Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Tel: 704-405-6600

www.crowncastle.com

March 21, 2014

Melanie A. Bachman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **Sprint PCS-Exempt Modification - Crown Site BU: 876312**
Sprint PCS Site ID: CT03XC011
Located at: 2755 State Street, Hamden, CT 06473

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of Sprint PCS (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their 2.5GHz LTE technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Scott D. Jackson, Mayor for the Town of Hamden.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **2755 State Street, Hamden, CT 06473**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the 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 tower. Sprint's additional antennas will be located at the same elevation on the existing tower.

2. There will be no proposed modifications to the ground and no extension of boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. A Structural Modification Report confirming that the tower and foundation can support Sprint's proposed modifications is included as Exhibit-2.

5. The operation of the additional antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for Sprint's modified facility is included as Exhibit-3.

For the foregoing reasons, Sprint respectfully submits the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Donna Neal.

Sincerely,

Jeff Barbadora
Real Estate Specialist

Enclosures

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Scott D. Jackson, Mayor
Town of Hamden
2750 Dixwell Avenue
Hamden, CT 06518

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	MONTOWESE AMODIO SELF STORE
SITE CASCADE:	CT03XC011
SITE NUMBER:	876312
SITE ADDRESS:	2755 STATE STREET HAMDEN, CT 06473
SITE TYPE:	SELF SUPPORT TOWER
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
GLOBAL SIGNAL ACQUISITIONS II LLC
CROWN CASTLE
200 CORPORATE DRIVE
CANONSBURG, PA 15317

LATITUDE (NAD83):
41° 21' 19.67" N
41.355464°

LONGITUDE (NAD83):
72° 53' 25.13" W
-72.890314°

COUNTY:
NEW HAVEN

ZONING JURISDICTION:
TOWN OF HAMDEN

ZONING DISTRICT:
TBD

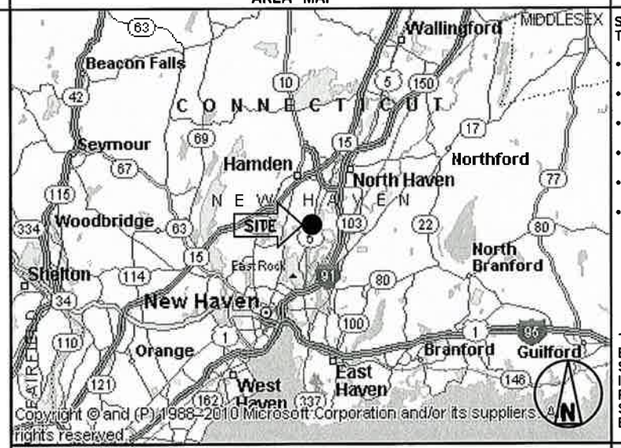
POWER COMPANY:
TBD

AAV PROVIDER:
TBD

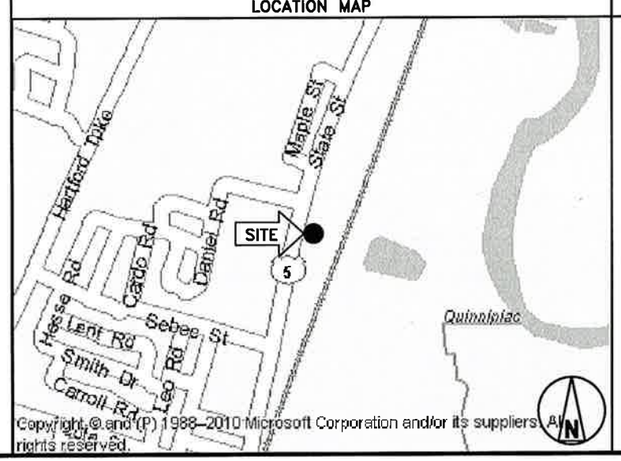
SPRINT CM:
GARY WOOD
GARY.WOOD@SPRINT.COM

CROWN CASTLE CM:
HARRY ATHAN
(518) 380-0041
HTAMANAGEMENT@NYCAP.RR.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (27) JUMPER CABLES
- INSTALL (1) HYBRID CABLE
- INSTALL (8) BATTERIES IN EXISTING BBU CABINET

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2012 IBC)
2. TIA-EIA-222-F OR LATEST EDITION
3. NFPA 780 -- LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

811 Know what's **below.** **Call** before you dig. www.call811.com

DRAWING INDEX

SHEET NO:	SHEET TITLE	REV
T-1	TITLE SHEET & PROJECT DATA	B
SP-1	SPRINT SPECIFICATIONS	B
SP-2	SPRINT SPECIFICATIONS	B
SP-2	SPRINT SPECIFICATIONS	B
A-1	SITE PLAN	B
A-2	TOWER ELEVATION & CABLE PLAN	B
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	B
A-4	COLOR CODING & NOTES	B
A-5	EQUIPMENT & MOUNTING DETAILS	B
A-6	CIVIL DETAILS	B
A-7	PLUMBING DIAGRAM	B
E-1	ELECTRICAL & GROUNDING PLAN	B
E-2	ELECTRICAL & GROUNDING DETAILS	B

PLANS PREPARED FOR:
Sprint
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Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
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ISSUED FOR REVIEW	1/10/14	AHS	A

SITE NAME:
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SITE CASCADE:
CT03XC011

SITE ADDRESS:
2755 STATE STREET
HAMDEN, CT 06473

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

TOWER OWNER NOTIFICATION
ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	2/20/14	MAP	B
ISSUED FOR REVIEW	1/10/14	AHS	A

SITE NAME:

MONTOWESE AMODIO SELF STORE

SITE CASCADE:

CT03XC011

SITE ADDRESS:

2755 STATE STREET
HAMDEN, CT 06473

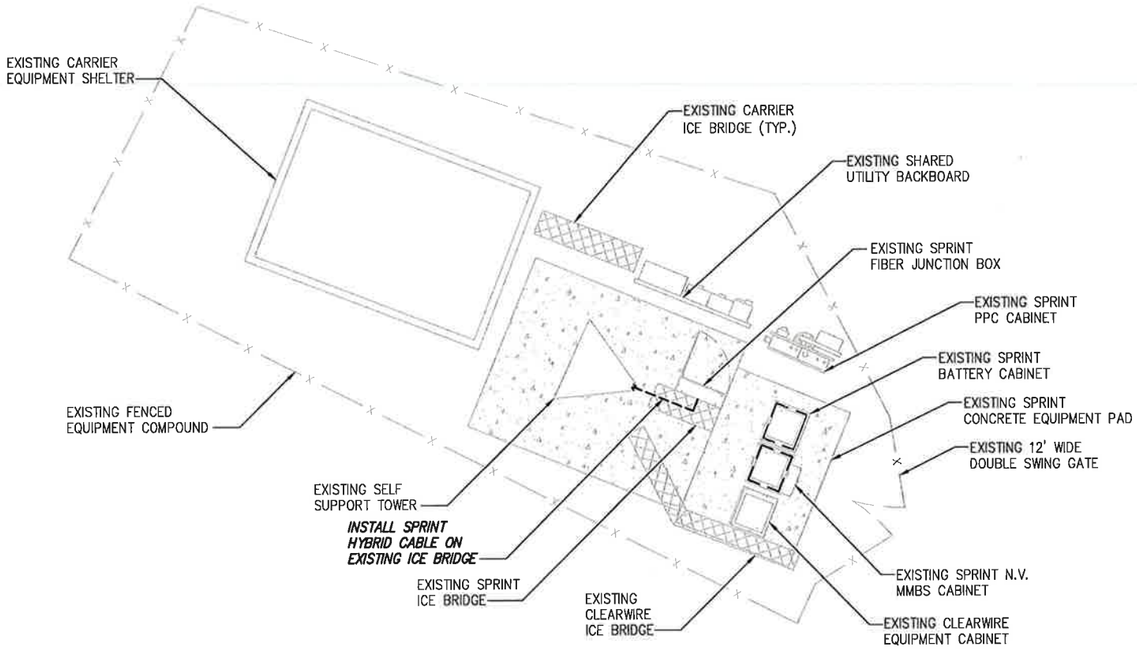
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

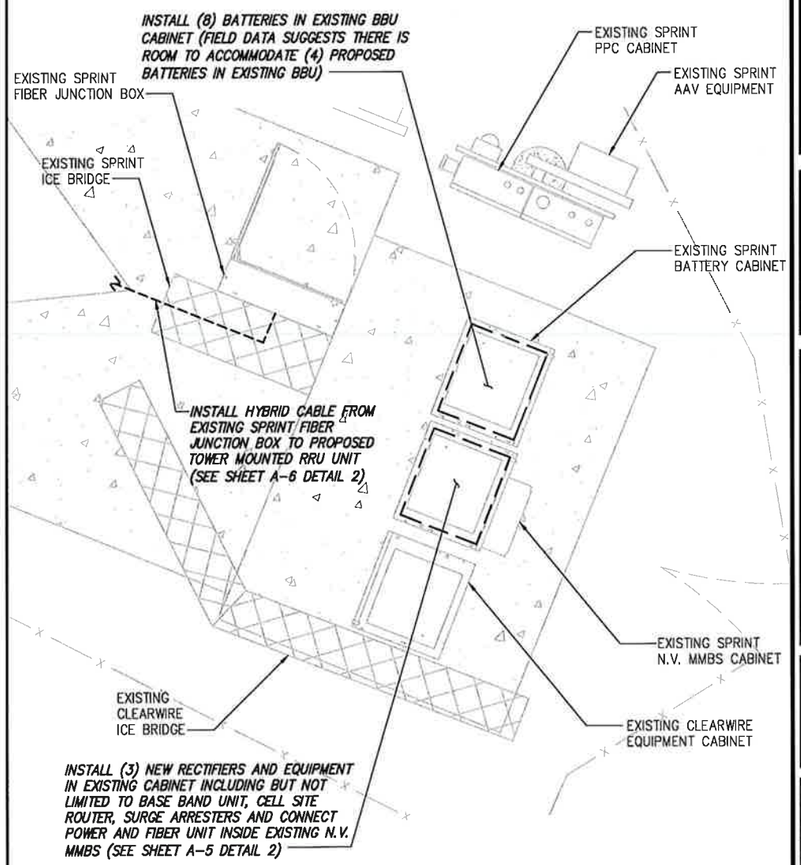
SHEET NUMBER:

SP-1

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.



OVERALL SITE PLAN | SCALE: AS NOTED | 1



SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

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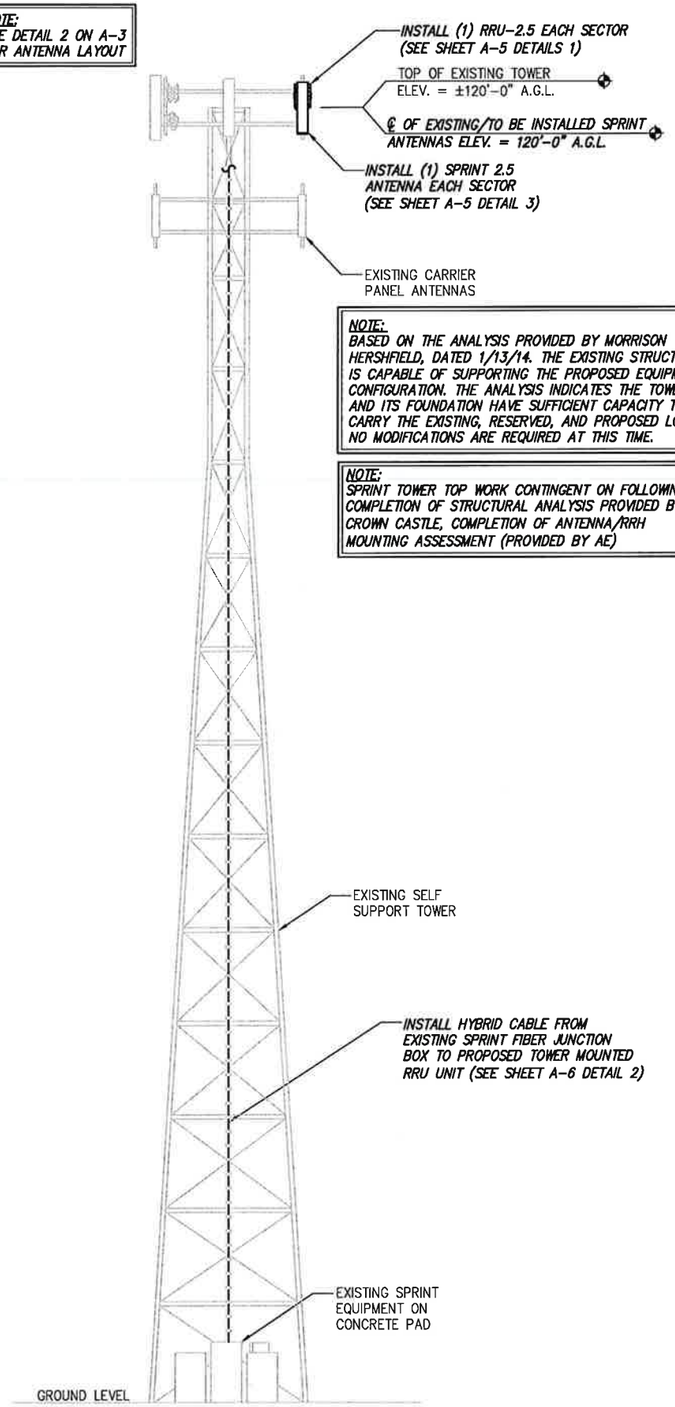
SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

NOTE:
SEE DETAIL 2 ON A-3
FOR ANTENNA LAYOUT



NOTE:
BASED ON THE ANALYSIS PROVIDED BY MORRISON HERSHFIELD, DATED 1/13/14. THE EXISTING STRUCTURE IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION. THE ANALYSIS INDICATES THE TOWER AND ITS FOUNDATION HAVE SUFFICIENT CAPACITY TO CARRY THE EXISTING, RESERVED, AND PROPOSED LOADS. NO MODIFICATIONS ARE REQUIRED AT THIS TIME.

