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

March 1, 2013

Kevin Savage
Crown Castle
3530 Torrington Way, Suite 300
Charlotte, NC 28277

RE: **EM-SPRINT-NEXTEL-077-130214** - Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located 53 Slater Street, Manchester, Connecticut.

Dear Mr. Savage:

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

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

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated February 8, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding

the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Leo V. Diana, Mayor, Town of Manchester
James Davis, Zoning Enforcement Officer, Town of Manchester

Crown Castle
3530 Torrington Way Suite 300
Charlotte NC 28277

Tel 704-405-6560
Fax 724-416-4911
www.crowncastle.com

February 8, 2013

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

RE: Sprint Nextel-Exempt Modification Request- Crown Site BU 876347 Sprint Nextel Site CT03XC211 – Located at – 53 Slater Street Manchester, CT 06040.

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of Sprint Nextel (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their network vision technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to Mayor Leo Diana for the Town of Manchester.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at 53 Slater Street Manchester, CT 06040. Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to Sprints operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 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 the R.C.S.A. Section 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Sprint's replacement antennas will be located at the same elevation on the existing tower.
2. Although the proposed modifications will involve replacing the ground-mounted equipment, the proposed change will not require the extension of the site boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

ORIGINAL

4. The operation of the replacement 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 for Sprint modified facility is included behind Tab 2.

Also attached is a Structural Report confirming that the tower and foundation can support Sprints proposed modifications. (See Tab 3).

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

Sincerely,

Kevin Savage

Enclosures
Copy to: Town of Manchester, Mayor Leo Diana

SHEET INDEX

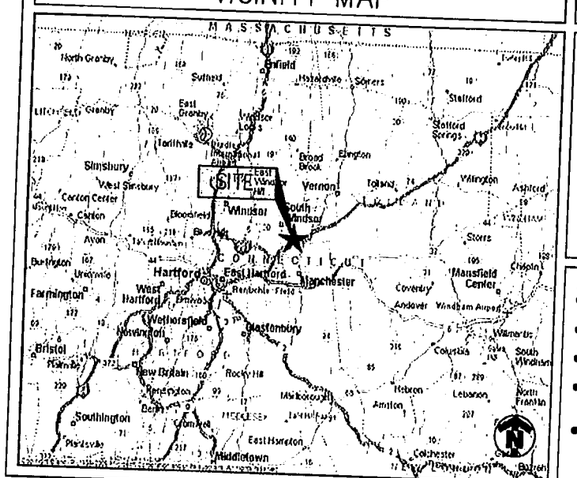
NO.	DESCRIPTION
T1	TITLE SHEET
C1	GENERAL NOTES
C2	COMPOUND SITE PLAN & ELEVATION
C3	EQUIPMENT SITE PLANS
C4	EQUIPMENT DETAILS
C5	ANTENNA PLANS
C6	ANTENNA CABLE RISER & GPS DETAILS
C7	EQUIPMENT DETAILS
C8	RF AND CABLE DETAILS
C9	FIBER DISTRIBUTION BOX DETAILS
E1	UTILITY SITE PLAN
E2	DETAILS
E3	GROUNDING PLAN AND DETAILS

DRIVING DIRECTIONS

DEPART FROM SPRINT:
1 INTERNATIONAL BLVD MAHWAH, NJ 07430

1. HEAD NORTH ON INTERNATIONAL BLVD/PARK ST TOWARD QUEENSLAND RD. CONTINUE TO FOLLOW INTERNATIONAL BLVD.
2. TAKE THE 3RD RIGHT ONTO PARK LN.
3. CONTINUE STRAIGHT ONTO LEISURE LN.
4. CONTINUE ONTO NJ-17 N.
5. TAKE THE NEW JERSEY 17 N/INTERSTATE 287 N EXIT TOWARD INTERSTATE 87/NORTH Y. THRUWAY.
6. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-287 N/I-87/NJ-17 N/N Y. THRUWAY AND MERGE ONTO I-287 N/NJ-17 N. ENTERING NEW YORK.
7. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-87 S/I-287/TAPPAN ZEE BR/NEW YORK CITY/NEW YORK THRUWAY AND MERGE ONTO I-287 E/I-87 S. CONTINUE TO FOLLOW I-287 E.
8. TAKE THE EXIT ONTO I-95 N. ENTERING CONNECTICUT.
9. TAKE EXIT 48 ON THE LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD.
36.9 MI 10. TAKE EXIT 29 TO MERGE ONTO CT-15 N/U.S. ROUTE 5 N/US-5 N TOWARD I-84 E/E HARTFORD/BOSTON.
11. CONTINUE ONTO CT-15 N.
12. MERGE ONTO I-84 E.
13. TAKE EXIT 63 FOR CT-30 TOWARD CT-83/S WINDSOR.
14. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR SHOPPING MALL AND MERGE ONTO CT-30 S/DEMING ST/TOLLAND TURNPIKE.
15. TURN LEFT ONTO TOLLAND TURNPIKE.
16. TURN RIGHT ONTO SLATER ST.
17. TURN RIGHT.
DESTINATION WILL BE ON THE RIGHT.

VICINITY MAP



Sprint

NETWORK VISION MMBTS LAUNCH
NORTHERN CONNECTICUT MARKET

SITE NAME

BUCKLAND MALL

CROWN CASTLE SITE NAME

BUCKLAND MALL

SITE NUMBER

CT03XC211

CROWN CASTLE SITE ID

876347

SITE ADDRESS

53 SLATER STREET
MANCHESTER, CT 06040

STRUCTURE TYPE

MONOPOLE

OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AND EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/ OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

UNDERGROUND SERVICE ALERT
CALL TOLL FREE 1-800-922-4455
THREE WORKING DAYS BEFORE YOU DIG

PROJECT SUMMARY

SITE NAME:	BUCKLAND MALL	
SITE NO.:	CT03XC211	
SITE ADDRESS:	53 SLATER STREET MANCHESTER, CT 06040	
COUNTY:	HARTFORD	
SITE COORDINATES:		
LATITUDE:	41° 48' 18.2" N	(NAD 83)
LONGITUDE:	72° 32' 00.6" W	(NAD 83)
GROUND ELEV.:	±193'	(AMSL)
JURISDICTION:	CONNECTICUT SITING COUNCIL	
ZONING CLASSIFICATION:	RESIDENTIAL	
LANDLORD:	CROWN ATLANTIC COMPANY LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (704) 405-6555	
CROWN CASTLE CONSTRUCTION MANAGER:	MIKE CALLAHAN (860) 919-7278	
APPLICANT:	SPRINT 1 INTERNATIONAL BLVD. MAHWAH, NJ 07495	
PROJECT MANAGER:	ALCATEL LUCENT 1 ROBBINS ROAD WESTFORD, MA 01886	
CONTACT:	CAMILLE MULLIGAN (845) 313-6920	
CONSTRUCTION MANAGER:	TRACEY SWEARINGEN (518) 944-8794 (CELL)	
ENGINEER:	INFINIGY 11 HERBERT DRIVE LATHAM, NY 12110	
CONTACT:	PAUL FANOS (518) 690-0790	
FIBER PROVIDER:	AT&T (800) 288-2020	
POWER PROVIDER:	CONNECTICUT LIGHTS AND POWER (860) 947-2000	
BUILDING CODE:	2003 INTERNATIONAL BUILDING CODE 2005 CONNECTICUT BUILDING CODE W/ 2009 AMENDMENT UNIFORM MECHANICAL CODE UNIFORM PLUMBING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES	
ELECTRICAL CODE:	2005 NATIONAL ELECTRICAL CODE	

PROJECT TEAM

ALCATEL·LUCENT

1 ROBBINS ROAD
WESTFORD, MA 01886

PROJECT MANAGER

INFINIGY Design. Build. Deliver.

11 Herbert Drive
Latham, NY 12110
OFFICE #: (518) 690-0790
FAX #: (518) 690-0793

ENGINEER

SCOPE OF WORK:

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
- FACILITY HAS NO PLUMBING OR REFRIGERANTS
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. CABINETS, ANTENNAS/RRU AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR
- INSTALL NEW ANTENNAS/RRH'S ON EXISTING TOWER
- INSTALL NEW BTS OR RETROFIT EXISTING BTS IN EXISTING EQUIPMENT AREA
- REMOVE EXISTING CDMA ANTENNAS AND COAX CABLES
- REPLACE EXISTING BATTERY CABINET WITH NEW BATTERY CABINET IF REQUIRED
- REPLACE EXISTING GPS IF REQUIRED

ENGINEER'S LICENSE

CERTIFICATION STATEMENT:

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CONNECTICUT.

LICENSED ENGINEER – STATE OF CONNECTICUT

APPROVALS

SPRINT CONST.		DATE
ALU RF		DATE
ALU LEASING/SITE ACQ.		DATE
IN-MARKET CONSTRUCTION LEAD		DATE
SITE OWNER	NAME/COMPANY: TITLE:	DATE

INFINIGY Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

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

No.	Submittal / Revision	Appd.	Date
1	ISSUED FOR CONSTRUCTION	ANS	1/30/13
0	ISSUED FOR REVIEW	KMF	11/5/12

Drawn: KMF Date: 11/5/12
Designed: AJD Date: 11/5/12
Checked: AGF Date: 11/5/12

Project Number
294-052

Project Title

BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For

Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/30/13

Drawing Title

TITLE SHEET

Drawing Number

T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
- A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
- B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
- C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC").
- D. AND NFPA 101 (LIFE SAFETY CODE).
- E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
- F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).

1.2 DEFINITIONS:
A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B: COMPANY: SPRINT NEXTEL 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.

1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.

1.4 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.

1.5 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 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.

1.6 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.

1.7 NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT NEXTEL WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

2.1 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.

2.2 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.

2.3 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.

2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY SPRINT NEXTEL TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.

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

2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE 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.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR SPRINT NEXTEL PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
- A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
- B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
- C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
- D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT NEXTEL OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
- E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
- F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.

4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

5.1 TESTS AND INSPECTIONS:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.

C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.

D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.

F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS. HYBERFLEX TESTING NOT LIMITED TO COAX SWEEPS.

G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.

A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.

B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.

C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.

E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.

F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.

G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ICE, SNOW, ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ICE, SNOW ROOTS, SOD, RUBBISH, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

PROJECT INFORMATION

THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT FACILITY AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS COMMUNICATIONS SERVICE.

NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.

NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.

NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

SPRINT MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAGE OF ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

LEGEND

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
F	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
M	KILOWATT HOUR METER
JB	JUNCTION BOX
PB	PULL BOX TO NEC/TELCO STANDARDS
— — — — —	UNDERGROUND UTILITIES
#	DENOTES REFERENCE NOTE
■	EXOTHERMIC WELD CONNECTION
●	MECHANICAL CONNECTION
OR ⊗	GROUND ROD
OR ⊠	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	PIN AND SLEEVE RECEPTACLE
	120AC DUPLEX RECEPTACLE
G	GROUND CONDUCTOR
# / #	REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER

ABBREVIATIONS

CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MIGB	MASTER ISOLATED GROUND BAR
SST	SELF SUPPORTING TOWER
GPS	GLOBAL POSITIONING SYSTEM
TYP.	TYPICAL
DWG	DRAWING
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
PVC	POLYVINYL CHLORIDE
CAB	CABINET
C	CONDUIT
SS	STAINLESS STEEL
G	GROUND
AWG	AMERICAN WIRE GAUGE
RGS	RIGID GALVANIZED STEEL
AHJ	AUTHORITY HAVING JURISDICTION
TTLNA	TOWER TOP LOW NOISE AMPLIFIER
UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING
AGL	ABOVE GROUND LEVEL

INFINIGY Design. Build. Deliver.
11 Herbert Drive
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Fax # (518) 690-0793

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

No.	Submittal / Revision	App'd	Date
1	ISSUED FOR CONSTRUCTION	AHS	1/30/13
0	ISSUED FOR REVIEW	KMF	11/5/12

Drawn: KMF Date: 11/5/12
Designed: AJB Date: 11/5/12
Checked: ASF Date: 11/5/12

Project Number 284-052

Project Title

BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For

Sprint VISION

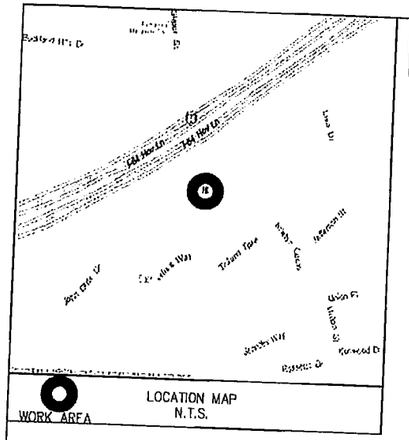
Drawing Scale: AS NOTED
Date: 1/30/13

Drawing Title

GENERAL NOTES

Drawing Number

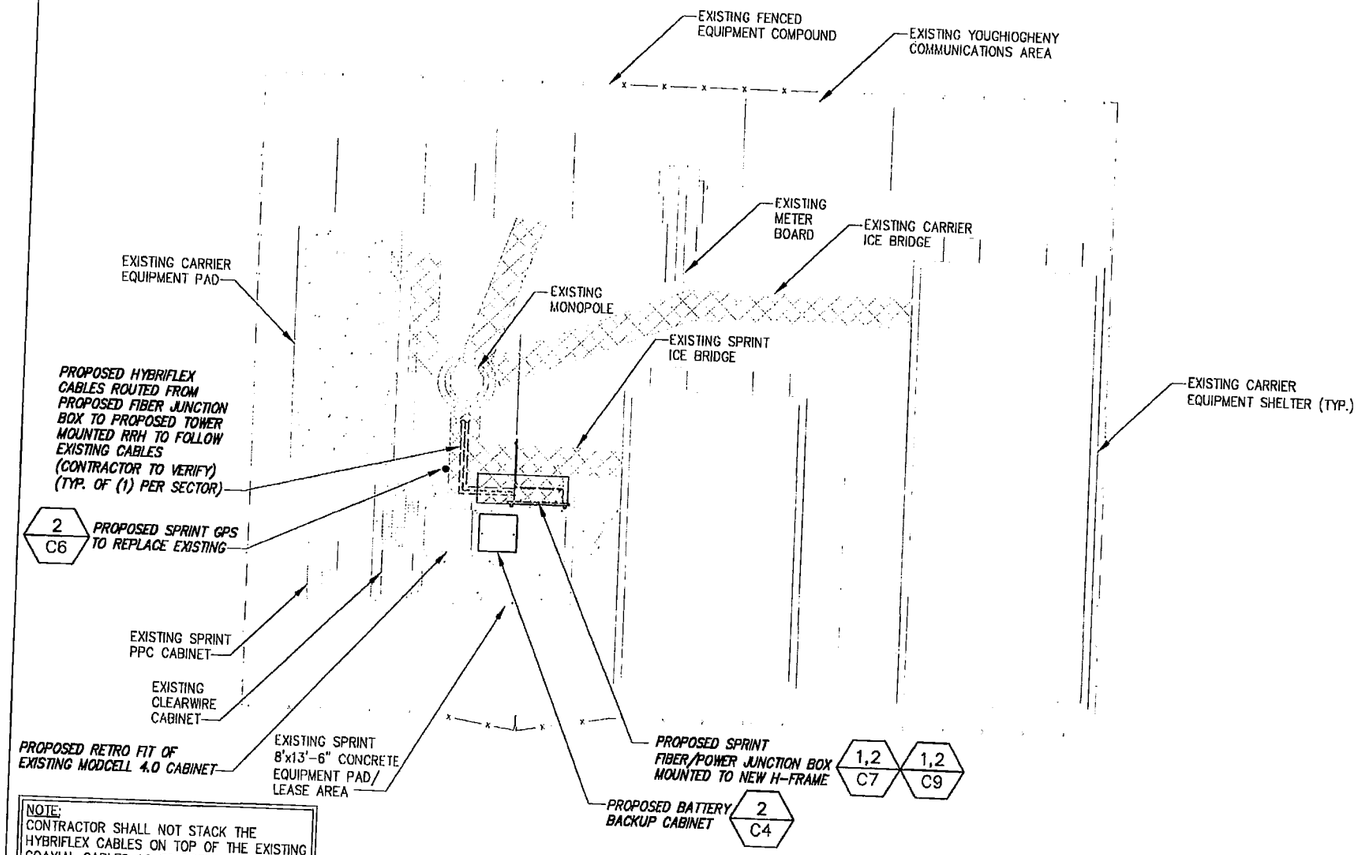
C1



LOCATION MAP
N.T.S.

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION.

NOTE:
OVERALL VERTICAL SPRINT LEASED AREA OF 8' NOT TO BE EXCEEDED.



NOTE:
CONTRACTOR SHALL NOT STACK THE HYBRIFLEX CABLES ON TOP OF THE EXISTING COAXIAL CABLES AS TO PREVENT THE COAXIAL CABLES FROM BEING REMOVED.

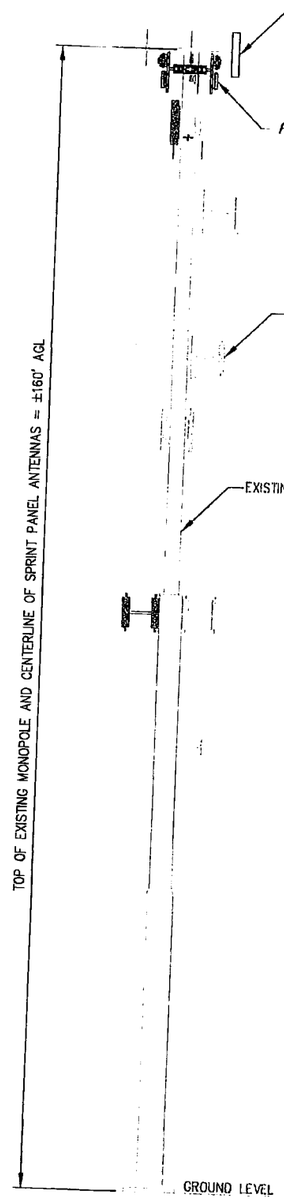
NOTE:
1. REFER TO: CONSTRUCTION STANDARDS-SPRINT DOCUMENT: "EXHIBIT A - STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV 4.0 - 02.15.2011.DOCM"
2. REFER TO: "WEATHERPROOFING SPECS: EXCERPT EXH A - WTHRPRF - STD CONSTR SPECS._15720111042185542 9.DOCM"
3. REFER TO: "COLOR CODING-SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF"
4. CONTRACTOR TO VERIFY LATEST REV AND DATE PRIOR TO CONSTRUCTION.

CALLED NORTH

1 / --- COMPOUND SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE
10' 5' 0 5' 10'
SCALE (11x17): 1" = 10'-0"
SCALE (22x34): 1" = 5'-0"

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY CROWN CASTLE DATED: 10/20/12



2 / --- SITE ELEVATION
NOT TO SCALE

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CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For
Sprint
VISION

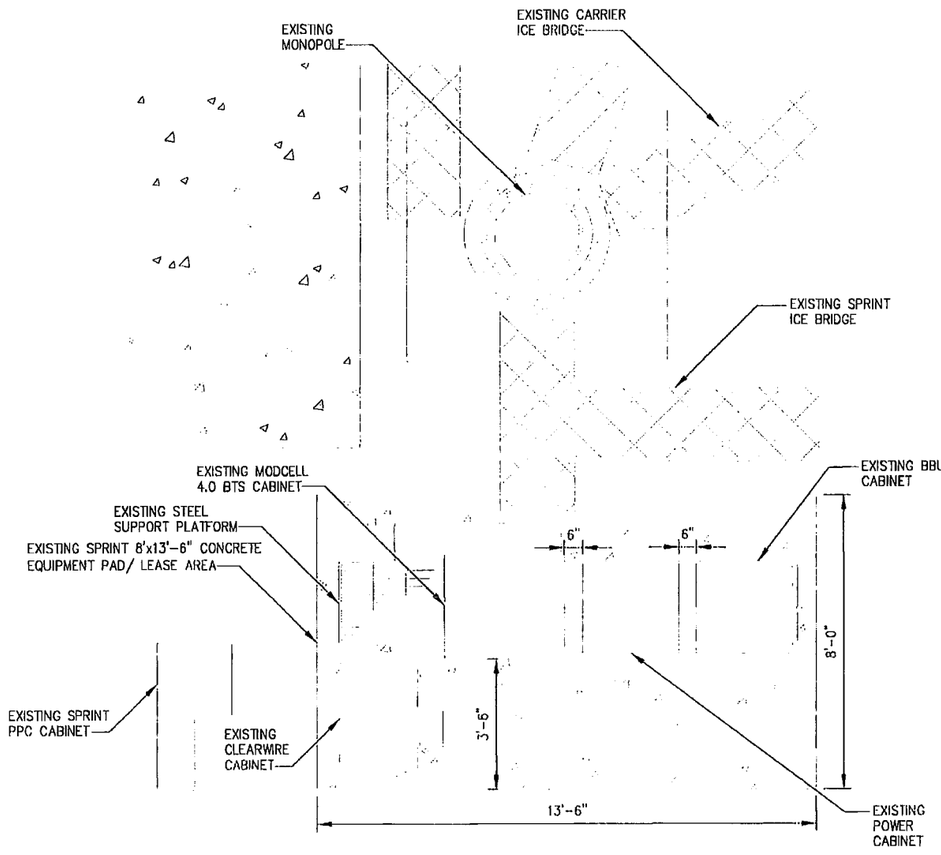
Drawing Scale:
AS NOTED

Date:
1/30/13

Drawing Title
COMPOUND SITE PLAN & ELEVATION

Drawing Number
C2

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY CROWN CASTLE DATED: 10/20/12



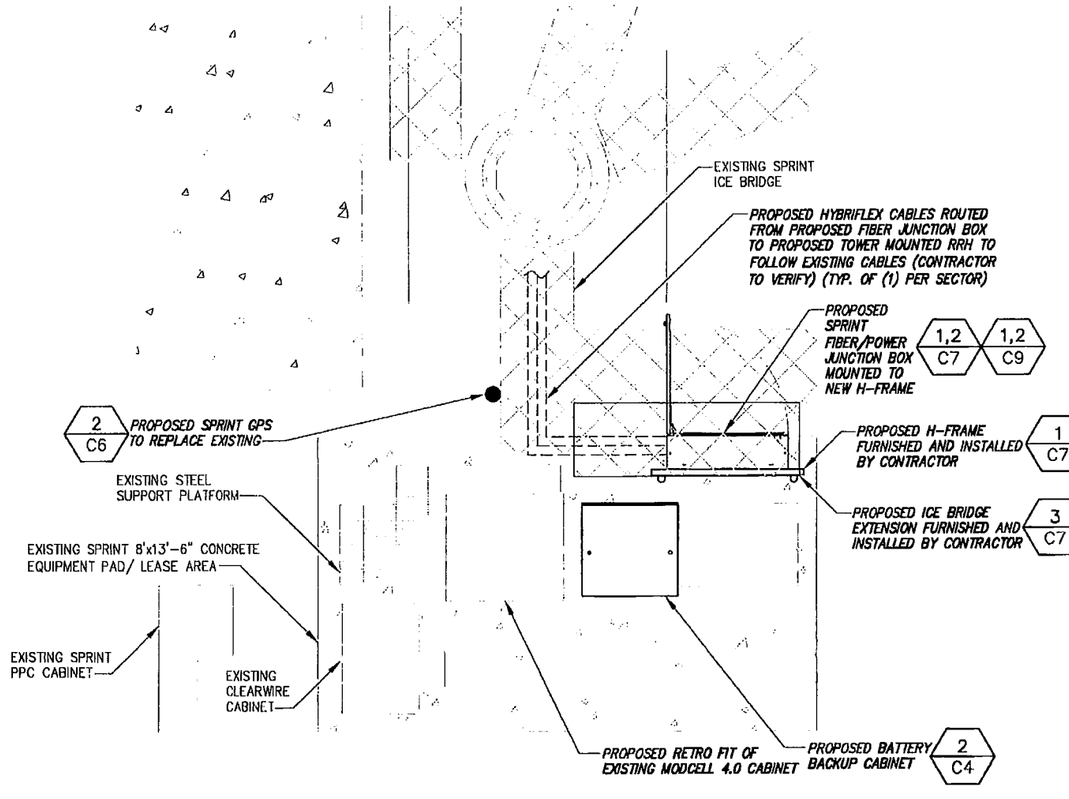
CALLED NORTH

1 / -- EQUIPMENT SITE PLAN (EXISTING)
SCALE: AS NOTED

GRAPHIC SCALE

4' 2' 0 2' 4'

SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"



CALLED NORTH

2 / -- EQUIPMENT SITE PLAN (FINAL/PERMANENT)
SCALE: AS NOTED

GRAPHIC SCALE

4' 2' 0 2' 4'

SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

NOTE:
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53 SLATER STREET
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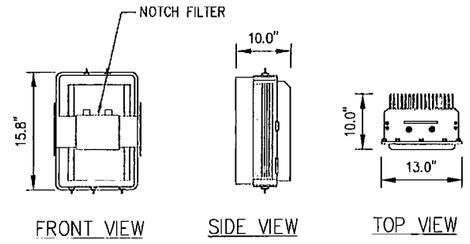
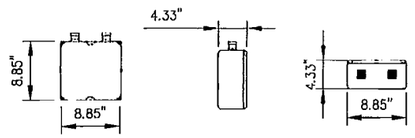
Drawing Title

EQUIPMENT SITE PLANS

Drawing Number

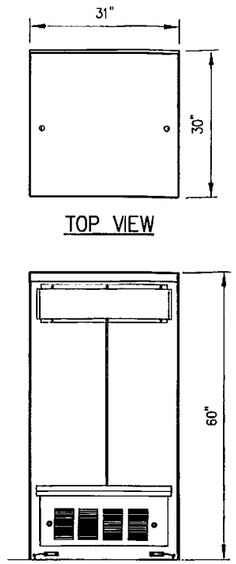
C3



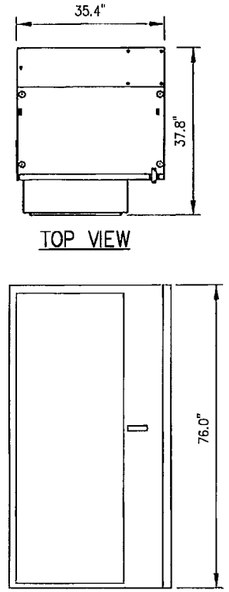


NOTE:
REFER TO R.F. SYSTEM SCHEDULE FOR EXACT RRH SPECIFICATIONS AND QUANTITIES.

