

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
: :
A PETITION OF CROWN CASTLE FOR A : PETITION NO. ____
DECLARATORY RULING ON THE NEED TO :
OBTAIN A SITING COUNCIL CERTIFICATE :
FOR THE INSTALLATION OF A :
TEMPORARY TELECOMMUNICATIONS :
FACILITY AT 445 PUTNAM AVENUE, :
HAMDEN, CONNECTICUT : JANUARY 7, 2019

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), Crown Castle (“Crown”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) to install a temporary telecommunications facility on an approximately 3.01-acre parcel at 445 Putnam Avenue in Hamden, Connecticut (the “Property”). The Property is in Hamden’s General Urban (T-4) zone district and the owner, Woodeast LLC, uses the Property for light industrial purposes. *See Attachment 1 – Site Location Map and Site Schematic Maps (Aerial Photograph).*

II. Factual Background

Crown currently owns and maintains an existing flagpole tower in the southerly portion of the 12.35-acre Putnam Plaza Shopping Center (“Putnam Plaza”) parcel at 1245 Dixwell Avenue in Hamden. The tower and small facility compound around the base of the tower are

located within the southerly portion of Putnam Plaza's parking lot.

To accommodate the needs of its existing wireless tenant (T-Mobile) and make this existing facility available to additional wireless carriers who have also expressed an interest in sharing the Putnam Plaza tower, Crown recently considered expanding the existing facility in its current location. Due to constraints on the Putnam Plaza parcel and limitations imposed by Crown's current landlord, Crown cannot expand the existing facility at its current location and has chosen instead, to relocate the existing facility approximately 1,000 feet to the east to the Property.

In an effort to maintain the continuity of T-Mobile's existing wireless service while Crown pursues the necessary permits and approvals to relocate the existing tower at the Property, Crown seeks the Council's approval for the installation of a temporary telecommunications facility at the Property.¹

The temporary facility will consist of a 100-foot tall ballast tower installed in the rear (northerly) portion of the Property within a 35' x 90' fenced facility compound. T-Mobile antennas will be installed at the top of the temporary tower at a centerline height of 95 feet above ground level ("AGL"). T-Mobile's equipment will be installed in the northwest corner of the facility compound. Power and telephone service will extend from existing service along Putnam Avenue. Included in Attachment 2 are a set of Relocation Project Drawings showing the temporary tower location and permanent relocated tower.

Crown plans to meet with municipal officials in Hamden later this month to commence the 90-day municipal consultation process required for a Certificate of Environmental

¹ The permanent relocated tower will be a 130-foot tower, installed immediately to the east of the temporary structure.

Compatibility and Public Need for the permanent relocated tower at the Property. Also, included in Attachment 3 are Structural Calculations confirming that the temporary ballast tower can support T-Mobile's antennas and related equipment.

III. Discussion

A. The Proposed Installation of Temporary Ballast Tower Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the "Act"), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications towers in the state to avoid "a significant impact on the environment and ecology of the State of Connecticut." C.G.S. § 16-50g. To achieve these goals, the Act established the Council, and requires a Certificate of Environmental Compatibility and Public Need for the construction of cellular telecommunication towers "that may, as determined by the Council, have a substantial adverse environmental effect". C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Crown respectfully submits that the installation of a temporary ballast tower supporting T-Mobile's antennas and the installation of radio and electrical equipment in the facility compound, will not involve a significant alteration in the physical and environmental characteristics of the Property. Placement of the temporary ballast-frame tower in the lawn in the northerly portion of the Property will result in minimal ground disturbance. To access the temporary tower facility, Crown will construct an approximately 80-foot gravel access driveway extension from the existing paved parking area to the tower compound. No trees will need to be removed to install the temporary wireless facility or the gravel access driveway.

2. Visual Effects

The visibility of the proposed temporary telecommunications facility would be limited to

neighboring areas with 1,000 feet of the Property, primarily within and near surrounding commercial and industrial parcels. (See Visual Assessment & Photo-Simulations (“Visual Assessment”) included in Attachment 4). Based on the results of a Visual Assessment, Crown has determined that the proposed temporary telecommunications facility will have a minimal and short-term visual impact on existing views in the area.

3. FCC Compliance

Radio frequency (“RF”) emissions from the proposed installation will be well below the standards adopted by the Federal Communications Commission (“FCC”). Included in Attachment 5 is a radio frequency Site Compliance Report for T-Mobile’s antennas at a centerline height of approximately 95 feet AGL on the temporary tower. This calculation indicates that the temporary facility will operate well within the RF emission standards established by the FCC.

4. FAA Summary Report

Included in Attachment 6 of this Petition is a Federal Airways & Airspace Summary Report verifying that the 100-foot tall temporary ballast tower described in this Petition would not constitute an obstruction or hazard to air navigation and that notification to the FAA is not required.

B. Notice to the Town, Property Owner and Abutting Landowners

On January 7, 2019, a copy of this Petition was sent to Hamden Mayor, Curt B. Leng; Daniel W. Kops, Jr., Hamden’s Town Planner; Matthew Davis, Hamden’s Assistant Town Planner; and Woodeast LLC, the owner of the Property. A notice and a copy of the Petition was also sent to the owners of land that abuts the Property. Included in Attachment 7 are copies of the letters sent to Mayor Leng, Mr. Kops and Woodeast LLC. Included in Attachment 8 is a

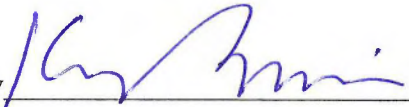
sample abutter's letter and the list of those abutting landowners who were sent notice and a copy of the Petition.

IV. Conclusion

Based on the information provided above, Crown respectfully requests that the Council issue a determination in the form of a declaratory ruling that the installation of a temporary tower at the Property will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

CROWN CASTLE




By  _____

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1



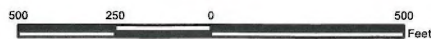
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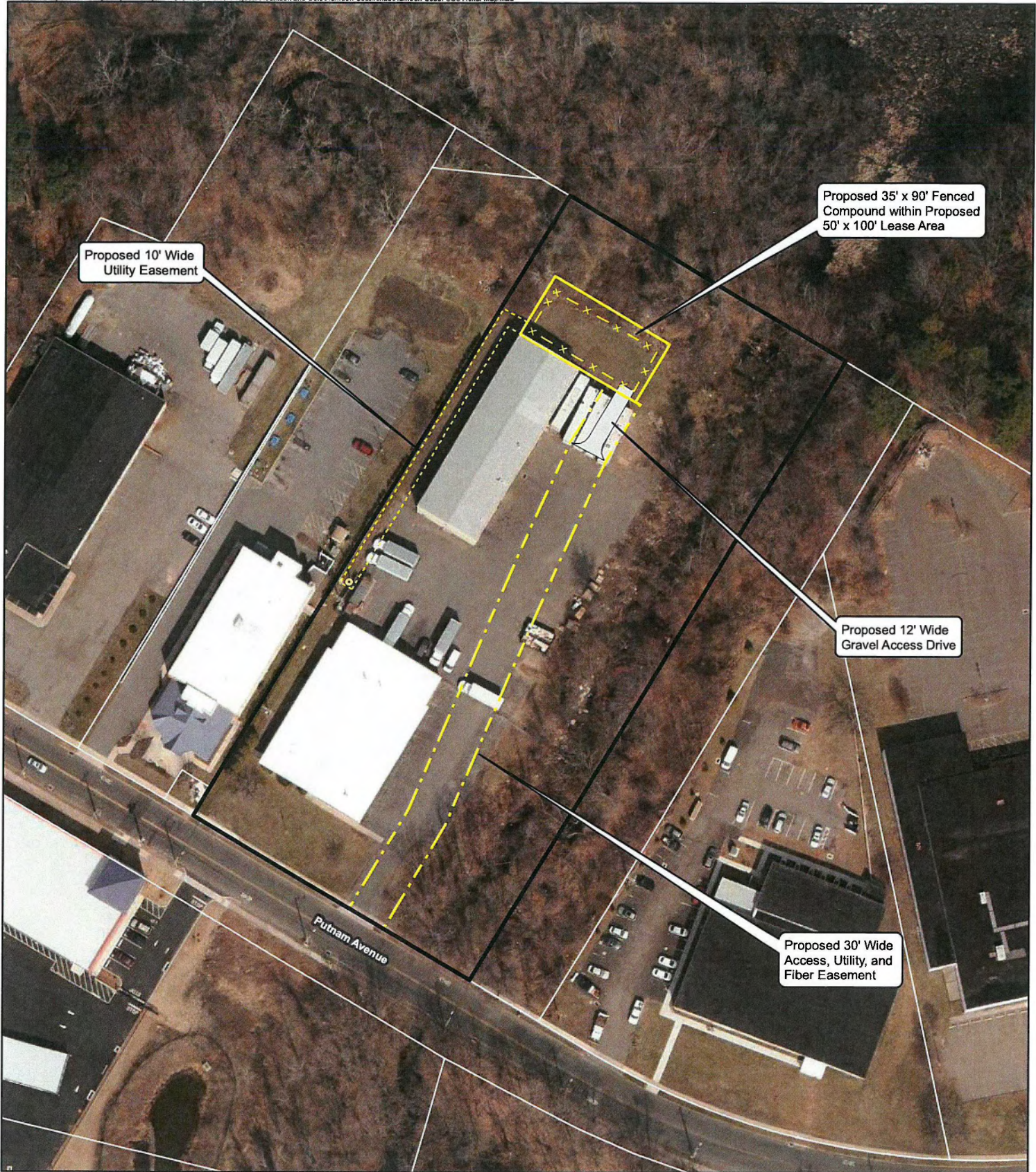
-  Site
-  Existing Crown Site (To Be Relocated)
-  Subject Property
-  Approximate Parcel Boundary (CTDEEP GIS)

Site Location Map

Proposed Wireless
Telecommunications Facility
445 Putnam Ave Tower Site
445 Putnam Avenue
Hamden, Connecticut

Map Notes:
Base Map Source: CT ECO 2016 Imagery
Map Scale: 1 Inch = 500 feet
Map Date: November 2018





Legend

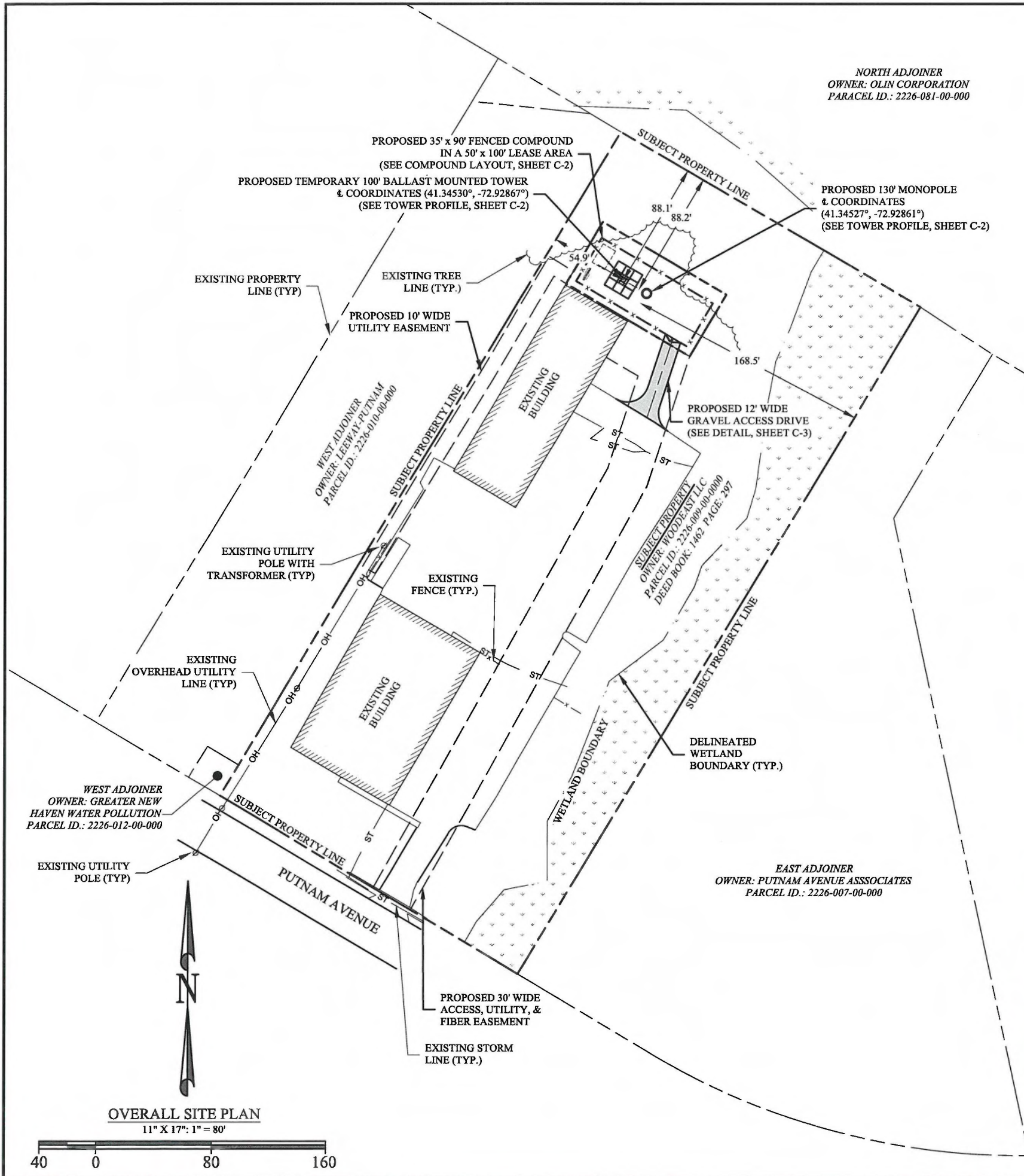
- Proposed Lease Area
- Proposed Compound Area
- Proposed Access, Utility, and Fiber Easement
- Proposed Utility Easement
- Proposed Gravel Access Drive
- Existing Utility Pole (By Others)
- Subject Property
- Approximate Parcel Boundary (CTDEEP)

Site Schematic

Proposed Wireless
Telecommunications Facility
445 Putnam Ave Tower Site
445 Putnam Avenue
Hamden, Connecticut

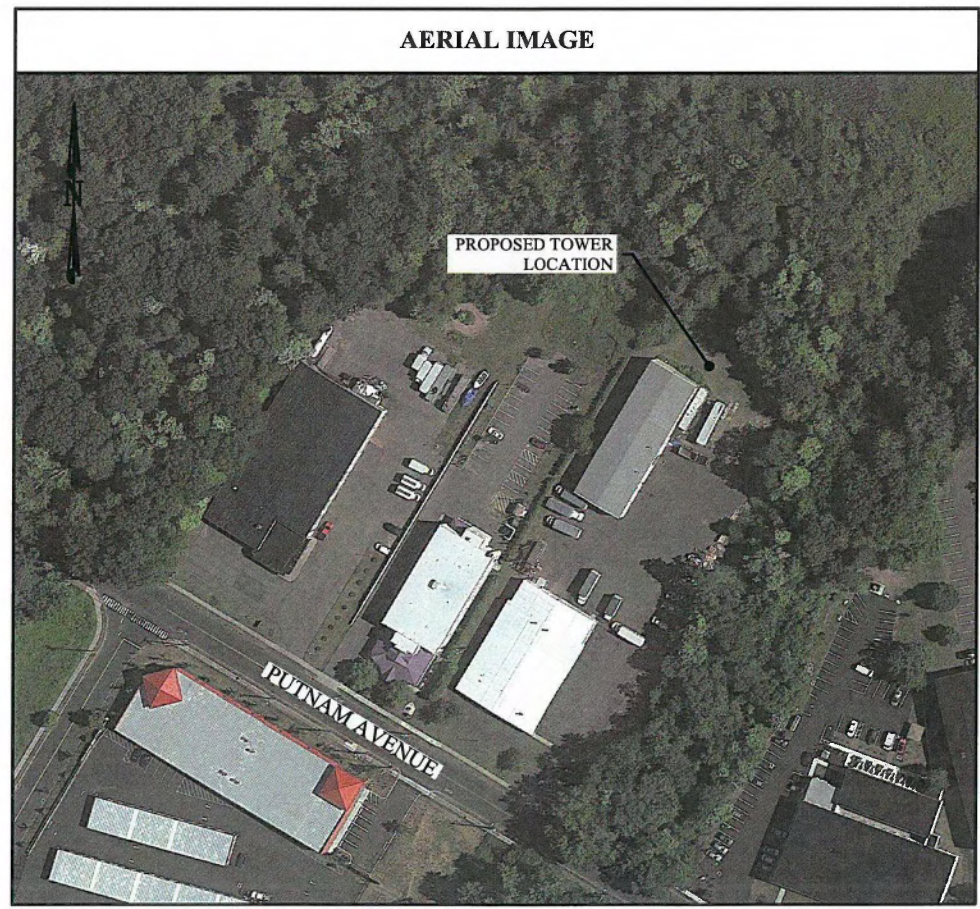


ATTACHMENT 2



SITE DATA TABLE	
TOWER LEASE AREA:	0.11 ACRES (5,000 SF)
EASEMENT AREA:	0.37 ACRES (16,260 SF)
DISTURBED AREA:	0.10 ACRES (4,500 SF)
PARCEL AREA:	3.01 ACRES
PROPOSED USE:	130-FT MONOPOLE TELECOMMUNICATIONS FACILITY

- SITE PLAN NOTES:**
- SEE GENERAL NOTES SHEET GN-1.
 - THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE PROPOSED EQUIPMENT AND TOWER AREA.
 - VEGETATED AREAS DISTURBED BY THE WORK OF THIS PROJECT SHALL BE GRADED TO UNIFORM SLOPE, FERTILIZED, SEEDED, AND STABILIZED AS SPECIFIED.
 - AUTHORIZATION FOR WORK WITHIN PUBLIC R.O.W. SHALL BE OBTAINED BY THE CONTRACTOR.
 - EROSION CONTROL MEASURES SHALL BE INSTALLED IN CONFORMANCE WITH LOCAL, COUNTY, AND STATE GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
 - THE PROPOSED PROJECT WILL NOT RESULT IN A SIGNIFICANT AREA OF DISTURBANCE AND WILL NOT SIGNIFICANTLY INCREASE STORM WATER RUNOFF.
 - NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
 - THE SITE WILL GENERATE APPROX. 4 TRIPS PER MONTH BY TECHNICIANS PERFORMING ROUTINE MAINTENANCE.
 - THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION. THERE IS NO HANDICAP ACCESS REQUIRED.
 - THE FACILITY DOES NOT REQUIRE WATER OR SANITARY SEWER SERVICE.
 - THE WETLAND BOUNDARY DEPICTED ON THESE DRAWINGS IS BASED ON THE WETLAND DELINEATION PERFORMED BY ALL-POINTS TECHNOLOGY CORPORATION ON 09/14/2018.
 - THE ENTIRE SUBJECT PROPERTY, INCLUSIVE OF THE PROJECT AREA, IS LOCATED WITHIN THE SOUTH CENTRAL CONNECTICUT REGIONAL WATER AUTHORITY PUBLIC WATER SUPPLY WATERSHED MILL RIVER/LAKE WHITNEY SYSTEM.
 - ALL PROPOSED UTILITIES FOR THIS PROJECT SHALL BE ROUTED UNDERGROUND.
 - THE PROPOSED TOWER LEASE AREA IS LOCATED WITHIN FLOOD HAZARD ZONE AE PER FEMA FIRM# 09009C0431J WITH EFFECTIVE DATE OF MAY 16, 2017.



PREPARED FOR:

CROWN CASTLE

CROWN CASTLE USA, INC.
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
PHONE: (724) 416-2000

PREPARED BY:

DELTA OAKS GROUP

DELTA OAKS GROUP
4904 PROFESSIONAL COURT, 2ND FLOOR
RALEIGH, NC 27609
PHONE: (919) 342-8084

JOSEPH V. BORRELLI JR., P.E.
CONNECTICUT LICENSE NO. 31317

11/16/18

DRAWN BY: BJW

CHECKED BY: WRB

APP'VD: MLL

PROJECT NO: 18-03196

SUBMITTALS			
DATE	DESCRIPTION	REV	ISSUED BY
11/02/18	FOR REVIEW	0	BJW
11/16/18	FINAL	1	BJW

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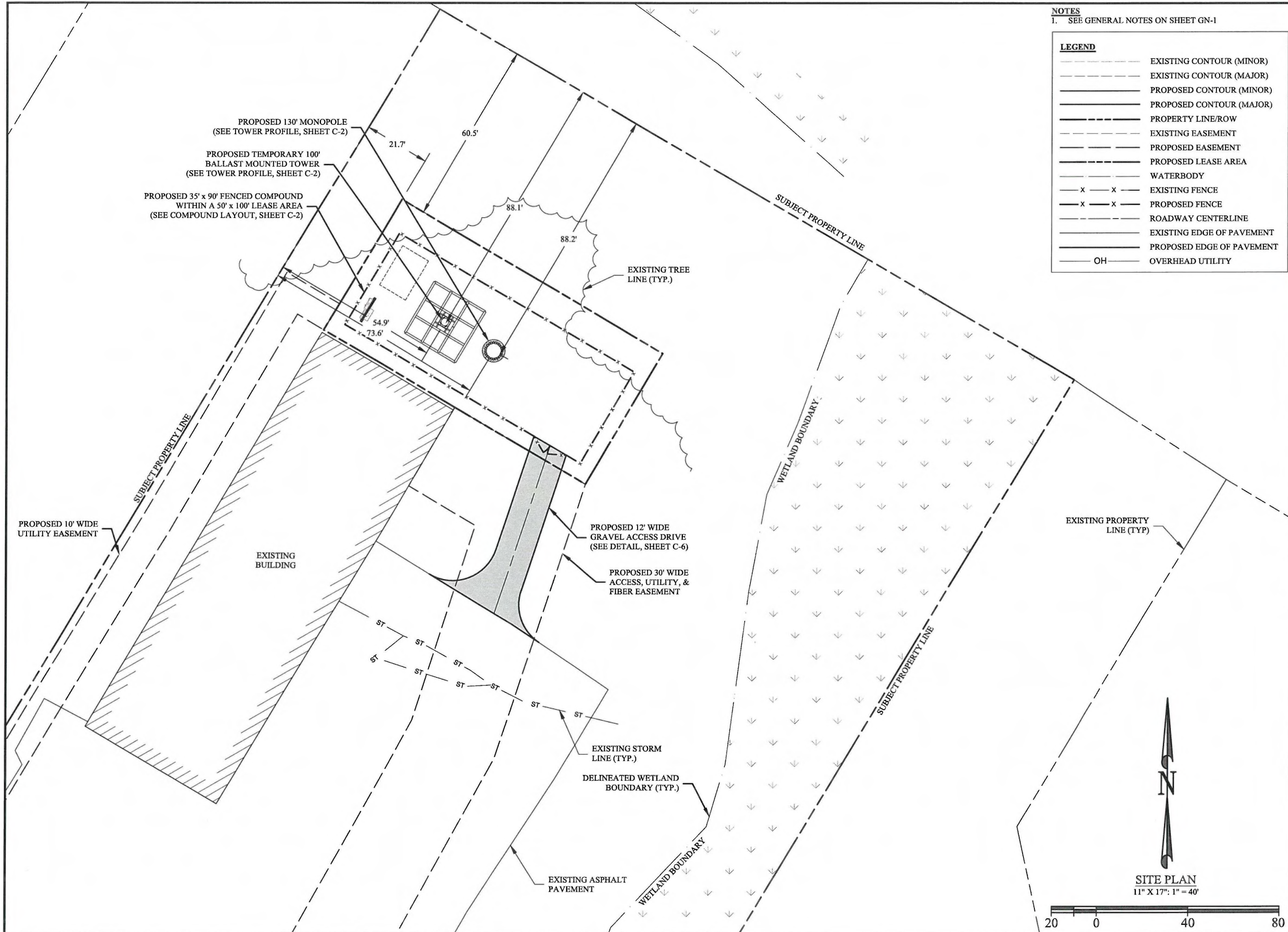
SITE NAME:
HAMDEN SOUTH/DIXWELL AVE.

SITE ADDRESS:
445 PUTNAM AVE
HAMDEN, CT 06517

SITE ID:
829935

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
C-1.1



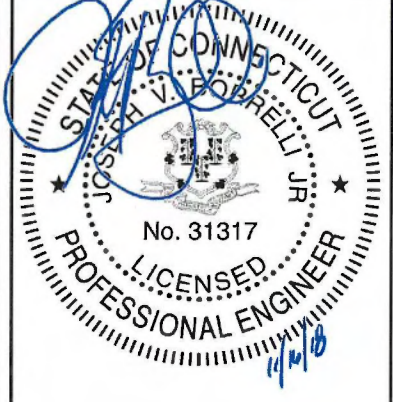
- NOTES**
1. SEE GENERAL NOTES ON SHEET GN-1
- LEGEND**
- EXISTING CONTOUR (MINOR)
 - EXISTING CONTOUR (MAJOR)
 - PROPOSED CONTOUR (MINOR)
 - PROPOSED CONTOUR (MAJOR)
 - PROPERTY LINE/ROW
 - EXISTING EASEMENT
 - PROPOSED EASEMENT
 - PROPOSED LEASE AREA
 - WATERBODY
 - x-x- EXISTING FENCE
 - x-x- PROPOSED FENCE
 - ROADWAY CENTERLINE
 - EXISTING EDGE OF PAVEMENT
 - PROPOSED EDGE OF PAVEMENT
 - OH --- OVERHEAD UTILITY

PREPARED FOR:

CROWN CASTLE
 CROWN CASTLE USA, INC.
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
 PHONE: (724) 418-2000

PREPARED BY:

DELTA OAKS GROUP
 DELTA OAKS GROUP
 4904 PROFESSIONAL COURT, 2ND FLOOR
 RALEIGH, NC 27809
 PHONE: (919) 342-8084



JOSEPH V. BORRELLI JR., P.E.
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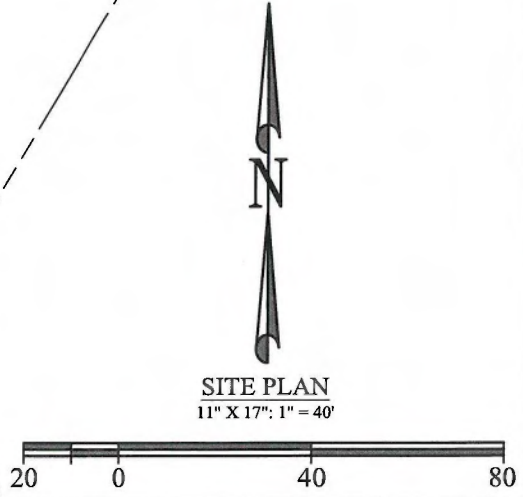
SITE NAME:
 HAMDEN SOUTH/DIXWELL AVE.

SITE ADDRESS:
 445 PUTNAM AVE
 HAMDEN, CT 06517

SITE ID:
 829935

SHEET TITLE
 SITE PLAN

SHEET NUMBER
 C-1.2



NOTES:
 1. TOWER/ANTENNA MOUNT DESIGN BY OTHERS. NO WORK SHALL COMMENCE WITHOUT AN APPROVED TOWER/ANTENNA MOUNT STRUCTURAL ANALYSIS REPORT SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER UNDER SEPARATE COVER.
 2. ALL PROPOSED CABLES SHALL BE ROUTED IN ACCORDANCE WITH THE APPROVED STRUCTURAL ANALYSIS.

