

KENNETH C. BALDWIN

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Also admitted in Massachusetts

June 19, 2017

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

Re: **EM-VER-148-160923 – Cellco Partnership d/b/a Verizon Wireless  
20 Alexander Drive, Wallingford, Connecticut**

Dear Ms. Bachman:

On October 17, 2016, the Siting Council acknowledged receipt of the Cellco Partnership d/b/a Verizon Wireless (“Cellco”) notice of intent to modify its existing telecommunications facility at 20 Alexander Drive in Wallingford, Connecticut. The modifications involved the replacement of certain antennas.

As a condition of the acknowledgement, Cellco was required to provide the Council with an updated Structural Analysis Report referencing Rev. G of the structural standards. The updated Structural Certification Letter is attached for your records.

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

Sincerely,



Kenneth C. Baldwin

Attachment

Copy to:

Tim Parks

16668805-v1



April 12, 2017

Verizon  
99 East River Drive, 9<sup>th</sup> Floor  
East Hartford, CT 06106

Attn: Mr. Aleksey Tyurin

Re: Structural Certification Letter – Wireless Communications Modification  
Verizon Site Ref: Wallingford CT ANTMO  
20 Alexander Drive,  
Wallingford, CT 06492

Project/Location Code: 20161476593/117711

APT Filing No. CT141ANTMO9240

Dear Mr. Tyurin,

All Points Technology Corporation, P.C. (APT), a professional engineering corporation licensed in the State of Connecticut, has been retained by Verizon to assess the structural adequacy of the existing and proposed Verizon antenna mounts to support the proposed antenna and appurtenance modification at the above existing structure.

The proposed Verizon equipment modification consists of the replacement of three (3) existing panel antennas with three (3) new panel antennas. One (1) Gamma sector panel antenna will be relocated to the Beta Sector at the Easterly side of the host building. Reference is made to drawings DE-1 thru DE-4, prepared by APT, dated 04.12.17.

The structural review 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, 14<sup>th</sup> Ed.

IBC 2012 - as amended by the 2016 Connecticut State Building Code.

Antenna, appurtenance and mount assembly loads were evaluated utilizing the ANSI TIA-222-G standard.

- Load Case 1: 97 mph (3-second gust,), 0" ice (Nominal Survival Wind)<sup>1</sup>
- Load Case 2: 50 mph (3-second gust) with 1.0in ice thickness
- Load Case 3: 60 mph (3-second gust) (Service Load)
- Structure Class II
- Exposure Category B
- Topographic Category 1

**ALL-POINTS TECHNOLOGY CORPORATION, P.C.**

3 SADDLEBROOK DRIVE · KILLINGWORTH, CT 06419 · PHONE 860-663-1697 · FAX 860-663-0935

116 GRANDVIEW ROAD · CONWAY, NH 03818 · PHONE 603-496-5853 · FAX 603-447-2124

The existing and proposed Verizon antenna/appurtenance and mount assembly loading consists of the following equipment (proposed equipment shown in **bold text**):

Antenna and Appurtenance Make/Model	Quantity	Status	Mount Type	Elevation
<b>Commscope SBNHH-1D45B panel antennas</b>	1	P	<b>One (1) New P2.5 x-strong antenna pipe mount attached to exist. building masonry wall veneer with SitePRO1 Wall Mount Brackets (P/N SP222)<sup>(2)</sup></b>	28-ft± AGL
<b>Commscope SBNHH-1D45B panel antennas</b>	1	P	Independent antenna pipe mounts attached to exist. building masonry wall veneer with wall mount brackets.	28-ft± AGL
Commscope HBXX-6517DS-A2M panel antennas	6	ETR		
Antel LPA-80063-4CF panel antennas	2	ETR		
Swedcom SC-E 6016 REV2 panel antennas	4	ETR		
Alcatel Lucent B4 RRH2x60W-4R AWS Remote Radio Heads (RRHs)	3	ETR		
Raycap RRFDC-3315-PF-48 Main Distribution Box (MDB,6 OVP)	3	ETR		
RFS FD9R6004/2C-3L	6	ETR		
RFS Hybrid Fiber Cables	3	ETR		
1-5/8" dia, Coaxial Cables	12	ETR	n/a	n/a

