

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

October 4, 2016

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

RE: Notice of Exempt Modification

274 Derby Avenue, New Haven CT 06520

Latitude: 41.31377 Longitude: -72.95955

T-Mobile Site#: CT11333D\_L700

#### Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 85-foot level of the existing 90-foot flagpole at 274 Derby Avenue, New Haven CT 06520. On April 22, 2014 T-Mobile received approval to replace this facility. The construction and upgrades for this site never transpired.

T-Mobile now intends to replace the existing facility with a new flagpole of the same height with a larger diameter. The existing flagpole is 10 inches in diameter. The replacement pole is 30 inches in diameter. T-Mobile also intends to replace the existing 7.5 foot square mat foundation with a new 12 foot square mat. The flagpole is owned by T-Mobile. The property is owned by Yale University. T-Mobile intends to replace three (3) of its existing antennas with three (3) new 1900/2100 MHz antenna at the 85-foot level of the flagpole and add three (3) new 700 MHz antenna and (24) coax cables. The new antennas would be installed at the 75-foot level of the flagpole.



#### **Total Planned Site Modifications:**

Remove:

(1) 3106 Cabinet

(1) S8000 Cabinet

Cabinet Concrete Pad

Remove and Replace:

10"x48' Flagpole (REMOVE) – 30"x48' flagpole (**REPLACE**)

7.5'x7.5 Mat (REMOVE) – 12'x12' Mat Foundation (**REPLACE**)

(12) Coax Lines (REMOVE) – (24) 7/8" Coax lines (REPLACE)

(3) Antenna/ Canister 10" (REMOVE) – (3) APX16 DWV SE A20 (**REPLACE**) 85' RAD Replace existing Ice Bridge with New Ice Bridge

Install New:

(3) DBXNH6565B A2M Antenna (75' RAD)

(3) RRUS11 B12 (Ground Mounted)

(3)\_RRUS32 B4 (Ground Mounted)

(1) H-Frame on exiting concrete pad

Existing to Remain: 6102 Radio Cabinet

2416 Cabinet

GPS Antenna (Relocated to Ice Bridge)

This facility was retained by the CT Siting Council, an approved exempt modification was received on April 22, 2014 - No. EM-T-Mobile-093-140307. Approval was received to replace the facility. Please see attached. T-Mobile did not proceed with construction and proposed upgrades were not completed. T-Mobile is now seeking approval to replace and upgrade this facility. The approval for the facility included a 91-foot AGL flagpole.



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 Toni Harp, Elected Official for the City of New Haven, 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: - Toni Harp- Mayor - as elected official T-Mobile - as tower owner Yale University - as property owner

### Exhibit A



#### JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

March 6, 2014

Attorney Melanie Bachman Acting Executive Director Connecticut Siting Council Ten Franklin Square New Britain, CT 06051

Re: Notice of Exempt Modification Site ID CT11333D 274 Derby Avenue, New Haven

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, T-Mobile owns the existing flagpole telecommunications facility at 274 Derby Avenue, New Haven Connecticut (Latitude: 41.31377, Longitude: -72.959559). T-Mobile intends to replace the existing flagpole (which houses T-Mobile's canister antenna) with a flagpole of the exact same height at this existing telecommunications facility in New Haven ("New Haven Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2) and/or (3). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mayor Toni Harp, and the property owner, Yale University.

The existing New Haven Facility consists of a flagpole telecommunications facility at a height of 91 feet AGL, with T-Mobile's canister antenna internally mounted at a height of 85 feet AGL ("Existing Facility"). T-Mobile proposes to:

- Replace the Existing Facility with a flagpole of the same height with a slightly larger diameter ("Replacement Facility"). The existing flagpole facility is 10 inches in diameter. The Replacement Facility will be 18 inches in diameter to accommodate T-Mobile's 18 inch diameter canister antenna; and
- Replace the 7.5 foot square mat foundation with a 10 foot square mat

<sup>&</sup>lt;sup>1</sup> The online Connecticut Siting Council database does not include a docket or petition number for the approval of this structure, and therefore does not include limitations on the configuration of the facility.



March 6, 2014 Site ID CT11333D Page 2

foundation. (See the plans revised to October 31, 2013 attached hereto as Exhibit A).

The planned modifications to the New Haven Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2) and/or (3).

- 1. The proposed replacement will not increase the height of the tower. T-Mobile's Replacement Facility will be 91 feet AGL, merely replacing the Existing Facility at a height of 91 feet AGL. (The antenna centerline will remain at 85 feet AGL.) The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.
- 2. The proposed modifications will not require an extension of the site boundaries. The Replacement Facility will be located in the exact same location as the Existing Facility and no expansion of the existing site boundaries or lease area is required.
- 3. The proposed replacement of the New Haven Facility will not increase the noise levels at the Existing Facility by six decibels or more.
- The operation of the replacement antenna will not increase the total radio frequency (RF) power density, measured at the base of the Replacement Facility, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated October 16, 2013, T-Mobile's operations would add 1.737% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 1.737% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit B.

For the foregoing reasons, T-Mobile respectfully submits that the proposed Replacement Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2) and/or (3). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: City of New Haven, Mayor Toni Harp
Yale University
Sheldon Freincle, Northeast Site Solutions



#### STATE OF CONNECTICUT

#### CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051 Phone: (860) 827-2935 Fax: (860) 827-2950 E-Mail: siting.council@ct.gov www.ct.gov/csc

April 22, 2014

Julie D. Kohler, Esq. Cohen and Wolf, P.C. 1115 Broad Street P.O. Box 1821 Bridgeport, CT 06601-1821

RE: EM-T-MOBILE-093-140307 – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 274 Derby Avenue, New Haven, Connecticut.

#### Dear Attorney Kohler:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated March 6, 2014, and additional correspondence dated March 28, 2014. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.



This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman Acting Executive Director

MAB/RDM/laf

c: The Honorable Toni N. Harp, Mayor, City of New Haven Tomas Reyes, Jr., Chief of Staff, City of New Haven Thomas Talbot, Zoning Admr., City of New Haven Yale University

## Exhibit B

Parcel ID 073-0015-0-0000

00

Account

00015574

#### **Property Information**

Owner	YALE UNIVERSITY		
Co-Owner	FINANCIAL REPORTING & ANALYSIS		
Address	250 DERBY AVE		
Mailing Address	155 WHITNEY AVE		
C	NEW HAVEN, CT 0651	0	
Land Use	3890 YALE TAXAB MDL-94		
Land Class	С		

17343
1541
C700
RB
21.95
Public Water,Public Sewer,Gas

#### **Photo**



#### Sketch

#### **Primary Construction Details**

Actual Year Built	1930
Effective Year Built	1963
Stories	1
Building Style	Auditorium
Building Use	Comm/Ind
<b>Building Condition</b>	Average
Total Rooms	

Bedrooms	
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Shed
Roof Cover	Asph/F Gls/Cmp

Exterior Walls	Brick/Masonry
Interior Walls	Drywall/Sheet
Heating Type	Forced Air-Duc
Heating Fuel	Gas
AC Type	Central
Gross Bldg Area	5803
Total Living Area	5541

Parcel ID

073-0015-0-0000

Account

00015574

#### Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	1975900	1383130
Outbuildings	549800	384860
Improvements	2535000	1774500
Extras	9300	6510
Land	4115600	2880920
Total	6650600	4655420

#### **Sub Areas**

<b>Gub 7 11 Gu</b> G		
Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	29120	29120
Porch, Open, Finished	262	0
First Floor	5541	5541
Basement, Finished	20800	20800
Total Area	5803	

#### **Outbuilding and Extra Items**

Description	Units	
W/FOUR LIGHTS	6 UNITS	
CELL SHED	200 S.F.	
AIR COND	1500 S.F.	
CELL SHED	200 S.F.	
W/LIGHTS ETC	600 S.F.	

#### **Sales History**

Owner of Record	Book/ Page	Sale Date	Sale Price	
YALE UNIVERSITY			0	
YALE UNIVERSITY			0	



### Exhibit C

# T - Mobile -

# T-MOBILE NORTHEAST LLC

SITE #: CT11333D

SITE NAME: NEW HAVEN/RT10/RT24

SITE ADDRESS:
274 DERBY AVENUE
NEW HAVEN, CT 06520
WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(793D CONFIGURATION)

# VICINITY MAP Concerned to the second of the

#### 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:

#### CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING

SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL
TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC - RED SEWER - GREEN
GAS/OIL - YELLOW SURVEY - PINK
TEL/CATO - ORANGE PROPOSED EXCAVATION - WHITE
RECLAIMED WATER - PURPI

#### GENERAL NOTES

- 1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY 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.
- 2. 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 DOCUMENTS.
- 3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE STARRY 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 WRITING OTHERWISE
- 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.
- 5. 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 CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
- 7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRESENCE.
- 8. 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.

- 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 EQUIPMENT 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 SAFETY REGULATIONS.
- 14. THE CONTRACTOR SHALL NOTIFY THE STARRY 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 STARRY 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. ATLANTIS DESIGN GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE ADEQUACY OF THE STRUCTURE AND COMPONENTS.
- 18. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "COMMUNICATION POLE DESIGN CALCULATIONS" AND "SLAB FOUNDATION DESIGN CALCULATIONS" PREPARED BY VALMONT MICROFLECT. VALMONT ORDER NO.: 329278, "T-MOBILE SITE ID CT11329A", DATED SEPTEMBER 12, 2016.

#### SITE INFORMATION

 SITE NUMBER:
 CT11333D

 SITE NAME:
 NEW HAVEN/RT10/RT24

 SITE ADDRESS:
 274 DERBY AVENUE

 NEW HAVEN. CT 06520

LAT./LONG.: N 41.31377 / W -72.95955

PARCEL: 073-0015-0-0000

CURRENT ZONING: RE

JURISDICTION: CITY OF NEW HAVEN, CT

PROPERTY OWNER: YALE UNIVERSITY
155 WHITNEY AVE
NEW HAVEN, CT 06510

#### PROJECT SUB-CONTRACTORS

APPLICANT: T-MOBILE NORTHEAST, LLC.
35 GRIFFIN ROAD SOUTH

BLOOMFIELD, CT 06002 (860) 692-7100

PROJECT MANAGER LISA LIN AL

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

A&F:

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:

SHEET	DESCRIPTION			
T-1	TITLE SHEET			
N-1	GENERAL AND ELECTRICAL NOTES			
A-1	SITE PLAN			
A-2	ELEVATION			
A-3	DETAILS			
E-1	GROUNDING AND COAX/FIBER DIAGRAM			
E-2	GROUNDING DETAILS			
B-144561	, , ,			
329278	FLAGPOLE STRUCTURAL DESIGN (BY OTHERS)			

SHEET INDEX

#### T - Mobile -

#### T-MOBILE NORTHEAST, LLC

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

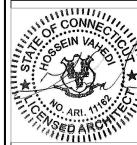
# TLANTIS DESIGN GROUP, INC.