NOTE:
SPRINT TOWER TOP WORK CONTINGENT ON FOLLOWING: COMPLETION OF STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, COMPLETION OF ANTENNA/RRH MOUNTING ASSESSMENT (PROVIDED BY AE)

TOWER ELEVATION | NO SCALE | 1

DETAIL NOT USED | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

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DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	2/20/14	MAP	B
ISSUED FOR REVIEW	1/10/14	AHS	A

SITE NAME:

MONTOWESE AMODIO SELF STORE

SITE CASCADE:

CT03XC011

SITE ADDRESS:

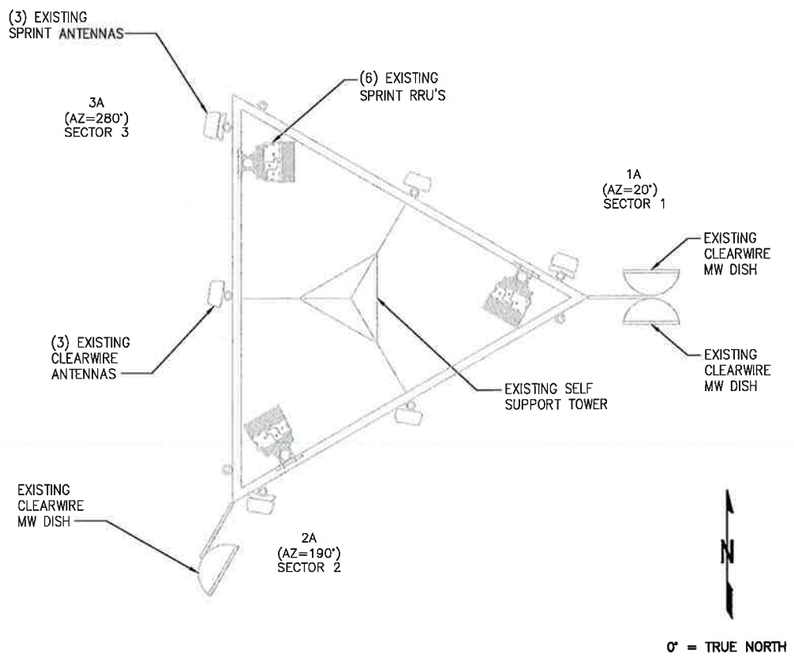
2755 STATE STREET
HAMDEN, CT 06473

SHEET DESCRIPTION:

TOWER ELEVATION & CABLE PLAN

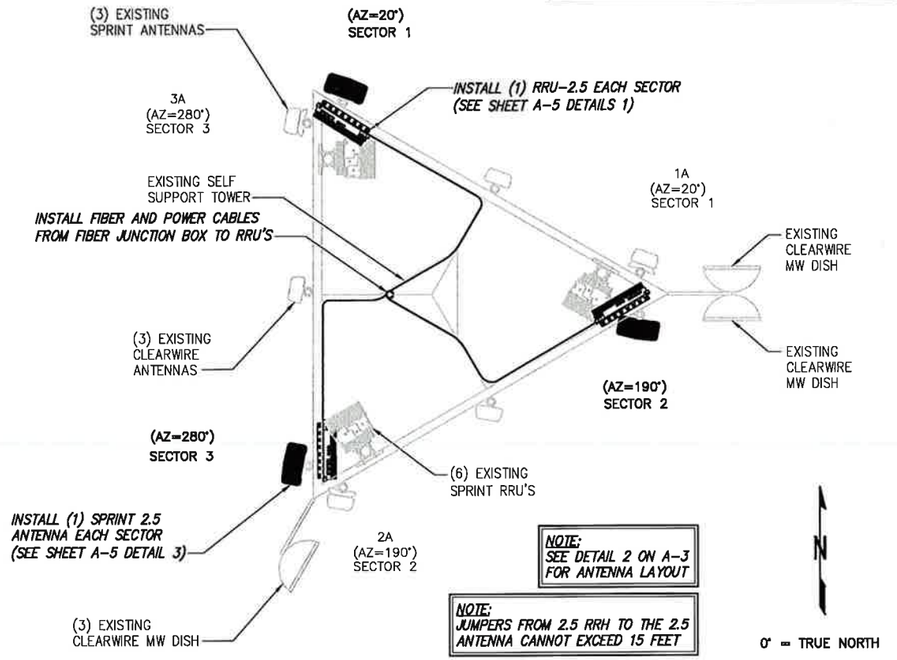
SHEET NUMBER:

A-2



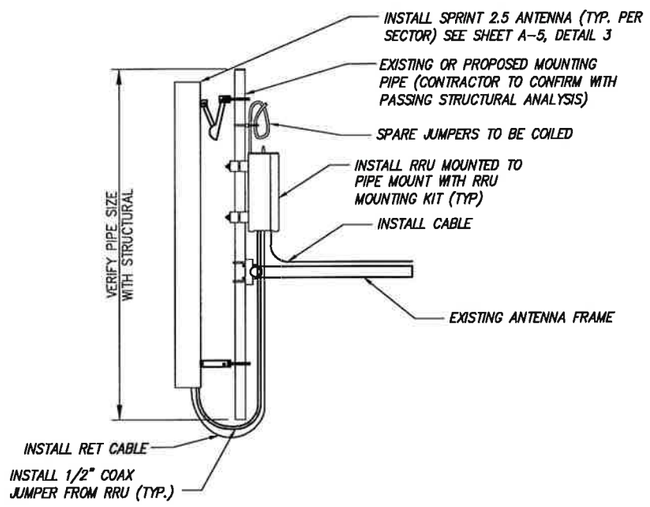
EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.



FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRU.
3. DO NO EXCEED BEND RADIUS.

NOTE: CONTRACTOR TO POSITION RRU ON MOUNT BEHIND ANTENNA SUCH THAT THE RRU DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: SPARE DC CABLES ARE COILED UP ON NV RRHS AT SPRINT ARRAY. THESE ARE TO BE USED TO POWER UP THE 2.5 RRHS AND TIED INTO EXISTING DC BREAKERS INSIDE THE FIBER JUNCTION BOX LOCATED AT EQUIPMENT.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRU MOUNTING DETAILS

TYPICAL ANTENNA & RRU MOUNTING DETAILS | NO SCALE | 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

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MONTOWESE AMODIO SELF STORE

SITE CASCADE:

CT03XC011

SITE ADDRESS:

2755 STATE STREET
HAMDEN, CT 06473

SHEET DESCRIPTION:

ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

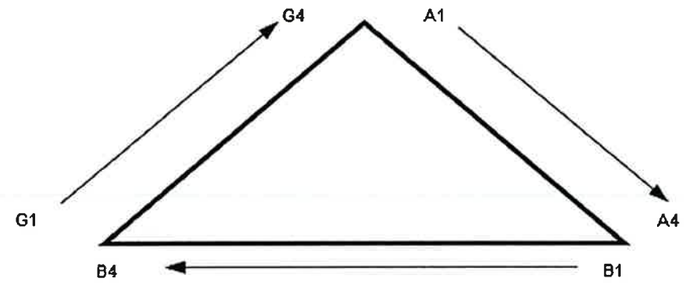
A-3

NV CABLES				
BAND	INDICATOR		PORT	COLOR
800-1	YEL	GRN	NV-1	GRN
1900-1	YEL	RED	NV-2	BLU
1900-2	YEL	BRN	NV-3	BRN
1900-3	YEL	BLU	NV-4	WHT
1900-4	YEL	SLT	NV-5	RED
800-2	YEL	ORG	NV-6	SLT
SPARE	YEL	WHT	NV-7	PPL
2500	YEL	PPL	NV-8	ORG

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band		
2500 Radio 1		COLOR
YEL	WHT	GRN
YEL	WHT	BLU
YEL	WHT	BRN
YEL	WHT	WHT
YEL	WHT	RED
YEL	WHT	SLT
YEL	WHT	PPL
YEL	WHT	ORG

Figure 1: Antenna Orientation



NOTES:

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.

2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER. THERE SHALL BE A 1" SPACE BETWEEN EACH RING FOR THE CABLE IDENTIFIER, AND NO SPACES BETWEEN THE FREQUENCY BANDS.

3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.

4. THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.

5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.

6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.

7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.

8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

Example – Sector 2, Cable 2, 800mhz Radio #1

Example – Sector 3, Cable 1, 1900mhz Radio #1

Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

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6580 Sprint Parkway
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Fax # (518) 690-0793
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MLA PARTNER:
CROWN CASTLE

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JOHN S. STEVENS
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CT03XC011

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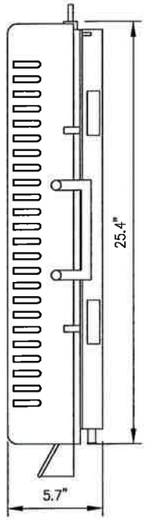
2755 STATE STREET
HAMDEN, CT 06473

SHEET DESCRIPTION:
COLOR CODING AND NOTES

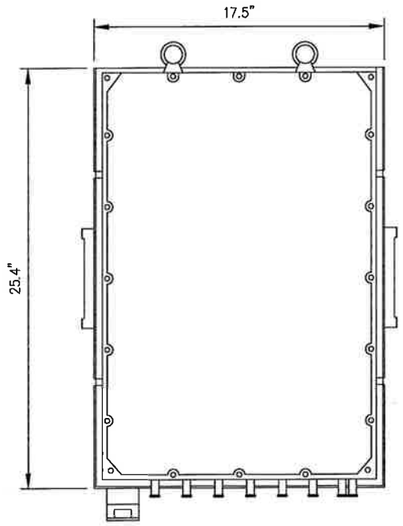
SHEET NUMBER:
A-4

RRU: ALCATEL LUCENT TD-RRH8X20

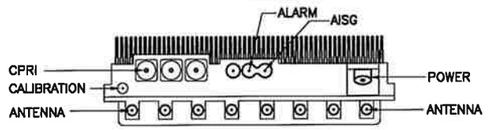
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

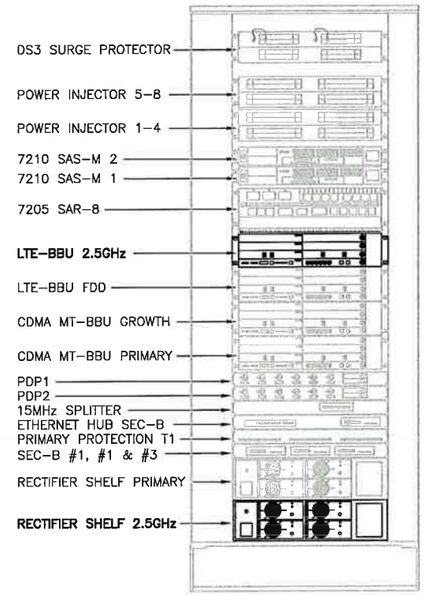


PLAN VIEW

NOTES

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRU'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRU PACKAGES IN THE RAIN.

2.5 RRU'S | NO SCALE | 1

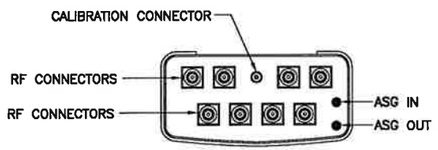


FRONT VIEW

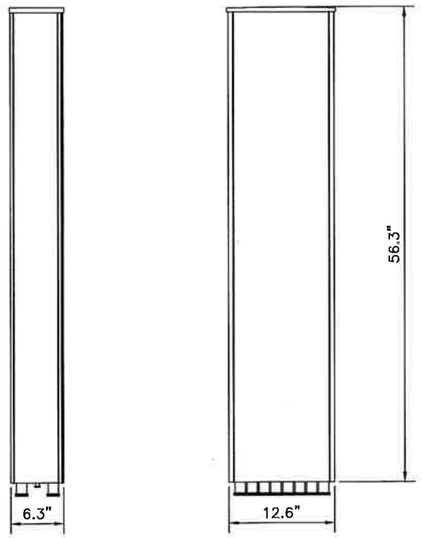
NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 2

ANTENNA: RFS APXVTM14-C-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD.in(mim):	56.3"x12.6"x6.3" (1430x320x160mm)
WEIGHT:	52.9 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW



2.5 ANTENNA | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

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CT03XC011

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2755 STATE STREET
HAMDEN, CT 06473

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5

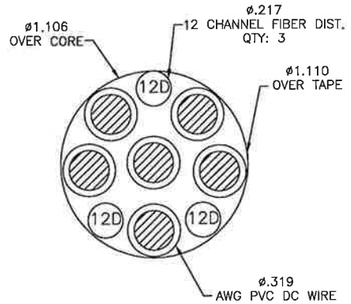
RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	**Hybrid cable** MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	**Hybrid cable** MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	**Hybrid cable** MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	**Hybrid cable** MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

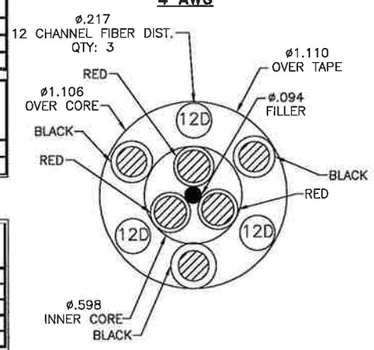
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	**Hybrid Jumper cable** MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	**Hybrid Jumper cable** MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

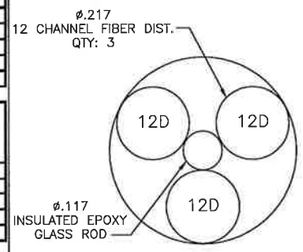
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG



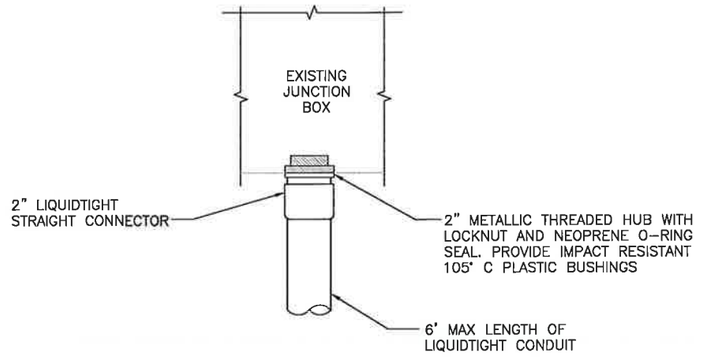
8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA

NO SCALE | 1



FIBER JUNCTION BOX PENETRATION

NO SCALE | 2

DETAIL NOT USED

NO SCALE | 3

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

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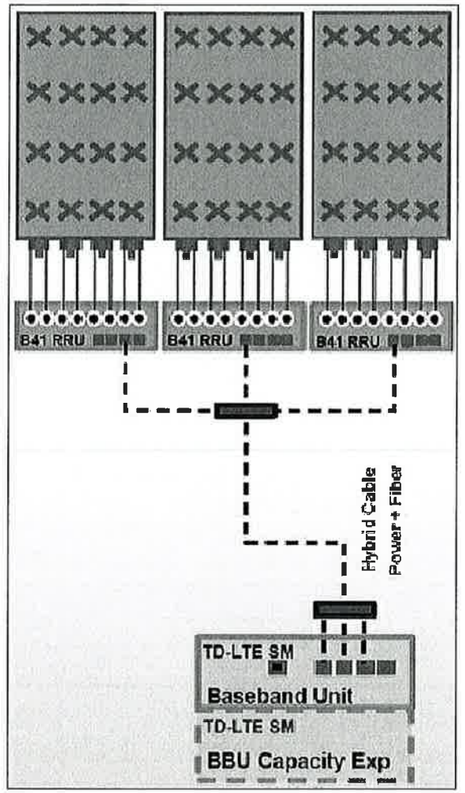
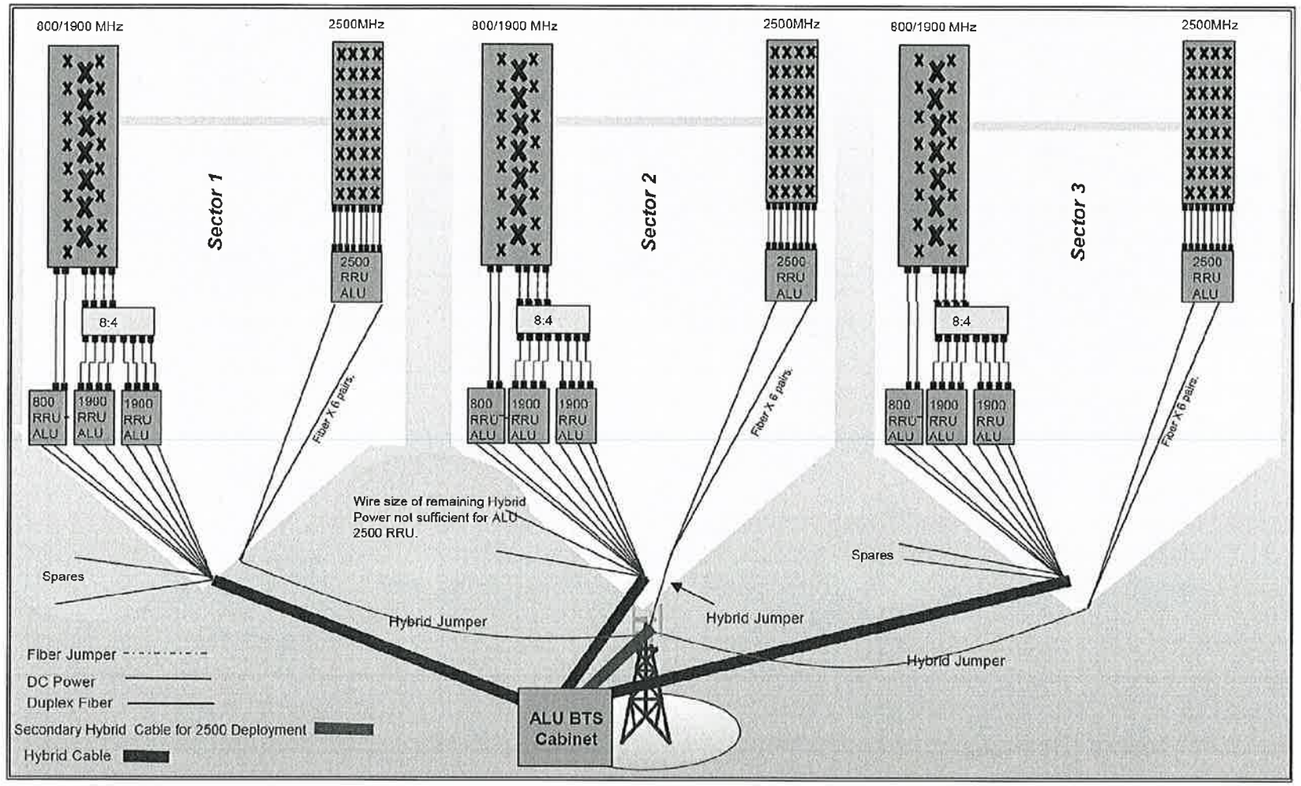
CIVIL DETAILS

SHEET NUMBER:

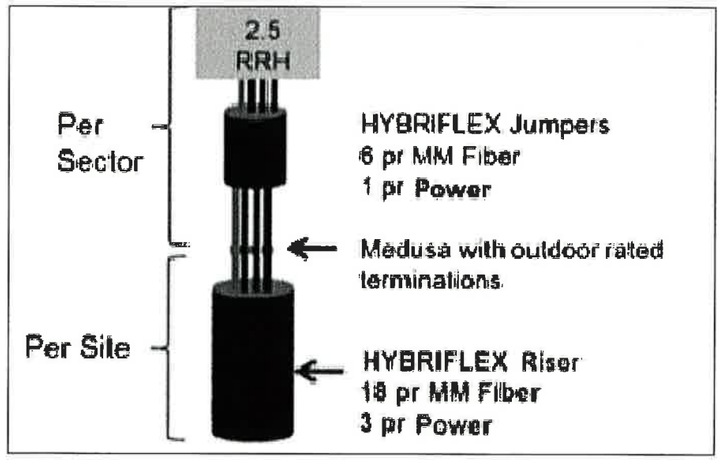
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM

NO SCALE

1

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Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

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SHEET DESCRIPTION:

PLUMBING DIAGRAM

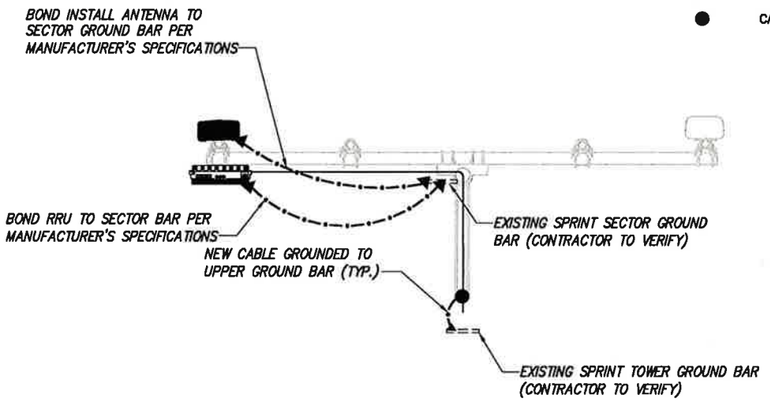
SHEET NUMBER:

A-7

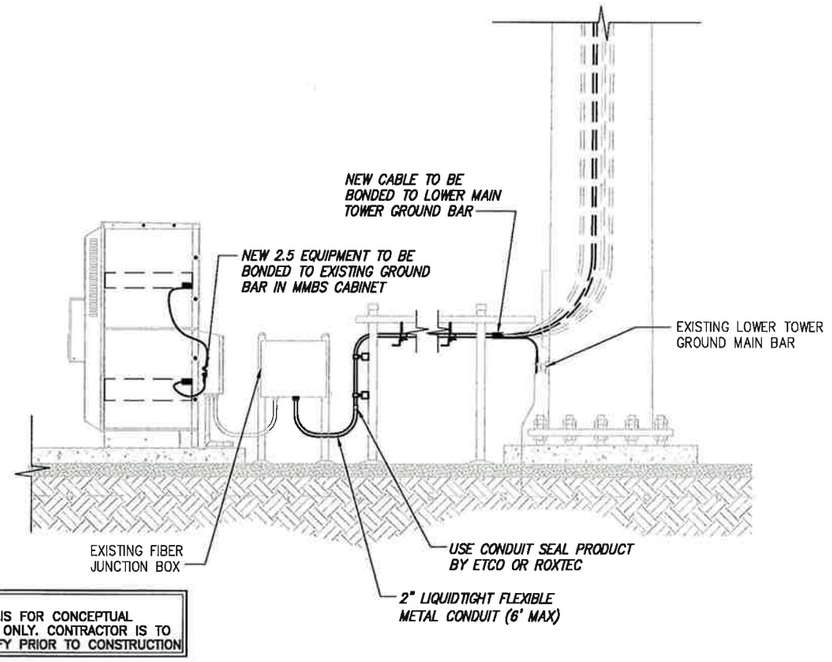
PLAN NOT USED | NO SCALE | 1

LEGEND:

—— G ——	EXISTING GROUND RING
■	CADWELD CONNECTION (EXOTHERMIC WELD)
▲	MECHANICAL CONNECTION
⊗	GROUND ROD
●	CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



NOTE:
DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) | NO SCALE | 3

PLANS PREPARED FOR:

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Overland Park, Kansas 66251

PLANS PREPARED BY:

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SITE ADDRESS:

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HAMDEN, CT 06473

SHEET DESCRIPTION:

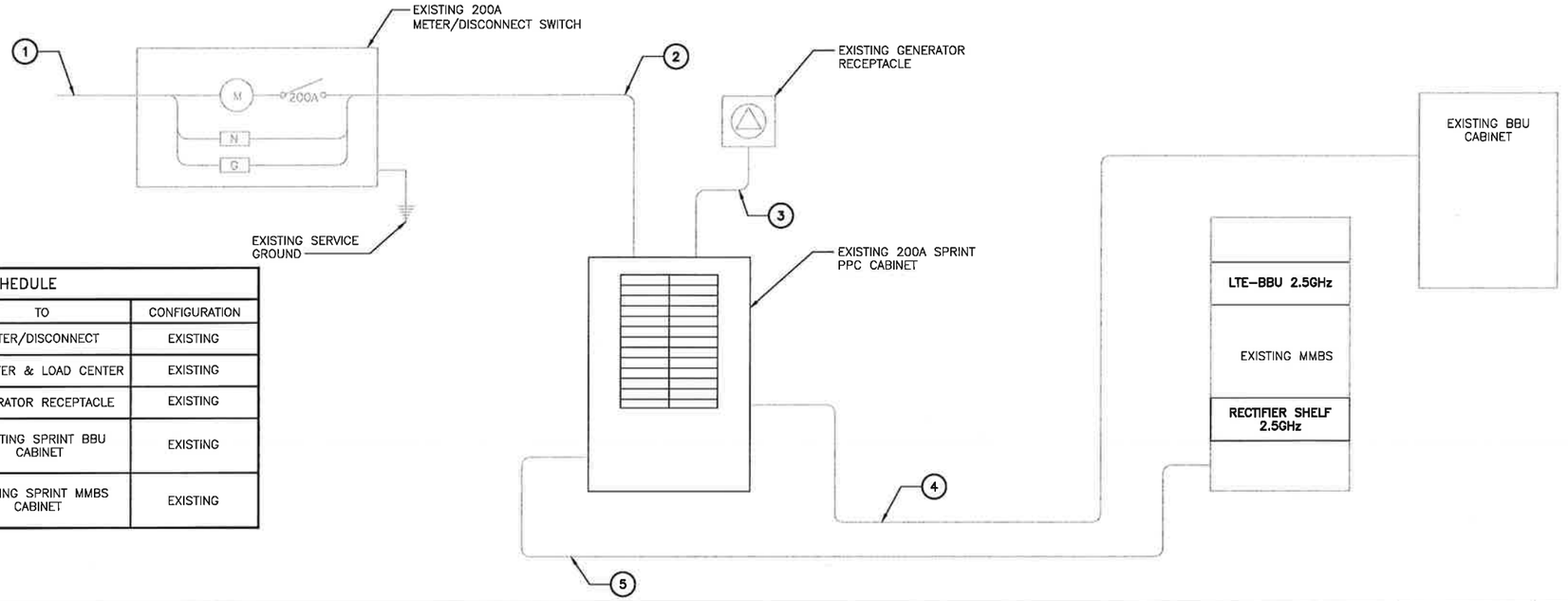
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

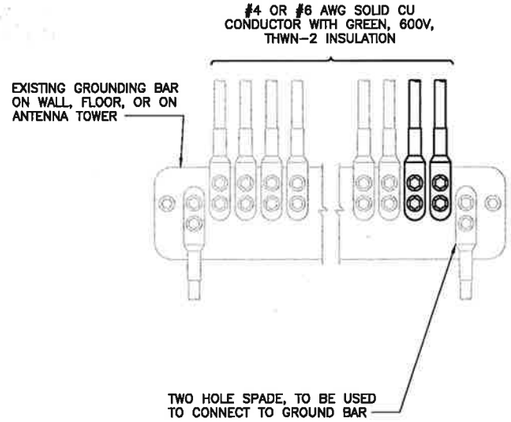
NOTES

CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

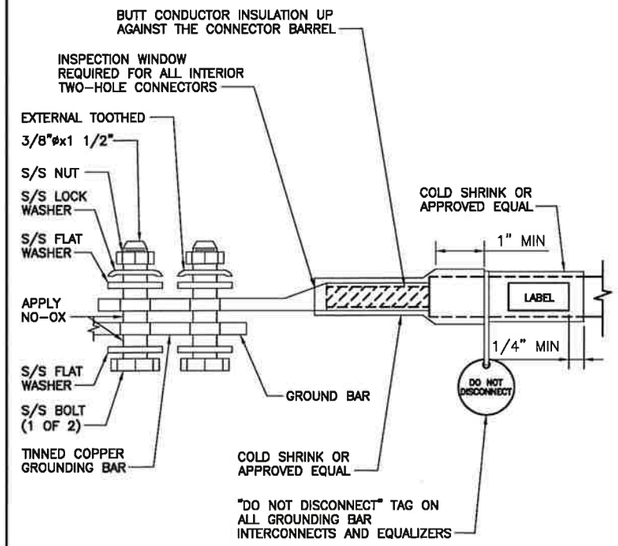
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



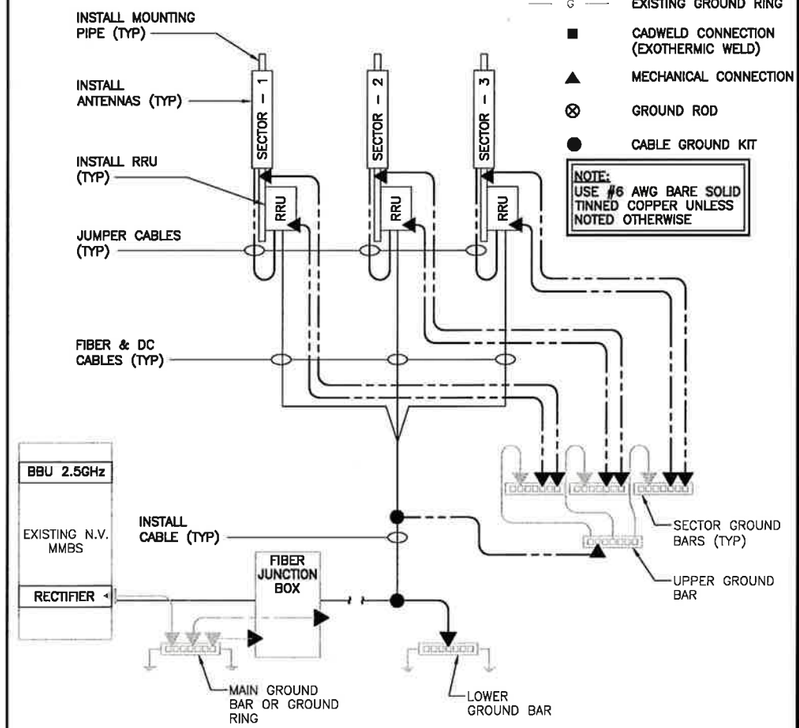
NOTES

1. APPLY NO–OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR — NO SCALE — 2



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

PLANS PREPARED FOR:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353–XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT · JOHN S. STEVENS · No. 24705 · LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	2/20/14	MAP	B
ISSUED FOR REVIEW	1/10/14	AHS	A

SITE NAME:

MONTOWESE AMODIO SELF STORE

SITE CASCADE:

CT03XC011

SITE ADDRESS:

2755 STATE STREET
HAMDEN, CT 06473

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

Date: **January 13, 2014**

MORRISON HERSHFIELD

Ms. Amber Puckett
Crown Castle
5350 North 48th Street Suite 305
Chandler, AZ 85226

Morrison Hershfield
1455 Lincoln Parkway
Atlanta, GA 30346
(770) 379-8500

Subject: Structural Analysis Report

Carrier Designation:	***Sprint PCS* Co-Locate**	Scenario 2.5B
	Carrier Site Number:	CT03XC011
	Carrier Site Name:	Montowese Amodio Self Storage
Crown Castle Designation:	**Crown Castle BU Number:**	876312
	Crown Castle Site Name:	Montowese Amodio Self Store
	Crown Castle JDE Job Number:	252025
	Crown Castle Work Order Number:	692984
	Crown Castle Application Number:	205510 Rev. 1
Engineering Firm Designation:	**Morrison Hershfield Project Number:**	CN3-350 / 614000101
Site Data:	**2755 State Street, Hamden, New Haven County, CT** **Latitude *41° 21' 19.67"*, Longitude *-72° 53' 25.13"*** **120 Foot - Self Support Tower**	

Dear Ms. Puckett,

Morrison Hershfield is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 605756, in accordance with application 205510, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Proposed Equipment for all applicants **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code with 2009 Amendments (IBC 2003) based upon a wind speed of 85 mph fastest mile.