T/TOWER
 ELEV. = 130'-0" ± AGL
 CL OF FUTURE ANTENNAS
 ELEV. = 125'-0" ± AGL
 CL OF FUTURE ANTENNAS
 ELEV. = 115'-0" ± AGL
 CL OF FUTURE ANTENNAS
 ELEV. = 105'-0" ± AGL
 CARRIER ANTENNAS AND MOUNTING FRAMES (TYP) (BY OTHERS)

T/TOWER
 ELEV. = 100'-0" ± AGL
 CL OF FUTURE ANTENNAS
 ELEV. = 95'-0" ± AGL
 CARRIER ANTENNAS AND MOUNTING FRAMES (TYP) (BY OTHERS)

PROPOSED TEMPORARY BALLAST MOUNTED TOWER (DESIGN BY OTHERS)

PROPOSED MONOPOLE (DESIGN BY OTHERS)

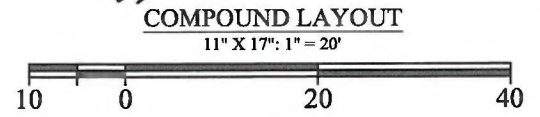
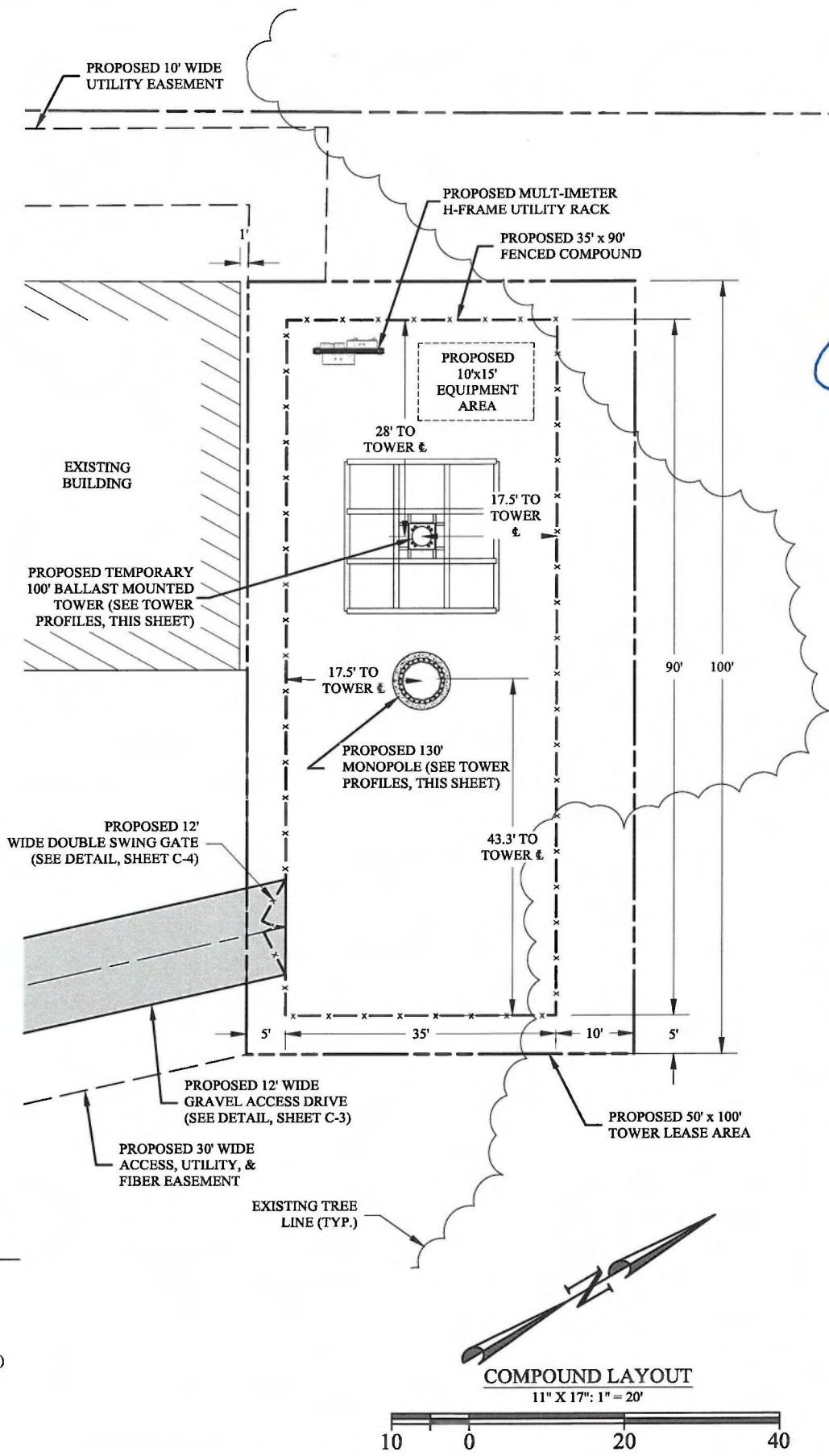
PROPOSED CHAIN-LINK SECURITY FENCE (SEE DETAIL, SHEET C-4)

T/GRADE
 ELEV. = 0'-0" ± AGL

FOUNDATION (DESIGN BY OTHERS)

TEMPORARY BALLAST MOUNTED TOWER PROFILE
 NTS

MONOPOLE TOWER PROFILE
 NTS



PREPARED FOR:
CROWN CASTLE
 CROWN CASTLE USA, INC.
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
 PHONE: (724) 418-2000

PREPARED BY:

DELTA OAKS GROUP
 4904 PROFESSIONAL COURT, 2ND FLOOR
 RALEIGH, NC 27609
 PHONE: (919) 342-8084

JOSEPH V. BORRELLI JR., P.E.
 CONNECTICUT LICENSE NO. 31317
 12/26/18

DRAWN BY: BJW
 CHECKED BY: WRB
 APP'D: MLL
 PROJECT NO: 18-03196

SUBMITTALS			
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11/16/18	FINAL	1	BJW
12/26/18	REVISED ANTENNA CL	2	BJW

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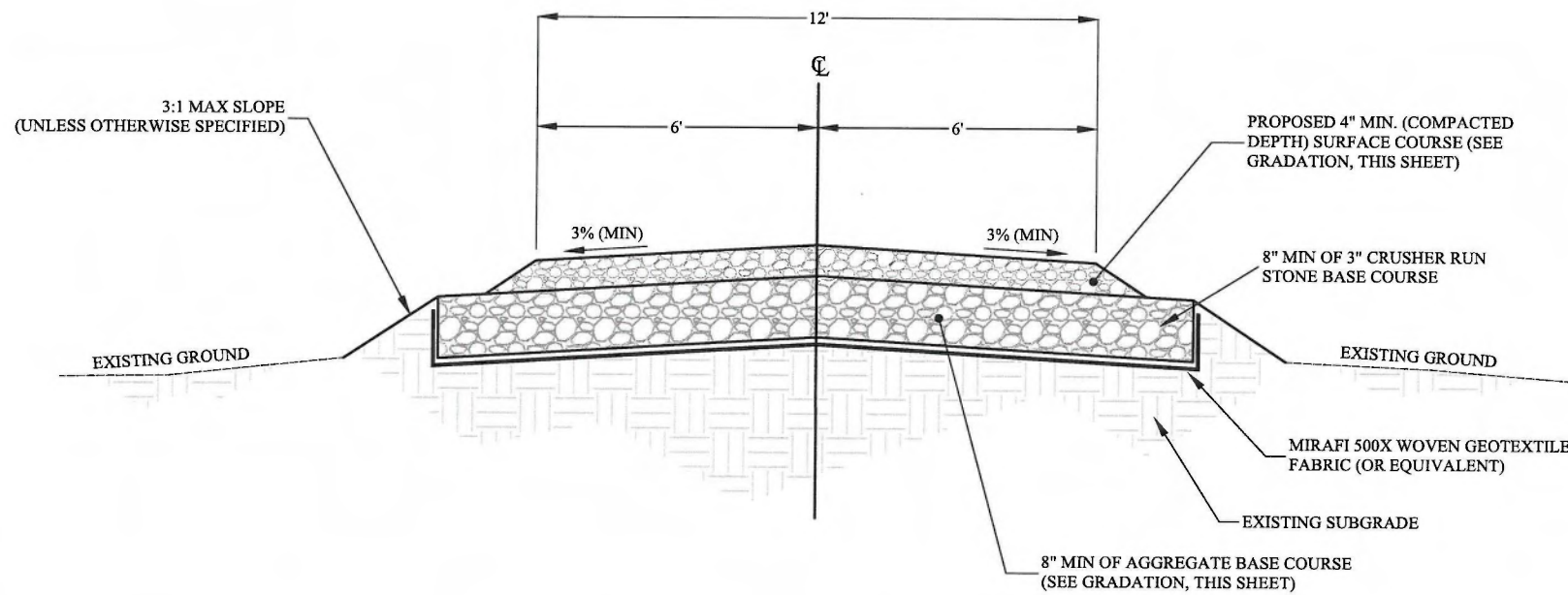
SITE ADDRESS:
 445 PUTNAM AVE
 HAMDEN, CT 06517

SITE ID:
 829935

SHEET TITLE
 TOWER PROFILES AND
 COMPOUND LAYOUT

SHEET NUMBER
 C-2

TYPICAL GRAVEL ACCESS DRIVE SECTION



NOTES

1. REMOVE ALL TOPSOIL, ORGANIC MATERIAL, AND WET OR POOR SOILS ALONG ACCESS DRIVE. CONTRACTOR TO REVIEW SITE CONDITIONS AND CONSULT GEOTECHNICAL REPORT FOR ANTICIPATED DEPTH OF SOILS THAT WILL REQUIRE REMOVAL (IF AVAILABLE). IF POOR SOILS ARE ENCOUNTERED AT A DEPTH OF MORE THAN 12", CONTACT CONSTRUCTION MANAGER FOR GUIDANCE.
2. SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR AND VERIFIED BY PROOF-ROLL AND/OR GEOTECHNICAL PROFESSIONAL OBSERVATION AND/OR TESTING.
3. CONSULT GRADING PLAN OR SITE PLAN FOR FINAL SITE GRADES.

ROADBED, GRAVEL COURSE, AND SUBGRADE REQUIREMENTS

1. THICKNESS OF GRAVEL DRIVE BASE COURSE TO BE DETERMINED BASED ON THE EXISTING SOIL BEARING CAPACITY (PER UFC DESIGN RECOMMENDATIONS):

BEARING CAPACITY (PSF)	TOTAL AGGREGATE THICKNESS (IN)
1000	16
1500	12
2000	8

*A HIGH PERFORMANCE, WOVEN GEOTEXTILE FABRIC MAY BE USED TO REPLACE UP TO 50%, OR 6" OF AGGREGATE THICKNESS, WHICHEVER IS LESS (MIRAFI HP 270 OR EQUIVALENT). FOR SITES WITH POOR SOILS, THE EQUIVALENT AGGREGATE THICKNESS SHOULD BE DETERMINED FROM THE GEOTECHNICAL REPORT OR FROM SITE SPECIFIC CALCULATIONS.

2. IF POOR OR WET SOILS ARE PRESENT BELOW BASE COURSE, CONTRACTOR TO INSTALL 6" MIN. WELL-GRADED GRAVEL/SAND SUB-BASE TO FACILITATE ADEQUATE DRAINAGE AND STABILITY.
3. CONSULT GEOTECHNICAL REPORT (AS AVAILABLE) FOR ANTICIPATED SOIL CONDITIONS.
4. AGGREGATE LAYER GRADATIONS SHALL BE AS FOLLOWS:

REQUIREMENT SIEVE	AGGREGATE BASE COURSE % PASSING	GRAVEL SURFACE COURSE % PASSING
2.5"	-	-
2"	100	-
1.5"	-	-
1"	-	-
3/4"	52-100	100
1/2"	-	-
3/8"	36-70	-
No. 4	24-50	50-78
No. 8	16-38	37-67
No. 16	10-30	-
No. 40	-	15-35
No. 200	0-10	4-15
PLASTICITY INDEX	0-6	4-12

NOTES (FOR IMPROVEMENTS TO EXISTING GRAVEL ROADS)

1. PRIOR TO PLACEMENT OF ADDITIONAL SURFACE OR BASE MATERIAL, EXISTING GRAVEL AND/OR DIRT ROADS SHALL BE EXCAVATED AND RESHAPED AS NECESSARY TO REMOVE DEPRESSIONS, POTHOLES, EROSION, RUTTING, WASHBOARDS, OR OTHER SURFACE IRREGULARITIES IN ORDER TO RESTORE THE SPECIFIED ROADWAY SECTION (NORMAL CROWN, SUPER-SLOPED, ETC.).
2. EXISTING ROADWAY SURFACE SHALL BE SCARIFIED PRIOR TO PLACEMENT OF NEW MATERIAL IN ORDER TO ENSURE A SUFFICIENT BOND.
3. FOR AREAS WHERE PAVEMENT IS REMOVED TO CONSTRUCT THE ACCESS ROAD, ALL EXISTING PAVEMENT/AGGREGATE LAYERS SHALL BE REMOVED, AND THE EXISTING SUBGRADE COMPACTED AND REWORKED AS NECESSARY TO PROVIDE THE COMPACTION AND SECTION REQUIREMENTS SPECIFIED HEREIN OR IN THE ASSOCIATED GEOTECHNICAL REPORT, WHICHEVER IS MORE STRINGENT.

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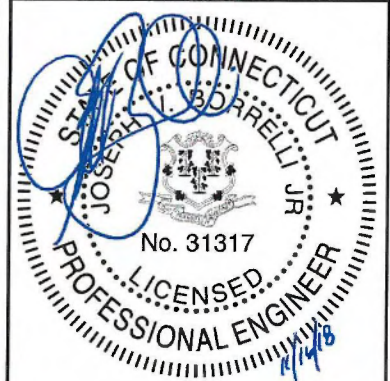


CROWN CASTLE USA, INC.
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
PHONE: (724) 418-2000

PREPARED BY:



DELTA OAKS GROUP
4904 PROFESSIONAL COURT, 2ND FLOOR
RALEIGH, NC 27609
PHONE: (919) 342-8084



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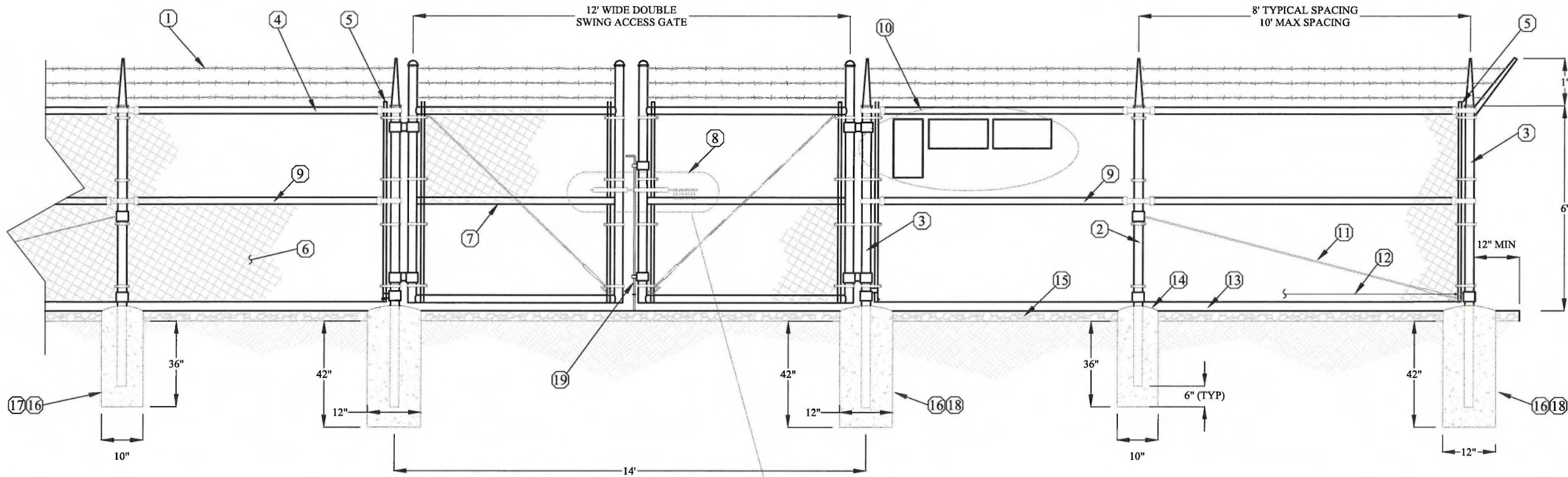
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SHEET NUMBER

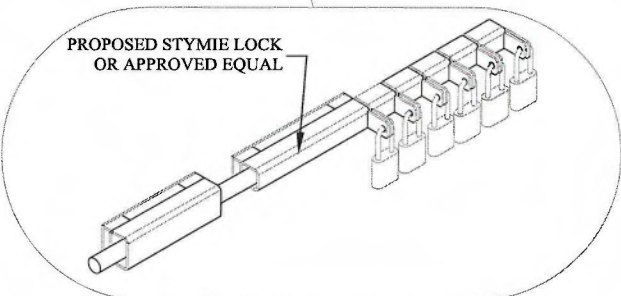
C-3

COMPOUND FENCE



KEYNOTES:

- 1 3 STRANDS OF DOUBLE 12 1/2 GAUGE TWISTED STRAND WIRE, WITH 4 POINT 14 GAUGE BARBS SPACED 5" O.C.
- 2 2-1/2" NOMINAL GALVANIZED STEEL, SCHEDULE 40 INTERMEDIARY LINE POSTS (PER ASTM-F1083). LINE POSTS SHALL BE EQUALLY SPACED AT MAXIMUM 10' O.C.
- 3 3" O.D. GALVANIZED STEEL SCHEDULE 40 CORNER AND GATE POSTS (PER ASTM-F1083). IF GATE LEAF WIDTH GREATER THAN OR EQUAL TO 10-FT OR IF FENCE FABRIC EXTENDED OVER 6-FT AND GATE LEAF WIDTH OVER 6-FT, GATE POST SHALL BE 4" O.D. GALVANIZED STEEL SCHEDULE 40 (PER ASTM-F1083).
- 4 1-5/8" O.D. SCHEDULE 40 ROUND TOP/BRAVE RAIL (PER ASTM-F1083)
- 5 STRETCHER BAR TO EXTEND FULL HEIGHT OF FENCE FABRIC; NOT LESS THAN 1/8" X 3/4" CROSS SECTION; PLACE ON ALL GATES AND POSTS
- 6 9 GAUGE 2" x 2" FENCE FABRIC (TO CONFORM TO ASTM-A392)
- 7 GATE FRAME BRACE
- 8 STYMIE LOCK OR OTHER APPROVED MULTI-TENANT LOCKING DEVICE
- 9 1-5/8" DIAMETER POST BRACE (AS REQUIRED)
- 10 GATE SIGNS (SEE DETAIL, THIS SHEET)
- 11 3/8" DIAGONAL BRACE ROD WITH GALVANIZED STEEL TURNBUCKLE OR DIAGONAL THREADED ROD
- 12 9 GAUGE ALUMINUM TIE WIRE. PROVIDE HOG RING FABRIC TIES SPACED 12" O.C. FOR POSTS AND GATES AND 24" O.C. FOR RAILS AND WIRE.
- 13 MAINTAIN A 1" MAXIMUM CLEARANCE FROM FINISHED GRADE
- 14 PROVIDE CROWNED/PITCHED FINISH FOR FENCE POST PIER FOUNDATIONS
- 15 COMPOUND SECTION AND MATERIALS (SEE DETAIL, SHEET C-5)
CONCRETE PIER FOUNDATION; TO ACHIEVE A MINIMUM STRENGTH OF 3000 PSI AT 28 DAYS. CONCRETE DEPTH TO BE AS SPECIFIED HEREIN, AS SPECIFIED BY MANUFACTURER, OR A MINIMUM OF 6" BELOW FROST LINE; WHICHEVER IS GREATER
- 17 LINE POST CONCRETE PIER FOUNDATION
- 18 CORNER/GATE POST CONCRETE PIER FOUNDATION
- 19 COMMERCIAL GRADE DROP ROD AND CENTERSTOP (HOOVER FENCE OR EQUIV)



- NOTES:**
1. FENCE DESIGN AND INSTALLATION NOTES ARE INDUSTRY STANDARDS AND/OR MINIMUM REQUIREMENTS AND ARE FOR GENERAL GUIDANCE ONLY. REFER TO MANUFACTURER'S RECOMMENDATIONS OF THE SPECIFIED PRODUCT AND APPLICABLE GOVERNING CODES FOR FULL INSTALLATION DETAILS. IN THE EVENT OF DISCREPANCIES, MANUFACTURER'S RECOMMENDATIONS OR APPLICABLE CODE SHALL GOVERN, WHICHEVER IS MORE STRINGENT.
 2. ALL FENCING TO BE INSTALLED PER ASTM F-567. ALL SWING GATES TO BE INSTALLED PER ASTM F-900.
 3. BARBED WIRE PERMIT REQUIRED SHALL BE COMPLETED IF LOCAL ORDINANCE REQUIRES.
 4. POST & GATE PIPE SIZES ARE INDUSTRY STANDARDS. ALL PIPE TO BE GALVANIZED (HOT DIP, ASTM A120 GRADE "A" STEEL). ALL GATE FRAMES SHALL BE WELDED. ALL WELDINGS SHALL BE COATED WITH (3) COATS OF GOLD GALV. (OR EQUAL). ALL OPEN POSTS SHALL HAVE END-CAPS.
 5. ALL SIGNS MUST BE MOUNTED ON INSIDE OF FENCE FABRIC USING GALVANIZED HOG-RING WIRE.
 6. ALL SIGNS AND SIGN PLACEMENT SHALL ADHERE TO THE REQUIREMENTS OF OSHA 1910.145 AND 1910.200 AND ALL APPLICABLE FCC CODES
 7. DROP ROD AND CENTERSTOP REQUIRED FOR GATE. GENERAL CONTRACTOR RESPONSIBLE FOR GATE LOCK.

GATE SIGNS

CROWN CASTLE
CROWNCASTLE.COM

FOR LEASE INFORMATION: 877-486-9377
FOR 24 HOUR SERVICE, SECURITY OR EMERGENCIES CALL: 800-788-7011
CROWN CASTLE BUSINESS UNIT NUMBER: 829935

SITE ADDRESS: STREET, CITY, STATE, ZIP
FCC TOWER FIELD NO: XXXXXXX

18" x 24" ALUMINUM

CAUTION

18" x 12" ALUMINUM

NO TRESPASSING!
AUTHORIZED ENTRY ONLY

WARNING
ANTENNAS MAY BE ACTIVE

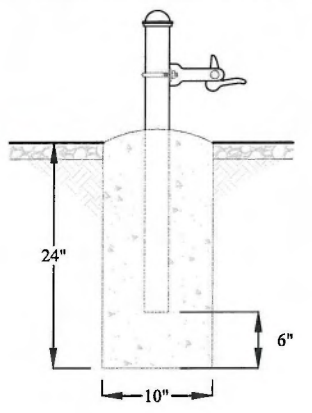
18" x 24" ALUMINUM

NOTICE

DO NOT CLIMB TOWER WITHOUT OWNERS WRITTEN AUTHORIZATION

18" x 12" ALUMINUM

GATE KEEPER



PREPARED FOR:

CROWN CASTLE

CROWN CASTLE USA, INC.
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
PHONE: (724) 416-2000

PREPARED BY:

DELTA OAKS GROUP

DELTA OAKS GROUP
4904 PROFESSIONAL COURT, 2ND FLOOR
RALEIGH, NC 27609
PHONE: (919) 342-8084

STATE OF CONNECTICUT
JOSEPH V. BORRELLI JR.
No. 31317
LICENSED PROFESSIONAL ENGINEER

11/16/18

JOSEPH V. BORRELLI JR., P.E.
CONNECTICUT LICENSE NO. 31317

DRAWN BY:	BJW
CHECKED BY:	WRB
APPVD:	MLL
PROJECT NO:	18-03196

SUBMITTALS			
DATE	DESCRIPTION	REV	ISSUED BY
11/02/18	FOR REVIEW	0	BJW
11/16/18	FINAL	1	BJW

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SITE NAME:
HAMDEN SOUTH/DIXWELL AVE.

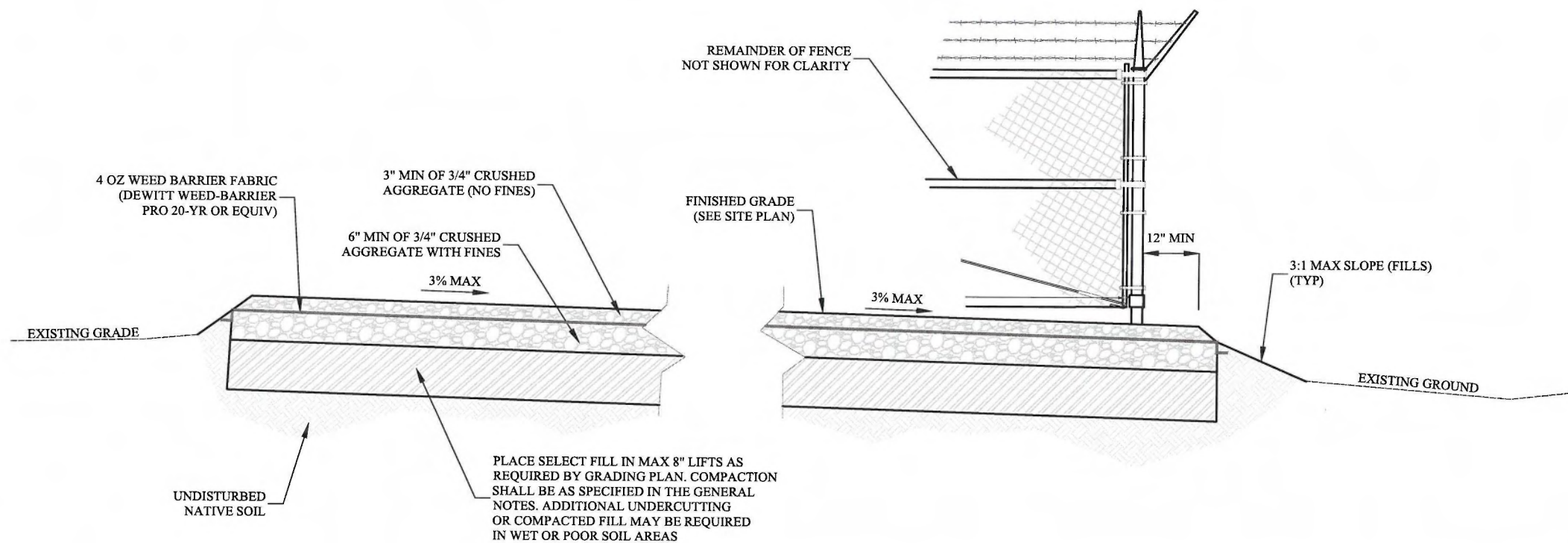
SITE ADDRESS:
445 PUTNAM AVE
HAMDEN, CT 06517

SITE ID:
829935

SHEET TITLE
CIVIL DETAILS

SHEET NUMBER
C-4

COMPOUND SECTION



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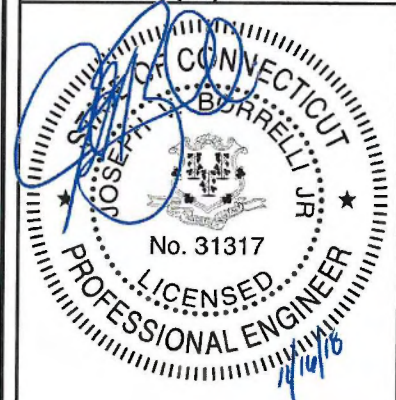


CROWN CASTLE USA, INC.
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PHONE: (724) 416-2000

PREPARED BY:



DELTA OAKS GROUP
4804 PROFESSIONAL COURT, 2ND FLOOR
RALEIGH, NC 27609
PHONE: (919) 342-8084



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445 PUTNAM AVE
HAMDEN, CT 06517

SITE ID:
829935

SHEET TITLE
CIVIL DETAILS

SHEET NUMBER
C-5

GENERAL NOTES

- THE SCOPE OF WORK DEPICTED IN THIS PLANSET MUST BE COMPLETED UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE SUBSTANTIAL EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS PROJECT, THE CONTRACTOR IS CONFIRMING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY TO COMPLETE THE WORK, THAT HE IS KNOWLEDGEABLE OF THE SCOPE OF WORK TO BE PERFORMED AND THAT HE IS LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.
- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST VERSION OF THE LOCAL AND NATIONAL BUILDING CODE, WHICHEVER IS MORE STRINGENT.
- SHOP DRAWINGS AND/OR MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS REGARDING ANY HARDWARE, INFRASTRUCTURE, OR MATERIALS SPECIFIED HEREIN SHALL BE FOLLOWED EXACTLY AND SHALL SUPERCEDE ANY CONFLICTING INFORMATION CONTAINED HEREIN.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS NOT PROVIDED BY OWNER. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH PERMITS AS ISSUED AND ANY AND ALL APPLICABLE STATE, COUNTY, AND LOCAL CODES.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING TOPOGRAPHY, DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS ARE AS INDICATED ON THESE DRAWINGS. ADDITIONALLY, THE CONTRACTOR SHALL ESTABLISH THE LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND OWNER'S ENGINEER FOR RESOLUTION AND/OR MODIFICATION PRIOR TO COMMENCEMENT OF THE WORK.
- EXISTING IMPROVEMENTS DAMAGED OR DESTROYED AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE REPLACED OR RESTORED TO THEIR ORIGINAL CONDITION OR BETTER, AND TO THE SATISFACTION OF THE OWNER OF THE IMPROVEMENTS
- THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL INSPECTIONS, CERTIFICATIONS, AND/OR ANY OTHER REQUIREMENTS WHICH MUST BE MET TO FULFILL THE SCOPE OF WORK AS REPRESENTED IN THIS PLAN SET, OBTAIN A CERTIFICATE OF OCCUPANCY, OR OTHERWISE ALLOW FOR THE FULL INTENDED USE OF THE PROPOSED FACILITY
- THESE PLANS/DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR ENGINEER SHALL NOT INCLUDE INSPECTION OF THE CONSTRUCTION PROCEDURES AND DOES NOT ALLEVIATE CONTRACTOR FROM THE FOREGOING. ENGINEER AND/OR OWNER DISCLAIM ANY ROLE IN THE CONSTRUCTION MEANS AND/OR METHODS ASSOCIATED WITH THE PROJECT AS SET FORTH IN THESE PLANS.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE AND IMPLEMENT BOTH THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE, ALL SURROUNDING INFRASTRUCTURE, WORKSPACE, EMPLOYEES, AND PUBLIC DURING ERECTION AND/OR MODIFICATIONS. THIS INCLUDES BUT IS NOT LIMITED TO TEMPORARY BRACING, GUYS, TIE DOWNS, OR OTHER SUPPORTS THAT MAY BE NECESSARY DURING CONSTRUCTION.
- ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTION MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION.
- IF DEVIATIONS FROM THE DRAWINGS OR SPECIFICATIONS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEVIATION AND REASONS THEREOF SHALL BE SUBMITTED TO THE OWNER AND ENGINEER FOR REVIEW. NO DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE MADE WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE OWNER AND/OR ENGINEER
- THE CONTRACTOR MUST, AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY HIM, HIS EMPLOYEES, OR HIS WORK. ALL DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE ON A DAILY BASIS
- CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS (INCLUDING THE GENERAL PUBLIC) AND PROPERTY (INCLUDING ADJOINING PROPERTIES). THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY, AND HOLD THE OWNER AND DESIGN PROFESSIONAL HARMLESS OF ANY AND ALL LIABILITY REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR DESIGN PROFESSIONAL.

GENERAL NOTES (CONT.)

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL WORK ASSOCIATED WITH THIS PROJECT COMPLIES WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY CODES AND OTHER REGULATIONS GOVERNING THE WORK.
- ACCESS TO THE PROPOSED SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER OR THE OWNER'S REPRESENTATIVE REGARDING ALL CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS.

EXISTING INFRASTRUCTURE

- EXISTING TOPOGRAPHIC, UTILITY, PLANIMETRIC, AND BOUNDARY INFORMATION IS TAKEN FROM A DRAWING ENTITLED "HAMDEN SOUTH/DIXWELL RELO" AND DATED 10/10/18 BY JONATHAN MURPHY PROFESSIONAL LAND SURVEYING OF 10505 LEAFWOOD PLACE, RALEIGH, NC 27613; (919)280-8189.
- THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES IN THE AREA OF ANY PROPOSED CONSTRUCTION OR PROPOSED DISTURBANCE DUE TO CONSTRUCTION. THE LOCATION OF ALL EXISTING UTILITIES ARE NOT NECESSARILY SHOWN ON THE PLANS AND WHERE SHOWN ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL ON HIS INITIATIVE AND AT NO EXTRA COSTS LOCATE ALL UNDERGROUND LINES AND STRUCTURES AS NECESSARY. NO CLAIMS FOR DAMAGES OR EXTRA COMPENSATION SHALL ACCRUE TO THE CONTRACTOR FROM THE PRESENCE OF SUCH PIPE, OTHER OBSTRUCTIONS OR FROM ANY DELAY DUE TO REMOVAL OR REARRANGEMENT OF THE SAME. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND STRUCTURES AND IS RESPONSIBLE FOR CONTACTING ALL NON-SUBSCRIBING UTILITIES. CONTACT ENGINEER IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLANS OR IF THERE APPEARS TO BE A CONFLICT BETWEEN EXISTING AND PROPOSED UTILITY LOCATIONS.