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

SUBMITTALS		
DATE	DESCRIPTION	REVISION
09/13/16	ISSUED FOR REVIEW	A
09/23/16	FINAL CD	0

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

PROJECT NO:	CT11333D
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:
CT11333D
SITE NAME:
NEW HAVEN/RT10/RT24

SITE ADDRESS: 274 DERBY AVENUE

NEW HAVEN, CT 06520

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 PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
  E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL
- RAMING SUPPORTS, AND BASES FOR CONDUIT AND FOUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
- F. 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 FLECTRICAL 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

PROPER FUNCTIONING OF THE WORK

- QUALITY, WORKMANSHIP, MATERIALS AND SAFETY A. PROVIDE NEW MATERIALS AND FOUIPMENT OF A DOMESTIC 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
- 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 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 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

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. 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 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-BUILT 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

- IS, INSPECTION AND APPROVAL

  SEFORE 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 OPERATE SATISFACTORILY LINDER FULL LOAD CONDITIONS WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

- 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 LITHITIES 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.

- 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.

- 1. 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 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 VERTICAL DIRECTIONS.
    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 CARLES

- 1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT FOLLIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
- 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%. 9. 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. IO COMPLEIE HE 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 DIFFERENCI BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER 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 WARRANTIFS

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

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

- TO 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.
- EXTERIOR A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER
- 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
- . 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 OWNER

#### 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 DEFMED 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

- SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK, SUBMIT A BAR TYPE PROGRES CHART, NOT MORE THAN 3
   DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR. EACH 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 SLIBCONTRACTED)
- 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 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

AGI

BTS CAB

CLG

CONC

CONT

DWG

ELEC

ELEV

EQUIP EGB

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

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

**CFILING** 

CONCRETE

DIAMETER

DRAWING

ELECTRICAL

ELEVATION

FXISTING

**EXTERIOR** 

GAUGE

GROUND

MINIMUM

LONG MAXIMUM

MECHANICAL

MICROWAVE DISH

NOT IN CONTRACT

PERSONAL COMMUNICATION SYSTEM

POWER PROTECTION CABINET

NOT TO SCALE

SQUARE FOOT

STAINLESS STEEL

TOP OF CONCRETE

TOP OF MASONRY

UNLESS OTHERWISE NOTED

WELDED WIRE FABRIC

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 GSEIN VAL 10 ARI. 11167 WAR AROTT

PROFESSIONAL SEAL

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SITE NUMBER: CT11333D SITE NAME: NEW HAVEN/RT10/RT24

274 DERBY AVENUE NEW HAVEN, CT 06520

SITE ADDRESS:

SHEET TITLE **GENERAL** AND ELECTRICAL NOTES

SHEET NUMBER

ARCHITECTURAL SYMBOLS STORAGE

REFER TO - DRAWING DETAIL NUMBER-EXISTING N.I.C. RE: 2/A-3 LSHEET NUMBER OF DETAIL-

38 (3)-DETAIL REFERENCE KEY DEPT. DATE APP'D REVISIONS ZONING

CONSTR.

09/23/16

CT11333D PROJECT NO: DRAWN BY CHECKED BY

T - Mobile -

T-MOBILE NORTHEAST, LLC

BLOOMFIELD, CT 0600

OFFICE: (860) 692-7100

FAX:(860) 692-7159

TLANTIS DESIGN

GROUP, INC.

3210 MAIN CAMPUS DRIVE LEXINGTON, MA 02421

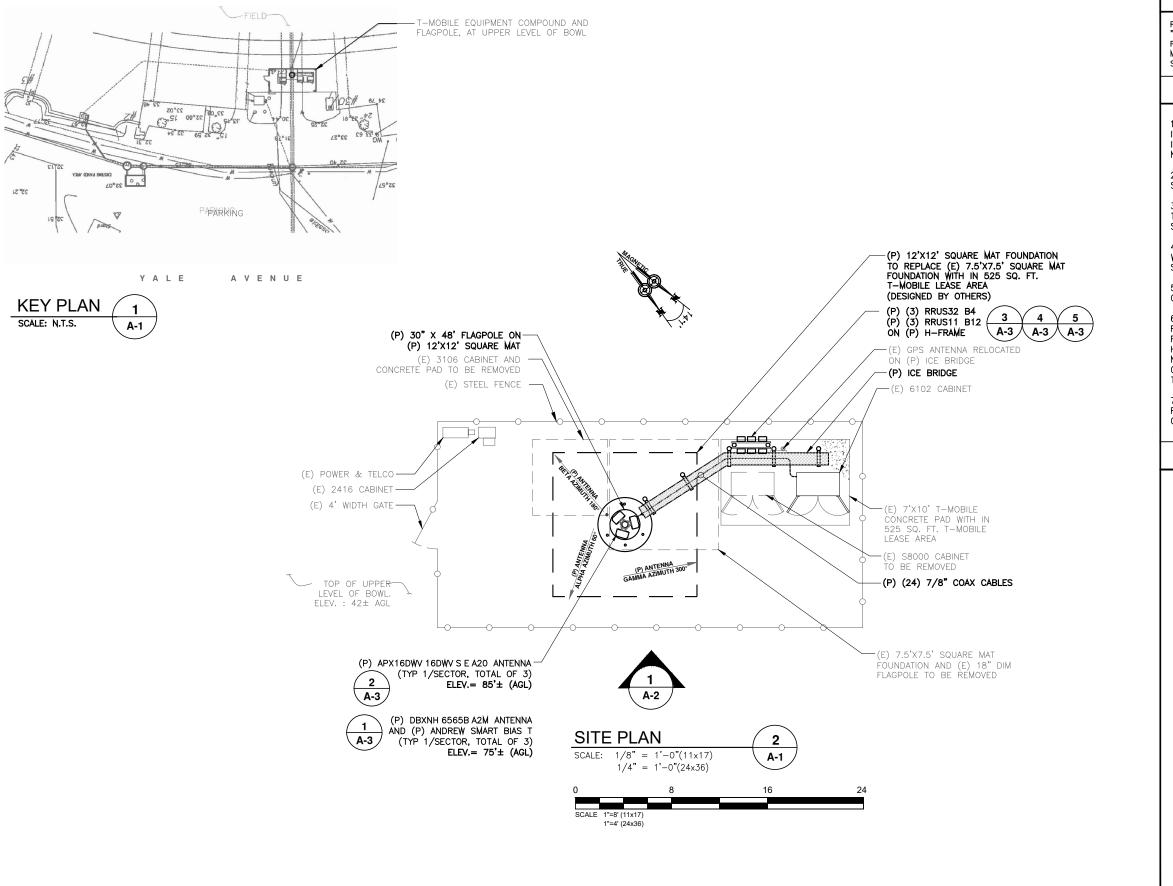
SUBMITTALS

DESCRIPTION

ISSUED FOR REVIEW

FINAL CD

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



#### STRUCTURAL REFERENCE

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "COMMUNICATION POLE DESIGN CALCULATIONS" AND "SLAB FOUNDATION DESIGN CALCULATIONS" PREPARED BY VALMONT MICROFLECT. VALMONT ORDER NO.: 329278, "T-MOBILE SITE ID CT11329A", DATED SEPTEMBER 12, 2016.

#### 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 SHOWN.
- 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

	SITE PROPERTY LINE
	STREET OR ROAD
— x —	CHAIN LINK FENCE
<del></del>	OPAQUE WOODEN FENCE
— <u>-</u> -	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
<del></del>	PROP. UMTS/GSM ANTENNA
<del></del>	EX. GSM ANTENNA
***	EX. UMTS ANTENNA



Γ-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				
DATE	DESCRIP	TION	REVISION	
09/13/16	ISSUED FOR	REVIEW	¥	
09/23/16	FINAL	CD	0	

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

PROJECT NO:	CT11333D
DRAWN BY:	FG
CHECKED BY:	KM



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SITE NUMBER: CT11333D SITE NAME: NEW HAVEN/RT10/RT24

SITE ADDRESS: 274 DERBY AVENUE

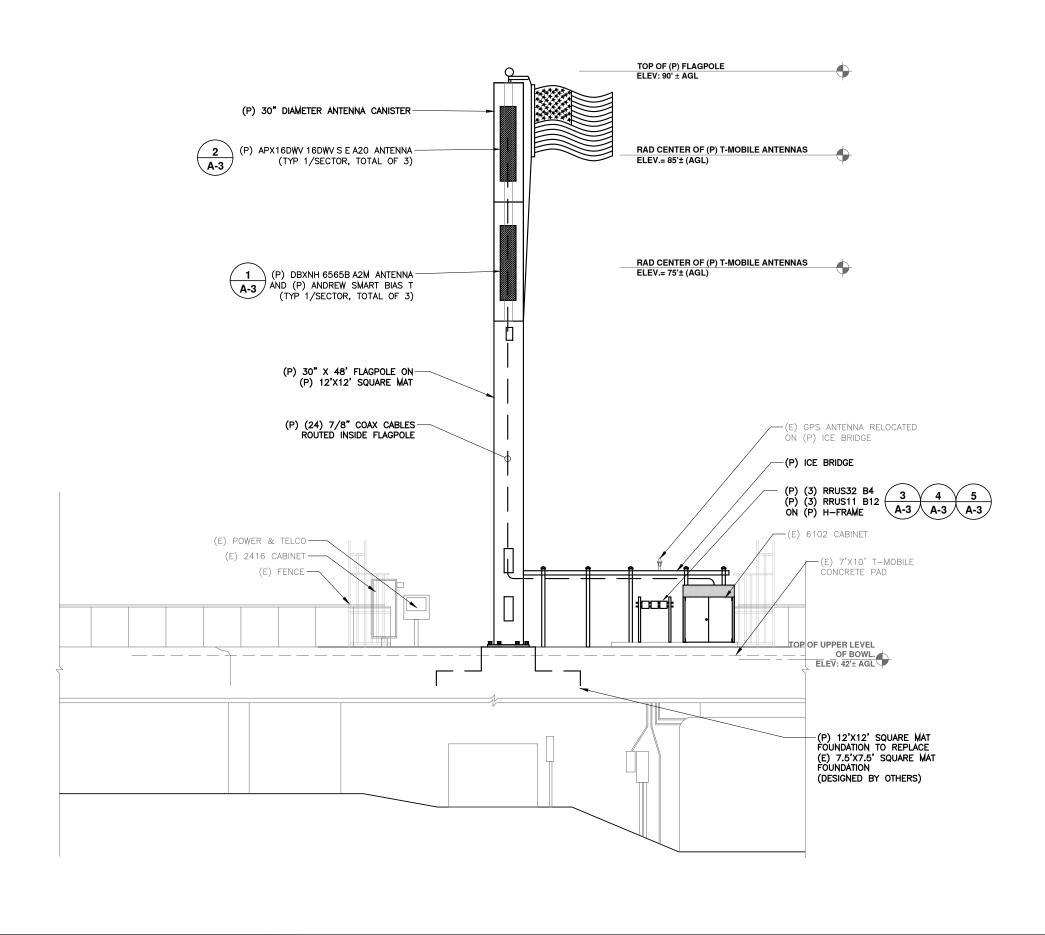
ZI + DERDI /WENCE

NEW HAVEN, CT 06520 SHEET TITLE

SITE PLAN

SHEET NUMBER

A-1



T - Mobile -

T-MOBILE NORTHEAST, LLC
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LEXINGTON, MA 02421
Phone number: 617–852–3611
Fox Number: 781–742–2247

	SUBMITTALS			
DATE	DESCRIPTION	REVISION		
09/13/16	issued for review	A		
09/23/16	FINAL CD	0		

