exercising jurisdiction over the existing tower, approved the tower share application filed by New Cingular Wireless PCS, LLC (“Cingular”) (TS-CING-047-060405). A copy of the Council’s approval of the Cingular tower share application is included in Attachment 1. AT&T; Sprint; T-Mobile, Metro PCS and Clearwire maintain antennas at various heights on the tower and maintain radio equipment inside a fenced facility compound near the base of the tower.

Cellco requests that the Council find that the proposed shared use of the tower satisfies the criteria of C.G.S § 16-50aa and issue an order approving the proposed shared use. A copy of this filing is being sent to East Windsor First Selectman, Jason E. Bowsza; Mike D’Amato, East

Melanie A. Bachman, Esq.
August 27, 2020
Page 2

Windsor's Acting Town Planner; and the Property Owner and the tower owner, Plantation Properties LLC.

Background

Cellco is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. Cellco and the Property Owner have agreed to the proposed shared use of the existing tower at the Property pursuant to mutually acceptable terms and conditions. Likewise, the Property Owner and Cellco have agreed to the proposed installation of equipment on the ground near the base of the tower. The installation of Cellco equipment will require a slight expansion (809 square feet) of the fenced compound area. All of Cellco's improvements will, however, remain within the limits of the Property. The Property Owner has authorized Cellco to apply for all necessary permits and approvals that may be required to share the existing tower. (See Owner's authorization letter included in Attachment 2).

Cellco proposes to install six (6) antennas and six (6) remote radio heads ("RRHs") on the tower, three (3) each at a height of 94-feet and 102-feet above ground level. Cellco will install an equipment cabinet; a backup generator; and a 500-gallon propane tank on the ground to the south of the Cingular equipment shelter. Included in Attachment 3 are Cellco's project plans showing the location of its proposed site improvements. Attachment 4 contains specifications for Cellco's proposed antennas, RRHs and back-up generator.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such shared use." Cellco respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing tower, with certain structural modifications can support Cellco's antennas, RRHs, antenna mounting brackets and related equipment. The proposed shared use of this tower is, therefore, technically feasible. A copy of the Structural Modification Design Report is included in Attachment 5.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue orders approving the shared use of an existing tower like the one at the Property. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue

Melanie A. Bachman, Esq.

August 27, 2020

Page 3

orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. **Environmental Feasibility.** The proposed shared use of the existing tower would have minimal environmental effects, for the following reasons:

1. The proposed installation of antennas and remote radio heads on the legs of the tower at a height of 94-feet and 102-feet above grade on the existing 132.5-foot tower would have an insignificant incremental visual impact on the area around the existing tower. Cellco's equipment will be located on the ground within an expanded fenced compound area. All improvement will remain within the current limits of the 0.74-acre Property. Cellco's shared use of this tower facility would therefore, not cause any significant change or alteration in the physical or environmental characteristics of the existing site.
2. Noise associated with Cellco's proposed facility will comply with State and local noise standards. Noise associated with the existing backup generator is exempt from these same standards but would only operate when commercial power to the facility is interrupted.
3. Operation of Cellco's antennas at this site would not exceed the RF emissions standards adopted by the Federal Communications Commission ("FCC"). Included in Attachment 6 of this filing is a cumulative General Power Density table which demonstrates that the tower will operate well within the FCC's safety standards.
4. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic other than periodic maintenance visits to the cell site.

Melanie A. Bachman, Esq.
August 27, 2020
Page 4

The proposed shared use of the tower would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, Cellco has entered into an agreement with the Property Owner for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Cellco's antennas, RRHs and related equipment. Cellco is not aware of any public safety concerns relative to the proposed sharing of the existing tower. In fact, the provision of new and improved wireless service through shared use of the existing tower is expected to enhance the safety and welfare of area residents and members of the general public traveling through the Town of East Windsor.

Conclusion

A Certificate of Mailing verifying that this filing was sent to the municipal officials, the tower owner and the Property Owner is included in Attachment 7.

For the reasons discussed above, the proposed shared use of the existing tower at the Property satisfies the criteria stated in C.G.S. § 16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Very truly yours,



Kenneth C. Baldwin

Enclosures

Copy to:

Jason E. Bowsza, First Selectman
Mike D'Amato, Acting Town Planner
Plantation Properties, LLC

ATTACHMENT 1



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

www.ct.gov/csc

April 13, 2006

Steven L. Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **TS-CING-047-060405** - New Cingular Wireless PCS, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 50 Plantation Road, East Windsor, Connecticut.

Dear Mr. Levine:

At a public meeting held April 12, 2006, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated April 4, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz, P.E.

Chairman

PBK/laf

c: The Honorable Linda L. Roberts, First Selectman, Town of East Windsor
Laurie Whitten, Town Planner, Town of East Windsor
Thomas J Regan, Esq., Brown Rudnick Berlack Israels LLP
Christopher B. Fisher, Esq., Cuddy & Feder LLP

ATTACHMENT 2

August 26, 2020

Mr. Andrew Candiello
Verizon Wireless
118 Flanders Road, Third Floor
Westborough, MA 01581

RE: Verizon Wireless proposed installation at 50 Plantation
Road, East Windsor, CT 06016

Dear Mr. Candiello:

I, Dean Rasmussen, member of Plantation Properties, LLC,
the owner of the above-referenced property, hereby authorize
Verizon Wireless and/or its agent(s) to apply for and obtain all
necessary permits and approvals from all applicable State of
Connecticut and/or Town of East Windsor commissions and
departments for the proposed installation of the equipment at the
above referenced address.

Please contact me at 860-604-5174 should you have any
questions.

Sincerely,

By:



8-26-2020

or member

Print Name: Dean
Rasmussen, Member

ATTACHMENT 3

verizon

WIRELESS SERVICES FACILITY

SOUTH WINDSOR NORTH CT

50 PLANTATION ROAD

EAST WINDSOR, CT 06016

SITE DIRECTIONS

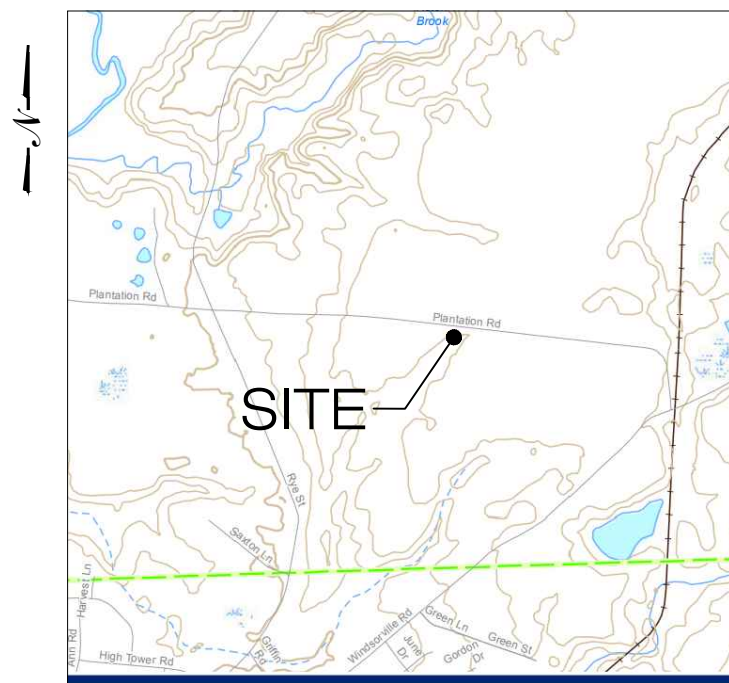
**START: 20 ALEXANDER DRIVE
WALLINGFORD, CONNECTICUT 06492**

**END: 50 PLANTATION ROAD
EAST WINDSOR, CT 06016**

- | | |
|--|---------|
| 1. HEAD SOUTH TOWARDS ALEXANDER DR | 279 FT |
| 2. SLIGHT RIGHT TOWARD ALEXANDER DR | 289 MI |
| 3. TURN RIGHT TOWARD ALEXANDER DR | 167 FT |
| 4. TURN RIGHT ONTO ALEXANDER DR | 0.3 MI |
| 5. TURN RIGHT ONTO BARNES INDUSTRIAL RD S. | 0.1 MI |
| 6. TURN LEFT AT THE 1ST CROSS STREET ONTO CT-68W | 0.4 MI |
| 7. TURN RIGHT | 0.2 MI |
| 8. TURN RIGHT ONTO N COLONY RD | 0.3 MI |
| 9. TURN RIGHT TO MERGE ONTO CT-15 TOWARD HARTFORD | 0.3 MI |
| 10. MERGE ONTO CT-15N | 3.3 MI |
| 11. TAKE EXIT 68 N-E TO MERGE ONTO I-91N | 18.3 MI |
| 12. CONTINUE STRAIGHT TO STAY ON I-91N | 3.8 MI |
| 13. TAKE EXIST 35A-35B FOR INTERSTATE 291 TOWARD MANCHESTER | 0.7 MI |
| 14. MERGE ONTO I-291 E | 2.2 MI |
| 15. TAKE EXIT 4 FOR US-5 N TOWARD SOUTH WINDSOR | 0.4 MI |
| 16. USE THE LEFT 2 LANES TO TURN LEFT ONTO US-5N | 3.9 MI |
| 17. TURN LEFT ONTO CT-194E | 0.3 MI |
| 18. TURN LEFT ONTO RYE STREET | 2.2 MI |
| 19. TURN RIGHT ONTO PLANTATION RD (DESTINATION ON THE RIGHT) | 0.5 MI |

LIST OF DRAWINGS

- T-1 TITLE SHEET & INDEX
- 1 OF 1 TOPOGRAPHIC SURVEY
- C-1 ABUTTERS MAP
- C-2 COMPOUND PLAN & WEST ELEVATION
- C-3 COMPOUND EXPANSION/ EQUIP. AREA PLAN & DETAILS



LOCATION MAP
SCALE: 1" = 1000'-0"

SITE INFORMATION

VZ SITE NAME: SOUTH WINDSOR NORTH CT
VZ PROJ. FUZE I.D.: 2132728
VZ LOCATION CODE: 469756
VZ PROJECT CODE: 20171645681

LOCATION: 50 PLANTATION ROAD
EAST WINDSOR, CT 06016

PROJECT SCOPE: PROPOSED INSTALLATION CONSISTS OF SIX (6) PANEL ANTENNAS, NINE (9) REMOTE RADIO HEADS (RRHs) & ONE (1) 120VP MOUNTED TO AN EXIST. 132.5' ELEVATED WATER RESERVOIR (INACTIVE) IN ADDITION TO AN EQUIPMENT CABINET & 30KW PROPANE EMERGENCY STANDBY POWER GENERATOR & 500 GAL. LPG TANK LOCATED AT GRADE WITHIN AN IRREGULARLY SHAPED (809± SF) COMPOUND EXPANSION AREA .

MAP/BLOCK/LOT: 016-50-001C

LATITUDE: 41° 52' 32.328" N (41.87564664° N)

LONGITUDE: 72° 33' 53.232" W (72.56478672° W)

GROUND ELEVATION: 159.8± AMSL

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

APPLICANT: CELCO PARTNERSHIP
d/b/a VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

LEGAL/REGULATORY COUNSEL: ROBINSON & COLE, LLP
KENNETH C. BALDWIN, ESQ.
280 TRUMBULL STREET
HARTFORD, CT 06103

ENGINEER CONTACT: ALL-POINTS TECHNOLOGY CORP., P.C.
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385
860 663-1697

COORDINATES & GROUND ELEVATION INDICATED HEREIN WERE ESTABLISHED FROM AN FAA 1-A SURVEY CERTIFICATION, AS PREPARED BY GESICK & ASSOCIATES P.C. DATED JUNE 30, 2020.

Cellco Partnership d/b/a



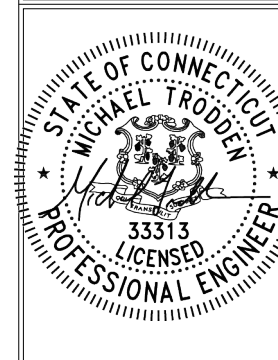
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492



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

CSC DOCUMENTS

NO	DATE	REVISION
0	08/14/20	FOR REVIEW: JRM
1	08/24/20	ISSUED FOR FILING: JRM
2		
3		
4		
5		
6		



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 50 PLANTATION ROAD
ADDRESS: EAST WINDSOR, CT 06016

APT FILING NUMBER: CT141NB7760

DRAWN BY: DRA
DATE: 08/14/20 CHECKED BY: JRM

VZW PROJECT CODE: 20171645681

VZW LOCATION CODE: 469756

VZW FUZE ID: 2132728

SHEET TITLE:

TITLE SHEET & INDEX

SHEET NUMBER:

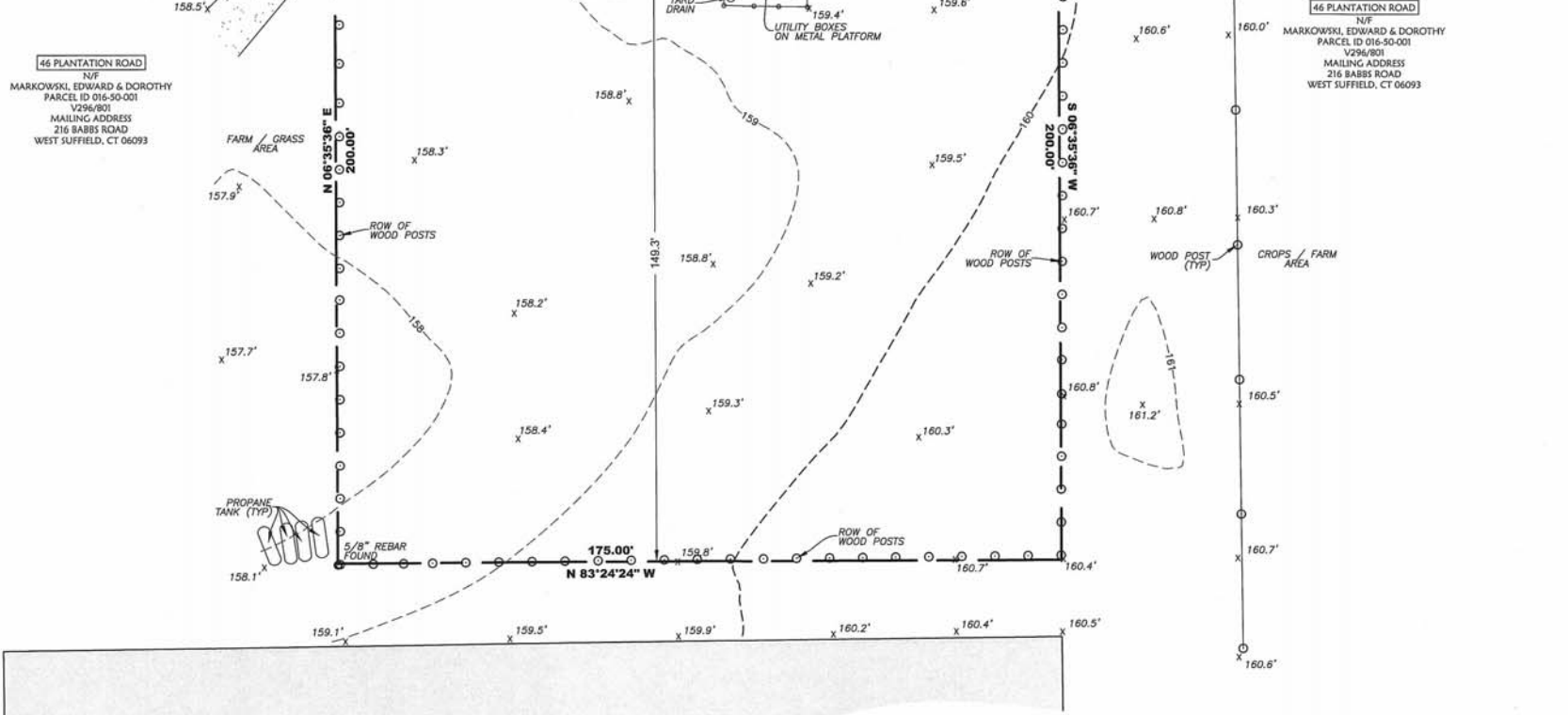
T-1



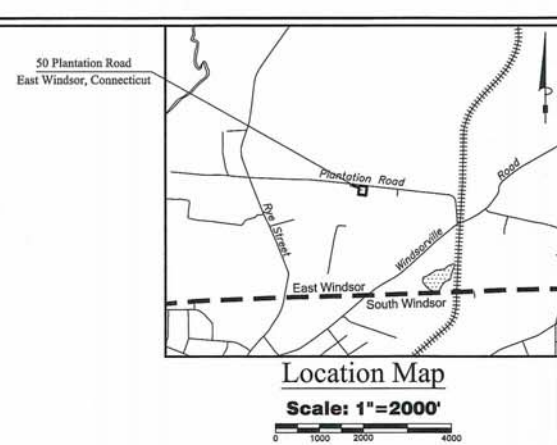
Legend

SYMBOL	DESCRIPTION
●	PROPERTY CORNER
○	IP / REBAR
◻	MON / MERESTONE
○	BENCH MARK
○	UTILITY POLE
○	UTILITY POLE W/ LIGHT
○	GUY WIRE
○	GAS VALVE
○	WATER VALVE
○	FIRE HYDRANT
○	CATCH BASIN
○	MANHOLE
○	SIGN
○	LIGHT POLE
○	YARD LIGHT
○	WOOD POST
○	MAILBOX
○	DECIDUOUS TREE
○	CONIFEROUS TREE
○	SHRUB
○	STUMP
○	HEDGE
○	STONEWALL
○	TREELINE
○	FENCE LINE
○	OVERHEAD WIRES
○	WATER LINE
○	GAS LINE
○	PROPERTY LINE
○	PROPERTY LINE OTHER
○	ROAD PAINTMARKS
○	INDEX CONTOUR
○	INTERMEDIATE CONTOUR
○	LAND USE ZONE LINE
○	SPOT ELEVATION
○	PLANTED AREA
○	GRAVEL AREA
○	EXISTING BUILDING
○	NOW OR FORMERLY
○	ELEV / EL.
○	E.M.
○	(TYP)
○	C.M.P.
○	R.C.P.
○	C.P.P.
○	E.O.P.
○	B.C.L.C.

46 PLANTATION ROAD
 N/F
 MARKOWSKI, EDWARD & DOROTHY
 PARCEL ID 016-50-001
 V296/801
 MAILING ADDRESS
 216 BARBS ROAD
 WEST SUFFIELD, CT 06093



46 PLANTATION ROAD
 N/F
 MARKOWSKI, EDWARD & DOROTHY
 PARCEL ID 016-50-001
 V296/801
 MAILING ADDRESS
 216 BARBS ROAD
 WEST SUFFIELD, CT 06093



Notes

- THIS SURVEY PLAN HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20-300B-1 THROUGH 20-300B-20 AND THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF THE LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
- TYPE OF SURVEY: TOPOGRAPHIC SURVEY
- WITH RESPECT TO THE PERIMETER OF THE PROPERTY THE BOUNDARY DETERMINATION IS BASED UPON A RESURVEY OF REFERENCE MAP #2.
- THIS SURVEY CONFORMS TO THE STANDARDS AND THE ACCURACY OF CLASS: A-2 HORIZONTAL & T-2 TOPOGRAPHIC ACCURACY.
- BEARINGS AS DERIVED ARE BASED UPON THE CONNECTICUT GRID SYSTEM NORTH AMERICAN DATUM OF 1983.
- ELEVATIONS BASED UPON NORTH AMERICAN VERTICAL DATUM 1988.
- CONTOUR INTERVAL = 1'
- THE INTENT OF THIS MAP IS TO DEPICT THE EXISTING CONDITIONS OF THE PROPERTY.
- BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.
- THE WORD "CERTIFY" AS USED IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE SURVEYOR. IT IS A DECLARATORY STATEMENT, WHICH IS BASED ON HIS BEST KNOWLEDGE, INFORMATION AND BELIEF, AS SUCH IT CONSTITUTES NEITHER GUARANTEE NOR WARRANTY, EXPRESSED OR IMPLIED, OF ANY INFORMATION CONTAINED HEREON. NO CERTIFICATION IS EXPRESSED OR IMPLIED ON ANY ORIGINAL OR ANY DUPLICATE OF THIS MAP UNLESS IT BEARS AN ORIGINAL STAMP OR SEAL AND ORIGINAL SIGNATURE OF THE INDIVIDUAL WHOSE REGISTRATION NUMBER APPEARS HEREON.
- THIS MAP IS THE PROPERTY OF GESICK & ASSOCIATES P.C. AND HAS BEEN SPECIFICALLY PREPARED FOR THE OWNER OF THIS PROJECT OR PROPERTY. IT IS NOT TO BE DUPLICATED OR USED IN PART OR WHOLE FOR ANY OTHER PURPOSE, PROJECT, LOCATION, OR OWNER WITHOUT THE EXPRESS WRITTEN CONSENT OF GESICK & ASSOCIATES P.C.
- BASE MAPPING PREPARED BY GESICK & ASSOCIATES P.C. FROM A 5/17/2018 FIELD SURVEYS.
- THE FLOOD ZONE BOUNDARIES SHOWN WERE DERIVED UTILIZING FLOOD INSURANCE RATE MAPS. THE FLOOD ZONE BOUNDARIES WERE DIGITIZED AND ARE TO BE CONSIDERED AS APPROXIMATE ONLY AND FOR INFORMATIONAL PURPOSES ONLY. (DATUM = NAVD 1988).
- UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING AND LIMITED FIELD MEASUREMENTS. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO GESICK & ASSOCIATES P.C. THE SITE LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-4455.
- TREES SHOWN ON THIS MAP WERE FIELD LOCATED BUT ARE NOT SHOWN TO SCALE.
- UNLESS OTHERWISE NOTED, BUILDING OFFSETS ARE TO BUILDING SIDING ABOVE THE FOUNDATION.
- PARCEL HAS RIGHTS TO DRAIN WATER ALONG THE SOUTHERLY LINE OF THE PREMISES.

Reference Maps

- "PROPERTY OF J.R.F. REALTY, INC. PLANTATION ROAD, RYE STREET, WAPPING ROAD AREA WINDSORVILLE ROAD, EAST WINDSOR, CONNECTICUT" PREPARED BY SANDERSON & WASHBURN DATED JANUARY, 1982 SCALE 1"=300' TOWN CLERK MAP #2682
- "SURVEY PREPARED FOR CASCO INC. PLANTATION ROAD, EAST WINDSOR, CONNECTICUT" PREPARED BY PALMBERG & RUSSO DATED SEPTEMBER 12, 1986 SCALE 1"=40' TOWN CLERK MAP #2823
- "LUCENT TECHNOLOGIES / BECHTEL ALLIANCE SSSP PROJECT, WATER TOWER, EAST WINDSOR, CONNECTICUT" PREPARED BY UNITED INTERNATIONAL CORPORATION DATED AUGUST 2, 1996 SCALE 1"=20' (NOT ON FILE)
- "RESUBDIVISION PLAN PROPERTY OF PLANTATION PROPERTIES, LLC, 47 PLANTATION ROAD, EAST WINDSOR, CONNECTICUT MAP 18 BLK 49 LOT 7A ZONE M-1" PREPARED BY J.R. RUSSO & ASSOCIATES, LLC DATED MARCH 7, 2014 SCALE 1"=40' TOWN CLERK MAP #3981
- "SOUTH WINDSOR NORTH CT, 50 PLANTATION ROAD, EAST WINDSOR, CT. 06016" PREPARED BY ALL POINTS TECHNOLOGY CORPORATION DATED DECEMBER 19, 2016 SCALE 1"=20' (NOT ON FILE)

Subject Parcel Information

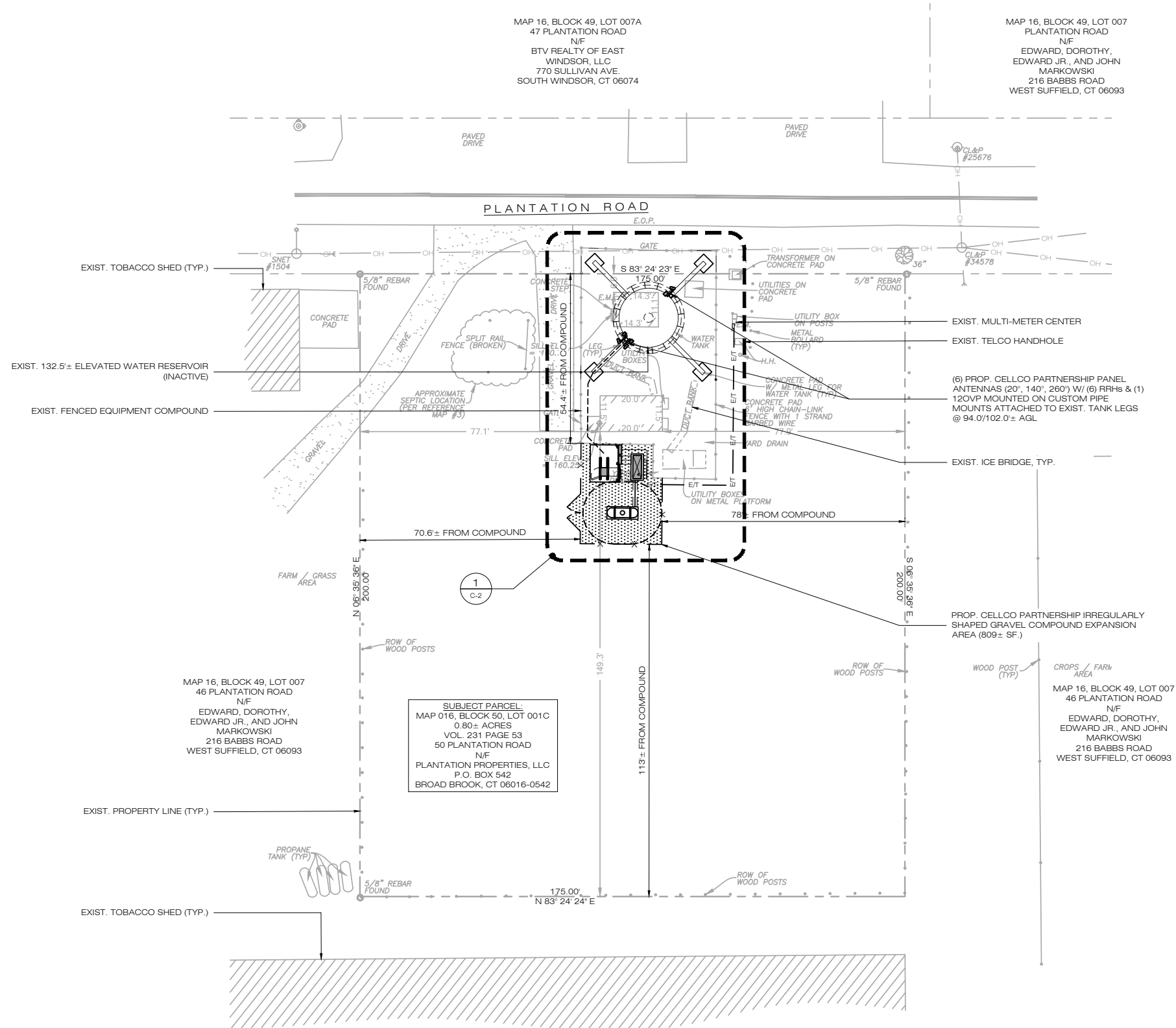
OWNER: PLANTATION PROPERTIES, LLC
 PARCEL ADDRESS: 50 PLANTATION ROAD, EAST WINDSOR, CONNECTICUT 06016
 MAILING ADDRESS: P.O. BOX 542, BROAD BROOK, CONNECTICUT 06016-0542
 PARCEL ID: MAP 016 BLOCK 50 LOT 001C
 DEED: VOLUME 231 PAGE 053
 LAND USE ZONE: A-1
 AREA: 35000.00 SQ. FT. ± OR 0.80 ACRES ±
 FLOOD ZONE: ZONE X PER FIRM MAP COMMUNITY PANEL #09003C0239F DATED SEPTEMBER 26, 2008 (SEE NOTE #6)

GESICK & ASSOCIATES, P.C.
 SURVEYORS & MAPPERS & PLANNERS
 19 CEDAR ISLAND AVE.
 CLINTON, CONNECTICUT 06413
 OFFICE: 860-669-7799 FAX: 860-689-5833
 www.gesicksurveyors.com

Topographic Survey
 of
50 Plantation Road
East Windsor, Connecticut
 Prepared for
All Points Technology Corporation

Revisions	Date	Drawn by	Sheet
	May 21, 2018	18-075a	1 of 1
		P.H.	





MAP 16, BLOCK 49, LOT 007A
47 PLANTATION ROAD
N/F
BTV REALTY OF EAST
WINDSOR, LLC
770 SULLIVAN AVE.
SOUTH WINDSOR, CT 06074

MAP 16, BLOCK 49, LOT 007
PLANTATION ROAD
N/F
EDWARD, DOROTHY,
EDWARD JR., AND JOHN
MARKOWSKI
216 BABBS ROAD
WEST SUFFIELD, CT 06093

MAP 16, BLOCK 49, LOT 007
46 PLANTATION ROAD
N/F
EDWARD, DOROTHY,
EDWARD JR., AND JOHN
MARKOWSKI
216 BABBS ROAD
WEST SUFFIELD, CT 06093

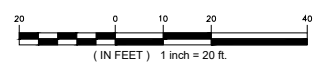
SUBJECT PARCEL:
MAP 016, BLOCK 50, LOT 001C
0.80± ACRES
VOL. 231 PAGE 53
50 PLANTATION ROAD
N/F
PLANTATION PROPERTIES, LLC
P.O. BOX 542
BROAD BROOK, CT 06016-0542

MAP 16, BLOCK 49, LOT 007
46 PLANTATION ROAD
N/F
EDWARD, DOROTHY,
EDWARD JR., AND JOHN
MARKOWSKI
216 BABBS ROAD
WEST SUFFIELD, CT 06093

MAP 16, BLOCK 49, LOT 007
46 PLANTATION ROAD
N/F
EDWARD, DOROTHY,
EDWARD JR., AND JOHN
MARKOWSKI
216 BABBS ROAD
WEST SUFFIELD, CT 06093

- ABUTTERS MAP REFERENCE:**
1. "TOPOGRAPHIC SURVEY OF 50 PLANTATION ROAD, EAST WINDSOR, CONNECTICUT, PREPARED FOR ALL-POINTS TECHNOLOGY CORPORATION, P.C.", DATED: MAY 21, 2018 PREPARED BY GESICK & ASSOCIATES, P.C., SURVEYORS|MAPPERS|PLANNERS, 19 CEDAR ISLAND AVE., CLINTON, CONNECTICUT 06413, OFFICE: (860) 669-7799 FAX: (860) 669-5833, WWW.GESICKSURVEYORS.COM.
 2. "TOWN OF EAST WINDSOR, GEOGRAPHIC & PROPERTY INFORMATION NETWORK. 50 PLANTATION ROAD, EAST WINDSOR. PARCEL ID: 016-50-001C
 3. BASE MAPPING SUPPLEMENTED W/ FIELD MEASUREMENTS TAKEN BY ALL-POINTS TECHNOLOGY CORP. ON 08-09-2017.