Notes:

1. ETR = Existing to Remain/to be Relocated; P = Proposed.
2. One (1) existing Gamma sector panel antenna to be replaced with One (1) Commscope SBNHH-1D45B panel antenna and relocated to Beta Sector.

In conclusion, we find that the existing and proposed Verizon antenna pipe mount(s) and existing host building structure are structurally adequate to support the proposed antenna/appurtenance modification with the implementation of the aforementioned DE drawing details prepared by this office.

The findings of this certification letter are based upon a review of the physical characteristics of the existing mount assembly and field observations conducted by APT during March 2017. This letter assumes that the existing antenna mounts and host building structure were correctly designed and/or analyzed for the existing load conditions at the time of their respective original installations, additionally it is assumed that the existing mount structural components and connections are in good condition and have been properly maintained since erection.

Sincerely,  
 APT Engineering



Robert E. Adair, P.E.  
 Principal



Prepared By:  
 APT Engineering



Jason R. Mead  
 Project Manager/  
 Structural Engineer

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**NOTES:**

- DESIGN EXHIBIT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CONVEY GENERAL INFORMATION PERTAINING TO THE SIZE AND LOCATION OF THE PROPOSED WIRELESS EQUIPMENT UPGRADE.
- THE PROPOSED EQUIPMENT UPGRADE INDICATED HEREON IS SUBJECT TO THE COMPLETION OF A STRUCTURAL EVALUATION OF THE HOST SUPPORT STRUCTURE.
- ALL ANTENNAS AND APPURTENANCES SHALL BE PAINTED TO MATCH THE EXIST. HOST STRUCTURE (WHERE APPLICABLE). COLOR SHALL BE APPROVED BY THE OWNER.

EXIST. LESSEE EQUIPMENT SHELTER W/ GENERATOR ON ELEVATED STEEL SUPPORT FRAME. EXIST. RACK MOUNTED ALU TRDUJ-2x40-700 TO REMAIN.

EXIST. (4) LESSEE GAMMA SECTOR PANEL ANTENNAS PIPE MOUNTED TO EXIST. BUILDING FACADE. TO REMAIN.

EXIST. (1) LESSEE GAMMA SECTOR PANEL ANTENNA PIPE MOUNTED TO EXIST. BUILDING FACADE TO BE REPLACED & RECOATED TO BETA SECTOR.

EXIST. ROOFTOP HVAC EQUIPMENT (TYPICAL)

REPLACE (1) OF (5) EXIST. LESSEE ALPHA SECTOR PANEL ANTENNAS MOUNTED TO EXIST. BUILDING FACADE. REMOVE (1) EXIST. ANTENNA.

PROP. LESSEE (1) ONE GAMMA SECTOR PANEL ANTENNA ATTACHED TO NEW PIPE MAST EQUALLY SPACED ON EXIST. WALL PANEL.

EXIST. SECURITY CAMERA

REPLACE (1) OF (5) EXIST. LESSEE BETA SECTOR PANEL ANTENNAS MOUNTED TO EXIST. BUILDING FACADE.

Q. EXIST./PROPOSED LESSEE ANTENNAS @ 28" ± AGL

EXISTING BUILDING @ 25" ± AGL

APPROX. EXIST. GRADE

**2 PARTIAL BETA/GAMMA SECTOR ELEVATION - PROPOSED**

DE-1 SCALE: 1/16" = 1'-0"



EXIST. CABLE TRAY (TYP.)

EXIST. CABLE TRAY (TYP.)