UTILITIES

- CONTRACTOR SHALL COORDINATE WITH THE OWNER REGARDING THE REQUIREMENTS AND LIMITS OF CLEARANCE FOR OVERHEAD AND/OR UNDERGROUND ELECTRICAL SERVICE
- ALL UNDERGROUND UTILITIES SHALL BE INSTALLED AND TESTED SATISFACTORILY PRIOR TO COMMENCING ANY PAVING ACTIVITY WHERE SUCH UTILITIES ARE WITHIN THE LIMITS OF PAVEMENT
- UNLESS OTHERWISE SPECIFIED HEREIN, MINIMUM COVER FOR CONDUITS SHALL BE 36-INCHES

GRADING

- CONTRACTOR IS TO CONTACT 811 CONNECTICUT, INC AT 1-800-922-4455 FOR UNDERGROUND UTILITY LOCATION 48 HOURS PRIOR TO ANY GROUND DISTURBANCE.
- ALL CONSTRUCTION AREAS ARE TO BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL, ORGANICS AND UNSUITABLE MATERIALS PRIOR TO GRADING AND IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT.
- EXCAVATIONS SHOULD BE SLOPED OR SHORED IN ACCORDANCE AND COMPLIANCE WITH OSHA 29 CFR PART 1926, EXCAVATION TRENCH SAFETY STANDARDS AS WELL AS LOCAL, STATE AND FEDERAL REGULATIONS.
- ALL FILL PLACEMENT INCLUDING SUITABILITY OF FILL MATERIALS AND COMPACTION OF MATERIALS SHOULD BE CONDUCTED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT. IN THE ABSENCE OF FILL SPECIFICATIONS, THE FOLLOWING MINIMUM REQUIREMENTS SHOULD BE ADHERED TO:
 - FILL LIFT THICKNESS SHOULD NOT EXCEED 8 INCHES LOOSE.
 - FILL MATERIALS SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES
 - FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER OBJECTIONABLE MATERIALS THAT WOULD PREVENT THE CONSTRUCTION AND/OR COMPACTION OF SATISFACTORY FILLS. THIS INCLUDES SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS
 - ALL FILLS SHOULD BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OR OTHER RELATED PROBLEMS. ALL FILL AREAS WITHIN BUILDINGS OR OTHER STRUCTURES, TRAVEL/ACCESS ROUTES, PARKING AREAS AND EXTENDING 5-FT (MINIMUM) OUTSIDE OF THOSE AREAS' FOOTPRINT, SHOULD BE COMPACTED TO +/- 95% OF MAXIMUM DRY DENSITY OF THE MATEIRAL AS OBTAINED BY THE STANDARD PROCTOR METHOD.

* DELTA OAKS GROUP MAKES NO CLAIM TO THE VALIDITY OF THESE RECOMMENDATIONS TO THE SITE'S SPECIFIC GEOTECHNICAL CONDITIONS AND STRONGLY RECOMMENDS A SITE-SPECIFIC GEOTECHNICAL INVESTIGATION BE PERFORMED. ANY AND ALL FILL RECOMMENDATIONS PRESENTED IN SUCH A REPORT WILL TAKE PRECEDENCE OVER THE INFORMATION PRESENTED HEREIN.

GRADING (CONT.)

- THE CONTRACTOR SHALL REWORK ALL MATERIALS NOT SUITABLE FOR USE IN THEIR PRESENT STATE DUE TO MOISTURE CONTENT VARIATION. IF THE MATERIAL REMAINS UNSUITABLE AFTER INITIAL REWORKING, THE CONTRACTOR SHALL REMOVE AND REPLACE WITH NEW MATERIAL IN ACCORDANCE WITH THE GEOTECHNICAL REPORT RECOMMENDATIONS.
- IN THE ABSENCE OF A GEOTECHNICAL REPORT A GEOTECHNICAL ENGINEER SHOULD BE RETAINED TO PROVIDE SITE SPECIFIC RECOMMENDATIONS/OVERSIGHT.
- DELTA OAKS GROUP MAKES NO CLAIMS TO THE SUITABILITY OF ANY ON-SITE MATERIALS FOR USE AS FILL TO SUPPORT ANY PROPOSED INFRASTRUCTURE.
- SPOT ELEVATIONS REPRESENT FINISHED GRADE UNLESS OTHERWISE NOTED.
- ALL TEMPORARY AND FINISHED GRADES MUST MAINTAIN ADEQUATE SURFACE DRAINAGE SO THAT RUN-OFF IS DIRECTED TO DEDICATED OFF-SITE AREAS OR TO ON-SITE COLLECTION POINTS SUCH AS SWALES, CATCH BASINS, DROP INLETS, CULVERTS, STORMWATER BMP'S, ETC. TO PREVENT SURFACE PONDING, STANDING WATER, OR EXTENDED PERIODS OF SOIL SATURATION.

EROSION AND SEDIMENT CONTROL

- THE PROJECT AREA IS APPROXIMATELY 21,260 SQUARE FEET.
- THE RECEIVING WATERCOURSE IS LAKE WHITNEY, WHICH DISCHARGE INTO MILL RIVER.
- THE PROPOSED TOWER LEASE AREA IS LOCATED IN FEMA SPECIAL FLOOD HAZARD AREA (ZONE AE) PER FIRM #09009C0431J WITH EFFECTIVE DATE MAY 7, 2017.
- CUT AND FILL SLOPES SHOULD BE STABILIZED WITHIN 7 DAYS DURING ANY PHASE OF GRADING
- STREETS ADJACENT TO THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES FROM SEDIMENT OR OTHER CONSTRUCTION GENERATED MATERIAL OR A WASH STATION WILL BE REQUIRED
- THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS REGARDING EROSION AND SEDIMENT CONTROL FOR THE AGENCY HAVING JURISDICTION OVER CLEARING AND GRADING PROCEDURES. UTILIZE BEST MANAGEMENT PRACTICES (BMP'S) DESCRIBED IN THE GOVERNING AGENCY'S OR APPLICABLE STATES' CODE IN ORDER TO BOTH PREVENT/MINIMIZE CONCENTRATED FLOWS THROUGH OR ACROSS UNSTABILIZED/DENUDED AREAS AND PREVENT/MINIMIZE SEDIMENT LADEN STORMWATER RUNOFF FROM LEAVING THE CONSTRUCTION SITE. SPECIFIC BMP EXAMPLES INCLUDE SILT FENCE, CONSTRUCTION ENTRANCE(S), PERIMETER DIVERSION SWALES, INLET PROTECTION, AND OTHER APPLICABLE MEASURES.
- CONTRACTOR AND/OR OWNER SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL DEVICES SPECIFIED HEREIN AND ANY ADDITIONAL CONTROLS THAT MAY BECOME NECESSARY IN ORDER TO ENSURE THE PROTECTION OF ADJACENT PROPERTIES AND WATERWAYS. ALL TEMPORARY DEVICES SHALL BE APPROPRIATELY MAINTAINED UNTIL ALL EARTH DISTURBING ACTIVITIES HAVE CEASED AND THE PROJECT IS STABILIZED AND APPROVED.
- EROSION CONTROL MEASURES SHALL BE CHECKED DAILY AND IMMEDIATELY FOLLOWING ANY RAINFALL EVENTS. ANY NOTED DEFICIENCIES WILL BE CORRECTED IMMEDIATELY (NO LATER THAN THE END OF EACH DAY). IMMEDIATELY UPON THE DISCOVERY OF UNFORESEEN CIRCUMSTANCES THAT POSE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BMP'S TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENTATION.
- ALL DENUDED CUT/FILL SLOPES STEEPER THAN OR EQUAL TO 3:1 SHALL BE PROTECTED WITH NORTH AMERICAN GREEN SCI25 OR EQUIVALENT UNLESS ALTERNATIVE SLOPE PROTECTION MEASURES ARE APPROVED
- ALL CONSTRUCTION TRAFFIC SHALL ENTER AND EXIT THE SITE VIA THE CONSTRUCTION ENTRANCES

PANEL SCHEDULE

- SERVICE BOND IS TO BE MADE BY DEVICES (STRAPS, SCREWS, ETC. SUPPLIED BY EQUIPMENT MANUFACTURER. IF NO SUCH DEVICE IS SUPPLIED, BOND IS TO BE MADE IN ACCORDANCE WITH NEC ARTICLE 250.
- CONDUCTOR OVERCURRENT PROTECTION DEVICES ARE SELECTED IN ACCORDANCE WITH NEC ARTICLE 240-3.
- CONDUCTOR SIZING IS SELECTED FROM NEC ARTICLE 310-16
- ALL LUGS THAT HOLD MORE THAN ONE WIRE SHALL BE LISTED FOR MULTI-BARREL CONNECTIONS
- ALL CONDUCTORS SHALL BE INSULATED THHN WIRE


CONSTRUCTION REQUIREMENTS

- UPON ISSUANCE OF BID AWARD, CONTRACTOR WILL BE REQUIRED TO PROVIDE PROOF OF LICENSE TO PERFORM WORK IN APPLICABLE JURISDICTION
- CONTRACTOR WILL PROVIDE A CONSTRUCTION SCHEDULE PRIOR TO COMMENCEMENT OF CONSTRUCTION. SCHEDULE SHALL BE UPDATED IMMEDIATELY AND SUBMITTED TO OWNER IN EVENT OF DELAYS OR REQUIRED TIME EXTENSIONS. ALL DELAYS AND/OR TIME EXTENSIONS WILL BE ACCOMPANIED BY EXPLANATIONS FOR EACH OCCURRENCE.
- DURING CONSTRUCTION, CONTRACTOR SHALL PROVIDE OWNER OR OWNER'S REPRESENTATIVE WITH PHOTOGRAPHS OF MAJOR CONSTRUCTION MILESTONES AS THEY OCCUR.
- CONTRACTOR OR CONTRACTOR'S REPRESENTATIVE SHALL BE PREPARED TO ATTEND WEEKLY CONFERENCE CALLS WHERE SPECIFIC DETAILS, INCLUDING PROGRESS REPORTS, UNFORESEEN SITE CONDITIONS, SCHEDULE CHANGES, SAFETY CONCERNS, ETC. REGARDING THE SITE WILL BE DISCUSSED.
- CONTRACTOR WILL UTILIZE, ADHERE TO, AND SUBMIT (AS REQUIRED) ALL OWNER PROVIDED DOCUMENTATION.
- CONTRACTOR IS RESPONSIBLE FOR COMPLETION OF ALL CONCRETE COMPRESSIVE STRENGTH TESTING (INCLUDING THE SUBMITTAL OF FINAL TESTING RESULTS AND CLOSE-OUT BOOK)
- CONTRACTOR IS RESPONSIBLE FOR ALL GRADING AND FILL COMPACTION TESTING REQUIRED AS SET FORTH IN THE GEOTECHNICAL REPORT PROVIDED BY OWNER.
- CONTRACTOR IS RESPONSIBLE FOR GROUND MEG TESTING.
- CONTRACTOR SHALL ASSIST IN COORDINATING AND OBTAINING PRIMARY POWER TO THE SITE PRIOR TO TOWER ERECTION. CONTRACTOR SHALL ALSO ASSIST IN COORDINATING AND OBTAINING TELCO/FIBER SERVICE PRIOR TO PROJECT COMPLETION (ON SITE VISITS WITH UTILITY COMPANY REPRESENTATIVES AS NECESSARY).
- CONTRACTOR SHOULD BE PREPARED FOR RANDOM SAFETY INSPECTIONS AT ALL TIMES.
- CONTRACTOR IS EXPECTED TO MAINTAIN PROPER WORKING CONDITIONS AND PROCEDURES PER OSHA STANDARDS AT ALL TIMES.
- CONTRACTOR WILL BE REQUIRED TO OBTAIN ALL NECESSARY CONSTRUCTION AND/OR CLOSE-OUT RELATED PERMITS, INCLUDING ELECTRICAL PERMITS AND INSPECTIONS, CERTIFICATES OF OCCUPANCY, ETC. AS REQUIRED BY JURISDICTION.
- CONTRACTOR IS EXPECTED TO CLOSE-OUT THE JOB SITE AS QUICKLY AS POSSIBLE (OBTAINING A CERTIFICATE OF OCCUPANCY AND GETTING OWNER'S SIGN-OFF ON THE SITE).
- CONTRACTOR WILL PROVIDE A COMPLETED TOWER HEIGHT VERIFICATION FORM AND TAPE DROP WITHIN 24 HOURS OF REACHING OVERALL HEIGHT.

SEEDBED PREPARATION


- SCARIFY COMPACTED AREAS AND REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM. FILL ANY EXISTING RILLS AND GULLIES
- IMMEDIATELY PRIOR TO SPREADING TOPSOIL, CORRECT PH OF THE SUBSOIL WITH LIME PER RECOMMENDATION OF SOILS TEST OR AT A RATE SUITABLE TO THE SITE CONDITIONS. LOOSEN THE SUBGRADE OF THE SITE TO RECEIVE THE TOPSOIL BY DISKING OR SCARIFYING TO A DEPTH OF AT LEAST 2-INCHES TO ENSURE BONDING OF THE TOPSOIL AND SUBSOIL.
- UNIFORMLY SPREAD TOPSOIL 3-INCHES DEEP IN AREAS AS REQUIRED
- APPLY LIME AND/OR FERTILIZER AS NECESSARY AND TILL SOIL UNTIL A WELL-MIXED, PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED. THE PREPARED SEEDBED SHOULD BE 4 TO 6 INCHES DEEP.
- SEED A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CUL TILPACK AFTER SEEDING
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH
- INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 70% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES
- SEE PERMANENT SEEDING SPECIFICATION SHEET C-9.

PREPARED FOR:

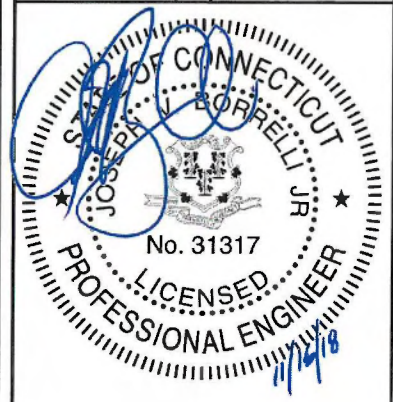


CROWN CASTLE
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CANONSBURG, PA 15317
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PREPARED BY:



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JOSEPH V. BORRELLI JR., P.E.
CONNECTICUT LICENSE NO. 31317

11/16/18

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SITE ADDRESS:
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HAMDEN, CT 06517

SITE ID:
829935

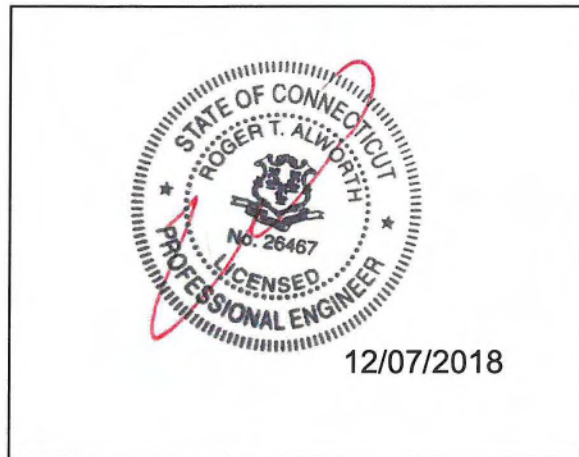
SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

ATTACHMENT 3



STRUCTURAL CALCULATIONS
for
HAMDEN SOUTH DIXWELL (SITE # 824408)
100'-0" MONOPOLE W/ LS-20
at
445 PUTNAM AVENUE
HAMDEN, CT 06517
for
CDMI



BY: ROGER T. ALWORTH, P.E.
PRINCIPAL
CT Firm License Number: PEC 0001229
PROJECT #: U1140-116-181
DATE: December 7, 2018

DESIGNED BY BRF; CHECKED BY CMP

NOTE:

The calculations presented in this package are intended for a single use at the location indicated above, for the client listed above. These calculations shall not be reproduced, reused, "card filed", sold to a third party, or altered in any way without the written authorization of Vector Structural Engineering, LLC and CDMI.

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JOB NO.: U1140-116-181



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PROJECT: HAMDEN SOUTH DIXWELL

Design Criteria:

Code: Structural design is based on the Connecticut State Building Code, 2018 Edition (2015 IBC)

Wind: Basic wind speed = 125 mph (3-second gust) per the ASCE 7-10 standard
 Basic wind speed reduction factor = 0.85 as the tower will only be in use for 2 years or less per ASCE 37-14
 Adjusted Basic wind speed = 107 mph (3-second gust) per the ASCE 7-10 standard & ASCE 37-14
 Risk category / Structure class: II
 Wind exposure: C
 Topographic category: 1
 Crest height: 0 ft

Ice: 0.75" radial ice @ 50 mph basic wind speed (3-second gust) per the TIA-222-G standard

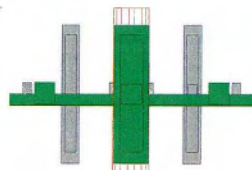
General Notes:

- 1 The contractor shall verify dimensions, conditions and elevations before starting work. The engineer shall be notified immediately if any discrepancies are found.
- 2 The typical notes and details shall apply in all cases unless specifically detailed elsewhere. Where no detail is shown, the construction shall be as shown for other similar work and as required by the building code.
- 3 These calculations are limited to the structural members shown in these calculations only.
- 4 The contractor shall be responsible for compliance with local construction safety orders. Approval of shop drawings by the architect or structural engineer shall not be construed as accepting this responsibility.
- 5 All structural framing members shall be adequately shored and braced during erection and until full lateral and vertical support is provided by adjoining members.

Structural Steel:

- 1 All structural steel code checks based on the AISC-LRFD, 3rd Edition per the TIA-222-G standard
- 2 All 18-sided, tapered shaft steel to be per ASTM A572 GR. 65, U.N.O.
- 3 The design length of slip splices is equal to 1.67 times the inside width of the base of the upper section. Slip splice length tolerance is equal to $\pm 10\%$ of the design slip splice length.
- 4 All steel plates to be per ASTM A572 (50 KSI), U.N.O.
- 5 All other structural steel shapes & plates shall be per ASTM A572 (65 KSI), U.N.O.
- 6 All anchor bolts shall be per ASTM F1554 GR. 105, U.N.O.
- 7 All bolts for steel-to-steel connections shall be per ASTM F3125 GR. A325 U.N.O.
- 8 All bolted connections shall be tightened per the "turn-of-nut" method as defined by AISC.
- 9 All welding shall be performed by certified welders in accordance with the latest edition of the American Welding Society (AWS) D1.1
- 10 All steel surfaces shall be galvanized in accordance with ASTM A123 and ASTM F2329 standards, thoroughly coated with a zinc-rich primer, or otherwise protected as noted on the structural drawings.

100.0 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PV-RP10S-HR-12-B	95	CellMax CMA-BDHH/6521/EO-6 w/ Mount Pipe	95
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	95	(2) Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	95
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	95	RRUS-4415 B25 (14.96"x13.19"x5.39")	95
Ericsson air 5121 (23.62"x11.81"x3.54")	95	Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	95
CellMax CMA-BDHH/6521/EO-6 w/ Mount Pipe	95	RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	95
(2) Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	95	Ericsson air 5121 (23.62"x11.81"x3.54")	95
RRUS-4415 B25 (14.96"x13.19"x5.39")	95	CellMax CMA-BDHH/6521/EO-6 w/ Mount Pipe	95
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	95	(2) Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	95
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	95	RRUS-4415 B25 (14.96"x13.19"x5.39")	95
Ericsson air 5121 (23.62"x11.81"x3.54")	95		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 107 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 48.8%

Length (ft)	28.50	28.50	28.50	25.00	22.8 ft	2.5 ft
Number of Sides	18	18	18	18		
Thickness (in)	0.1875	0.2500	0.2500	0.2500		
Socket Length (ft)	4.00	4.25	4.75			
Top Dia (in)	23.8545	26.9869	29.7989	32.5194		
Bot Dia (in)	27.9345	30.8794	33.6635	35.8750		
Grade		A572-65				
Weight (lb)	1483.7	2207.3	2422.6	2291.5		

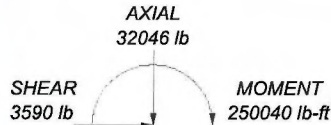
71.5 ft

47.0 ft

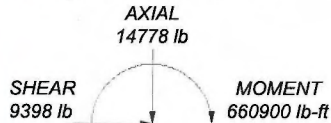
22.8 ft

2.5 ft

ALL REACTIONS ARE FACTORED



50 mph WIND - 0.750 in ICE



REACTIONS - 107 mph WIND

<p>VECTOR ENGINEERS</p>	<p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>		<p>Job: Hamden South Dixwell Relo</p> <p>Project: U1140-116-181</p>	
	Client: CDMI	Drawn by: bferguson	App'd:	
	Code: TIA-222-G	Date: 12/06/18	Scale: N	
	Path:		Dwg No.:	

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>1 of 21</p>
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	<p>Client</p> <p>CDMI</p>	<p>Designed by</p> <p>bferguson</p>

Tower Input Data

The tower is a monopole.
 This tower is designed using the TIA-222-G standard.
 The following design criteria apply:
 Tower is located in New Haven County, Connecticut.
 ASCE 7-10 Wind Data is used.
 Basic wind speed of 107 mph.
 Risk Category II.
 Exposure Category C.
 Topographic Category 1.
 Crest Height 0.00 ft.
 Nominal ice thickness of 0.7500 in.
 Ice thickness is considered to increase with height.
 Ice density of 56 pcf.
 A wind speed of 50 mph is used in combination with ice.
 Temperature drop of 50 °F.
 Deflections calculated using a wind speed of 60 mph.
 A non-linear (P-delta) analysis was used.
 Pressures are calculated at each section.
 Stress ratio used in pole design is 1.
 Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|--|--|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	

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Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	100.00-71.50	28.50	4.00	18	23.8545	27.9345	0.1875	0.7500	A572-65 (65 ksi)
L2	71.50-47.00	28.50	4.25	18	26.9869	30.8794	0.2500	1.0000	A572-65 (65 ksi)
L3	47.00-22.75	28.50	4.75	18	29.7989	33.6635	0.2500	1.0000	A572-65 (65 ksi)
L4	22.75-2.50	25.00		18	32.5194	35.8750	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	24.1936	14.0848	996.7248	8.4018	12.1181	82.2510	1994.7612	7.0438	3.8684	20.631
	28.3365	16.5129	1606.1783	9.8502	14.1907	113.1851	3214.4700	8.2580	4.5865	24.461
L2	27.9194	21.2157	1916.0903	9.4916	13.7093	139.7654	3834.7019	10.6099	4.3097	17.239
	31.3172	24.3044	2880.7121	10.8734	15.6867	183.6400	5765.2146	12.1545	4.9948	19.979
L3	30.8053	23.4471	2586.4845	10.4899	15.1379	170.8620	5176.3724	11.7258	4.8046	19.218
	34.1442	26.5136	3739.8165	11.8618	17.1011	218.6892	7484.5539	13.2593	5.4848	21.939
L4	33.6299	25.6058	3368.6609	11.4556	16.5199	203.9158	6741.7544	12.8053	5.2834	21.134
	36.3899	28.2684	4532.6168	12.6469	18.2245	248.7101	9071.1977	14.1369	5.8740	23.496

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 100.00-71.50				1	1	1			
L2 71.50-47.00				1	1	1			
L3 47.00-22.75				1	1	1			
L4 22.75-2.50				1	1	1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	√
Base plate is grouted	
Anchor bolt grade	F1554-105
Anchor bolt size	2.2500 in
Number of bolts	8
Embedment length	12.0000 in
f _c	3 ksi
Grout space	3.0000 in
Base plate grade	A572-50
Base plate thickness	2.5000 in
Bolt circle diameter	42.0000 in
Outer diameter	45.0000 in
Inner diameter	27.0000 in
Base plate type	Plain Plate

tnxTower Vector Structural Engineering, LLC 654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776	Job Hamden South Dixwell Relo	Page 3 of 21
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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		$C_A A_A$	Weight
							ft^2/ft	plf
AVA5-50 (7/8 LOW DENSIFOAM)	C	No	Inside Pole	96.00 - 2.50	12	No Ice	0.00	0.30
						1/2" Ice	0.00	0.30
						1" Ice	0.00	0.30

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R	A_F	$C_A A_A$	$C_A A_A$	Weight
			ft^2	ft^2	In Face ft^2	Out Face ft^2	lb
L1	100.00-71.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	88.20
L2	71.50-47.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	88.20
L3	47.00-22.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	87.30
L4	22.75-2.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	72.90

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness	A_R	A_F	$C_A A_A$	$C_A A_A$	Weight
			in	ft^2	ft^2	In Face ft^2	Out Face ft^2	lb
L1	100.00-71.50	A	1.650	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	88.20
L2	71.50-47.00	A	1.590	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	88.20
L3	47.00-22.75	A	1.507	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	87.30
L4	22.75-2.50	A	1.361	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	72.90

Shielding Factor K_a

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight lb
PV-RP10S-HR-12-B	A	None		0.0000	95.00	No Ice 25.30 1/2" Ice 32.20 1" Ice 39.10	25.30 32.20 39.10	2033.00 4066.00 6099.00
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	A	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 7.94 1/2" Ice 8.34 1" Ice 8.75	6.31 6.97 7.65	97.67 165.31 239.98
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	A	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 20.24 1/2" Ice 20.89 1" Ice 21.54	10.79 12.21 13.49	87.17 220.84 365.12
Ericsson air 5121 (23.62"x11.81"x3.54")	A	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 2.32 1/2" Ice 2.53 1" Ice 2.73	0.80 0.95 1.11	55.00 69.40 86.52
CellMax CMA-BDHH/6521/EO-6 w/ Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 11.27 1/2" Ice 11.82 1" Ice 12.36	6.59 7.82 8.75	87.55 164.91 250.90
(2) Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	A	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 1.65 1/2" Ice 1.81 1" Ice 1.98	1.16 1.30 1.45	70.00 86.16 104.95
RRUS-4415 B25 (14.96"x13.19"x5.39")	A	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	0.68 0.79 0.91	46.00 58.43 73.23
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	B	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 7.94 1/2" Ice 8.34 1" Ice 8.75	6.31 6.97 7.65	97.67 165.31 239.98
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	B	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 20.24 1/2" Ice 20.89 1" Ice 21.54	10.79 12.21 13.49	87.17 220.84 365.12
Ericsson air 5121 (23.62"x11.81"x3.54")	B	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 2.32 1/2" Ice 2.53 1" Ice 2.73	0.80 0.95 1.11	55.00 69.40 86.52
CellMax CMA-BDHH/6521/EO-6 w/ Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 11.27 1/2" Ice 11.82 1" Ice 12.36	6.59 7.82 8.75	87.55 164.91 250.90
(2) Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	B	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 1.65 1/2" Ice 1.81 1" Ice 1.98	1.16 1.30 1.45	70.00 86.16 104.95
RRUS-4415 B25 (14.96"x13.19"x5.39")	B	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97	0.68 0.79 0.91	46.00 58.43 73.23
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	C	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 7.94 1/2" Ice 8.34 1" Ice 8.75	6.31 6.97 7.65	97.67 165.31 239.98
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	C	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 20.24 1/2" Ice 20.89 1" Ice 21.54	10.79 12.21 13.49	87.17 220.84 365.12
Ericsson air 5121 (23.62"x11.81"x3.54")	C	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 2.32 1/2" Ice 2.53 1" Ice 2.73	0.80 0.95 1.11	55.00 69.40 86.52
CellMax CMA-BDHH/6521/EO-6 w/ Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 11.27 1/2" Ice 11.82 1" Ice 12.36	6.59 7.82 8.75	87.55 164.91 250.90
(2) Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	C	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 1.65 1/2" Ice 1.81 1" Ice 1.98	1.16 1.30 1.45	70.00 86.16 104.95

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>5 of 21</p>
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	<p>Client</p> <p>CDMI</p>	<p>Designed by</p> <p>bferguson</p>

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	lb	
RRUS-4415 B25 (14.96"x13.19"x5.39")	C	From Face	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	46.00 58.43 73.23

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
L1 100.00-71.50	85.38	1.224	34	62.379	A	0.000	62.379	62.379	100.00	0.000	0.000
					B	0.000	62.379	100.00	0.000	0.000	
					C	0.000	62.379	100.00	0.000	0.000	
L2 71.50-47.00	59.02	1.133	32	60.471	A	0.000	60.471	60.471	100.00	0.000	0.000
					B	0.000	60.471	100.00	0.000	0.000	
					C	0.000	60.471	100.00	0.000	0.000	
L3 47.00-22.75	34.67	1.013	28	65.626	A	0.000	65.626	65.626	100.00	0.000	0.000
					B	0.000	65.626	100.00	0.000	0.000	
					C	0.000	65.626	100.00	0.000	0.000	
L4 22.75-2.50	12.49	0.85	24	59.079	A	0.000	59.079	59.079	100.00	0.000	0.000
					B	0.000	59.079	100.00	0.000	0.000	
					C	0.000	59.079	100.00	0.000	0.000	

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	in	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
L1 100.00-71.50	85.38	1.224	7	1.6496	70.215	A	0.000	70.215	70.215	100.00	0.000	0.000
						B	0.000	70.215	100.00	0.000	0.000	
						C	0.000	70.215	100.00	0.000	0.000	
L2 71.50-47.00	59.02	1.133	7	1.5898	67.206	A	0.000	67.206	67.206	100.00	0.000	0.000
						B	0.000	67.206	100.00	0.000	0.000	
						C	0.000	67.206	100.00	0.000	0.000	
L3 47.00-22.75	34.67	1.013	6	1.5074	72.051	A	0.000	72.051	72.051	100.00	0.000	0.000
						B	0.000	72.051	100.00	0.000	0.000	
						C	0.000	72.051	100.00	0.000	0.000	
L4 22.75-2.50	12.49	0.85	5	1.3611	64.167	A	0.000	64.167	64.167	100.00	0.000	0.000
						B	0.000	64.167	100.00	0.000	0.000	
						C	0.000	64.167	100.00	0.000	0.000	

tnxTower Vector Structural Engineering, LLC 654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776	Job	Hamden South Dixwell Relo	Page	6 of 21
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Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 100.00-71.50	85.38	1.224	10	62.379	A	0.000	62.379	62.379	100.00	0.000	0.000
					B	0.000	62.379		100.00	0.000	0.000
					C	0.000	62.379		100.00	0.000	0.000
L2 71.50-47.00	59.02	1.133	9	60.471	A	0.000	60.471	60.471	100.00	0.000	0.000
					B	0.000	60.471		100.00	0.000	0.000
					C	0.000	60.471		100.00	0.000	0.000
L3 47.00-22.75	34.67	1.013	8	65.626	A	0.000	65.626	65.626	100.00	0.000	0.000
					B	0.000	65.626		100.00	0.000	0.000
					C	0.000	65.626		100.00	0.000	0.000
L4 22.75-2.50	12.49	0.85	7	59.079	A	0.000	59.079	59.079	100.00	0.000	0.000
					B	0.000	59.079		100.00	0.000	0.000
					C	0.000	59.079		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 100.00-71.50	88.20	1483.68	A	1	0.65	34	1	1	62.379	1520.29	53.34	C
			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2 71.50-47.00	88.20	2207.26	A	1	0.65	32	1	1	60.471	1363.54	55.65	C
			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3 47.00-22.75	87.30	2422.58	A	1	0.65	28	1	1	65.626	1322.99	54.56	C
			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
L4 22.75-2.50	72.90	2291.53	A	1	0.65	24	1	1	59.079	999.75	49.37	C
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	255604.00 lb-ft	5206.57		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 100.00-71.50	88.20	1483.68	A	1	0.65	34	1	1	62.379	1520.29	53.34	C
			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>7 of 21</p>
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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L2	88.20	2207.26	A	1	0.65	32	1	1	60.471	1363.54	55.65	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	28	1	1	65.626	1322.99	54.56	C
47.00-22.75			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
L4	22.75-2.50	72.90	2291.53	A	1	0.65	24	1	59.079	999.75	49.37	C
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	255604.00	5206.57		
									lb-ft			

