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-011-130214** - Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 28 Brewer Drive, Bloomfield, Connecticut.

Dear Mr. Savage:

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

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

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

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

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

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Sydney Schulman, Mayor, Town of Bloomfield
Thomas B. Hooper, Director of Planning, Town of Bloomfield

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
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February 19, 2013

The Honorable Sydney Schulman
Mayor
Bloomfield Town Hall
800 Bloomfield Avenue
P. O. Box 337
Bloomfield, CT 06002-0337

RE: **EM-SPRINT-NEXTEL-011-130214** - Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 28 Brewer Drive, Bloomfield, Connecticut.

Dear Mayor Schulman:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by March 5, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/laf

c: Louie Chapman, Jr., Town Manager, Town of Bloomfield
Thomas B. Hooper, Director of Planning, Town of Bloomfield

EM-SPRINT-NEXTEL-011-130214

CROWN CASTLE

Crown Castle
3530 Torrington Way Suite 300
Charlotte NC 28277

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

February 8, 2013

ORIGINAL

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

RE: Sprint Nextel-Exempt Modification Request- Crown Site BU 876329, Sprint Nextel Site CT03XC076 – Located at 28 Brewer Dr., Bloomfield, CT 06002

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.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to Mayor Sydney Schulman for the Town of Bloomfield.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at 28 Brewer Dr., Bloomfield, CT 06002. 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 Sprint's 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 in R.C.S.A. Section 16-50j-72(b)(2).

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table for Sprint modified facility is included behind Tab 2.

Also attached is a Structural Report confirming that the tower and foundation can support Sprint's 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 Bloomfield, Mayor Sydney Schulman

SHEET INDEX

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

DRIVING DIRECTIONS

DEPART FROM SPRINT:
1 INTERNATIONAL BLVD MAHWAH, NJ 07430

1. HEAD NORTH ON INTERNATIONAL BLVD/PARK ST TOWARD QUEENSLAND RD
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 EXIT 8A FOR NY-119/SAW MILL PKWY N TOWARD ELMSFORD.
9. KEEP LEFT AT THE FORK AND MERGE ONTO SAW MILL RIVER PARKWAY N
10. TAKE THE EXIT TOWARD I-684 N.
11. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-684/BREWSTER AND MERGE ONTO I-684 N.
12. TAKE EXIT 9E FOR INTERSTATE 84 E TOWARD DANBURY
13. MERGE ONTO I-84 E.
14. SLIGHT RIGHT TO STAY ON I-84 E.
15. SLIGHT RIGHT TO STAY ON I-84 E.
16. TAKE EXIT 44 TOWARD PROSPECT AVE.
17. MERGE ONTO CAYA AVE.
18. TURN LEFT ONTO PROSPECT AVE.
19. TURN RIGHT ONTO ALBANY AVE.
20. TAKE THE 1ST LEFT ONTO CT-189 N/BLOOMFIELD AVE.
21. TURN LEFT ONTO CT-178 W/MOUNTAIN AVE.
22. TAKE THE 1ST RIGHT ONTO BROWN ST.
23. TAKE THE 2ND RIGHT ONTO DOWNING CIR.
24. TAKE THE 2ND RIGHT ONTO BREWER DR.

DESTINATION WILL BE ON THE LEFT.

Sprint

NETWORK VISION MMBTS LAUNCH

NORTHERN CONNECTICUT MARKET

SITE NAME

MTN. VIEW CEMETERY (FILLEY PARK)

SITE NUMBER

CT03XC076

SITE ADDRESS

28 BREWER DR.
BLOOMFIELD, CT 06002

STRUCTURE TYPE

MONOPOLE

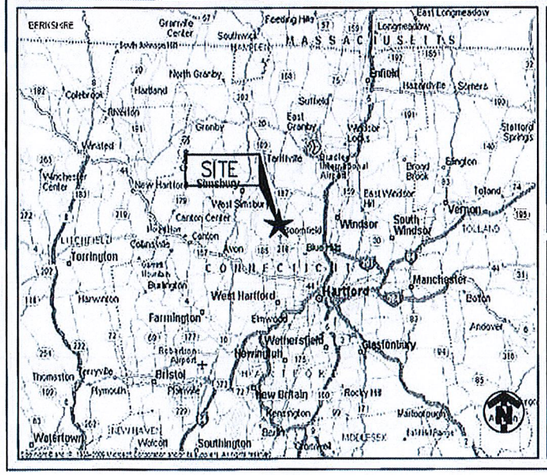
OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AND EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL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

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

PROJECT SUMMARY

SITE NAME:	MTN. VIEW CEMETERY (FILLEY PARK)	
SITE NO.:	CT03XC076	
SITE ADDRESS:	28 BREWER DR. BLOOMFIELD, CT 06002	
COUNTY:	HARTFORD	
SITE COORDINATES:		
LATITUDE:	41° 50' 6.5682" N	(NAD 83)
LONGITUDE:	72° 44' 28.2012" W	(NAD 83)
GROUND ELEV.:	±201'	(AMSL)
JURISDICTION:	CONNECTICUT SITING COUNCIL	
ZONING CLASSIFICATION:	RESIDENTIAL	
LANDLORD:	CROWN ATLANTIC COMPANY LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317	
CONTACT:	MIKE CALLAHAN (860) 919-7278	
APPLICANT:	SPRINT 1 INTERNATIONAL BLVD. MAHWAH, NJ 07495	
PROJECT MANAGER:	ALCATEL LUCENT 1 ROBBINS ROAD WESTFORD, MA 01886	
CONTACT:	ISAM ELHALWANI (617) 851-6133	
CONSTRUCTION MANAGER:	MIKE NEGRETE (315) 439-4819	
ENGINEER:	INFINIGY 11 HERBERT DRIVE LATHAM, NY 12110	
CONTACT:	PAUL FANOS (518) 690-0790	
POWER COMPANY:	CONNECTICUT LINE AND POWER (800) 286-2000	
PHONE COMPANY:	VERIZON (800) 837-4966	
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
1	REVISED PER COMMENTS	KMF	1/28/13
0	ISSUED FOR REVIEW	AHS	11/28/12

Drawn: AHS Date: 11/28/12
Designed: AJD Date: 11/28/12
Checked: AGF Date: 11/28/12

Project Number 284-046

Project Title
MTN. VIEW CEMETARY (FILLEY PARK) CT03XC076

28 BREWER DR.
BLOOMFIELD, CT 06002

Prepared For
Sprint VISION

Drawing Scale: AS NOTED
Date: 11/28/12

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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Fax # (518) 690-0793

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

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Designed: AJD Date: 11/28/12
Checked: AGF Date: 11/28/12

Project Number: 294-046

Project Title:
MTN. VIEW CEMETARY (FILLEY PARK)
CT03XC076

28 BREWER DR.
BLOOMFIELD, CT 06002

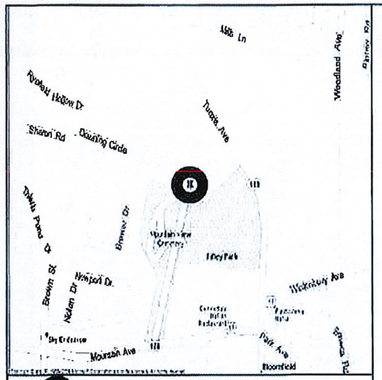
Prepared For: Sprint VISION

Drawing Scale: AS NOTED
Date: 11/28/12

Drawing Title:
GENERAL NOTES

Drawing Number:
C1

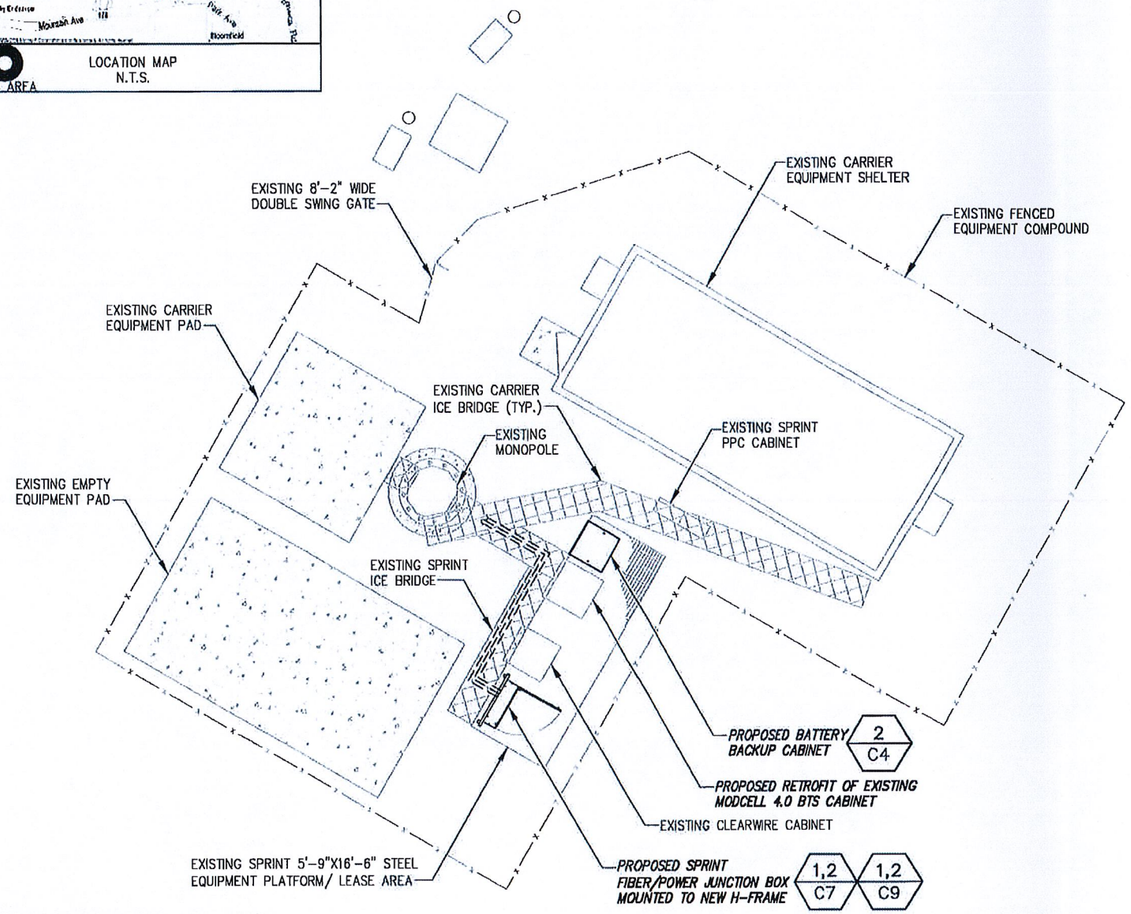
INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION.

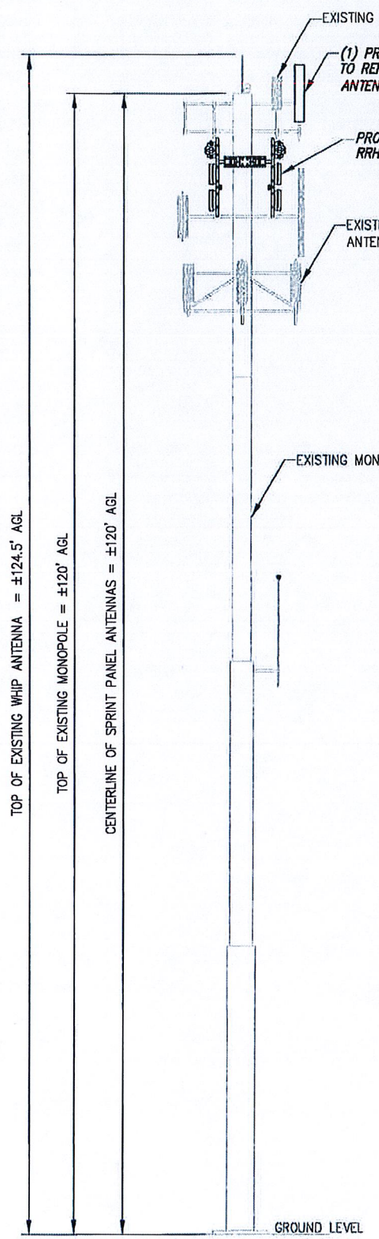


LOCATION MAP
N.T.S.

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

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD. DATED: 12/5/12





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

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

CALLED NORTH

1 COMPOUND SITE PLAN
SCALE: AS NOTED

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

2 SITE ELEVATION
NOT TO SCALE

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CT03XC076

28 BREWER DR.
BLOOMFIELD, CT 06002

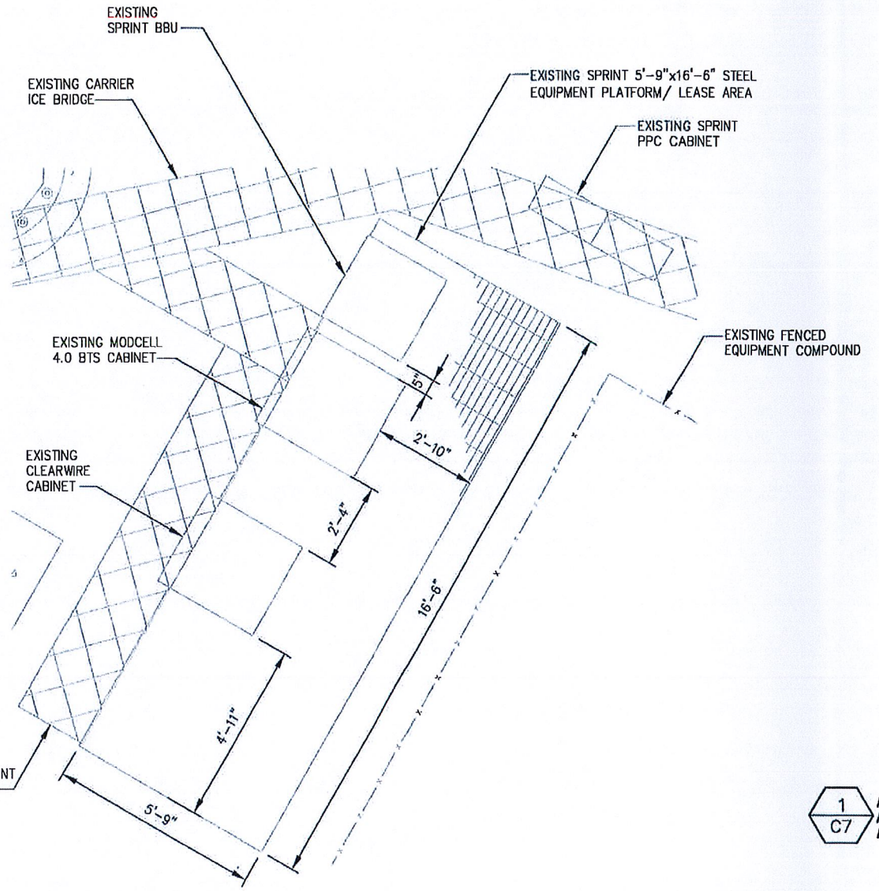
Prepared For
Sprint VISION

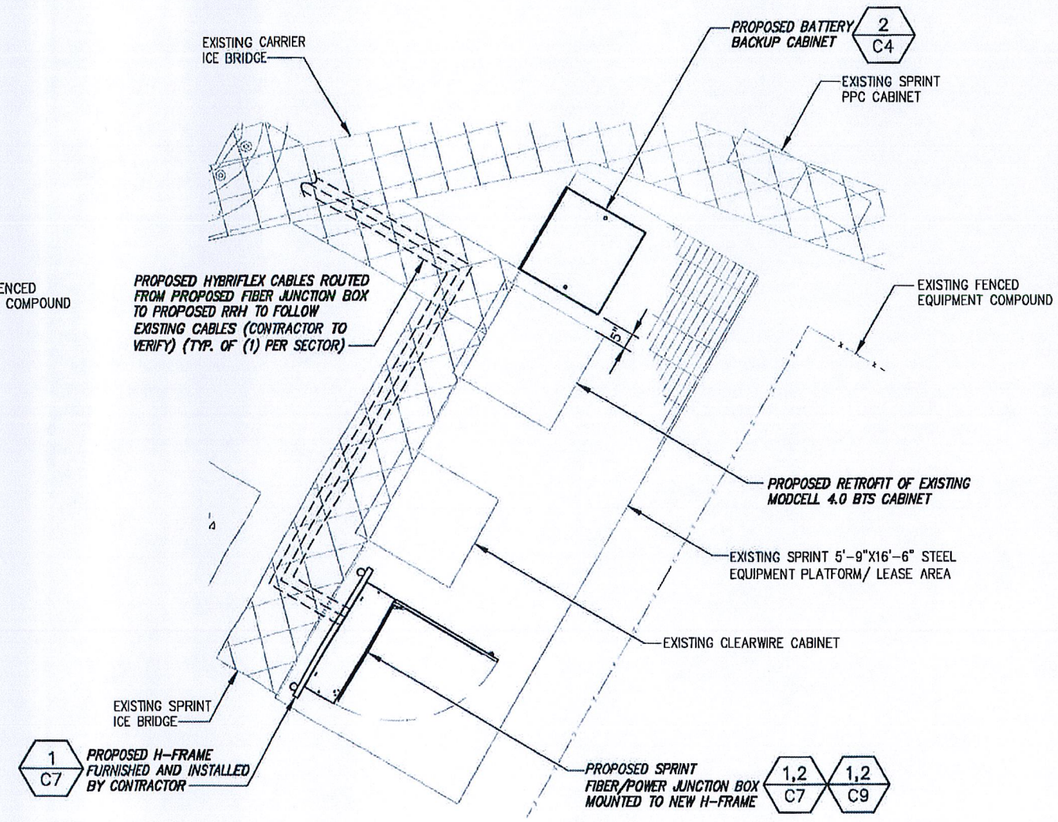
Drawing Scale:
AS NOTED

Date:
11/28/12

Drawing Title
COMPOUND SITE PLAN & ELEVATION

Drawing Number
C2





CALLED NORTH

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

GRAPHIC SCALE

4' 2' 0 2' 4'

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

NOTE:
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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

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

GRAPHIC SCALE

4' 2' 0 2' 4'

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

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28 BREWER DR.
BLOOMFIELD, CT 06002

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Sprint VISION

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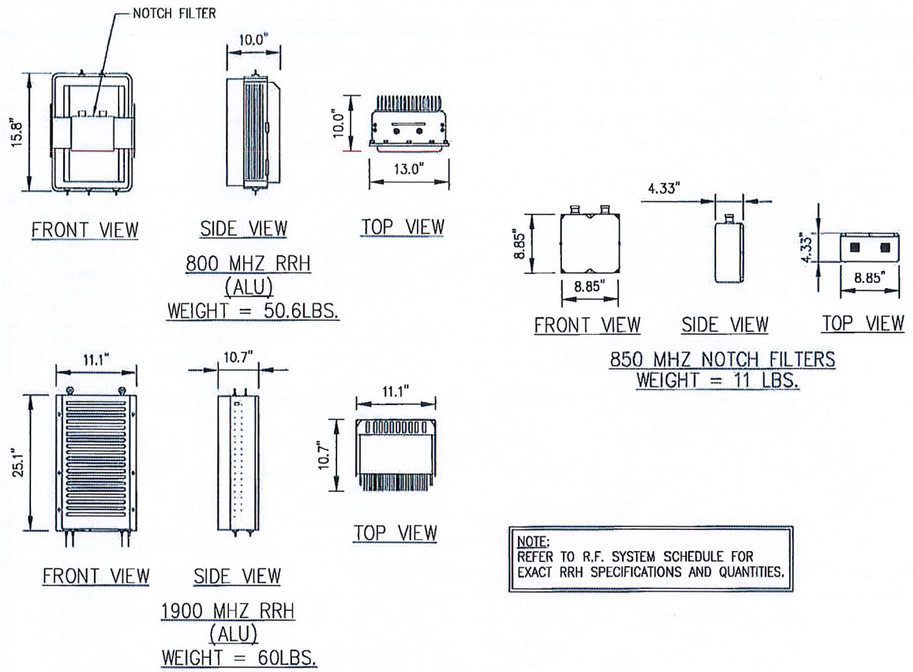
Date:
11/28/12

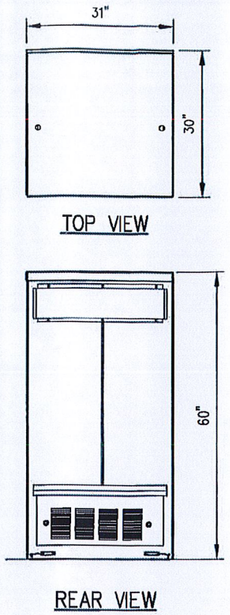
Drawing Title
EQUIPMENT SITE PLANS

Drawing Number
C3



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

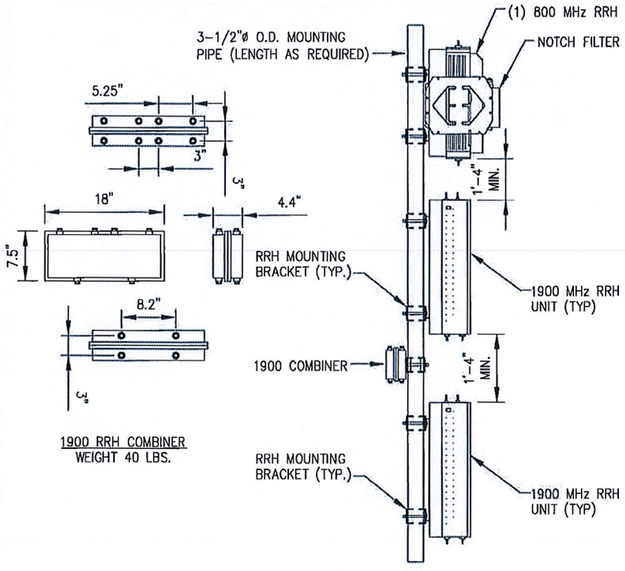
1 RRH EQUIPMENT DETAILS
NOT TO SCALE



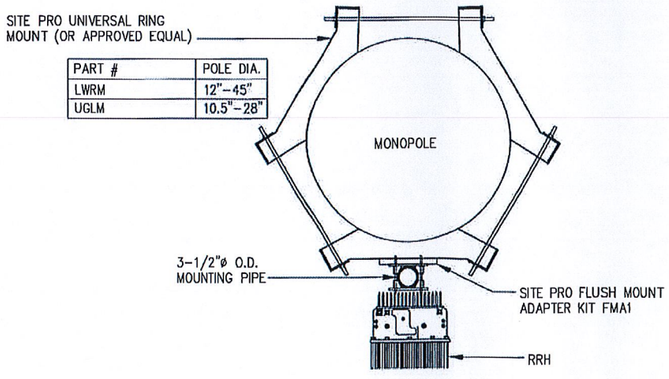
2 BATTERY CABINET PROFILE
NOT TO SCALE

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

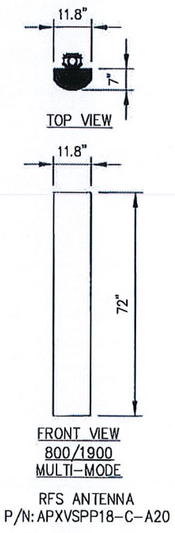
OVERALL VERTICAL SPRINT LEASED AREA OF 8' NOT TO BE EXCEEDED



3 RRH MOUNTING DETAIL (TYP.)
NOT TO SCALE

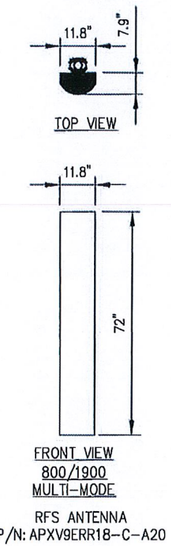


PART #	POLE DIA.
LWRM	12"-45"
UGLM	10.5"-28"