PROP. LESSEE ROOFTOP CABLE TRAY EXTENSION

REPLACE (1) OF (4) EXIST. LESSEE BETA SECTOR PANEL ANTENNAS MOUNTED TO EXIST. BUILDING FACADE.

PROP. LESSEE (1) ONE GAMMA SECTOR PANEL ANTENNA ATTACHED TO NEW PIPE MAST EQUALLY SPACED ON EXIST. WALL PANEL.

EXIST. SECURITY CAMERA (V.I.F.)  
EXIST. LIGHT FIXTURE (V.I.F.)

**3 BETA/GAMMA SECTOR PLAN**

DE-1 SCALE: 1/16" = 1'-0"



REPLACE (1) OF (5) EXIST. LESSEE BETA SECTOR PANEL ANTENNAS MOUNTED TO EXIST. BUILDING FACADE.

PROP. LESSEE ROOFTOP CABLE TRAY EXTENSION

PROP. LESSEE (1) ONE GAMMA SECTOR PANEL ANTENNA ATTACHED TO NEW PIPE MAST EQUALLY SPACED ON EXIST. WALL PANEL.

7' = 170" ± (LTE/AWS)

**1 PARTIAL ROOF PLAN**

DE-1 SCALE: 3/32" = 1'-0"

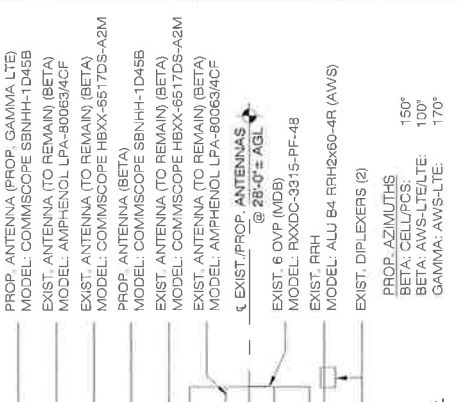


<b>APPROVALS:</b> LANDLORD: 	DATE: 04/12/17	DATE: 04/12/17
	CHECKED BY: JRM	DRAWN BY: DRA/JRM
<b>APT FILING NUMBER:</b> CT141 ANTM09240 <b>WALLINGFORD CT ANTM0</b>	<b>PROJECT CODE:</b> 201614746993 LC: 117711 CM: JM WALLINGFORD, CT 06492	<b>DATE:</b> DATE: 04/12/17 <b>RF ENGINEER:</b> RF ENGINEER: VZW <b>SHEET NUMBER:</b> DE-1

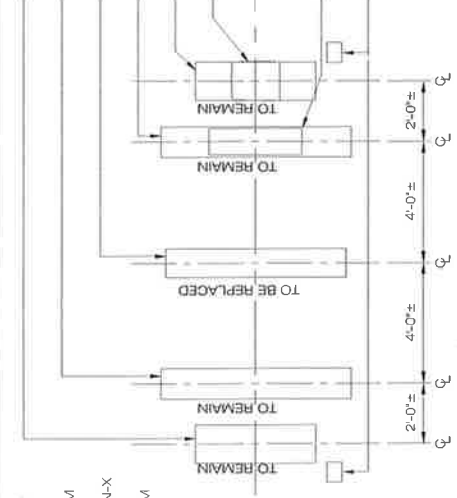
ALL-POINTS TECHNOLOGY CORPORATION  
 3 SANDHURST DRIVE  
 WASHINGTON, CT 06498  
 PHONE: (860) 663-9935  
 WWW.ALLPOINTSCT.COM



