·T· · ·Mobile·

Please Reply To:
Sam Simons
35 Griffin Road South
Bloomfield, CT 06002
203-482-5156
Sam.Simons@T-Mobile.com

August 23, 2017

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council Ten
Franklin Square
New Britain, CT 06501

EM-T-MOBILE-151-160919
T-Mobile Site ID CTNH336C
330 Bishop Street, Waterbury CT
Notice of Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T- Mobile Northeast LLC ("T-Mobile") notice of exempt modification on October 11, 2016. T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of July 20, 2017.

Please don't hesitate to contact me with any questions.

Sincerely,

Samuel Simons, Engineering Development - Connecticut

cc: Mark Richard, Engineering and Operations

STRUCTURAL ANALYSIS REPORT – UPGRADE ROOFTOP

Prepared For:

T-Mobile Northeast, LLC
35 Griffin Road South
Bloomfield, CT 06002

Structure Rating:

Stealth Canister Pole:	**Pass**
Penthouse:	**Pass**

Sincerely,
Destek Engineering, LLC
License No: PEC0001429

08-10-2017

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED
PROFESSIONAL ENGINEER

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

T-Mobile Site ID: CTNH336C
Site Name: NH336/Waterbury Omega_RT
330 Bishop Street
Waterbury, CT 06704

Destek Job No: 1775042 August 10, 2017

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the wireless telecommunication installation on the proposed stealth canister, existing pole and building penthouse located at 330 Bishop Street, Waterbury, CT 06704 for additions and alterations proposed by T-Mobile.

The structural analysis is based on the following documentation provided to Destek Engineering, LLC (Destek):

- RFDS provided by T-Mobile, dated 04/22/2016.
- Construction Drawings prepared by Bay State Design, Inc., dated 11/17/2008.
- Site Photographs and Field Notes provided by Atlantis Design Group, Inc.
- Proposed Stealth Canister drawings provide by Atlantis Design Group, Inc.

1.1 STRUCTURE AND EXISTING EQUIPMENT

The subject structure is a seven story residential building. The main roof line of the building is at 66’ AGL. T-Mobile currently have (6) antennas inside a stealth canister pole located on the roof. The top of the pole is at 99’ AGL. The pole is supported on the rooftop slab and is also anchored to the penthouse wall. The RAD centers of all the antennas are at 96’ AGL. Please refer to the calculations in Appendix A for details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

Sector	Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
Alpha	96	(2) RFS APX16DWV-16DWV-S-E-A20 (1) Generic Style 1A - Twin PCS (1) Generic Style 1B - Twin AWS	(8) 7/8”	Inside Existing Stealth Canister Pole
Beta	96	(2) RFS APX16DWV-16DWV-S-E-A20 (1) Generic Style 1A - Twin PCS (1) Generic Style 1B - Twin AWS	(8) 7/8”	
Gamma	96	(2) RFS APX16DWV-16DWV-S-E-A20 (1) Generic Style 1A - Twin PCS (1) Generic Style 1B - Twin AWS	(8) 7/8”	

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Proposed and Final Configuration of T-Mobile Appurtenances:

Sector	Rad Center (ft.)	Antennas & Equipment	Coax	Mounts
Alpha	96	(1) RV4PX310R (1) Generic Style 1A - Twin PCS (1) Generic Style 1B - Twin AWS	(8) 7/8"	Inside New 36" Diameter Stealth Canister Pole
Beta	96	(1) RV4PX310R (1) Generic Style 1A - Twin PCS (1) Generic Style 1B - Twin AWS	(8) 7/8"	
Gamma	96	(1) RV4PX310R (1) Generic Style 1A - Twin PCS (1) Generic Style 1B - Twin AWS	(8) 7/8"	

3.0 CODES AND LOADING

The analysis is in accordance with the following codes and loading as adopted in Connecticut:

- *2016 Connecticut State Building Code*
- *Minimum Design Loads for Building and Other Structures ASCE/SEI 7-10*, American Society of Civil Engineers
- *Specifications for Structural Steel Buildings – ASD ANSI/AISC 360-10*, American National Standards Institute/American Institute for Steel Construction

The following load parameters were used:

- Basic Wind Speed: V_{asd}=97 mph
- Exposure: B
- Topographic Factor: K_{zt}=1.0
- Risk Category: II

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless noted otherwise, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Destek to generate an additional structural analysis.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

5.0 ANALYSIS AND ASSUMPTIONS

This structural analysis and qualification of the subject structure is based on either a load comparison or a strength check as following:

Pursuant to 2012 International Existing Building Code Sections 706 and 807, any existing gravity load-carrying structural element for which additions and/or alterations cause an increase in design gravity load of no more than 5 percent, shall be permitted to remain unaltered, and thus considered to be Code-compliant and adequate. Any existing gravity load-carrying structural element for which additions and/or alterations cause an increase in design gravity loads exceeding 5 percent is checked against the applicable Code criteria for new structures.

Pursuant to 2012 International Existing Building Code Sections 706 and 807, any existing lateral load-carrying structural element whose demand-capacity ratio with the addition and/or alteration considered is no more than 10 percent greater than its demand-capacity ratio with the addition and/or alteration ignored shall be permitted to remain unaltered, and thus considered to be Code-compliant and adequate. If the demand-capacity ratio increase is more than 10 percent, the subject structural element is checked against the applicable Code criteria for new structures.

This analysis was performed by utilizing Risa 3-D, a commercially available structural engineering software package by Risa Technologies, as applicable.

6.0 RESULTS AND CONCLUSION

Stealth Canister Pole: The stealth canister pole **will have adequate** structural capacity for the proposed changes by T-Mobile once it is modified per Destek Drawings dated 08/10/2017. Under controlling load combinations and as a maximum, the 6.0STD pole is stressed to **22.6%** of its structural capacity.

Penthouse: The penthouse **will have adequate** structural capacity for the proposed changes by T-Mobile once it is modified per Destek Drawings dated 08/10/2017. Under controlling load combinations and as a maximum, the penthouse wall is stressed to **31.5%** of its structural capacity.

Therefore, the proposed additions by T-Mobile **can be implemented once the modifications are installed** and with the conditions outlined in this report.