1 ABUTTERS MAP
C-1 SCALE: 1" = 20'-0"



Cellco Partnership d/b/a



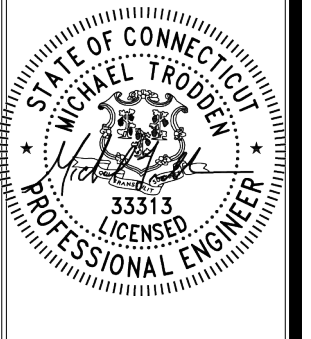
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492



567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-963-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-963-0935

CSC DOCUMENTS

NO	DATE	REVISION
0	08/14/20	FOR REVIEW: JRM
1	08/24/20	ISSUED FOR FILING: JRM
2		
3		
4		
5		
6		



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	50 PLANTATION ROAD
ADDRESS:	EAST WINDSOR, CT 06016
APT FILING NUMBER:	CT141NB7760
DRAWN BY:	DRA
DATE:	08/14/20
CHECKED BY:	JRM
VZW PROJECT CODE:	20171645681
VZW LOCATION CODE:	469756
VZW FUZE ID:	2132728

SHEET TITLE:

ABUTTERS MAP

SHEET NUMBER:

C-1

NOTE:
 1. EXISTING ANTENNA MOUNTS & HOST STRUCTURE REQUIRE MODIFICATION PRIOR TO THE INSTALLATION OF THE PROP. EQUIPMENT UPGRADE. REFER TO STRUCTURAL MODIFICATION REPORT PREPARED BY ALL POINTS TECHNOLOGY CORP., DATED JULY 09, 2020 AVAILABLE UNDER SEPARATE COVER.

Cellco Partnership d/b/a

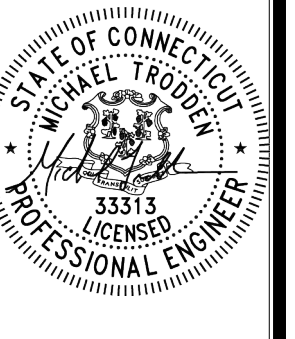


20 ALEXANDER DRIVE
 WALLINGFORD, CT 06492



567 VAUXHALL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-963-1697
 WWW.ALLPOINTSTECH.COM FAX: (860)-963-0935

CSC DOCUMENTS		
NO	DATE	REVISION
0	08/14/20	FOR REVIEW: JRM
1	08/24/20	ISSUED FOR FILING: JRM
2		
3		
4		
5		
6		



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 ADD: 567 VAUXHALL STREET EXT. SUITE 311
 WATERFORD, CT 06385

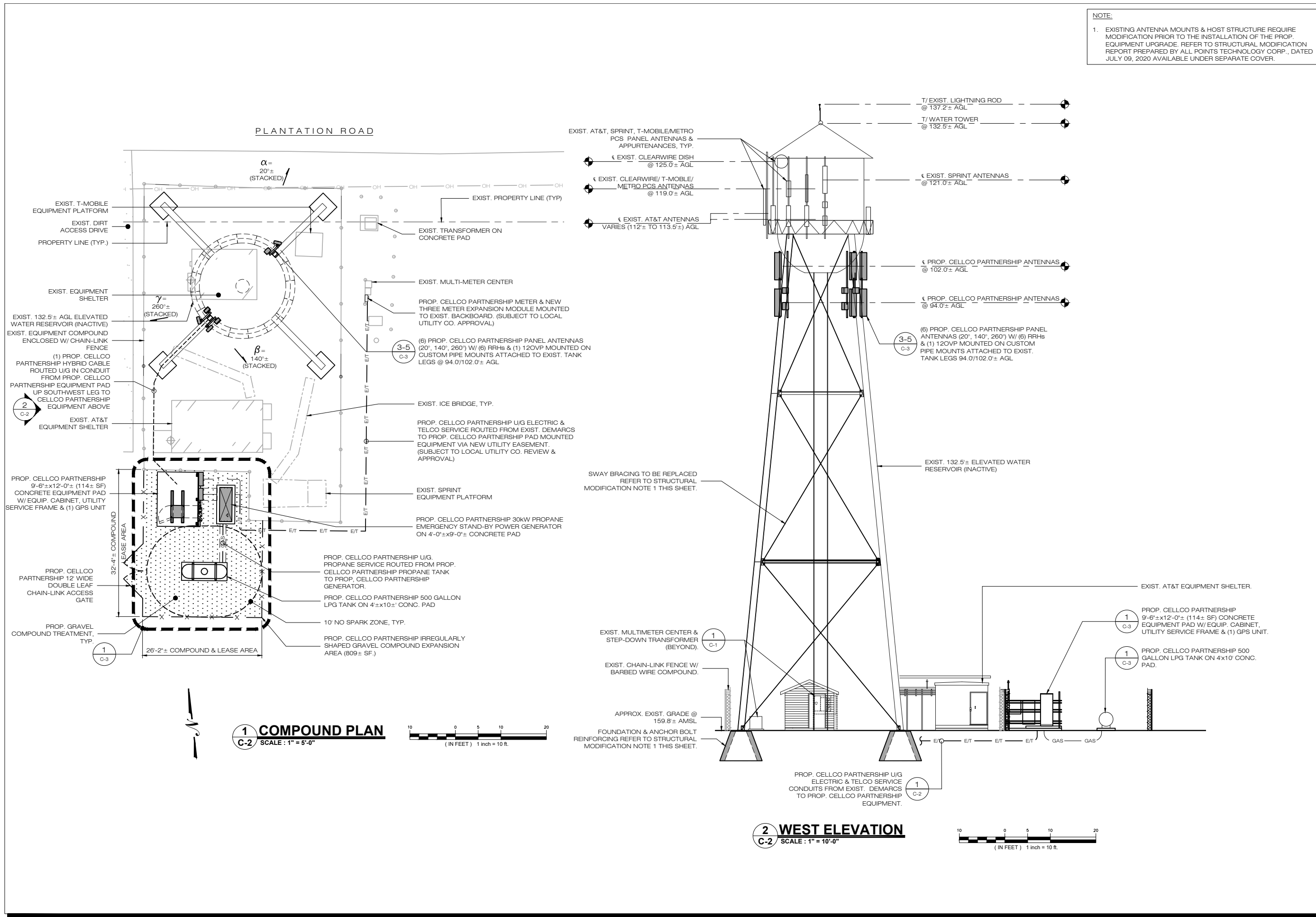
OWNER: PLANTATION PROPERTIES, LLC
 ADDRESS: P.O. BOX 542
 BROAD BROOK, CT 06016-0542

SOUTH WINDSOR NORTH CT

SITE 50 PLANTATION ROAD
ADDRESS: EAST WINDSOR, CT 06016
APT FILING NUMBER: CT141NB7760
DRAWN BY: DRA
DATE: 08/14/20 **CHECKED BY:** JRM
VZW PROJECT CODE: 20171645681
VZW LOCATION CODE: 469756
VZW FUZE ID: 2132728

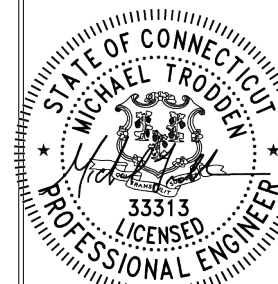
SHEET TITLE:
COMPOUND PLAN & WEST ELEVATION

SHEET NUMBER:
C-2



CSC DOCUMENTS

NO	DATE	REVISION
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1	08/24/20	ISSUED FOR FILING: JRM
2		
3		
4		
5		
6		



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ADDRESS: EAST WINDSOR, CT 06016

APT FILING NUMBER: CT141NB7760

DRAWN BY: DRA

DATE: 08/14/20 CHECKED BY: JRM

VZW PROJECT CODE: 20171645681

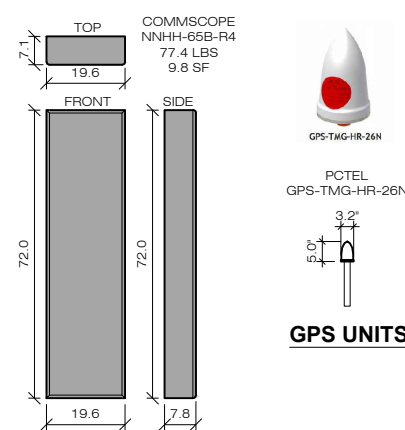
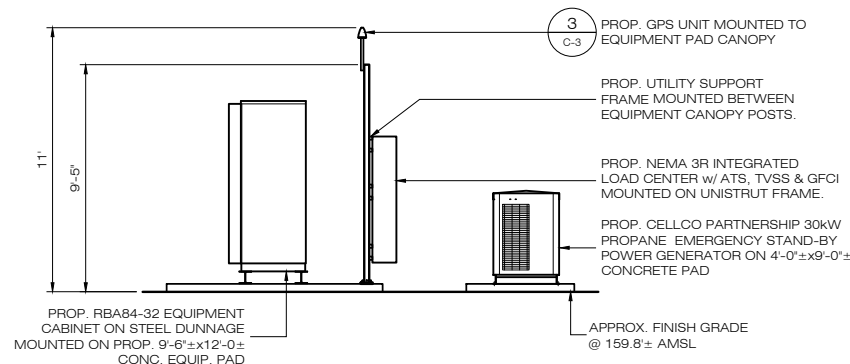
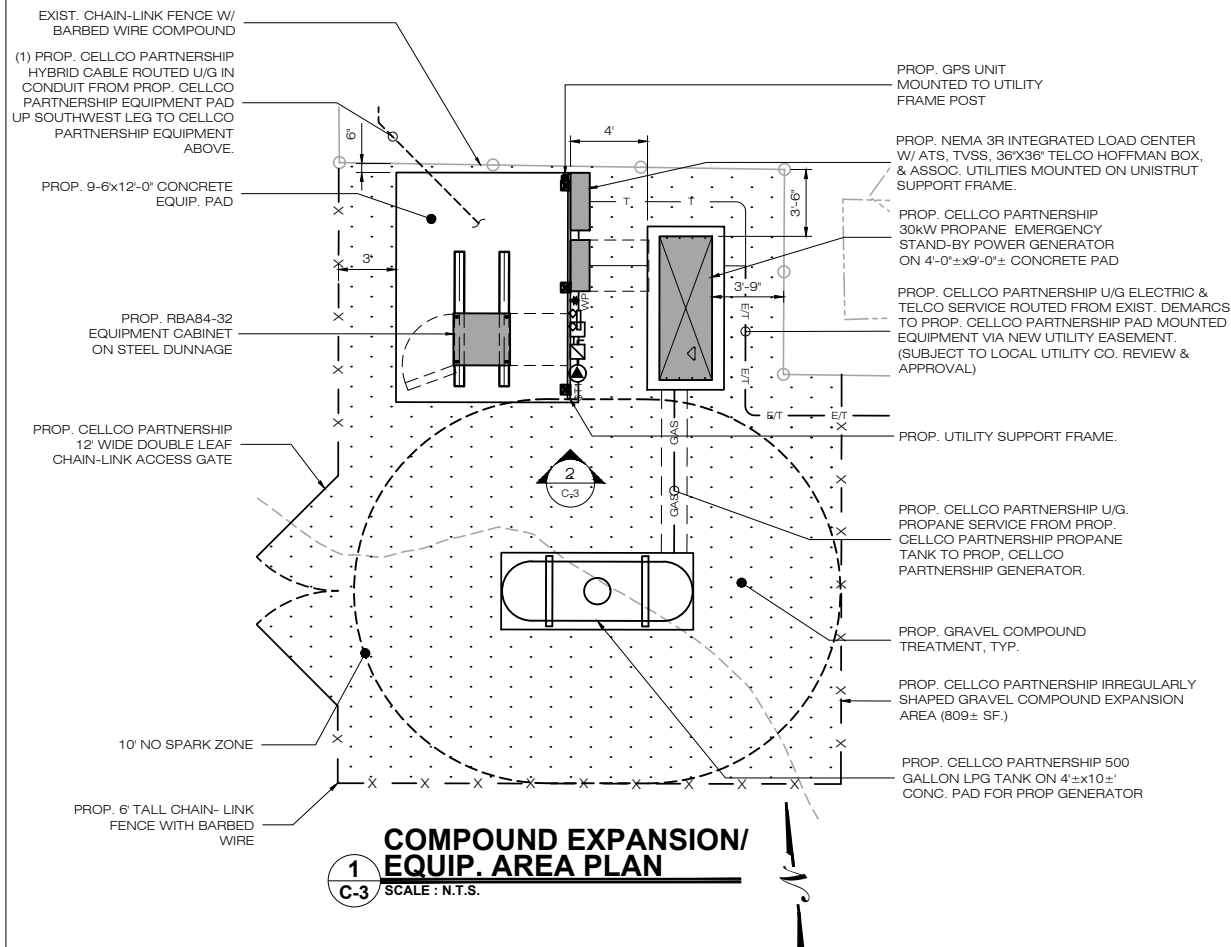
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VZW FUZE ID: 2132728

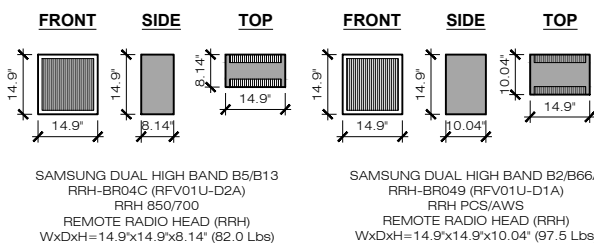
SHEET TITLE:
COMPOUND EXPANSION/ EQUIP. AREA PLAN & DETAILS

SHEET NUMBER:

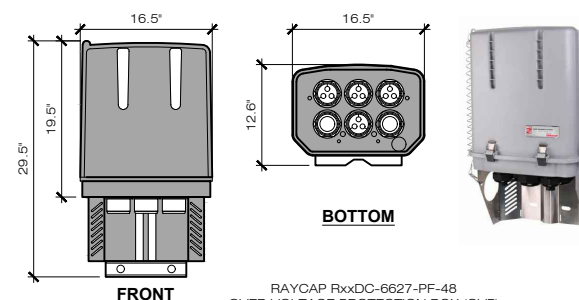
C-3



3 ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



4 RRH EQUIPMENT
SCALE: 1/2" = 1'-0"



5 MAIN DISTRIBUTION BOX (12 OVP)
SCALE: 1" = 1'-0"

ATTACHMENT 4



**EPA-Certified for Stationary
Emergency Applications**

Ratings Range

Standby:	kW	60 Hz
	kVA	30
		30- 38



The Kohler® Advantage

- High Quality Power**
 Kohler generators provide advanced voltage and frequency regulation along with ultra-low levels of harmonic distortion for excellent generator power quality to protect your valuable electronics.
- Extraordinary Reliability**
 Kohler is known for extraordinary reliability and performance and backs that up with a premium five-year or 2000 hour limited warranty.
- All-Aluminum Sound Enclosure**
 Durable aluminum sound-attenuating enclosure.