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

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CHECKED BY:	KM



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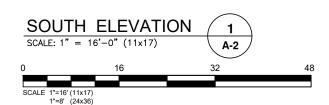
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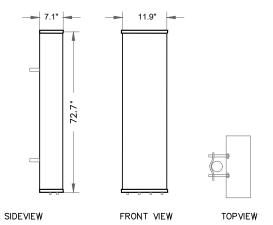
NEW HAVEN, CT 06520

SHEET TITLE

**ELEVATION** AND ANTENNA PLAN

SHEET NUMBER





MANUFACTURE: COMMSCOPE

MODEL NO. DBXNH-6565B-VTM / DBXNH-6565B-A2M DIMENSIONS - HxWxD, (IN) 72.7x11.9x7.1

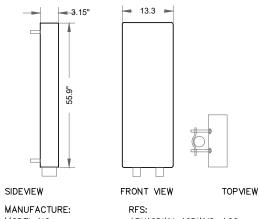
- 33.5 LB

#### COMMSCOPE DBXNH-6565B-A2M

ANTENNA DETAILS

SCALE: N.T.S

A-3



MANUFACTURE:

MODEL NO. APX16DWV-16DWVS-A20

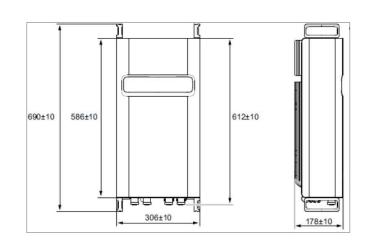
DIMENSIONS - HxWxD, (IN) 55.9x13.3x3.15

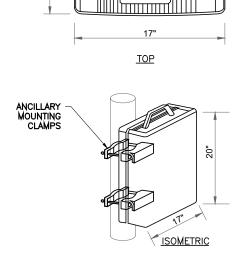
- 40.7 LB

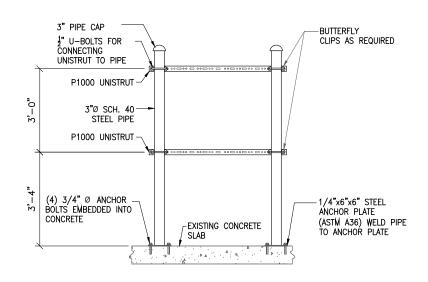
#### RFS APX16DWV-16DWVS-A20 **ANTENNA DETAILS**

SCALE: N.T.S

(2) A-3)













T - Mobile -

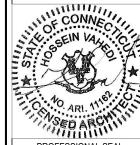
T-MOBILE NORTHEAST, LLC
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TLANTIS DESIGN
GROUP, INC.
3210 MAIN CAMPUS DRIVE
LEXINGTON, MA 02421
Phone number: 617–852–3611
Fax Number: 781–742–2247

SUBMITTALS				
DATE	DESCRIPTION	REVISION		
09/13/16	issued for review	A		
09/23/16	FINAL CD	0		

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

ı		
ı	PROJECT NO:	CT11333D
ı	DRAWN BY:	FG
ı	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: CT11333D SITE NAME: NEW HAVEN/RT10/RT24

SITE ADDRESS: 274 DERBY AVENUE

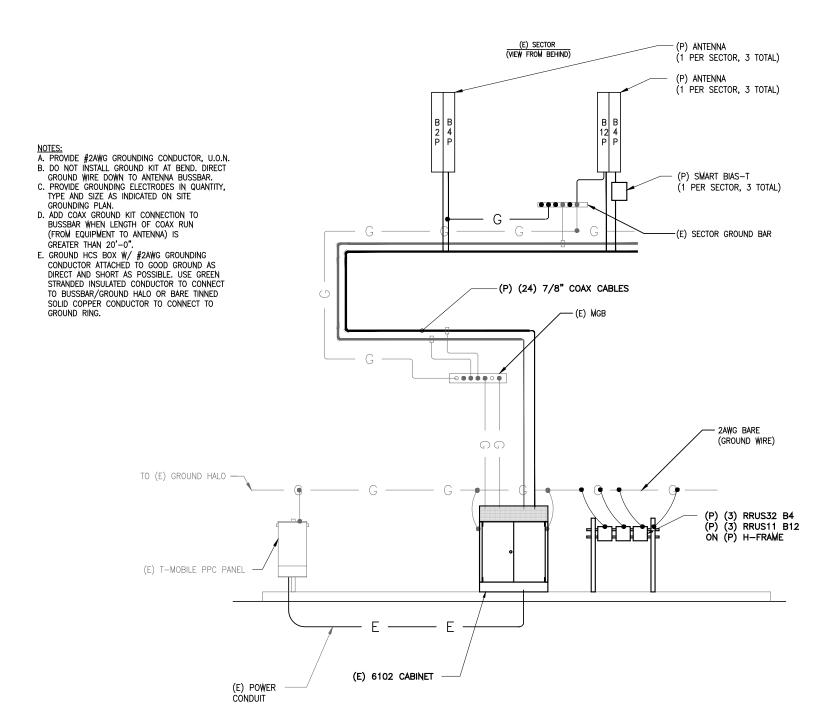
NEW HAVEN, CT 06520

SHEET TITLE

**DETAILS** 

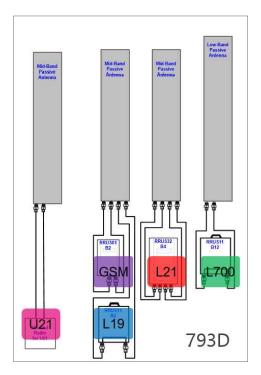
SHEET NUMBER

A-3



**GROUNDING DIAGRAM** 

SCALE: N.T.S



- 1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO %" 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 MOVEMENT 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 3/4" 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
- 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

793D CONFIGURATION **COAX/FIBER PLUMBING DIAGRAM** 

SCALE: N.T.S



T - Mobile -

T-MOBILE NORTHEAST, LLC

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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09/13/16	ISSUED FOR REVIEW	A
09/23/16	FINAL CD	0
		+
		T
		+

DEPT.	DATE	APP'D	revisions
RFE			
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ZONING			
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CONSTR.			
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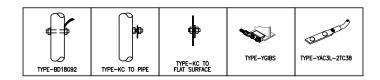
SITE NUMBER: CT11333D SITE NAME: NEW HAVEN/RT10/RT24

SITE ADDRESS: 274 DERBY AVENUE

NEW HAVEN, CT 06520 SHEET TITLE

COAX/FIBER PLUMBING DIAGRAM

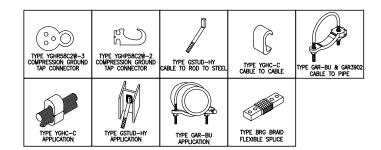
SHEET NUMBER



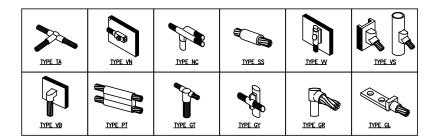
#### **BURNDY GROUNDING DETAILS**

SCALE: N.T.S



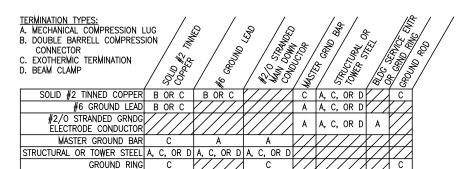






#### **CADWELD GROUNDING CONNECTION PRODUCTS**

SCALE: N.T.S

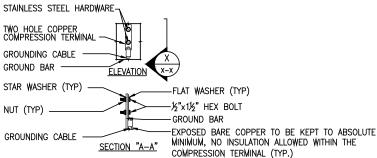


#### GROUNDING TERMINATION MATRIX 7

SCALE: N.T.S

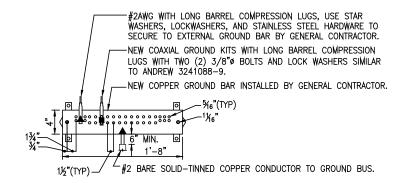


E-2



#### NOTES:

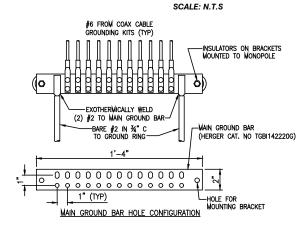
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

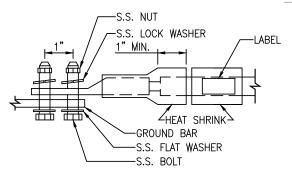


- 1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
- FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
- 3. ALL HOLES ARE COUNTERSUNK 1/6".

#### TYPICAL GROUND BAR CONNECTIONS DETAIL







GROUND BAR DETAIL / E-2

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 -

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	RFE			
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	ZONING			
	OPS			
	CONSTR.			
ì	SITE AC.			

PROJECT NO:	CT11333D
DRAWN BY:	FG
CHECKED BY:	KM



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SITE NUMBER: CT11333D SITE NAME: NEW HAVEN/RT10/RT24

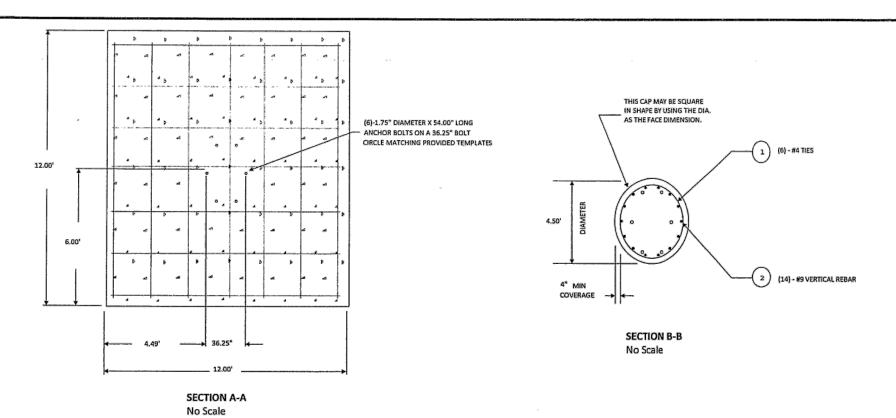
SITE ADDRESS: 274 DERBY AVENUE

NEW HAVEN, CT 06520

SHEET TITLE

**GROUNDING DETAILS** 

SHEET NUMBER



#### **GENERAL NOTES: SLAB FOUNDATION**

- 1. Prior to excavation, check the area for underground facilities.
- 2.All reinforcing shall be deformed bars conforming to ASTM A615 Grade 60 (60,000 psi min. yield) and shall be provided by the foundation contractor.
- 3.All concrete shall have a minimum compressive strength of 4000 psi @ 28 days. The requirement for the concrete shall be as given in the ACI "Building Code Requirements for Reinforced Concrete", ACI 318, the latest edition.
- 4.Trowel top of foundation smooth.
- 5.Concrete shall be placed against undisturbed soil to the depth indicated on the foundation drawing. The portion above grade shall be formed. If an area is excavated beyond the limits shown, this volume shall be filled with concrete or formed. After the forms are removed, the excess
  - filled with concrete or formed. After the forms are removed, the excavation shall be replaced and compacted.
- 6.Ground water was not encountered below grade during boring. 7.Foundation design based on vert. bearing pressure of 3000 psf.
- roundation design based on vert, bearing pressure
- 8.Concrete is assumed to weigh 150 pcf.
- 9.Estimated concrete volume = 12.54 cubic yards total.
  10.Design Based on the following loads from installation drawing for
  - order No: 329278.