Should you have any questions about this report, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

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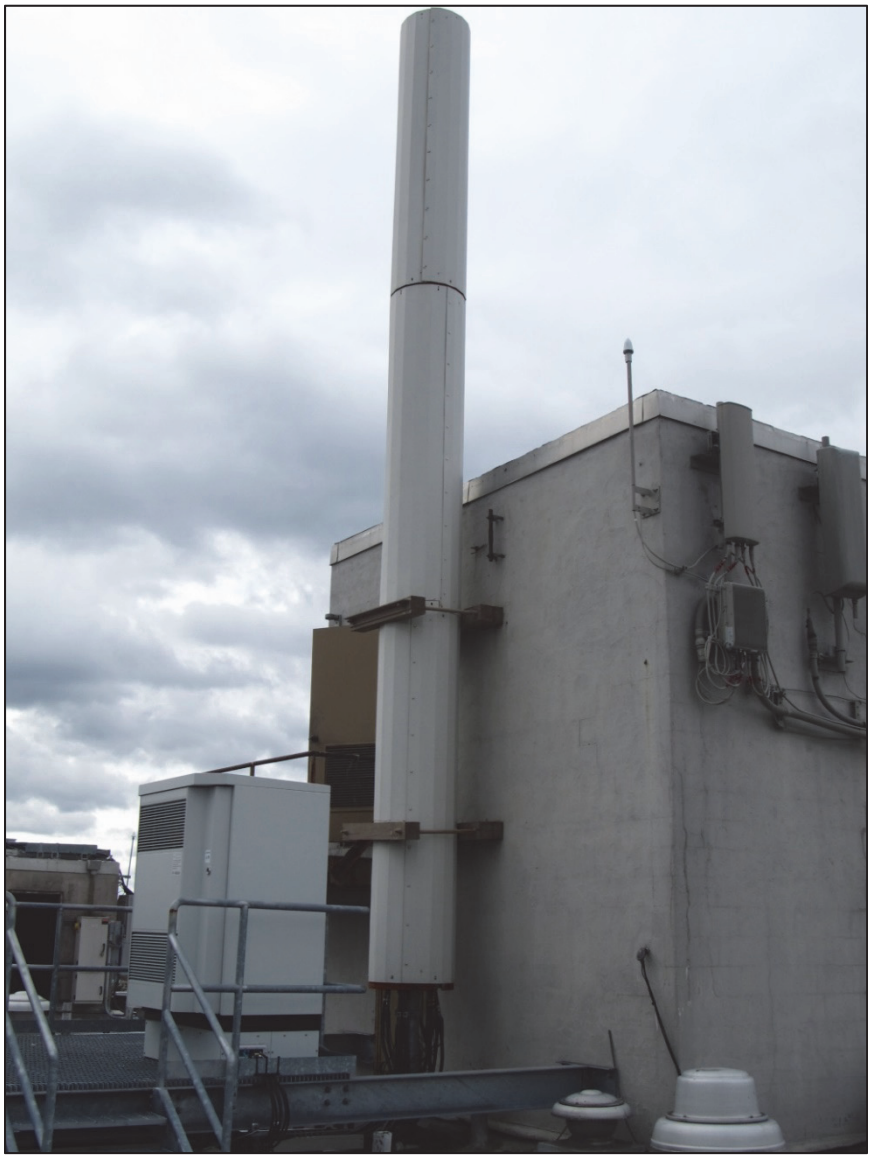
APPENDIX A
PICTURES, CALCULATIONS AND DRAWINGS



Existing Antennas inside the Stealth Canister Pole

CALCULATION SHEET

PURPOSE

The purpose of these calculations is to determine whether the stealth canister pole and the Penthouse wall at 330 Bishop Street, Waterbury, CT 06704 has adequate structural capacity to support a proposed installation by T-Mobile.

All calculations in accordance with 2016 Connecticut State Building Code with all amendments and supplements

CHECK ANTENNA MOUNTS :

Wind Load per ASCE 7-10

(Reference 2016 Connecticut State Building Code)

Input:

Location: Westport, CT 06880

Classification: II

RAD Center: $z := 96ft$

Exposure category: $Exp := "B"$ — Section 26.7.3, pg 251

$$z_g := \begin{cases} 1200ft & \text{if } Exp = "B" \\ 900ft & \text{if } Exp = "C" \\ 700ft & \text{if } Exp = "D" \end{cases} = 1200 \quad \alpha := \begin{cases} 7.0 & \text{if } Exp = "B" \\ 9.5 & \text{if } Exp = "C" \\ 11.5 & \text{if } Exp = "D" \end{cases} = 7$$

Velocity pressure exposure coefficient: $K_z := 2.01 \cdot \left(\frac{z}{z_g}\right)^{\frac{2}{\alpha}} = 0.98$ — Table 29.3-1, pg 310

Topographic factor: $K_{zt} := 1.0$ — Section 26.8.2, pg 254

Wind directionality factor: $K_d := 0.85$ — Table 26.6-1, pg 250

Basic wind speed: $V := 97$ mph — Figure 26.5-1A, pg 247

Gust response factor: $G := 0.85$ — Section 26.9.1, pg 254

Velocity pressure: $q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot psf$ — Equation 29.3-1, pg 307

$q_z = 20 \cdot psf$

Force Coefficients: Figure 29.5-1, Pg 312

for Flat surface

$$C_{F\_flat} := \begin{pmatrix} 1 & 1.3 \\ 7 & 1.4 \\ 25 & 2 \end{pmatrix}$$

for D*sqrt(qz) >2.5

$$C_{F\_round\_1} := \begin{pmatrix} 1 & 0.5 \\ 7 & 0.6 \\ 25 & 0.7 \end{pmatrix}$$

for D*sqrt(qz) < 2.5

$$C_{F\_round\_2} := \begin{pmatrix} 1 & 0.7 \\ 7 & 0.8 \\ 25 & 1.2 \end{pmatrix}$$

Loads on Antennas (RV4PX310R):

Dimensions: $H := 99.7in$ $W := 13.9in$ $D := 8.2in$ $Wt_{ant} := 80lbf$

$C_{f\_F} := linterp\left(C_{F\_flat}^{\langle 0 \rangle}, C_{F\_flat}^{\langle 1 \rangle}, \frac{H}{W}\right) = 1.406$ Figure 29.5-1, Pg 312

$C_{f\_S} := linterp\left(C_{F\_flat}^{\langle 0 \rangle}, C_{F\_flat}^{\langle 1 \rangle}, \frac{H}{D}\right) = 1.572$ Figure 29.5-1, Pg 312

$F_{rv4p} := q_z \cdot G \cdot C_{f\_F} \cdot H \cdot W = 230\,lbf$ Equation 29.5-1, Pg 308

$S_{rv4p} := q_z \cdot G \cdot C_{f\_S} \cdot H \cdot D = 151.7\,lbf$ Equation 29.5-1, Pg 308

Loads on Generic Style 1A - Twin PCS:

Dimensions : $H := 10.2in$ $W := 6.7in$ $D := 3.7in$ $W_{1A} := 15lbf$

$C_{f\_F} := linterp\left(C_{F\_flat}^{\langle 0 \rangle}, C_{F\_flat}^{\langle 1 \rangle}, \frac{H}{D}\right) = 1.329$ Figure 29.5-1, Pg 312