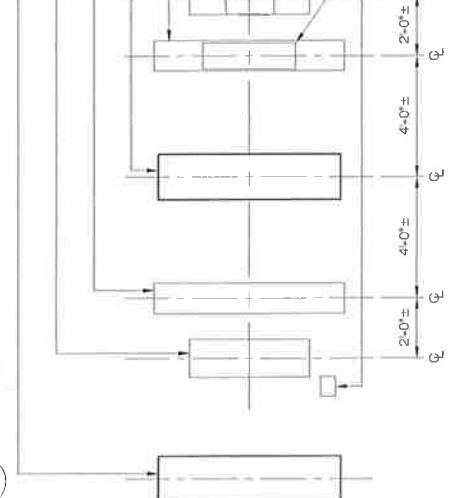
**1 ALPHA ANTENNA MOUNTING CONFIG. - EXIST.**  
 DE-2, SCALE: 1/4" = 1'-0"



**2 ALPHA ANTENNA MOUNTING CONFIG. - PROP.**  
 DE-2, SCALE: 1/4" = 1'-0"



**3 BETA ANTENNA MOUNTING CONFIG. - EXIST.**  
 DE-2, SCALE: 1/4" = 1'-0"



**4 BETA ANTENNA MOUNTING CONFIG. - PROP.**  
 DE-2, SCALE: 1/4" = 1'-0"

- NOTES:
- ANTENNA CONFIGURATIONS SHOWN HEREIN ARE FRONT ELEVATIONS.
  - ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. AND PROP. ANTENNAS.
  - REFER TO THE FINAL RFDS PROVIDED BY LESSEE FOR THE LATEST INFORMATION REGARDING ANTENNA MODELS & AZIMUTHS, REQUIRED CABLES, & APPURTENANCES.

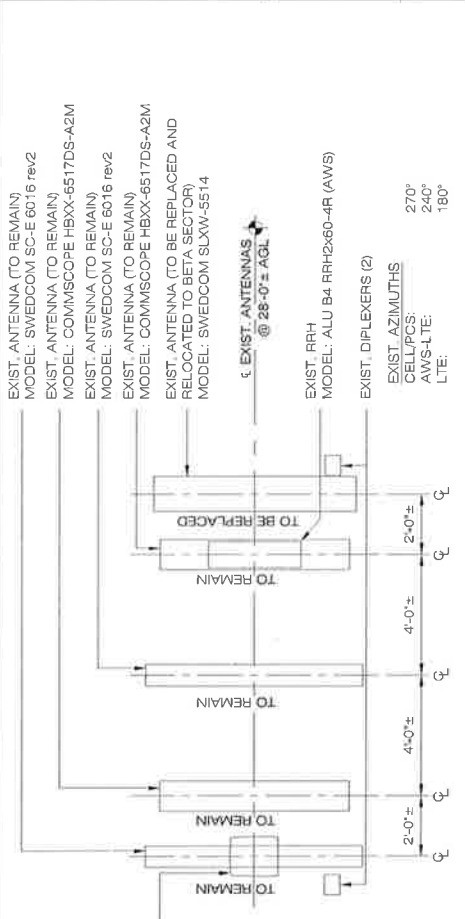
- REVISIONS:
- REV0: 04/12/17; FOR REVIEW: JRM
  - REV1:
  - REV2:
  - REV3:
  - REV4:

EXIST. ANTENNA (TO REMAIN)  
 MODEL: AMPHENOL LPA-80063/4CF  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 EXIST. ANTENNA (TO BE REPLACED)  
 MODEL: AMPHENOL BXA-70063/6CF-EDIN-X  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: SWEDCOM SC-E 6016 rev2  
 EXIST. 6 OVP (MDB)  
 MODEL: RXXDC-3315-PF-48  
 EXIST. ANTENNAS @ 28'-0"± AGL  
 EXIST. RRH  
 MODEL: ALU B4 RRH2x60-4R (AWS)  
 EXIST. DIPLEXERS (2)  
 EXIST. AZIMUTHS  
 CELL/FCS:  
 AWS-L/TE/LTE: 150° 90°