We at *Morrison Hershfield* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

G. Lance Cooke, P.E (CT License No. PEN.0028133)
Senior Engineer

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1) INTRODUCTION

This tower is a 120 ft Self Support tower designed by Pirod Manufactures Inc. in November of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	120.0	3	Lucent	TD-RRH8x20-25	1	1-1/4"	1
		3	RFS	APXVTM14-C-I20 w/ pipe mount			

Notes:
1) The proposed equipment is to be installed in addition to the existing equipment.

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	122.0	3	Dragonwave	A-ANT-23G-2-C	3	1/2"	1
	120.0	3	-	2' Standoff Mount			
		1	-	Platform Mount (LP 405-1)			
		1	Lucent	1900 MHz RRH (65 MHz)			
		2	Lucent	1900 MHz RRH (65 MHz)	-	-	3
		3	RFS	ACU-A20-N			
		3	Lucent	800 MHz RRH			
		2	Powerwave	P40-16-XLPP-RR-A w/ pipe mount	6 3 2	5/16" 1-1/4" 2" Conduit	1
		6	RFS	ACU-A20-N			
		1	Lucent	800 MHz RRH			
		1	RFS	APXVSPP18-C-A20 w/ pipe mount			
	118.0	3	Argus	LLPX310R w/ pipe mount			
		3	Samsung	FDD-R6 RRH			
110.0	112.0	6	Powerwave	7770.00 w/ pipe mount	12	1-5/8"	1
	110.0	3	-	Sector Mount [SM 407-1]			
		6	Ericsson	RRUS-11	1 2	3/8" 3/4"	2
		3	KMW Communications	AM-X-CD-16-65-00T-RET w/ pipe mount			
		6	Powerwave	LGP21403	-	-	1
		1	Raycap	DC6-48-60-18-8F			2

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	100.0	3	-	Pipe Mount [PM 601-1]	6	1-5/8"	1
		3	RFS	APXV18-206517S-C w/ pipe mount			
40.0	40.0	1	Trimble	BULLET III	1	1/2"	1

Notes:
1) Existing Equipment
2) This equipment is reserved and has been considered in this analysis.
3) The existing equipment is to be removed and has not been considered in the calculations for this analysis.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120	120	1	Unknown	LP Platform	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E., P.C., dated 9/12/1996	1529742	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Pirod, Job # A-113604, dated 11/04/1997	1611716	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Pirod, Job # A-113604, dated 11/04/1997	1611638	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Associates, Job # 2008281.30, dated 11/10/2008	2486404	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) The tower and structures were built in accordance with the manufacturer's specifications and applicable ANSI/TIA/EIA standards.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The foundation was properly designed and constructed for the original design loads.

This analysis may be affected if any assumptions are not valid or have been made in error. Morrison Hershfield should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	120 - 110	Leg	1 1/2	2	-13.73	35.44	34.7	Pass
T2	110 - 90	Leg	1 3/4	38	-61.09	52.97	86.5	Pass
T3	90 - 70	Leg	2	102	-107.23	85.99	93.5	Pass
T4	70 - 50	Leg	2 1/2	204	-150.55	164.50	91.5	Pass
T5	50 - 40	Leg	Pirod 105245	268	-144.83	184.67	78.4	Pass
T6	40 - 20	Leg	Pirod 105217	277	-153.40	184.67	83.1	Pass
T7	20 - 0	Leg	Pirod 105217 Reinf w/ (2) 1-1/4" SR	292	-161.99	272.03	59.5	Pass
T1	120 - 110	Diagonal	5/8	14	-2.77	4.48	61.8	Pass
T2	110 - 90	Diagonal	3/4	50	-4.68	7.69	60.8	Pass
T3	90 - 70	Diagonal	7/8	198	-5.42	13.07	41.4	Pass
T4	70 - 50	Diagonal	7/8	266	-5.58	11.59	48.1	Pass
T5	50 - 40	Diagonal	L2 1/2x2 1/2x3/16	272	-5.43	12.05	45.0 60.0 (b)	Pass
T6	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	283	-2.12	9.51	22.3 24.1 (b)	Pass
T7	20 - 0	Diagonal	L2 1/2x2 1/2x3/16	298	-3.31	7.29	45.4	Pass
T1	120 - 110	Horizontal	5/8	30	-0.15	1.86	8.3	Pass
T2	110 - 90	Horizontal	3/4	59	-0.91	3.16	28.8	Pass
T3	90 - 70	Horizontal	7/8	188	-1.81	5.31	34.0	Pass
T4	70 - 50	Horizontal	7/8	260	-1.66	4.26	39.0	Pass
T3	90 - 70	Secondary Horizontal	1 1/4	120	-1.86	18.39	10.1	Pass
T1	120 - 110	Top Girt	3/4	5	-0.74	3.85	19.2	Pass
T2	110 - 90	Top Girt	7/8	41	-1.70	7.14	23.8	Pass
T3	90 - 70	Top Girt	1	105	-0.93	9.34	10.0	Pass
T4	70 - 50	Top Girt	1	207	-1.43	7.46	19.2	Pass
T1	120 - 110	Bottom Girt	3/4	9	-0.94	3.85	24.3	Pass
T2	110 - 90	Bottom Girt	7/8	45	-2.37	5.51	43.0	Pass
T3	90 - 70	Bottom Girt	1	107	-2.32	7.43	31.2	Pass
T4	70 - 50	Bottom Girt	1	209	-1.64	6.07	27.1	Pass
							Summary	
						Leg (T3)	93.5	Pass
						Diagonal (T1)	61.8	Pass
						Horizontal (T4)	39.0	Pass
						Secondary Horizontal (T3)	10.1	Pass
						Top Girt (T2)	23.8	Pass
						Bottom Girt (T2)	43.0	Pass
						Bolt Checks	80.6	Pass
						Rating =	91.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	47.0	Pass
1	Base Foundation	0	58.9	Pass

Structure Rating (max from all components) =	93.5%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

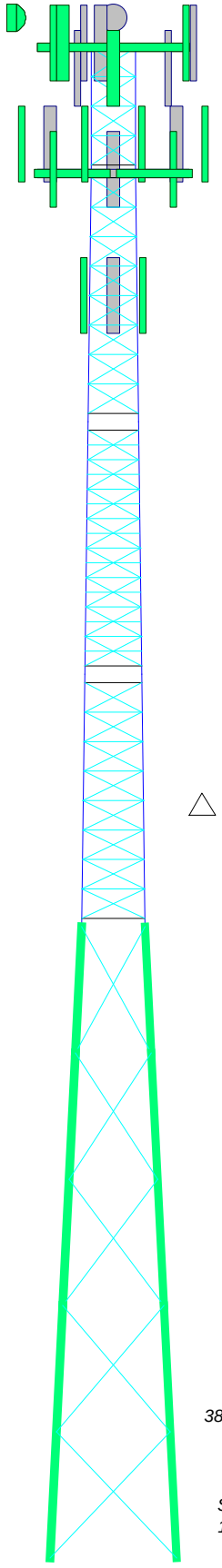
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7
Legs	SR 1 1/2	SR 1 3/4	SR 2	SR 2 1/2	Pirod 105245	Pirod 105217	Pirod 105217 Reinf w/ (2) 1-1/4" SR
Leg Grade	A572-50						
Diagonals	SR 5/8	SR 3/4	SR 7/8		L2 1/2x2 1/2x3/16		
Diagonal Grade	A572-50				A36		
Top Girts	SR 3/4	SR 7/8	SR 1		N.A.		
Bottom Girts	SR 3/4	SR 7/8	SR 1		N.A.		
Horizontals	SR 5/8	SR 3/4	SR 7/8		N.A.		
Sec. Horizontals		N.A.	SR 1 1/4		N.A.		
Face Width (ft)	3.5		4	4.5	5	6	8
# Panels @ (ft)	31 @ 2.33333					5 @ 10	
Weight (K)	0.3	0.9	1.8	1.7	1.2	2.1	2.8



MAX. CORNER REACTIONS AT BASE:
DOWN: 166 K
SHEAR: 13 K

UPLIFT: -149 K
SHEAR: 11 K

AXIAL
43 K
SHEAR 6 K
MOMENT 498 kip-ft

TORQUE 1 kip-ft
38 mph WIND - 0.7500 in ICE

AXIAL
22 K
SHEAR 17 K
MOMENT 1375 kip-ft

TORQUE 4 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount (LP 405-1)	120	(2) 7770.00 w/ pipe mount	110
LLPX310R w/ pipe mount	120	(2) 7770.00 w/ pipe mount	110
LLPX310R w/ pipe mount	120	(2) LGP21403	110
LLPX310R w/ pipe mount	120	(2) LGP21403	110
FDD-R6 RRH	120	(2) LGP21403	110
FDD-R6 RRH	120	AM-X-CD-16-65-00T-RET w/ pipe mount	110
FDD-R6 RRH	120	AM-X-CD-16-65-00T-RET w/ pipe mount	110
APXVSPP18-C-A20 w/ pipe mount	120	AM-X-CD-16-65-00T-RET w/ pipe mount	110
(3) ACU-A20-N	120	(2) RRUS-11	110
800 MHz RRH	120	(2) RRUS-11	110
P40-16-XLPP-RR-A w/ pipe mount	120	(2) RRUS-11	110
P40-16-XLPP-RR-A w/ pipe mount	120	DC6-48-60-18-8F	110
1900 MHz RRH (65 MHz)	120	Sector Mount [SM 407-1]	110
(3) ACU-A20-N	120	Sector Mount [SM 407-1]	110
2' Standoff Mount	120	Sector Mount [SM 407-1]	110
(2) 2' Standoff Mount	120	APXV18-206517S-C w/ pipe mount	100
APXVTM14-C-I20 w/ pipe mount	120	APXV18-206517S-C w/ pipe mount	100
APXVTM14-C-I20 w/ pipe mount	120	APXV18-206517S-C w/ pipe mount	100
APXVTM14-C-I20 w/ pipe mount	120	Pipe Mount [PM 601-1]	100
TD-RRH8x20-25	120	Pipe Mount [PM 601-1]	100
TD-RRH8x20-25	120	Pipe Mount [PM 601-1]	100
TD-RRH8x20-25	120	BULLET III	40
A-ANT-23G-2-C	120		
A-ANT-23G-2-C	120		
A-ANT-23G-2-C	120		
(2) 7770.00 w/ pipe mount	110		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

Morrison Hershfield
Consulting Engineers
1455 Lincoln Parkway
Atlanta, GA 30346
Phone: (770) 379-8500
FAX: (770) 379-8501

Job: CN3-350 / 614000101			
Project: 876312 / Montowese Amodio Self Store			
Client: Crown Castle USA	Drawn by: cmackay	App'd:	
Code: TIA/EIA-222-F	Date: 01/13/14	Scale: NTS	
Path: P:\Projects\Tower Projects\Crown Analyses-3\CN3-350 - 876312 - MONTOWESE AMODIO SELF STORE\CN3-350 SA\Analysis\CN3-350.eri		Dwg No. E-1	

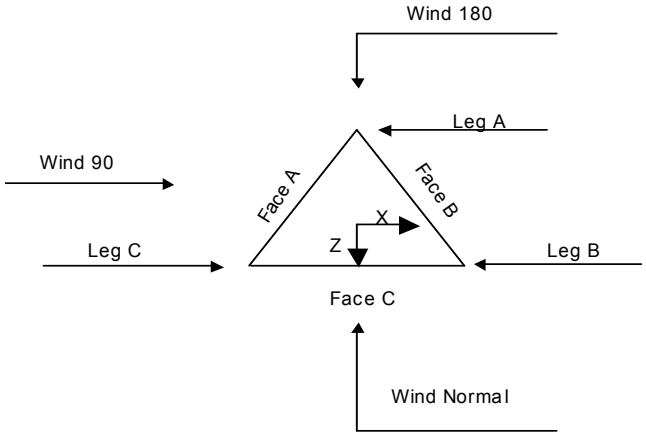
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 10.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

2) Tower is located in New Haven County, Connecticut.
3) Basic wind speed of 85 mph.
4) Nominal ice thickness of 0.7500 in.
5) Ice thickness is considered to increase with height.
6) Ice density of 56 pcf.
7) A wind speed of 38 mph is used in combination with ice.
8) Temperature drop of 50 °F.
9) Deflections calculated using a wind speed of 50 mph.
10) A non-linear (P-delta) analysis was used.
11) Pressures are calculated at each section.
12) Stress ratio used in tower member design is 1.333.
13) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate	√	Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension	√	All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.	√	Include Angle Block Shear Check
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section	√	SR Members Have Cut Ends		Include Shear-Torsion Interaction
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice		
			Capacity Exemption		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	120.00-110.00			3.50	1	10.00
T2	110.00-90.00			3.50	1	20.00
T3	90.00-70.00			4.00	1	20.00
T4	70.00-50.00			4.50	1	20.00
T5	50.00-40.00			5.00	1	10.00
T6	40.00-20.00			6.00	1	20.00
T7	20.00-0.00			8.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	120.00-110.00	2.33	X Brace	No	Steps	4.0000	4.0000
T2	110.00-90.00	2.33	X Brace	No	Steps	8.0000	8.0000
T3	90.00-70.00	2.33	X Brace	No	Yes	8.0000	8.0000
T4	70.00-50.00	2.33	X Brace	No	Steps	8.0000	8.0000
T5	50.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T6	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T7	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 120.00-	Solid Round	1 1/2	A572-50	Solid Round	5/8	A572-50

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
110.00			(50 ksi)			(50 ksi)
T2 110.00-90.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T3 90.00-70.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 70.00-50.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 50.00-40.00	Truss Leg	Pirod 105245	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 40.00-20.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 20.00-0.00	Truss Leg	Pirod 105217 Reinf w/ (2) 1-1/4" SR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 120.00-110.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 110.00-90.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 90.00-70.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T4 70.00-50.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 120.00-110.00	None	Flat Bar		A36 (36 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T2 110.00-90.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T3 90.00-70.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 70.00-50.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T3 90.00-70.00	Solid Round	1 1/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 110.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 90.00-70.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 70.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1.107	1.06	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 120.00-110.00	No	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T2 110.00-90.00	No	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T3 90.00-70.00	No	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T4 70.00-50.00	No	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T5 50.00-40.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T6 40.00-20.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T7 20.00-0.00	Yes	Yes	1.279	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
Tower Elevation ft	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T5 50.00-40.00	1	1	1	1	0.5	0.85
T6 40.00-20.00	1	1	1	1	0.5	0.85
T7 20.00-0.00	1	1	1	1	0.5	0.85

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 120.00-110.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 110.00-90.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 90.00-70.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 70.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 120.00-110.00	Sleeve DS	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 110.00-90.00	Sleeve DS	0.6250 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 90.00-70.00	Sleeve DS	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 70.00-50.00	Flange	1.0000 A325N	6	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 50.00-40.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 40.00-20.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 20.00-0.00	Flange	1.0000 A687	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8"	C	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	-0.5	1	1	0.3750	0.3750		0.22
1-5/8"	A	Yes	Ar (CfAe)	110.00 - 6.00	-6.0000	-0.4	12	6	0.5000	1.9800		1.04
Fiber (3/8")	A	Yes	Ar (CfAe)	110.00 - 6.00	-6.0000	-0.405	1	1	0.3250	0.3250		0.12
Power Cable (3/4")	A	Yes	Ar (CfAe)	110.00 - 6.00	-6.0000	-0.41	2	2	0.7500	0.7500		0.88
Feedline Ladder (Af) ******	A	Yes	Af (CfAe)	110.00 - 6.00	-6.0000	-0.415	1	1	3.0000	3.0000	12.0000	8.40
1-5/8"	C	Yes	Ar (CfAe)	100.00 - 6.00	-3.0000	-0.4	6	6	0.5000	1.9800		1.04
Feedline Ladder (Af)	C	Yes	Af (CfAe)	100.00 - 6.00	-3.5000	-0.41	1	1	3.0000	3.0000	12.0000	8.40