$C_{f\_S} := linterp\left(C_{F\_flat}^{\langle 0 \rangle}, C_{F\_flat}^{\langle 1 \rangle}, \frac{H}{W}\right) = 1.309$ Figure 29.5-1, Pg 312

$F_{B12} := q_z \cdot G \cdot C_{f\_F} \cdot H \cdot W = 10.724\,lbf$ Equation 29.5-1, Pg 308

$S_{B12} := q_z \cdot G \cdot C_{f\_S} \cdot H \cdot D = 5.83\,lbf$ Equation 29.5-1, Pg 308

Loads on Generic Style 1B - Twin AWS:

Dimensions : $H := 6.3in$ $W := 7.7in$ $D := 3.1in$ $W_{1B} := 7lbf$

$C_{f\_F} := linterp\left(C_{F\_flat}^{\langle 0 \rangle}, C_{F\_flat}^{\langle 1 \rangle}, \frac{H}{D}\right) = 1.317$ Figure 29.5-1, Pg 312

$C_{f\_S} := linterp\left(C_{F\_flat}^{\langle 0 \rangle}, C_{F\_flat}^{\langle 1 \rangle}, \frac{H}{W}\right) = 1.297$ Figure 29.5-1, Pg 312

$F_{B12} := q_z \cdot G \cdot C_{f\_F} \cdot H \cdot W = 7.543\,lbf$ Equation 29.5-1, Pg 308

$S_{B12} := q_z \cdot G \cdot C_{f\_S} \cdot H \cdot D = 2.99\,lbf$ Equation 29.5-1, Pg 308

Loads on Antenna Pipe (36" Stealth Canister):

Dimensions: $Dia := 36in$ $H := 30ft$ $W := 500lbf$

$C_f := linterp\left(C_{F\_round\_1}^{\langle 0 \rangle}, C_{F\_round\_1}^{\langle 1 \rangle}, \frac{H}{Dia}\right) = 0.617$ Figure 29.5-1, Pg 312

$C_f := \begin{cases} C_f & \text{if } C_f \le 1.2 \quad = 0.617 \\ 1.2 & \text{otherwise} \end{cases}$ Figure 29.5-1, Pg 312

$F_{Pipe} := q_z \cdot G \cdot C_f \cdot Dia = 31.4 \cdot plf$ Equation 29.5-1, Pg 308

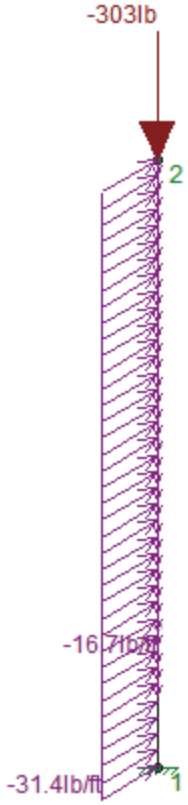
CALCULATION SHEET

RISA MODEL OF POLE:

Note: Antennas and TMAs are located inside the stealth canister which shields it from wind loads

POLE

LOADING:
Dead+Front Wind



CODE CHECK:
Axial+Bending

SHEAR CHECK

The maximum usage is 22.6%

Check the Penthouse Walls:

Wind Pressure:

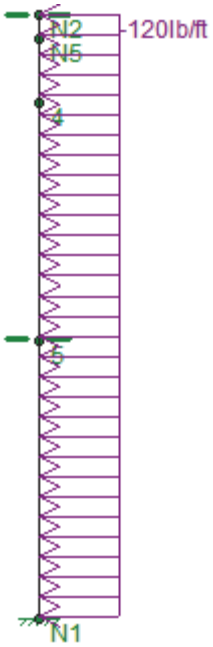
Wind Pressure on Penthouse Walls: $p_{parapet} := (q_z)$

Effective Width: $b := 6ft$

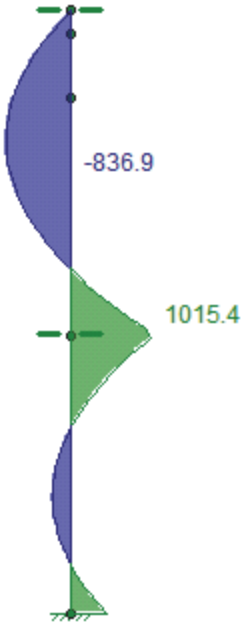
Distributed Wind Load on Penthouse Walls: $WL_{parapet} := p_{parapet} \cdot b = 120 \cdot plf$

RISA 3D Analysis Results of Penthouse Walls:

Take the reactions of the support that located at mid-span of the parapet wall as the critical force:



Load on Penthouse Wall



Moment Diagram (Lb-ft)

Wall Strength Check: Masonry Wall

$H_{wall} := 208in$ Height of Penthouse Wall over The Max Moment

$b := 6ft$ Tributary Width

$d := 8in$ Masonry depth

$M_{max} := 1015.4lbf \cdot ft$ Maximum moment due to appurtenances and pipe

$P_{mount} := 0lbf$ Maximum force due to appurtenances and pipe

$$S := \frac{b \cdot d^2}{6} = 768 \cdot in^3$$

$$f_b := \frac{M_{max}}{S} = 15.866psi$$

$\rho_{masonry} := 115pcf$

$P_{masonry} := \rho_{masonry} \cdot b \cdot d \cdot H_{wall} = 7973.333lbf$ Weight of masonry

$A_{masonry} := b \cdot d = 4\,ft^2$ Area of masonry

$$f_a := \frac{P_{masonry} + P_{mount}}{A_{masonry}} = 13.843psi$$

$f_{masonry} := f_b - 0.6 \cdot f_a = 7.56psi$

Compare the stress calculated from service loads to allowable stress as defined by ACI 530-11, Table 2.2.3.2. Assuming masonry cement and that the stress is normal to the bed joints.

$f_{allow} := 24psi$

$$Check := \begin{cases} \text{"Penthouse wall is adequate"} & \text{if } f_{allow} \geq f_{masonry} \\ \text{"Penthouse wall is not adequate"} & \text{otherwise} \end{cases}$$

$Check = \text{"Penthouse wall is adequate"}$

$$\frac{f_{masonry}}{f_{allow}} = 31.5 \cdot \%$$

1.0 DESIGN INFORMATION AND GENERAL REQUIREMENTS

1.0 GENERAL
a. ALL DIMENSIONS ARE APPROXIMATE, CONTRACTOR SHOULD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL MEMBERS AND COMMENCEMENT OF WORK.