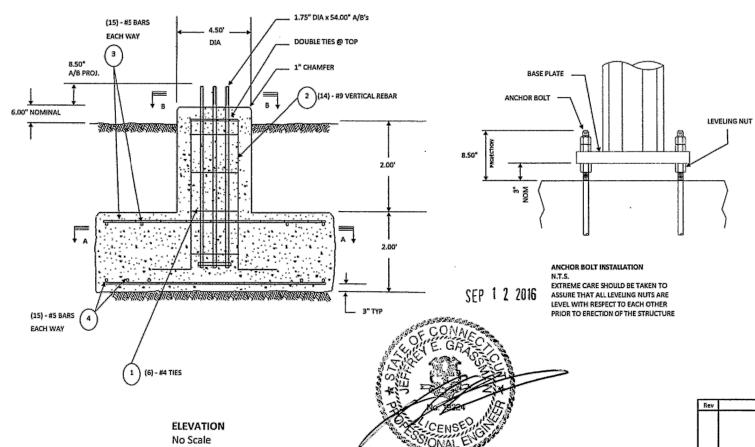
Factored Moment = 198 FT-KIPS

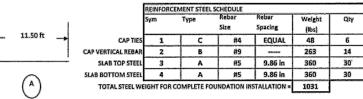
Overturning Safety Factor = 1.92

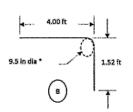
Factored Download = 6.0 KIPS Max. Toe Bearing Pressure = 1.14 ksf

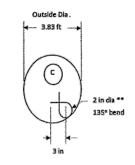
Factored Shear = 7.3 KIPS

- 11. Backfill should be compacted to a density of 100 pct.
- 12. Anchor bolts to be ASTM A615, Gr. 75 ksi.
- 13. Reference: DR WELTI REPORT AT YALE BOWL DATED 10/09/2000









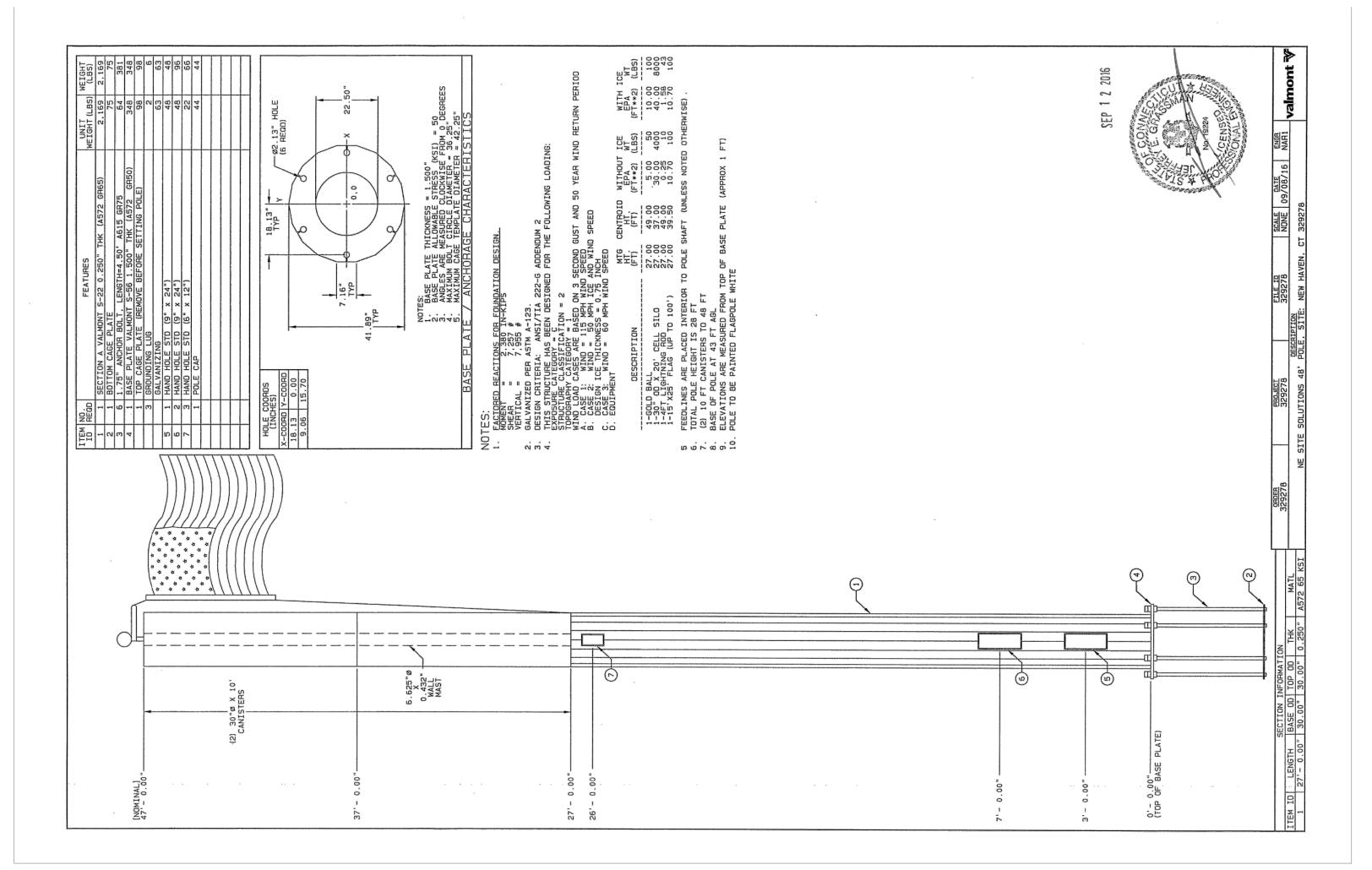
ade 60 F	tebar				
Size	Ask#	Wt/ft	6db (in)	d* (in)	d** (in)
#3	11-97203	0.38	2.25	2.25	1.50
#4	11-97204	0.67	3.00	3.00	2,00
#5	11-97205	1.04	3.75	3.75	2.50
#6	11-97200	1.50	4.50	4.50	4,50
#7	11-97207	2.04	5.25	5.25	4.25
#8	11-97208	2.67	6.00	6.00	6.00
#9	11-97209	3.40	6.77	9.50	-
#10	11-97210	4.30	7.62	10.75	
#11	11-97211	5.31	8.46	12.00	-

- Refers to ACI standard hook detail chart
- \*\* Refers to ACI stirrup hook detail chart

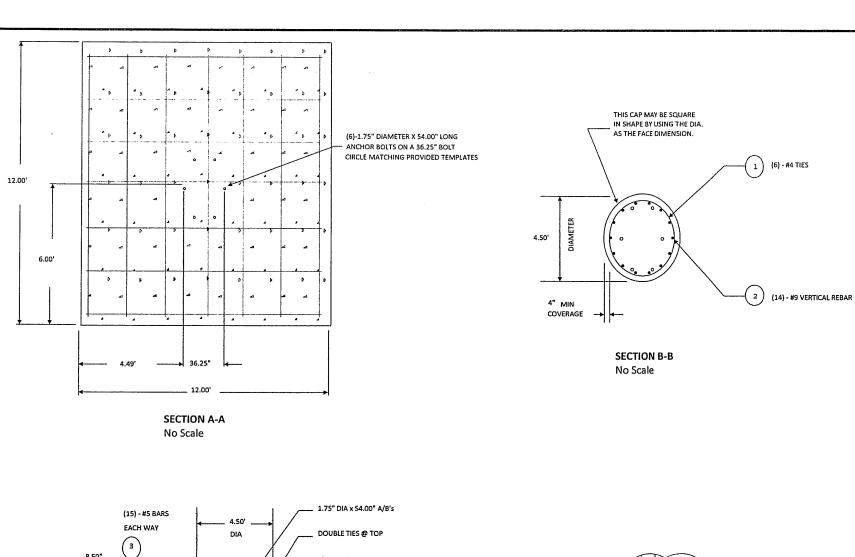
Rebar	Rebar	ebar Specified Overlap (inches)				
Size	Grade	Concrete	Vert &	Bottom	Тор	
		Strength	Ties	Horiz	Horiz	
#3	60	4000 psi	13	15	21	
#4	60	4000 psi	18	20	29	
#5	60	4000 psi	22	26	36	
#6	60	4000 psi	26	33	46	
#7	60	4000 psi	38	45	62	
#8	60	4000 psi	43	59	82	
#9	60	4000 psi	49	74	104	
#10	60	4000 psi	58	95	132	
#11	60	4000 psi	71	116	163	

Splicing is an alternative to specified material listed in rebar schedule. Lap Splice may be used on ties when Selsmic Hook not required.

Rev	Description	Date	By/Ck	UNLESS OTHERWISE NOTED	valmont ₹ 3575 25TH STREET SE SALEM, OR 97302  MAIN (503) 363-9267
				DIMENSIONS ARE IN INCHES TOLERANCES ARE:	MICROFLECT FAX (503) 316-30267
		,		X'- X X/X" - ± 1/16" X X/X" - ± 1/16" X'- X 1/16"	By: NAR CLAS FOUNDATION LAYOUT Check: NAR, Customer NW SITE SOLUTIONS Date: 09/08/16 Site NEW HAVEN
				S.O. 329278	SIZE - B Dwg No. B-144561 Sheet 1 of 1



## Exhibit D



#### **GENERAL NOTES: SLAB FOUNDATION**

1.Prior to excavation, check the area for underground facilities.

2.All reinforcing shall be deformed bars conforming to ASTM A615 Grade 60 (60,000 psi min. yield) and shall be provided by the foundation contractor.

3.All concrete shall have a minimum compressive strength of 4000 psi @ 28 days. The requirement for the concrete shall be as given in the ACI "Building Code Requirements for Reinforced Concrete", ACI 318, the latest edition.

4. Trowel top of foundation smooth.

5.Concrete shall be placed against undisturbed soil to the depth indicated

on the foundation drawing. The portion above grade shall be formed. If an area is excavated beyond the limits shown, this volume shall be filled with concrete or formed. After the forms are removed, the excess

excavation shall be replaced and compacted.

6. Ground water was not encountered below grade during boring.

7. Foundation design based on vert. bearing pressure of 3000 psf.

8.Concrete is assumed to weigh 150 pcf.

9.Estimated concrete volume = 12.54 cubic yards total.

10.Design Based on the following loads from installation drawing for

order No: 329278.

Factored Moment = 198 FT-KIPS Factored Download = 6.0 KIPS Overturning Safety Factor = 1.92

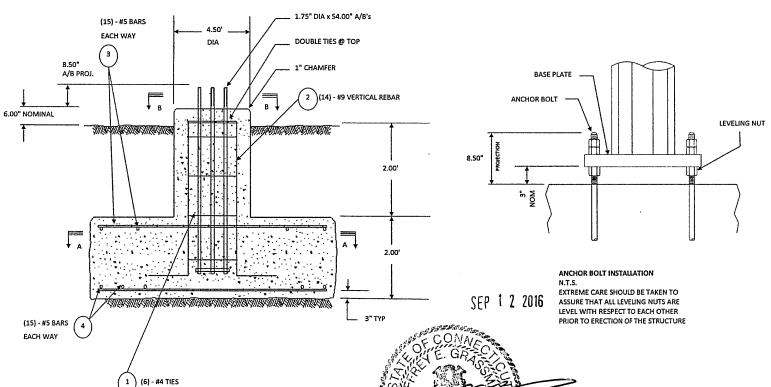
Max. Toe Bearing Pressure = 1.14 ksf

Factored Shear = 7.3 KIPS

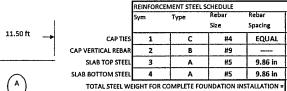
11. Backfill should be compacted to a density of 100 pcf.