1 RRH EQUIPMENT DETAILS
NOT TO SCALE



2 BATTERY CABINET PROFILE
NOT TO SCALE

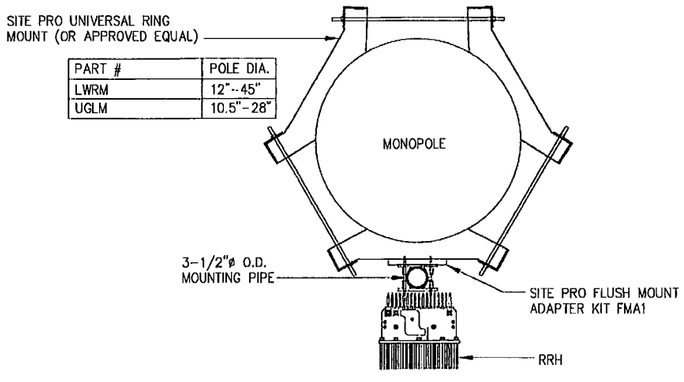


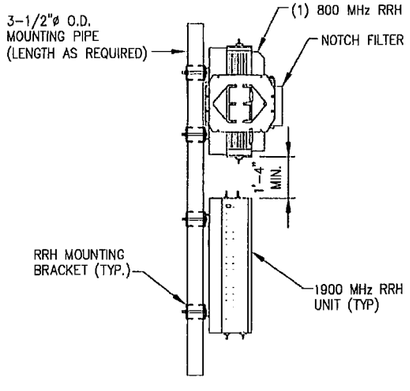
3 BTS CABINET PROFILE
NOT TO SCALE

DESIGN CRITERIA:

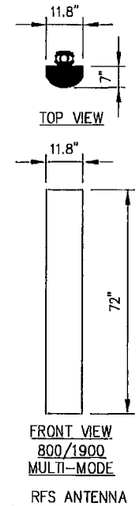
2009 INTERNATIONAL BUILDING CODE W/ STATE MODIFICATION	
WIND SPEED (ASCE-7-05)	90 MPH
EXPOSURE B	
IMPORTANCE FACTOR	1.0
SEISMIC SITE CLASS	D
Ss=0.152 S1=0.050	
SEISMIC IMPORTANCE FACTOR	1.0
SEISMIC DESIGN CATEGORY	B
CABINET WEIGHT:	
9928 MM BTS CABINET	1074 LBS.
60EC V2 BATTERY CABINET	2830 LBS.
MATERIAL SPECIFICATIONS	
C-, M-, AND ANGLE SHAPES:	ASTM A36
HIGH-STRENGTH BOLTS:	ASTM A325SC OR (A325N)
STRUCTURAL WF SHAPES:	ASTM A572-GR50
TUBE STEEL & PIPE COLUMNS:	ASTM A500, GRADE B
WELDING ELECTRODES:	E70XX
W - SHAPES:	ASTM A992, GRADE 50
U-BOLTS:	ASTM A36

NOTE:
OVERALL VERTICAL SPRINT LEASED AREA OF 8' NOT TO BE EXCEEDED.



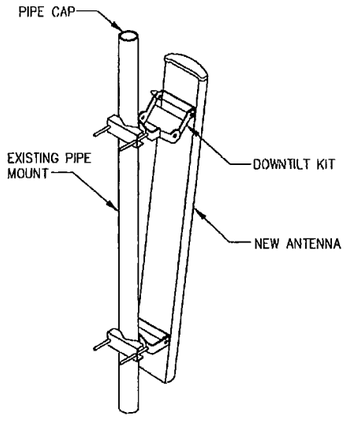


4 RRH MOUNTING DETAIL (TYP.)
NOT TO SCALE



RFS ANTENNA
P/N: APXVSPP18-C-A20

5 ANTENNA DETAILS
NOT TO SCALE



6 PANEL ANTENNA MOUNT DETAIL
NOT TO SCALE

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Fax # (518) 690-0793

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
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294-052

Project Title
BUCKLAND MALL
CT03XC211

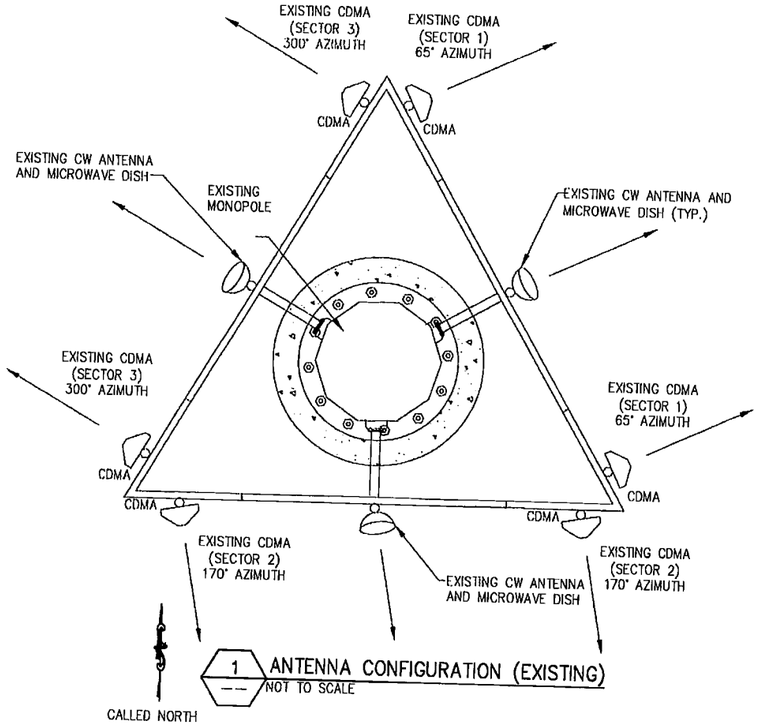
53 SLATER STREET
MANCHESTER, CT 06040

Prepared For
Sprint VISION

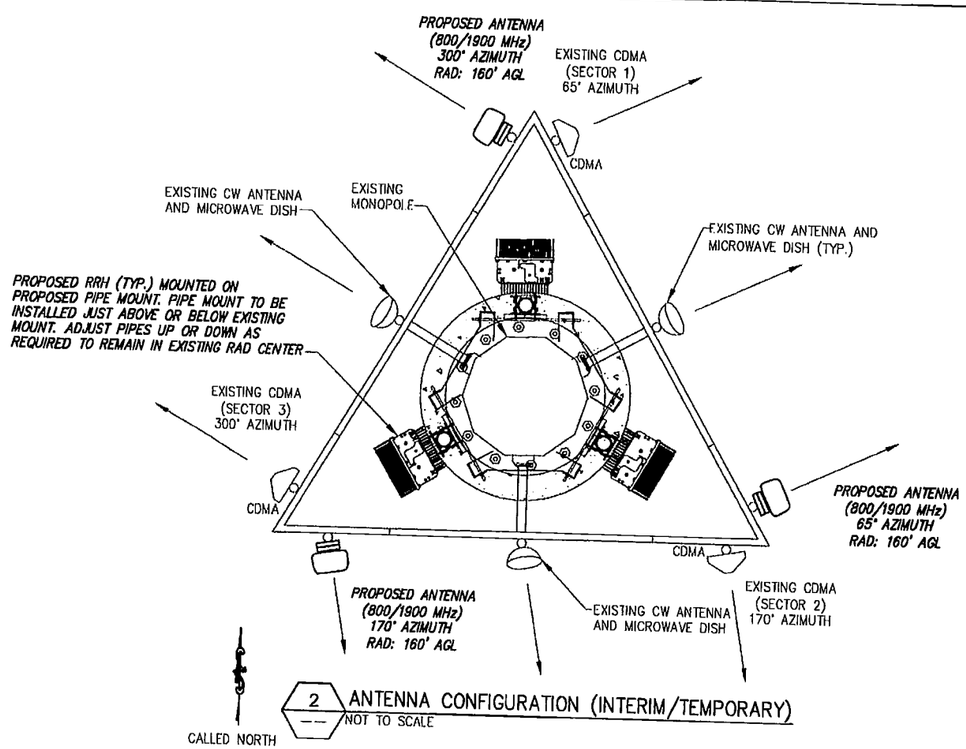
Drawing Scale:
AS NOTED
Date:
1/30/13

Drawing Title
EQUIPMENT DETAILS

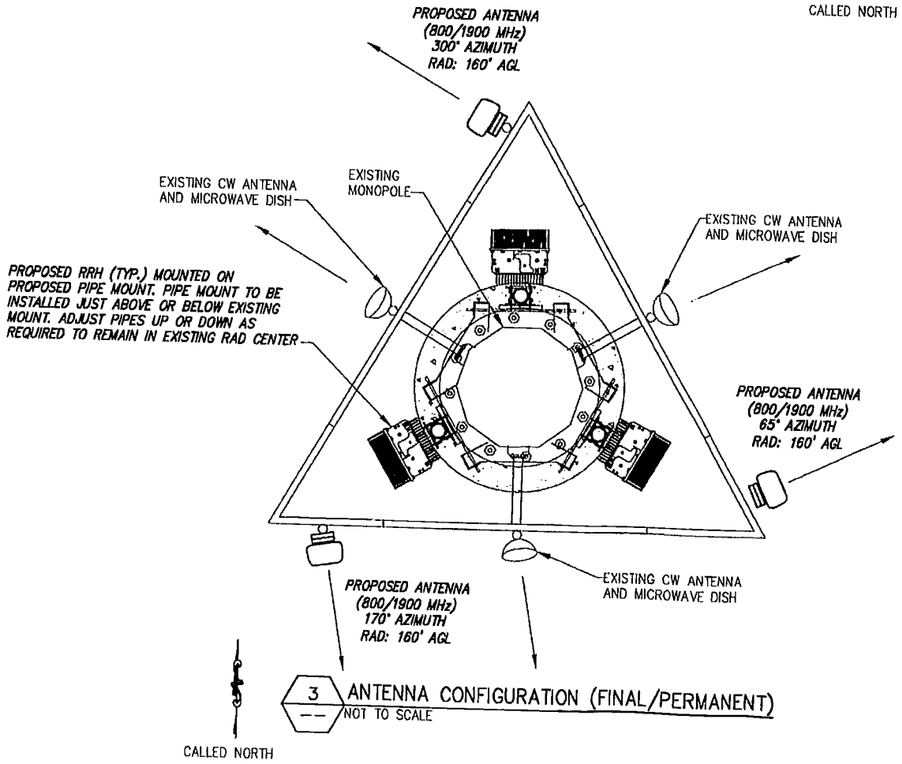
Drawing Number
C4



1 ANTENNA CONFIGURATION (EXISTING)
NOT TO SCALE



2 ANTENNA CONFIGURATION (INTERIM/TEMPORARY)
NOT TO SCALE



3 ANTENNA CONFIGURATION (FINAL/PERMANENT)
NOT TO SCALE

NOTE:
CONTRACTOR TO VERIFY A PASSING SIGNED AND SEALED ANTENNA MOUNT/PLATFORM STRUCTURAL ANALYSIS HAS BEEN COMPLETED FOR INTERIM AND FINAL RF CONFIGURATION. NO ANTENNA MOUNT/PLATFORM MODIFICATIONS SHOULD COMMENCE OR INSTALLATION OF ANTENNAS, RRH OR TOWER MOUNTED EQUIPMENT WITHOUT VERIFYING THE MOUNT/PLATFORM ANALYSIS HAS BEEN COMPLETED FOR THE SPECIFIC LOADING. ADDITIONALLY ALL MOUNTS, ANTENNA AND COAX TO BE INSTALLED IN ACCORDANCE WITH TOWER STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE.

NOTE:
REQUIRED PIPE MOUNTS TO BE SUPPLIED BY CONTRACTOR.

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY CROWN CASTLE DATED: 10/20/12

RRH NOTES:

- SEE PAGE C4 FOR RRH MOUNTING INFORMATION (TYP. ALL SECTORS).
- REFER TO RF SCHEDULE ON SHEET C7 FOR RRH UNIT SPECS AND QUANTITIES.

GENERAL NOTES:

1. NEW SPRINT PANEL ANTENNAS TO MEET RF DESIGN REQUIREMENTS PER EBTS, PER APPROVED STRUCTURAL ANALYSIS.
2. CONTRACTOR TO PROVIDE EXISTING ANTENNA VERIFICATION AND TO INCLUDE MOUNTING HEIGHT, RAD CENTER, TOP AND BOTTOM OF ANTENNAS.
3. THE CONFIGURATION PLANS ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS.
4. THE ANTENNA INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS AND ASSOCIATED DETAILS THEREIN. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO WORK ON THE STRUCTURE.
5. CONTRACTOR SHALL VERIFY NEW PARTS BEFORE ORDERING.
6. REFER TO SHEET C4 & C7 FOR ANTENNA SPECS.
7. CONTRACTOR TO USE PROPER TORQUE WHEN INSTALLING AND TIGHTENING CONNECTORS TO INSURE PROPER FIT.
8. ALL HYBRID CABLES SHALL BE MARKED WITHIN 24" OF THE END OF EACH CABLE WITH 2" WIDE VINYL TAPE. THIS INCLUDES ALL JUMPERS AND MAIN LINE HYBRID CABLES.
9. CDMA ANTENNAS SHALL NOT BE REMOVED UNTIL ALL NEW MULTI-MODE ANTENNAS ARE INSTALLED AND ON-AIR.

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Fax # (516) 690-0793

STATE OF CONNECTICUT
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No. 24705
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294-052

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BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

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VISION

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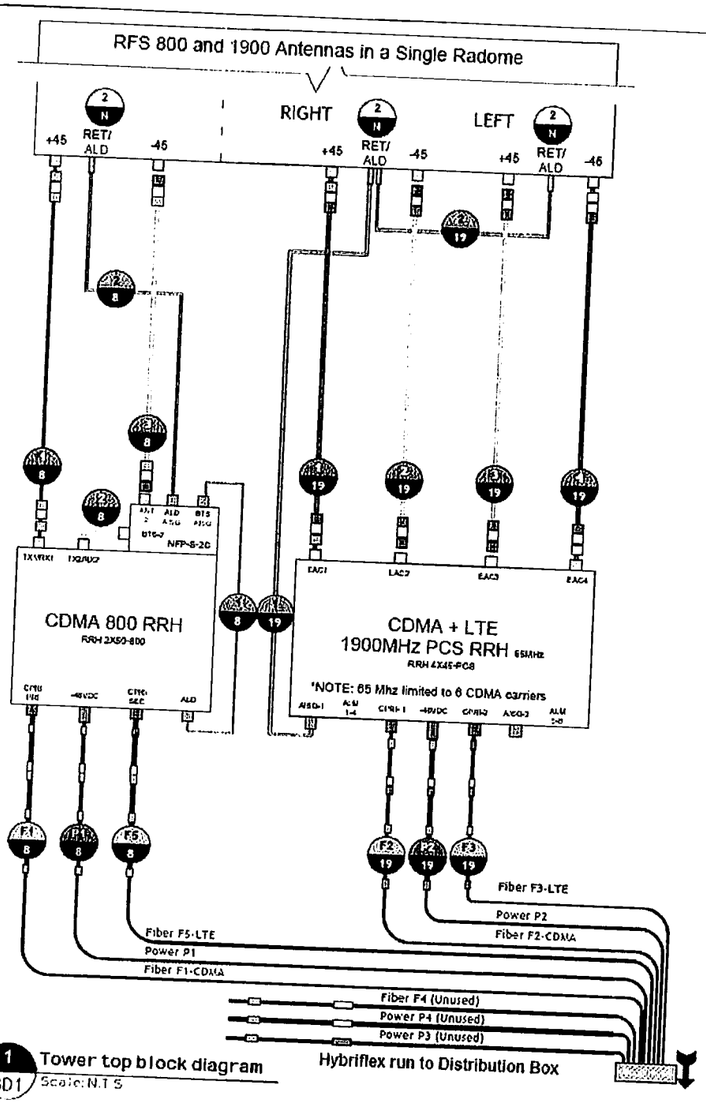
Drawing Title
ANTENNA PLANS

Drawing Number
C5



1 BD1 Tower top block diagram
Scale: N.T.S

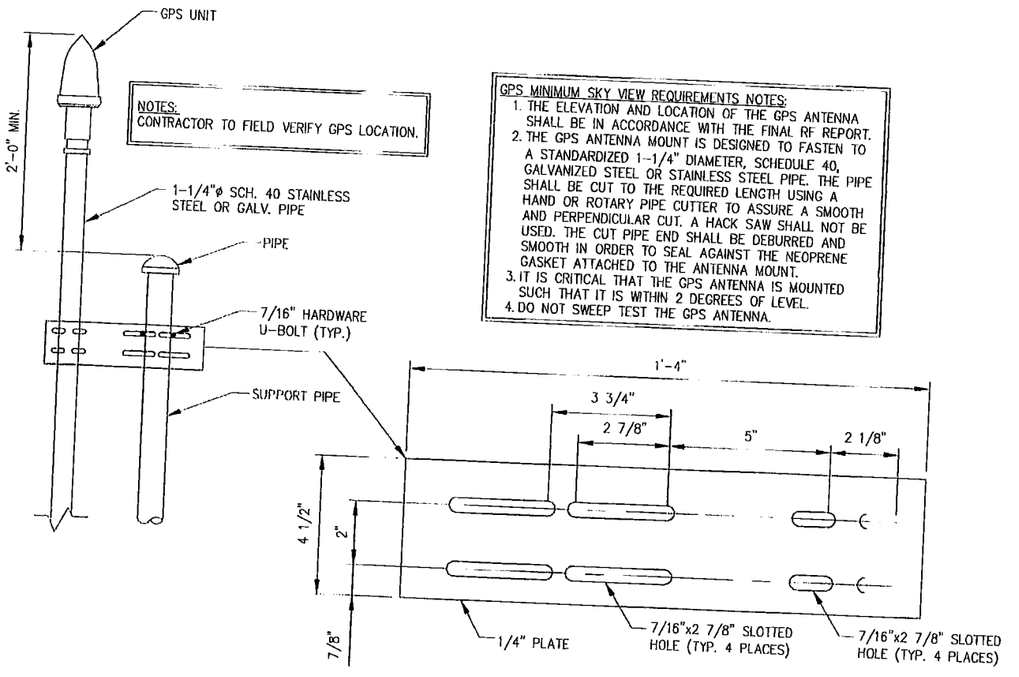
SCENARIO 124 v2.0

1 ANTENNA CABLE RISER DIAGRAM
NOT TO SCALE

INSTALLER VERIFY LATEST PLUMBING/WIRING DIAGRAMS, PRIOR TO INSTALLATION.

WEATHERPROOFING CONNECTORS AND GROUND KIT NOTES:
1. ALL CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED USING BUTYL RUBBER WEATHERPROOFING AND TAPE. THIS INSTALLATION MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION OR PER THE FOLLOWING INSTRUCTIONS (WHICHEVER IS GREATER).
2. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE ENCOMPASSED INTO COLD SHRINK AND COMPLETELY WRAPPED WITH 2 IN. WIDE ELECTRICAL TAPE OVERLAPPING EACH ROW BY APPROXIMATELY ½" AND EXTENDING PAST THE CONNECTION BY TWO INCHES AND DISCUSSED BELOW; OR
3. THE COAXIAL ABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH LAYERS OR ELECTRICAL/BUTYL RUBBER/ELECTRICAL TAPE AS DISCUSSED BELOW OR;
4. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH TWO LAYERS OF 1.5 INCH WIDE SELF-AMALGAMATING TAPE COVERED WITH TWO LAYERS OF ELECTRICAL TAPE.

RRH JUMPER NOTES:
1. FOR DISTANCES BETWEEN RRH'S AND ANTENNAS LESS THAN 10'-0" USE A 1/2" JUMPER.
2. FOR DISTANCES BETWEEN RRH'S AND ANTENNAS GREATER THAN 10'-0" USE A 7/8" JUMPER.



NOTES:
CONTRACTOR TO FIELD VERIFY GPS LOCATION.

GPS MINIMUM SKY VIEW REQUIREMENTS NOTES:
1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARDIZED 1-1/4" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
3. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF LEVEL.
4. DO NOT SWEEP TEST THE GPS ANTENNA.

2 GPS ANTENNA DETAIL
NOT TO SCALE

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
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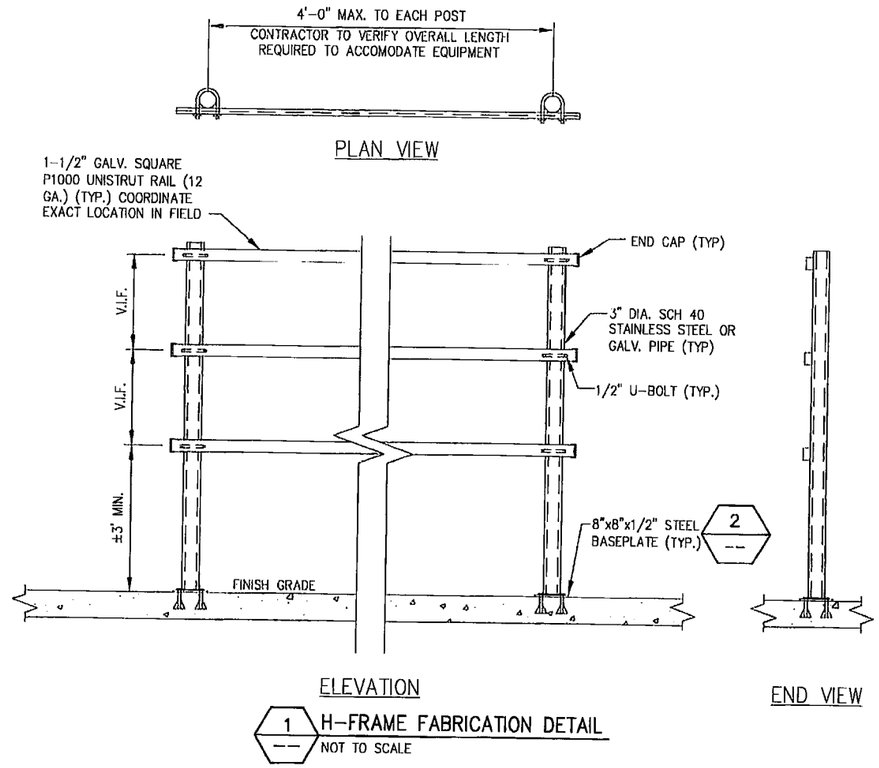
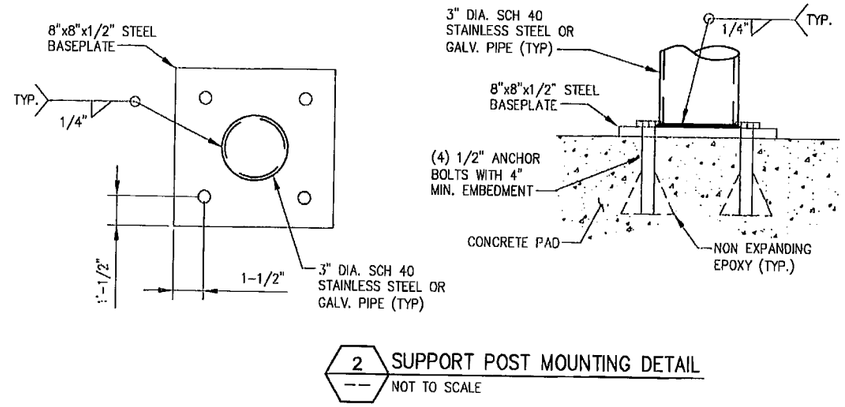
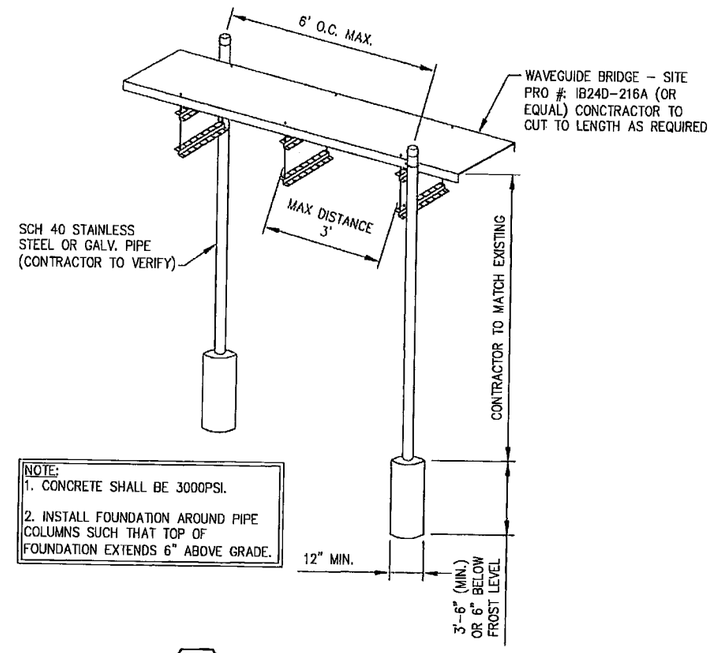
ANTENNA CABLE RISER AND GPS DETAILS

