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

May 17, 2013

Jeff Barbadora
Crown Castle
3530 Torrington Way, Suite 300
Charlotte, NC 28277

RE: **EM-SPRINT-NEXTEL-033-130429** – Sprint Nextel notice of intent to modify an existing telecommunications facility located at 201 Main Street, Cromwell, Connecticut.

Dear Mr. Barbadora:

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:

- Prior to antenna installation, the tower modifications identified in drawings included as Appendix D of the Structural Modification Report prepared by B+T Group dated March 1, 2013, and stamped by Chad Tuttle shall be implemented;
- Within 45 days following completion of the antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the structure and foundation do not exceed 100 percent of the post-construction structural rating;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the 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 April 25, 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,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/cm

c: The Honorable Mertie Terry, First Selectman, Town of Cromwell
Frederic Curtin, Zoning Enforcement Officer, Town of Cromwell

CROWN CASTLE

Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Tel: 704-405-6600

www.crowncastle.com

April 25, 2013

EM-SPRINT-NEXTEL-033-130429

ORIGINAL

RECEIVED
APR 29 2013
CONNECTICUT
SITING COUNCIL

Linda Roberts
Executive Director
Connecticut Siting Coun
10 Franklin Square
New Britain, CT 06051

RE: **Sprint Nextel-Exempt Modification - Crown Site BU: 876364**
Sprint Nextel Site ID: CT23XC558
Located at: 201 Main St., Cromwell, CT 06416

Dear Ms. Roberts:

This letter and exhibits 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 exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter and exhibits is being sent to The Honorable Mertie Terry, First Selectman for the Town of Cromwell.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at **201 Main St., Cromwell, CT 06416**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to Sprint's operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Sprint's 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 report for Sprint's modified facility is included as Exhibit-3.

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

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

Sincerely,

Jeff Barbadora
Property Specialist

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

CC: The Honorable Mertie Terry, First Selectman, Town of Cromwell

Exhibit – 1

Full Construction Drawings, Stamped & Sealed

(Insert A&E Drawings Complete – FST Task 25.0)

SHEET INDEX

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

DRIVING DIRECTIONS

DEPART FROM SPRINT:
1 INTERNATIONAL BLVD MAHWAH, NJ 07430

1. HEAD NORTH ON INTERNATIONAL BLVD/PARK ST TOWARD QUEENSLAND RD.
2. TAKE THE 3RD RIGHT ONTO PARK LN.
3. CONTINUE STRAIGHT ONTO LEISURE LN.
4. CONTINUE ONTO NJ-17 N.
5. TAKE THE NEW JERSEY 17 N/INTERSTATE 287 N EXIT TOWARD INTERSTATE 87/NORTH Y. THRUWAY.
6. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-287 N/I-87/NJ-17 N/NY. THRUWAY AND MERGE ONTO I-287 N/NJ-17 N.
7. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-87 S/I-287/TAPPAN ZEE BR/NEW YORK CITY/NEW YORK THRUWAY AND MERGE ONTO I-287 E/I-87 S.
8. TAKE THE EXIT ONTO I-95 N.
9. TAKE EXIT 48 ON THE LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD.
10. TAKE EXIT 22-22 NORTH-22 SOUTH TO MERGE ONTO CT-9 S TOWARD.
11. TAKE EXIT 19 FOR CT-372/WEST ST TOWARD CROMWELL.
12. TURN RIGHT ONTO CT-372 W/WEST ST.
13. TAKE THE 1ST RIGHT ONTO CT-3 N/SHUNPIKE RD.
14. TURN RIGHT ONTO EVERGREEN RD.
15. TURN RIGHT ONTO CT-99 S/MAIN ST.

Sprint

NETWORK VISION MMBTS LAUNCH
NORTHERN CONNECTICUT MARKET

SPRINT SITE NAME

CROMWELL/ FIRST LINE EMERGENCY

CROWN CASTLE SITE NAME

CROMWELL/ FIRST LINE EMERGENCY

SPRINT SITE NUMBER

CT23XC558

CROWN CASTLE NUMBER

876364

SITE ADDRESS
210 MAIN STREET
CROMWELL, CT 06416

STRUCTURE TYPE
MONOPOLE

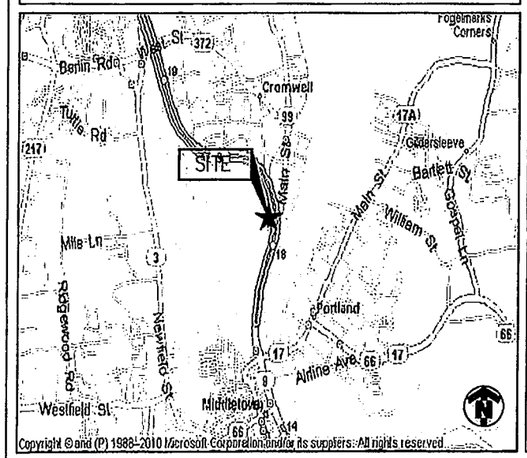
OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AND EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL 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:	CROMWELL/ FIRST LINE EMERGENCY	
SITE NO.:	CT23XC558	
SITE ADDRESS:	210 MAIN STREET CROMWELL, CT 06416	
COUNTY:	MIDDLESEX	
SITE COORDINATES:		
LATITUDE:	41° 35' 0.15" N	(NAD 83)
LONGITUDE:	72° 38' 59.14" W	(NAD 83)
GROUND ELEV.:	±6'	(AMSL)
POWER COMPANY.:	CL&P: (860) 947-2000	
PHONE COMPANY:	AT&T: (800) 288-2020	
JURISDICTION:	CONNECTICUT SITING COUNCIL	
LANDLORD:	CROWN ATLANTIC COMPANY LLC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (704) 405-6555	
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 CALLAHAN (860) 919-7278	
ENGINEER:	INFINIGY 11 HERBERT DRIVE LATHAM, NY 12110	
CONTACT:	PAUL FANOS (518) 690-0790	
BUILDING CODE:	2003 INTERNATIONAL BUILDING CODE 2005 CONNECTICUT BUILDING CODE W/ 2009 AMENDMENT UNIFORM MECHANICAL CODE UNIFORM PLUMBING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES	
ELECTRICAL CODE:	2005 NATIONAL ELECTRICAL CODE	

VICINITY MAP



PROJECT TEAM

ALCATEL·LUCENT

1 ROBBINS ROAD
WESTFORD, MA 01886

PROJECT MANAGER

INFINIGY Design. Build. Deliver.