1.1 CODES
a. 2016 CONNECTICUT STATE BUILDING CODE
b. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-10, AMERICAN SOCIETY OF CIVIL ENGINEERS
c. STEEL CONSTRUCTION MANUAL, 14TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION

1.2 LOADS AND DESIGN CRITERIA
a. WIND LOADING: V: 97 MPH, EXPOSURE B, OCCUPANCY CATEGORY II
b. EQUIPMENT AS LISTED IN STRUCTURAL ANALYSIS REPORT PREPARED BY DESTEK ENGINEERING, LLC, DATED 08/10/2017.

1.3 NOTES
a. PRIOR TO PURCHASE OR FABRICATION OF MATERIAL, THE CONTRACTOR SHALL PERFORM AN INSPECTION VERIFYING MEMBER AND BOLT SIZES. SHOULD THE CONTRACTOR DISCOVER ANY DAMAGED OR MISSING MEMBERS OR THE MEMBER OR BOLT SIZES DO NOT MATCH THOSE LISTED, DESTEK SHALL BE NOTIFIED IMMEDIATELY.
b. CONTRACTOR TO REPLACE ALL MEMBERS AND BOLTS REMOVED WITH NEW MEMBERS AND BOLTS OF SAME TYPE, UNLESS NOTED OTHERWISE.

2.0 STRUCTURAL STEEL

2.1 MATERIALS
a. STRUCTURAL STEEL . . . . . ASTM A992
MISC ANGLE & PLATE . . . . ASTM A36
PIPE . . . . . ASTM A53 GR. B
RODS . . . . . ASTM A572-50 (MINIMUM)
HSS. . . . . ASTM A500, GR. B, Fy=46 KSI
b. BOLTS . . . . . ASTM A325 U.N.O.
c. WELDING ELECTRODES . . . . . AWS A5.1 (E70XX)
d. STEEL CONSTRUCTION SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ANSI/AISC 360-10"
e. WELDING SHALL CONFORM TO AWS D1.1/D1.3/D1.7 AS APPLICABLE.
f. THE FABRICATOR SHALL FURNISH CHECKED SHOP AND ERECTION DRAWINGS TO THE ENGINEER, AND OBTAIN APPROVAL PRIOR TO FABRICATING ANY STRUCTURAL STEEL. SHOP DRAWINGS SHALL CONFORM TO "DETAILING FOR STEEL CONSTRUCTION, 2ND EDITION"
g. POOR MATCHING OF HOLES SHALL BE CORRECTED BY DRILLING TO THE NEXT LARGER SIZE. WELDING FOR REDRILLING WILL NOT BE PERMITTED.

2.2 CONNECTIONS
a. SHOP CONNECTIONS MAY BE BOLTED OR WELDED
b. CONNECTIONS WHERE THE BEAM SHEAR (V) IS NOT NOTED ON THE DRAWINGS, SIMPLE SHEAR CONNECTIONS SHALL BE DESIGNED TO DEVELOP 1/2 OF THE MAXIMUM TOTAL UNIFORM LOAD CAPACITY OF THE BEAM.
c. FIELD CONNECTIONS SHALL BE MADE WITH A325 BOLTS AND HARDENED WASHERS EXCEPT AS INDICATED ON THE DESIGN DRAWINGS
d. CONNECTIONS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED BY THE STEEL FABRICATOR. CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AND "AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
e. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER.
f. BOLT HOLES SHALL BE CUT, DRILLED OR PUNCHED AT RIGHT ANGLES TO THE SURFACE OF THE METAL AND SHALL NOT BE MADE OR ENLARGED BY BURNING. HOLES SHALL BE CLEAN CUT WITHOUT TORN OR RAGGED EDGES. OUTSIDE BURRS RESULTING FROM DRILLING OR REAMING OPERATION SHALL BE REMOVED WITH A TOOL MAKING A 1/16 INCH BEVEL. BOLT HOLES SHALL BE 1/16 INCH OVERSIZE.

2.3 FINISHES
a. STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A123
b. BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED PER ASTM A153.
c. ALL SURFACES DAMAGED BY FIELD WELDING OR CUTTING SHALL BE PAINTED WITH COLD GALVANIZING COMPOUND TWICE. THE PAINT SHOULD BE AT LEAST 93% PURE ZINC. RUST-OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

2.4 WELDING
a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON GALVANIZED SURFACE. COAX IS FLAMMABLE AND SHALL CATCH FIRE IF NOT PROTECTED. WATER SHALL BE ON SITE OF ADEQUATE AMOUNT AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. CONTRACTOR SHOULD BE ABLE TO TRANSPORT THE WATER TO THE HEIGHT WELDING BEING PERFORMED.
b. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC, IT DOES NOT PROVIDE A STRUCTURAL WELD. GROUND GALVANIZING BEFORE WELDING.
c. WELDING CERTIFICATE MUST BE PROVIDED PRIOR TO WELDING. ALL WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES.

3. REINFORCED MASONRY NOTES

3.1 MASONRY DESIGN SHALL BE IN ACCORDANCE WITH ACI 530/ASCE 10/TMS 402.

3.2 HOLLOW MASONRY LOAD-BEARING CONCRETE UNITS SHALL BE MEDIUM WEIGHT, GRADE N IN COMPLIANCE WITH ASTM SPECIFICATION C90. THE AVERAGE MINIMUM COMPRESSIVE STRENGTH OF THREE UNITS SHALL BE 1900PSI BASED ON NET AREA. THE MINIMUM COMPRESSIVE STRENGTH OF ANY INDIVIDUAL UNIT SHALL BE 1700PSI BASED ON NET AREA. THE MINIMUM ULTIMATE COMPRESSIVE 28-DAY STRENGTH OF MASONRY, F'M, SHALL BE 1500PSI.

3.3 MORTAR SHALL BE TYP.E S, AND SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 1800PSI, AND SHALL COMPLY WITH ASTM C270.

3.4 CONCRETE FILL FOR MASONRY (GROUT) SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2500PSI AND COMPLY WITH ASTM C476. FILL ALL CELLS BELOW GRADE WITH GROUT. MASONRY CELLS FILLED WITH GROUT SHALL BE GROUTED IN INCREMENTS NOT EXCEEDING 4'-0" VERTICALLY.

3.5 THE BOND OF MASONRY SHALL BE RUNNING BOND UNLESS NOTED OTHERWISE.

3.6 HORIZONTAL JOINT REINFORCING SHALL BE LADDER TYP.E WITH NO. 9 SIDE RODS AND SHALL BE SPACED VERTICALLY AT 16" O.C. UNLESS OTHERWISE NOTED. PROVIDE CORNER AND INTERSECTION REINFORCING WHERE APPLICABLE.

