CROWN CASTLE

500 West Cummings Park, Suite 3600 Woburn, Ma 01801

Telephone: 781-771-2255
Email
jeff.barbadora@crowncastle.com

June 27, 2014

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

RE: Sprint PCS-Exempt Modification - Crown Site BU: 806384
Sprint PCS Site ID: CT03XC110
Located at: 93 Roxbury Road, East Lyme, Connecticut

Dear Ms. Bachman:

This letter is to confirm that all construction activity has been completed. Pursuant to the Connecticut Siting Council approval of **EM-Sprint-Nextel-045-130201, t**his letter is to satisfy item number three of the approval letter that the CSC will be notified in writing within 45 days after completion of construction.

Please contact me if you have any questions.

Sincerely,

Jeffrey Barbadora
781-970-0053

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-045-130201** - Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 93 Roxbury Road, East Lyme, 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 January 29, 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 Paul M. Formica, First Selectman, Town of East Lyme
Gary Goeschel, Director of Planning, Town of East Lyme

CROWN CASTLE

Crown Castle
3530 Torrington Way Suite 300
Charlotte NC 28277

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

ORIGINAL

RECEIVED
FEB - 1 2013
CONNECTICUT
SITING COUNCIL

January 29, 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 806384 Sprint Nextel Site CT03XC110 - Located at 93 Roxbury Road East Lyme, CT 06357

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 the Town Manager, Richard Johnson for the Town of Glastonbury.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at 299 Paxton Way, Glastonbury, CT 06033. 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. Sprints replacement antennas and 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.
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 a safely 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 Glastonbury, Town Manager Richard Johnson

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
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.
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/NY. THRUWAY AND MERGE ONTO I-287 N/NJ-17 N.
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.
8. TAKE THE EXIT ONTO I-95 N.
9. TAKE EXIT 72 TOWARD ROCKY NECK/STATE PARK.
10. MERGE ONTO ROCKY NECK CON.
11. TURN LEFT ONTO CT-156 E/W MAIN ST.
12. TURN LEFT ONTO ROXBURY RD.

DESTINATION WILL BE ON THE LEFT.

Sprint

NETWORK VISION MMBTS LAUNCH
NORTHERN CONNECTICUT MARKET

SPRINT SITE NAME

EAST LYME (CROWN)

SPRINT SITE NUMBER

CT03XC110

CROWN SITE NAME

NLN 136 943455

CROWN SITE NUMBER

806384

SITE ADDRESS

93 ROXBURY ROAD
NIANTIC, CT 06357

STRUCTURE TYPE

SELF SUPPORT TOWER

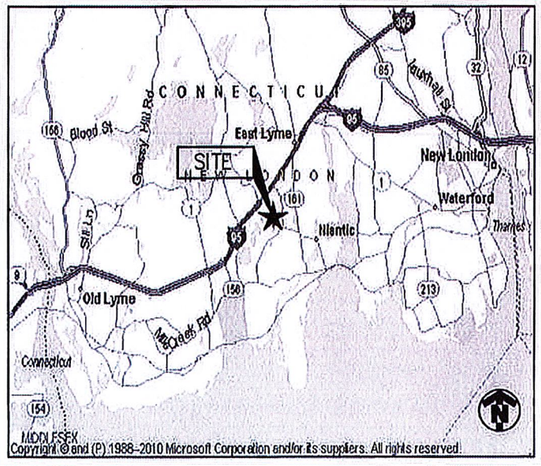
OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL 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:	EAST LYME (CROWN)	
SITE NO.:	CT03XC110	
SITE ADDRESS:	93 ROXBURY ROAD NIANTIC, CT 06357	
COUNTY:	NEW LONDON	
SITE COORDINATES:		
LATITUDE:	41.33565278° N	(NAD 83)
LONGITUDE:	72.22174444° W	(NAD 83)
GROUND ELEV.:	±155'	(AMSL)
JURISDICTION:	CONNECTICUT SITING COUNCIL	
ZONING CLASSIFICATION:	TBD	
LANDLORD:	CROWN ATLANTIC COMPANY LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317	
CONTACT:	PROJECT MANAGER: JOSH MOSTOW (201) 236-9059 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	
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	

VICINITY MAP



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
2	REVISED PER COMMENTS	KMF	1/16/13
1	REVISED PER COMMENTS	AHS	12/17/12
0	ISSUED FOR REVIEW	AHS	11/7/12

Drawn: ANS Date: 11/7/12
Designed: AJD Date: 11/7/12
Checked: AGF Date: 11/7/12

Project Number 294-060

Project Title

EAST LYME (CROWN)
CT03XC110

93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For

Sprint VISION

Drawing Scale: AS NOTED
Date: 1/16/13

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

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Project Number 294-060

Project Title

EAST LYME (CROWN)
CT03XC110

93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For

Sprint VISION

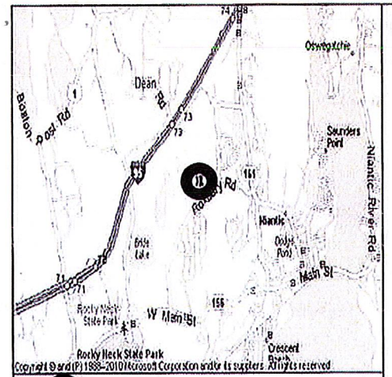
Drawing Scale: AS NOTED
Date: 1/16/13

Drawing Title

GENERAL NOTES

Drawing Number

C1

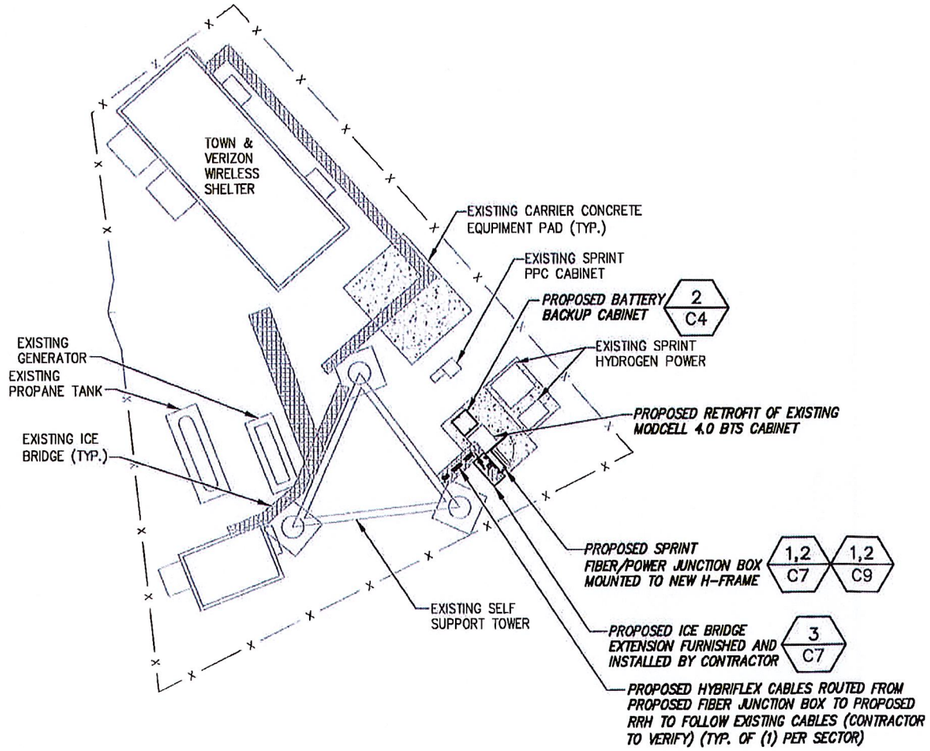


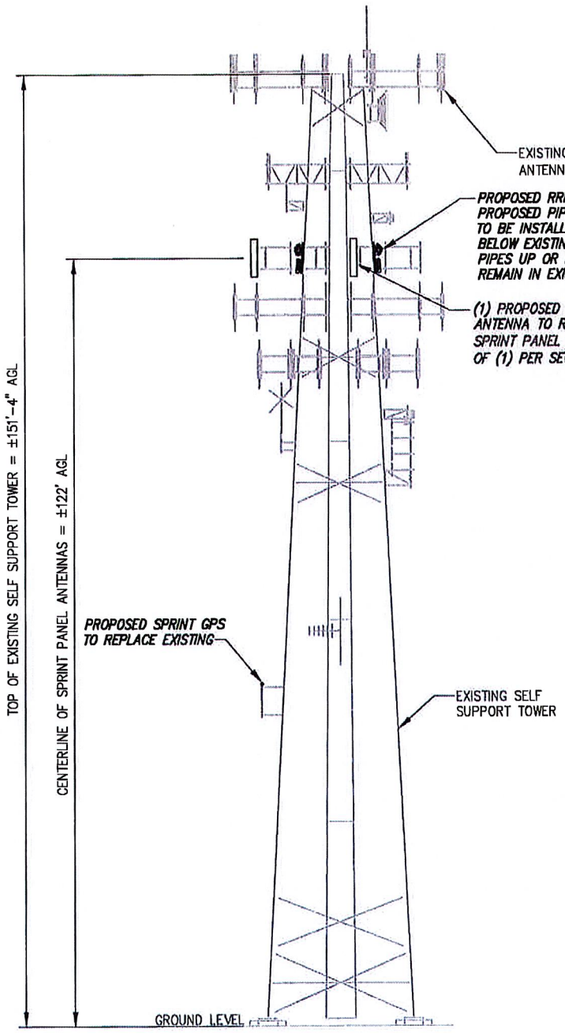
LOCATION MAP
N.T.S.

WORK AREA

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION.

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD DATED: 10/29/12.





2 SITE ELEVATION
NOT TO SCALE

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
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'–0"
SCALE (22x34): 1" = 10'–0"

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Date:
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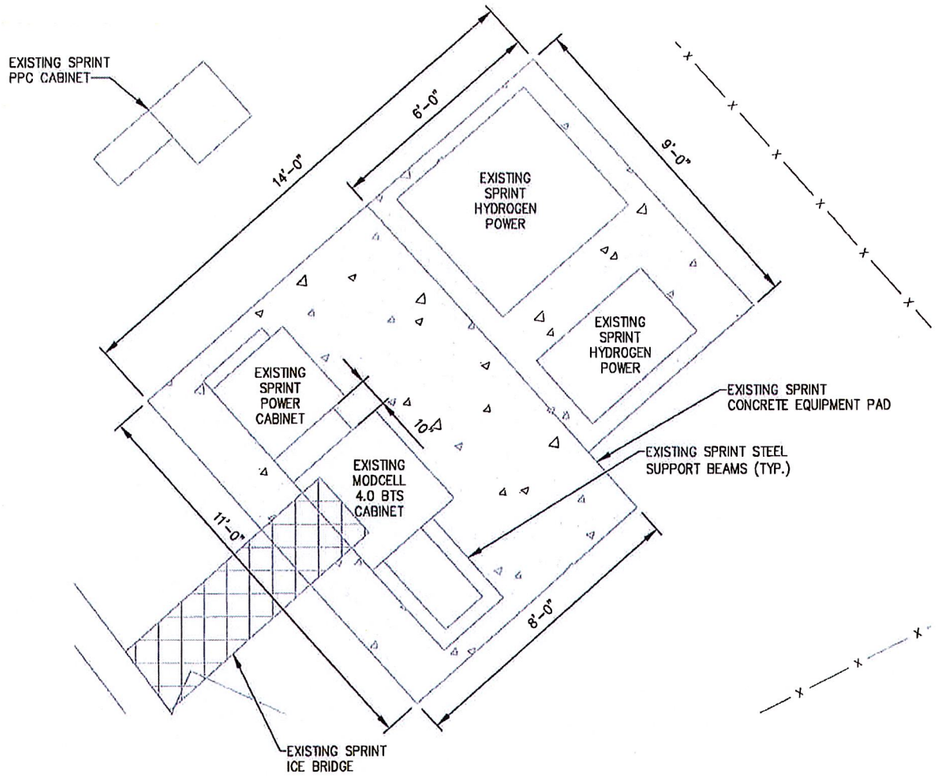
Drawing Title
COMPOUND SITE PLAN & ELEVATION

Drawing Number
C2



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

CALLED NORTH

GRAPHIC SCALE

4' 2' 0 2' 4'

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

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:
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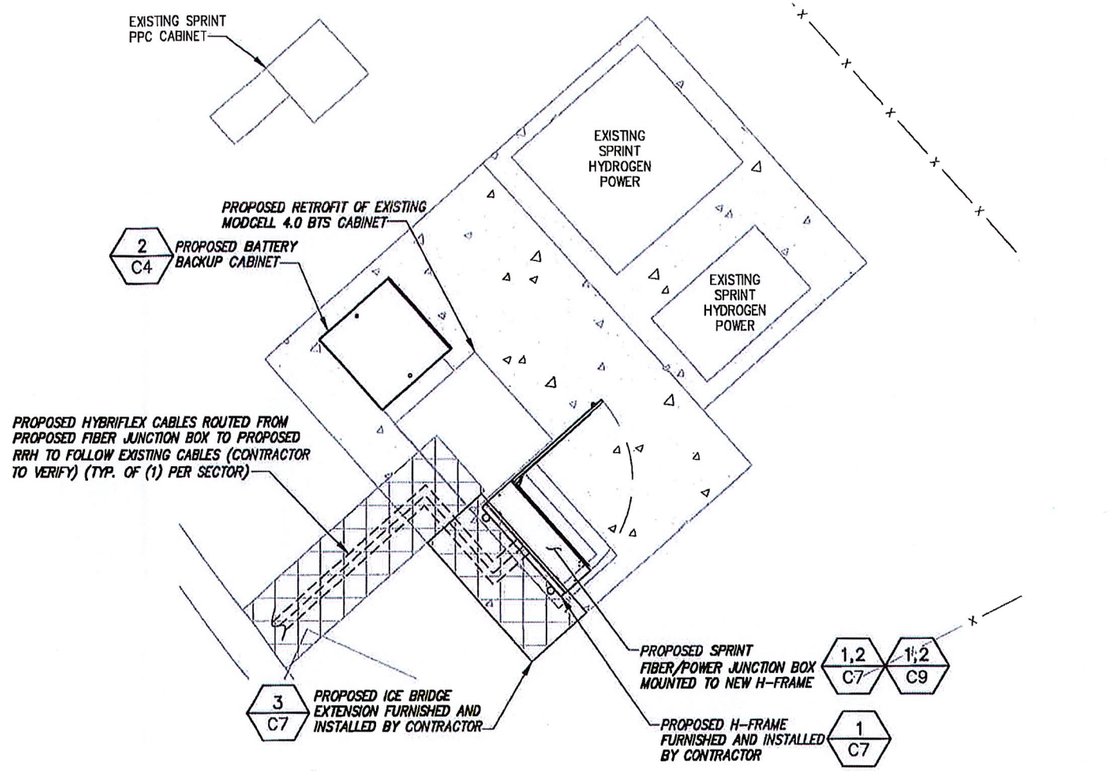

2 / -- EQUIPMENT SITE PLAN (FINAL/PERMANENT)
SCALE: AS NOTED

CALLED NORTH

GRAPHIC SCALE

4' 2' 0 2' 4'

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

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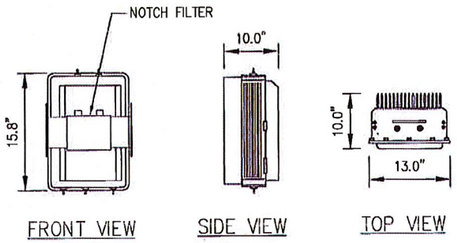
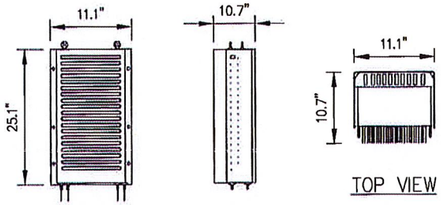
EQUIPMENT SITE PLANS

Drawing Number

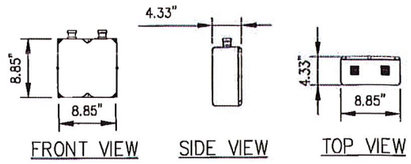
C3



800 MHZ RRH
(ALU)
WEIGHT = 50.6LBS.



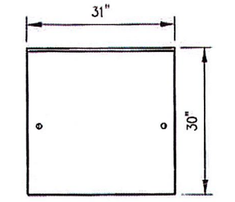
1900 MHZ RRH
(ALU)
WEIGHT = 60LBS.

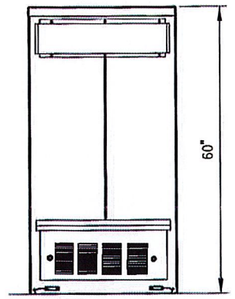


850 MHZ NOTCH FILTERS
WEIGHT = 11 LBS.

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

1 RRH EQUIPMENT DETAILS
NOT TO SCALE





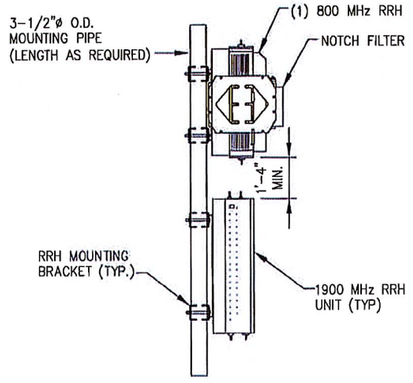
2 BATTERY CABINET PROFILE
NOT TO SCALE

DESIGN CRITERIA:

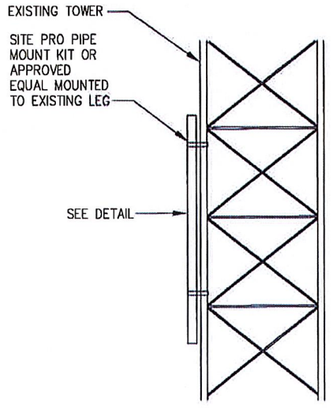
2009 INTERNATIONAL BUILDING CODE W/ STATE MODIFICATION	
WIND SPEED (ASCE-7-05)	90 MPH
EXPOSURE B	
IMPORTANCE FACTOR	1.0
SEISMIC SITE CLASS	D
Ss=0.152 S1=0.050	
SEISMIC IMPORTANCE FACTOR	1.0
SEISMIC DESIGN CATEGORY	B
CABINET WEIGHT:	
9928 MM BTS CABINET	1074 LBS.
60EC V2 BATTERY CABINET	2830 LBS.

