

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- SOj-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-SOj-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 PLANING

CITY HALL ANNEX 26 Kendrick Avenue WATERBURY, CONNECTICUT 06702

203-574-6818 Fax 203-346-394

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.

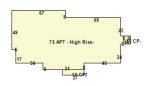
Dennis Brown, Land Use Officer

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		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		Valid sale
11/9/2001	1115000	Other No	10
1/1/1971	21000		No

## **Building Information:**

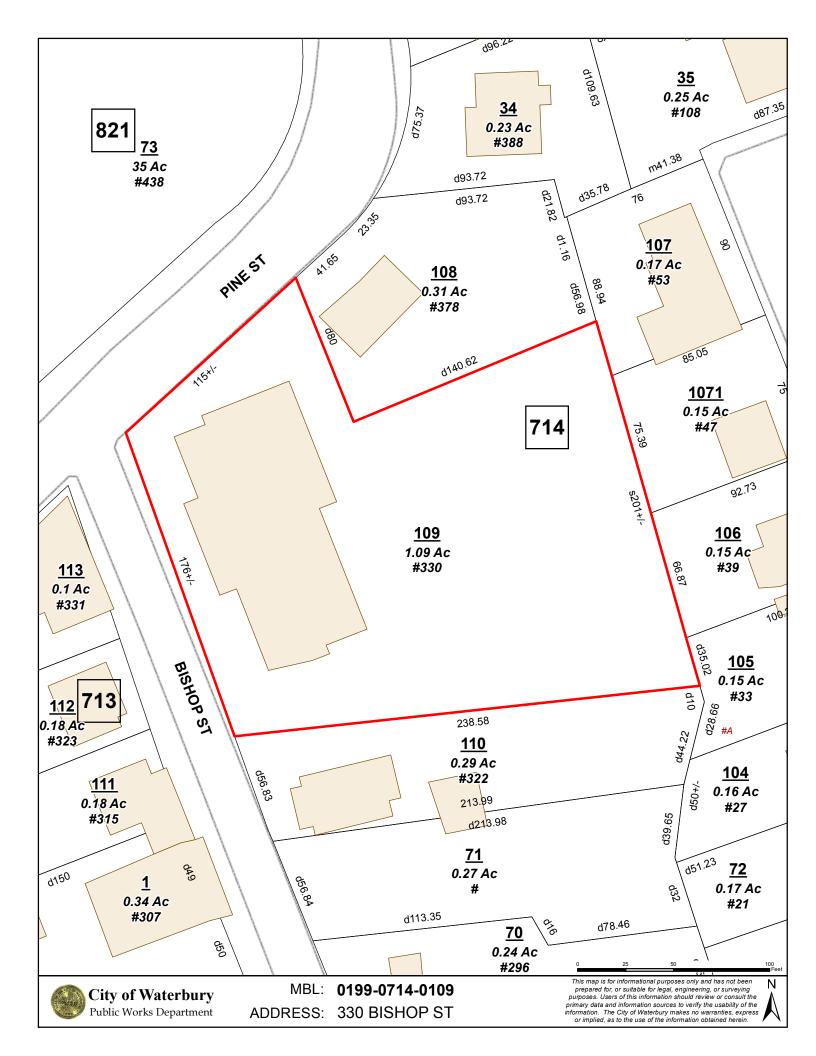
Bldg Style:		Living Area:	60956sq.ft
Construction:	Average	Year Built:	1972
Exterior Wall:	Concrete Block	Stories:	7
Roof Cover:		Heating:	Package Unit
Condition:	Average	Heat Fuel:	
Rooms:	0	Bedrooms:	0
Full Baths:	0	Half Baths:	0

## Outbuilding Information:

Туре	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

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

## Close



# Exhibit C

# T - Mobile -

# T-MOBILE NORTHEAST LLC

SITE #: CTNH336C

SITE NAME: WATERBURY BISHOP ST

SITE ADDRESS: 330 BISHOP STREET WATERBURY, CT 06704 WIRELESS BROADBAND FACILITY **CONSTRUCTION DRAWINGS** (794DB CONFIGURATION)

## VICINITY MAP



### DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

RECLAIMED WATER

CALL THREE WORKING DAYS PRIOR TO DIGGING SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT AL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

FLECTRIC - RED GAS/OIL - YELLOW PROPOSED EXCAVATION - WHITE TEL/CATV - ORANGE

### CALL 800 922 4455, OR 811

UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR

3. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS. AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT

THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY MUNICIPAL AND LITHITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK, THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.

GENERAL NOTES

- THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE
- . THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN
- THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
- . THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE
- 5. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT
- 7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS

- 9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY
- 11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY
- 12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT. DEBRIS. RUBBISH AND REMOVE FOUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY, PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE
- 13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFFTY REGULATIONS.
- 14. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
- 15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
- 16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
- 17. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT - UPGRADE, STEALTH CANISTER POLE AND PENTHOUSE", PREPARED BY ATLANTIS DESIGN GROUP, INC., "T-MOBILE SITE ID CTNH336C", DATED JULY 28, 2016.

## SITE INFORMATION

SITE NUMBER: SITE NAME: SITE ADDRESS:

WATERBURY\_BISHOP\_ST

330 BISHOP STREET WATERBURY, CT 06704

LAT./LONG.: JURISDICTION

TOWN OF WATERBURY, CT

N 41.56660 / W -73.03825

PROPERTY OWNER:

WATERBURY OMEGA LLC ATTN: MORRIS SCHWARTZ

## PROJECT SUB-CONTRACTORS

T-MORILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692-7100

PROJECT MANAGER

LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434-5237

A&E:

SHEET

ATLANTIS DESIGN GROUP INC. 3210 MAIN CAMPUS DRIVE LEXINGTON, MA 02421 (617)-852-3611

## CODE COMPLIANCE

#### CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT 2011 NATIONAL FLECTRICAL CODE

CONSTRUCTION TYPE: 2B

USE GROUP:

## TITLE SHEET N-1 GENERAL AND ELECTRICAL NOTES A-1 SITE PLAN ELEVATION A-3 DETAILS GROUNDING AND COAX/FIBER DIAGRAM GROUNDING DETAILS S1A NOTES & SITE PLAN S1B NOTES & SITE PLAN UPGRADE DETAILS UPGRADE DETAILS

SHEET INDEX

DESCRIPTION

# T - Mobile-

T-MOBILE NORTHEAST, LLC

35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 OFFICE: (860) 692-7100 FAX:(860) 692-7159

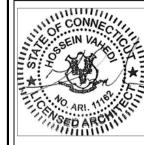
# TLANTIS DESIGN GROUP, INC.

3210 MAIN CAMPUS DRIVE LEXINGTON, MA 02421 hone number: 617–852–3611 x Number : 781–742–2247

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PROJECT NO:	CTNH336C
DRAWN BY:	FG
CHECKED BY:	KM



PROFESSIONAL SEAL

THIS DOCUMENT IS THE CREATION. DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE, ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED

### SITE NUMBER CTNH336C

WATERBURY\_BISHOP\_ST

SITE ADDRESS 330 BISHOP STREET WATERBURY, CT 06704

SHEET TITLE

TITLE SHEET

SHEET NUMBER

| - '

### **ELECTRICAL NOTES:**

- 1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS. AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
- B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH
- C SUBMIT AS-BUILT DRAWINGS OPERATING AND MAINTENANCE
- D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION
  REQUIRED FOR THE WORK OF THIS CONTRACT, FOR SLAB AREA OF PENETRATION PRIOR TO PERFORMING WORK COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
  E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL
- FRAMING SUPPORTS, AND BASES FOR CONDUIT AND FOUIPMENT PROVIDED OR INSTALLED LINDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
- . MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES. CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION
- 2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS IT IS CONSIDERED SUFFICIENT MATERIAL AND FOUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR I SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS

### GENERAL REQUIREMENTS

- 1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL
- 2 THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING
- 3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED FOUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY
- 4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE FOUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
- A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL,
  MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING,
  OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
- B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
- A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS. PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK
- B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES
  ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE
- D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.

  E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR
- SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER, CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT.
DURING THAT PERIOD. MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS

- 1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE
- WORK.
  2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

#### COORDINATION AND SUPERVISION

 CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CFILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS, IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE

- 1 AS-RUILT DRAWINGS.
- A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
- A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, FOUIPMENT AND SYSTEMS
- B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

#### CUTTING AND PATCHING

- . PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING
- REQUIRED TO COMPLETE THE WORK.

  2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

#### TESTS, INSPECTION AND APPROVAL

- . BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE,
- 2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS. WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

#### SPECIAL REQUIREMENTS

- 1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS DO NOT WITHOUT THE OWNER'S WRITTEN PERMISSION.
- 2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN, ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

#### GROUNDING

- 1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON
- CONDUIT/GROUNDING RISER. 2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL VERIEY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE
- GROUNDING ELECTRODE CONDUCTOR (GEC).