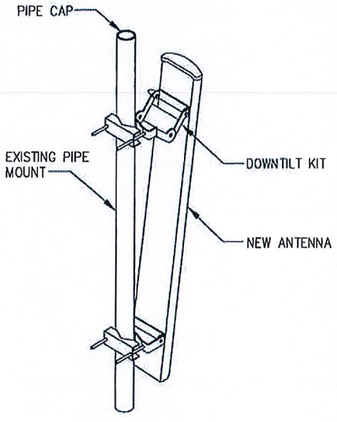
RFS ANTENNA
P/N: APXVSPP18-C-A20

4 ANTENNA DETAILS
NOT TO SCALE



RFS ANTENNA
P/N: APXV9ERR18-C-A20

5 ANTENNA DETAILS
NOT TO SCALE



6 PANEL ANTENNA MOUNT DETAIL
NOT TO SCALE

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CT03XC076

28 BREWER DR.
BLOOMFIELD, CT 06002

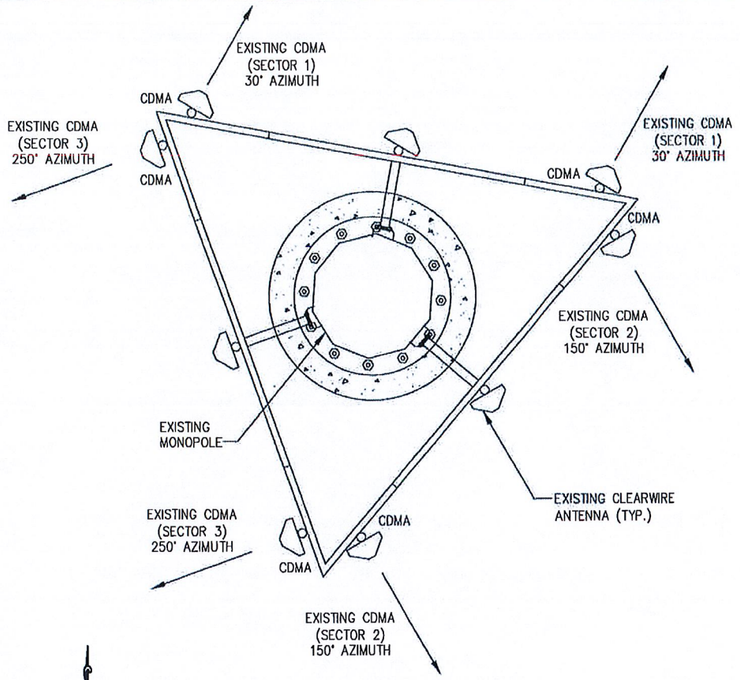
Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

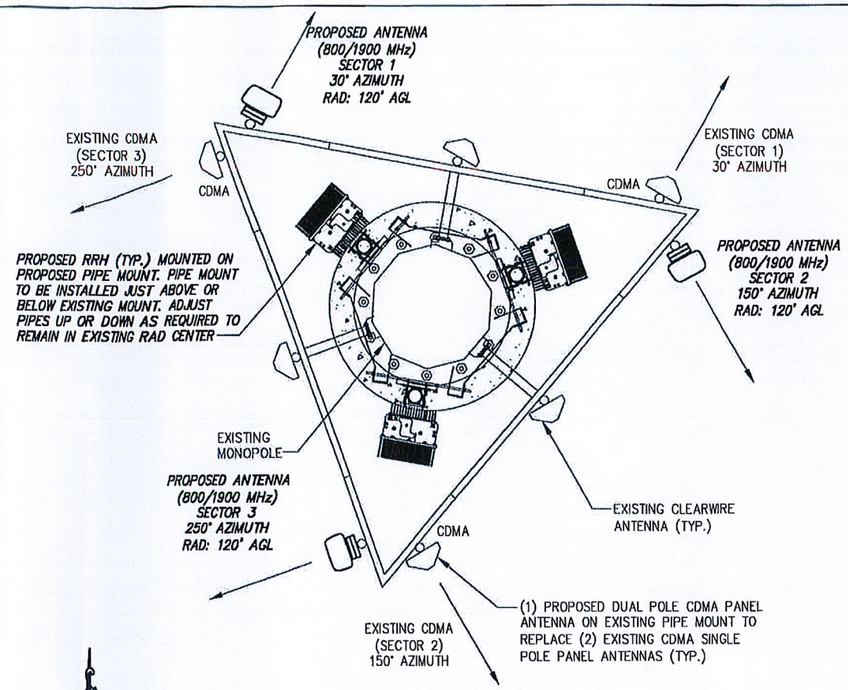
Date:
11/28/12

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C4

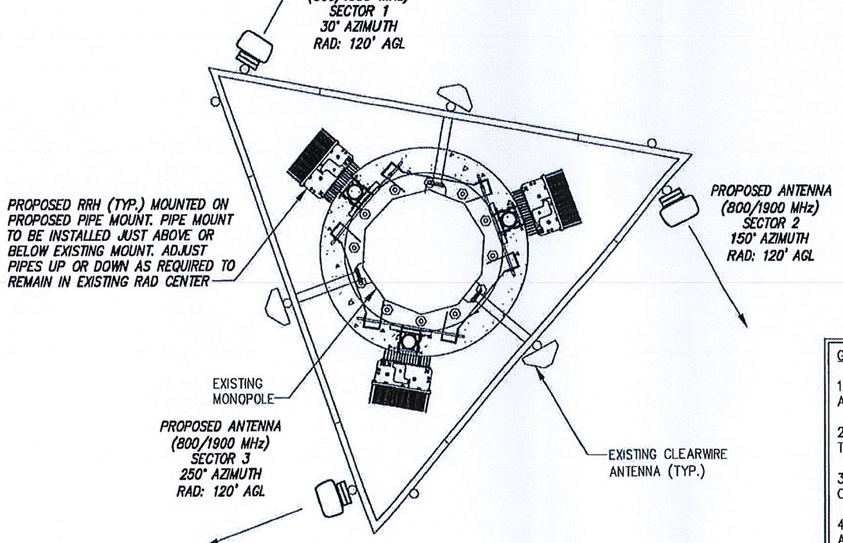


1 ANTENNA CONFIGURATION (EXISTING)
NOT TO SCALE



2 ANTENNA CONFIGURATION (INTERIM/TEMPORARY)
NOT TO SCALE

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



3 ANTENNA CONFIGURATION (FINAL/PERMANENT)
NOT TO SCALE

NOTE:
REQUIRED PIPE MOUNTS TO BE SUPPLIED BY CONTRACTOR.

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD. DATED: 12/5/12

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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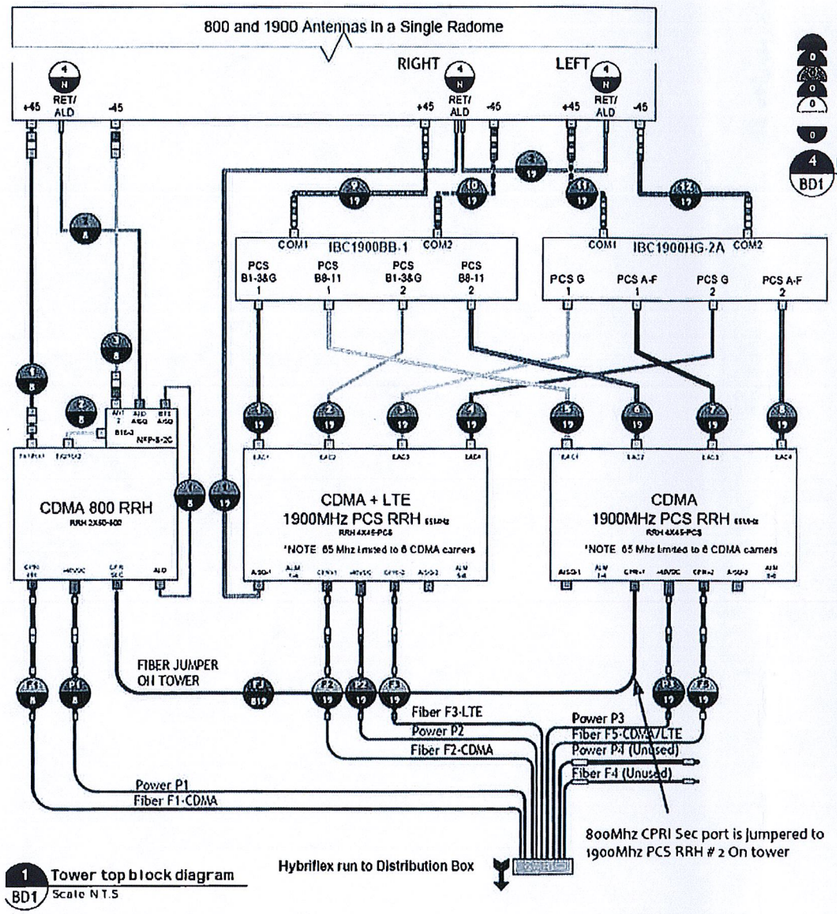
Drawing Title
ANTENNA PLANS

Drawing Number
C5



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

AISG
COAX
FIBER
POWER
NOTES
FREQ

4 BD1 Diagram Legend
Scale: N.T.S

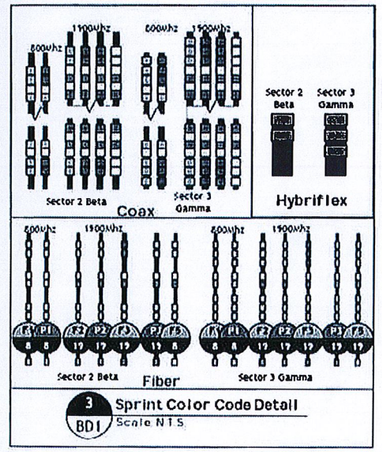
Power Feed Polarity Definition:
IF wires are BLACK AND BLACK/ WHITE STRIPE:
- Black= -48VDC Feed (Battery)
- Black/White Stripe= Return

IF wires are RED AND BLACK:
- Red= -48VDC Feed (Battery)
- Black= Return

NOTE: For power feed use the same Hybriflex OEM color designator as the fiber.

- MM Pair 1= F1= Green= P1(Green)
- MM Pair 2= F2= Blue= P2(Blue)
- MM Pair 3= F3= Red= P3(Red)
- MM Pair 4= F4= Yellow= P4(Yellow)
- MM Pair 5= F5= Orange= (No P5 power feed)

2 BD1 Hybriflex OEM Color Code
Scale: N.T.S



3 BD1 Sprint Color Code Detail
Scale: N.T.S

SCENARIO 128 v2.0

1 ANTENNA CABLE RISER DIAGRAM
NOT TO SCALE

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

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

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

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Project Number
294-046

Project Title
MTN. VIEW CEMETARY (FILLEY PARK)
CT03XC076

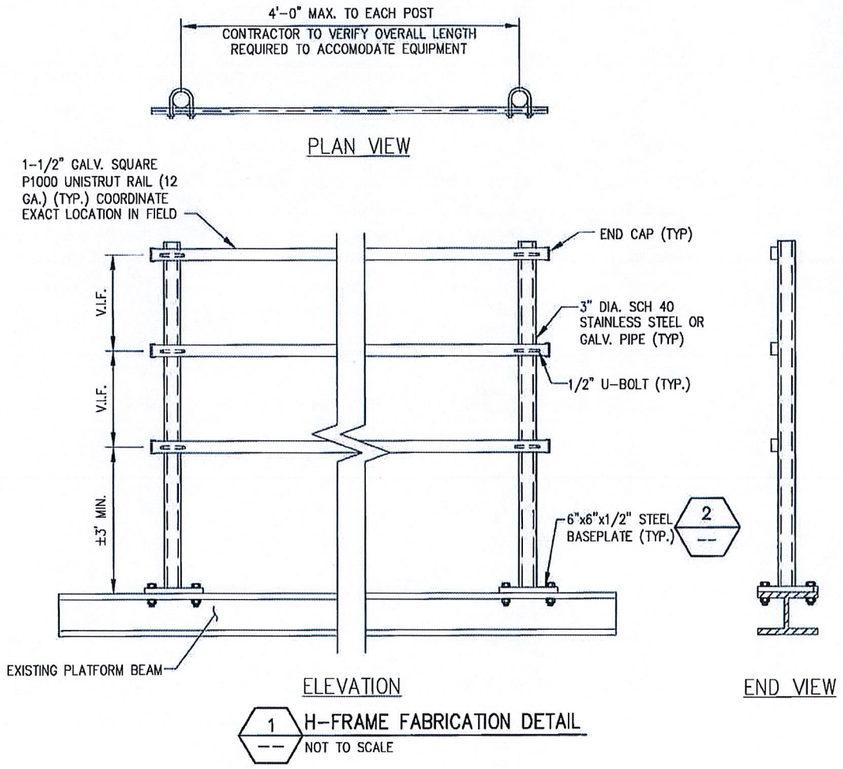
28 BREWER DR.
BLOOMFIELD, CT 06002

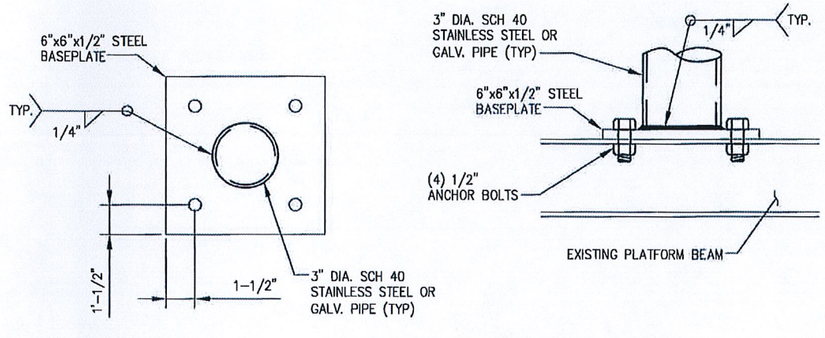
Prepared For
Sprint VISION

Drawing Scale: AS NOTED
Date: 11/28/12

Drawing Title
ANTENNA CABLE RISER AND GPS DETAILS

Drawing Number
C6





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Fax # (518) 690-0793

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

No.	Submittal / Revision	App'd	Date
1	REVISED PER COMMENTS	KMF	1/28/13
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28 BREWER DR.
BLOOMFIELD, CT 08002

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
11/28/12

Drawing Title
EQUIPMENT DETAILS

Drawing Number
C7

		Market	Northern Connecticut		
		Cascade ID	CT03XC076		
			SECTOR 1	SECTOR 2	SECTOR 3
	Split sector present		No	No	No
1900	1900MHz_Azimuth		30	150	250
	1900MHz_No_of_Antennas		1	1	1
	1900MHz_RADCenter(ft)		120	120	120
	1900MHz_Antenna Make		RFS	RFS	RFS
	1900MHz_Antenna Model		APXV9ERR18-C-A20	APXV5PP18-C-A20	APXV5PP18-C-A20
	1900MHz_Horizontal_Beamwidth		80	65	65
	1900MHz_Vertical_Beamwidth		5.5	5.5	5.5
	1900MHz_AntennaHeight (ft)		6	6	6
	1900MHz_AntennaGain(dBd)		14.9	15.9	15.9
	1900MHz_E_Tilt		0	-2	0
	1900MHz _M_Tilt		0	0	0
	1900MHz_Carrier_Forecast_Year_2013		6	6	6
	1900MHz_RRH Manufacturer		ALU	ALU	ALU
	1900MHz_RRH Model		RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz
	1900MHz_RRH Count		2	2	2
	1900MHz_RRH Location		Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
	1900MHz Combiner Model		IBC1900BB-1 and IBC1900HG-2A	IBC1900BB-1 and IBC1900HG-2A	IBC1900BB-1 and IBC1900HG-2A
	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)		6	6	6
	1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable)		LCF12-50J	LCF12-50J	LCF12-50J
	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		30	150	250
	800MHz_No_of_Antennas		0	0	0
	800MHz_RADCenter(ft)		120	120	120
	800MHz_AntennaMake		RFS	RFS	RFS
	800MHz_AntennaModel		APXV9ERR18-C-A20 (Shared w/1900)	APXV5PP18-C-A20 (Shared w/1900)	APXV5PP18-C-A20 (Shared w/1900)
	800MHz_Horizontal_Beamwidth		80	65	65
	800MHz_Vertical_Beamwidth		10.5	11.5	11.5
	800MHz_AntennaHeight (ft)		6	6	6
	800MHz_AntennaGain (dBd)		11.9	13.4	13.4
	800MHz_E_Tilt		-8	-8	0
	800MHz_M_Tilt		0	0	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 *		128	128	128
Comments	* If plumbing scenario does not match the material received, please contact your Construction Manager				
	11/9/2012				

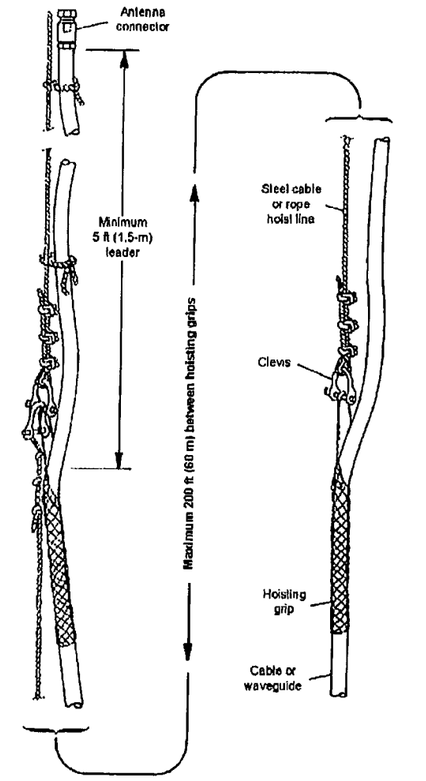
NOTE:
RFDS SHOWN PROVIDED BY SPRINT DATED 11/9/12.

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

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



2 HOIST GRIP DETAIL
NOT TO SCALE

NOTE:
1. REFER TO: CONSTRUCTION STANDARDS-SPRINT DOCUMENT: "EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV 4.0 – 02.15.2011.DOCM"
2. REFER TO: "WEATHERPROOFING SPECS: EXCERPT EXH A – WTHRPRF – STD CONSTR SPECS._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.

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Project Number
284-048

Project Title
MTN. VIEW CEMETARY (FILLEY PARK)
CT03XC076

28 BREWER DR.
BLOOMFIELD, CT 06002

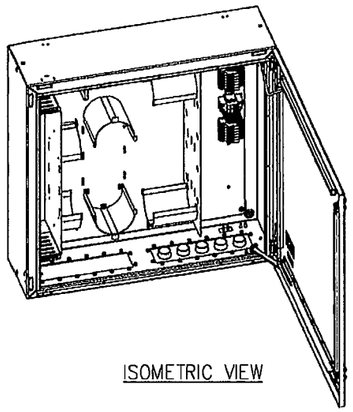
Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

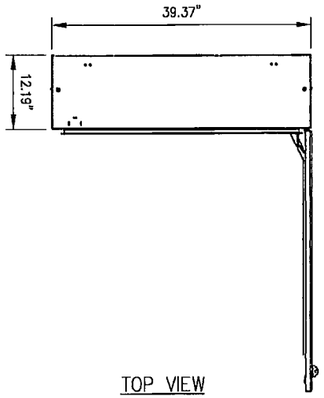
Date:
11/28/12

Drawing Title
RF AND CABLE DETAILS

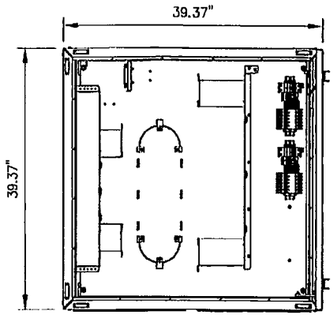
Drawing Number
C8



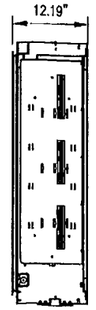
ISOMETRIC VIEW



TOP VIEW



FRONT VIEW



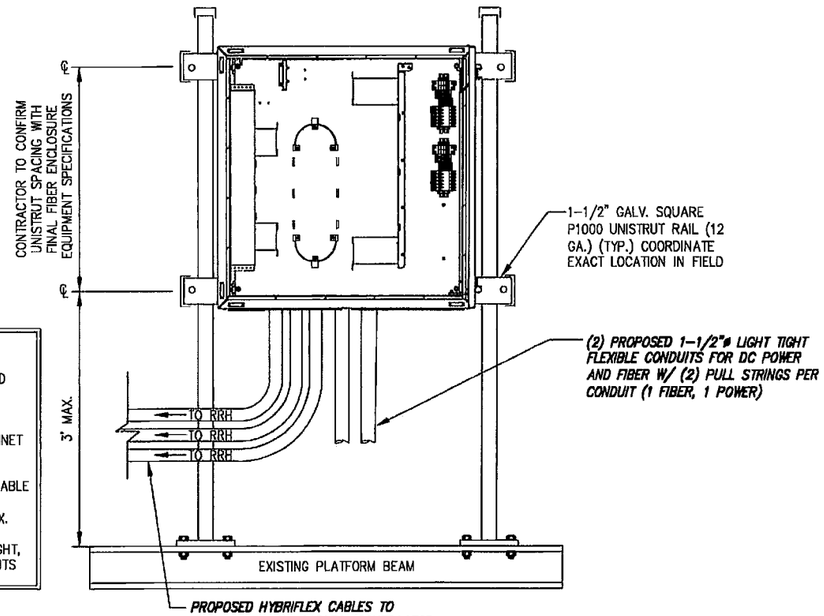
SIDE VIEW

1 DISTRIBUTION BOX DETAIL
NOT TO SCALE

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.