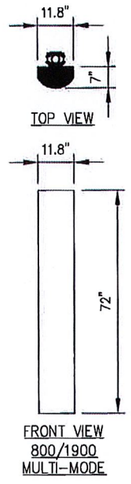
MATERIAL SPECIFICATIONS

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



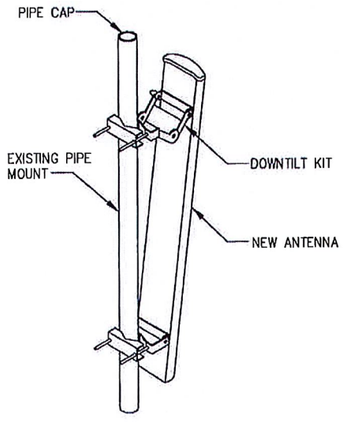
3 RRH MOUNTING DETAIL (TYP.)
NOT TO SCALE





RFS ANTENNA
P/N: APXVSPP18-C-A20

4 ANTENNA DETAILS
NOT TO SCALE



5 PANEL ANTENNA
MOUNT DETAIL
NOT TO SCALE

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93 ROXBURY ROAD
NIANTIC, CT 06357

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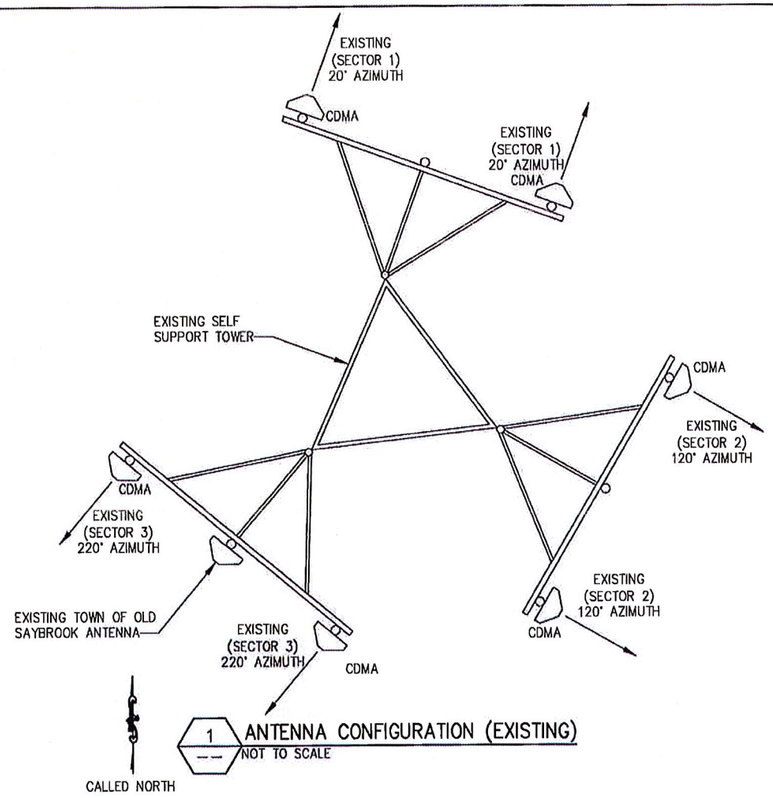
Drawing Title

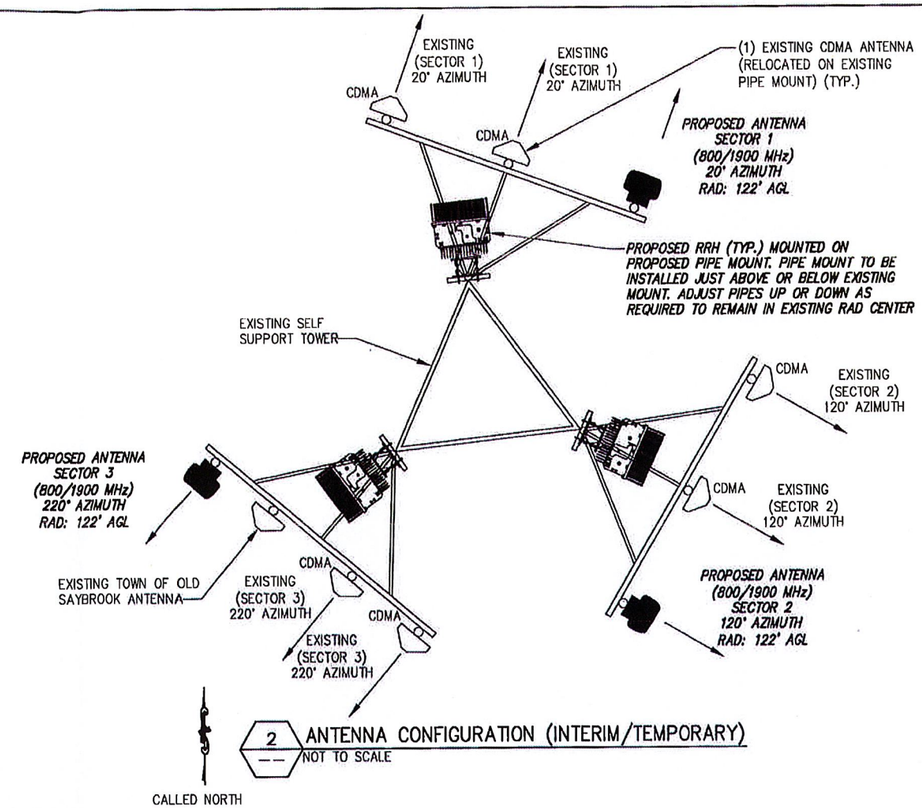
EQUIPMENT DETAILS

Drawing Number

C4

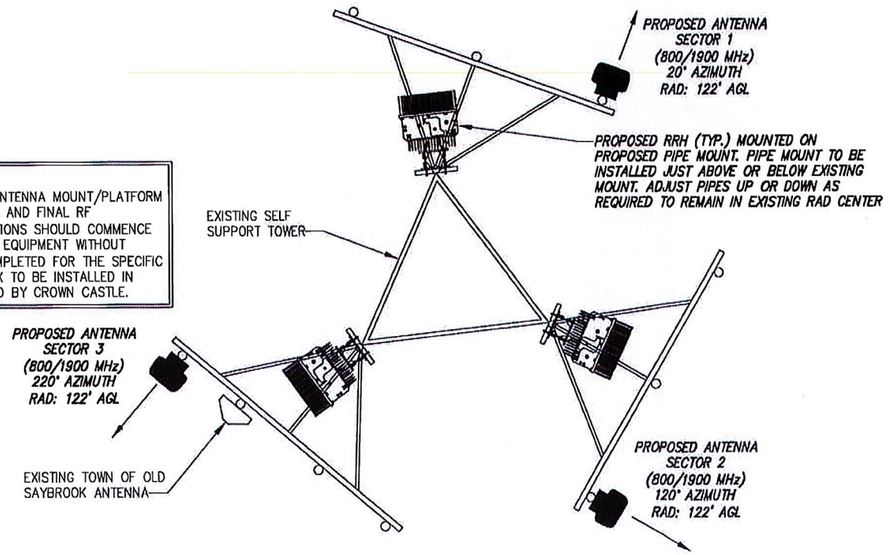


1 ANTENNA CONFIGURATION (EXISTING)
NOT TO SCALE



2 ANTENNA CONFIGURATION (INTERIM/TEMPORARY)
NOT TO SCALE

NOTE:
CONTRACTOR TO VERIFY A PASSING SIGNED AND SEALES 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, ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH TOWER STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE.



3 ANTENNA CONFIGURATION (FINAL/PERMANENT)
NOT TO SCALE

CALLED NORTH

NOTE:
REQUIRED PIPE MOUNTS TO BE SUPPLIED BY CONTRACTOR.

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD DATED: 10/29/12.

RRH NOTES:

- SEE PAGE C4 FOR RRH MOUNTING INFORMATION (TYP. ALL SECTORS).
- REFER TO RF SCHEDULE ON SHEET C8 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 & C8 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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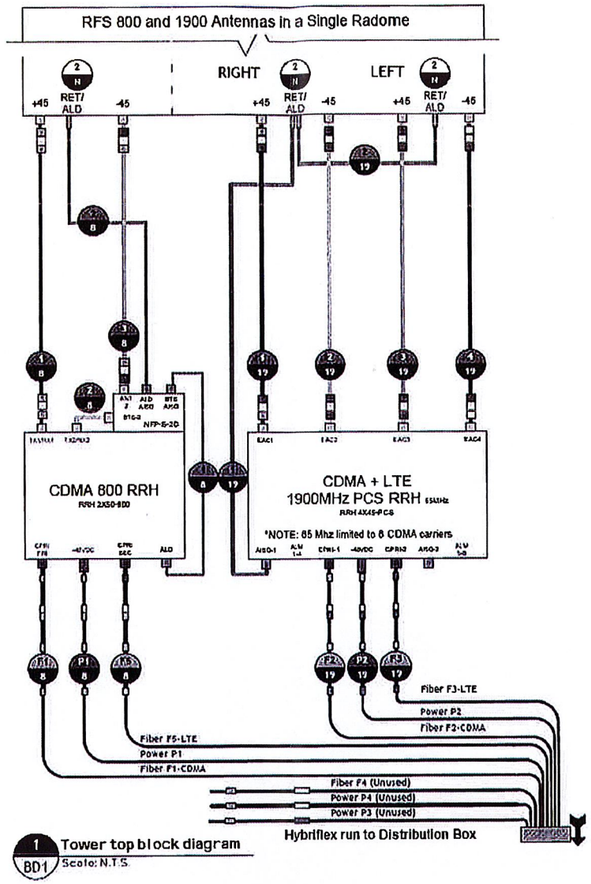
ANTENNA PLANS

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 OF 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.

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Project Number 284-060

Project Title
EAST LYME (CROWN)
CT03XC110

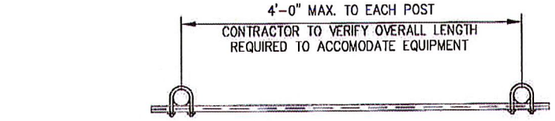
93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For
Sprint VISION

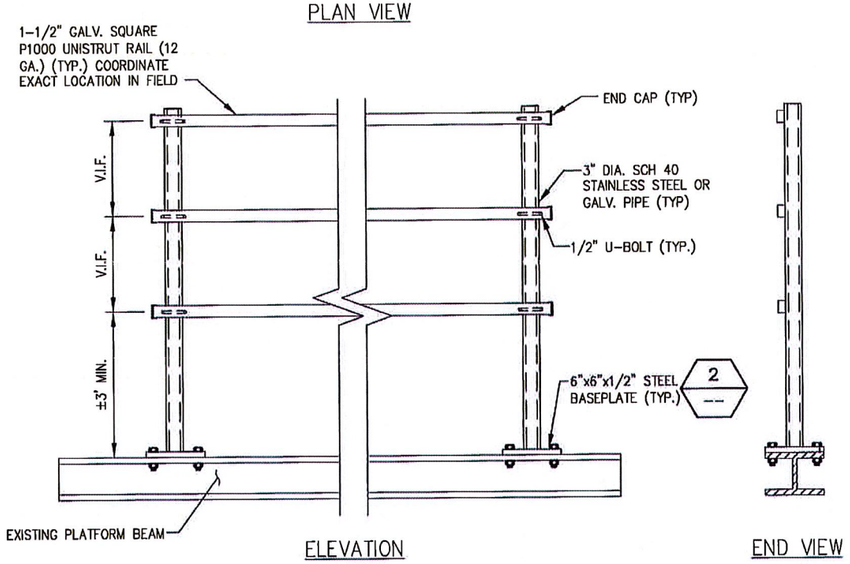
Drawing Scale: AS NOTED
Date: 1/16/13

Drawing Title
ANTENNA CABLE RISER DETAILS

Drawing Number
C6



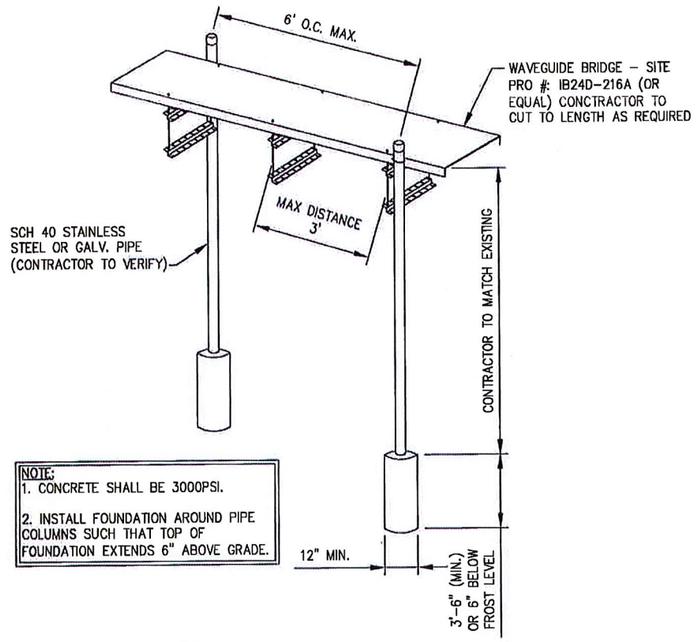
PLAN VIEW



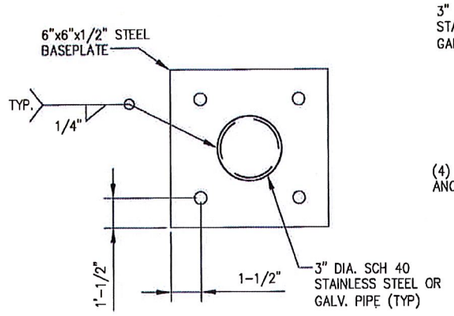
ELEVATION

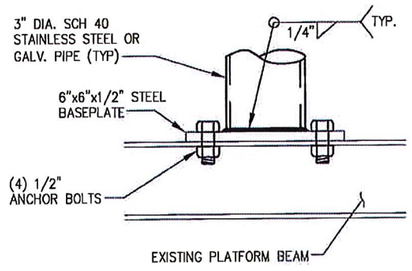
END VIEW

1 H-FRAME FABRICATION DETAIL
NOT TO SCALE



3 TYPICAL ICE BRIDGE DETAIL
NOT TO SCALE





2 SUPPORT POST MOUNTING DETAIL
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
2	REVISED PER COMMENTS	KMF	1/16/13
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Drawn: AHS Date: 11/7/12
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Project Number
284-060

Project Title
EAST LYME (CROWN)
CT03XC110

93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For
Sprint
VISION

Drawing Scale:
AS NOTED
Date:
1/16/13

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C7

		Market	Northern Connecticut		
		Cascade ID	CT03XC110		
			SECTOR 1	SECTOR 2	SECTOR 3
	Split sector present		No	No	No
1900	1900MHz_Azimuth		20	120	220
	1900MHz_No_of_Antennas		1	1	1
	1900MHz_RADCenter(ft)		122	122	122
	1900MHz_Antenna Make		RFS	RFS	RFS
	1900MHz_Antenna Model		APXV5PP18-C-A20	APXV9ERR18-C-A20	APXV5PP18-C-A20
	1900MHz_Horizontal_Beamwidth		65	80	65
	1900MHz_Vertical_Beamwidth		5.5	5.5	5.5
	1900MHz_AntennaHeight (ft)		6	6	6
	1900MHz_AntennaGain(dBd)		15.9	14.9	15.9
	1900MHz_E_Tilt		0	0	-1
	1900MHz _M_Tilt		0	-3	0
	1900MHz_Carrier_Forecast_Year_2013		3	3	3
	1900MHz_RRH Manufacturer		ALU	ALU	ALU
	1900MHz_RRH Model		RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz
	1900MHz_RRH Count		1	1	1
	1900MHz_RRH Location		Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
	1900MHz Combiner Model		No Combiner Required	No Combiner Required	No Combiner Required
	1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to		10	10	10
	1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax		LCF12-50J	LCF12-50J	LCF12-50J
	1900MHz_Top_Jumper #2_Length (RRH to Combiner for TT if applicable, ft)		N/A	N/A	N/A
	1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable)		N/A	N/A	N/A
	1900MHz_Main_Coax_Cable_Length (ft)		N/A	N/A	N/A
	1900MHz_Main_Coax_Cable_Model		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #1_Length (Ground based RRH to Combiner-OR-Main Coax, ft)		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #1_Cable_Model (Ground based RRH to Combiner-OR-Main Coax)		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #2_Length (Ground based-Combiner to Main Coax, ft)		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #2_Cable_Model (Ground based-Combiner to Main Coax)		N/A	N/A	N/A
800	800MHz_Azimuth		20	120	220
	800MHz_No_of_Antennas		0	0	0
	800MHz_RADCenter(ft)		122	122	122
	800MHz_AntennaMake		RFS	RFS	RFS
	800MHz_AntennaModel		APXVSPP18-C-A20 (Shared w/1900)	APXV9ERR18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)
	800MHz_Horizontal_Beamwidth		65	80	65
	800MHz_Vertical_Beamwidth		11.5	10.5	11.5
	800MHz_AntennaHeight (ft)		6	6	6
	800MHz_AntennaGain (dBd)		13.4	11.9	13.4
	800MHz_E_Tilt		-1	0	-1
	800MHz_M_Tilt		0	-3	0
	800MHz_RRH Manufacturer		ALU	ALU	ALU
	800MHz_RRH Model		800 MHz RRH 2x50W	800 MHz RRH 2x50W	800 MHz RRH 2x50W
	800MHz_RRH Count		1	1	1
	800MHz_RRH Location		Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
	800_Top_Jumper #1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM)		10	10	10
	800_Top_Jumper_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM)		LCF12-50J	LCF12-50J	LCF12-50J
	800MHz_Main_Coax_Cable_Length (ft)		N/A	N/A	N/A
	800MHz_Main_Coax_Cable_Model		N/A	N/A	N/A
	800_Bottom_Jumper #1_Length (Ground based RRH to Main Coax)		N/A	N/A	N/A
	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				
	11/9/2012				

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

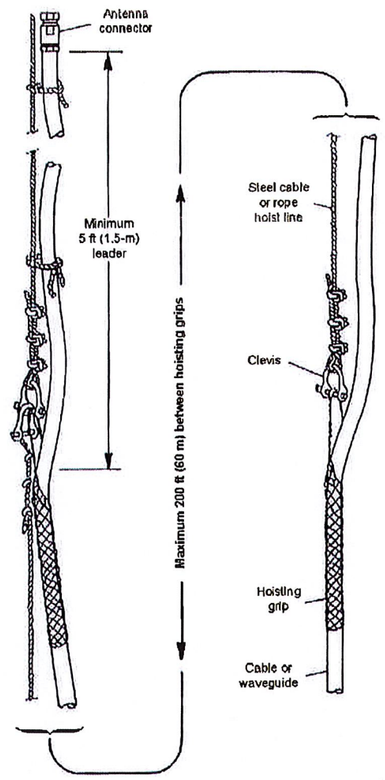
NOTE:
COORDINATE RF ANTENNA INSTALLATION WITH FINAL SPRINT RFDS. COORDINATE RF MW DISH (IF APPLICABLE) INSTALLATION WITH FINAL SPRINT RFDS.