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

ENGINEER

SCOPE OF WORK:

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

ENGINEER'S LICENSE

CERTIFICATION STATEMENT:

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

LICENSED ENGINEER – STATE OF CONNECTICUT

APPROVALS

ALU 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

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

No.	Submittal / Revision	App'd	Date
2	REVISED PER COMMENTS	AHB	4/15/13
1	REVISED PER COMMENTS	AHS	3/21/13
0	ISSUED FOR REVIEW	AHS	11/13/12

Drawn: AHS Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: AGE Date: 11/13/12

Project Number: 284-064

Project Title:
CROMWELL / FIRST LINE EMERGENCY
CT23XC558
201 MAIN STREET
CROMWELL, CT 06416

Prepared For: Sprint VISION

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Drawing Scale: AS NOTED
Date: 4/15/13

Drawing Title:
TITLE SHEET

Drawing Number:
T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

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

1.2 DEFINITIONS:
A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B: COMPANY: SPRINT NEXTEL CORPORATION
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

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

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

1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

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

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

PART 2 – EXECUTION

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

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

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

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

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

2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

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

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

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

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

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

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

4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

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

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

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

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

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

G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

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

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

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

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

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

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

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

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

PROJECT INFORMATION

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

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

NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.

NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

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

LEGEND

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
F	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
KW	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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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

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0	ISSUED FOR REVIEW	AHS	11/13/12

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Project Number
294-054

Project Title
CROMWELL / FIRST LINE EMERGENCY
CT23XC558

201 MAIN STREET
CROMWELL, CT 06416

Prepared For
Sprint VISION

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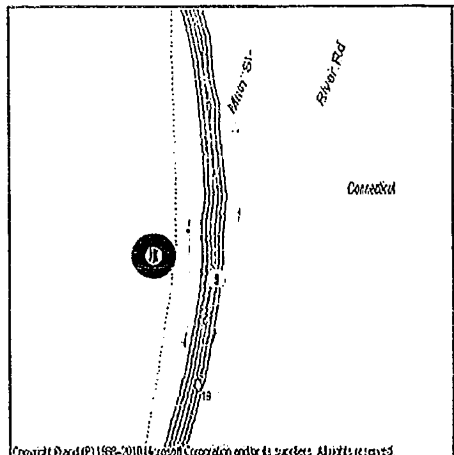
Drawing Title
GENERAL NOTES

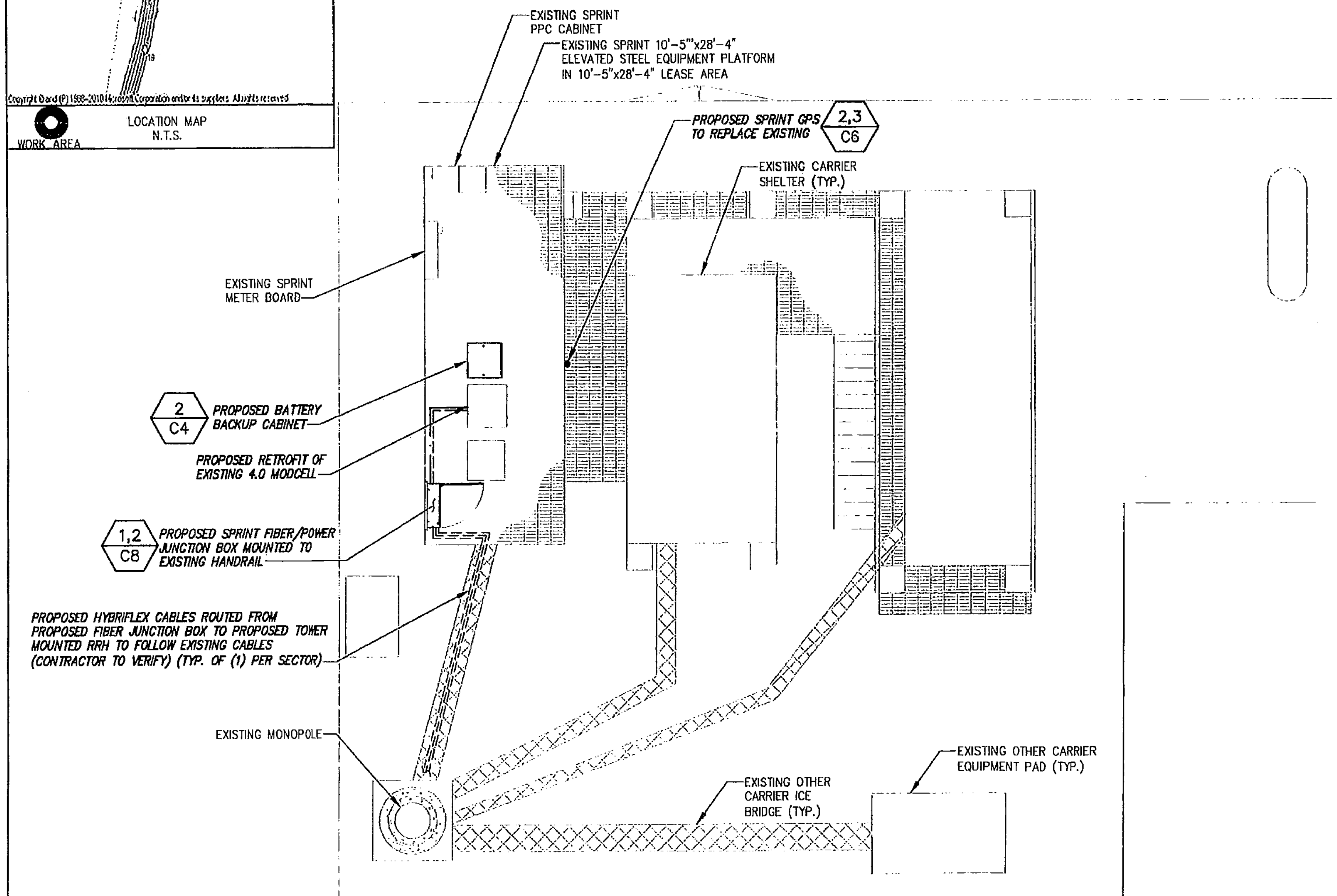
Drawing Number
C1

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION.



WORK AREA

LOCATION MAP
N.T.S.



