NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

July 8, 2016

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

RE: Notice of Exempt Modification
1669 Thomaston Avenue, Waterbury CT 06074
Latitude: 41.58981
Longitude: -73.054228
T-Mobile Site#: CT11214D_L1900

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing smoke stack at 1669 Thomaston Avenue, Waterbury CT 06074. The smoke stack has become inactive and is no longer under the City of Waterbury's jurisdiction. T-Mobile currently maintains three (3) antennas at the 130-foot level and three (3) antennas at the 132-foot level of the existing 134-foot smokestack. The smoke stack is owned by Brownstein Realty LLC. The property is owned by 1669 Thomaston Avenue LLC. T-Mobile now intends to add three (3) new 1900/2100 MHz antenna and add (1) hybrid cable. The new antennas would be installed at the 132-foot level of the tower.

Planned Modifications:

Remove: NONE

Remove and Replace: NONE

Install New:
(1) 1-5/8" Hybrid Cable
(3)AIR32 B66Aa/B2a

Existing to Remain:
(3)APX16DWVS-E-A20 Antenna
(3) Commscope LNX-6515 Antenna
(6) Twin TMA
(18) 1-5/8" Coax

This facility was approved by the City of Waterbury PZC. File No. 87500 – Approved by the City of Waterbury to install antenna to the existing smokestack. Please see attached documentation.

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

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

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Neil O'Leary- Mayor - as elected official
Brownstein Realty LLC - as tower owner
1669 Thomaston Avenue LLC - as property owner

Exhibit A

BLDGAPP6

#02-128

6/25/02 .1225 PM

THE CITY OF WATERBURY

DEPARTMENT OF INSPECTIONS

235 Grand Street, Waterbury, CT 06702

(203) 574-6832

PERMIT No. 2208D

Application for Building Permit

PLEASE PRINT LEGIBLY (Shaded areas for Office use only!) Date: 6/25, 2002

Applicant:

Company Name: URS Corporation AES

Address: 795 Brook Street, Bldg 5

City: Rocky Hill State: CT Zip: 06067

License No.

Phone No. 860-529-8882

Location of Work:

Address: 1669 Thomaston Avenue

Waterbury, CT 06067

Location Owner:

Owner's Name: John Fey/Brownstein Realty

Address: 1669 Thomaston Ave.

City: Waterbury State: CT

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as an authorized agent and we agree to conform to all applicable laws of this jurisdiction.

Architect:

Architect's Name: Ignacio C. Artaiz

Address: URS Corp, 795 Brook St., Bldg 5

City: Rocky Hill State: CT

Print Name: Peter H. Maxwell Signature:

(must check one) ☐ Proposed Use ☑ Existing Use Floodplain? ○ Yes ○ No If yes, attach form.

☐ Commercial ☐ Restaurant ☐ Residential ☐ Temp. Structure

☐ Industrial ☐ Hospital ☑ Other telecommunication Plan(s) on File? ☑ Yes ○ No

What are you building? Sprint PCS—telecommunications facility: antennes on

(Please describe in detail) existing smokestack, equipment cabinet platform on roof

Est. Cost $ 82,000 Start Work Date: Zone:

continued on back →

REQUIRED?	Department		REQUIRED?	Department	
~~X~~ Yes ○ No	ZONING		○ Yes ○ No	HEALTH	
○ Yes ○ No	ENG'G		○ Yes ○ No	TRAFF	
○ Yes ○ No	CITY PL		~~X~~ Yes ○ No	DEL. TAX (allow 5 days)	
7-11-02 DFM ~~X~~ Yes ○ No	FIR MSH		○ Yes ○ No	WATER	
○ Yes ○ No	IN/ WET		○ Yes ○ No	WASTE	

FEE: $ 1240.00

CofO: $ 15.00

Ed. Fee: $ 13.12

TOTAL: $ 1268.12

Zoning fee 15.00

$ 1283.12

ck # 9689 & 9733

Fine: $

Date Issued: 7-10-02

Issued by:

Title:

SEAL OF THE CITY OF WATERBURY CONN.

THE CITY OF WATERBURY

DEPARTMENT OF INSPECTIONS

Certificate No. 28307

Certificate of Use and Occupancy

Date: _____

This Certificate Must be Signed Before Building Can be Occupied.

This is to certify that address 1669 Thomaston Ave may be used for

~~telecommunication facility~~ and is in compliance

with the provisions of the State of Connecticut Basic Building Code.

Use Group (in accordance with provisions of Article 3): _____

Fire Grading (as defined in Table 902): _____

Maximum Live Load (as prescribed in Table 1106, p.s.f.): 1st _____ 2nd _____ 3rd _____

Permit No. 2208D Date: 7-12-02

Special Building Permit Stipulations and Conditions:

_____

_____

_____

Building Official

REQUIRED?		Department
~~O~~ Yes	O No	ZONING:
O Yes	~~O~~ No	ENGINEERING:
O Yes	~~O~~ No	CITY PLAN:
~~O~~ Yes	O No	FIRE MARSHAL:
O Yes	~~O~~ No	INLAND WETLANDS:
O Yes	~~O~~ No	HEALTH DEPT:
O Yes	~~O~~ No	TRAFFIC DEPT:
O Yes	~~O~~ No	DELINQUENT TAX:
O Yes	~~O~~ No	WATER DEPT:
O Yes	~~O~~ No	WASTE DISPOSAL:

THE CITY OF WATERBURY
MEMORANDUM

DATE: JUNE 26,2002

FROM: KAREN MULCHAY, TAX COLLECTOR

TO: DEPT. OF BUILDING INSPECTIONS

SUBJECT: TAX CLEARANCE

AS OF THIS DATE, THE RECORDS IN THE TAX COLLECTOR'S OFFICE INDICATES THAT THE FOLLOWING IS NOT DELINQUENT.

BROWNSTEIN REALTY
1669 THOMASTON AVE.
WATERBURY, CT

FOR: 1669 THOMASTON AVE

IF YOU HAVE ANY FURTHER QUESTIONS, DO NOT HESITATE TO CALL THE OFFICE AT 574-6935.

VERY TRULY YOURS,

KAREN MULCHAY
TAX COLLECTOR

KM/dk

STATE OF CONNECTICUT

DEPARTMENT OF CONSUMER PROTECTION

165 CAPITOL AVE • HARTFORD CT 06106-1630

Be it known that

CONSTRUCTION SERVICES OF BRANFORD

63-3 NORTH BRANFORD ROAD

BRANFORD, CT 06405

Is certified by the Department of Consumer Protection as a registered

MAJOR CONTRACTOR

Registration Number: MCO.900576

Effective Date: 07/01/2001
Expiration Date: 06/30/2002

James T. Fleming, Commissioner

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 02/12/2002

PRODUCER 203-985-9034
ABBATELLO INSURANCE AGENCY
2ND FLOOR
100 BROADWAY
NORTH HAVEN, CT 06473

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

INSURED
CONSTRUCTION SERVICES OF BRANFORD, LLC
63-3 NORTH BRANFORD RD.
BRANFORD, CT 06405

INSURER A: UNITED NATIONAL
INSURER B: TRAVELERS
INSURER C: CNA
INSURER D: ROYAL
INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR X GENERAL AGGREG. GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC	L7156823	1/04/02	1/04/03	EACH OCCURRENCE FIRE DAMAGE (Any one fire) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 50,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	8101948A234	12/13/01	12/13/02	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
D	EXCESS LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE X RETENTION $ 10,000	PHN016837	1/04/02	1/04/03	EACH OCCURRENCE AGGREGATE	$ 10,000,000 $ 10,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	6858UB717X471	02/07/02	02/07/03	STATUTORY LIMITS X OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
B	OTHER PROPERTY OF OTHERS	QT-660-929X6931 ALL RISK BASIS	12/13/01	12/13/02	$2,000,000	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
$500 DEDUCTIBLE FOR COMPREHENSIVE & COLLISION

CERTIFICATE HOLDER | Y | ADDITIONAL INSURED; INSURER LETTER: X

SPRINT SPECTRUM, LP
1 INTERNATIONAL BLVD., SUITE 900
MAHWAH, NJ 07495

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25-S (7/97) ©ACORD CORPORATION 1988

6/25/02 .1225 PM

BLDGAPP6

THE CITY OF WATERBURY

DEPARTMENT OF INSPECTIONS

235 Grand Street, Waterbury, CT 06702

(203) 574-6832

PERMIT No. 2208-D

Application for Building Permit

PLEASE PRINT LEGIBLY (Shaded areas for Office use only!) Date: 6/25, 2002

Applicant:

Company Name: URS Corporation AES

Address: 795 Brook Street, Bldg 5

City: Rocky Hill State: CT Zip: 06067

License No. _____

Phone No. 860-529-6682

Location of Work:

Address: 1669 Thomaston Avenue
Waterbury, CT 06067

Location Owner:

Owner's Name: John Fey / Brownstein Realty

Address: 1669 Thomaston Ave.

City: Waterbury State: CT

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as an authorized agent and we agree to conform to all applicable laws of this jurisdiction.

Architect:

Architect's Name: Ignacio C. Artaiz

Address: URS Corp, 795 Brook St, Bldg 5

City: Rocky Hill State: CT

Print Name: Peter H. Maxwell Signature: [signature]

(must check one) ☐ Proposed Use ☑ Existing Use Floodplain? ○ Yes ○ No If yes, attach form.

☐ Commercial ☐ Restaurant ☐ Residential ☐ Temp. Structure

☐ Industrial ☐ Hospital ☑ Other telecommunications Plan(s) on File? ○ Yes ○ No

What are you building? unmanned telecommunications facility: antennas on existing smokestack, equipment cabinet platform on roof
(Please describe in detail)

Est. Cost $ 82,000 Start Work Date: _____ Zone: _____ continued on back →

REQUIRED?	Department		REQUIRED?	Department	
○ Yes ○ No	ZONING		○ Yes ○ No	HEALTH	
○ Yes ○ No	ENG'G		○ Yes ○ No	TRAFF	
○ Yes ○ No	CITY PL		○ Yes ○ No	DEL. TAX (allow 5 days)	
○ Yes ○ No	FIR MSH		○ Yes ○ No	WATER	
○ Yes ○ No	IN/ WET		○ Yes ○ No	WASTE	

FEE: $_____ Fine: $_____

CofO: $_____ Date Issued: _____

Ed. Fee: $_____ Issued by: _____

TOTAL: $_____ Title: _____

SEAL OF THE CITY OF WATERBURY CONN.

URS

June 19, 2002

Mr. Brett Phair
Sprint PCS
1 International Boulevard, 8th floor
Mahwah, New Jersey 07492

Reference: **Proposed Telecommunications Facility**
Sprint PCS Site No.: CT43XC845
1669 Thomaston Avenue
Waterbury, Connecticut
F300002072.33

Dear Mr. Phair,

URS Corporation AES has been retained by Sprint PCS to provide contract documents for the installation of a telecommunications facility at 1669 Thomaston Avenue in Waterbury, Connecticut. The facility will consist of antennas to be mounted to the existing smokestack at the facility and equipment to be mounted on the roof of an existing structure.

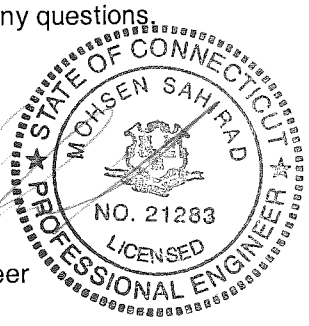
The equipment will be installed on a steel platform designed to support 11,000 lbs of equipment cabinets. The steel platform is designed to be supported on the existing parapet wall supported by the bearing wall located directly below the parapet wall at one side and mounted to the existing masonry bearing wall on the other side. Construction documents have been prepared by URS for the installation of the proposed Sprint PCS facility. See drawings S-1 through S-3 dated 06/18/02 for structural details of the proposed steel platform.

The purpose of this letter is certify that the existing building structure supporting the Sprint PCS steel platform has sufficient structural capacity to support the proposed Sprint PCS installation. This analysis and design are based on requirements of the Connecticut State Building Code dated 1999 and the latest supplement and amendments.

Please call if there are any questions.

Sincerely,

URS Corporation AES



Mohsen Sahirad, P.E.
Senior Structural Engineer

cc: A. Abadjian - URS
I. Artaiz, AIA - URS
D. Roberts, AIA - URS
CF/Book

URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Tel: 860.529.8882
Fax: 860.529.3991

URS

SITE VISIT REPORT #1

CLIENT NAME:	Sprint PCS
SITE NAME:	Waterbury
SITE NUMBER:	CT43XC845
SITE ADDRESS:	1669 Thomaston Avenue Waterbury, CT
SITE TYPE:	Rooftop / chimney-mounted antennas
SITE VISIT TYPE:	Structural Inspection
PROJECT NO.:	F300002072.33 / F07
DATE OF VISIT:	9/26/02
ATTENDEES:	Ron Vaughn, McPhee Electric (ME) Chris Taroli, Eastern Inc. (EI) Peter Maxwell, URS Corp. (URS)
WEATHER:	Light rain, 75º at 1:00
PREPARED BY:	Peter Maxwell
PROGRESS / ACTIVITIES:	Structural steel attachment inspection

Steel attachment to masonry was in progress. The following was noted:

1. Beam: W8 on parapet was bolted at location as shown on documents. Required grout space was provided.
2. Mounting plates: Wall attachment was per CD's, with flanges prepared for beam bolting. Beam locations have been raised to level with beam height at parapet.
3. Bolting: All locations encountered voids, and therefore were attached using Hilti HY-150 system.