Generator Set Ratings

Alternator	Voltage	Ph	Hz	Natural Gas 130°C Rise		LP Gas 130°C Rise	
				Standby Rating kW/kVA	Amps	Standby Rating kW/kVA	Amps
4D8.3	120/208	3	60	30/38	106	30/38	106
	127/220	3	60	30/38	100	30/38	100
	120/240	3	60	30/38	92	30/38	92
	120/240	1	60	30/30	125	30/30	125
	139/240	3	60	30/38	92	30/38	92
	220/380	3	60	30/38	58	30/38	58
	277/480	3	60	30/38	46	30/38	46
	347/600	3	60	30/38	37	30/38	37
4P7BX	120/208	3	60	30/38	106	30/38	106
	127/220	3	60	30/38	100	30/38	100
	120/240	3	60	30/38	92	30/38	92
	120/240	1	60	30/30	125	30/30	125
	139/240	3	60	30/38	92	30/38	92
	220/380	3	60	30/38	58	30/38	58
4E8.3	277/480	3	60	30/38	46	30/38	46
	347/600	3	60	30/38	37	30/38	37
4E8.3	120/240	1	60	30/30	125	30/30	125
4Q7BX	120/240	1	60	30/30	125	30/30	125

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The generator set accepts rated load in one step.
- A five-year/2000 hour limited warranty covers all generator set systems and components. A five-year extended comprehensive limited warranty is also available.
- Engine Features
 - Powerful and reliable 2.2 L turbocharged liquid-cooled engine
 - Electronic engine management system.
 - Simple field conversion between natural gas and LPG fuels while maintaining emission certification.
- Innovative Cooling System
 - Electronically controlled fan speeds minimize generator set sound signature.
- Alternator features:
 - Kohler's wound field excitation system with its unique PowerBoost™ design delivers great voltage response and short-circuit capability.
 - The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
 - The brushless, rotating-field alternator has broadrange reconnectability.
- Kohler designed controller for one-source system integration and remote communication. See Controller on page 3.
- Certifications
 - The generator set engine is certified by the Environmental Protection Agency (EPA) to conform to the New Source Performance Standard (NSPS) for stationary spark-ignited emissions.
 - UL 2200/cUL listing is available.
 - The generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
 - CSA certification is available.
 - Accepted by the Massachusetts Board of Registration of Plumbers and Gas Fitters.
- Approved for stationary standby applications in locations served by a reliable utility source.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Exciter type	Brushless, Wound-Field
Leads: quantity, type	
4D	12, Reconnectable
4E	4, 110- 120/220- 240 V
4PX	12, Reconnectable
4QX	4, 110- 120/220- 240 V
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V 4D8.3 (12 lead)	120
240 V 4E8.3 (4 lead)	74
480 V 4P7BX (12 lead)	180
240 V 4Q7BX (4 lead)	113

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Application Data

Engine

Engine Specifications	
Manufacturer	Kohler
Engine: model, type	KG2204T, 2.2 L, 4-Cycle Turbocharged
Cylinder arrangement	In-line 4
Displacement, L (cu. in.)	2.2 (134.25)
Bore and stroke, mm (in.)	91 x 86 (3.5 x 3.4)
Compression ratio	10.5:1
Piston speed, m/min. (ft./min.)	340 (1016)
Main bearings: quantity, type	5, plain alloy steel
Rated rpm	1800
Max power at rated RPM, kW (HP)	
LPG	47.8 (64.1)
Natural Gas	47.6 (63.9)
Cylinder head material	Cast Iron
Piston type and material	High Silicon Aluminum
Crankshaft material	Nodular Iron
Valve (exhaust) material	Forged Steel
Governor type	Electronic
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state	±1.0%
Frequency	Fixed
Air cleaner type, all models	Dry

Engine Electrical

Engine Electrical System	
Ignition system	Electronic
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	14
Ampere rating	90
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA):	
Qty., rating for - 18°C (0°F)	One, 630
Battery voltage (DC)	12
Battery group size	24

Exhaust

Exhaust System	
Exhaust manifold type	Dry
Exhaust temperature at rated kW, dry exhaust, °C (°F)	610 (1130)
Maximum allowable back pressure, kPa (in. Hg)	7.5 (2.2)

Fuel

Fuel System	
Fuel type	Natural Gas or LPG
Fuel supply line inlet	1 NPTF
Natural gas fuel supply pressure, kPa (in. H ₂ O)	1.7-2.7 (7-11)
LPG vapor withdrawal fuel supply pressure, kPa (in. H ₂ O)	1.7-2.7 (7-11)

Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	—
Ethane, % by volume	4.0 max.	—
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C ₄ and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m ³ (Btu/ft ³), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Application Data

Lubrication

Lubricating System

Type	Full Pressure
Oil pan capacity, L (qt.) ‡	4.2 (4.4)
Oil added during oil change (on average), L (qt.) ‡	3.3 (3.5)
Oil pan capacity with filter, L (qt.) ‡	8.5 (9.0)
Oil filter: quantity, type ‡	1, Cartridge
‡ Kohler recommends the use of Kohler Genuine oil and filters.	

Cooling

Radiator System

Ambient temperature, °C (°F)	50 (122)
Engine jacket water capacity, L (gal.)	2.65 (0.7)
Radiator system capacity, including engine, L (gal.)	13.2 (3.5)
Engine jacket water flow, Lpm (gpm)	62 (16.4)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	22.5 (1280)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	qty. 3 @ 406 (16)
Fan power requirements (powered by engine battery charging alternator)	12 VDC, 18 amps each

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m ³ /min. (scfm) ‡	51 (1800)
Combustion air, m ³ /min. (cfm)	1.6 (57)
Air over engine m ³ /min. (cfm)	25 (883)
† Air density = 1.20 kg/m ³ (0.075 lbm/ft ³)	

Fuel Consumption ‡

Natural Gas, m ³ /hr. (cfh) at % load	Standby Ratings
100%	11.9 (421)
75%	10.0 (355)
50%	8.2 (289)
25%	6.3 (223)
0%	4.5 (158)

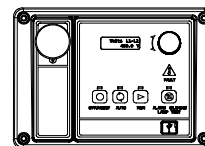
LP Gas, m ³ /hr. (cfh) at % load	Standby Ratings
100%	4.6 (164)
75%	3.7 (131)
50%	2.8 (99)
25%	1.9 (66)
0%	1.0 (34)

‡ Nominal fuel rating: Natural gas, 37 MJ/m³ (1000 Btu/ft.³)
LP vapor, 93 MJ/m³ (2500 Btu/ft.³)

LP vapor conversion factors:

- 8.58 ft.³ = 1 lb.
- 0.535 m³ = 1 kg.
- 36.39 ft.³ = 1 gal.

Controller



APM402 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
 - Measurements are selectable in metric or English units
 - Remote communication thru a PC via network or serial configuration
 - Controller supports Modbus® protocol
 - Integrated hybrid voltage regulator with ±0.5% regulation
 - Built-in alternator thermal overload protection
 - NFPA 110 Level 1 capability
- Refer to G6-161 for additional controller features and accessories.

Modbus® is a registered trademark of Schneider Electric.

Sound Enclosure

- Durable aluminum, sound-attenuating enclosure with quiet operation of 57 dB(A) log average @ 7 m (23 ft.) at no load.
- Internally mounted silencer.
- Fade-, scratch, and corrosion-resistant Kohler® Power Armor™ automotive-grade textured finish.
- Acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.

Standard Features

- Alternator Protection
- Aluminum Sound Enclosure with Enclosed Silencer
- Battery Rack and Cables
- Flexible Fuel Line
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Low Fuel Pressure Switch (with NFPA fuel module)
- Oil Drain Extension
- Operation and Installation Literature
- Standard 5-Year Limited Warranty

Available Options

Approvals and Listings

- CSA Certified
- UL 2200 Listing

Controller

- 15-Relay Dry Contact Board
- Communication Products
- Input/Output Module (2 inputs, 5 outputs)
- Lockable Emergency Stop (lockout/tagout)
- Manual Key Switch
- Manual Speed Adjust
- Remote Annunciator Panel
- Remote Emergency Stop
- Run Relay

Enclosure Accessories

- Enclosure Doors for 291 kph (181 mph) Wind Load

Starting Aids*

- Block Heater, 110- 120 V
- Block Heater, 220- 240 V

Oil Pan Heater*

- Oil Pan Heater, 110- 120 V
- Oil Pan Heater, 190- 240 V

* One block heater or oil pan heater is required for ambient temperatures below 0°C (32°F). At temperatures below -18°C (0°F) installation of both heaters is required.

Electrical System

- Alternator Strip Heater
- Battery
- Battery Charger, 6 Amp
- Battery Charger, 10 Amp w/Alarms
- Battery Heater
- Temperature Compensation for 10 Amp Battery Charger

Miscellaneous

- Air Cleaner Restriction Indicator
- Certified Test Report
- Engine Fluids Added
- Maintenance Kit (filters, spark plugs, oil)
- Rated Power Factor Testing

Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

Warranty

- Optional Extended 5-Year/2000 Hour Comprehensive Limited Warranty

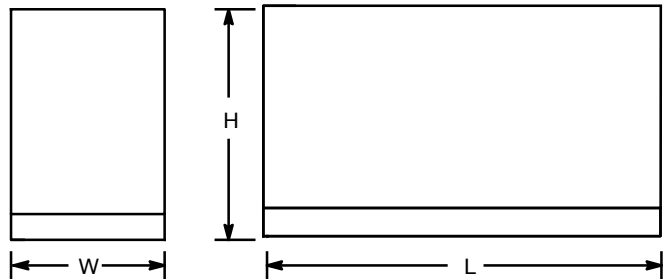
Other Options

- _____
- _____
- _____
- _____
- _____
- _____
- _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.): 2280 x 830 x 1182
 (89.8 x 32.7 x 46.5)

Weight, with engine fluids, kg (lb.): 635 (1432)



NOTE: This drawing is provided for reference only and should not be used for planning. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

NNHH-65B-R4

8-port sector antenna, 4x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 4x RETs



Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain, dBi	14.6	15.0	17.0	17.3	17.5	17.9
Beamwidth, Horizontal, degrees	66	64	58	61	63	59
Beamwidth, Vertical, degrees	11.9	10.3	7.4	6.9	6.4	5.7
Beam Tilt, degrees	2–14	2–14	2–12	2–12	2–12	2–12
USLS (First Lobe), dB	17	19	14	19	16	18
Front-to-Back Ratio at 180°, dB	30	31	35	38	37	34
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	25	25	25	25	25	25
VSWR Return Loss, dB	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150	-150	-150	-150
Input Power per Port at 50°C, maximum, watts	300	300	250	250	250	200
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	14.2	14.7	16.4	16.9	17.0	17.5
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.5	±0.9	±0.4	±0.5	±0.5
Gain by Beam Tilt, average, dBi	2 ° 14.2 8 ° 14.2 14 ° 13.9	2 ° 14.7 8 ° 14.8 14 ° 14.3	2 ° 16.5 7 ° 16.6 12 ° 16.1	2 ° 16.7 7 ° 17.0 12 ° 16.7	2 ° 16.8 7 ° 17.1 12 ° 16.7	2 ° 17.2 7 ° 17.8 12 ° 17.3
Beamwidth, Horizontal Tolerance, degrees	±3.3	±3.1	±6.4	±3	±3.5	±5.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.8	±0.8	±0.4	±0.7	±0.2
USLS, beampeak to 20° above beampeak, dB	17	19	14	17	15	17
Front-to-Back Total Power at 180° ± 30°, dB	21	21	30	31	27	27
CPR at Boresight, dB	21	22	16	17	18	17
CPR at Sector, dB	9	6	9	9	8	12

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs](#).

Array Layout



Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	CPxxxxxxxxxxxxxxxxMM.1
R2	698-896	3-4	2	CPxxxxxxxxxxxxxxxxMM.2
Y1	1695-2360	5-6	3	CPxxxxxxxxxxxxxxxxMM.3
Y2	1695-2360	7-8	4	CPxxxxxxxxxxxxxxxxMM.4

Left Bottom Right

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration



General Specifications

Operating Frequency Band

1695 – 2360 MHz | 698 – 896 MHz

NNHH-65B-R4

Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage
Total Input Power, maximum	900 W @ 50 °C

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	685.0 N @ 150 km/h 154.0 lbf @ 150 km/h
Wind Loading, lateral	232.0 N @ 150 km/h 52.2 lbf @ 150 km/h
Wind Loading, maximum	889.0 N @ 150 km/h 199.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h 150 mph

Dimensions

Length	1828.0 mm 72.0 in
Width	498.0 mm 19.6 in
Depth	197.0 mm 7.8 in
Net Weight, without mounting kit	35.1 kg 77.4 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (2) Low band (2)
Power Consumption, idle state, maximum	1 W
Power Consumption, normal conditions, maximum	8 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Hardware	CommRET v2
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	1 female 1 male

NNHH-65B-R4

Packed Dimensions

Length	2010.0 mm 79.1 in
Width	608.0 mm 23.9 in
Depth	352.0 mm 13.9 in
Shipping Weight	49.0 kg 108.0 lb

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU
China RoHS SJ/T 11364-2006
ISO 9001:2008

Classification

Compliant by Exemption
Above Maximum Concentration Value (MCV)
Designed, manufactured and/or distributed under this quality management system



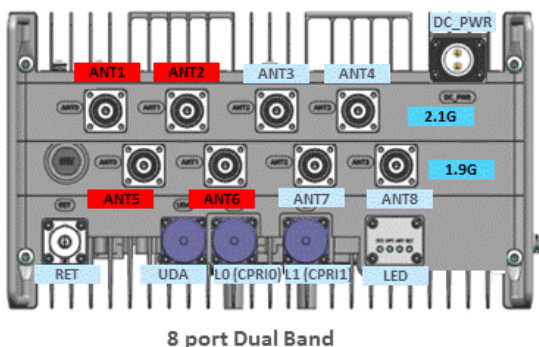
Included Products

BSAMNT-3 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

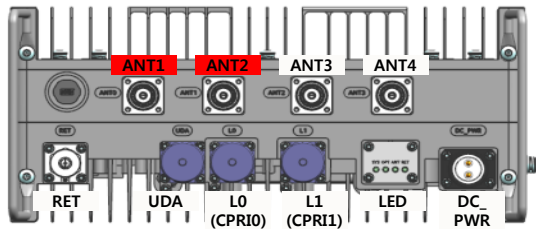
PCS+AWS Dual Band RRH(Model : RFV01U-D1A)



8 port Dual Band

Item	Specification	
Band	Band2 (1.9GHz)	Band66 (2.1GHz)
Frequency	DL : 1930~1990MHz	DL : 2110~2180MHz
	UL : 1850~1910MHz	UL : 1710~1780MHz
IBW	60MHz	70MHz
OBW	20MHz	30MHz
Carrier Bandwidth	5MHz, 10MHz, 15MHz, 20MHz	
# of carriers	2 carriers	3 carriers
Total # of carriers	4 carriers	
RF Chain	4T4R, 2T4R, 2T2R (SW configurable)	
RF Output Power	Total : 320W (for OBW 40MHz)	
	4 x 40W or 2 x 60W	4 x 60W or 2 x 90W
Spectrum Analyzer	TX/RX Support	
Noise Figure	Less than 3.0 dB	
RX Sensitivity	Typical : -105dBm @1Rx (25RBs 5MHz)	
Modulation	256QAM support	
Input Power	-48VDC (-38VDC to -57VDC)	
Power Consumption	About 1,270 Watt @ 100% RF load, typical conditions (w/ BAS OOB)+TMA/RET	
Size (WHD)	380 x 380 x 255 mm (15.0" x 15.0" x 10.0") (w/ BAS OOB)	
Volume	36.8 L	
Weight	38.3 kg(84.4 lb) w/o solar shield(finger guard) & mount bracket 44.2 kg (97.5 lb) with solar shield(finger guard) & mount bracket	
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (Without solar load)	
Cooling	Natural convection	
Unwanted Emission	3GPP 36.104 Category A	3GPP 36.104 Category A,
	[B2] : FCC 47 CFR 24.238	[B66] : FCC 47 CFR 27.53 h)
CPRI Cascade	Not supported	
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, Duplex	
RET & TMA Interface	AISG 2.2	
Bias-T	4 ports (2 ports per band) (Max. 49W)	
Mounting Options	Pole, wall, tower, side by side, back to back	
NB-IoT	Support	
PIM Cancellation	Support	
# of antenna port	4	4
External Alarm	4	