CALLED NORTH

1 — COMPOUND SITE PLAN
SCALE: AS NOTED

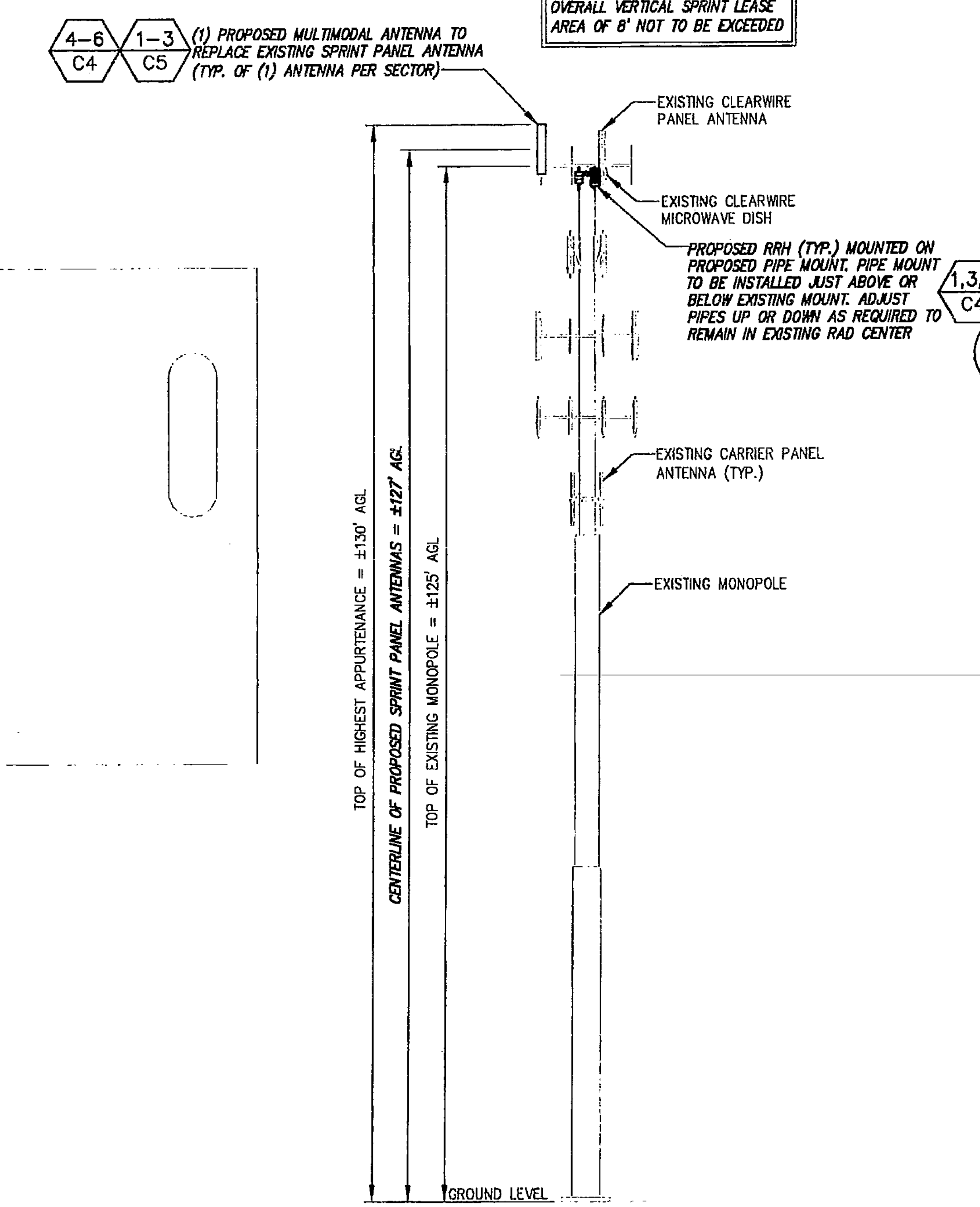
GRAPHIC SCALE

10' 5' 0 5' 10'

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

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY B+T GROUP DATED: 3/1/13

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



2 — SITE ELEVATION
NOT TO SCALE

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

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

INFINIGY& Design. Build. Deliver.

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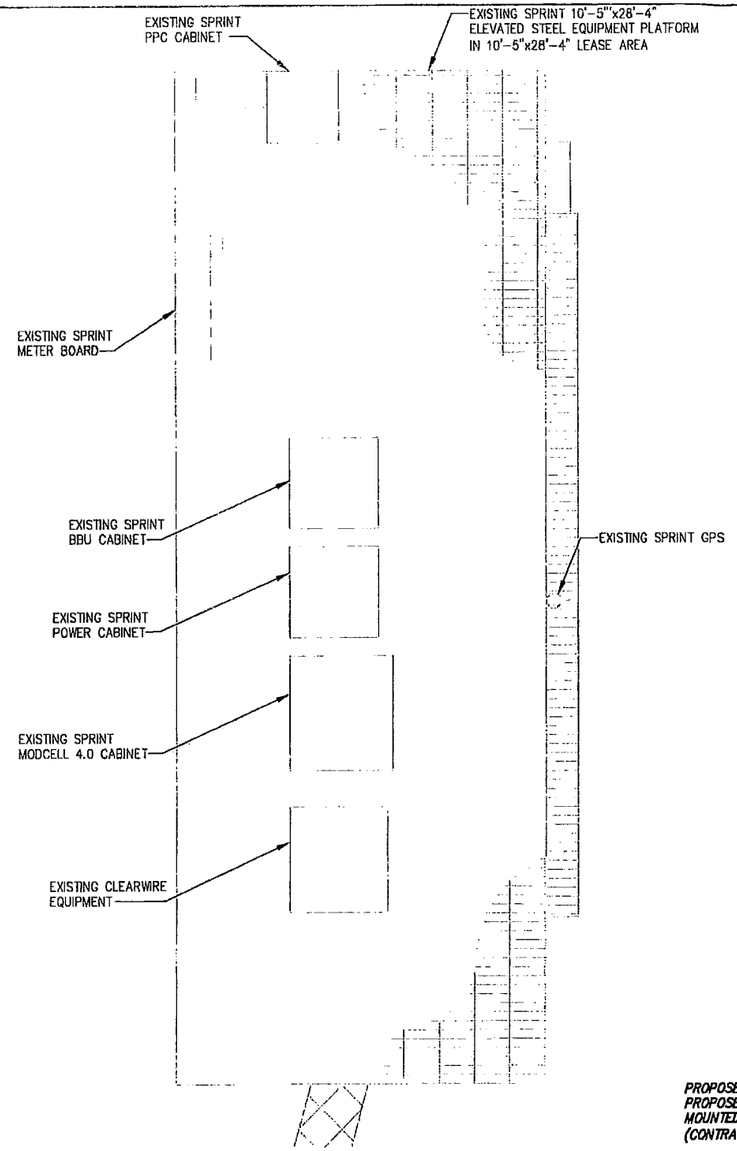
Drawing Title