ME will advise URS when masonry preparation is completed for re-pointing inspection.

cc: G. Graveline, City of Waterbury 203-574-6854
L. Thoman, Sprint PCS 201-684-4170
D. Barker, McPhee Electric 674-9385
A. Abadjian, URS Corp.
DR, NA, MS, CF, Book

URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Tel: 860.529.8882
Fax: 860.529.3991

THE CITY OF WATERBURY
DEPARTMENT OF INSPECTIONS

235 Grand Street, Waterbury, CT 06702
(203) 574-6832

PERMIT No. 5328

Application for Building Permit

PLEASE PRINT LEGIBLY (Shaded areas for Office use only!) Date: _____

Applicant:

Company Name: T-Mobile Inc
Address: 100 Filley Street
City/State/Zip: Bloomfield, CT 06232

License No. _____
Phone No. 860-014-4538

Location of Work:

Address: 1669 Thomaston Avenue
Waterbury, CT 06710

Location Owner:

Owner's Name: Brownstein Realty
Address: 1669 Thomaston Avenue
City/State: Waterbury, CT 06704

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as an authorized agent and we agree to conform to all applicable laws of this jurisdiction.

Architect:

Architect's Name: _____
Address: _____
City/State: _____

Print Name: MARIE R BURBANK Signature: Marie R Burbank

(must check one) ☐ Proposed Use ☒ Existing Use Floodplain? ○ Yes ⊗ No If yes, attach form

☐ Commercial ☐ Restaurant ☐ Residential ☐ Temp. Structure
☐ Industrial ☐ Hospital ☒ Other Telecommunication site Plan(s) on File? ⊗ Yes ○ No

What are you building? (Please describe in detail) adding (3) antennae and cabinet at existing site

Est. Cost $ 8,000 Start Work Date: 7/03 Zone: IG

continued on back >

REQUIRED?	Department		REQUIRED?	Department	
⊗ Yes ○ No	ZONING	Lil Gradin	○ Yes ○ No	HEALTH	
○ Yes ○ No	ENG'G		○ Yes ○ No	TRAFF	
○ Yes ○ No	CITY PL		⊗ Yes ○ No	DEL. TAX (allow 5 days)	
⊗ Yes ○ No	FIR MSH	7-1-03	○ Yes ○ No	WATER	
○ Yes ○ No	IN/ WET		○ Yes ○ No	WASTE	

Permit Fee:	$ 130.00	Date Issued:	7/17/03
State Ed Fee:	$ 1.00		
CO:	$ 15.00		
Zoning Fee:	$ 15.00	Issued by:	
Fine:	$		
Total:	$ 161.00	Title:	

SEAL OF THE CITY OF WATERBURY CONN.

THE CITY OF WATERBURY

DEPARTMENT OF INSPECTIONS

Certificate No. 29274

Certificate of Use and Occupancy

Date: _____

This Certificate Must be Signed Before Building Can be Occupied.

This is to certify that address 1669 Thomaston Ave may be used for 3 antennaes and cabinets and is in compliance with the provisions of the State of Connecticut Basic Building Code.

Use Group (in accordance with provisions of Article 3): _____

Fire Grading (as defined in Table 902): _____

Maximum Live Load (as prescribed in Table 1106, p.s.f.): 1st _____ 2nd _____ 3rd _____

Permit No. 3323D Date: 7-17-03

Special Building Permit Stipulations and Conditions:

_____

_____

_____
Building Official

REQUIRED?		Department
~~O Yes~~	O No	ZONING: _____
O Yes	~~O No~~	ENGINEERING: _____
O Yes	~~O No~~	CITY PLAN: _____
~~O Yes~~	O No	FIRE MARSHAL: _____
O Yes	~~O No~~	INLAND WETLANDS: _____
O Yes	~~O No~~	HEALTH DEPT: _____
O Yes	~~O No~~	TRAFFIC DEPT: _____
O Yes	~~O No~~	DELINQUENT TAX: _____
O Yes	~~O No~~	WATER DEPT: _____
O Yes	~~O No~~	WASTE DISPOSAL: _____

ACORD CERTIFICATE OF LIABILITY INSURANCE

CSR MC COSTR-1

DATE (MM/DD/YY) 04/07/03

PRODUCER

Newbridge Coverage Corp.
1666 Newbridge Road
North Bellmore NY 11710
Phone:516-781-9000 Fax:516-781-9172

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

INSURED

Costrotta Construction Managem
3188 Lawson Blvd
Oceanside NY 11572

INSURER A: First Speciality InsuranceCorp
INSURER B: Hartford Insurance Co.
INSURER C: Firemans Fund
INSURER D: American International Group
INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [ ] PRO-JECT [ ] LOC	PGL76691	11/15/02	11/15/03	EACH OCCURRENCE FIRE DAMAGE (Any one fire) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	12URCU05566	11/20/02	11/20/03	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
D	EXCESS LIABILITY X OCCUR [ ] CLAIMS MADE DEDUCTIBLE RETENTION $	XBU3717138	11/15/02	11/15/03	EACH OCCURRENCE AGGREGATE	$ 10,000,000 $ 10,000,000 $ $ $
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	12WBCKR0681	09/05/02	09/05/03	WC STATU-TORY LIMITS / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1000000 $ 1000000 $ 1000000
C	OTHER Builders Risk	MXI-97061576	02/26/03	02/26/04	Property	300,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

Additional Insured: LIN Television, Hamden, CT

CERTIFICATE HOLDER | Y | ADDITIONAL INSURED; INSURER LETTER: A

CANCELLATION

VOICEWI

VoiceStream Wireless
100 Filley Street
Bloomfield CT 06002

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Anthony Capone

ACORD 25-S (7/97)

THE CITY OF WATERBURY
MEMORANDUM

DATE: JULY 1, 2003

FROM: KAREN MULCAHY, TAX COLLECTOR

TO: DEPT. OF BUILDING INSPECTIONS

SUBJECT: TAX CLEARANCE

AS OF THIS DATE, THE RECORDS IN THE TAX COLLECTOR'S OFFICE INDICATES THAT THE FOLLOWING IS NOT DELINQUENT.

BROWNSTEIN REALTY, LLC
1669 THOMASTON AVE
WATERBURY, CT 06704

FOR: 1669 THOMASTON AVE.

IF YOU HAVE ANY FURTHER QUESTIONS, DO NOT HESITATE TO CALL THE OFFICE AT 574-6935.

VERY TRULY YOURS,

KAREN MULCAHY
TAX COLLECTOR

KM/ps

BLDGAPP5

THE CITY OF WATERBURY
DEPARTMENT OF INSPECTIONS

235 Grand Street, Waterbury, CT 06702
(203) 574-6832

PERMIT No. E98CC

Application for Building Permit

PLEASE PRINT LEGIBLY (Shaded areas for Office use only!) Date: Nov 23, 1998

Applicant: Omnipoint Communications Inc.

Company Name: Conti Enterprises, Inc.
Address: 3001 South Clinton Avenue
City: South Plainfield State: NJ Zip: 07080

License No. 00900869
Phone No. (908)561-8005

Location of Work:
Address: 1669 Thomaston Ave.
Waterbury, CT

Location Owner: Brownstein Realty LLC
Owner's Name: Jack Browstein
Brownstein Realty L.L.C.
Address: 1669 Thomaston Avenue
City: Waterbury State: CT

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as an authorized agent and we agree to conform to all applicable laws of this jurisdiction.

Architect:
Architect's Name: Arcnet Architects, Inc
670 North Beers Street
Address: Building 2
City: Holmdel State: NJ

Print Name: Scott Gustafson Signature: Scott E Gustafson

(must check one) ☒ **Proposed Use** ☐ **Existing Use** **Floodplain?** ○ Yes ○ No If yes, attach form.

☒ Commercial ☐ Restaurant ☐ Residential ☐ Temp. Structure
☐ Industrial ☐ Hospital ☐ Other _____ **Plan(s) on File?** ○ Yes ○ No

What are you building? Wireless telecommunication antennas attached to exisiting
(Please describe in detail) 150' Smokestack with related equipment cabinet at base.

Est. Cost $ 42,000 Start Work Date: _____ Zone: IG **continued on back →**

REQUIRED?	Department		REQUIRED?	Department	
☒ Yes ○ No	ZONING	Vincent Higgins 11-23-98	○ Yes ○ No	HEALTH	
○ Yes ○ No	ENG'G		○ Yes ○ No	TRAFF	
○ Yes ○ No	CITY PL		☒ Yes ○ No	DEL. TAX (allow 5 days)	
○ Yes ○ No	FIR MSH		○ Yes ○ No	WATER	
○ Yes ○ No	IN/ WET		○ Yes ○ No	WASTE	

FEE: $ 343.00 Fine: $ _____
CofO: $ 5.00 Issued by: GD
TOTAL: $ 348.00 Title: AZO

SEAL OF THE CITY OF WATERBURY CONN.

THE CITY OF WATERBURY

MEMORANDUM

From: Debra DuBois, Delinquent Tax Collector **Date:** Nov. 20, 1998

To: Department of Building Inspections

Subject: Tax Clearance

As of this date, the records in the Tax Collector's Office indicate that the following is not delinquent.

Brownstein Realty LLC
1669 Thomaston Avenue
Waterbury, CT

FOR: 1669 Thomaston Ave.

If you have any further questions, do not hesitate to call me at 574-6935.

Very truly yours,

Debra L. DuBois
Delinquent Tax Collector
C.C.M.C.

DLD/scm

Omnipoint Communications Inc.
25 Van Zant St, 4th Floor, Ste 18E
East Norwalk, CT 06855

OMNIPOINT®
OMNIPOINT COMMUNICATIONS SERVICES

October 29, 1998

Town of Waterbury
Planning and Zoning

To whom it may concern:

Omnipoint Communications is developing a system to provide PCS wireless technology to the state of Connecticut. The design of our system is based on what is known as a grid, in which each antenna site is spaced in a non-uniform pattern. Prior to obtaining any specific sites, this grid is designed by taking into consideration the topography of the land, population density, expected use levels, and, whenever possible, the location of existing structures. Next, a search "ring" is identified for each antenna site. The technology that Omnipoint is employing to develop this PCS system allows for some flexibility in base station placement but generally only within a search ring that is at most one-half mile in diameter. Specific sites are then obtained through the zoning and leasing processes. In order to maintain contiguous coverage between cell sites, as sites around a particular area become fixed, flexibility is lost for shifting sites in the remaining rings.

The candidate at 1669 Thomaston Avenue, Waterbury, CT has been selected to meet our coverage objective for adjacent portion of Route 8, Thomaston Avenue, the Bucks Hill and Waterville sections of Waterbury. This candidate fulfills our coverage objectives. We consider it important to provide a high quality service in Waterbury. High quality means; it is our goal to provide a dependable radio signal level allowing successful call completion and handover between adjacent sites. The location of a site with respect to the adjacent sites is of prime importance in the design of our system. Since the system works in continuity, the location of the sites are chosen such that they handoff to adjacent sites successfully. The candidate at 1669 Thomaston Avenue, Waterbury. will handover to adjacent northeast site in the 300 block of Garden Circle, Waterbury, the southeast site in the 100 block Todd Hollow Road, Waterbury, the southwest site at 1021 Straits Turnpike, Middlebury and the southern site at 65 Benedict Street, Waterbury.

Two other candidates considered for this ring, 1359 Thomaston Avenue, Waterbury and 266 Brookside Road, Waterbury. The owner of the candidate at 1359 Thomaston Avenue, Waterbury was not interested in negotiating with Omnipoint and the candidate at 266 Brookside Road, Waterbury would not provide adequate coverage for the area. Thus, the two candidates proved to not be viable options.

The cabinet chosen for the site is manufactured by Nortel which is a leader in the Telecommunication industry. The model number for the cabinet is S8000. This cabinet will support the tri-sectored antenna configuration . The dimensions of the cabinet (in inches) are 63"H X 53"W X 25"D . The cabinet will be located on the roof close to the penthouse and will be visible only from the roof of adjoining properties. The antenna chosen for this site is manufactured by EMS Wireless with model number RR90-17-02DP for each sector of the three. The dimensions for the antenna (in inches) are 56.0"L X 8.0"W X 2.75"D . The antenna cluster will consist of three sectors and there is one directional antenna proposed per sector to be used for both transmit and receive. These are high gain directional antennas which provide maximum coverage and increase the capacity of a site by three times. Since each antenna will

be transmitting a unique frequency, we can get three channels out of one site, whereas Omni-directional antennas would provide considerably less coverage than the proposed directional panel antennas. Moreover , Omni-directional antennas cannot resolve capacity issues since they transmit the same frequency in all directions (which means our capacity is reduced to one third). The other technological alternative would be the Micro cell design. However the antennas used for this design provide coverage to very small areas and would not at all be feasible to meet our coverage objective for this site.

The maximum level of RF energy associated with simultaneous and continuous operations of all transmitters will be at least 2000 times below the exposure limits of ANSI, IEEE, NCRP set at 1000 microwatts per square centimeter ($\mu W/cm^2$) and the limits of all states that regulate RF exposure. The emissions from Omnipoint Communications Inc. transmitters will be in the non-ionizing 1930-1945 Mhz frequency spectrum.

Please contact me if I can be of any further assistance.

Sincerely,

Michael Walker
Radio Frequency Engineer
on behalf of Omnipoint Communications

BROWNSTEIN REALTY, L.L.C.

1669 THOMASTON AVENUE
WATERBURY, CONNECTICUT 06704
TELEPHONE: (203) 574-3811 FAX: (203) 575-0169

October 28, 1998

City of Waterbury Zoning Department
235 Grand Street
Waterbury, Connecticut 06702

To Whom It May Concern:

This letter is to advise you that Omnipoint Communications, Inc. has my permission to apply to the City of Waterbury for any permits necessary to install their communications equipment on the smokestack located on my property at 1669 Thomaston Avenue.