3.7 UNLESS OTHERWISE NOTED, PROVIDE REINFORCING STEEL (NO. 5 MINIMUM) WITH POSITIONERS AS FOLLOWS:
a. WALLS - VERTICALLY AT: EACH SIDE OF OPENINGS; WALL CORNERS AND INTERSECTIONS; AND NOT TO EXCEED 48" O/C (SEE SCHEDULE). VERTICAL WALL STEEL SHALL LAP WITH HOOKED FOUNDATION DOWELS AND DOWELS HOOKED INTO A CONTINUOUS BOND BEAM AT THE TOP OF THE WALL.
b. BOND BEAMS - TWO HORIZONTALLY LAPPED AND CONTINUOUS AROUND CORNERS.
c. LINTEL BEAMS - UNLESS OTHERWISE NOTED LINTEL BEAMS SHALL CONFORM WITH THE LINTEL SCHEDULE.

3.8 DETAILS OF REINFORCEMENT:
a. MINIMUM EMBEDMENT LENGTH OF STRAIGHT BARS = 36 X DIA. OF BAR (12" MIN.)
b. MINIMUM EMBEDMENT LENGTH OF HOOKED BARS = 11.25 X DIA. OF BAR.
c. MINIMUM HOOK LENGTH OF 90 DEG. HOOK = 12 X DIA. OF BAR.
d. MINIMUM LAP SPLICE LENGTH = SEE SCHEDULE (15" MIN.).

3.9 FOR OTHER REINFORCING REQUIREMENTS, SEE PLANS AND "REINFORCED CONCRETE NOTES" ABOVE.

3.10 MASONRY CONTROL JOINTS (UNLESS OTHERWISE SPECIFIED BY THE ARCHITECTURAL DOCUMENTS):
a. FACE BRICK - UNLESS MORE STRINGENT REQUIREMENTS ARE RECOMMENDED BY THE BRICK INSTITUTE OF AMERICA THE FOLLOWING SHALL APPLY AT A MINIMUM.
i. VERTICALLY AT CORNERS, OFFSETS, SETBACKS, OPENINGS, INTERSECTIONS, CHANGES IN SUPPORT TYP.E AND AT A SPACING NOT TO EXCEED 30 FT. O/C.
ii. HORIZONTALLY AT SHELF ANGLES.
b. CONCRETE MASONRY UNITS (CMU) - UNLESS MORE STRINGENT REQUIREMENTS ARE RECOMMENDED BY THE NATIONAL CONCRETE MASONRY ASSOCIATION THE FOLLOWING SHALL APPLY AT A MINIMUM.
i. VERTICALLY AT CHANGES IN WALL HEIGHT OR THICKNESS, BUILDING EXPANSION JOINTS, ABUTMENT OF WALL AND COLUMN OR PILASTER, CORNERS AND INTERSECTIONS, ONE SIDE OF OPENINGS LESS THAN 6 FEET WIDE, BOTH SIDES OF OPENINGS GREATER THAN 6 FEET WIDE, AND AT A SPACING NOT TO EXCEED 3 TIMES THE WALL HEIGHT NOR 50 FEET ON CENTER.
ii. HORIZONTAL SLIP PLANE AT TERMINATION OF REINFORCED LINTEL BEAM.

3.11 FACE BRICK DETAILS - UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL PLANS AND SPECIFICATIONS:
a. TWO-PART GALVANIZED BRICK TIES SHALL BE INSTALLED AT THE FOLLOWING FREQUENCY UNLESS THE BRICK INSTITUTE OF AMERICA RECOMMENDS MORE RESTRICTIVE REQUIREMENTS. TIES SHALL ALSO BE LOCATED WITHIN 8" OF DISCONTINUITIES (E.G. OPENINGS, JOINTS, AND ENDS OF WALLS). ALL TIES SHALL BE 3/16 INCH DIAMETER, GALVANIZED ADJUSTABLE TIES EMBEDDED TO THE MID-DEPTH OF THE WYTHE WITH A MINIMUM COVER OF 5/8 INCH. TIES LOCATED MORE THAN 35 FT ABOVE ADJACENT GRADE SHALL BE STAINLESS STEEL.
i. BRICK VENEER/WOOD STUD - 2 2/3SF./CORRUGATED TIE WITH A MAXIMUM VERTICAL AND HORIZONTAL SPACING OF 16" AND 24" RESPECTIVELY. (1" AIR SPACE)
ii. BRICK VENEER/STEEL STUD - 2SF./ADJUSTABLE UNIT TIE WITH A MAXIMUM VERTICAL AND HORIZONTAL SPACING OF 16". (2" TO 3" AIR SPACE)
iii. BRICK VENEER/CMU OR CONCRETE - 2 2/3SF./ADJUSTABLE UNIT TIE WITH A MAXIMUM VERTICAL AND HORIZONTAL SPACING OF 16" AND 24" RESPECTIVELY. (1" AIR SPACE)
b. 1/4" DIAMETER WEEP HOLES SHALL BE LOCATED IMMEDIATELY ABOVE ALL FLASHING AT A SPACING NOT TO EXCEED 24" O/C WITHOUT WICKS AND 18" O/C WITH WICKS.

3.12 CMU DETAILS - ANCHOR VERTICAL ENDS OF WALL PANELS TO BUILDING COLUMNS WITH DUROWALL D/A 601 NOTCHED STEEL COLUMN ANCHORS (2 3/4 IN. MIN EMBED., TALLOW = 648 LBS.)

4. CONCRETE

4.1 MATERIALS
a. ALL CONCRETE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318-11 AND ACI 301-10.
b. CEMENT SHALL BE TYPE I OR III CONFORMING TO ASTM C-150 AND CONCRETE SHALL DEVELOP A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI.
c. TEST CYLINDERS SHALL BE TAKEN AS A REPRESENTATIVE SAMPLE OF CONCRETE PLACED IN THE AMOUNT ACCORDING TO THE LESSER OF THE FOLLOWING:
i. 75 CUBIC YARDS
ii. 24 HOUR PERIOD
iii. CHANGE IN CONCRETE STRENGTH.
d. TEST RESULTS SHALL BE FORWARDED TO THE ARCHITECT/ENGINEER, UNLESS NOTED OTHERWISE.
e. NORMAL WEIGHT CONCRETE (150 PCF) SHALL BE USED WITH A 1" MAX COURSE AGGREGATE CONFORMING TO ASTM C 33.
f. CONCRETE SLUMP SHALL BE 3"-5" (MAX) FOR REGULAR MIX, WITH SUPERPLASTICIZER ADMIXTURES INCREASING SLUMP TO 8" (MAX). CONCRETE AIR-ENTRAINMENT SHALL BE 4.5% TO 7.5% FOR EXTERIOR SLABS AND 0% TO 3% FOR INTERIOR SLABS.
g. UNLESS NOTED OTHERWISE, CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
i. CONCRETE CAST AGAINST EARTH - 3"
ii. FORMED CONCRETE EXPOSED TO EARTH OR WEATHER - 2"