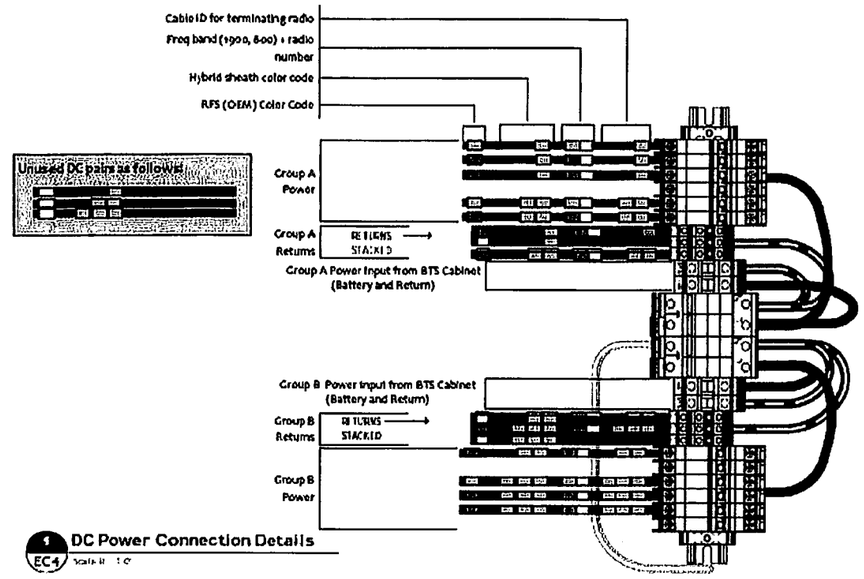
– DISTRIBUTION BOX IS KITTED WITH 2 AWG, POWER CABLE 35' x 2EA. RUNS RED AND 2EA. RUNS BLACK. THIS SHOULD BE COILED AND LEFT INSIDE DISTRIBUTION BOX.

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

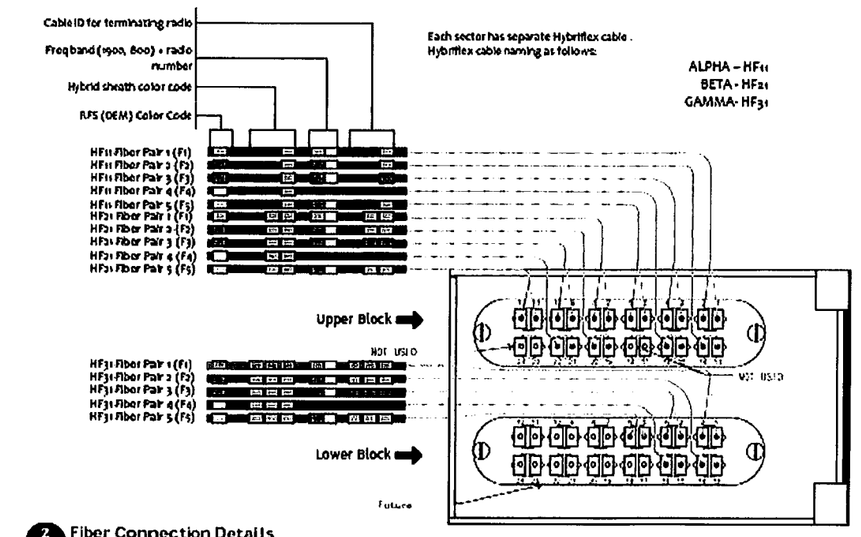


NOTE:
1. ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT–DIPPED GALVANIZED FINISH.
2. MOUNT FIBER AND POWER DISTRIBUTION BOX WITH FOUR (4) 1/4"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.

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



1 EC4 DC Power Connection Details



2 EC4 Fiber Connection Details

SCENARIO 128 v2.0

3 FIBER & DC CONNECTION DETAILS
NOT TO SCALE

INFINIGY Design. Build. Deliver.
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STATE OF CONNECTICUT
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No. 24705
PROFESSIONAL ENGINEER

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28 BREWER DR. BLOOMFIELD, CT 06002

Prepared For
Sprint VISION

Drawing Scale: AS NOTED
Date: 11/28/12

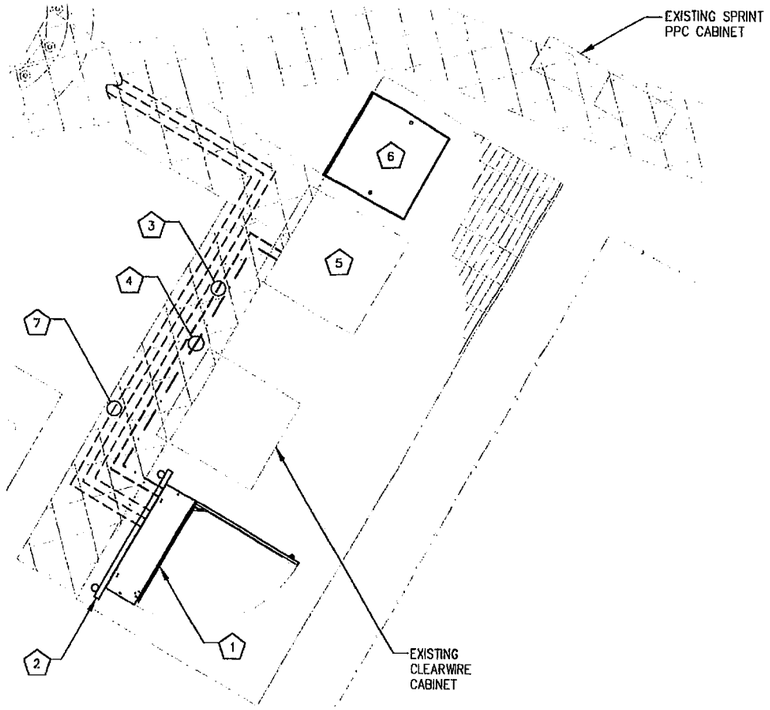
Drawing Title
FIBER DISTRIBUTION BOX DETAILS

Drawing Number
C9

CODED NOTES:

1. *PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO NEW H-FRAME*
2. *PROPOSED H-FRAME FURNISHED AND INSTALLED BY CONTRACTOR*
3. *PROPOSED 1-1/2" LIQUID TIGHT CONDUIT WITH PULL-STRING FOR TELCO FROM FIBER JUNCTION BOX TO RADIO EQUIPMENT CABINET, 10'*
4. *PROPOSED 1-1/2" LIQUID TIGHT CONDUIT WITH PULL-STRING FOR DC POWER FROM FIBER JUNCTION BOX TO RADIO EQUIPMENT CABINET, 9'*
5. *PROPOSED RETRO FIT OF MODCELL 4.0 BTS CABINET*
6. *PROPOSED BATTERY BACKUP CABINET*
7. *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
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

ELECTRICAL NOTES:

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

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

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).

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

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

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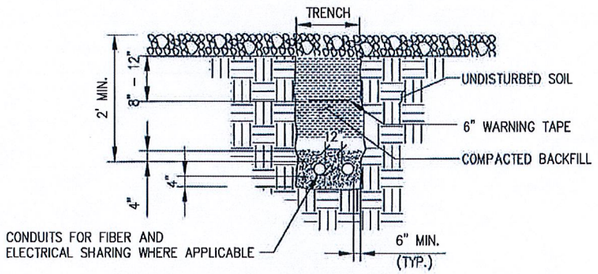
Drawing Scale:
AS NOTED

Date:
11/28/12

Drawing Title
UTILITY SITE PLAN

Drawing Number
E1

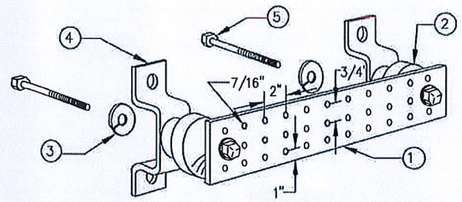
GROUNDING NOTES:
IN ADDITION TO POWER SERVICE GROUNDING AS REQUIRED BY NEC. CONTRACTOR SHALL BE RESPONSIBLE TO COORD AND INSTALL ALL SURGE AND LIGHTING PROTECTION GROUNDING AS REQUIRED AND SPECIFIED BY SPRINT.



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

*HAND DIG INSIDE COMPOUND

1 UTILITY TRENCH DETAIL
NOT TO SCALE

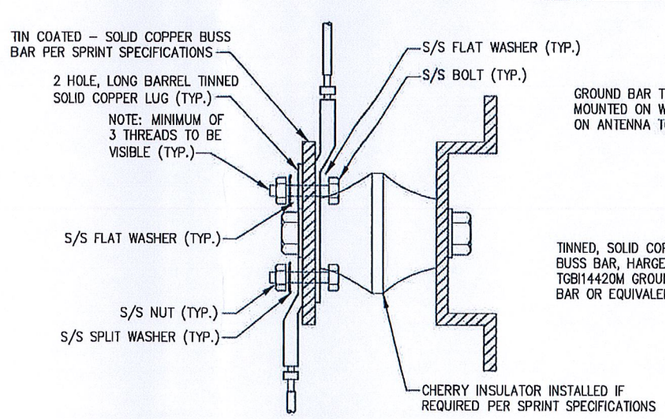


LEGEND

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

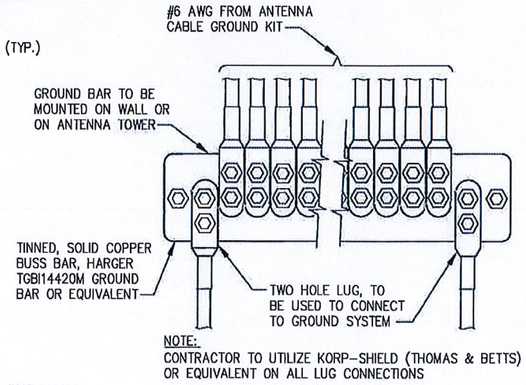
NOTE:
1) ALL MOUNTING HARDWARE CAN ALSO BE USED ON 6", 12", 18", ETC. GROUND BARS.
2) ENTIRE ESSEMBLY AVAILABLE FROM NEWTON INSTRUMENT CO. CAT. NO. 2106060010 OR AS HARGER TGBI14420M.

GROUND BAR



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

GROUND LUG



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

ANTENNA GROUND BAR

2 GROUND BAR DETAILS
NOT TO SCALE

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LICENSED PROFESSIONAL ENGINEER

No	Submittal / Revision	App'd	Date
1	REVISED PER COMMENTS	KMF	1/28/13
0	ISSUED FOR REVIEW	AHS	11/28/12

Drawn: AHS Date: 11/28/12
Designed: AHS Date: 11/28/12
Checked: AGF Date: 11/28/12

Project Number
294-046

Project Title
MTN. VIEW CEMETARY (FILLEY PARK)
CT03XC076

28 BREWER DR.
BLOOMFIELD, CT 06002

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
11/28/12

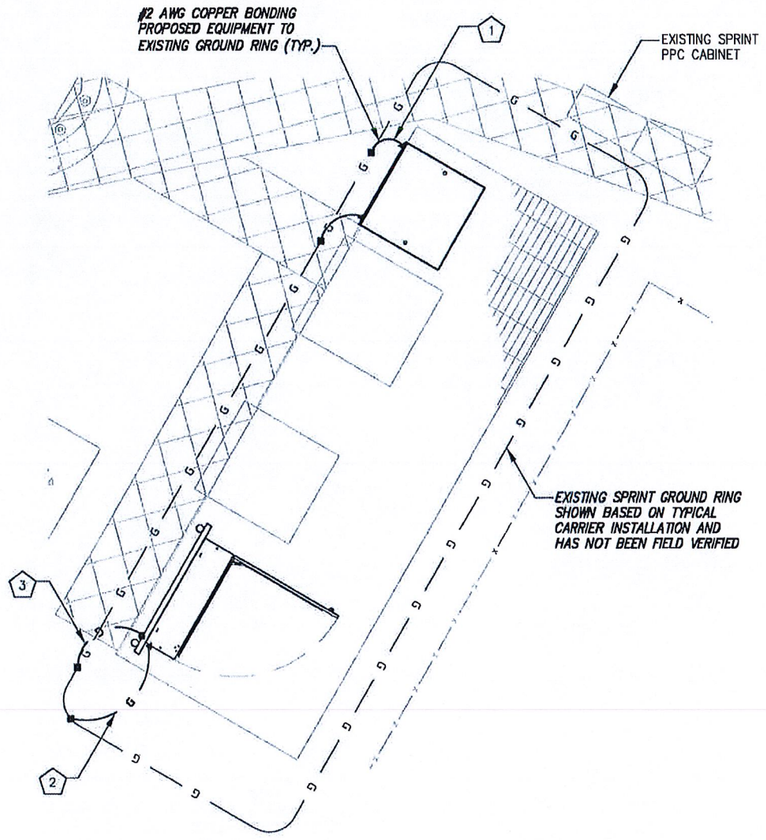
Drawing Title
DETAILS

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*

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



CALLED NORTH

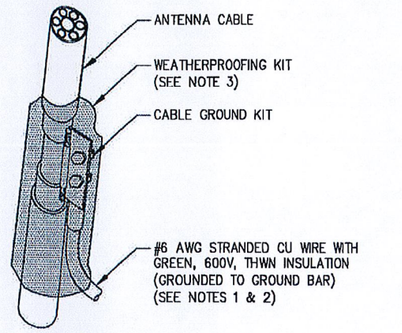
1 — EQUIPMENT GROUNDING PLAN
SCALE: AS NOTED

GRAPHIC SCALE

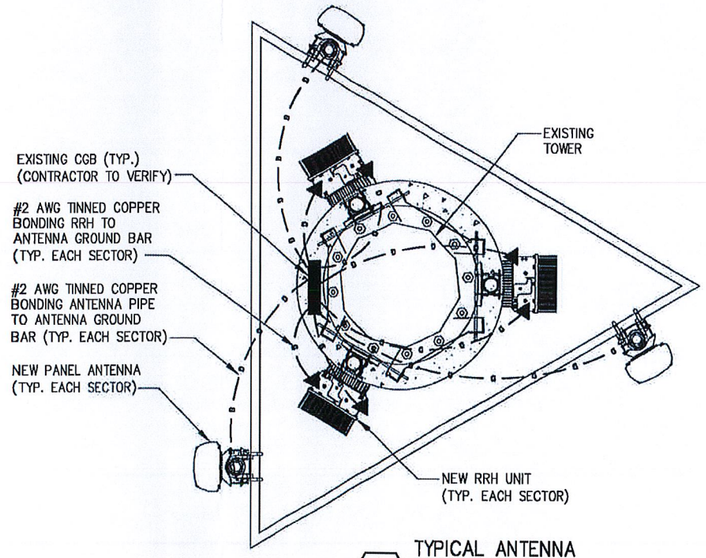
4' 2' 0 2' 4'

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

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.

GROUNDING NOTES:

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

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

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28 BREWER DR.
BLOOMFIELD, CT 06002

Prepared For: Sprint VISION

Drawing Scale: AS NOTED
Date: 11/28/12

Drawing Title: **GROUNDING PLAN AND DETAILS**

Drawing Number: **E3**

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

Sprint Existing Facility

Site ID: CT03XC076

Mountain View Cemetery (Filley Park)
28 Brewer Drive
Bloomfield, CT 06002

December 12, 2012

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

EBI Consulting
environmental | engineering | due diligence

December 12, 2012

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

Re: Emissions Values for Site: **CT03XC076 – Mountain View Cemetery (Filley Park)**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 28 Brewer Drive, Bloomfield, 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 28 Brewer Drive, Bloomfield, 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) 6 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

6) The antenna mounting height centerline of the proposed antennas is **120 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	CT03XC076 - Mountain View Cemetery (Filley Park)
Site Addresss	28 Brewer Drive, Bloomfield, CT, 06002
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	6	120	15.9	120	114	1/2 "	0.5	0	4160.8422	115.1006	11.51006%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	120	114	1/2 "	0.5	0	389.96892	10.78764	1.90258%
														Sector total Power Density Value:		13.413%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	6	120	15.9	120	114	1/2 "	0.5	0	4160.8422	115.1006	11.51006%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	120	114	1/2 "	0.5	0	389.96892	10.78764	1.90258%
														Sector total Power Density Value:		13.413%	

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	6	120	15.9	120	114	1/2 "	0.5	0	4160.8422	115.1006	11.51006%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	120	114	1/2 "	0.5	0	389.96892	10.78764	1.90258%
														Sector total Power Density Value:		13.413%	

Site Composite MPE %	
Carrier	MPE %
Sprint	40.238%
T-Mobile	8.960%
Verizon Wireless	28.700%
AT&T	40.740%
Clearwire	1.330%
Town of Bloomfield	3.410%
Total Site MPE %	123.378%

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Summary

All calculations performed for this analysis yielded results that were above the allowable limits for general public exposure to RF Emissions. However, the area surrounding the tower is a controlled fenced compound, occupational threshold limits would apply to this area.

The anticipated Maximum Composite contributions from the Sprint facility are **40.238% (13.413% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level. This is equal to **8.048% (2.683% from each sector)** of the allowable FCC established occupational limit considering all three sectors simultaneously sampled at the ground level

The anticipated composite MPE value for this site assuming all carriers present is **123.378%** of the allowable FCC established general public limit sampled at the ground level. This is equal to **24.676%** of the allowable FCC established occupational 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. Although values could potentially exceed the FCC established general public limit at the base of the tower, this area is well within the FCC established occupational limit for this same area and should be considered in compliance since it is a controlled area.

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: December 5, 2012

Veronica Harris
Crown Castle USA Inc.
1200 McArthur Blvd
Mahwah, NJ 07430
201.236.9094

Paul J. Ford and Company
250 East Broad Street, Suite 1500
Columbus, Ohio 43215
614.221.6679
kmahlum@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC076
	Carrier Site Name:	CT03XC076
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	190523
	Crown Castle Work Order Number:	540551
	Crown Castle Application Number:	165361 Rev. 1
Engineering Firm Designation:	**Paul J. Ford Project Number:**	37512-2736 B (Revised)
Site Data:	**28 Brewer Dr., BLOOMFIELD, Hartford County, CT**	
	Latitude *41° 50' 6.57"*, Longitude *-72° 44' 28.2"*	
	120 Foot - Monopole Tower	

Dear Veronica Harris,

Paul J. Ford 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 497900, in accordance with application 165361, revision 1.

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

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

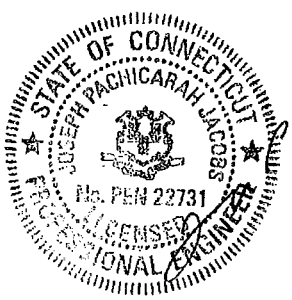
The structural analysis was performed for this tower in accordance with the requirements of the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the 2005 Connecticut Building Code using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.0 inch ice thickness and 50 mph under service loads.

We at *Paul J. Ford* 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:

Kevin Mahlum, E.I.
Structural Engineer

tnxTower Report - version 6.0.3.0



DEC 05 2012

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

Date: **December 5, 2012**

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Subject: **Structural Analysis Report**

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	Carrier Site Number:	CT03XC076
	Carrier Site Name:	CT03XC076
Crown Castle Designation:	**Crown Castle BU Number:**	876329
	Crown Castle Site Name:	MTN. VIEW CEM. (FILLEY PARK)
	Crown Castle JDE Job Number:	190523
	Crown Castle Work Order Number:	540551
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Respectfully submitted by:

Kevin Mahlum, E.I.
Structural Engineer

tnxTower Report - version 6.0.3.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ROHN in October of 1996. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the 2005 Connecticut Building Code using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.0 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
118.0	118.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	-
		6		PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Side Arm Mount [SO 102-3]			
116.0	120.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Pipe	3	1-1/4	-
		2		APXVSPP18-C-A20 w/ Pipe			
		3		IBC1900BB-1			
		3		IBC1900HG-2A			

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
116.0	120.0	6	ems wireless	RR90-17-00DP w/ Pipe	6	1-5/8	3
		3	kathrein	840 10054 w/ Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD	2	1/2	
		1		A-ANT-18G-1-C	6	5/16	1
	116.0	1	dragonwave	A-ANT-18G-2-C	2	2" Conduit	
		2		HORIZON COMPACT			
107.0	107.0	1	tower mounts	Platform Mount [LP 501-1]	18	1-5/8	1
		3	andrew	ONEBASE TWIN DUAL DUPLEX TMA			
		3	ems wireless	DR65-18-00DP w/ Pipe			
		3	rfs celwave	APX16DWV-16DWV-S-E-ACU w/ Pipe			
		1	tower mounts	Platform Mount [LP 712-1]			
99.0	100.0	9	css	DUO1417-8686 w/ Pipe	-	-	3
		3	communication components inc.	DTMABP7819VG12A			
		2	kmw communications	AM-X-CD-14-65-00T-RET w/ Pipe	2	3/4	2
		2		AM-X-CD-16-65-00T-RET w/ Pipe	1	3/8	
		1	raycap	DC6-48-60-18-8F			
		2	powerwave technologies	P65-17-XLH-RR w/ Pipe			
		3		7770.00 w/ Pipe			
		6		LGP13519	12	7/8	1
97.0	99.0	1	tower mounts	Platform Mount [LP 501-1]			
	97.0	6	ericsson	RRUS-11	-	-	2
		1	tower mounts	Side Arm Mount [SO 102-3]			
59.0	63.0	1	decibel	DB536	1	1/2	1
	59.0	1	tower mounts	Side Arm Mount [SO 702-1]			
50.0	50.0	1	unknown	GPS	1	1-5/8	1

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 08/09/96	1529722	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 34738SW, 10/11/96	1616549	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn, 34738SW, 10/17/96	2158527	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Semaan, CT03XC076, 08/25/03	-	Semaan
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 080063.01, 01/18/08	2205450	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B&T, 79582, 11/03/08	2343687	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2011111.27, 05/31/11	2917489	CCISITES