Drawing Number
C6







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0	ISSUED FOR REVIEW	KMF	11/9/12

Drawn: KMF Date: 11/9/12
Designed: AJD Date: 11/9/12
Checked: AGF Date: 11/9/12

Project Number
294-052

Project Title

BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 08040

Prepared For

Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/30/13

Drawing Title

EQUIPMENT DETAILS

Drawing Number

C7

	Market	Northern Connecticut		
	Cascade ID	CT03XC211		
		SECTOR 1	SECTOR 2	SECTOR 3
	Split sector present	No	No	No
1900	1900MHz_Azimuth	65	170	300
1900	1900MHz_No_of_Antennas	1	1	1
1900	1900MHz_RADCenter(ft)	160	160	160
1900	1900MHz_Antenna Make	RFS	RFS	RFS
1900	1900MHz_Antenna Model	APXVSPP18-C-A20	APXVSPP18-C-A20	APXVSPP18-C-A20
1900	1900MHz_Horizontal_Beamwidth	65	65	65
1900	1900MHz_Vertical_Beamwidth	5.5	5.5	5.5
1900	1900MHz_AntennaHeight (ft)	6	6	6
1900	1900MHz_AntennaGain(dBd)	15.9	15.9	15.9
1900	1900MHz_E_Tilt	0	-3	-1
1900	1900MHz _M_Tilt	0	0	0
1900	1900MHz_Carrier_Forecast_Year_2013	4	4	4
1900	1900MHz_RRH Manufacturer	ALU	ALU	ALU
1900	1900MHz_RRH Model	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz
1900	1900MHz_RRH Count	1	1	1
1900	1900MHz_RRH Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
1900	1900MHz Combiner Model	No Combiner Required	No Combiner Required	No Combiner Required
1900	1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to	10	10	10
1900	1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax	LCF12-50J	LCF12-50J	LCF12-50J
1900	1900MHz_Top_Jumper #2_Length (RRH to Combiner for TT if applicable, ft)	N/A	N/A	N/A
1900	1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable)	N/A	N/A	N/A
1900	1900MHz_Main_Coax_Cable_Length (ft)	N/A	N/A	N/A
1900	1900MHz_Main_Coax_Cable_Model	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #1_Length (Ground based RRH to Combiner-OR-Main Coax, ft)	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #1_Cable_Model (Ground based RRH to Combiner-OR-Main Coax)	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #2_Length (Ground based-Combiner to Main Coax, ft)	N/A	N/A	N/A
1900	1900MHz_Bottom_Jumper #2_Cable_Model (Ground based-Combiner to Main Coax)	N/A	N/A	N/A
800	800MHz_Azimuth	65	170	300
800	800MHz_No_of_Antennas	0	0	0
800	800MHz_RADCenter(ft)	160	160	160
800	800MHz_AntennaMake	RFS	RFS	RFS
800	800MHz_AntennaModel	APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)
800	800MHz_Horizontal_Beamwidth	65	65	65
800	800MHz_Vertical_Beamwidth	11.5	11.5	11.5
800	800MHz_AntennaHeight (ft)	6	6	6
800	800MHz_AntennaGain (dBd)	13.4	13.4	13.4
800	800MHz_E_Tilt	-1	-8	-8
800	800MHz_M_Tilt	0	0	0
800	800MHz_RRH Manufacturer	ALU	ALU	ALU
800	800MHz_RRH Model	800 MHz RRH 2x50W	800 MHz RRH 2x50W	800 MHz RRH 2x50W
800	800MHz_RRH Count	1	1	1
800	800MHz_RRH Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
800	800_Top_Jumper #1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM)	10	10	10
800	800_Top_Jumper_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM)	LCF12-50J	LCF12-50J	LCF12-50J
800	800MHz_Main_Coax_Cable_Length (ft)	N/A	N/A	N/A
800	800MHz_Main_Coax_Cable_Model	N/A	N/A	N/A
800	800_Bottom_Jumper #1_Length (Ground based RRH to Main Coax)	N/A	N/A	N/A
800	800_Bottom_Jumper #1_Cable_Model (Ground based RRH to Main Coax)	N/A	N/A	N/A
	Plumbing Scenario *	124	124	124
Comments	* If plumbing scenario does not match the material received, please contact your Construction Manager			
Comments	11/9/2012			

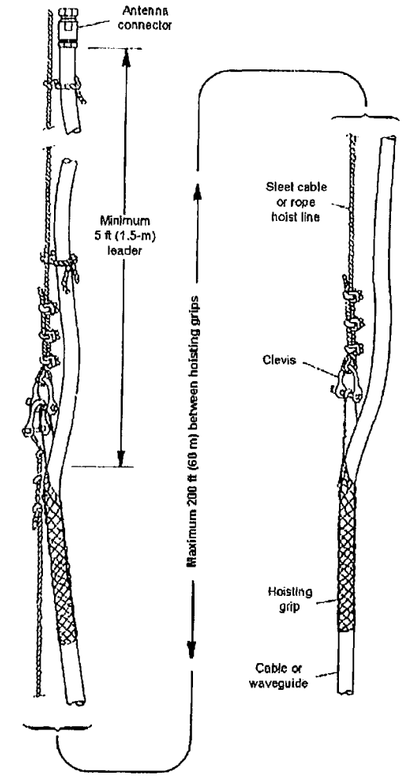
NOTE:
RFDS SHOWN PROVIDED BY SPRINT DATED 11/9/12.

NOTE:
COORDINATE RF ANTENNA INSTALLATION WITH FINAL SPRINT RFDS. COORDINATE RF MW DISH (IF APPLICABLE) INSTALLATION WITH FINAL SPRINT RFDS.

1 SPRINT RFDS
NOT TO SCALE

CHECK FST FOR LATEST VERSION OF RFDS

1. DO NOT USE ONE HOISTING GRIP FOR HOISTING TWO OR MORE CABLES OR CABLE TRAYS. THIS CAN CAUSE THE HOISTING GRIP TO BREAK OR THE CABLES OR WAVE- GUIDES TO FALL.
2. DO NOT USE THE HOISTING GRIP FOR LOWERING CABLE OR CABLE TRAY. SNAGGING OF THE CABLE OR CABLE TRAY MAY LOOSEN THE GRIP AND POSSIBLY CAUSE THE CABLE TO CABLE TRAY TO SWAY OR FALL
3. DO NOT REUSE HOISTING GRIPS. USED GRIPS MAY HAVE LOST ELASTICITY, STRETCHED, OR BECOME WEAKENED. REUSING A GRIP CAN CAUSE THE CABLE OR CABLE TRAY TO SLIP, BREAK, OR FALL
4. USE HOISTING GRIPS AT INTERVALS OF NO MORE THAN 200 FT (60 M).
5. MAKE SURE THAT THE PROPER HOISTING GRIP IS USED FOR THE CABLE OR CABLE TRAY BEING INSTALLED. SLIPPAGE OR INSUFFICIENT GRIPPING STRENGTH WILL RESULT IF YOU ARE USING THE WRONG HOISTING GRIP.



2 HOIST GRIP DETAIL
NOT TO SCALE

NOTE:
1. REFER TO: CONSTRUCTION STANDARDS–SPRINT DOCUMENT: "EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV 4.0 – 02.15.2011.DOCM"
2. REFER TO: "WEATHERPROOFING SPECS: EXCERPT EXH A – WTHRPRF – STD CONSTR SPECS._15720111042185542 9.DOCM"
3. REFER TO: "COLOR CODING–SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09–08–11.PDF"
4. CONTRACTOR TO VERIFY LATEST REV AND DATE PRIOR TO CONSTRUCTION.

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

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

No	Submittal / Revision	Appv'd	Date
1	ISSUED FOR CONSTRUCTION	AHS	1/30/13
0	ISSUED FOR REVIEW	KMF	11/5/12

Drawn: KMF Date: 11/5/12
Designed: AJD Date: 11/5/12
Checked: AGF Date: 11/5/12

Project Number
294-052

Project Title

BUCKLAND MALL
CT03XC211

59 SLATER STREET
MANCHESTER, CT 06040

Prepared For

Sprint VISION

Drawing Scale:
AS NOTED

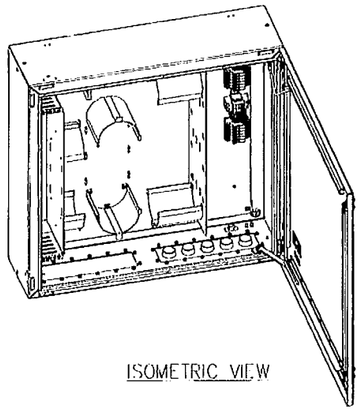
Date:
1/30/13

Drawing Title

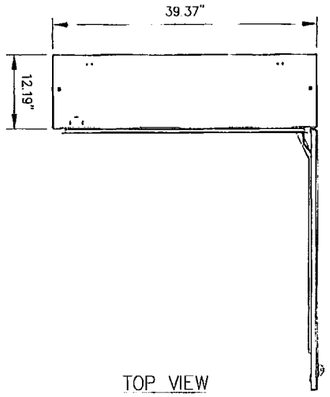
RF AND CABLE DETAILS

Drawing Number

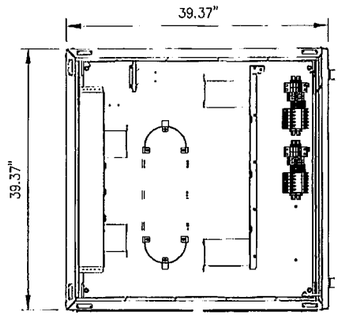
C8



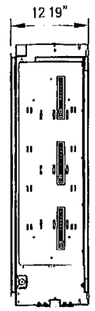
ISOMETRIC VIEW



TOP VIEW

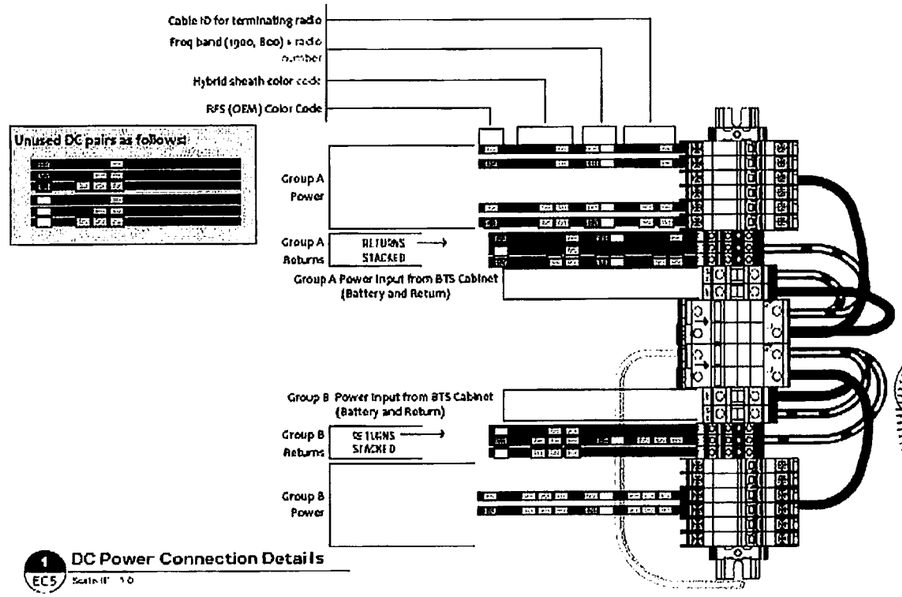


FRONT VIEW

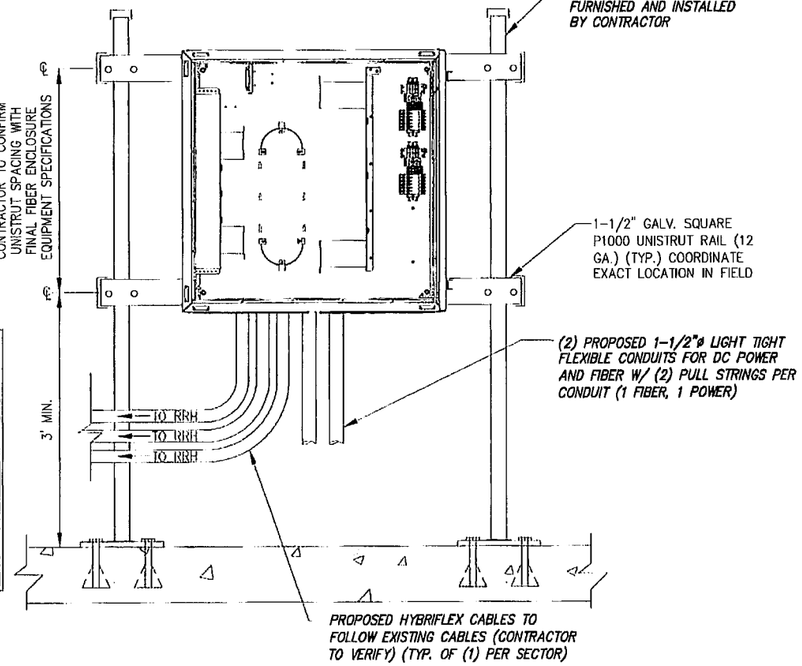


SIDE VIEW

1 DISTRIBUTION BOX DETAIL
NOT TO SCALE



1 EC5 DC Power Connection Details
Scale: N.T.S.



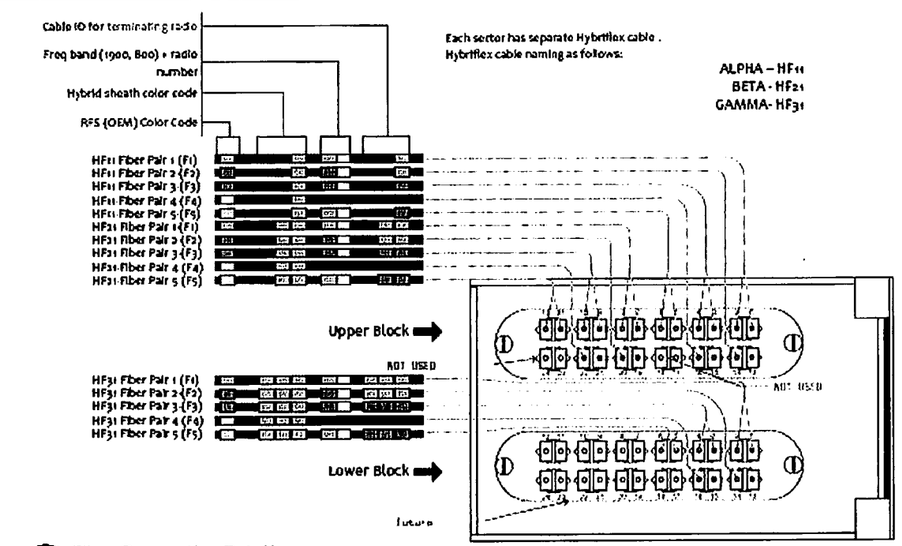
NOTE:
- DISTRIBUTION BOX IS KITTED WITH 50' OF 1-1/2" LIQUID-TIGHT CONDUIT AND CONNECTORS. THIS SHOULD BE:
* SPLIT IN HALF,
* TERMINATED TO THE DISTRIBUTION BOX AS SHOWN,
* RAN TO AND COILED AS CLOSE TO WHERE THE CABINET IS GOING TO BE MOUNTED AS POSSIBLE.

- DISTRIBUTION BOX IS KITTED WITH 2 AWG, POWER CABLE 35' x 2EA. RUNS RED AND 2EA. RUNS BLACK. THIS SHOULD BE COILED AND LEFT INSIDE DISTRIBUTION BOX.

- BTS INSTALLATION TEAM WILL TERMINATE LIQUID-TIGHT, RUN THE FIBER JUMPERS AND POWER CABLES FROM BTS CABINET TO DISTRIBUTION BOX.

NOTE:
1. ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
2. MOUNT FIBER AND POWER DISTRIBUTION BOX WITH FOUR (4) 1/4"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.

2 TYPICAL DISTRIBUTION BOX ON H-FRAME DETAIL
NOT TO SCALE



2 EC5 Fiber Connection Details
Scale: N.T.S.

SCENARIO 124 v2.0

3 FIBER & DC CONNECTION DETAILS
NOT TO SCALE

INFINIGY Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

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

No.	Submittal / Revision	App'd	Date
1	ISSUED FOR CONSTRUCTION	AHS	1/30/13
0	ISSUED FOR REVIEW	KMF	11/5/12

Drawn: KMF Date: 11/5/12
Designed: AJD Date: 11/5/12
Checked: AGF Date: 11/5/12

Project Number
294-052

Project Title
BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/30/13

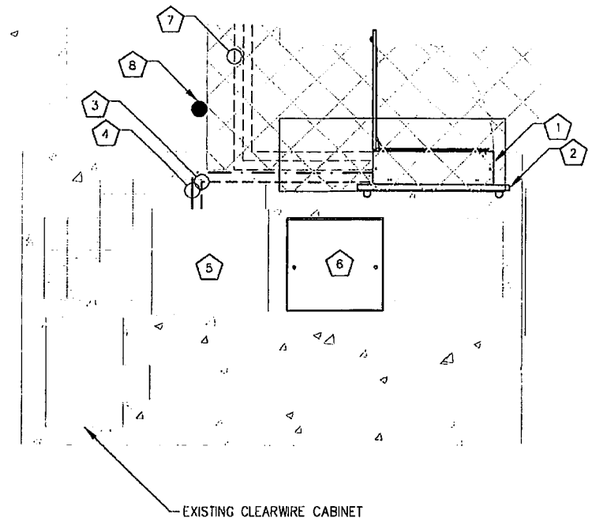
Drawing Title
FIBER DISTRIBUTION BOX DETAILS

Drawing Number
C9

CODED NOTES:

1. PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO NEW H-FRAME
2. PROPOSED H-FRAME FURNISHED AND INSTALLED BY CONTRACTOR
3. PROPOSED 1-1/2" LIQUID TIGHT CONDUIT WITH PULL-STRING FOR TELCO FROM FIBER JUNCTION BOX TO RADIO EQUIPMENT CABINET, 8'
4. PROPOSED 1-1/2" LIQUID TIGHT CONDUIT WITH PULL-STRING FOR DC POWER FROM FIBER JUNCTION BOX TO RADIO EQUIPMENT CABINET, 8'
5. PROPOSED RETRO FIT OF EXISTING MODCELL 4.0 CABINET
6. PROPOSED BATTERY BACKUP CABINET
7. PROPOSED HYBRIFLEX CABLES ROUTED FROM PROPOSED FIBER JUNCTION BOX TO PROPOSED TOWER MOUNTED RRH TO FOLLOW EXISTING CABLES (CONTRACTOR TO VERIFY) (TYP. OF (1) PER SECTOR)
8. PROPOSED SPRINT GPS TO REPLACE EXISTING

NOTE:
CONTRACTOR SHALL NOT STACK THE HYBRIFLEX CABLES ON TOP OF THE EXISTING COAXIAL CABLES AS TO PREVENT THE COAXIAL CABLES FROM BEING REMOVED.



CALLED NORTH

1 UTILITY SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

UNDERGROUND SERVICE ALERT
CALL TOLL FREE
1-800-922-4455
THREE WORKING DAYS BEFORE YOU DIG

NOTES:
CONTRACTOR TO USE EXISTING SPARE CONDUITS, IF AVAILABLE. CONDUIT SIZES MUST BE EQUAL TO OR GREATER THAN THAT ALLOWED BY CODE.

EXISTING ALARMS NEED TO BE RE-ROUTED AND VERIFIED IN PROPER WORKING CONDITION WHEN NEW MMBTS EQUIPMENT IS INSTALLED.

REMAINING GROUND LEADS FROM REMOVED CABINETS TO BE COILED (NOT ON WALKING SURFACE).

REMAINING UNUSED CONDUITS FROM EXISTING CABINETS TO BE COVERED WITH WATERPROOF CAPS (NOT DUCT TAPE).

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (N.E.C.), AND APPLICABLE LOCAL CODES
2. GROUNDING SHALL COMPLY WITH THE ARTICLE 250 OF NATIONAL ELECTRICAL CODE.
3. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
4. ALL WIRES SHALL BE AWG MIN #12 THHN COPPER UNLESS NOTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT UNLESS NOTED OTHERWISE.
6. LABEL SPRINT SERVICE DISCONNECTS WITH SWITCH AND PPC CABINET WITH ENGRAVED LAMACOID LABELS, LETTERS 1" IN HEIGHT.
7. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 8" RADIUS.
8. ENGAGE AN INDEPENDENT TESTING FIRM TO TEST AND VERIFY THAT RESISTANCE DOES NOT EXCEED 10 OHMS TO GROUND. TEST GROUND RING RESISTANCE PRIOR TO MAKING FINAL GROUND CONNECTIONS TO INFRASTRUCTURE AND EQUIPMENT. GROUNDING AND OTHER OPERATIONAL TESTING SHALL BE WITNESSED BY SPRINTS REPRESENTATIVE.
9. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE REQUIRED SO THAT CONDUIT BENDS DO NOT EXCEED 360 DEGREES.
10. OBTAIN PERMITS AND PAY FEES RELATED TO ELECTRICAL WORK PERFORMED ON THIS PROJECT. DELIVER COPIES OF ALL PERMITS TO SPRINT REPRESENTATIVE.
11. SCHEDULE AND ATTEND INSPECTIONS RELATED TO ELECTRICAL WORK REQUIRED BY JURISDICTION HAVING AUTHORITY. CORRECT AND PAY FOR ANY WORK REQUIRED TO PASS ANY FAILED INSPECTION.
12. REDLINED AS-BUILTS ARE TO BE DELIVERED TO A SPRINT REPRESENTATIVE.
13. PROVIDE TWO COPIES OF OPERATION AND MAINTENANCE MANUALS IN THREE-RING BINDER.
14. FURNISH AND INSTALL THE COMPLETE ELECTRICAL SERVICE, TELCO CONDUIT, AND THE COMPLETE GROUNDING SYSTEM.
15. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE BUILDING CODES AND LOCAL ORDINANCES, INSTALLED IN A NEAT MANNER AND SHALL BE SUBJECT TO APPROVAL BY A SPRINT REPRESENTATIVE.
16. CONDUCT A PRE-CONSTRUCTION SITE VISIT AND VERIFY EXISTING SITE CONDITIONS AFFECTING THIS WORK. REPORT ANY OMISSIONS OR DISCREPANCIES FOR CLARIFICATION PRIOR TO THE START OF CONSTRUCTION.
17. PROTECT ADJACENT STRUCTURES AND FINISHES FROM DAMAGE, REPAIR TO ORIGINAL CONDITION ANY DAMAGED AREA.
18. REMOVE DEBRIS ON A DAILY BASIS. DEBRIS NOT REMOVED IN A TIMELY FASHION WILL BE REMOVED BY OTHERS AND THE RESPONSIBLE SUBCONTRACTOR SHALL BE CHARGED ACCORDINGLY. REMOVAL OF DEBRIS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE. DEBRIS SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF LEGALLY.
19. UPON COMPLETION OF WORK, THE SITE SHALL BE CLEAN AND FREE OF DUST AND FINGERPRINTS.
20. PRIOR TO ANY TRENCHING, CONTACT LOCAL UTILITY TO VERIFY LOCATION OF ANY EXISTING BURIED SERVICE CONDUITS.
21. DOCUMENT GROUND RING INSTALLATION AND CONNECTIONS TO IT WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PRESENT PHOTO ARCHIVE A SITE "PUNCH LIST" WALK TO SPRINT'S REPRESENTATIVE.

NOTE:
INFINIGY ENGINEERING HAS NOT CONDUCTED AN ELECTRICAL LOAD STUDY FOR THIS SITE. CONTRACTOR IS TO VERIFY EXISTING ELECTRICAL LOADS PRIOR TO CONSTRUCTION TO ENSURE THERE IS AMPLE SERVICE AVAILABLE TO ACCOMMODATE THE EXISTING AND PROPOSED EQUIPMENT.