1 SPRINT RFDS
NOT TO SCALE

CHECK FST FOR LATEST VERSION OF RFDS

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._157201110421855429.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.

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

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

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Project Number 294-060

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CT03XC110

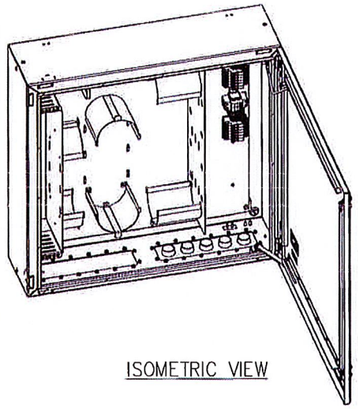
93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For
Sprint VISION

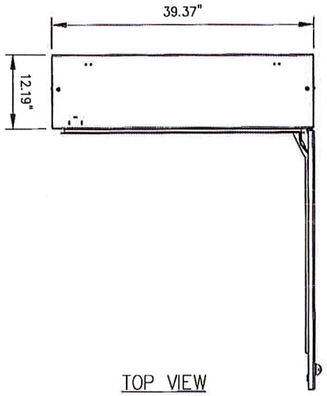
Drawing Scale: AS NOTED
Date: 1/18/13

Drawing Title
RF AND CABLE DETAILS

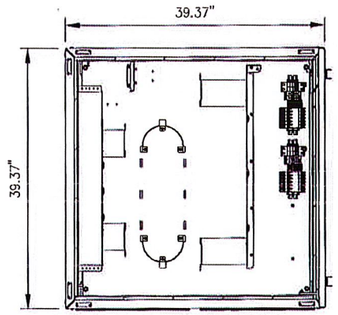
Drawing Number
C8



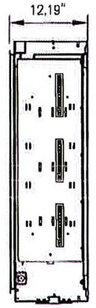
ISOMETRIC VIEW



TOP VIEW

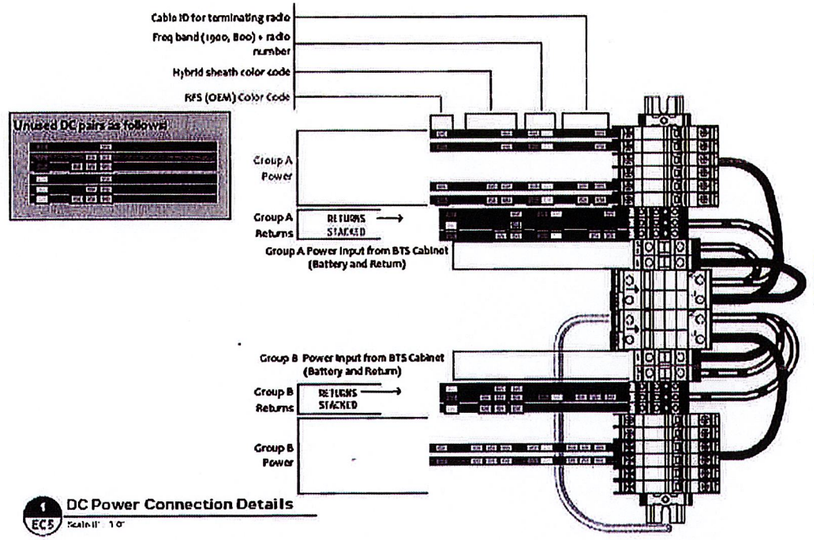


FRONT VIEW

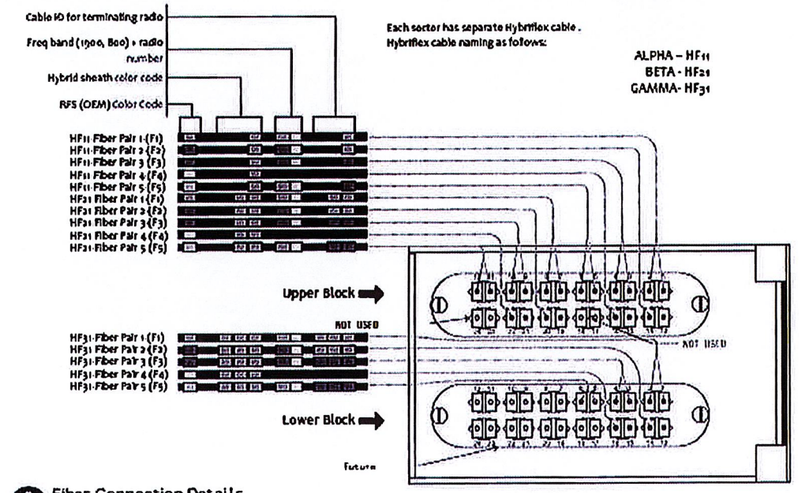


SIDE VIEW

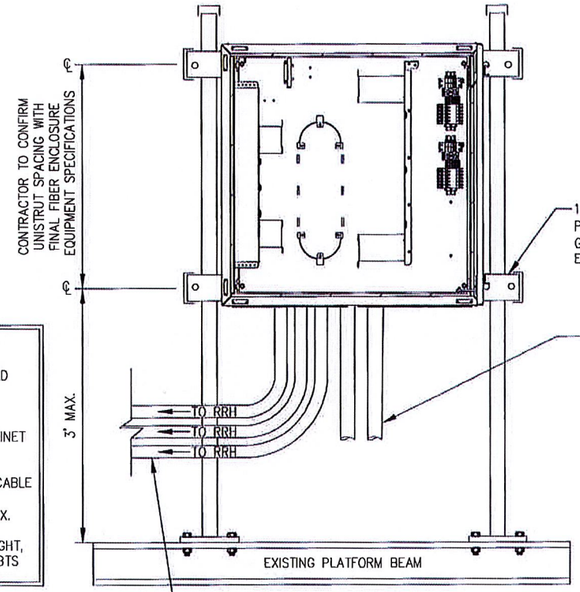
1 DISTRIBUTION BOX DETAIL
NOT TO SCALE



1 EC5 DC Power Connection Details
Scale: 1" = 1'-0"



2 EC5 Fiber Connection Details
Scale: 1" = 1'-0"



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

SCENARIO 124 v2.0

3 FIBER & DC CONNECTION DETAILS
NOT TO SCALE

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

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

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93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/16/13

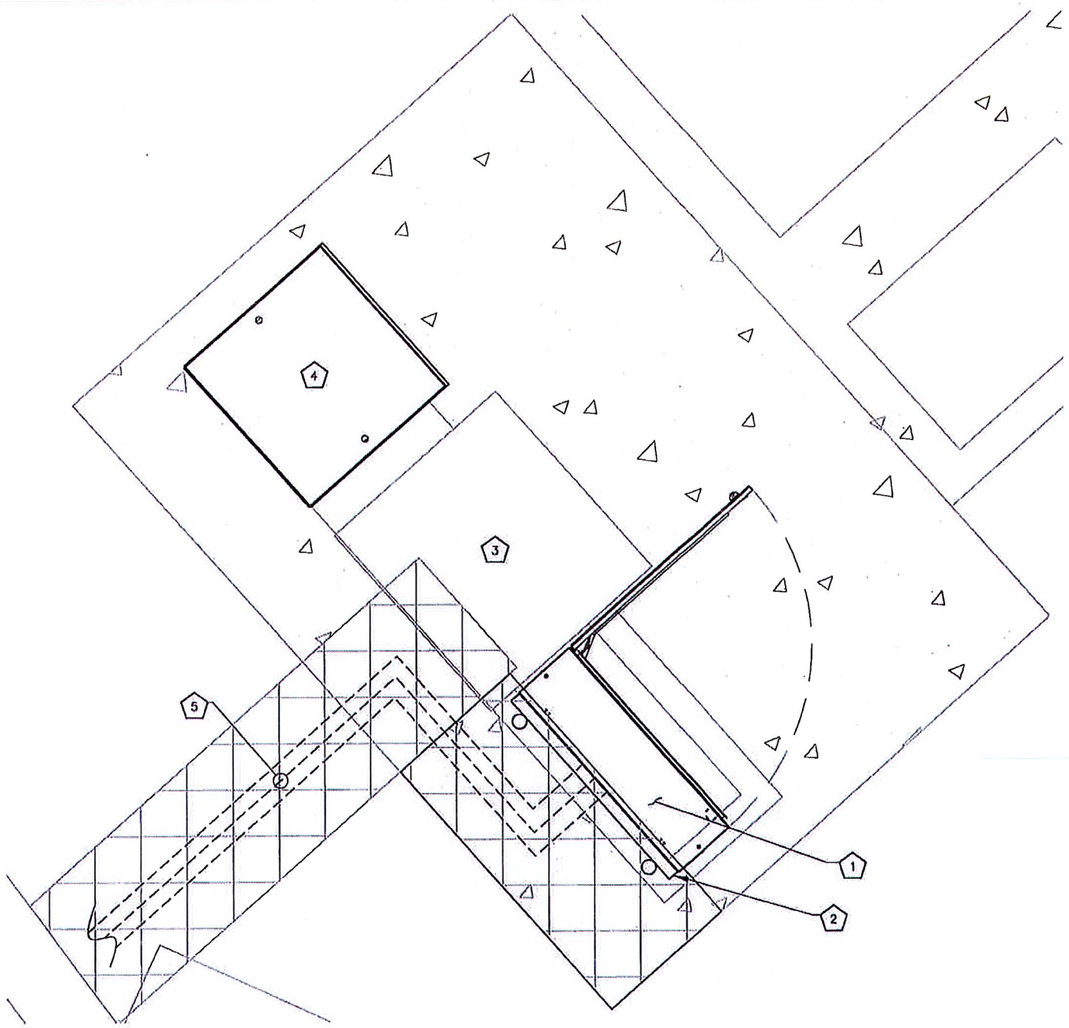
Drawing Title
FIBER DISTRIBUTION BOX DETAILS

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 RETROFIT OF EXISTING MODCELL 4.0 BTS CABINET*
4. *PROPOSED BATTERY BACKUP CABINET*
5. *PROPOSED HYBRIFLEX CABLES ROUTED FROM PROPOSED FIBER JUNCTION BOX TO PROPOSED RRH TO FOLLOW EXISTING CABLES (CONTRACTOR TO VERIFY) (TYP. OF (1) PER SECTOR)*

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
2' 1' 0 1' 2'
SCALE (11x17): 1" = 2'-0"
SCALE (22x34): 1" = 1'-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 SPRING 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. PROJECT 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
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CT03XC110

93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For
Sprint
VISION

Drawing Scale:
AS NOTED

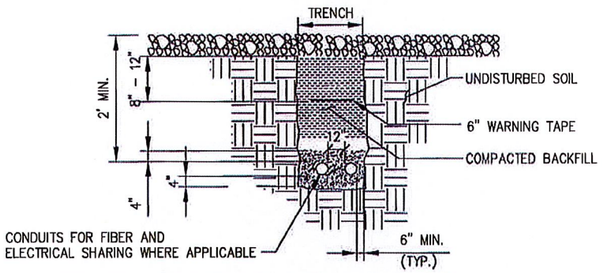
Date:
1/16/13

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.

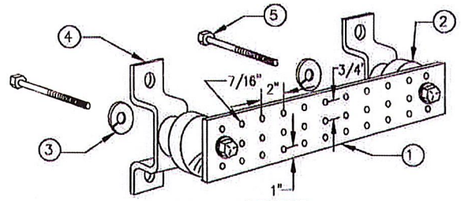
NOTE:
ANTENNA BUSS BARS SHOULD BE INSTALLED DIRECTLY TO TOWER STEEL WITHOUT INSULATORS OR DOWN CONDUCTORS.



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

***HAND DIG INSIDE COMPOUND**

1 — UTILITY TRENCH DETAIL
NOT TO SCALE

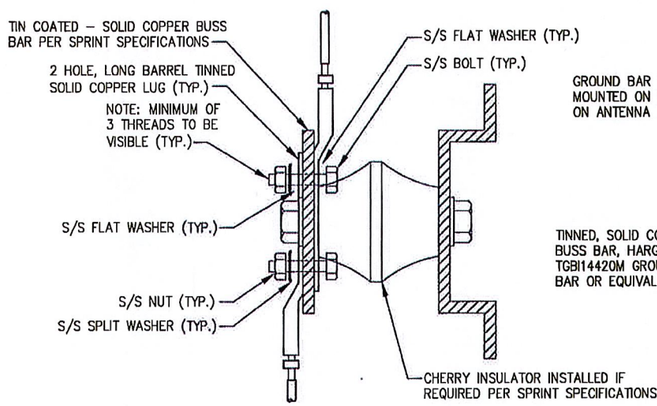


LEGEND

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.

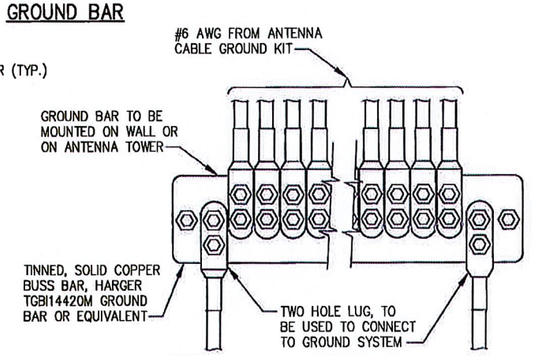
NOTE:
1) ALL MOUNTING HARDWARE CAN ALSO BE USED ON 6", 12", 18", ETC. GROUND BARS.
2) ENTIRE ESSEMBLY AVAILABLE FROM NEWTON INSTRUMENT CO. CAT. NO. 2106060010 OR AS HARGER TGBI14420M.

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 # (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	App'd	Date
2	REVISED PER COMMENTS	NMF	1/16/13
1	REVISED PER COMMENTS	AHS	12/17/12
0	ISSUED FOR REVIEW	AHS	11/7/12

Drawn: AHS Date: 11/7/12
Designed: AJD Date: 11/7/12
Checked: AGF Date: 11/7/12

Project Number
294-060

Project Title
EAST LYME (CROWN)
CT03XC110

93 ROXBURY ROAD
NIANTIC, CT 06357

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/16/13

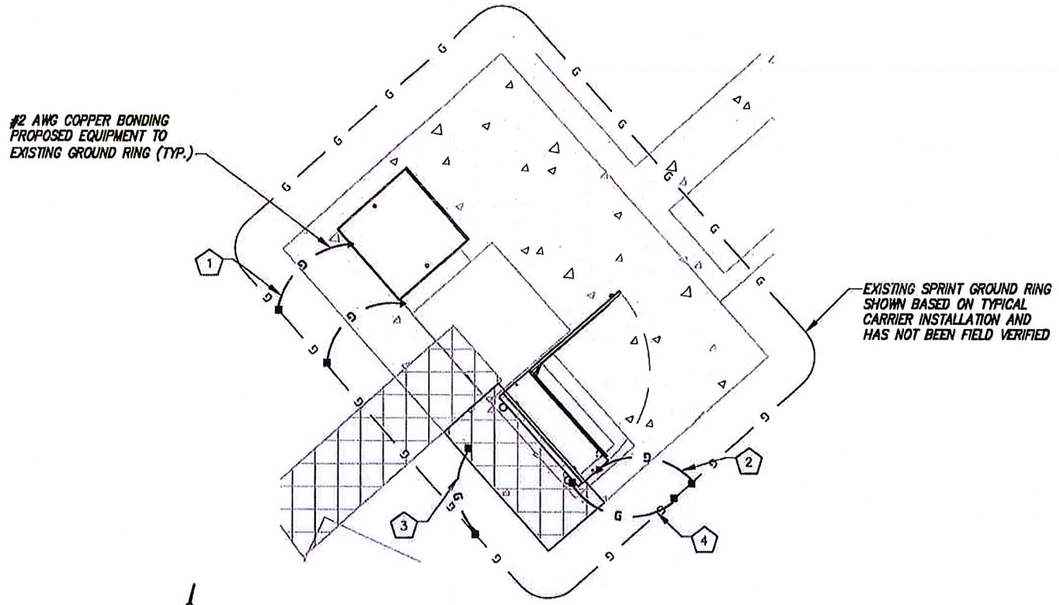
Drawing Title
DETAILS

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*

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



1 EQUIPMENT GROUNDING PLAN
SCALE: AS NOTED

GRAPHIC SCALE

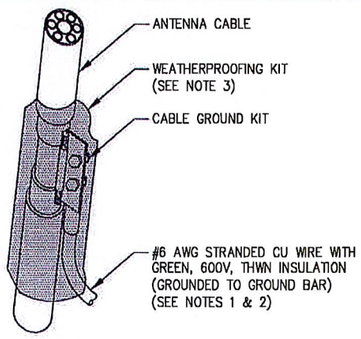
4' 2' 0 2' 4'