COMPOUND SITE PLAN & ELEVATION

Drawing Number

C2

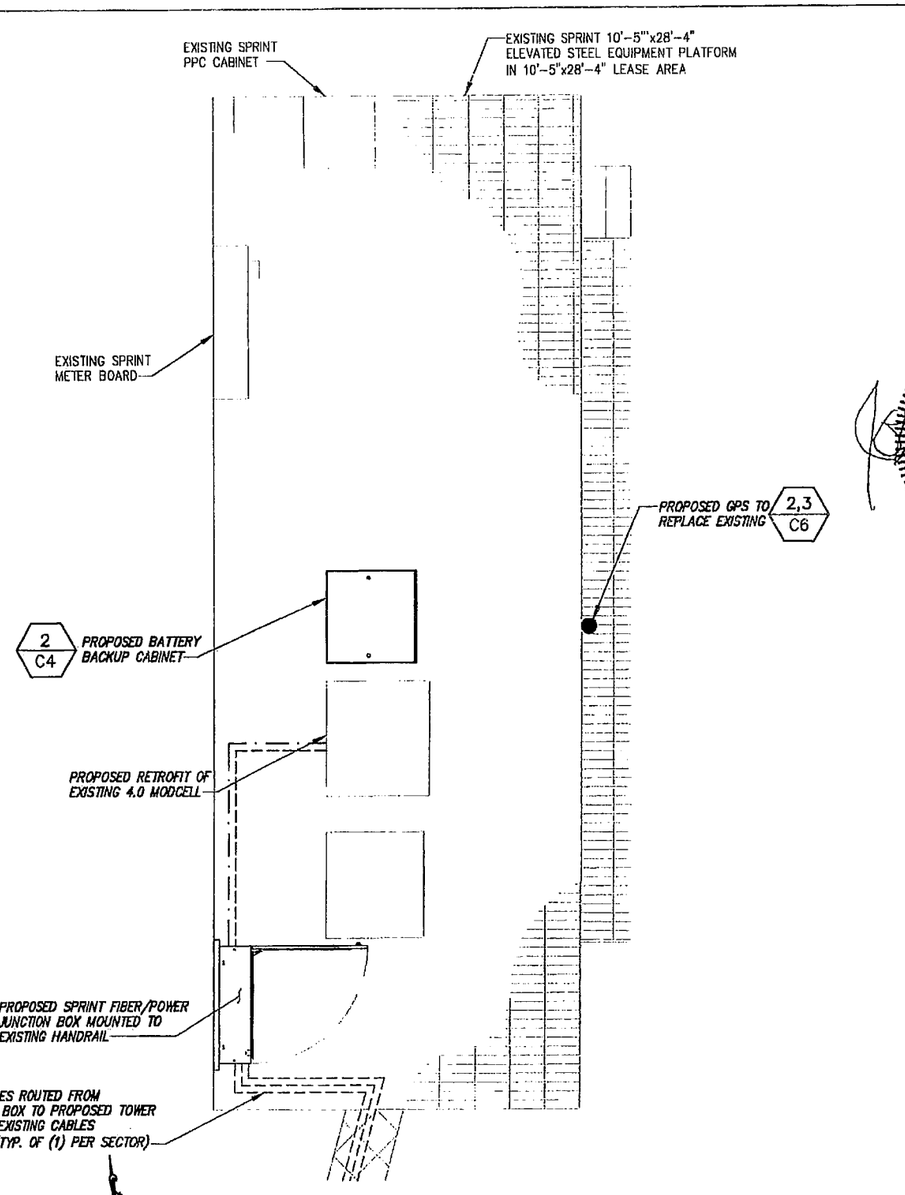
FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY B+T GROUP DATED: 3/1/13



1 EQUIPMENT SITE PLAN (EXISTING)
SCALE: AS NOTED

CALLED NORTH

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



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

CALLED NORTH

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

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"
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4. CONTRACTOR TO VERIFY LATEST REV AND DATE PRIOR TO CONSTRUCTION.

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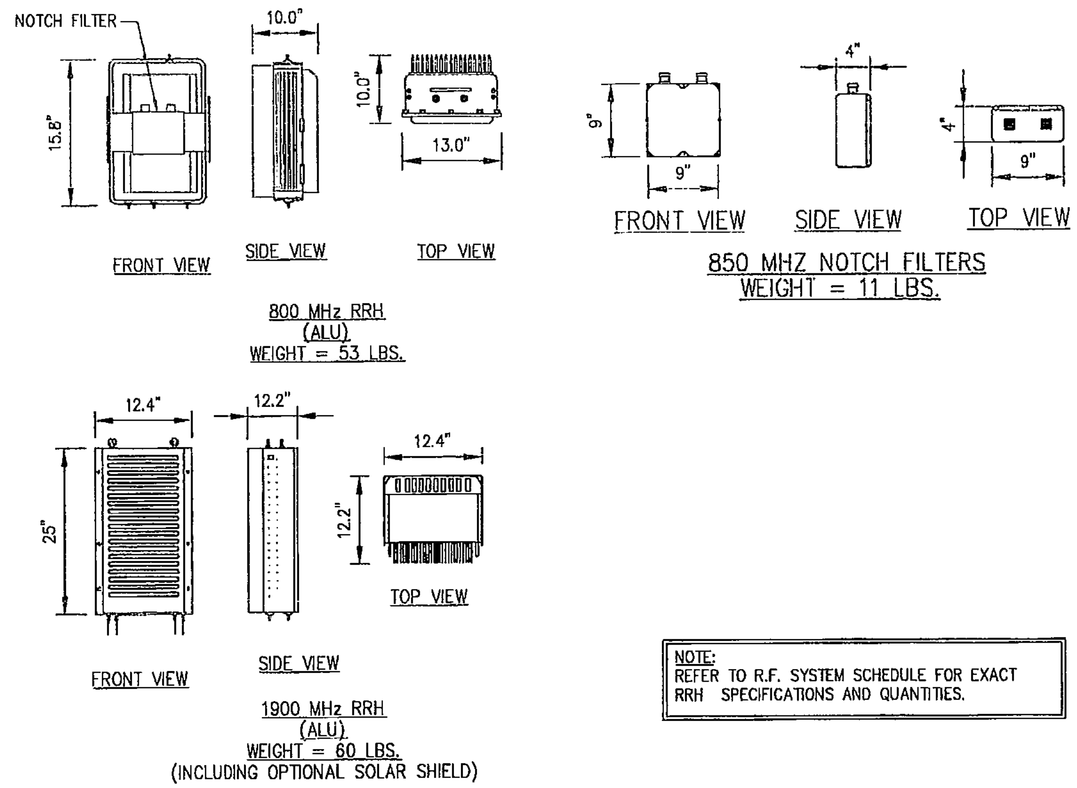
Drawing Title