INFINIGY Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

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

No	Submittal / Revision	App'd	Date
1	ISSUED FOR CONSTRUCTION	ANS	1/30/13
0	ISSUED FOR REVIEW	KMF	11/5/12

Drawn: KMF Date: 11/8/12
Designed: AJD Date: 11/5/12
Checked: AGF Date: 11/5/12

Project Number
294-052

Project Title

BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For

Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/30/13

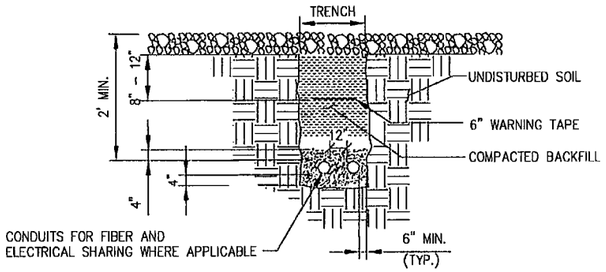
Drawing Title

UTILITY SITE PLAN

Drawing Number

E1

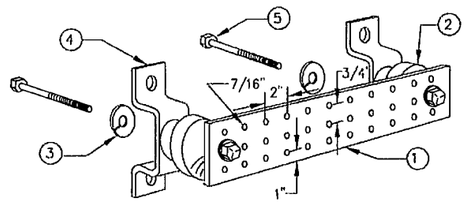
GROUNDING NOTES:
IN ADDITION TO POWER SERVICE GROUNDING AS REQUIRED BY NEC. CONTRACTOR SHALL BE RESPONSIBLE TO COORD AND INSTALL ALL SURGE AND LIGHTING PROTECTION GROUNDING AS REQUIRED AND SPECIFIED BY SPRINT.



- SEPARATION DIMENSIONS MUST BE VERIFIED WITH LOCAL UTILITY CO. REQUIREMENTS.

***HAND DIG INSIDE COMPOUND**

1 — UTILITY TRENCH DETAIL
NOT TO SCALE

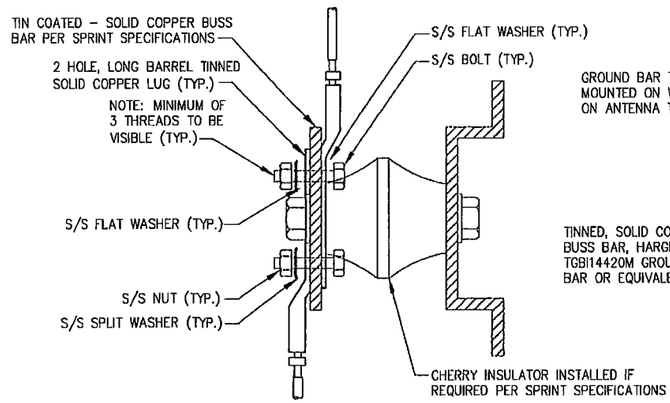


LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO., HARGER TGBI14420M, OR EQUIVALENT. HOLE CENTERS TO MATCH
2. NEMA DOUBLE LUG CONFIGURATION.
3. INSULATORS, NEWTON INSTRUMENT CO. CAT. NO. 3061-4 OR HARGER EQUIVALENT.
4. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUIVALENT.
5. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056 OR HARGER EQUIVALENT.
6. 5/8-11"x1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT. NO. 3012-1 OR HARGER EQUIVALENT.

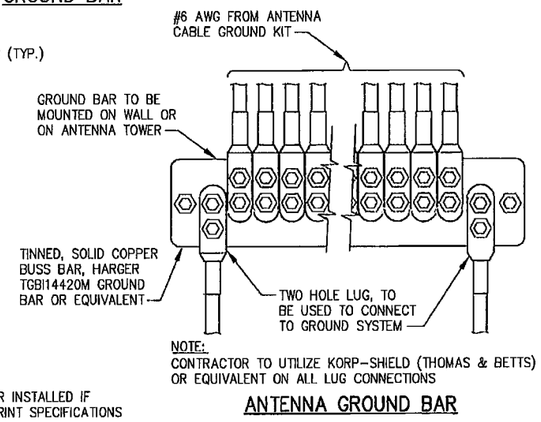
NOTE:
1) ALL MOUNTING HARDWARE CAN ALSO BE USED ON 6", 12", 18", ETC. GROUND BARS.
2) ENTIRE ESSEMBLY AVAILABLE FROM NEWTON INSTRUMENT CO. CAT. NO. 2106060010 OR AS HARGER TGBI14420M.

GROUND BAR



NOTE:
1) ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2) COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3) APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

GROUND LUG



NOTE:
CONTRACTOR TO UTILIZE KORP-SHIELD (THOMAS & BETTS) OR EQUIVALENT ON ALL LUG CONNECTIONS

ANTENNA GROUND BAR

2 — GROUND BAR DETAILS
NOT TO SCALE

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (516) 690-0790
Fax # (516) 690-0793

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

No.	Submittal / Revision	App'd	Date
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0	ISSUED FOR REVIEW	KMF	11/9/12

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Designed: AJD Date: 11/9/12
Checked: ASF Date: 11/9/12

Project Number
294-052

Project Title

BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For

Sprint VISION

Drawing Scale: AS NOTED
Date: 1/30/13

Drawing Title

DETAILS

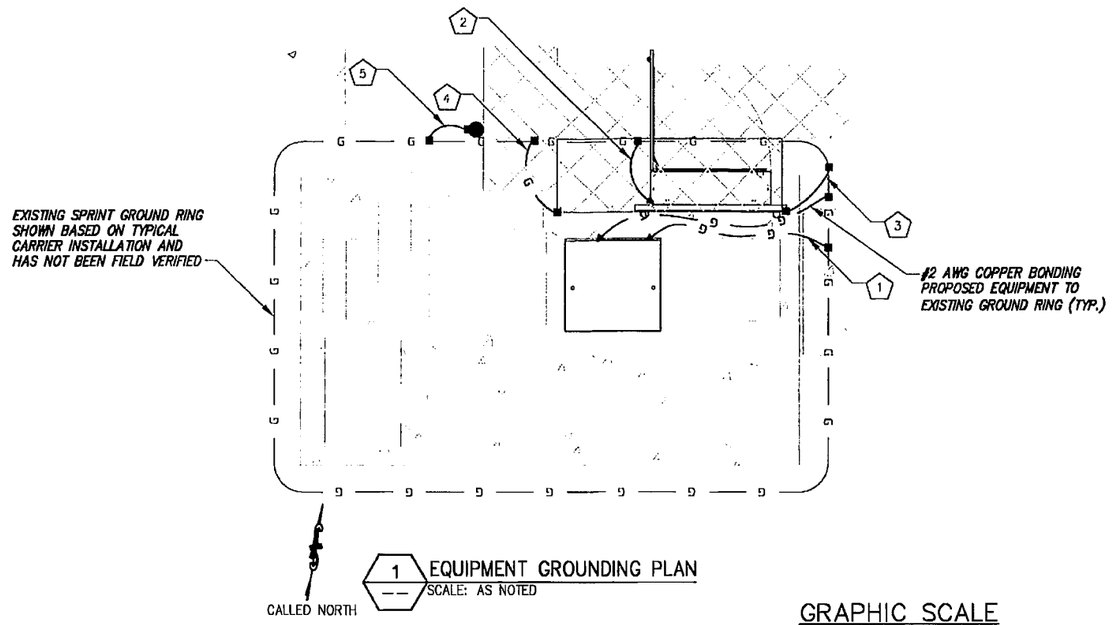
Drawing Number

E2

CODED NOTES:

1. PROPOSED BATTERY BACKUP CABINET
2. PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO NEW H-FRAME
3. PROPOSED H-FRAME FURNISHED AND INSTALLED BY CONTRACTOR
4. PROPOSED ICE BRIDGE EXTENSION FURNISHED AND INSTALLED BY CONTRACTOR
5. PROPOSED SPRINT GPS TO REPLACE EXISTING

SYMBOL	
⊗	COPPER GROUND ROD
▸	CONNECT PER MANUFACTURER SPECS
■	CADWELD CONNECTION
•	MECHANICAL CONNECTION
▬	GROUND BAR



1 EQUIPMENT GROUNDING PLAN
SCALE: AS NOTED

GRAPHIC SCALE

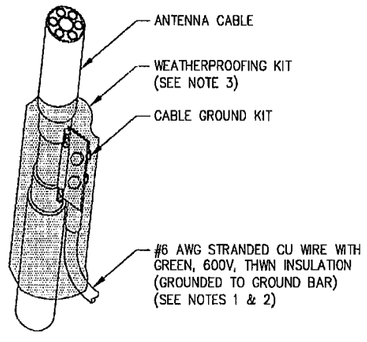
4' 2' 0 2' 4'

SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

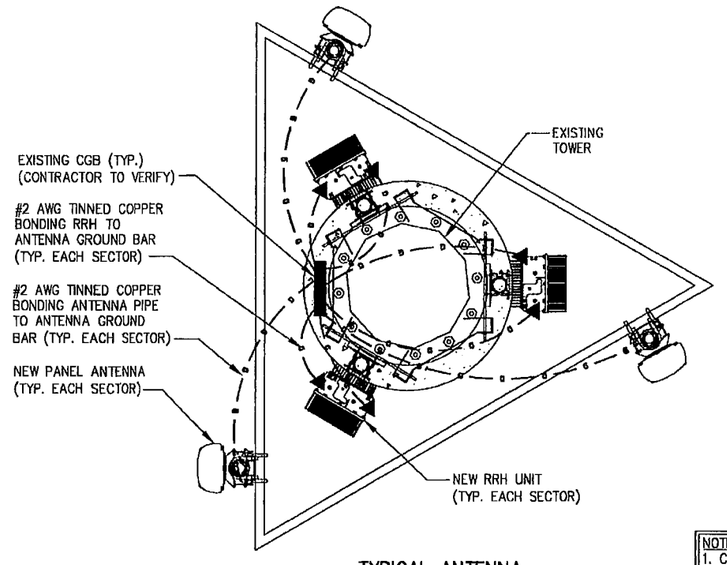
GROUNDING NOTES:

1. ALL DOWN CONDUCTORS AND GROUND RING AND CONDUCTOR SHALL BE #2 AWG, SOLID, BARE, TINNED COPPER, UNO. ALL CONNECTIONS TO GROUND RING SHALL BE EXOTHERMICALLY WELDED. CONDUCTOR SHALL BE A MINIMUM DEPTH BELOW GRADE OF 30 INCHES OR TO THE LEDGE. MINIMUM BEND RADIUS SHALL BE 8 INCHES. CONDUCTOR SHALL BE AT LEAST 24 INCHES FROM ANY FOUNDATION, UNO.
2. WHERE MECHANICAL CONDUCTOR CONNECTIONS ARE SPECIFIED, BOLTED, COMPRESSION-TYPE CLAMPS OR SPLIT-BOLT TYPE CONNECTORS SHALL BE USED.
3. GRIND OFF GALVANIZING IN AFFECTED AREA. EXOTHERMICALLY WELD #2 CONDUCTOR AT 6 INCHES ABOVE GRADE R FOUNDATION, WHICHEVER IS HIGHER. COLD-GALV AFTER. EXOTHERMICALLY WELD OTHER END TO THE GROUND.
4. GROUND CONDUCTORS ON EXTERIOR WALL OF SHELTER SHALL BE ENCASED IN PVC CONDUIT TO GRADE. MOUNT PVC WITH GALVANIZED "C" CLAMPS. SEAL TOP ENDS.
5. FOLLOWING COMPLETION OF WORK, CONDUCT GROUND TEST. SUBMIT WRITTEN TEST TO CONSTRUCTION MANAGER AND PROJECT MANAGER.
6. ALL GROUNDING WORK SHALL COMPLY WITH CARRIER(S) STANDARDS.
7. GROUNDING REQUIREMENTS SHOWN ON THIS PLAN ARE FOR ITEMS THAT ARE LOCATED NEAR GRADE LEVEL AND THAT NEED TO BE TIED TO THE BELOW GRADE GROUND RING.
8. UNLESS NOTED OTHERWISE, ALL GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT'S SSEQ DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES", AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING". ALL GROUNDING SHALL ALSO COMPLY WITH ALL STATE AND LOCAL CODES, AND THE NATIONAL ELECTRICAL CODE (NEC).
9. UNLESS NOTED OTHERWISE, ALL GROUNDING CONNECTIONS SHALL BE MADE BY AN EXOTHERMIC WELD.
10. RESISTANCE TO EARTH TESTING IS REQUIRED PER SPRINT STANDARDS ON ALL NEW SITES.
11. REFER TO "ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUND RING.

NOTES:
1) DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2) GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3) WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.



2 CONNECTION OF GROUND KIT TO ANTENNA CABLE
NOT TO SCALE



3 TYPICAL ANTENNA GROUNDING PLAN
NOT TO SCALE

NOTES:
1. CONTRACTOR TO VERIFY EXISTING LUG SPACES ARE AVAILABLE ON GROUND BAR. ADD ADDITIONAL BUS BAR IF NO LUG SPACES ARE AVAILABLE.
2. ANTENNA GROUNDING CONNECTIONS SHOWN ARE NOT EXACT TO THIS SITE. FOR EXACT ANTENNA LAYOUT REFER TO ANTENNA CONFIGURATION SHEET.

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

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

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF APPLICABLE STATE AND/OR LOCAL LAWS

No	Submittal / Revision	Appvd	Date
1	ISSUED FOR CONSTRUCTION	AHS	1/30/13
0	ISSUED FOR REVIEW	KMF	11/5/12

Drawn: KMF Date: 11/5/12
Designed: AJD Date: 11/5/12
Checked: AGF Date: 11/5/12

Project Number
284-052

Project Title
BUCKLAND MALL
CT03XC211

53 SLATER STREET
MANCHESTER, CT 06040

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/30/13

Drawing Title
GROUNDING PLAN AND DETAILS

Drawing Number
E3

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

Sprint Existing Facility

Site ID: CT03XC211

Buckland Mall
53 Slater Street
Manchester, CT 06040

December 28, 2012

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

EBI Consulting
environmental | engineering | due diligence

December 28, 2012

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

Re: Emissions Values for Site: **CT03XC211 – Buckland Mall**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 53 Slater Street, Manchester, CT, for the purpose of determining whether the emissions 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 ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. 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 53 Slater Street, Manchester, 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 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) 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.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 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.

6) The antenna mounting height centerline of the proposed antennas is **155 feet** above ground level (AGL)
7) 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	CT03XC211 - Buckland Mall
Site Addresss	53 Slater Street, Manchester, CT, 06040
Site Type	Monopole

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	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	155	149	1/2 "	0.5	0	2773.8948	44.91831	4.49183%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	155	149	1/2 "	0.5	0	389.96892	6.314856	1.11373%
														Sector total Power Density Value:		5.606%	

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	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	155	149	1/2 "	0.5	0	2773.8948	44.91831	4.49183%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	155	149	1/2 "	0.5	0	389.96892	6.314856	1.11373%
														Sector total Power Density Value:		5.606%	

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	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	4	80	15.9	155	149	1/2 "	0.5	0	2773.8948	44.91831	4.49183%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	155	149	1/2 "	0.5	0	389.96892	6.314856	1.11373%
														Sector total Power Density Value:		5.606%	

Site Composite MPE %	
Carrier	MPE %
Sprint	16.817%
Nextel	9.380%
Clearwire	0.790%
AT&T	16.810%
MetroPCS	6.420%
T-Mobile	0.200%
Verizon Wireless	23.150%
Total Site MPE %	**73.567%**

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Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **16.817% (5.606%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 **73.567%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

Date: **October 20, 2012**

Cheryl Schultz
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(412) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate – Interim Load**	
	Carrier Site Number:	CT03XC211
	Carrier Site Name:	CT03XC211
Crown Castle Designation:	**Crown Castle BU Number:**	876347
	Crown Castle Site Name:	BUCKLAND MALL
	Crown Castle JDE Job Number:	190529
	Crown Castle Work Order Number:	540656
	Crown Castle Application Number:	165582 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	540656
Site Data:	**53 Slater Street, MANCHESTER, Hartford County, CT** **Latitude *41° 48' 18"*, Longitude *-72° 32' 1"*** **155 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Crown Castle 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 540656, in accordance with application 165582, 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 + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

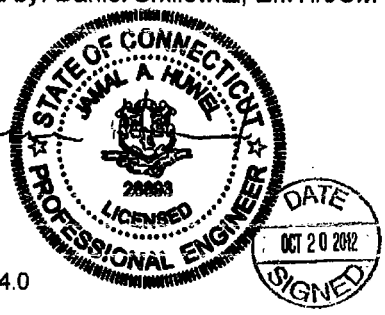
The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* 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.

Structural analysis prepared by: Daniel Smilowitz, E.I.T./JCM

Respectfully submitted by:



Jamal A. Huwel
Manager Engineering

tnxTower Report - version 6.0.4.0

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing and Reserved Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE
Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 5 - Section Capacity (Summary)
Table 6 – Tower Components vs. Capacity
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 155 ft Monopole tower designed by SUMMIT in February of 2002. The tower was originally designed for a wind speed of 80 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 80 mph with no ice, 37.6 mph with 1.25 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
155.0	155.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	3	1-1/4	-
153.0	153.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Side Arm Mount [SO 102-3]			

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
155.0	155.0	3	argus technologies	LLPX310R	5 3 3 6	1/2 5/16 1/4 1-5/8	1
		6	decibel	DB980H90E-M w/ Mount Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount [LP 713-1]			
	151.0	1	andrew	VHLP1-23			
		1	andrew	VHLP2-11			
		1	andrew	VHLP2.5-18			
		3	dragonwave	HORIZON COMPACT			
143.0	145.0	3	kathrein	800 10121 w/ Mount Pipe	6	1 1/4	1
		6	powerwave technologies	LGP21401			
		6	ericsson	RRUS-11	1 2	3/8 3/4	2
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
	143.0	1	tower mounts	T-Arm Mount [TA 702-3]			
133.0	133.0	3	andrew	ETW190VS12UB	18	1-5/8	1
		6	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Platform Mount [LP 403-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
113.0	113.0	2	antel	BXA-70063/6CFx2 w/ Mount Pipe	-	-	2
		1	antel	BXA-70063/6CFx4 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
		6	decibel	DB844G65ZAXY w/ Mount Pipe	12	1-5/8	1
		1	tower mounts	Platform Mount [LP 601-1]			
103.0	103.0	3	rfs celwave	APXV18-206517S-C	6	1 5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
78.0	78.0	12	decibel	844G65VTZASX w/ Mount Pipe	12	1 5/8	1
		1	tower mounts	Platform Mount [LP 303-1]			
60.0	60.0	1	tower mounts	Side Arm Mount [SO 701-1]	1	1/2	1
		1	trimble	ACUTIME 2000			

Notes:
1) Existing Equipment
2) Reserved Equipment

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)
155	155	9	Decibel	DB980H90	-	-
145	145	6	Allgon	7250.03	-	-
133	133	6	EMS	RR90-17-00DP PCS	-	-
50	50	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	1533476	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford	1615406	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford	2068033	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), 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) Tower and structures were built in accordance with the manufacturer's specifications.
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) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-7.79	1080.07	59.7	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.1142x0.3125	2	-14.78	1772.22	85.9	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.0565x0.375	3	-24.28	2481.90	97.4	Pass
L4	43.75 - 0	Pole	TP48.8x39.7348x0.4375	4	-38.88	3491.31	99.9	Pass
							Summary	
						Pole (L4)	99.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	92.9	Pass
1	Base Plate	0	79.8	Pass
1	Base Foundation	0	66.7	Pass

Structure Rating (max from all components) =	99.9%

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

4.1) Recommendations

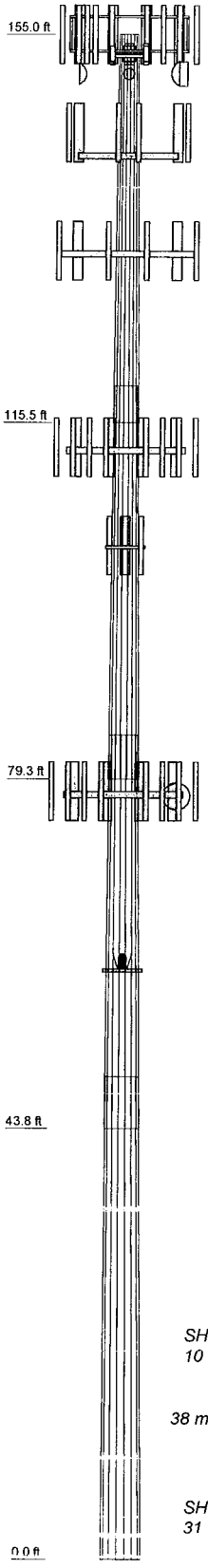
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	39.50	40.00	40.00	49.00
Number of Sides	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.4375
Socket Length (ft)	3.75	4.50	5.25	
Top Dia (in)	22.0000	28.1142	34.0565	39.7348
Bot Dia (in)	29.3080	35.5140	41.4560	48.8000
Grade	A607-60		A607-65	
Weight (K)	2.7	4.3	6.1	10.1

Total Weight: 23.2



AXIAL
73 K
SHEAR
10 K
MOMENT
1226 kip-ft
TORQUE 1 kip-ft
38 mph WIND - 1.2500 in ICE

AXIAL
39 K
SHEAR
31 K
MOMENT
3425 kip-ft
TORQUE 1 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
LLPX310R	155	800 10121 w/ Mount Pipe	143
LLPX310R	155	800 10121 w/ Mount Pipe	143
LLPX310R	155	800 10121 w/ Mount Pipe	143
WiMAX DAP HEAD	155	ATMAA1412D-1A20	133
WiMAX DAP HEAD	155	ATMAA1412D-1A20	133
WiMAX DAP HEAD	155	ATMAA1412D-1A20	133
HORIZON COMPACT	155	ETW190VS12UB	133
HORIZON COMPACT	155	ETW190VS12UB	133
HORIZON COMPACT	155	ETW190VS12UB	133
10' x 3" Pipe Mount	155	Platform Mount [LP 403-1]	133
10' x 3" Pipe Mount	155	(2) 5' x 2" Pipe Mount	133
10' x 3" Pipe Mount	155	(2) 5' x 2" Pipe Mount	133
(2) DB980H90E-M w/ Mount Pipe	155	(2) 5' x 2" Pipe Mount	133
(2) DB980H90E-M w/ Mount Pipe	155	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	133
(2) DB980H90E-M w/ Mount Pipe	155		
APXVSPP18-C-A20 w/ Mount Pipe	155	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	133
APXVSPP18-C-A20 w/ Mount Pipe	155		
APXVSPP18-C-A20 w/ Mount Pipe	155	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	133
Platform Mount [LP 713-1]	155		
VHLP2.5-18	155	MG D3-800Tx w/ Mount Pipe	113
VHLP1-23	155	MG D3-800Tx w/ Mount Pipe	113
VHLP2-11	155	MG D3-800Tx w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	BXA-70063/6CFx2 w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	BXA-70063/6CFx2 w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	BXA-70063/6CFx4 w/ Mount Pipe	113
Side Arm Mount [SO 102-3]	153	(2) FD9R6004/2C-3L	113
800MHz 2X50W RRH W/FILTER	153	(2) FD9R6004/2C-3L	113
800MHz 2X50W RRH W/FILTER	153	(2) FD9R6004/2C-3L	113
800MHz 2X50W RRH W/FILTER	153	Platform Mount [LP 601-1]	113
(2) LGP21401	143	(2) DB844G65ZAXY w/ Mount Pipe	113
(2) LGP21401	143	(2) DB844G65ZAXY w/ Mount Pipe	113
(2) LGP21401	143	(2) DB844G65ZAXY w/ Mount Pipe	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	Pipe Mount [PM 601-3]	103
		APXV18-206517S-C	103
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	APXV18-206517S-C	103
		APXV18-206517S-C	103
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	Platform Mount [LP 303-1]	78
		(4) 844G65VTZASX w/ Mount Pipe	78
(2) RRUS-11	143	(4) 844G65VTZASX w/ Mount Pipe	78
(2) RRUS-11	143	(4) 844G65VTZASX w/ Mount Pipe	78
(2) RRUS-11	143	Side Arm Mount [SO 701-1]	60
DC6-48-60-18-8F	143	ACUTIME 2000	60
T-Arm Mount [TA 702-3]	143		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.9%

CROWN We Are Solutions
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (412) 416-2000
FAX:

Job: BU# 876347			
Project:			
Client: Crown Castle	Drawn by: DSmilowitz		App'd:
Code: TIA/EIA-222-F	Date: 10/19/12		Scale: NTS
Path: R:\SA Models - Letters\Work Area\DSmilowitz\876347 - 540559\Interim\876347.eri			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 80 mph.
3) Nominal ice thickness of 1.2500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) Local bending stresses due to climbing loads, feedline 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		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	155.00-115.50	39.50	3.75	18	22.0000	29.3080	0.2500	1.0000	A607-60 (60 ksi)
L2	115.50-79.25	40.00	4.50	18	28.1142	35.5140	0.3125	1.2500	A607-65 (65 ksi)
L3	79.25-43.75	40.00	5.25	18	34.0565	41.4560	0.3750	1.5000	A607-65 (65 ksi)
L4	43.75-0.00	49.00		18	39.7348	48.8000	0.4375	1.7500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	29.7601	23.0575	2459.6966	10.3156	14.8885	165.2082	4922.6297	11.5310	4.7182	18.873
L2	29.2523	27.5758	2692.8279	9.8696	14.2820	188.5468	5389.1990	13.7905	4.3981	14.074
	36.0619	34.9155	5466.1042	12.4965	18.0411	302.9804	10939.4008	17.4611	5.7005	18.241
L3	35.4272	40.0894	5745.8039	11.9569	17.3007	332.1137	11499.1684	20.0485	5.3339	14.224
	42.0955	48.8967	10425.5424	14.5838	21.0596	495.0483	20864.8031	24.4530	6.6363	17.697
L4	41.3340	54.5692	10646.6064	13.9505	20.1853	527.4439	21307.2218	27.2898	6.2233	14.225
	49.5528	67.1574	19844.8883	17.1687	24.7904	800.5070	39715.8890	33.5851	7.8188	17.872