Sincerely,

Jack Brownstein

CERTOFO1

THE CITY OF WATERBURY

DEPARTMENT OF INSPECTIONS

Certificate No. 25158

Certificate of Use and Occupancy

Date: 11-12, 1999

This Certificate Must be Signed Before Building Can be Occupied.

This is to certify that address 1669 Thomaston Avenue may be used for wireless telecommunication antennas w/ equip. cab. and is in compliance with the provisions of the State of Connecticut Basic Building Code.

Use Group (in accordance with provisions of Article 3): _____

Fire Grading (as defined in Table 902): _____

Maximum Live Load (as prescribed in Table 1106, **p.s.f.**): 1st _____ 2nd _____ 3rd _____

Permit No. 8750C Date: 11/23/98

Special Building Permit Stipulations and Conditions:

_____

_____

Building Official

REQUIRED?		Department
✓ Yes	○ No	ZONING: Vincent Viggiano 11-10-99
○ Yes	✓ No	ENGINEERING:
○ Yes	✓ No	CITY PLAN:
○ Yes	✓ No	FIRE MARSHAL:
○ Yes	✓ No	INLAND WETLANDS:
○ Yes	✓ No	HEALTH DEPT:
○ Yes	✓ No	TRAFFIC DEPT:
○ Yes	✓ No	DELINQUENT TAX:
○ Yes	✓ No	WATER DEPT:
○ Yes	✓ No	WASTE DISPOSAL:

Exhibit B

Location: 1669 THOMASTON AVE Owner: 1669 THOMASTON AVENUE LLC

Property Information:

Map Block Lot:	0074-0973-0005	Acres:	4
Primary Use:	Light Industrial	Zone:	IL
Neighborhood:	80000-Industrial General	Vol/Page:	7379
Mailing Address:	1669 THOMASTON AVENUE LLC 30 ECHO LAKE RD WATERTOWN, CT 06795		

Property Values:

	Appraised Value	Assessed Value (70%)
Building	681951	477370
Land	326400	228480
OutBuilding	0	0
Total	1008351	705850

Sales Information:

Sale Date	Sale Price	Sale Type	Valid sale
8/7/2015	300000	Additional Parcel	No

Building Information:

Bldg Style:		Living Area:	218476sq.ft
Construction:	Average	Year Built:	1900
Exterior Wall:	Brick, Solid	Stories:	4
Roof Cover:		Heating:	Forced Air
Condition:	Average	Heat Fuel:	
Rooms:	0	Bedrooms:	0
Full Baths:	0	Half Baths:	0

Outbuilding Information:

Type	Area (sq.ft)	Year Built	Condition

Special Features:

Feature:	Sprinklers
Feature:	Passenger Elevator
Feature:	Passenger Elevator

Permit Information:

Permit Date	Permit Number	Permit Type	Click for Details
11/16/2010	PR20100002153	BD - Electrical	Details
10/31/2014	PR20140003174	BD - Electrical	Details
09/28/2012	PR20120003202	BD - Electrical	Details
09/25/2009	590-09-E	BD - Electrical	Details
09/25/2009	591-09-E	BD - Electrical	Details
09/12/2012	PR20120002736	BD - Electrical	Details
09/11/2014	PR20140001915	BD - Electrical	Details
08/31/2012	PR20120002302	BD - Building	Details
08/20/2012	PR20120002441	BD - Electrical	Details
08/20/2012	PR20120002445	BD - Plumbing	Details
08/13/2010	PR20100001146	BD - HVAC	Details
05/11/2015	PR20150001093	BD - Electrical	Details
02/01/2013	PR20130000267	BD - Electrical	Details
02/01/2013	PR20130000269	BD - Electrical	Details
01/29/2015	PR20150000202	BD - Electrical	Details
01/23/2015	PR20150000143	BD - Electrical	Details
	PR20120004343	BD - Electrical	Details
	PR20100001565	FM - Tank	Details
	PR20110000177	BD - HVAC	Details

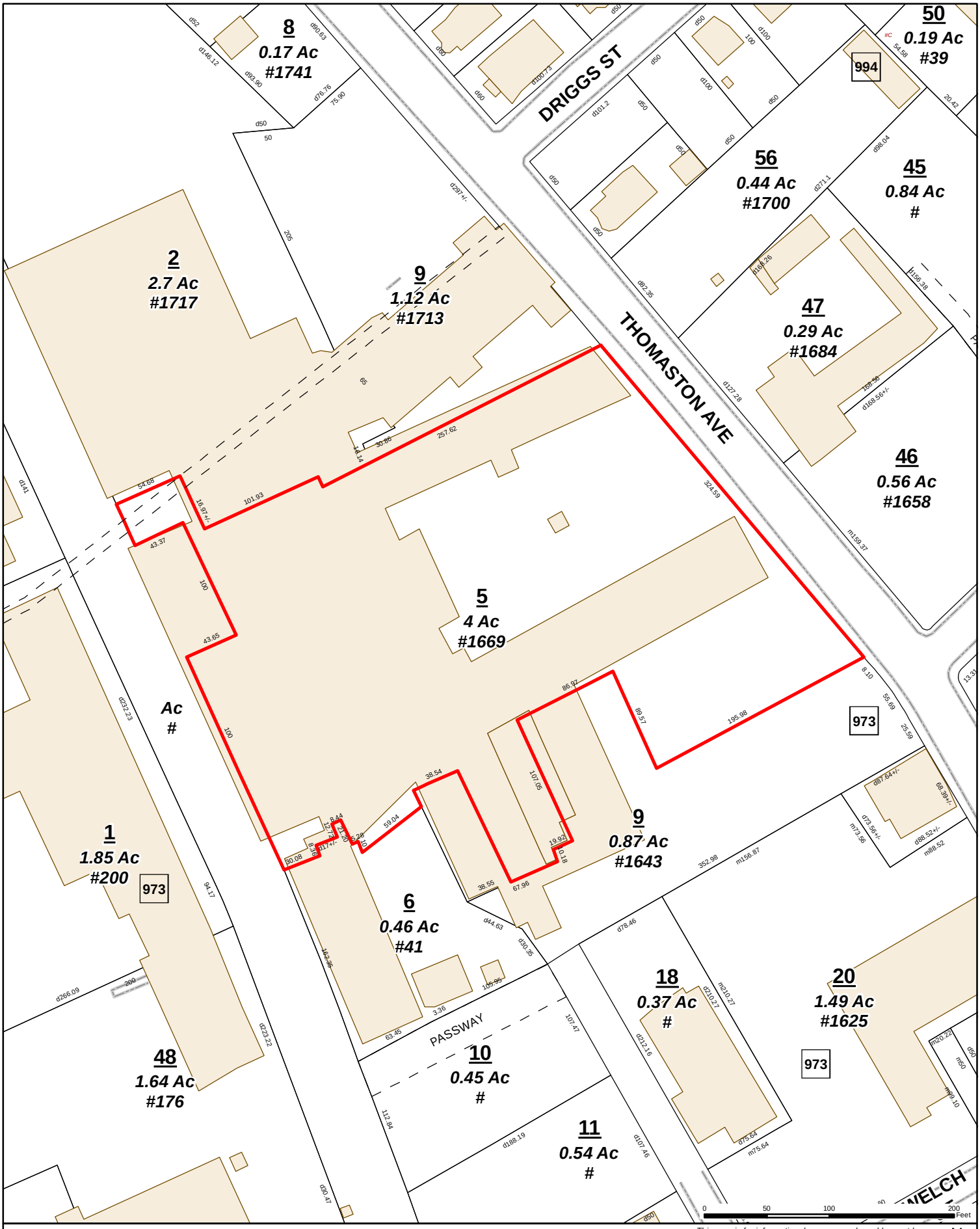
Planning Application:

Application Date	Application Number	Application Type	Click for Details

Code Enforcement:

Case Date	Case Number	Case Type	Click for Details
09/23/2013	CE20130000400	PL-Zoning	Details
04/25/2012	CE20120000318	PL-Zoning	Details

Close



City of Waterbury
Public Works Department

MBL: **0074-0973-0005**

ADDRESS: 1669 THOMASTON AVE

N

Exhibit C

T-MOBILE NORTHEAST LLC

SITE #: CT11214D

SITE NAME: WATERBURY / ROUTE 8_1

SITE ADDRESS:
1669 THOMASTON AVE.
WATERBURY, CT 06074

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(794DB CONFIGURATION)

VICINITY MAP

DO NOT SCALE DRAWINGS

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

CALL BEFORE YOU DIG:

WWW.CBYD.COM

CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING

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

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC	– RED	SEWER	– GREEN
GAS/OIL	– YELLOW	SURVEY	– PINK
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
17. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT–REV.2, SMOKESTACK" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T–MOBILE SITE ID CT11214D", DATED JUNE 27, 2016.

SITE INFORMATION

SITE NUMBER:	CT11214D
SITE NAME:	WATERBURY / ROUTE 8_1
SITE ADDRESS:	1669 THOMASTON AVE. WATERBURY, CT 06074
LAT./LONG.:	N 41.58981 / W –73.054228
JURISDICTION:	CITY OF WATERBURY , CT
PROPERTY OWNER:	BROWNSTIN PROPERTIES

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT
2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B USE GROUP: N/A

PROJECT SUB–CONTRACTORS

APPLICANT:	T–MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692–7100
PROJECT MANAGER	LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434–5237
A&E:	ATLANTIS DESIGN GROUP INC. 54 JACQUELINE ROAD, SUITE #7 WALTHAM, MA 02452 (617)–852–3611

SHEET INDEX

SHEET	DESCRIPTION
T–1	TITLE SHEET
N–1	GENERAL AND ELECTRICAL NOTES
A–1	SITE PLAN
A–2	PARTIAL SITE PLAN
A–3	ELEVATION
A–4	DETAILS
E–1	GROUNDING AND COAX/FIBER DIAGRAM
E–2	GROUNDING DETAILS

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617–852–3611
Fax Number : 781–742–2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/25/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO:	CT11214D
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

ELECTRICAL NOTES:

WORK INCLUDED

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

GENERAL REQUIREMENTS

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

GUARANTEE

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

CLEANING

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

COORDINATION AND SUPERVISION

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

SUBMITTALS

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

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

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

SPECIAL REQUIREMENTS

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

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
   A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
   B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
   C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
   D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
   E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
   F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
   G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
   H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
   J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
   K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.
   L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
   M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
   N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
   O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
   P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

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

DISCONNECT SWITCHES AND FUSES

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

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
   A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
   B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

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

STORAGE

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

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
   A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
   A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

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

RELATED DOCUMENTS AND COORDINATION

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

SHOP DRAWINGS

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

PRODUCTS AND SUBSTITUTIONS

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

QUALITY ASSURANCE

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

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

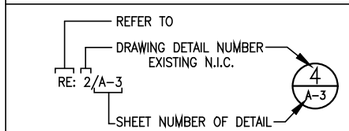
INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ARCHITECTURAL SYMBOLS

STORAGE
38
3

DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/26/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO: CT11214D
DRAWN BY: FG
CHECKED BY: KM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11462
LICENSED ARCHITECT

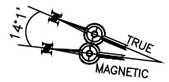
PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

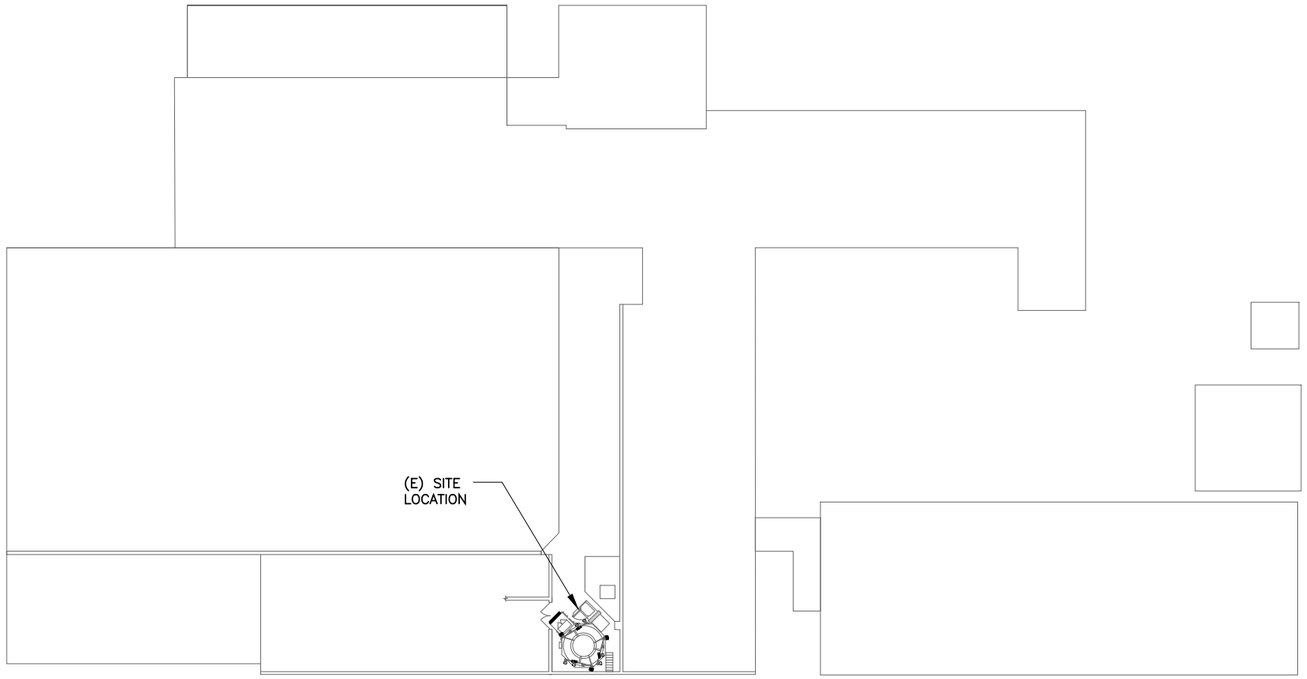
SHEET TITLE
GENERAL AND ELECTRICAL NOTES

SHEET NUMBER
N-1

KEY PLAN — SCALE: N.T.S. — 1 / A-1



THOMASTON AVENUE



SITE PLAN — SCALE: 1" = 50'-0" (11x17), 1" = 25'-0" (24X36) — 2 / A-1

0 50 100 150

SCALE 1"=50' (11x17)
1"=25' (24x36)

STRUCTURAL REFERENCE

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT-REV.2, SMOKESTACK" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T-MOBILE SITE ID CT11214D", DATED JUNE 27, 2016.

GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS DESIGN GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.

2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.

3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.

4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.

5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.

6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.

7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

SITE LEGEND

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

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/26/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO:	CT11214D
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT — HOSSEIN VAHEDI — NO. ARI. 11162 — LICENSED ARCHITECT

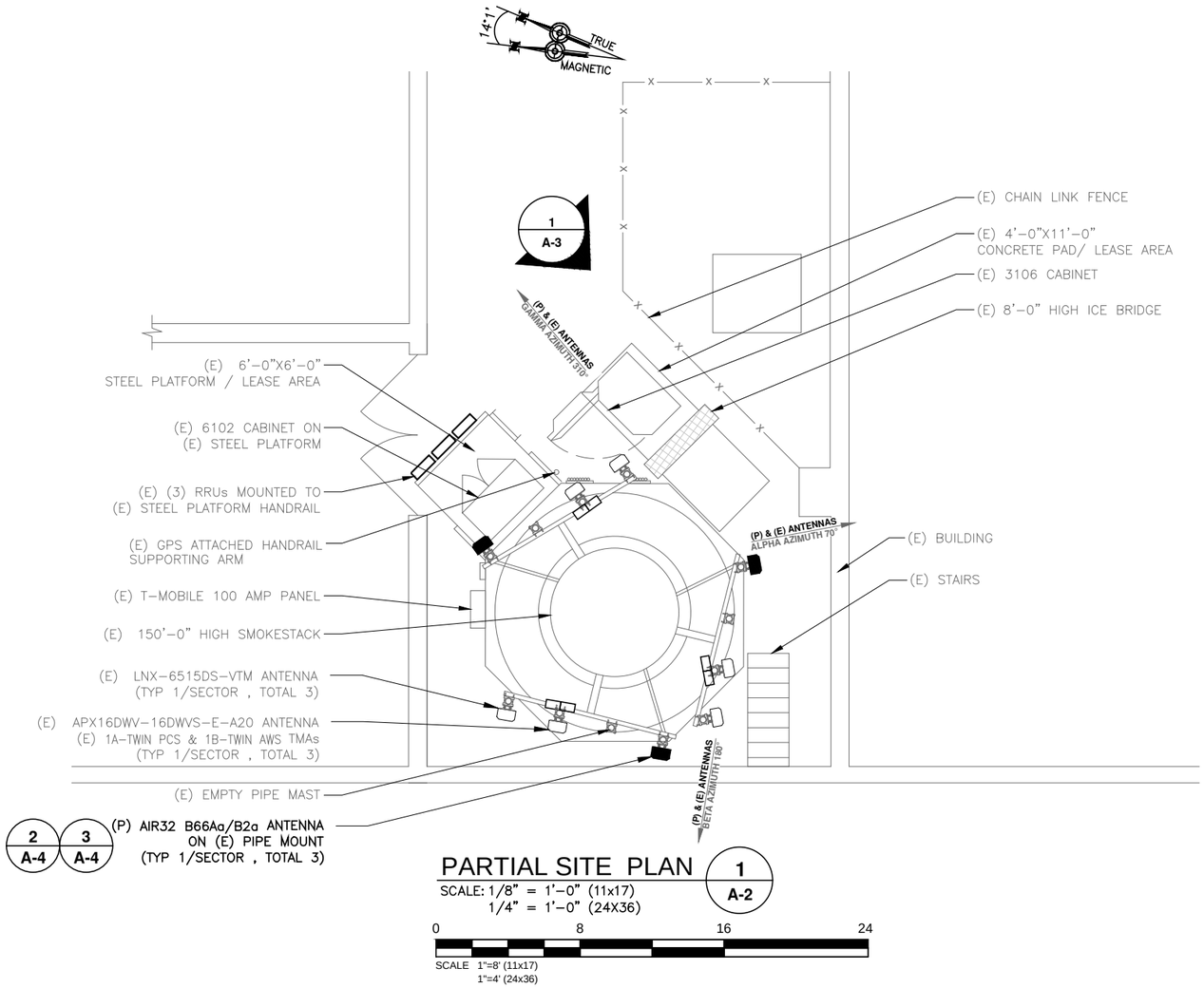
PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

SHEET TITLE
SITE PLAN

SHEET NUMBER
A-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT–REV.2, SMOKESTACK" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T–MOBILE SITE ID CT11214D", DATED JUNE 27, 2016.



PARTIAL SITE PLAN 1 / A-2

SCALE: 1/8" = 1'–0" (11x17)
1/4" = 1'–0" (24X36)

0 8 16 24

SCALE 1"=8' (11x17)
1"=4' (24x36)

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617–852–3611
Fax Number : 781–742–2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/26/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO:	CT11214D
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT

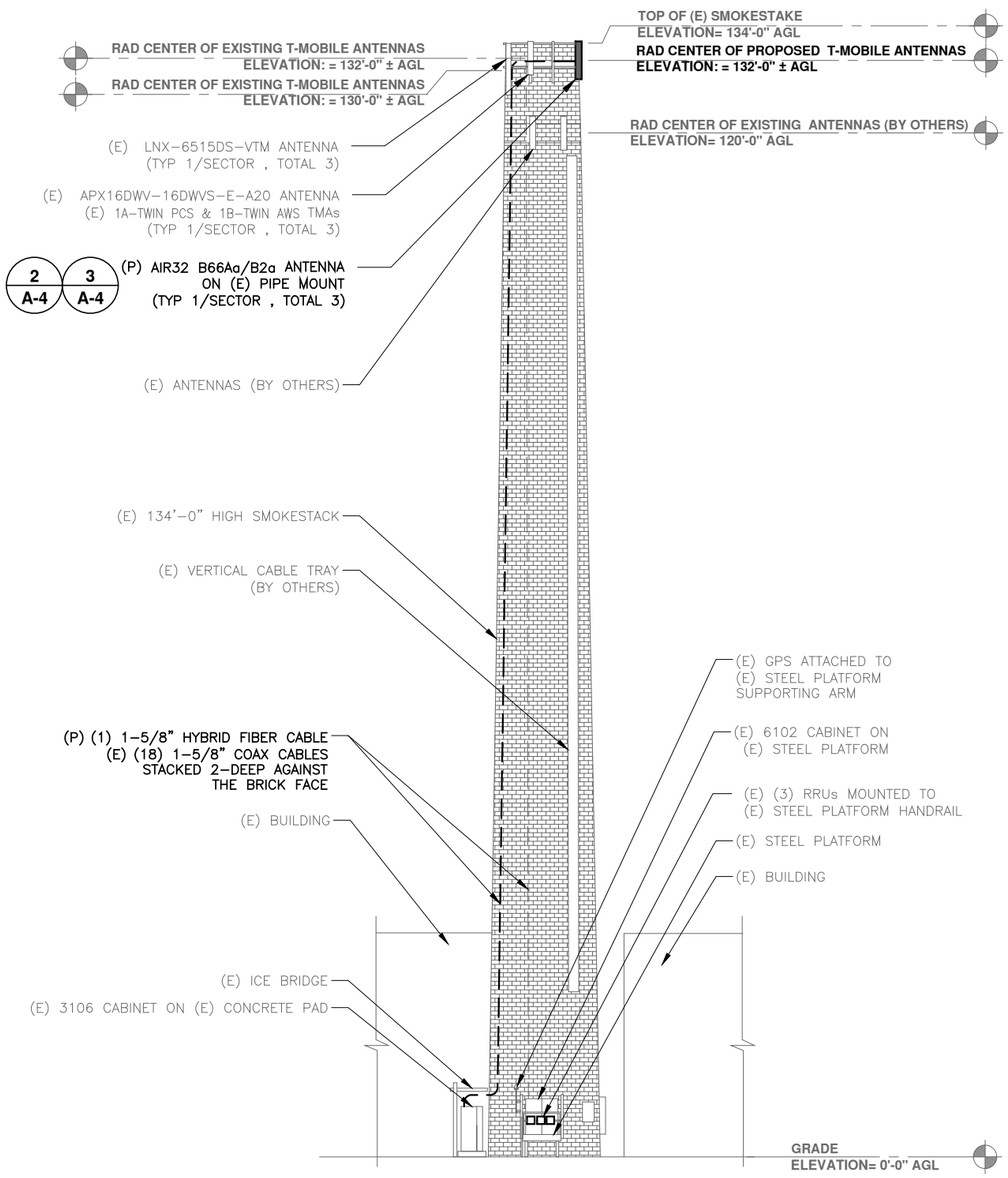
PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

SHEET TITLE
PARTIAL SITE PLAN

SHEET NUMBER
A-2

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT–REV.2, SMOKESTACK" PREPARED BY ATLANTIS DESIGN GROUP, INC., "T–MOBILE SITE ID CT11214D", DATED JUNE 27, 2016.



ELEVATION 1 / A-3

SCALE: 1" = 20'–0" (11x17)
1" = 10'–0" (24X36)

0 20 40 60

SCALE 1"=20' (11x17)
1"=10' (24x36)

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617–852–3611
Fax Number : 781–742–2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/26/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO:	CT11214D
DRAWN BY:	FG
CHECKED BY:	KM

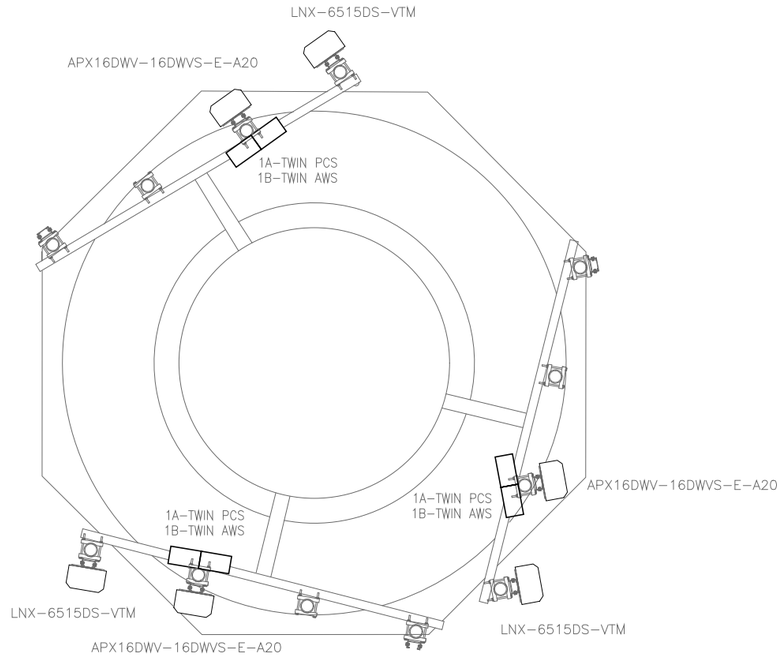
STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162.
LICENSED ARCHITECT

PROFESSIONAL SEAL

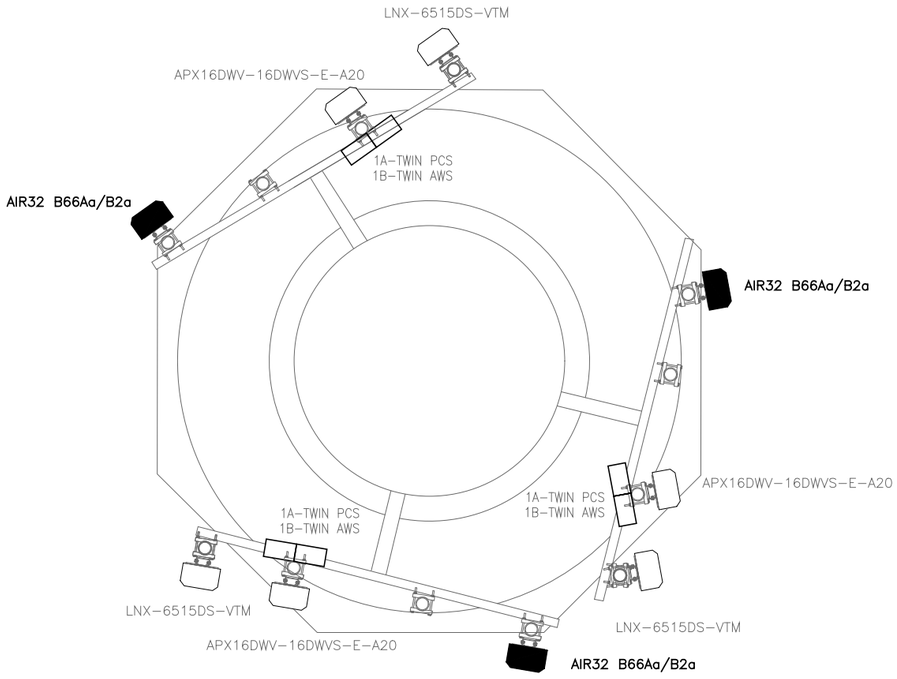
SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