  3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION ERMINATIONS, SIZED AS REQUIRED.
- 4. USE 1 HOLE. CRIMP TYPE. BURNDY COMPRESSIONS ERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS
- 5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

- ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
- A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND. TO BE IN SCH 40 PVC.

  B. EXTERIOR. ABOVE GROUND POWER CONDUITS TO BE
- GALVANIZED RIGID STEEL (RGS).
  C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO
- D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED
- ON THIS PROJECT.

  E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T—MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
- F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS G. MINIMUM SIZE CONDUIT TO BE 34" TRADE SIZE
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS. H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
- I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC, BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND
- K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.

- RACEWAYS CONT'D
  L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS. CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR
  - M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS
- N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND
- O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
- P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS,

#### WIRES AND CABLES

- 1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO RID
- 2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR 3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/
- THHN INSULATION, EXCEPT AS NOTED.

  4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO.
- 12AWG, ALL WIRE NO. 8 AND LARGER TO BE STRANDED. 5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES, CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE, CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE, ALL CONTROL WIRE TO BE 600VOLT RATED.
- 6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED
- 7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS: LENGTH (FT.) HOME RUN WIRE SIZE NO. 12 NO. 10
- 101 TO 150 8. VOLTAGE DROP IS NOT TO EXCEED 3%.
- MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS,
   PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

## 1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

- DISCONNECT SWITCHES AND FUSES

  1. DISCONNECT SWITCHES TO BE VOLTAGE—RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE
- 2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
- 3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION. NEMA 3R FOR EXTERIOR INSTALLATION.
- 4. DISCONNECT SWITCHES TO BE MANUFACTURED BY A. GENERAL ELECTRIC COMPANY
- 5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.
- 1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON 2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES
- MUST MATCH IN TYPE AND RATING.

  3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR
- RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.

  4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS
- A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF
- 60A, USED FOR INITIAL FUSING.

  B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE. UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND

## **GENERAL NOTES:**

#### INTENT

- THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS
   ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
  2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE
- FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
- 3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR
  AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT 4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF
- THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.

  5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK, NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE DWNER FOR CONSIDERATION BEFORE THE CONTRACTOR
- PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.

  2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING
- 3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED OR ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS

#### CONTRACTS AND WARRANTIES

- 1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
- 2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

- THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK, THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
- FXTFRIOR A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM
- ADJACENT SURFACES.

  C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE. 3 INTERIOR
- A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING. B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM
- ADJACENT SURFACES.
  C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

#### RELATED DOCUMENTS AND COORDINATION

- 1. GENERAL CAPPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

   100 DRAWINGS. SHOP DRAWINGS
- I. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR
- 2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE

#### PRODUCTS AND SUBSTITUTIONS

- 1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS
- 2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS,
  PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR
  SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT

#### QUALITY ASSURANCE

ALTH ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL,
STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT
NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

### ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT, THIS PROJECT MANAGER WILL DEVELOP A MASTER

PROJECT. HIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.

2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR FACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED

- FOR SUBSTANTIAL COMPLETION OF THE WORK.

  3. PRIOR TO COMMENCINE CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
- SUBCONTRACTED).

  4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
- 5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY
  REQUIREMENTS IN THEIR AGREEMENT.
- 6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE
- 7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.

  8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

#### INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.

ADJ

AGL

BTS CAB

CLG

CONC

CONT

D₩G

ELEC

ELEV

EQ

(E) EXT

FF

GALV GC GRND

LG MAX

MECH

MW MFR

MGB

MIN MTL

(N) NIC NTS

OC

OPP

(P) PCS PPC SF SHT SIM SS STL TOC

TOM TYP VIF UON

EQUIP EGB

ΕÁ

DIA OR Ø

APPROX

THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES. 3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE

**ABBREVIATIONS** 

ADJUSTABLE

APPROXIMATE

CEILING

CONCRETE

DIAMETER

DRAWING

ELECTRICAL

ELEVATION

FXISTING

EXTERIOR

GAUGE

GROUND

MINIMUM

METAL

LONG MAXIMUM

MECHANICAL

MICROWAVE DISH

NOT IN CONTRACT

PERSONAL COMMUNICATION SYSTEM

POWER PROTECTION CABINET

UNLESS OTHERWISE NOTED

WELDED WIRE FABRIC

NOT TO SCALE

SQUARE FOOT

STAINLESS STEEL

TOP OF CONCRETE

TOP OF MASONRY

TYPICAL VERIFY IN FIELD

ON CENTER

OPPOSITE

PROPOSED

SHFFT

STEEL

SIMILAR

MASTER GROUND BAR

MANUFACTURER

GAI VANIZED

FINISHED FLOOR

GENERAL CONTRACTOR

FACH

CONTINUOUS

ABOVE GROUND LINE

BASE TRANSMISSION STATION CABINET

EQUAL EQUIPMENT EQUIPMENT GROUND BAR

# OF CONNEC SEIN VAL 10 ARI. 11167 SEDARONI

DEPT. DATE APP'D

PROJECT NO:

DRAWN BY

CHECKED BY

ZONING

CONSTR.

SITE AC.

T - Mobile -

T-MOBILE NORTHEAST, LLC

35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002

OFFICE: (860) 692-7100 FAX:(860) 692-7159

TLANTIS DESIGN

ne number: 617-852-3611 Number : 781-742-2247

A

REVISIONS

CTNH336C

GROUP, INC.

3210 MAIN CAMPUS DRIVE LEXINGTON, MA 02421

SUBMITTALS

FINAL CD

DESCRIPTION

08/16/16

PROFESSIONAL SEAL

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> SITE NUMBER CTNH336C

SITE NAME WATERBURY\_BISHOP\_ST

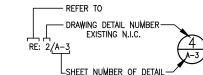
SITE ADDRESS 330 BISHOP STREET WATERBURY, CT 06704