4.2 FIELD WORK
a. WHERE NEW CONCRETE IS TO BE POURED ONTO EXISTING CONCRETE, ROUGHEN AND CLEAN SURFACE OF ADJOINING AREA AND COAT WITH SIKADUR 32 HI-MOD OR AN APPROVED BONDING AGENT.
b. NO ADDITIONAL WATER SHALL BE ADDED TO THE CONCRETE AT THE JOB SITE.
c. THE RESULTS OF ALL CONCRETE COMPRESSIVE TESTS SHALL BE AT THE JOB SITE FOR REVIEW BY THE INSPECTOR.
d. FLY ASH, MEETING ASTM C-618 CLASS C OR CLASS F, MAY BE USED TO REPLACE UP TO 25% OF PORTLAND CEMENT. CONTRACTOR AND SUPPLIER SHALL COORDINATE TO ENSURE THAT REQUIRED SET TIMES FOR CONCRETE ARE NOT ADVERSELY AFFECTED BY USE OF FLY ASH. CONTRACTOR AND ALL CONCRETE SUBCONTRACTORS SHALL HAVE EXPERIENCE WITH HANDLING, PLACING AND FINISHING CONCRETE WITH FLY ASH.

DRAWINGS PLOTTED TO SCALE ON 11x17 SHEETS

08-10-2017
STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED
PROFESSIONAL ENGINEER

Ahmet Colakoglu, PE
CT License No: 27057

PREPARED BY:
DESTEK ENGINEERING
DESTEK ENGINEERING, LLC
1281 KENNESTONE CIRCLE
SUITE 100
MARIETTA, GA 30066
TEL NO: 770-693-0835
ADMIN@DESTEKENGINEERING.COM
LICENSE # PEC 001429

PREPARED FOR:
T-MOBILE
35 Griffin Road South
Bloomfield, CT 06002

NUM	DATE	DESCRIPTION:
A	08/10/17	ISSUED FOR CONSTRUCTION

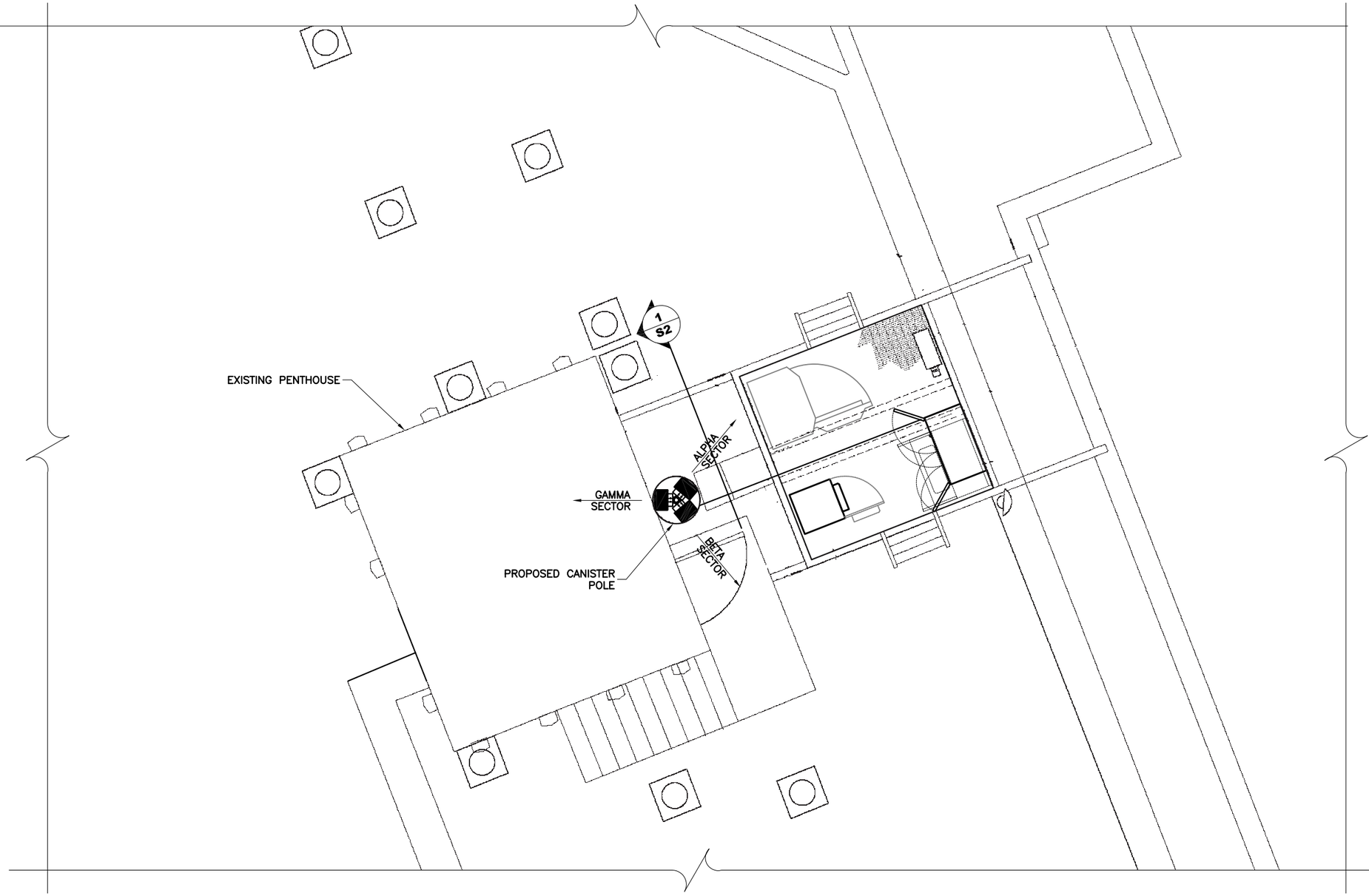
CTNH336C NH336/WATERBURY OMEGA_RT

ADDRESS:
330 BISHOP STREET,
WATERBURY, CT 06704

DESIGNED: RH
DRAWN: RH
CHECKED: AC

JOB #: 1775042

S1A
NOTES & SITE PLAN



TRUE NORTH

1 S1B PARTIAL ROOF PLAN

N.T.S.

NOTES:
PROPOSED ANTENNAS TO BE INSTALLED INSIDE THE NEW CANISTER.