700+850MHz Dual Band RRH(Model : RFV01U-D2A)



Item	Specification	
Band	Band13 (700MHz)	Band5 (850MHz)
Frequency	DL : 746~756MHz	DL : 869~894MHz
	UL : 777~787MHz	UL : 824~849MHz
IBW	10MHz	25MHz
OBW	10MHz	25MHz
Carrier Bandwidth	10MHz	5MHz, 10MHz
# of carriers	1 carrier	3C
Total # of carriers	4C	
RF Chain	4T4R, 2T4R, 2T2R (SW configurable)	
RF Output Power	Total : 320W	
	4 x 40W or 2 x 60W	4 x 40W or 2 x 60W
Spectrum Analyzer	TX/RX Support	
Noise Figure	Less than 3.0 dB	
RX Sensitivity	Typical : -105dBm @1Rx (25RBs 5MHz)	
Modulation	256QAM support	
Input Power	-48VDC (-38VDC to -57VDC)	
Power Consumption	About 1,106Watt @ 100% RF load, typical conditions + TMA/RET	
Size (WHD)	380 x 380 x 207 mm (15.0" x 15.0" x 8.1")	
Volume	29.9 L	
Weight	31.9 kg(70.3 lb) w/o solar shield(finger guard) & mount bracket	
	37.2 kg(82.0 lb) with solar shield(finger guard) & mount bracket	
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (Without solar load)	
Cooling	Natural convection	
Unwanted Emission	3GPP 36.104 Category A,	3GPP 36.104 Category A
	FCC 47 CFR 27.53 c), f)	FCC 47 CFR 22.917
CPRI Cascade	Not supported	
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, Duplex	
RET & TMA Interface	AISG 2.2	
Bias-T	2 ports (Max. 49W)	
Mounting Options	Pole, wall, tower, side by side, back to back	
NB-IoT	Support	
PIM Cancellation	Support	
# of antenna port	4	
External Alarm	4	

ATTACHMENT 5



July 09, 2020

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Attn: Mr. David Vivian

Re: Structural Modification Design Report
Verizon Site I.D.: South Windsor North CT
404 Bridge Street
Groton, CT 06340

Project/Location Code: 20171646071/467295
VZW FUZE I.D.: 3575
APT Filing No. CT141EB9740

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 installation. Our analysis indicated that reinforcement of the existing water reservoir sway rods and anchor bolts are required to meet the requirements of the 2015 International Building Code (IBC), as amended by the 2018 Connecticut State Building Code.

Reference is made to the reinforcement design drawings S-1 and S-2 prepared by this office, marked Rev 0, dated June 30, 2020, included within this report.

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

ANSI/TIA-222-G-2009 - Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

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.

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 reinforcement was designed to support the following equipment loading (proposed equipment shown in **bold text**):

Carrier	Antenna and Appurtenance Make/Model	Elevation	Status	Mount Type	Coax/Feed-Line
Clearwire	Two (2) 3-ft Dia. Microwave Dishes (Dragonwave A-ANT-23-G-2.5 est.)	125'±	E	Three (3) Pipe Mounts	(3) 1-1/4 RF Hyrbriplex, (2) 1/2", (2) 2-1/4" Innerduct
Clearwire	Three (3) Fiber Boxes	124'±	E		
Clearwire	Three (3) Argus LLPX310R-V4 panel antennas	119'±	E		
Clearwire	Three (3) Remote Radio Units	116'±	E		
Sprint	Two (2) RFS APVX9ERR18-C-A20, one (1) RFS APVXSPP18-C-A20, three (3) ALU 800 MHz 2x50W RRHs and three (3) ALU 1900MHz 4x40W RRHs	121'±	E	Three (3) Pipe Mounts	
Clearwire	One (1) Fiber Box	109'±	E	Catwalk Rail	n/a
MetroPCS/ T-Mobile	Three (3) RFS APXV18-206517S-C panel antennas	119'±	E	Three (3) Pipe Mounts	(6) 1-5/8
AT&T	Six (6) Powerwave 7770 panel antennas, two (2) Powerwave P65-17-XLH-RR panel antennas, one (1) KMW AM-X-CD-16-65-00T-RET panel antenna, twelve (12) Powerwave LGP 21401 TMAs, three (3) Ericsson RRUS-11, three (3) Ericsson RRUS-12 and three (3) Raycap DC2 Surge Suppressors (est.)	112 - 113'±	E	Three (3) Pipe Mounts (shared with Clearwire & MetroPCS/T-Mobile)	(12) 1-5/8", (2) 5/8" & (1) 3/8" fiber/DC cables (est.)
Verizon	Six (6) Commscope NNHH-65B-R4 panel antennas, three (3) Samsung B5/B13 RRH-BR04C Remote Radio Heads (RRHs), three (3) Samsung B2/B66A RRH-BR049 Remote Radio Heads (RRHs) & one (1) Raycap RVZDC-6627-PF-48 Over Voltage Protection Box (OVP)	102'/94'	P	Custom Pipe Mounts Attached to Exist. Tank Legs	(1) 12x24 Hybrid Fiber Cable (Routed with Southwest Built-Up Lattice Leg Channels)
Clearwire	One (1) Fiber Box	10'±	E	Leg	n/a

Results:

The reinforcement design was limited to replacement of the existing diagonal sway rods, with larger diameter sway rods, the installation of one (1) additional anchor bolt at each water tower leg, base plate restoration, and the reinforcement of all four (4) existing water tank concrete frustum pyramid foundations. The horizontal girts and lattice columns were evaluated within our Rev1 structural analysis report, dated April 22, 2019 and were found to be structurally adequate under the existing and proposed loading.

The following table summarizes the results of the reinforcement design:

Component	Usage (%)
New Sway Rods	94%
Exist. Anchor Bolts	90%

Notes:

1. ASTM A36 steel grade used for the basis of the sway rod design.
2. Usage considering existing anchor bolts with 1/8" corrosion allowance.
3. Assumes reservoir no longer used for water storage.
4. Reinforced gusset plates (Pin bearing on plate controls).

Base Foundations:

Evaluation of the existing water tower foundation system was limited to a global stability check with the existing and proposed loading. The existing foundation system was established through field investigation conducted by APT during May 2017.

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

Load Effect	Calculated Base Reactions	Usage
Axial	73 k	n/a
Shear	70 k	n/a
Overturing Moment	5289 ft-k	n/a
Leg Uplift	91 k	0.89 < 1.0 (PASS)

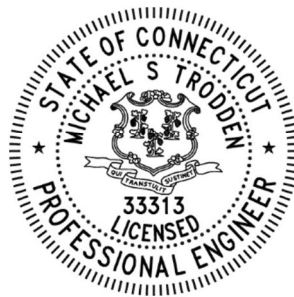
Conclusions:

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.

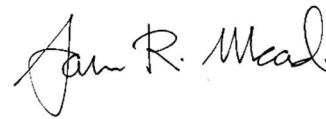
Sincerely,
All-Points Technology Corp., P.C.



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

Municipality	Ground Snow Load (psf)	MCE Spectral Acceleration s (%g)		Wind Design Parameters								
		S _s	S ₁	Ultimate Design Wind Speeds, V _{ult} (mph)			Nominal Design Wind Speeds, V _{asd} (mph)			Wind-Borne Debris Regions ¹		Hurricane-Prone Regions
				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

All-Points Technology Corporation

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

Subject: **Water Tank Properties**
 Project: **Verizon - South Windsor North CT**
 Prepared: **07.09.20** Revised:

APT Job No. **CT141NB7760**

Existing Water Tank Material Dead Load Calculations

Upper Reservoir & Center Stand Pipe

Plate Des.	Quantity (n)	Thickness in	Outside D in	Inside D in	Height H in	Area in2	Steel Density lbs/ft ³	Volume in3	Weight (ea.) kips	Weight kips
Reservoir (1 plate @ 5/16" & 2 plates @ 1/4", est.)	1.00	0.27	228.00	227.46	216.00	193.17	490.00	41724.15	11.83	11.83
Center Stand Pipe	1.00	0.25	36.00	35.50	1200.00	28.08	490.00	33693.57	9.55	9.55
									Sub-total Wt. (kips)	21.39

Dome (Lower Reservoir) & Roof

Plate Des.	Quantity (n)	Thickness in	Outside D in	Inside D in	Height H in	Area in2	Steel Density lbs/ft ³	Volume in3	Weight (ea.) kips	Weight kips	
Dome	1	0.2500					490.00	27416.20	7.77	7.77	
Roof Cone	1	0.2500					490.00	18220.00	5.17	5.17	
								Total Plate Vol. (kips)	45636.20	Sub-total Wt. (kips)	12.94

Legs, Spider Rods and Diag Sway Rod Bracing

Plate Des.	Quantity (n)	Length in	Weight plf	Area in2/ft	Steel Density lbs/ft ³	Volume in3	Weight (ea.) kips	Weight kips	
Channel Legs with Lacing & Plates	4	1308.00	31.70		490.00		7.82	31.29	
Horz Channel Brace - Level 1 (C7x9.8) (est.)	4	318.00	9.80	2.87	490.00	912.66	0.26	1.04	
Vert Channel Brace Level 1 (C6x8.2) (est.)	4	330.00	8.20	2.40	490.00	792.00	0.22	0.90	
Horz Channel Brace - Level 2 (C6x8.2) (est.)	4	252.00	8.20	2.40	490.00	604.80	0.17	0.69	
Vert Channel Brace Level 2 (C6x8.2) (est.)	4	264.00	8.20	2.40	490.00	633.60	0.18	0.72	
New 1.5" Dia. Diagonal Sway Rods (Level 1)	8	558.00	6.01	1.77	490.00	985.99	0.28	2.24	
New Diagonal Sway Rods (Level 2)	8	504.00	6.01	1.77	490.00	890.57	0.25	2.02	
New Diagonal Sway Rods (Level 3)	8	444.00	5.05	1.48	490.00	658.90	0.19	1.49	
Spider Rods (Level 1) (est.)	4	912.00	1.04	0.44	490.00	401.28	0.11	0.46	
Spider Rods (Level 2) (est.)	4	732.00	1.04	0.44	490.00	322.08	0.09	0.37	
						Total Vol. (kips)	6201.87	Sub-total Wt. (kips)	41.20

Platform and Railing

Plate Des.	Quantity (n)	Thickness in	Length in	Width in	Weight psf	Area in2	Steel Density lbs/ft ³	Volume in3	Weight (ea.) kips	Weight kips	
Platform Plate (0.25"x24" est.)	1	0.2500	792.00	24.00	11.26	19008.00	490.00	4752.00	1.35	1.35	
Perimeter Kick Plate (0.25"x4")	1	0.2500	867.00	4.00	11.26	3468.00	490.00	867.00	0.25	0.25	
Diagonal Angle Bracing (L2x3/16 est.)	24	0.0000	48.00	0.00			490.00	34.32	0.01	0.23	
Top Rail (L2x3/16 est.)	1	0.0000	842.00	0.00			490.00	602.03	0.17	0.17	
								Total Vol. (kips)	6255.35	Sub-total Wt. (kips)	2.00

Total Material Dead Load (includes 5% for connections and misc materials)

	Total Wt. (kips)	78.00
(Gross tank material weight minus stand pipe & 1/2 spider rods used for foundation analysis)	kips	68.0

Comments:

Antenna and Appurtenance Area Calculations

Table with columns: Height, Carrier/Equipment, Item Quantity, Dimensions (H, W, D), Item Area, Aspect Ratio, Flat or Round, Cf, CfAa, Shielding Factor, Rotational Area Factor, Total CfAa, Adjusted Net CfAa, Weight (ea), Weight (Total). Includes subtotals for various antenna types and a final Total Sum Weight of 6059.70.

Linear Interpolation table with x and y values.

FLAT ROUND

Table with columns: Cross-Section, Surface, 1, 7, 25. Includes rows for Square, Round (D/vqz>2.5), and Round (D/vqz<2.5).

Linear Interpolation table with x and y values.

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

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**

Prepared: **07.09.20**

Revised:

CT141NB7760

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 =
Risk Category =
Exposure Category =
Base Tower Cross-Section =

125 mph
II
C
SQ

Appendix N 2018 CSBC
Note: Structure no longer utilized as a water tank and is empty. (Antenna support structure) 2012 IBC Section 1609.4.5/ASCE 7-10
2015 IBC Section 1609.4.3
Enter 'SQ' for Square, 'T' for Triangle)

Terrain Exposure Constants:

Topographic Factor, K_t = 1.00 ASCE 7-10 Sec. 26.8.2
Wind Directionality Factor, K_d = 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 (z_g) = 900 ASCE 7-10 Table 26.9-1
Gust Response Factor, G = 0.85 ASCE 7-10 Sec. 26.9.1
K_{zmin} = 0.85 ASCE 7-10

Velocity Pressure at height z, q_z = $q_z = 0.00256 K_z K_{zt} K_d V^2$ ASCE 7-10 [Eq. 29.3-1] Sec. 29.3.2
Design Wind Load, P = F = q_zC_fA_f ≥ 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)	A _{leg} (ft ²)	A _{girts} (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)	K _z	q _z	e	C _f	R _R	D _F	D _R	D _F A _F	D _R A _{RR}	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 Elevation (ft)	Δh (ft)	Depth (ft)	Diameter (ft ²)	A _F (ft ²)	A _R (ft ²)	z bar (ft)	K _z	q _z	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)	K _z	q _z	C _F A _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	42.85	31.50	1.15	112.43
Prop. Verizon Mounts	98	98	98.0	1.26	42.85	12.60	0.46	44.97
Prop. Verizon Panels & RRHs	102	102	102.0	1.27	43.21	36.50	1.34	136.74
Prop. Verizon Panels, RRHs & OVP	94	94	94.0	1.25	42.47	40.94	1.48	138.93
CW Fiber Box	10	10	10.0	0.85	28.90	1.02	0.03	0.25
						345.89	12.91	1341.39

Total Axial Force Above Grade (P) = 73.1 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) = 5285.9 (ft-kips)

Overturning % Increase = 34.0%
 If >10% check anchor bolts

Shear % Increase = 22.5%
 If >10% check bracing

All-Points Technology Corporation

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

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

Prepared: **07.09.20**

Revised:

APT Job No.