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	88.20	1483.68	A	1	0.65	34	1	1	62.379	1520.29	53.34	C
100.00-71.50			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2	88.20	2207.26	A	1	0.65	32	1	1	60.471	1363.54	55.65	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	28	1	1	65.626	1322.99	54.56	C
47.00-22.75			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
L4	22.75-2.50	72.90	2291.53	A	1	0.65	24	1	59.079	999.75	49.37	C
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	255604.00	5206.57		
									lb-ft			

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	88.20	1483.68	A	1	0.65	34	1	1	62.379	1520.29	53.34	C
100.00-71.50			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2	88.20	2207.26	A	1	0.65	32	1	1	60.471	1363.54	55.65	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	28	1	1	65.626	1322.99	54.56	C
47.00-22.75			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
L4	22.75-2.50	72.90	2291.53	A	1	0.65	24	1	59.079	999.75	49.37	C

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>8 of 21</p>
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	<p>Client</p> <p>CDMI</p>	<p>Designed by</p> <p>bferguson</p>

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
Sum Weight:	336.60	8405.06	B C	1 1	0.65 0.65		1 1	1 1 OTM	59.079 59.079 255604.00 lb-ft	5206.57		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 100.00-71.50	88.20	3082.05	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	70.215 70.215 70.215	689.85	24.21	C
L2 71.50-47.00	88.20	3687.84	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	67.206 67.206 67.206	610.91	24.93	C
L3 47.00-22.75	87.30	3935.34	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	72.051 72.051 72.051	585.55	24.15	C
L4 22.75-2.50	72.90	3512.15	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	64.167 64.167 64.167	437.73	21.62	C
Sum Weight:	336.60	14217.38						OTM	114907.37 lb-ft	2324.04		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
L1 100.00-71.50	88.20	3082.05	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	70.215 70.215 70.215	689.85	24.21	C
L2 71.50-47.00	88.20	3687.84	A B C	1 1 1	1.2 1.2 1.2	7	1 1 1	1 1 1	67.206 67.206 67.206	610.91	24.93	C
L3 47.00-22.75	87.30	3935.34	A B C	1 1 1	1.2 1.2 1.2	6	1 1 1	1 1 1	72.051 72.051 72.051	585.55	24.15	C
L4 22.75-2.50	72.90	3512.15	A B C	1 1 1	1.2 1.2 1.2	5	1 1 1	1 1 1	64.167 64.167 64.167	437.73	21.62	C
Sum Weight:	336.60	14217.38						OTM	114907.37 lb-ft	2324.04		

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>9 of 21</p>
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Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 100.00-71.50	88.20	3082.05	A	1	1.2	7	1	1	70.215	689.85	24.21	C
			B	1	1.2	1	1	70.215				
			C	1	1.2	1	1	70.215				
L2 71.50-47.00	88.20	3687.84	A	1	1.2	7	1	1	67.206	610.91	24.93	C
			B	1	1.2	1	1	67.206				
			C	1	1.2	1	1	67.206				
L3 47.00-22.75	87.30	3935.34	A	1	1.2	6	1	1	72.051	585.55	24.15	C
			B	1	1.2	1	1	72.051				
			C	1	1.2	1	1	72.051				
L4 22.75-2.50	72.90	3512.15	A	1	1.2	5	1	1	64.167	437.73	21.62	C
			B	1	1.2	1	1	64.167				
			C	1	1.2	1	1	64.167				
Sum Weight:	336.60	14217.38						OTM	114907.37 lb-ft	2324.04		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 100.00-71.50	88.20	3082.05	A	1	1.2	7	1	1	70.215	689.85	24.21	C
			B	1	1.2	1	1	70.215				
			C	1	1.2	1	1	70.215				
L2 71.50-47.00	88.20	3687.84	A	1	1.2	7	1	1	67.206	610.91	24.93	C
			B	1	1.2	1	1	67.206				
			C	1	1.2	1	1	67.206				
L3 47.00-22.75	87.30	3935.34	A	1	1.2	6	1	1	72.051	585.55	24.15	C
			B	1	1.2	1	1	72.051				
			C	1	1.2	1	1	72.051				
L4 22.75-2.50	72.90	3512.15	A	1	1.2	5	1	1	64.167	437.73	21.62	C
			B	1	1.2	1	1	64.167				
			C	1	1.2	1	1	64.167				
Sum Weight:	336.60	14217.38						OTM	114907.37 lb-ft	2324.04		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	88.20	1483.68	A	1	0.65	10	1	1	62.379	427.72	15.01	C

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>10 of 21</p>
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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
100.00-71.50			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2	88.20	2207.26	A	1	0.65	9	1	1	60.471	383.62	15.66	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	8	1	1	65.626	372.21	15.35	C
47.00-22.75			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
L4	22.75-2.50	72.90	2291.53	A	1	0.65	7	1	59.079	281.27	13.89	C
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	71911.43	1464.81		
									lb-ft			

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	88.20	1483.68	A	1	0.65	10	1	1	62.379	427.72	15.01	C
100.00-71.50			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2	88.20	2207.26	A	1	0.65	9	1	1	60.471	383.62	15.66	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	8	1	1	65.626	372.21	15.35	C
47.00-22.75			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
L4	22.75-2.50	72.90	2291.53	A	1	0.65	7	1	59.079	281.27	13.89	C
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	71911.43	1464.81		
									lb-ft			

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	88.20	1483.68	A	1	0.65	10	1	1	62.379	427.72	15.01	C
100.00-71.50			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2	88.20	2207.26	A	1	0.65	9	1	1	60.471	383.62	15.66	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	8	1	1	65.626	372.21	15.35	C
47.00-22.75			B	1	0.65		1	1	65.626			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
LA 22.75-2.50	72.90	2291.53	C	1	0.65	7	1	1	65.626	281.27	13.89	C
			A	1	0.65		1	1	59.079			
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	71911.43 lb-ft	1464.81		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1	88.20	1483.68	A	1	0.65	10	1	1	62.379	427.72	15.01	C
100.00-71.50			B	1	0.65		1	1	62.379			
			C	1	0.65		1	1	62.379			
L2	88.20	2207.26	A	1	0.65	9	1	1	60.471	383.62	15.66	C
71.50-47.00			B	1	0.65		1	1	60.471			
			C	1	0.65		1	1	60.471			
L3	87.30	2422.58	A	1	0.65	8	1	1	65.626	372.21	15.35	C
47.00-22.75			B	1	0.65		1	1	65.626			
			C	1	0.65		1	1	65.626			
LA 22.75-2.50	72.90	2291.53	A	1	0.65	7	1	1	59.079	281.27	13.89	C
			B	1	0.65		1	1	59.079			
			C	1	0.65		1	1	59.079			
Sum Weight:	336.60	8405.06						OTM	71911.43 lb-ft	1464.81		

Discrete Appurtenance Pressures - No Ice G_H = 1.100

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
PV-RP10S-HR-12-B	0.0000	2033.00	0.00	0.00	95.00	1.252	35	25.30	25.30
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	300.0000	97.67	-3.48	-2.01	95.00	1.252	35	7.94	6.31
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	300.0000	87.17	-3.48	-2.01	95.00	1.252	35	20.24	10.79
Ericsson air 5121 (23.62"x11.81"x3.54")	300.0000	55.00	-3.48	-2.01	95.00	1.252	35	2.32	0.80
CellMax	300.0000	87.55	-3.48	-2.01	95.00	1.252	35	11.27	6.59
CMA-BDHH/6521/EO-6 w/ Mount Pipe									
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	300.0000	140.00	-3.48	-2.01	95.00	1.252	35	3.30	2.33
RRUS-4415 B25 (14.96"x13.19"x5.39")	300.0000	46.00	-3.48	-2.01	95.00	1.252	35	1.64	0.68

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	60.0000	97.67	3.48	-2.01	95.00	1.252	35	7.94	6.31
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	60.0000	87.17	3.48	-2.01	95.00	1.252	35	20.24	10.79
Ericsson air 5121 (23.62"x11.81"x3.54")	60.0000	55.00	3.48	-2.01	95.00	1.252	35	2.32	0.80
CellMax	60.0000	87.55	3.48	-2.01	95.00	1.252	35	11.27	6.59
CMA-BDHH/6521/EO-6 w/ Mount Pipe	60.0000	140.00	3.48	-2.01	95.00	1.252	35	3.30	2.33
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	60.0000	46.00	3.48	-2.01	95.00	1.252	35	1.64	0.68
RRUS-4415 B25 (14.96"x13.19"x5.39")	60.0000	46.00	3.48	-2.01	95.00	1.252	35	1.64	0.68
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	180.0000	97.67	0.00	4.02	95.00	1.252	35	7.94	6.31
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	180.0000	87.17	0.00	4.02	95.00	1.252	35	20.24	10.79
Ericsson air 5121 (23.62"x11.81"x3.54")	180.0000	55.00	0.00	4.02	95.00	1.252	35	2.32	0.80
CellMax	180.0000	87.55	0.00	4.02	95.00	1.252	35	11.27	6.59
CMA-BDHH/6521/EO-6 w/ Mount Pipe	180.0000	140.00	0.00	4.02	95.00	1.252	35	3.30	2.33
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	180.0000	46.00	0.00	4.02	95.00	1.252	35	1.64	0.68
RRUS-4415 B25 (14.96"x13.19"x5.39")	180.0000	46.00	0.00	4.02	95.00	1.252	35	1.64	0.68
Sum Weight:		3573.17							

Discrete Appurtenance Pressures - With Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
PV-RP10S-HR-12-B	0.0000	8812.22	0.00	0.00	95.00	1.252	8	48.31	48.31	1.6673
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	300.0000	355.62	-3.48	-2.01	95.00	1.252	8	9.30	8.58	1.6673
RFS-APXVAARR24_43_U_NA20 (95.9"x24"x8.7") W/ MP	300.0000	581.58	-3.48	-2.01	95.00	1.252	8	22.43	14.98	1.6673
Ericsson air 5121 (23.62"x11.81"x3.54")	300.0000	115.33	-3.48	-2.01	95.00	1.252	8	3.03	1.34	1.6673
CellMax	300.0000	385.37	-3.48	-2.01	95.00	1.252	8	13.10	10.02	1.6673
CMA-BDHH/6521/EO-6 w/ Mount Pipe	300.0000	271.60	-3.48	-2.01	95.00	1.252	8	4.43	3.31	1.6673
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	300.0000	98.24	-3.48	-2.01	95.00	1.252	8	2.21	1.09	1.6673
RRUS-4415 B25 (14.96"x13.19"x5.39")	300.0000	98.24	-3.48	-2.01	95.00	1.252	8	2.21	1.09	1.6673
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	60.0000	355.62	3.48	-2.01	95.00	1.252	8	9.30	8.58	1.6673
RFS-APXVAARR24_43	60.0000	581.58	3.48	-2.01	95.00	1.252	8	22.43	14.98	1.6673

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A Ac Front ft ²	C _A Ac Side ft ²	t _z in
_U_NA20 (95.9"x24"x8.7") W/ MP Ericsson air 5121 (23.62"x11.81"x3.54") CellMax	60.0000	115.33	3.48	-2.01	95.00	1.252	8	3.03	1.34	1.6673
CMA-BDHH/6521/EO-6 w/ Mount Pipe	60.0000	385.37	3.48	-2.01	95.00	1.252	8	13.10	10.02	1.6673
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	60.0000	271.60	3.48	-2.01	95.00	1.252	8	4.43	3.31	1.6673
RRUS-4415 B25 (14.96"x13.19"x5.39")	60.0000	98.24	3.48	-2.01	95.00	1.252	8	2.21	1.09	1.6673
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	180.0000	355.62	0.00	4.02	95.00	1.252	8	9.30	8.58	1.6673
RFS-APXVAARR24_43 _U_NA20 (95.9"x24"x8.7") W/ MP	180.0000	581.58	0.00	4.02	95.00	1.252	8	22.43	14.98	1.6673
Ericsson air 5121 (23.62"x11.81"x3.54") CellMax	180.0000	115.33	0.00	4.02	95.00	1.252	8	3.03	1.34	1.6673
CMA-BDHH/6521/EO-6 w/ Mount Pipe	180.0000	385.37	0.00	4.02	95.00	1.252	8	13.10	10.02	1.6673
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	180.0000	271.60	0.00	4.02	95.00	1.252	8	4.43	3.31	1.6673
RRUS-4415 B25 (14.96"x13.19"x5.39")	180.0000	98.24	0.00	4.02	95.00	1.252	8	2.21	1.09	1.6673
Sum Weight:		14235.44								

Discrete Appurtenance Pressures - Service $G_H = 1.100$

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A Ac Front ft ²	C _A Ac Side ft ²
PV-RP10S-HR-12-B	0.0000	2033.00	0.00	0.00	95.00	1.252	10	25.30	25.30
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	300.0000	97.67	-3.48	-2.01	95.00	1.252	10	7.94	6.31
RFS-APXVAARR24_43 _U_NA20 (95.9"x24"x8.7") W/ MP	300.0000	87.17	-3.48	-2.01	95.00	1.252	10	20.24	10.79
Ericsson air 5121 (23.62"x11.81"x3.54") CellMax	300.0000	55.00	-3.48	-2.01	95.00	1.252	10	2.32	0.80
CMA-BDHH/6521/EO-6 w/ Mount Pipe	300.0000	87.55	-3.48	-2.01	95.00	1.252	10	11.27	6.59
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	300.0000	140.00	-3.48	-2.01	95.00	1.252	10	3.30	2.33
RRUS-4415 B25 (14.96"x13.19"x5.39")	300.0000	46.00	-3.48	-2.01	95.00	1.252	10	1.64	0.68
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	60.0000	97.67	3.48	-2.01	95.00	1.252	10	7.94	6.31
RFS-APXVAARR24_43 _U_NA20 (95.9"x24"x8.7") W/ MP	60.0000	87.17	3.48	-2.01	95.00	1.252	10	20.24	10.79
Ericsson air 5121 (23.62"x11.81"x3.54")	60.0000	55.00	3.48	-2.01	95.00	1.252	10	2.32	0.80

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>14 of 21</p>
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	<p>Client</p> <p>CDMI</p>	<p>Designed by</p> <p>bferguson</p>

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
CellMax	60.0000	87.55	3.48	-2.01	95.00	1.252	10	11.27	6.59
CMA-BDHH/6521/EO-6 w/ Mount Pipe									
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	60.0000	140.00	3.48	-2.01	95.00	1.252	10	3.30	2.33
RRUS-4415 B25 (14.96"x13.19"x5.39")	60.0000	46.00	3.48	-2.01	95.00	1.252	10	1.64	0.68
Ericsson Air 3246 B66 (58.1"x15.7"x9.4") w/ MP	180.0000	97.67	0.00	4.02	95.00	1.252	10	7.94	6.31
RFS-APXVAARR24_43 U_NA20 (95.9"x24"x8.7") W/ MP	180.0000	87.17	0.00	4.02	95.00	1.252	10	20.24	10.79
Ericsson air 5121 (23.62"x11.81"x3.54")	180.0000	55.00	0.00	4.02	95.00	1.252	10	2.32	0.80
CellMax	180.0000	87.55	0.00	4.02	95.00	1.252	10	11.27	6.59
CMA-BDHH/6521/EO-6 w/ Mount Pipe									
Ericsson RRUS 4449 (15"x13.2"x9.3", 70lbs)	180.0000	140.00	0.00	4.02	95.00	1.252	10	3.30	2.33
RRUS-4415 B25 (14.96"x13.19"x5.39")	180.0000	46.00	0.00	4.02	95.00	1.252	10	1.64	0.68
Sum Weight:		3573.17							

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M _x lb-ft	Sum of Overturning Moments, M _z lb-ft	Sum of Torques lb-ft
Leg Weight	8405.06					
Bracing Weight	0.00					
Total Member Self-Weight	8405.06			0.00	0.00	
Total Weight	12314.83			0.00	0.00	
Wind 0 deg - No Ice		0.00	-9398.17	-643327.28	0.00	0.00
Wind 45 deg - No Ice		6645.51	-6645.51	-454901.08	-454901.08	0.00
Wind 90 deg - No Ice		9398.17	0.00	0.00	-643327.28	0.00
Wind 135 deg - No Ice		6645.51	6645.51	454901.08	-454901.08	0.00
Wind 180 deg - No Ice		0.00	9398.17	643327.28	0.00	0.00
Wind 225 deg - No Ice		-6645.51	6645.51	454901.08	454901.08	0.00
Wind 270 deg - No Ice		-9398.17	0.00	0.00	643327.28	0.00
Wind 315 deg - No Ice		-6645.51	-6645.51	-454901.08	454901.08	0.00
Member Ice	5812.32					
Total Weight Ice	28789.42			0.00	0.00	
Wind 0 deg - Ice		0.00	-3590.49	-232054.24	0.00	0.00
Wind 45 deg - Ice		2538.86	-2538.86	-164087.13	-164087.13	0.00
Wind 90 deg - Ice		3590.49	0.00	0.00	-232054.24	0.00
Wind 135 deg - Ice		2538.86	2538.86	164087.13	-164087.13	0.00
Wind 180 deg - Ice		0.00	3590.49	232054.24	0.00	0.00
Wind 225 deg - Ice		-2538.86	2538.86	164087.13	164087.13	0.00
Wind 270 deg - Ice		-3590.49	0.00	0.00	232054.24	0.00
Wind 315 deg - Ice		-2538.86	-2538.86	-164087.13	164087.13	0.00
Total Weight	12314.83			0.00	0.00	
Wind 0 deg - Service		0.00	-2644.07	-180993.19	0.00	0.00
Wind 45 deg - Service		1869.64	-1869.64	-127981.51	-127981.51	0.00
Wind 90 deg - Service		2644.07	0.00	0.00	-180993.19	0.00
Wind 135 deg - Service		1869.64	1869.64	127981.51	-127981.51	0.00

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 180 deg - Service		0.00	2644.07	180993.19	0.00	0.00
Wind 225 deg - Service		-1869.64	1869.64	127981.51	127981.51	0.00
Wind 270 deg - Service		-2644.07	0.00	0.00	180993.19	0.00
Wind 315 deg - Service		-1869.64	-1869.64	-127981.51	127981.51	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 45 deg - No Ice
5	0.9 Dead+1.0 Wind 45 deg - No Ice
6	1.2 Dead+1.0 Wind 90 deg - No Ice
7	0.9 Dead+1.0 Wind 90 deg - No Ice
8	1.2 Dead+1.0 Wind 135 deg - No Ice
9	0.9 Dead+1.0 Wind 135 deg - No Ice
10	1.2 Dead+1.0 Wind 180 deg - No Ice
11	0.9 Dead+1.0 Wind 180 deg - No Ice
12	1.2 Dead+1.0 Wind 225 deg - No Ice
13	0.9 Dead+1.0 Wind 225 deg - No Ice
14	1.2 Dead+1.0 Wind 270 deg - No Ice
15	0.9 Dead+1.0 Wind 270 deg - No Ice
16	1.2 Dead+1.0 Wind 315 deg - No Ice
17	0.9 Dead+1.0 Wind 315 deg - No Ice
18	1.2 Dead+1.0 Ice+1.0 Temp
19	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
20	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
21	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
22	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
23	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
24	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
25	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
26	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 45 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 135 deg - Service
31	Dead+Wind 180 deg - Service
32	Dead+Wind 225 deg - Service
33	Dead+Wind 270 deg - Service
34	Dead+Wind 315 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	100 - 71.5	Pole	Max Tension	6	0.01	0.00	-0.00
			Max. Compression	18	-17928.59	0.00	0.00
			Max. Mx	14	-5687.62	101099.55	0.00
			Max. My	2	-5687.62	0.00	101099.55

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	<p>Client</p> <p>CDMI</p>	<p>Designed by</p> <p>bferguson</p>

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L2	71.5 - 47	Pole	Max. Vy	14	-5695.70	101099.55	0.00
			Max. Vx	2	-5695.70	0.00	101099.55
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-22218.58	0.00	0.00
			Max. Mx	14	-8297.22	255914.92	0.00
			Max. My	10	-8297.22	0.00	-255914.92
			Max. Vy	14	-7063.20	255914.92	0.00
L3	47 - 22.75	Pole	Max. Vx	10	7063.20	0.00	-255914.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-26875.16	0.00	0.00
			Max. Mx	14	-11279.29	438807.32	0.00
			Max. My	10	-11279.29	0.00	-438807.32
			Max. Vy	14	-8309.32	438807.32	0.00
			Max. Vx	10	8309.32	0.00	-438807.32
L4	22.75 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-32045.55	0.00	0.00
			Max. Mx	14	-14774.14	660842.14	0.00
			Max. My	10	-14774.14	0.00	-660842.14
			Max. Vy	14	-9403.02	660842.14	0.00
			Max. Vx	2	-9403.02	0.00	660842.14

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	18	32045.55	0.00	0.00
	Max. H _x	15	11083.33	9397.57	0.00
	Max. H _z	3	11083.33	0.00	9397.57
	Max. M _x	2	660842.14	0.00	9397.32
	Max. M _z	6	660842.14	-9397.32	0.00
	Max. Torsion	13	0.00	6645.45	-6645.45
	Min. Vert	3	11083.33	0.00	9397.57
	Min. H _x	7	11083.33	-9397.57	0.00
	Min. H _z	11	11083.33	0.00	-9397.57
	Min. M _x	10	-660842.14	0.00	-9397.32
	Min. M _z	14	-660842.14	9397.32	0.00
	Min. Torsion	9	0.00	-6645.45	-6645.45

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	12314.83	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	14777.77	0.00	-9397.32	-660842.14	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	11083.33	0.00	-9397.57	-656306.64	0.00	0.00
1.2 Dead+1.0 Wind 45 deg - No Ice	14777.79	6645.43	-6645.43	-467326.52	-467326.52	0.00
0.9 Dead+1.0 Wind 45 deg - No Ice	11083.34	6645.45	-6645.45	-464107.13	-464107.13	0.00

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Load Combination	Vertical	Shear _x	Shear _y	Overturning Moment, M _x	Overturning Moment, M _y	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 90 deg - No Ice	14777.77	9397.32	0.00	0.00	-660842.14	0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	11083.33	9397.57	0.00	0.00	-656306.64	0.00
1.2 Dead+1.0 Wind 135 deg - No Ice	14777.79	6645.43	6645.43	467326.52	-467326.52	0.00
0.9 Dead+1.0 Wind 135 deg - No Ice	11083.34	6645.45	6645.45	464107.13	-464107.13	0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	14777.77	0.00	9397.32	660842.14	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	11083.33	0.00	9397.57	656306.64	0.00	0.00
1.2 Dead+1.0 Wind 225 deg - No Ice	14777.79	-6645.43	6645.43	467326.52	467326.52	0.00
0.9 Dead+1.0 Wind 225 deg - No Ice	11083.34	-6645.45	6645.45	464107.13	464107.13	0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	14777.77	-9397.32	0.00	0.00	660842.14	0.00
0.9 Dead+1.0 Wind 270 deg - No Ice	11083.33	-9397.57	0.00	0.00	656306.64	0.00
1.2 Dead+1.0 Wind 315 deg - No Ice	14777.79	-6645.43	-6645.43	-467326.52	467326.52	0.00
0.9 Dead+1.0 Wind 315 deg - No Ice	11083.34	-6645.45	-6645.45	-464107.13	464107.13	0.00
1.2 Dead+1.0 Ice+1.0 Temp	32045.55	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	32045.55	0.00	-3590.33	-250040.37	0.00	0.00
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	32045.55	2538.75	-2538.75	-176805.25	-176805.25	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	32045.55	3590.33	0.00	0.00	-250040.37	0.00
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	32045.55	2538.75	2538.75	176805.25	-176805.25	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	32045.55	0.00	3590.33	250040.37	0.00	0.00
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	32045.55	-2538.75	2538.75	176805.25	176805.25	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	32045.55	-3590.33	0.00	0.00	250040.37	0.00
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	32045.55	-2538.75	-2538.75	-176805.25	176805.25	0.00
Dead+Wind 0 deg - Service	12314.82	0.00	-2643.57	-185099.33	0.00	0.00
Dead+Wind 45 deg - Service	12314.82	1869.29	-1869.29	-130885.01	-130885.01	0.00
Dead+Wind 90 deg - Service	12314.82	2643.57	0.00	0.00	-185099.33	0.00
Dead+Wind 135 deg - Service	12314.82	1869.29	1869.29	130885.01	-130885.01	0.00
Dead+Wind 180 deg - Service	12314.82	0.00	2643.57	185099.33	0.00	0.00
Dead+Wind 225 deg - Service	12314.82	-1869.29	1869.29	130885.01	130885.01	0.00
Dead+Wind 270 deg - Service	12314.82	-2643.57	0.00	0.00	185099.33	0.00
Dead+Wind 315 deg - Service	12314.82	-1869.29	-1869.29	-130885.01	130885.01	0.00

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-12314.83	0.00	0.00	12314.83	0.00	0.000%
2	0.00	-14777.79	-9398.17	0.00	14777.77	9397.32	0.005%
3	0.00	-11083.34	-9398.17	0.00	11083.33	9397.57	0.004%

<p>tnxTower</p> <p>Vector Structural Engineering, LLC</p> <p>654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>Hamden South Dixwell Relo</p>	<p>Page</p> <p>18 of 21</p>
	<p>Project</p> <p>U1140-116-181</p>	<p>Date</p> <p>10:34:02 12/07/18</p>
	<p>Client</p> <p>CDMI</p>	<p>Designed by</p> <p>bferguson</p>

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
4	6645.51	-14777.79	-6645.51	-6645.43	14777.79	6645.43	0.001%
5	6645.51	-11083.34	-6645.51	-6645.45	11083.34	6645.45	0.001%
6	9398.17	-14777.79	0.00	-9397.32	14777.77	0.00	0.005%
7	9398.17	-11083.34	0.00	-9397.57	11083.33	0.00	0.004%
8	6645.51	-14777.79	6645.51	-6645.43	14777.79	-6645.43	0.001%
9	6645.51	-11083.34	6645.51	-6645.45	11083.34	-6645.45	0.001%
10	0.00	-14777.79	9398.17	0.00	14777.77	-9397.32	0.005%
11	0.00	-11083.34	9398.17	0.00	11083.33	-9397.57	0.004%
12	-6645.51	-14777.79	6645.51	6645.43	14777.79	-6645.43	0.001%
13	-6645.51	-11083.34	6645.51	6645.45	11083.34	-6645.45	0.001%
14	-9398.17	-14777.79	0.00	9397.32	14777.77	0.00	0.005%
15	-9398.17	-11083.34	0.00	9397.57	11083.33	0.00	0.004%
16	-6645.51	-14777.79	-6645.51	6645.43	14777.79	6645.43	0.001%
17	-6645.51	-11083.34	-6645.51	6645.45	11083.34	6645.45	0.001%
18	0.00	-32045.55	0.00	0.00	32045.55	0.00	0.000%
19	0.00	-32045.55	-3590.49	0.00	32045.55	3590.33	0.000%
20	2538.86	-32045.55	-2538.86	-2538.75	32045.55	2538.75	0.000%
21	3590.49	-32045.55	0.00	-3590.33	32045.55	0.00	0.000%
22	2538.86	-32045.55	2538.86	-2538.75	32045.55	-2538.75	0.000%
23	0.00	-32045.55	3590.49	0.00	32045.55	-3590.33	0.000%
24	-2538.86	-32045.55	2538.86	2538.75	32045.55	-2538.75	0.000%
25	-3590.49	-32045.55	0.00	3590.33	32045.55	0.00	0.000%
26	-2538.86	-32045.55	-2538.86	2538.75	32045.55	2538.75	0.000%
27	0.00	-12314.83	-2644.07	0.00	12314.82	2643.57	0.004%
28	1869.64	-12314.83	-1869.64	-1869.29	12314.82	1869.29	0.004%
29	2644.07	-12314.83	0.00	-2643.57	12314.82	0.00	0.004%
30	1869.64	-12314.83	1869.64	-1869.29	12314.82	-1869.29	0.004%
31	0.00	-12314.83	2644.07	0.00	12314.82	-2643.57	0.004%
32	-1869.64	-12314.83	1869.64	1869.29	12314.82	-1869.29	0.004%
33	-2644.07	-12314.83	0.00	2643.57	12314.82	0.00	0.004%
34	-1869.64	-12314.83	-1869.64	1869.29	12314.82	1869.29	0.004%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00000001	0.00007300
3	Yes	13	0.00000001	0.00006595
4	Yes	15	0.00000001	0.00014449
5	Yes	15	0.00000001	0.00011717
6	Yes	13	0.00000001	0.00007300
7	Yes	13	0.00000001	0.00006595
8	Yes	15	0.00000001	0.00014449
9	Yes	15	0.00000001	0.00011717
10	Yes	13	0.00000001	0.00007300
11	Yes	13	0.00000001	0.00006595
12	Yes	15	0.00000001	0.00014449
13	Yes	15	0.00000001	0.00011717
14	Yes	13	0.00000001	0.00007300
15	Yes	13	0.00000001	0.00006595
16	Yes	15	0.00000001	0.00014449
17	Yes	15	0.00000001	0.00011717
18	Yes	6	0.00000001	0.00000001
19	Yes	15	0.00000001	0.00008440
20	Yes	15	0.00000001	0.00009949

tnxTower Vector Structural Engineering, LLC 654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776	Job Hamden South Dixwell Relo	Page 19 of 21
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21	Yes	15	0.00000001	0.00008440
22	Yes	15	0.00000001	0.00009949
23	Yes	15	0.00000001	0.00008440
24	Yes	15	0.00000001	0.00009949
25	Yes	15	0.00000001	0.00008440
26	Yes	15	0.00000001	0.00009949
27	Yes	12	0.00000001	0.00006196
28	Yes	12	0.00000001	0.00004858
29	Yes	12	0.00000001	0.00006196
30	Yes	12	0.00000001	0.00004858
31	Yes	12	0.00000001	0.00006196
32	Yes	12	0.00000001	0.00004858
33	Yes	12	0.00000001	0.00006196
34	Yes	12	0.00000001	0.00004858

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 71.5	8.386	31	0.6399	0.0000
L2	75.5 - 47	5.183	31	0.5836	0.0000
L3	51.25 - 22.75	2.516	31	0.4466	0.0000
L4	27.5 - 2.5	0.725	31	0.2510	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
95.00	PV-RP10S-HR-12-B	31	7.713	0.6320	0.0000	61358

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 71.5	29.962	10	2.2872	0.0000
L2	75.5 - 47	18.516	10	2.0858	0.0000
L3	51.25 - 22.75	8.988	10	1.5958	0.0000
L4	27.5 - 2.5	2.590	8	0.8967	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
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tnxTower Vector Structural Engineering, LLC 654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776	Job Hamden South Dixwell Relo	Page 20 of 21
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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
95.00	PV-RP10S-HR-12-B	10	27.559	2.2589	0.0000	17206

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
in		in						
2.5000	8	2.2500	91350.75	95044.29	13.223		Bolt T	0.33
			279568.00	464082.88	45.000			✓
			0.33	0.20	0.29			