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

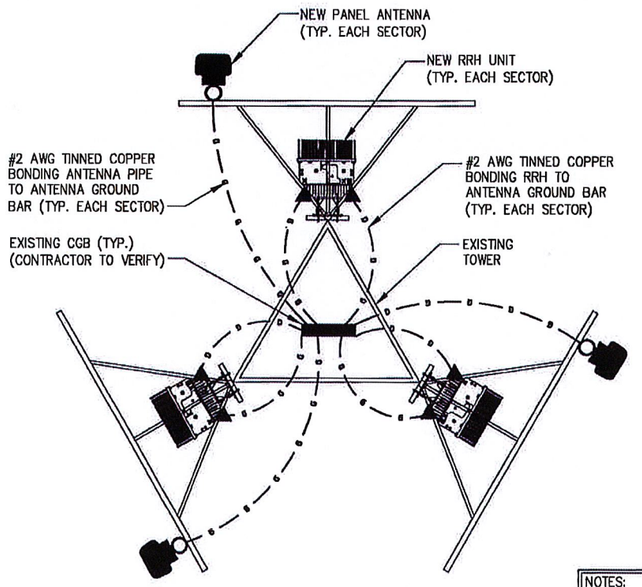
GROUNDING NOTES:

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-GALY 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 G. STEVENS
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2	REVISED PER COMMENTS	KMF	1/16/13
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Drawing Scale:
AS NOTED

Date:
1/16/13

Drawing Title

GROUNDING PLAN AND DETAILS

Drawing Number

E3

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT03XC110

East Lyme (Crown)
93 Roxbury Road
East lyme, CT 06333

December 27, 2012

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

EBI Consulting
environmental | engineering | due diligence

December 27, 2012

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

Re: Emissions Values for Site: **CT03XC110 – East Lyme (Crown)**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 93 Roxbury Road, East lyme, 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 93 Roxbury Road, East lyme, 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) 3 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 14.9 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 **122 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	CT033C110 - East Lyme (Crown)
Site Addresss	93 Roxbury Road, East lyme, CT, 06333
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	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	3	60	15.9	122	116	1/2 "	0.5	0	2080.4211	55.58291	5.55829%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	122	116	1/2 "	0.5	0	389.96892	10.41886	1.83754%
														Sector total Power Density Value:			7.396%

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	APXV9ERR18-CC-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	14.9	122	116	1/2 "	0.5	0	1652.5372	44.15107	4.41511%
2a	RFS	APXV9ERR18-CC-A20	RRH	850 MHz	CDMA / LTE	20	1	20	11.9	122	116	1/2 "	0.5	0	276.07685	7.375985	1.30088%
														Sector total Power Density Value:			5.716%

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	3	60	15.9	122	116	1/2 "	0.5	0	2080.4211	55.58291	5.55829%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	122	116	1/2 "	0.5	0	389.96892	10.41886	1.83754%
														Sector total Power Density Value:			7.396%

Site Composite MPE %	
Carrier	MPE %
Sprint	20.508%
T-Mobile	9.030%
Verizon Wireless	13.110%
MetroPCS	4.370%
Nextel	2.520%
Town	0.750%
Total Site MPE %	**50.288%**

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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 **20.508% (7.396% 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 **50.288%** 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

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **October 29, 2012**

James Williams
Crown Castle USA Inc.
3530 Toringdon WaySuite 300
Charlotte, NC 28277
704-405-6521

Paul J Ford and Company
250 E. Broad St Suite 1500
Columbus, OH 43215
614-221-6679
chedges@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC110
	Carrier Site Name:	CT03XC110
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	190491
	Crown Castle Work Order Number:	540155
	Crown Castle Application Number:	165452 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37512-2741B
Site Data:	**93 ROXBURY ROAD, EAST LYME, New London County, CT** **Latitude *41° 20' 8.35"*, Longitude *-72° 13' 18.28"*** **151.292 Foot - Self Support Tower**	

Dear James Williams,

Paul J Ford and Company 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 497942, in accordance with application 165452, revision 0.

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 an importance factor of 1.15 based upon a wind speed of 91.2 mph fastest mile with no ice, 37.6 mph with 0.9375 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Christina Hedges, E.I.T
Structural Engineer

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

OCT 30 2012

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **October 29, 2012**

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3530 Toringdon WaySuite 300
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704-405-6521

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250 E. Broad St Suite 1500
Columbus, OH 43215
614-221-6679
chedges@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC110
	Carrier Site Name:	CT03XC110
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	190491
	Crown Castle Work Order Number:	540155
	Crown Castle Application Number:	165452 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37512-2741B
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Respectfully submitted by:

Christina Hedges, E.I.T
Structural Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 151.292 ft Self Support tower designed by ROHN in March of 1990. The tower was originally designed for a wind speed of 85 mph per EIA-222-D.

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 an importance factor of 1.15 based upon a wind speed of 91.2 mph fastest mile with no ice, 37.6 mph with 0.9375 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
121.0	122.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3	1 1/4	
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	121.0	3	alcatel lucent	1900MHz RRH (65MHz)			
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			

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
150.0	157.0	1	telewave	ANT150F2	1	7/8	1
	152.0	1	motorola	WB2618	1	5/16	
	150.0	1	tower mounts	Side Arm Mount [SO 304-1]			
148.0	149.0	3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	6	1 5/8	2
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			1
		4	antel	LPA-80063/6CF w/ Mount Pipe			
		2	decibel	DB846H80E-SX w/ Mount Pipe	6	7/8	
		6	rfs celwave	FD9R6004/2C-3L			
	148.0	1	tower mounts	Sector Mount [SM 510-3]			
143.0	143.0	1	andrew	PL6-59W	1	EW52	1
		1	tower mounts	Pipe Mount [PM 601-1]			
133.0	133.0	3	kathrein	800 10504 w/ Mount Pipe	6	1 5/8	1
		1	tower mounts	Sector Mount [SM 104-3]			
128.0	130.0	1	til-tek	TA-2450	1	7/8	1
	128.0	1	tower mounts	Side Arm Mount [SO 305-1]			
126.0	126.0	1	motorola	WB2618	1	5/16	1
		1	tower mounts	Side Arm Mount [SO 305-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
121.0	123.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1 5/8	3
	121.0	1	tower mounts	Sector Mount [SM 505-3]			1
112.0	112.0	9	decibel	DB844H90E-XY w/Mount Pipe	9	7/8	1
		1	tower mounts	Sector Mount [SM 510-3]			
103.0	103.0	6	ems wireless	RR90-17-02DP w/ Mount Pipe	18	1 5/8	1
		6	ericsson	KRY 112 71			
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Sector Mount [SM 701-3]			
95.0	94.0	1	motorola	WB2618	1	5/16	1
90.0	96.0	1	sinclair	SRL-217 Ground Plane 10.67' x 4.83'	1	7/8	1
	90.0	1	tower mounts	Side Arm Mount [SO 302-1]			
85.0	90.0	1	telewave	ANT150D3	1	7/8	1
	85.0	1	tower mounts	Side Arm Mount [SO 305-1]			
61.0	61.0	1	bluewave	BW246Y	1	1/4	1
50.0	52.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 305-1]			

Notes:
1) Existing Equipment
2) Future Equipment
3) Equipment to be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Drawings	March 5, 1990, Rohn	24792JC	258359
Foundation Drawings	March 5, 1990, Rohn	24792JC	958525
Geotechnical Report	July 19, 1989, Dr. Clarence Welti	-	258373
Modification Drawings	January 16, 2003, All Points Technology	CT105761	801526
Modification Drawings	February 26, 2008, (Revised July 9, 2008) Vertical Structures	2008-004-030	2215933
Modification Drawings	May 14, 2009, PJF	41709-0057	2457486
Modification Drawings	May 10, 2011, PJF	37511-0187Mod	2883931
Structural Analysis	May 10, 2011, PJF	37511-0187Mod	2883926

3.1) Analysis Method

tnxTower (version 6.0.3.0), 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. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T1	151.292 - 146.229	Leg	ROHN 2.5 STD	1	-2289.07	37965.40	14.8	Pass
T2	146.229 - 141.167	Leg	ROHN 2.5 STD	14	-7391.76	50607.87	18.5	Pass
T3	141.167 - 121.042	Leg	ROHN 2.5 EH	23	-29393.70	52977.02	55.5	Pass
T4	121.042 - 114.313	Leg	ROHN 2.5 EH (GR)	47	-34278.10	61869.99	55.4	Pass
T5	114.313 - 107.646	Leg	ROHN 2.5 EH (GR)	56	-45117.20	61867.72	72.9	Pass
T6	107.646 - 100.917	Leg	ROHN 2.5 EH (GR)	65	-62669.10	91492.98	68.5	Pass
T7	100.917 - 94.2014	Leg	ROHN 3 EH (GR)	77	-68251.90	102414.52	66.6	Pass
T8	94.2014 - 87.4861	Leg	ROHN 3 EH (GR)	86	-80219.40	132155.48	60.7	Pass
T9	87.4861 - 80.7708	Leg	ROHN 3 EH (GR)	98	-98968.10	132524.46	74.7	Pass
T10	80.7708 - 70.6875	Leg	ROHN 4 EH (GR)	110	-107504.00	136793.79	78.6	Pass
T11	70.6875 - 60.6041	Leg	ROHN 4 EH (GR)	119	-124994.00	193618.24	64.6 75.8 (b)	Pass
T12	60.6041 - 50.5104	Leg	ROHN 4 EH (GR)	131	-152584.00	194567.34	78.4	Pass
T13	50.5104 - 40.4166	Leg	ROHN 4 EH (GR)	143	-170087.00	194647.32	87.4	Pass
T14	40.4166 - 30.3125	Leg	ROHN 5 EH (GR)	155	-178286.00	231920.66	76.9	Pass
T15	30.3125 - 20.2083	Leg	ROHN 5 EH (GR)	163	174235.00	244417.54	71.3 85.2 (b)	Pass
T16	20.2083 - 10.1041	Leg	ROHN 5 EH (GR)	175	180591.00	244417.54	73.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T17	10.1041 - 0	Leg	ROHN 5 EH (GR)	187	202046.00	244417.54	82.7	Pass
T1	151.292 - 146.229	Diagonal	L 1.5 x 1.5 x 3/16	12	-853.78	2936.81	29.1	Pass
T2	146.229 - 141.167	Diagonal	L 2 x 2 x 3/16	18	-3127.48	7183.02	43.5 47.3 (b)	Pass
T3	141.167 - 121.042	Diagonal	L2 1/2x2 1/2x3/16	30	-4546.58	8577.46	53.0 82.7 (b)	Pass
T4	121.042 - 114.313	Diagonal	L2 1/2x2 1/2x3/16	51	-5706.53	7802.10	73.1	Pass
T5	114.313 - 107.646	Diagonal	L2 1/2x2 1/2x3/16	60	-6305.51	7121.94	88.5	Pass
T6	107.646 - 100.917	Diagonal	2L 2.5 x 2.5 x 3/16 (3/16)	69	-7535.74	27668.41	27.2 68.6 (b)	Pass
T7	100.917 - 94.2014	Diagonal	L3x3x3/16	81	-8046.72	10656.04	75.5	Pass
T8	94.2014 - 87.4861	Diagonal	L3x3x3/16	90	-8254.08	9740.18	84.7	Pass
T9	87.4861 - 80.7708	Diagonal	2L 3 x 3 x 3/16 (1/4)	102	-8835.56	35614.03	24.8 80.4 (b)	Pass
T10	80.7708 - 70.6875	Diagonal	2L3x3x3/16x1/4	114	-10003.30	29260.28	34.2 87.0 (b)	Pass
T11	70.6875 - 60.6041	Diagonal	2L3x3x3/16x1/4	123	-10574.80	26882.74	39.3 88.4 (b)	Pass
T12	60.6041 - 50.5104	Diagonal	2L3x3x1/4x1/4	135	-10775.60	32676.90	33.0 92.5 (b)	Pass
T13	50.5104 - 40.4166	Diagonal	2L3x3x1/4x1/4	147	-11380.40	29874.53	38.1 66.3 (b)	Pass
T14	40.4166 - 30.3125	Diagonal	2L3 1/2x3 1/2x1/4x1/4	159	-11585.70	43629.75	26.6 67.5 (b)	Pass
T15	30.3125 - 20.2083	Diagonal	2L3 1/2x3 1/2x1/4x1/4	168	-12491.40	40231.14	31.0 72.7 (b)	Pass
T16	20.2083 - 10.1041	Diagonal	2L 4 x 4 x 1/4 (1/4)	180	-12379.80	55366.02	22.4 72.1 (b)	Pass
T17	10.1041 - 0	Diagonal	2L 4 x 4 x 1/4 (1/4)	192	-13672.90	51311.17	26.6 79.6 (b)	Pass
T6	107.646 - 100.917	Secondary Horizontal	L 2 x 2 x 3/16	73	-1086.85	4253.63	25.6	Pass
T8	94.2014 - 87.4861	Secondary Horizontal	L 2 x 2 x 3/16	94	-1391.31	3443.41	40.4	Pass
T9	87.4861 - 80.7708	Secondary Horizontal	L 2 x 2 x 3/16	106	-1716.49	3111.40	55.2	Pass
T11	70.6875 - 60.6041	Secondary Horizontal	L2 1/2x2 1/2x3/16	127	-2167.62	4890.70	44.3	Pass
T12	60.6041 - 50.5104	Secondary Horizontal	L3x3x1/4	139	-2646.31	9857.64	26.8 48.1 (b)	Pass
T13	50.5104 - 40.4166	Secondary Horizontal	L3x3x1/4	151	-2949.87	8745.97	33.7 53.7 (b)	Pass
T15	30.3125 - 20.2083	Secondary Horizontal	L 3 x 3 x 3/16	172	-3556.89	5467.17	65.1	Pass
T16	20.2083 - 10.1041	Secondary Horizontal	L3x3x3/16	184	-3696.19	4943.07	74.8	Pass
T17	10.1041 - 0	Secondary	L 3.5 x 3.5 x 1/4	196	-4162.12	9469.10	44.0	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
		Horizontal					48.5 (b)	
T1	151.292 - 146.229	Top Girt	L2 1/2x2 1/2x3/16	6	-139.44	4410.47	3.2	Pass
T3	141.167 - 121.042	Top Girt	L2 1/2x2 1/2x3/16	25	-551.74	4403.90	12.5	Pass
							Summary	
						Leg (T13)	87.4	Pass
						Diagonal (T12)	92.5	Pass
						Secondary Horizontal (T16)	74.8	Pass
						Top Girt (T3)	12.5	Pass
						Bolt Checks	92.5	Pass
						RATING =	**92.5**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods		77.9	Pass
1	Base Foundation		40.3	Pass
1	Base Foundation Soil Interaction		93.8	Pass

Structure Rating (max from all components) =	93.8%

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

APPENDIX A

TNXTOWER OUTPUT

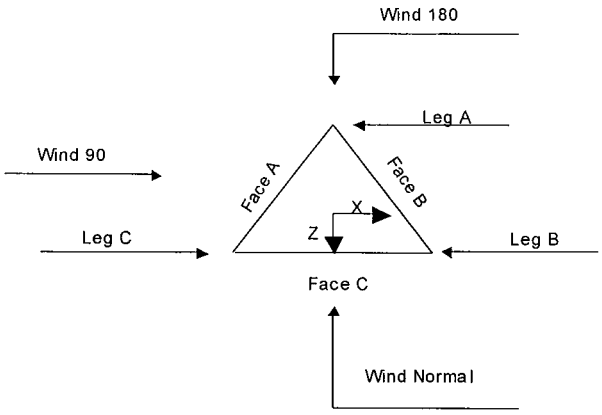
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 151.29 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.56 ft at the top and 22.78 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

- Tower is located in New London County, Connecticut.
- Basic wind speed of 91 mph.
- Nominal ice thickness of 0.9375 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 38 mph is used in combination with ice.
- Deflections calculated using a wind speed of 50 mph.
- A non-linear (P-delta) analysis was used.
- Grouted pipe f'_c is 7 ksi.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333.
- 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	151.29-146.23			8.56	1	5.06
T2	146.23-141.17			8.56	1	5.06
T3	141.17-121.04			8.56	1	20.13
T4	121.04-114.31			10.56	1	6.73
T5	114.31-107.65			11.24	1	6.67
T6	107.65-100.92			11.92	1	6.73
T7	100.92-94.20			12.60	1	6.72
T8	94.20-87.49			13.30	1	6.72
T9	87.49-80.77			14.00	1	6.72
T10	80.77-70.69			14.70	1	10.08
T11	70.69-60.60			15.70	1	10.08
T12	60.60-50.51			16.70	1	10.09
T13	50.51-40.42			17.73	1	10.09
T14	40.42-30.31			18.77	1	10.10
T15	30.31-20.21			19.78	1	10.10
T16	20.21-10.10			20.78	1	10.10
T17	10.10-0.00			21.78	1	10.10

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	151.29-146.23	4.94	X Brace	No	No	0.7500	0.7500
T2	146.23-141.17	4.94	X Brace	No	No	0.7500	0.7500
T3	141.17-121.04	6.67	X Brace	No	No	0.7500	0.7500
T4	121.04-114.31	6.67	X Brace	No	No	0.7500	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T5	114.31-107.65	6.67	X Brace	No	No	0.0000	0.0000
T6	107.65-100.92	6.67	X Brace	No	Yes	0.0000	0.7500
T7	100.92-94.20	6.65	X Brace	No	No	0.7500	0.0000
T8	94.20-87.49	6.72	X Brace	No	Yes	0.0000	0.0000
T9	87.49-80.77	6.63	X Brace	No	Yes	0.0000	1.0000
T10	80.77-70.69	10.00	X Brace	No	No	1.0000	0.0000
T11	70.69-60.60	10.08	X Brace	No	Yes	0.0000	0.0000
T12	60.60-50.51	9.91	X Brace	No	Yes	1.0000	1.2500
T13	50.51-40.42	9.91	X Brace	No	Yes	1.0000	1.2500
T14	40.42-30.31	10.00	X Brace	No	No	1.2500	0.0000
T15	30.31-20.21	10.00	X Brace	No	Yes	0.0000	1.2500
T16	20.21-10.10	10.00	X Brace	No	Yes	1.2500	0.0000
T17	10.10-0.00	10.00	X Brace	No	Yes	0.0000	1.2500