SHEET TITLE
ELEVATION

SHEET NUMBER
A-3



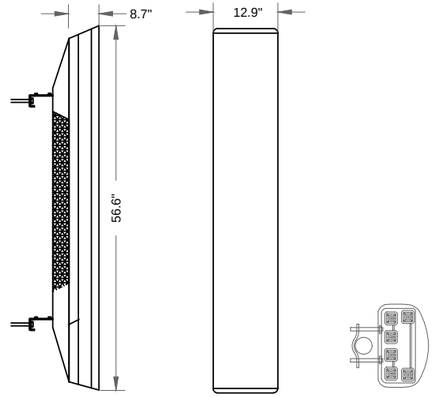
EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

ANTENNA PLAN — 1 / A-4

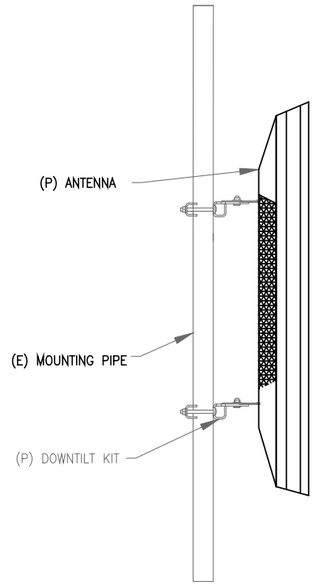
SCALE: NTS



MANUFACTURER: ERICSSON
MODEL NO.:ERICSSON AIR32 AIR32 B66Aa/B2a
DIMENSIONS – HxWxD, (IN) 56.6"x12.9"x8.7"

ERICSSON AIR32 B66Aa/B2a
ANTENNA DETAILS — 2 / A-4

SCALE: N.T.S



ANTENNA MOUNT DETAILS — 3 / A-4

SCALE: N.T.S

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/26/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO:	CT11214D
DRAWN BY:	FG
CHECKED BY:	KM

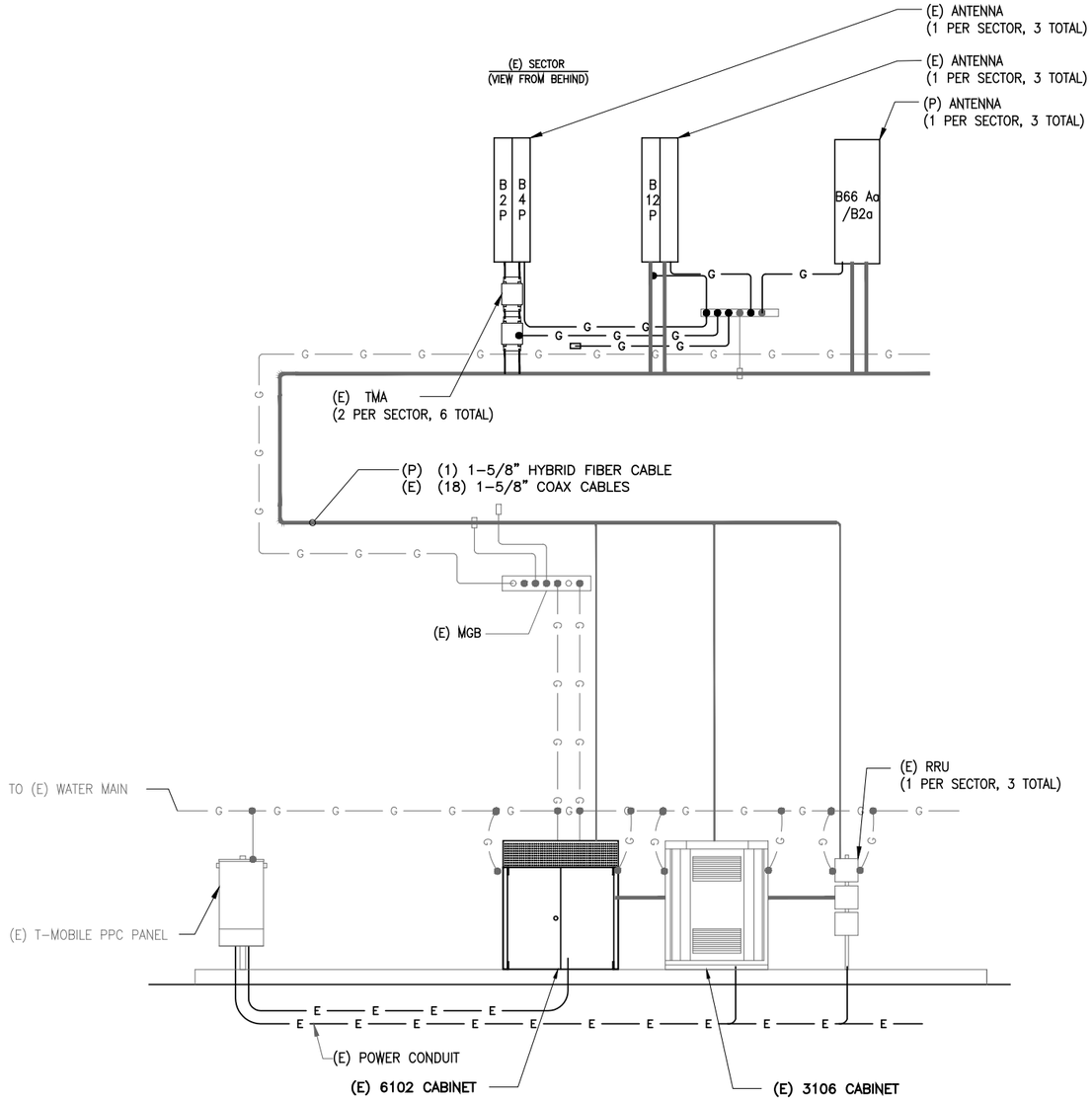
STATE OF CONNECTICUT · HOSSEIN VAHEDI · NO. ARI. 11162 · LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

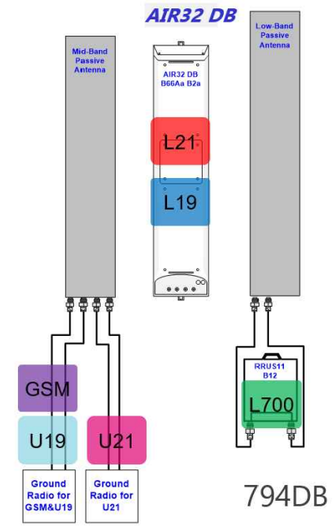
SHEET TITLE
DETAILS

SHEET NUMBER
A-4



GROUNDING AND ONE LINE DIAGRAM (1 / E-1)

SCALE: N.T.S



794DB

TRUNK FIBER NOTES:

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

HYBRID FIBER/POWER JUMPER NOTES:

1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A 3/8" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN ¾" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

794DB CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM (2 / E-1)

SCALE: N.T.S

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/25/16	FINAL CD	0
06/27/16	REVISION	1

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

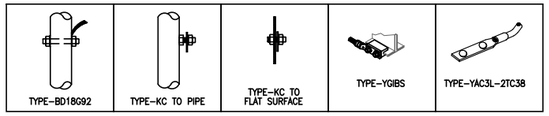
PROJECT NO: CT11214D
DRAWN BY: FG
CHECKED BY: KM

PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

SHEET TITLE
GROUNDING AND ONE LINE DIAGRAM
COAX/FIBER DIAGRAM

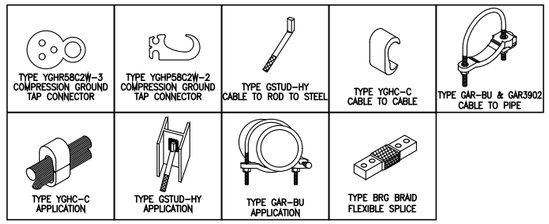
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

SCALE: N.T.S

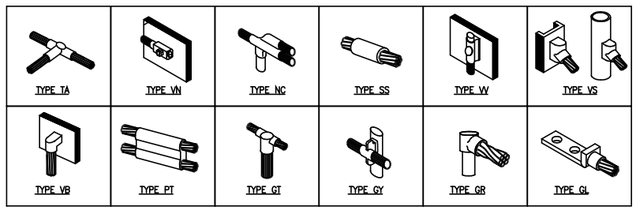
1 E-3



BURNDY GROUNDING PRODUCTS

SCALE: N.T.S

2 E-3



CADWELD GROUNDING CONNECTION PRODUCTS

SCALE: N.T.S

3 E-3

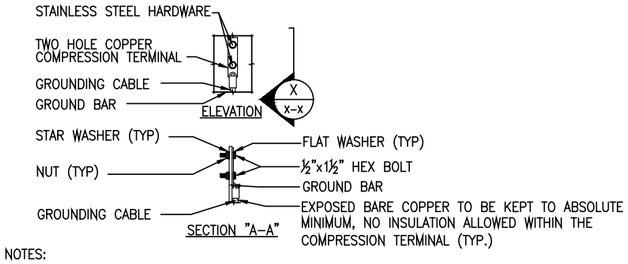
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A	A, C, OR D	A	
MASTER GROUND BAR	C	A	A				
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D				
GROUND RING	C		C				C

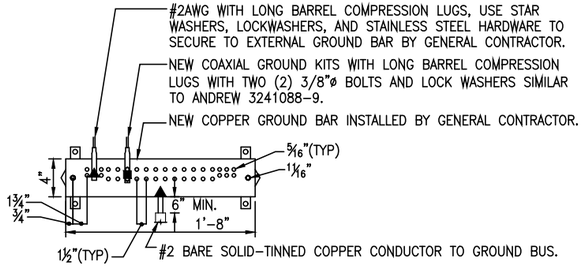
GROUNDING TERMINATION MATRIX

SCALE: N.T.S

7 E-3



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

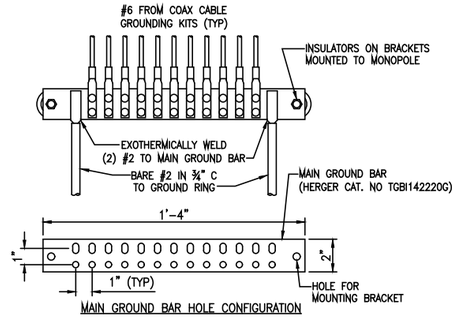


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

SCALE: N.T.S

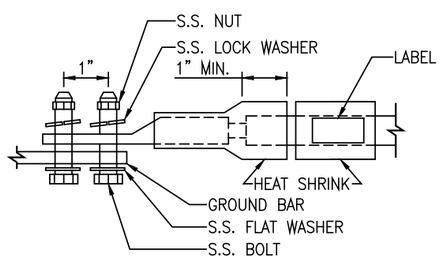
4 E-3



GROUND BAR DETAIL

SCALE: N.T.S

5 E-3



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. ⅜"ø OR LARGER.
3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

GROUND BAR DETAIL

SCALE: N.T.S

6 E-3

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

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
05/09/16	ISSUED FOR REVIEW	A
05/26/16	FINAL CD	0
06/27/16	REVISION	1

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

PROJECT NO:	CT11214D
DRAWN BY:	FG
CHECKED BY:	KM

PROFESSIONAL SEAL

SITE NUMBER
CT11214D
SITE NAME
WATERBURY / ROUTE 8_1
SITE ADDRESS
1669 THOMASTON AVE.
WATERBURY, CT 06074

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit D

STRUCTURAL ANALYSIS REPORT - REV.2
SMOKESTACK

ATLANTIS DESIGN GROUP, INC.

Prepared For:

T-Mobile

35 Griffin Road South
Bloomfield, CT 06002

Site ID: CT11214D
Site Name: Waterbury/Rt8_1
1669 Thomaston Ave
Waterbury, CT 06074

June 27, 2016

Submitted By:

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

Prepared For:

35 Griffin Road South
Bloomfield, CT 06002

RESULT: PASS

Site ID: CT11214D
Site Name: Waterbury/Rt8_1
1669 Thomaston Ave
Waterbury, CT 06074

Prepared By:

Destek Engineering, LLC
Professional Engineering Corporation
License # PEC 001429

06-27-2016

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

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

CONTENTS

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

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the wireless telecommunication installation on the existing smoke stack located at 1669 Thomaston Avenue, Waterbury, CT 06074 for additions and alterations proposed by T-Mobile.

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

- RFDS provided by T-Mobile, dated 04/06/2016.
- Structural Analysis Report prepared by Atlantis Group dated 11/05/2014.

1.1 STRUCTURE

The subject structure is a 134 feet tall, round, tapered brick smokestack. The stack has a diameter range of approximately 14'-3" feet at the base to 9'-9" at the top. The thickness of the smoke stack varies from 28 inches at the base to 8 inches at the top. T-Mobile has currently nine (9) panel antennas, (3) per sector, mounted on sector mounts which are attached to smokestack brick wall.