EQUIPMENT SITE PLANS

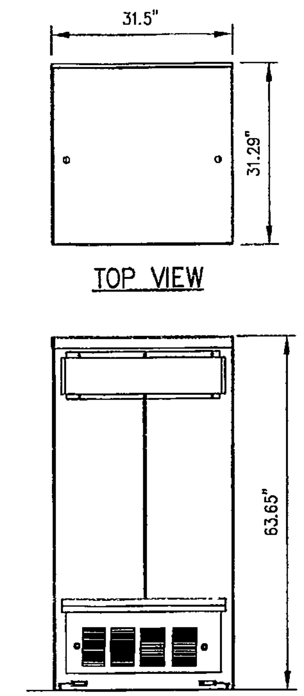
Drawing Number

C3



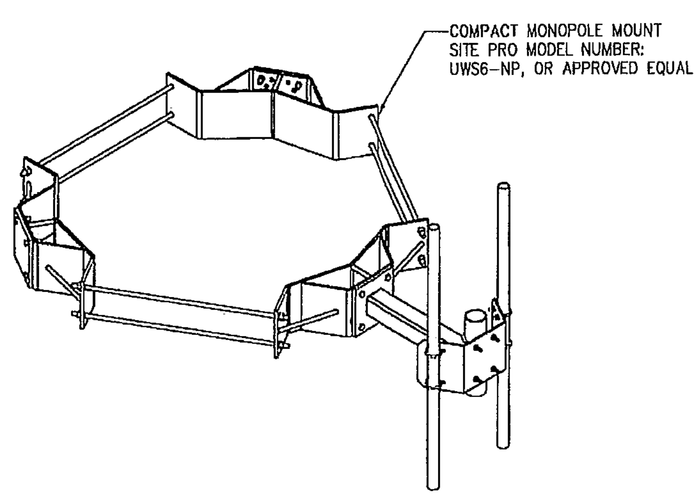
NOTE:
REFER TO R.F. SYSTEM SCHEDULE FOR EXACT RRH SPECIFICATIONS AND QUANTITIES.

1 — RRH EQUIPMENT DETAILS
NOT TO SCALE



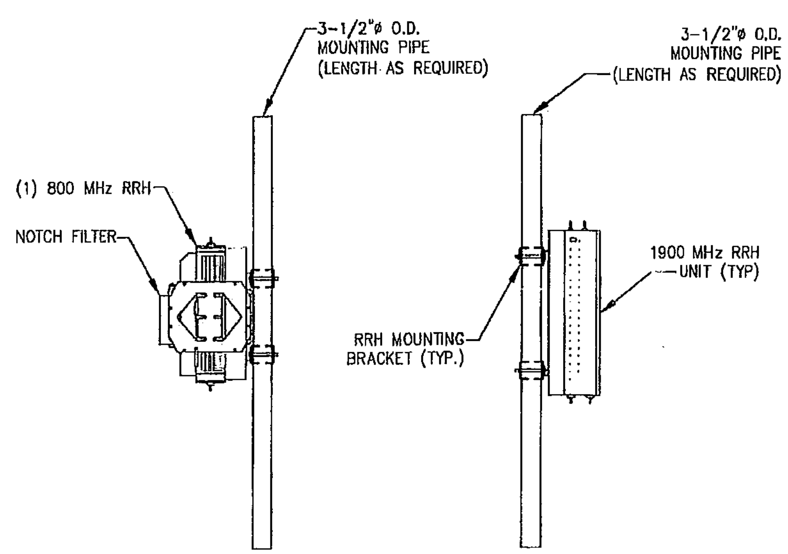
2 — BATTERY CABINET PROFILE
NOT TO SCALE

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
9928 MM BTS CABINET WEIGHT:	1074 LBS.
EMERSON BATTERY CABINET SPECIFICATIONS: (31.29"x31.5"x63.65")	
WEIGHTS:	
SHIPPING WEIGHT:	600 LBS.
LIFT WEIGHT:	540 LBS.
TOTAL WEIGHT:	2640 LBS (WITH BATTERIES)
INDIVIDUAL BATTERY WEIGHT:	105 LBS
(DO NOT LIFT WITH BATTERIES IN CABINET)	
MATERIAL SPECIFICATIONS	
C-, M-, AND ANGLE SHAPES:	ASTM A36
HIGH-STRENGTH BOLTS:	ASTM A325SC OR (A325N)
STRUCTURAL WF SHAPES:	ASTM A572-GR50
TUBE STEEL & PIPE COLUMNS:	ASTM A500, GRADE B
WELDING ELECTRODES:	E70XX
W - SHAPES:	ASTM A992, GRADE 50
U-BOLTS:	ASTM A36

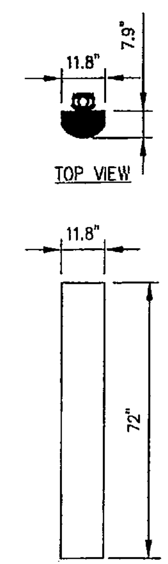


3 — COMPACT MONOPOLE MOUNT
NOT TO SCALE

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



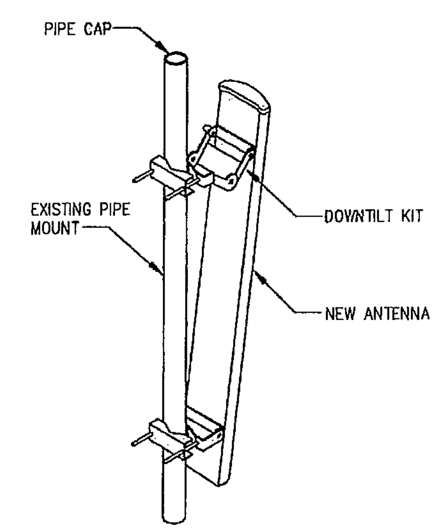
4 — RRH MOUNTING DETAILS
NOT TO SCALE



FRONT VIEW
800/1900
MULTI-MODE

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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11 Herbert Drive
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Project Number
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CROMWELL / FIRST LINE EMERGENCY
CT23XC558