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 151.29-146.23	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T2 146.23-141.17	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)
T3 141.17-121.04	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 121.04-114.31	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 114.31-107.65	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 107.65-100.92	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Double Angle	2L 2.5 x 2.5 x 3/16 (3/16)	A36 (36 ksi)
T7 100.92-94.20	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 94.20-87.49	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T9 87.49-80.77	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Angle	2L 3 x 3 x 3/16 (1/4)	A36 (36 ksi)
T10 80.77-70.69	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T11 70.69-60.60	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T12 60.60-50.51	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T13 50.51-40.42	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T14 40.42-30.31	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)
T15 30.31-20.21	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)
T16 20.21-10.10	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 1/4 (1/4)	A572-50 (50 ksi)
T17 10.10-0.00	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Angle	2L 4 x 4 x 1/4 (1/4)	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 151.29-146.23	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 141.17-121.04	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T6 107.65-100.92	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T8 94.20-87.49	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 87.49-80.77	Single Angle	L 2 x 2 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 70.69-60.60	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T12 60.60-50.51	Single Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 50.51-40.42	Single Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T15 30.31-20.21	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 20.21-10.10	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 10.10-0.00	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 151.29-146.23	0.30	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T2 146.23-141.17	0.30	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T3 141.17-121.04	0.80	0.1875	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T4 121.04-114.31	0.27	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T5 114.31-107.65	0.27	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T6 107.65-100.92	1.25	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
T7 100.92-94.20	0.93	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T8 94.20-87.49	0.47	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T9 87.49-80.77	0.47	0.4375	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T10 80.77-70.69	0.45	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T11 70.69-60.60	0.45	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T12 60.60-50.51	0.45	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T13 50.51-40.42	0.45	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T14 40.42-30.31	0.45	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T15 30.31-20.21	0.45	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T16 20.21-10.10	1.50	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000
T17 10.10-0.00	1.50	0.5000	A36 (36 ksi)	1	1	1	Mid-Pt	30.0000

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 151.29-146.23	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T2 146.23-141.17	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T3 141.17-121.04	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T4 121.04-114.31	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T5 114.31-107.65	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T6 107.65-100.92	No	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T7 100.92-94.20	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T8 94.20-87.49	No	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T9 87.49-80.77	No	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T10 80.77-70.69	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T11 70.69-60.60	No	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T12 60.60-50.51	No	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T13 50.51-40.42	No	No	1	1	1	1	1	1	0.5	1
				1	1	1	1	1	0.5	1
T14 40.42-30.31	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T15 30.31-20.21	No	No	1	1	1	1	1	1	0.5	1
				1	1	1	1	1	0.5	1
T16 20.21-10.10	No	No	1	1	1	1	1	1	0.5	1
				1	1	1	1	1	0.5	1
T17 10.10-0.00	No	No	1	1	1	1	1	1	0.5	1
				1	1	1	1	1	0.5	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1 151.29-146.23	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 146.23-141.17	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 141.17-121.04	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 121.04-114.31	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 114.31-107.65	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 107.65-100.92	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100.92-94.20	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 94.20-87.49	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 87.49-80.77	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 80.77-70.69	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 70.69-60.60	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 60.60-50.51	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 50.51-40.42	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.42-30.31	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 30.31-20.21	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20.21-10.10	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T17 10.10-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 151.29-146.23	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 146.23-141.17	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 141.17-121.04	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 121.04-114.31	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 114.31-107.65	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 107.65-100.92	2.5000	3.0000	2.5000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 100.92-94.20	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T8 94.20-87.49	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T9 87.49-80.77	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T10 80.77-70.69	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T11 70.69-60.60	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T12 60.60-50.51	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T13 50.51-40.42	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T14 40.42-30.31	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T15 30.31-20.21	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T16 20.21-10.10	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T17 10.10-0.00	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 151.29-146.23	Flange	0.6250 A325N	0	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T2 146.23-141.17	Flange	0.6250 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T3 141.17-121.04	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T4 121.04-114.31	Flange	0.7500 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T5 114.31-107.65	Flange	0.7500 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T6 107.65-100.92	Flange	0.7500 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T7 100.92-94.20	Flange	0.8750 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T8 94.20-87.49	Flange	0.8750 A325N	0	0.5000 A325N	2	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T9 87.49-80.77	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T10 80.77-70.69	Flange	0.8750 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T11 70.69-60.60	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T12 60.60-50.51	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T13 50.51-40.42	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T14 40.42-30.31	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T15 30.31-20.21	Flange	1.0625 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T16 20.21-10.10	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T17 10.10-0.00	Flange	1.0000 A354-BC	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1

Grouted Pipe Properties

Size	F_y ksi	A_s in^2	A_c in^2	Wt plf	E_c ksi	E_m ksi	F_{ym} ksi
ROHN 2.5 EH (GR)	50	2.2535	4.2383	16.498	4769	36175	61
ROHN 3 EH (GR)	50	3.0159	6.6052	24.023	4769	37356	63
ROHN 4 EH (GR)	50	4.4074	11.4969	38.949	4769	38952	66
ROHN 5 EH (GR)	50	6.1120	18.1937	58.701	4769	40357	68

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**												
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	103.00 - 8.00	0.0000	0.45	2	2	12.0000 1.5000	1.5000	6.0000	1.80
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	103.00 - 8.00	0.0000	0.45	18	7	0.2700	1.9800		0.82
LDF4P-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	50.00 - 8.00	-1.0000	0.49	1	1	0.6300	0.6300		0.15
**												
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	90.00 - 8.00	-1.0000	-0.4	17	10	1.0000	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	112.00 - 90.00	-1.0000	-0.4	16	9	1.0000	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	148.00 - 112.00	-1.0000	-0.4	8	8	1.0000	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	148.00 - 8.00	2.0000	-0.45	3	2	0.2700 1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	148.00 - 8.00	2.0000	-0.35	3	2	0.2700 1.0000	1.9800		0.82
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	148.00 - 8.00	0.0000	-0.4	2	2	30.0000 1.5000	1.5000	6.0000	1.80
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	121.00 - 8.00	-1.0000	-0.35	1	1	30.0000 1.5000	1.5000	6.0000	1.80
HB114-1-08U4-M5J(1 1/4")	B	Yes	Ar (CfAe)	121.00 - 8.00	-2.0000	-0.35	3	3	0.7600 1.5400	1.5400		1.08
**												
1.5" flat Cable Ladder Rail	A	Yes	Af (CfAe)	133.00 - 8.00	0.0000	0.4	2	2	12.0000 1.5000	1.5000	6.0000	1.80
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	85.00 - 8.00	0.0000	0.45	2	2	1.0000	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	128.00 - 85.00	0.0000	0.45	1	1	1.0000	1.0900		0.33
9207 (5/16")	A	Yes	Ar (CfAe)	95.00 - 8.00	0.0000	0.4	3	3	0.3300	0.3300		0.60
9207 (5/16")	A	Yes	Ar (CfAe)	126.00 - 8.00	0.0000	0.4	2	2	0.3300	0.3300		0.60
9207 (5/16")	A	Yes	Ar (CfAe)	151.29 - 8.00	0.0000	0.4	1	1	0.3300	0.3300		0.60
FXL 1873 PE(1 5/8")	A	Yes	Ar (CfAe)	133.00 - 8.00	0.0000	0.4	6	6	0.2700	1.9800		0.01
**												

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
EW52	B	No	CaAa (In Face)	143.00 - 8.00	0.0000	-0.35	1	No Ice	0.00	0.59
								1/2" Ice	0.00	1.95
								1" Ice	0.00	3.93
								2" Ice	0.00	9.71

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
								4" Ice	0.00	28.60
**										

Discrete Tower Loads

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 lb
Side Arm Mount [SO 304-1]	A	From Leg	1.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.63 1.00 1.37 2.11 3.59	0.94 1.45 1.96 2.98 5.02	23.00 31.92 40.83 58.66 94.32
WB2618	A	From Leg	2.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.04 2.24 2.44 2.87 3.82	0.53 0.65 0.78 1.07 1.75	12.10 23.53 37.28 72.51 179.32
ANT150F2	A	From Leg	2.00 0.00 7.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.60 1.91 2.57 4.06	1.29 1.60 1.91 2.57 4.06	13.00 23.28 37.06 75.67 201.46
**									
Sector Mount [SM 510-3]	B	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	40.10 57.33 74.56 109.02 177.94	40.10 57.33 74.56 109.02 177.94	2396.40 3089.00 3781.60 5166.80 7937.20
(2) LPA-80063/6CF w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.58 11.24 11.87 13.16 15.87	10.67 11.93 12.91 14.92 19.16	52.22 141.85 243.93 476.26 1087.66
(2) DB846H80E-SX w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.33 5.89 6.41 7.48 9.83	7.74 8.93 9.84 11.71 15.89	40.70 95.98 163.04 323.19 782.09
(2) LPA-80063/6CF w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.58 11.24 11.87 13.16 15.87	10.67 11.93 12.91 14.92 19.16	52.22 141.85 243.93 476.26 1087.66
BXA-70063-6CF-2 w/ Mount Pipe	B	From Face	4.00 0.00	0.0000	148.00	No Ice 1/2"	7.97 8.61	5.80 6.95	42.25 100.22

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			1.00			Ice	9.22	7.82	169.88
						1" Ice	10.46	9.60	335.13
						2" Ice	13.07	13.37	803.42
						4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	C	From Face	4.00	0.0000	148.00	No Ice	7.97	5.80	42.25
			0.00			1/2"	8.61	6.95	100.22
			1.00			Ice	9.22	7.82	169.88
						1" Ice	10.46	9.60	335.13
						2" Ice	13.07	13.37	803.42
						4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	A	From Face	4.00	0.0000	148.00	No Ice	7.97	5.80	42.25
			0.00			1/2"	8.61	6.95	100.22
			1.00			Ice	9.22	7.82	169.88
						1" Ice	10.46	9.60	335.13
						2" Ice	13.07	13.37	803.42
						4" Ice			
(2) FD9R6004/2C-3L	B	From Face	4.00	0.0000	148.00	No Ice	0.37	0.08	3.10
			0.00			1/2"	0.45	0.14	5.40
			1.00			Ice	0.54	0.20	8.79
						1" Ice	0.75	0.34	19.61
						2" Ice	1.28	0.74	62.87
						4" Ice			
(4) FD9R6004/2C-3L	C	From Face	4.00	0.0000	148.00	No Ice	0.37	0.08	3.10
			0.00			1/2"	0.45	0.14	5.40
			1.00			Ice	0.54	0.20	8.79
						1" Ice	0.75	0.34	19.61
						2" Ice	1.28	0.74	62.87
						4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Face	4.00	0.0000	148.00	No Ice	3.18	3.35	28.93
			0.00			1/2"	3.56	3.97	59.07
			1.00			Ice	3.97	4.60	97.61
						1" Ice	4.86	5.90	193.45
						2" Ice	6.77	8.89	487.78
						4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Face	4.00	0.0000	148.00	No Ice	3.18	3.35	28.93
			0.00			1/2"	3.56	3.97	59.07
			1.00			Ice	3.97	4.60	97.61
						1" Ice	4.86	5.90	193.45
						2" Ice	6.77	8.89	487.78
						4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Face	4.00	0.0000	148.00	No Ice	3.18	3.35	28.93
			0.00			1/2"	3.56	3.97	59.07
			1.00			Ice	3.97	4.60	97.61
						1" Ice	4.86	5.90	193.45
						2" Ice	6.77	8.89	487.78
						4" Ice			
**									
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	143.00	No Ice	3.00	0.90	65.00
			0.00			1/2"	3.74	1.12	79.14
			0.00			Ice	4.48	1.34	93.27
						1" Ice	5.96	1.78	121.55
						2" Ice	8.92	2.66	178.10
						4" Ice			
**									
Sector Mount [SM 104-3]	A	None		0.0000	133.00	No Ice	30.02	30.02	952.50
						1/2"	40.48	40.48	1404.60

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 lb
						Ice	50.94	50.94	1856.70
						1" Ice	71.86	71.86	2760.90
						2" Ice	113.70	113.70	4569.30
						4" Ice			
800 10504 w/ Mount Pipe	A	From Leg	3.50 3.50 0.00	44.0000	133.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.59 4.01 4.42 5.34 7.38	3.18 3.91 4.58 5.98 8.98	37.75 68.19 107.66 206.58 513.48
800 10504 w/ Mount Pipe	B	From Leg	3.50 3.50 0.00	44.0000	133.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.59 4.01 4.42 5.34 7.38	3.18 3.91 4.58 5.98 8.98	37.75 68.19 107.66 206.58 513.48
800 10504 w/ Mount Pipe	C	From Leg	3.50 3.50 0.00	44.0000	133.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.59 4.01 4.42 5.34 7.38	3.18 3.91 4.58 5.98 8.98	37.75 68.19 107.66 206.58 513.48
**									
Side Arm Mount [SO 305-1]	C	From Leg	1.50 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
TA-2450	C	From Leg	3.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	0.84 1.08 1.34 1.87 3.19	0.84 1.08 1.34 1.87 3.19	15.00 21.99 31.80 60.52 158.57
Side Arm Mount [SO 305-1]	A	From Leg	1.50 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
WB2618	A	From Leg	3.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	2.04 2.24 2.44 2.87 3.82	0.53 0.65 0.78 1.07 1.75	12.10 23.53 37.28 72.51 179.32
**									
Sector Mount [SM 505-3]	A	None		0.0000	121.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	34.86 49.79 64.72 94.58 154.30	34.86 49.79 64.72 94.58 154.30	1725.30 2316.90 2908.50 4091.70 6458.10
1900MHz RRH (65MHz)	A	From Leg	1.00 0.00	0.0000	121.00	No Ice 1/2"	2.70 2.94	2.77 3.01	60.00 83.90

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			Ice	3.18	3.26	111.08
						1" Ice	3.70	3.78	176.02
						2" Ice	4.85	4.93	353.75
						4" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00	0.0000	121.00	No Ice	2.40	2.25	64.00
			0.00			1/2"	2.61	2.46	86.12
			0.00			Ice	2.83	2.68	111.30
						1" Ice	3.30	3.13	171.62
						2" Ice	4.34	4.15	337.52
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	121.00	No Ice	8.50	6.95	82.55
			0.00			1/2"	9.15	8.13	147.74
			1.00			Ice	9.77	9.02	224.90
						1" Ice	11.03	10.84	405.88
						2" Ice	13.68	14.85	908.85
						4" Ice			
1900MHz RRH (65MHz)	B	From Leg	1.00	0.0000	121.00	No Ice	2.70	2.77	60.00
			0.00			1/2"	2.94	3.01	83.90
			0.00			Ice	3.18	3.26	111.08
						1" Ice	3.70	3.78	176.02
						2" Ice	4.85	4.93	353.75
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00	0.0000	121.00	No Ice	2.40	2.25	64.00
			0.00			1/2"	2.61	2.46	86.12
			0.00			Ice	2.83	2.68	111.30
						1" Ice	3.30	3.13	171.62
						2" Ice	4.34	4.15	337.52
						4" Ice			
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	121.00	No Ice	8.50	7.47	87.55
			0.00			1/2"	9.15	8.66	155.21
			1.00			Ice	9.77	9.56	234.90
						1" Ice	11.03	11.39	421.12
						2" Ice	13.68	15.53	935.27
						4" Ice			
1900MHz RRH (65MHz)	C	From Leg	1.00	0.0000	121.00	No Ice	2.70	2.77	60.00
			0.00			1/2"	2.94	3.01	83.90
			0.00			Ice	3.18	3.26	111.08
						1" Ice	3.70	3.78	176.02
						2" Ice	4.85	4.93	353.75
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00	0.0000	121.00	No Ice	2.40	2.25	64.00
			0.00			1/2"	2.61	2.46	86.12
			0.00			Ice	2.83	2.68	111.30
						1" Ice	3.30	3.13	171.62
						2" Ice	4.34	4.15	337.52
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	121.00	No Ice	8.50	6.95	82.55
			0.00			1/2"	9.15	8.13	147.74
			1.00			Ice	9.77	9.02	224.90
						1" Ice	11.03	10.84	405.88
						2" Ice	13.68	14.85	908.85
						4" Ice			
Sector Mount [SM 510-3]	B	None		0.0000	112.00	No Ice	40.10	40.10	2396.40
						1/2"	57.33	57.33	3089.00
						Ice	74.56	74.56	3781.60
						1" Ice	109.02	109.02	5166.80