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio P _u / φP _n
	ft		ft	ft		in ²	lb	lb	
L1	100 - 71.5 (1)	TP27.9345x23.8545x0.1875	28.50	0.00	0.0	16.1721	-5687.58	1066330.00	0.005
L2	71.5 - 47 (2)	TP30.8794x26.9869x0.25	28.50	0.00	0.0	23.8438	-8297.19	1682040.00	0.005
L3	47 - 22.75 (3)	TP33.6635x29.7989x0.25	28.50	0.00	0.0	26.0025	-11279.30	1781610.00	0.006
L4	22.75 - 2.5 (4)	TP35.875x32.5194x0.25	25.00	0.00	0.0	28.2684	-14774.20	1876710.00	0.008

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{ux}	Ratio M _{ux} / φM _{ux}	M _{uy}	φM _{uy}	Ratio M _{uy} / φM _{uy}
	ft		lb-ft	lb-ft		lb-ft	lb-ft	
L1	100 - 71.5 (1)	TP27.9345x23.8545x0.1875	101106.67	596425.00	0.170	0.00	596425.00	0.000
L2	71.5 - 47 (2)	TP30.8794x26.9869x0.25	255935.83	1038866.67	0.246	0.00	1038866.67	0.000
L3	47 - 22.75 (3)	TP33.6635x29.7989x0.25	438845.83	1200808.33	0.365	0.00	1200808.33	0.000
L4	22.75 - 2.5 (4)	TP35.875x32.5194x0.25	660899.17	1375958.33	0.480	0.00	1375958.33	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V _u	φV _n	Ratio V _u / φV _n	Actual T _u	φT _n	Ratio T _u / φT _n
	ft		lb	lb		lb-ft	lb-ft	

tnxTower Vector Structural Engineering, LLC 654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776	Job Hamden South Dixwell Relo	Page 21 of 21
	Project U1140-116-181	Date 10:34:02 12/07/18
	Client CDMI	Designed by bferguson

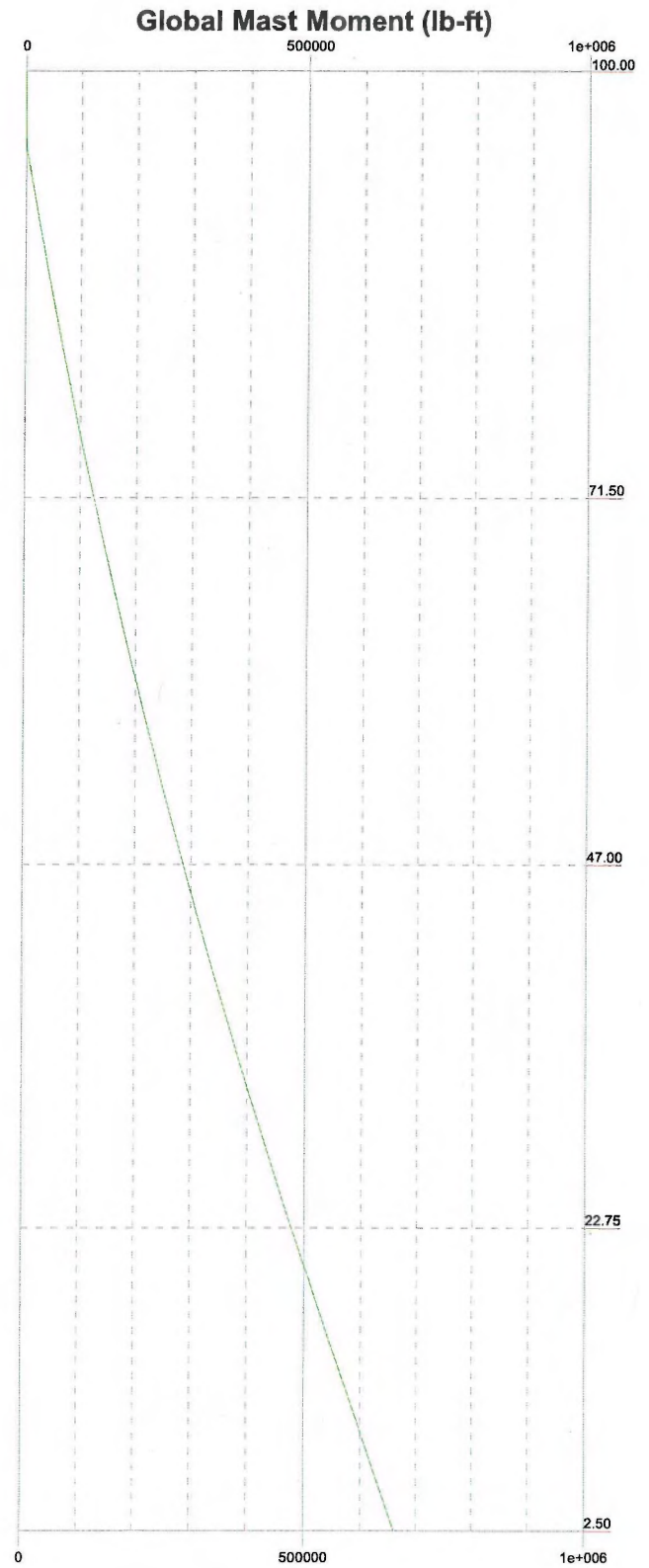
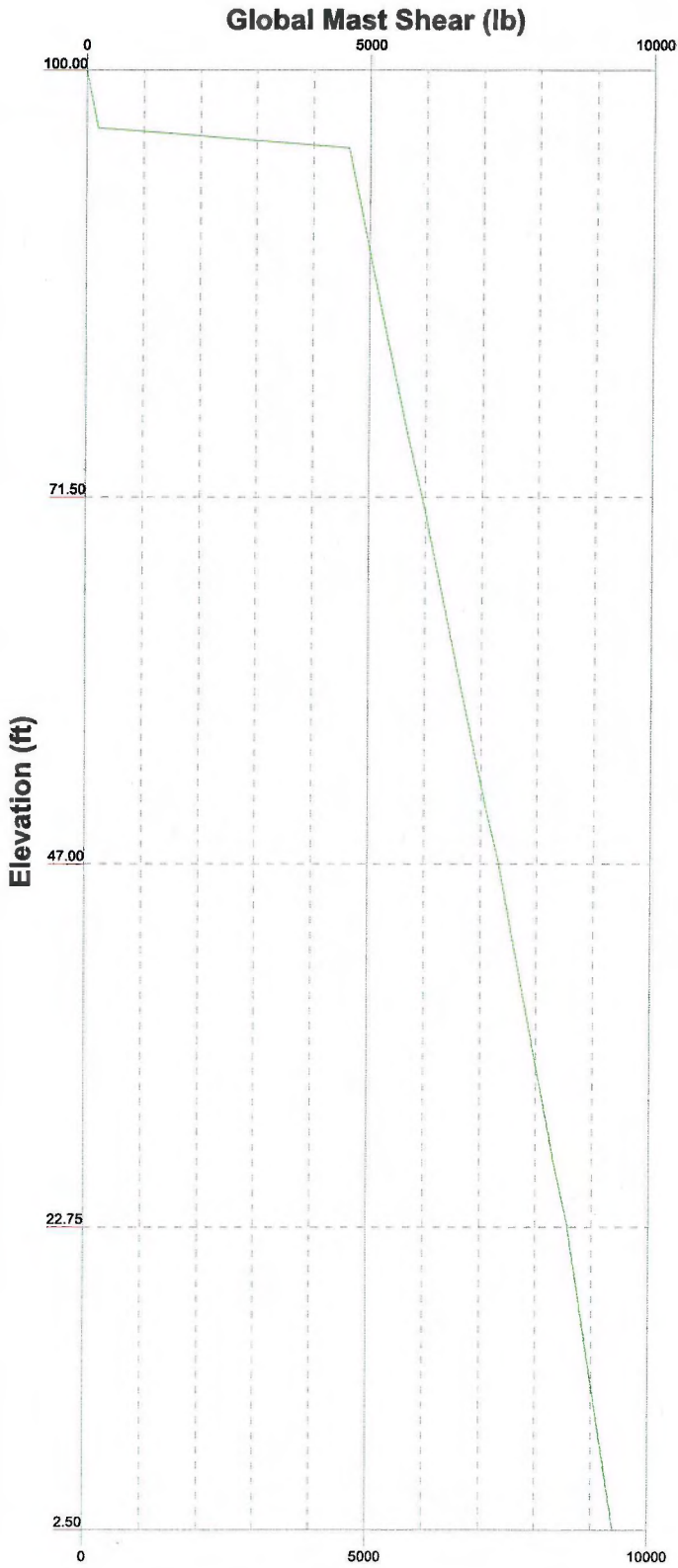
Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio V_u ϕV_n	Actual T_u lb-ft	ϕT_n lb-ft	Ratio T_u ϕT_n
L1	100 - 71.5 (1)	TP27.9345x23.8545x0.1875	5697.26	533163.00	0.011	0.00	1195550.00	0.000
L2	71.5 - 47 (2)	TP30.8794x26.9869x0.25	7065.02	841020.00	0.008	0.00	2082883.33	0.000
L3	47 - 22.75 (3)	TP33.6635x29.7989x0.25	8310.21	890804.00	0.009	0.00	2407316.67	0.000
L4	22.75 - 2.5 (4)	TP35.875x32.5194x0.25	9403.76	938353.00	0.010	0.00	2758208.33	0.000

Pole Interaction Design Data

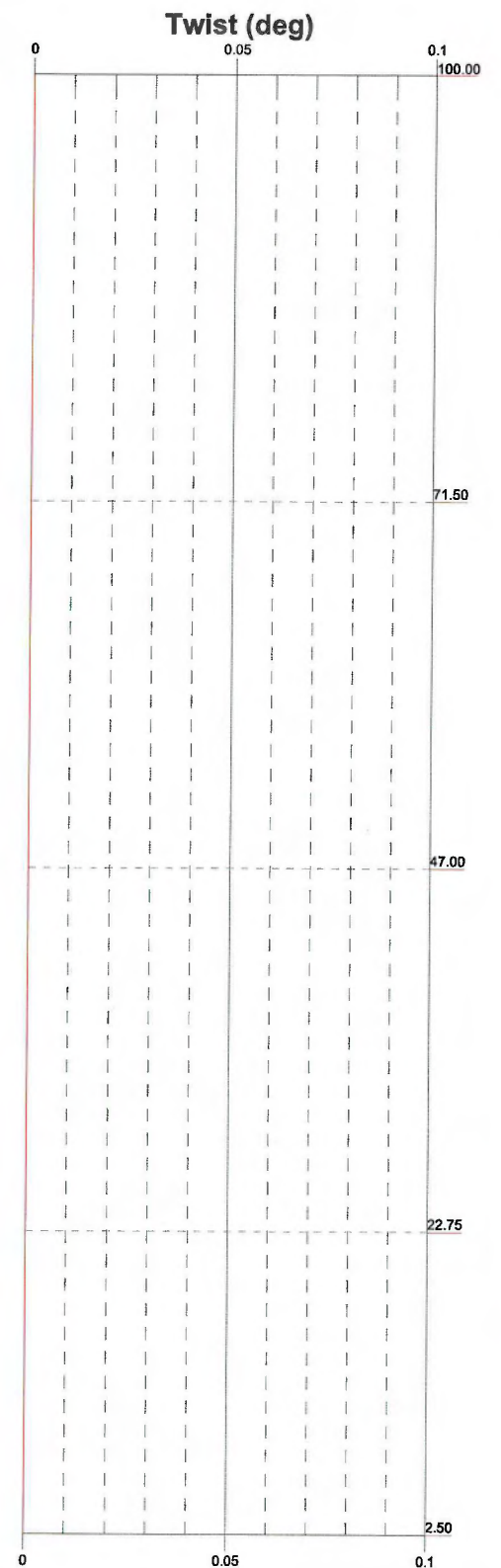
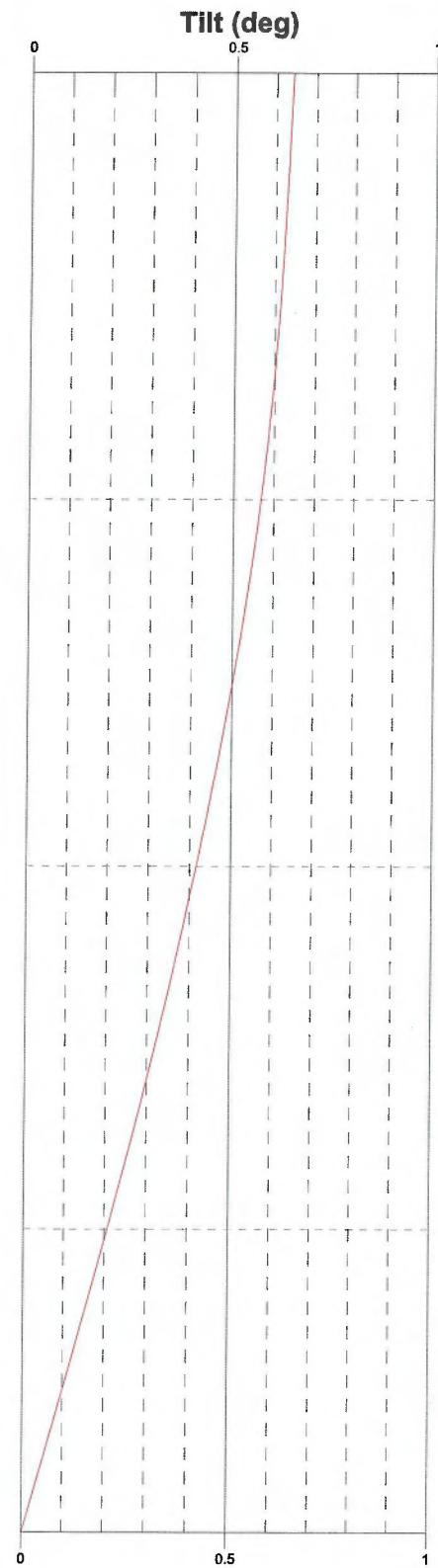
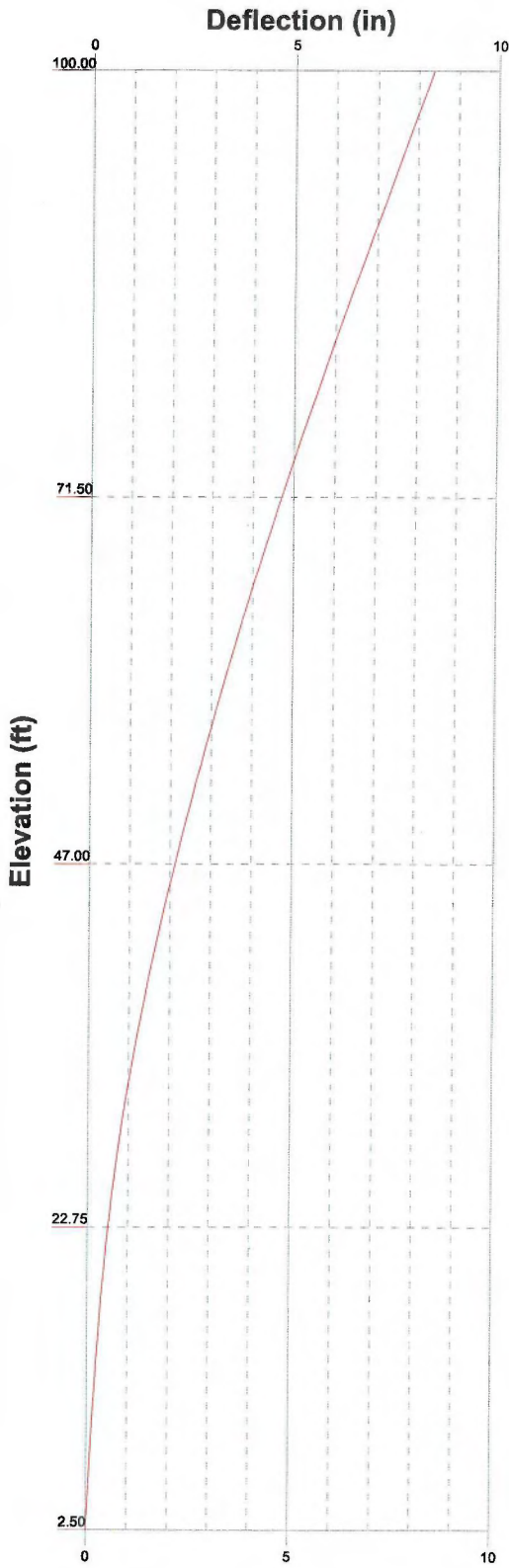
Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 71.5 (1)	0.005	0.170	0.000	0.011	0.000	0.175	1.000	4.8.2 ✓
L2	71.5 - 47 (2)	0.005	0.246	0.000	0.008	0.000	0.251	1.000	4.8.2 ✓
L3	47 - 22.75 (3)	0.006	0.365	0.000	0.009	0.000	0.372	1.000	4.8.2 ✓
L4	22.75 - 2.5 (4)	0.008	0.480	0.000	0.010	0.000	0.488	1.000	4.8.2 ✓

Section Capacity Table

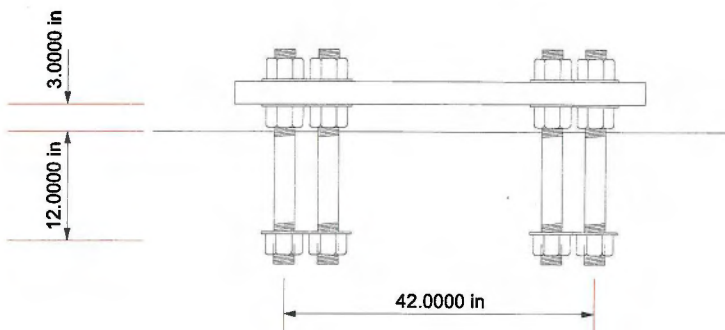
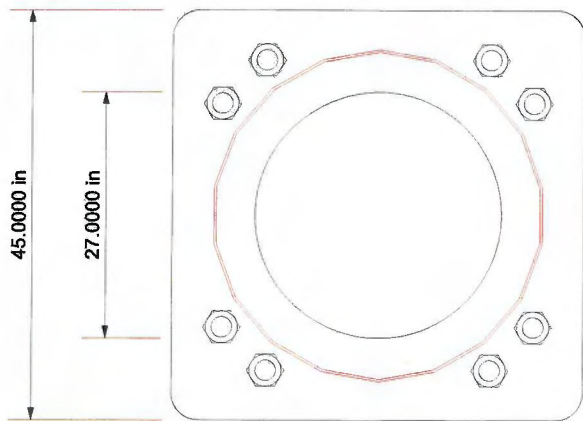
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	100 - 71.5	Pole	TP27.9345x23.8545x0.1875	1	-5687.58	1066330.00	17.5	Pass
L2	71.5 - 47	Pole	TP30.8794x26.9869x0.25	2	-8297.19	1682040.00	25.1	Pass
L3	47 - 22.75	Pole	TP33.6635x29.7989x0.25	3	-11279.30	1781610.00	37.2	Pass
L4	22.75 - 2.5	Pole	TP35.875x32.5194x0.25	4	-14774.20	1876710.00	48.8	Pass
Summary								
Pole (L4)							48.8	Pass
Base Plate							32.7	Pass
RATING =							48.8	Pass



	Vector Structural Engineering, LLC		Job: Hamden South Dixwell Relo	
	654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776		Project: U1140-116-181	
		Client: CDMI	Drawn by: bferguson	App'd:
		Code: TIA-222-G	Date: 12/06/18	Scale: N
		Path:		Dwg No.:



	Vector Structural Engineering, LLC		Job: Hamden South Dixwell Relo		
	654 W. Galena Park Blvd. Suite 101		Project: U1140-116-181		
	Draper, Utah 84016		Client: CDMI	Drawn by: bferguson	App'd:
	Phone: (801) 990-1775		Code: TIA-222-G	Date: 12/06/18	Scale: N
	FAX: (801) 990-1776		Path:		Dwg No. 1



FOUNDATION NOTES

1. Plate thickness is 2.5000 in.
2. Plate grade is A572-50.
3. Anchor bolt grade is F1554-105.
4. fc is 3 ksi.

	Vector Structural Engineering, LLC 654 W. Galena Park Blvd. Suite 101 Draper, Utah 84016 Phone: (801) 990-1775 FAX: (801) 990-1776		Job: Hamden South Dixwell Relo Project: U1140-116-181	
	Client: CDMI Code: TIA-222-G Path:	Drawn by: bferguson Date: 12/07/18	App'd: Scale: N Dwg No.:	



JOB NO.: U1140-116-181

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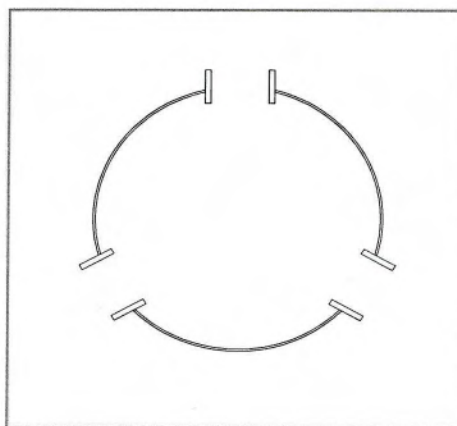
PROJECT: HAMDEN SOUTH DIXWELL

Port Design:

Label: Ports @ 92'-2"

Geometry Input

Pole Diameter	25.05	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Effective Reinforcing Rims?	No	
Rim Yield Strength	50	ksi
# of Ports	3	



	<u>Port 1</u>	<u>Port 2</u>	<u>Port 3</u>
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	6	6	6
Depth (in)	3.125	3.125	3.125
Thickness (in)	0.5	0.5	0.5
Projection (in)	1.5	1.5	1.5
Port Weight (lbs)	36		

Composite Section Properties

	<u>Original</u>	<u>w/ ports</u>	
A	15	11	in2
Ixx	1131	866	in4
Iyy	1131	866	in4
Smin	90	62	in3

Port Check

Pole unity at port location		
from tower model:	18%	(optional)
Rim Fy Reduction:	100%	(rims not considered in section properties)
Result:	26%	



JOB NO.: U1140-116-181

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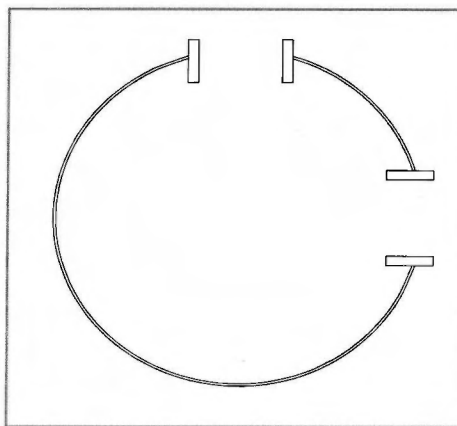
PROJECT: HAMDEN SOUTH DIXWELL

Port Design:

Label: Base port @ 7'-5"

Geometry Input

Pole Diameter	35.38	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Effective Reinforcing Rims?	Yes	
Rim Yield Strength	50	ksi
# of Ports	2	



	Port 1	Port 2
Azimuth (°)	0	90
Height (in)	30	30
Width (in)	10	10
Depth (in)	4.5	4.5
Thickness (in)	1	1
Projection (in)	1	1
Port Weight (lbs)	160	

Composite Section Properties

	Original	w/ ports	
A	28	40	in ²
Ixx	4258	6062	in ⁴
Iyy	4258	6062	in ⁴
Smin	241	324	in ³

Port Check

Pole unity at port location	
from tower model:	18% (optional)
Rim Fy Reduction:	77%
Result:	17%



JOB NO.: U1140-116-181
DATE: 12/07/18

DESIGNED: BRF
CHECKED: CMP

SHEET OF

PROJECT: HAMDEN SOUTH DIXWELL

LS-20 Foundation Design

Design Loads (Factored / ϕ_s):

Max. Base Shear, $V_u / 0.75$:	12.5	k
Max. Overturning Moment, $M_u / 0.75$:	881.2	k-ft
Max. Down, $P_{u-down} / 0.75$:	42.7	k
Structure Weight:	12.3	k
Moment Components, $M_y = M_x$:	623.1	k-ft

Mat Properties:

Mat Width, $L = B$:	20.0	ft
Mat Thickness, t :	0.0	ft
Pier Diameter, b :	0.0	ft
Height of Pier:	2.0	ft
Depth of Soil Above Mat:	0.0	ft

Volume of Concrete:	0	ft ³
Volume of Concrete:	0.0	yd ³
Weight of Ballast:	100.0	k
LS-20 weight	19.0	k

Soil Properties:

Allow. Bearing Pressure:	1,500	psf
Factor of Safety:	2	
1/3 increase for short term loads?	No	
Passive Pressure:	0	pcf
Factor of Safety:	1	
Max. Passive Pressure (opt'l):	0	psf
1/3 increase for short term loads?	No	
Top Depth to Ignore:	0.0	ft

Eff. Bearing Pressure:	3000	psf
Coefficient of Friction:	0.30	
Factor of Safety:	2	
% Passive for Sliding:	100.00	
% Friction for Sliding:	100.00	

Check Bearing:

Total Moment, $M_y = M_x$:	640.8	k-ft
Total Axial Load, P :	233.1	k
Load eccentricity, $e_L = e_B$:	2.75	ft
Mat Brg Width, $B_1 = L_1$:	20.00	ft
Area, $A = (B)(L)$:	400.00	ft ²
Mat Section, $S = (B)(L)^2/6 =$	1333.33	ft ³
Axial load: $P/A+M/S$	1063	psf
Allowable axial load:	1500	psf

Bearing Capacity OK.



JOB NO.: U1140-116-181
 DATE: 12/07/18

DESIGNED: BRF
 CHECKED: CMP

SHEET OF

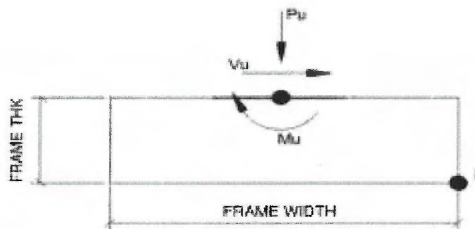
PROJECT: HAMDEN SOUTH DIXWELL

LS-20 Foundation Design (cont.)

Check Overturning:

Base Shear (1.6W), V_u :	9.4	k
Overturning Moment (1.6W), M_u :	660.9	k-ft
Down (0.9 D), P_u :	11.1	k
OTM about point P (1.6W):	679.70669	k-ft
Resisting Moment (0.9D):	1181.8	k-ft

Overturning OK.



Check Sliding:

Sliding Resistance from Friction:	70.9	k
Sliding Resistance from Passive:	0.0	k
Total Sliding Resistance:	70.9	k

Sliding resistance OK.