201 MAIN STREET
CROMWELL, CT 06416

Prepared For

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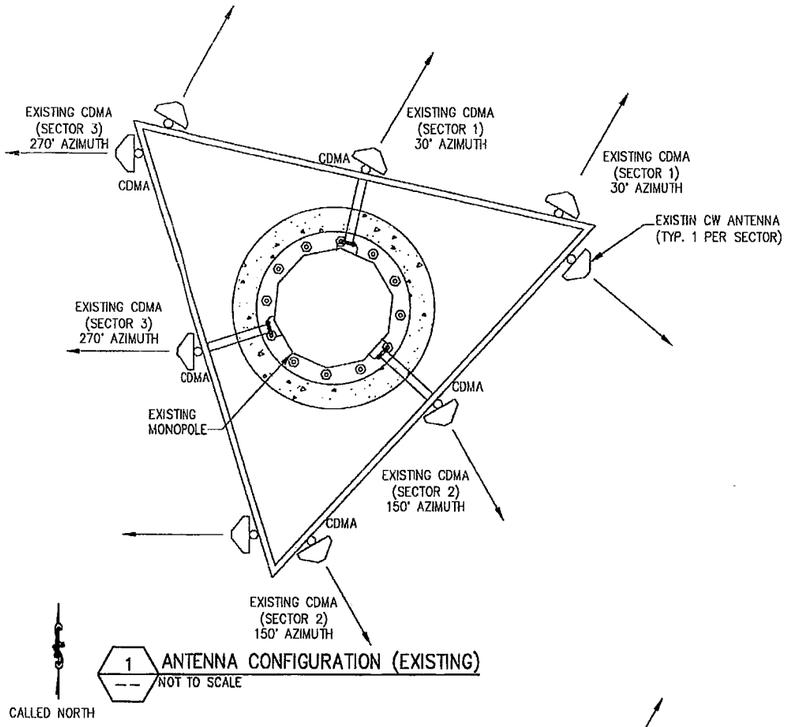
Drawing Title

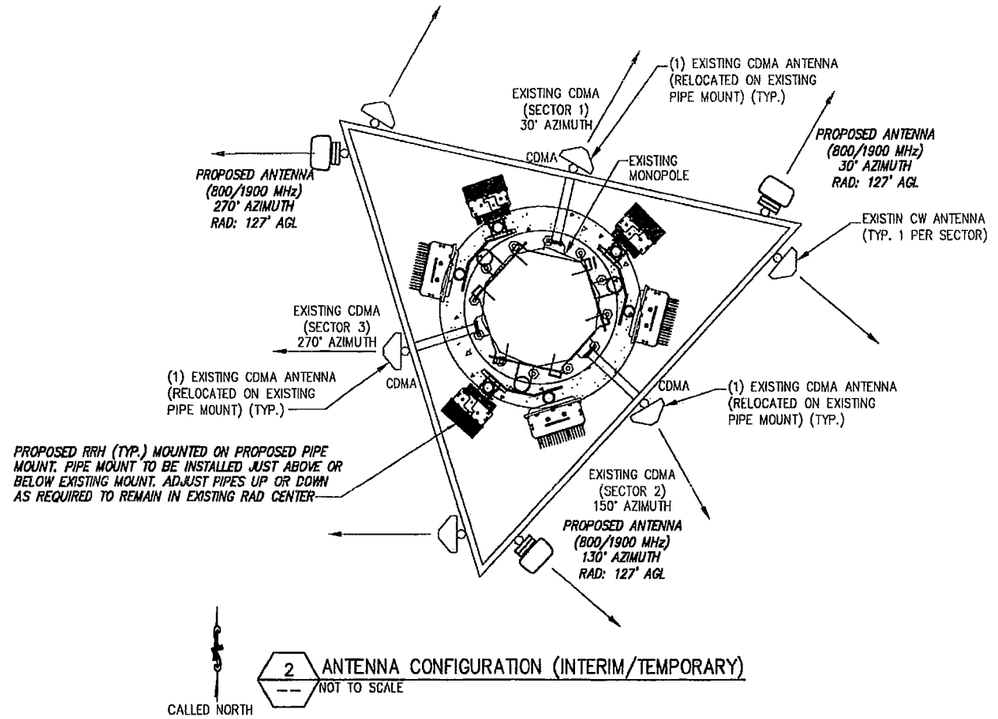
EQUIPMENT DETAILS

Drawing Number

C4

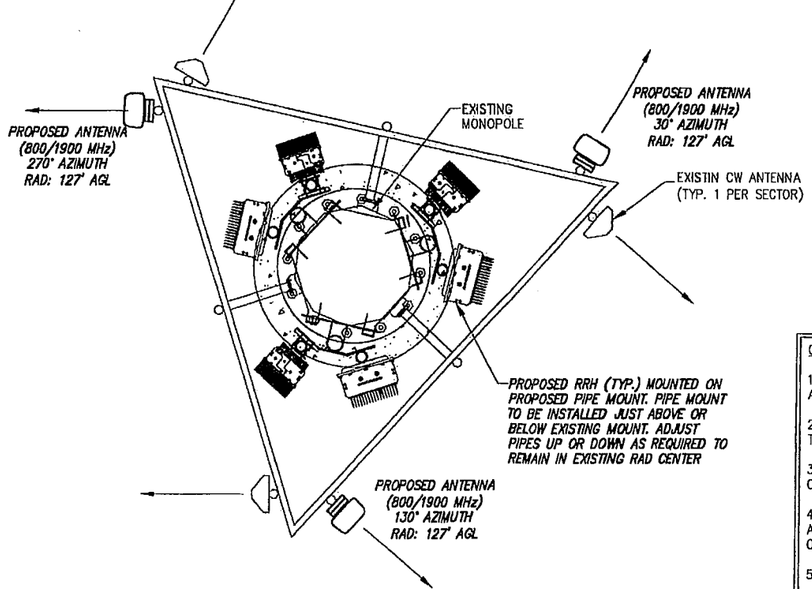


1 ANTENNA CONFIGURATION (EXISTING)
NOT TO SCALE



2 ANTENNA CONFIGURATION (INTERIM/TEMPORARY)
NOT TO SCALE

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, ANTENNAS 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 B+T GROUP DATED: 3/1/13

RRH NOTES:

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

GENERAL NOTES:

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

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Fax # (518) 690-0793

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 21705
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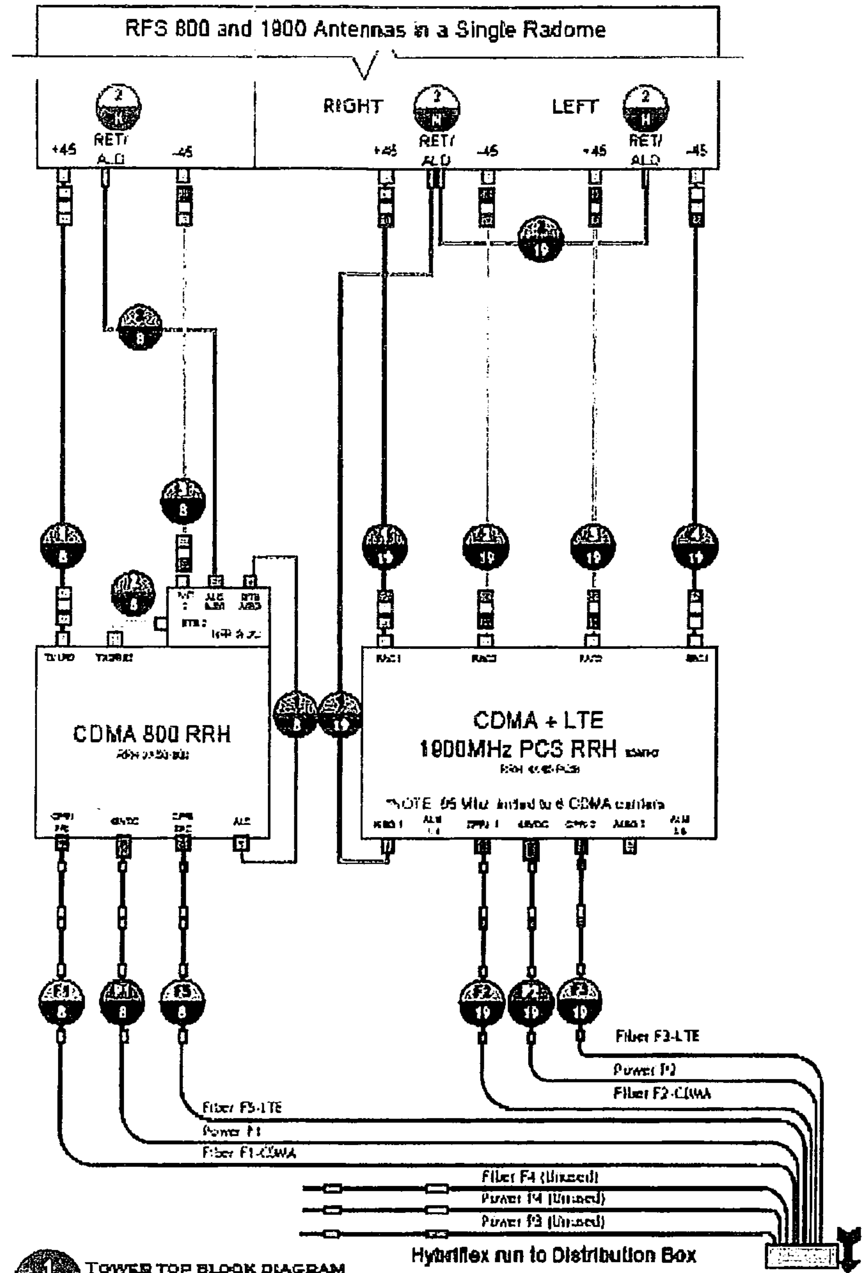
Drawing Title

ANTENNA PLANS

Drawing Number

C5



1 BD1 TOWER TOP BLOCK DIAGRAM
SCALE: N.T.S.

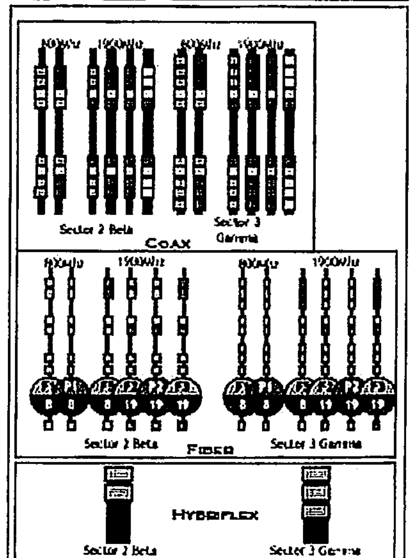
Power Feed Polarity Definition:
IF wires are BLACK AND BLACK/WHITE STRIPE:
- Black- -48VDC Feed (Battery)
- Black/White Stripe- Return

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.