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 lb
						2" Ice	177.94	177.94	7937.20
						4" Ice			
(3) DB844H90E-XY w/Mount Pipe	A	From Face	4.00 0.00 0.00	-16.0000	112.00	No Ice	3.58	5.40	35.55
						1/2" Ice	4.20	6.49	76.59
						1" Ice	4.73	7.30	127.74
						2" Ice	5.86	8.96	251.11
						4" Ice	8.27	12.49	616.43
(3) DB844H90E-XY w/Mount Pipe	B	From Face	4.00 0.00 0.00	-16.0000	112.00	No Ice	3.58	5.40	35.55
						1/2" Ice	4.20	6.49	76.59
						1" Ice	4.73	7.30	127.74
						2" Ice	5.86	8.96	251.11
						4" Ice	8.27	12.49	616.43
(3) DB844H90E-XY w/Mount Pipe	C	From Face	4.00 0.00 0.00	-16.0000	112.00	No Ice	3.58	5.40	35.55
						1/2" Ice	4.20	6.49	76.59
						1" Ice	4.73	7.30	127.74
						2" Ice	5.86	8.96	251.11
						4" Ice	8.27	12.49	616.43
**									
Sector Mount [SM 701-3]	A	None		0.0000	103.00	No Ice	19.73	19.73	825.00
						1/2" Ice	27.41	27.41	1165.99
						1" Ice	35.09	35.09	1506.98
						2" Ice	50.45	50.45	2188.96
						4" Ice	81.17	81.17	3552.92
(2) RR90-17-02DP w/ Mount Pipe	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	4.59	3.32	34.18
						1/2" Ice	5.09	4.09	69.33
						1" Ice	5.58	4.78	113.86
						2" Ice	6.59	6.23	223.79
						4" Ice	8.73	9.31	556.77
(2) KRY 112 71	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	0.68	0.45	13.20
						1/2" Ice	0.80	0.56	18.38
						1" Ice	0.93	0.68	25.16
						2" Ice	1.22	0.94	44.33
						4" Ice	1.90	1.57	110.52
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	7.47	3.49	61.35
						1/2" Ice	7.99	4.26	107.59
						1" Ice	8.52	4.96	163.58
						2" Ice	9.59	6.40	297.50
						4" Ice	11.87	9.49	682.77
ATMAA1412D-1A20	A	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	1.17	0.47	13.00
						1/2" Ice	1.31	0.57	20.62
						1" Ice	1.47	0.69	30.11
						2" Ice	1.81	0.95	55.52
						4" Ice	2.58	1.57	137.44
(2) RR90-17-02DP w/ Mount Pipe	B	From Leg	1.50 0.00 0.00	0.0000	103.00	No Ice	4.59	3.32	34.18
						1/2" Ice	5.09	4.09	69.33
						1" Ice	5.58	4.78	113.86
						2" Ice	6.59	6.23	223.79
						4" Ice	8.73	9.31	556.77

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
							4" Ice			
(2) KRY 112 71	B	From Leg	1.50	0.00	0.0000	103.00	No Ice	0.68	0.45	13.20
							1/2" Ice	0.80	0.56	18.38
							1" Ice	0.93	0.68	25.16
							2" Ice	1.22	0.94	44.33
							4" Ice	1.90	1.57	110.52
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	1.50	0.00	0.0000	103.00	No Ice	7.47	3.49	61.35
							1/2" Ice	7.99	4.26	107.59
							1" Ice	8.52	4.96	163.58
							2" Ice	9.59	6.40	297.50
							4" Ice	11.87	9.49	682.77
ATMAA1412D-1A20	B	From Leg	1.50	0.00	0.0000	103.00	No Ice	1.17	0.47	13.00
							1/2" Ice	1.31	0.57	20.62
							1" Ice	1.47	0.69	30.11
							2" Ice	1.81	0.95	55.52
							4" Ice	2.58	1.57	137.44
(2) RR90-17-02DP w/ Mount Pipe	C	From Leg	1.50	0.00	0.0000	103.00	No Ice	4.59	3.32	34.18
							1/2" Ice	5.09	4.09	69.33
							1" Ice	5.58	4.78	113.86
							2" Ice	6.59	6.23	223.79
							4" Ice	8.73	9.31	556.77
(2) KRY 112 71	C	From Leg	1.50	0.00	0.0000	103.00	No Ice	0.68	0.45	13.20
							1/2" Ice	0.80	0.56	18.38
							1" Ice	0.93	0.68	25.16
							2" Ice	1.22	0.94	44.33
							4" Ice	1.90	1.57	110.52
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	1.50	0.00	0.0000	103.00	No Ice	7.47	3.49	61.35
							1/2" Ice	7.99	4.26	107.59
							1" Ice	8.52	4.96	163.58
							2" Ice	9.59	6.40	297.50
							4" Ice	11.87	9.49	682.77
ATMAA1412D-1A20	C	From Leg	1.50	0.00	0.0000	103.00	No Ice	1.17	0.47	13.00
							1/2" Ice	1.31	0.57	20.62
							1" Ice	1.47	0.69	30.11
							2" Ice	1.81	0.95	55.52
							4" Ice	2.58	1.57	137.44
**										
3'x2" Pipe Mount	A	From Leg	1.50	0.00	0.0000	95.00	No Ice	0.52	0.52	27.00
							1/2" Ice	0.71	0.71	31.81
							1" Ice	0.90	0.90	38.81
							2" Ice	1.33	1.33	59.99
							4" Ice	2.44	2.44	135.33
WB2618	A	From Leg	3.00	0.00	0.0000	95.00	No Ice	2.04	0.53	12.10
							1/2" Ice	2.24	0.65	23.53
							1" Ice	2.44	0.78	37.28
							2" Ice	2.87	1.07	72.51
							4" Ice	3.82	1.75	179.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
10'x2" Pipe Mount	A	From Leg	3.00 0.00 0.00	0.0000	95.00 - 85.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.00 3.02 4.07 5.70 8.26	2.00 3.02 4.07 5.70 8.26	70.00 85.50 107.47 171.40 383.58
Side Arm Mount [SO 305-1]	A	From Leg	1.50 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
ANT150D3	A	From Leg	3.00 0.00 5.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.88 4.16 6.72 11.84	1.60 2.88 4.16 6.72 11.84	18.00 23.40 28.80 39.60 61.20
**									
Side Arm Mount [SO 302-1]	B	From Leg	2.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.67 2.51 3.35 5.03 8.39	3.27 4.99 6.71 10.15 17.03	55.00 88.07 121.14 187.28 319.57
SRL-217 Ground Plane 10.67' x 4.83'	B	From Leg	4.00 0.00 6.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.21 3.30 4.41 6.27 8.98	2.21 3.30 4.41 6.27 8.98	6.50 23.49 47.35 116.33 343.56
BW246Y	A	From Leg	1.50 0.00 0.00	0.0000	61.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.35 2.73 4.11 6.88 12.41	0.39 0.88 1.36 2.32 4.25	7.00 24.00 41.00 75.00 143.00
**									
Side Arm Mount [SO 305-1]	B	From Leg	1.50 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.48 2.02 3.10 5.26	1.41 2.17 2.93 4.45 7.49	30.00 43.27 56.54 83.07 136.14
KS24019-L112A	B	From Leg	3.00 0.00 2.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.16 0.22 0.30 0.48 0.95	0.16 0.22 0.30 0.48 0.95	5.00 6.59 9.15 17.96 55.81
**									

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 lb
PL6-59W	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	-90.0000		143.00	6.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.27 29.05 29.83 31.39 34.51	143.00 292.13 441.25 739.50 1336.01

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
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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 Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	10	235406.61	25707.23	-16356.10
	Max. H_x	10	235406.61	25707.23	-16356.10
	Max. H_z	4	-200846.94	-22218.25	14246.59
	Min. Vert	4	-200846.94	-22218.25	14246.59
	Min. H_x	4	-200846.94	-22218.25	14246.59
	Min. H_z	10	235406.61	25707.23	-16356.10
Leg B	Max. Vert	6	238671.74	-25483.72	-17091.31
	Max. H_x	12	-196936.52	21700.41	14637.89
	Max. H_z	12	-196936.52	21700.41	14637.89
	Min. Vert	12	-196936.52	21700.41	14637.89
	Min. H_x	6	238671.74	-25483.72	-17091.31
	Min. H_z	6	238671.74	-25483.72	-17091.31
Leg A	Max. Vert	2	236723.47	654.50	30405.83
	Max. H_x	11	15172.03	5677.89	1211.83
	Max. H_z	2	236723.47	654.50	30405.83
	Min. Vert	8	-195271.77	-627.16	-26051.55
	Min. H_x	5	15545.55	-5675.84	1253.57
	Min. H_z	8	-195271.77	-627.16	-26051.55

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	151.292 - 146.229	3.433	27	0.1891	0.0401
T2	146.229 - 141.167	3.237	27	0.1888	0.0400
T3	141.167 - 121.042	3.036	27	0.1874	0.0385
T4	121.042 - 114.313	2.262	27	0.1723	0.0302
T5	114.313 - 107.646	2.018	27	0.1646	0.0272
T6	107.646 - 100.917	1.788	27	0.1551	0.0241
T7	100.917 - 94.2014	1.575	27	0.1437	0.0224
T8	94.2014 - 87.4861	1.368	27	0.1342	0.0194
T9	87.4861 - 80.7708	1.177	27	0.1236	0.0164
T10	80.7708 - 70.6875	1.006	27	0.1116	0.0148
T11	70.6875 - 60.6041	0.771	27	0.0985	0.0125
T12	60.6041 - 50.5104	0.567	27	0.0842	0.0101
T13	50.5104 - 40.4166	0.395	31	0.0685	0.0082
T14	40.4166 - 30.3125	0.260	31	0.0520	0.0063
T15	30.3125 - 20.2083	0.153	31	0.0397	0.0046
T16	20.2083 - 10.1041	0.075	31	0.0270	0.0030

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T17	10.1041 - 0	0.020	31	0.0136	0.0015

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Side Arm Mount [SO 304-1]	27	3.383	0.1891	0.0402	51160
148.00	Sector Mount [SM 510-3]	27	3.306	0.1890	0.0402	51160
143.00	PL6-59W	27	3.109	0.1880	0.0392	136123
133.00	Sector Mount [SM 104-3]	27	2.715	0.1828	0.0353	83864
128.00	Side Arm Mount [SO 305-1]	27	2.522	0.1789	0.0332	71783
126.00	Side Arm Mount [SO 305-1]	27	2.447	0.1771	0.0323	67872
121.00	Sector Mount [SM 505-3]	27	2.260	0.1722	0.0301	63358
112.00	Sector Mount [SM 510-3]	27	1.936	0.1616	0.0260	36187
103.00	Sector Mount [SM 701-3]	27	1.640	0.1471	0.0229	71496
95.00	3'x2" Pipe Mount	27	1.392	0.1354	0.0198	36451
90.00	10'x2" Pipe Mount	27	1.246	0.1279	0.0174	25158
85.00	10'x2" Pipe Mount	27	1.111	0.1191	0.0157	31107
61.00	BW246Y	27	0.575	0.0847	0.0102	42502
50.00	Side Arm Mount [SO 305-1]	31	0.387	0.0676	0.0081	30747

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	151.292 - 146.229	11.361	6	0.6223	0.1333
T2	146.229 - 141.167	10.717	6	0.6217	0.1329
T3	141.167 - 121.042	10.054	6	0.6174	0.1280
T4	121.042 - 114.313	7.493	6	0.5691	0.1002
T5	114.313 - 107.646	6.687	6	0.5439	0.0903
T6	107.646 - 100.917	5.923	6	0.5128	0.0801
T7	100.917 - 94.2014	5.219	6	0.4751	0.0743
T8	94.2014 - 87.4861	4.533	6	0.4439	0.0646
T9	87.4861 - 80.7708	3.900	6	0.4088	0.0546
T10	80.7708 - 70.6875	3.333	6	0.3691	0.0491
T11	70.6875 - 60.6041	2.555	6	0.3259	0.0414
T12	60.6041 - 50.5104	1.881	6	0.2785	0.0337
T13	50.5104 - 40.4166	1.311	6	0.2267	0.0274

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T14	40.4166 - 30.3125	0.862	6	0.1721	0.0209
T15	30.3125 - 20.2083	0.508	6	0.1315	0.0154
T16	20.2083 - 10.1041	0.248	6	0.0893	0.0098
T17	10.1041 - 0	0.067	6	0.0451	0.0049

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Side Arm Mount [SO 304-1]	6	11.198	0.6223	0.1335	15559
148.00	Sector Mount [SM 510-3]	6	10.944	0.6222	0.1335	15559
143.00	PL6-59W	6	10.295	0.6194	0.1302	41969
133.00	Sector Mount [SM 104-3]	6	8.991	0.6033	0.1173	25835
128.00	Side Arm Mount [SO 305-1]	6	8.355	0.5908	0.1102	22186
126.00	Side Arm Mount [SO 305-1]	6	8.104	0.5850	0.1074	20925
121.00	Sector Mount [SM 505-3]	6	7.488	0.5690	0.1002	19312
112.00	Sector Mount [SM 510-3]	6	6.416	0.5340	0.0864	10924
103.00	Sector Mount [SM 701-3]	6	5.433	0.4864	0.0762	22112
95.00	3'x2" Pipe Mount	6	4.613	0.4476	0.0659	10973
90.00	10'x2" Pipe Mount	6	4.128	0.4230	0.0579	7581
85.00	10'x2" Pipe Mount	6	3.684	0.3938	0.0522	9376
61.00	BW246Y	6	1.906	0.2804	0.0340	12666
50.00	Side Arm Mount [SO 305-1]	6	1.285	0.2239	0.0270	9393

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	151.292	Diagonal	A325N	0.5000	1	888.49	3126.56	0.284	1.333	Member Block Shear
		Top Girt	A325N	0.5000	1	139.44	4123.34	0.034	1.333	Bolt Shear
T2	146.229	Leg	A325N	0.6250	4	1285.54	13337.10	0.096	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	3002.96	4757.81	0.631	1.333	Gusset Bearing
T3	141.167	Leg	A325N	0.6250	4	6220.31	13260.40	0.469	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4546.58	4123.34	1.103	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	644.55	4078.13	0.158	1.333	Member Bearing
T4	121.042	Diagonal	A325N	0.5000	2	2853.27	4123.34	0.692	1.333	Bolt Shear
T5	114.313	Diagonal	A325N	0.5000	2	3152.76	4123.34	0.765	1.333	Bolt Shear
T6	107.646	Leg	A325N	0.7500	4	12879.00	18849.40	0.683	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	7535.74	8246.68	0.914	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	1086.85	4553.91	0.239	1.333	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T7	100.917	Diagonal	A325N	0.5000	2	4049.63	4123.34	0.982	1.333	Bolt Shear
T8	94.2014	Diagonal	A325N	0.5000	2	4127.04	4123.34	1.001	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	1391.31	4553.91	0.306	1.333	Member Block Shear
T9	87.4861	Leg	A325N	0.8750	4	21024.80	25913.90	0.811	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	8835.56	8246.68	1.071	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	1716.49	4553.91	0.377	1.333	Member Block Shear
T10	80.7708	Diagonal	A325N	0.6250	1	9986.97	8609.38	1.160	1.333	Gusset Bearing
T11	70.6875	Leg	A325N	0.8750	4	26740.70	26457.90	1.011	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	10140.60	8609.38	1.178	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2167.62	5097.66	0.425	1.333	Member Bearing
T12	60.6041	Diagonal	A325N	0.6250	1	10618.60	8609.38	1.233	1.333	Gusset Bearing
		Secondary Horizontal	A325N	0.5000	1	2646.31	4123.34	0.642	1.333	Bolt Shear
T13	50.5104	Leg	A325N	1.0000	4	36358.80	33959.20	1.071	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	11380.40	12885.40	0.883	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.5000	1	2949.87	4123.34	0.715	1.333	Bolt Shear
T14	40.4166	Diagonal	A325N	0.6250	1	11585.70	12885.40	0.899	1.333	Bolt Shear
T15	30.3125	Leg	A325N	1.0625	4	43558.70	38374.60	1.135	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	12491.40	12885.40	0.969	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3556.89	5097.66	0.698	1.333	Member Bearing
T16	20.2083	Diagonal	A325N	0.6250	1	12379.80	12885.40	0.961	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3696.19	5097.66	0.725	1.333	Member Bearing
T17	10.1041	Leg	A354-BC	1.0000	6	33674.40	32397.70	1.039	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	13672.90	12885.40	1.061	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	4162.12	6442.72	0.646	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	ROHN 2.5 STD	5.06	4.94	62.5 K=1.00	22.279	1.7040	-2775.69	37965.40	0.073
T2	146.229 - 141.167	ROHN 2.5 STD	5.06	4.94	62.5 K=1.00	22.279	1.7040	-7649.92	37965.40	0.201
T3	141.167 -	ROHN 2.5 EH	20.16	6.68	86.7	17.636	2.2535	-29393.70	39742.70	0.740

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	121.042				K=1.00					✓
T4	121.042 - 114.313	ROHN 2.5 EH (GR)	6.74	6.68	86.7 K=1.00	20.596	2.2535	-34278.10	46414.10	0.739 ✓
T5	114.313 - 107.646	ROHN 2.5 EH (GR)	6.68	6.68	86.7 K=1.00	20.595	2.2535	-45117.20	46412.40	0.972 ✓
T6	107.646 - 100.917	ROHN 2.5 EH (GR)	6.74	3.43	44.6 K=1.00	30.457	2.2535	-62669.10	68636.90	0.913 ✓
T7	100.917 - 94.2014	ROHN 3 EH (GR)	6.73	6.66	70.4 K=1.00	25.475	3.0159	-68251.90	76830.10	0.888 ✓
T8	94.2014 - 87.4861	ROHN 3 EH (GR)	6.73	3.45	36.4 K=1.00	32.873	3.0159	-80219.40	99141.40	0.809 ✓
T9	87.4861 - 80.7708	ROHN 3 EH (GR)	6.73	3.40	35.9 K=1.00	32.964	3.0159	-98968.10	99418.20	0.995 ✓
T10	80.7708 - 70.6875	ROHN 4 EH (GR)	10.10	10.02	81.4 K=1.00	23.284	4.4074	- 107504.00	102621.00	1.048 ✓
T11	70.6875 - 60.6041	ROHN 4 EH (GR)	10.10	5.21	42.3 K=1.00	32.956	4.4074	- 124994.00	145250.00	0.861 ✓
T12	60.6041 - 50.5104	ROHN 4 EH (GR)	10.11	5.11	41.5 K=1.00	33.117	4.4074	- 152584.00	145962.00	1.045 ✓
T13	50.5104 - 40.4166	ROHN 4 EH (GR)	10.11	5.10	41.4 K=1.00	33.131	4.4074	- 170087.00	146022.00	1.165 ✓
T14	40.4166 - 30.3125	ROHN 5 EH (GR)	10.12	10.02	65.4 K=1.00	28.466	6.1120	- 178286.00	173984.00	1.025 ✓
T15	30.3125 - 20.2083	ROHN 5 EH (GR)	10.12	5.13	33.5 K=1.00	35.792	6.1120	- 205104.00	218759.00	0.938 ✓
T16	20.2083 - 10.1041	ROHN 5 EH (GR)	10.12	5.12	33.4 K=1.00	35.800	6.1120	- 213139.00	218809.00	0.974 ✓
T17	10.1041 - 0	ROHN 5 EH (GR)	10.12	5.12	33.4 K=1.00	35.807	6.1120	- 240006.00	218848.00	1.097 ✓