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) Monopole was reinforced in conformance with the referenced modification drawings.
5) The bridge stiffeners take the entire load through the flange connection.
6) The 60' elevation bridge jump is designed exactly the same as the 30' elevation bridge jump.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford 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 (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 90	Pole	P24x1/4	1	-7.67	589.19	84.1	Pass
L2	90 - 80	Pole	P24x3/8	2	-9.03	934.94	75.9	Pass
L3	80 - 68.5	Pole	RPS 24" x 0.62517"	3	-11.32	1212.06	85.5	Pass
L4	68.5 - 68	Pole	RPS 24" x 0.88003"	4	-11.45	1685.53	63.6	Pass
L5	68 - 63.5	Pole	RPS 24" x 0.61306"	5	-12.34	1362.11	86.5	Pass
L6	63.5 - 60	Pole	RPS 24" x 1.13718"	6	-13.45	2216.54	60.4	Pass
L7	60 - 56.5	Pole	RPS 30" x 0.90733"	7	-14.61	2333.99	48.2	Pass
L8	56.5 - 45.417	Pole	RPS 30" x 0.55714"	8	-17.05	1565.42	88.7	Pass
L9	45.417 - 36.417	Pole	RPS 30" x 0.70733"	9	-19.47	1975.72	83.8	Pass
L10	36.417 - 33.5	Pole	RPS 30" x 0.86188"	10	-20.39	2395.96	73.4	Pass
L11	33.5 - 32.75	Pole	RPS 30" x 1.23648"	11	-20.71	3145.60	58.0	Pass
L12	32.75 - 30	Pole	RPS 30" x 0.90733"	12	-21.61	2335.32	80.0	Pass
L13	30 - 26.5	Pole	RPS 36" x 0.7835"	13	-22.81	2484.77	65.3	Pass
L14	26.5 - 20.583	Pole	RPS 36" x 0.62423"	14	-24.49	1990.28	88.3	Pass
L15	20.583 - 2	Pole	RPS 36" x 0.84085"	15	-31.25	2662.29	85.4	Pass
L16	2 - 0	Pole	RPS 36" x 0.9234"	16	-32.04	2864.71	81.6	Pass
							Summary	
						Pole (L5)	88.7	Pass
						Rating =	88.7	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1		90	56.7	Pass
1	Flange	60	60.3	Pass
1		30	96.3	Pass
1, 3	Anchor Rods	0	79.8	Pass
1	Base Plate	0	69.0	Pass
1	Base Foundation Steel Interaction	0	74.4	Pass
1, 4	Base Foundation Soil Interaction	0	34.3	Pass

Structure Rating (max from all components) =	96.3%

Notes:

1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Capacities up to 105% are considered acceptable based on analysis methods used.
3) Worst case scenario between existing and post installed anchors.
4) Foundation Analysis Notes: According to the procedures prescribed and agreed to by the Crown Castle Engineering Foundation Committee, held in January 2010, the existing caisson foundation was analyzed using the methodology in the software 'PLS-Caisson' (Version 8.10, or newer, by Power Line Systems, Inc.). Per the methods in PLS-Caisson, the soil reactions of cohesive soils are calculated using 8CD independent of the depth of the soil layer. The depth of soil to be ignored at the top of the caisson is the greater of the geotechnical report's recommendation, the frost depth of the site or half of the caisson diameter.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.0000 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.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole 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		

Pole Section Geometry

Section	*Elevation* ft	*Section Length* ft	*Pole Size*	*Pole Grade*	*Socket Length* ft
L1	120.00-90.00	30.00	P24x1/4	A53-B-42 (42 ksi)	5.00
L2	85.00-75.00	10.00	P24x3/8	A53-B-42 (42 ksi)	5.00
L3	75.00-63.50	11.50	RPS 24" x 0.62517"	Reinf 33.01 ksi (33 ksi)	5.00
L4	63.50-63.00	0.50	RPS 24" x 0.88003"	Reinf 32.97 ksi (33 ksi)	5.00
L5	63.00-58.50	4.50	RPS 24" x 0.61306"	Reinf 37.81 ksi (38 ksi)	5.00

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L6	58.50-55.00	3.50	RPS 24" x 1.13718"	Reinf 33.93 ksi (34 ksi)	5.00
L7	55.00-51.50	3.50	RPS 30" x 0.90733"	Reinf 35.19 ksi (35 ksi)	5.00
L8	51.50-40.42	11.08	RPS 30" x 0.55714"	Reinf 37.98 ksi (38 ksi)	5.00
L9	40.42-31.42	9.00	RPS 30" x 0.70733"	Reinf 37.95 ksi (38 ksi)	5.00
L10	31.42-28.50	2.92	RPS 30" x 0.86188"	Reinf 37.97 ksi (38 ksi)	5.00
L11	28.50-27.75	0.75	RPS 30" x 1.23648"	Reinf 35.20 ksi (35 ksi)	5.00
L12	27.75-25.00	2.75	RPS 30" x 0.90733"	Reinf 35.21 ksi (35 ksi)	5.00
L13	25.00-21.50	3.50	RPS 36" x 0.7835"	Reinf 35.84 ksi (36 ksi)	5.00
L14	21.50-15.58	5.92	RPS 36" x 0.62423"	Reinf 35.87 ksi (36 ksi)	5.00
L15	15.58-3.00	18.58	RPS 36" x 0.84085"	Reinf 35.84 ksi (36 ksi)	5.00
L16	3.00-1.00	2.00	RPS 36" x 0.9234"	Reinf 35.20 ksi (35 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 120.00-90.00				1	1	1		
L2 90.00-80.00				1	1	1		
L3 80.00-68.50				1	1	1		
L4 68.50-68.00				1	1	1		
L5 68.00-63.50				1	1	1		
L6 63.50-60.00				1	1	1		
L7 60.00-56.50				1	1	1		
L8 56.50-45.42				1	1	1		
L9 45.42-36.42				1	1	1		
L10 36.42-33.50				1	1	1		
L11 33.50-32.75				1	1	1		
L12 32.75-30.00				1	1	1		
L13 30.00-26.50				1	1	1		
L14 26.50-20.58				1	1	1		

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
L15 20.58-2.00				1	1	1		
L16 2.00-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	116.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
						2" Ice	0.00	1.08
						4" Ice	0.00	1.08
*								
ATCB-B01-001(5/16)	C	No	Inside Pole	116.00 - 0.00	6	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
						2" Ice	0.00	0.07
						4" Ice	0.00	0.07
FSJ4-50B(1/2")	C	No	Inside Pole	116.00 - 0.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
						2" Ice	0.00	0.14
						4" Ice	0.00	0.14
2" Conduit	C	No	Inside Pole	116.00 - 0.00	2	No Ice	0.00	0.95
						1/2" Ice	0.00	0.95
						1" Ice	0.00	0.95
						2" Ice	0.00	0.95
						4" Ice	0.00	0.95
***								
AL7-50(1 5/8)	C	No	CaAa (Out Of Face)	107.00 - 0.00	1	No Ice	0.20	0.52
						1/2" Ice	0.30	2.02
						1" Ice	0.40	4.14
						2" Ice	0.60	10.20
						4" Ice	1.00	29.65
AL7-50(1 5/8)	C	No	CaAa (Out Of Face)	107.00 - 0.00	5	No Ice	0.00	0.52
						1/2" Ice	0.00	2.02
						1" Ice	0.00	4.14
						2" Ice	0.00	10.20
						4" Ice	0.00	29.65
FLC 158-50J(1-5/8")	C	No	Inside Pole	107.00 - 0.00	12	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
						2" Ice	0.00	0.92
						4" Ice	0.00	0.92
***								
LDF5-50A(7/8")	C	No	Inside Pole	99.00 - 0.00	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
FB-L98B-002-75000(	C	No	Inside Pole	99.00 - 0.00	1	No Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
3/8")						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	99.00 - 0.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
***								
FLC 158-50J(1-5/8")	C	No	Inside Pole	87.00 - 0.00	12	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
						2" Ice	0.00	0.92
						4" Ice	0.00	0.92
***								
LDF4-50A(1/2")	C	No	Inside Pole	59.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
***								
C8x18.75	C	No	CaAa (Out Of Face)	33.50 - 0.00	2	No Ice	0.42	0.00
						1/2" Ice	0.53	0.00
						1" Ice	0.64	0.00
						2" Ice	0.87	0.00
						4" Ice	1.31	0.00
C8x11.5 brace	C	No	CaAa (Out Of Face)	70.00 - 33.50	2	No Ice	1.33	0.00
						1/2" Ice	1.43	0.00
						1" Ice	1.56	0.00
						2" Ice	1.78	0.00
						4" Ice	2.22	0.00
******								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	120.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.332	0.44
L2	90.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.960	0.33
L3	80.00-68.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.254	0.42
L4	68.50-68.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.431	0.02
L5	68.00-63.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.882	0.16
L6	63.50-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	10.019	0.13
L7	60.00-56.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	10.019	0.13

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L8	56.50-45.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	31.727	0.41
L9	45.42-36.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	25.764	0.34
L10	36.42-33.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.350	0.11
L11	33.50-32.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.779	0.03
L12	32.75-30.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.855	0.10
L13	30.00-26.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.634	0.13
L14	26.50-20.58	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.144	0.22
L15	20.58-2.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	19.295	0.69
L16	2.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.077	0.07

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	120.00-90.00	A	1.149	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.239	0.90
L2	90.00-80.00	A	1.120	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.200	0.59
L3	80.00-68.50	A	1.102	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.524	0.71
L4	68.50-68.00	A	1.091	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.783	0.03
L5	68.00-63.50	A	1.086	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.032	0.27
L6	63.50-60.00	A	1.078	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.451	0.21
L7	60.00-56.50	A	1.071	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.434	0.21
L8	56.50-45.42	A	1.054	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	39.252	0.67
L9	45.42-36.42	A	1.026	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	31.716	0.54
L10	36.42-33.50	A	1.007	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.243	0.17
L11	33.50-32.75	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.262	0.04

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L12	32.75-30.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.628	0.16
L13	30.00-26.50	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.890	0.21
L14	26.50-20.58	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.957	0.35
L15	20.58-2.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	31.271	1.10
L16	2.00-0.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.366	0.12

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	120.00-90.00	-0.1367	0.0789	-0.2577	0.1488
L2	90.00-80.00	-0.2319	0.1339	-0.4186	0.2417
L3	80.00-68.50	-0.5554	0.3207	-0.7144	0.4125
L4	68.50-68.00	-1.5295	0.8831	-1.6118	0.9306
L5	68.00-63.50	-1.5295	0.8831	-1.6115	0.9304
L6	63.50-60.00	-1.5295	0.8831	-1.6110	0.9301
L7	60.00-56.50	-1.7336	1.0009	-1.8516	1.0690
L8	56.50-45.42	-1.7336	1.0009	-1.8500	1.0681
L9	45.42-36.42	-1.7336	1.0009	-1.8474	1.0666
L10	36.42-33.50	-1.7336	1.0009	-1.8455	1.0655
L11	33.50-32.75	-0.9530	0.5502	-1.2566	0.7255
L12	32.75-30.00	-0.9530	0.5502	-1.2565	0.7254
L13	30.00-26.50	-1.0020	0.5785	-1.3523	0.7808
L14	26.50-20.58	-1.0020	0.5785	-1.3523	0.7808
L15	20.58-2.00	-1.0020	0.5785	-1.3523	0.7808
L16	2.00-0.00	-1.0020	0.5785	-1.3523	0.7808

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0.00	0.0000	118.00	No Ice 1/2"	2.71 2.95	2.61 2.85	0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
Side Arm Mount [SO 102-3]	C	None		0.0000	118.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	3.00 3.48 3.96 4.92 6.84	3.00 3.48 3.96 4.92 6.84	0.08 0.11 0.14 0.20 0.32
***									
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	7.47 8.66 9.56 11.39 15.53	0.09 0.16 0.23 0.42 0.94
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.22 0.41 0.91
IBC1900HG-2A	A	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900HG-2A	B	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900HG-2A	C	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
IBC1900BB-1	A	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900BB-1	B	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
IBC1900BB-1	C	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.13 1.27 1.43 1.76 2.53	0.53 0.65 0.77 1.04 1.69	0.02 0.03 0.04 0.06 0.15
* Platform Mount [LP 501-1]	C	None		0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	32.04 45.28 58.51 84.98 137.92	32.04 45.28 58.51 84.98 137.92	0.98 1.28 1.57 2.16 3.33
* 840 10054 w/ Mount Pipe	A	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.41 5.83 6.26 7.16 9.09	2.39 2.92 3.47 4.61 7.32	0.05 0.09 0.13 0.23 0.53
840 10054 w/ Mount Pipe	B	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.41 5.83 6.26 7.16 9.09	2.39 2.92 3.47 4.61 7.32	0.05 0.09 0.13 0.23 0.53
840 10054 w/ Mount Pipe	C	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.41 5.83 6.26 7.16 9.09	2.39 2.92 3.47 4.61 7.32	0.05 0.09 0.13 0.23 0.53
WIMAX DAP HEAD	A	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
WIMAX DAP HEAD	B	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
WIMAX DAP HEAD	C	From Leg	4.00 0.00 4.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 1.99 2.18 2.59 3.51	0.78 0.92 1.07 1.39 2.14	0.03 0.04 0.06 0.09 0.20
(2) HORIZON COMPACT	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	0.84 0.97 1.10	0.43 0.52 0.63	0.01 0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
						4" Ice			
***									
DR65-18-00DP w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	10.40	6.73	0.07
						1/2" Ice	11.19	8.86	0.14
						1" Ice	11.99	11.02	0.22
						2" Ice	13.55	14.26	0.42
						4" Ice	16.72	19.69	1.02
DR65-18-00DP w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	10.40	6.73	0.07
						1/2" Ice	11.19	8.86	0.14
						1" Ice	11.99	11.02	0.22
						2" Ice	13.55	14.26	0.42
						4" Ice	16.72	19.69	1.02
DR65-18-00DP w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	10.40	6.73	0.07
						1/2" Ice	11.19	8.86	0.14
						1" Ice	11.99	11.02	0.22
						2" Ice	13.55	14.26	0.42
						4" Ice	16.72	19.69	1.02
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	6.94	3.29	0.06
						1/2" Ice	7.44	4.00	0.10
						1" Ice	7.94	4.66	0.16
						2" Ice	8.98	6.04	0.28
						4" Ice	11.17	9.02	0.65
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	6.94	3.29	0.06
						1/2" Ice	7.44	4.00	0.10
						1" Ice	7.94	4.66	0.16
						2" Ice	8.98	6.04	0.28
						4" Ice	11.17	9.02	0.65
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	6.94	3.29	0.06
						1/2" Ice	7.44	4.00	0.10
						1" Ice	7.94	4.66	0.16
						2" Ice	8.98	6.04	0.28
						4" Ice	11.17	9.02	0.65
ONEBASE TWIN DUAL DUPLEX TMA	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	0.67	0.31	0.01
						1/2" Ice	0.79	0.39	0.02
						1" Ice	0.91	0.49	0.02
						2" Ice	1.18	0.70	0.04
						4" Ice	1.82	1.23	0.10
ONEBASE TWIN DUAL DUPLEX TMA	B	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	0.67	0.31	0.01
						1/2" Ice	0.79	0.39	0.02
						1" Ice	0.91	0.49	0.02
						2" Ice	1.18	0.70	0.04
						4" Ice	1.82	1.23	0.10
ONEBASE TWIN DUAL DUPLEX TMA	C	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice	0.67	0.31	0.01
						1/2" Ice	0.79	0.39	0.02
						1" Ice	0.91	0.49	0.02
						2" Ice	1.18	0.70	0.04
						4" Ice	1.82	1.23	0.10
Platform Mount [LP 712-1]	C	None		0.0000	107.00	No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96
						2" Ice	46.17	46.17	2.58
						4" Ice	67.81	67.81	3.82
***									

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 K
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) LGP13519	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) LGP13519	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) LGP13519	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.70 12.42 13.15 14.64 17.91	8.94 10.45 11.99 14.31 19.14	0.10 0.18 0.28 0.51 1.14
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
(2) AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	0.03 0.08 0.13 0.25 0.61
DC6-48-60-18-8F	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	0.02 0.04 0.06 0.11 0.24
DTMABP7819VG12A	A	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.02 0.03 0.04 0.06 0.14

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 K
						4" Ice			
DTMABP7819VG12A	B	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.02 0.03 0.04 0.06 0.14
DTMABP7819VG12A	C	From Leg	4.00 0.00 1.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.02 0.03 0.04 0.06 0.14
Platform Mount [LP 501-1]	C	None		0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	32.04 45.28 58.51 84.98 137.92	32.04 45.28 58.51 84.98 137.92	0.98 1.28 1.57 2.16 3.33
*									
(2) RRUS-11	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
Side Arm Mount [SO 102-3]	C	None		0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.48 3.96 4.92 6.84	3.00 3.48 3.96 4.92 6.84	0.08 0.11 0.14 0.20 0.32
***									
DB536	A	From Leg	4.00 0.00 4.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.83 3.99 5.16 7.08 9.94	2.83 3.99 5.16 7.08 9.94	0.02 0.04 0.06 0.14 0.40
Side Arm Mount [SO 702-1]	A	None		0.0000	59.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.00 1.00 1.00 1.00 1.00	1.43 2.05 2.67 3.91 6.39	0.03 0.04 0.05 0.07 0.12
***									
GPS	A	From Leg	4.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.17 0.24 0.31 0.48 0.92	0.17 0.24 0.31 0.48 0.92	0.00 0.00 0.00 0.01 0.05
******									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-18G-1-C	B	Paraboloid w/Radome	From Leg	4.00 0.00 0.00	0.0000		116.00	1.27	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.28 4.01 4.30 4.88 6.04	0.02 0.04 0.05 0.07 0.11
A-ANT-18G-2-C	B	Paraboloid w/Radome	From Leg	4.00 0.00 0.00	0.0000		116.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.72 4.01 4.30 4.88 6.04	0.03 0.04 0.05 0.07 0.11

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Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 120.00-90.00	105.00	1.392	23	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	3.332
L2 90.00-80.00	85.00	1.31	21	20.000	A	0.000	20.000	20.000	100.00	0.000	0.000
					B	0.000	20.000		100.00	0.000	0.000
					C	0.000	20.000		100.00	0.000	1.960
L3 80.00-68.50	74.25	1.261	21	23.000	A	0.000	23.000	23.000	100.00	0.000	0.000
					B	0.000	23.000		100.00	0.000	0.000
					C	0.000	23.000		100.00	0.000	6.254
L4 68.50-68.00	68.25	1.231	20	1.000	A	0.000	1.000	1.000	100.00	0.000	0.000
					B	0.000	1.000		100.00	0.000	0.000
					C	0.000	1.000		100.00	0.000	1.431
L5 68.00-63.50	65.75	1.218	20	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	12.882
L6 63.50-60.00	61.75	1.196	20	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	10.019
L7 60.00-56.50	58.25	1.176	19	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	10.019
L8 56.50-45.42	50.96	1.132	19	27.708	A	0.000	27.708	27.708	100.00	0.000	0.000
					B	0.000	27.708		100.00	0.000	0.000
					C	0.000	27.708		100.00	0.000	31.727
L9 45.42-36.42	40.92	1.063	17	22.500	A	0.000	22.500	22.500	100.00	0.000	0.000
					B	0.000	22.500		100.00	0.000	0.000
					C	0.000	22.500		100.00	0.000	25.764
L10 36.42-33.50	34.96	1.017	17	7.293	A	0.000	7.293	7.293	100.00	0.000	0.000
					B	0.000	7.293		100.00	0.000	0.000
					C	0.000	7.293		100.00	0.000	8.350
L11 33.50-32.75	33.13	1.001	16	1.875	A	0.000	1.875	1.875	100.00	0.000	0.000
					B	0.000	1.875		100.00	0.000	0.000
					C	0.000	1.875		100.00	0.000	0.779
L12 32.75-30.00	31.38	1	16	6.875	A	0.000	6.875	6.875	100.00	0.000	0.000
					B	0.000	6.875		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	6.875		100.00	0.000	2.855
L13 30.00-26.50	28.25	1	16	10.500	A	0.000	10.500	10.500	100.00	0.000	0.000
					B	0.000	10.500		100.00	0.000	0.000
					C	0.000	10.500		100.00	0.000	3.634
L14 26.50-20.58	23.54	1	16	17.751	A	0.000	17.751	17.751	100.00	0.000	0.000
					B	0.000	17.751		100.00	0.000	0.000
					C	0.000	17.751		100.00	0.000	6.144
L15 20.58-2.00	11.29	1	16	55.749	A	0.000	55.749	55.749	100.00	0.000	0.000
					B	0.000	55.749		100.00	0.000	0.000
					C	0.000	55.749		100.00	0.000	19.295
L16 2.00-0.00	1.00	1	16	6.000	A	0.000	6.000	6.000	100.00	0.000	0.000
					B	0.000	6.000		100.00	0.000	0.000
					C	0.000	6.000		100.00	0.000	2.077

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-90.00	105.00	1.392	5	1.1490	65.745	A	0.000	65.745	65.745	100.00	0.000	0.000
						B	0.000	65.745		100.00	0.000	0.000
						C	0.000	65.745		100.00	0.000	7.239
L2 90.00-80.00	85.00	1.31	5	1.1202	21.867	A	0.000	21.867	21.867	100.00	0.000	0.000
						B	0.000	21.867		100.00	0.000	0.000
						C	0.000	21.867		100.00	0.000	4.200
L3 80.00-68.50	74.25	1.261	5	1.1022	25.113	A	0.000	25.113	25.113	100.00	0.000	0.000
						B	0.000	25.113		100.00	0.000	0.000
						C	0.000	25.113		100.00	0.000	9.524
L4 68.50-68.00	68.25	1.231	4	1.0911	1.091	A	0.000	1.091	1.091	100.00	0.000	0.000
						B	0.000	1.091		100.00	0.000	0.000
						C	0.000	1.091		100.00	0.000	1.783
L5 68.00-63.50	65.75	1.218	4	1.0862	9.815	A	0.000	9.815	9.815	100.00	0.000	0.000
						B	0.000	9.815		100.00	0.000	0.000
						C	0.000	9.815		100.00	0.000	16.032
L6 63.50-60.00	61.75	1.196	4	1.0781	7.629	A	0.000	7.629	7.629	100.00	0.000	0.000
						B	0.000	7.629		100.00	0.000	0.000
						C	0.000	7.629		100.00	0.000	12.451
L7 60.00-56.50	58.25	1.176	4	1.0706	9.374	A	0.000	9.374	9.374	100.00	0.000	0.000
						B	0.000	9.374		100.00	0.000	0.000
						C	0.000	9.374		100.00	0.000	12.434
L8 56.50-45.42	50.96	1.132	4	1.0535	29.654	A	0.000	29.654	29.654	100.00	0.000	0.000
						B	0.000	29.654		100.00	0.000	0.000
						C	0.000	29.654		100.00	0.000	39.252
L9 45.42-36.42	40.92	1.063	4	1.0261	24.039	A	0.000	24.039	24.039	100.00	0.000	0.000
						B	0.000	24.039		100.00	0.000	0.000
						C	0.000	24.039		100.00	0.000	31.716
L10 36.42-33.50	34.96	1.017	4	1.0069	7.782	A	0.000	7.782	7.782	100.00	0.000	0.000
						B	0.000	7.782		100.00	0.000	0.000
						C	0.000	7.782		100.00	0.000	10.243
L11 33.50-32.75	33.13	1.001	4	1.0005	2.000	A	0.000	2.000	2.000	100.00	0.000	0.000
						B	0.000	2.000		100.00	0.000	0.000
						C	0.000	2.000		100.00	0.000	1.262
L12 32.75-30.00	31.38	1	4	1.0000	7.333	A	0.000	7.333	7.333	100.00	0.000	0.000
						B	0.000	7.333		100.00	0.000	0.000
						C	0.000	7.333		100.00	0.000	4.628
L13 30.00-26.50	28.25	1	4	1.0000	11.083	A	0.000	11.083	11.083	100.00	0.000	0.000
						B	0.000	11.083		100.00	0.000	0.000
						C	0.000	11.083		100.00	0.000	5.890
L14 26.50-20.58	23.54	1	4	1.0000	18.737	A	0.000	18.737	18.737	100.00	0.000	0.000
						B	0.000	18.737		100.00	0.000	0.000
						C	0.000	18.737		100.00	0.000	9.957
L15 20.58-2.00	11.29	1	4	1.0000	58.846	A	0.000	58.846	58.846	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	0.000	58.846		100.00	0.000	0.000
						C	0.000	58.846		100.00	0.000	31.271
L16 2.00-0.00	1.00	1	4	1.0000	6.333	A	0.000	6.333	6.333	100.00	0.000	0.000
						B	0.000	6.333		100.00	0.000	0.000
						C	0.000	6.333		100.00	0.000	3.366

