



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

September 16, 2016

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
330 Bishop Street, Waterbury CT 06704
Latitude: 41.56660
Longitude: -73.03825
T-Mobile Site#: CTNH336C_L700

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing 30-foot canister pole at 330 Bishop Street, Waterbury CT 06704. The canister pole was approved by Waterbury PZC and is no longer under the City of Waterbury's jurisdiction. T-Mobile currently maintains three (3) antennas at the 96-foot level and three (3) antennas at the 90-foot level of the existing 99-foot canister. The canister pole is owned by Waterbury Omega LLC. The property is owned by Waterbury Omega LLC. T-Mobile now intends to replace six (6) existing antenna with one (1) new 700/1900/2100 MHz antenna and replace the existing canister pole with one (1) new 30'x3' canister pole. The new antennas would be installed at the 96-foot level of the canister pole.

Planned Modifications:

Remove: (3)APX16DWVS-E-A20 Antenna

Remove and Replace:

(3)APX16DWVS-E-A20 Antenna (**Remove**) – (3) RV4PX31OR (Penta) (**Replace**)
(1) 30'x2'6"Canister (**Remove**) - (1) 30'x 3'Canister (**Replace**)

Install New:

(3)RRUS11 B12 (Mounted on ground – to exiting railing)

Existing to Remain:

(6) Twin TMA
(24) 7/8" Coax

This facility was approved by the City of Waterbury PZC. On October 24, 2006 – Approved by the City of Waterbury to install antenna to the existing rooftop. No further documentation is available. Please see attached.



Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mayor Neil O'Leary, Elected Official for the City of Waterbury, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo

Mobile: 860-209-4690

Fax: 413-521-0558

Office: 199 Brickyard Rd, Farmington, CT 06032

Email: denise@northeastsitesolutions.com

Attachments

cc: Neil O'Leary- Mayor - as elected official

Waterbury Omega LLC - as tower owner

Waterbury Omega LLC - as property owner

Exhibit A



DEPARTMENT OF PLANNING
CITY OF WATERBURY
CITY HALL ANNEX
26 Kendrick Avenue
WATERBURY, CONNECTICUT 06702
203-574-6818 Fax 203-346-3949

James A. Sequin, AICP
City Planner

Notice of Zoning Board of Appeals Decision

24 October, 2006

Jennifer Young Gaudet
Omnipoint Communications Inc
30 Coldspring Road
Rocky Hill, Ct.06067

Dear Ms. Gaudet,

At the regularly scheduled meeting of the Waterbury Zoning Board of Appeals, 18 October, 2006, your applications for Antenna installation and related variances at 330 Bishop Street were approved.

Please be also advised that the decision is not official until a copy of this approval letter is filed with the City Clerk.

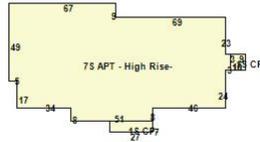
A handwritten signature in black ink, appearing to read "Dennis Brown".

Dennis Brown, Land Use Officer

Cc: James Sequin, AICP, City Planner

Exhibit B

Location: 330 BISHOP ST Owner: WATERBURY OMEGA LLC



Property Information:

| | | | |
|-------------------------|---|------------------|------|
| Map Block Lot: | 0199-0714-0109 | Acres: | 1.09 |
| Primary Use: | Apt - High Rise | Zone: | RM |
| Neighborhood: | 70007-7+ Units | Vol/Page: | 4254 |
| Mailing Address: | WATERBURY OMEGA LLC 330 BISHOP ST WATERBURY, CT 06704 | | |

Property Values:

| | Appraised Value | Assessed Value (70%) |
|--------------------|------------------------|-----------------------------|
| Building | 1747017 | 1222910 |
| Land | 170313 | 119230 |
| OutBuilding | 30492 | 21340 |
| Total | 1947822 | 1363480 |

Sales Information:

| Sale Date | Sale Price | Sale Type | Valid sale |
|------------------|-------------------|------------------|-------------------|
| 11/9/2001 | 1115000 | Other | No |
| 1/1/1971 | 21000 | | No |

Building Information:

| | | | |
|-----------------------|----------------|---------------------|--------------|
| Bldg Style: | | Living Area: | 60956sq.ft |
| Construction: | Average | Year Built: | 1972 |
| Exterior Wall: | Concrete Block | Stories: | 7 |
| Roof Cover: | | Heating: | Package Unit |
| Condition: | Average | Heat Fuel: | |
| Rooms: | 0 | Bedrooms: | 0 |
| Full Baths: | 0 | Half Baths: | 0 |

Outbuilding Information:

| Type | Area (sq.ft) | Year Built | Condition |
|---------------------------|---------------------|-------------------|------------------|
| Concrete Block/Frame Shed | 240sq.ft | 2005 | Average |
| Canopy Canopy | 90sq.ft | 1990 | Average |
| Canopy Canopy | 189sq.ft | 1990 | Average |
| Asphalt Paving | 11000sq.ft | 1990 | Average |
| Asphalt Paving | 6700sq.ft | 1972 | Average |

Special Features:

| | |
|-----------------|--------------------|
| Feature: | Passenger Elevator |
|-----------------|--------------------|

Permit Information:

| Permit Date | Permit Number | Permit Type | Click for Details |
|-------------|---------------|-----------------|-------------------------|
| 08/05/2010 | PR20100001034 | BD - Electrical | Details |
| 07/31/2012 | PR20120002094 | BD - Building | Details |
| 07/30/2009 | 493-09-E | BD - Electrical | Details |
| 07/24/2009 | 442-09-E | BD - Electrical | Details |
| 07/21/2014 | PR20140001878 | BD - Electrical | Details |
| 07/19/2010 | PR20100000855 | BD - Electrical | Details |
| 01/22/2010 | 82-10-P | BD - Plumbing | Details |
| | PR20160002565 | BD - Building | Details |
| | PR20160002431 | BD - Electrical | Details |
| | PR20160002436 | BD - Electrical | Details |
| | PR20120000098 | BD - Building | Details |
| | PR20100000374 | BD - Building | Details |

Planning Application:

| Application Date | Application Number | Application Type | Click for Details |
|------------------|--------------------|------------------|-------------------|
|------------------|--------------------|------------------|-------------------|

Code Enforcement:

| Case Date | Case Number | Case Type | Click for Details |
|-----------|-------------|-----------|-------------------|
|-----------|-------------|-----------|-------------------|

[Close](#)

Exhibit C

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. 2005 CONNECTICUT BUILDING CODE WITH ALL AMENDMENTS & SUPPLEMENT
 b. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-02, AMERICAN SOCIETY OF CIVIL ENGINEERS
 c. STEEL CONSTRUCTION MANUAL, 9TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION

- 1.2 LOADS AND DESIGN CRITERIA
 a. WIND LOADING: V: 110 MPH, EXPOSURE B, OCCUPANCY CATEGORY II
 b. EQUIPMENT AS LISTED IN STRUCTURAL ANALYSIS REPORT PREPARED BY DESTEK ENGINEERING, LLC, DATED 07/28/2016.

- 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 335-89a1"
 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 5/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.

PREPARED BY:



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

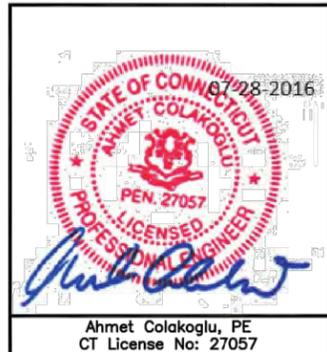
| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |

CTNH336C NH336/WATERBURY OMEGA_RT
 ADDRESS:
 330 BISHOP STREET,
 WATERBURY, CT 06704

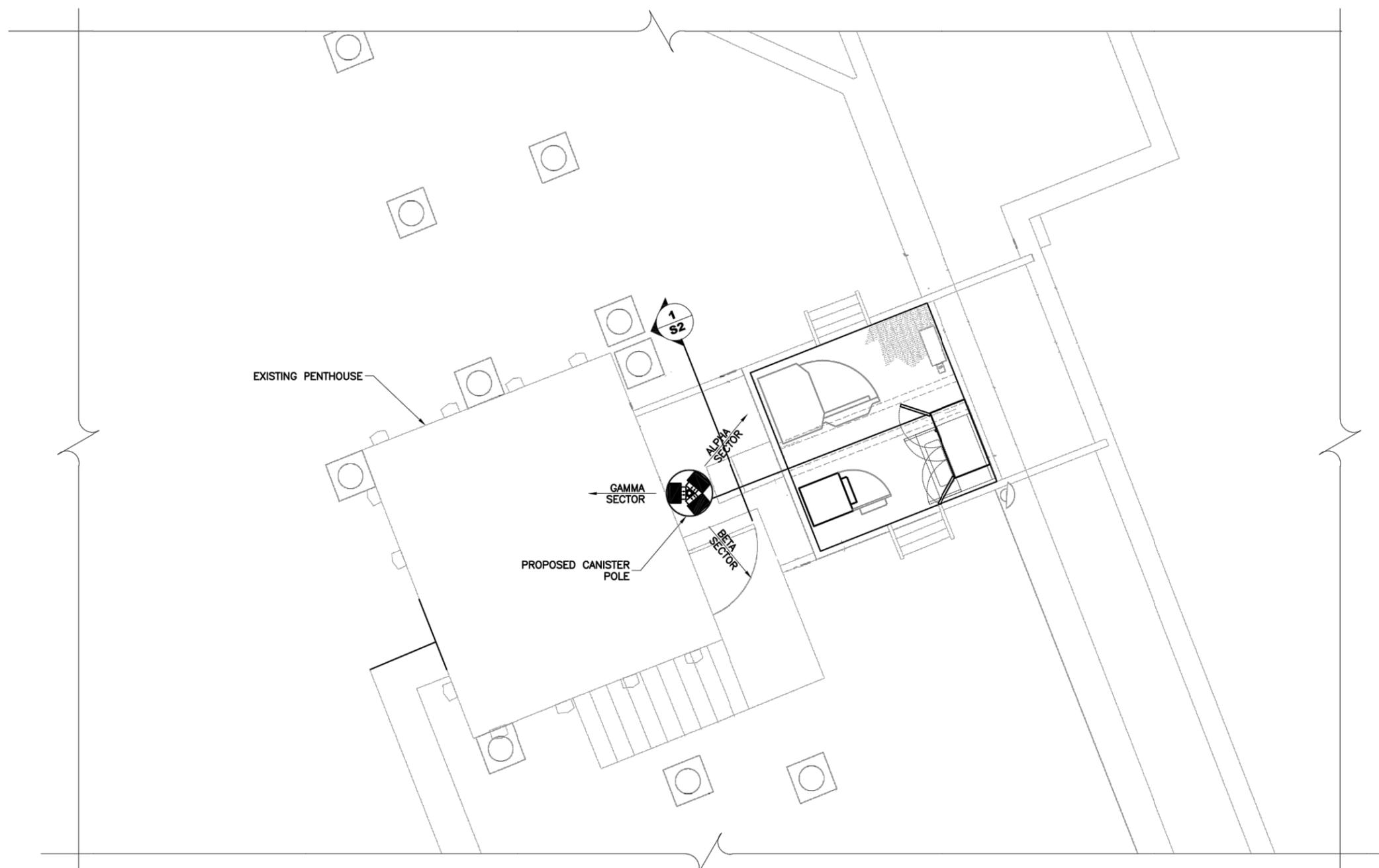
DESIGNED: GW
 DRAWN: GW
 CHECKED: AC

JOB #: 1664071

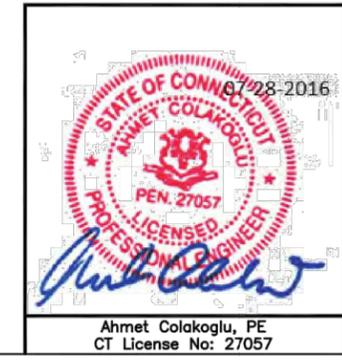
S1A
NOTES &
SITE PLAN



Ahmet Colakoglu, PE
 CT License No: 27057

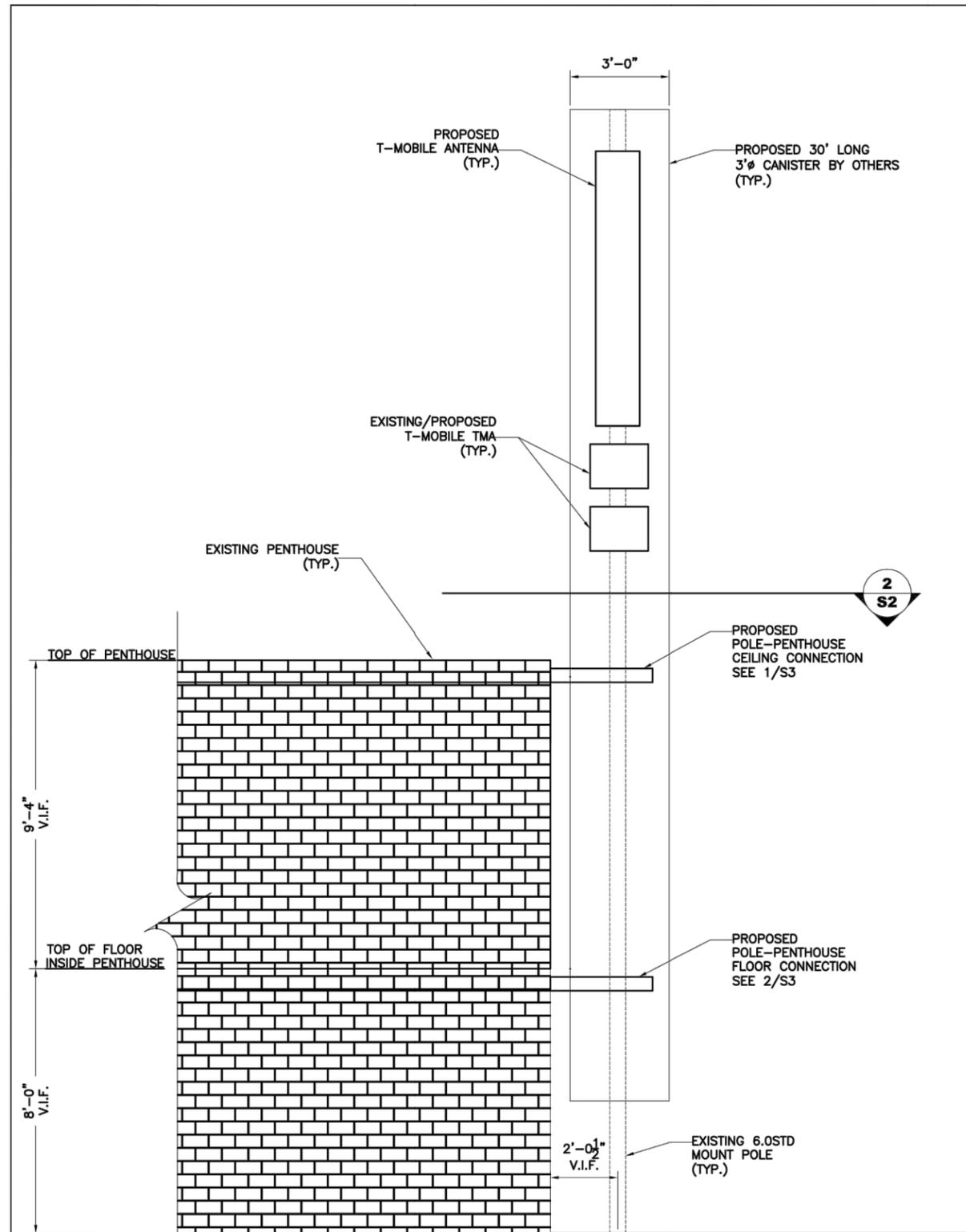


1
S1B PARTIAL ROOF PLAN
N.T.S.
NOTES:
PROPOSED ANTENNAS TO BE INSTALLED
INSIDE THE NEW CANISTER.

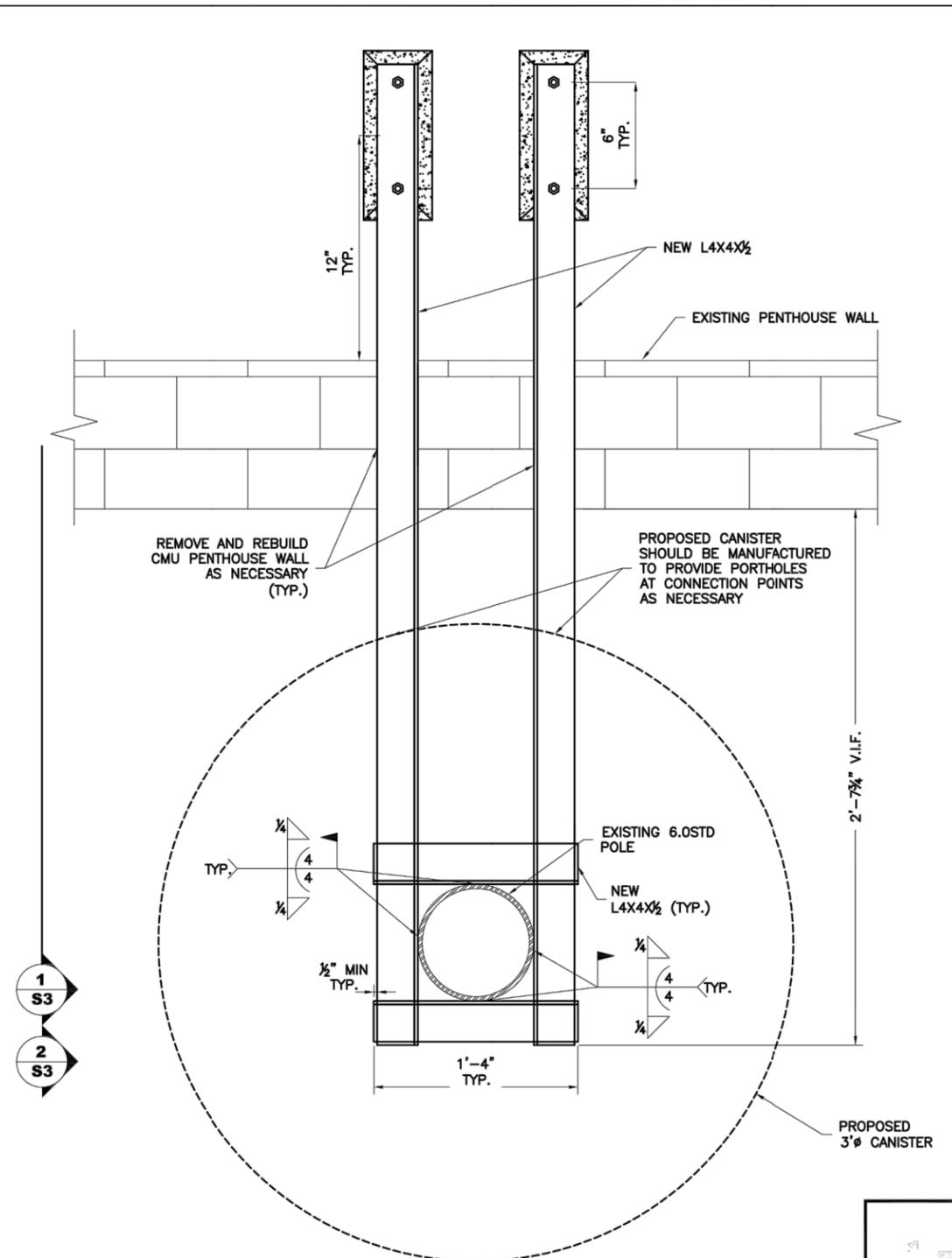


| | | | |
|-----------------------------------|----------|---|--|
| PREPARED BY: | | DESTEK ENGINEERING, LLC 1281 KENESTONE CIRCLE SUITE 100 MARIETTA, GA 30066 TEL. NO: 770-893-0835 ADMIN@DESTENGINEERING.COM LICENSE # PEC 001429 | |
| PREPARED FOR: | | T-MOBILE 35 Griffin Road South Bloomfield, CT 06002 | |
| NUM | DATE | DESCRIPTION: | |
| A | 07/28/16 | ISSUED FOR CONSTRUCTION | |
| CTNH336C NH336/WATERBURY OMEGA_RT | | ADDRESS: | |