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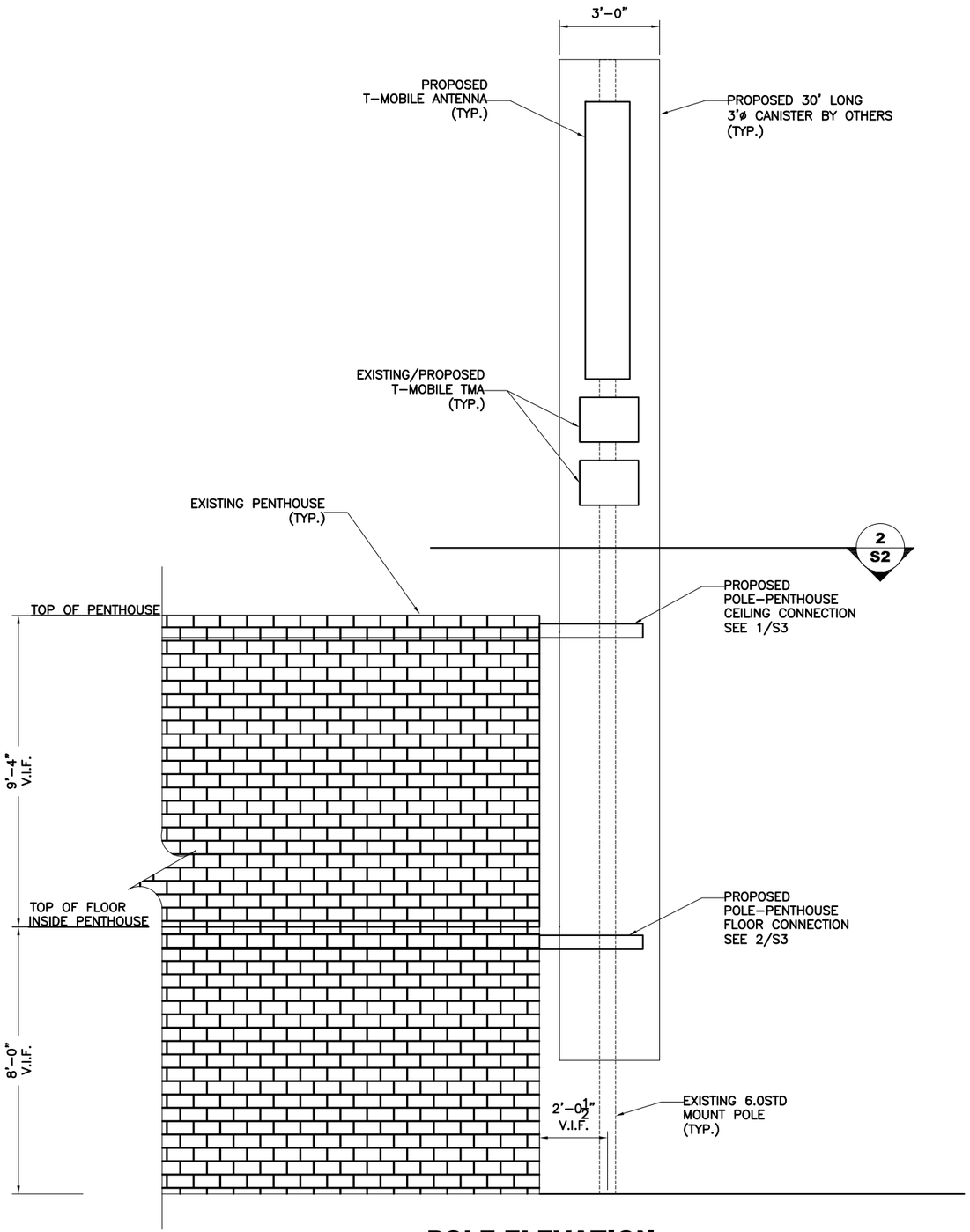
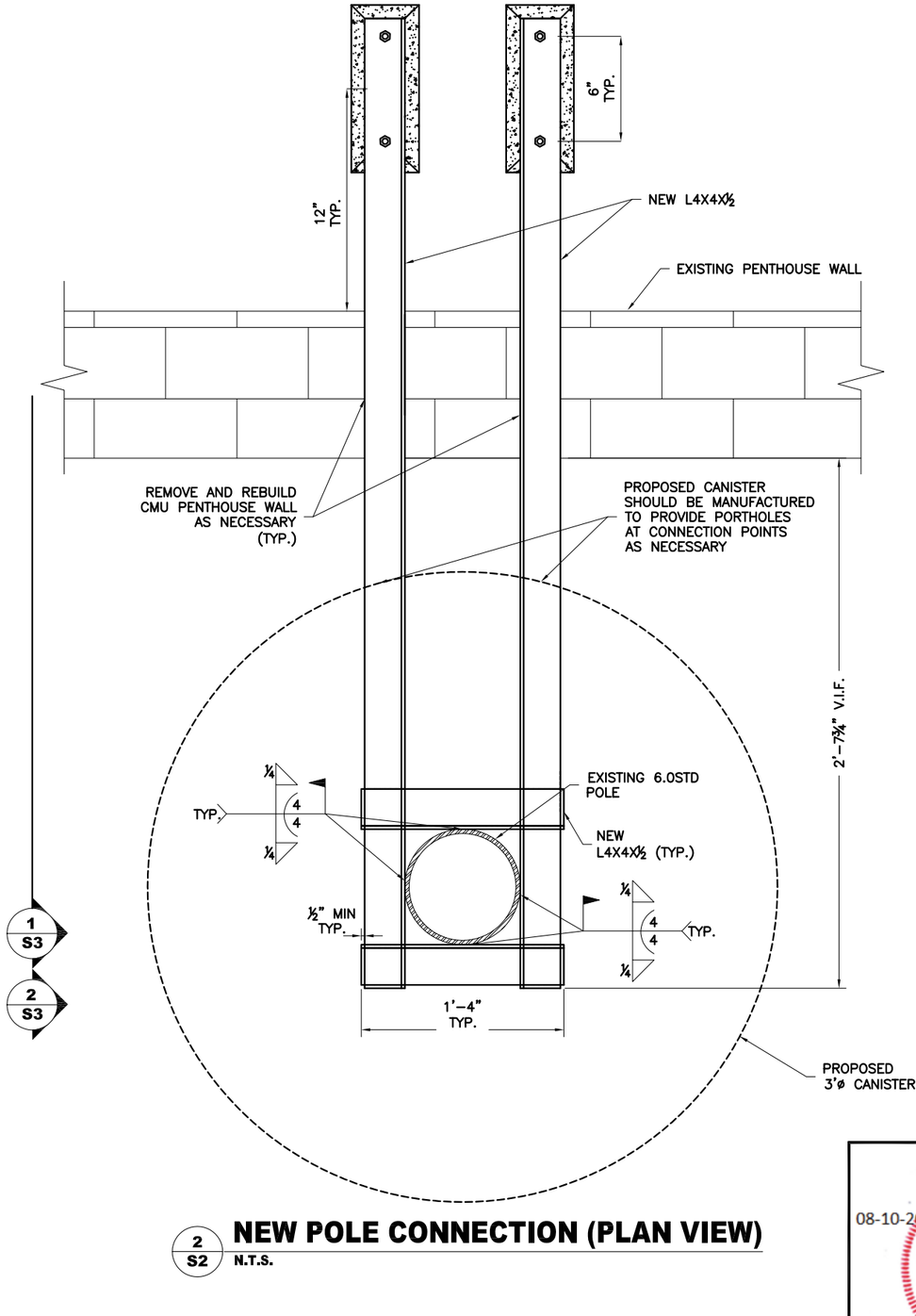


1/S2 POLE ELEVATION

N.T.S.