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 120.00-90.00	105.00	1.392	9	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	3.332
L2 90.00-80.00	85.00	1.31	8	20.000	A	0.000	20.000	20.000	100.00	0.000	0.000
					B	0.000	20.000		100.00	0.000	0.000
					C	0.000	20.000		100.00	0.000	1.960
L3 80.00-68.50	74.25	1.261	8	23.000	A	0.000	23.000	23.000	100.00	0.000	0.000
					B	0.000	23.000		100.00	0.000	0.000
					C	0.000	23.000		100.00	0.000	6.254
L4 68.50-68.00	68.25	1.231	8	1.000	A	0.000	1.000	1.000	100.00	0.000	0.000
					B	0.000	1.000		100.00	0.000	0.000
					C	0.000	1.000		100.00	0.000	1.431
L5 68.00-63.50	65.75	1.218	8	9.000	A	0.000	9.000	9.000	100.00	0.000	0.000
					B	0.000	9.000		100.00	0.000	0.000
					C	0.000	9.000		100.00	0.000	12.882
L6 63.50-60.00	61.75	1.196	8	7.000	A	0.000	7.000	7.000	100.00	0.000	0.000
					B	0.000	7.000		100.00	0.000	0.000
					C	0.000	7.000		100.00	0.000	10.019
L7 60.00-56.50	58.25	1.176	8	8.750	A	0.000	8.750	8.750	100.00	0.000	0.000
					B	0.000	8.750		100.00	0.000	0.000
					C	0.000	8.750		100.00	0.000	10.019
L8 56.50-45.42	50.96	1.132	7	27.708	A	0.000	27.708	27.708	100.00	0.000	0.000
					B	0.000	27.708		100.00	0.000	0.000
					C	0.000	27.708		100.00	0.000	31.727
L9 45.42-36.42	40.92	1.063	7	22.500	A	0.000	22.500	22.500	100.00	0.000	0.000
					B	0.000	22.500		100.00	0.000	0.000
					C	0.000	22.500		100.00	0.000	25.764
L10 36.42-33.50	34.96	1.017	7	7.293	A	0.000	7.293	7.293	100.00	0.000	0.000
					B	0.000	7.293		100.00	0.000	0.000
					C	0.000	7.293		100.00	0.000	8.350
L11 33.50-32.75	33.13	1.001	6	1.875	A	0.000	1.875	1.875	100.00	0.000	0.000
					B	0.000	1.875		100.00	0.000	0.000
					C	0.000	1.875		100.00	0.000	0.779
L12 32.75-30.00	31.38	1	6	6.875	A	0.000	6.875	6.875	100.00	0.000	0.000
					B	0.000	6.875		100.00	0.000	0.000
					C	0.000	6.875		100.00	0.000	2.855
L13 30.00-26.50	28.25	1	6	10.500	A	0.000	10.500	10.500	100.00	0.000	0.000
					B	0.000	10.500		100.00	0.000	0.000
					C	0.000	10.500		100.00	0.000	3.634
L14 26.50-20.58	23.54	1	6	17.751	A	0.000	17.751	17.751	100.00	0.000	0.000
					B	0.000	17.751		100.00	0.000	0.000
					C	0.000	17.751		100.00	0.000	6.144
L15 20.58-2.00	11.29	1	6	55.749	A	0.000	55.749	55.749	100.00	0.000	0.000
					B	0.000	55.749		100.00	0.000	0.000
					C	0.000	55.749		100.00	0.000	19.295
L16 2.00-0.00	1.00	1	6	6.000	A	0.000	6.000	6.000	100.00	0.000	0.000
					B	0.000	6.000		100.00	0.000	0.000
					C	0.000	6.000		100.00	0.000	2.077

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.44	1.90	A	1	0.59	1	1	1	60.000	1.49	49.76	C
			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L2 90.00-80.00	0.33	0.95	A	1	0.59	1	1	1	20.000	0.50	49.93	C
			B	1	0.59	1	1	1	20.000			
			C	1	0.59	1	1	1	20.000			
L3 80.00-68.50	0.42	1.80	A	1	0.59	1	1	1	23.000	0.69	60.18	C
			B	1	0.59	1	1	1	23.000			
			C	1	0.59	1	1	1	23.000			
L4 68.50-68.00	0.02	0.11	A	1	0.59	1	1	1	1.000	0.07	137.77	C
			B	1	0.59	1	1	1	1.000			
			C	1	0.59	1	1	1	1.000			
L5 68.00-63.50	0.16	0.69	A	1	0.59	1	1	1	9.000	0.61	136.30	C
			B	1	0.59	1	1	1	9.000			
			C	1	0.59	1	1	1	9.000			
L6 63.50-60.00	0.13	0.97	A	1	0.59	1	1	1	7.000	0.47	133.88	C
			B	1	0.59	1	1	1	7.000			
			C	1	0.59	1	1	1	7.000			
L7 60.00-56.50	0.13	0.99	A	1	0.59	1	1	1	8.750	0.49	141.28	C
			B	1	0.59	1	1	1	8.750			
			C	1	0.59	1	1	1	8.750			
L8 56.50-45.42	0.41	1.94	A	1	0.59	1	1	1	27.708	1.51	135.98	C
			B	1	0.59	1	1	1	27.708			
			C	1	0.59	1	1	1	27.708			
L9 45.42-36.42	0.34	1.99	A	1	0.59	1	1	1	22.500	1.15	127.72	C
			B	1	0.59	1	1	1	22.500			
			C	1	0.59	1	1	1	22.500			
L10 36.42-33.50	0.11	0.78	A	1	0.59	1	1	1	7.293	0.36	122.10	C
			B	1	0.59	1	1	1	7.293			
			C	1	0.59	1	1	1	7.293			
L11 33.50-32.75	0.03	0.29	A	1	0.59	1	1	1	1.875	0.05	69.67	C
			B	1	0.59	1	1	1	1.875			
			C	1	0.59	1	1	1	1.875			
L12 32.75-30.00	0.10	0.78	A	1	0.59	1	1	1	6.875	0.19	69.59	C
			B	1	0.59	1	1	1	6.875			
			C	1	0.59	1	1	1	6.875			
L13 30.00-26.50	0.13	1.03	A	1	0.59	1	1	1	10.500	0.27	77.76	C
			B	1	0.59	1	1	1	10.500			
			C	1	0.59	1	1	1	10.500			
L14 26.50-20.58	0.22	1.40	A	1	0.59	1	1	1	17.751	0.46	77.76	C
			B	1	0.59	1	1	1	17.751			
			C	1	0.59	1	1	1	17.751			
L15 20.58-2.00	0.69	5.87	A	1	0.59	1	1	1	55.749	1.45	77.76	C
			B	1	0.59	1	1	1	55.749			
			C	1	0.59	1	1	1	55.749			
L16 2.00-0.00	0.07	0.69	A	1	0.59	1	1	1	6.000	0.16	77.76	C
			B	1	0.59	1	1	1	6.000			
			C	1	0.59	1	1	1	6.000			
Sum Weight:	3.72	22.18						OTM	532.34 kip-ft	9.92		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.44	1.90	A	1	0.59	1	1	1	60.000	1.49	49.76	C
			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L2 90.00-80.00	0.33	0.95	A	1	0.59	1	1	1	20.000	0.50	49.93	C
			B	1	0.59	1	1	1	20.000			
			C	1	0.59	1	1	1	20.000			
L3 80.00-68.50	0.42	1.80	A	1	0.59	1	1	1	23.000	0.69	60.18	C
			B	1	0.59	1	1	1	23.000			
			C	1	0.59	1	1	1	23.000			
L4 68.50-68.00	0.02	0.11	A	1	0.59	1	1	1	1.000	0.07	137.77	C
			B	1	0.59	1	1	1	1.000			
			C	1	0.59	1	1	1	1.000			
L5 68.00-63.50	0.16	0.69	A	1	0.59	1	1	1	9.000	0.61	136.30	C
			B	1	0.59	1	1	1	9.000			
			C	1	0.59	1	1	1	9.000			
L6 63.50-60.00	0.13	0.97	A	1	0.59	1	1	1	7.000	0.47	133.88	C
			B	1	0.59	1	1	1	7.000			
			C	1	0.59	1	1	1	7.000			
L7 60.00-56.50	0.13	0.99	A	1	0.59	1	1	1	8.750	0.49	141.28	C
			B	1	0.59	1	1	1	8.750			
			C	1	0.59	1	1	1	8.750			
L8 56.50-45.42	0.41	1.94	A	1	0.59	1	1	1	27.708	1.51	135.98	C
			B	1	0.59	1	1	1	27.708			
			C	1	0.59	1	1	1	27.708			
L9 45.42-36.42	0.34	1.99	A	1	0.59	1	1	1	22.500	1.15	127.72	C
			B	1	0.59	1	1	1	22.500			
			C	1	0.59	1	1	1	22.500			
L10 36.42-33.50	0.11	0.78	A	1	0.59	1	1	1	7.293	0.36	122.10	C
			B	1	0.59	1	1	1	7.293			
			C	1	0.59	1	1	1	7.293			
L11 33.50-32.75	0.03	0.29	A	1	0.59	1	1	1	1.875	0.05	69.67	C
			B	1	0.59	1	1	1	1.875			
			C	1	0.59	1	1	1	1.875			
L12 32.75-30.00	0.10	0.78	A	1	0.59	1	1	1	6.875	0.19	69.59	C
			B	1	0.59	1	1	1	6.875			
			C	1	0.59	1	1	1	6.875			
L13 30.00-26.50	0.13	1.03	A	1	0.59	1	1	1	10.500	0.27	77.76	C
			B	1	0.59	1	1	1	10.500			
			C	1	0.59	1	1	1	10.500			
L14 26.50-20.58	0.22	1.40	A	1	0.59	1	1	1	17.751	0.46	77.76	C
			B	1	0.59	1	1	1	17.751			
			C	1	0.59	1	1	1	17.751			
L15 20.58-2.00	0.69	5.87	A	1	0.59	1	1	1	55.749	1.45	77.76	C
			B	1	0.59	1	1	1	55.749			
			C	1	0.59	1	1	1	55.749			
L16 2.00-0.00	0.07	0.69	A	1	0.59	1	1	1	6.000	0.16	77.76	C
			B	1	0.59	1	1	1	6.000			
			C	1	0.59	1	1	1	6.000			
Sum Weight:	3.72	22.18						OTM	532.34 kip-ft	9.92		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.44	1.90	A	1	0.59	1	1	1	60.000	1.49	49.76	C
			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L2 90.00-80.00	0.33	0.95	A	1	0.59	1	1	1	20.000	0.50	49.93	C
			B	1	0.59	1	1	1	20.000			
			C	1	0.59	1	1	1	20.000			
L3 80.00-68.50	0.42	1.80	A	1	0.59	1	1	1	23.000	0.69	60.18	C
			B	1	0.59	1	1	1	23.000			
			C	1	0.59	1	1	1	23.000			
L4 68.50-	0.02	0.11	A	1	0.59	1	1	1	1.000	0.07	137.77	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
68.00			B	1	0.59	1	1	1	1.000			
			C	1	0.59	1	1	1	1.000			
L5 68.00-63.50	0.16	0.69	A	1	0.59	1	1	1	9.000	0.61	136.30	C
			B	1	0.59	1	1	1	9.000			
			C	1	0.59	1	1	1	9.000			
L6 63.50-60.00	0.13	0.97	A	1	0.59	1	1	1	7.000	0.47	133.88	C
			B	1	0.59	1	1	1	7.000			
			C	1	0.59	1	1	1	7.000			
L7 60.00-56.50	0.13	0.99	A	1	0.59	1	1	1	8.750	0.49	141.28	C
			B	1	0.59	1	1	1	8.750			
			C	1	0.59	1	1	1	8.750			
L8 56.50-45.42	0.41	1.94	A	1	0.59	1	1	1	27.708	1.51	135.98	C
			B	1	0.59	1	1	1	27.708			
			C	1	0.59	1	1	1	27.708			
L9 45.42-36.42	0.34	1.99	A	1	0.59	1	1	1	22.500	1.15	127.72	C
			B	1	0.59	1	1	1	22.500			
			C	1	0.59	1	1	1	22.500			
L10 36.42-33.50	0.11	0.78	A	1	0.59	1	1	1	7.293	0.36	122.10	C
			B	1	0.59	1	1	1	7.293			
			C	1	0.59	1	1	1	7.293			
L11 33.50-32.75	0.03	0.29	A	1	0.59	1	1	1	1.875	0.05	69.67	C
			B	1	0.59	1	1	1	1.875			
			C	1	0.59	1	1	1	1.875			
L12 32.75-30.00	0.10	0.78	A	1	0.59	1	1	1	6.875	0.19	69.59	C
			B	1	0.59	1	1	1	6.875			
			C	1	0.59	1	1	1	6.875			
L13 30.00-26.50	0.13	1.03	A	1	0.59	1	1	1	10.500	0.27	77.76	C
			B	1	0.59	1	1	1	10.500			
			C	1	0.59	1	1	1	10.500			
L14 26.50-20.58	0.22	1.40	A	1	0.59	1	1	1	17.751	0.46	77.76	C
			B	1	0.59	1	1	1	17.751			
			C	1	0.59	1	1	1	17.751			
L15 20.58-2.00	0.69	5.87	A	1	0.59	1	1	1	55.749	1.45	77.76	C
			B	1	0.59	1	1	1	55.749			
			C	1	0.59	1	1	1	55.749			
L16 2.00-0.00	0.07	0.69	A	1	0.59	1	1	1	6.000	0.16	77.76	C
			B	1	0.59	1	1	1	6.000			
			C	1	0.59	1	1	1	6.000			
Sum Weight:	3.72	22.18						OTM	532.34 kip-ft	9.92		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.90	2.96	A	1	0.59	1	1	1	65.745	0.39	13.06	C
			B	1	0.59	1	1	1	65.745			
			C	1	0.59	1	1	1	65.745			
L2 90.00-80.00	0.59	1.29	A	1	0.59	1	1	1	21.867	0.14	13.71	C
			B	1	0.59	1	1	1	21.867			
			C	1	0.59	1	1	1	21.867			
L3 80.00-68.50	0.71	2.19	A	1	0.59	1	1	1	25.113	0.19	16.32	C
			B	1	0.59	1	1	1	25.113			
			C	1	0.59	1	1	1	25.113			
L4 68.50-68.00	0.03	0.13	A	1	0.59	1	1	1	1.091	0.02	36.53	C
			B	1	0.59	1	1	1	1.091			
			C	1	0.59	1	1	1	1.091			
L5 68.00-63.50	0.27	0.84	A	1	0.59	1	1	1	9.815	0.16	36.12	C
			B	1	0.59	1	1	1	9.815			
			C	1	0.59	1	1	1	9.815			
L6 63.50-60.00	0.21	1.09	A	1	0.59	1	1	1	7.629	0.12	35.43	C
			B	1	0.59	1	1	1	7.629			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	1	0.59	1	1	1	7.629			
L7 60.00-56.50	0.21	1.13	A	1	0.59	1	1	1	9.374	0.13	36.93	C
			B	1	0.59	1	1	1	9.374			
			C	1	0.59	1	1	1	9.374			
L8 56.50-45.42	0.67	2.39	A	1	0.59	1	1	1	29.654	0.39	35.46	C
			B	1	0.59	1	1	1	29.654			
			C	1	0.59	1	1	1	29.654			
L9 45.42-36.42	0.54	2.34	A	1	0.59	1	1	1	24.039	0.30	33.17	C
			B	1	0.59	1	1	1	24.039			
			C	1	0.59	1	1	1	24.039			
L10 36.42-33.50	0.17	0.89	A	1	0.59	1	1	1	7.782	0.09	31.62	C
			B	1	0.59	1	1	1	7.782			
			C	1	0.59	1	1	1	7.782			
L11 33.50-32.75	0.04	0.31	A	1	0.59	1	1	1	2.000	0.01	19.94	C
			B	1	0.59	1	1	1	2.000			
			C	1	0.59	1	1	1	2.000			
L12 32.75-30.00	0.16	0.88	A	1	0.59	1	1	1	7.333	0.05	19.92	C
			B	1	0.59	1	1	1	7.333			
			C	1	0.59	1	1	1	7.333			
L13 30.00-26.50	0.21	1.19	A	1	0.59	1	1	1	11.083	0.08	21.72	C
			B	1	0.59	1	1	1	11.083			
			C	1	0.59	1	1	1	11.083			
L14 26.50-20.58	0.35	1.66	A	1	0.59	1	1	1	18.737	0.13	21.72	C
			B	1	0.59	1	1	1	18.737			
			C	1	0.59	1	1	1	18.737			
L15 20.58-2.00	1.10	6.71	A	1	0.59	1	1	1	58.846	0.40	21.72	C
			B	1	0.59	1	1	1	58.846			
			C	1	0.59	1	1	1	58.846			
L16 2.00-0.00	0.12	0.78	A	1	0.59	1	1	1	6.333	0.04	21.72	C
			B	1	0.59	1	1	1	6.333			
			C	1	0.59	1	1	1	6.333			
Sum Weight:	6.29	26.79						OTM	141.31 kip-ft	2.66		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.90	2.96	A	1	0.59	1	1	1	65.745	0.39	13.06	C
			B	1	0.59	1	1	1	65.745			
			C	1	0.59	1	1	1	65.745			
L2 90.00-80.00	0.59	1.29	A	1	0.59	1	1	1	21.867	0.14	13.71	C
			B	1	0.59	1	1	1	21.867			
			C	1	0.59	1	1	1	21.867			
L3 80.00-68.50	0.71	2.19	A	1	0.59	1	1	1	25.113	0.19	16.32	C
			B	1	0.59	1	1	1	25.113			
			C	1	0.59	1	1	1	25.113			
L4 68.50-68.00	0.03	0.13	A	1	0.59	1	1	1	1.091	0.02	36.53	C
			B	1	0.59	1	1	1	1.091			
			C	1	0.59	1	1	1	1.091			
L5 68.00-63.50	0.27	0.84	A	1	0.59	1	1	1	9.815	0.16	36.12	C
			B	1	0.59	1	1	1	9.815			
			C	1	0.59	1	1	1	9.815			
L6 63.50-60.00	0.21	1.09	A	1	0.59	1	1	1	7.629	0.12	35.43	C
			B	1	0.59	1	1	1	7.629			
			C	1	0.59	1	1	1	7.629			
L7 60.00-56.50	0.21	1.13	A	1	0.59	1	1	1	9.374	0.13	36.93	C
			B	1	0.59	1	1	1	9.374			
			C	1	0.59	1	1	1	9.374			
L8 56.50-45.42	0.67	2.39	A	1	0.59	1	1	1	29.654	0.39	35.46	C
			B	1	0.59	1	1	1	29.654			
			C	1	0.59	1	1	1	29.654			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L9 45.42-36.42	0.54	2.34	A	1	0.59	1	1	1	24.039	0.30	33.17	C
			B	1	0.59	1	1	1	24.039			
			C	1	0.59	1	1	1	24.039			
L10 36.42-33.50	0.17	0.89	A	1	0.59	1	1	1	7.782	0.09	31.62	C
			B	1	0.59	1	1	1	7.782			
			C	1	0.59	1	1	1	7.782			
L11 33.50-32.75	0.04	0.31	A	1	0.59	1	1	1	2.000	0.01	19.94	C
			B	1	0.59	1	1	1	2.000			
			C	1	0.59	1	1	1	2.000			
L12 32.75-30.00	0.16	0.88	A	1	0.59	1	1	1	7.333	0.05	19.92	C
			B	1	0.59	1	1	1	7.333			
			C	1	0.59	1	1	1	7.333			
L13 30.00-26.50	0.21	1.19	A	1	0.59	1	1	1	11.083	0.08	21.72	C
			B	1	0.59	1	1	1	11.083			
			C	1	0.59	1	1	1	11.083			
L14 26.50-20.58	0.35	1.66	A	1	0.59	1	1	1	18.737	0.13	21.72	C
			B	1	0.59	1	1	1	18.737			
			C	1	0.59	1	1	1	18.737			
L15 20.58-2.00	1.10	6.71	A	1	0.59	1	1	1	58.846	0.40	21.72	C
			B	1	0.59	1	1	1	58.846			
			C	1	0.59	1	1	1	58.846			
L16 2.00-0.00	0.12	0.78	A	1	0.59	1	1	1	6.333	0.04	21.72	C
			B	1	0.59	1	1	1	6.333			
			C	1	0.59	1	1	1	6.333			
Sum Weight:	6.29	26.79						OTM	141.31 kip-ft	2.66		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.90	2.96	A	1	0.59	1	1	1	65.745	0.39	13.06	C
			B	1	0.59	1	1	1	65.745			
			C	1	0.59	1	1	1	65.745			
L2 90.00-80.00	0.59	1.29	A	1	0.59	1	1	1	21.867	0.14	13.71	C
			B	1	0.59	1	1	1	21.867			
			C	1	0.59	1	1	1	21.867			
L3 80.00-68.50	0.71	2.19	A	1	0.59	1	1	1	25.113	0.19	16.32	C
			B	1	0.59	1	1	1	25.113			
			C	1	0.59	1	1	1	25.113			
L4 68.50-68.00	0.03	0.13	A	1	0.59	1	1	1	1.091	0.02	36.53	C
			B	1	0.59	1	1	1	1.091			
			C	1	0.59	1	1	1	1.091			
L5 68.00-63.50	0.27	0.84	A	1	0.59	1	1	1	9.815	0.16	36.12	C
			B	1	0.59	1	1	1	9.815			
			C	1	0.59	1	1	1	9.815			
L6 63.50-60.00	0.21	1.09	A	1	0.59	1	1	1	7.629	0.12	35.43	C
			B	1	0.59	1	1	1	7.629			
			C	1	0.59	1	1	1	7.629			
L7 60.00-56.50	0.21	1.13	A	1	0.59	1	1	1	9.374	0.13	36.93	C
			B	1	0.59	1	1	1	9.374			
			C	1	0.59	1	1	1	9.374			
L8 56.50-45.42	0.67	2.39	A	1	0.59	1	1	1	29.654	0.39	35.46	C
			B	1	0.59	1	1	1	29.654			
			C	1	0.59	1	1	1	29.654			
L9 45.42-36.42	0.54	2.34	A	1	0.59	1	1	1	24.039	0.30	33.17	C
			B	1	0.59	1	1	1	24.039			
			C	1	0.59	1	1	1	24.039			
L10 36.42-33.50	0.17	0.89	A	1	0.59	1	1	1	7.782	0.09	31.62	C
			B	1	0.59	1	1	1	7.782			
			C	1	0.59	1	1	1	7.782			
L11 33.50-	0.04	0.31	A	1	0.59	1	1	1	2.000	0.01	19.94	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
32.75			B	1	0.59	1	1	1	2.000			
			C	1	0.59	1	1	1	2.000			
L12 32.75-30.00	0.16	0.88	A	1	0.59	1	1	1	7.333	0.05	19.92	C
			B	1	0.59	1	1	1	7.333			
			C	1	0.59	1	1	1	7.333			
L13 30.00-26.50	0.21	1.19	A	1	0.59	1	1	1	11.083	0.08	21.72	C
			B	1	0.59	1	1	1	11.083			
			C	1	0.59	1	1	1	11.083			
L14 26.50-20.58	0.35	1.66	A	1	0.59	1	1	1	18.737	0.13	21.72	C
			B	1	0.59	1	1	1	18.737			
			C	1	0.59	1	1	1	18.737			
L15 20.58-2.00	1.10	6.71	A	1	0.59	1	1	1	58.846	0.40	21.72	C
			B	1	0.59	1	1	1	58.846			
			C	1	0.59	1	1	1	58.846			
L16 2.00-0.00	0.12	0.78	A	1	0.59	1	1	1	6.333	0.04	21.72	C
			B	1	0.59	1	1	1	6.333			
			C	1	0.59	1	1	1	6.333			
Sum Weight:	6.29	26.79						OTM	141.31 kip-ft	2.66		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.44	1.90	A	1	0.59	1	1	1	60.000	0.58	19.44	C
			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L2 90.00-80.00	0.33	0.95	A	1	0.59	1	1	1	20.000	0.20	19.50	C
			B	1	0.59	1	1	1	20.000			
			C	1	0.59	1	1	1	20.000			
L3 80.00-68.50	0.42	1.80	A	1	0.59	1	1	1	23.000	0.27	23.51	C
			B	1	0.59	1	1	1	23.000			
			C	1	0.59	1	1	1	23.000			
L4 68.50-68.00	0.02	0.11	A	1	0.59	1	1	1	1.000	0.03	53.81	C
			B	1	0.59	1	1	1	1.000			
			C	1	0.59	1	1	1	1.000			
L5 68.00-63.50	0.16	0.69	A	1	0.59	1	1	1	9.000	0.24	53.24	C
			B	1	0.59	1	1	1	9.000			
			C	1	0.59	1	1	1	9.000			
L6 63.50-60.00	0.13	0.97	A	1	0.59	1	1	1	7.000	0.18	52.30	C
			B	1	0.59	1	1	1	7.000			
			C	1	0.59	1	1	1	7.000			
L7 60.00-56.50	0.13	0.99	A	1	0.59	1	1	1	8.750	0.19	55.19	C
			B	1	0.59	1	1	1	8.750			
			C	1	0.59	1	1	1	8.750			
L8 56.50-45.42	0.41	1.94	A	1	0.59	1	1	1	27.708	0.59	53.12	C
			B	1	0.59	1	1	1	27.708			
			C	1	0.59	1	1	1	27.708			
L9 45.42-36.42	0.34	1.99	A	1	0.59	1	1	1	22.500	0.45	49.89	C
			B	1	0.59	1	1	1	22.500			
			C	1	0.59	1	1	1	22.500			
L10 36.42-33.50	0.11	0.78	A	1	0.59	1	1	1	7.293	0.14	47.70	C
			B	1	0.59	1	1	1	7.293			
			C	1	0.59	1	1	1	7.293			
L11 33.50-32.75	0.03	0.29	A	1	0.59	1	1	1	1.875	0.02	27.21	C
			B	1	0.59	1	1	1	1.875			
			C	1	0.59	1	1	1	1.875			
L12 32.75-30.00	0.10	0.78	A	1	0.59	1	1	1	6.875	0.07	27.18	C
			B	1	0.59	1	1	1	6.875			
			C	1	0.59	1	1	1	6.875			
L13 30.00-26.50	0.13	1.03	A	1	0.59	1	1	1	10.500	0.11	30.37	C
			B	1	0.59	1	1	1	10.500			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			C	1	0.59	1	1	1	10.500			
L14 26.50-20.58	0.22	1.40	A	1	0.59	1	1	1	17.751	0.18	30.37	C
			B	1	0.59	1	1	1	17.751			
			C	1	0.59	1	1	1	17.751			
L15 20.58-2.00	0.69	5.87	A	1	0.59	1	1	1	55.749	0.56	30.37	C
			B	1	0.59	1	1	1	55.749			
			C	1	0.59	1	1	1	55.749			
L16 2.00-0.00	0.07	0.69	A	1	0.59	1	1	1	6.000	0.06	30.37	C
			B	1	0.59	1	1	1	6.000			
			C	1	0.59	1	1	1	6.000			
Sum Weight:	3.72	22.18						OTM	207.94 kip-ft	3.87		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.44	1.90	A	1	0.59	1	1	1	60.000	0.58	19.44	C
			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L2 90.00-80.00	0.33	0.95	A	1	0.59	1	1	1	20.000	0.20	19.50	C
			B	1	0.59	1	1	1	20.000			
			C	1	0.59	1	1	1	20.000			
L3 80.00-68.50	0.42	1.80	A	1	0.59	1	1	1	23.000	0.27	23.51	C
			B	1	0.59	1	1	1	23.000			
			C	1	0.59	1	1	1	23.000			
L4 68.50-68.00	0.02	0.11	A	1	0.59	1	1	1	1.000	0.03	53.81	C
			B	1	0.59	1	1	1	1.000			
			C	1	0.59	1	1	1	1.000			
L5 68.00-63.50	0.16	0.69	A	1	0.59	1	1	1	9.000	0.24	53.24	C
			B	1	0.59	1	1	1	9.000			
			C	1	0.59	1	1	1	9.000			
L6 63.50-60.00	0.13	0.97	A	1	0.59	1	1	1	7.000	0.18	52.30	C
			B	1	0.59	1	1	1	7.000			
			C	1	0.59	1	1	1	7.000			
L7 60.00-56.50	0.13	0.99	A	1	0.59	1	1	1	8.750	0.19	55.19	C
			B	1	0.59	1	1	1	8.750			
			C	1	0.59	1	1	1	8.750			
L8 56.50-45.42	0.41	1.94	A	1	0.59	1	1	1	27.708	0.59	53.12	C
			B	1	0.59	1	1	1	27.708			
			C	1	0.59	1	1	1	27.708			
L9 45.42-36.42	0.34	1.99	A	1	0.59	1	1	1	22.500	0.45	49.89	C
			B	1	0.59	1	1	1	22.500			
			C	1	0.59	1	1	1	22.500			
L10 36.42-33.50	0.11	0.78	A	1	0.59	1	1	1	7.293	0.14	47.70	C
			B	1	0.59	1	1	1	7.293			
			C	1	0.59	1	1	1	7.293			
L11 33.50-32.75	0.03	0.29	A	1	0.59	1	1	1	1.875	0.02	27.21	C
			B	1	0.59	1	1	1	1.875			
			C	1	0.59	1	1	1	1.875			
L12 32.75-30.00	0.10	0.78	A	1	0.59	1	1	1	6.875	0.07	27.18	C
			B	1	0.59	1	1	1	6.875			
			C	1	0.59	1	1	1	6.875			
L13 30.00-26.50	0.13	1.03	A	1	0.59	1	1	1	10.500	0.11	30.37	C
			B	1	0.59	1	1	1	10.500			
			C	1	0.59	1	1	1	10.500			
L14 26.50-20.58	0.22	1.40	A	1	0.59	1	1	1	17.751	0.18	30.37	C
			B	1	0.59	1	1	1	17.751			
			C	1	0.59	1	1	1	17.751			
L15 20.58-2.00	0.69	5.87	A	1	0.59	1	1	1	55.749	0.56	30.37	C
			B	1	0.59	1	1	1	55.749			
			C	1	0.59	1	1	1	55.749			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L16 2.00-0.00	0.07	0.69	A	1	0.59	1	1	1	6.000	0.06	30.37	C
			B	1	0.59	1	1	1	6.000			
			C	1	0.59	1	1	1	6.000			
Sum Weight:	3.72	22.18						OTM	207.94 kip-ft	3.87		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1 120.00-90.00	0.44	1.90	A	1	0.59	1	1	1	60.000	0.58	19.44	C
			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L2 90.00-80.00	0.33	0.95	A	1	0.59	1	1	1	20.000	0.20	19.50	C
			B	1	0.59	1	1	1	20.000			
			C	1	0.59	1	1	1	20.000			
L3 80.00-68.50	0.42	1.80	A	1	0.59	1	1	1	23.000	0.27	23.51	C
			B	1	0.59	1	1	1	23.000			
			C	1	0.59	1	1	1	23.000			
L4 68.50-68.00	0.02	0.11	A	1	0.59	1	1	1	1.000	0.03	53.81	C
			B	1	0.59	1	1	1	1.000			
			C	1	0.59	1	1	1	1.000			
L5 68.00-63.50	0.16	0.69	A	1	0.59	1	1	1	9.000	0.24	53.24	C
			B	1	0.59	1	1	1	9.000			
			C	1	0.59	1	1	1	9.000			
L6 63.50-60.00	0.13	0.97	A	1	0.59	1	1	1	7.000	0.18	52.30	C
			B	1	0.59	1	1	1	7.000			
			C	1	0.59	1	1	1	7.000			
L7 60.00-56.50	0.13	0.99	A	1	0.59	1	1	1	8.750	0.19	55.19	C
			B	1	0.59	1	1	1	8.750			
			C	1	0.59	1	1	1	8.750			
L8 56.50-45.42	0.41	1.94	A	1	0.59	1	1	1	27.708	0.59	53.12	C
			B	1	0.59	1	1	1	27.708			
			C	1	0.59	1	1	1	27.708			
L9 45.42-36.42	0.34	1.99	A	1	0.59	1	1	1	22.500	0.45	49.89	C
			B	1	0.59	1	1	1	22.500			
			C	1	0.59	1	1	1	22.500			
L10 36.42-33.50	0.11	0.78	A	1	0.59	1	1	1	7.293	0.14	47.70	C
			B	1	0.59	1	1	1	7.293			
			C	1	0.59	1	1	1	7.293			
L11 33.50-32.75	0.03	0.29	A	1	0.59	1	1	1	1.875	0.02	27.21	C
			B	1	0.59	1	1	1	1.875			
			C	1	0.59	1	1	1	1.875			
L12 32.75-30.00	0.10	0.78	A	1	0.59	1	1	1	6.875	0.07	27.18	C
			B	1	0.59	1	1	1	6.875			
			C	1	0.59	1	1	1	6.875			
L13 30.00-26.50	0.13	1.03	A	1	0.59	1	1	1	10.500	0.11	30.37	C
			B	1	0.59	1	1	1	10.500			
			C	1	0.59	1	1	1	10.500			
L14 26.50-20.58	0.22	1.40	A	1	0.59	1	1	1	17.751	0.18	30.37	C
			B	1	0.59	1	1	1	17.751			
			C	1	0.59	1	1	1	17.751			
L15 20.58-2.00	0.69	5.87	A	1	0.59	1	1	1	55.749	0.56	30.37	C
			B	1	0.59	1	1	1	55.749			
			C	1	0.59	1	1	1	55.749			
L16 2.00-0.00	0.07	0.69	A	1	0.59	1	1	1	6.000	0.06	30.37	C
			B	1	0.59	1	1	1	6.000			
			C	1	0.59	1	1	1	6.000			
Sum Weight:	3.72	22.18						OTM	207.94 kip-ft	3.87		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	22.18					
Bracing Weight	0.00					
Total Member Self-Weight	22.18			-0.38	-0.30	
Total Weight	32.05			-0.38	-0.30	
Wind 0 deg - No Ice		-0.05	-21.28	-1755.11	5.44	0.47
Wind 30 deg - No Ice		10.56	-18.39	-1515.27	-868.71	-0.42
Wind 60 deg - No Ice		18.35	-10.60	-872.65	-1511.35	-1.10
Wind 90 deg - No Ice		21.25	0.03	3.32	-1752.05	-1.43
Wind 120 deg - No Ice		18.43	10.67	880.30	-1521.03	-1.48
Wind 150 deg - No Ice		10.65	18.43	1519.48	-879.37	-1.13
Wind 180 deg - No Ice		0.02	21.23	1748.40	-2.74	-0.38
Wind 210 deg - No Ice		-10.60	18.36	1511.45	873.40	0.42
Wind 240 deg - No Ice		-18.41	10.60	872.01	1517.56	1.01
Wind 270 deg - No Ice		-21.30	-0.03	-4.14	1757.84	1.36
Wind 300 deg - No Ice		-18.46	-10.69	-883.03	1523.85	1.48
Wind 330 deg - No Ice		-10.68	-18.48	-1525.74	882.03	1.20
Member Ice	4.61					
Total Weight Ice	45.92			0.15	1.53	
Wind 0 deg - Ice		-0.01	-6.31	-533.96	2.95	0.19
Wind 30 deg - Ice		3.14	-5.46	-460.96	-263.84	-0.11
Wind 60 deg - Ice		5.46	-3.15	-265.63	-459.98	-0.34
Wind 90 deg - Ice		6.32	0.01	0.78	-533.60	-0.46
Wind 120 deg - Ice		5.48	3.16	267.79	-462.93	-0.49
Wind 150 deg - Ice		3.17	5.46	462.38	-266.58	-0.39
Wind 180 deg - Ice		0.00	6.29	531.95	1.39	-0.15
Wind 210 deg - Ice		-3.16	5.45	460.07	268.95	0.11
Wind 240 deg - Ice		-5.48	3.15	265.97	465.68	0.30
Wind 270 deg - Ice		-6.34	-0.01	-0.50	539.14	0.43
Wind 300 deg - Ice		-5.50	-3.17	-268.26	467.31	0.49
Wind 330 deg - Ice		-3.18	-5.48	-464.22	270.90	0.42
Total Weight	32.05			-0.38	-0.30	
Wind 0 deg - Service		-0.02	-8.31	-686.02	1.59	0.18
Wind 30 deg - Service		4.12	-7.18	-592.33	-339.87	-0.16
Wind 60 deg - Service		7.17	-4.14	-341.31	-590.91	-0.43
Wind 90 deg - Service		8.30	0.01	0.86	-684.93	-0.56
Wind 120 deg - Service		7.20	4.17	343.43	-594.68	-0.58
Wind 150 deg - Service		4.16	7.20	593.11	-344.04	-0.44
Wind 180 deg - Service		0.01	8.29	682.54	-1.60	-0.15
Wind 210 deg - Service		-4.14	7.17	589.98	340.64	0.16
Wind 240 deg - Service		-7.19	4.14	340.20	592.27	0.39
Wind 270 deg - Service		-8.32	-0.01	-2.05	686.13	0.53
Wind 300 deg - Service		-7.21	-4.18	-345.37	594.72	0.58
Wind 330 deg - Service		-4.17	-7.22	-596.43	344.01	0.47