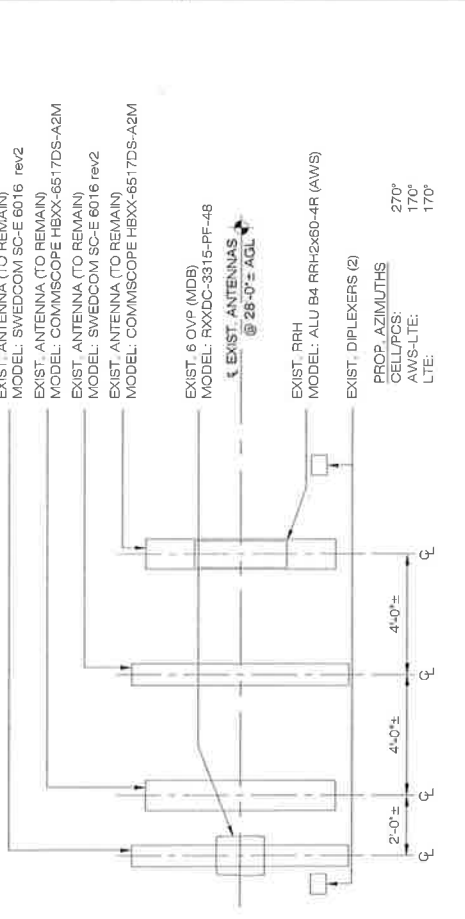
EXIST. ANTENNA (TO REMAIN)  
 MODEL: SWEDCOM SC-E 6016 rev2  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 PROP. ANTENNA  
 MODEL: COMMSCOPE SBNHH-1D45B  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: SWEDCOM SC-E 6016 rev2  
 EXIST. 6 OVP (MDB)  
 MODEL: RXXDC-3315-PF-48  
 EXIST. ANTENNAS @ 28'-0"± AGL  
 EXIST. RRH  
 MODEL: ALU B4 RRH2x60-4R (AWS)  
 EXIST. DIPLEXERS (2)  
 PROP. AZIMUTHS  
 CELL/FCS:  
 AWS-L/TE/LTE: 30° 30°

EXIST. ANTENNA (TO REMAIN)  
 MODEL: AMPHENOL LPA-80063/4CF  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 EXIST. ANTENNA (TO BE REPLACED)  
 MODEL: AMPHENOL BXA-70063/6CF-EDIN-X  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: SWEDCOM SC-E 6016 rev2  
 EXIST. 6 OVP (MDB)  
 MODEL: RXXDC-3315-PF-48  
 EXIST. ANTENNAS @ 28'-0"± AGL  
 EXIST. RRH  
 MODEL: ALU B4 RRH2x60-4R (AWS)  
 EXIST. DIPLEXERS (2)  
 EXIST. AZIMUTHS  
 CELL/FCS:  
 AWS-L/TE/LTE: 150° 100° 170°

EXIST. ANTENNA (TO REMAIN)  
 MODEL: SWEDCOM SC-E 6016 rev2  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: COMMSCOPE HBXX-6517DS-A2M  
 PROP. ANTENNA  
 MODEL: COMMSCOPE SBNHH-1D45B  
 EXIST. ANTENNA (TO REMAIN)  
 MODEL: SWEDCOM SC-E 6016 rev2  
 EXIST. 6 OVP (MDB)  
 MODEL: RXXDC-3315-PF-48  
 EXIST. ANTENNAS @ 28'-0"± AGL  
 EXIST. RRH  
 MODEL: ALU B4 RRH2x60-4R (AWS)  
 EXIST. DIPLEXERS (2)



**1 GAMMA ANTENNA MOUNTING CONFIG. - EXIST.**  
 DE-3 / SCALE: 1/4" = 1'-0"



**2 GAMMA ANTENNA MOUNTING CONFIG. - PROP.**  
 DE-3 / SCALE: 1/4" = 1'-0"

**NOTES:**  
 1. ANTENNA CONFIGURATIONS SHOWN HEREIN ARE FRONT ELEVATIONS.  
 2. ANTENNA SPACING DIMENSIONS ARE TO THE CENTER OF THE EXIST. ANTENNA AND PROP. ANTENNA FACE.  
 3. REFER TO THE FINAL RFDS PROVIDED BY LESSEE FOR THE LATEST INFORMATION REGARDING ANTENNA MODELS & AZIMUTHS, REQUIRED CABLES, & APPURTENANCES.