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
******												
Feedline Ladder (Af)	B	Yes	Af (CfAe)	120.00 - 6.00	-3.5000	-0.41	1	1	3.0000	3.0000	12.0000	8.40
1-1/4"	B	Yes	Ar (CfAe)	120.00 - 6.00	-3.5000	-0.41	3	3	1.5500	1.5500		0.66
1-1/4"	B	Yes	Ar (CfAe)	120.00 - 6.00	-3.5000	-0.41	1	1	1.5500	1.5500		0.66
1/2"	B	No	Ar (CfAe)	40.00 - 6.00	-3.5000	-0.41	1	1	0.5800	0.5800		0.25
1/2"	B	No	Ar (CfAe)	120.00 - 6.00	-3.5000	-0.41	3	3	0.5800	0.5800		0.25
5/16"	B	No	Ar (CfAe)	120.00 - 6.00	-3.5000	-0.41	6	6	0.0000	0.0000		0.03
2" Conduit	B	No	Ar (CfAe)	120.00 - 6.00	-3.5000	-0.41	2	2	2.0000	2.0000		2.80

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	120.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	9.950	2.500	0.000	0.000	0.18
		C	0.313	0.000	0.000	0.000	0.00
T2	110.00-90.00	A	22.842	5.000	0.000	0.000	0.46
		B	19.900	5.000	0.000	0.000	0.35
		C	10.525	2.500	0.000	0.000	0.15
T3	90.00-70.00	A	22.842	5.000	0.000	0.000	0.46
		B	19.900	5.000	0.000	0.000	0.35
		C	20.425	5.000	0.000	0.000	0.30
T4	70.00-50.00	A	22.842	5.000	0.000	0.000	0.46
		B	19.900	5.000	0.000	0.000	0.35
		C	20.425	5.000	0.000	0.000	0.30
T5	50.00-40.00	A	11.421	2.500	0.000	0.000	0.23
		B	9.950	2.500	0.000	0.000	0.18
		C	10.213	2.500	0.000	0.000	0.15
T6	40.00-20.00	A	22.842	5.000	0.000	0.000	0.46
		B	20.867	5.000	0.000	0.000	0.36
		C	20.425	5.000	0.000	0.000	0.30
T7	20.00-0.00	A	15.989	3.500	0.000	0.000	0.32
		B	14.607	3.500	0.000	0.000	0.25
		C	14.298	3.500	0.000	0.000	0.21

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	120.00-110.00	A	0.871	0.000	0.000	0.000	0.000	0.00
		B		15.112	10.568	0.000	0.000	0.45
		C		1.765	0.000	0.000	0.000	0.02
T2	110.00-90.00	A	0.857	13.659	30.070	0.000	0.000	1.10
		B		29.934	21.104	0.000	0.000	0.89
		C		6.559	13.785	0.000	0.000	0.38
T3	90.00-70.00	A	0.834	13.433	30.020	0.000	0.000	1.09
		B		29.482	21.054	0.000	0.000	0.87
		C		9.486	27.520	0.000	0.000	0.71
T4	70.00-50.00	A	0.806	13.149	29.957	0.000	0.000	1.07
		B		28.916	20.991	0.000	0.000	0.85
		C		9.297	27.457	0.000	0.000	0.70
T5	50.00-40.00	A	0.778	6.438	14.948	0.000	0.000	0.53
		B		14.184	10.465	0.000	0.000	0.42
		C		4.557	13.698	0.000	0.000	0.34
T6	40.00-20.00	A	0.750	12.592	29.833	0.000	0.000	1.04
		B		41.433	10.533	0.000	0.000	0.81
		C		8.925	27.333	0.000	0.000	0.67
T7	20.00-0.00	A	0.750	8.814	20.883	0.000	0.000	0.73

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		29.003	7.373	0.000	0.000	0.57
		C		6.247	19.133	0.000	0.000	0.47

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	120.00-110.00	A	0.000	0.000	0.000	0.000
		B	0.480	3.377	0.000	0.000
		C	0.024	0.512	0.000	0.000
T2	110.00-90.00	A	1.843	9.610	0.000	0.000
		B	1.015	6.252	0.000	0.000
		C	1.147	5.974	0.000	0.000
T3	90.00-70.00	A	3.956	17.182	0.000	0.000
		B	2.179	11.166	0.000	0.000
		C	3.613	14.686	0.000	0.000
T4	70.00-50.00	A	2.042	9.086	0.000	0.000
		B	1.125	5.897	0.000	0.000
		C	2.514	10.505	0.000	0.000
T5	50.00-40.00	A	0.000	1.174	1.202	1.884
		B	0.000	0.761	0.662	1.221
		C	0.000	1.005	1.098	1.614
T6	40.00-20.00	A	0.000	1.892	2.030	3.154
		B	0.000	1.218	1.118	2.029
		C	0.000	1.623	1.854	2.704
T7	20.00-0.00	A	0.000	1.134	1.216	1.889
		B	0.000	0.729	0.670	1.216
		C	0.000	0.972	1.111	1.620

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	120.00-110.00	-0.6444	-8.3042	-0.0770	-4.4198
T2	110.00-90.00	-2.2018	-0.5495	-1.0871	-1.4119
T3	90.00-70.00	-0.0690	0.2167	0.0750	-1.0954
T4	70.00-50.00	-0.2456	0.3343	-0.2602	-1.1312
T5	50.00-40.00	-0.1369	0.2607	0.0127	-0.6463
T6	40.00-20.00	-0.2364	0.0865	-0.0033	-1.8779
T7	20.00-0.00	-0.2568	0.0658	-0.0038	-1.6063

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount (LP 405-1)	C	None		0.0000	120.00	No Ice	20.80	20.80	1.80
						1/2" Ice	28.09	28.09	2.07
						1" Ice	35.38	35.38	2.33
							49.96	49.96	2.86

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
						2" Ice	79.12	79.12	3.93
						4" Ice			
LLPX310R w/ pipe mount	A	From Face	4.00	0.0000	120.00	No Ice	5.24	3.29	0.06
			3.00			1/2"	5.68	3.86	0.10
			-2.00			Ice	6.14	4.45	0.15
						1" Ice	7.08	5.74	0.26
						2" Ice	9.14	8.67	0.59
						4" Ice			
LLPX310R w/ pipe mount	B	From Face	4.00	0.0000	120.00	No Ice	5.24	3.29	0.06
			0.00			1/2"	5.68	3.86	0.10
			-2.00			Ice	6.14	4.45	0.15
						1" Ice	7.08	5.74	0.26
						2" Ice	9.14	8.67	0.59
						4" Ice			
LLPX310R w/ pipe mount	C	From Face	4.00	0.0000	120.00	No Ice	5.24	3.29	0.06
			0.00			1/2"	5.68	3.86	0.10
			-2.00			Ice	6.14	4.45	0.15
						1" Ice	7.08	5.74	0.26
						2" Ice	9.14	8.67	0.59
						4" Ice			
FDD-R6 RRH	A	From Face	3.75	0.0000	120.00	No Ice	1.80	0.78	0.03
			3.00			1/2"	1.99	0.92	0.04
			-2.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
FDD-R6 RRH	B	From Face	3.75	0.0000	120.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			-2.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
FDD-R6 RRH	C	From Face	3.75	0.0000	120.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			-2.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
APXVSPP18-C-A20 w/ pipe mount	A	From Face	4.00	0.0000	120.00	No Ice	8.50	6.95	0.09
			4.00			1/2"	9.15	8.13	0.16
			0.00			Ice	9.77	9.02	0.23
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.92
						4" Ice			
(3) ACU-A20-N	A	From Face	3.75	0.0000	120.00	No Ice	0.14	0.08	0.00
			4.00			1/2"	0.19	0.12	0.00
			0.00			Ice	0.25	0.17	0.00
						1" Ice	0.40	0.30	0.01
						2" Ice	0.80	0.67	0.04
						4" Ice			
800 MHz RRH	A	From Face	3.75	0.0000	120.00	No Ice	2.49	2.91	0.07
			4.00			1/2"	2.71	3.14	0.09
			0.00			Ice	2.93	3.38	0.12
						1" Ice	3.41	3.89	0.19
						2" Ice	4.46	5.00	0.38
						4" Ice			
P40-16-XLPP-RR-A w/ pipe mount	B	From Face	4.00	0.0000	120.00	No Ice	9.49	4.94	0.09
			4.00			1/2"	10.08	5.79	0.15
			0.00			Ice	10.65	6.51	0.22
						1" Ice	11.82	8.11	0.39
						2" Ice	14.29	11.53	0.84
						4" Ice			
P40-16-XLPP-RR-A w/ pipe mount	C	From Face	4.00	0.0000	120.00	No Ice	9.49	4.94	0.09
			4.00			1/2"	10.08	5.79	0.15
			0.00			Ice	10.65	6.51	0.22

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
						1" Ice	11.82	8.11	0.39
						2" Ice	14.29	11.53	0.84
						4" Ice			
1900 MHz RRH (65 MHz)	C	From Face	3.75	0.0000	120.00	No Ice	2.71	2.61	0.06
			4.00			1/2"	2.95	2.85	0.08
			0.00			Ice	3.20	3.10	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.75	0.35
						4" Ice			
(3) ACU-A20-N	C	From Face	3.75	0.0000	120.00	No Ice	0.14	0.08	0.00
			4.00			1/2"	0.19	0.12	0.00
			0.00			Ice	0.25	0.17	0.00
						1" Ice	0.40	0.30	0.01
						2" Ice	0.80	0.67	0.04
						4" Ice			
2' Standoff Mount	A	From Leg	5.00	0.0000	120.00	No Ice	0.94	1.41	0.03
			0.00			1/2"	1.48	2.17	0.04
			0.00			Ice	2.02	2.93	0.06
						1" Ice	3.10	4.45	0.08
						2" Ice	5.26	7.49	0.14
						4" Ice			
(2) 2' Standoff Mount	C	From Leg	5.00	0.0000	120.00	No Ice	0.94	1.41	0.03
			0.00			1/2"	1.48	2.17	0.04
			0.00			Ice	2.02	2.93	0.06
						1" Ice	3.10	4.45	0.08
						2" Ice	5.26	7.49	0.14
						4" Ice			
APXVTM14-C-I20 w/ pipe mount	A	From Leg	4.00	0.0000	120.00	No Ice	7.21	5.03	0.09
			-1.00			1/2"	7.77	5.89	0.15
			0.00			Ice	8.31	6.63	0.21
						1" Ice	9.42	8.20	0.36
						2" Ice	11.77	11.67	0.78
						4" Ice			
APXVTM14-C-I20 w/ pipe mount	B	From Leg	4.00	0.0000	120.00	No Ice	7.21	5.03	0.09
			-1.00			1/2"	7.77	5.89	0.15
			0.00			Ice	8.31	6.63	0.21
						1" Ice	9.42	8.20	0.36
						2" Ice	11.77	11.67	0.78
						4" Ice			
APXVTM14-C-I20 w/ pipe mount	C	From Leg	4.00	0.0000	120.00	No Ice	7.21	5.03	0.09
			-1.00			1/2"	7.77	5.89	0.15
			0.00			Ice	8.31	6.63	0.21
						1" Ice	9.42	8.20	0.36
						2" Ice	11.77	11.67	0.78
						4" Ice			
TD-RRH8x20-25	A	From Leg	4.00	0.0000	120.00	No Ice	4.32	1.41	0.07
			-1.00			1/2"	4.60	1.61	0.09
			0.00			Ice	4.89	1.83	0.12
						1" Ice	5.50	2.28	0.18
						2" Ice	6.82	3.30	0.36
						4" Ice			
TD-RRH8x20-25	B	From Leg	4.00	0.0000	120.00	No Ice	4.32	1.41	0.07
			-1.00			1/2"	4.60	1.61	0.09
			0.00			Ice	4.89	1.83	0.12
						1" Ice	5.50	2.28	0.18
						2" Ice	6.82	3.30	0.36
						4" Ice			
TD-RRH8x20-25	C	From Leg	4.00	0.0000	120.00	No Ice	4.32	1.41	0.07
			-1.00			1/2"	4.60	1.61	0.09
			0.00			Ice	4.89	1.83	0.12
						1" Ice	5.50	2.28	0.18
						2" Ice	6.82	3.30	0.36
						4" Ice			
*****									
Sector Mount [SM 407-1]	A	From Leg	1.75	0.0000	110.00	No Ice	10.27	7.94	0.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	15.29	11.73	0.46
			0.00			Ice	20.31	15.52	0.60
						1" Ice	30.35	23.10	0.88
						2" Ice	50.43	38.26	1.44
						4" Ice			
Sector Mount [SM 407-1]	B	From Leg	1.75	0.0000	110.00	No Ice	10.27	7.94	0.32
			0.00			1/2"	15.29	11.73	0.46
			0.00			Ice	20.31	15.52	0.60
						1" Ice	30.35	23.10	0.88
						2" Ice	50.43	38.26	1.44
						4" Ice			
Sector Mount [SM 407-1]	C	From Leg	1.75	0.0000	110.00	No Ice	10.27	7.94	0.32
			0.00			1/2"	15.29	11.73	0.46
			0.00			Ice	20.31	15.52	0.60
						1" Ice	30.35	23.10	0.88
						2" Ice	50.43	38.26	1.44
						4" Ice			
(2) 7770.00 w/ pipe mount	A	From Leg	3.50	0.0000	110.00	No Ice	6.22	4.35	0.06
			0.00			1/2"	6.77	5.20	0.11
			2.00			Ice	7.30	5.92	0.16
						1" Ice	8.38	7.41	0.30
						2" Ice	10.69	10.76	0.68
						4" Ice			
(2) 7770.00 w/ pipe mount	B	From Leg	3.50	0.0000	110.00	No Ice	6.22	4.35	0.06
			0.00			1/2"	6.77	5.20	0.11
			2.00			Ice	7.30	5.92	0.16
						1" Ice	8.38	7.41	0.30
						2" Ice	10.69	10.76	0.68
						4" Ice			
(2) 7770.00 w/ pipe mount	C	From Leg	3.50	0.0000	110.00	No Ice	6.22	4.35	0.06
			0.00			1/2"	6.77	5.20	0.11
			2.00			Ice	7.30	5.92	0.16
						1" Ice	8.38	7.41	0.30
						2" Ice	10.69	10.76	0.68
						4" Ice			
(2) LGP21403	A	From Leg	3.25	0.0000	110.00	No Ice	1.26	0.38	0.01
			0.00			1/2"	1.42	0.49	0.02
			0.00			Ice	1.58	0.62	0.03
						1" Ice	1.94	0.89	0.05
						2" Ice	2.75	1.54	0.13
						4" Ice			
(2) LGP21403	B	From Leg	3.25	0.0000	110.00	No Ice	1.26	0.38	0.01
			0.00			1/2"	1.42	0.49	0.02
			0.00			Ice	1.58	0.62	0.03
						1" Ice	1.94	0.89	0.05
						2" Ice	2.75	1.54	0.13
						4" Ice			
(2) LGP21403	C	From Leg	3.25	0.0000	110.00	No Ice	1.26	0.38	0.01
			0.00			1/2"	1.42	0.49	0.02
			0.00			Ice	1.58	0.62	0.03
						1" Ice	1.94	0.89	0.05
						2" Ice	2.75	1.54	0.13
						4" Ice			
AM-X-CD-16-65-00T-RET w/ pipe mount	A	From Leg	3.50	0.0000	110.00	No Ice	8.50	6.30	0.08
			0.00			1/2"	9.15	7.48	0.15
			0.00			Ice	9.77	8.37	0.22
						1" Ice	11.03	10.18	0.39
						2" Ice	13.68	14.02	0.88
						4" Ice			
AM-X-CD-16-65-00T-RET w/ pipe mount	B	From Leg	3.50	0.0000	110.00	No Ice	8.50	6.30	0.08
			0.00			1/2"	9.15	7.48	0.15
			0.00			Ice	9.77	8.37	0.22
						1" Ice	11.03	10.18	0.39
						2" Ice	13.68	14.02	0.88
						4" Ice			