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	120 - 90	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	14	-16.58	-1.04	0.94
			Max. Mx	11	-7.68	236.00	1.09
			Max. My	2	-7.68	0.57	235.44
			Max. Vy	11	-13.21	236.00	1.09
			Max. Vx	2	-13.19	0.57	235.44
			Max. Torque	13			-2.03
L2	90 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.47	-0.79	0.80
			Max. Mx	11	-9.03	370.60	1.45
			Max. My	2	-9.03	1.12	369.78
			Max. Vy	11	-13.71	370.60	1.45
			Max. Vx	2	-13.69	1.12	369.78
			Max. Torque	13			-2.02
L3	80 - 68.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.36	-0.50	0.63
			Max. Mx	11	-11.32	532.39	1.85
			Max. My	2	-11.33	1.75	531.28
			Max. Vy	11	-14.42	532.39	1.85
			Max. Vx	2	-14.40	1.75	531.28
			Max. Torque	13			-2.01
L4	68.5 - 68	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.52	-0.49	0.62
			Max. Mx	11	-11.46	539.62	1.87
			Max. My	2	-11.46	1.78	538.49
			Max. Vy	11	-14.49	539.62	1.87
			Max. Vx	2	-14.47	1.78	538.49
			Max. Torque	13			-1.97
L5	68 - 63.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22.63	-0.38	0.56
			Max. Mx	11	-12.34	606.17	2.03
			Max. My	2	-12.34	2.03	604.93

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	11	-15.09	606.17	2.03
			Max. Vx	2	-15.07	2.03	604.93
			Max. Torque	13			-1.96
L6	63.5 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23.93	-0.30	0.51
			Max. Mx	11	-13.46	659.82	2.16
			Max. My	2	-13.46	2.22	658.49
			Max. Vy	11	-15.57	659.82	2.16
			Max. Vx	2	-15.55	2.22	658.49
			Max. Torque	13			-1.87
L7	60 - 56.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.39	-0.19	0.82
			Max. Mx	11	-14.62	715.95	2.37
			Max. My	2	-14.62	2.41	714.63
			Max. Vy	11	-16.23	715.95	2.37
			Max. Vx	2	-16.21	2.41	714.63
			Max. Torque	12			-2.19
L8	56.5 - 45.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.46	0.13	0.66
			Max. Mx	11	-17.05	903.94	2.75
			Max. My	2	-17.05	3.03	902.31
			Max. Vy	11	-17.69	903.94	2.75
			Max. Vx	2	-17.67	3.03	902.31
			Max. Torque	12			-2.14
L9	45.417 - 36.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.34	0.38	0.51
			Max. Mx	11	-19.47	1068.04	3.06
			Max. My	2	-19.47	3.54	1066.16
			Max. Vy	11	-18.78	1068.04	3.06
			Max. Vx	2	-18.76	3.54	1066.16
			Max. Torque	12			-1.95
L10	36.417 - 33.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.41	0.46	0.47
			Max. Mx	11	-20.39	1123.29	3.16
			Max. My	2	-20.39	3.70	1121.34
			Max. Vy	11	-19.12	1123.29	3.16
			Max. Vx	2	-19.09	3.70	1121.34
			Max. Torque	12			-1.78
L11	33.5 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.76	0.48	0.45
			Max. Mx	11	-20.71	1137.64	3.18
			Max. My	2	-20.71	3.74	1135.67
			Max. Vy	11	-19.16	1137.64	3.18
			Max. Vx	2	-19.14	3.74	1135.67
			Max. Torque	12			-1.73
L12	32.75 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.81	0.56	0.41
			Max. Mx	11	-21.62	1190.56	3.28
			Max. My	2	-21.62	3.90	1188.52
			Max. Vy	11	-19.33	1190.56	3.28
			Max. Vx	2	-19.31	3.90	1188.52
			Max. Torque	12			-1.73
L13	30 - 26.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.20	0.67	0.35
			Max. Mx	11	-22.81	1258.66	3.39
			Max. My	2	-22.81	4.09	1256.52
			Max. Vy	11	-19.59	1258.66	3.39
			Max. Vx	2	-19.56	4.09	1256.52
			Max. Torque	12			-1.71
L14	26.5 - 20.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37.22	0.86	0.23
			Max. Mx	11	-24.49	1375.72	3.59
			Max. My	2	-24.49	4.43	1373.41
			Max. Vy	11	-19.99	1375.72	3.59
			Max. Vx	2	-19.96	4.43	1373.41

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	12			-1.69
L15	20.583 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.02	1.46	-0.11
			Max. Mx	11	-31.25	1758.53	4.19
			Max. My	2	-31.25	5.47	1755.71
			Max. Vy	11	-21.19	1758.53	4.19
			Max. Vx	2	-21.17	5.47	1755.71
			Max. Torque	12			-1.65
L16	2 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.92	1.53	-0.15
			Max. Mx	11	-32.04	1801.02	4.26
			Max. My	2	-32.04	5.58	1798.15
			Max. Vy	11	-21.31	1801.02	4.26
			Max. Vx	2	-21.29	5.58	1798.15
			Max. Torque	12			-1.53

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	45.92	0.00	-0.00
	Max. H_x	11	32.05	21.30	0.03
	Max. H_z	2	32.05	0.05	21.28
	Max. M_x	2	1798.15	0.05	21.28
	Max. M_z	5	1795.10	-21.25	-0.03
	Max. Torsion	6	1.51	-18.43	-10.67
	Min. Vert	2	32.05	0.05	21.28
	Min. H_x	5	32.05	-21.25	-0.03
	Min. H_z	8	32.05	-0.02	-21.23
	Min. M_x	8	-1791.23	-0.02	-21.23
	Min. M_z	11	-1801.02	21.30	0.03
	Min. Torsion	12	-1.52	18.46	10.69