**REVISIONS:**  
 -REV0: 04/21/17: FOR REVIEW: JRM  
 -REV1:  
 -REV2:  
 -REV3:  
 -REV4:

STRUCTURAL NOTES & SPECIFICATIONS

SUBMITTALS:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION TO ENGINEER FOR REVIEW.
2. ALL BUILDING CONNECTION POINTS ARE TO BE CENTERED OVER BEARING WALLS & COLUMNS.
3. NOTIFY ENGINEER FOR INSPECTION PRIOR TO CLOSING PENETRATIONS.

STRUCTURAL STEEL

1. CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
3. STRUCTURAL AND WIDE FLANGE STEEL SHALL CONFORM TO ASTM A992 (FY-50 KSI), UNLESS OTHERWISE NOTED.
4. STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B, STEEL PIPE DIAMETERS NOTED ON THE DRAWINGS ARE NOMINAL.
5. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE MIN. OF TWO BOLTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
6. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIAMETER GALVANIZED ASTM A 307 BOLTS UNLESS OTHERWISE NOTED.
7. ALL STEEL MATERIAL EXPOSED TO WEATHER SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 ZINC PHOSPHATE GALVANIZED COATINGS (MIN. 1.0 MIL) AND STEEL PRODUCTS (HOT ROLLS, SHEARS, CUT SHEETS, ETC.) SHALL BE EXPOSED TO WEATHER. BOLTS, NUTS, WASHERS, LOCK WASHERS, AND ANCHORS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 ZINC COATING (HOT-DIP ON IRON AND STEEL HARDWARE).
9. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY TOUCHING UP ALL DAMAGED GALVANIZED STEEL WITH COLD ZINC "GALVANOX", "DRY GALV", "ZINC IT", OR APPROVED EQUIVALENT IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D11. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE 10.
11. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
12. CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.
13. MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 (OR EQUAL).
14. STEEL HAS STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GR. B
15. APPLY A QUALITY CONCRETE SEALER SUCH AS THERMOSEAL TO EXPOSED CONCRETE IN ACCORDANCE WITH MANUFACTURERS APPLICATION DIRECTIONS

REVISIONS:

- REV0: 04/12/17: FOR REVIEW: JRM
- REV1:
- REV2:
- REV3:
- REV4:

**DESIGN BASIS:**  
 GOVERNING CODE: 2012 IBC AS AMENDED BY THE 2016 CONNECTICUT STATE BUILDING CODE

**DESIGN CRITERIA:**

- STRUCTURAL OCCUPANCY/ RISK CATEGORY = II (2012 IBC Table 1604.5)

**WIND LOAD:**

- ULTIMATE BASIC WIND SPEED ( $V_{ult}$ ) = 125 MPH (2016 CSBC APPENDIX N)
- (3-SECOND GUST)
- NOMINAL BASIC WIND SPEED ( $V_{nbs}$ ) = 97 MPH (2016 CSBC APPENDIX N) - (USED (3-SECOND GUST)
- NOMINAL BASIC WIND SPEED ( $V_{asb}$ ) = 95-115 MPH (TIA-222-G, HARTFORD COUNTY (3-SECOND GUST)
- EXPOSURE CATEGORY = B (2012 IBC SEC 1609.4.3)
- IMPORTANCE FACTOR, ( $I_w$ ) = 1.0 (ASCE 7-10 TABLE 1.5-2)