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
L1 155.00-115.50				1	1	1		
L2 115.50-79.25				1	1	1		
L3 79.25-43.75				1	1	1		
L4 43.75-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	155.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	0.15	1.08
						1/2" Ice	0.25	2.33
						1" Ice	0.35	4.18
						2" Ice	0.55	9.73
						4" Ice	0.95	28.15
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	155.00 - 0.00	2	No Ice	0.00	1.08
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.18
						2" Ice	0.00	9.73
						4" Ice	0.00	28.15
***								
ATCB-B01-005(5/16)	B	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						2" Ice	0.00	0.07
						4" Ice	0.00	0.07
FSJ1-50A(1/4")	B	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.04
						1/2" Ice	0.00	0.04
						1" Ice	0.00	0.04
						2" Ice	0.00	0.04
						4" Ice	0.00	0.04
2" Rigid Conduit	B	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	0.20	2.80
						1/2" Ice	0.30	4.33
						1" Ice	0.40	6.47
						2" Ice	0.60	12.57
						4" Ice	1.00	32.12
2" Rigid Conduit	B	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	4.33
						1" Ice	0.00	6.47

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	12.57
						4" Ice	0.00	32.12
FSJ4-50B(1/2")	B	No	CaAa (Out Of Face)	155.00 - 0.00	2	No Ice	0.05	0.14
						1/2" Ice	0.15	0.76
						1" Ice	0.25	2.00
						2" Ice	0.45	6.30
						4" Ice	0.85	22.23
FSJ4-50B(1/2")	B	No	CaAa (Out Of Face)	155.00 - 0.00	3	No Ice	0.00	0.14
						1/2" Ice	0.00	0.76
						1" Ice	0.00	2.00
						2" Ice	0.00	6.30
						4" Ice	0.00	22.23
***								
LDF6-50A(1-1/4")	A	No	Inside Pole	145.00 - 0.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
FB-L98B-002-75000(3/8")	A	No	Inside Pole	143.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	143.00 - 0.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
***								
LCF158-50JA-A0(1 5/8")	A	No	Inside Pole	133.00 - 0.00	18	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
***								
561(1-5/8")	C	No	Inside Pole	113.00 - 0.00	12	No Ice	0.00	1.35
						1/2" Ice	0.00	1.35
						1" Ice	0.00	1.35
						2" Ice	0.00	1.35
						4" Ice	0.00	1.35
***								
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	103.00 - 0.00	1	No Ice	0.20	0.70
						1/2" Ice	0.30	2.23
						1" Ice	0.40	4.38
						2" Ice	0.60	10.50
						4" Ice	1.00	30.07
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	103.00 - 0.00	5	No Ice	0.00	0.70
						1/2" Ice	0.00	2.23
						1" Ice	0.00	4.38
						2" Ice	0.00	10.50
						4" Ice	0.00	30.07
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	78.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
***								
LDF4-50A(1/2")	C	No	Inside Pole	60.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
***								
ATCB-B01-005(5/16)	C	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						2" Ice	0.00	0.07
						4" Ice	0.00	0.07

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A_R	A_F	C_AA_A In Face	C_AA_A Out Face	Weight
	ft		ft^2	ft^2	ft^2	ft^2	K
L1	155.00-115.50	A	0.000	0.000	0.000	0.000	0.18
		B	0.000	0.000	0.000	12.008	0.26
		C	0.000	0.000	0.000	6.083	0.33
L2	115.50-79.25	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.000	15.794	0.29
		C	0.000	0.000	0.000	5.582	0.85
L3	79.25-43.75	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.000	17.928	0.31
		C	0.000	0.000	0.000	5.467	1.21
L4	43.75-0.00	A	0.000	0.000	0.000	0.000	0.29
		B	0.000	0.000	0.000	22.094	0.38
		C	0.000	0.000	0.000	6.737	1.51

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A_R	A_F	C_AA_A In Face	C_AA_A Out Face	Weight
	ft		in	ft^2	ft^2	ft^2	ft^2	K
L1	155.00-115.50	A	1.480	0.000	0.000	0.000	0.000	0.18
		B		0.000	0.000	0.000	47.074	1.56
		C		0.000	0.000	0.000	17.772	1.01
L2	115.50-79.25	A	1.423	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	55.003	1.95
		C		0.000	0.000	0.000	16.310	1.48
L3	79.25-43.75	A	1.347	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	58.330	2.07
		C		0.000	0.000	0.000	15.568	1.79
L4	43.75-0.00	A	1.250	0.000	0.000	0.000	0.000	0.29
		B		0.000	0.000	0.000	69.224	2.38
		C		0.000	0.000	0.000	18.520	2.17

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	155.00-115.50	0.1605	0.2829	0.5117	0.6538
L2	115.50-79.25	0.3050	0.3654	0.7677	0.8128
L3	79.25-43.75	0.3777	0.4094	0.9051	0.9030
L4	43.75-0.00	0.3875	0.4200	0.9422	0.9413

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
***										
LLPX310R	A	From Leg	4.00		0.0000	155.00	No Ice	4.84	1.96	0.03

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
			0.00				1/2"	5.19	2.23	0.05
			0.00				Ice	5.55	2.50	0.08
							1" Ice	6.30	3.13	0.16
							2" Ice	7.91	4.55	0.36
							4" Ice			
LLPX310R	B	From Leg	4.00		0.0000	155.00	No Ice	4.84	1.96	0.03
			0.00				1/2"	5.19	2.23	0.05
			0.00				Ice	5.55	2.50	0.08
							1" Ice	6.30	3.13	0.16
							2" Ice	7.91	4.55	0.36
							4" Ice			
LLPX310R	C	From Leg	4.00		0.0000	155.00	No Ice	4.84	1.96	0.03
			0.00				1/2"	5.19	2.23	0.05
			0.00				Ice	5.55	2.50	0.08
							1" Ice	6.30	3.13	0.16
							2" Ice	7.91	4.55	0.36
							4" Ice			
WIMAX DAP HEAD	A	From Leg	4.00		0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00				1/2"	1.99	0.92	0.04
			0.00				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			
WIMAX DAP HEAD	B	From Leg	4.00		0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00				1/2"	1.99	0.92	0.04
			0.00				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			
WIMAX DAP HEAD	C	From Leg	4.00		0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00				1/2"	1.99	0.92	0.04
			0.00				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			
HORIZON COMPACT	A	From Leg	4.00		0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00				1/2"	0.97	0.52	0.02
			-4.00				Ice	1.10	0.63	0.03
							1" Ice	1.39	0.86	0.05
							2" Ice	2.08	1.43	0.12
							4" Ice			
HORIZON COMPACT	B	From Leg	4.00		0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00				1/2"	0.97	0.52	0.02
			-4.00				Ice	1.10	0.63	0.03
							1" Ice	1.39	0.86	0.05
							2" Ice	2.08	1.43	0.12
							4" Ice			
HORIZON COMPACT	C	From Leg	4.00		0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00				1/2"	0.97	0.52	0.02
			-4.00				Ice	1.10	0.63	0.03
							1" Ice	1.39	0.86	0.05
							2" Ice	2.08	1.43	0.12
							4" Ice			
10' x 3" Pipe Mount	A	From Leg	4.00		0.0000	155.00	No Ice	3.00	3.00	0.08
			0.00				1/2"	4.03	4.03	0.10
			0.00				Ice	5.03	5.03	0.13
							1" Ice	6.26	6.26	0.21
							2" Ice	8.83	8.83	0.45
							4" Ice			
10' x 3" Pipe Mount	B	From Leg	4.00		0.0000	155.00	No Ice	3.00	3.00	0.08
			0.00				1/2"	4.03	4.03	0.10
			0.00				Ice	5.03	5.03	0.13
							1" Ice	6.26	6.26	0.21
							2" Ice	8.83	8.83	0.45
							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
10' x 3" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 4.03 5.03 6.26 8.83	3.00 4.03 5.03 6.26 8.83	0.08 0.10 0.13 0.21 0.45
***									
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.06 0.11 0.22 0.55
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.06 0.11 0.22 0.55
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	0.03 0.06 0.11 0.22 0.55
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
Platform Mount [LP 713-1]	C	None		0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	31.27 39.68 48.09 64.91 98.55	31.27 39.68 48.09 64.91 98.55	1.51 1.93 2.35 3.19 4.86
***									
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice	2.40 2.61 2.83	2.25 2.46 2.68	0.06 0.09 0.11

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	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
Side Arm Mount [SO 102-3]	C	None		0.0000	153.00	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
						2" Ice	4.92	4.92	0.20
						4" Ice	6.84	6.84	0.32
***									
***									
800 10121 w/ Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
(2) LGP21401	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) LGP21401	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) LGP21401	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14

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/ Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	143.00	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	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	143.00	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	0.07 0.14 0.21 0.38 0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	143.00	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	0.07 0.14 0.21 0.38 0.87
(2) RRUS-11	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
DC6-48-60-18-8F	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.27 1.46 1.66 2.09 3.10	1.27 1.46 1.66 2.09 3.10	0.02 0.04 0.05 0.10 0.21
T-Arm Mount [TA 702-3]	C	None		0.0000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.64 6.55 7.46 9.28 12.92	5.64 6.55 7.46 9.28 12.92	0.34 0.43 0.52 0.70 1.06
***									
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.47 7.99 8.52 9.59 11.87	3.49 4.26 4.96 6.40 9.49	0.06 0.11 0.16 0.30 0.68
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.47 7.99 8.52 9.59 11.87	3.49 4.26 4.96 6.40 9.49	0.06 0.11 0.16 0.30 0.68
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice	7.47 7.99 8.52 9.59	3.49 4.26 4.96 6.40	0.06 0.11 0.16 0.30

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	11.87	9.49	0.68
						4" Ice			
ATMAA1412D-1A20	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
ATMAA1412D-1A20	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
ATMAA1412D-1A20	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
ETW190VS12UB	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.76	0.35	0.01
						1/2" Ice	0.88	0.44	0.02
						1" Ice	1.01	0.54	0.02
						2" Ice	1.30	0.77	0.04
						4" Ice	1.97	1.33	0.11
ETW190VS12UB	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.76	0.35	0.01
						1/2" Ice	0.88	0.44	0.02
						1" Ice	1.01	0.54	0.02
						2" Ice	1.30	0.77	0.04
						4" Ice	1.97	1.33	0.11
ETW190VS12UB	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.76	0.35	0.01
						1/2" Ice	0.88	0.44	0.02
						1" Ice	1.01	0.54	0.02
						2" Ice	1.30	0.77	0.04
						4" Ice	1.97	1.33	0.11
Platform Mount [LP 403-1]	C	None		0.0000	133.00	No Ice	18.85	18.85	1.50
						1/2" Ice	24.30	24.30	1.80
						1" Ice	29.75	29.75	2.09
						2" Ice	40.65	40.65	2.69
						4" Ice	62.45	62.45	3.87
(2) 5' x 2" Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
						4" Ice	3.78	3.78	0.20
(2) 5' x 2" Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
						4" Ice	3.78	3.78	0.20
(2) 5' x 2" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						1" Ice	1.70	1.70	0.05
						2" Ice	2.35	2.35	0.08
						4" Ice	3.78	3.78	0.20
***									
(2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	113.00	No Ice	4.90	4.92	0.03
						1/2" Ice	5.35	5.60	0.08

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			Ice	5.80	6.28	0.13
						1" Ice	6.73	7.71	0.26
						2" Ice	8.73	10.83	0.62
						4" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.00	0.0000	113.00	No Ice	4.90	4.92	0.03
			0.00			1/2"	5.35	5.60	0.08
			0.00			Ice	5.80	6.28	0.13
						1" Ice	6.73	7.71	0.26
						2" Ice	8.73	10.83	0.62
						4" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.00	0.0000	113.00	No Ice	4.90	4.92	0.03
			0.00			1/2"	5.35	5.60	0.08
			0.00			Ice	5.80	6.28	0.13
						1" Ice	6.73	7.71	0.26
						2" Ice	8.73	10.83	0.62
						4" Ice			
MG D3-800Tx w/ Mount Pipe	A	From Leg	4.00	0.0000	113.00	No Ice	3.57	3.42	0.03
			0.00			1/2"	3.98	4.12	0.07
			0.00			Ice	4.39	4.78	0.11
						1" Ice	5.33	6.16	0.21
						2" Ice	7.34	9.18	0.52
						4" Ice			
MG D3-800Tx w/ Mount Pipe	B	From Leg	4.00	0.0000	113.00	No Ice	3.57	3.42	0.03
			0.00			1/2"	3.98	4.12	0.07
			0.00			Ice	4.39	4.78	0.11
						1" Ice	5.33	6.16	0.21
						2" Ice	7.34	9.18	0.52
						4" Ice			
MG D3-800Tx w/ Mount Pipe	C	From Leg	4.00	0.0000	113.00	No Ice	3.57	3.42	0.03
			0.00			1/2"	3.98	4.12	0.07
			0.00			Ice	4.39	4.78	0.11
						1" Ice	5.33	6.16	0.21
						2" Ice	7.34	9.18	0.52
						4" Ice			
BXA-70063/6CFx2 w/ Mount Pipe	A	From Leg	4.00	0.0000	113.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			0.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
BXA-70063/6CFx2 w/ Mount Pipe	B	From Leg	4.00	0.0000	113.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			0.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
BXA-70063/6CFx4 w/ Mount Pipe	C	From Leg	4.00	0.0000	113.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			0.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
						4" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	113.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.00	0.0000	113.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
						4" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.0000	113.00	No Ice	0.37	0.08	0.00

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
			0.00				1/2" Ice	0.45	0.14	0.01
			0.00				1" Ice	0.54	0.20	0.01
							2" Ice	0.75	0.34	0.02
							4" Ice	1.28	0.74	0.06
Platform Mount [LP 601-1]	C	None			0.0000	113.00	No Ice	28.47	28.47	1.12
							1/2" Ice	33.59	33.59	1.51
							1" Ice	38.71	38.71	1.91
							2" Ice	48.95	48.95	2.69
							4" Ice	69.43	69.43	4.26
***										
APXV18-206517S-C	A	From Leg	0.50		0.0000	103.00	No Ice	5.17	3.04	0.03
			0.00				1/2" Ice	5.62	3.47	0.05
			0.00				1" Ice	6.08	3.91	0.09
							2" Ice	7.02	4.81	0.17
							4" Ice	9.12	6.70	0.40
APXV18-206517S-C	B	From Leg	0.50		0.0000	103.00	No Ice	5.17	3.04	0.03
			0.00				1/2" Ice	5.62	3.47	0.05
			0.00				1" Ice	6.08	3.91	0.09
							2" Ice	7.02	4.81	0.17
							4" Ice	9.12	6.70	0.40
APXV18-206517S-C	C	From Leg	0.50		0.0000	103.00	No Ice	5.17	3.04	0.03
			0.00				1/2" Ice	5.62	3.47	0.05
			0.00				1" Ice	6.08	3.91	0.09
							2" Ice	7.02	4.81	0.17
							4" Ice	9.12	6.70	0.40
Pipe Mount [PM 601-3]	C	None			0.0000	103.00	No Ice	4.39	4.39	0.20
							1/2" Ice	5.48	5.48	0.24
							1" Ice	6.57	6.57	0.28
							2" Ice	8.75	8.75	0.36
							4" Ice	13.11	13.11	0.53
***										
(4) 844G65VTZASX w/ Mount Pipe	A	From Leg	4.00		0.0000	78.00	No Ice	6.13	5.21	0.03
			0.00				1/2" Ice	6.59	5.89	0.08
			0.00				1" Ice	7.06	6.59	0.14
							2" Ice	8.04	8.04	0.28
							4" Ice	10.12	11.19	0.67
(4) 844G65VTZASX w/ Mount Pipe	B	From Leg	4.00		0.0000	78.00	No Ice	6.13	5.21	0.03
			0.00				1/2" Ice	6.59	5.89	0.08
			0.00				1" Ice	7.06	6.59	0.14
							2" Ice	8.04	8.04	0.28
							4" Ice	10.12	11.19	0.67
(4) 844G65VTZASX w/ Mount Pipe	C	From Leg	4.00		0.0000	78.00	No Ice	6.13	5.21	0.03
			0.00				1/2" Ice	6.59	5.89	0.08
			0.00				1" Ice	7.06	6.59	0.14
							2" Ice	8.04	8.04	0.28
							4" Ice	10.12	11.19	0.67
Platform Mount [LP 303-1]	C	None			0.0000	78.00	No Ice	14.66	14.66	1.25
							1/2" Ice	18.87	18.87	1.48
							1" Ice	23.08	23.08	1.71
							2" Ice	31.50	31.50	2.18
							4" Ice	48.34	48.34	3.10
***										
ACUTIME 2000	A	From Leg	3.00		0.0000	60.00	No Ice	0.30	0.30	0.00
			0.00				1/2" Ice	0.37	0.37	0.00
			0.00				1" Ice	0.46	0.46	0.01

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
							1" Ice	0.65	0.65	0.02
							2" Ice	1.15	1.15	0.08
							4" Ice			
Side Arm Mount [SO 701-1]	A	None			0.0000	60.00	No Ice	0.85	1.67	0.07
							1/2" Ice	1.14	2.34	0.08
							1" Ice	1.43	3.01	0.09
							2" Ice	2.01	4.35	0.12
							4" Ice	3.17	7.03	0.18
***										

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2.5-18	B	Paraboloid w/Shroud (HP)	From Leg	4.00		0.0000		155.00	2.50	No Ice	6.68	0.05
				0.00						1/2" Ice	7.06	0.05
				-4.00						1" Ice	7.46	0.06
										2" Ice	8.29	0.10
										4" Ice	10.08	0.26
VHLP1-23	A	Paraboloid w/o Radome	From Leg	4.00		0.0000		155.00	1.27	No Ice	1.28	0.01
				0.00						1/2" Ice	1.45	0.02
				-4.00						1" Ice	1.62	0.02
										2" Ice	1.97	0.04
										4" Ice	2.66	0.07
VHLP2-11	C	Paraboloid w/o Radome	From Leg	4.00		0.0000		155.00	2.17	No Ice	3.72	0.03
				0.00						1/2" Ice	4.01	0.05
				-4.00						1" Ice	4.30	0.07
										2" Ice	4.88	0.11
										4" Ice	6.04	0.19

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
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

Comb. No.	Description
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
L1	155 - 115.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.39	-0.69	-1.29
			Max. Mx	5	-7.80	-370.41	0.91
			Max. My	2	-7.81	-1.05	368.51
			Max. Vy	5	14.48	-370.41	0.91
			Max. Vx	2	-14.43	-1.05	368.51
			Max. Torque	3			-0.89
L2	115.5 - 79.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-36.47	-2.19	-3.27
			Max. Mx	5	-14.79	-1061.66	1.97
			Max. My	2	-14.80	-2.25	1057.64
			Max. Vy	5	22.00	-1061.66	1.97
			Max. Vx	2	-21.95	-2.25	1057.64
			Max. Torque	3			-0.94
L3	79.25 - 43.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-53.07	-4.16	-5.55
			Max. Mx	5	-24.28	-1967.43	2.95
			Max. My	2	-24.29	-3.48	1961.21
			Max. Vy	5	28.01	-1967.43	2.95
			Max. Vx	2	-27.96	-3.48	1961.21
			Max. Torque	3			-1.05
L4	43.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-73.36	-7.04	-8.92
			Max. Mx	5	-38.88	-3421.55	4.21
			Max. My	2	-38.88	-5.22	3412.14
			Max. Vy	5	31.21	-3421.55	4.21
			Max. Vx	2	-31.16	-5.22	3412.14
			Max. Torque	3			-1.24

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	73.36	-10.44	0.01

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	11	38.91	31.17	0.11
	Max. H_z	2	38.91	-0.03	31.12
	Max. M_x	2	3412.14	-0.03	31.12
	Max. M_z	5	3421.55	-31.17	0.04
	Max. Torsion	9	0.99	15.47	-26.94
	Min. Vert	1	38.91	0.00	0.00
	Min. H_x	5	38.91	-31.17	0.04
	Min. H_z	8	38.91	-0.09	-31.07
	Min. M_x	8	-3406.42	-0.09	-31.07
	Min. M_z	11	-3419.01	31.17	0.11
	Min. Torsion	3	-1.24	-15.69	26.87

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	38.91	0.00	0.00	1.34	-1.00	0.00
Dead+Wind 0 deg - No Ice	38.91	0.03	-31.12	-3412.14	-5.22	0.69
Dead+Wind 30 deg - No Ice	38.91	15.69	-26.87	-2941.01	-1728.44	1.24
Dead+Wind 60 deg - No Ice	38.91	27.04	-15.49	-1694.45	-2971.31	0.86
Dead+Wind 90 deg - No Ice	38.91	31.17	-0.04	-4.21	-3421.55	0.31
Dead+Wind 120 deg - No Ice	38.91	27.08	15.48	1694.45	-2976.65	0.06
Dead+Wind 150 deg - No Ice	38.91	15.57	26.88	2945.86	-1709.68	-0.18
Dead+Wind 180 deg - No Ice	38.91	0.09	31.07	3406.42	-14.78	-0.62
Dead+Wind 210 deg - No Ice	38.91	-15.47	26.94	2954.90	1691.82	-0.99
Dead+Wind 240 deg - No Ice	38.91	-27.01	15.47	1693.27	2964.16	-0.75
Dead+Wind 270 deg - No Ice	38.91	-31.17	-0.11	-15.69	3419.01	-0.68
Dead+Wind 300 deg - No Ice	38.91	-27.00	-15.57	-1706.60	2962.80	-0.24
Dead+Wind 330 deg - No Ice	38.91	-15.65	-26.89	-2944.02	1720.36	0.31
Dead+Ice+Temp	73.36	0.00	0.00	8.92	-7.04	0.00
Dead+Wind 0 deg+Ice+Temp	73.36	0.01	-10.43	-1203.41	-8.69	0.39
Dead+Wind 30 deg+Ice+Temp	73.36	5.25	-9.01	-1037.03	-619.27	0.61
Dead+Wind 60 deg+Ice+Temp	73.36	9.06	-5.20	-594.22	-1060.95	0.50
Dead+Wind 90 deg+Ice+Temp	73.36	10.44	-0.01	7.17	-1221.23	0.28
Dead+Wind 120 deg+Ice+Temp	73.36	9.07	5.19	611.54	-1062.41	0.08
Dead+Wind 150 deg+Ice+Temp	73.36	5.22	9.02	1055.80	-613.45	-0.13
Dead+Wind 180 deg+Ice+Temp	73.36	0.02	10.42	1219.11	-10.87	-0.37
Dead+Wind 210 deg+Ice+Temp	73.36	-5.19	9.03	1058.46	594.96	-0.54
Dead+Wind 240 deg+Ice+Temp	73.36	-9.05	5.19	611.58	1045.10	-0.48
Dead+Wind 270 deg+Ice+Temp	73.36	-10.44	-0.03	4.25	1206.76	-0.38
Dead+Wind 300 deg+Ice+Temp	73.36	-9.05	-5.22	-597.41	1044.74	-0.13
Dead+Wind 330 deg+Ice+Temp	73.36	-5.24	-9.02	-1037.72	603.02	0.17
Dead+Wind 0 deg - Service	38.91	0.01	-12.16	-1334.42	-2.69	0.27
Dead+Wind 30 deg - Service	38.91	6.13	-10.49	-1150.05	-677.04	0.49
Dead+Wind 60 deg - Service	38.91	10.56	-6.05	-662.24	-1163.42	0.34
Dead+Wind 90 deg - Service	38.91	12.18	-0.01	-0.80	-1339.61	0.12
Dead+Wind 120 deg - Service	38.91	10.58	6.05	663.95	-1165.52	0.03
Dead+Wind 150 deg - Service	38.91	6.08	10.50	1153.65	-669.69	-0.07
Dead+Wind 180 deg - Service	38.91	0.03	12.14	1333.87	-6.43	-0.25

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+Wind 210 deg - Service	38.91	-6.04	10.52	1157.19	661.41	-0.39
Dead+Wind 240 deg - Service	38.91	-10.55	6.04	663.48	1159.33	-0.30
Dead+Wind 270 deg - Service	38.91	-12.17	-0.04	-5.29	1337.34	-0.27
Dead+Wind 300 deg - Service	38.91	-10.55	-6.08	-667.00	1158.81	-0.09
Dead+Wind 330 deg - Service	38.91	-6.11	-10.50	-1151.23	672.59	0.12