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

Sector	Rad Center (ft)	Antenna & TMA	Mount	Feed Lines
Alpha	130 132	(1) Commscope LNX-6515DS-VTM (1) RFS APX16DWV_16DWVS-E-A20 (2) TMAs	(1) Sector Mount	(18) 1-5/8" Coax
Beta	130 132	(1) Commscope LNX-6515DS-VTM (1) RFS APX16DWV_16DWVS E-A20 (2) TMAs	(1) Sector Mount	
Gamma	130 132	(1) Commscope LNX-6515DS-VTM (1) RFS APX16DWV_16DWVS E-A20 (2) TMAs	(1) Sector Mount	

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

Proposed and Final Configuration of T-Mobile Appurtenances:

Sector	Rad Center (ft)	Antenna & TMA	Mount	Feed Lines
Alpha	130 132	(1) Commscope LNX-6515DS-VTM (1) RFS APX16DWV_16DWVS E-A20 (1)AIR32 B66Aa/B2a (2) TMAs	(1) Sector Mount	(18) 1-5/8" Coax (1)1-5/8 hybrid fiber coax
Beta	130 132	(1) Commscope LNX-6515DS-VTM (1) RFS APX16DWV_16DWVS E-A20 (1)AIR32 B66Aa/B2a (2) TMAs	(1) Sector Mount	
Gamma	130 132	(1) Commscope LNX-6515DS-VTM (1) RFS APX16DWV_16DWVS E-A20 (1)AIR32 B66Aa/B2a (2) TMAs	(1) Sector Mount	

Existing appurtenances by Others:

Sector	Rad Center (ft)	Antenna & TMA	Mount	Feed Lines
Sprint	120	(3) 6'x1'x8" Panel Antennas (6) RRHs	(3) Pipe Mounts	(3) 7/8" (1) 1/4" In Cable Tray

3.0 CODES AND LOADING

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

- *2005 State Building Code* with all of the adopted Addendums and Supplements.
- *Minimum Design Loads for Buildings and Other Structures SEI/ASCE 7-02*, American Society of Civil Engineers
- *Specifications for Structural Steel Buildings – Allowable Stress ANSI/AISC 335-89s1*, American National Standards Institute/American Institute for Steel Construction
- Building Classification: II
- Basic Wind Speed: 95 mph
- Exposure: B

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

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

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

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

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

5.0 ANALYSIS AND ASSUMPTIONS

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

The existing brick is assumed to have a unit weight of 115 pound per cubic foot (pcf) while the mortar is assumed to be Type N.

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

6.0 RESULTS AND CONCLUSION

Smoke Stack: The existing smoke stack is found to have **adequate** structural capacity for the proposed changes by T-Mobile. Under the controlling load combination and as a maximum, the smoke stack is stressed to **39.7%** of its capacity.

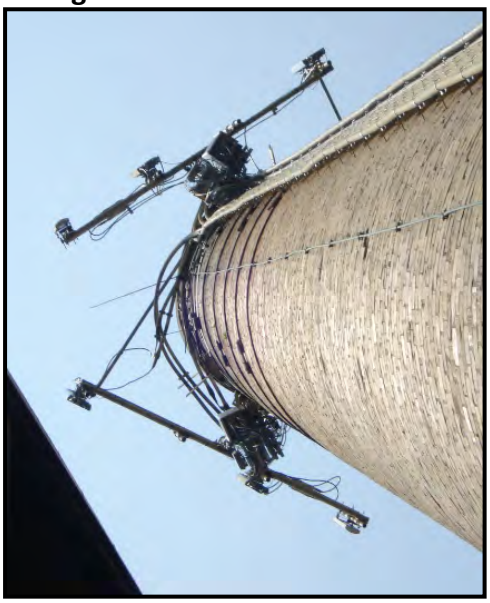
Therefore, the proposed additions by T-Mobile **can** be implemented as intended and with the conditions outlined in this report.

Should you have any questions about this report, please contact us at (770) 693-0835.

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

APPENDIX A
PICTURES & CALCULATIONS

Existing antenna mounts & smokestack



Existing antenna mounts & smokestack

CALCULATION SHEET

PURPOSE

The purpose of this analysis is to evaluate the structural capacity of the existing telecommunication installation on the building at 1669 Thomaston Ave., Waterbury, CT 06074 for the additions and alterations proposed by T-Mobile.

Wind Load

Input to determine wind loads on the smoke stack:

Reference, ASCE-7-02

Height of exposed area of stack: $H_{exposed\_stack} := 134 \cdot ft$

Occupancy Category: II — Table 1.1, pg. 3

Exposure category: $Exp := "B"$ — Section 6.5.6.3, pg. 25

$$z_g := \begin{cases} 1200 & \text{if } Exp = "B" \\ 900 & \text{if } Exp = "C" \\ 700 & \text{if } Exp = "D" \end{cases} = 1200$$

Table 6-2, pg. 78

$$\alpha := \begin{cases} 7.0 & \text{if } Exp = "B" \\ 9.5 & \text{if } Exp = "C" \\ 11.5 & \text{if } Exp = "D" \end{cases} = 7.0$$

Smokestack height: $z_{stack} := \frac{2}{3} \cdot H_{exposed\_stack} = 89.3\ ft$ — Use z at 2/3 point of exposed smokestack

Velocity pressure exposure coefficient: $K_z := 2.01 \cdot \left(\frac{z_{stack}}{z_g \cdot ft} \right)^{\frac{2}{\alpha}} = 0.957$ — Table 6-3, pg. 79

Topographic factor: $K_{zt} := 1.0$ — Section 6.5.7.2, pg. 26

Wind directionality factor: $K_d := 0.95$ — Table 6-4, pg. 80

Basic wind speed: $V := 95$ mph — Figure 6-1c

Importance factor: $I := 1$ — Table 6-1, pg. 77

Velocity pressure: $q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot psf = 21 \cdot psf$ Equation(6 – 15)

Gust response factor: $G := 0.85$ Section 6.5.8.1, pg. 26

Force coefficient: $C_f := 0.625$ Figure 6-21 pg. 74

Width of exposed area of stack: $W_{exposed\_stack} := \frac{14.25\,ft + 9.75\,ft}{2} = 12\,ft$

Total exposed area of stack: $A_{exposed\_stack} := H_{exposed\_stack} \cdot W_{exposed\_stack} = 1608\,ft^2$

Wind force on exposed area of stack: $F_{wind\_exposed\_stack} := q_z \cdot G \cdot C_f \cdot A_{exposed\_stack} = 17.9 \cdot kip$

Input to determine wind loads on the antennas(T-Mobile): Reference, ASCE-7-02

Rad center elevation of proposed antennas: $z_{ant\_tmob} := 132ft$

Velocity pressure exposure coefficient: $K_z := 2.01 \cdot \left(\frac{z_{ant\_tmob}}{z_g \cdot ft} \right)^{\frac{2}{\alpha}} = 1.07$ Table 6-3, pg. 79

Wind directionality factor: $K_d := 0.85$ Table 6-4, pg. 80

Velocity pressure: $q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot psf = 21 \cdot psf$ Equation(6 – 15)

Gust response factor: $G := 0.85$ Section 6.5.8.1, pg. 26

Force coefficient: $C_f := 1.4$ Figure 6-21 pg. 74

Input proposed antenna information (Erricssion AIR32 B66Aa/B2a):

Number of proposed antennas:	$Num_{proposed\_ant} := 3$	
Height of proposed antennas:	$H_{proposed\_ant} := 56.6 \cdot in$	
Width of proposed antennas:	$W_{proposed\_ant} := 12.9 \cdot in$	
Depth of proposed antennas:	$D_{proposed\_ant} := 8.7 \cdot in$	
Area of proposed antennas:	$A_{proposed\_antf} := H_{proposed\_ant} \cdot W_{proposed\_ant} = 5.1\ ft^2$	Front area exposed to wind
Area of proposed antennas:	$A_{proposed\_ants} := H_{proposed\_ant} \cdot D_{proposed\_ant} = 3.4\ ft^2$	Side area exposed to wind
Number of proposed antennas exposed to wind:	$Num_{exposed\_antf} := 1$ $Num_{exposed\_ants} := 2$	
Weight of Proposed antennas:	$Weight_{proposed\_ant} := 132.2 \cdot lbf$	

Input existing antenna information (RFS APX16DWV_16DWVS):

Number of existing antennas:	$Num_{existing\_ant1} := 3$	
Height of existing antennas:	$H_{existing\_ant1} := 55.9 \cdot in$	
Width of existing antennas:	$W_{existing\_ant1} := 13.3 \cdot in$	
Depth of existing antennas:	$D_{existing\_ant1} := 3.15 \cdot in$	
Area of existing antennas:	$A_{existing\_ant1f} := H_{existing\_ant1} \cdot W_{existing\_ant1} = 5.2\ ft^2$	Front area exposed to wind
Area of existing antennas:	$A_{existing\_ant1s} := H_{existing\_ant1} \cdot D_{existing\_ant1} = 1.2\ ft^2$	Side area exposed to wind
Number of proposed antennas exposed to wind:	$Num_{exposed\_exist\_ant1f} := 1$ $Num_{exposed\_exist\_ant1s} := 2$	
Weight of existing antennas:	$Weight_{existing\_ant1} := 40.7 \cdot lbf$	

Input existing antenna information (Commscope LNX-6515DS-VTM):

Number of existing antennas: $Num_{existing\_ant2} := 3$

Height of existing antennas: $H_{existing\_ant2} := 96.4 \cdot in$

Width of existing antennas: $W_{existing\_ant2} := 11.9 \cdot in$

Depth of existing antennas: $D_{existing\_ant2} := 7.1 \cdot in$

Area of existing antennas: $A_{existing\_ant2f} := H_{existing\_ant2} \cdot W_{existing\_ant2} = 8\,ft^2$ Front area exposed to wind

Area of existing antennas: $A_{existing\_ant2s} := H_{existing\_ant2} \cdot D_{existing\_ant2} = 4.8\,ft^2$ Side area exposed to wind

Number of proposed antennas exposed to wind: $Num_{exposed\_exist\_ant2f} := 1$ $Num_{exposed\_exist\_ant2s} := 2$

Weight of existing antennas: $Weight_{existing\_ant2} := 50.3 \cdot lbf$

Input Existing TMA information :

Number of existing TMA: $Num_{existing\_TMA} := 6$

Height of existing TMA: $H_{existing\_TMA} := 10 \cdot in$

Width of existing TMA: $W_{existing\_TMA} := 6 \cdot in$

Depth of existing TMA: $D_{existing\_TMA} := 6 \cdot in$

Area of existing TMA: $A_{existing\_TMAf} := H_{existing\_TMA} \cdot W_{existing\_TMA} = 0.4\ ft^2$ Front area exposed to wind

Area of existing TMA: $A_{existing\_TMAs} := H_{existing\_TMA} \cdot D_{existing\_TMA} = 0.4\ ft^2$ Side area exposed to wind

Number of existing TMA exposed to wind: $Num_{exposed\_TMAf} := 0$ $Num_{exposed\_TMA} := 2$

Weight of existing TMA: $Weight_{existing\_TMA} := 20 \cdot lbf$

Compute wind loads on antennas:

Total exposed area of T-Mobile antennas:

$$A_{ant} := Num_{exposed\_exist\_ant1f} \cdot A_{existing\_ant1f} + Num_{exposed\_exist\_ant1s} \cdot A_{existing\_ant1s} \cdots + Num_{exposed\_exist\_ant2f} \cdot A_{existing\_ant2f} + Num_{exposed\_exist\_ant2s} \cdot A_{existing\_ant2s} \cdots + Num_{exposed\_antf} \cdot A_{proposed\_antf} + Num_{exposed\_ants} \cdot A_{proposed\_ants} \cdots + Num_{exposed\_TMAf} \cdot A_{existing\_TMAf} + Num_{exposed\_TMA} \cdot A_{existing\_TMAs}$$

Wind force on T-Mobile antennas:

$$F_{wind\_ant} := q_z \cdot G \cdot C_f \cdot A_{ant} = 0.946 \cdot kip$$

Antenna height (at C.G. above roof):

$$r_{ant\_tmob} := z_{ant\_tmob} = 132\,ft$$

$$M_{wind\_ant} := F_{wind\_ant} \cdot r_{ant\_tmob} = 124.8 \cdot kip \cdot ft$$

Input to determine wind loads on the antennas(Sprint):

Rad center elevation of proposed antennas:

$$z_{ant\_other} := 120ft$$

Velocity pressure exposure coefficient:

$$K_z := 2.01 \cdot \left(\frac{z_{ant\_other}}{z_g \cdot ft} \right)^{\frac{2}{\alpha}} = 1.041$$

Table 6-3, pg. 79

Wind directionality factor:

$$K_d := 0.85$$

Table 6-4, pg. 80

Velocity pressure:

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot psf = 20.4 \cdot psf$$

Equation(6 – 15)

Gust response factor:

$$G := 0.85$$

Section 6.5.8.1, pg. 26

Force coefficient:

$$C_f := 1.4$$

Figure 6-21 pg. 74

Input existing antenna information (Sprint):

Number of existing antennas:

$$Num_{existing\_ant1\_other} := 3$$

Height of existing antennas:

$$H_{existing\_ant1\_other} := 72 \cdot in$$

Width of existing antennas:

$$W_{existing\_ant1\_other} := 12 \cdot in$$

Depth of existing antennas:

$$D_{existing\_ant1\_other} := 8 \cdot in$$

Area of existing antennas: $A_{existing\_ant1f\_other} := H_{existing\_ant1\_other} \cdot W_{existing\_ant1\_other} = 6\,ft^2$ Front area exposed to wind

Area of existing antennas: $A_{existing\_ant1s\_other} := H_{existing\_ant1\_other} \cdot D_{existing\_ant1\_other} = 4\,ft^2$ Side area exposed to wind

Number of proposed antennas exposed to wind: $Num_{exposed\_exist\_ant1f\_other} := 1$ $Num_{exposed\_exist\_ant1s\_other} := 2$

Weight of existing antennas: $Weight_{existing\_ant1\_other} := 40.7 \cdot lbf$

Input Existing RRU information (RRUS11-12):

Number of existing RRUS12: $Num_{existing\_RRUS12\_other} := 6$

Height ofexisting RRUS12: $H_{existing\_RRUS12\_other} := 20 \cdot in$

Width of existing RRUS12: $W_{existing\_RRUS12\_other} := 17 \cdot in$

Depth of existing RRUS12: $D_{existing\_RRUS12\_other} := 7 \cdot in$

Front area exposed to wind

Area of existing RRUS12: $A_{existing\_RRUS12f\_other} := H_{existing\_RRUS12\_other} \cdot W_{existing\_RRUS12\_other} = 2.4\,ft^2$