CT141NB7760

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)	52.50	kips (#4, 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	Estimated due to corrosion
Number of Anchor Bolts Per Leg	2	
Number of Legs	4	(Assumes central standpipe takes no shell DL)
Leg Circle Diameter (in)	5.94	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	45.18	kips, (0.9DL + 1.0WL)
Total Ultimate Base Wind Shear	70.84	kips, (x1.0WL)
Ultimate Shear Per Leg	17.71	kips, (x1.0 WL)
Shear Per Anchor Bolt	8.86	kips, (x1.0 WL)
Available Bolt Tension Strength	50.19	kips
Available Bolt Shear Strength	30.14	kips
Usage	0.90	<1.0 OK

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)
b _{eff}	1.380	in
b	2.156	in
As _f	1.875	in ²
a	1.563	in
d	1.875	in
Ap _b	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	50.63	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	183.77	kips
Usage	1.57	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	0.94	<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)
b _{eff}	1.380	in
b	3.313	in
As _f	2.623	in ²
a	2.560	in
d	1.875	in
Ap _b	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	70.82	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	274.73	kips
Usage	1.57	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	0.94	<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)
b _{eff}	1.380	in
b	3.690	in
As _f	2.391	in ²
a	2.250	in
d	1.875	in
Ap _b	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	64.55	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	183.77	kips
Usage	1.47	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	0.88	<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)
b _{eff}	1.380	in
b	3.850	in
As _f	2.436	in ²
a	2.310	in
d	1.875	in
Ap _b	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	65.76	kips
Available Bearing Strength at Pin	31.32	kips
Available Tension Strength (Gross area)	283.93	kips
Usage	1.24	>1.0 BEARING CONTROLS. ADD 1/4" THK. REINF. PLATE
Reinf Usage	0.74	<1.0 OK

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

Project: Verizon - South Windsor North CT

Prepared: 07.09.20 Revised:

APT Job No. CT141NB7760

Lattice Column & Lacing Bar Analysis

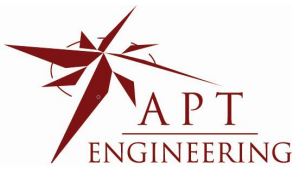
Column Steel Yield Strength	33	ksi, ASTM A7-39 (tank built circa 1946)
Column Area	12.095	in ²
Lacing Bar Thickness	0.375	in
Lacing Bar Depth	2.25	in
Column Moment of Inertia, Ixx	257.41	in ⁴ (Calculated Externally)
Column Moment of Inertia, Iyy	286.94	in ⁴ (Calculated Externally)
Column Radius of Gyration, 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, φPn	229.17	kips
Ultimate Compressive Force, Pu	128.70	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, φPn 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, φPn	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, φPn	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



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 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Project Title:
 Engineer:
 Project ID:
 Project Descr:

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General Section Property Calculator

File: Lattice Column & Girt Section Properties.ec6
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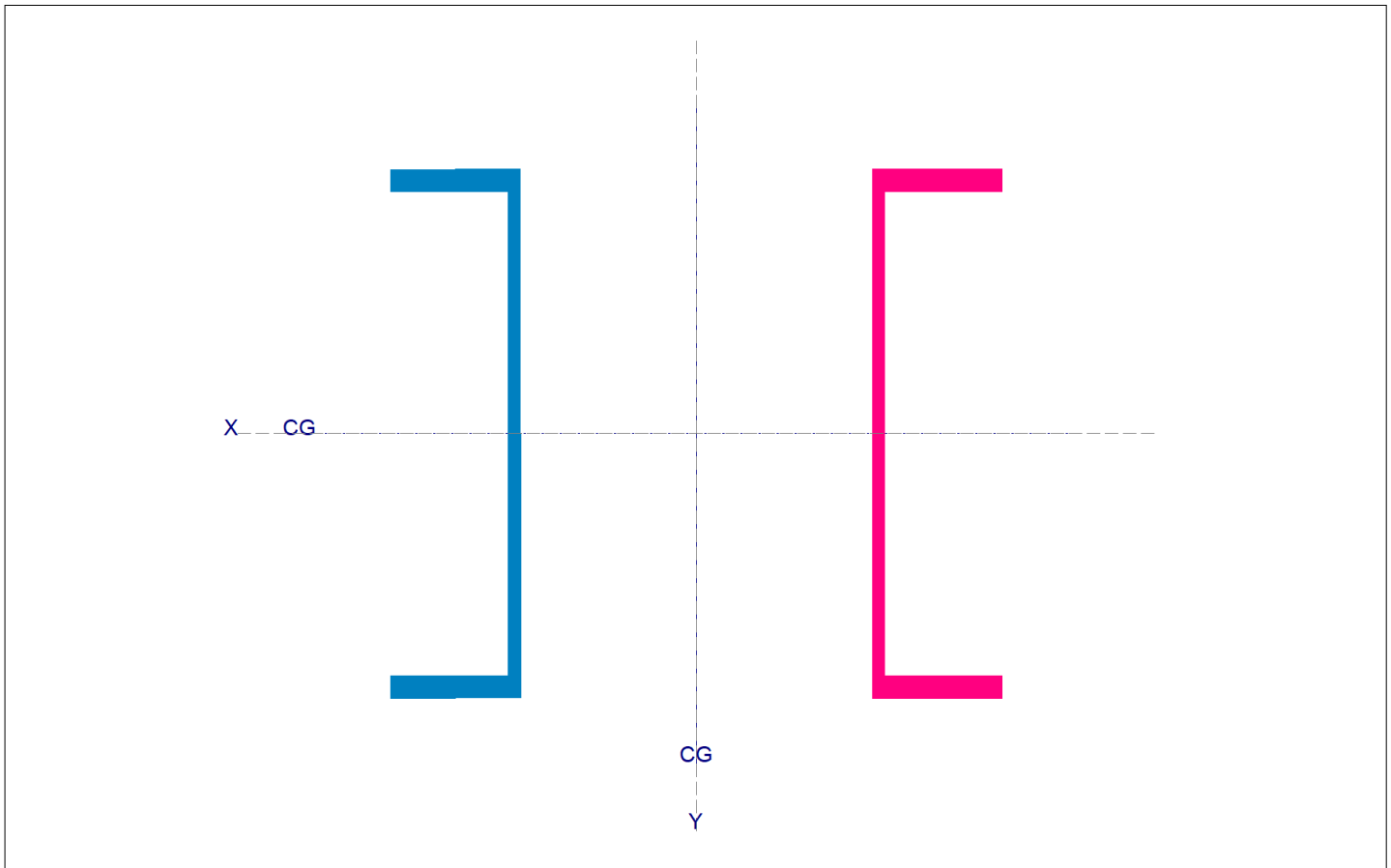
Lic. #: KW-06006315

DESCRIPTION: Built -Up Latticed Column Section Properties

Final Section Properties

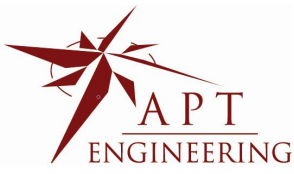
Total Area	:	12.095 in ²	lxx	:	257.406 in ⁴	Sxx : - Y	:	42.901 in ³
Calculated final C.G. distance from Datum :			lyy	:	286.937 in ⁴	Sxx : +Y	:	42.901 in ³
X cg Dist.	:	0.0 in	Zxx	:	50.929 in ³	Syy : - X	:	41.345 in ³
Y cg Dist.	:	0.0 in	Zyy	:	57.914 in ³	Syy : +X	:	41.345 in ³
Edge Distances from CG. :						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		



Title Block Line 1
 You can change this area
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 and then using the "Printing &
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 Title Block Line 6

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General Section Property Calculator

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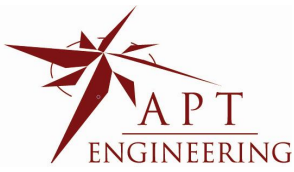
ALL-POINTS TECHNOLOGY CORP.

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
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 and then using the "Printing &
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 Title Block Line 6

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 Engineer:
 Project ID:
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General Section Property Calculator

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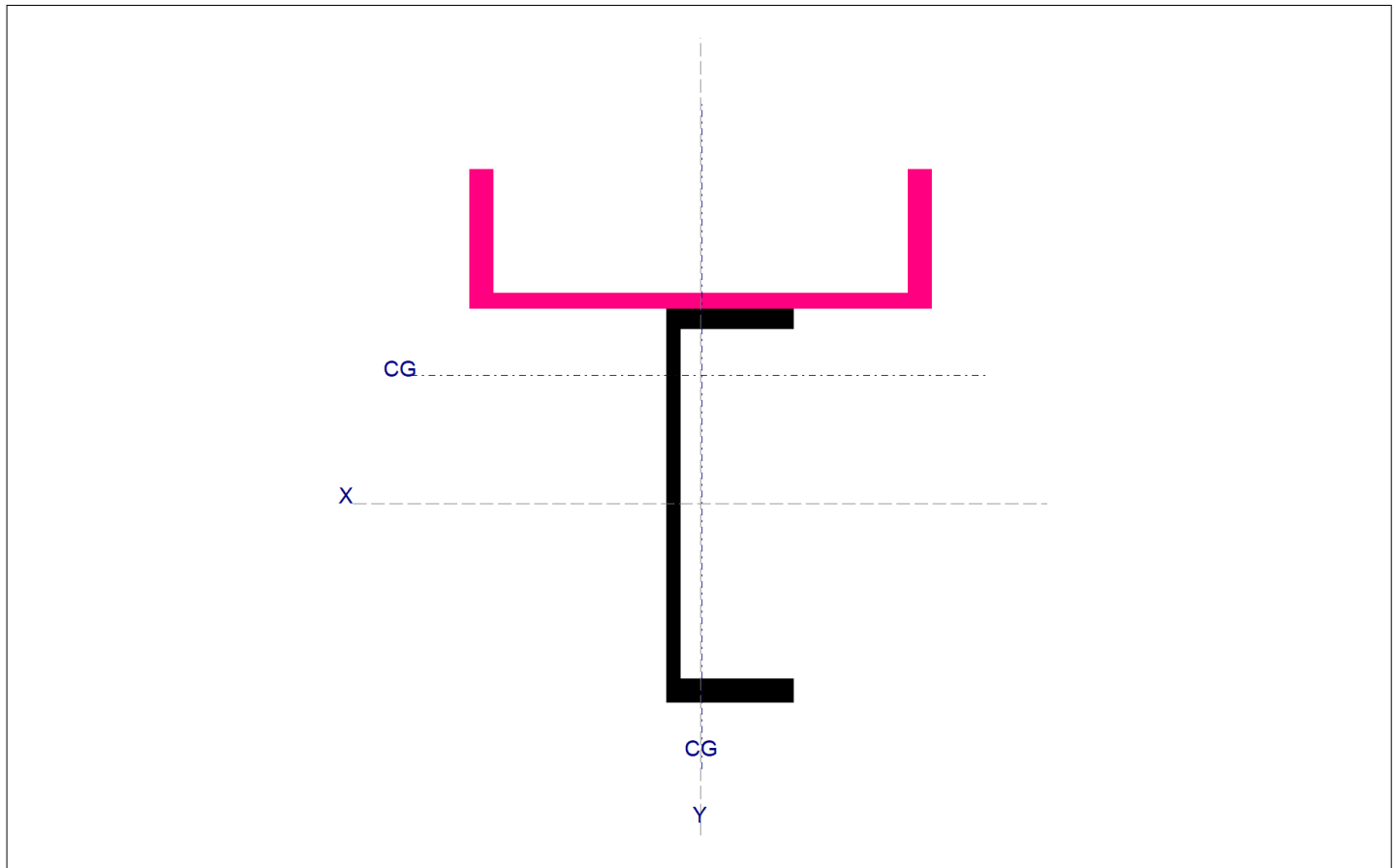
Lic. #: KW-06006315

DESCRIPTION: Existing Level 1 Horz Girt Section Properties



Final Section Properties

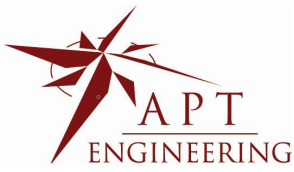
Total Area	:	5.226 in ²	lxx	:	30.862 in ⁴	Sxx : - Y	:	6.234 in ³
			lyy	:	22.007 in ⁴	Sxx : +Y	:	9.952 in ³
Calculated final C.G. distance from Datum :			Zxx	:	8.80 in ³	Syy : - X	:	6.219 in ³
X cg Dist.	:	0.02912 in	Zyy	:	8.289 in ³	Syy : +X	:	6.323 in ³
Y cg Dist.	:	1.950 in						
Edge Distances from 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



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 and then using the "Printing &
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 Title Block Line 6

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General Section Property Calculator

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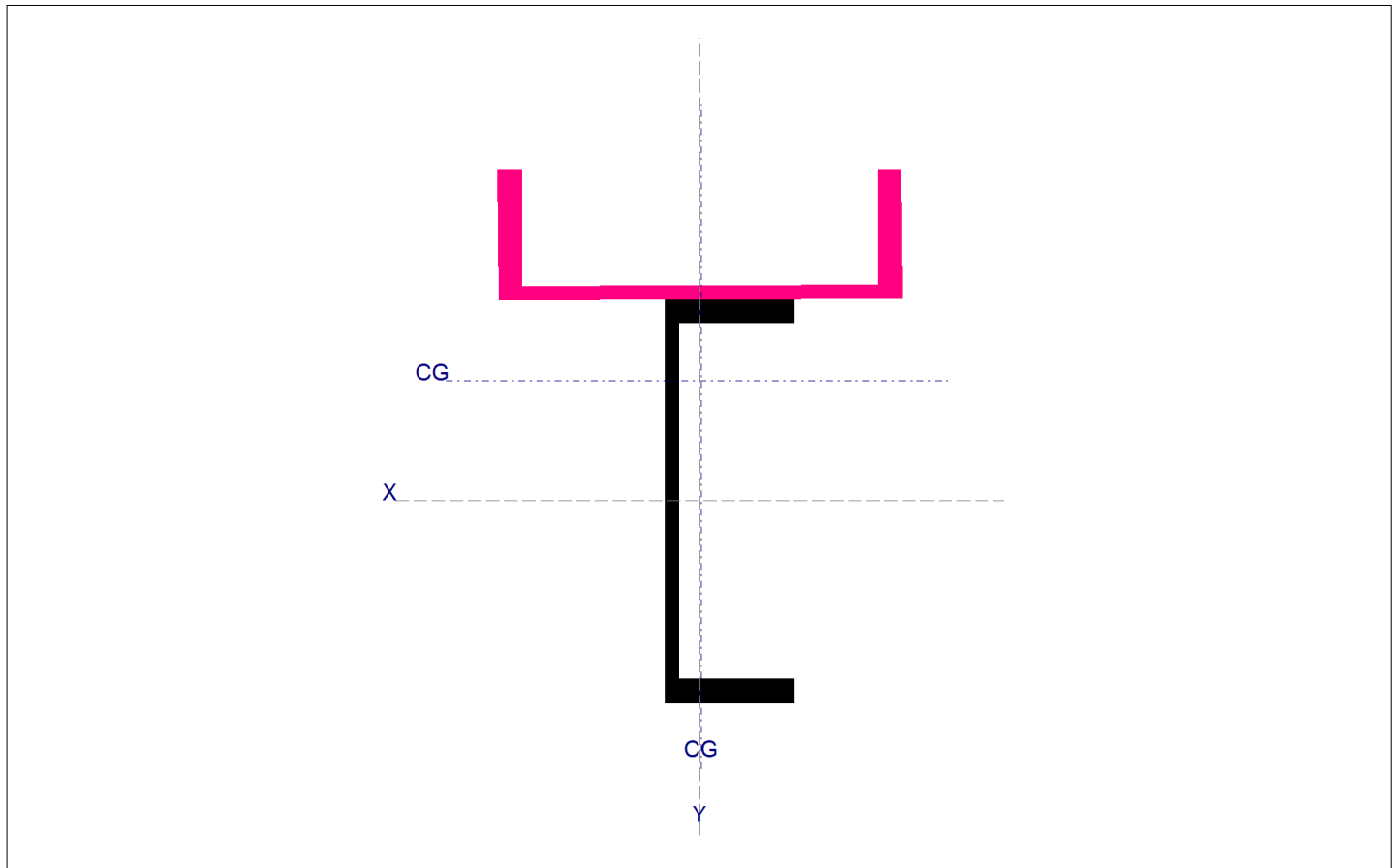
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DESCRIPTION: Existing Level 2 Horz Girt Section Properties