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-38.91	0.00	0.00	38.91	0.00	0.000%
2	0.03	-38.91	-31.12	-0.03	38.91	31.12	0.000%
3	15.69	-38.91	-26.87	-15.69	38.91	26.87	0.000%
4	27.04	-38.91	-15.49	-27.04	38.91	15.49	0.000%
5	31.17	-38.91	-0.04	-31.17	38.91	0.04	0.000%
6	27.08	-38.91	15.48	-27.08	38.91	-15.48	0.000%
7	15.57	-38.91	26.88	-15.57	38.91	-26.88	0.000%
8	0.09	-38.91	31.07	-0.09	38.91	-31.07	0.000%
9	-15.47	-38.91	26.94	15.47	38.91	-26.94	0.000%
10	-27.01	-38.91	15.47	27.01	38.91	-15.47	0.000%
11	-31.17	-38.91	-0.11	31.17	38.91	0.11	0.000%
12	-27.00	-38.91	-15.57	27.00	38.91	15.57	0.000%
13	-15.65	-38.91	-26.89	15.65	38.91	26.89	0.000%
14	0.00	-73.36	0.00	-0.00	73.36	-0.00	0.000%
15	0.01	-73.36	-10.43	-0.01	73.36	10.43	0.000%
16	5.25	-73.36	-9.01	-5.25	73.36	9.01	0.000%
17	9.06	-73.36	-5.20	-9.06	73.36	5.20	0.000%
18	10.44	-73.36	-0.01	-10.44	73.36	0.01	0.000%
19	9.07	-73.36	5.19	-9.07	73.36	-5.19	0.000%
20	5.22	-73.36	9.02	-5.22	73.36	-9.02	0.000%
21	0.02	-73.36	10.42	-0.02	73.36	-10.42	0.000%
22	-5.19	-73.36	9.03	5.19	73.36	-9.03	0.000%
23	-9.05	-73.36	5.19	9.05	73.36	-5.19	0.000%
24	-10.44	-73.36	-0.03	10.44	73.36	0.03	0.000%
25	-9.05	-73.36	-5.22	9.05	73.36	5.22	0.000%
26	-5.24	-73.36	-9.02	5.24	73.36	9.02	0.000%
27	0.01	-38.91	-12.16	-0.01	38.91	12.16	0.000%
28	6.13	-38.91	-10.49	-6.13	38.91	10.49	0.000%
29	10.56	-38.91	-6.05	-10.56	38.91	6.05	0.000%
30	12.18	-38.91	-0.01	-12.18	38.91	0.01	0.000%
31	10.58	-38.91	6.05	-10.58	38.91	-6.05	0.000%
32	6.08	-38.91	10.50	-6.08	38.91	-10.50	0.000%
33	0.03	-38.91	12.14	-0.03	38.91	-12.14	0.000%
34	-6.04	-38.91	10.52	6.04	38.91	-10.52	0.000%
35	-10.55	-38.91	6.04	10.55	38.91	-6.04	0.000%
36	-12.17	-38.91	-0.04	12.17	38.91	0.04	0.000%
37	-10.55	-38.91	-6.08	10.55	38.91	6.08	0.000%
38	-6.11	-38.91	-10.50	6.11	38.91	10.50	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	0.00089404
3	Yes	6	0.00000001	0.00008789

4	Yes	6	0.00000001	0.00008516
5	Yes	4	0.00000001	0.00050517
6	Yes	6	0.00000001	0.00008624
7	Yes	6	0.00000001	0.00008611
8	Yes	5	0.00000001	0.00004843
9	Yes	6	0.00000001	0.00008448
10	Yes	6	0.00000001	0.00008665
11	Yes	4	0.00000001	0.00050957
12	Yes	6	0.00000001	0.00008598
13	Yes	6	0.00000001	0.00008586
14	Yes	4	0.00000001	0.00007203
15	Yes	5	0.00000001	0.00090969
16	Yes	6	0.00000001	0.00021387
17	Yes	6	0.00000001	0.00020779
18	Yes	5	0.00000001	0.00092238
19	Yes	6	0.00000001	0.00021553
20	Yes	6	0.00000001	0.00021454
21	Yes	5	0.00000001	0.00092214
22	Yes	6	0.00000001	0.00020739
23	Yes	6	0.00000001	0.00021288
24	Yes	5	0.00000001	0.00091228
25	Yes	6	0.00000001	0.00020649
26	Yes	6	0.00000001	0.00020645
27	Yes	4	0.00000001	0.00023115
28	Yes	5	0.00000001	0.00023238
29	Yes	5	0.00000001	0.00021967
30	Yes	4	0.00000001	0.00017774
31	Yes	5	0.00000001	0.00022540
32	Yes	5	0.00000001	0.00022418
33	Yes	4	0.00000001	0.00024000
34	Yes	5	0.00000001	0.00021610
35	Yes	5	0.00000001	0.00022637
36	Yes	4	0.00000001	0.00019617
37	Yes	5	0.00000001	0.00022311
38	Yes	5	0.00000001	0.00022244

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	48.806	31	2.6727	0.0045
L2	119.25 - 79.25	29.652	31	2.3345	0.0022
L3	83.75 - 43.75	14.565	31	1.6521	0.0011
L4	49 - 0	4.970	31	0.9344	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	LLPX310R	31	48.806	2.6727	0.0045	23628
153.00	800MHz 2X50W RRH W/FILTER	31	47.691	2.6587	0.0044	23628
151.00	VHLP2.5-18	31	46.577	2.6447	0.0042	23628
143.00	800 10121 w/ Mount Pipe	31	42.145	2.5858	0.0036	9844
133.00	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	31	36.722	2.4987	0.0030	5369
113.00	(2) DB844G65ZAXY w/ Mount Pipe	31	26.646	2.2365	0.0019	3230
103.00	APXV18-206517S-C	31	22.141	2.0534	0.0016	3121
78.00	(4) 844G65VTZASX w/ Mount Pipe	31	12.593	1.5300	0.0010	2783
60.00	ACUTIME 2000	31	7.376	1.1560	0.0007	2405

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	124.191	6	6.8100	0.0107
L2	119.25 - 79.25	75.532	6	5.9512	0.0052
L3	83.75 - 43.75	37.141	6	4.2141	0.0028
L4	49 - 0	12.684	6	2.3846	0.0013

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	LLPX310R	6	124.191	6.8100	0.0107	9518
153.00	800MHz 2X50W RRH W/FILTER	6	121.360	6.7747	0.0104	9518
151.00	VHLP2.5-18	6	118.531	6.7391	0.0100	9518
143.00	800 10121 w/ Mount Pipe	6	107.275	6.5895	0.0087	3964
133.00	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	6	93.499	6.3685	0.0070	2160
113.00	(2) DB844G65ZAXY w/ Mount Pipe	6	67.890	5.7019	0.0046	1294
103.00	APXV18-206517S-C	6	56.430	5.2359	0.0038	1246
78.00	(4) 844G65VTZASX w/ Mount Pipe	6	32.118	3.9032	0.0025	1103
60.00	ACUTIME 2000	6	18.820	2.9499	0.0017	948

Compression Checks

Pole Design Data

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 $\frac{P}{P_a}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	39.50	0.00	0.0	36.000	22.5070	-7.79	810.25	0.010
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	40.00	0.00	0.0	39.000	34.0898	-14.78	1329.50	0.011
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	40.00	0.00	0.0	39.000	47.7407	-24.28	1861.89	0.013
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	49.00	0.00	0.0	39.000	67.1574	-38.88	2619.14	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	371.16	28.300	36.000	0.786	0.00	0.000	36.000	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.312 5	1063.2 4	44.185	39.000	1.133	0.00	0.000	39.000	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	1969.8 4	50.100	39.000	1.285	0.00	0.000	39.000	0.000
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	3425.1	51.345	39.000	1.317	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
			4							

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	14.50	0.644	24.000	0.054	0.04	0.002	24.000	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.312 5	22.02	0.646	26.000	0.050	0.00	0.000	26.000	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	28.03	0.587	26.000	0.045	0.00	0.000	26.000	0.000
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	31.23	0.465	26.000	0.036	0.06	0.000	26.000	0.000

Pole Interaction Design Data

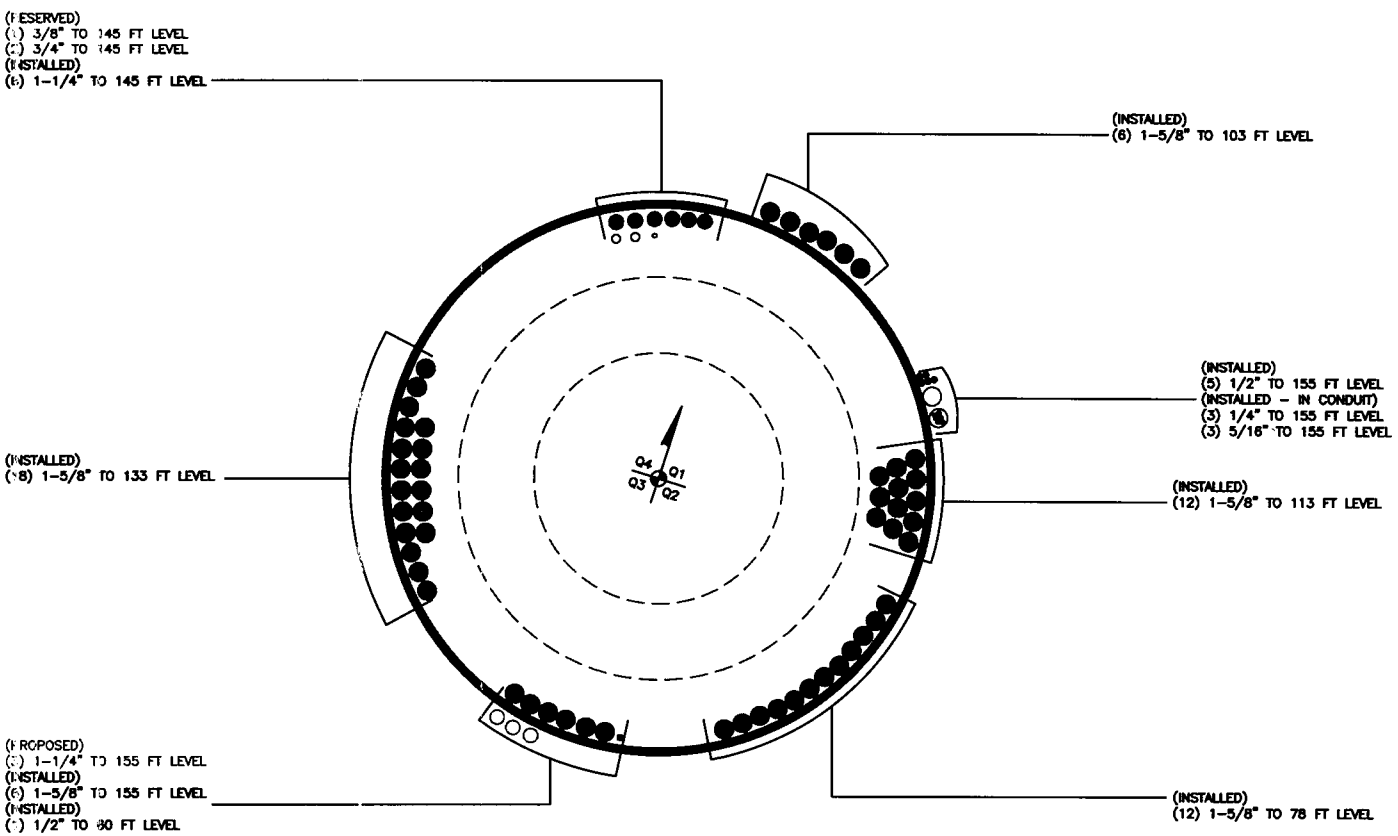
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	155 - 115.5 (1)	0.010	0.786	0.000	0.054	0.000	0.796 ✓	1.333	H1-3+VT ✓
L2	115.5 - 79.25 (2)	0.011	1.133	0.000	0.050	0.000	1.145 ✓	1.333	H1-3+VT ✓
L3	79.25 - 43.75 (3)	0.013	1.285	0.000	0.045	0.000	1.298 ✓	1.333	H1-3+VT ✓
L4	43.75 - 0 (4)	0.015	1.317	0.000	0.036	0.000	1.332 ✓	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-7.79	1080.07	59.7	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.1142x0.3125	2	-14.78	1772.22	85.9	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.0565x0.375	3	-24.28	2481.90	97.4	Pass
L4	43.75 - 0	Pole	TP48.8x39.7348x0.4375	4	-38.88	3491.31	99.9	Pass
							Summary	
							Pole (L4) 99.9	Pass
							RATING = **99.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876347 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876347*
Site Name: *BUCKLAND MALL*
App #: *165582 Rev. 1*

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	56	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	55	in
Thick:	3.25	in
Grade:	50	ksi
Clip Distance:	16	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	48.8	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3425	ft-kips
Unfactored Axial, P:	39	kips
Unfactored Shear, V:	31	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	181.0 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	92.9%

Base Plate Results Flexural Check

Base Plate Stress:	39.9 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	79.8%

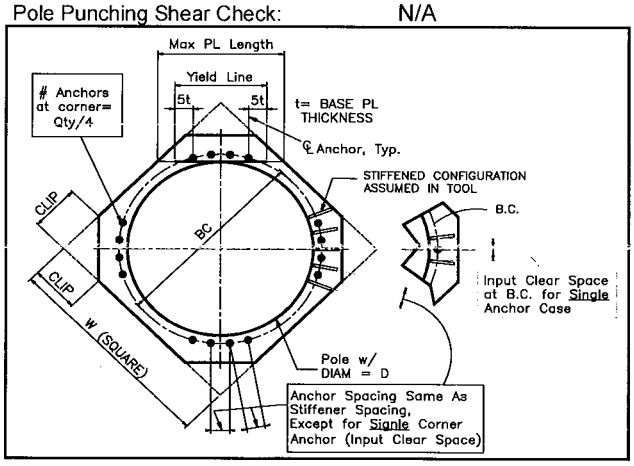
PL Ref. Data
Yield Line (in): 28.98
Max PL Length: 28.98

N/A - Unstiffened
Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Monopole Pier and Pad Foundation

BU # : 876347
Site Name: BUCKLAND MALL
App. Number: 165582 Rev. 1

TIA-222 Revision: F

Design Reactions		
Shear, **S**:	31	kips
Moment, **M**:	3425	ft-kips
Tower Height, **H**:	155	ft
Tower Weight, **Wt**:	39	kips
Base Diameter, **BD**:	4.07	ft

Foundation Dimensions		
Depth, **D**:	10	ft
Pad Width, **W**:	23	ft
Neglected Depth, **N**:	4	ft
Thickness, **T**:	3.00	ft
Pier Diameter, **Pd**:	7.00	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.115	kcf
Ult. Bearing Capacity, Bc:	30.0	ksf
Angle of Friction, **Φ**:	30	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	3.500	ksf
Base Friction, **μ**:	0.45	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	11	
Pier Rebar Quanity, **mp**:	32	
Pad Rebar Size, **Spad**:	9	
Pad Rebar Quanity, **mpad**:	33	
Pier Tie Size, **St**:	5	
Tie Quanity, **mt**:	12	

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7	5.566666667	**OK**
Overturning (ft-kips)	6114.92	3425.00	**56.0%**
Shear Capacity (kips)	319.29	31.00	**9.7%**
Bearing (ksf)	22.50	3.95	**17.6%**
Pad Shear - 1-way (kips)	735.51	490.72	**66.7%**
Pad Shear - 2-way (kips)	1949.60	129.50	**6.6%**
Pad Moment Capacity (k-ft)	4607.86	2961.70	**64.3%**
Pier Moment Capacity (k-ft)	5892.57	3657.50	**62.1%**

Date: **October 20, 2012**

Cheryl Schultz
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(412) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC211
	Carrier Site Name:	CT03XC211
Crown Castle Designation:	**Crown Castle BU Number:**	876347
	Crown Castle Site Name:	BUCKLAND MALL
	Crown Castle JDE Job Number:	190529
	Crown Castle Work Order Number:	540656
	Crown Castle Application Number:	165582 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	540656
Site Data:	**53 Slater Street, MANCHESTER, Hartford County, CT** **Latitude *41° 48' 18"*, Longitude *-72° 32' 1"*** **155 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Crown Castle 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 540656, in accordance with application 165582, 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 + Reserved + Proposed Equipment **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 CT State Building Code based upon a wind speed of 80 mph fastest mile.

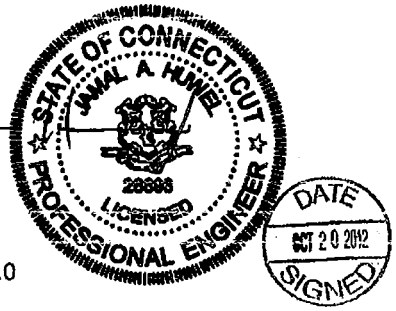
All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* 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.

Structural analysis prepared by: Daniel Smilowitz, E.I.T./JCM

Respectfully submitted by:

Jamal A. Huwel
Manager, Engineering



tnxTower Report - version 6.0.4.0

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing and Reserved Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE
Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 5 - Section Capacity (Summary)
Table 6 – Tower Components vs. Capacity
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 155 ft Monopole tower designed by SUMMIT in February of 2002. The tower was originally designed for a wind speed of 80 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 80 mph with no ice, 37.6 mph with 1.25 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
155.0	155.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	3	1-1/4	-
153.0	153.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Side Arm Mount [SO 102-3]			

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
155.0	155.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	3
		3	argus technologies	LLPX310R	5 3 3	1/2 5/16 1/4	1
		3	samsung telecommunications	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount [LP 713-1]			
	151.0	1	andrew	VHLP1-23			
		1	andrew	VHLP2-11			
		1	andrew	VHLP2.5-18			
		3	dragonwave	HORIZON COMPACT			
143.0	145.0	3	kathrein	800 10121 w/ Mount Pipe	6	1 1/4	1
		6	powerwave technologies	LGP21401			
		6	ericsson	RRUS-11	1 2	3/8 3/4	2
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
	143.0	1	tower mounts	T-Arm Mount [TA 702-3]			
133.0	133.0	3	andrew	ETW190VS12UB	18	1-5/8	1
		6	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Platform Mount [LP 403-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
113.0	113.0	2	antel	BXA-70063/6CFx2 w/ Mount Pipe	-	-	2
		1	antel	BXA-70063/6CFx4 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
		6	decibel	DB844G65ZAXY w/ Mount Pipe	12	1-5/8	1
		1	tower mounts	Platform Mount [LP 601-1]			
103.0	103.0	3	rfs celwave	APXV18-206517S-C	6	1 5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
78.0	78.0	12	decibel	844G65VTZASX w/ Mount Pipe	12	1 5/8	1
		1	tower mounts	Platform Mount [LP 303-1]			
60.0	60.0	1	tower mounts	Side Arm Mount [SO 701-1]	1	1/2	1
		1	trimble	ACUTIME 2000			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed; Not Considered in 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)
155	155	9	Decibel	DB980H90	-	-
145	145	6	Allgon	7250.03	-	-
133	133	6	EMS	RR90-17-00DP PCS	-	-
50	50	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	1533476	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford	1615406	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford	2068033	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), 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) Tower and structures were built in accordance with the manufacturer's specifications.
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) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-7.63	1080.07	53.8	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.1142x0.3125	2	-14.40	1772.22	79.8	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.0565x0.375	3	-23.66	2481.90	91.8	Pass
L4	43.75 - 0	Pole	TP48.8x39.7348x0.4375	4	-37.90	3491.31	95.1	Pass
							Summary	
						Pole (L4)	95.1	Pass
						RATING =	95.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	88.4	Pass
1	Base Plate	0	75.9	Pass
1	Base Foundation	0	65.1	Pass

Structure Rating (max from all components) =	95.1%

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

4.1) Recommendations

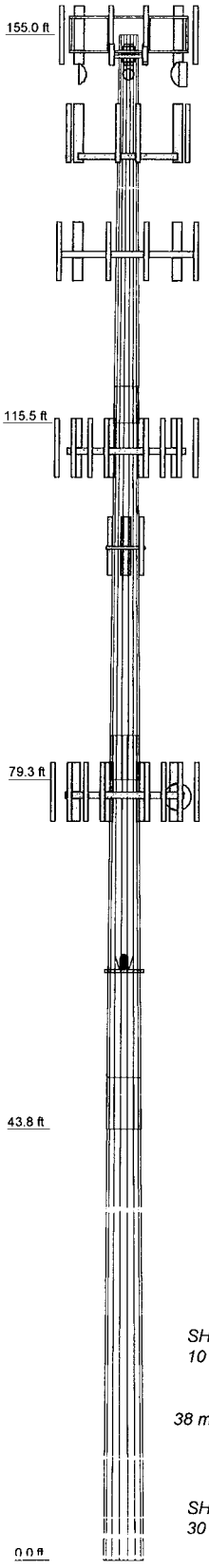
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

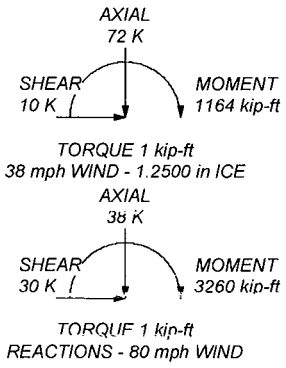
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	39.50	40.00	40.00	49.00
Number of Sides	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.4375
Socket Length (ft)	3.75	4.50	5.25	
Top Dia (in)	22.0000	28.1142	34.0565	39.7348
Bot Dia (in)	29.3080	35.5140	41.4560	48.8000
Grade	A607-60		A607-65	
Weight (K)	2.7	4.3	6.1	10.1

Total Weight: 21.2





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
LLPX310R	155	800 10121 w/ Mount Pipe	143
LLPX310R	155	800 10121 w/ Mount Pipe	143
LLPX310R	155	ATMAA1412D-1A20	133
WIMAX DAP HEAD	155	ATMAA1412D-1A20	133
WIMAX DAP HEAD	155	ATMAA1412D-1A20	133
WIMAX DAP HEAD	155	ETW190VS12UB	133
HORIZON COMPACT	155	ETW190VS12UB	133
HORIZON COMPACT	155	ETW190VS12UB	133
HORIZON COMPACT	155	Platform Mount [LP 403-1]	133
10' x 3" Pipe Mount	155	(2) 5' x 2" Pipe Mount	133
10' x 3" Pipe Mount	155	(2) 5' x 2" Pipe Mount	133
10' x 3" Pipe Mount	155	(2) 5' x 2" Pipe Mount	133
APXVSPP18-C-A20 w/ Mount Pipe	155	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	133
APXVSPP18-C-A20 w/ Mount Pipe	155		
APXVSPP18-C-A20 w/ Mount Pipe	155	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	133
Platform Mount [LP 713-1]	155		
VHLP2.5-18	155	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	133
VHLP1-23	155		
VHLP2-11	155	MG D3-800Tx w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	MG D3-800Tx w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	MG D3-800Tx w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	BXA-70063/6CFx2 w/ Mount Pipe	113
Side Arm Mount [SO 102-3]	153	BXA-70063/6CFx2 w/ Mount Pipe	113
800MHz 2X50W RRH W/FILTER	153	BXA-70063/6CFx4 w/ Mount Pipe	113
800MHz 2X50W RRH W/FILTER	153	(2) FD9R6004/2C-3L	113
800MHz 2X50W RRH W/FILTER	153	(2) FD9R6004/2C-3L	113
(2) LGP21401	143	(2) FD9R6004/2C-3L	113
(2) LGP21401	143	Platform Mount [LP 601-1]	113
(2) LGP21401	143	(2) DB844G65ZAXY w/ Mount Pipe	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	(2) DB844G65ZAXY w/ Mount Pipe	113
		(2) DB844G65ZAXY w/ Mount Pipe	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	Pipe Mount [PM 601-3]	103
		APXV18-206517S-C	103
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	APXV18-206517S-C	103
		APXV18-206517S-C	103
(2) RRUS-11	143	Platform Mount [LP 303-1]	78
(2) RRUS-11	143	(4) 844G65VTZASX w/ Mount Pipe	78
(2) RRUS-11	143	(4) 844G65VTZASX w/ Mount Pipe	78
DC6-48-60-18-8F	143	(4) 844G65VTZASX w/ Mount Pipe	78
T-Arm Mount [TA 702-3]	143	Side Arm Mount [SO 701-1]	60
800 10121 w/ Mount Pipe	143	ACUTIME 2000	60

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 95.1%

CROWN We Are Solutions
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (412) 416-2000
FAX:

Job: BU# 876347			
Project:			
Client: Crown Castle	Drawn by: DSmilowitz		App'd:
Code: TIA/EIA-222-F	Date: 10/19/12		Scale: NTS
Path: R:\SA Models - Letters\Work Area\DSmilowitz\876347 - 540656\Final\876347.eri			Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 80 mph.
3) Nominal ice thickness of 1.2500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) Local bending stresses due to climbing loads, feedline 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		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	155.00-115.50	39.50	3.75	18	22.0000	29.3080	0.2500	1.0000	A607-60 (60 ksi)
L2	115.50-79.25	40.00	4.50	18	28.1142	35.5140	0.3125	1.2500	A607-65 (65 ksi)
L3	79.25-43.75	40.00	5.25	18	34.0565	41.4560	0.3750	1.5000	A607-65 (65 ksi)
L4	43.75-0.00	49.00		18	39.7348	48.8000	0.4375	1.7500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	29.7601	23.0575	2459.6966	10.3156	14.8885	165.2082	4922.6297	11.5310	4.7182	18.873
L2	29.2523	27.5758	2692.8279	9.8696	14.2820	188.5468	5389.1990	13.7905	4.3981	14.074
	36.0619	34.9155	5466.1042	12.4965	18.0411	302.9804	10939.4008	17.4611	5.7005	18.241
L3	35.4272	40.0894	5745.8039	11.9569	17.3007	332.1137	11499.1684	20.0485	5.3339	14.224
	42.0955	48.8967	10425.5424	14.5838	21.0596	495.0483	20864.8031	24.4530	6.6363	17.697
L4	41.3340	54.5692	10646.6064	13.9505	20.1853	527.4439	21307.2218	27.2898	6.2233	14.225
	49.5528	67.1574	19844.8883	17.1687	24.7904	800.5070	39715.8890	33.5851	7.8188	17.872