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	32.05	0.00	-0.00	-0.38	-0.30	0.00
Dead+Wind 0 deg - No Ice	32.05	-0.05	-21.28	-1798.15	5.58	0.48
Dead+Wind 30 deg - No Ice	32.05	10.56	-18.39	-1552.51	-890.06	-0.43
Dead+Wind 60 deg - No Ice	32.05	18.35	-10.60	-894.10	-1548.51	-1.13
Dead+Wind 90 deg - No Ice	32.05	21.25	0.03	3.40	-1795.10	-1.46
Dead+Wind 120 deg - No Ice	32.05	18.43	10.67	901.93	-1558.44	-1.51
Dead+Wind 150 deg - No Ice	32.05	10.65	18.43	1556.81	-901.01	-1.15
Dead+Wind 180 deg - No Ice	32.05	0.02	21.23	1791.23	-2.82	-0.39
Dead+Wind 210 deg - No Ice	32.05	-10.60	18.36	1548.57	894.86	0.43
Dead+Wind 240 deg - No Ice	32.05	-18.41	10.60	893.42	1554.86	1.03
Dead+Wind 270 deg - No Ice	32.05	-21.30	-0.03	-4.26	1801.02	1.39
Dead+Wind 300 deg - No Ice	32.05	-18.46	-10.69	-904.75	1561.32	1.52
Dead+Wind 330 deg - No Ice	32.05	-10.68	-18.48	-1563.26	903.71	1.23
Dead+Ice+Temp	45.92	-0.00	0.00	0.15	1.53	-0.00
Dead+Wind 0 deg+Ice+Temp	45.92	-0.01	-6.31	-558.58	3.03	0.20
Dead+Wind 30 deg+Ice+Temp	45.92	3.14	-5.46	-482.21	-276.03	-0.12
Dead+Wind 60 deg+Ice+Temp	45.92	5.46	-3.15	-277.89	-481.20	-0.37
Dead+Wind 90 deg+Ice+Temp	45.92	6.32	0.01	0.77	-558.23	-0.49

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 120 deg+Ice+Temp	45.92	5.48	3.16	280.06	-484.31	-0.52
Dead+Wind 150 deg+Ice+Temp	45.92	3.17	5.46	483.60	-278.92	-0.42
Dead+Wind 180 deg+Ice+Temp	45.92	0.00	6.29	556.35	1.38	-0.16
Dead+Wind 210 deg+Ice+Temp	45.92	-3.16	5.45	481.17	281.26	0.12
Dead+Wind 240 deg+Ice+Temp	45.92	-5.48	3.15	278.14	487.05	0.33
Dead+Wind 270 deg+Ice+Temp	45.92	-6.34	-0.01	-0.58	563.90	0.46
Dead+Wind 300 deg+Ice+Temp	45.92	-5.50	-3.17	-280.66	488.77	0.53
Dead+Wind 330 deg+Ice+Temp	45.92	-3.18	-5.48	-485.65	283.31	0.45
Dead+Wind 0 deg - Service	32.05	-0.02	-8.31	-702.96	1.98	0.19
Dead+Wind 30 deg - Service	32.05	4.12	-7.18	-606.99	-348.05	-0.17
Dead+Wind 60 deg - Service	32.05	7.17	-4.14	-349.68	-605.38	-0.44
Dead+Wind 90 deg - Service	32.05	8.30	0.01	1.09	-701.70	-0.58
Dead+Wind 120 deg - Service	32.05	7.20	4.17	352.25	-609.27	-0.59
Dead+Wind 150 deg - Service	32.05	4.16	7.20	608.19	-352.33	-0.45
Dead+Wind 180 deg - Service	32.05	0.01	8.29	699.77	-1.30	-0.15
Dead+Wind 210 deg - Service	32.05	-4.14	7.17	604.97	349.53	0.17
Dead+Wind 240 deg - Service	32.05	-7.19	4.14	348.92	607.47	0.41
Dead+Wind 270 deg - Service	32.05	-8.32	-0.01	-1.91	703.62	0.55
Dead+Wind 300 deg - Service	32.05	-7.21	-4.17	-353.84	610.00	0.60
Dead+Wind 330 deg - Service	32.05	-4.17	-7.22	-611.20	352.99	0.48

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-32.05	0.00	-0.00	32.05	0.00	0.000%
2	-0.05	-32.05	-21.28	0.05	32.05	21.28	0.003%
3	10.56	-32.05	-18.39	-10.56	32.05	18.39	0.000%
4	18.35	-32.05	-10.60	-18.35	32.05	10.60	0.000%
5	21.25	-32.05	0.03	-21.25	32.05	-0.03	0.001%
6	18.43	-32.05	10.67	-18.43	32.05	-10.67	0.000%
7	10.65	-32.05	18.43	-10.65	32.05	-18.43	0.000%
8	0.02	-32.05	21.23	-0.02	32.05	-21.23	0.003%
9	-10.60	-32.05	18.36	10.60	32.05	-18.36	0.000%
10	-18.41	-32.05	10.60	18.41	32.05	-10.60	0.000%
11	-21.30	-32.05	-0.03	21.30	32.05	0.03	0.001%
12	-18.46	-32.05	-10.69	18.46	32.05	10.69	0.000%
13	-10.68	-32.05	-18.48	10.68	32.05	18.48	0.000%
14	0.00	-45.92	0.00	0.00	45.92	-0.00	0.000%
15	-0.01	-45.92	-6.31	0.01	45.92	6.31	0.000%
16	3.14	-45.92	-5.46	-3.14	45.92	5.46	0.000%
17	5.46	-45.92	-3.15	-5.46	45.92	3.15	0.000%
18	6.32	-45.92	0.01	-6.32	45.92	-0.01	0.000%
19	5.48	-45.92	3.16	-5.48	45.92	-3.16	0.000%
20	3.17	-45.92	5.46	-3.17	45.92	-5.46	0.000%
21	0.00	-45.92	6.29	-0.00	45.92	-6.29	0.000%
22	-3.16	-45.92	5.45	3.16	45.92	-5.45	0.000%
23	-5.48	-45.92	3.15	5.48	45.92	-3.15	0.000%
24	-6.34	-45.92	-0.01	6.34	45.92	0.01	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
25	-5.50	-45.92	-3.17	5.50	45.92	3.17	0.000%
26	-3.18	-45.92	-5.48	3.18	45.92	5.48	0.000%
27	-0.02	-32.05	-8.31	0.02	32.05	8.31	0.004%
28	4.12	-32.05	-7.18	-4.12	32.05	7.18	0.001%
29	7.17	-32.05	-4.14	-7.17	32.05	4.14	0.001%
30	8.30	-32.05	0.01	-8.30	32.05	-0.01	0.004%
31	7.20	-32.05	4.17	-7.20	32.05	-4.17	0.001%
32	4.16	-32.05	7.20	-4.16	32.05	-7.20	0.001%
33	0.01	-32.05	8.29	-0.01	32.05	-8.29	0.004%
34	-4.14	-32.05	7.17	4.14	32.05	-7.17	0.001%
35	-7.19	-32.05	4.14	7.19	32.05	-4.14	0.001%
36	-8.32	-32.05	-0.01	8.32	32.05	0.01	0.004%
37	-7.21	-32.05	-4.18	7.21	32.05	4.17	0.001%
38	-4.17	-32.05	-7.22	4.17	32.05	7.22	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00000001	0.00012142
3	Yes	16	0.00000001	0.00008463
4	Yes	16	0.00000001	0.00008838
5	Yes	14	0.00000001	0.00007466
6	Yes	16	0.00000001	0.00008117
7	Yes	16	0.00000001	0.00009251
8	Yes	13	0.00000001	0.00012778
9	Yes	16	0.00000001	0.00008483
10	Yes	16	0.00000001	0.00008241
11	Yes	14	0.00000001	0.00007797
12	Yes	16	0.00000001	0.00009431
13	Yes	16	0.00000001	0.00008210
14	Yes	6	0.00000001	0.00000854
15	Yes	15	0.00000001	0.00007096
16	Yes	15	0.00000001	0.00008182
17	Yes	15	0.00000001	0.00008230
18	Yes	15	0.00000001	0.00007109
19	Yes	15	0.00000001	0.00008208
20	Yes	15	0.00000001	0.00008287
21	Yes	15	0.00000001	0.00007023
22	Yes	15	0.00000001	0.00008150
23	Yes	15	0.00000001	0.00008178
24	Yes	15	0.00000001	0.00007137
25	Yes	15	0.00000001	0.00008396
26	Yes	15	0.00000001	0.00008266
27	Yes	12	0.00000001	0.00009113
28	Yes	13	0.00000001	0.00010906
29	Yes	13	0.00000001	0.00012311
30	Yes	12	0.00000001	0.00011088
31	Yes	13	0.00000001	0.00009564
32	Yes	13	0.00000001	0.00013601
33	Yes	12	0.00000001	0.00008961
34	Yes	13	0.00000001	0.00010895
35	Yes	13	0.00000001	0.00009977
36	Yes	12	0.00000001	0.00011020
37	Yes	13	0.00000001	0.00014094
38	Yes	13	0.00000001	0.00009707

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 90	20.870	38	1.5320	0.0076
L2	90 - 80	11.611	38	1.3151	0.0048
L3	80 - 68.5	9.026	38	1.1409	0.0034
L4	68.5 - 68	6.488	38	0.9563	0.0023
L5	68 - 63.5	6.388	38	0.9493	0.0023
L6	63.5 - 60	5.537	38	0.8559	0.0019
L7	60 - 56.5	4.926	38	0.8097	0.0017
L8	56.5 - 45.417	4.344	38	0.7791	0.0016
L9	45.417 - 36.417	2.735	38	0.6000	0.0010
L10	36.417 - 33.5	1.734	38	0.4583	0.0007
L11	33.5 - 32.75	1.467	38	0.4157	0.0006
L12	32.75 - 30	1.402	38	0.4076	0.0006
L13	30 - 26.5	1.179	38	0.3669	0.0005
L14	26.5 - 20.583	0.923	38	0.3313	0.0005
L15	20.583 - 2	0.561	38	0.2512	0.0003
L16	2 - 0	0.005	38	0.0253	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	(2) PCS 1900MHz 4x45W-65MHz	38	20.219	1.5255	0.0074	21670
116.00	A-ANT-18G-1-C	38	19.570	1.5187	0.0073	21670
107.00	DR65-18-00DP w/ Mount Pipe	38	16.683	1.4800	0.0066	8334
99.00	7770.00 w/ Mount Pipe	38	14.211	1.4227	0.0058	5159
97.00	(2) RRUS-11	38	13.615	1.4034	0.0056	4710
59.00	DB536	38	4.757	0.8010	0.0017	4929
50.00	GPS	38	3.352	0.6822	0.0013	3695

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 90	53.324	13	3.9175	0.0194
L2	90 - 80	29.680	13	3.3620	0.0123
L3	80 - 68.5	23.076	13	2.9169	0.0086
L4	68.5 - 68	16.589	13	2.4452	0.0060
L5	68 - 63.5	16.334	13	2.4273	0.0059
L6	63.5 - 60	14.157	13	2.1886	0.0049
L7	60 - 56.5	12.596	13	2.0705	0.0045
L8	56.5 - 45.417	11.107	13	1.9922	0.0042
L9	45.417 - 36.417	6.995	13	1.5344	0.0027
L10	36.417 - 33.5	4.435	13	1.1722	0.0018
L11	33.5 - 32.75	3.752	13	1.0633	0.0016
L12	32.75 - 30	3.587	13	1.0424	0.0015
L13	30 - 26.5	3.016	13	0.9384	0.0013
L14	26.5 - 20.583	2.361	13	0.8475	0.0012
L15	20.583 - 2	1.436	13	0.6427	0.0008
L16	2 - 0	0.014	13	0.0648	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
118.00	(2) PCS 1900MHz 4x45W-65MHz	13	51.663	3.9006	0.0190	8584
116.00	A-ANT-18G-1-C	13	50.005	3.8832	0.0186	8584
107.00	DR65-18-00DP w/ Mount Pipe	13	42.632	3.7837	0.0168	3300
99.00	7770.00 w/ Mount Pipe	13	36.321	3.6371	0.0149	2042
97.00	(2) RRUS-11	13	34.796	3.5877	0.0144	1864
59.00	DB536	13	12.164	2.0483	0.0044	1933
50.00	GPS	13	8.574	1.7447	0.0033	1448

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
L1	120 - 90 (1)	P24x1/4	30.00	0.00	0.0	23.696	18.6532	-7.67	442.00	0.017
L2	90 - 80 (2)	P24x3/8	10.00	0.00	0.0	25.200	27.8325	-9.03	701.38	0.013
L3	80 - 68.5 (3)	RPS 24" x 0.62517"	11.50	0.00	0.0	19.806	45.9089	-11.32	909.27	0.012
L4	68.5 - 68 (4)	RPS 24" x 0.88003"	0.50	0.00	0.0	19.782	63.9197	-11.45	1264.46	0.009
L5	68 - 63.5 (5)	RPS 24" x 0.61306"	4.50	0.00	0.0	22.686	45.0429	-12.34	1021.84	0.012
L6	63.5 - 60 (6)	RPS 24" x 1.13718"	3.50	0.00	0.0	20.358	81.6787	-13.45	1662.82	0.008
L7	60 - 56.5 (7)	RPS 30" x 0.90733"	3.50	0.00	0.0	21.114	82.9275	-14.61	1750.93	0.008
L8	56.5 - 45.417 (8)	RPS 30" x 0.55714"	11.08	0.00	0.0	22.788	51.5340	-17.05	1174.36	0.015
L9	45.417 - 36.417 (9)	RPS 30" x 0.70733"	9.00	0.00	0.0	22.770	65.0925	-19.47	1482.16	0.013
L10	36.417 - 33.5 (10)	RPS 30" x 0.86188"	2.92	0.00	0.0	22.782	78.8966	-20.39	1797.42	0.011
L11	33.5 - 32.75 (11)	RPS 30" x 1.23648"	0.75	0.00	0.0	21.120	111.7320	-20.71	2359.79	0.009
L12	32.75 - 30 (12)	RPS 30" x 0.90733"	2.75	0.00	0.0	21.126	82.9275	-21.61	1751.93	0.012
L13	30 - 26.5 (13)	RPS 36" x 0.7835"	3.50	0.00	0.0	21.504	86.6832	-22.81	1864.04	0.012
L14	26.5 - 20.583 (14)	RPS 36" x 0.62423"	5.92	0.00	0.0	21.522	69.3746	-24.49	1493.08	0.016
L15	20.583 - 2 (15)	RPS 36" x 0.84085"	18.58	0.00	0.0	21.504	92.8767	-31.25	1997.22	0.016
L16	2 - 0 (16)	RPS 36" x 0.9234"	2.00	0.00	0.0	21.120	101.7550	-32.04	2149.07	0.015

Pole Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		kip-ft	ksi	ksi		kip-ft	ksi	ksi	
L1	120 - 90 (1)	P24x1/4	236.84	25.928	23.696	1.094	0.00	0.000	23.696	0.000
L2	90 - 80 (2)	P24x3/8	371.86	27.570	27.720	0.995	0.00	0.000	27.720	0.000
L3	80 - 68.5 (3)	RPS 24" x 0.62517"	534.14	24.514	21.787	1.125	0.00	0.000	21.787	0.000
L4	68.5 - 68 (4)	RPS 24" x 0.88003"	541.39	18.227	21.760	0.838	0.00	0.000	21.760	0.000
L5	68 - 63.5 (5)	RPS 24" x 0.61306"	608.13	28.417	24.955	1.139	0.00	0.000	24.955	0.000
L6	63.5 - 60 (6)	RPS 24" x 1.13718"	661.93	17.817	22.394	0.796	0.00	0.000	22.394	0.000
L7	60 - 56.5 (7)	RPS 30" x 0.90733"	718.30	14.723	23.225	0.634	0.00	0.000	23.225	0.000
L8	56.5 - 45.417 (8)	RPS 30" x 0.55714"	906.74	29.217	25.067	1.166	0.00	0.000	25.067	0.000
L9	45.417 - 36.417 (9)	RPS 30" x 0.70733"	1071.22	27.602	25.047	1.102	0.00	0.000	25.047	0.000
L10	36.417 - 33.5 (10)	RPS 30" x 0.86188"	1126.59	24.197	25.060	0.966	0.00	0.000	25.060	0.000
L11	33.5 - 32.75	RPS 30" x 1.23648"	1140.9	17.741	23.232	0.764	0.00	0.000	23.232	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	(11)		7							
L12	32.75 - 30 (12)	RPS 30" x 0.90733"	1194.01	24.473	23.239	1.053	0.00	0.000	23.239	0.000
L13	30 - 26.5 (13)	RPS 36" x 0.7835"	1262.25	20.279	23.654	0.857	0.00	0.000	23.654	0.000
L14	26.5 - 20.583 (14)	RPS 36" x 0.62423"	1379.55	27.450	23.674	1.159	0.00	0.000	23.674	0.000
L15	20.583 - 2 (15)	RPS 36" x 0.84085"	1763.11	26.521	23.654	1.121	0.00	0.000	23.654	0.000
L16	2 - 0 (16)	RPS 36" x 0.9234"	1805.68	24.905	23.232	1.072	0.00	0.000	23.232	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	120 - 90 (1)	P24x1/4	13.25	1.421	16.800	0.085	2.02	0.111	11.901	0.009
L2	90 - 80 (2)	P24x3/8	13.76	0.988	16.800	0.059	2.01	0.075	16.800	0.004
L3	80 - 68.5 (3)	RPS 24" x 0.62517"	14.47	0.630	13.204	0.048	1.98	0.045	13.204	0.003
L4	68.5 - 68 (4)	RPS 24" x 0.88003"	14.54	0.455	13.188	0.034	1.97	0.033	13.188	0.003
L5	68 - 63.5 (5)	RPS 24" x 0.61306"	15.14	0.672	15.124	0.044	1.89	0.044	15.124	0.003
L6	63.5 - 60 (6)	RPS 24" x 1.13718"	15.62	0.382	13.572	0.028	1.83	0.025	13.572	0.002
L7	60 - 56.5 (7)	RPS 30" x 0.90733"	16.27	0.392	14.076	0.028	2.00	0.020	14.076	0.001
L8	56.5 - 45.417 (8)	RPS 30" x 0.55714"	17.73	0.688	15.192	0.045	1.75	0.028	15.192	0.002
L9	45.417 - 36.417 (9)	RPS 30" x 0.70733"	18.82	0.578	15.180	0.038	1.56	0.020	15.180	0.001
L10	36.417 - 33.5 (10)	RPS 30" x 0.86188"	19.16	0.486	15.188	0.032	1.51	0.016	15.188	0.001
L11	33.5 - 32.75 (11)	RPS 30" x 1.23648"	19.21	0.344	14.080	0.024	1.48	0.011	14.080	0.001
L12	32.75 - 30 (12)	RPS 30" x 0.90733"	19.38	0.467	14.084	0.033	1.46	0.015	14.084	0.001
L13	30 - 26.5 (13)	RPS 36" x 0.7835"	19.63	0.453	14.336	0.032	1.44	0.012	14.336	0.001
L14	26.5 - 20.583 (14)	RPS 36" x 0.62423"	20.03	0.577	14.348	0.040	1.39	0.014	14.348	0.001
L15	20.583 - 2 (15)	RPS 36" x 0.84085"	21.24	0.457	14.336	0.032	1.25	0.009	14.336	0.001
L16	2 - 0 (16)	RPS 36" x 0.9234"	21.35	0.420	14.080	0.030	1.24	0.009	14.080	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 90 (1)	0.017	1.094	0.000	0.085	0.009	1.120 ✓	1.333	H1-3+VT ✓
L2	90 - 80 (2)	0.013	0.995	0.000	0.059	0.004	1.011 ✓	1.333	H1-3+VT ✓
L3	80 - 68.5 (3)	0.012	1.125	0.000	0.048	0.003	1.140 ✓	1.333	H1-3+VT ✓
L4	68.5 - 68 (4)	0.009	0.838	0.000	0.034	0.003	0.848 ✓	1.333	H1-3+VT ✓
L5	68 - 63.5 (5)	0.012	1.139	0.000	0.044	0.003	1.153 ✓	1.333	H1-3+VT ✓
L6	63.5 - 60 (6)	0.008	0.796	0.000	0.028	0.002	0.805 ✓	1.333	H1-3+VT ✓
L7	60 - 56.5 (7)	0.008	0.634	0.000	0.028	0.001	0.643 ✓	1.333	H1-3+VT ✓
L8	56.5 - 45.417	0.015	1.166	0.000	0.045	0.002	1.182 ✓	1.333	H1-3+VT ✓

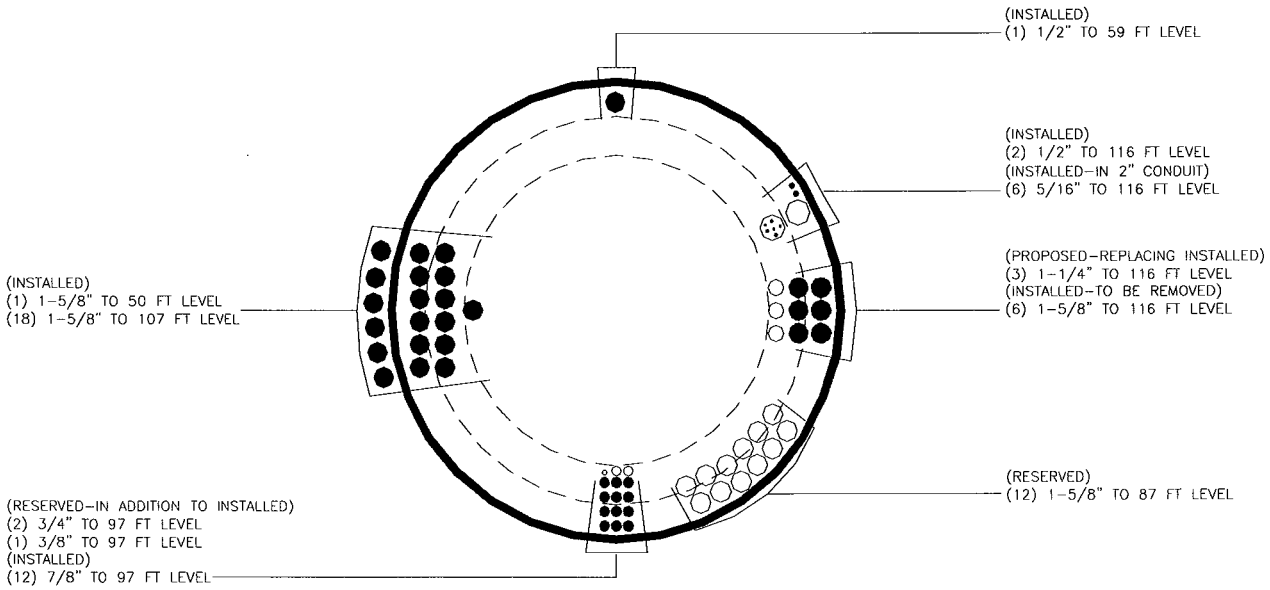
Section No.	Elevation ft (8)	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L9	45.417 - 36.417 (9)	0.013	1.102	0.000	0.038	0.001	1.117 ✓	1.333	H1-3+VT ✓
L10	36.417 - 33.5 (10)	0.011	0.966	0.000	0.032	0.001	0.978 ✓	1.333	H1-3+VT ✓
L11	33.5 - 32.75 (11)	0.009	0.764	0.000	0.024	0.001	0.773 ✓	1.333	H1-3+VT ✓
L12	32.75 - 30 (12)	0.012	1.053	0.000	0.033	0.001	1.067 ✓	1.333	H1-3+VT ✓
L13	30 - 26.5 (13)	0.012	0.857	0.000	0.032	0.001	0.871 ✓	1.333	H1-3+VT ✓
L14	26.5 - 20.583 (14)	0.016	1.159	0.000	0.040	0.001	1.178 ✓	1.333	H1-3+VT ✓
L15	20.583 - 2 (15)	0.016	1.121	0.000	0.032	0.001	1.138 ✓	1.333	H1-3+VT ✓
L16	2 - 0 (16)	0.015	1.072	0.000	0.030	0.001	1.088 ✓	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	120 - 90	Pole	P24x1/4	1	-7.67	589.19	84.1	Pass
L2	90 - 80	Pole	P24x3/8	2	-9.03	934.94	75.9	Pass
L3	80 - 68.5	Pole	RPS 24" x 0.62517"	3	-11.32	1212.06	85.5	Pass
L4	68.5 - 68	Pole	RPS 24" x 0.88003"	4	-11.45	1685.53	63.6	Pass
L5	68 - 63.5	Pole	RPS 24" x 0.61306"	5	-12.34	1362.11	86.5	Pass
L6	63.5 - 60	Pole	RPS 24" x 1.13718"	6	-13.45	2216.54	60.4	Pass
L7	60 - 56.5	Pole	RPS 30" x 0.90733"	7	-14.61	2333.99	48.2	Pass
L8	56.5 - 45.417	Pole	RPS 30" x 0.55714"	8	-17.05	1565.42	88.7	Pass
L9	45.417 - 36.417	Pole	RPS 30" x 0.70733"	9	-19.47	1975.72	83.8	Pass
L10	36.417 - 33.5	Pole	RPS 30" x 0.86188"	10	-20.39	2395.96	73.4	Pass
L11	33.5 - 32.75	Pole	RPS 30" x 1.23648"	11	-20.71	3145.60	58.0	Pass
L12	32.75 - 30	Pole	RPS 30" x 0.90733"	12	-21.61	2335.32	80.0	Pass
L13	30 - 26.5	Pole	RPS 36" x 0.7835"	13	-22.81	2484.77	65.3	Pass
L14	26.5 - 20.583	Pole	RPS 36" x 0.62423"	14	-24.49	1990.28	88.3	Pass
L15	20.583 - 2	Pole	RPS 36" x 0.84085"	15	-31.25	2662.29	85.4	Pass
L16	2 - 0	Pole	RPS 36" x 0.9234"	16	-32.04	2864.71	81.6	Pass
							Summary	
						Pole (L8)	88.7	Pass
						RATING =	**88.7**	**Pass**