| | | 330 BISHOP STREET, WATERBURY, CT 06704 | |
| DESIGNED: | GW | | |
| DRAWN: | GW | | |
| CHECKED: | AC | | |
| JOB #: | | 1664071 | |
| | | S1B NOTES & SITE PLAN | |

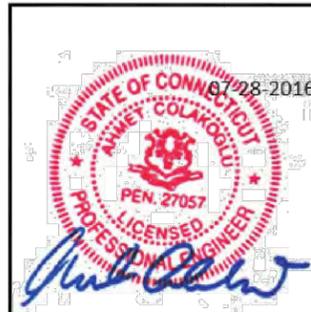
Ahmet Colakoglu, PE
CT License No: 27057



1
S2
POLE ELEVATION
 N.T.S.



2
S2
NEW POLE CONNECTION (PLAN VIEW)
 N.T.S.



Ahmet Colakoglu, PE
 CT License No: 27057

PREPARED BY:
DESTEK
 ENGINEERING
 DESTEK ENGINEERING, LLC
 1281 KENNESTONE CIRCLE
 SUITE 100
 MARIETTA, GA 30066
 TEL. NO: 770-893-0835
 ADMIN@DESTENGINEERING.COM
 LICENSE # PEC 001429

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

| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |

CTNH336C NH336/WATERBURY OMEGA_RT
 ADDRESS:
 330 BISHOP STREET,
 WATERBURY, CT 06704

DESIGNED: GW
 DRAWN: GW
 CHECKED: AC

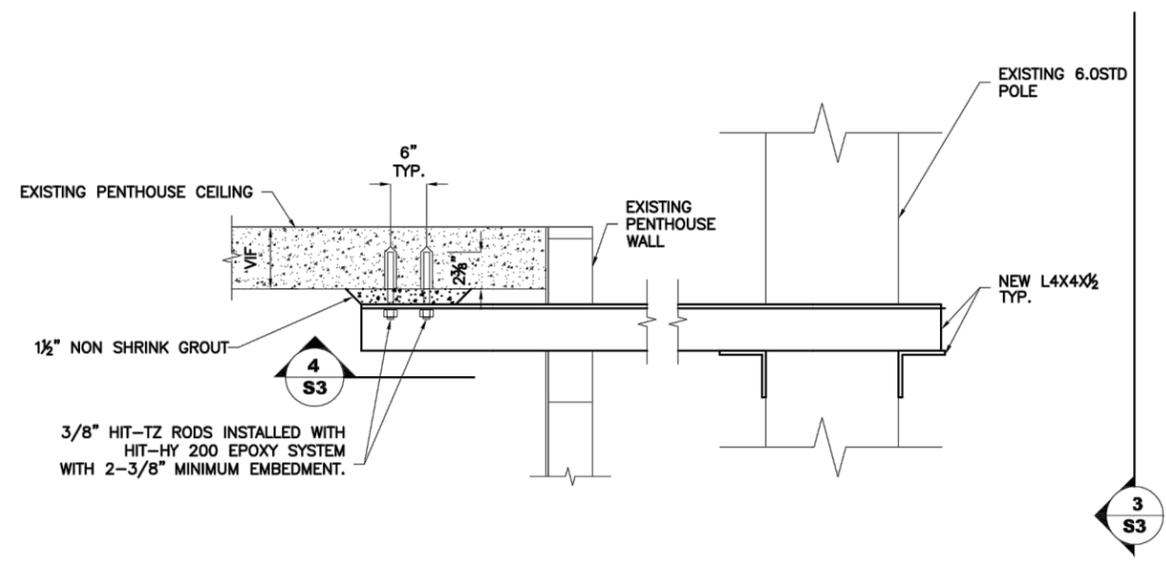
JOB #: 1664071

S2
UPGRADE
DETAILS

PREPARED BY:

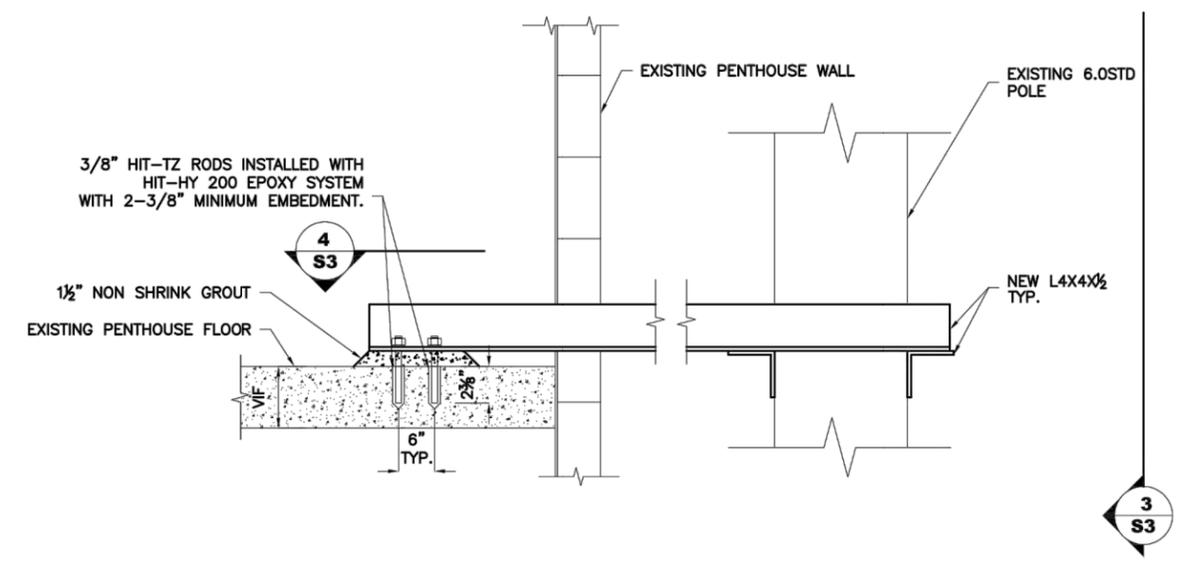


PREPARED FOR:
T-MOBILE
35 Griffin Road South
Bloomfield, CT 06002



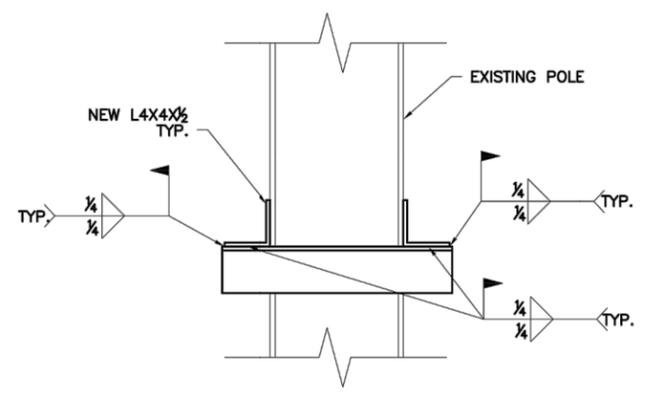
1
S3 **NEW POLE CONNECTION (PENTHOUSE CEILING)**
N.T.S.

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

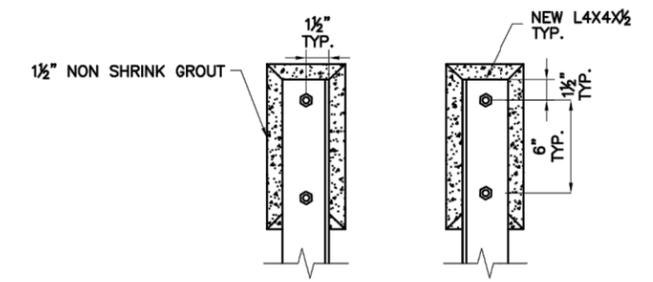


2
S3 **NEW POLE CONNECTION (PENTHOUSE FLOOR)**
N.T.S.

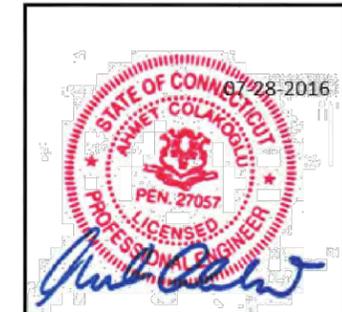
NOTES:
1. CONTRACTOR TO VERIFY THICKNESS OF CONCRETE FLOOR IS A MINIMUM OF 4"
2. CANISTER NOT SHOWN FOR CLARITY



3
S3 **NEW POLE CONNECTION DETAIL**
N.T.S.



4
S3 **NEW POLE CONNECTION DETAIL**
N.T.S.



Ahmet Colakoglu, PE
CT License No: 27057

| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |
| | | |
| | | |

CTNH336C NH336/WATERBURY OMEGA_RT
ADDRESS:
330 BISHOP STREET,
WATERBURY, CT 06704

DESIGNED: GW
DRAWN: GW
CHECKED: AC

JOB #: 1664071

S3
UPGRADE
DETAILS

Exhibit D

**STRUCTURAL ANALYSIS REPORT – UPGRADE
STEALTH CANISTER POLE AND PENTHOUSE**



Prepared For:



**35 Griffin Road South
Bloomfield, CT 06002**



Site ID: CTNH336C

Site Name: NH336/Waterbury Omega_RT

**330 Bishop Street
Waterbury, CT 06704**

July 28, 2016

Submitted By:

Atlantis Design Group, Inc.
54 Jacqueline Road, Suite #7
Waltham, Massachusetts 02452
Phone: 617-852-3611

**STRUCTURAL ANALYSIS REPORT - UPGRADE
STEALTH CANISTER POLE AND PENTHOUSE**



Prepared For:

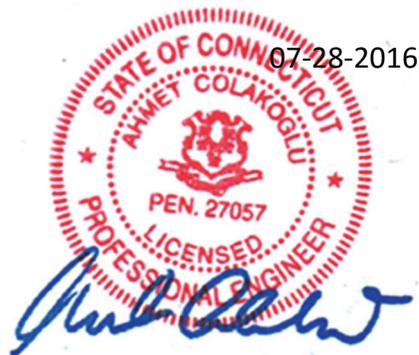
T-Mobile
35 Griffin Road South
Bloomfield, CT 06002

RESULT: Pass w/Mods

Site ID: CTNH336C
Site Name: NH336/Waterbury Omega_RT

Prepared By:

Destek Engineering, LLC
Professional Engineering Corporation
License # PEC 001429



Ahmet Colakoglu, P.E.
Connecticut Professional Engineer
License No: 27057

CONTENTS

1.0 – SUBJECT AND REFERENCES

1.1 – STRUCTURE

2.0 – EXISTING AND PROPOSED APPURTENANCES

3.0 - CODES AND LOADING

4.0 - STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING
STRUCTURES

5.0 - ANALYSIS AND ASSUMPTIONS

6.0 – RESULTS AND CONCLUSION

APPENDIX

A –PICTURES & CALCULATIONS

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

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" | |

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:

- *2005 State Building Code* with all of the adopted Addendums and Supplements.
- *Minimum Design Loads for Buildings and Other Structures SEI/ASCE 7-02*, American Society of Civil Engineers
- *Specifications for Structural Steel Buildings – Allowable Stress ANSI/AISC 335-89s1*, American National Standards Institute/American Institute for Steel Construction
- Building Classification: II
- Basic Wind Speed: 110 mph
- Exposure: B

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 otherwise noted, 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.

5.0 ANALYSIS AND ASSUMPTIONS

The structure is considered to have adequate strength for the proposed loading if the existing structural members that will be used to support the proposed equipment are structurally adequate per the applicable Code criteria or if the additions or alterations to the existing structure do not increase the force in any structural element by more than 5%, in accordance with the applicable referenced Code.

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 07/28/2016. Under controlling load combinations and as a maximum, the 6.0STD pole is stressed to **24.7%** 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 07/28/2016. Under controlling load combinations and as a maximum, the penthouse wall is stressed to **50.4%** 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 us at (770) 693-0835.

**APPENDIX A
PICTURES & CALCULATIONS**



Existing Antennas inside the Stealth Canister Pole



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 pen . All calculations in accordance with 2005 Connecticut State Building Code with all amendments and supplements

CHECK ANTENNA MOUNTS :

Wind Load per ASCE 7-02

per section 6.5.15

Location: New Haven County, Connecticut

Reference, ASCE-7-02

Input

| | | |
|--------------------------------|---|------------------------|
| Classification: | II | Table 1.5-1, Pg. 2 |
| Exposure category: | Exp := "B" | Table 6-2 pg 74 |
| | $\alpha := 7.0$ | |
| | $z_g := 1200\text{ft}$ | |
| Height at Centroid: | $z := 96\text{ft}$ | Antenna RAD Center |
| Velocity pressure coefficient: | $K_z := 2.01 \left(\frac{z}{z_g} \right)^{\frac{2}{\alpha}}$ | Table 6-3 pg 75 |
| | $K_z = 0.977$ | |
| Topographic factor: | $K_{zt} := 1.0$ | Section 6.5.7.2 pg. 30 |
| Wind directional factor: | $K_d := 0.85$ | Table 6-4 pg.76 |
| Basic wind speed: | $V_{ww} := 110 \text{ mph}$ | Figure 6-1A pg.34 |
| Importance factor: | $I := 1.0$ | Table 6-1 pg 73 |
| Gust response factor: | $G_{ww} := 0.85$ | Section 6.5.8 pg 30 |

Velocity pressure: $q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V_{ww}^2 \cdot I \cdot \text{psf} = 25.7 \cdot \text{psf}$ Equation 6-15

Force Coefficients:

Figure 6-21 Pg 74

| | | |
|---|---|---|
| for Flat surface | for $D \cdot \sqrt{q_z} > 2.5$ | for $D \cdot \sqrt{q_z} < 2.5$ |
| $C_{F_flat} := \begin{pmatrix} 1 & 1.3 \\ 7 & 1.4 \\ 25 & 2 \end{pmatrix}$ | $C_{F_round_1} := \begin{pmatrix} 1 & 0.5 \\ 7 & 0.6 \\ 25 & 0.7 \end{pmatrix}$ | $C_{F_round_2} := \begin{pmatrix} 1 & 0.7 \\ 7 & 0.8 \\ 25 & 1.2 \end{pmatrix}$ |