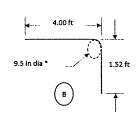
12. Anchor bolts to be ASTM A615, Gr. 75 ksi.

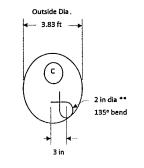
13. Reference: DR WELTI REPORT AT YALE BOWL DATED 10/09/2000



ELEVATION No Scale







Size	Ask#	Wt/ft	6db (in)	d* (in)	d** (in)
#3	11-97203	0.38	2.25	2.25	1.50
#4	11-97204	0.67	3.00	3.00	2.00
#5	11-97205	1.04	3.75	3.75	2.50
#6	11-97200	1.50	4.50	4.50	4.50
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#8	11-97208	2.67	6.00	6.00	6.00
#9	11-97209	3.40	6.77	9.50	-
#10	11-97210	4.30	7.62	10.75	-
#11	11-97211	5.31	8.46	12.00	

263

360

360

30

\* Refers to ACI standard hook detail chart

\*\* Refers to ACI stirrup hook detail chart

Rebar	Rebar	Specified		Overlap (inc	hes)
Size	Grade	Concrete	Vert & Bottom T		Тор
		Strength	Ties	Horiz	Horiz
#3	60	4000 psi	13	15	21
#4	60	4000 psi	18	20	29
#5	60	4000 psi	22	26	36
#6	60	4000 psi	26	33	46
#7	60	4000 psi	38	45	62
#8	60	4000 psi	43	59	82
#9	60	4000 psi	49	74	104
#10	60	4000 psi	58	95	132
#11	60	4000 psi	71	116	163

Splicing is an alternative to specified material listed in rebar schedu Lap Splice may be used on ties when Selsmic Hook not required.

Rev	Description	Date	By/Ck	UNLESS OTHERWISE NOTED	valen	ont W	3575 25TH STREET SE SALEM	OR 97302
				DIMENSIONS ARE IN INCHES TOLERANCES ARE:		ROFLEC		
				X'- X X/X" - ± 1/8" X X/X" - ± 1/8" X" - ± 1/8"	Check:	NAR,	SLAB FOUNDATION LAYOU Customer NW SITE SOLUT Site NEW HAVEN	
					SIZE - B	Dwg No. B	-144561	Sheet 1 of 1



VALMONT/MICROFLECT
3575 25<sup>1H</sup> ST. SE – P.O. BOX 12985
SALEM, OR 97302-1190
PHONE: 1-800-547-2151
ENGINEER:NAR
Reviewed by:NAR

# SLAB FOUNDATION DESIGN CALCULATIONS

SEP 1 2 2016



Valmont Order No.: 329278

**Customer: NW SITE SOLUTIONS** 

Site: NEW HAVEN

Pole Ht: 27 FT (48 FT AGL)

# valmont ♥ Pole Foundation Mat Design MICROFLECT

SLAB DESIGN			Date:	09/08/16	Time:	18:06
Project:	329278	3	Run by:	NAR		
Input (Blue):			Checked by:	NAR		
legs	1		1 = Pole \ 3	3 or 4 = Tower		
otm_t	198	k-ft	total pole o	overturning moment		
sh_t	7.26	k	total pole s	shear		
sh_1	7.26	k				
wt	5.97	k	total pole v	weight * 0.9		
f_w	3.02	ft	anchor bolt	circle dia		
b	12.00	ft	slab width	(rigid square slab	only)	
t	24.00	in	slab thickne	ess		
net_p_a	3.00	ksf	ultimate so	ll bearing pressure		
s_f	1.00		allowable st	ress increase fact	or (rebar)	
c_h	30.00	in	cap height a	above slab		
c_s	54.00	in	cap dia			
d_f	4.00	ft.	depth from f	final grade to bott	om of footing	
d_fl	24.00	in	depth of fil	ll over slab		
dens_c	0.150	kcf	density of d	concrete		
dens_s	0.100	kcf	density of s	soil		
dens_fl	0.100	kcf	density of f	ill over slab		
f_c	4,000	psi	concrete com	pres. strength		
c_type			concrete typ	oe .		
f_y e	50,000	psi	rebar yield	strength		
u	1.00	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	soil factor	of safety: qult/qa	11.	
Output Summar	y (see	complete	calculations	below):	₩# 	
s_r	1.92		OK (overturn	ing F.S. OK)		
net_p	1.14	ksf	OK (net soil	bearing pressure	is OK)	
vol_c	12.54	cu.yd.	Total volume	of concrete.		
slab two-way	shear:		(punching sh	ear ok)		
slab beam she	ar:		(beam shear	ok)		

Slab Reinforcement (ASTM A615 Gr.60):

		Size	Quan.	Len.	Spc.	Total
			(E/W)	(ft)	(in)	(lbs)
	Top Bar	#4	14	11.50	10.62	215 <01
Y	Options	#51 //	17.15	1111.50	9.86	360 <0
		#6	7	11.50	23.00	242
	As>=2.79	#7	5	11.50	34.50	235
		#8	4	11.50	46.00	246
		#9	3	11.50	69.00	235
	Bot.Bar	#4	18	11.50	8.12	277 <01
Y	Options	/ <sup>*</sup> ." #5.",	15.	11,50	9.86	360 <u> </u>
		#6	8	11.50	19.71	276
	As>=3.43	#7	6	11.50	27.60	282
		#8	5	11.50	34.50	307
		#9	4	11.50	46.00	313

(special design req'd for cap shear reinforcement)
(special design req'd for cap flexural/tensile reinforcement.)

VALMONT MICROFLECT 3575 25TH STREET SE SALEM, OR 97302 PHONE: 1-800-547-2151



# Pole Foundation Mat Design Special Cap Reinforcement

Special Cap Reinforcement:

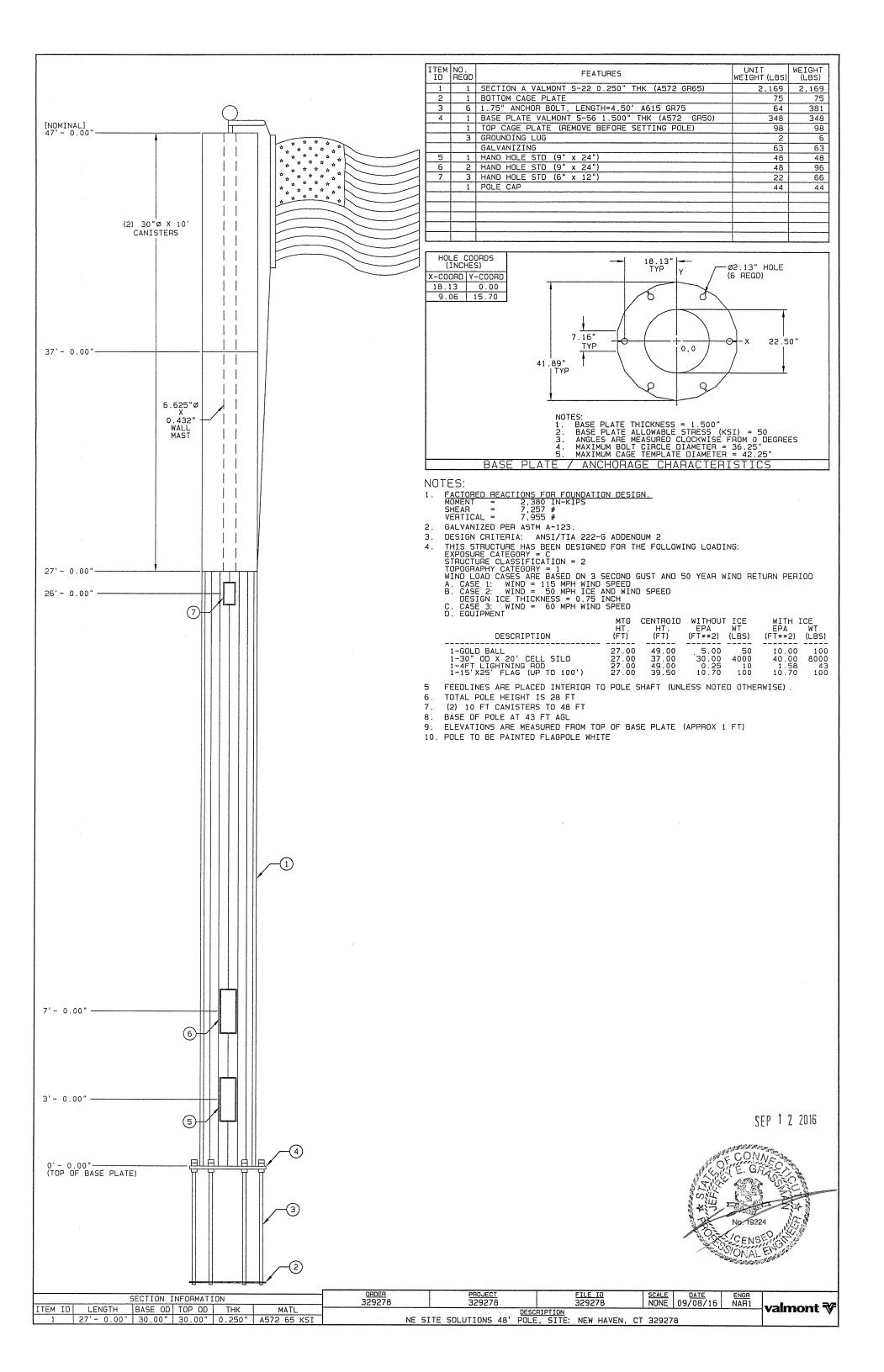
Projec 329278

# #	Vertical Reinforcement Size =  Quantity of vertical rebar  Total area of vert. rebar  Vertical rebar horiz. Spacing  Factored max moment in cap = M + (V*h <sub>cap</sub> )  Section Modulus of rebar  fb = M/S  Section Modulus of vert  And wert. bar dev. length = (3d <sub>b</sub> /40)*(f <sub>y</sub> /f <sup>1</sup> , f <sup>2</sup> , f <sup>3</sup> )*(1/2.5)  Shear tie rebar size = 1  Vertical spacing  Factored max shear in cap =  Concrete shear capacity = 0.85*2*sqrt(f'c)*bw*d  Concrete shear capacity = 0.85*2*sqrt(f'c)*bw*d  Anchor Bolt Diameter (a)  Circumference  # of ties  Anchor Bolt Diameter  Length of Anchor Bolts  Depth of Pocket to Accommodate Anchor Bolts  Total Depth from Final Grade  Pocket Vol:		Date:  rebar dev. 1  iev. length Oi  tev. length Oi  olt Required  olf Required  olf Required  olf Required
	Total area of vert. rebar		= 0.005*Acap = 11.45in2, OK
	vertical rebar horiz. Spacing	8.72	1.5db and >= 1.5in, OK (ACI)
			(conservatively neglect passive pressure of soil)
1 11 11			
14.00 8.72 8.72 164.4	S/M = dj		=54ksi, OX
	Req'd vert. bar dev. length = $(3d_b/40)*(f_y/f_c^{0.5})*(1/2.5)$	32.02	provide min 33 in vert. rebar dev. length
= 14.00 in2 >= 0. = 8.72 in >= 1.5 = 218.3 ft-k (com = 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in	concrete cover	4:00	
= 14.00 in2 >= 0. = 8.72 in >= 1.5 = 218.3 ft-k (com = 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in = 32.02 in	length of vert rebar	4.00	
= 14.00 in2 >= 0. = 8.72 in >= 1.5 = 218.3 ft-k (com = 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in = 32.02 in = 4.00 ft	rs	48.00	> 33 in of vert. rebar dev. length OK
= 14.00 in2 >= 0. 8.72 in >= 1.5 8.72 in >= 1.5 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in = 32.02 in = 40.00 in = 40.00 in	*p	9.50	
= 14.00 in2 >= 0. 8.72 in >= 1.5 8.72 in >= 1.5 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in = 32.02 in = 4.00 ft = 48.00 in 9.50 in	· A	1.52	
= 14.00 in2 >= 0. 8.72 in >= 1.5 = 218.3 ft-k (com = 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in = 4.00 ft = 48.00 in = 48.00 in = 1.52 ft	total wt of vert rebar	263	
= 14.00 in2 >= 0. 8.72 in >= 1.5 = 218.3 ft-k (com = 164.4 in³ = 15.9 ksi <=54k = 32.02 in = 4.00 ft = 40.00 in = 40.00 in = 1.52 ft = 263 lbs	radius of vert rebar	21.94	
= 14.00 in2 >= 0. 8.72 in >= 1.5 = 218.3 ft-k (com = 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in = 4.00 ft = 48.00 in 9.50 in = 26.3 lbs = 21.94 in	Shear tie rebar size =	*	
= 14.00 in2 >= 0.  8.72 in >= 1.5  8.72 in >= 1.5  164.4 in  15.9 ksi <=54k  15.9 ksi <=54k  4.00 in  4.00 ft  4.00 ft  1.52 ft  1.52 ft  2.63 lbs  = 21.94 in	vertical spacing		
= 14.00 in2 >= 0.  = 8.72 in >= 1.5  = 164.4 in <sup>3</sup> = 15.9 ksi <=54k  = 32.02 in  = 4.00 ft  = 40.00 in  9.50 in  = 1.52 ft  = 26.3 lbs  = 21.94 in  = 1.22.00 in	Factored max shear in cap =	7.3 k	
= 14.00 in2 >= 0.  = 8.72 in >= 1.5  = 218.3 ft-k (com  = 15.9 ksi <=54k  = 32.02 in  = 4.00 ft  4.00 ft  = 40.00 in  = 9.50 in  = 26.3 lbs  = 21.94 in  7.3 k	Concrete shear capacity = 0.85*2*sqrt(f'c)*bw*d		
= 14.00 in2 >= 0. 8.72 in >= 1.5 8.72 in >= 1.5 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in 4.00 ft 4.00 ft = 40.00 in = 9.50 in 1.52 ft = 26.3 k, 0K = 7.3 k			Anchor Bolt Embedment Check
= 14.00 in2 >= 0. 8.72 in >= 1.5 8.72 in >= 1.5 164.4 in <sup>3</sup> = 15.9 ksi <=54k = 32.02 in 4.00 ft 4.00 ft 4.00 ft 4.00 ft 4.00 ft 2.50 in 1.52 ft 2.63 lbs = 21.94 in 7.3 k		3.83	۸
= 14.00 in2 >= 0.005*Acap = 11.45in2, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in and 1.5 kg in and		12.04	٨
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.74 in ad 9.70 i	# of ties		
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad	total wt of ties	48	
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in)	****	2.00	
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5.9 ksi <= 54ksi, OX		5.00	
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in)	Anchor Bolt Diameter		
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in and 1.5 ) ksi <= 54ksi, OX	Tenath Of Anahar Bolts		
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in)	Anchor Bolt Projection .		
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in)	Depth of Pocket to Accommodate Anchor Bolts		
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 1.4 in)		4.00	
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >		0.00	
= 14.00 in2 >= 0.005*Acap = 11.45in2, on (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 8.72 in >= 1.5db and >= 1.5in, OX (Ad 11.4 in 3.4 in 3.4 in 3.4 in 4.00 in 5.9 ksi <= 54ksi, OX	TOTAL TOTAL MINISTER CALIFORNIA CARREST	G 11	

	REINFOR	REINFORCEMENT STEEL SCHEDULE	SEL SCHEDU	LB							
	E S	PATO	Rebar	Rebar	Dimensions	8				Weight	Qty
	į.	145	Size	Spacing	æ	Q	υ	ğ	(qp9)	(1ps)	
CAP TIES	1	ນ	#4	EQUAL	3.83 ft			2 in 3 in	3 in	48	9
CAP VERTICAL REBAR	7	Д	6#		4.00 ft 1.52 ft	1.52 ft		9.5 in		263	14
SLAB TOP STEEL	3	ď	#2	9.86 in	11.50 ft					360	30
SLAB BOTTOM STREL	4	A	#4	8.12 in	11.50 ft					277	36
	TOTAL S	TEEL WEIGH	IT FOR COM	TOTAL STEEL WEIGHT FOR COMPLETE FOUNDATION INSTALLATION	N INSTALL	ATION =				948	

VALMONT MICROFLECT 3575 25TH STREET SE SALEM, OR 97302 PHONE: 1-800-547-2151

TOTAL VOLUME OF CONCRETE FOR FOUNDATION INSTALLATION =



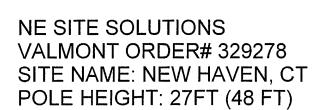


**STRUCTURES** 

VALMONT MICROFLECT 3575 25th St. SE Salem, OR 97302 PHONE: 1-800-547-2151 ENGINEER: Nathan Ross Reviewed by:

# COMMUNICATION POLE DESIGN CALCULATIONS

SEP 1 2 2016





#### **STRUCTURES**

9/8/16

#### **ENGINEERING DATA**

#### **NE SITE SOLUTIONS NEW HAVEN, CT VALMONT QUOTATION 329278**

1)	STRUCTURE DESIGN CONFORMS TO EIA/TIA-222-G INCLUDING: 115.0 MPH WIND (3 SECOND GUST, 50 YR. RETURN PERIOD) 50.0 MPH ICE WIND (50 YR. RETURN PERIOD)
	DESIGN ICE THICKNESS = 0.75 INCHES
	EXPOSURE CATEGORY C
	STRUCTURE CLASSIFICATION II
	TOPOGRAPHIC CATEGORY 1
	60.0 MPH BASIC WIND SPEED WITH NO ICE FOR TWIST AND SWAY
2)	FEEDLINES ARE ASSUMED TO BE PLACED INTERIOR TO THE POLE.
3)	ALL MICROWAVE ASSUMED TO BE 6 GHz UNLESS OTHERWISE NOTED.
4)	TOTAL POLE HEIGHT IS 28 FT
5)	(2) 10 FT CANISTERS TO 48 FT
6)	BASE OF POLE AT 43 FT AGL
7)	ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE (APPROX 1 FT)
8)	POLE TO BE PAINTED FLAGPOLE WHITE
9)	LOADING AS FOLLOWS:
	27.0' POLE
	1 - GOLD BALL @ 27.0
	1 - 30" OD X 20' CELL SILO @ 27.0

#### STRUCTURE ANCHORAGE INFORMATION

1 - 4ft lightning rod @ 27.0 1 - 15'x25' flag (up to 100') @ 27.0

POLE HEIGHT(FT):	27	NUMBER OF A.B.'s:	6
BOLT CIRCLE(IN):	36.25	DIA. OF A.B.'s(IN):	1.75
BASE VERTICAL(K):	7.95	LENGTH OF A.B.'s(IN):	54.00
BASE SHEAR(K):	7.26	PROJECTION LENGTH(IN):	8.50
BASE MOMENT(FT-K):	198	TEMPLATE OD(IN):	39.75



#### **STRUCTURES**

BY	DATE	
CHKD. BY	_DATE	SHEET NO.

9/8/16

#### **ENGINEERING DATA**

for

#### **NE SITE SOLUTIONS NEW HAVEN, CT VALMONT QUOTATION 329278**

EIA/TIA-222-G

BASIC WIND:	115.0 MPH	DESIGN ICE THICKNESS:	0.75 IN.
WIND & ICE:	50.0 MPH	EXPOSURE CATEGORY:	С
TWIST & SWAY:	60.0 MPH	STRUCTURE CLASS.:	11
S <sub>S</sub> :	N/A	TOPOGRAPHIC CATEGORY:	1
S₁:	N/A		

		DATA W.O.	ICE	DATA W/	ICE
QTY DESCRIPTION	HEIGHT	EPA	WT	EPA	WT
1 GOLD BALL	@ 27.0 '	5.00	50	10.00	100
1 30" OD X 20' CELL SILO	@ 27.0 '	30.00	4000	40.00	8000
1 4ft lightning rod	@ 27.0 '	0.25	10	1.58	43
1 15'x25' flag (up to 100')	@ 27.0 '	10.70	100	10.70	100

BY VALMONT INDUSTRIES FOR:	NE SITE SOLUTIONS 48' POLE, SITE: NEW HAVEN, CT 329278	OLE, SITE:	NEW HAVEN,	CT 329278	
	*** SUMMARY	RY ***			
Design Code: 11A-2227-6 Addendum 2	DESIGN SUMMARY	ARY			1
Height Above Base Plate (ft) 27.00	Ground Line Diameter (in)	30.000		Pole Shaft Weight (lbs)	2169
	Top Diameter (in)	30.000			
	Pole Taper (in/ft)	0.0000.0	Shape:	18 Sides	
Section Characteristics	/First/				
Base Diameter (in)	30.000				
Top Diameter (in)	30.000				
Thickness (in)	0.25000				
Length (ft)	27.000				
Weight (lbs)	2169				
Yield Strength (ksi)	65.00				

e C.	WIND	27.00	561	3902	4970	78.59	0.05	1.15
Pole Top	MIN							
Governing Level Sec.1	WIND	00.00	2380	7259	7604	78.59	0.20	00.00
Pt. of Fixity	WIND	00.00	2380	7259	7604	78.59	0.20	00.00
	Governing Load Case	Height (ft)	Resultant Moment (in-kips)	Shear Force (lbs)	Axial Force (lbs)	Effective Yield Strength (ksi)	Combined Interaction Value	Total Deflection (in)

---- ANALYSIS SUMMARY

Note: Diameters are outside, measured across the flats Forces and moments are reported in the local element coordinate system

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NEW HAVEN, CT 329278
HAVEN,
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NE SITE SOLUTIONS 48' POLE,
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DATE 09/08/2016 Fuse 1.13.0.0

Shear Notes Resultant (X & Y) (1bs)	7257 1433 1105
Shear In on Y-Direction (lbs)	5559 1098 846
Shear In X-Direction (1bs)	4665 921 710
Vertical Force (1bs)	7607 13822 6329
Moments Torsional (in-kips)	000
Moments Resultant (X & Y) (in-kips)	2380 434 362
Moments About Y-Axis (in-kips)	-1530 -279 -233
Moments About X-Axis (in-kips)	1823 332 277
Loading Case Identifier	WIND ICE + WIND T+S

Note: Positive vertical force is downward.