Final Section Properties

Total Area	:	4.760 in ²	lxx	:	29.111 in ⁴	Sxx : - Y	:	6.080 in ³
Calculated final C.G. distance from Datum :			lyy	:	13.899 in ⁴	Sxx : +Y	:	9.324 in ³
X cg Dist.	:	0.03198 in	Zxx	:	8.510 in ³	Syy : - X	:	4.570 in ³
Y cg Dist.	:	1.788 in	Zyy	:	6.288 in ³	Syy : +X	:	4.668 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



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

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

$$f_{AN} = 0.69 \quad \ll \text{Spacing Reduction Factor, 10"}$$
$$f_{RN} = 0.66 \quad \ll \text{Edge Distance Reduction Factor, 18"}$$
$$f_{AV} = 0.58 \quad \ll \text{Spacing Reduction Factor, 10"}$$
$$f_{RV} = 0.66 \quad \ll \text{Edge Distance Reduction Factor, 18" (Parallel)}$$
$$f_{RV} = 0.74 \quad \ll \text{Edge Distance Reduction Factor, 18" (Perpendicular)}$$
$$f_{HV} = 1.00 \quad \ll \text{Concrete Thickness Reduction Factor}$$
$$\text{LRFD Factor} = 1$$

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

Capacities:

$$T_{allow} = 10506.1 \text{ lbs}$$
$$V_{allow} = 19021.3 \text{ lbs} \quad (\text{Parallel})$$
$$V_{allow} = 21326.9 \text{ lbs} \quad (\text{Perpendicular})$$

Elevated Reservoir Foundation Analysis:

Max Reactions at Connection:

Un-factored Base Axial Load =	$P := 73.1 \cdot kip$	(User Input)	(Un-factored Axial Load = Tank Self Weight +
Un-factored Base Shear Load =	$V := 70.3 \cdot kip$	(User Input)	Wireless Equip DL - Stand
Un-factored Base Moment =	$M := 5286 \cdot ft \cdot kip$	(User Input)	Pipe & 1/2 x Spider Rod DL)

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.

Top Width of Frustrum Pyramid =	$W_{top} := 42 \text{ in}$	(User Input)	
Bot Width of Frustrum Pyramid =	$W_{bot} := 110 \text{ in}$	(User Input)	
Overall Depth of Pyramid =	$D_f := 78.0 \text{ in}$	(User Input)	
Base Thickness =	$T_{base} := 0.00 \cdot \text{in}$	(User Input)	
Base Width =	$W_{base} := 0.00 \cdot \text{in}$	(User Input)	
Height of Foundation Above Grade =	$T_{ext} := 6.00 \cdot \text{in}$	(User Input)	
Depth to Water Table =	$D_{wt} := 99 \cdot \text{ft}$	(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 =	$D_{circle} := 594.00 \cdot \text{in}$	(User Input)	
Number of Legs =	$N_{leg} := 4.00$	(User Input)	
Depth to Base of Foundation from Grade =	$D_{base} := D_f + T_{base} - T_{ext} = 6 \text{ ft}$		

Material Data:

Concrete Compressive Strength =	$f_c := 3000 \cdot psi$	(User Input)	
Steel Reinforcement Yield Strength =	$F_y := 40000 \text{ psi}$	(User Input)	
Internal Friction Angle of Soil =	$\phi_s := 32 \cdot deg$	(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 =	$\gamma_{conc} := 145 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$D_n := 6 \text{ in}$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	
Coefficient of Lateral Soil Pressure =	$K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)} = 3.25$		
Adjusted Concrete Unit Weight =	$\gamma_c = 145 \text{ pcf}$		
Adjusted Soil Unit Weight =	$\gamma_s = 110 \text{ pcf}$		

Determine Maximum Uplift and Compression Forces at Leg:

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

Factored Max Leg Uplift Force = $U_{plift} := \left(\frac{WL_f \cdot (4 \cdot M)}{N_{leg} \cdot D_{circle}} \right) - \left(\frac{DL_{f1} \cdot P}{N_{leg}} \right) = 90.34 \text{ kip}$

Factored Max Leg Compression Force = $C_{compression} := \left(\frac{WL_f \cdot (4 \cdot M)}{N_{leg} \cdot D_{circle}} \right) + \left(\frac{DL_{f2} \cdot P}{N_{leg}} \right) = 128.72 \text{ kip}$

Calculate Foundation Volume:

Distance from Grade to Bottom of Foundation $D_{net} := D_f - T_{ext} = 72 \text{ in}$

Volume of Frustum Pyramid Concrete Foundation = $V_{Frustum} := \frac{1}{3} \cdot D_f \cdot \left(W_{top}^2 + W_{bot}^2 + \sqrt{W_{top}^2 \cdot W_{bot}^2} \right) = 278.12 \text{ ft}^3$

Area and Volume of Base = $A_p := W_{bot}^2 = 84.028 \text{ ft}^2$

$V_{Base} := A_p \cdot T_{base} = 0 \text{ ft}^3$

Gross Volume of Conc = $V_{conc} := V_{Frustum} + V_{Base} = 278.12 \text{ ft}^3$

Volume of Frustum Pyramid Below Grade (Minus Depth to Neglect) = $V_{Frustumnet} := \frac{1}{3} \cdot (D_{net} - D_n) \cdot \left(W_{top}^2 + W_{bot}^2 + \sqrt{W_{top}^2 \cdot W_{bot}^2} \right) = 235.33 \text{ ft}^3$

Net Volume of Conc = $V_{conchnet} := V_{Frustumnet} + V_{Base} = 235.33 \text{ ft}^3$

Stability of Footing:

Cross-Sectional Area of Resisting Soil at Base of Foundation = $B_1 := W_{bot}^2 = 84.028 \text{ ft}^2$

Cross-Sectional Area of Resisting Soil at Top of Foundation (Minus Depth to Neglect) = $B_2 := \left(2 \cdot ((D_{net} - D_n) \cdot (\tan(\Phi_s)) + W_{bot}) \right)^2 = 257.289 \text{ ft}^2$

Volume of Resisting Soil = $V_{Soil} := \frac{1}{3} \cdot ((D_{net} - D_n) \cdot (B_1 + B_2 + \sqrt{B_1 \cdot B_2})) - V_{conchnet} = 659.98 \text{ ft}^3$

Weight of Concrete = $Wt_{conc} := V_{conc} \cdot \gamma_c = 40.33 \text{ kip}$

Weight of Resisting Soil = $Wt_{soil} := V_{Soil} \cdot \gamma_s = 72.6 \text{ kip}$

Total Resisting Weight of Soil & Conc = $Wt_{Total} := (Wt_{conc} + Wt_{soil}) \cdot DL_{f1} = 101.63 \text{ kip}$

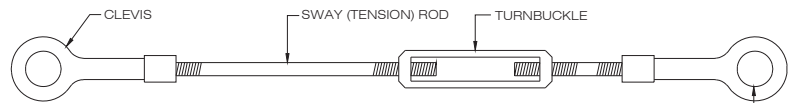
Uplift Interaction Ratio = $Usage := \left(\frac{U_{plift}}{Wt_{Total}} \right) = 0.89$

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

UsageCheck = "Okay"

Appendix B

Modification Design Drawings



4 TYP. SWAY ROD DETAIL

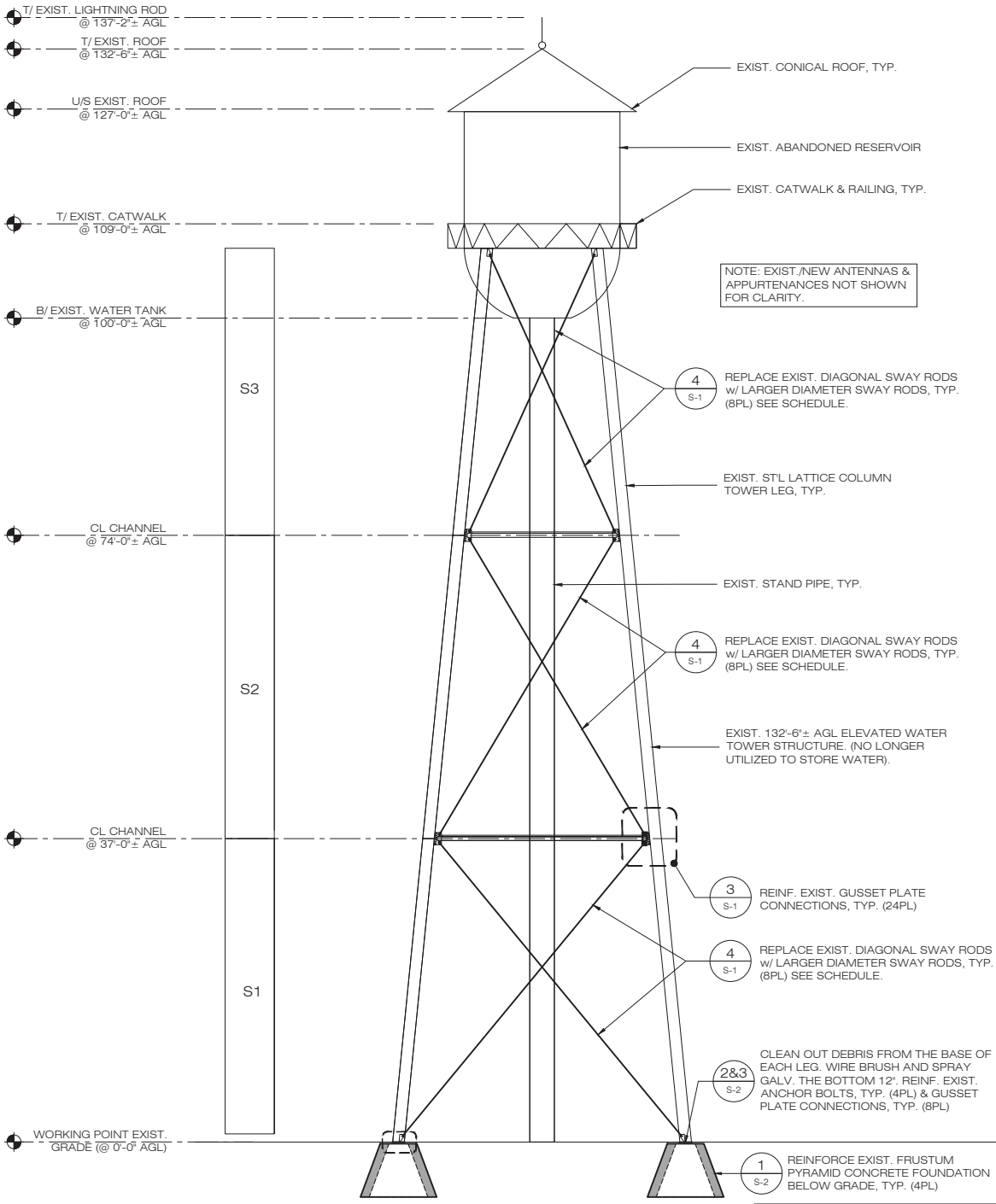
S-1 SCALE: 1 1/2" = 1'-0"

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

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]

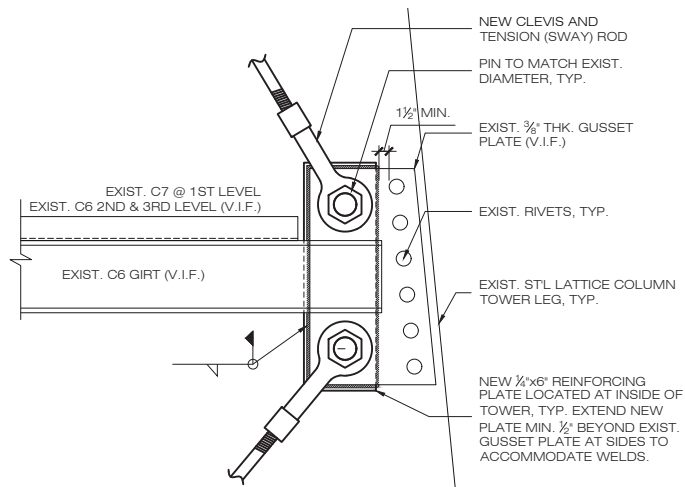
* SWAY ROD LENGTHS NOTED ABOVE ARE ESTIMATED. CONTRACTOR SHALL VERIFY IN FIELD.



2 TANK ELEVATION

S-1 SCALE: 1" = 10'-0"

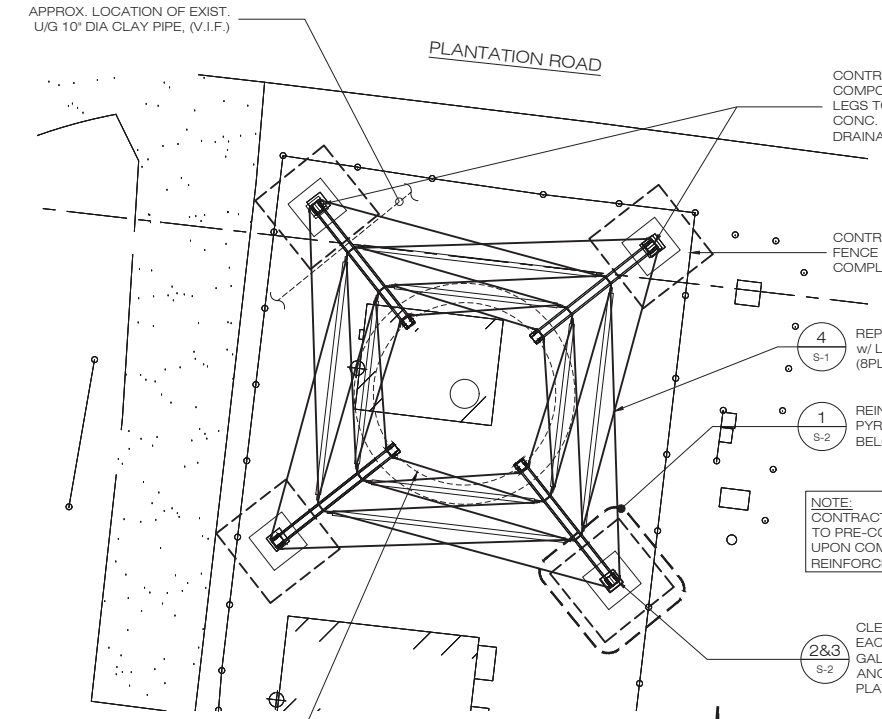
NOTE: CONTRACTOR TO RE-GRADE EXIST. COMPOUND @ EXIST NE & NW TOWER LEGS TO EXPOSE MIN. TOP 4" OF EXIST. CONC. FOUNDATION. PROVIDE POSITIVE DRAINAGE AWAY FROM LEGS.