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
L1 155.00-115.50				1	1	1		
L2 115.50-79.25				1	1	1		
L3 79.25-43.75				1	1	1		
L4 43.75-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***										
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	0.15	1.08
						1/2" Ice	0.25	2.33
						1" Ice	0.35	4.18
						2" Ice	0.55	9.73
						4" Ice	0.95	28.15
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	155.00 - 0.00	2	No Ice	0.00	1.08
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.18
						2" Ice	0.00	9.73
						4" Ice	0.00	28.15
***								
ATCB-B01-005(5/16)	B	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						2" Ice	0.00	0.07
						4" Ice	0.00	0.07
FSJ1-50A(1/4")	B	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.04
						1/2" Ice	0.00	0.04
						1" Ice	0.00	0.04
						2" Ice	0.00	0.04
						4" Ice	0.00	0.04
2" Rigid Conduit	B	No	CaAa (Out Of	155.00 - 0.00	1	No Ice	0.20	2.80

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
			Face)			1/2" Ice	0.30	4.33
						1" Ice	0.40	6.47
						2" Ice	0.60	12.57
						4" Ice	1.00	32.12
2" Rigid Conduit	B	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	4.33
						1" Ice	0.00	6.47
						2" Ice	0.00	12.57
						4" Ice	0.00	32.12
FSJ4-50B(1/2")	B	No	CaAa (Out Of Face)	155.00 - 0.00	2	No Ice	0.05	0.14
						1/2" Ice	0.15	0.76
						1" Ice	0.25	2.00
						2" Ice	0.45	6.30
						4" Ice	0.85	22.23
FSJ4-50B(1/2")	B	No	CaAa (Out Of Face)	155.00 - 0.00	3	No Ice	0.00	0.14
						1/2" Ice	0.00	0.76
						1" Ice	0.00	2.00
						2" Ice	0.00	6.30
						4" Ice	0.00	22.23
***								
***								
LDF6-50A(1-1/4")	A	No	Inside Pole	145.00 - 0.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
FB-L98B-002-75000(3/8")	A	No	Inside Pole	143.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	143.00 - 0.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
***								
LCF158-50JA-A0(1 5/8")	A	No	Inside Pole	133.00 - 0.00	18	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
***								
561(1-5/8")	C	No	Inside Pole	113.00 - 0.00	12	No Ice	0.00	1.35
						1/2" Ice	0.00	1.35
						1" Ice	0.00	1.35
						2" Ice	0.00	1.35
						4" Ice	0.00	1.35
***								
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	103.00 - 0.00	1	No Ice	0.20	0.70
						1/2" Ice	0.30	2.23
						1" Ice	0.40	4.38
						2" Ice	0.60	10.50
						4" Ice	1.00	30.07
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	103.00 - 0.00	5	No Ice	0.00	0.70
						1/2" Ice	0.00	2.23
						1" Ice	0.00	4.38
						2" Ice	0.00	10.50
						4" Ice	0.00	30.07
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	78.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
***								
LDF4-50A(1/2")	C	No	Inside Pole	60.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	155.00-115.50	A	0.000	0.000	0.000	0.000	0.18
		B	0.000	0.000	0.000	12.008	0.26
		C	0.000	0.000	0.000	6.083	0.13
L2	115.50-79.25	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.000	15.794	0.29
		C	0.000	0.000	0.000	5.582	0.66
L3	79.25-43.75	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.000	17.928	0.31
		C	0.000	0.000	0.000	5.467	1.03
L4	43.75-0.00	A	0.000	0.000	0.000	0.000	0.29
		B	0.000	0.000	0.000	22.094	0.38
		C	0.000	0.000	0.000	6.737	1.29

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	155.00-115.50	A	1.480	0.000	0.000	0.000	0.000	0.18
		B		0.000	0.000	0.000	47.074	1.56
		C		0.000	0.000	0.000	17.772	0.81
L2	115.50-79.25	A	1.423	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	55.003	1.95
		C		0.000	0.000	0.000	16.310	1.29
L3	79.25-43.75	A	1.347	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	58.330	2.07
		C		0.000	0.000	0.000	15.568	1.61
L4	43.75-0.00	A	1.250	0.000	0.000	0.000	0.000	0.29
		B		0.000	0.000	0.000	69.224	2.38
		C		0.000	0.000	0.000	18.520	1.95

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	155.00-115.50	0.1605	0.2829	0.5117	0.6538
L2	115.50-79.25	0.3050	0.3654	0.7677	0.8128
L3	79.25-43.75	0.3777	0.4094	0.9051	0.9030
L4	43.75-0.00	0.3875	0.4200	0.9422	0.9413

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
***										
LLPX310R	A	From Leg	4.00		0.0000	155.00	No Ice	4.84	1.96	0.03
			0.00				1/2" Ice	5.19	2.23	0.05
			0.00				1" Ice	5.55	2.50	0.08
							2" Ice	6.30	3.13	0.16
							4" Ice	7.91	4.55	0.36
LLPX310R	B	From Leg	4.00		0.0000	155.00	No Ice	4.84	1.96	0.03
			0.00				1/2" Ice	5.19	2.23	0.05
			0.00				1" Ice	5.55	2.50	0.08
							2" Ice	6.30	3.13	0.16
							4" Ice	7.91	4.55	0.36
LLPX310R	C	From Leg	4.00		0.0000	155.00	No Ice	4.84	1.96	0.03
			0.00				1/2" Ice	5.19	2.23	0.05
			0.00				1" Ice	5.55	2.50	0.08
							2" Ice	6.30	3.13	0.16
							4" Ice	7.91	4.55	0.36
WIMAX DAP HEAD	A	From Leg	4.00		0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00				1/2" Ice	1.99	0.92	0.04
			0.00				1" Ice	2.18	1.07	0.06
							2" Ice	2.59	1.39	0.09
							4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	B	From Leg	4.00		0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00				1/2" Ice	1.99	0.92	0.04
			0.00				1" Ice	2.18	1.07	0.06
							2" Ice	2.59	1.39	0.09
							4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	C	From Leg	4.00		0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00				1/2" Ice	1.99	0.92	0.04
			0.00				1" Ice	2.18	1.07	0.06
							2" Ice	2.59	1.39	0.09
							4" Ice	3.51	2.14	0.20
HORIZON COMPACT	A	From Leg	4.00		0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00				1/2" Ice	0.97	0.52	0.02
			-4.00				1" Ice	1.10	0.63	0.03
							2" Ice	1.39	0.86	0.05
							4" Ice	2.08	1.43	0.12
HORIZON COMPACT	B	From Leg	4.00		0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00				1/2" Ice	0.97	0.52	0.02
			-4.00				1" Ice	1.10	0.63	0.03
							2" Ice	1.39	0.86	0.05
							4" Ice	2.08	1.43	0.12
HORIZON COMPACT	C	From Leg	4.00		0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00				1/2" Ice	0.97	0.52	0.02
			-4.00				1" Ice	1.10	0.63	0.03
							2" Ice	1.39	0.86	0.05
							4" Ice	2.08	1.43	0.12
10' x 3" Pipe Mount	A	From Leg	4.00		0.0000	155.00	No Ice	3.00	3.00	0.08
			0.00				1/2" Ice	4.03	4.03	0.10
			0.00				1" Ice	5.03	5.03	0.13
							2" Ice	6.26	6.26	0.21
							4" Ice	8.83	8.83	0.45
10' x 3" Pipe Mount	B	From Leg	4.00		0.0000	155.00	No Ice	3.00	3.00	0.08
			0.00				1/2" Ice	4.03	4.03	0.10
			0.00				1" Ice	5.03	5.03	0.13
							2" Ice	6.26	6.26	0.21

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	8.83	8.83	0.45
						4" Ice			
10' x 3" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 4.03 5.03 6.26 8.83	3.00 4.03 5.03 6.26 8.83	0.08 0.10 0.13 0.21 0.45
***									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
Platform Mount [LP 713-1]	C	None		0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	31.27 39.68 48.09 64.91 98.55	31.27 39.68 48.09 64.91 98.55	1.51 1.93 2.35 3.19 4.86
***									
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-	C	From Leg	1.00	0.0000	153.00	No Ice	2.71	2.61	0.06

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
65MHz			0.00				1/2"	2.95	2.85	0.08
			0.00				Ice	3.20	3.09	0.11
							1" Ice	3.72	3.61	0.17
							2" Ice	4.86	4.74	0.35
							4" Ice			
Side Arm Mount [SO 102-3]	C	None			0.0000	153.00	No Ice	3.00	3.00	0.08
							1/2"	3.48	3.48	0.11
							Ice	3.96	3.96	0.14
							1" Ice	4.92	4.92	0.20
							2" Ice	6.84	6.84	0.32
							4" Ice			
***										
***										
800 10121 w/ Mount Pipe	A	From Leg	3.00		0.0000	143.00	No Ice	5.69	4.60	0.07
			0.00				1/2"	6.18	5.35	0.11
			2.00				Ice	6.68	6.05	0.17
							1" Ice	7.70	7.53	0.30
							2" Ice	9.86	10.83	0.68
							4" Ice			
800 10121 w/ Mount Pipe	B	From Leg	3.00		0.0000	143.00	No Ice	5.69	4.60	0.07
			0.00				1/2"	6.18	5.35	0.11
			2.00				Ice	6.68	6.05	0.17
							1" Ice	7.70	7.53	0.30
							2" Ice	9.86	10.83	0.68
							4" Ice			
800 10121 w/ Mount Pipe	C	From Leg	3.00		0.0000	143.00	No Ice	5.69	4.60	0.07
			0.00				1/2"	6.18	5.35	0.11
			2.00				Ice	6.68	6.05	0.17
							1" Ice	7.70	7.53	0.30
							2" Ice	9.86	10.83	0.68
							4" Ice			
(2) LGP21401	A	From Leg	3.00		0.0000	143.00	No Ice	1.29	0.23	0.01
			0.00				1/2"	1.45	0.31	0.02
			2.00				Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
							4" Ice			
(2) LGP21401	B	From Leg	3.00		0.0000	143.00	No Ice	1.29	0.23	0.01
			0.00				1/2"	1.45	0.31	0.02
			2.00				Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
							4" Ice			
(2) LGP21401	C	From Leg	3.00		0.0000	143.00	No Ice	1.29	0.23	0.01
			0.00				1/2"	1.45	0.31	0.02
			2.00				Ice	1.61	0.40	0.03
							1" Ice	1.97	0.61	0.05
							2" Ice	2.79	1.12	0.14
							4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	3.00		0.0000	143.00	No Ice	8.50	6.30	0.07
			0.00				1/2"	9.15	7.48	0.14
			2.00				Ice	9.77	8.37	0.21
							1" Ice	11.03	10.18	0.38
							2" Ice	13.68	14.02	0.87
							4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	3.00		0.0000	143.00	No Ice	8.50	6.30	0.07
			0.00				1/2"	9.15	7.48	0.14
			2.00				Ice	9.77	8.37	0.21
							1" Ice	11.03	10.18	0.38
							2" Ice	13.68	14.02	0.87
							4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	3.00		0.0000	143.00	No Ice	8.50	6.30	0.07
			0.00				1/2"	9.15	7.48	0.14
			2.00				Ice	9.77	8.37	0.21
							1" Ice	11.03	10.18	0.38

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
							2" Ice	13.68	14.02	0.87
							4" Ice			
(2) RRUS-11	A	From Leg	3.00		0.0000	143.00	No Ice	3.25	1.37	0.05
			0.00				1/2"	3.49	1.55	0.07
			2.00				Ice	3.74	1.74	0.09
							1" Ice	4.27	2.14	0.15
							2" Ice	5.43	3.04	0.31
							4" Ice			
(2) RRUS-11	B	From Leg	3.00		0.0000	143.00	No Ice	3.25	1.37	0.05
			0.00				1/2"	3.49	1.55	0.07
			2.00				Ice	3.74	1.74	0.09
							1" Ice	4.27	2.14	0.15
							2" Ice	5.43	3.04	0.31
							4" Ice			
(2) RRUS-11	C	From Leg	3.00		0.0000	143.00	No Ice	3.25	1.37	0.05
			0.00				1/2"	3.49	1.55	0.07
			2.00				Ice	3.74	1.74	0.09
							1" Ice	4.27	2.14	0.15
							2" Ice	5.43	3.04	0.31
							4" Ice			
DC6-48-60-18-8F	A	From Leg	3.00		0.0000	143.00	No Ice	1.27	1.27	0.02
			0.00				1/2"	1.46	1.46	0.04
			2.00				Ice	1.66	1.66	0.05
							1" Ice	2.09	2.09	0.10
							2" Ice	3.10	3.10	0.21
							4" Ice			
T-Arm Mount [TA 702-3]	C	None			0.0000	143.00	No Ice	5.64	5.64	0.34
							1/2"	6.55	6.55	0.43
							Ice	7.46	7.46	0.52
							1" Ice	9.28	9.28	0.70
							2" Ice	12.92	12.92	1.06
							4" Ice			
***										
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00		0.0000	133.00	No Ice	7.47	3.49	0.06
			0.00				1/2"	7.99	4.26	0.11
			0.00				Ice	8.52	4.96	0.16
							1" Ice	9.59	6.40	0.30
							2" Ice	11.87	9.49	0.68
							4" Ice			
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.00		0.0000	133.00	No Ice	7.47	3.49	0.06
			0.00				1/2"	7.99	4.26	0.11
			0.00				Ice	8.52	4.96	0.16
							1" Ice	9.59	6.40	0.30
							2" Ice	11.87	9.49	0.68
							4" Ice			
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.00		0.0000	133.00	No Ice	7.47	3.49	0.06
			0.00				1/2"	7.99	4.26	0.11
			0.00				Ice	8.52	4.96	0.16
							1" Ice	9.59	6.40	0.30
							2" Ice	11.87	9.49	0.68
							4" Ice			
ATMAA1412D-1A20	A	From Leg	4.00		0.0000	133.00	No Ice	0.47	1.17	0.01
			0.00				1/2"	0.57	1.31	0.02
			0.00				Ice	0.69	1.47	0.03
							1" Ice	0.95	1.81	0.06
							2" Ice	1.57	2.58	0.14
							4" Ice			
ATMAA1412D-1A20	B	From Leg	4.00		0.0000	133.00	No Ice	0.47	1.17	0.01
			0.00				1/2"	0.57	1.31	0.02
			0.00				Ice	0.69	1.47	0.03
							1" Ice	0.95	1.81	0.06
							2" Ice	1.57	2.58	0.14
							4" Ice			
ATMAA1412D-1A20	C	From Leg	4.00		0.0000	133.00	No Ice	0.47	1.17	0.01
			0.00				1/2"	0.57	1.31	0.02

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			Ice	0.69	1.47	0.03
						1" Ice	0.95	1.81	0.06
						2" Ice	1.57	2.58	0.14
						4" Ice			
ETW190VS12UB	A	From Leg	4.00	0.0000	133.00	No Ice	0.76	0.35	0.01
			0.00			1/2"	0.88	0.44	0.02
			0.00			Ice	1.01	0.54	0.02
						1" Ice	1.30	0.77	0.04
						2" Ice	1.97	1.33	0.11
						4" Ice			
ETW190VS12UB	B	From Leg	4.00	0.0000	133.00	No Ice	0.76	0.35	0.01
			0.00			1/2"	0.88	0.44	0.02
			0.00			Ice	1.01	0.54	0.02
						1" Ice	1.30	0.77	0.04
						2" Ice	1.97	1.33	0.11
						4" Ice			
ETW190VS12UB	C	From Leg	4.00	0.0000	133.00	No Ice	0.76	0.35	0.01
			0.00			1/2"	0.88	0.44	0.02
			0.00			Ice	1.01	0.54	0.02
						1" Ice	1.30	0.77	0.04
						2" Ice	1.97	1.33	0.11
						4" Ice			
Platform Mount [LP 403-1]	C	None		0.0000	133.00	No Ice	18.85	18.85	1.50
						1/2"	24.30	24.30	1.80
						Ice	29.75	29.75	2.09
						1" Ice	40.65	40.65	2.69
						2" Ice	62.45	62.45	3.87
						4" Ice			
(2) 5' x 2" Pipe Mount	A	From Leg	4.00	0.0000	133.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			0.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
(2) 5' x 2" Pipe Mount	B	From Leg	4.00	0.0000	133.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			0.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
(2) 5' x 2" Pipe Mount	C	From Leg	4.00	0.0000	133.00	No Ice	1.00	1.00	0.03
			0.00			1/2"	1.39	1.39	0.04
			0.00			Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
***									
(2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.00	0.0000	113.00	No Ice	4.90	4.92	0.03
			0.00			1/2"	5.35	5.60	0.08
			0.00			Ice	5.80	6.28	0.13
						1" Ice	6.73	7.71	0.26
						2" Ice	8.73	10.83	0.62
						4" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.00	0.0000	113.00	No Ice	4.90	4.92	0.03
			0.00			1/2"	5.35	5.60	0.08
			0.00			Ice	5.80	6.28	0.13
						1" Ice	6.73	7.71	0.26
						2" Ice	8.73	10.83	0.62
						4" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.00	0.0000	113.00	No Ice	4.90	4.92	0.03
			0.00			1/2"	5.35	5.60	0.08
			0.00			Ice	5.80	6.28	0.13
						1" Ice	6.73	7.71	0.26
						2" Ice	8.73	10.83	0.62
						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
MG D3-800Tx w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.57 3.98 4.39 5.33 7.34	3.42 4.12 4.78 6.16 9.18	0.03 0.07 0.11 0.21 0.52
MG D3-800Tx w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.57 3.98 4.39 5.33 7.34	3.42 4.12 4.78 6.16 9.18	0.03 0.07 0.11 0.21 0.52
MG D3-800Tx w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.57 3.98 4.39 5.33 7.34	3.42 4.12 4.78 6.16 9.18	0.03 0.07 0.11 0.21 0.52
BXA-70063/6CFx2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
BXA-70063/6CFx2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
BXA-70063/6CFx4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0.00 0.01 0.01 0.02 0.06
Platform Mount [LP 601-1]	C	None		0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.47 33.59 38.71 48.95 69.43	28.47 33.59 38.71 48.95 69.43	1.12 1.51 1.91 2.69 4.26
***									
APXV18-206517S-C	A	From Leg	0.50 0.00 0.00	0.0000	103.00	No Ice 1/2" Ice 1" Ice	5.17 5.62 6.08 7.02	3.04 3.47 3.91 4.81	0.03 0.05 0.09 0.17

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	9.12	6.70	0.40
						4" Ice			
APXV18-206517S-C	B	From Leg	0.50 0.00 0.00	0.0000	103.00	No Ice	5.17	3.04	0.03
						1/2" Ice	5.62	3.47	0.05
						1" Ice	6.08	3.91	0.09
						2" Ice	7.02	4.81	0.17
						4" Ice	9.12	6.70	0.40
APXV18-206517S-C	C	From Leg	0.50 0.00 0.00	0.0000	103.00	No Ice	5.17	3.04	0.03
						1/2" Ice	5.62	3.47	0.05
						1" Ice	6.08	3.91	0.09
						2" Ice	7.02	4.81	0.17
						4" Ice	9.12	6.70	0.40
Pipe Mount [PM 601-3]	C	None		0.0000	103.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
						2" Ice	8.75	8.75	0.36
						4" Ice	13.11	13.11	0.53
***									
(4) 844G65VTZASX w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice	6.13	5.21	0.03
						1/2" Ice	6.59	5.89	0.08
						1" Ice	7.06	6.59	0.14
						2" Ice	8.04	8.04	0.28
						4" Ice	10.12	11.19	0.67
(4) 844G65VTZASX w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice	6.13	5.21	0.03
						1/2" Ice	6.59	5.89	0.08
						1" Ice	7.06	6.59	0.14
						2" Ice	8.04	8.04	0.28
						4" Ice	10.12	11.19	0.67
(4) 844G65VTZASX w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice	6.13	5.21	0.03
						1/2" Ice	6.59	5.89	0.08
						1" Ice	7.06	6.59	0.14
						2" Ice	8.04	8.04	0.28
						4" Ice	10.12	11.19	0.67
Platform Mount [LP 303-1]	C	None		0.0000	78.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
***									
ACUTiME 2000	A	From Leg	3.00 0.00 0.00	0.0000	60.00	No Ice	0.30	0.30	0.00
						1/2" Ice	0.37	0.37	0.00
						1" Ice	0.46	0.46	0.01
						2" Ice	0.65	0.65	0.02
						4" Ice	1.15	1.15	0.08
Side Arm Mount [SO 701-1]	A	None		0.0000	60.00	No Ice	0.85	1.67	0.07
						1/2" Ice	1.14	2.34	0.08
						1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18
***									

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
VHLP2.5-18	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 -4.00	0.0000		155.00	2.50	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.68 7.06 7.46 8.29 10.08	0.05 0.05 0.06 0.10 0.26
VHLP1-23	A	Paraboloid w/o Radome	From Leg	4.00 0.00 -4.00	0.0000		155.00	1.27	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.28 1.45 1.62 1.97 2.66	0.01 0.02 0.02 0.04 0.07
VHLP2-11	C	Paraboloid w/o Radome	From Leg	4.00 0.00 -4.00	0.0000		155.00	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

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
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
L1	155 - 115.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-20.23	-0.68	-1.27
			Max. Mx	5	-7.63	-332.90	0.91
			Max. My	2	-7.64	-1.05	330.99
			Max. Vy	5	13.40	-332.90	0.91
			Max. Vx	2	-13.36	-1.05	330.99
			Max. Torque	3			-0.90
L2	115.5 - 79.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.13	-2.17	-3.24
			Max. Mx	5	-14.41	-985.55	1.97
			Max. My	2	-14.41	-2.24	981.54
			Max. Vy	5	20.91	-985.55	1.97
			Max. Vx	2	-20.86	-2.24	981.54
			Max. Torque	3			-0.94
L3	79.25 - 43.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.55	-4.13	-5.51
			Max. Mx	5	-23.66	-1853.59	2.95
			Max. My	2	-23.66	-3.47	1847.37
			Max. Vy	5	26.94	-1853.59	2.95
			Max. Vx	2	-26.89	-3.47	1847.37
			Max. Torque	3			-1.05
L4	43.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-71.59	-7.00	-8.87
			Max. Mx	5	-37.90	-3256.85	4.20
			Max. My	2	-37.90	-5.22	3247.45
			Max. Vy	5	30.21	-3256.85	4.20
			Max. Vx	2	-30.17	-5.22	3247.45
			Max. Torque	3			-1.24

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	71.59	-10.12	0.01
	Max. H_x	11	37.93	30.18	0.11
	Max. H_z	2	37.93	-0.03	30.13
	Max. M_x	2	3247.45	-0.03	30.13
	Max. M_z	5	3256.85	-30.18	0.04
	Max. Torsion	9	0.99	14.98	-26.08
	Min. Vert	1	37.93	0.00	0.00
	Min. H_x	5	37.93	-30.18	0.04
	Min. H_z	8	37.93	-0.09	-30.08
	Min. M_x	8	-3241.72	-0.09	-30.08
	Min. M_z	11	-3254.31	30.18	0.11
	Min. Torsion	3	-1.24	-15.20	26.01

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	37.93	0.00	0.00	1.34	-1.00	0.00
Dead+Wind 0 deg - No Ice	37.93	0.03	-30.13	-3247.45	-5.22	0.69
Dead+Wind 30 deg - No Ice	37.93	15.20	-26.01	-2798.40	-1646.07	1.24
Dead+Wind 60 deg - No Ice	37.93	26.19	-15.00	-1612.12	-2828.67	0.86