**ICE LOAD:**

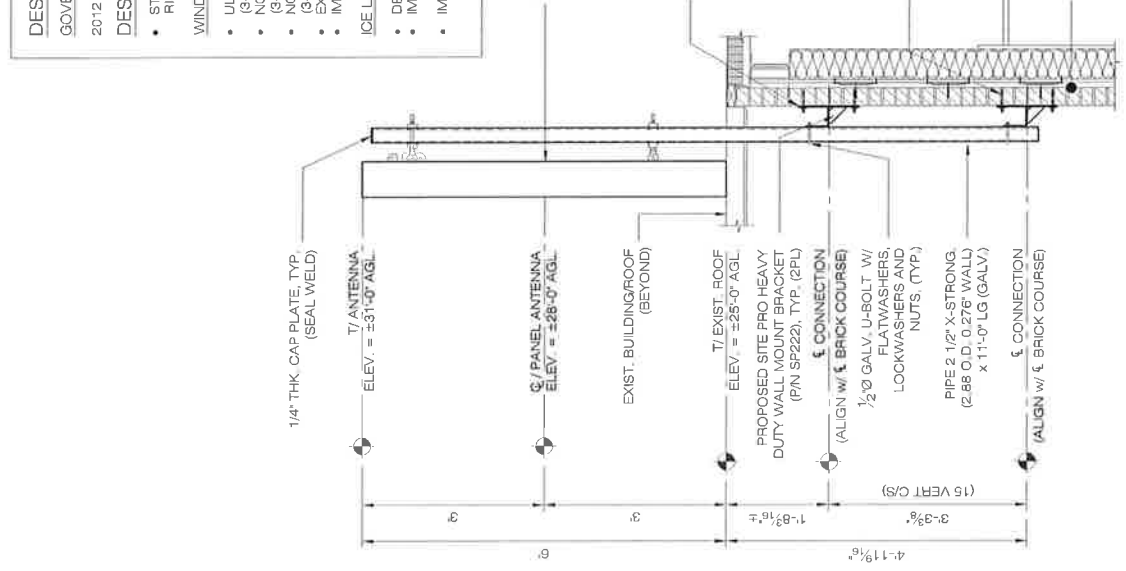
- DESIGN ICE THICKNESS ( $t_i$ ) = 1.0" (TIA-222-G)
- IMPORTANCE FACTOR, ( $I_i$ ) = 1.0 (ASCE 7-10 TABLE 1.5-2),
- IMPORTANCE FACTOR, ( $I_w$ ) = 1.0 (ASCE 7-10 TABLE 2-3)
- (TIA-222-G TABLE 2-3)

PROP. LESSEE (1) ONE GAMMA SECTOR PANEL ANTENNA ATTACHED TO PROP. PIPE W/AST EQUALLY SPACED ON EXIST. WALL PANEL.

SEAL PERIPHERY OF ALL STEEL WHERE IN CONTACT WITH EXISTING BRICK MASONRY. TYP. SEALANT SHALL BE DOW CORNING 790 SILICON BUILDING SEALANT (OR ENGINEER APPROVED EQUAL).

1/2" HILTI HAS-E ROD WITH HILTI HY-70 EPOXY ADHESIVE & SC SLEEVES, FLAT WASHERS, LOCK WASHERS AND NUTS. PROVIDE 3-1/8" MIN. EMBEDMENT. (TYP. OF 4 ANCHORS PER MOUNTING BRACKET)

EXIST. WALL CONSTRUCTION (4" BRICK MASONRY VENEER OVER 6" 18GA MTL STUDS @ 16" O.C.). CONTRACTOR SHALL VERIFY IN FIELD (V.I.F.) EXIST. WALL CONSTRUCTION AND REPORT FINDINGS TO ENGINEER OF RECORD FOR APPROVAL PRIOR TO CONSTRUCTION.



1 ANTENNA MOUNTING DETAIL (PROP.)  
 DE-4 SCALE: 1/2" = 1'-0"