> SHEET TITLE **GENERAL** AND ELECTRICAL NOTES

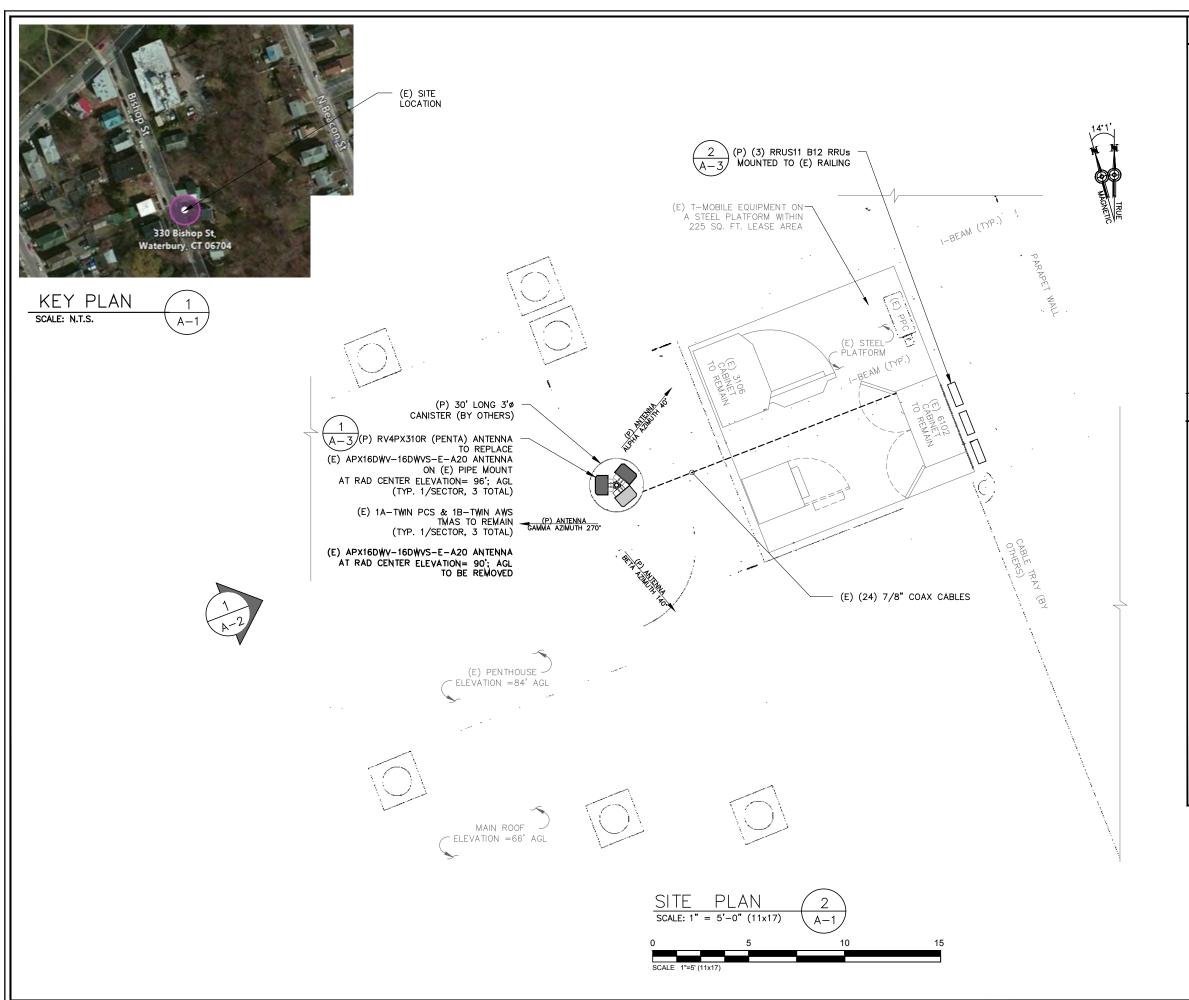
> > SHEET NUMBER

ARCHITECTURAL SYMBOLS STORAGE 38

DETAIL REFERENCE KEY



(3)-



## GENERAL SITE NOTES

- 1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS DESIGN GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.
- 2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.
- 3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.
- 4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS
- 5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.
- 6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.
- 7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

## SITE LEGEND

<del></del>	SITE PROPERTY LINE
	STREET OR ROAD
— x — x — x —	CHAIN LINK FENCE
<b></b> -	OPAQUE WOODEN FENCE
	BOARD ON BOARD FENCE
	DECIDUOUS TREES/SHRUBS
	EVERGREEN TREES/SHRUBS
	TREE LINE
×	UTILITY POLE
(E)	EXISTING
(N)	NEW
(P)	PROPOSED
(F)	FUTURE
<del></del>	PROP. LTE ANTENNA
6	PROP. UMTS/GSM ANTENNA
<del></del>	EX. GSM ANTENNA
***	EX. UMTS ANTENNA



T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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FAX:(860) 692-7159



SUBMITTALS				
DATE DESCRIPTION REV				
08/09/16	8/09/16 ISSUED FOR REVIEW			
08/16/16	FINAL CD	0		

DEPT.	DATE	APP'D	revisions
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CTNH336C
DRAWN BY:	FG
CHECKED BY:	KM



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> SITE NUMBER CTNH336C

SITE NAME WATERBURY\_BISHOP\_ST

SITE ADDRESS 330 BISHOP STREET WATERBURY, CT 06704

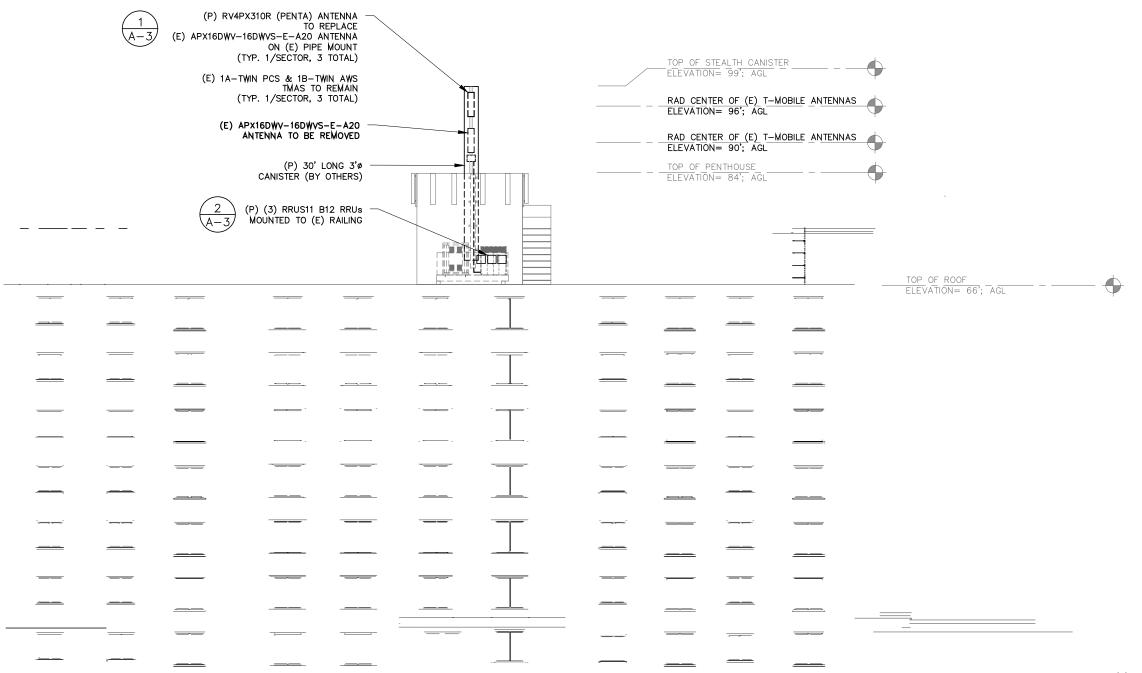
SHEET TITLE

SITE PLAN

SHEET NUMBER

**A-**1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS DOCUMENT ENTITLED,
"STRUCTURAL ANALYSIS REPORT — UPGRADE, STEALTH
CANISTER POLE AND PENTHOUSE", PREPARED BY ATLANTIS
DESIGN GROUP, INC., "T-MOBILE SITE ID CTNH336C",
DATED JULY 28, 2016.



\_\_\_\_\_(E) GRADE ELEVATION= 0' AGL

WEST ELEVATION SCALE: 1"= 16'-0"



T - Mobile -

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Fax Number: 781–742–2247

	SUBMITTALS	
DATE	DESCRIPTION	REVISIO
08/09/16 08/16/16	ISSUED FOR REVIEW	A
08/16/16	FINAL CD	0

DEPT.	DATE	APP'D	revisions
RFE			
RF MAN.			
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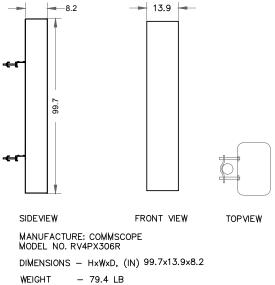
SHEET TITLE

**ELEVATION** 

SHEET NUMBER

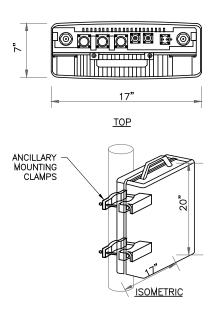
A-2

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT — UPGRADE, STEALTH
CANISTER POLE AND PENTHOUSE", PREPARED BY ATLANTIS
DESIGN GROUP, INC., "T-MOBILE SITE ID CTNH336C",
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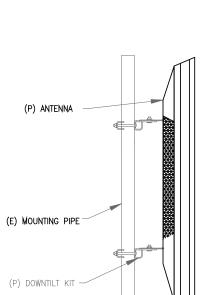


SCALE: N.T.S



RRUS 11 B12 DETAILS SCALE: N.T.S





ANTENNA MOUNT DETAILS



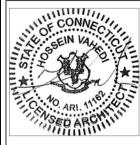
T-MOBILE NORTHEAST, LLC
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DATE DESCRIPTION I 08/09/16 ISSUED FOR REVIEW	REVISIO	
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08/16/16 FINAL CD	0	

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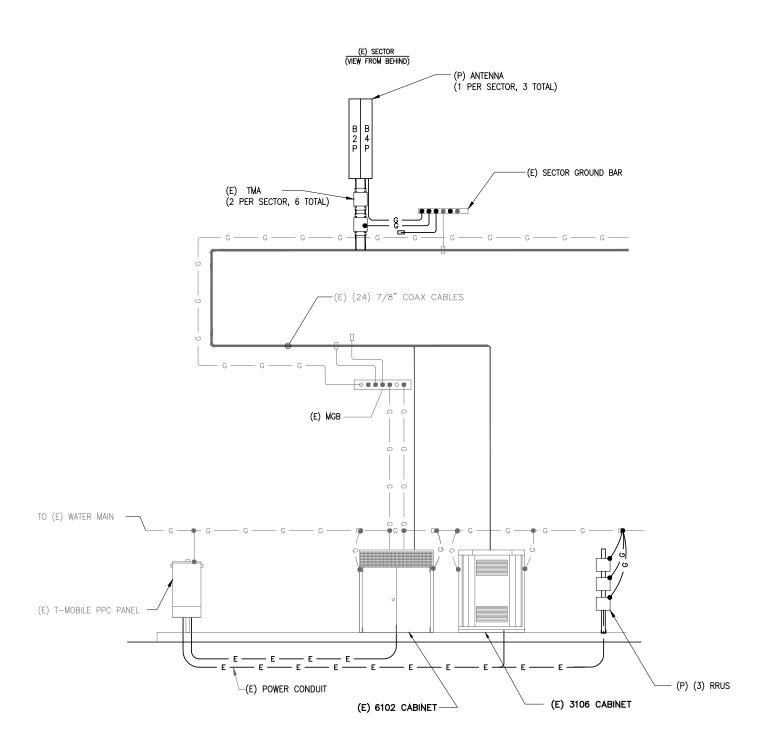
SITE ADDRESS 330 BISHOP STREET WATERBURY, CT 06704