Reactions are considered in the global coordinate system.

Orientation of System +\*\*\*\* +X-Axis (Transverse)

\* (Vertical)
\* +2-Axis

(Longitudinal) \* +Y-Axis \*

# \*\*\* INPUT LOADS \*\*\*

	1-GOLD BALL	1-30" OD X 20	1-4ft lightni	1-15'x25' fla
EPA (ft^2)	5.00	30.00	0.25	10.70
Force-Z (lbs)	09	4800	12	120
Force-Y (1bs)	331	1928	17	692
Force-X (lbs)	278	1618	14	581
Orientation in XY Plane (Degrees)	50.00	50.00	50.00	50.00
Load Eccentricity (ft)	00.00	00.00		00.00
Load Height (ft)	49.00	37.00	49.00	39.50
Mounting Height (ft)	27.00	27.00	27.00	27.00
Load Number	Н	2	ю	Þ

DATE 09/08/2016 Fuse 1.13.0.0

NE SITE SOLUTIONS 48' POLE, SITE: NEW HAVEN, CT 329278 FOR:

BY VALMONT INDUSTRIES

# \*\*\* INPUT LOADS \*\*\*

	Orientation of System +***** +X-Axis	* * (Transverse)	* *	*	<pre>(Longitudinal) * * (Vertical) +Y-Axis * +Z-Axis</pre>		
Design Code TIA-222-G Addendum 2 Loading Case ICE + WIND	Basic Wind Velocity is 50.00 mph Ice Thickness 0.75	Wind Orientation is 50.0 Degrees Clockwise From +X Axis	Structure Weight Overload Factor is 1.200	Exposure C, Gust Factor 1.35	Structure Category 2, Topographic Category 1, Crest Height 0.00 ft Orientations are Measured Clockwise From +X Axis	Positive Y Axis is 90 Degrees Clockwise From +X Axis Foundation Rotation of 0.00 Degrees	Elevation of structure base above surrounding terrain = 43.00 ft

	1-GOLD BALL	1-30" OD X 20	1-4ft lightni	1-15'x25' fla
EPA (ft^2)	10.00	40.00	1.58	10.70
Force-Z (lbs)	120	0096	52	120
Force-Y (1bs)	78	304	12	82
Force-X (lbs)	99	255	10	69
Orientation in XY Plane (Degrees)	50.00	50.00	50.00	50.00
Load Eccentricity (ft)	00.0	00.00	00.00	00.00
Load Height (ft)	49.00	37.00	49.00	39.50
Mounting Height (ft)	27.00	27.00	27.00	27.00
Load Number	Н	7	т	4

DATE 09/08/2016 Fire 1 13 0 0			Orientation of System +***** +X-Axis	* * (Transverse)	*	*	<pre>11) * * (Vertical)</pre>	s * + +Z-Axis			
EW HAVEN, CT 329278			0				(Longitudinal) *	+Y-Axis			
NE SITE SOLUTIONS 48' POLE, SITE: NEW HAVEN, CT 329278	*** INPUT LOADS ***	n 2	0 mph Ice Thickness 0.00	grees Clockwise From +X Axis	or is 1.000		Structure Category 2, Topographic Category 1, Crest Height 0.00 ft	kwise From +X Axis	s Clockwise From +X Axis	grees	Elevation of structure base above surrounding terrain = 43.00 ft
BY VALMONT INDUSTRIES FOR:		Design Code TIA-222-G Addendum 2 Loading Case T+S	Basic Wind Velocity is 60.00 mph Ice Thickness 0.00	Wind Orientation is 50.0 Degrees	Structure Weight Overload Factor is	Exposure C, Gust Factor 1.35	Structure Category 2, Topograph	Orientations are Measured Clockwise	Positive Y Axis is 90 Degrees Clockwise From +X Axis	Foundation Rotation of 0.00 Degrees	Elevation of structure base abo

	1-GOLD BALL	1-30" OD X 20	1-4ft lightni	1-15'x25' fla
EPA (ft^2)	5.00	30.00	0.25	10.70
Force-Z (lbs)	20	4000	10	100
Force-Y (1bs)	50	293	ю	105
Force-X (lbs)	42	246	2	88
Orientation in XY Plane (Degrees)	50.00	50.00	50.00	50.00
Load Eccentricity (ft)	00.00	00.00	00.00	00.00
Load Height (ft)	49.00	37.00	49.00	39.50
Mounting Height (ft)	27.00	27.00	27.00	27.00
Load Number	-1	2	т	4

### \*\*\* Properties \*\*\*

n	in^2)	23.61	23.61	23.61	23.61	23.61	23.61	23.61	23.61	23.61	23.61	23.61	23.61
Ioments of	~	2639	2639	2639	2639	2639	2639	2639	2639	2639	2639	2639	2639
w/t M		19.40	19.40	19.40	19.40	19.40	19.40	19.40	19.40	19.40	19.40	19.40	19.40
D/t	Flats	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00
Wall	(in)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
Diameter Across Flate	(in)	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
Distance From Race	(ft)	27.00	24.50	22.00	19.50	17.00	14.50	12.00	9.50	7.00	4.50	2.00	00.00
no:+reanno)	Locations	Top of Sect 1											Pt of Fixity

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	Axial (1bs)	4970	5212	5454	5697	5940	6184	6428	6673	6919	7165	7411	7604
Resultant	Shear (1bs)	3902	4229	4553	4874	5192	5506	5817	6124	6427	6726	7021	7259
Shear	Y-Dir. (1bs)	2989	3240	3488	3734	3977	4218	4456	4691	4923	5152	5379	5561
Shear	X-Dir. (1bs)	2508	2718	2927	3133	3337	3539	3739	3936	4131	4323	4513	4666
	Torsion (in-kips)	0	0	0	0	0	0	0	0	0	0	0	0
Resultant	Mx & My (in-kips)	561	683	815	926	1107	1268	1437	1617	1805	2002	2209	2380
	My (in-kips)	-361	-439	-524	-615	-712	-815	-924	-1039	-1160	-1287	-1420	-1530
MIND	Mx (in-kips)	430	523	624	732	848	971	1101	1238	1383	1534	1692	1823
Loading Case WIND Dist. From	Base (ft)	27.00	24.50	22.00	19.50	17.00	14.50	12.00	9.50	7.00	4.50	2.00	00.00

DATE 09/08/2016 Fuse 1.13.0.0

POLE,	
48	
SOLUTIONS	
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FOR:	
INDUSTRIES	
BY VALMONT	
BY	

Deflections and Stresses for Pole

	Effective Yield Strength (ksi)	78.59	78.59	78.59	78.59	78.59	78.59	78.59	78.59	78.59	78.59	78.59
	Combined Stress Interaction	0.05	0.06	0.08	0.09	0.11	0.12	0.14	0.15	0.17	0.19	0.20
*	Torsion Interaction Term	0.00	00.0	00.0	00.0	00.0	00.0	00.0	00.00	00.0	00.0	00.00
Stresses ***	Shear Torsion Interaction Interaction Term Term	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
*** Deflections and Stresses	Flexural Interaction Term	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.19
*** Defle	Axial Interaction Term	0.00	00.0	00.00	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.00
	Rotation (deg.)	0.33	0.32	0.28	0.26	0.23	0.20	0.17	0.13	0.09	0.04	00.0
	Defl. Z-Dir (in)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Defl. Resultant X & Y (in)	1.2	0.4	0.7	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	Defl. Y-Dir (in)	0.0	9.0	0.5	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0
ase WIND	Defl. X-Dir (in)	0.7	0.0	0.4	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0
Loading Case WIND	Distance From Base (ft)	27.00	22.00	19.50	17.00	14.50	12.00	9.50	7.00	4.50	2.00	00.00

Forces and Moments for Pole in the Local Element Coordinate System

	Axial (lbs)	9891	10266	10640	11013	11384	11753	12119	12484	12845	13201	13552	13822
Resultant	Shear (1bs)	631	710	788	998	942	1017	1092	1165	1237	1308	1378	1434
Shear	Y-Dir. (1bs)	484	544	604	663	722	779	836	893	948	1002	1055	1098
Shear	X-Dir. (1bs)	406	457	507	556	909	654	702	749	795	841	886	922
	Torsion (in-kips)	0	0	0	0	0	0	0	0	0	0	0	0
Resultant	Mx & My (in-kips)	96	116	139	163	191	220	252	286	322	360	400	434
	My (in-kips)	-62	-75	68-	-105	-123	-141	-162	-184	-207	-231	-257	-279
ICE + WIND	Mx (in-kips)	74	68	106	125	146	169	193	219	246	276	307	332
Loading Case ICE + WI Dist. From	Base (ft)	27.00	24.50	22.00	19.50	17.00	14.50	12.00	9.50	7.00	4.50	2.00	00.0

	Fuse 1.13.0.0		Effective Yield Strength	7 7 7 7 7 7 7 7 7 7 7 8 8 8 8 8 7 7 7 7
			Combined Stress Interaction	0.01 0.02 0.02 0.03 0.03 0.03 0.03
29278		000000000000000000000000000000000000000		
N HAVEN, CT		*** Deflections and Stresses ***	Shear Torsion Interaction Interaction Term Term	000000000000000000000000000000000000000
E, SITE: NEV		ections and		0.01 0.01 0.01 0.02 0.02 0.02 0.03 0.03
SITE SOLUTIONS 48' POLE, SITE: NEW HAVEN, CT 329278  *** Deflections and Stresses ***	Axial Flexural Interaction Interaction Term Term	0.01 0.01 0.01 0.01 0.01 0.01 0.01		
SITE SOLUT			I Rotation (deg.)	000000000000000000000000000000000000000
NE :			Defl. Z-Dir (in)	0.0000000000000000000000000000000000000
FOR:	r Pole		Defl. Resultant X & Y (in)	000000000000000000000000000000000000000
DUSTRIES	resses for	WIND	Defl. R Y-Dir (in)	000000000000000000000000000000000000000
BY VALMONT INDUSTRIES	Deflections and Stresses	Loading Case ICE + WIND	Defl. X-Dir (in)	000000000000000000000000000000000000000
BY V	Deflectio	Loading C	Distance From Base (ft)	27.00 24.50 22.00 19.50 17.00 14.50 9.50 7.00 7.00

Forces and Moments for Pole in the Local Element Coordinate System

	Axial (1bs)	4159	4360	4561	4762	4963	5164	5365	5566	5766	5967	6168	6329
Resultant	Shear (1bs)	593	643	692	741	790	838	885	932	978	1024	1069	1105
Shear	Y-Dir. (1bs)	454	493	530	568	605	642	678	714	749	784	819	846
Shear	X-Dir. (1bs)	381	413	445	476	508	538	569	599	629	658	687	710
Torsion (in-kips)	Torsion (in-kips)	0	0	0	0	0	0	0	0	0	0	0	0
Resultant	Mx & My (in-kips)	85	104	124	145	168	193	219	246	275	305	336	362
	My (in-kips)	-55	<b>L9-</b>	-80	-93	-108	-124	-141	-158	-176	-196	-216	-233
7+S	Mx (in-kips)	65	80	95	111	129	148	167	188	210	233	257	277
Loading Case T+S Dist. From	Base (ft)	27.00	24.50	22.00	19.50	17.00	14.50	12.00	9.50	7.00	4.50	2.00	00.0