Side area exposed to wind

Area of existing RRUS12: $A_{existing\_RRUS12s\_other} := H_{existing\_RRUS12\_other} \cdot D_{existing\_RRUS12\_other} = 1\,ft^2$

Number of existing RRUS exposed to wind: $Num_{exposed\_RRUS12f\_other} := 4$ $Num_{exposed\_RRUS12s\_other} := 2$

Weight of existing RRUS12: $Weight_{existing\_RRUS12\_other} := 50.7 \cdot lbf$

Compute wind loads on antennas:

Total exposed area of antennas:

$$A_{ant\_other} := Num_{exposed\_exist\_ant1f\_other} \cdot A_{existing\_ant1f\_other} \cdots + Num_{exposed\_exist\_ant1s\_other} \cdot A_{existing\_ant1s\_other} \cdots + Num_{exposed\_RRUS12f\_other} \cdot A_{existing\_RRUS12f\_other} \cdots + Num_{exposed\_RRUS12s\_other} \cdot A_{existing\_RRUS12s\_other}$$

Wind force on other antennas: $F_{wind\_ant\_other} := q_z \cdot G \cdot C_f \cdot A_{ant\_other} = 0.618 \cdot kip$

Antenna height (at C.G. above roof): $r_{ant\_other} := z_{ant\_other} = 120\,ft$

$M_{wind\_ant\_other} := F_{wind\_ant\_other} \cdot r_{ant\_other} = 74.1 \cdot kip \cdot ft$

Input to determine wind loads on the exposed cables(T-Mobile):

Reference, ASCE-7-02

Rad center elevation of cables: $z_{cables} := \frac{2}{3}\cdot 132 = 88$ ft — Use z at 2/3 point of exposed cables

Velocity pressure exposure coefficient: $K_z := 2.01\cdot\left(\frac{z_{cables}}{z_g}\right)^{\frac{2}{\alpha}} = 0.953$ — Table 6-3, pg. 79

Velocity pressure: $q_z := 0.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V^2\cdot I\cdot psf = 18.7\cdot psf$ — Equation(6 – 15)

Gust response factor: $G := 0.85$ — Section 6.5.8.1, pg. 26

Force coefficient: $C_f := 1.2$ — Figure 6-21 pg. 74

Number of exposed cables: $Num_{exposed\_cables} := 3$

Number of total cables: $Num_{total\_cables} := 18$

Width of exposed cables: $W_{cables} := 1.625\cdot in$

Length of exposed cables: $L_{cables} := 132\cdot ft$

Total exposed area of cables: $A_{exposed\_cables} := Num_{exposed\_cables}\cdot W_{cables}\cdot L_{cables} = 53.6\,ft^2$

Wind force on exposed cables: $F_{wind\_exposed\_cables} := q_z\cdot G\cdot C_f\cdot A_{exposed\_cables} = 1\cdot kip$

Cable tray height (at C.G.): $r_{cables} := \frac{L_{cables}}{2} = 66\,ft$

$M_{wind\_exposed\_cables} := F_{wind\_exposed\_cables}\cdot r_{cables} = 67.5\cdot kip\cdot ft$

Weight of cables: $Weight_{cables} := 1.35\cdot\frac{lbf}{ft}$

Input Existing mount information:

Reference, ASCE-7-02

Mount centerline: $z_{mount} := 132ft$

Velocity pressure exposure coefficient: $K_z := 2.01 \cdot \left(\frac{z_{mount}}{z_g \cdot ft} \right)^{\frac{2}{\alpha}} = 1.07$ — Table 6-3, pg. 79

Wind directionality factor: $K_d := 0.85$

Velocity pressure: $q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot psf = 21 \cdot psf$ — Equation(6 – 15)

Gust response factor: $G := 0.85$ — Section 6.5.8.1, pg. 26

Force coefficient: $C_f := 1.2$ — Figure 6-21 pg. 74

Number of 2 in. antenna pipes: $Num_{2\_ant\_pipes} := 4$ per sector

OD of 2 in antenna pipes: $OD_{2\_ant\_pipes} := 2.375 \cdot in$

Length of 2 in antenna pipes: $L_{2\_ant\_pipes} := 50 \cdot in$ — exposed length

Area of 2 in antenna pipes: $A_{2\_ant\_pipes} := Num_{2\_ant\_pipes} \cdot OD_{2\_ant\_pipes} \cdot L_{2\_ant\_pipes}$

$A_{2\_ant\_pipes} = 3.3\ ft^2$

Number of 3 in. mount pipes: $Num_{3\_mt\_pipes} := 1$ per sector

OD of 3 in mount pipes: $OD_{3\_mt\_pipes} := 3.5 \cdot in$

Length of 3 in mount pipes: $L_{3\_mt\_pipes} := 60 \cdot in$

Area of 3 in mount pipes: $A_{3\_mt\_pipes} := Num_{3\_mt\_pipes} \cdot OD_{3\_mt\_pipes} \cdot L_{3\_mt\_pipes}$

$A_{3\_mt\_pipes} = 1.5\ ft^2$

Number of 2 in. horz. mount pipes: $Num_{2\_mt\_pipes} := 2$ per sector

OD of 2 in horz. mount pipes: $OD_{2\_mt\_pipes} := 2.375 \cdot in$

Length of 2 in horz. mount pipes: $L_{2\_mt\_pipes} := 126 \cdot in$

Area of 2 in horz. mount pipes: $A_{2\_mt\_pipes} := Num_{2\_mt\_pipes} \cdot OD_{2\_mt\_pipes} \cdot L_{2\_mt\_pipes}$

$A_{2\_mt\_pipes} = 4.2\ ft^2$

Area of existing mount: $A_{mount\_f} := A_{2\_ant\_pipes} + A_{3\_mt\_pipes} + A_{2\_mt\_pipes} = 8.9\,ft^2$ Front area exposed to wind

Area of existing mount: $A_{mount\_s} := 0ft^2$ Side area exposed to wind

Number of mounts exposed to wind: $Num_{mount\_expf} := 1$ $Num_{mount\_exps} := 0$

Weight of mount: $Weight_{mount} := 350 \cdot lbf$

Total exposed area of cables: $A_{exposed\_mount} := A_{mount\_f} \cdot Num_{mount\_expf} + A_{mount\_s} \cdot Num_{mount\_exps}$

$A_{exposed\_mount} = 8.9\,ft^2$

Wind force on exposed mount: $F_{wind\_mount} := q_z \cdot G \cdot C_f \cdot A_{exposed\_mount} = 0.2 \cdot kip$

$r_{mount} := z_{mount}$

$M_{wind\_mount} := F_{wind\_mount} \cdot r_{mount}$

$M_{wind\_mount} = 25.2 \cdot kip \cdot ft$

Compute Wind Loads at the Base of the Smokestack at the roof height

Wind Loads on the Smokestack:

Lateral wind load on smokestack: $F_{wind\_exposed\_stack} = 17.9 \cdot kip$

Smokestack height (at C.G. above roof): $r_{stack} := \frac{H_{exposed\_stack}}{2} = 67\,ft$

Lateral wind moment at base of smokestack: $M_{wind\_exposed\_stack} := F_{wind\_exposed\_stack} \cdot r_{stack} = 1202.1 \cdot kip \cdot ft$

Wind Loads on the Antennas , Cable , and Mounts :

Lateral wind load on antennas (T-Mobile): $F_{wind\_ant} = 0.946 \cdot kip$

Lateral wind moment at base of smokestack(T-Mobile): $M_{wind\_ant} = 124.8 \cdot kip \cdot ft$

Lateral wind load on antennas(Sprint): $F_{wind\_ant\_other} = 0.618 \cdot kip$

Lateral wind moment at base of smokestack(Sprint): $M_{wind\_ant\_other} = 74.1 \cdot kip \cdot ft$

Lateral wind load on cable trays: $F_{wind\_exposed\_cables} = 1.023 \cdot kip$

Lateral wind moment at base of smokestack(cables): $M_{wind\_exposed\_cables} = 67.5 \cdot kip \cdot ft$

Wind force on exposed mount: $F_{wind\_mount} = 191\,lbf$

Lateral wind moment at base of smokestack(mount): $M_{wind\_mount} = 25.2 \cdot kip \cdot ft$

Total additional lateral wind load:

$$F_{wind\_additional} := F_{wind\_ant} + F_{wind\_ant\_other} + F_{wind\_exposed\_cables} + F_{wind\_mount} = 2.778 \cdot kip$$

Total additional lateral wind moment at base of smokestack:

$$M_{wind\_additional} := M_{wind\_ant} + M_{wind\_ant\_other} + M_{wind\_exposed\_cables} \ldots + M_{wind\_mount} = 291.7 \cdot kip \cdot ft$$

Seismic Load

Input to determine dead load of the smoke stack above the roof height:

Unit weight of brick: $\gamma_{brick} := 115 \cdot pcf$

Height of smokestack: $h_{stack} := H_{exposed\_stack} = 134\,ft$

Average thickness of smokestack walls: $t_{walls} := \frac{(28 \cdot in + 8in)}{2} = 18 \cdot in$

Number of vertical smokestack walls: $Num_{vert} := 1$

Average out side dia : $d_{average} := 12ft$

Average inside dia : $d_{1\_average} := d_{average} - 2 \cdot t_{walls} = 9\,ft$

Area of Smokestack cross-section: $A_{cross\_section} := \frac{\pi}{4} \cdot \left(d_{average}^{2} - d_{1\_average}^{2} \right) = 49.5 \cdot ft^{2}$

Volume of smokestack brick: $Vol_{stack\_brick} := h_{stack} \cdot A_{cross\_section} = 6630.3 \cdot ft^{3}$

Weight of smokestack: $W_{stack} := Vol_{stack\_brick} \cdot \gamma_{brick} = 762.5 \cdot kip$

Seismic Load per ASCE 7-02

per Chapters 11 and 12

USGS Design Maps Summary Report

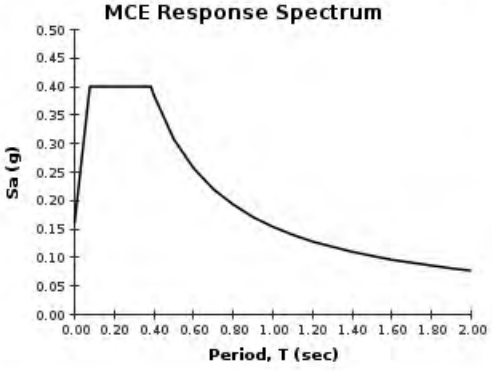
User-Specified Input

Building Code Reference Document	ASCE 7-05 Standard (which utilizes USGS hazard data available in 2002)
Site Coordinates	41.58981°N, 73.05423°W
Site Soil Classification	Site Class D – "Stiff Soil"
Occupancy Category	I/II/III

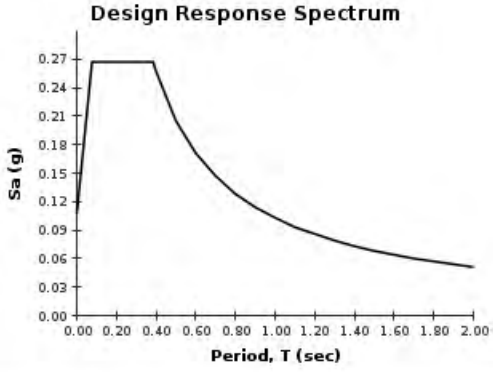
USGS-Provided Output

S_S =	0.250 g	S_{MS} =	0.400 g	S_{DS} =	0.267 g
S_1 =	0.064 g	S_{M1} =	0.154 g	S_{D1} =	0.103 g

MCE Response Spectrum



Design Response Spectrum



Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

Determine Seismic Ground Motion Values (Section 11.4):

Reference, ASCE-7-02

$S_s := 0.250$ — Figure 22-1, pg. 210-211

$S_1 := 0.064$ — Figure 22-2, pg. 212-213

$F_a := 1.6$ — Table 11.4-1, pg. 115

$F_v := 2.4$ — Table 11.4-2, pg. 115

} Site Class D assumed per code

$S_{MS} := F_a \cdot S_s$ $S_{MS} = 0.4$ — Eq. (11.4-1), pg. 115

$S_{M1} := F_v \cdot S_1$ $S_{M1} = 0.154$ — Eq. (11.4.2), pg. 115

$S_{DS} := \frac{2}{3} \cdot S_{MS}$ $S_{DS} = 0.267$ — Eq. (11.4-3), pg. 115

$S_{D1} := \frac{2}{3} \cdot S_{M1}$ $S_{D1} = 0.102$ — Eq. (11.4-4), pg. 115

Determine Occupancy Category and Importance Factor (Section 11.5):

Occupancy Category: II — Table 1.1, pg. 3

Importance Factor: $I := 1.0$ — Table 11.5-1, pg. 116

Equivalent Lateral Force Procedure (Section 12.8):

Non-reinforced masonry structure $R := 1.25$ — Table 15.4-2, pg. 163

Compute Approximate Fundamental Period (Section 12.8.2.1):

$C_t := 0.02$ Table 12.8-2, pg. 129

$x := 0.75$ Table 12.8-2, pg. 129

$h_n := \frac{h_{stack}}{ft} = 134$

$T_a := C_t \cdot h_n^{\,x} = 0.788$ sec Eq. (12.8-7), pg. 129

$T := T_a \qquad T = 0.788$ sec

$T_L := 6$ sec Figure 22-15, pg. 229

Compute Seismic Response Coefficient (Section 12.8.1.1):

$C_s := \frac{S_{DS}}{\frac{R}{I}} = 0.213$ for $T < T_L$ Eq. (12.8-2), pg. 129

$C_{s\_max} := \frac{S_{D1}}{T \cdot \left(\frac{R}{I}\right)} = 0.104$ Eq. (12.8-3), pg. 129