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
AM-X-CD-16-65-00T-RET w/ pipe mount	C	From Leg	3.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.08 0.15 0.22 0.39 0.88
(2) RRUS-11	A	From Leg	3.25 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
(2) RRUS-11	B	From Leg	3.25 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
(2) RRUS-11	C	From Leg	3.25 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.06 0.07 0.10 0.15 0.30
DC6-48-60-18-8F	A	From Leg	3.25 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.60 1.81 2.02 2.49 3.56	1.60 1.81 2.02 2.49 3.56	0.03 0.05 0.07 0.13 0.27
******									
Pipe Mount [PM 601-1]	A	From Leg	0.25 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	0.07 0.08 0.09 0.12 0.18
Pipe Mount [PM 601-1]	B	From Leg	0.25 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	0.07 0.08 0.09 0.12 0.18
Pipe Mount [PM 601-1]	C	From Leg	0.25 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	0.07 0.08 0.09 0.12 0.18
APXV18-206517S-C w/ pipe mount	A	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.06 0.11 0.16 0.29 0.69
APXV18-206517S-C w/ pipe mount	B	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	5.40 5.96 6.48 7.55 9.92	4.70 5.86 6.73 8.51 12.28	0.06 0.11 0.16 0.29 0.69
APXV18-206517S-C w/ pipe mount	C	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice	5.40 5.96 6.48 7.55	4.70 5.86 6.73 8.51	0.06 0.11 0.16 0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment ° °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*****						2" Ice 4" Ice	9.92	12.28	0.69
BULLET III	A	From Leg	0.50 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.10 0.18 0.26 0.42 0.74	0.10 0.18 0.26 0.42 0.74	0.00 0.00 0.00 0.00 0.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-23G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	6.00 0.00 2.00	-80.0000		120.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.19
A-ANT-23G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	6.00 0.00 2.00	30.0000		120.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.19
A-ANT-23G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	6.00 0.00 2.00	-90.0000		120.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.05 0.07 0.11 0.19

Truss-Leg Properties

Section Designation	Area in^2	Area Ice in^2	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
Pirod 105245	1090.3344	2417.2301	0.64	0.42	7.5718	16.7863	5.3014
Pirod 105217	2296.2363	4562.6756	0.56	0.76	7.9730	15.8426	5.3014
Pirod 105217 Reinf w/ (2) 1-1/4" SR	2395.2746	5024.9572	0.76	0.75	8.3169	17.4478	7.7558

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice

Comb. No.	Description
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	120 - 110	Leg	Max Tension	12	11.61	-0.65	-0.36
			Max. Compression	2	-13.73	0.02	-0.24
			Max. Mx	5	-1.26	0.76	0.01
			Max. My	2	3.60	-0.05	-0.85
			Max. Vy	10	-1.43	-0.26	0.13
			Max. Vx	2	-1.68	-0.01	-0.28
		Diagonal	Max Tension	3	2.79	0.00	0.00
			Max. Compression	3	-2.77	0.00	0.00
			Max. Mx	22	0.81	-0.00	0.00
			Max. My	3	-2.76	-0.00	-0.00
			Max. Vy	22	0.00	-0.00	0.00
			Max. Vx	3	0.00	-0.00	-0.00
		Horizontal	Max Tension	8	0.24	0.00	0.00
			Max. Compression	2	-0.15	0.00	0.00
			Max. Mx	14	0.08	0.00	0.00
			Max. My	10	0.14	0.00	-0.00
			Max. Vy	14	-0.00	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Top Girt	Max Tension	6	0.75	0.00	0.00
			Max. Compression	4	-0.74	0.00	0.00
			Max. Mx	14	-0.00	0.00	0.00
			Max. My	3	0.00	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	0.86	0.00	0.00
			Max. Compression	6	-0.94	0.00	0.00
			Max. Mx	14	-0.01	0.00	0.00
			Max. My	3	0.14	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
T2	110 - 90	Leg	Max Tension	12	56.01	1.43	-0.02
			Max. Compression	2	-61.09	0.43	0.07
			Max. Mx	6	-60.73	-1.50	-0.01
			Max. My	13	-3.43	0.03	-1.49
			Max. Vy	6	-2.91	0.43	0.00
			Max. Vx	13	-2.85	-0.01	0.40
		Diagonal	Max Tension	3	4.80	0.00	0.00
			Max. Compression	3	-4.68	0.00	0.00
			Max. Mx	11	2.64	-0.00	-0.00
			Max. My	3	-4.41	-0.00	-0.00
			Max. Vy	22	0.00	-0.00	-0.00
			Max. Vx	3	0.00	-0.00	-0.00
		Horizontal	Max Tension	8	1.08	0.00	0.00
			Max. Compression	2	-0.91	0.00	0.00
			Max. Mx	21	0.30	0.01	0.00
			Max. My	10	0.53	0.00	-0.00
			Max. Vy	21	-0.01	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Top Girt	Max Tension	6	1.75	0.00	0.00
			Max. Compression	4	-1.70	0.00	0.00
			Max. Mx	14	0.01	0.01	0.00
			Max. My	3	-0.13	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	2.14	0.00	0.00
			Max. Compression	6	-2.37	0.00	0.00
			Max. Mx	14	0.04	0.01	0.00
			Max. My	3	0.61	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
T3	90 - 70	Leg	Max Tension	12	99.65	1.40	-0.01
			Max. Compression	2	-107.23	0.77	0.10
			Max. Mx	6	-60.74	2.31	0.01
			Max. My	13	-3.48	-0.04	2.30
			Max. Vy	2	-3.44	0.77	0.10
			Max. Vx	13	-2.84	-0.04	2.30
		Diagonal	Max Tension	3	5.06	0.00	0.00
			Max. Compression	3	-5.42	0.00	0.00
			Max. Mx	12	3.97	-0.01	0.00
			Max. My	3	-5.40	0.00	-0.00
			Max. Vy	23	0.01	-0.00	-0.00
			Max. Vx	3	0.00	0.00	-0.00
		Horizontal	Max Tension	12	1.96	0.00	0.00
			Max. Compression	2	-1.81	0.00	0.00
			Max. Mx	14	0.19	0.01	0.00
			Max. My	3	0.21	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	2	1.86	0.00	0.00
			Max. Compression	2	-1.86	0.00	0.00
			Max. Mx	14	0.12	0.02	0.00
			Max. My	3	1.60	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
		Top Girt	Max Tension	6	1.30	0.00	0.00
			Max. Compression	4	-0.93	0.00	0.00
			Max. Mx	14	0.11	0.01	0.00
			Max. My	3	-0.37	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	2.27	0.00	0.00
			Max. Compression	2	-2.32	0.00	0.00
			Max. Mx	14	0.12	0.01	0.00
			Max. My	3	0.41	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T4	70 - 50	Leg	Max Tension	12	140.41	-0.07	-0.02
			Max. Compression	6	-150.55	2.56	0.01
			Max. Mx	2	-107.25	2.98	0.40
			Max. My	13	-5.14	0.04	2.49
			Max. Vy	6	-3.79	2.56	0.01
			Max. Vx	13	-2.76	0.04	2.49
		Diagonal	Max Tension	3	5.27	0.00	0.00
			Max. Compression	9	-5.58	0.00	0.00
			Max. Mx	7	2.64	-0.01	-0.00
			Max. My	3	-5.52	0.00	-0.00
			Max. Vy	15	0.01	-0.00	0.00
			Max. Vx	3	0.00	0.00	-0.00
		Horizontal	Max Tension	8	1.82	0.00	0.00
			Max. Compression	2	-1.66	0.00	0.00
			Max. Mx	14	0.14	0.01	0.00
			Max. My	4	-0.77	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	4	0.00	0.00	0.00
		Top Girt	Max Tension	6	1.69	0.00	0.00
			Max. Compression	4	-1.43	0.00	0.00
			Max. Mx	14	0.03	0.01	0.00
			Max. My	3	-0.51	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	1.77	0.00	0.00
			Max. Compression	2	-1.64	0.00	0.00
			Max. Mx	14	0.06	0.01	0.00
			Max. My	3	-0.16	0.00	0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	3	-0.00	0.00	0.00
T5	50 - 40	Leg	Max Tension	12	135.38	-2.35	0.01
			Max. Compression	6	-144.83	6.26	-0.04
			Max. Mx	12	135.09	-6.58	0.03
			Max. My	13	-5.95	-0.15	11.12
			Max. Vy	4	0.50	-6.58	-0.04
			Max. Vx	3	1.04	-0.18	-11.00
		Diagonal	Max Tension	3	4.89	0.00	0.00
			Max. Compression	3	-5.43	0.00	0.00
			Max. Mx	4	0.20	0.10	-0.01
			Max. My	3	-0.06	-0.08	0.03
			Max. Vy	5	-0.02	0.09	-0.02
			Max. Vx	3	-0.01	0.00	0.00
T6	40 - 20	Leg	Max Tension	12	140.75	-6.27	0.01
			Max. Compression	6	-153.40	5.04	-0.01
			Max. Mx	12	138.92	-6.58	0.03
			Max. My	13	-6.75	-0.15	11.12
			Max. Vy	4	-0.22	-6.26	-0.01
			Max. Vx	13	0.61	-0.15	11.12
		Diagonal	Max Tension	2	1.96	0.05	-0.00
			Max. Compression	8	-2.14	0.00	0.00
			Max. Mx	2	0.87	0.10	0.01
			Max. My	8	0.03	0.08	-0.01
			Max. Vy	2	-0.02	0.10	0.01
			Max. Vx	8	0.00	0.00	0.00
T7	20 - 0	Leg	Max Tension	12	146.04	-3.69	0.01
			Max. Compression	6	-161.98	0.00	-0.00
			Max. Mx	6	-158.50	5.04	-0.01
			Max. My	13	-7.99	-0.16	5.79
			Max. Vy	4	-0.45	-3.69	-0.03
			Max. Vx	13	0.65	-0.16	5.79
		Diagonal	Max Tension	4	2.75	0.00	0.00
			Max. Compression	2	-3.31	0.00	0.00
			Max. Mx	2	1.05	0.05	0.00
			Max. My	2	0.61	0.04	0.01
			Max. Vy	25	0.02	0.04	-0.01
			Max. Vx	23	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	166.01	10.86	-6.46
	Max. H_x	10	166.01	10.86	-6.46
	Max. H_z	4	-148.80	-9.71	5.79
	Min. Vert	4	-148.80	-9.71	5.79
	Min. H_x	4	-148.80	-9.71	5.79
	Min. H_z	10	166.01	10.86	-6.46
Leg B	Max. Vert	6	166.19	-10.97	-6.33
	Max. H_x	12	-148.93	9.79	5.63
	Max. H_z	12	-148.93	9.79	5.63
	Min. Vert	12	-148.93	9.79	5.63
	Min. H_x	6	166.19	-10.97	-6.33
	Min. H_z	6	166.19	-10.97	-6.33
Leg A	Max. Vert	2	166.07	-0.19	12.65
	Max. H_x	5	6.98	0.61	0.52
	Max. H_z	2	166.07	-0.19	12.65
	Min. Vert	8	-148.14	0.16	-11.26
	Min. H_x	12	85.35	-0.64	6.45
	Min. H_z	8	-148.14	0.16	-11.26

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	22.10	0.00	0.00	-0.24	2.80	-0.00
Dead+Wind 0 deg - No Ice	22.10	-0.06	-17.15	-1374.42	9.72	-3.15
Dead+Wind 30 deg - No Ice	22.10	8.43	-14.52	-1171.52	-679.70	-3.52
Dead+Wind 60 deg - No Ice	22.10	14.51	-8.29	-669.14	-1175.37	-2.61
Dead+Wind 90 deg - No Ice	22.10	16.84	0.03	3.38	-1358.41	-1.35
Dead+Wind 120 deg - No Ice	22.10	14.90	8.57	685.66	-1192.42	0.06
Dead+Wind 150 deg - No Ice	22.10	8.49	14.49	1167.50	-686.50	1.41
Dead+Wind 180 deg - No Ice	22.10	0.01	16.65	1346.75	1.11	2.81
Dead+Wind 210 deg - No Ice	22.10	-8.41	14.52	1170.73	682.85	3.39
Dead+Wind 240 deg - No Ice	22.10	-14.85	8.54	681.90	1192.73	2.78
Dead+Wind 270 deg - No Ice	22.10	-16.78	-0.05	-6.66	1357.65	1.05
Dead+Wind 300 deg - No Ice	22.10	-14.45	-8.34	-675.35	1173.08	-0.42
Dead+Wind 330 deg - No Ice	22.10	-8.45	-14.52	-1171.52	687.44	-1.87
Dead+Ice+Temp	43.36	-0.00	0.00	-0.82	6.27	-0.00
Dead+Wind 0 deg+Ice+Temp	43.36	-0.01	-6.32	-494.95	8.10	-0.80
Dead+Wind 30 deg+Ice+Temp	43.36	3.08	-5.32	-417.76	-235.66	-1.13
Dead+Wind 60 deg+Ice+Temp	43.36	5.29	-3.03	-238.48	-410.00	-1.07
Dead+Wind 90 deg+Ice+Temp	43.36	6.16	0.01	0.25	-477.25	-0.81
Dead+Wind 120 deg+Ice+Temp	43.36	5.48	3.16	246.17	-422.93	-0.40
Dead+Wind 150 deg+Ice+Temp	43.36	3.10	5.32	415.52	-237.66	0.13
Dead+Wind 180 deg+Ice+Temp	43.36	0.00	6.09	476.97	5.68	0.72
Dead+Wind 210 deg+Ice+Temp	43.36	-3.08	5.32	416.01	247.77	1.10
Dead+Wind 240 deg+Ice+Temp	43.36	-5.47	3.15	244.91	434.10	1.13
Dead+Wind 270 deg+Ice+Temp	43.36	-6.15	-0.01	-2.48	488.42	0.75
Dead+Wind 300 deg+Ice+Temp	43.36	-5.28	-3.05	-240.29	421.07	0.30
Dead+Wind 330 deg+Ice+Temp	43.36	-3.09	-5.32	-418.00	249.16	-0.23