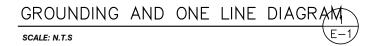
SHEET TITLE

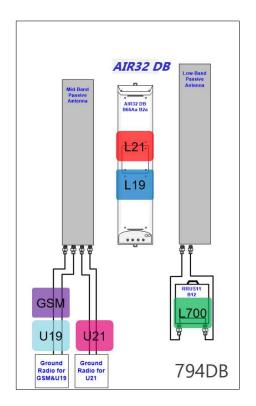
**DETAILS** 

SHEET NUMBER

A-3







#### TRUNK FIBER NOTES:

- 1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO 7/8" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
- 2, THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
- 3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
- 4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN ¾" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
- 5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOYEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
- 6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
- 7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
- 8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
- 9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM. 10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
- 11. MAXIMUM HANGER SPACING 3FT (0.9 M).

## HYBRID FIBER/POWER JUMPER NOTES:

- 1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A 3/8" COAXIAL CABLE.
- 2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
- 3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN 34" (19MM) RADIUS. ELSE THERE IS A RISK OF BREAKING THE GLASS.
- 4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
- 5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
- 6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
- 7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
- 8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N)
- 9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

794DB CONFIGURATION COAX/FIBER PLUMBING DIAGRAM2 SCALE: N.T.S

T - Mobile -

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3210 MAIN CAMPUS DRIVE LEXINGTON, MA 02421 Phone number: 617-852-3611 Fax Number : 781-742-2247

SUBMITTALS				
DATE	DESCRIPTION	REVISION		
08/09/16	issued for review	A		
08/16/16	FINAL CD	0		

	DEPT.	DATE	APP'D	revisions
	RFE			
	RF MAN.			
	ZONING			
	OPS			
	CONSTR.			
	SITE AC.			

_		
П	PROJECT NO:	CTNH336C
	DRAWN BY:	FG
	CHECKED BY:	KM



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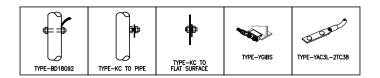
> SITE NUMBER CTNH336C

WATERBURY\_BISHOP\_ST

SITE ADDRESS 330 BISHOP STREET WATERBURY, CT 06704

SHEET TITLE GROUNDING AND ONE LINE DIAGRAM COAX/FIBER DIAGRAM

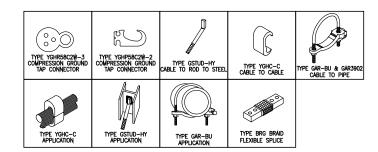
SHEET NUMBER



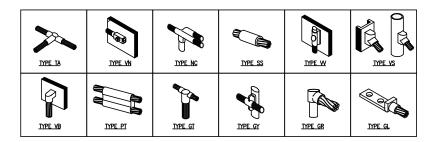
## **BURNDY GROUNDING DETAILS**

SCALE: N.T.S.



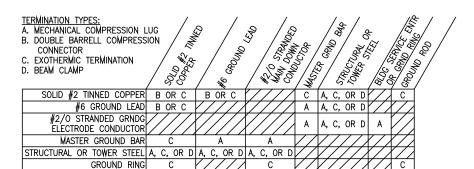


## **BURNDY GROUNDING PRODUCTS** SCALE: N.T.S



## **CADWELD GROUNDING CONNECTION PRODUCTS**,

SCALE: N.T.S

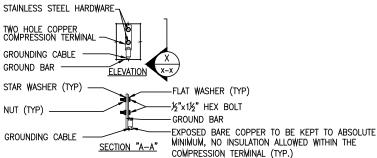


## **GROUNDING TERMINATION MATRIX** 7

SCALE: N.T.S

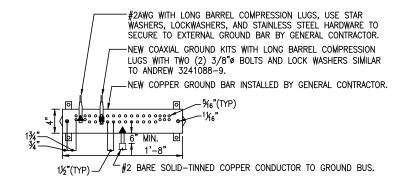


E-2



#### NOTES:

1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

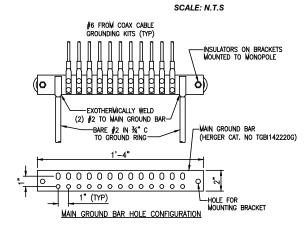


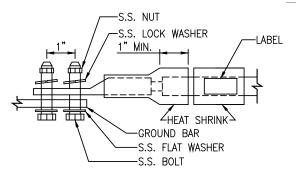
#### NOTES:

- 1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
- FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
- 3. ALL HOLES ARE COUNTERSUNK 1/6".

## TYPICAL GROUND BAR CONNECTIONS DETAIL







**GROUND BAR DETAIL** 

SCALE: N.T.S

#### LUG NOTES:

- 1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
- 2. ALL HARDWARE SHALL BE S.S. ¾"ø OR LARGER.
- 3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

### **GROUND BAR DETAIL**

SCALE: N.T.S



T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002 OFFICE: (860) 692-7100 FAX:(860) 692-7159

# TLANTIS DESIGN GROUP, INC.

3210 MAIN CAMPUS DRIVE LEXINGTON, MA 02421 Phone number: 617-852-3611 Fax Number : 781-742-2247

SUBMITTALS				
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DEPT.	DATE	APP'D	revisions	
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RF MAN.				
ZONING				
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CONSTR.				
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l	PROJECT NO:	CTNH336C
L	DRAWN BY:	FG
ı	CHECKED BY:	KM



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> SITE NUMBER CTNH336C

WATERBURY\_BISHOP\_ST

SITE ADDRESS 330 BISHOP STREET WATERBURY, CT 06704

SHEET TITLE

**GROUNDING DETAILS** 

SHEET NUMBER

#### 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

- a. 2005 CONNECTICUT BUILDING CODE WITH ALL AMENDMENTS & SUPPLEMENT . 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

#### 1.2 LOADS AND DESIGN CRITERIA

a. WIND LOADING: V: 110 MPH, EXPOSURE B, OCCUPANCY CATEGORY II 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

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 STFFI URAL 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"

. 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

g. 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

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.

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% BE 3/16 INCH DIAMETER, GALVANIZED ADJUSTABLE TIES EMBEDDED TO THE PURE ZINC. RUST-OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

g. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND SPACE) COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON ii. BR 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 BLE TO TRANSPORT THE WATER TO THE HEIGHT WELDING BEING PERFORMED. D. WELDING ON GALVANIZED SURFACE SHOULD BE DONE WITH EXTREME CAUTION.
F 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

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:

g. 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

c. LINTEL BEAMS - UNLESS OTHERWISE NOTED LINTEL BEAMS SHALL CONFORM WITH THE LINTEL SCHEDULE.

#### 3.8 DETAILS OF REINFORCEMENT:

CORNERS.

a. MINIMUM EMBEDMENT LENGTH OF STRAIGHT BARS = 36 X DIA. OF BAR (12"

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):
g. FACE BRICK — UNLESS MORE STRINGENT REQUIREMENTS ARE RECOMMENDED

BY THE BRICK INSTITUTE OF AMERICA THE FOLLOWING SHALL APPLY AT A

VERTICALLY AT CORNERS, OFFSETS, SETBACKS, OPENINGS, INTERSECTIONS, CHANGES IN SUPPORT TYPLE AND AT A SPACING NOT TO EXCEED 30 FT. O/C. 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.

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 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. BRICK VENEER/WOOD STUD - 2 2/3SF./CORRUGATED TIE WITH A MAXIMUM

VERTICAL AND HORIZONTAL SPACING OF 16" AND 24" RESPECTIVELY. (1" AIR

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

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:

75 CUBIC YARDS 24 HOUR PERIOD

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.