FOR: BY VALMONT INDUSTRIES

Deflections and Stresses for Pole

Loading Case T+S

*
Stresses
and
Deflections
*

	9 6	59	78.59	.59	.59	.59	.59	.59	.59	.59	.59
Effective Yield Strength (ksi)	78.59	78.	78.	78.	78.	78.	78.	78.	78.	78.	78.
Combined Stress Interaction	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
orsion eraction Term	00.00	00.00	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.00
l Shear T on Interaction Int Term	00.00	00.00	00.0	00.0	0.00	00.0	00.0	00.00	00.0	00.0	00.00
flexura teracti Term	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03
Axial luteraction In:	00.00	00.0	00.0	00.0	0.00	00.0	00.0	00.00	00.0	00.0	0.00
I Rotation (deg.)	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	0.01	00.00
Defl. Z-Dir (in)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Defl. Resultant X & Y (in)	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Defl. Y-Dir (in)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Defl. X-Dir (in)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Distance From Base (ft)	27.00	22.00	19.50	17.00	14.50	12.00	9.50	7.00	4.50	2.00	0.00

MINIMUM DEFLECTION RATIO // DEFLECTION LIMIT / DEFLECTION // IS

CT 329278
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POLE, STTE: NEW HAVEN.
NEW
STTR
48
NE SITE SOLUTIONS
SITE
NE
FOR:

BY VALMONT INDUSTRIES

DATE 09/08/2016 Fuse 1.13.0.0

THREAD SIZE	5-UNC-2A	CONFIGURATION OF BOTTOM END	THREADED WITH HEAVY HEY HEAD NITT
GALVANIZED LENGTH (IN.)	54.00	INTERACTION VALUE	N.27 THREAD
PROJECTION LENGTH (IN.)	8.50	_	O
	ATES	L STRESS AREA (SQ. IN.)	1.90
SHIPPED AS	BOLTS, TEMPLATES	MAXIMUM BOLT FACTORED NOMINAL STRESS SHEAR FORCE TENS. STRENGTH AREA (KIPS) (KIPS) (SQ. IN.	152.00
WEIGHT (KIPS)	0.25	MAXIMUM BOLT SHEAR FORCE (KIPS)	1.21
LENGIH (IN.)	54.00	MAXIMUM BOLT FORCE (KIPS)	39.14
DIAMETER (IN.)	1.750	STEEL SPECIF.	A615
NUMBER OF BOLIS	9	STEEL SPEC. VALMONT	\$23

NOTE: BOLT INTERACTION VALUE WAS CALCULATED BY DIVIDING SHEAR FORCE BY FACTOR RELATED TO DETAIL TYPE d] IN EIA-G SPECS.

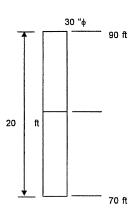
## \*\*\* BOLT COORDINATES (IN.) \*\*\*

	75 IN.
Y-COORD 15.697	= 39.75
X-COORD 9.063	DIAMETER
BOLT NO.	TEMPLATE
* *	
Y-COORD 0.000	
X-COORD 18.125	
BOLT NO.	
	36.25 IN.
	BOLT CIRCLE =
	MAX.

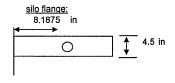
# \*\*\* BASE PLATE CHARACTERISTICS GOVERNED BY LOADING CASE WIND \*\*\*

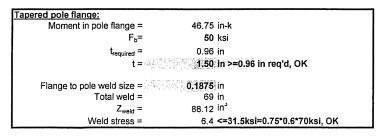
IAM. JIAM.) )	01	RED IG MOM. -K)	61			GLOBAL COORDINATE SYSTEM ************************************
POLE DIAM. (MAJOR DIAM.)	30.00	FACTORED RESISTING MOM (INK)	397.61			ING CASES **    MA   MA   MC   MC   RE   SE   BC
RAW MATERIAL WEIGHT (KIPS)	0.71	PLASTIC MOMENT (INK)	441.79	STRESS RATIO	0.31	**************************************
ACTUAL WEIGHT (KIPS)	0.35	MOMENT IN BASE PLATE (INK)	122.31	EFFECTIVE YIELD STRESS (KSI)	50	STEM ************************************
BASE PLATE THICKNESS (IN.)	1.50	PLASTIC SECTION MOD. (CU. IN.)	8.84	STEEL SPECIF. OTHER	A572	OBAL COORDINATE SYMIND 1823 332 -1529 -278 7256 1433 7606 13822
BASE PLATE DIAMETER (IN.)	41.25	EFFECTIVE PLATE WIDTH (IN.)	15.71	STEEL SPECIF. VALMONT	856	** LOADS AT POLE BASE IN THE GL LOADING CASE IDENTIFICATION MOMENT ABT. X-AXIS (IN-KIP) MOMENT ABT. Y-AXIS (IN-KIP) SHEAR FORCE (LB.) VERTICAL FORCE (LB.)

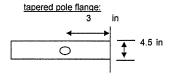
Quote/Order No.:	329278	ENGR	NAR
Total flagpole height =	90 f	ft Date:	9/8/2016
Height of pole =	<b>70</b> f	īt	
Silo pipe change height =	90 f	ft .	
Diameter of cellsilo =	<b>30</b> i	n	
Height of cellsilo =	20 f	t	
Flag dimensions =	<b>15</b> f	tx 25	ft
3-sec gust windspeed= V=	115 r	mph	
# of Top Whip Antennas	0	default	0
# of Antennas =	. 6	default	# of Carriers*3
# of Carriers = 1	2		
Paint Type	White	default	Gray
Weight =	4.00 H	<	
Topo =		default	1
Topo H =	0		
Exposure =	C (		~
Structure Class =	2)(		2
Windarea of silo = $C_AA_A$ =	30.0 f		
Windarea of flag = $C_AA_A$ =	10.7 f	ť	
Windpressure per EIA-G=	43.8 p	osf	
Force from top part of silo =	0.00 H	<b>(</b>	
Force from entire silo =	2.10 k	<b>‹</b>	
Force from flag =	0.75 k	<b>(</b>	
$\Delta_{\text{silo}} = PL^3/3EI =$	8.2 i	n	
Moment at pipe change =	32.9 i	n-k = 2.7 ft	-k
Moment at base of silo =	561.0 i	n-k = 46.8 t	t-k

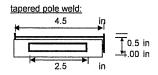


Bolts for base flange:			
bolt diameter =	0:75	in	
area of bolt =	0.331	in <sup>2</sup>	
number of bolts =	6		
Flange bolt circle =	24		
Max bolt force =			
Max bolt stress =	47.0	ksi <= 90	)ksi = 0.75*120ksi, OK
Silo base flange:			
Moment in silo flange =	127.5885417	in-k	
F <sub>b</sub> =	50	ksi	
t <sub>required</sub> =	1.59	in	
t =	2	in >=1.59	in req'd, OK
Silo lower support pipe:			
Pipe Size	6.0" x 0,432"		
Silo support pipe =	6.625	"OD x	0.432 "Wall Thickness
Support pipe weight per foot =			
Z=	16.60	in <sup>3</sup>	
i=	54.97	in <sup>4</sup>	
$f_b = M/Z =$	34	<=45Ksi	=0.9*50ksi, OK
Pipe to flange weld size =	0.7E	in	
	27.20	in	
Z <sub>weld</sub> =	27.20		tion area certains. OK
Weld stress =	20.6	<≖31.5K9	ij≑0.75*0.6*70ksi, OK









### Exhibit E



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

T-Mobile Existing Facility

Site ID: CT11333D

New Haven/Rt10/Rt24 274 Derby Avenue New Haven, CT 06520

**September 19, 2016** 

EBI Project Number: 6216004154

Site Compliance Summary				
Compliance Status:	COMPLIANT			
Site total MPE% of FCC general public allowable limit:	8.17 %			



September 19, 2016

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

Emissions Analysis for Site: CT11333D – New Haven/Rt10/Rt24

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **274 Derby Avenue**, **New Haven**, **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 **274 Derby Avenue, New Haven, 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) Since all radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 1.14 dB of additional cable loss for all ground mounted 700 MHz Channels, 2.02 dB of additional cable loss for all ground mounted 1900 MHz channels and 2.08 dB of additional cable loss for all ground mounted 2100 MHz channels. This is based on manufacturers Specifications for 120 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 DBXNH-6565B-A2M** & **RFS APX16DWV-16DWVS-E-A20** 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 DBXNH-6565B-A2M** has a maximum gain of **17 dBd** at its main lobe at 1900 MHz and a maximum gain of **13.1 dBd** at its main lobe at 700 MHz. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe at 1900 MHz and 2100 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 centerlines of the proposed antennas are **75 feet & 85 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:	С
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope DBXNH-6565B- A2M	Make / Model:	Commscope DBXNH-6565B- A2M	Make / Model:	Commscope DBXNH-6565B- A2M
Gain:	17 dBd / 13.1 dBd	Gain:	17 dBd / 13.1 dBd	Gain:	17 dBd / 13.1 dBd
Height (AGL):	75	Height (AGL):	75	Height (AGL):	75
Frequency Bands	1900 MHz (PCS) / 700 MHz	Frequency Bands	1900 MHz (PCS) / 700 MHz	Frequency Bands	1900 MHz (PCS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power(W):	150	Total TX Power(W):	150	Total TX Power(W):	150
ERP (W):	4,196.58	ERP (W):	4,196.58	ERP (W):	4,196.58
Antenna A1 MPE%	3.57	Antenna B1 MPE%	3.57	Antenna C1 MPE%	3.57
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APX16DWV- 16DWVS-E-A20	Make / Model:	RFS APX16DWV- 16DWVS-E-A20	Make / Model:	RFS APX16DWV- 16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	85	Height (AGL):	85	Height (AGL):	85
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	4,800.45	ERP (W):	4,800.45	ERP (W):	4,800.45
Antenna A2 MPE%	4.59	Antenna B2 MPE%	4.59	Antenna C2 MPE%	4.59

Site Composite MPE%					
Carrier	MPE%				
T-Mobile (Per Sector Max)	8.17 %				
No Additional Carriers on	NA				
Site					
Site Total MPE %:	8.17 %				

-	
T-Mobile Sector A Total:	8.17 %
T-Mobile Sector B Total:	8.17 %
T-Mobile Sector C Total:	8.17 %
Site Total:	8.17 %

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	1,862.74	75	28.13	AWS - 2100 MHz	1000	2.81%
T-Mobile 700 MHz LTE	1	471.11	75	3.56	700 MHz	1000	0.76%
T-Mobile AWS - 2100 MHz UMTS	2	792.72	85	9.13	AWS - 2100 MHz	1000	0.91%
T-Mobile PCS - 1950 MHz UMTS	2	803.75	85	9.26	PCS - 1950 MHz	1000	0.93%
T-Mobile PCS - 1950 MHz GSM	2	803.75	85	9.26	PCS - 1950 MHz	1000	0.93%
T-Mobile AWS - 2100 MHz LTE	2	1,585.45	85	18.27	AWS - 2100 MHz	467	1.83%
						Total:	8.17%



### **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:	8.17 %
Sector B:	8.17 %
Sector C:	8.17 %
T-Mobile Per Sector	8.17 %
Maximum:	8.17 %
Site Total:	8.17 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **8.17%** 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.

### Exhibit F