2/S2 NEW POLE CONNECTION (PLAN VIEW)

N.T.S.

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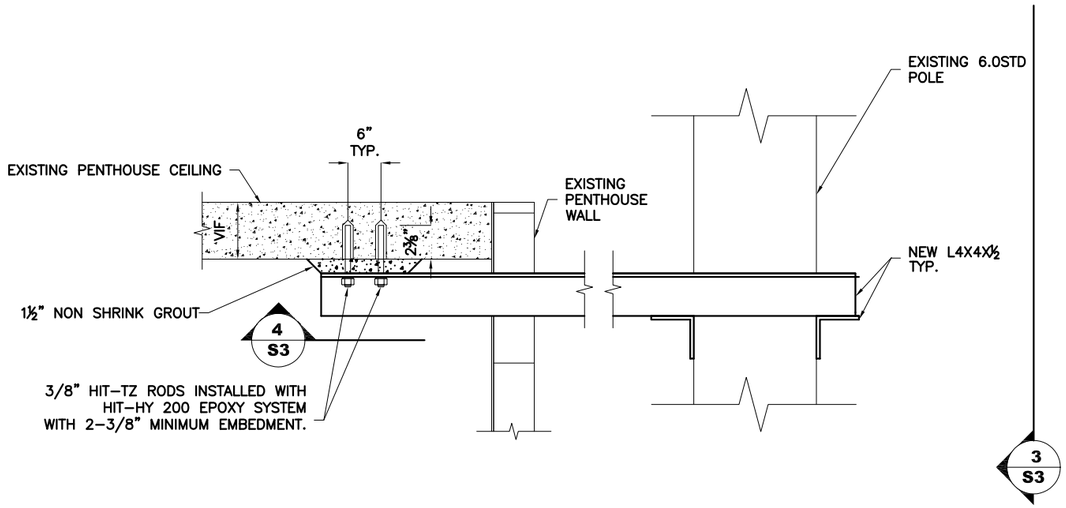
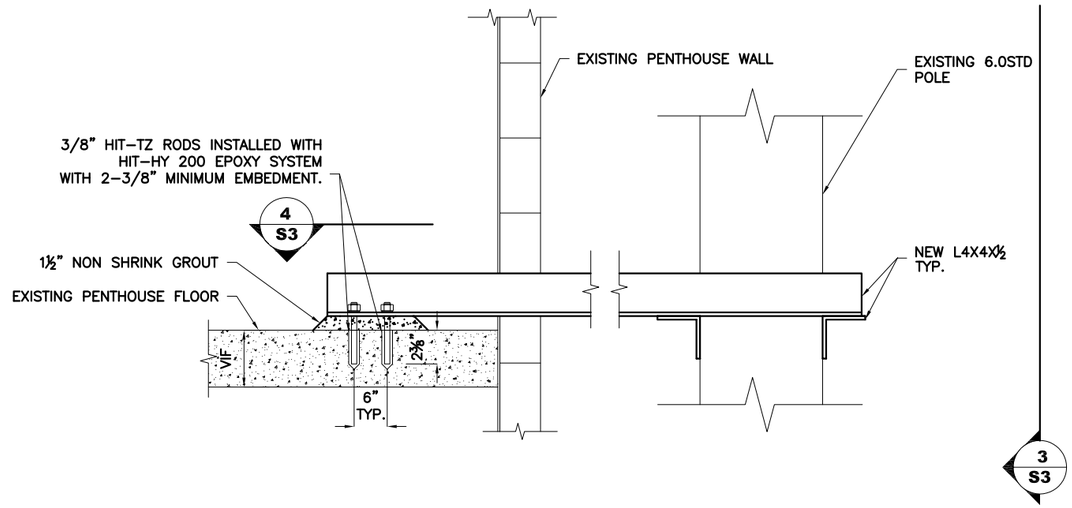
S2 UPGRADE DETAILS



1 S3 NEW POLE CONNECTION (PENTHOUSE CEILING)

N.T.S.

NOTES:
1. CONTRACTOR TO VERIFY THICKNESS OF CONCRETE FLOOR IS A MINIMUM OF 4"
2. CANISTER NOT SHOWN FOR CLARITY
3. ASSUMED CEILING CONSTRUCTION IS THE SAME AS FLOOR



2 S3 NEW POLE CONNECTION (PENTHOUSE FLOOR)

N.T.S.

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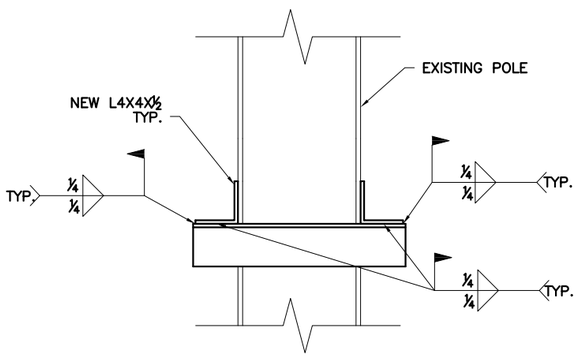
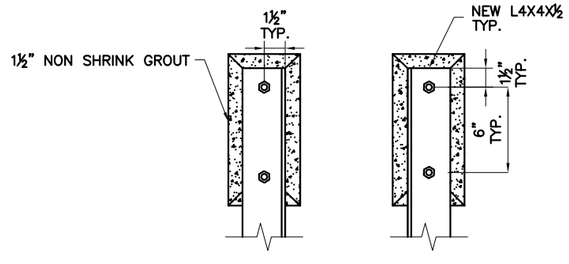
2. CANISTER NOT SHOWN FOR CLARITY



3 S3 NEW POLE CONNECTION DETAIL

N.T.S.



4 S3 NEW POLE CONNECTION DETAIL

N.T.S.

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S3 UPGRADE DETAILS