UNLESS NOTED OTHERWISE, CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

CONCRETE CAST AGAINST FARTH - 3"

FORMED CONCRETE EXPOSED TO EARTH OR WEATHER - 2"

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:



South 06002 Griffin Road Soomfield, CT C -MOBILE 33 BI

OMEGA

NH336/WATERBURY

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OF CONVOT/28-2016 Ahmet Colakoglu, P

CT License No: 27057

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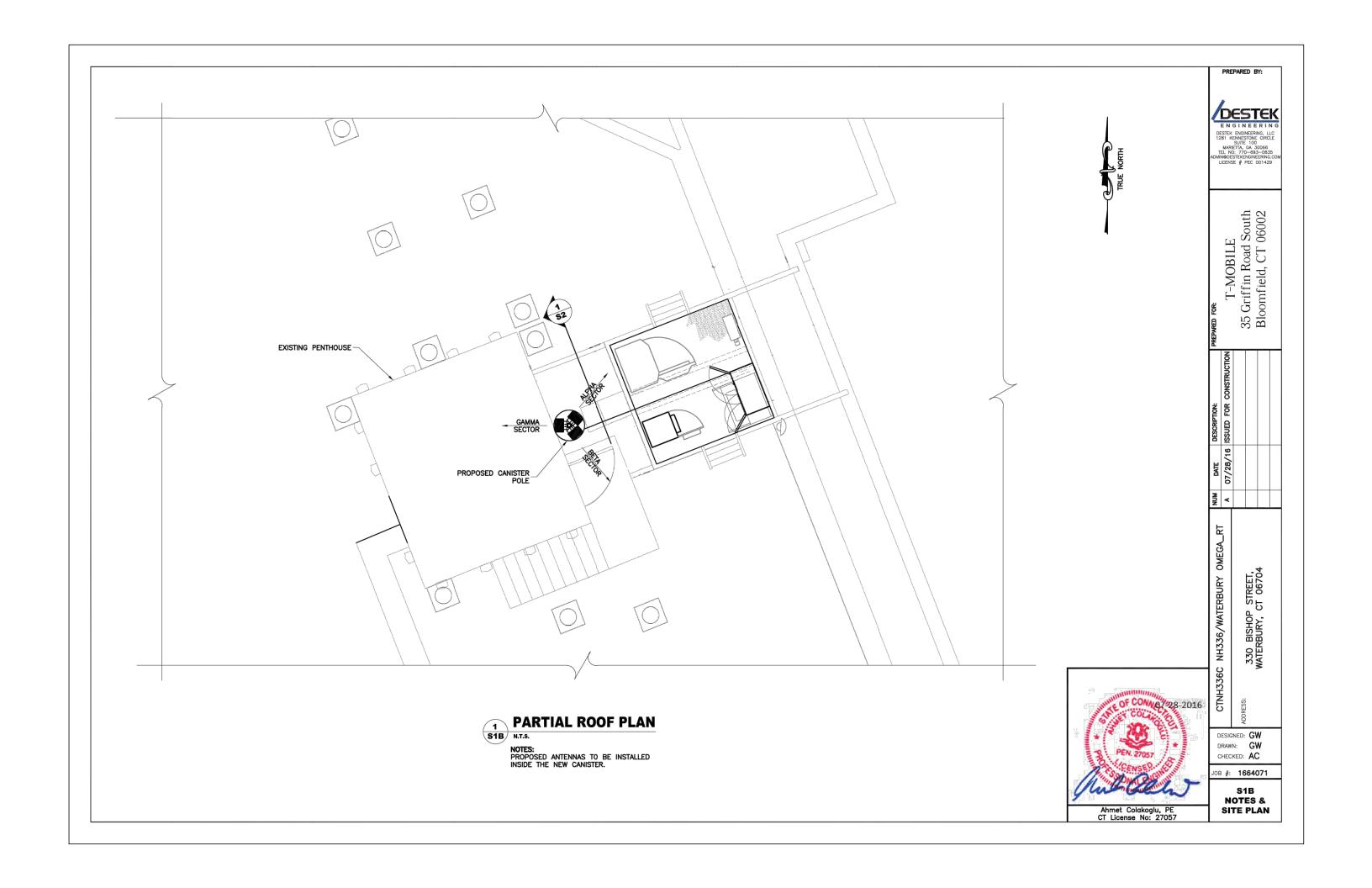
NOTES & SITE PLAN

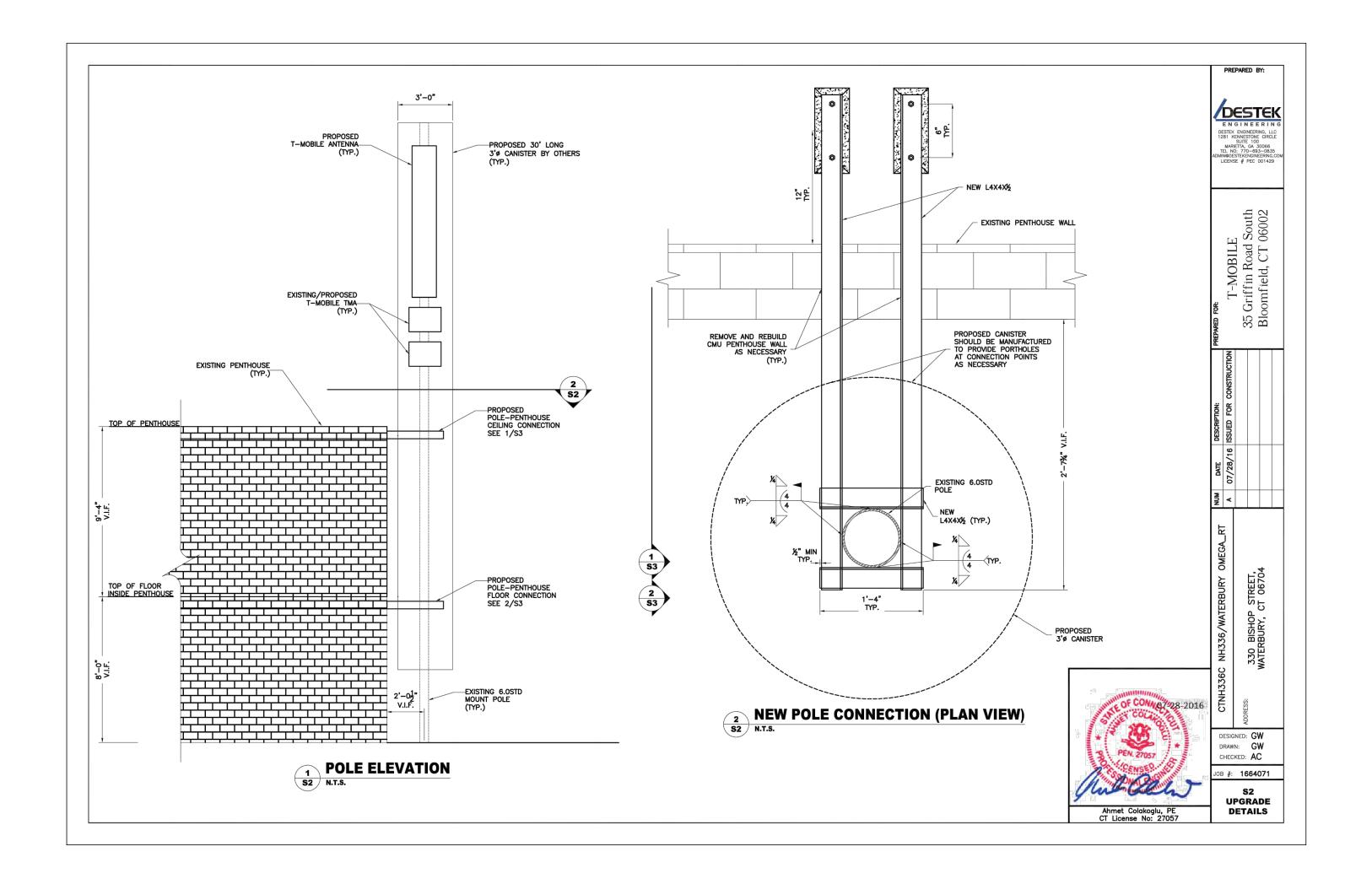
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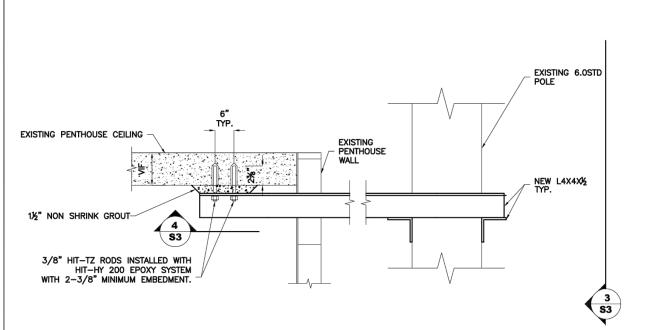
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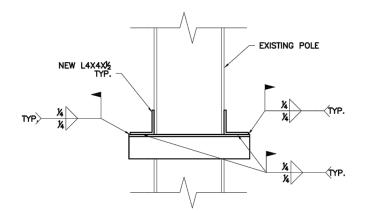