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 0 deg - Service	22.10	-0.02	-5.94	-475.79	5.21	-1.09
Dead+Wind 30 deg - Service	22.10	2.92	-5.02	-405.57	-233.37	-1.22
Dead+Wind 60 deg - Service	22.10	5.02	-2.87	-231.71	-404.89	-0.91
Dead+Wind 90 deg - Service	22.10	5.83	0.01	1.02	-468.24	-0.46
Dead+Wind 120 deg - Service	22.10	5.15	2.96	237.12	-410.80	0.02
Dead+Wind 150 deg - Service	22.10	2.94	5.01	403.86	-235.73	0.48
Dead+Wind 180 deg - Service	22.10	0.00	5.76	465.89	2.23	0.97
Dead+Wind 210 deg - Service	22.10	-2.91	5.02	404.98	238.15	1.18
Dead+Wind 240 deg - Service	22.10	-5.14	2.95	235.83	414.60	0.96
Dead+Wind 270 deg - Service	22.10	-5.81	-0.02	-2.46	471.67	0.36
Dead+Wind 300 deg - Service	22.10	-5.00	-2.89	-233.86	407.80	-0.14
Dead+Wind 330 deg - Service	22.10	-2.92	-5.02	-405.58	239.73	-0.64

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-22.10	0.00	0.00	22.10	0.00	0.000%
2	-0.06	-22.10	-17.15	0.06	22.10	17.15	0.000%
3	8.43	-22.10	-14.52	-8.43	22.10	14.52	0.000%
4	14.51	-22.10	-8.29	-14.51	22.10	8.29	0.000%
5	16.84	-22.10	0.03	-16.84	22.10	-0.03	0.000%
6	14.90	-22.10	8.57	-14.90	22.10	-8.57	0.000%
7	8.49	-22.10	14.49	-8.49	22.10	-14.49	0.000%
8	0.01	-22.10	16.65	-0.01	22.10	-16.65	0.000%
9	-8.41	-22.10	14.52	8.41	22.10	-14.52	0.000%
10	-14.85	-22.10	8.54	14.85	22.10	-8.54	0.000%
11	-16.78	-22.10	-0.05	16.78	22.10	0.05	0.000%
12	-14.45	-22.10	-8.34	14.45	22.10	8.34	0.000%
13	-8.45	-22.10	-14.52	8.45	22.10	14.52	0.000%
14	0.00	-43.36	0.00	0.00	43.36	-0.00	0.000%
15	-0.01	-43.36	-6.32	0.01	43.36	6.32	0.000%
16	3.08	-43.36	-5.32	-3.08	43.36	5.32	0.000%
17	5.29	-43.36	-3.03	-5.29	43.36	3.03	0.000%
18	6.16	-43.36	0.01	-6.16	43.36	-0.01	0.000%
19	5.48	-43.36	3.16	-5.48	43.36	-3.16	0.000%
20	3.10	-43.36	5.32	-3.10	43.36	-5.32	0.000%
21	0.00	-43.36	6.09	-0.00	43.36	-6.09	0.000%
22	-3.08	-43.36	5.32	3.08	43.36	-5.32	0.000%
23	-5.47	-43.36	3.15	5.47	43.36	-3.15	0.000%
24	-6.15	-43.36	-0.01	6.15	43.36	0.01	0.000%
25	-5.28	-43.36	-3.05	5.28	43.36	3.05	0.000%
26	-3.09	-43.36	-5.32	3.09	43.36	5.32	0.000%
27	-0.02	-22.10	-5.94	0.02	22.10	5.94	0.000%
28	2.92	-22.10	-5.02	-2.92	22.10	5.02	0.000%
29	5.02	-22.10	-2.87	-5.02	22.10	2.87	0.000%
30	5.83	-22.10	0.01	-5.83	22.10	-0.01	0.000%
31	5.15	-22.10	2.96	-5.15	22.10	-2.96	0.000%
32	2.94	-22.10	5.01	-2.94	22.10	-5.01	0.000%
33	0.00	-22.10	5.76	-0.00	22.10	-5.76	0.000%
34	-2.91	-22.10	5.02	2.91	22.10	-5.02	0.000%
35	-5.14	-22.10	2.95	5.14	22.10	-2.95	0.000%
36	-5.81	-22.10	-0.02	5.81	22.10	0.02	0.000%
37	-5.00	-22.10	-2.89	5.00	22.10	2.89	0.000%
38	-2.92	-22.10	-5.02	2.92	22.10	5.02	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00002096
3	Yes	4	0.00000001	0.00002084
4	Yes	4	0.00000001	0.00001708
5	Yes	4	0.00000001	0.00001262
6	Yes	4	0.00000001	0.00000568
7	Yes	4	0.00000001	0.00001114
8	Yes	4	0.00000001	0.00001773
9	Yes	4	0.00000001	0.00002049
10	Yes	4	0.00000001	0.00001932
11	Yes	4	0.00000001	0.00001229
12	Yes	4	0.00000001	0.00000649
13	Yes	4	0.00000001	0.00001513
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00004002
16	Yes	4	0.00000001	0.00004087
17	Yes	4	0.00000001	0.00004168
18	Yes	4	0.00000001	0.00004081
19	Yes	4	0.00000001	0.00003991
20	Yes	4	0.00000001	0.00004073
21	Yes	4	0.00000001	0.00004163
22	Yes	4	0.00000001	0.00004090
23	Yes	4	0.00000001	0.00004011
24	Yes	4	0.00000001	0.00004070
25	Yes	4	0.00000001	0.00004132
26	Yes	4	0.00000001	0.00004065
27	Yes	4	0.00000001	0.00000687
28	Yes	4	0.00000001	0.00000712
29	Yes	4	0.00000001	0.00000730
30	Yes	4	0.00000001	0.00000701
31	Yes	4	0.00000001	0.00000670
32	Yes	4	0.00000001	0.00000700
33	Yes	4	0.00000001	0.00000732
34	Yes	4	0.00000001	0.00000711
35	Yes	4	0.00000001	0.00000685
36	Yes	4	0.00000001	0.00000698
37	Yes	4	0.00000001	0.00000715
38	Yes	4	0.00000001	0.00000702

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 110	7.433	35	0.5750	0.2200
T2	110 - 90	6.198	35	0.5618	0.1716
T3	90 - 70	3.877	35	0.4725	0.0936
T4	70 - 50	2.076	35	0.3311	0.0481
T5	50 - 40	0.882	35	0.2047	0.0215
T6	40 - 20	0.515	35	0.1456	0.0124
T7	20 - 0	0.109	35	0.0518	0.0040

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	A-ANT-23G-2-C	35	7.433	0.5750	0.2200	89646
120.00	Platform Mount (LP 405-1)	35	7.433	0.5750	0.2200	89646

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.00	Sector Mount [SM 407-1]	35	6.198	0.5618	0.1716	40269
100.00	Pipe Mount [PM 601-1]	35	4.994	0.5277	0.1286	13352
40.00	BULLET III	35	0.515	0.1456	0.0124	10681

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 110	21.378	2	1.6471	0.6381
T2	110 - 90	17.831	2	1.6141	0.4981
T3	90 - 70	11.159	6	1.3588	0.2721
T4	70 - 50	5.977	6	0.9525	0.1392
T5	50 - 40	2.542	6	0.5889	0.0619
T6	40 - 20	1.486	6	0.4190	0.0357
T7	20 - 0	0.314	6	0.1492	0.0116

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	A-ANT-23G-2-C	2	21.378	1.6471	0.6381	35544
120.00	Platform Mount (LP 405-1)	2	21.378	1.6471	0.6381	35544
110.00	Sector Mount [SM 407-1]	2	17.831	1.6141	0.4981	15536
100.00	Pipe Mount [PM 601-1]	6	14.369	1.5174	0.3738	4768
40.00	BULLET III	6	1.486	0.4190	0.0357	3695

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	120	Leg	A325N	0.6250	4	2.90	12.89	0.225 ✔	1.333	Bolt DS
T2	110	Leg	A325N	0.6250	5	11.20	12.89	0.869 ✔	1.333	Bolt DS
T3	90	Leg	A325N	0.7500	5	19.93	18.56	1.074 ✔	1.333	Bolt DS
T4	70	Leg	A325N	1.0000	6	23.40	34.54	0.678 ✔	1.333	Bolt Tension
T5	50	Leg	A325N	1.0000	6	22.56	34.56	0.653 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	4.89	6.12	0.799 ✔	1.333	Member Block Shear
T6	40	Leg	A325N	1.0000	6	23.46	34.56	0.679 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	1.96	6.12	0.321 ✔	1.333	Member Block Shear
T7	20	Leg	A687	1.0000	6	24.34	38.88	0.626 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	2.75	6.12	0.449 ✔	1.333	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	1 1/2	10.00	2.33	74.7 K=1.00	20.058	1.7672	-13.73	35.44	0.387 ✔
T2	110 - 90	1 3/4	20.00	2.33	64.0 K=1.00	22.022	2.4053	-61.09	52.97	1.153 ✔
T3	90 - 70	H2-1 (1.37 CR) - 39 2	20.00	1.18	28.2 K=1.00	27.372	3.1416	-107.23	85.99	1.247 ✔
T4	70 - 50	H2-1 (1.94 CR) - 103 2 1/2	20.00	2.33	44.8 K=1.00	25.140	4.9087	-150.55	123.40	1.220 ✔
T5	50 - 40	Pirod 105245	10.02	10.02	37.8 K=1.00	26.132	5.3014	-144.83	138.54	1.045 ✔
T6	40 - 20	Pirod 105217	20.03	10.02	37.8 K=1.00	26.132	5.3014	-153.40	138.54	1.107 ✔
T7	20 - 0	Pirod 105217 Reinf w/ (2) 1-1/4" SR	20.03	10.02	36.5 K=1.28	26.312	7.7558	-161.99	204.07	0.794 ✔

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T5	50 - 40	0.5	1.47	141.2	7.490	0.1963	1.04	1.65	0.630 ✔
T6	40 - 20	0.5	1.47	141.2	7.490	0.1963	0.61	1.65	0.368 ✔
T7	20 - 0	0.5	1.38	132.1	8.562	0.1963	0.66	1.71	0.384 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	5/8	4.21	2.03	116.8 K=0.75	10.943	0.3068	-2.77	3.36	0.824 ✔
T2	110 - 90	3/4	4.59	2.23	106.9 K=0.75	13.058	0.4418	-4.68	5.77	0.811 ✔
T3	90 - 70	7/8	4.67	2.26	92.9 K=0.75	16.307	0.6013	-5.42	9.81	0.552 ✔
T4	70 - 50	7/8	5.11	2.46	101.1 K=0.75	14.462	0.6013	-5.58	8.70	0.642 ✔
T5	50 - 40	L2 1/2x2 1/2x3/16	11.42	5.02	121.8 K=1.00	10.024	0.9020	-5.43	9.04	0.600 ✔
T6	40 - 20	L2 1/2x2 1/2x3/16	12.50	5.67	137.4 K=1.00	7.907	0.9020	-2.12	7.13	0.297 ✔
T7	20 - 0	L2 1/2x2 1/2x3/16	13.80	6.47	157.0 K=1.00	6.062	0.9020	-3.31	5.47	0.605 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	5/8	3.50	3.38	181.4 K=0.70	4.536	0.3068	-0.15	1.39	0.111 ✔
T2	110 - 90	3/4	3.87	3.72	166.7 K=0.70	5.374	0.4418	-0.91	2.37	0.384 ✔
T3	90 - 70	7/8	4.08	3.91	150.1 K=0.70	6.630	0.6013	-1.81	3.99	0.454 ✔
T4	70 - 50	7/8	4.58	4.37	167.7 K=0.70	5.311	0.6013	-1.66	3.19	0.520 ✔

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T3	90 - 70	1 1/4	4.45	4.29	115.2 K=0.70	11.244	1.2272	-1.86	13.80	0.135 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	3/4	3.50	3.38	151.2 K=0.70	6.532	0.4418	-0.74	2.89	0.256 ✔
T2	110 - 90	7/8	3.52	3.37	129.4 K=0.70	8.913	0.6013	-1.70	5.36	0.318 ✔
T3	90 - 70	1	4.02	3.85	129.4 K=0.70	8.924	0.7854	-0.93	7.01	0.133 ✔
T4	70 - 50	1	4.52	4.31	144.8 K=0.70	7.126	0.7854	-1.43	5.60	0.256 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	3/4	3.50	3.38	151.2 K=0.70	6.532	0.4418	-0.94	2.89	0.325 ✔
T2	110 - 90	7/8	3.98	3.84	147.4 K=0.70	6.877	0.6013	-2.37	4.14	0.573 ✔
T3	90 - 70	1	4.48	4.32	145.0 K=0.70	7.099	0.7854	-2.32	5.58	0.415 ✔
T4	70 - 50	1	4.98	4.77	160.4	5.801	0.7854	-1.64	4.56	0.361

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
					K=0.70					✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	1 1/2	10.00	2.33	74.7	32.500	0.7732	11.61	70.8	0.164 ✔
T2	110 - 90	1 3/4	20.00	2.33	64.0	32.500	1.2339	56.01	96.2	0.582 ✔
T3	90 - 70	2	20.00	1.18	28.2	32.500	1.5625	99.65	125.66	0.595 ✔
T4	70 - 50	2 1/2	20.00	2.33	44.8	30.000	4.9087	140.41	196.35	0.536 ✔
T5	50 - 40	Pirod 105245	10.02	10.02	37.8	30.000	5.3014	135.38	159.04	0.851 ✔
T6	40 - 20	Pirod 105217	20.03	10.02	37.8	30.000	5.3014	140.75	159.04	0.885 ✔
T7	20 - 0	Pirod 105217 Reinf w/ (2) 1-1/4" SR	20.03	10.02	31.3	30.000	7.7558	146.04	232.68	0.628 ✔

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T5	50 - 40	0.5	1.47	141.2	7.490	0.1963	1.04	1.65	0.630 ✔
T6	40 - 20	0.5	1.47	141.2	7.490	0.1963	0.61	1.65	0.368 ✔
T7	20 - 0	0.5	1.38	132.1	8.562	0.1963	0.66	1.71	0.384 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	5/8	4.21	2.03	155.8	30.000	0.3068	2.79	9.20	0.303 ✔
T2	110 - 90	3/4	4.59	2.23	142.6	30.000	0.4418	4.80	13.25	0.362 ✔
T3	90 - 70	7/8	4.67	2.26	123.9	30.000	0.6013	5.06	18.04	0.280 ✔
T4	70 - 50	7/8	5.11	2.46	134.7	30.000	0.6013	5.27	18.04	0.292 ✔
T5	50 - 40	L2 1/2x2 1/2x3/16	11.42	5.02	80.1	29.000	0.5183	4.89	15.03	0.325

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T6	40 - 20	L2 1/2x2 1/2x3/16	11.93	5.42	86.2	29.000	0.5183	1.96	15.03	0.131 ✔
T7	20 - 0	L2 1/2x2 1/2x3/16	13.80	6.47	102.4	29.000	0.5183	2.75	15.03	0.183 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	5/8	3.50	3.38	259.2	30.000	0.3068	0.24	9.20	0.026 ✔
T2	110 - 90	3/4	3.87	3.72	238.1	30.000	0.4418	1.08	13.25	0.081 ✔
T3	90 - 70	7/8	4.08	3.91	214.4	30.000	0.6013	1.96	18.04	0.109 ✔
T4	70 - 50	7/8	4.58	4.37	239.5	30.000	0.6013	1.82	18.04	0.101 ✔