Loads on Antennas (RV4PX310R):

Dimensions: $H := 99.7\text{in}$ $W := 13.9\text{in}$ $D := 8.2\text{in}$ $W_{t_{ant}} := 80\text{lb}$

$$C_{f_F} := \text{linterp}\left(C_{F_flat}^{(0)}, C_{F_flat}^{(1)}, \frac{H}{W}\right) = 1.406 \quad \text{Figure (6-21), Pg 74}$$

$$C_{f_S} := \text{linterp}\left(C_{F_flat}^{(0)}, C_{F_flat}^{(1)}, \frac{H}{D}\right) = 1.572 \quad \text{Figure (6-21), Pg 74}$$

$$F_{rv4p} := q_z \cdot G \cdot C_{f_F} \cdot H \cdot W = 295.7\text{ lbf} \quad \text{Equation (6-28), Pg 29}$$

$$S_{rv4p} := q_z \cdot G \cdot C_{f_S} \cdot H \cdot D = 195.1\text{ lbf} \quad \text{Equation (6-28), Pg 29}$$

Loads on Generic Style 1A - Twin PCS:

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

$$C_{f_F} := \text{linterp}\left(C_{F_flat}^{(0)}, C_{F_flat}^{(1)}, \frac{H}{D}\right) = 1.329 \quad \text{Figure (6-21), Pg 74}$$

$$C_{f_S} := \text{linterp}\left(C_{F_flat}^{(0)}, C_{F_flat}^{(1)}, \frac{H}{W}\right) = 1.309 \quad \text{Figure (6-21), Pg 74}$$

$$F_{B12} := q_z \cdot G \cdot C_{f_F} \cdot H \cdot W = 13.791\text{ lbf} \quad \text{Equation (6-28), Pg 29}$$

$$S_{B12} := q_z \cdot G \cdot C_{f_S} \cdot H \cdot D = 7.498\text{ lbf} \quad \text{Equation (6-28), Pg 29}$$

Loads on Generic Style 1B - Twin AWS:

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

$$C_{f_F} := \text{linterp}\left(C_{F_flat}^{(0)}, C_{F_flat}^{(1)}, \frac{H}{D}\right) = 1.317 \quad \text{Figure (6-21), Pg 74}$$

$$C_{f_S} := \text{linterp}\left(C_{F_flat}^{(0)}, C_{F_flat}^{(1)}, \frac{H}{W}\right) = 1.297 \quad \text{Figure (6-21), Pg 74}$$

$$F_{B12} := q_z \cdot G \cdot C_{f_F} \cdot H \cdot W = 9.7\text{ lbf} \quad \text{Equation (6-28), Pg 29}$$

$$S_{B12} := q_z \cdot G \cdot C_{f_S} \cdot H \cdot D = 3.845\text{ lbf} \quad \text{Equation (6-28), Pg 29}$$

Loads on Antenna Pipe (36" Stealth Canister):

Dimensions: $Dia := 36\text{in}$ $H := 30\text{ft}$ $W := 500\text{lb}$

$$C_f := \text{linterp}\left(C_{F_round_1}^{(0)}, C_{F_round_1}^{(1)}, \frac{H}{Dia}\right) = 0.617 \quad \text{Figure (6-21), Pg 74}$$

$$C_f := \begin{cases} C_f & \text{if } C_f \leq 1.2 \\ 1.2 & \text{otherwise} \end{cases} = 0.617 \quad \text{Figure (6-21), Pg 74}$$

$$F_{Pipe} := q_z \cdot G \cdot C_f \cdot Dia = 40.4\text{ plf} \quad \text{Equation (6-28)}$$

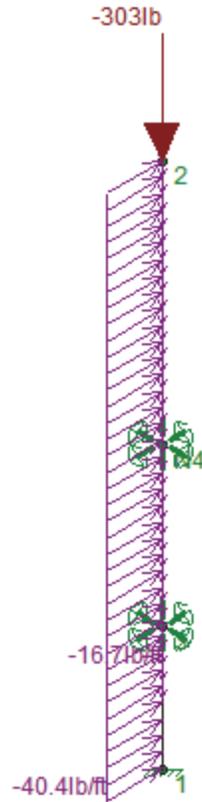
RISA MODEL OF POLE:

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

POLE



LOADING



CODE CHECK



SHEAR CHECK



The maximum usage is 24.7%

| Shear Check | |
|-------------|---------|
| Black | No Calc |
| Red | > 1.0 |
| Purple | .90-1.0 |
| Green | .75-.90 |
| Cyan | .50-.75 |
| Blue | 0.0-.50 |

Check the Penthouse Walls:

Wind Pressure:

Wind Pressure on Penthouse Walls:

$$p_{\text{parapet}} := (q_z)$$

Effective Width:

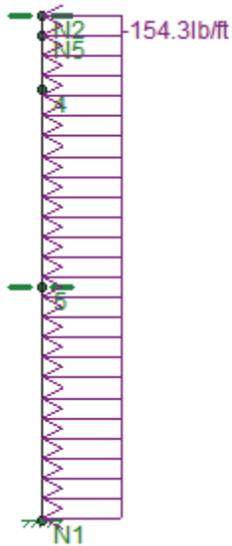
$$b := 6\text{ft}$$

Distributed Wind Load on Penthouse Walls:

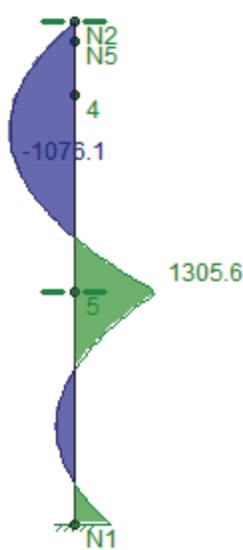
$$W_{L_{\text{parapet}}} := p_{\text{parapet}} \cdot b = 154.3 \cdot \text{plf}$$

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

$M_{max} := 1305.61bf \cdot ft$ Maximum moment due to appurtenances and pipe

$P_{mount} := 01bf$ Maximum force due to appurtenances and pipe

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

$$f_b := \frac{M_{max}}{S} = 20.4 \text{ psi}$$

$\rho_{masonry} := 115pcf$

$P_{masonry} := \rho_{masonry} \cdot b \cdot d \cdot H_{wall} = 7973.3331bf$ Weight of masonry

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

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

$$f_{masonry} := f_b - 0.6 \cdot f_a = 12.094 \text{ psi}$$

Compare the stress calculated from service loads to allowable stress as defined by ACI 530-05, Table 2.2.3.2. Assuming masonry cement and that the stress is normal to the bed joints.

$f_{allow} := 24psi$

Check := "Penthouse wall is adequate" if $f_{allow} \geq f_{masonry}$
 "Penthouse wall is not adequate" otherwise

Check = "Penthouse wall is adequate"

$$\frac{f_{masonry}}{f_{allow}} = 50.394\%$$

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. 2005 CONNECTICUT BUILDING CODE WITH ALL AMENDMENTS & SUPPLEMENT
b. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-02, AMERICAN SOCIETY OF CIVIL ENGINEERS
c. STEEL CONSTRUCTION MANUAL, 9TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION
- 1.2 LOADS AND DESIGN CRITERIA
a. WIND LOADING: V: 110 MPH, EXPOSURE B, OCCUPANCY CATEGORY II
b. EQUIPMENT AS LISTED IN STRUCTURAL ANALYSIS REPORT PREPARED BY DESTEK ENGINEERING, LLC, DATED 07/28/2016.
- 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 335-89s1"
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 5/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.