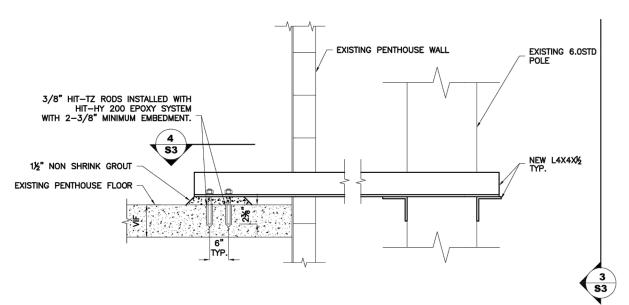
## NEW POLE CONNECTION (PENTHOUSE CEILING)

S3 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



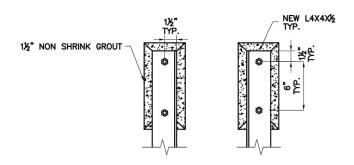
**NEW POLE CONNECTION DETAIL** 3 NEV



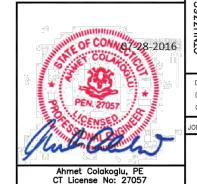
## **NEW POLE CONNECTION (PENTHOUSE FLOOR)**

2 NE\ 83 N.T.S.

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



**NEW POLE CONNECTION DETAIL** 4 NEV



/DESTEK

ENGINEERING

T-MOBILE 35 Griffin Road South Bloomfield, CT 06002

DATE 07/28/16

NH336/WATERBURY OMEGA\_RT 330 BISHOP STREET, WATERBURY, CT 06704 CTNH336C

> DESIGNED: GW DRAWN: GW

CHECKED: AC OB #: **1664071** 

S3 **UPGRADE DETAILS** 

# Exhibit D

# STRUCTURAL ANALYSIS REPORT – UPGRADE STEALTH CANISTER POLE AND PENTHOUSE







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

Destek Job No: 1664071 July 28, 2016

## **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 Coan		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"	
Beta	(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
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
		(1) RV4PX310R	(-) - (-)	
Alpha	96	(1) Generic Style 1A - Twin PCS	(8) 7/8"	Inside New 36"
		(1) Generic Style 1B - Twin AWS		
	96	(1) RV4PX310R		Diameter
Beta		(1) Generic Style 1A - Twin PCS	(8) 7/8"	Stealth
		(1) Generic Style 1B - Twin AWS		Canister Pole
		(1) RV4PX310R		Carrister Pole
Gamma	96	(1) Generic Style 1A - Twin PCS	(8) 7/8"	
		(1) Generic Style 1B - Twin AWS		

## 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

<u>Stealth Canister Pole:</u> 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.

<u>Penthouse:</u> 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** 

Site ID: CTNH336C Client: Atlantis Design Group



## **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

 $\alpha \coloneqq 7.0$ 

 $z_g := 1200 ft$ 

Height at Centroid: z := 96ft Antenna RAD Center

Velocity pressure coefficient: 2

 $K_z := 2.01 \left(\frac{z}{z_g}\right)^{\frac{z}{\alpha}}$ 

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: W:= 110 mph Figure 6-1A pg.34

Importance factor: I := 1.0 Table 6-1 pg 73

Gust response factor: G := 0.85 Section 6.5.8 pg 30

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

Force Coefficients: Figure 6-21 Pg 74

for Flat surface for D\*sqrt(qz) > 2.5 for D\*sqrt(qz) < 2.5

 $C_{\text{F\_flat}} := \begin{pmatrix} 1 & 1.3 \\ 7 & 1.4 \\ 25 & 2 \end{pmatrix} \quad C_{\text{F\_round\_1}} := \begin{pmatrix} 1 & 0.5 \\ 7 & 0.6 \\ 25 & 0.7 \end{pmatrix} \quad C_{\text{F\_round\_2}} := \begin{pmatrix} 1 & 0.7 \\ 7 & 0.8 \\ 25 & 1.2 \end{pmatrix}$ 

 Prepared By:
 1 of 5
 Job # 1664071

 Destek Engineering, LLC
 Date: 7/28/2016
 11:00 AM

Site ID: CTNH336C Client: Atlantis Design Group



### Loads on Antennas (RV4PX310R):

Dimensions: 
$$\underline{\mathbf{H}} := 99.7 \text{in } \underline{\mathbf{W}} := 13.9 \text{in } \underline{\mathbf{D}} := 8.2 \text{in } \underline{\mathbf{W}} \underline{\mathbf{t}} = 801 \underline{\mathbf{b}} \underline{\mathbf{f}}$$

$$C_{f_F} := linterp\left(C_{f_flat}, C_{f_flat}, \frac{\langle 1 \rangle}{W}, \frac{H}{W}\right) = 1.406$$
 Figure (6-21), Pg 74

$$C_{f\_S} := linterp\left(C_{f\_flat}, C_{f\_flat}, \frac{\langle 1 \rangle}{D}\right) = 1.572$$
 Figure (6-21), Pg 74

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

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

## **Loads on Generic Style 1A - Twin PCS:**

Dimensions: 
$$\underline{\mathbf{H}} := 10.2 \text{in}$$
  $\underline{\mathbf{W}} := 6.7 \text{in}$   $\underline{\mathbf{D}} := 3.7 \text{in}$   $\underline{\mathbf{W}}_{1A} := 15 \text{lbf}$ 

$$C_{\text{figure (6-21)}} := \text{linterp}\left(C_{\text{F_flat}}, C_{\text{F_flat}}, \frac{\langle 1 \rangle}{D}\right) = 1.329$$
 Figure (6-21), Pg 74

$$C_{\text{f_MS}} := \text{linterp}\left(C_{\text{F_flat}}, C_{\text{F_flat}}, \frac{\langle 1 \rangle}{W}\right) = 1.309$$
 Figure (6-21), Pg 74

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

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

### Loads on Generic Style 1B - Twin AWS:

Dimensions: 
$$\underline{\mathbf{H}} := 6.3 \text{in}$$
  $\underline{\mathbf{W}} := 7.7 \text{in}$   $\underline{\mathbf{D}} := 3.1 \text{in}$   $\underline{\mathbf{W}}_{1B} := 71 \text{bf}$ 

$$C_{f_{f_{a}}} := linterp\left(C_{f_{f_{a}}} := linterp(C_{f_{f_{a}}} := linterp(C_{$$

$$C_{f_{\underline{M}}} := linterp\left(C_{F_{\underline{f}lat}}, C_{F_{\underline{f}lat}}, \frac{\langle 1 \rangle}{W}, \frac{H}{W}\right) = 1.297$$
 Figure (6-21), Pg 74

FRIA: 
$$q_z \cdot G \cdot C_{f} \cdot F \cdot H \cdot W = 9.7 lbf$$
 Equation (6-28), Pg 29

$$S_{\text{Bl2}} := q_z \cdot G \cdot C_{f_S} \cdot H \cdot D = 3.845 \, \text{lbf}$$
 Equation (6-28), Pg 29

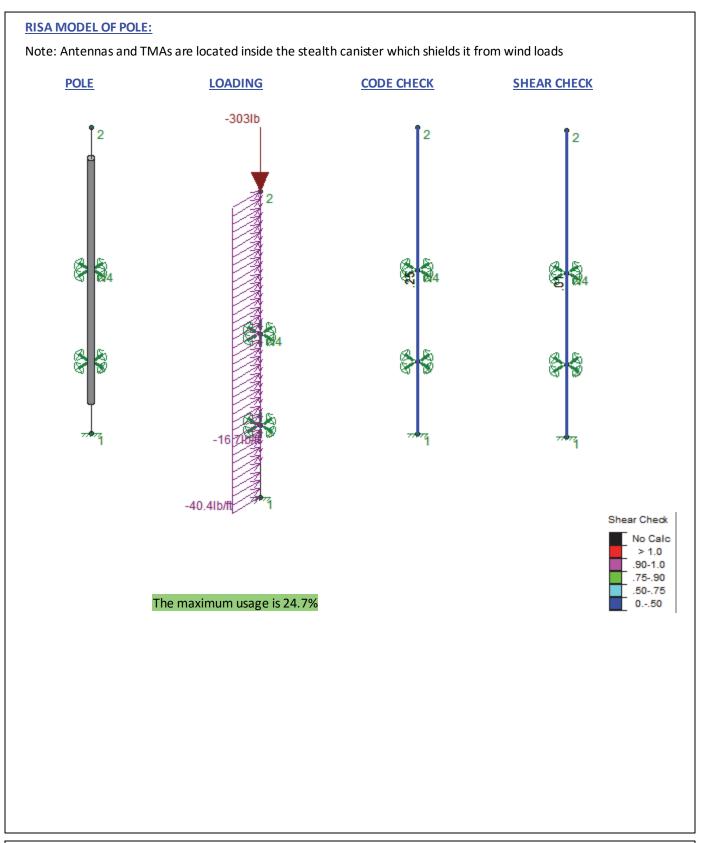
## Loads on Antenna Pipe (36" Stealth Canister):