3 CONNECTION DETAIL

S-1 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 TANK PLAN

S-1 SCALE: 1" = 10'-0"

GENERAL NOTES:

- COORDINATE WORK TO MINIMIZE DISRUPTION OF EXISTING FACILITIES.
- WORK MUST BE PERFORMED BY COMPETENT AND QUALIFIED WORKERS WITH EXPERIENCE PERTINENT TO THE TASKS INDICATED HEREIN.
- 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.
- WORK MAY REQUIRE TEMPORARY RELOCATION OF UTILITIES/HANGERS.
- 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.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS & METHODS AS WELL AS PROTECTING EXISTING LINES AND FACILITIES FROM WELDING AND CONSTRUCTION DAMAGE.
- DETAILS SHOWN ON ANY DRAWING ARE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL:

- ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION AND ALL APPLICABLE BUILDING CODES.
- WELD IN ACCORDANCE WITH AWS D1.1 USING CERTIFIED WELDERS AND E70XX ELECTRODES.
- MATERIALS:
 SWAY ROD: ASTM A307
 CLEVIS: ASTM A668 CLASS A
 TURNBUCKLES: ASTM A668 CLASS C
- BOLTS SHALL HAVE GALVANIZED LOCK WASHER OR PAL NUT; ANCO NUTS ARE NOT PERMITTED.
- ANCHOR BOLTS SHALL BE TIGHTENED USING THE 'TURN OF THE NUT' METHOD SPECIFIED BY AISC.
- HOT-DIP GALVANIZE STEEL MEMBERS AND WELDMENTS PER ASTM D123 AFTER FABRICATION.
- COLD GALVANIZE ANY FIELD CUT, WELDED, OR DRILLED SURFACES. TOUCH-UP ALL DAMAGED GALVANIZED STEEL WITH ZINC RICH/COLD GALV. (ZINGA®), ZRCH OR APPROVED EQUAL, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON-GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.
- EXERCISE EXTREME CAUTION DURING FIELD WELDING OPERATIONS. THOROUGHLY PROTECT EXISTING EQUIPMENT AND FEED LINES PRIOR TO WELDING.
- ALL SWAY RODS SHALL BE SNUG TIGHT.

Cellco Partnership d/b/a



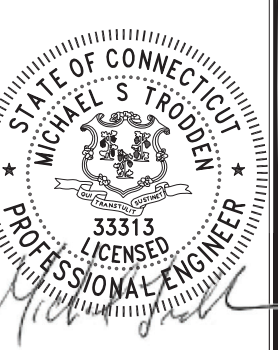
20 ALEXANDER DRIVE
 WALLINGFORD, CT 06492



567 VAUXHALL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-953-1697
 WWW.ALLPOINTS TECH.COM FAX: (860)-953-0935

CONSTRUCTION DOCUMENTS

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



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: 50 PLANTATION ROAD
 ADDRESS: 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_{nom} (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_1 : 0.178 (2015 IBC FIG. 1613.3.1(I))

MCE GROUND MOTION (PERIOD = 1.0S), S_2 : 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 INDUSTRIES 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 OR A GUARANTEE 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 APPROPRIATE 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 OWNERS 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 (AHL). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AHL, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLAN SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS 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 NEWLY 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 CLEARING PENETRATIONS AND OF ANY CONDITIONS WHICH PRELUDE 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, NEIGHBORHOOD ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDING SITE 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 PIPES 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 NEARLY 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 APPROPRIATE, ALL APNEWBATE 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 CONTRACTORS 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 SAFE 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 OBTSTRUCTING 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 OBTSTRUCTING 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 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 (H0B) SYSTEM
REBAR DOWELING	HILTI RE 500/3 ADHESIVE WITH SAFE SET (H0B) SYSTEM
SOLID GROUTED	HILTI HY 70 ADHESIVE WITH SCREEN TUBE
MASONRY	HILTI HY 70 ADHESIVE WITH HOLLOW / MULTI-WIDTH SCREEN TUBE
HOLLOW / MULTI-WIDTH	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 INCLUDED 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-308.14. INSTALLER SHALL BE CERTIFIED THROUGH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.

ANCHORS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND SHALL NOT 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 MANUFACTURERS REPRESENTATIVE TO PROVIDE ON-SITE ANCHOR INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED.

CONTRACTOR SHALL SUBMIT DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTORS 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 4.314 OF THE ICC-ES REPORT FOR THE INDIVIDUAL ANCHOR. SPECIAL INSPECTOR SHALL BE NOTIFIED PRIOR TO COMMENCEMENT OF WORK TO COORDINATE INSPECTION EFFORTS.

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, NEIGHBORHOOD ACCESS, NOISE AND CLEANLINESS REQUIREMENTS WITH THE BUILDING SITE 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 PIPES 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 NEARLY 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 APPROPRIATE, ALL APNEWBATE 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.

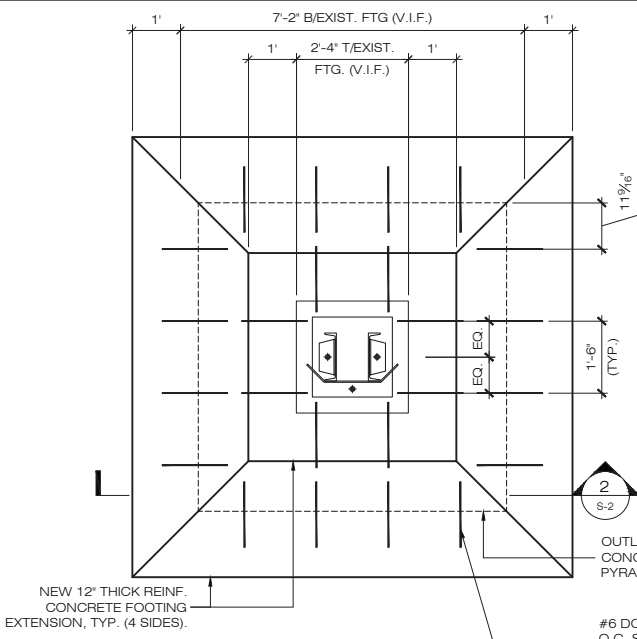
ALL CONTRACTORS SHALL PROVIDE ALL NECESSARY TOOLS, FIXTURES, SERVICES, MATERIALS, JOB AIDS, AND PERSONNEL REQUIRED FOR THE EXECUTION OF THEIR WORK.

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.

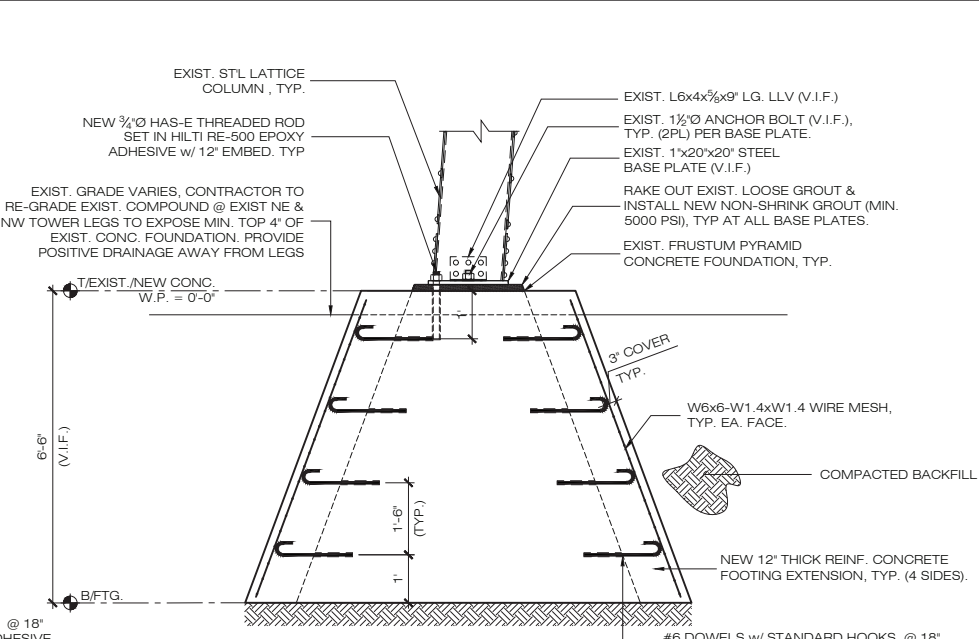
ALL WORK SHALL BE PERFORMED BY LICENSED CONTRACTORS IN THE TRADE HAVING JURISDICTION.

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

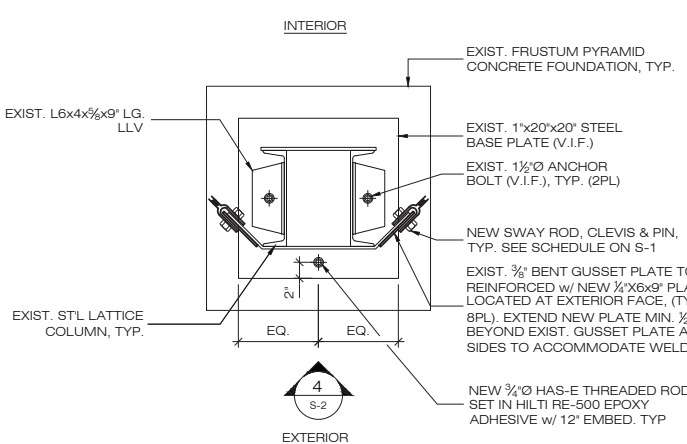
ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION, AND SHALL NOT PROCEED UNTIL ENGINEER APPROVAL IN WRITING IS RETURNED. EACH CONTRACTOR SHALL MAINTAIN ON JOB SITE A COMPLETE SET OF SHOP DRAWINGS WITH ANY DEVIATIONS FROM THE ORIGINAL DESIGN SHALL BE NOTED. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, WITHOUT BLEMISH OR



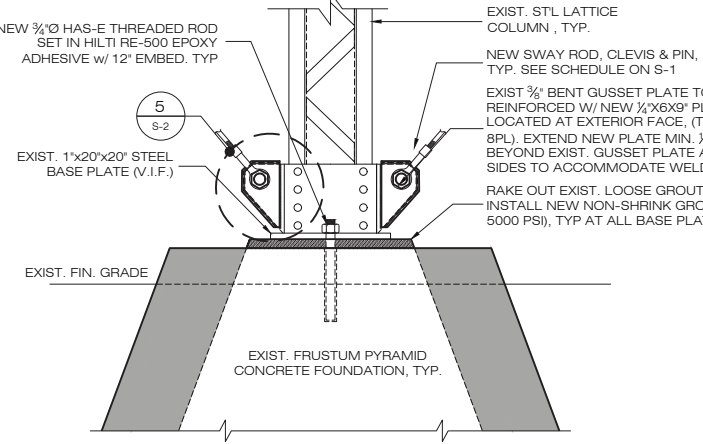
1 CONCRETE FOOTING REINF. PLAN
S-2 SCALE : 1/2" = 1'-0"



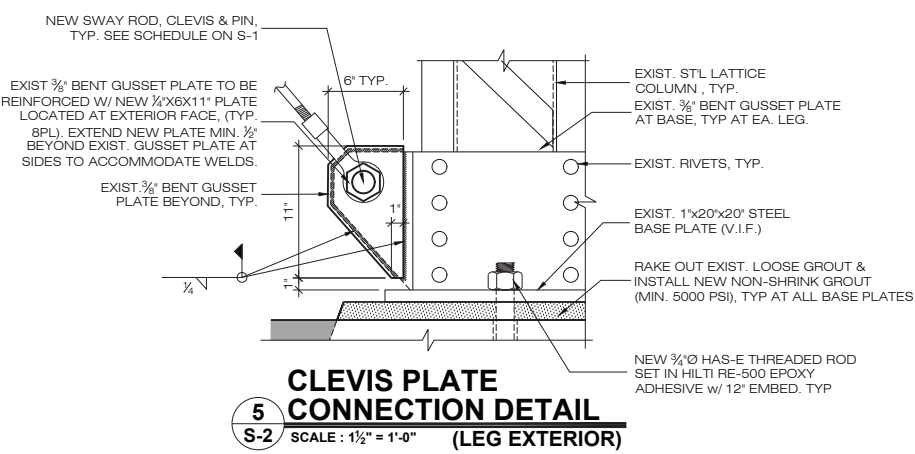
2 TYP. CONC. FOOTING REINF. DETAIL
S-2 SCALE : 1/2" = 1'-0"



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



4 BASE PLATE REINF. DETAIL
S-2 SCALE : 3/4" = 1'-0"



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

Cellco Partnership d/b/a



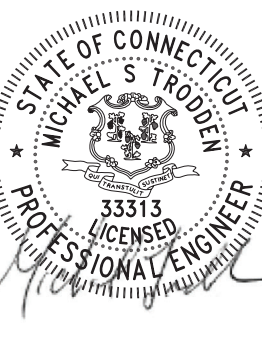
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492



567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-963-1697
WWW.ALLPOINTSCTECH.COM FAX: (860)-963-0935

CONSTRUCTION DOCUMENTS

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



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 50 PLANTATION ROAD
ADDRESS: 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

ATTACHMENT 6

	General	Power	Density					
Site Name: South Windsor N (East Windsor)								
Structure Height: 135 Ft								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*AT&T-UMTS	2	414	114	850	0.0255	0.5667	0.45%	
*AT&T-PCS-UMTS	2	656	114	1900	0.0405	1.0000	0.40%	
*AT&T-LTE	2	1615	114	700	0.0996	0.4667	2.13%	
*AT&T-PCS-LTE	2	1942	114	1900	0.1198	1.0000	1.20%	
*AT&T-GSM	2	414	114	850	0.0255	0.5667	0.45%	
*Sprint-CDMA	1	438	126	850	0.0109	0.5667	0.19%	
*Sprint-LTE	2	438	126	850	0.0219	0.5667	0.39%	
*Sprint-CDMA	5	623	126	1900	0.0778	1.0000	0.78%	
*Sprint-LTE	2	1556	126	1900	0.0777	1.0000	0.78%	
*Sprint-LTE	8	778	126	2500	0.1554	1.0000	1.55%	
*Clearwire	2	153	126	2496	0.0076	1.0000	0.08%	
*Clearwire	1	211	130	11 GHz	0.0049	1.0000	0.05%	
*T-Mobile	2	24	120	2100	0.0013	1.0000	0.01%	
*T-Mobile	2	12	120	1950	0.0007	1.0000	0.01%	
*T-Mobile	2	12	120	2100	0.0007	1.0000	0.01%	
5G 28GHz					28000			
VZW CBRS					3600			
VZW PCS	1	4920	94	0.2002	1970	1.0	20.02%	
VZW Cellular LTE	1	2925	102	0.1011	869	0.579333	17.45%	
VZW AWS	1	4550	102	0.1573	2145	1.0	15.73%	
VZW 700	1	2450	102	0.0847	746	0.497333	17.03%	
								78.71%
* Source: Siting Council								

ATTACHMENT 7



SOUTH WINDSOR NORTH CT

Certificate of Mailing — Firm

Name and Address of Sender Kenneth C. Baldwin, Esquire Robinson & Cole 280 Trumbull Street Hartford, CT 06103	TOTAL NO. of Pieces Listed by Sender <div style="text-align: center; font-size: 2em;">3</div>	TOTAL NO. of Pieces Received at Post Office™ <div style="text-align: center; font-size: 2em;">3</div>	Affix Stamp Here <i>Postmark with Date of Receipt.</i> <div style="text-align: right;"> ZIP 06103 041L12203937 </div>
	Postmaster, per (name of receiving employee) <div style="text-align: center;"> </div>		

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Jason E. Bowsza, First Selectman Town of East Windsor 11 Rye Street Broad Brook, CT 06016				
2.	Mike D'Amato, Acting Planner Town of East Windsor 11 Rye Street Broad Brook, CT 06016				
3.	Plantation Properties, LLC PO Box542 Broad Brook, CT 06016				
4.					
5.					
6.					