Company : VSE
 Designer : BRF
 Job Number : U1140-116-181
 Model Name : HAMDEN SOUTH DIXWELL

Dec 6, 2018
 3:15 PM
 Checked By: CMP

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-10: ASD - Building AISC 14th(360-10): ASD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parma Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



Company : VSE
 Designer : BRF
 Job Number : U1140-116-181
 Model Name : HAMDEN SOUTH DIXWELL

Dec 6, 2018
 3:15 PM
 Checked By: CMP

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Joint Loads and Enforced Displacements (BLC 1 : DL)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N279	L	Y	-12.31

Joint Loads and Enforced Displacements (BLC 3 : wlx)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N279	L	Mz	-660.9
2	N279	L	X	9.4

Joint Loads and Enforced Displacements (BLC 4 : wlz)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N279	L	Z	-9.4
2	N279	L	Mx	-660.9

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...Surface(...
1	DL	DL		-1		1			
2	ballast	DL							2664
3	wlx	WLX				2			
4	wlz	WLZ				2			

Load Combinations

	Description	So...P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
1	1.2dl	Y		DL 1.2								
2	1.2dl+1.0wlx	Y		DL 1.2 W...	1							
3	1.2dl+1.0wlz	Y		DL 1.2 W...	1							
4	.9dl+1.0wlx	Yes	Y	DL .9 W...	1							
5	.9dl+1.0wlz	Y		DL .9 W...	1							

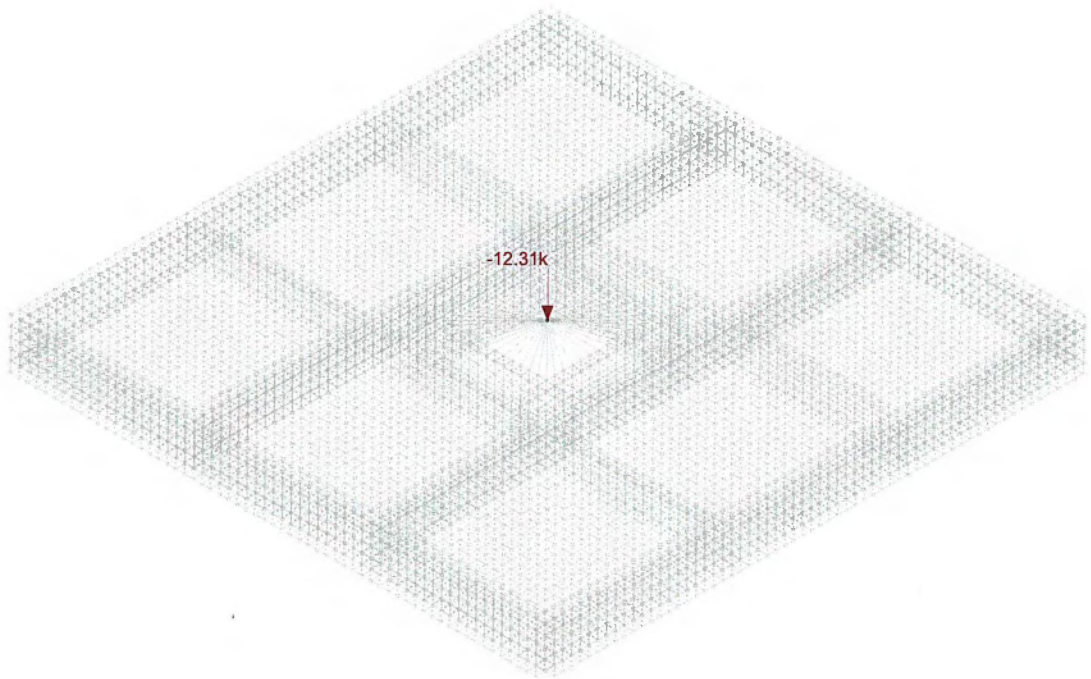
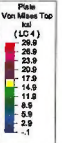


Company : VSE
 Designer : BRF
 Job Number : U1140-116-181
 Model Name : HAMDEN SOUTH DIXWELL

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 3:15 PM
 Checked By: CMP

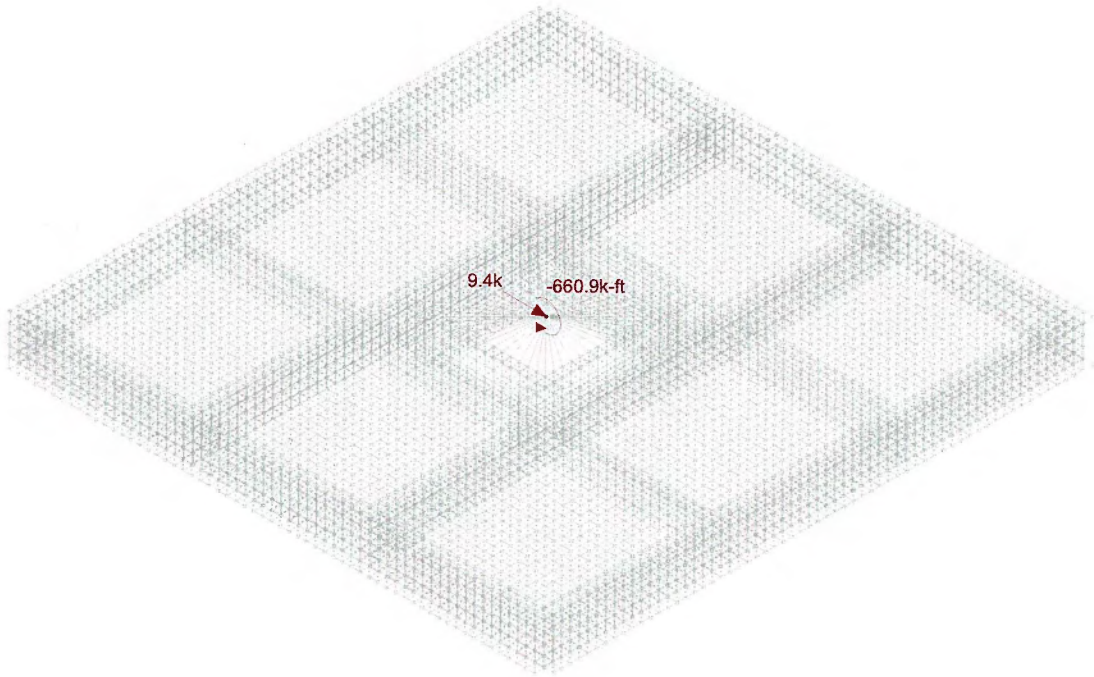
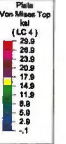
Load Combinations (Continued)

	Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
6	1			Y	1	1							
7	2			Y	2	1							
8	1.2dl+.707wlx+.70...			Y	DL	1.2	W...	.707	W...	.707			
9	.9dl+.707wlx+.707...	Yes		Y	DL	.9	W...	.707	W...	.707			



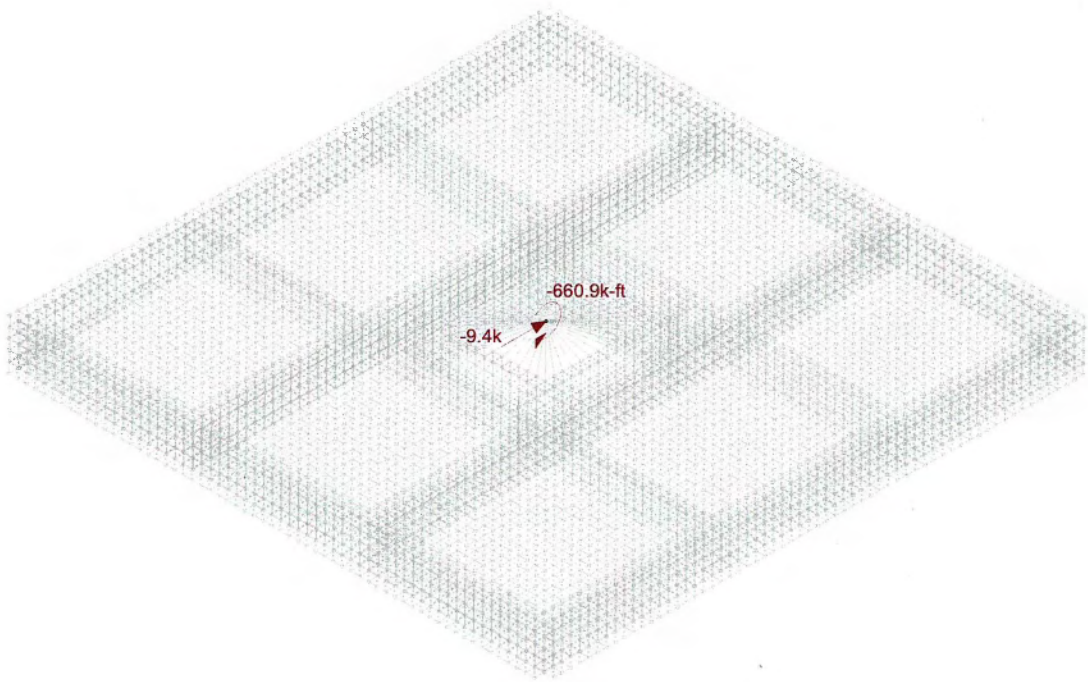
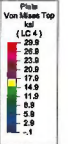
Loads: BLC 1, DL
Results for LC 4, .9dl+1.0wx

VSE	HAMDEN SOUTH DIXWELL	SK - 1
BRF		Dec 6, 2018 at 3:15 PM
U1140-116-181		LS-20 with pole centered A325x 11...



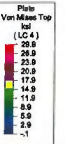
Loads: BLC 3, wlx
Results for LC 4, .9dl+1.0wlx

VSE	HAMDEN SOUTH DIXWELL	SK - 2
BRF		Dec 6, 2018 at 3:16 PM
U1140-116-181		LS-20 with pole centered A325x 11...

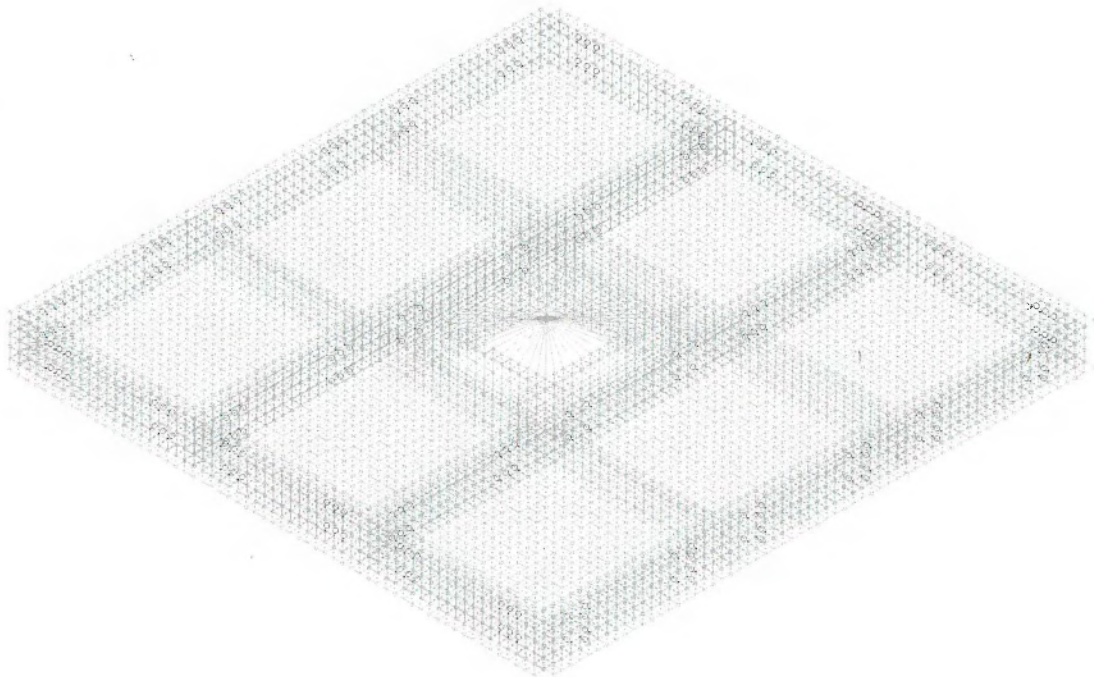


Loads: BLC 4, wtz
Results for LC 4, .9dl+1.0wtx

VSE	HAMDEN SOUTH DIXWELL	SK - 3
BRF		Dec 6, 2018 at 3:16 PM
U1140-116-181		LS-20 with pole centered A325x 11...



Bolt Locations



Results for LC 4, .9dl+1.0wlx

VSE	HAMDEN SOUTH DIXWELL	SK - 4
BRF		Dec 6, 2018 at 3:16 PM
U1140-116-181		LS-20 with pole centered A325x 11...



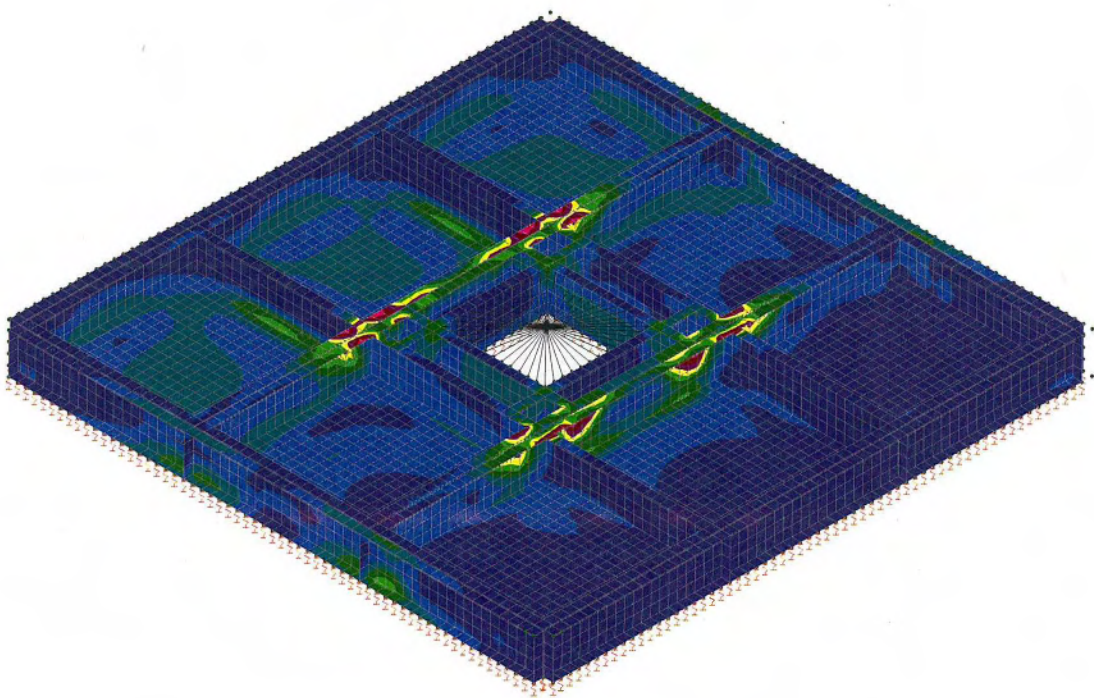
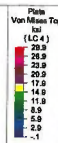
Company : VSE
 Designer : BRF
 Job Number : U1140-116-181
 Model Name : HAMDEN SOUTH DIXWELL

Dec 6, 2018
 3:39 PM
 Checked By: CMP

worst case bolt force

Envelope Member Section Forces

Member	Sec		Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC	
1	M152	1	max	-559	9	6.977	4	-7.149	9	-0.07	9	0	4	0	4
2			min	-2.01	4	2.611	9	-16.123	4	-0.19	4	0	4	0	4
3		2	max	-559	9	6.977	4	-7.149	9	-0.07	9	-0.75	9	-0.27	9
4			min	-2.01	4	2.611	9	-16.123	4	-0.19	4	-1.69	4	-0.73	4
5		3	max	-559	9	6.977	4	-7.149	9	-0.07	9	-1.15	9	-0.55	9
6			min	-2.01	4	2.611	9	-16.123	4	-0.19	4	-3.39	4	-1.47	4
7		4	max	-559	9	6.977	4	-7.149	9	-0.07	9	-2.25	9	-0.82	9
8			min	-2.01	4	2.611	9	-16.123	4	-0.19	4	-5.08	4	-2.2	4
9		5	max	-559	9	6.977	4	-7.149	9	-0.07	9	-3.01	9	-1.1	9
10			min	-2.01	4	2.611	9	-16.123	4	-0.19	4	-6.78	4	-2.93	4
11	M199	1	max	-14	9	6.025	4	-8.678	9	.017	4	0	4	0	4
12			min	-3.74	4	2.832	9	-14.813	4	.008	9	0	4	0	4
13		2	max	-14	9	6.025	4	-8.678	9	.017	4	-0.91	9	-0.3	9
14			min	-3.74	4	2.832	9	-14.813	4	.008	9	-1.56	4	-0.63	4
15		3	max	-14	9	6.025	4	-8.678	9	.017	4	-1.82	9	-0.6	9
16			min	-3.74	4	2.832	9	-14.813	4	.008	9	-3.11	4	-1.27	4
17		4	max	-14	9	6.025	4	-8.678	9	.017	4	-2.74	9	-0.89	9
18			min	-3.74	4	2.832	9	-14.813	4	.008	9	-4.67	4	-1.9	4
19		5	max	-14	9	6.025	4	-8.678	9	.017	4	-3.65	9	-1.19	9
20			min	-3.74	4	2.832	9	-14.813	4	.008	9	-6.23	4	-2.53	4
21	M186	1	max	-6.628	9	6.455	4	-9.345	9	0	4	.403	4	.179	4
22			min	-9.471	4	1.896	9	-14.511	4	0	4	.26	9	.053	9
23		2	max	-6.628	9	6.455	4	-9.345	9	0	4	.302	4	.134	4
24			min	-9.471	4	1.896	9	-14.511	4	0	4	.195	9	.039	9
25		3	max	-6.628	9	6.455	4	-9.345	9	0	4	.202	4	.09	4
26			min	-9.471	4	1.896	9	-14.511	4	0	4	.13	9	.026	9
27		4	max	-6.628	9	6.455	4	-9.345	9	0	4	.101	4	.045	4
28			min	-9.471	4	1.896	9	-14.511	4	0	4	.065	9	.013	9
29		5	max	-6.628	9	6.455	4	-9.345	9	0	4	0	4	0	4
30			min	-9.471	4	1.896	9	-14.511	4	0	4	0	4	0	4
31	M49	1	max	-219	9	2.826	4	-6.068	9	-0.01	9	0	4	0	4
32			min	-4.11	4	1.08	9	-14.043	4	-0.04	4	0	4	0	4
33		2	max	-219	9	2.826	4	-6.068	9	-0.01	9	-0.63	9	-0.11	9
34			min	-4.11	4	1.08	9	-14.043	4	-0.04	4	-1.47	4	-0.3	4
35		3	max	-219	9	2.826	4	-6.068	9	-0.01	9	-1.27	9	-0.23	9
36			min	-4.11	4	1.08	9	-14.043	4	-0.04	4	-2.93	4	-0.59	4
37		4	max	-219	9	2.826	4	-6.068	9	-0.01	9	-1.9	9	-0.34	9
38			min	-4.11	4	1.08	9	-14.043	4	-0.04	4	-4.4	4	-0.89	4
39		5	max	-219	9	2.826	4	-6.068	9	-0.01	9	-2.53	9	-0.45	9
40			min	-4.11	4	1.08	9	-14.043	4	-0.04	4	-5.86	4	-1.18	4
41	M22	1	max	1.481	4	2.582	4	-8.756	9	.004	4	0	4	0	4
42			min	.726	9	1.284	9	-13.965	4	.002	9	0	4	0	4
43		2	max	1.481	4	2.582	4	-8.756	9	.004	4	-0.91	9	-0.13	9
44			min	.726	9	1.284	9	-13.965	4	.002	9	-1.46	4	-0.27	4
45		3	max	1.481	4	2.582	4	-8.756	9	.004	4	-1.83	9	-0.27	9
46			min	.726	9	1.284	9	-13.965	4	.002	9	-2.92	4	-0.54	4
47		4	max	1.481	4	2.582	4	-8.756	9	.004	4	-2.74	9	-0.4	9
48			min	.726	9	1.284	9	-13.965	4	.002	9	-4.37	4	-0.81	4
49		5	max	1.481	4	2.582	4	-8.756	9	.004	4	-3.66	9	-0.54	9
50			min	.726	9	1.284	9	-13.965	4	.002	9	-5.83	4	-1.08	4
51	M171	1	max	2.02	4	-6.009	9	-11.874	9	-0.17	9	0	4	0	4
52			min	2.015	9	-6.452	4	-13.285	4	-0.18	4	0	4	0	4
53		2	max	2.02	4	-6.009	9	-11.874	9	-0.17	9	-1.25	9	.068	4
54			min	2.015	9	-6.453	4	-13.285	4	-0.18	4	-1.4	4	.063	9
55		3	max	2.02	4	-6.009	9	-11.874	9	-0.17	9	-2.5	9	.136	4
56			min	2.015	9	-6.453	4	-13.285	4	-0.18	4	-2.79	4	.126	9



Results for LC 4, .9dl+1.0wlx

VSE	HAMDEN SOUTH DIXWELL	SK - 5
BRF		Dec 6, 2018 at 3:18 PM
U1140-116-181		LS-20 with pole centered A325x 11...



Company : VSE
Designer : BRF
Job Number : U1140-116-181
Model Name : HAMDEN SOUTH DIXWELL

Dec 6, 2018
3:38 PM
Checked By: CMP

worst case plate stress

Envelope Plate/Shell Principal Stresses

Table with 13 columns: Plate, Surf..., Sigma1 [ksij], LC, Sigma2 [ksij], LC, Tau Max [ksij], LC, Angle [rad], LC, Von Mises [ksij], LC. Rows 1-110 showing stress data for various plates like P3163, P3215, P3159, etc.



JOB NO.: U1140-116-181
 DATE: 12/07/18

DESIGNED: BRF
 CHECKED: CMP

PROJECT: HAMDEN SOUTH DIXWELL

FINITE ELEMENT MODEL PLATE STRESS CHECK

Design Methodology:	LRFD				
Connection Under Consideration:					
Element Description:					
Element Yield Stress, F_y (ksi):	65				
Max. Von Mises Stress (ksi):	29.23				
Corresponding RISA Plate I.D.:	P6465				
Allowable Stress ¹ (ksi):	87.75				
Element Unity Check:	0.33				
	OKAY	OKAY	OKAY	OKAY	OKAY

Note 1: Allowable stress based on the following formulas derived from the AISC Specification, Section F11:

ASD: Allowable Stress = $(Z/S)F_y / \Omega = (1.5)F_y / 1.67 = 0.90F_y$

LRFD: Allowable Stress = $\phi(Z/S)F_y = 0.9(1.5)F_y = 1.35F_y$

Bolt Check

LRFD Tension (kips):	9.5	kips
Corresponding LRFD Shear (kips):	16.10	kips

Bolt Designation:	A325N		
Bolt Diameter (in):	1 1/4		
ϕT_n (kips):	82.8	11%	AISC Eq. J3-2
ϕV_n (kips):	49.7	32%	AISC Eq. J3-2

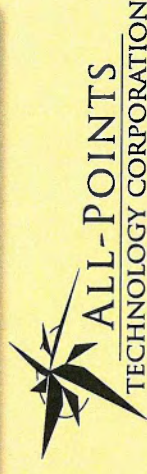
ATTACHMENT 4

Visual Assessments & Photo-Simulations

HAMDEN SOUTH/DIXWELL AVENUE
SITE ID: 829935
445 PUTNAM AVENUE
HAMDEN, CT 06517



Prepared in November 2018 by:
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419



VISUAL ASSESSMENT & PHOTO-SIMULATIONS

Crown Castle USA, Inc. ("Crown") is seeking to relocate existing wireless communications facilities from 1245 Dixwell Avenue in Hamden, Connecticut to a temporary ballast-mounted monopole at 445 Putnam Avenue in Hamden ("Host Property"). At the request of Crown, All-Points Technology Corporation, P.C. ("APT") completed this visual assessment and prepared computer-generated photo-simulations depicting the proposed installation of the temporary wireless telecommunications facility ("Temporary Facility") at the Host Property.

Project Setting

The Host Property is located along the northern side of Putnam Avenue, west of Dixwell Avenue and east of Feeder Hill Drive. The Host Property is currently developed with two large warehouse buildings. The surrounding land use is commercial/industrial, with residential development occurring to the southeast (± 0.2 -mile away) and west (± 0.3 -mile). The Farmington Canal Heritage Greenway Trail extends generally in a north to south direction, approximately 0.2 mile to the west of the Site. Undeveloped forested land, Lake Whitney and wetlands associated with tributaries to the Mill River extend over 0.5 mile to the north.

The proposed temporary Facility includes a ± 100 -foot tall, ballast-mounted monopole surrounded by a ± 26 -foot by ± 26 -foot enclosure, located in the northern portion of the Host Property ("Site"). The Temporary Facility would be built and T-Mobile antennas/equipment installed until a new permanent monopole is constructed at a later date.

Methodology

On October 10, 2018, APT personnel conducted a balloon float and field reconnaissance to evaluate the visibility associated with the proposed Temporary Facility. The balloon float consisted of raising a brightly-colored (green), approximately four-foot diameter, helium-filled balloon tethered to a string height of ± 100 feet above ground level at the proposed Site location. Weather conditions were favorable for the in-field activities, with calm winds (6 mph and below) and mostly sunny skies.

Once the balloon was secured, APT conducted a Study Area reconnaissance by driving along the surrounding and nearby roads and other publicly accessible locations to document and inventory where the balloon could be seen above/through the tree canopy. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens using a focal length of 50 mm for consistency.

Photograph Locations

The table below summarizes characteristics of the photographs and simulations presented in the attachment to this report including a description of each location, view orientation, and the distance from where the photo was taken relative to the proposed Facility.

View	Location	Orientation	Distance to Site
1	<i>Treadwell Street*</i>	South	±0.54 Mile
2	<i>Leeder Hill Drive*</i>	Southwest	±0.37 Mile
3	<i>Leeder Hill Drive</i>	Northwest	±0.12 Mile
4	<i>Newhall Street at Augur Street*</i>	Northwest	±0.30 Mile
5	<i>Arch Street*</i>	North	±0.54 Mile
6	<i>3rd Street*</i>	Northeast	±0.33 Mile
7	<i>Farmington Canal Greenway Trail*</i>	East	±0.17 Mile
8	<i>Dixwell Avenue*</i>	Southeast	±0.29 Mile
9	<i>Beacon Street at Dixwell Avenue*</i>	Southeast	±0.45 Mile
10	<i>Putnam Avenue Adjacent to Host Property</i>	Northeast	±485 Feet
11	<i>Putnam Avenue*</i>	Northeast	±0.10 Mile

**Proposed Temporary Facility Not visible from this location*

Note the existing facility at 1245 Dixwell Avenue is visible in views 1, 6 and 8.

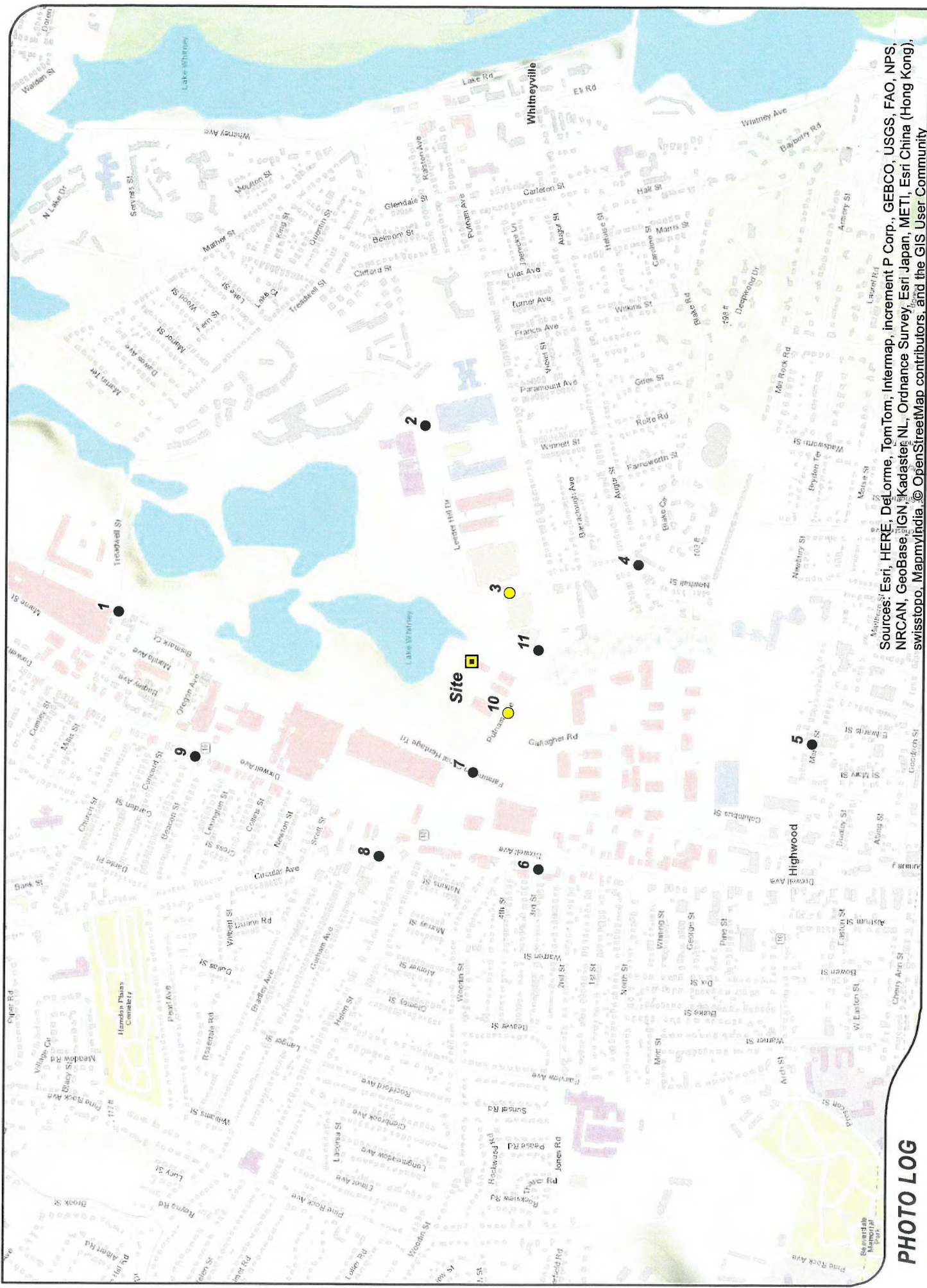
The photo locations are depicted on the photo-log map provided as an attachment to this report. Three-dimensional computer models were developed for the proposed Temporary Facility from AutoCAD information, from which photographic simulations were then generated to portray scaled renderings of the installation. Using field data, site plan information and image editing software, the Temporary Facility was scaled to the correct location and height, relative to the existing Host Property structures and surrounding area. Copies of the existing conditions photographs and photo-simulations are attached.

Conclusions

The visibility of the proposed Temporary Facility would be limited to neighboring areas within less than 1,000 feet of the Site, primarily within the immediate area occupied by businesses within the industrial park. The combination of relatively low tower height and flat terrain, existing development, and mature tree canopy would assist in limiting views of the Temporary Facility beyond these locations and to the east, south and west. Views to the north may extend into the undeveloped forested wetlands to the north.

Based on the results of this assessment, it is our opinion that the proposed installation of the proposed Temporary Facility will have a minimal and short-term visual impact on existing views.