APPENDIX B

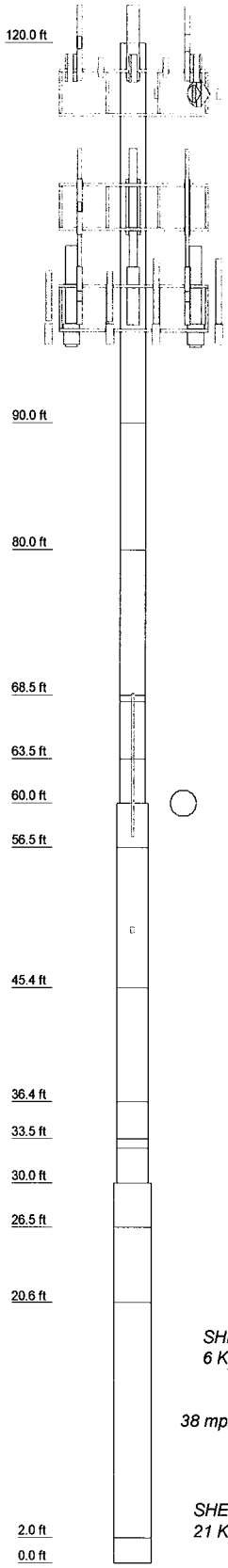
BASE LEVEL DRAWING

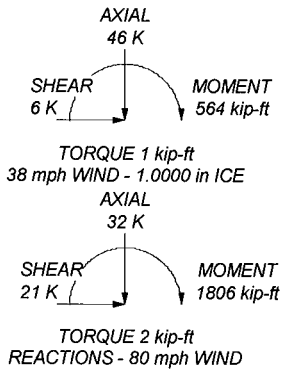


APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Size	P24x1/4	P24x3/8	RPS 36" x 0.84085"	RPS 36" x 0.62517"	RPS 36" x 0.55733"	RPS 30" x 0.70733"	RPS 30" x 0.55733"	RPS 30" x 0.55733"	RPS 30" x 0.70733"	RPS 30" x 0.55733"	RPS 30" x 0.55733"	RPS 30" x 0.55733"	RPS 30" x 0.55733"	RPS 36" x 0.62517"	RPS 36" x 0.84085"	RPS 36" x 0.9234"
Length (ft)	30.00	10.00	11.50	0.50	4.50	3.50	3.50	11.08	9.00	2.92	2.75	5.00	3.50	5.92	18.58	2.00
Socket Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
Grade	A53-B-42		Reinf 33.01 ksi	Reinf 37.97 ksi	Reinf 35.20 ksi	Reinf 35.21 ksi	Reinf 37.97 ksi	Reinf 37.98 ksi	Reinf 37.95 ksi	Reinf 37.97 ksi	Reinf 35.87 ksi	Reinf 35.84 ksi	Reinf 35.87 ksi	Reinf 35.87 ksi	Reinf 35.84 ksi	Reinf 35.20 ksi
Weight (K)	1.9	0.9	1.8	0.1	0.7	1.0	1.0	1.9	2.0	0.8	0.3	0.8	1.0	1.4	5.9	0.7





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) PCS 1900MHz 4x45W-65MHz	118	APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	107
(2) PCS 1900MHz 4x45W-65MHz	118	ONEBASE TWIN DUAL DUPLEX TMA	107
(2) PCS 1900MHz 4x45W-65MHz	118	ONEBASE TWIN DUAL DUPLEX TMA	107
800MHz 2X50W RRH W/FILTER	118	ONEBASE TWIN DUAL DUPLEX TMA	107
800MHz 2X50W RRH W/FILTER	118	Platform Mount [LP 712-1]	107
800MHz 2X50W RRH W/FILTER	118	DR65-18-00DP w/ Mount Pipe	107
Side Arm Mount [SO 102-3]	118	DR65-18-00DP w/ Mount Pipe	107
APXV9ERR18-C-A20 w/ Mount Pipe	116	7770.00 w/ Mount Pipe	99
APXVSPP18-C-A20 w/ Mount Pipe	116	(2) LGP13519	99
APXVSPP18-C-A20 w/ Mount Pipe	116	(2) LGP13519	99
IBC1900HG-2A	116	(2) LGP13519	99
IBC1900HG-2A	116	(2) P65-17-XLH-RR w/ Mount Pipe	99
IBC1900HG-2A	116	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	99
IBC1900BB-1	116	(2) AM-X-CD-14-65-00T-RET w/ Mount Pipe	99
IBC1900BB-1	116	DC6-48-60-18-8F	99
IBC1900BB-1	116	DTMABP7819VG12A	99
Platform Mount [LP 501-1]	116	DTMABP7819VG12A	99
840 10054 w/ Mount Pipe	116	DTMABP7819VG12A	99
840 10054 w/ Mount Pipe	116	Platform Mount [LP 501-1]	99
840 10054 w/ Mount Pipe	116	7770.00 w/ Mount Pipe	99
WiMAX DAP HEAD	116	7770.00 w/ Mount Pipe	99
WiMAX DAP HEAD	116	(2) RRUS-11	97
WiMAX DAP HEAD	116	Side Arm Mount [SO 102-3]	97
(2) HORIZON COMPACT	116	(2) RRUS-11	97
A-ANT-18G-1-C	116	(2) RRUS-11	97
A-ANT-18G-2-C	116	DB536	59
DR65-18-00DP w/ Mount Pipe	107	Side Arm Mount [SO 702-1]	59
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	107	GPS	50
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	107		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi	Reinf 37.95 ksi	38 ksi	48 ksi
Reinf 33.01 ksi	33 ksi	42 ksi	Reinf 37.97 ksi	38 ksi	65 ksi
Reinf 32.97 ksi	33 ksi	42 ksi	Reinf 35.20 ksi	35 ksi	44 ksi
Reinf 37.81 ksi	38 ksi	65 ksi	Reinf 35.21 ksi	35 ksi	45 ksi
Reinf 33.93 ksi	34 ksi	43 ksi	Reinf 35.84 ksi	36 ksi	45 ksi
Reinf 35.19 ksi	35 ksi	44 ksi	Reinf 35.87 ksi	36 ksi	65 ksi
Reinf 37.98 ksi	38 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 88.7%

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Job: ***Existing 120 ft. Monopole / Mtn. View Cem. (Filley Park)***		
Project: ***37512-2736 / BU876329***		
Client: Crown Castle USA	Drawn by: Kevin Mahlum	App'd:
Code: TIA/EIA-222-F	Date: 12/03/12	Scale: NTS
Path: G:\TOWER\375_Crown_Castle\2012\37512-2736 BU 876329\B\37512-2736_B.en		Dwg No. E-1

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#:	
Site Name:	
App #:	

Pole Manufacturer:	Other

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle (in.):	29		

Plate Data		
Diam:	32	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	24	in
Thick:	0.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	236.84	ft-kips
Axial:	7.67	kips
Shear:	13.25	kips
Elevation:	90	feet

If No stiffeners, Criteria: AISC ASD <-Only Applcable to Unstiffened Cases

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	19.22	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	2.018	in	
Min PL "treq" for actual **T w/ Pry**:	0.995	in	
Min PL "t1" for actual **T w/o Pry**:	1.304	in	
T allowable with Prying:	35.75	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	19.22	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	41.7%	Pass	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	20.4	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	56.7%	Pass	Comp. Y.L. Length:
No Prying			16.28
Tension Side Stress Ratio, (treq/t)^2:	44.0%	Pass	

n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	n/a

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

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v4.1 - Effective 7-3-12

Date: 12/3/2012
PJF Project: 37512-2736 B
Client Ref. # 876329
Site Name: MTN. View Cem. (Filley Park)
Description: 60' Flange
Owner: CCI
Engineer: KMM

Asymmetric Bolt Analysis

Moment =	662	k-ft	TIA Ref.	F	Location =	Flange Plate		
Axial =	13.5	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	15.6	kips	Max Ratio =	105.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	16							

** For Flange Plates: Prying action is not considered in the bolt loads. **

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	0.000				0.0	46.19	8.00	8.00	175.34	168.61	175.34	**290.77**	290.77	60.3%
2	0.000				90.0	46.19	8.00	8.00	175.34	168.61	175.34	**290.77**	290.77	60.3%
3	0.000				180.0	46.19	8.00	8.00	175.34	168.61	175.34	**290.77**	290.77	60.3%
4	0.000				270.0	46.19	8.00	8.00	175.34	168.61	175.34	**290.77**	290.77	60.3%
5	0.000	A325	0	0	0.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
6	0.000	A325	0	0	30.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
7	0.000	A325	0	0	60.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
8	0.000	A325	0	0	90.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
9	0.000	A325	0	0	120.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
10	0.000	A325	0	0	150.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
11	0.000	A325	0	0	180.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
12	0.000	A325	0	0	210.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
13	0.000	A325	0	0	240.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
14	0.000	A325	0	0	270.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
15	0.000	A325	0	0	300.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
16	0.000	A325	0	0	330.0	35.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.0%
								32.00						

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v4.1 - Effective 7-3-12

Date: 12/3/2012
PJF Project: 37512-2736 B
Client Ref. # 876329
Site Name: MTN. View Cem. (Filley Park)
Description: 30' Flange
Owner: CCI
Engineer: KMM

Asymmetric Bolt Analysis

Moment =	1194	k-ft	TIA Ref.	F	Location =	Flange Plate		
Axial =	21.6	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	19.4	kips	Max Ratio =	105.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	20							

** For Flange Plates: Prying action is not considered in the bolt loads. **

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	0.000				0.0	52.19	8.00	8.00	279.95	269.15	279.95	290.77	290.77	96.3%
2	0.000				90.0	52.19	8.00	8.00	279.95	269.15	279.95	290.77	290.77	96.3%
3	0.000				180.0	52.19	8.00	8.00	279.95	269.15	279.95	290.77	290.77	96.3%
4	0.000				270.0	52.19	8.00	8.00	279.95	269.15	279.95	290.77	290.77	96.3%
5	0.000	A325	0	0	0.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
6	0.000	A325	0	0	22.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
7	0.000	A325	0	0	45.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
8	0.000	A325	0	0	67.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
9	0.000	A325	0	0	90.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
10	0.000	A325	0	0	112.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
11	0.000	A325	0	0	135.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
12	0.000	A325	0	0	157.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
13	0.000	A325	0	0	180.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
14	0.000	A325	0	0	202.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
15	0.000	A325	0	0	225.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
16	0.000	A325	0	0	247.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
17	0.000	A325	0	0	270.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
18	0.000	A325	0	0	292.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
19	0.000	A325	0	0	315.0	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
20	0.000	A325	0	0	337.5	41.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
								32.00						

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v4.1 - Effective 7-3-12

Date: 12/3/2012
PJF Project: 37512-2736 B
Client Ref. # 876329
Site Name: MTN. View CEM. (Filley Park)
Description: 120' Pole
Owner: CCI
Engineer: KMM

Asymmetric Anchor Rod Analysis

Moment =	1806	k-ft	TIA Ref.	F	Location =	Base Plate		
Axial =	32.0	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	21.0	kips	Max Ratio =	105.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	24							

** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. **

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.500	A354 Gr BC	109	125	0.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
2	1.500	A354 Gr BC	109	125	22.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
3	1.500	A354 Gr BC	109	125	45.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
4	1.500	A354 Gr BC	109	125	67.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
5	1.500	A354 Gr BC	109	125	90.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
6	1.500	A354 Gr BC	109	125	112.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
7	1.500	A354 Gr BC	109	125	135.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
8	1.500	A354 Gr BC	109	125	157.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
9	1.500	A354 Gr BC	109	125	180.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
10	1.500	A354 Gr BC	109	125	202.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
11	1.500	A354 Gr BC	109	125	225.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
12	1.500	A354 Gr BC	109	125	247.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
13	1.500	A354 Gr BC	109	125	270.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
14	1.500	A354 Gr BC	109	125	292.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
15	1.500	A354 Gr BC	109	125	315.0	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
16	1.500	A354 Gr BC	109	125	337.5	41.00	0.00	1.77	78.97	76.26	76.26	0.00	97.19	78.5%
17	1.375	Williams R71	127.7	150	33.8	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
18	1.375	Williams R71	127.7	150	56.3	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
19	1.375	Williams R71	127.7	150	123.8	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
20	1.375	Williams R71	127.7	150	146.3	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
21	1.375	Williams R71	127.7	150	213.8	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
22	1.375	Williams R71	127.7	150	236.3	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
23	1.375	Williams R71	127.7	150	303.8	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
24	1.375	Williams R71	127.7	150	326.3	49.88	0.00	1.68	90.94	88.37	88.37	0.00	110.75	79.8%
								41.70						

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#:	
Site Name:	
App #:	
Pole Manufacturer:	*Other*

Reactions		
Moment:	1060.8	ft-kips
Axial:	21.7	kips
Shear:	14.2	kips

Reactions adjusted to account for post-installed anchor rods

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	16	
Diam:	1.5	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi
Bolt Circle:	41	in

Plate Data		
Diam:	47	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	7.07	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0.5	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.75	in
Fillet V. Weld:	0.375	in
Width:	5.5	in
Height:	20.5	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Anchor Rod Results

		Stiffened
Maximum Rod Tension:	76.3 Kips	Service, ASD
Allowable Tension:	97.2 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	78.5% Pass	

Base Plate Results

	Flexural Check	Stiffened
Base Plate Stress:	24.8 ksi	Service, ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	69.0% Pass	Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld :	36.4% Pass
Vertical Weld:	18.7% Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	5.3% Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	36.6% Pass
Plate Comp. (AISC Bracket):	34.3% Pass

Pole Results

Pole Punching Shear Check:	6.7% Pass

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

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Job Number: 37512-2736 B
Site Number: 876329
Site Name: MTN. View CEM. (Filley Park)

Page: 1
By: KMM
Date: 12/3/2012

DRILLED PIER SOIL AND STEEL ANALYSIS - TIA/EIA-222-F

Unfactored Base Reactions from RISA

	Comp. (+)	Tension (-)	
Moment, M =	1806.0		k-ft
Shear, V =	21.0		kips
Axial Load, P =	32.0		kips
OTM =	1816.5		k-ft @ Ground

Safety Factors / Load Factors / Φ Factors

Tower Type =	Monopole DP
ACI Code =	ACI 318-02
Seismic Design Category =	D
Reference Standard =	TIA/EIA-222-F
Use 1.3 Load Factor?	Yes
Load Factor =	1.30

Drilled Pier Parameters

Diameter =	6	ft
Height Above Grade =	0.5	ft
Depth Below Grade =	25	ft
fc' =	3	ksi
εc =	0.003	in/in
Mat Ftdn. Cap Width =		ft
Mat Ftdn. Cap Length =		ft
Depth Below Grade =		ft

	Safety Factor	Φ Factor
Soil Lateral Resistance =	2.00	
Skin Friction =	2.00	
End Bearing =	2.00	
Concrete Wt. Resist Uplift =	1.25	

Load Combinations Checked per TIA/EIA-222-F

1. Ult. Skin Friction/2.00 + Ult. End Bearing/2.00
+ Effective Soil Wt. - Buoyant Conc. Wt. ≥ Compression
2. Ult. Skin Friction/2.00 + Buoyant Conc. Wt./1.25 ≥ Uplift
3. Ult. Skin Friction/1.50 + Buoyant Conc. Wt./1.50 ≥ Uplift

Steel Parameters

Number of Bars =	24	
Rebar Size =	#9	
Rebar Fy =	60	ksi
Rebar MOE =	29000	ksi
Tie Size =	#5	
Side Clear Cover to Ties =	3	in

Soil Parameters

Water Table Depth =	15.00	ft
Depth to Ignore Soil =	3.00	ft
Depth to Full Cohesion =	0	ft
Full Cohesion Starts at?	Ground	

Above Full Cohesion Lateral Resistance = 4(Cohesion)(Dia)(H)
Below Full Cohesion Lateral Resistance = 8(Cohesion)(Dia)(H)

Direct Embed Pole Shaft Parameters

Dia @ Grade =		in
Dia @ Depth Below Grade =		in
Number of Sides =		
Thickness =		in
Fy =		ksi
Backfill Condition =		

Maximum Capacity Ratios

Maximum Soil Ratio =	110.0%
Maximum Steel Ratio =	105.0%

Define Soil Layers

Note: Cohesion = Undrained Shear Strengh = Unconfined Compressive Strength / 2

Layer	Thickness ft	Unit Weight pcf	Cohesion psf	Friction Angle degrees	Soil Type	Ultimate End Bearing psf	Comp. Ult. Skin Friction psf	Tension Ult. Skin Friction psf	Depth ft
1	15	135		36	Sand	8000			15
2	15	137.4		36	Sand	8000			30
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Soil Results: Overturning

Depth to COR =	17.63	ft, from Grade	Shear, V =	21.00	kips
Bending Moment, M =	2186.81	k-ft, from COR	Resisting Shear, Va =	61.25	kips
Resisting Moment, Ma =	6378.07	k-ft, from COR			

MOMENT RATIO = 34.3% OK

SHEAR RATIO = 34.3% OK

Soil Results: Uplift

Uplift, T =	0.00	kips
Allowable Uplift Cap., Ta =	72.40	kips

UPLIFT RATIO = 0.0% OK

Soil Results: Compression

Compression, C =	32.00	kips
Allowable Comp. Cap., Ca =	101.05	kips

COMPRESSION RATIO = 31.7% OK

Steel Results (ACI 318-02):

Minimum Steel Area =	13.57	sq in
Actual Steel Area =	24.00	sq in
Allowable Min Axial, Pa =	-996.92	kips, Where Ma = 0 k-ft
Allowable Max Axial, Pa =	4704.45	kips, Where Ma = 0 k-ft

Axial Load, P =	56.39	kips @ 5.25 ft Below Grade
Moment, M =	1911.52	k-ft @ 5.25 ft Below Grade
Allowable Moment, Ma =	2568.68	k-ft

MOMENT RATIO = 74.4% OK

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *876329*
Site Name: *MTN. View CEM. (Filley Park)*
App #:

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	1911.52	ft-kips (* **Note**)
Max. Service Shaft P:	56.39	kips
Max Axial Force Type:	Comp.	

(*) **Note**: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	Shaft Factored Loads		
1.30	Mu:	2484.976	ft-kips
1.30	Pu:	73.307	kips

Pier Properties		
Concrete:		
Pier Diameter =	6.0	ft
Concrete Area =	4071.5	in^2
Reinforcement:		
Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =	5.30	ft
Vert. Cage Diameter =	63.62	in
Vertical Bar Size =	9	
Bar Diameter =	1.13	in
Bar Area =	1	in^2
Number of Bars =	24	
As Total=	24	in^2
A s/ Aconc, Rho:	0.0059	0.59%

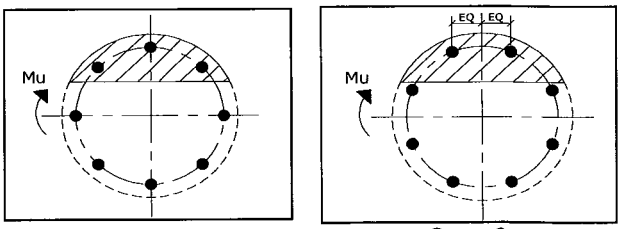
Material Properties		
Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2002	
Seismic Properties		
Seismic Design Category =	D	
Seismic Risk =	**High**	

Solve (Run) <-- Press Upon Completing All Input

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Results:

Governing Orientation Case: **2**



Case 1 Case 2

Dist. From Edge to Neutral Axis: **12.09** in
Extreme Steel Strain, εt: **0.0138**
εt > 0.0050, Tension Controlled
Reduction Factor,φ: **0.900**

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.59%	OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	6115.79	kips
at Mu=(ϕ=0.65)Mn=	3187.43	ft-kips
Max Tu, (φ=0.9) Tn =	1296	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	73.31	kips
Drilled Shaft Moment Capacity, φMn:	**3339.29**	ft-kips
Drilled Shaft Superimposed Mu:	**2484.98**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**74.4%**