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 90 deg - No Ice	37.93	30.18	-0.04	-4.20	-3256.85	0.31
Dead+Wind 120 deg - No Ice	37.93	26.22	14.98	1612.12	-2834.00	0.06
Dead+Wind 150 deg - No Ice	37.93	15.08	26.02	2803.24	-1627.33	-0.18
Dead+Wind 180 deg - No Ice	37.93	0.09	30.08	3241.72	-14.76	-0.62
Dead+Wind 210 deg - No Ice	37.93	-14.98	26.08	2812.27	1609.49	-0.99
Dead+Wind 240 deg - No Ice	37.93	-26.15	14.97	1610.94	2821.52	-0.75
Dead+Wind 270 deg - No Ice	37.93	-30.18	-0.11	-15.67	3254.31	-0.69
Dead+Wind 300 deg - No Ice	37.93	-26.15	-15.08	-1624.25	2820.17	-0.24
Dead+Wind 330 deg - No Ice	37.93	-15.16	-26.03	-2801.40	1637.99	0.31
Dead+Ice+Temp	71.59	0.00	0.00	8.87	-7.00	0.00
Dead+Wind 0 deg+Ice+Temp	71.59	0.01	-10.11	-1141.76	-8.65	0.39
Dead+Wind 30 deg+Ice+Temp	71.59	5.09	-8.73	-983.66	-588.36	0.61
Dead+Wind 60 deg+Ice+Temp	71.59	8.78	-5.04	-563.43	-1007.47	0.50
Dead+Wind 90 deg+Ice+Temp	71.59	10.12	-0.01	7.14	-1159.49	0.28
Dead+Wind 120 deg+Ice+Temp	71.59	8.78	5.03	580.66	-1008.92	0.08
Dead+Wind 150 deg+Ice+Temp	71.59	5.05	8.73	1002.34	-582.57	-0.13
Dead+Wind 180 deg+Ice+Temp	71.59	0.02	10.09	1157.38	-10.82	-0.37
Dead+Wind 210 deg+Ice+Temp	71.59	-5.03	8.75	1004.99	564.16	-0.54
Dead+Wind 240 deg+Ice+Temp	71.59	-8.77	5.03	580.70	991.68	-0.48
Dead+Wind 270 deg+Ice+Temp	71.59	-10.12	-0.03	4.23	1145.08	-0.38
Dead+Wind 300 deg+Ice+Temp	71.59	-8.76	-5.05	-566.60	991.32	-0.13
Dead+Wind 330 deg+Ice+Temp	71.59	-5.08	-8.73	-984.34	572.18	0.17
Dead+Wind 0 deg - Service	37.93	0.01	-11.77	-1269.66	-2.68	0.27
Dead+Wind 30 deg - Service	37.93	5.94	-10.16	-1093.97	-644.64	0.49
Dead+Wind 60 deg - Service	37.93	10.23	-5.86	-629.87	-1107.32	0.34
Dead+Wind 90 deg - Service	37.93	11.79	-0.01	-0.79	-1274.84	0.12
Dead+Wind 120 deg - Service	37.93	10.24	5.85	631.57	-1109.41	0.03
Dead+Wind 150 deg - Service	37.93	5.89	10.17	1097.56	-637.30	-0.07
Dead+Wind 180 deg - Service	37.93	0.03	11.75	1269.10	-6.42	-0.25
Dead+Wind 210 deg - Service	37.93	-5.85	10.19	1101.09	629.04	-0.39
Dead+Wind 240 deg - Service	37.93	-10.22	5.85	631.10	1103.24	-0.30
Dead+Wind 270 deg - Service	37.93	-11.79	-0.04	-5.28	1272.57	-0.27
Dead+Wind 300 deg - Service	37.93	-10.21	-5.89	-634.62	1102.72	-0.09
Dead+Wind 330 deg - Service	37.93	-5.92	-10.17	-1095.15	640.20	0.12

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	-37.93	0.00	0.00	37.93	0.00	0.000%
2	0.03	-37.93	-30.13	-0.03	37.93	30.13	0.000%
3	15.20	-37.93	-26.01	-15.20	37.93	26.01	0.000%
4	26.19	-37.93	-15.00	-26.19	37.93	15.00	0.000%
5	30.18	-37.93	-0.04	-30.18	37.93	0.04	0.000%
6	26.22	-37.93	14.98	-26.22	37.93	-14.98	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	15.08	-37.93	26.02	-15.08	37.93	-26.02	0.000%
8	0.09	-37.93	30.08	-0.09	37.93	-30.08	0.000%
9	-14.98	-37.93	26.08	14.98	37.93	-26.08	0.000%
10	-26.15	-37.93	14.97	26.15	37.93	-14.97	0.000%
11	-30.18	-37.93	-0.11	30.18	37.93	0.11	0.000%
12	-26.15	-37.93	-15.08	26.15	37.93	15.08	0.000%
13	-15.16	-37.93	-26.03	15.16	37.93	26.03	0.000%
14	0.00	-71.59	0.00	-0.00	71.59	-0.00	0.000%
15	0.01	-71.59	-10.11	-0.01	71.59	10.11	0.000%
16	5.09	-71.59	-8.73	-5.09	71.59	8.73	0.000%
17	8.78	-71.59	-5.04	-8.78	71.59	5.04	0.000%
18	10.12	-71.59	-0.01	-10.12	71.59	0.01	0.000%
19	8.78	-71.59	5.03	-8.78	71.59	-5.03	0.000%
20	5.05	-71.59	8.73	-5.05	71.59	-8.73	0.000%
21	0.02	-71.59	10.09	-0.02	71.59	-10.09	0.000%
22	-5.03	-71.59	8.75	5.03	71.59	-8.75	0.000%
23	-8.77	-71.59	5.03	8.77	71.59	-5.03	0.000%
24	-10.12	-71.59	-0.03	10.12	71.59	0.03	0.000%
25	-8.76	-71.59	-5.05	8.76	71.59	5.05	0.000%
26	-5.08	-71.59	-8.73	5.08	71.59	8.73	0.000%
27	0.01	-37.93	-11.77	-0.01	37.93	11.77	0.000%
28	5.94	-37.93	-10.16	-5.94	37.93	10.16	0.000%
29	10.23	-37.93	-5.86	-10.23	37.93	5.86	0.000%
30	11.79	-37.93	-0.01	-11.79	37.93	0.01	0.000%
31	10.24	-37.93	5.85	-10.24	37.93	-5.85	0.000%
32	5.89	-37.93	10.17	-5.89	37.93	-10.17	0.000%
33	0.03	-37.93	11.75	-0.03	37.93	-11.75	0.000%
34	-5.85	-37.93	10.19	5.85	37.93	-10.19	0.000%
35	-10.22	-37.93	5.85	10.22	37.93	-5.85	0.000%
36	-11.79	-37.93	-0.04	11.79	37.93	0.04	0.000%
37	-10.21	-37.93	-5.89	10.21	37.93	5.89	0.000%
38	-5.92	-37.93	-10.17	5.92	37.93	10.17	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	0.00078771
3	Yes	6	0.00000001	0.00006940
4	Yes	6	0.00000001	0.00006712
5	Yes	4	0.00000001	0.00041658
6	Yes	6	0.00000001	0.00006806
7	Yes	6	0.00000001	0.00006792
8	Yes	4	0.00000001	0.00098322
9	Yes	6	0.00000001	0.00006650
10	Yes	6	0.00000001	0.00006839
11	Yes	4	0.00000001	0.00042261
12	Yes	6	0.00000001	0.00006784
13	Yes	6	0.00000001	0.00006774
14	Yes	4	0.00000001	0.00007146
15	Yes	5	0.00000001	0.00076405
16	Yes	6	0.00000001	0.00015956
17	Yes	6	0.00000001	0.00015509
18	Yes	5	0.00000001	0.00077548
19	Yes	6	0.00000001	0.00016090
20	Yes	6	0.00000001	0.00016014
21	Yes	5	0.00000001	0.00077514
22	Yes	6	0.00000001	0.00015478
23	Yes	6	0.00000001	0.00015884
24	Yes	5	0.00000001	0.00076642
25	Yes	6	0.00000001	0.00015404
26	Yes	6	0.00000001	0.00015399
27	Yes	4	0.00000001	0.00019822
28	Yes	5	0.00000001	0.00017943

29	Yes	5	0.00000001	0.00016849
30	Yes	4	0.00000001	0.00014776
31	Yes	5	0.00000001	0.00017337
32	Yes	5	0.00000001	0.00017240
33	Yes	4	0.00000001	0.00020510
34	Yes	5	0.00000001	0.00016553
35	Yes	5	0.00000001	0.00017435
36	Yes	4	0.00000001	0.00016706
37	Yes	5	0.00000001	0.00017144
38	Yes	5	0.00000001	0.00017086

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	45.765	31	2.4787	0.0045
L2	119.25 - 79.25	27.941	31	2.1830	0.0022
L3	83.75 - 43.75	13.781	31	1.5572	0.0011
L4	49 - 0	4.716	31	0.8853	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	LLPX310R	31	45.765	2.4787	0.0045	26501
153.00	800MHz 2X50W RRH W/FILTER	31	44.729	2.4669	0.0043	26501
151.00	VHLP2.5-18	31	43.694	2.4550	0.0042	26501
143.00	800 10121 w/ Mount Pipe	31	39.576	2.4047	0.0036	11042
133.00	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	31	34.532	2.3292	0.0030	6022
113.00	(2) DB844G65ZAXY w/ Mount Pipe	31	25.131	2.0943	0.0019	3593
103.00	APXV18-206517S-C	31	20.909	1.9272	0.0016	3429
78.00	(4) 844G65VTZASX w/ Mount Pipe	31	11.921	1.4438	0.0010	2984
60.00	ACUTIME 2000	31	6.993	1.0939	0.0007	2557

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	116.528	6	6.3184	0.0107
L2	119.25 - 79.25	71.211	6	5.5672	0.0052
L3	83.75 - 43.75	35.155	6	3.9734	0.0028
L4	49 - 0	12.040	6	2.2601	0.0013

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	LLPX310R	6	116.528	6.3184	0.0107	10642
153.00	800MHz 2X50W RRH W/FILTER	6	113.895	6.2885	0.0104	10642

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
151.00	VHLP2.5-18	6	111.265	6.2583	0.0100	10642
143.00	800 10121 w/ Mount Pipe	6	100.797	6.1307	0.0087	4432
133.00	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	6	87.973	5.9389	0.0070	2415
113.00	(2) DB844G65ZAXY w/ Mount Pipe	6	64.061	5.3415	0.0046	1436
103.00	APXV18-206517S-C	6	53.312	4.9161	0.0038	1366
78.00	(4) 844G65VTZASX w/ Mount Pipe	6	30.415	3.6843	0.0025	1181
60.00	ACUTIME 2000	6	17.848	2.7923	0.0017	1007

Compression Checks

Pole Design Data

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 $\frac{P}{P_a}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	39.50	0.00	0.0	36.000	22.5070	-7.63	810.25	0.009
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	40.00	0.00	0.0	39.000	34.0898	-14.40	1329.50	0.011
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	40.00	0.00	0.0	39.000	47.7407	-23.66	1861.89	0.013
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	49.00	0.00	0.0	39.000	67.1574	-37.90	2619.14	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	333.65	25.440	36.000	0.707	0.00	0.000	36.000	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	987.13	41.023	39.000	1.052	0.00	0.000	39.000	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	1856.00	47.205	39.000	1.210	0.00	0.000	39.000	0.000
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	3260.44	48.876	39.000	1.253	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	13.42	0.596	24.000	0.050	0.04	0.002	24.000	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	20.93	0.614	26.000	0.047	0.00	0.000	26.000	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	26.96	0.565	26.000	0.043	0.00	0.000	26.000	0.000
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	30.23	0.450	26.000	0.035	0.06	0.000	26.000	0.000

Pole Interaction Design Data

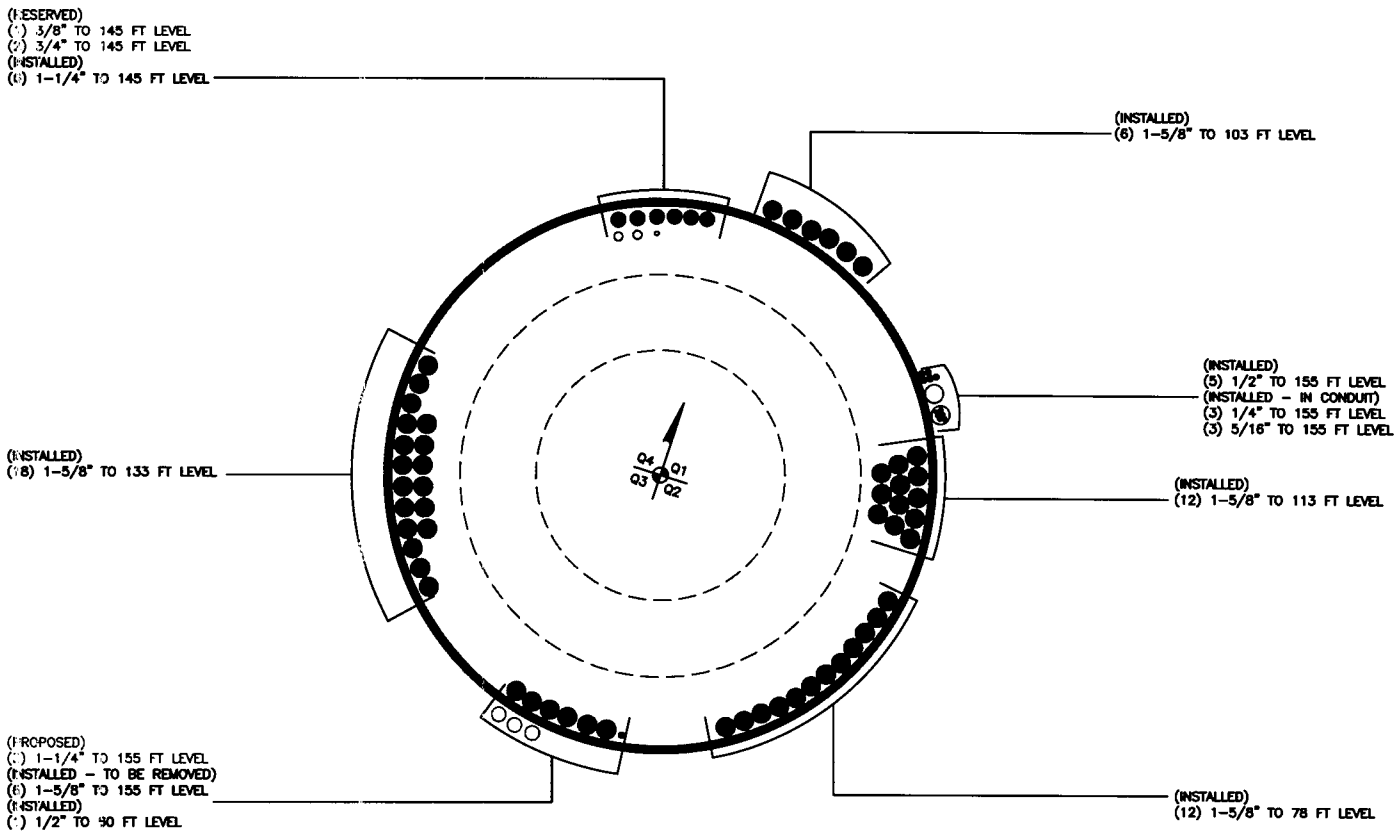
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	155 - 115.5 (1)	0.009	0.707	0.000	0.050	0.000	0.717 ✓	1.333	H1-3+VT ✓
L2	115.5 - 79.25 (2)	0.011	1.052	0.000	0.047	0.000	1.063 ✓	1.333	H1-3+VT ✓
L3	79.25 - 43.75 (3)	0.013	1.210	0.000	0.043	0.000	1.224 ✓	1.333	H1-3+VT ✓
L4	43.75 - 0 (4)	0.014	1.253	0.000	0.035	0.000	1.268 ✓	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-7.63	1080.07	53.8	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.1142x0.3125	2	-14.40	1772.22	79.8	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.0565x0.375	3	-23.66	2481.90	91.8	Pass
L4	43.75 - 0	Pole	TP48.8x39.7348x0.4375	4	-37.90	3491.31	95.1	Pass
							Summary	
						Pole (L4)	95.1	Pass
						RATING =	**95.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876347 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876347*
Site Name: *BUCKLAND MALL*
App #: *165583 Rev. 1*

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	56	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	55	in
Thick:	3.25	in
Grade:	50	ksi
Clip Distance:	16	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	48.8	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3260	ft-kips
Unfactored Axial, P:	38	kips
Unfactored Shear, V:	30	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	172.3 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	88.4%

Base Plate Results Flexural Check

Base Plate Stress:	38.0 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	75.9%

PL Ref. Data
Yield Line (in):
28.98
Max PL Length:
28.98

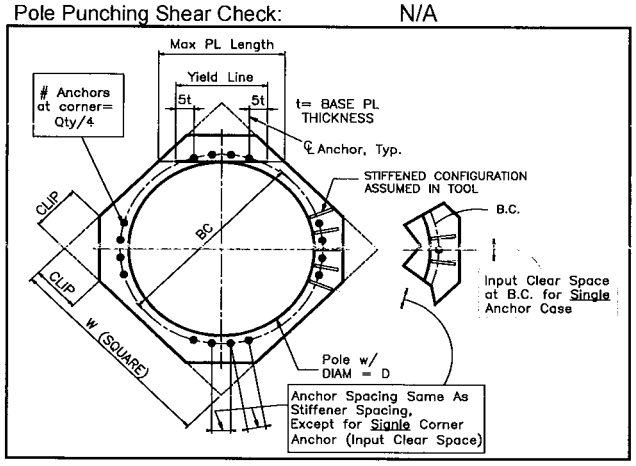
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Monopole Pier and Pad Foundation

BU # : 876347
Site Name: BUCKLAND MALL
App. Number: 165582 Rev. 1

TIA-222 Revision: F

Design Reactions		
Shear, **S**:	30	kips
Moment, **M**:	3260	ft-kips
Tower Height, **H**:	155	ft
Tower Weight, **Wt**:	38	kips
Base Diameter, **BD**:	4.07	ft

Foundation Dimensions		
Depth, **D**:	10	ft
Pad Width, **W**:	23	ft
Neglected Depth, **N**:	4	ft
Thickness, **T**:	3.00	ft
Pier Diameter, **Pd**:	7.00	ft
Ext. Above Grade, **E**:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.115	kcf
Ult. Bearing Capacity, Bc:	30.0	ksf
Angle of Friction, **Φ**:	30	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	3.500	ksf
Base Friction, **μ**:	0.45	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	11	
Pier Rebar Quanity, **mp**:	32	
Pad Rebar Size, **Spad**:	9	
Pad Rebar Quanity, **mpad**:	33	
Pier Tie Size, **St**:	5	
Tie Quanity, **mt**:	12	

Design Checks	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7	5.566666667	**OK**
Overturning (ft-kips)	6117.56	3260.00	**53.3%**
Shear Capacity (kips)	319.06	30.00	**9.4%**
Bearing (ksf)	22.50	3.75	**16.7%**
Pad Shear - 1-way (kips)	735.51	479.10	**65.1%**
Pad Shear - 2-way (kips)	1949.60	128.20	**6.6%**
Pad Moment Capacity (k-ft)	4607.86	2891.64	**62.8%**
Pier Moment Capacity (k-ft)	5892.57	3485.00	**59.1%**

EM-SPRINT-NEXTEL-077-130214

53 Slater Street

Manchester

Alcatel·Lucent

1 Robbins Road
Westford, MA 01886

July 9, 2014

State of Connecticut
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notification of Construction Completion on telecommunication facilities

To whom it may concern:

Alcatel Lucent hereby acknowledges that the list of attached sites have completed construction per the approval granted on the specified date. Please advise if further information is needed..

Very truly yours,

Martha Powers

Martha Powers
Lead Development Manager
Alcatel-Lucent
Sprint Vision Project
1 Robbins Road
Westford, MA 01886

Cc: FST, Siterra

EM/TS #	Address	Town	Sprint ID	Decision Date
EM-SPRINT-062-130912	1065 Wintergreen Avenue	Hamden	CT03XC003	10/15/2013
EM-SPRINT-NEXTEL-060-130118	10 Tanner Marsh Road	Guilford	CT03XC022	2/14/2013
EM-SPRINT-004-130822	181 Montevideo Road	Avon	CT03XC053	9/6/2013
EM-SPRINT-NEXTEL-155-130214A	1358 New Britain Ave.	West Hartford	CT03XC057	3/1/2013
EM-SPRINT-NEXTEL-164-130201	440 Hayden Station Road	Windsor	CT03XC065	3/8/2013
EM-SPRINT-NEXTEL-132-130201	59 McGuire Road	South Windsor	CT03XC066	3/1/2013
EM-SPRINT-NEXTEL-054-130201	299 Paxton Way	Glastonbury	CT03XC081	3/1/2013
EM-SPRINT-NEXTEL-094-130214B	36 Prospect Street	Newington	CT03XC084	3/1/2013
EM-SPRINT-110-130725	10 Sparks Street	Plainville	CT03XC086	8/8/2013
EM-SPRINT-007-130314	260 Beckley Road	Kensington	CT03XC088	4/5/2013
EM-SPRINT-NEXTEL-155-130201	570 New Park Avenue	West Hartford	CT03XC091	3/1/2013
EM-SPRINT-NEXTEL-106-130201	430 Middlesex Turnpike	Old Saybrook	CT03XC102	3/1/2013
EM-SPRINT-NEXTEL-105-130201	30 Short Hills Road	Old Lyme	CT03XC104	3/1/2013
EM-SPRINT-NEXTEL-152-130201	41 Manitock Hill Road	Waterford	CT03XC105	3/1/2013
EM-SPRINT-NEXTEL-045-130201	93 Roxbury Road	East Lyme	CT03XC110	3/1/2013
EM-SPRINT-152-130114	45R Fargo Road	Waterford	CT03XC112	2/14/2013
EM-SPRINT-NEXTEL-027-130201	48 Cow Hill Road	Clinton	CT03XC156	3/1/2013
EM-SPRINT-NEXTEL-082-130201	238 Meridan Road	Middlefield	CT03XC160	3/8/2013
EM-SPRINT-047-130109	160 Plantation Road	East Windsor	CT03XC202	2/7/2013
EM-SPRINT-NEXTEL-077-130214	53 Slater Street	Manchester	CT03XC211	3/1/2013
EM-SPRINT-142-130109	497 Old Post Road	Tolland	CT03XC212	2/7/2013
EM-SPRINT-NEXTEL-042-130222	94 East High Street	East Hampton	CT03XC335	3/8/2013
EM-SPRINT-057-121226	Butternut Hollow Road	Greenwich	CT03XC343	1/11/2013
EM-SPRINT-158-130213	515 Boston Post Road	Westport	CT03XC355	3/1/2013
EM-SPRINT-046-130402	206 Everett Road	Easton	CT03XC362	4/19/2013
EM-SPRINT-085-130322	474 MAIN STREET	MONROE	CT03XC365	4/5/2013
EM-SPRINT-086-131011	57 Cook Drive	Montville	CT03XC365	10/25/2013
EM-SPRINT-118-130322	76 EAST RIDGE	RIDGEFIELD	CT03XC370	4/5/2013
EM-SPRINT-097-131230	20 Barnabas Road	Newtown	CT03XC383	1/21/2014
EM-SPRINT-051-130207	3965 Congress Street	Fairfield	CT03XC385	3/1/2013
EM-SPRINT-NEXTEL-094-130214A	123 Costello Road	Newington	CT23XC555	3/1/2013
EM-SPRINT-119-131008	699 Old Main Street	Rocky Hill	CT23XC556	10/25/2013
EM-SPRINT-077-131008	60 Adams Street	Manchester	CT23XC557	10/25/2013
EM-SPRINT-NEXTEL-080-130123	462 West Main Street	Meriden	CT25XC840	2/14/2013
EM-SPRINT-096-130920	18 Hilltop View Lane	New Milford	CT33XC095	10/4/2013
EM-SPRINT-157-130213	237 Godfrey Road	Weston	CT33XC522	3/1/2013
EM-SPRINT-018-131008	20 Vale Road	Brookfield	CT33XC525	10/25/2013
EM-SPRINT-077-130528	595 Keeney Street	Manchester	CT33XC538	6/14/2013
EM-SPRINT-NEXTEL-129-130214	400 Main Street	Somers	CT33XC554	3/1/2013
EM-SPRINT-047-130322	15 CHAMBERLAIN	BROADBROOK	CT33XC565	4/5/2013
EM-SPRINT-004-130502	277 Huckleberry Road	Avon	CT33XC589	5/17/2013

EM-SPRINT-143-130604	218 Wheeler Road	Torrington	CT33XC592	6/28/2013
EM-SPRINT-140-130724	583 Chapel Street	Thomaston	CT33XC603	8/8/2013
EM-SPRINT-103-130920	Charles Marshall Drive	Norwalk	CT33XC802	10/4/2013
EM-SPRINT-NEXTEL-064-130214	439-455 Homestead Ave.	Hartford	CT43XC805	3/1/2013
EM-SPRINT-064-130311	99 Meadow Street	Hartford	CT43XC806	4/5/2013
EM-SPRINT-083-131127	290 Preston Ave.	Middletown	CT43XC816	12/16/2013
EM-SPRINT-128-130920	530 Bushy Hill Road	Simsbury	CT43XC825	10/4/2013
EM-SPRINT-164-130405A	340 Bloomfield Avenue	Windsor	CT43XC826	4/19/2013
EM-SPRINT-077-130109	239 Middle Turnpike	Manchester	CT43XC827	2/13/2013
EM-SPRINT-165-130118	2-4 Volunteer Drive	Windsor Locks	CT43XC828	2/14/2013
EM-SPRINT-NEXTEL-139-130214	44 Fyler Place	Suffield	CT43XC829	3/8/2013
EM-SPRINT-111-130712	171 Town Hill Road	Plymouth	CT54XC712	7/26/2013
EM-SPRINT-009-130322	38 Spring Hill Road	Bethel	CT54XC749	4/5/2013
EM-SPRINT-154-131011	315 Spencer Plains Road	Westbrook	CT54XC758	10/25/2013
EM-SPRINT-023-130405	14 Canton Springs Road	Canton	CT54XC760	4/19/2013
EM-SPRINT-104-130606	153 Old Salem Road	Norwich	CT54XC775	6/28/2013
EM-SPRINT-164-130405B	99 Day Hill Road	Windsor	CT54XC787	4/19/2013
EM-SPRINT-132-130920	300 Governor's Highway	South Windsor	CT60XC014	10/4/2013
EM-SPRINT-094-130108	605 Willard Avenue	Newington	CT60XC018	1/25/2013
EM-SPRINT-146-130506	197 South Street	Vernon	CT60XC935	5/24/2013
EM-SPRINT-146-130311	777 Talcottville Road	Vernon	CT70XC147	4/5/2013
EM-SPRINT-126-130531	62 Birdseye Road	Shelton	CT73XC004	6/21/2013