ATTACHMENTS



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

PHOTO LOG

- Legend
- Site
 - Visible
 - Not Visible





PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO
1

LOCATION
TREADWELL STREET

ORIENTATION
SOUTH

DISTANCE TO SITE
+/- 0.54 MILE

VISIBILITY
NOT VISIBLE





PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO

2

LOCATION

LEEDER HILL DRIVE

ORIENTATION

SOUTHWEST

DISTANCE TO SITE

+/- 0.37 MILE

VISIBILITY

NOT VISIBLE



**ALL-POINTS
TECHNOLOGY CORPORATION**



**CROWN
CASTLE**



PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO

3

LOCATION

LEEDER HILL DRIVE

ORIENTATION

NORTHWEST

DISTANCE TO SITE

+/- 0.12 MILE

VISIBILITY

VISIBLE



**ALL-POINTS
TECHNOLOGY CORPORATION**



**CROWN
CASTLE**



PROPOSED

PHOTO

3

LOCATION

LEEDER HILL DRIVE

ORIENTATION

NORTHWEST

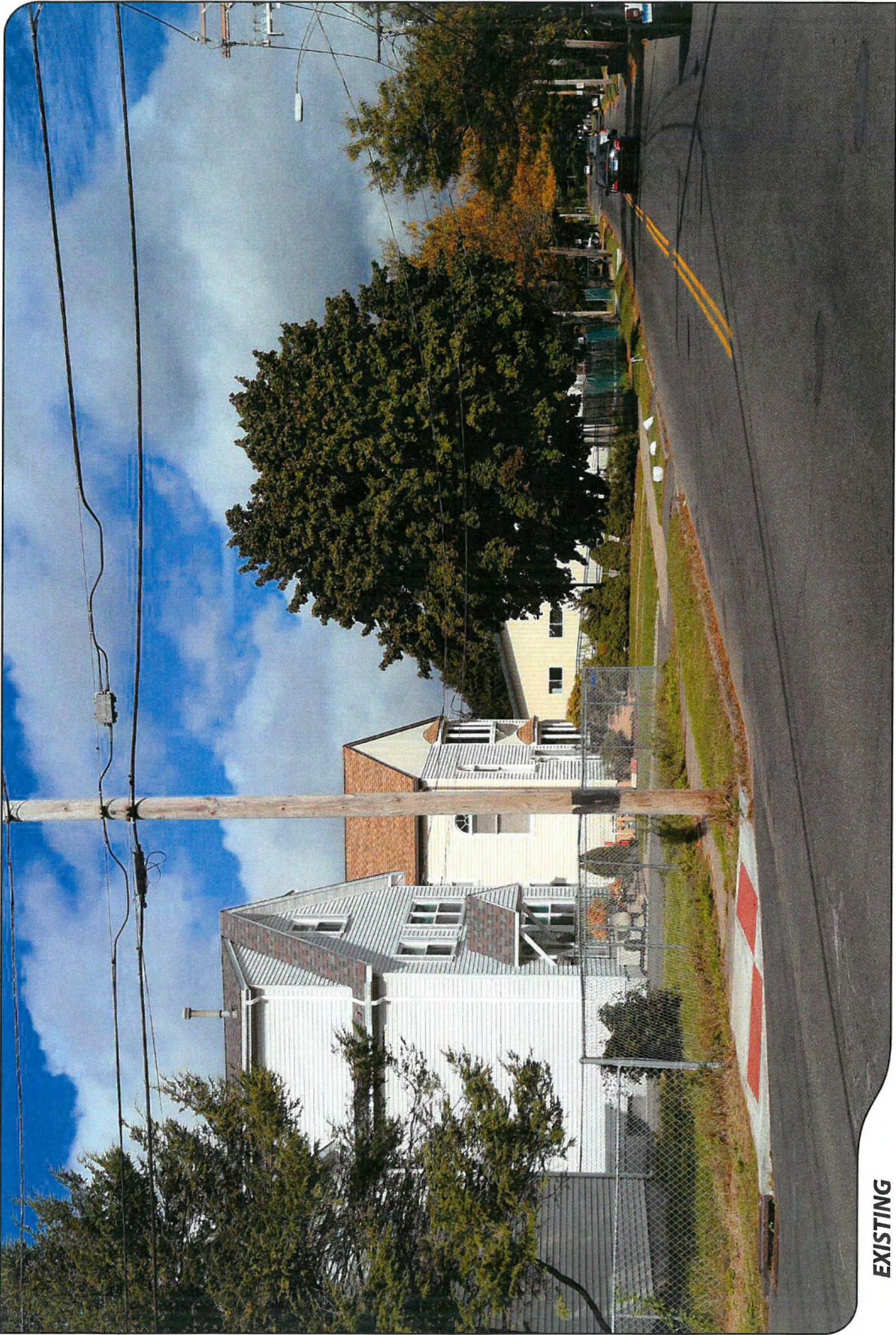
DISTANCE TO SITE

+/- 0.12 MILE

VISIBILITY

VISIBLE





PHOTOGRAPHED ON 10/10/2018

EXISTING

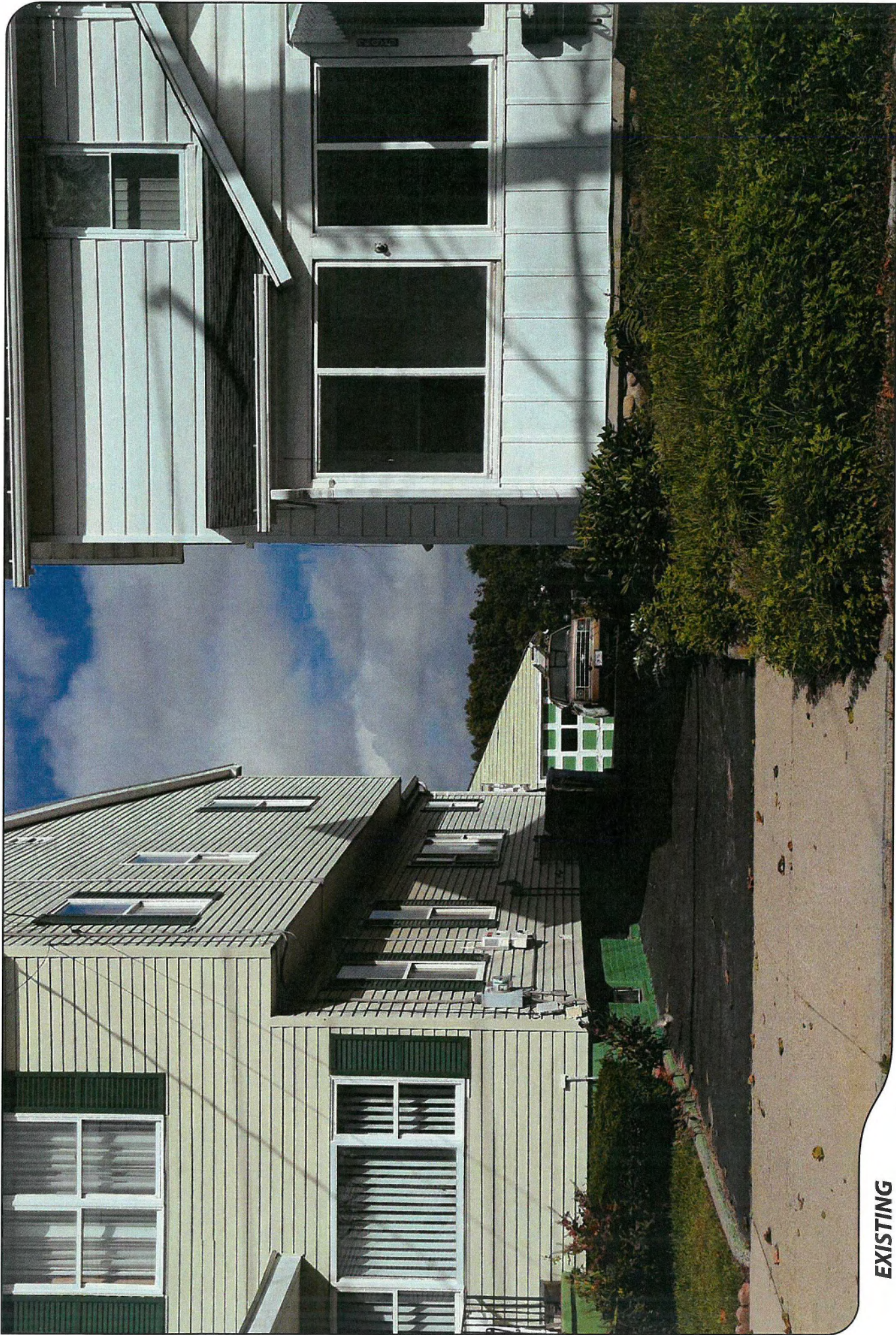
PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	NEWHALL STREET AT AUGUR STREET	NORTHWEST	+/- 0.30 MILE	NOT VISIBLE



ALL-POINTS
TECHNOLOGY CORPORATION



CROWN
CASTLE



PROGRAMMED ON 10/10/2018

EXISTING

PHOTO

5

LOCATION

ARCH STREET

ORIENTATION

NORTH

DISTANCE TO SITE

+/- 0.54 MILE

VISIBILITY

NOT VISIBLE



ALL-POINTS
TECHNOLOGY CORPORATION



CROWN
CASTLE



EXISTING

PHOTO

6

LOCATION

3RD STREET

ORIENTATION

NORTHEAST

DISTANCE TO SITE

+/- 0.33 MILE

VISIBILITY

NOT VISIBLE



**ALL-POINTS
TECHNOLOGY CORPORATION**



**CROWN
CASTLE**



EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	FARMINGTON CANAL GREENWAY TRAIL BRIDGE - OVER PUTNAM AVENUE	EAST	+/- 0.17 MILE	NOT VISIBLE





PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO

8

LOCATION

DIXWELL AVENUE

ORIENTATION

SOUTHEAST

DISTANCE TO SITE

+/- 0.29 MILE

VISIBILITY

NOT VISIBLE





PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	BEACON STREET AT DIXWELL AVENUE	SOUTHEAST	+/- 0.45 MILE	NOT VISIBLE



ALL-POINTS
TECHNOLOGY CORPORATION



CROWN
CASTLE



PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	PUTNAM AVENUE ADJACENT TO HOST PROPERTY	NORTHEAST	+/- 485 FEET	VISIBLE





PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	PUTNAM AVENUE ADJACENT TO HOST PROPERTY	NORTHEAST	+/- 485 FEET	VISIBLE



ALL-POINTS
TECHNOLOGY CORPORATION



CROWN
CASTLE



PHOTOGRAPHED ON 10/10/2018

EXISTING

PHOTO

11

LOCATION

PUTNAM AVENUE

ORIENTATION

NORTHEAST

DISTANCE TO SITE

+/- 0.10 MILE

VISIBILITY

NOT VISIBLE



ATTACHMENT 5



SITE SAFE
RF COMPLIANCE EXPERTS

8618 Westwood Center Drive, Suite 315, Vienna, VA 22182
703.276.1100 • 703.276.1169 fax
info@sitesafe.com • www.sitesafe.com

**Crown Castle on behalf of T-
Mobile
Site ID – 829935
Assessment Purpose –
Site Name – HAMDEN
SOUTH/DIXWELL AVE.
Site Compliance Report**

**445 Putnam Avenue
Hamden, CT 06517**

Latitude: N41-20-42.97
Longitude: W72-55-43.00
Structure Type: Monopole

Report generated date: December 12, 2018
Report by: Sam Cosgrove
Customer Contact: PASCELLE SAINT-LAURENT

**T-Mobile is compliant and will remain
compliant upon implementation of the
proposed changes.**

© 2018 Sitesafe, LLC., Vienna, VA



Klaus Bender

**Klaus Bender
Registered Professional Engineer (Electrical)
Expires December 31, 2018**

**Crown Castle on behalf of T-Mobile
HAMDEN SOUTH/DIXWELL AVE. - 829935
Radio Frequency (RF) Site Compliance Report**



445 Putnam Avenue, Hamden, CT 06517



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1 Executive Summary

T-Mobile has contracted with Sitesafe, LLC. (Sitesafe), an independent Radio Frequency (RF) regulatory and engineering consulting firm, to determine whether the proposed communications site, 829935 - HAMDEN SOUTH/DIXWELL AVE., located at 445 Putnam Avenue, Hamden, CT, is in compliance with Federal Communication Commission (FCC) Rules and Regulations for RF emissions.

This report contains a detailed summary of the RF environment at the site including:

- Diagram of the site
- Inventory of the make / model of all antennas
- Theoretical MPE based on modeling

This report addresses exposure to radio frequency electromagnetic fields in accordance with the FCC Rules and Regulations for all individuals, classified in two groups, "Occupational or Controlled" and "General Public or Uncontrolled." **T-Mobile is compliant with the FCC rules and regulations, as described in OET Bulletin 65 and will remain compliant upon implementation of the proposed changes.**

T-Mobile proposes to add technology to a new site build. A temporary 100' AGL tower will be used until the permanent 130' AGL tower is constructed. The proposed antennas are noted as "proposed" in the antenna table under section 6.

This document and the conclusions herein are based on the information provided by T-Mobile.

If you have any questions regarding RF safety and regulatory compliance, please do not hesitate to contact Sitesafe's Customer Support Department at (703) 276-1100.

2 Regulatory Basis

2.1 FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to accessible areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

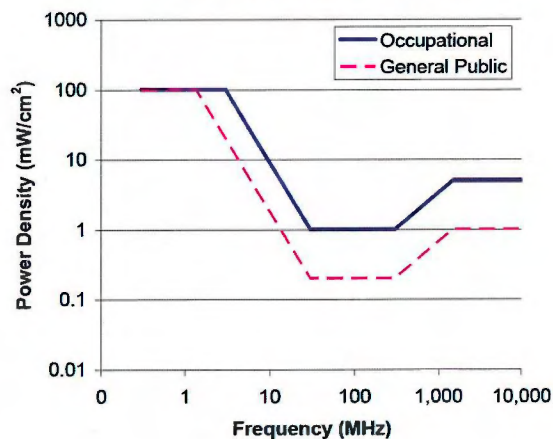
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:

FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

2.2 OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

- (a) Each employer –
 - (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
 - (2) shall comply with occupational safety and health standards promulgated under this Act.

- (b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lock Out Tag Out procedure aimed to control the unexpected energization or start up of machines when maintenance or service is being performed.

3 Site Compliance

3.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, Sitesafe has determined that:

T-Mobile is compliant with the FCC rules and regulations, as described in OET Bulletin 65 and will remain compliant upon implementation of the proposed changes.

The compliance determination is based on theoretical modeling, RF signage placement recommendations, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the T-Mobile's proposed deployment plan could result in the site being rendered non-compliant.

3.2 Actions for Site Compliance

Based on common industry practice and our understanding of FCC and OSHA requirements, this section provides a statement of recommendations for site compliance. RF alert signage recommendations have been proposed based on theoretical analysis of MPE levels. Barriers can consist of locked doors, fencing, railing, rope, chain, paint striping or tape, combined with RF alert signage.

T-Mobile is compliant with the FCC rules and regulations and will remain compliant upon implementation of the proposed changes.

4 Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 5 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

5 Analysis

5.1 RF Emissions Diagram

The RF diagram(s) below display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix B.

The key at the bottom of each diagram indicates if percentages displayed are referenced to FCC General Population Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Gray represents areas predicted to be at 5% of the MPE limits, or below.
- Green represents areas predicted to be between 5% and 100% of the MPE limits.
- Blue represents areas predicted to be between 100% and 500% of the MPE limits.
- Yellow represents areas predicted to be between 500% and 5000% of the MPE limits.
- Red areas indicated predicted levels greater than 5000% of the MPE limits.

The theoretical analysis identified the maximum predicted MPE levels on the ground to be:

Maximum Cumulative Theoretical General Public MPE level: 0.0%

General Population diagrams are specified when an area is accessible to the public; i.e. personnel that do not meet Occupational or RF Safety trained criteria, could gain access.

If trained occupational personnel require access to areas that are delineated as **Blue** or above 100% of the limit, Sitesafe recommends that they utilize the proper personal protection equipment (RF monitors), coordinate with the carriers to reduce or shutdown power, or make real-time power density measurements with the appropriate power density meter to determine real-time MPE levels. This will allow the personnel to ensure that their work area is within exposure limits.

The key at the bottom also indicates the level or height of the modeling with respect to the main level. The origin is typically referenced to the main rooftop level, or ground level for a structure without access to the antenna level. For example:

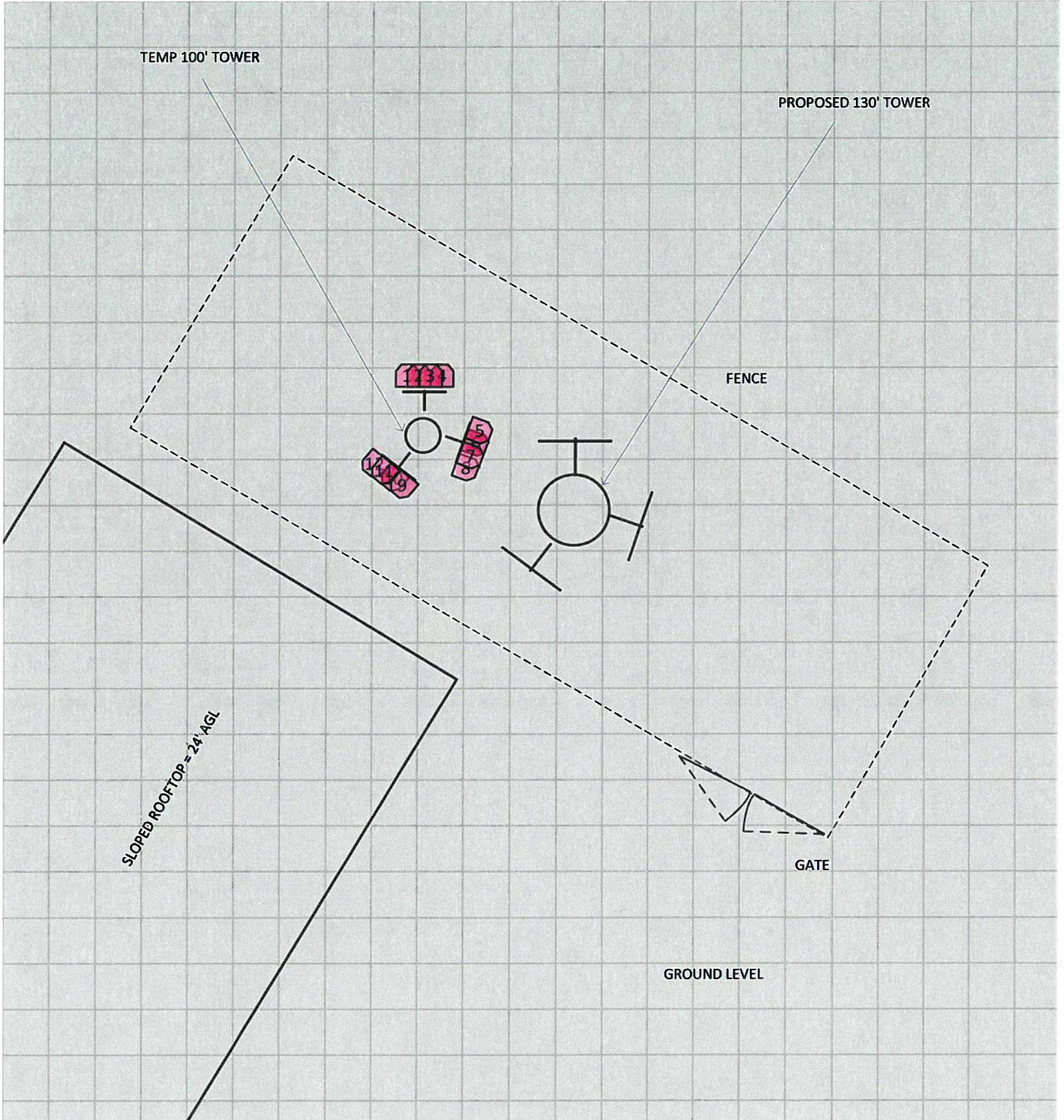
Average from 0 feet above to 6 feet above origin
and
Average from 20 feet above to 26 feet above origin

The first indicates modeling at the main rooftop (or ground) level averaged over 6 feet. The second indicates modeling at a higher level (possibly a penthouse level) of 20 feet averaged over 6 feet.

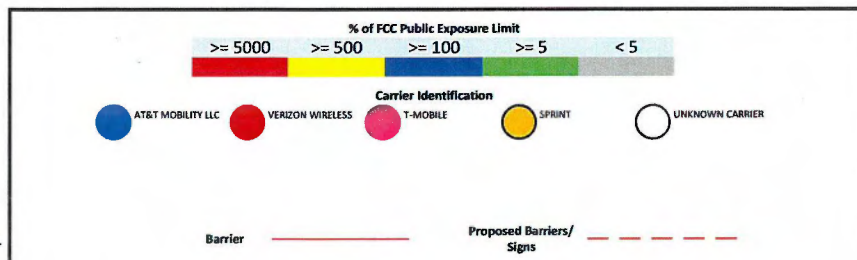
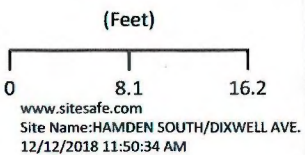
Abbreviations used in the RF Emissions Diagrams

PH=##'	Penthouse at ## feet above main roof
--------	--------------------------------------

RF Exposure Simulation For: HAMDEN SOUTH/DIXWELL AVE.
Temporary Tower Configuration

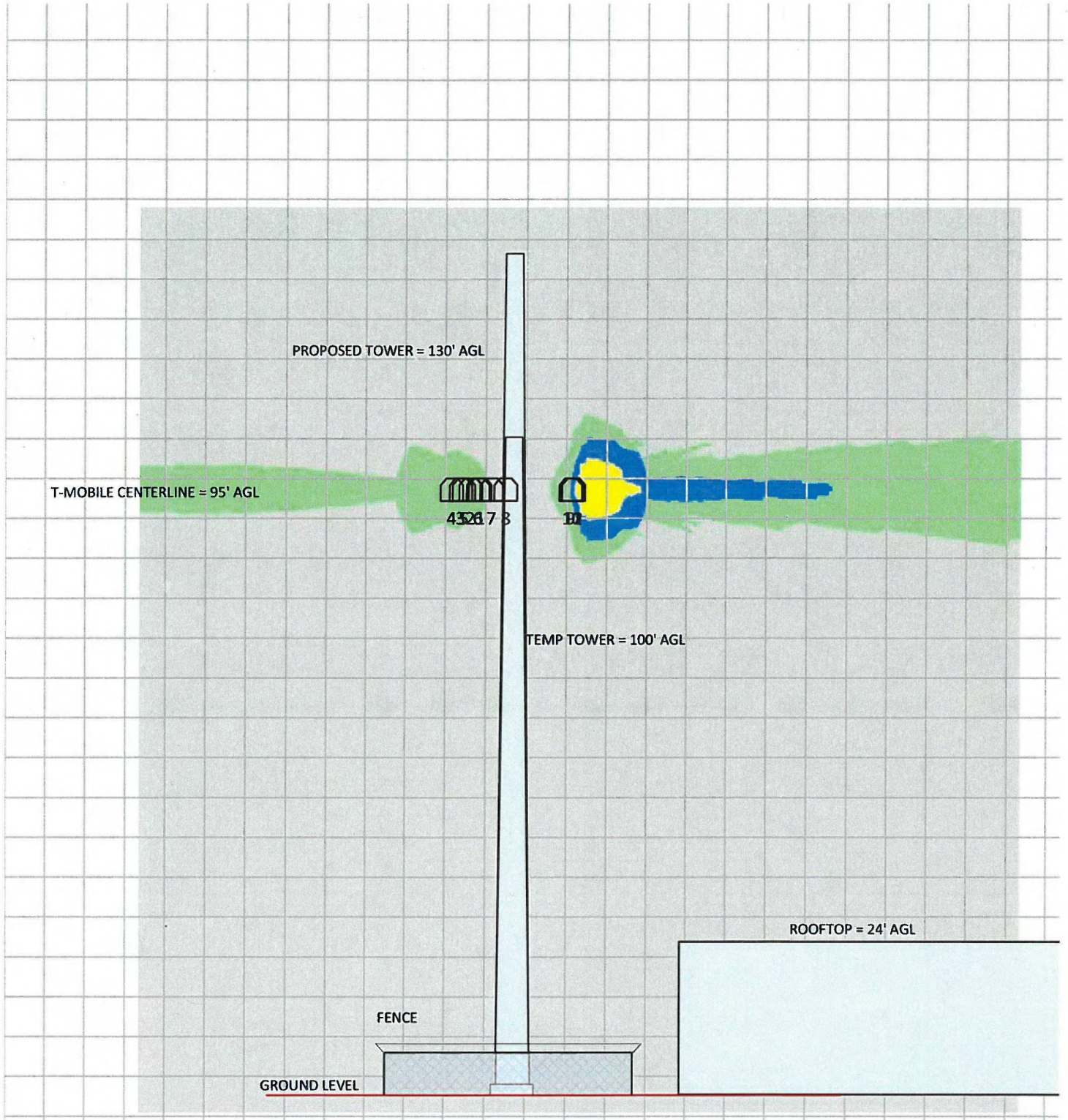


% of FCC Public Exposure Limit
Spatial average 0' - 6'

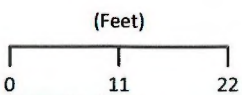
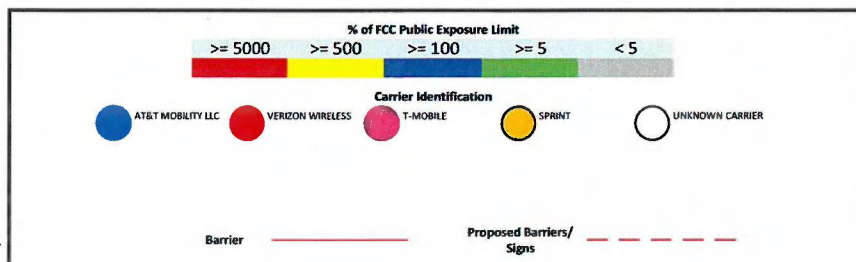


Sitesafe OET-65 Model
Near Field Boundary:
1.5° Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: HAMDEN SOUTH/DIXWELL AVE.
Elevation View – Temporary Tower Configuration



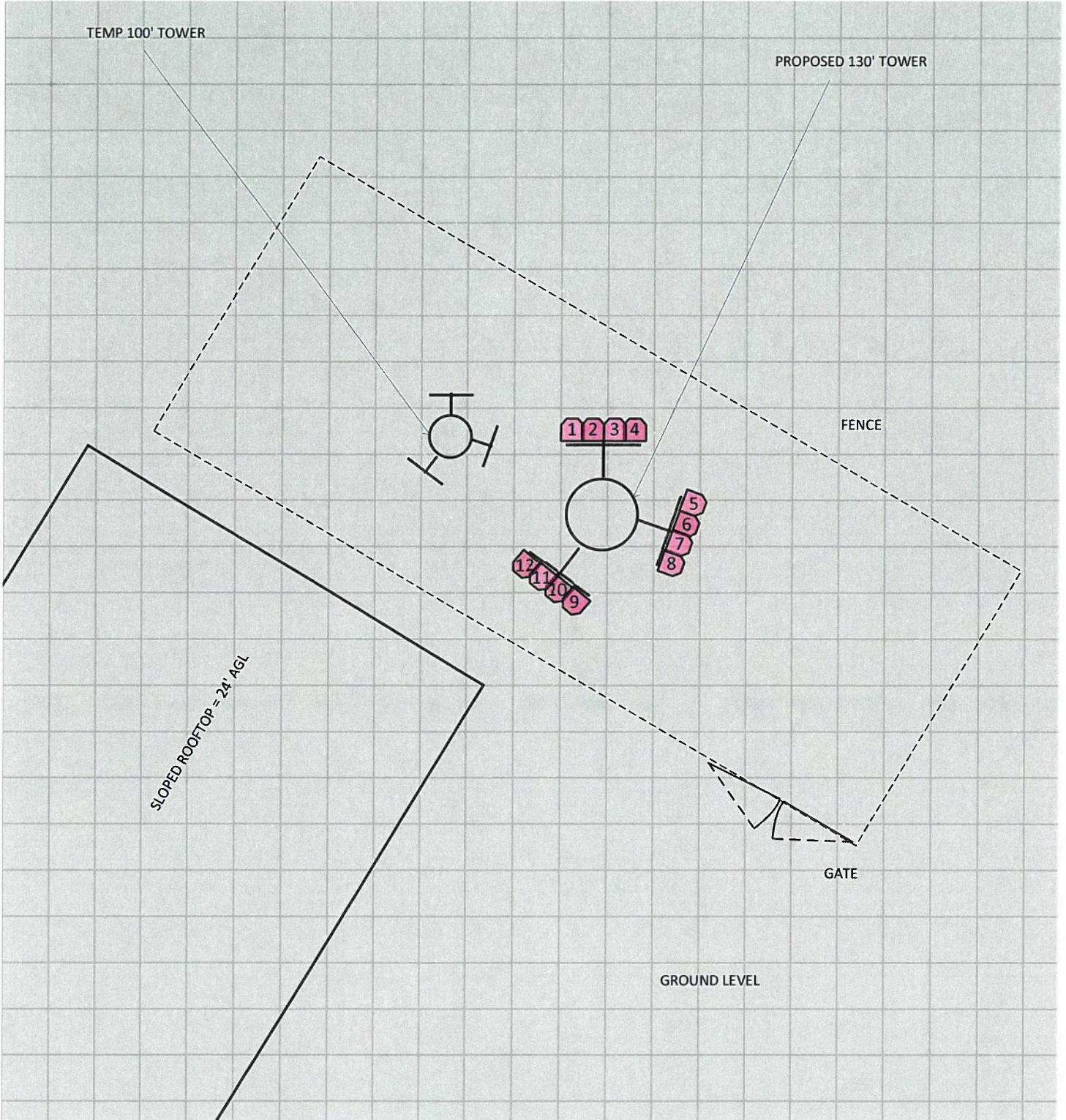
% of FCC Public Exposure Limit
Spatial average 0' - 6'



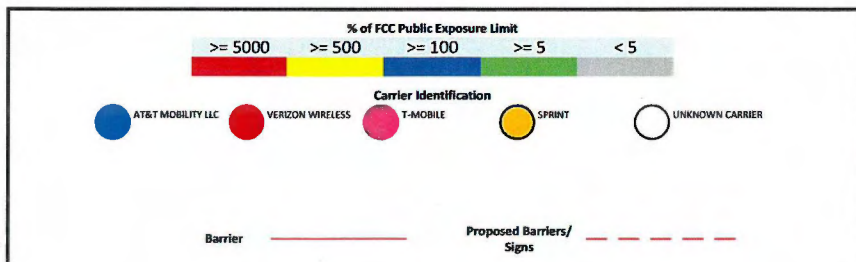
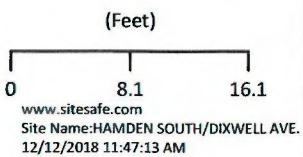
www.sitesafe.com
Site Name:HAMDEN SOUTH/DIXWELL AVE.
12/12/2018 11:45:12 AM

Sitesafe OET-65 Model
Near Field Boundary:
1.5° Aperture
Reflection Factor: 1
Single Level (0)

RF Exposure Simulation For: HAMDEN SOUTH/DIXWELL AVE.
Proposed Tower Configuration

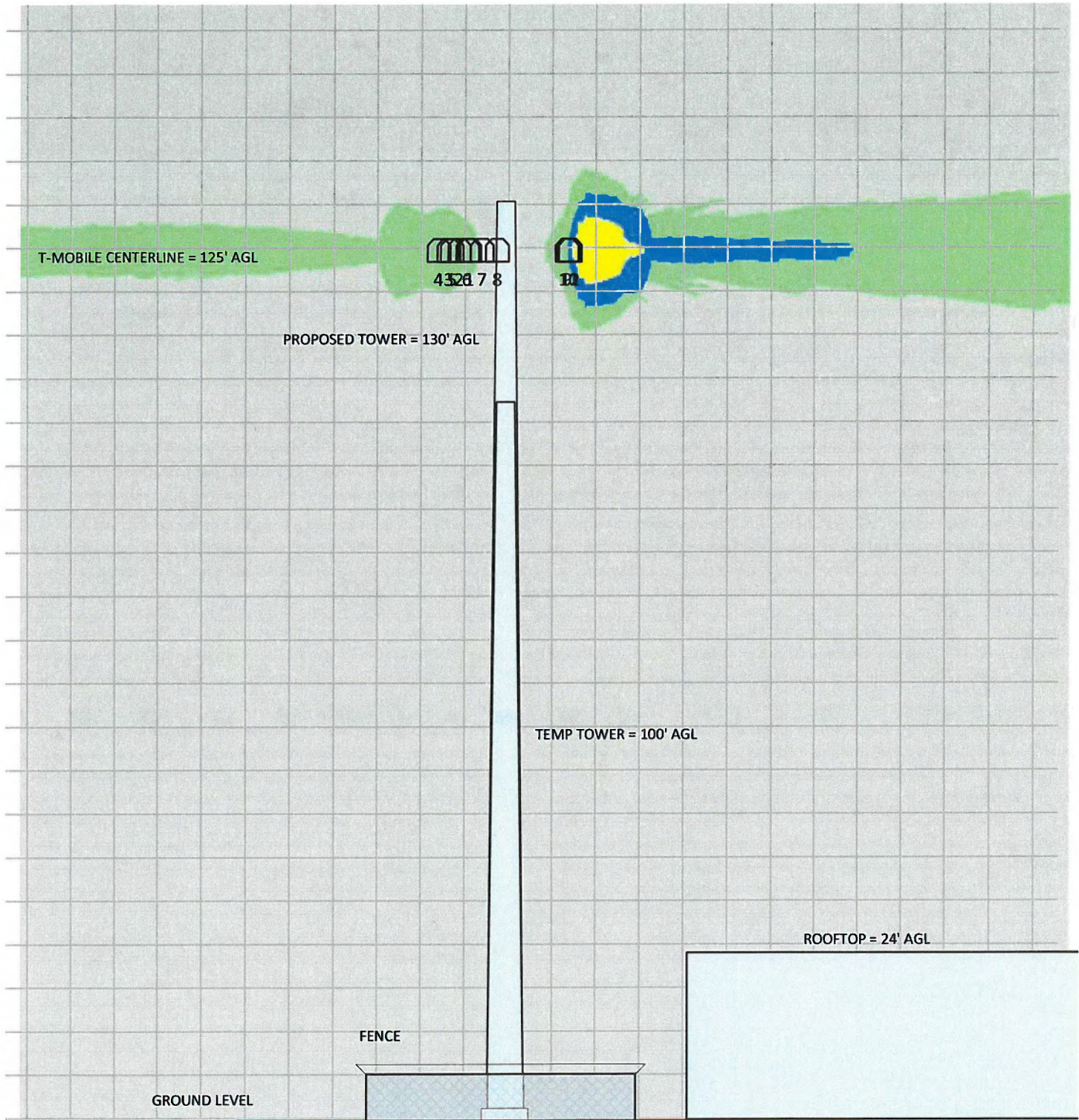


% of FCC Public Exposure Limit
Spatial average 0' - 6'

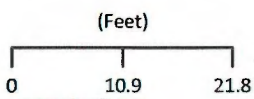
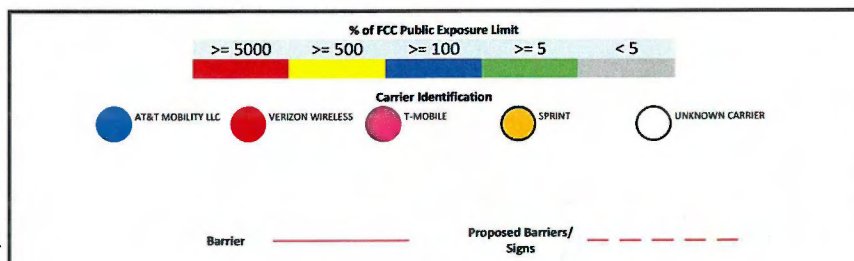


Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: HAMDEN SOUTH/DIXWELL AVE.
Elevation View – Proposed Tower Configuration



% of FCC Public Exposure Limit
Spatial average 0' - 6'



www.sitesafe.com
Site Name: HAMDEN SOUTH/DIXWELL AVE.
12/12/2018 11:40:08 AM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Single Level (0)

6 Antenna Inventory

The Antenna Inventory shows all transmitting antennas at the site. This inventory was provided by the customer, and was utilized by Sitesafe to perform theoretical modeling of RF emissions. The inventory coincides with the site diagrams in this report, identifying each antenna's location at 829935 - HAMDEN SOUTH/DIXWELL AVE.. The antenna information collected includes the following information:

- Licensee or wireless operator name
- Frequency or frequency band
- Transmitter power – Effective Radiated Power ("ERP"), or Equivalent Isotropic Radiated Power ("EIRP") in Watts
- Antenna manufacturer make, model, and gain

For other carriers at this site, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information with regard to carrier, their FCC license and/or antenna information was not available nor could it be secured while on site. Equipment, antenna models and nominal transmit power were used for modeling, based on past experience with radio service providers.