$C_{s\_min} := 0.01$ Eq. (12.8-5), pg. 129

Therefore, use $C_s := C_{s\_max} = 0.104$

Compute Seismic Base Shear (Section 12.8.1):

$W := W_{stack} = 762.5 \cdot kip$

$V_{stack} := C_s \cdot W = 79.3 \cdot kip$ Eq. (12.8-1), pg. 129

Compute Earthquake Loads on Antennas and Appurtenances:

Compute Earthquake Loads from Existing Antennas:

Existing antenna base shear(T-Mobile):

$$V_{existing\_ant\_tmob} := C_s \cdot \begin{pmatrix} Num_{existing\_ant1} \cdot Weight_{existing\_ant1} \cdots \\ + Num_{existing\_ant2} \cdot Weight_{existing\_ant2} \cdots \\ + Num_{existing\_TMA} \cdot Weight_{existing\_TMA} \end{pmatrix} = 0.041 \cdot kip$$

Existing antenna base shear(Sprint):

$$V_{existing\_ant\_other} := C_s \cdot \begin{pmatrix} Num_{existing\_ant1\_other} \cdot Weight_{existing\_ant1\_other} \cdots \\ + Num_{existing\_RRUS12\_other} \cdot Weight_{existing\_RRUS12\_other} \end{pmatrix} = 44.3\ lbf$$

Compute Earthquake Loads from Proposed Antennas:

Proposed antenna base shear:

$$V_{proposed\_ant} := C_s \cdot Num_{proposed\_ant} \cdot Weight_{proposed\_ant} = 0.041 \cdot kip$$

Compute Earthquake Loads from cable trays:

Number of total cables:

$$Num_{total\_cables} = 18$$

Length of cables:

$$L_{cables} = 132\ ft$$

Weight of cable trays:

$$Weight_{cables} = 1.4 \cdot \frac{lbf}{ft}$$

Cable base shear:

$$V_{cables} := C_s \cdot Num_{total\_cables} \cdot L_{cables} \cdot Weight_{cables} = 0.334 \cdot kip$$

Compute Earthquake Loads from mounts:

Number of total mounts:

$$Num_{total\_mounts} := 3$$

Weight of mounts:

$$Weight_{mount} = 350 \cdot lbf$$

Mount base shear:

$$V_{mounts} := C_s \cdot Num_{total\_mounts} \cdot Weight_{mount} = 0.109 \cdot kip$$

Compute Seismic Loads at the Base of the Smokestack

Seismic Loads on the Smokestack:

Lateral seismic load on smokestack: $V_{stack} = 79.3 \cdot kip$

Smokestack height (at C.G.): $r_{stack} := \frac{H_{exposed\_stack}}{2} = 67\,ft$

Lateral wind moment at base of smokestack: $M_{seismic\_stack} := V_{stack} \cdot r_{stack} = 5313 \cdot kip \cdot ft$

Seismic Loads on the Antennas and Cable Tray:

Lateral seismic load on antennas: $V_{existing\_ant\_tmob} = 40.872\,lbf$

Antenna height (at C.G. above roof): $r_{ant\_tmob} = 132\,ft$

Lateral seismic load on antennas: $V_{existing\_ant\_other} = 44.3\,lbf$

Antenna height (at C.G. above roof): $r_{ant\_other} = 120\,ft$

Lateral seismic load on antennas: $V_{proposed\_ant} = 41.2\,lbf$

Antenna height (at C.G. above roof): $r_{ant\_tmob} = 132\,ft$

Lateral seismic load on cables: $V_{cables} = 0.334 \cdot kip$

Cable height (at C.G. above roof): $r_{cables} = 66\,ft$

Lateral seismic load on mounts: $V_{mounts} = 109.2\,lbf$

Mount height (at C.G. above roof): $r_{mount} = 132\,ft$

Total additional lateral seismic load:

$$V_{seismic\_additional} := V_{existing\_ant\_tmob} + V_{existing\_ant\_other} + V_{proposed\_ant} \cdots + V_{cables} + V_{mounts} = 0.569 \cdot kip$$

Total additional lateral seismic moment at base of smokestack:

$$M_{seismic\_additional} := V_{existing\_ant\_tmob} \cdot r_{ant\_tmob} \cdots + V_{existing\_ant\_other} \cdot r_{ant\_other} \cdots + V_{proposed\_ant} \cdot r_{ant\_tmob} \cdots + V_{cables} \cdot r_{cables} + V_{mounts} \cdot r_{mount} = 52.6 \cdot kip \cdot ft$$

Check Load Governing the Smokestack:

$$\frac{F_{wind\_exposed\_stack}}{L_f \cdot V_{stack}} = 0.3$$

Seismic Load factor $L_f := 0.7$

Seismic loads govern the design of the stack

$$\frac{M_{wind\_exposed\_stack}}{L_f \cdot M_{seismic\_stack}} = 0.3$$

Check Seismic Loads at the Base of the Smokestack:

$V_{stack} = 79.3 \cdot kip$

$V_{seismic\_additional} = 0.6 \cdot kip$

$V_{seismic\_total} := V_{stack} + V_{seismic\_additional} = 79.9 \cdot kip$

$$V_{seismic\_inc\_\%} := \frac{V_{seismic\_additional}}{V_{stack}} = 0.72 \cdot \%$$

$Test_{seismic\_V} :=$ "Add'l Seismic V < 5% of Original Seismic V" if $V_{seismic\_inc\_\%} < 5\%$

otherwise

"Total Seismic V < Original Wind F" if $0.7 \cdot V_{seismic\_total} < F_{wind\_exposed\_stack}$

"Further Alalysis Req'd " otherwise

$Test_{seismic\_V}$ = "Add'l Seismic V < 5% of Original Seismic V"

$M_{seismic\_stack} = 5313\ ft \cdot kip$

$M_{seismic\_additional} = 52.6\ ft \cdot kip$

$M_{seismic\_total} := M_{seismic\_stack} + M_{seismic\_additional} = 5365.6\ ft \cdot kip$

$$M_{seismic\_inc\_\%} := \frac{M_{seismic\_additional}}{M_{seismic\_stack}} = 0.9899 \cdot \%$$

$Test_{seismic\_M} :=$ "Add'l Seismic M < 5% of Original Seismic M" if $M_{seismic\_inc\_\%} < 5\%$

otherwise

"Total Seismic M < Original Wind M" if $0.7 \cdot M_{seismic\_total} < M_{wind\_exposed\_stack}$

"Further Alalysis Req'd " otherwise

$Test_{seismic\_M}$ = "Add'l Seismic M < 5% of Original Seismic M"

Check Wind Loads at the Base of the Smokestack:

$F_{wind\_exposed\_stack} = 17.9 \cdot kip$ $0.7 \cdot V_{stack} = 55.5 \cdot kip$

$F_{wind\_additional} = 2.778 \cdot kip$

$F_{wind\_total} := F_{wind\_exposed\_stack} + F_{wind\_additional} = 20.719 \cdot kip$

$$F_{wind\_inc\_\%} := \frac{F_{wind\_additional}}{F_{wind\_exposed\_stack}} = 15.4826 \cdot \%$$. > 10% **Not ok** **Further Analysis needed**

$M_{wind\_exposed\_stack} = 1202.1\ ft \cdot kip$ $M_{wind\_exposed\_stack} = 1202.1\ ft \cdot kip$ $0.7 \cdot M_{seismic\_stack} = 3719.1\ ft \cdot kip$

$M_{wind\_additional} = 291.7\ ft \cdot kip$

$M_{wind\_total} := M_{wind\_exposed\_stack} + M_{wind\_additional} = 1493.8\ ft \cdot kip$

$$M_{wind\_inc\_\%} := \frac{M_{wind\_additional}}{M_{wind\_exposed\_stack}} = 24.3 \cdot \%$$. > 10% **Not ok** **Further Analysis needed**

Check for Smokestack Section Capacity:

At base of the smoke stack:

Outer diameter of smoke stack $D_2 := 14.25\,ft$

Thickness of wall at base of smoke stack $t := 28\,in$

Flue diameter $D_1 := D_2 - 2 \cdot t = 9.6\,ft$

Cross section-Area : $A := \frac{\pi \cdot \left[(D_2)^2 - (D_1)^2 \right]}{4} = 87.4\,ft^2$

Section Moment of Inertia: $I_x := \frac{\pi \cdot \left[(D_2)^4 - (D_1)^4 \right]}{64} = 1610.1\,ft^4$

Section Modulus: $S_x := \frac{I_x}{0.5 \cdot D_2} = 226 \cdot ft^3$

Radius of Gyration: $r := \left(\frac{I_x}{A} \right)^{0.5} = 4.3\,ft$

Unbraced Length: $H_{exposed\_stack} = 134\,ft$

Masonry compressive Strength: $f_m := 1000\,psi$

$\frac{H_{exposed\_stack}}{r} = 31.2 \quad < \quad 99$ Section 2.2.3.1 of ACI 530-05

therefore, use:

Allowable Axial Stress: $F_a := \frac{1}{4} \cdot f_m \cdot \left[1 - \left(\frac{H_{exposed\_stack}}{140 \cdot r} \right)^2 \right] = 237.57\,psi$ Equation (2-12) of ACI 530-05

Allowable Bending Stress: $F_b := \frac{f_m}{3} = 333.33\,psi$ Equation (2-14) of ACI 530-05

Axial Stress from Weight: $f_a := \frac{W_{stack}}{A} = 60.62\,psi$

Bending Stress from Wind Loads: $f_b := \frac{M_{wind\_total}}{S_x} = 45.91\,psi$

Capacity Check:

Axial-Bending Interaction Check:

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} = 0.39 \quad < \quad 1.0 \quad \text{==> OK}$$

Maximum Compressive Stress:

$$\sigma_{Compressive\_Top} := \frac{W_{stack}}{A} + \frac{M_{wind\_total}}{S_x} = 106.5\ psi$$

$$\sigma_{Compressive\_Top} = 106.5\ psi \quad < \quad F_a = 237.6\ psi \quad \text{==> OK}$$

Maximum Tensile Stress:

$$\sigma_{Tensile} := \left| \frac{0.6 \cdot W_{stack}}{A} - \frac{M_{wind\_total}}{S_x} \right| = 9.5\ psi$$

Allowable Tensile Stress:

$\sigma_{t\_max} := 24psi$ Table 2.2.3.2

$$\sigma_{Tensile} = 9.5\ psi \quad < \quad \sigma_{t\_max} = 24\ psi \quad \text{==> OK}$$

$$\frac{\sigma_{Tensile}}{\sigma_{t\_max}} = 39.7352 \cdot \%$$

Exhibit E

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11214D

Waterbury / Route 8_1
1669 Thomaston Ave.
Waterbury, CT 06074

June 14, 2016

EBI Project Number: 6216002333

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	4.89 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

June 14, 2016

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

Emissions Analysis for Site: **CT11214D – Waterbury / Route 8_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1669 Thomaston Ave., Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm^2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **1669 Thomaston Ave., Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (PCS Band - 1900 MHz)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

7) Since some radios are ground mounted there are additional cabling losses for all passive antennas which are accounted for in these calculations. For each passive RF path the following losses were calculated. 0.81 dB of additional cable loss for all 700 MHz Channels, 1.49 dB of additional cable loss for all passive 1900 MHz channels and 1.54 dB of additional cable loss for all passive 2100 MHz channels. This is based on manufacturers Specifications for 145 feet of 1-5/8" coax cable on each passive path.

8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antennas used in this modeling are the **Ericsson AIR32 B66Aa/B2A & RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66Aa/B2A** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 Mhz. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe at 1900 MHz and 2100 Mhz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

11) The antenna mounting height centerline of the proposed antennas is **132 feet** above ground level (AGL).

12) Emissions values for additional carriers (Sprint) were taken from a prior emissions analysis report for this site completed by EBI Consulting on May 20,2016 and based upon theoretical calculations for Sprint. This site was not listed in the Connecticut Siting Council emissions database.
**All calculations were done with respect to uncontrolled / general public threshold limits.

EBI Consulting
environmental | engineering | due diligence

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	132	Height (AGL):	132	Height (AGL):	132
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	2.11	Antenna B1 MPE%	2.11	Antenna C1 MPE%	2.11
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	132	Height (AGL):	132	Height (AGL):	132
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	5,427.65	ERP (W):	5,427.65	ERP (W):	5,427.65
Antenna A2 MPE%	1.23	Antenna B2 MPE%	1.23	Antenna C2 MPE%	1.23
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	132	Height (AGL):	132	Height (AGL):	132
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	717.99	ERP (W):	717.99	ERP (W):	717.99
Antenna A3 MPE%	0.35	Antenna B3 MPE%	0.35	Antenna C3 MPE%	0.35

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**3.69 %**
Sprint	1.20 %
Site Total MPE %:	**4.89 %**

T-Mobile Sector 1 Total:	3.69 %
T-Mobile Sector 2 Total:	3.69 %
T-Mobile Sector 3 Total:	3.69 %
Site Total:	4.89 %

T-Mobile _Max per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	**2**	**2334.27**	**132**	**10.57**	**1900**	**1000**	**1.06 %**
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**132**	**10.57**	**2100**	**1000**	**1.06 %**
T-Mobile 1900 MHz (PCS) GSM	**2**	**908.07**	**132**	**4.11**	**1900**	**1000**	**0.41 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**908.07**	**132**	**4.11**	**1900**	**1000**	**0.41 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**897.68**	**132**	**4.07**	**2100**	**1000**	**0.41 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**132**	**1.63**	**700**	**467**	**0.35 %**
						Total:*	**3.69 %**

***Note: Totals may be adjusted by .01% due to summing of remainders**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	3.69 %
Sector B:	3.69 %
Sector C:	3.69 %
T-Mobile Per Sector Maximum:	3.69 %
Site Total:	4.89 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.89%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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