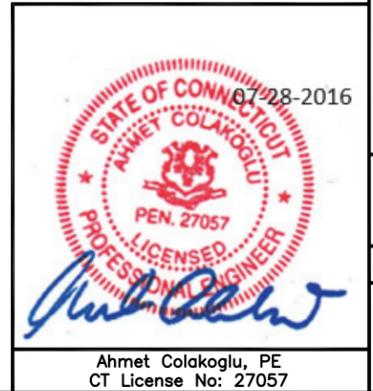
PREPARED BY:



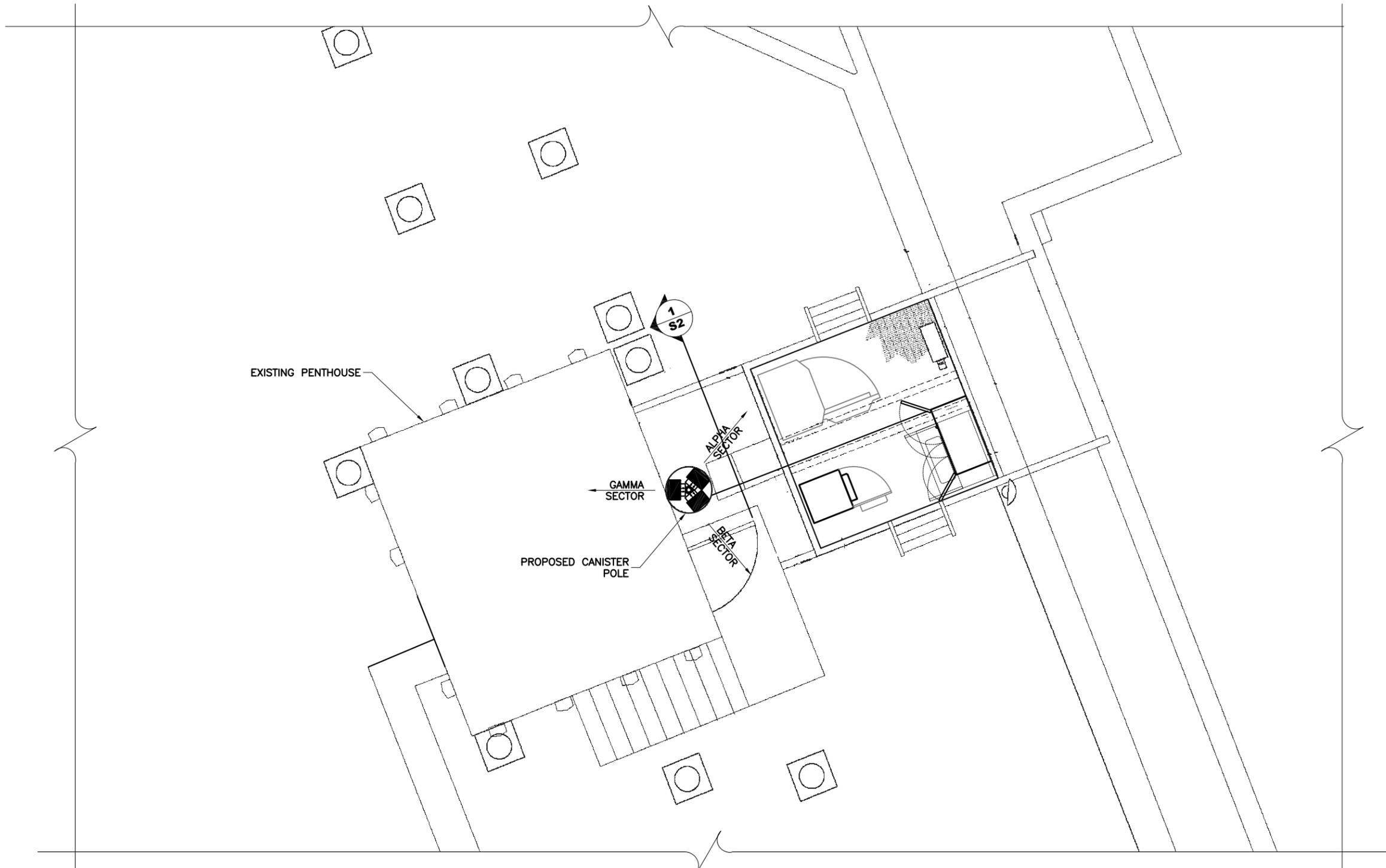
PREPARED FOR:
T-MOBILE
35 Griffin Road South
Bloomfield, CT 06002

| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |
| | | |
| | | |
| | | |

CTNH336C NH336/WATERBURY OMEGA_RT
330 BISHOP STREET,
WATERBURY, CT 06704
ADDRESS:



DESIGNED: GW
DRAWN: GW
CHECKED: AC
JOB #: 1664071
S1A
NOTES &
SITE PLAN



1
S1B PARTIAL ROOF PLAN
N.T.S.

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

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

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

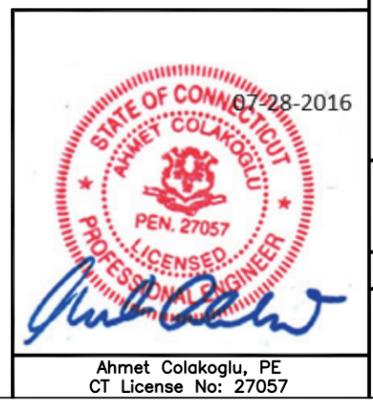
| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |
| | | |
| | | |

CTNH336C NH336/WATERBURY OMEGA_RT
ADDRESS:
330 BISHOP STREET,
WATERBURY, CT 06704

DESIGNED: GW
DRAWN: GW
CHECKED: AC

JOB #: 1664071

S1B
NOTES &
SITE PLAN



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@DESTKEENGINEERING.COM
LICENSE # PEC 001429

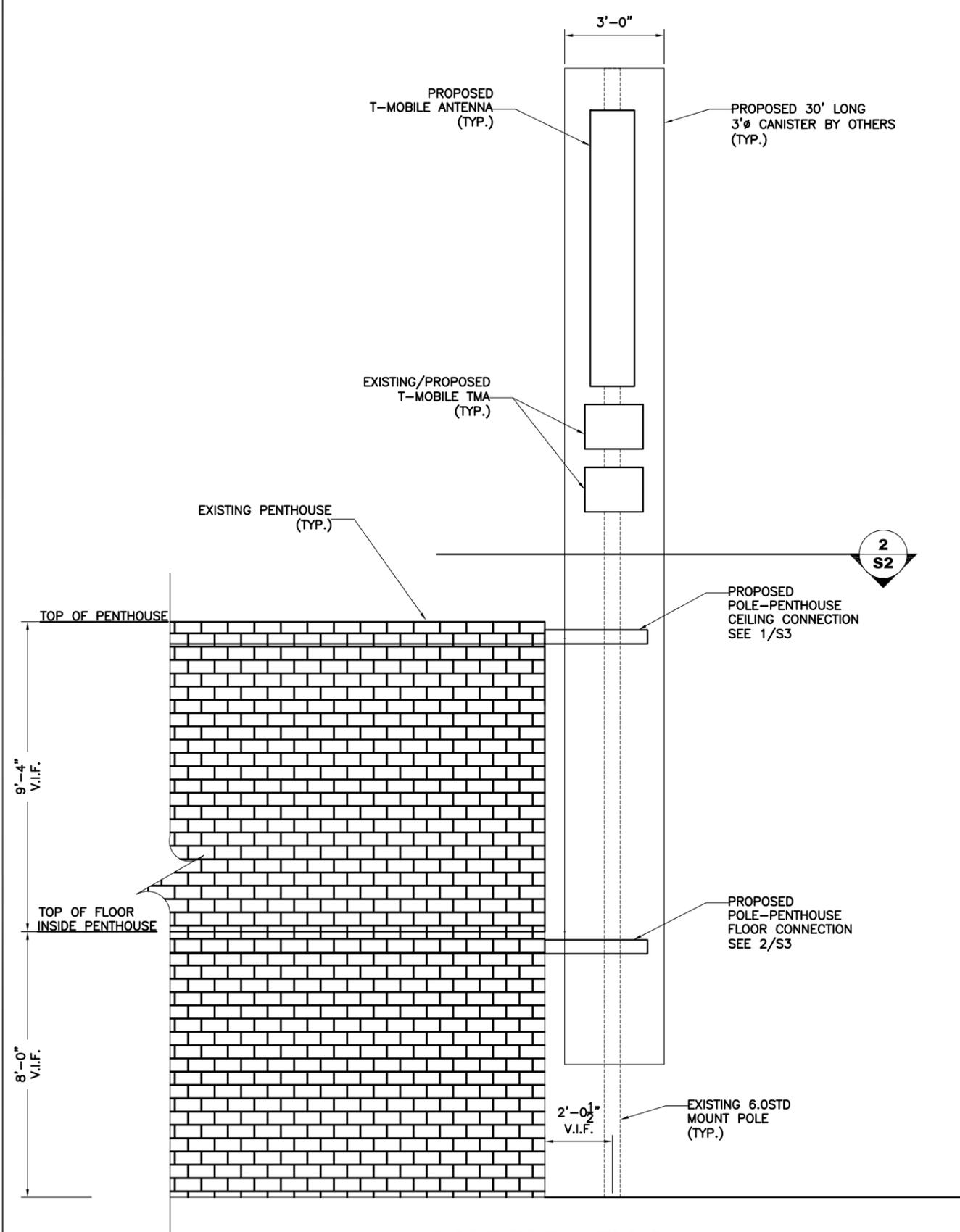
PREPARED FOR:
T-MOBILE
35 Griffin Road South
Bloomfield, CT 06002

| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |

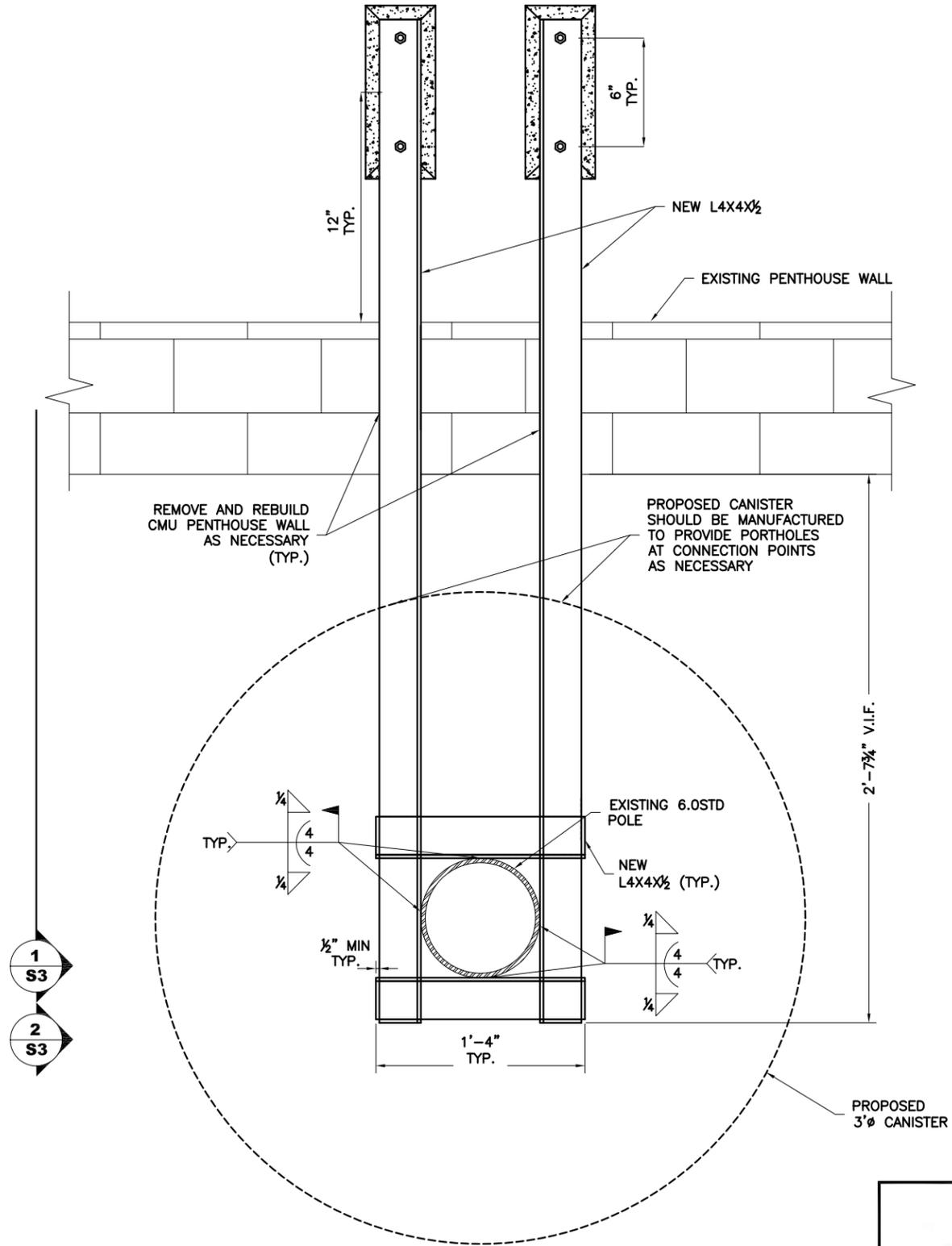
CTNH336C NH336/WATERBURY OMEGA_RT
330 BISHOP STREET,
WATERBURY, CT 06704
ADDRESS:

DESIGNED: GW
DRAWN: GW
CHECKED: AC
JOB #: 1664071

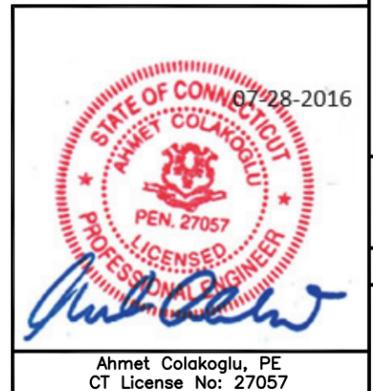
S2
UPGRADE
DETAILS



1
S2 **POLE ELEVATION**
N.T.S.



2
S2 **NEW POLE CONNECTION (PLAN VIEW)**
N.T.S.



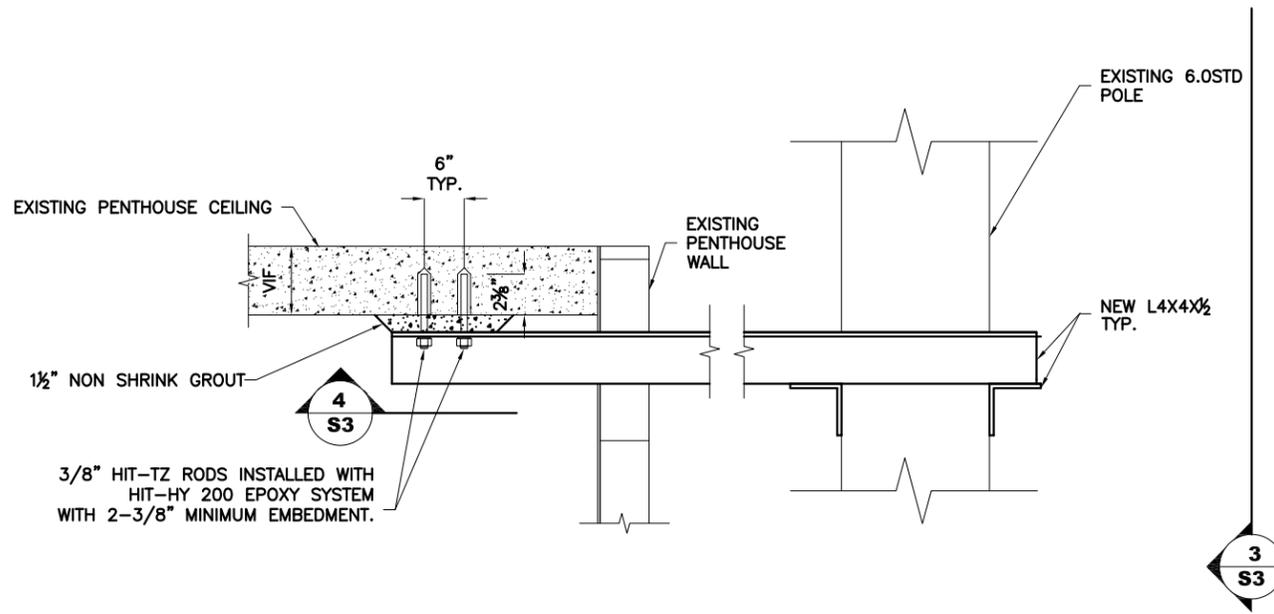
Ahmet Colakoglu, PE
CT License No: 27057

| NUM | DATE | DESCRIPTION: |
|-----|----------|-------------------------|
| A | 07/28/16 | ISSUED FOR CONSTRUCTION |

| | |
|-----------------------------------|---|
| CTNH336C NH336/WATERBURY OMEGA_RT | 330 BISHOP STREET, WATERBURY, CT 06704 |
| ADDRESS: | |