The following antenna inventory was provided by the customer and was utilized to create the site model diagrams:

Table 3: Antenna Inventory – Temporary Tower Configuration

Ant #	Operated By	Antenna Model	Ant Type	Len (ft)	TX Freq (MHz)	TECH	Az (Deg)	Antenna Gain (dBd)	Horizontal Half Power Beamwidth (Deg)	POWER	POWER TYPE	POWER UNITS	# of Trans	ERP (Watts)	Z (ft)	DT	EDT
1	T-MOBILE	Ericsson AIR 5121	Panel	2	28000	5G	0	21.86	60	611	ERP	Watt	1	611	95	0	0
2	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	UMTS	0	18.56	65	4407	ERP	Watt	1	4407	95	0	0
2	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	LTE	0	18.56	65	4407	ERP	Watt	1	4407	95	0	0
3	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	700	LTE	0	13.39	62	871	ERP	Watt	1	871	95	0	0
3	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	600	LTE	0	13.2	62.76	834	ERP	Watt	1	834	95	0	0
4	T-MOBILE	Ericsson AIR 3246	Panel	4.8	2100	LTE	0	15.86	65	2313	ERP	Watt	1	2313	95	0	0
5	T-MOBILE	Ericsson AIR 5121	Panel	2	28000	5G	110	21.86	60	611	ERP	Watt	1	611	95	0	0
6	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	UMTS	110	18.56	65	4407	ERP	Watt	1	4407	95	0	0
6	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	LTE	110	18.56	65	4407	ERP	Watt	1	4407	95	0	0
7	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	700	LTE	110	13.39	62	871	ERP	Watt	1	871	95	0	0
7	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	600	LTE	110	13.2	62.76	834	ERP	Watt	1	834	95	0	0
8	T-MOBILE	Ericsson AIR 3246	Panel	4.8	2100	LTE	110	15.86	65	2313	ERP	Watt	1	2313	95	0	0
9	T-MOBILE	Ericsson AIR 5121	Panel	2	28000	5G	220	21.86	60	611	ERP	Watt	1	611	95	0	0
10	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	UMTS	220	18.56	65	4407	ERP	Watt	1	4407	95	0	0
10	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	LTE	220	18.56	65	4407	ERP	Watt	1	4407	95	0	0
11	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	700	LTE	220	13.39	62	871	ERP	Watt	1	871	95	0	0
11	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	600	LTE	220	13.2	62.76	834	ERP	Watt	1	834	95	0	0
12	T-MOBILE	Ericsson AIR 3246	Panel	4.8	2100	LTE	220	15.86	65	2313	ERP	Watt	1	2313	95	0	0



Table 3: Antenna Inventory – Proposed Tower Configuration

Ant #	Operated By	Antenna Model	Ant Type	Len (ft)	TX Freq (MHz)	TECH	Az (Deg)	Antenna Gain (dBd)	Horizontal Half Power Beamwidth (Deg)	POWER	POWER TYPE	POWER UNITS	# of Trans	ERP (Watts)	Z (ft)	DT	EDT
1	T-MOBILE	Ericsson AIR 5121	Panel	2	28000	5G	0	21.86	60	611	ERP	Watt	1	611	125	0	0
2	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	UMTS	0	18.56	65	4407	ERP	Watt	1	4407	125	0	0
2	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	LTE	0	18.56	65	4407	ERP	Watt	1	4407	125	0	0
3	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	700	LTE	0	13.39	62	871	ERP	Watt	1	871	125	0	0
3	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	600	LTE	0	13.2	62.76	834	ERP	Watt	1	834	125	0	0
4	T-MOBILE	Ericsson AIR 3246	Panel	4.8	2100	LTE	0	15.86	65	2313	ERP	Watt	1	2313	125	0	0
5	T-MOBILE	Ericsson AIR 5121	Panel	2	28000	5G	110	21.86	60	611	ERP	Watt	1	611	125	0	0
6	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	UMTS	110	18.56	65	4407	ERP	Watt	1	4407	125	0	0
6	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	LTE	110	18.56	65	4407	ERP	Watt	1	4407	125	0	0
7	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	700	LTE	110	13.39	62	871	ERP	Watt	1	871	125	0	0
7	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	600	LTE	110	13.2	62.76	834	ERP	Watt	1	834	125	0	0
8	T-MOBILE	Ericsson AIR 3246	Panel	4.8	2100	LTE	110	15.86	65	2313	ERP	Watt	1	2313	125	0	0
9	T-MOBILE	Ericsson AIR 5121	Panel	2	28000	5G	220	21.86	60	611	ERP	Watt	1	611	125	0	0
10	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	UMTS	220	18.56	65	4407	ERP	Watt	1	4407	125	0	0
10	T-MOBILE	Cellmax CMA-B/6521/E0-6	Panel	6.8	1900	LTE	220	18.56	65	4407	ERP	Watt	1	4407	125	0	0
11	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	700	LTE	220	13.39	62	871	ERP	Watt	1	871	125	0	0
11	T-MOBILE	RFS APXVAARR24_43-U-NA20	Panel	8	600	LTE	220	13.2	62.76	834	ERP	Watt	1	834	125	0	0
12	T-MOBILE	Ericsson AIR 3246	Panel	4.8	2100	LTE	220	15.86	65	2313	ERP	Watt	1	2313	125	0	0

NOTE: Z indicates relative position of the antenna to the origin location on the site, displayed in the model results diagram. The Z reference indicates antenna height above the main site level unless otherwise indicated. ERP values provided by the client and used in the modeling may be greater than are currently deployed.



7 Engineer Certification

The professional engineer whose seal appears on the cover of this document hereby certifies and affirms:

That I am registered as a Professional Engineer in the jurisdiction indicated in the professional engineering stamp on the cover of this document; and

That I am an employee of Sitesafe, LLC., in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio-frequency Radiation; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Sam Cosgrove.

December 12, 2018



Appendix A – Statement of Limiting Conditions

Sitesafe will not be responsible for matters of a legal nature that affect the site or property.

Due to the complexity of some wireless sites, Sitesafe performed this analysis and created this report utilizing best industry practices and due diligence. Sitesafe cannot be held accountable or responsible for anomalies or discrepancies due to actual site conditions (i.e., mislabeling of antennas or equipment, inaccessible cable runs, inaccessible antennas or equipment, etc.) or information or data supplied by T-Mobile, the site manager, or their affiliates, subcontractors or assigns.

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, observed during the survey of the subject property or that Sitesafe became aware of during the normal research involved in performing this survey. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data provided by a second party and physical data collected by Sitesafe, the physical data will be used.

Appendix B – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The site has been modeled with these assumptions to show the maximum RF energy density. Sitesafe believes this to be a *worst-case* analysis, based on best available data. Areas modeled to predict emissions greater than 100% of the applicable MPE level may not actually occur, but are shown as a *worst-case* prediction that could be realized real time. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Thus, at any time, if power density measurements were made, we believe the real-time measurements would indicate levels below those depicted in the RF emission diagram(s) in this report. By modeling in this way, Sitesafe has conservatively shown exclusion areas – areas that should not be entered without the use of a personal monitor, carriers reducing power, or performing real-time measurements to indicate real-time exposure levels.

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.

Gain (of an antenna) – The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antennas as compared to an omni directional antenna.

General Population/Uncontrolled Environment – Defined by the FCC, as an area where RFR exposure may occur to persons who are **unaware** of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of “Generic” as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.



Maximum Permissible Exposure (MPE) – The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are **aware** of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of Radio Frequency radiation on Humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency Radiation – Electromagnetic waves that are propagated from antennas through space.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix C – Rules & Regulations

Explanation of Applicable Rules and Regulations

The FCC has set forth guidelines in OET Bulletin 65 for human exposure to radio frequency electromagnetic fields. Specific regulations regarding this topic are listed in Part 1, Subpart I, of Title 47 in the Code of Federal Regulations. Currently, there are two different levels of MPE - General Public MPE and Occupational MPE. An individual classified as Occupational can be defined as an individual who has received appropriate RF training and meets the conditions outlined below. General Public is defined as anyone who does not meet the conditions of being Occupational. FCC and OSHA Rules and Regulations define compliance in terms of total exposure to total RF energy, regardless of location of or proximity to the sources of energy.

It is the responsibility of all licensees to ensure these guidelines are maintained at all times. It is the ongoing responsibility of all licensees composing the site to maintain ongoing compliance with FCC rules and regulations. Individual licensees that contribute less than 5% MPE to any total area out of compliance are not responsible for corrective actions.

OSHA has adopted and enforces the FCC's exposure guidelines. A building owner or site manager can use this report as part of an overall RF Health and Safety Policy. It is important for building owners/site managers to identify areas in excess of the General Population MPE and ensure that only persons qualified as Occupational are granted access to those areas.

Occupational Environment Explained

The FCC definition of Occupational exposure limits apply to persons who:

- are exposed to RF energy as a consequence of their employment;
- have been made aware of the possibility of exposure; and
- can exercise control over their exposure.

OSHA guidelines go further to state that persons must complete RF Safety Awareness training and must be trained in the use of appropriate personal protective equipment.

In order to consider this site an Occupational Environment, the site must be controlled to prevent access by any individuals classified as the General Public. Compliance is also maintained when any non-occupational individuals (the General Public) are prevented from accessing areas indicated as Red or Yellow in the attached RF Emissions diagram. In addition, a person must be aware of the RF environment into which they are entering. This can be accomplished by an RF Safety Awareness class, and by appropriate written documentation such as this Site Compliance Report.

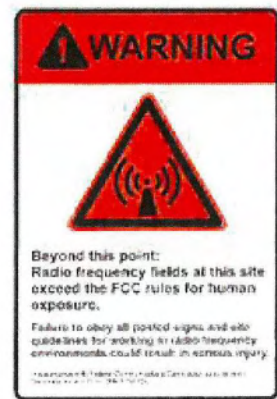
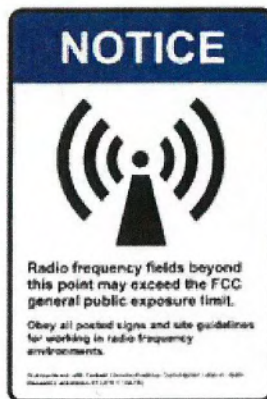
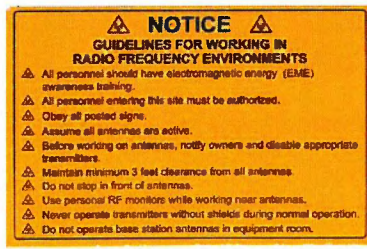
All T-Mobile employees who require access to this site must complete RF Safety Awareness training and must be trained in the use of appropriate personal protective equipment.

Appendix D – General Safety Recommendations

The following are *general recommendations* appropriate for any site with accessible areas in excess of 100% General Public MPE. These recommendations are not specific to this site. These are safety recommendations appropriate for typical site management, building management, and other tenant operations.

1. All individuals needing access to the main site (or the area indicated to be in excess of General Public MPE) should wear a personal RF Exposure monitor, successfully complete proper RF Safety Awareness training, and have and be trained in the use of appropriate personal protective equipment.
2. All individuals needing access to the main site should be instructed to read and obey all posted placards and signs.
3. The site should be routinely inspected and this or similar report updated with the addition of any antennas or upon any changes to the RF environment including:
 - adding new antennas that may have been located on the site
 - removing of any existing antennas
 - changes in the radiating power or number of RF emitters

4. Post the appropriate **NOTICE**, **CAUTION**, or **WARNING** sign at the main site access point(s) and other locations as required. Note: Please refer to RF Exposure Diagrams in Appendix B, to inform everyone who has access to this site that beyond posted signs there may be levels in excess of the limits prescribed by the FCC. In addition to RF Advisory Signage, a RF Guideline Signage is recommended to be posted at the main site access point(s). The signs below are examples of signs meeting FCC guidelines.



5. Ensure that the site door remains locked (or appropriately controlled) to deny access to the general public if deemed as policy by the building/site owner.

6. For a General Public environment the four color levels identified in this analysis can be interpreted in the following manner:

- Gray represents area at below 5% of the General Public MPE limits or below. This level is safe for a worker to be in at any time.



- Green represents areas predicted to be between 5% and 100% of the General Public MPE limits. This level is safe for a worker to be in at any time.
- Blue represents areas predicted to be between 100% and 500% of the General Public MPE limits. This level is safe for a worker to be in at any time.
- Yellow represents areas predicted to be between 500% and 5000% of the General Public MPE limits. This level is safe for a worker to be in.
- Red areas indicated predicted levels greater than 5000% of the General Public MPE limits. This level is not safe for the General Public to be in.

7. For an Occupational environment the five color levels identified in this analysis can be interpreted in the following manner:

- Areas indicated as Gray are at 5% of the Occupational MPE limits or below. This level is safe for a worker to be in at any time.
- Green represents areas predicted to be between 5% and 20% of the Occupational MPE limits. This level is safe for a worker to be in at any time.
- Blue represents areas predicted to be between 20% and 100% of the Occupational MPE limits. This level is safe for a worker to be in at any time.
- Yellow represents areas predicted to be between 100% and 500% of the Occupational MPE limits. Only individuals that have been properly trained in RF Health and Safety should be allowed to work in this area. This is not an area that is suitable for the General Public to be in.
- Red areas indicated predicted levels greater than 500% of the Occupational MPE limits. This level is not safe for the Occupational worker to be in for prolonged periods of time. Special procedures must be adhered to such as lock out tag out procedures to minimize the workers exposure to EME.

8. Use of a Personal Protective Monitor: When working around antennas, Sitesafe strongly recommends the use of a Personal Protective Monitor (PPM). Wearing a PPM will properly forewarn the individual prior to entering an RF exposure area.

Keep a copy of this report available for all persons who must access the site. They should read this report and be aware of the potential hazards with regards to RF and MPE limits.

Additional Information

Additional RF information is available by visiting both www.Sitesafe.com and www.fcc.gov/oet/rfsafety. OSHA has additional information available at: <http://www.osha-slc.gov/SLTC/radiofrequencyradiation>.

ATTACHMENT 6



**ASAC SITE SPECIFIC EVALUATION
FOR**

**Site Name: Hamden South
Site Number: 824408/829935
Site Location: Hamden, CT.**

**Requestors Name: Peter Crane
Company Name: Crown Castle
Street Address: 3 Corporate Park Drive, Ste 101
City and Zip: Clifton Park, NY. 12065**

This is an evaluation based on application of surfaces identified in Federal Aviation Regulation (FAR) Part 77 and Federal Communication Commission (FCC) Rules Part 17.

EXECUTIVE SUMMARY

- ✦ The max height that can be built at this site without notice to the FAA is 200 feet AGL or 242 feet AMSL.**
- ✦ The max No Extended Study height at this site is 423 AGL, or 465 AMSL.**
- ✦ The max no hazard height at this site is 458 AGL, or 500 AMSL.**
- ✦ The max no marking and lighting height at this site is 200 AGL, or 242 AMSL.**

SITE DATA

Structure Type: Antenna Tower

Coordinates of site:	Lat:	41°20'42.99"	
	Long:	72°55'42.96"	
	Datum:	NAD 83	
Site ground elevation:			42
Total height above the ground of the entire structure (AGL):			130
Total height above mean sea level (AMSL):			172

AIRPORT/HELIPORT INFORMATION

Nearest public use or Government Use (DOD) facility: Tweed New Haven.

This structure will be located 5.2 NM or 31814 FT from the airport on a bearing of 158 degrees true to the airport.

Nearest private use landing facility is: Bob Thomas Ford.

This structure will be located 1.5 NM from the helipad on a bearing of 19 degrees true to the helipad.

STUDY FINDINGS

FAA FAR Part 77 paragraph 9 (FAR 77.9): (Construction or Alteration requiring notice.) (These are the imaginary surfaces that the FAA has implemented to provide general criteria for notification purposes.)

This structure does not require notification to the FAA.

FAA FAR Part 77 paragraph 17(FAR 77.17): (Standards for Determining Obstructions.)(These are the imaginary surfaces that the FAA has implemented to protect aircraft safety. If any of these surfaces are penetrated, the structure may pose a Hazard to Air Navigation.)

This structure does not exceed these surfaces.

**FCC Notice Requirements:
(FCC Rules, Part 17)**

This structure does not require notification to the FAA or FCC based on these rules.

**FAA EMI:
(The FAA protects certain air navigational aids, radio transmitters, and RADAR facilities from possible interference. The distance and direction are dependent on the type of facility being evaluated. Some of these transmission and receiver facilities are listed in the National Flight Data Center (NFDC) database.)**

This site would not affect any FAA air navigational aids or transmitters.

Military Airspace:

(This would include low level visual and instrument routes along with operations areas and special use airspace.)

This structure will not affect this airspace.

AM Facilities:

(The FCC protects AM radio stations from possible interference for a distance of 3.0 km for directional facilities, and 1.0 km for non-directional facilities. New changes to the FCC critical distances are calculated based on the AM transmission Movement Method Proof evaluation.)

This site was evaluated against the FCC's AM antenna database using the Movement Method proof calculations and will require further evaluation by your AM contractor.

WELI radio station is close to this site.

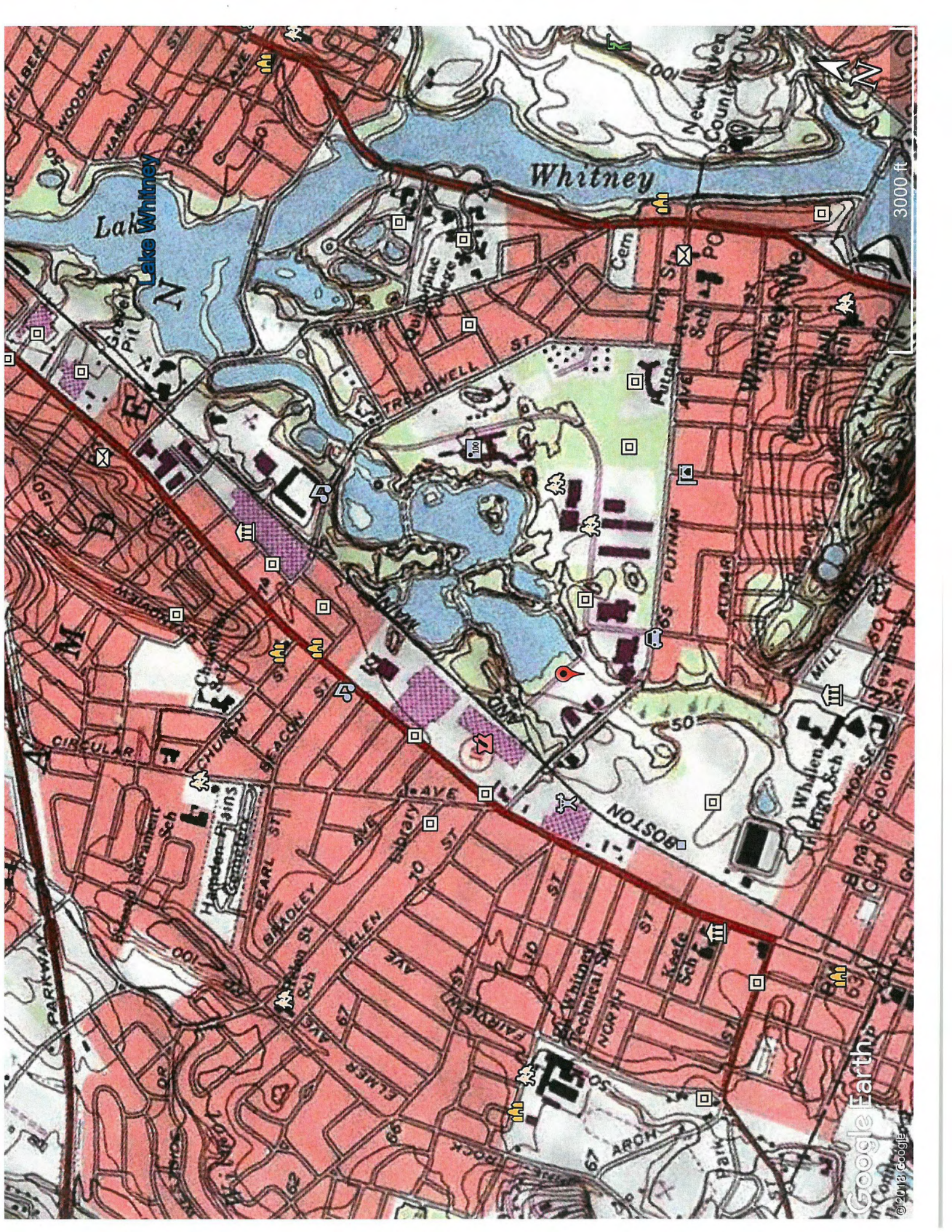
MARKING AND LIGHTING

FAA Advisory Circular 70/7460-1:

Marking and lighting is not required for this structure.

RECOMMENDATIONS

This site was evaluated in accordance with the requirements specified by the FAA under Federal Aviation Rules part 77, and found not to be a hazard to air navigation.



3000 ft

Google Earth

© 2013 Google

ATTACHMENT 7

January 7, 2019

Via Certificate of Mailing

Curt B. Leng, Mayor
Town of Hamden
2750 Dixwell Avenue
Hamden, CT 06518

**Re: Proposed Temporary Telecommunications Facility
445 Putnam Avenue, Hamden, Connecticut**

Dear Mayor Leng:

This firm represents Crown Castle (“Crown”). Today, Crown filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a temporary telecommunications facility at 445 Putnam Avenue in Hamden (the “Property”). Crown currently maintains a wireless telecommunications facility at 1245 Dixwell Avenue consisting of a 100’ flagpole tower and related equipment. Crown intends to relocate this existing tower to the Property. The temporary tower described in the Petition will allow T-Mobile to maintain wireless service in the area while Crown proceeds through the regulatory process for the permanent replacement tower.

The proposed temporary facility would involve the installation of a 100’ tall ballast tower in the northerly portion of the Property. T-Mobile’s equipment will be attached to the ballast frame. Utility service to the temporary facility would extend from existing service along Putnam Avenue.


A copy of the Petition is attached for your review. In accordance with Council requirements, abutting landowners were also sent notice of this filing and a copy of the Petition.

Robinson + Cole

Curt B. Leng, Mayor
January 7, 2019
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ken Baldwin', written over a light blue horizontal line.

Kenneth C. Baldwin

Attachment

January 7, 2019

Via Certificate of Mailing

Daniel W. Kops, Jr., Town Planner
Town of Hamden
2750 Dixwell Avenue
Hamden, CT 06518

**Re: Proposed Temporary Telecommunications Facility
445 Putnam Avenue, Hamden, Connecticut**

Dear Mr. Kops:

This firm represents Crown Castle (“Crown”). Today, Crown filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a temporary telecommunications facility at 445 Putnam Avenue in Hamden (the “Property”). Crown currently maintains a wireless telecommunications facility at 1245 Dixwell Avenue consisting of a 100’ flagpole tower and related equipment. Crown intends to relocate this existing tower to the Property. The temporary tower described in the Petition will allow T-Mobile to maintain wireless service in the area while Crown proceeds through the regulatory process for the permanent replacement tower.

The proposed temporary facility would involve the installation of a 100’ tall ballast tower in the northerly portion of the Property. T-Mobile’s equipment will be attached to the ballast frame. Utility service to the temporary facility would extend from existing service along Putnam Avenue.

A copy of the Petition is attached for your review. In accordance with Council requirements, abutting landowners were also sent notice of this filing and a copy of the Petition.

18842463-v1

Robinson+Cole

Daniel W. Kops, Jr., Town Planner
January 7, 2019
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Baldwin', written over a light blue horizontal line.

Kenneth C. Baldwin

Attachment

January 7, 2019

Via Certificate of Mailing

Matthew Davis, Assistant Town Planner
Town of Hamden
2750 Dixwell Avenue
Hamden, CT 06518

Re: **Proposed Temporary Telecommunications Facility**
445 Putnam Avenue, Hamden, Connecticut

Dear Mr. Davis:

This firm represents Crown Castle (“Crown”). Today, Crown filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a temporary telecommunications facility at 445 Putnam Avenue in Hamden (the “Property”). Crown currently maintains a wireless telecommunications facility at 1245 Dixwell Avenue consisting of a 100’ flagpole tower and related equipment. Crown intends to relocate this existing tower to the Property. The temporary tower described in the Petition will allow T-Mobile to maintain wireless service in the area while Crown proceeds through the regulatory process for the permanent replacement tower.

The proposed temporary facility would involve the installation of a 100’ tall ballast tower in the northerly portion of the Property. T-Mobile’s equipment will be attached to the ballast frame. Utility service to the temporary facility would extend from existing service along Putnam Avenue.

A copy of the Petition is attached for your review. In accordance with Council requirements, abutting landowners were also sent notice of this filing and a copy of the Petition.

Robinson+Cole

Matthew Davis, Assistant Town Planner
January 7, 2019
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kenneth C. Baldwin', written in a cursive style.

Kenneth C. Baldwin

Attachment

January 7, 2019

Via Certificate of Mailing

Woodeast LLC
445 Putnam Avenue
Hamden, CT 06517

Re: **Proposed Temporary Telecommunications Facility**
445 Putnam Avenue, Hamden, Connecticut

Dear Sir or Madam:

This firm represents Crown Castle (“Crown”). Today, Crown filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a temporary telecommunications facility at 445 Putnam Avenue in Hamden (the “Property”). Crown currently maintains a wireless telecommunications facility at 1245 Dixwell Avenue consisting of a 100’ flagpole tower and related equipment. Crown intends to relocate this existing tower to the Property. The temporary tower described in the Petition will allow T-Mobile to maintain wireless service in the area while Crown proceeds through the regulatory process for the permanent replacement tower.

The proposed temporary facility would involve the installation of a 100’ tall ballast tower in the northerly portion of the Property. T-Mobile’s equipment will be attached to the ballast frame. Utility service to the temporary facility would extend from existing service along Putnam Avenue.

A copy of the Petition is attached for your review. In accordance with Council requirements, abutting landowners were also sent notice of this filing and a copy of the Petition.

18842487-v1

Robinson+Cole

Woodeast LLC
January 7, 2019
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Baldwin', written in a cursive style.

Kenneth C. Baldwin

Attachment

ATTACHMENT 8

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

January 7, 2019

Via Certificate of Mailing

«Name_and_Address»

Re: Notice of Intent to File a Petition for Declaratory Ruling with the Connecticut Siting Council for the Installation of a Temporary Telecommunications Facility at 445 Putnam Avenue, Hamden, Connecticut

Dear «Salutation»:

This firm represents Crown Castle (“Crown”). Today, Crown filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval for the installation of a temporary telecommunications facility at 445 Putnam Avenue in Hamden (the “Property”). Crown currently maintains a wireless telecommunications facility at 1245 Dixwell Avenue consisting of a 100’ flagpole tower and related equipment. Crown intends to relocate this existing tower to the Property. The temporary tower described in the Petition will allow T-Mobile to maintain wireless service in the area while Crown proceeds through the regulatory process for the permanent replacement tower.

The proposed temporary facility would involve the installation of a 100’ tall ballast tower in the northerly portion of the Property. T-Mobile’s equipment will be attached to the ballast frame. Utility service to the temporary facility would extend from existing service along Putnam Avenue. A copy of the Petition is attached for your review.

This notice is being sent to you because you are listed on the Town Assessor’s records as an owner of land that abuts the Property. If you have any questions regarding the Petition, the Council’s process for reviewing the Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

January 7, 2019
Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kenneth C. Baldwin

Attachment

CROWN CASTLE

ABUTTING PROPERTY OWNERS

445 PUTNAM AVENUE, HAMDEN, CONNECTICUT

	Property Address	Owners and Mailing Address
1.	475 Putnam Avenue	Olin Corporation 190 Carondelet Plz #1530 St. Louis, MO 63105
2.	451 Putnam Avenue	LeeWay – Putnam Housing Corp. 40 Albert Street New Haven, CT 06511
3.	385 Putnam Avenue	Putnam Avenue Associates 415 LLC Putnam Avenue Associates 385 LLC 1351 Dixwell Avenue Hamden, CT 06514
4.	698 Newhall Street	South Central Connecticut Regional Water Authority 90 Sargent Drive New Haven, CT 06511
5.	450 Putnam Avenue	Cube HHF Northeast CT LLC PTA-CS #6945 P.O. Box 320099 Alexandria, VA 22320
6.	449 Putnam Avenue	Greater New Haven Water Pollution 345 East Shore Parkway New Haven, CT 06510