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

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

Site ID: CTNH336C Client: Atlantis Design Group





Site ID: CTNH336C Client: Atlantis Design Group



### **Check the Penthouse Walls:**

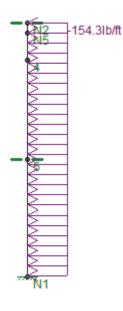
Wind Pressure:

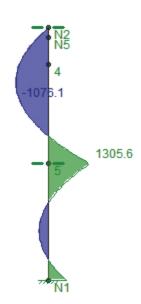
Wind Pressure on Penthouse Walls:  $p_{\texttt{parapet}} \coloneqq \left(q_z\right)$ 

Effective Width: b := 6ft

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)

Site ID: CTNH336C Client: Atlantis Design Group



Height of Penthouse Wall over The Max Moment

Maximum moment due to appurtenances and pipe

Maximum force due to appurtenances and pipe

## Wall Strength Check: Masonry Wall

$$H_{wall} := 208in$$

b.:= 6ft

d:= 8in

 $M_{\text{max}} := 1305.61 \text{bf} \cdot \text{ft}$ 

 $P_{mount} := 01bf$ 

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

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

 $\rho_{\texttt{masonry}} \coloneqq \texttt{115pcf}$ 

 $\mathtt{P}_{\texttt{masonry}} \coloneqq \rho_{\texttt{masonry}} \cdot \mathtt{b} \cdot \mathtt{d} \cdot \mathtt{H}_{\texttt{wall}} = 7973.333 \, \mathtt{lbf} \; \textbf{Weight of masonry}$ 

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

Area of masonry

Tributary Width

Masonry depth

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

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

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 
$$f_{allow} \ge f_{masonry}$$
 | "Penthouse wall is not adequate" otherwise

Check = "Penthouse wall is adequate"

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

#### 1.0 DESIGN INFORMATION AND GENERAL REQUIREMENTS

#### 1.0 GENERAL

ALL DIMENSIONS ARE APPROXIMATE, CONTRACTOR SHOULD VERIFY ALL
 DIMENSIONS BEFORE FABRICATION OF STEEL MEMBERS AND COMMENCEMENT OF

- 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

#### 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

IURAL STEEL . . . . . . . . . . ASTM A992 MISC ANGLE & PLATE . . . ASTM A36 PIPE a. STRUCTURAL STEEL PIPE . . . . . . . . . . . ASTM A53 GR. B RODS . . . . . . . . . . ASTM A572-50 (MINIMUM) HSS. . . . . . . . . . . . ASTM A500, GR. B, Fy=46 KSI 

- STEEL BUILDINGS ANSI/AISC 335-89e1\*
- 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

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

APPROVAL OF ENGINEER.

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% BE 3/16 INCH DIAMETER, GALVANIZED ADJUSTABLE TIES EMBEDDED TO THE PURE ZINC. RUST-OLEUM PROFESSIONAL, (MODEL# 7585838) OR SIMILAR.

a. CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS FOR FIRE PREVENTION DURING WELDING, SUCH AS; INSTALLING 3000 (NFPA 701) FIRE BLANKET AROUND SPACE) COAX. MORE SPLATTER AND SPARKS SHOULD BE ANTICIPATED WHILE WELDING ON ii. 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

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"

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

VERTICALLY AT CORNERS, OFFSETS, SETBACKS, OPENINGS, INTERSECTIONS, CHANGES IN SUPPORT TYP.E AND AT A SPACING NOT TO EXCEED 30 FT. O/C. 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. 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.

HORIZONTAL SLIP PLANE AT TERMINATION OF REINFORCED LINTEL BEAM.

3.11 FACE BRICK DETAILS - UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL PLANS AND SPECIFICATIONS:

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 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. BRICK VENEER/WOOD STUD - 2 2/3SF./CORRUGATED TIE WITH A MAXIMUM

VERTICAL AND HORIZONTAL SPACING OF 16" AND 24" RESPECTIVELY. (1" AIR

BRICK VENEER/STEEL STUD - 2SF./ADJUSTABLE UNIT TIE WITH A MAXIMUM

VERTICAL AND HORIZONTAL SPACING OF 16". (2" TO 3" AIR SPACE) 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

. 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

75 CUBIC YARDS

24 HOUR PERIOD

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%

g. UNLESS NOTED OTHERWISE, CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

CONCRETE CAST AGAINST EARTH - 3"

FORMED CONCRETE EXPOSED TO EARTH OR WEATHER - 2" ii.

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:

DESTEK ENGINEERIN

DESTEK ENGINEERING, LLC 1281 KENNESTONE CIRCLE MARIETTA, GA 30066
TEL NO: 770-693-0835
MIN@DESTEKENGINEERING.C
LICENSE # PEC 001429

South 06002 -MOBILE Griffin Road Soomfield, CT ( Bloomfield, 35 CONSTRUCT

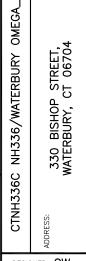
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DESCRIP ISSUED

DATE 07/28/16

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DESIGNED: GW DRAWN: GW CHECKED: AC

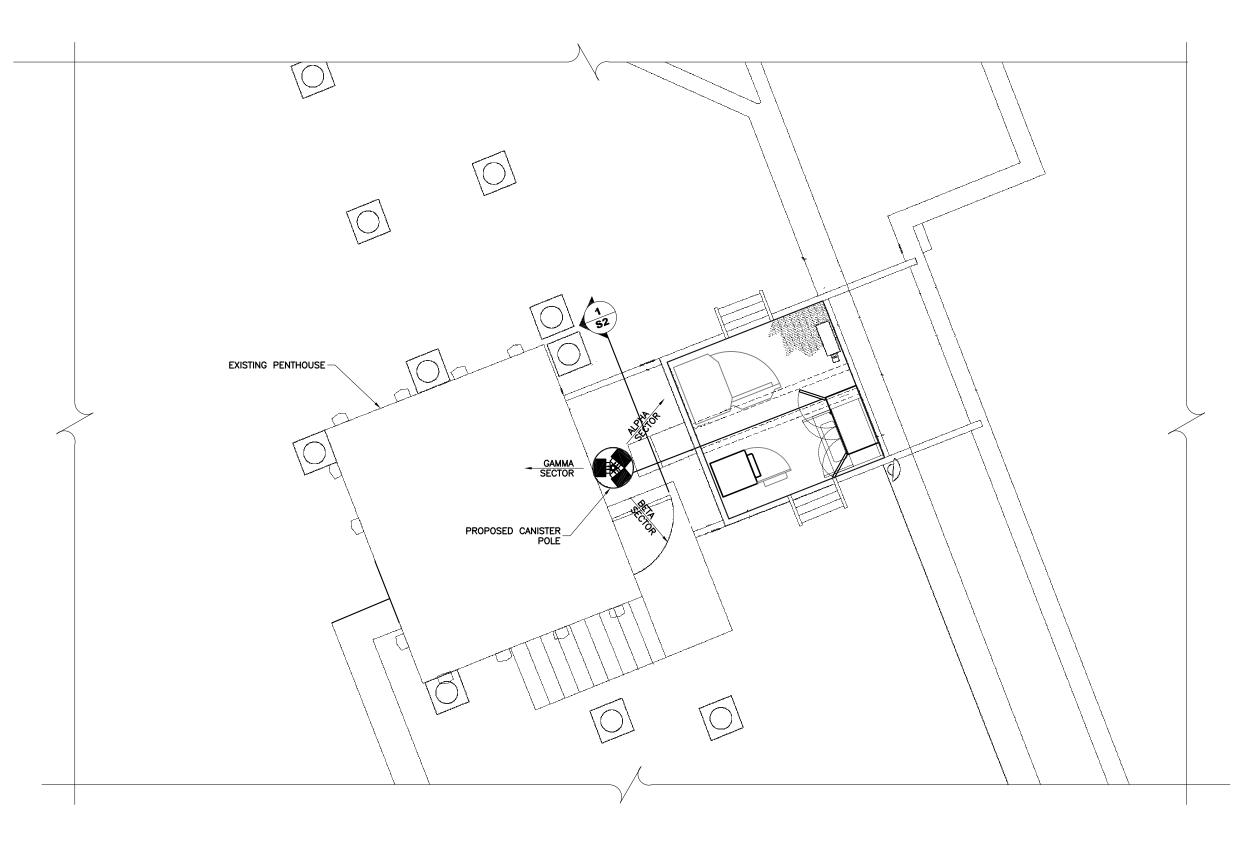
CONNOT-28-2016

Ahmet Colakoglu, PE

CT License No: 27057

JOB #: 1664071

S1A **NOTES &** SITE PLAN



PARTIAL ROOF PLAN 1 S1B N.T.S.