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	L 1.5 x 1.5 x 3/16	9.24	4.62	189.1 K=1.00	4.178	0.5273	-853.78	2203.16	0.388 ✓
T2	146.229 - 141.167	L 2 x 2 x 3/16	9.24	4.62	140.8 K=1.00	7.537	0.7150	-3127.48	5388.61	0.580 ✓
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16	11.56	5.97	144.7 K=1.00	7.134	0.9020	-4546.58	6434.70	0.707 ✓
T4	121.042 - 114.313	L2 1/2x2 1/2x3/16	12.14	6.26	151.7 K=1.00	6.489	0.9020	-5706.53	5853.04	0.975 ✓
T5	114.313 - 107.646	L2 1/2x2 1/2x3/16	12.73	6.55	158.8 K=1.00	5.923	0.9020	-6305.51	5342.79	1.180 ✓
T6	107.646 - 100.917	2L 2.5 x 2.5 x 3/16 (3/16)	13.32	6.84	111.3 K=1.00	11.501	1.8047	-7535.74	20756.50	0.363 ✓
		2L 'a' > 39.1618 in - 69								

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T7	100.917 - 94.2014	L3x3x3/16	13.81	7.09	142.7 K=1.00	7.334	1.0900	-8046.72	7994.03	1.007
T8	94.2014 - 87.4861	L3x3x3/16	14.46	7.41	149.3 K=1.00	6.704	1.0900	-8254.08	7306.96	1.130
T9	87.4861 - 80.7708	2L 3 x 3 x 3/16 (1/4)	15.05	7.71	104.1 K=1.00	12.257	2.1797	-8835.56	26717.20	0.331
T10	80.7708 - 70.6875	2L 'a' > 44.0220 in - 102 2L3x3x3/16x1/4	17.36	8.97	121.1 K=1.00	10.071	2.1797	-10003.30	21950.70	0.456
T11	70.6875 - 60.6041	2L 'a' > 51.2231 in - 114 2L3x3x3/16x1/4	18.25	9.41	127.0 K=1.00	9.252	2.1797	-10574.80	20167.10	0.524
T12	60.6041 - 50.5104	2L 'a' > 53.7356 in - 123 2L3x3x1/4x1/4	19.03	9.80	132.3 K=1.00	8.527	2.8750	-10775.60	24513.80	0.440
T13	50.5104 - 40.4166	2L 'a' > 56.1325 in - 135 2L3x3x1/4x1/4	19.93	10.24	138.4 K=1.00	7.795	2.8750	-11380.40	22411.50	0.508
T14	40.4166 - 30.3125	2L 'a' > 58.7062 in - 147 2L3 1/2x3 1/2x1/4x1/4	20.81	10.67	124.1 K=1.00	9.698	3.3750	-11585.70	32730.50	0.354
T15	30.3125 - 20.2083	2L 'a' > 61.0427 in - 159 2L3 1/2x3 1/2x1/4x1/4	21.69	11.11	129.2 K=1.00	8.942	3.3750	-12491.40	30180.90	0.414
T16	20.2083 - 10.1041	2L 'a' > 63.5688 in - 168 2L 4 x 4 x 1/4 (1/4)	22.61	11.57	118.0 K=1.00	10.719	3.8750	-12379.80	41534.90	0.298
T17	10.1041 - 0	2L 'a' > 66.0834 in - 180 2L 4 x 4 x 1/4 (1/4) 2L 'a' > 68.6449 in - 192	23.51	12.01	122.6 K=1.00	9.934	3.8750	-13672.90	38493.00	0.355

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T6	107.646 - 100.917	L 2 x 2 x 3/16	12.25	12.01	182.9 K=0.50	4.463	0.7150	-1086.85	3191.02	0.341
T8	94.2014 - 87.4861	L 2 x 2 x 3/16	13.64	13.35	203.3 K=0.50	3.613	0.7150	-1391.31	2583.20	0.539
T9	87.4861 - 80.7708	L 2 x 2 x 3/16	14.34	14.04	213.9 K=0.50	3.265	0.7150	-1716.49	2334.13	0.735
T11	70.6875 - 60.6041	L2 1/2x2 1/2x3/16	16.18	15.81	191.6 K=0.50	4.068	0.9020	-2167.62	3668.94	0.591
T12	60.6041 - 50.5104	L3x3x1/4	17.20	16.82	170.5 K=0.50	5.135	1.4400	-2646.31	7395.08	0.358
T13	50.5104 - 40.4166	L3x3x1/4	18.24	17.86	181.0 K=0.50	4.556	1.4400	-2949.87	6561.12	0.450
T15	30.3125 - 20.2083	L 3 x 3 x 3/16	20.26	19.80	199.2 K=0.50	3.763	1.0898	-3556.89	4101.40	0.867

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T16	20.2083 - 10.1041	L3x3x3/16	21.27	20.81	209.5 K=0.50	3.402	1.0900	-3696.19	3708.23	0.997
T17	10.1041 - 0	L 3.5 x 3.5 x 1/4	22.27	21.80	188.5 K=0.50	4.203	1.6900	-4162.12	7103.60	0.586

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	L2 1/2x2 1/2x3/16 KL/R > 200 (C) - 6	8.56	8.32	201.8 K=1.00	3.668	0.9020	-139.44	3308.68	0.042
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16 KL/R > 200 (C) - 25	8.57	8.33	201.9 K=1.00	3.663	0.9020	-551.74	3303.75	0.167

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	ROHN 2.5 STD	5.06	4.94	62.5	30.000	1.7040	541.52	51121.50	0.011
T2	146.229 - 141.167	ROHN 2.5 STD	5.06	4.94	62.5	30.000	1.7040	5142.14	51121.50	0.101
T3	141.167 - 121.042	ROHN 2.5 EH	20.16	6.68	86.7	30.000	2.2535	24881.30	67606.20	0.368
T4	121.042 - 114.313	ROHN 2.5 EH (GR)	6.74	6.68	86.7	30.000	2.2535	27918.30	67606.20	0.413
T5	114.313 - 107.646	ROHN 2.5 EH (GR)	6.68	6.68	86.7	30.000	2.2535	37143.50	67606.20	0.549
T6	107.646 - 100.917	ROHN 2.5 EH (GR)	6.74	3.43	44.6	30.000	2.2535	51515.80	67606.20	0.762
T7	100.917 - 94.2014	ROHN 3 EH (GR)	6.73	6.66	70.4	30.000	3.0159	56445.70	90477.90	0.624
T8	94.2014 - 87.4861	ROHN 3 EH (GR)	6.73	3.45	36.4	30.000	3.0159	67387.60	90477.90	0.745
T9	87.4861 - 80.7708	ROHN 3 EH (GR)	6.73	3.40	35.9	30.000	3.0159	84099.00	90477.90	0.929
T10	80.7708 - 70.6875	ROHN 4 EH (GR)	10.10	10.02	81.4	30.000	4.4074	91486.40	132223.00	0.692
T11	70.6875 - 60.6041	ROHN 4 EH (GR)	10.10	5.21	42.3	30.000	4.4074	107091.00	132223.00	0.810
T12	60.6041 -	ROHN 4 EH (GR)	10.11	5.11	41.5	30.000	4.4074	130706.00	132223.00	0.989

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	50.5104									
T13	50.5104 - 40.4166	ROHN 4 EH (GR)	10.11	5.10	41.4	30.000	4.4074	145435.00	132223.00	1.100
T14	40.4166 - 30.3125	ROHN 5 EH (GR)	10.12	10.02	65.4	30.000	6.1120	152175.00	183359.00	0.830
T15	30.3125 - 20.2083	ROHN 5 EH (GR)	10.12	5.13	33.5	30.000	6.1120	174235.00	183359.00	0.950
T16	20.2083 - 10.1041	ROHN 5 EH (GR)	10.12	5.12	33.4	30.000	6.1120	180591.00	183359.00	0.985
T17	10.1041 - 0	ROHN 5 EH (GR)	10.12	5.12	33.4	30.000	6.1120	202046.00	183359.00	1.102

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	L 1.5 x 1.5 x 3/16	9.24	4.62	121.4	29.000	0.3076	888.49	8920.90	0.100
T2	146.229 - 141.167	L 2 x 2 x 3/16	9.24	4.62	89.9	29.000	0.4484	3002.96	13002.40	0.231
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16	11.56	5.97	92.1	29.000	0.5886	4340.83	17069.70	0.254
T4	121.042 - 114.313	L2 1/2x2 1/2x3/16	12.14	6.26	96.5	29.000	0.5886	5397.32	17069.70	0.316
T5	114.313 - 107.646	L2 1/2x2 1/2x3/16	12.73	6.55	101.0	29.000	0.5886	6217.18	17069.70	0.364
T6	107.646 - 100.917	2L 2.5 x 2.5 x 3/16 (3/16)	13.32	6.84	105.5	29.000	1.1777	7159.05	34154.30	0.210
T7	100.917 - 94.2014	2L 'a' > 39.1618 in - 70 L3x3x3/16	13.81	7.09	90.6	29.000	0.7296	8099.27	21158.70	0.383
T8	94.2014 - 87.4861	L3x3x3/16	14.46	7.41	94.7	29.000	0.7296	8067.91	21158.70	0.381
T9	87.4861 - 80.7708	2L 3 x 3 x 3/16 (1/4)	15.05	7.71	98.4	29.000	1.4590	8728.98	42310.50	0.206
T10	80.7708 - 70.6875	2L 'a' > 44.0220 in - 103 2L3x3x3/16x1/4	17.36	8.97	114.5	29.000	1.4238	9986.97	41291.00	0.242
T11	70.6875 - 60.6041	2L 'a' > 51.2231 in - 115 2L3x3x3/16x1/4	18.25	9.41	120.2	29.000	1.4238	10140.60	41291.00	0.246
T12	60.6041 - 50.5104	2L 'a' > 53.7356 in - 124 2L3x3x1/4x1/4	19.03	9.80	126.3	32.500	1.8750	10618.60	60937.50	0.174
T13	50.5104 - 40.4166	2L 'a' > 56.1325 in - 136 2L3x3x1/4x1/4	19.93	10.24	132.1	32.500	1.8750	11035.60	60937.50	0.181
T14	40.4166 - 30.3125	2L 'a' > 58.7062 in - 148 2L3 1/2x3 1/2x1/4x1/4	20.81	10.67	117.3	32.500	2.2500	11481.40	73125.00	0.157

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T15	30.3125 - 20.2083	2L 'a' > 61.0427 in - 160 2L3 1/2x3 1/2x1/4x1/4	21.69	11.11	122.2	32.500	2.2500	11775.50	73125.00	0.161
T16	20.2083 - 10.1041	2L 'a' > 63.5688 in - 169 2L 4 x 4 x 1/4 (1/4)	22.61	11.57	110.8	32.500	2.6250	12328.40	85312.50	0.145
T17	10.1041 - 0	2L 'a' > 66.0834 in - 181 2L 4 x 4 x 1/4 (1/4) 2L 'a' > 68.6449 in - 193	23.51	12.01	115.1	32.500	2.6250	12544.50	85312.50	0.147

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T6	107.646 - 100.917	L 2 x 2 x 3/16	12.25	12.01	233.6	29.000	0.4308	1086.85	12492.70	0.087
T8	94.2014 - 87.4861	L 2 x 2 x 3/16	13.64	13.35	259.7	29.000	0.4308	1391.31	12492.70	0.111
T9	87.4861 - 80.7708	L 2 x 2 x 3/16	14.34	14.04	273.2	29.000	0.4308	1716.49	12492.70	0.137
T11	70.6875 - 60.6041	L2 1/2x2 1/2x3/16	16.18	15.81	243.8	29.000	0.5710	2167.62	16559.90	0.131
T12	60.6041 - 50.5104	L3x3x1/4	17.20	16.82	217.1	29.000	0.9628	2646.31	27921.60	0.095
T13	50.5104 - 40.4166	L3x3x1/4	18.24	17.86	230.5	29.000	0.9628	2949.87	27921.60	0.106
T15	30.3125 - 20.2083	L 3 x 3 x 3/16	20.26	19.80	252.9	29.000	0.7119	3556.89	20645.50	0.172
T16	20.2083 - 10.1041	L3x3x3/16	21.27	20.81	266.0	29.000	0.7120	3696.19	20648.90	0.179
T17	10.1041 - 0	L 3.5 x 3.5 x 1/4	22.27	21.80	239.9	29.000	1.1269	4162.12	32679.40	0.127

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	151.292 - 146.229	L2 1/2x2 1/2x3/16	8.56	8.32	128.4	29.000	0.5886	101.37	17069.70	0.006
T3	141.167 - 121.042	L2 1/2x2 1/2x3/16	8.57	8.33	128.5	29.000	0.5886	644.55	17069.70	0.038