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T3	90 - 70	1 1/4	4.45	4.29	164.6	30.000	1.2272	1.86	36.82	0.050 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	3/4	3.50	3.38	216.0	30.000	0.4418	0.75	13.25	0.056 ✔
T2	110 - 90	7/8	3.52	3.37	184.9	30.000	0.6013	1.75	18.04	0.097 ✔
T3	90 - 70	1	4.02	3.85	184.8	30.000	0.7854	1.30	23.56	0.055 ✔
T4	70 - 50	1	4.52	4.31	206.8	30.000	0.7854	1.69	23.56	0.072 ✔

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	120 - 110	3/4	3.50	3.38	216.0	30.000	0.4418	0.86	13.25	0.065 ✔

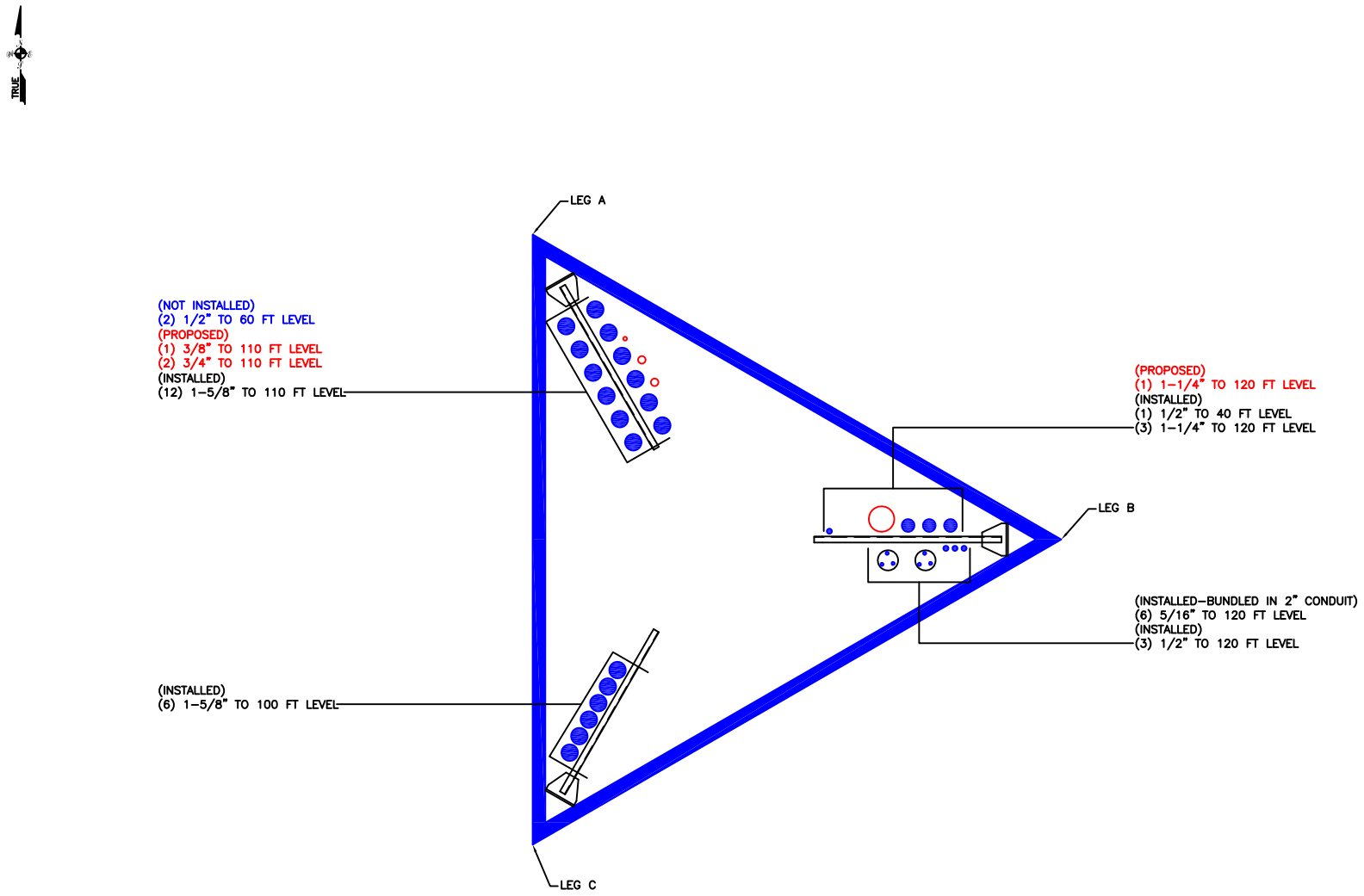
Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T2	110 - 90	7/8	3.98	3.84	210.5	30.000	0.6013	2.14	18.04	0.119 ✔
T3	90 - 70	1	4.48	4.32	207.2	30.000	0.7854	2.27	23.56	0.096 ✔
T4	70 - 50	1	4.98	4.77	229.2	30.000	0.7854	1.77	23.56	0.075 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	120 - 110	Leg	1 1/2	2	-13.73	35.44	34.7	Pass
T2	110 - 90	Leg	1 3/4	38	-61.09	52.97	86.5	Pass
T3	90 - 70	Leg	2	102	-107.23	85.99	93.5	Pass
T4	70 - 50	Leg	2 1/2	204	-150.55	164.50	91.5	Pass
T5	50 - 40	Leg	Pirod 105245	268	-144.83	184.67	78.4	Pass
T6	40 - 20	Leg	Pirod 105217	277	-153.40	184.67	83.1	Pass
T7	20 - 0	Leg	Pirod 105217 Reinf w/ (2) 1-1/4" SR	292	-161.99	272.03	59.5	Pass
T1	120 - 110	Diagonal	5/8	14	-2.77	4.48	61.8	Pass
T2	110 - 90	Diagonal	3/4	50	-4.68	7.69	60.8	Pass
T3	90 - 70	Diagonal	7/8	198	-5.42	13.07	41.4	Pass
T4	70 - 50	Diagonal	7/8	266	-5.58	11.59	48.1	Pass
T5	50 - 40	Diagonal	L2 1/2x2 1/2x3/16	272	-5.43	12.05	45.0 60.0 (b)	Pass
T6	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	283	-2.12	9.51	22.3 24.1 (b)	Pass
T7	20 - 0	Diagonal	L2 1/2x2 1/2x3/16	298	-3.31	7.29	45.4	Pass
T1	120 - 110	Horizontal	5/8	30	-0.15	1.86	8.3	Pass
T2	110 - 90	Horizontal	3/4	59	-0.91	3.16	28.8	Pass
T3	90 - 70	Horizontal	7/8	188	-1.81	5.31	34.0	Pass
T4	70 - 50	Horizontal	7/8	260	-1.66	4.26	39.0	Pass
T3	90 - 70	Secondary Horizontal	1 1/4	120	-1.86	18.39	10.1	Pass
T1	120 - 110	Top Girt	3/4	5	-0.74	3.85	19.2	Pass
T2	110 - 90	Top Girt	7/8	41	-1.70	7.14	23.8	Pass
T3	90 - 70	Top Girt	1	105	-0.93	9.34	10.0	Pass
T4	70 - 50	Top Girt	1	207	-1.43	7.46	19.2	Pass
T1	120 - 110	Bottom Girt	3/4	9	-0.94	3.85	24.3	Pass
T2	110 - 90	Bottom Girt	7/8	45	-2.37	5.51	43.0	Pass
T3	90 - 70	Bottom Girt	1	107	-2.32	7.43	31.2	Pass
T4	70 - 50	Bottom Girt	1	209	-1.64	6.07	27.1	Pass
						Summary		
						Leg (T3)	93.5	Pass
						Diagonal (T1)	61.8	Pass
						Horizontal (T4)	39.0	Pass
						Secondary Horizontal (T3)	10.1	Pass
						Top Girt (T2)	23.8	Pass
						Bottom Girt (T2)	43.0	Pass
						Bolt Checks	80.6	Pass
						RATING =	**93.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876312 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

TIA-222-F	Bolts					Leg					
Elevation	# Bolts	Bolt Dia	Maximum Load Per Bolt	Bolt Allowable Load	Bolt Capacity	Leg Diameter	Leg Area	Leg Area w/ Holes	Leg Tension (Actual P)	Allowable Leg Tension (Allowable Pa)	Leg Capacity
110	4	0.625	2.9	12.89	16.9%	1.5	1.77	1.7700	11.61	53.10	16.4%
90	5	0.625	11.2	12.89	65.2%	1.75	2.41	1.2339	11.61	37.02	23.5%
70	5	0.75	19.9	18.56	80.5%	2	3.14	1.7942	56.01	53.83	78.1%
50	6	1				2.5	4.91	2.9138	99.65	87.41	85.5%

MORRISON HERSHFIELD

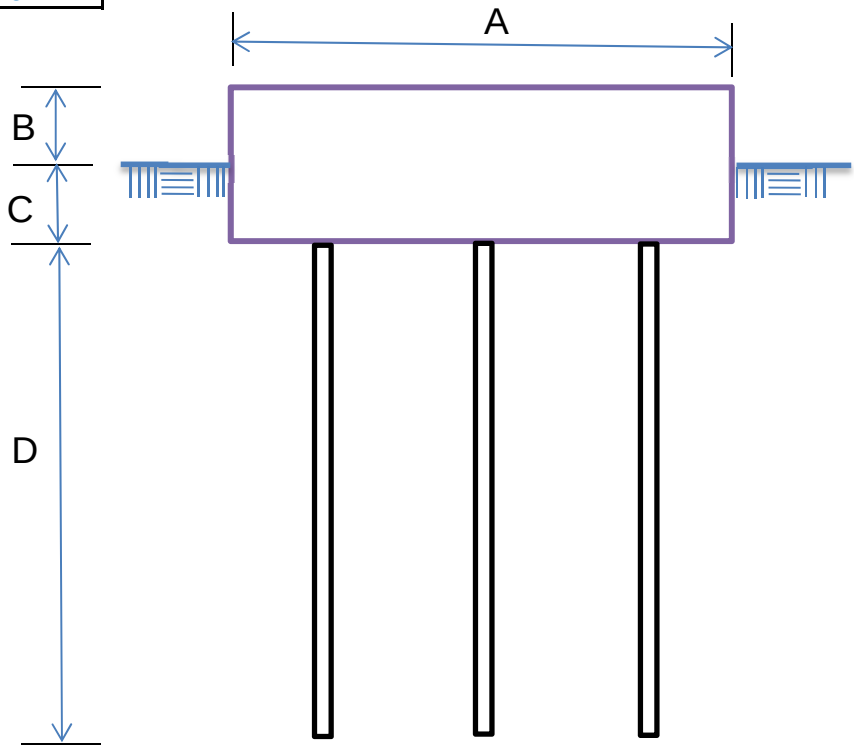
Foundation Calculations

Project Number	CN3-350 / 614000101
Date	1/13/2014
Site Number	876312
Site Name	Montowese Amodio Self Store

A :	6	ft
B :	2	ft
C :	2	ft
D :	41	ft
Ultimate Tension :	40	kips / pile
Ultimate Compression :	95	kips / pile
Number of piles :	6	per pad
Modified Pad "A "Weight :	42.75	kips
Modified Pad "B "Weight :	41.4	kips
Modified Pad "C "Weight :	42.2	kips
Original Foundation Weight :	39.9	kips

Compression Load:	166	k
Tension Load:	149	k

Tension Capacity:	58.9%	***Pass***
Compression Capacity:	57.8%	***Pass***



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RADIO FREQUENCY FCC REGULATORY COMPLIANCE MAXIMUM PERMISSIBLE EXPOSURE (MPE) ASSESSMENT

Sprint Existing Facility

Site ID: CT03XC011

Montowese Amodio Self Storage

2755 State Street
Hamden, CT 06473

March 6, 2014

EBI Project Number: 62140945

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

EBI Consulting
environmental | engineering | due diligence

March 6, 2014

Sprint
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC011 - Montowese Amodio Self Storage

Site Total: 59.828% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 2755 State Street, Hamden, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades 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/cm2 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 cellular band (850 MHz Band) is approximately 567 µW/cm^2, and the general population exposure limit for the 1900 MHz and 2500 MHz bands band 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 upgrades to the existing Sprint Wireless antenna facility located at 2755 State Street, Hamden, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. 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 emissions were calculated using the following assumptions:

1) 4 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation
3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
4) 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.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications was used in this direction.

6) The antennas used in this modeling are the Powerwave P40-16-XLPP-RRA and the RFS APXVTMM-C-120. This is based on feedback from the carrier with regards to anticipated antenna selection. The Powerwave P40-16-XLPP-RRA has a 15.9 dBd gain value at its main lobe at 1900 MHz and 14.2 dBd at its main lobe for 850 MHz. The RFS APXVTMM-C-120 has a 15.9 dBd gain value at its main lobe at 2500 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.
7) The antenna mounting height centerline for the proposed antennas is **120 feet** above ground level (AGL).
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT03XC011 Montowese Amodio Self Storage
Site Addresss	2755 State Street, Hamden, CT 06473
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
1a	Powerwave	P40-16-XLPP-RRA	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	120	114	34.74762	1/2 "	0.5	3	17.378008	1390.2407	38.45796	3.84580%
1a	Powerwave	P40-16-XLPP-RRA	RRH	850 MHz	CDMA / LTE	20	1	20	14.2	120	114	34.74762	1/2 "	0.5	3	11.748976	234.97951	6.500193	1.14642%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	120	114	34.74762	1/2 "	0.5	3	9.7723722	390.89489	10.81325	1.90710%
																Sector total Power Density Value:			6.899%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
1a	Powerwave	P40-16-XLPP-RRA	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	120	114	34.74762	1/2 "	0.5	3	17.378008	1390.2407	38.45796	3.84580%
1a	Powerwave	P40-16-XLPP-RRA	RRH	850 MHz	CDMA / LTE	20	1	20	14.2	120	114	34.74762	1/2 "	0.5	3	11.748976	234.97951	6.500193	1.14642%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	120	114	34.74762	1/2 "	0.5	3	9.7723722	390.89489	10.81325	1.90710%
																Sector total Power Density Value:			6.899%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Antenna Height Meters	Cable Size	Cable Loss (dB)	Additional Loss (dB)	Gain Factor	ERP	Power Density Value	Power Density Percentage
1a	Powerwave	P40-16-XLPP-RRA	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	120	114	34.74762	1/2 "	0.5	3	17.378008	1390.2407	38.45796	3.84580%
1a	Powerwave	P40-16-XLPP-RRA	RRH	850 MHz	CDMA / LTE	20	1	20	14.2	120	114	34.74762	1/2 "	0.5	3	11.748976	234.97951	6.500193	1.14642%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	13.4	120	114	34.74762	1/2 "	0.5	3	9.7723722	390.89489	10.81325	1.90710%
																Sector total Power Density Value:			6.899%

Site Composite MPE %	
Carrier	MPE %
Sprint	20.698%
AT&T	25.630%
MetroPCS	12.160%
Clearwire	1.340%
Total Site MPE %	**59.828%**

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

The anticipated Maximum Composite contributions from the Sprint facility are **20.698% (6.899% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **59.828%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE 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.

Scott Heffernan
RF Engineering Director

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