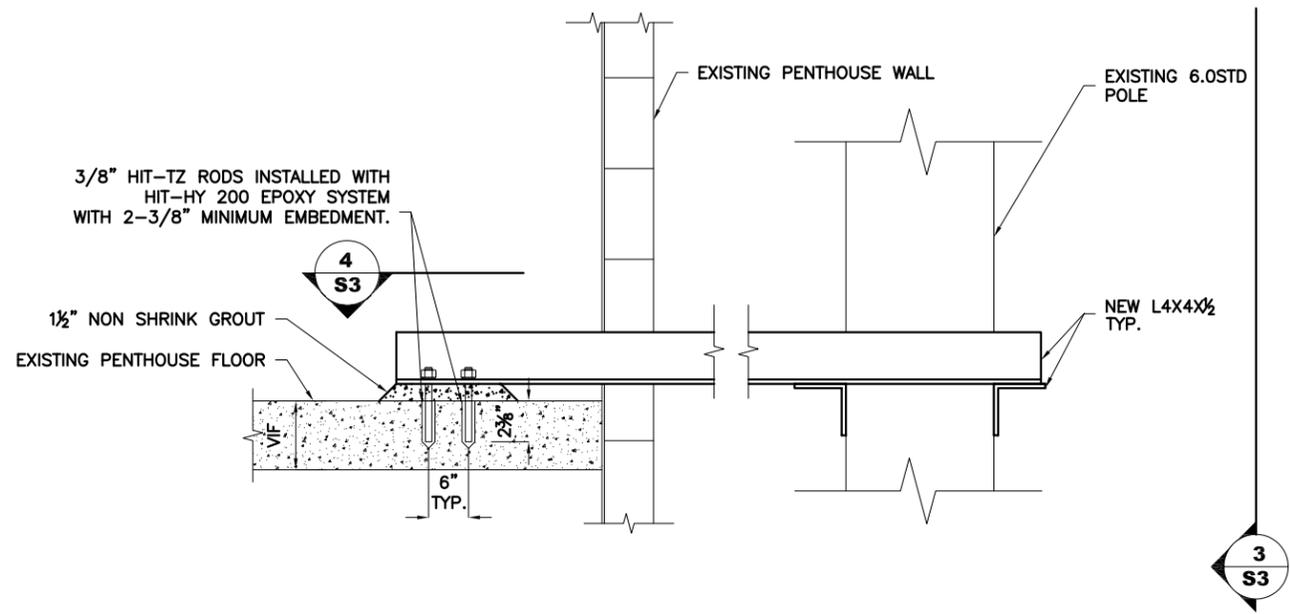
| |
|--------------|
| DESIGNED: GW |
| DRAWN: GW |
| CHECKED: AC |

| |
|---|
| JOB #: 1664071 |
| S3 UPGRADE DETAILS |



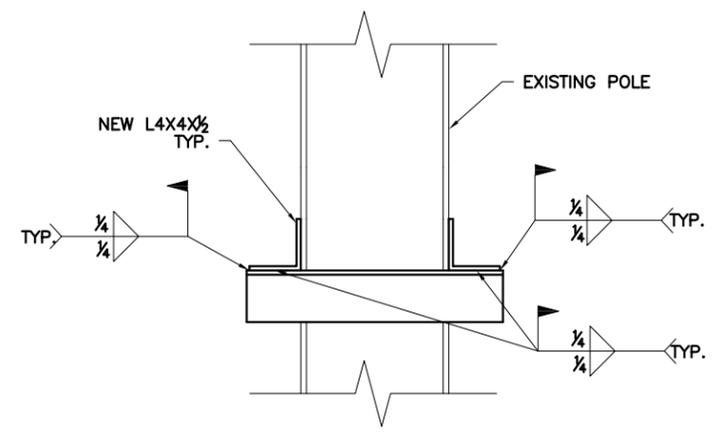
1
S3 **NEW POLE CONNECTION (PENTHOUSE CEILING)**
N.T.S.

- 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

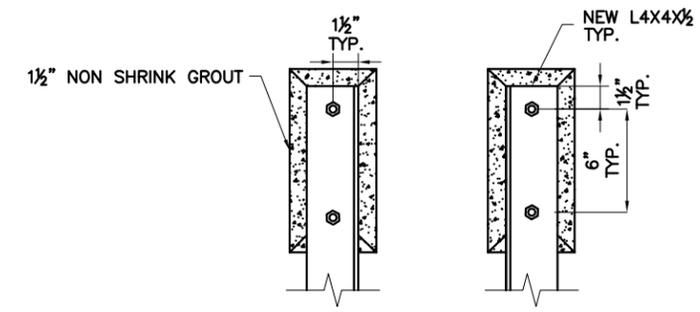


2
S3 **NEW POLE CONNECTION (PENTHOUSE FLOOR)**
N.T.S.

- NOTES:
 1. CONTRACTOR TO VERIFY THICKNESS OF CONCRETE FLOOR IS A MINIMUM OF 4"
 2. CANISTER NOT SHOWN FOR CLARITY



3
S3 **NEW POLE CONNECTION DETAIL**
N.T.S.



4
S3 **NEW POLE CONNECTION DETAIL**
N.T.S.

07-28-2016

Ahmet Colakoglu

Ahmet Colakoglu, PE
 CT License No: 27057

Exhibit E

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNH336C

Waterbury_Bishop_St
330 Bishop Street
Waterbury, CT 06704

August 26, 2016

EBI Project Number: 6216003817

| Site Compliance Summary | |
|--|------------------|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general public allowable limit: | 11.60 % |

August 26, 2016

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CTNH336C – Waterbury_Bishop_St**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **330 Bishop Street, Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **330 Bishop Street, Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

- 7) For all radios there are additional cabling losses accounted for. For each RF path the following losses were calculated. 0.91 dB of additional cable loss for all ground mounted 700 MHz Channels, 1.61 dB of additional cable loss for all ground mounted 1900 MHz channels and 1.66 dB of additional cable loss for all ground mounted 2100 MHz channels. This is based on manufacturers Specifications for 54 feet of 7/8" coax cable on each path.
- 8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antennas used in this modeling are the **Commscope RV4PX310R** for 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Commscope RV4PX310R** has a maximum gain of **15.05 dBd** at its main lobe at 1900 MHz and 2100 MHz and a maximum gain of **13.85 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerline of the proposed antennas is **96 feet** above ground level (AGL).
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 13) All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

| Sector: | A | Sector: | B | Sector: | C |
|--------------------|--|--------------------|--|--------------------|--|
| Antenna #: | 1 | Antenna #: | 1 | Antenna #: | 1 |
| Make / Model: | Commscope RV4PX310R | Make / Model: | Commscope RV4PX310R | Make / Model: | Commscope RV4PX310R |
| Gain: | 15.05 dBd | Gain: | 15.05 dBd | Gain: | 15.05 dBd |
| Height (AGL): | 96 | Height (AGL): | 96 | Height (AGL): | 96 |
| Frequency Bands | 1900 MHz(PCS) / 2100 MHz (AWS) / 700 MHz | Frequency Bands | 1900 MHz(PCS) / 2100 MHz (AWS) / 700 MHz | Frequency Bands | 1900 MHz(PCS) / 2100 MHz (AWS) / 700 MHz |
| Channel Count | 11 | Channel Count | 11 | Channel Count | 11 |
| Total TX Power(W): | 450 | Total TX Power(W): | 450 | Total TX Power(W): | 450 |
| ERP (W): | 9,818.49 | ERP (W): | 9,818.49 | ERP (W): | 9,818.49 |
| Antenna A1 MPE% | 4.66 | Antenna B1 MPE% | 4.66 | Antenna C1 MPE% | 4.66 |

| Site Composite MPE% | |
|---------------------------|----------------|
| Carrier | MPE% |
| T-Mobile (Per Sector Max) | 4.66 % |
| Verizon Wireless | 6.94 % |
| Site Total MPE %: | 11.60 % |

| | |
|--------------------------|----------------|
| T-Mobile Sector A Total: | 4.66 % |
| T-Mobile Sector B Total: | 4.66 % |
| T-Mobile Sector C Total: | 4.66 % |
| Site Total: | 11.60 % |

| T-Mobile _per sector | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density ($\mu\text{W}/\text{cm}^2$) | Frequency (MHz) | Allowable MPE ($\mu\text{W}/\text{cm}^2$) | Calculated % MPE |
|------------------------------|------------|-------------------------|---------------|---|-----------------|---|------------------|
| T-Mobile AWS - 2100 MHz LTE | 2 | 1,309.64 | 96 | 11.63 | AWS - 2100 MHz | 1000 | 1.16% |
| T-Mobile PCS - 1900 MHz LTE | 2 | 1,324.80 | 96 | 11.76 | PCS - 1900 MHz | 1000 | 1.18% |
| T-Mobile AWS - 2100 MHz UMTS | 2 | 654.82 | 96 | 5.81 | AWS - 2100 MHz | 1000 | 0.58% |
| T-Mobile PCS - 1950 MHz UMTS | 2 | 662.40 | 96 | 5.88 | PCS - 1950 MHz | 1000 | 0.59% |
| T-Mobile PCS - 1950 MHz GSM | 2 | 662.40 | 96 | 5.88 | PCS - 1950 MHz | 1000 | 0.59% |
| T-Mobile 700 MHz LTE | 1 | 590.37 | 96 | 2.62 | 700 MHz | 467 | 0.56% |
| | | | | | | Total: | 4.66% |

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

| T-Mobile Sector | Power Density Value (%) |
|------------------------------|-------------------------|
| Sector A: | 4.66 % |
| Sector B: | 4.66 % |
| Sector C: | 4.66 % |
| T-Mobile Per Sector Maximum: | 4.66 % |
| | |
| Site Total: | 11.60 % |
| | |
| Site Compliance Status: | COMPLIANT |

The anticipated composite MPE value for this site assuming all carriers present is **11.60%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.