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

PREPARED BY:

DESTEK

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LICENSE # PEC 001429

T-MOBILE 35 Griffin Road South Bloomfield, CT 06002

DESCRIPTION: ISSUED FOR CONSTRUCTION DATE 07/28/16

NH336/WATERBURY OMEGA\_RT 330 BISHOP STREET, WATERBURY, CT 06704 CTNH336C

DESIGNED: GW

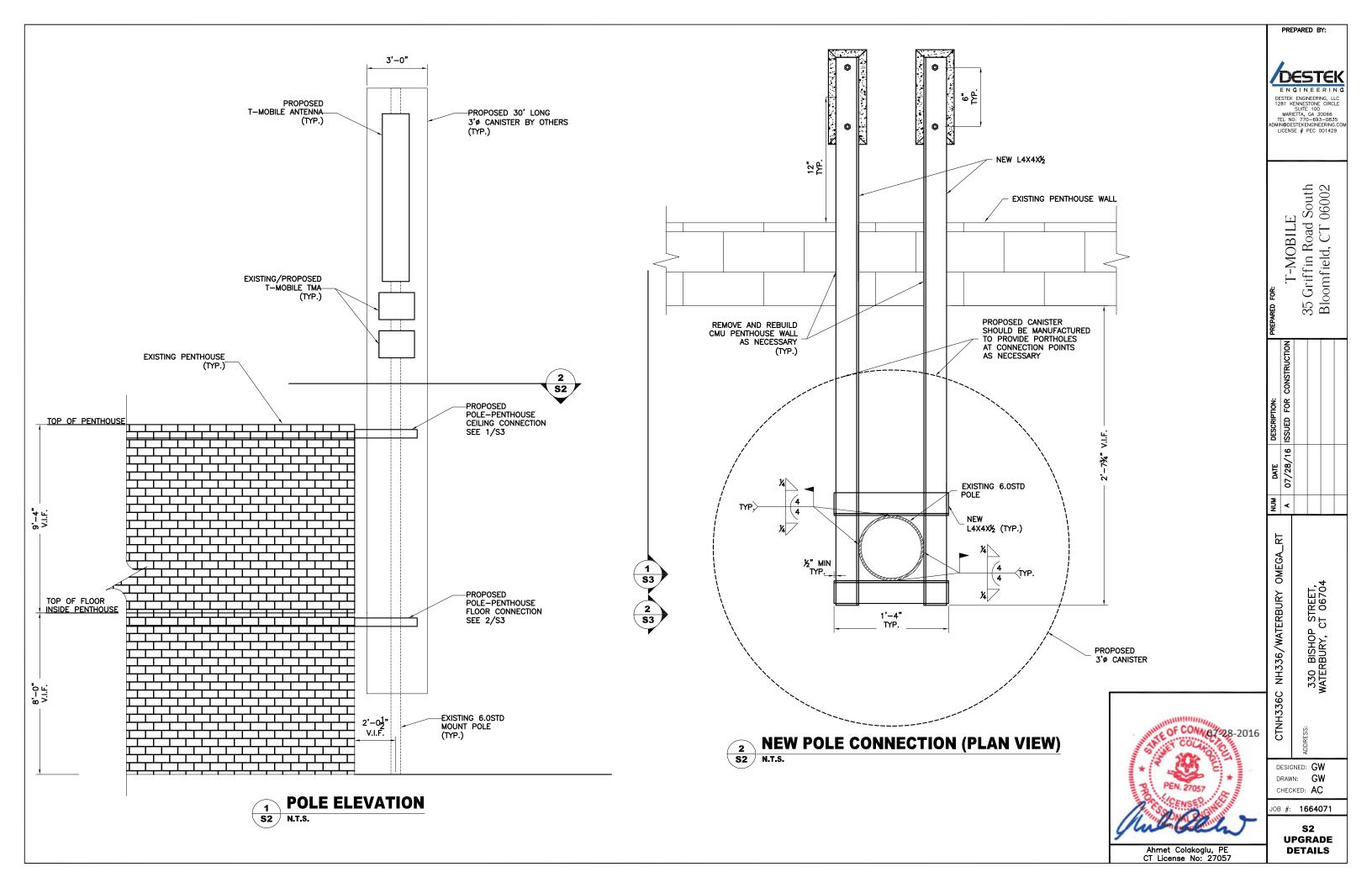
DRAWN: GW CHECKED: AC

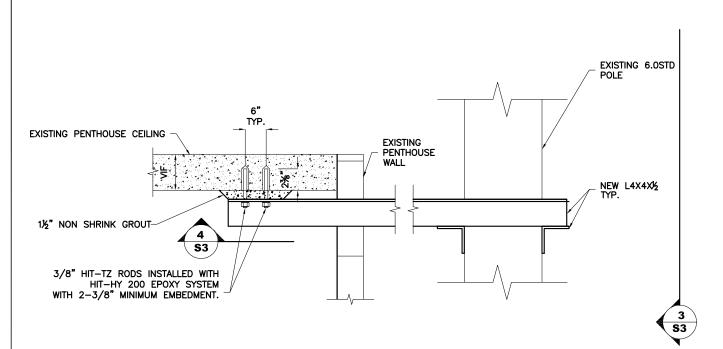
OF CONNOT 28-2016

Ahmet Colakoglu, PE CT License No: 27057

JOB #: **1664071** 

S1B NOTES & SITE PLAN

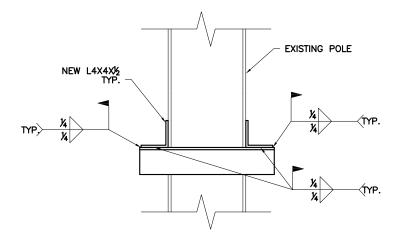




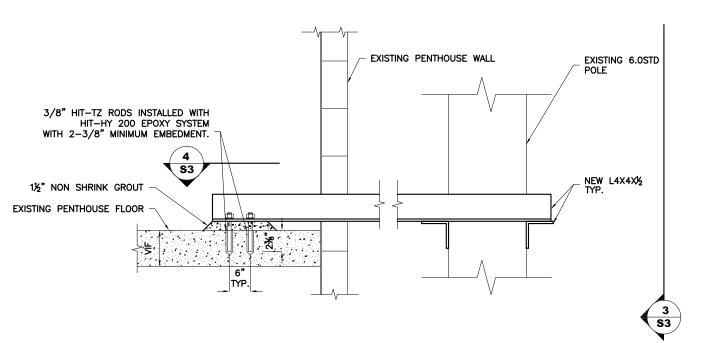
## **NEW POLE CONNECTION (PENTHOUSE CEILING) S3**

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



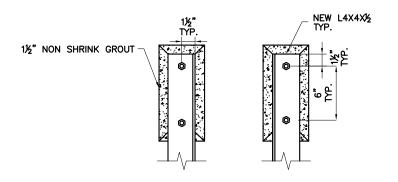
**NEW POLE CONNECTION DETAIL** S3 N.T.S.



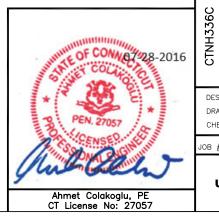
## **NEW POLE CONNECTION (PENTHOUSE FLOOR)** S3 /

1. CONTRACTOR TO VERIFY THICKNESS OF CONCRETE FLOOR IS A MINIMUM OF 4"

2. CANISTER NOT SHOWN FOR CLARITY



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



DESTEK

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LICENSE # PEC 001429

T-MOBILE 35 Griffin Road South Bloomfield, CT 06002

DESCRIPTION: ISSUED FOR CONSTRUCTION DATE 07/28/16

NH336/WATERBURY OMEGA\_RT 330 BISHOP STREET, WATERBURY, CT 06704

DESIGNED: GW DRAWN: GW CHECKED: AC

JOB #: **1664071** 

S3 **UPGRADE DETAILS** 

# 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu$ W/cm<sup>2</sup>). The number of  $\mu$ W/cm<sup>2</sup> 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 ( $\mu$ W/cm²). The general population exposure limit for the 700 MHz Band is approximately 467  $\mu$ W/cm², and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000  $\mu$ W/cm². 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:	В	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 (µW/cm²)	Frequency (MHz)	Allowable MPE (µW/cm²)	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%

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## **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	4.66 %	
Maximum:		
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.