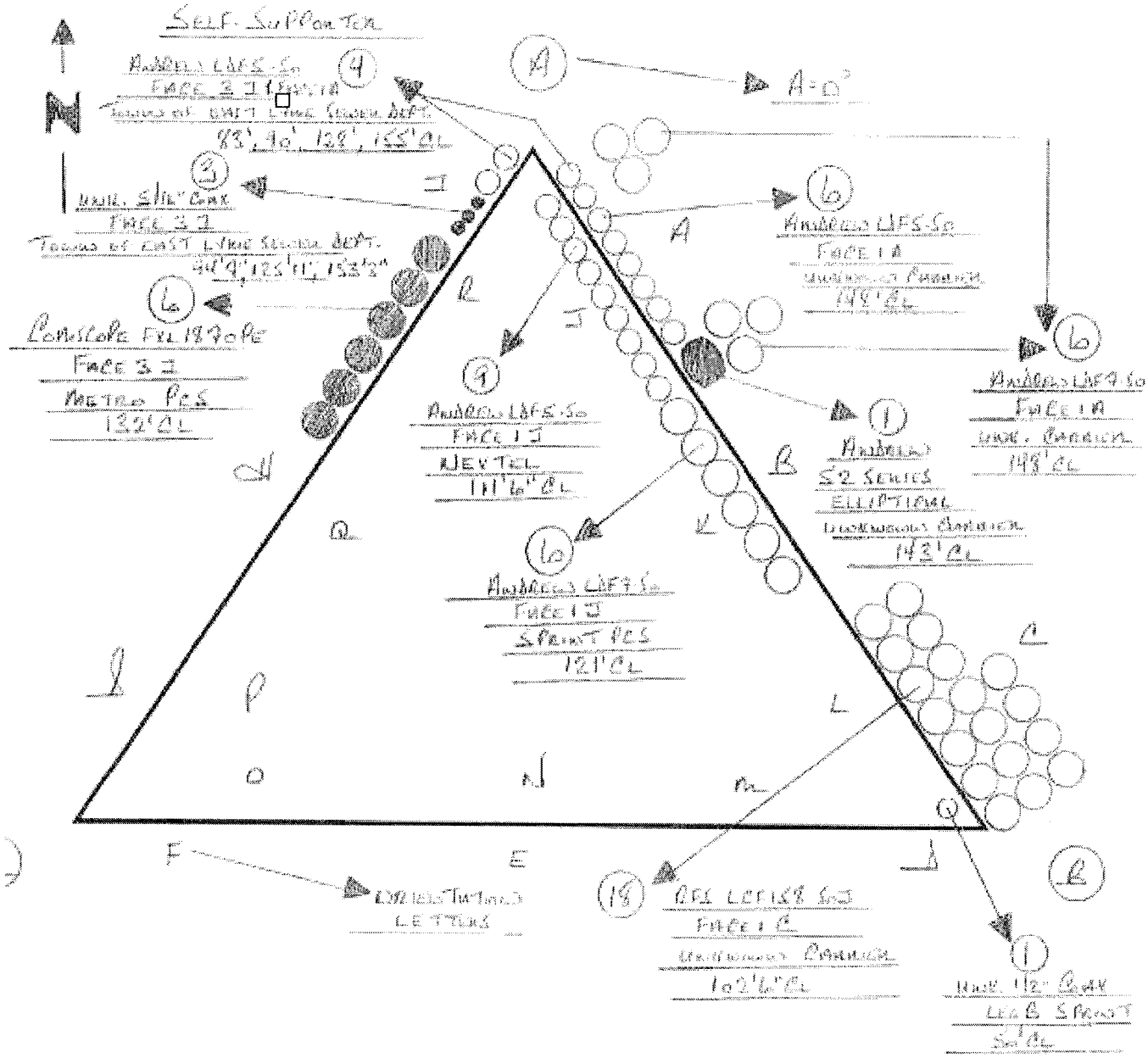
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	151.292 - 146.229	Leg	ROHN 2.5 STD	1	-2289.07	37965.40	14.8	Pass
T2	146.229 - 141.167	Leg	ROHN 2.5 STD	14	-7391.76	50607.87	18.5	Pass
T3	141.167 - 121.042	Leg	ROHN 2.5 EH	23	-29393.70	52977.02	55.5	Pass
T4	121.042 - 114.313	Leg	ROHN 2.5 EH (GR)	47	-34278.10	61869.99	55.4	Pass
T5	114.313 - 107.646	Leg	ROHN 2.5 EH (GR)	56	-45117.20	61867.72	72.9	Pass
T6	107.646 - 100.917	Leg	ROHN 2.5 EH (GR)	65	-62669.10	91492.98	68.5	Pass
T7	100.917 - 94.2014	Leg	ROHN 3 EH (GR)	77	-68251.90	102414.52	66.6	Pass
T8	94.2014 - 87.4861	Leg	ROHN 3 EH (GR)	86	-80219.40	132155.48	60.7	Pass
T9	87.4861 - 80.7708	Leg	ROHN 3 EH (GR)	98	-98968.10	132524.46	74.7	Pass
T10	80.7708 - 70.6875	Leg	ROHN 4 EH (GR)	110	-107504.00	136793.79	78.6	Pass
T11	70.6875 - 60.6041	Leg	ROHN 4 EH (GR)	119	-124994.00	193618.24	64.6 75.8 (b)	Pass
T12	60.6041 - 50.5104	Leg	ROHN 4 EH (GR)	131	-152584.00	194567.34	78.4	Pass
T13	50.5104 - 40.4166	Leg	ROHN 4 EH (GR)	143	-170087.00	194647.32	87.4	Pass
T14	40.4166 - 30.3125	Leg	ROHN 5 EH (GR)	155	-178286.00	231920.66	76.9	Pass
T15	30.3125 - 20.2083	Leg	ROHN 5 EH (GR)	163	174235.00	244417.54	71.3 85.2 (b)	Pass
T16	20.2083 - 10.1041	Leg	ROHN 5 EH (GR)	175	180591.00	244417.54	73.9	Pass
T17	10.1041 - 0	Leg	ROHN 5 EH (GR)	187	202046.00	244417.54	82.7	Pass
T1	151.292 - 146.229	Diagonal	L 1.5 x 1.5 x 3/16	12	-853.78	2936.81	29.1	Pass
T2	146.229 - 141.167	Diagonal	L 2 x 2 x 3/16	18	-3127.48	7183.02	43.5 47.3 (b)	Pass
T3	141.167 - 121.042	Diagonal	L2 1/2x2 1/2x3/16	30	-4546.58	8577.46	53.0 82.7 (b)	Pass
T4	121.042 - 114.313	Diagonal	L2 1/2x2 1/2x3/16	51	-5706.53	7802.10	73.1	Pass
T5	114.313 - 107.646	Diagonal	L2 1/2x2 1/2x3/16	60	-6305.51	7121.94	88.5	Pass
T6	107.646 - 100.917	Diagonal	2L 2.5 x 2.5 x 3/16 (3/16)	69	-7535.74	27668.41	27.2 68.6 (b)	Pass
T7	100.917 - 94.2014	Diagonal	L3x3x3/16	81	-8046.72	10656.04	75.5	Pass
T8	94.2014 - 87.4861	Diagonal	L3x3x3/16	90	-8254.08	9740.18	84.7	Pass
T9	87.4861 - 80.7708	Diagonal	2L 3 x 3 x 3/16 (1/4)	102	-8835.56	35614.03	24.8 80.4 (b)	Pass
T10	80.7708 - 70.6875	Diagonal	2L3x3x3/16x1/4	114	-10003.30	29260.28	34.2 87.0 (b)	Pass
T11	70.6875 - 60.6041	Diagonal	2L3x3x3/16x1/4	123	-10574.80	26882.74	39.3 88.4 (b)	Pass
T12	60.6041 - 50.5104	Diagonal	2L3x3x1/4x1/4	135	-10775.60	32676.90	33.0 92.5 (b)	Pass
T13	50.5104 - 40.4166	Diagonal	2L3x3x1/4x1/4	147	-11380.40	29874.53	38.1 66.3 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T14	40.4166 - 30.3125	Diagonal	2L3 1/2x3 1/2x1/4x1/4	159	-11585.70	43629.75	26.6 67.5 (b)	Pass
T15	30.3125 - 20.2083	Diagonal	2L3 1/2x3 1/2x1/4x1/4	168	-12491.40	40231.14	31.0 72.7 (b)	Pass
T16	20.2083 - 10.1041	Diagonal	2L 4 x 4 x 1/4 (1/4)	180	-12379.80	55366.02	22.4 72.1 (b)	Pass
T17	10.1041 - 0	Diagonal	2L 4 x 4 x 1/4 (1/4)	192	-13672.90	51311.17	26.6 79.6 (b)	Pass
T6	107.646 - 100.917	Secondary Horizontal	L 2 x 2 x 3/16	73	-1086.85	4253.63	25.6	Pass
T8	94.2014 - 87.4861	Secondary Horizontal	L 2 x 2 x 3/16	94	-1391.31	3443.41	40.4	Pass
T9	87.4861 - 80.7708	Secondary Horizontal	L 2 x 2 x 3/16	106	-1716.49	3111.40	55.2	Pass
T11	70.6875 - 60.6041	Secondary Horizontal	L2 1/2x2 1/2x3/16	127	-2167.62	4890.70	44.3	Pass
T12	60.6041 - 50.5104	Secondary Horizontal	L3x3x1/4	139	-2646.31	9857.64	26.8 48.1 (b)	Pass
T13	50.5104 - 40.4166	Secondary Horizontal	L3x3x1/4	151	-2949.87	8745.97	33.7 53.7 (b)	Pass
T15	30.3125 - 20.2083	Secondary Horizontal	L 3 x 3 x 3/16	172	-3556.89	5467.17	65.1	Pass
T16	20.2083 - 10.1041	Secondary Horizontal	L3x3x3/16	184	-3696.19	4943.07	74.8	Pass
T17	10.1041 - 0	Secondary Horizontal	L 3.5 x 3.5 x 1/4	196	-4162.12	9469.10	44.0 48.5 (b)	Pass
T1	151.292 - 146.229	Top Girt	L2 1/2x2 1/2x3/16	6	-139.44	4410.47	3.2	Pass
T3	141.167 - 121.042	Top Girt	L2 1/2x2 1/2x3/16	25	-551.74	4403.90	12.5	Pass
							Summary	
						Leg (T13)	87.4	Pass
						Diagonal (T12)	92.5	Pass
						Secondary Horizontal (T16)	74.8	Pass
						Top Girt (T3)	12.5	Pass
						Bolt Checks	92.5	Pass
						RATING =	**92.5**	**Pass**

APPENDIX B

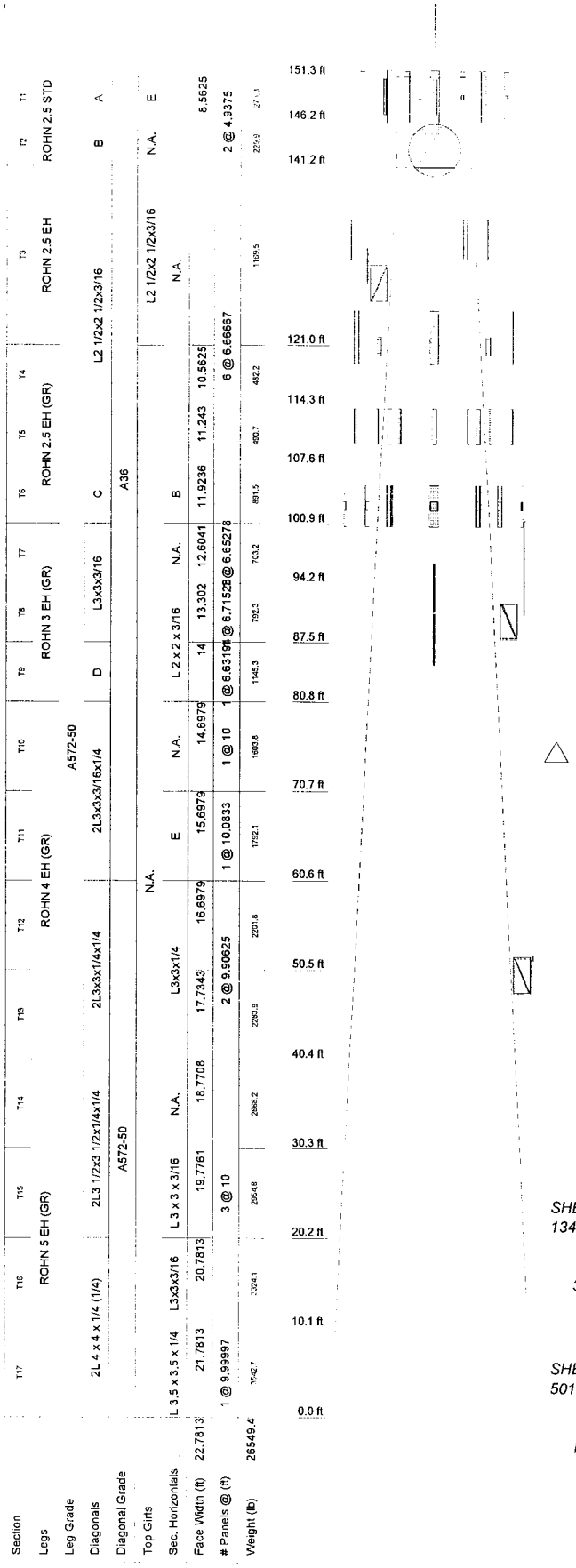
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Program Version 6.0.3.0 - 12/7/2011 File:T:/375_Crown_Castle/2012/37512-2741 BU 806384/37512-2741A.eri
Program Version 6.0.3.0 - 12/7/2011 File:T:/375_Crown_Castle/2012/37512-2741 BU 806384/37512-2741B.eri



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Side Arm Mount [SO 304-1]	150	1900MHz RRH (65MHz)	121
WB2618	150	800MHz 2X50W RRH W/FILTER	121
ANT150F2	150	APXVSPP18-C-A20 w/ Mount Pipe	121
Sector Mount [SM 510-3]	148	Sector Mount [SM 505-3]	121
(2) LPA-80063/6CF w/ Mount Pipe	148	(3) DB844H90E-XY w/Mount Pipe	112
(2) DB846H80E-SX w/ Mount Pipe	148	(3) DB844H90E-XY w/Mount Pipe	112
(2) LPA-80063/6CF w/ Mount Pipe	148	(3) DB844H90E-XY w/Mount Pipe	112
BXA-70063-6CF-2 w/ Mount Pipe	148	Sector Mount [SM 510-3]	112
BXA-70063-6CF-2 w/ Mount Pipe	148	(2) RR90-17-02DP w/ Mount Pipe	103
BXA-70063-6CF-2 w/ Mount Pipe	148	(2) KRY 112 71	103
(2) FD9R6004/2C-3L	148	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	103
(4) FD9R6004/2C-3L	148		
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	148	ATMAA1412D-1A20	103
		(2) RR90-17-02DP w/ Mount Pipe	103
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	148	(2) KRY 112 71	103
		APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	103
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	148		
		ATMAA1412D-1A20	103
Pipe Mount [PM 601-1]	143	(2) RR90-17-02DP w/ Mount Pipe	103
PL6-59W	143	(2) KRY 112 71	103
800 10504 w/ Mount Pipe	133	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	103
800 10504 w/ Mount Pipe	133		
800 10504 w/ Mount Pipe	133	ATMAA1412D-1A20	103
Sector Mount [SM 104-3]	133	Sector Mount [SM 701-3]	103
TA-2450	128	WB2618	95
Side Arm Mount [SO 305-1]	128	10'x2" Pipe Mount	95 - 85
WB2618	126	3'x2" Pipe Mount	95
Side Arm Mount [SO 305-1]	126	Side Arm Mount [SO 302-1]	90
1900MHz RRH (65MHz)	121	SRL-217 Ground Plane 10.67' x 4.83'	90
800MHz 2X50W RRH W/FILTER	121	ANT150D3	85
APXVSPP18-C-A20 w/ Mount Pipe	121	Side Arm Mount [SO 305-1]	85
1900MHz RRH (65MHz)	121	BW246Y	61
800MHz 2X50W RRH W/FILTER	121	KS24019-L112A	50
APXV9ERR18-C-A20 w/ Mount Pipe	121	Side Arm Mount [SO 305-1]	50

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L 1.5 x 1.5 x 3/16	D	2L 3 x 3 x 3/16 (1/4)
B	L 2 x 2 x 3/16	E	L2 1/2x2 1/2x3/16
C	2L 2.5 x 2.5 x 3/16 (3/16)		

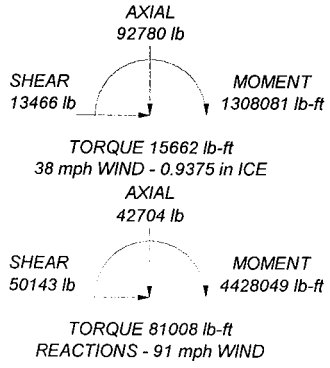
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 91 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.94 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. Grouted pipe f'c is 7 ksi
6. TOWER RATING: 92.5%

MAX. CORNER REACTIONS AT BASE:
DOWN: 236671 lb
UP: -200847 lb
SHEAR: 26393 lb



Paul J Ford and Company
250 E. Broad St Suite 1500
Columbus, OH 43215
Phone: 614-221-6679
FAX: 614-448-4105

Job: Modified 152-ft S/S Tower; East Lyme, CT
Project: BU #806384 (PJF #37511-0187)
Client: Crown Castle | Drawn by: chedges | App'd:
Code: TIA/EIA-222-F | Date: 10/29/12 | Scale: NTS
Path: T:\375_Crown_Castle\2012\37512-2741 BU 806384\37512-2741B.eri | Dwg No. E-1

PJF job no. **37512-2741** Project name **BU806384**

Foundation Loads:

Tower leg compression =	**238.67**	(kips)
Tower leg tension =	**200.65**	(kips)
Horizontal load at top of pier =	**0**	(kips)
Overturning moment at top of pier=	**0**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	
Uplift safety factor: conc. weight =	**1.25**	
Uplift safety factor for soil weight =	**2**	

Soil Properties:

Soil density =	**125**	(pcf)
Allowable soil bearing =	**6**	(ksf)
Soil cone of uplift =	**31**	(degrees)
Uplift cone from top or bottom of ftg	**B**	("T" or "B")
Depth to water table =	**99**	(ft)

Dimensions:

Pier shape (round or square)	**R**	("R" or "S")
Pier width =	**3**	(ft)
Pier height above grade =	**0.5**	(ft)
depth to bottom of footing =	**12**	(ft)
Footing thickness =	**2**	(ft)
Footing width =	**8.25**	(ft)
Footing length =	**8.25**	(ft)

Concrete:

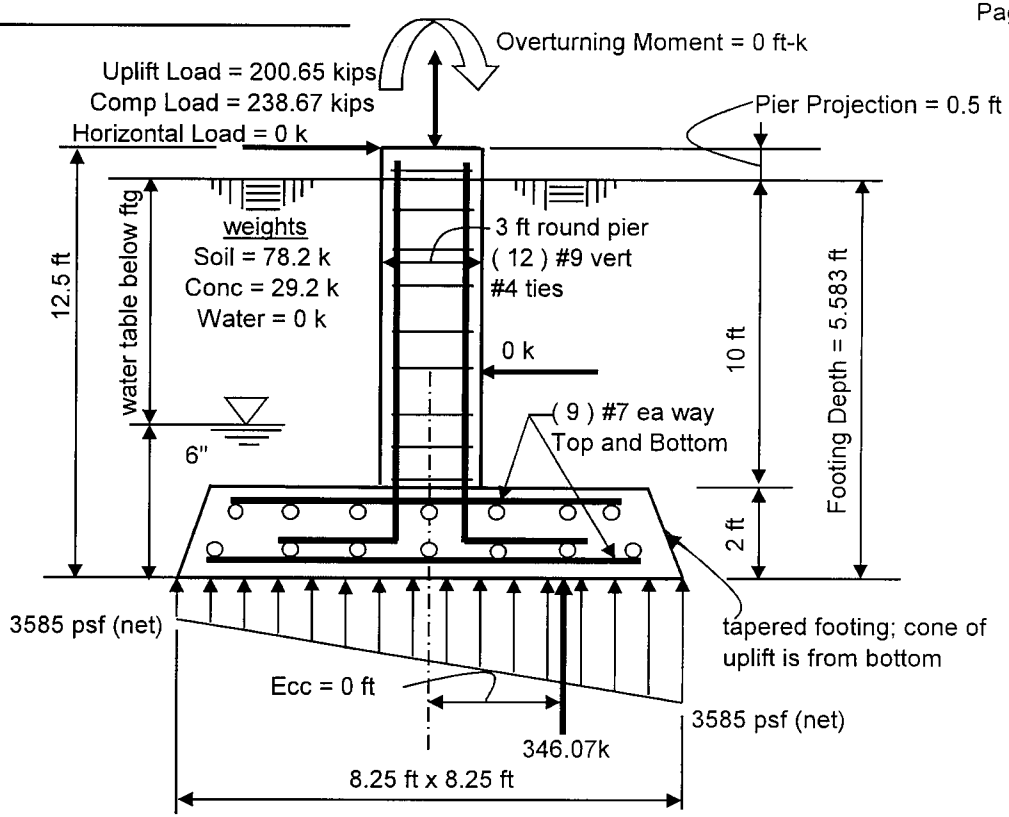
Concrete strength =	**3**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

Reinforcing Steel:

	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#7**	bar
quantity of pad rebar =	**9**	(ea direction)
	Pier	
size of vert rebar in pier=	**#9**	bar
vertical rebar quantity =	**12**	
size of pier ties =	**#4**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete = 7.2 cu yd each

(Total volume of concrete = 21.6 cu yd for 3)



Summary of analysis results	
Maximum Net Soil Bearing = 3.585 ksf Allowable Net Soil Bearing = 6 ksf **Soil Bearing Stress Ratio = 0.6 Okay**	Ult Punching Shear Capacity = 641 kips Ult Punching Shear Force = 120 kips **Punching Shear Stress Ratio = 0.19 OK**
Net Ftg Uplift Resistance = 213.8 kips Uplift Force = 200.647 kips Net Uplift Safety Factor = 1.97 **Ratio to Required Safety factor = 0.94 OK**	Ult Bending Shear Capacity = 110 psi Ult Bending Shear Stress = 41 psi **Bending Shear Stress Ratio = 0.38 Okay**
Ftg Overturning Resistance = 1428 ft-kips Overturning Moment = 0 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 999 **Ratio = 0 Okay**	Pad Bending Moment Capacity= 463 ft-k Pad Bending Moment = 131 ft-k **Bending Moment Stress Ratio = 0.28 OK**
	Allow Tension in Pier Rebar = 41.54 ksi Calc Vert Rebar Tension = 16.72 ksi **Ratio = 0.403 Okay**

EM-SPRINT-NEXTEL-045-130201

93 Roxbury Road

East Lyme

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-094-130214E	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