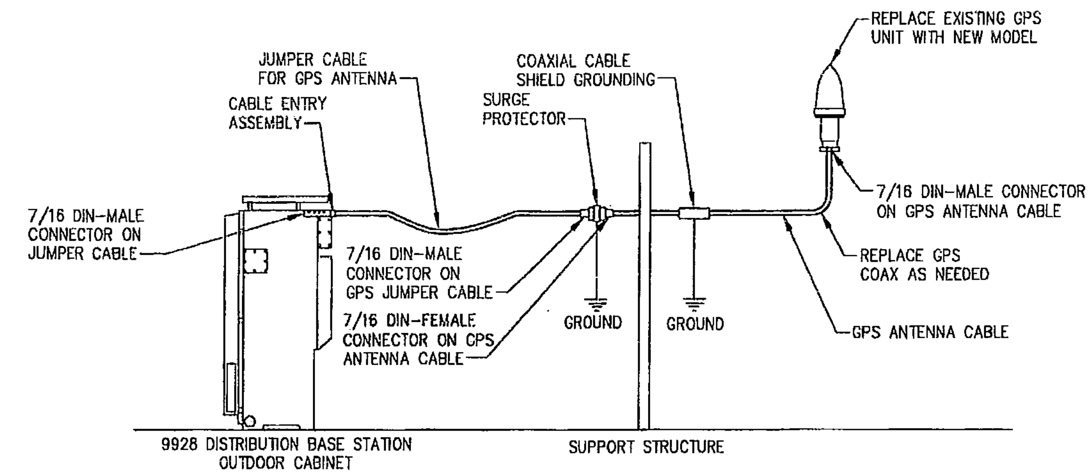
SCENARIO 124 v2.3

1 ANTENNA CABLE RISER DIAGRAM
NOT TO SCALE

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

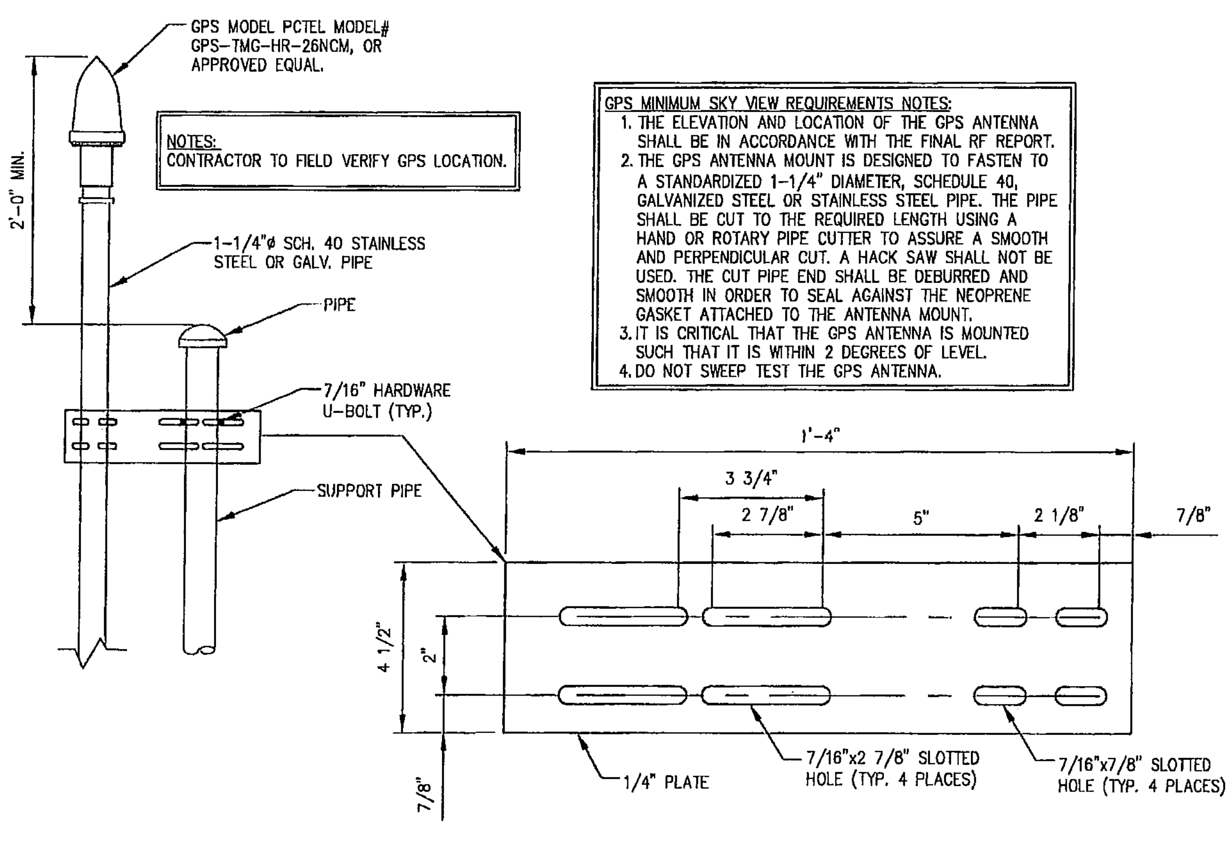
WEATHERPROOFING CONNECTORS AND GROUND KIT NOTES:
1. ALL CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED USING BUTYL RUBBER WEATHERPROOFING AND TAPE, THIS INSTALLATION MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION OR PER THE FOLLOWING INSTRUCTIONS (WHICHEVER IS GREATER).
2. THE 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.



NOTE:
THE GPS SURGE NEEDS TO BE INSTALLED AWAY FROM AND SEPARATE FROM THE MMBTS CABINET (PER THE SITE PREP GUIDE)
- THE JUMPERS ARE DESIGNED TO BE INSTALLED BEFORE/AFTER THE GPS SURGE.
- THE GPS SURGE NEED TO BE CONNECTED TO THE GROUND SYSTEM, VIA A GROUND LEAD.

2 GPS UNIT DETAIL
NOT TO SCALE



NOTES:
CONTRACTOR TO FIELD VERIFY GPS LOCATION.

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

3 GPS ANTENNA DETAIL
NOT TO SCALE

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

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No.	Submittal / Revision	App'd	Date
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0	ISSUED FOR REVIEW	AHS	11/13/12

Drawn: AHS Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: AGE Date: 11/13/12

Project Number: 294-054

Project Title:
CROMWELL / FIRST LINE EMERGENCY
CT23XC558
201 MAIN STREET
CROMWELL, CT 06416

Prepared For: Sprint VISION

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Drawing Scale: AS NOTED
Date: 4/15/13

Drawing Title:
ANTENNA CABLE RISER AND GPS DETAILS

Drawing Number: **C6**

		Market	Northern Connecticut		
		Cascade ID	CT23XC558		
			SECTOR 1	SECTOR 2	SECTOR 3
	Split sector present		No	No	No
1900	1900MHz_Azimuth		30	130	270
	1900MHz_No_of_Antennas		1	1	1
	1900MHz_RADCenter(ft)		125	125	125
	1900MHz_Antenna Make		RFS	RFS	RFS
	1900MHz_Antenna Model		APXVSPP18-C-A20	APXVSPP18-C-A20	APXVSPP18-C-A20
	1900MHz_Horizontal_Beamwidth		65	65	65
	1900MHz_Vertical_Beamwidth		5.5	5.5	5.5
	1900MHz_AntennaHeight (ft)		6	6	6
	1900MHz_AntennaGain(dBd)		15.9	15.9	15.9
	1900MHz_E_Tilt		0	0	0
	1900MHz _M_Tilt		0	0	0
	1900MHz_Carrier_Forecast_Year_2013		3	3	3
	1900MHz_RRH Manufacturer		ALU	ALU	ALU
	1900MHz_RRH Model		RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz
	1900MHz_RRH Count		1	1	1
	1900MHz_RRH Location		Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
	1900MHz Combiner Model		No Combiner Required	No Combiner Required	No Combiner Required
	1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to		10	10	10
	1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax		LCF12-50J	LCF12-50J	LCF12-50J
	1900MHz_Top_Jumper #2_Length (RRH to Combiner for TT if applicable, ft)		N/A	N/A	N/A
	1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable)		N/A	N/A	N/A
	1900MHz_Main_Coax_Cable_Length (ft)		N/A	N/A	N/A
	1900MHz_Main_Coax_Cable_Model		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #1_Length (Ground based RRH to Combiner-OR-Main Coax, ft)		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #1_Cable_Model (Ground based RRH to Combiner-OR-Main Coax)		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #2_Length (Ground based-Combiner to Main Coax, ft)		N/A	N/A	N/A
	1900MHz_Bottom_Jumper #2_Cable_Model (Ground based-Combiner to Main Coax)		N/A	N/A	N/A
800	800MHz_Azimuth		30	130	270
	800MHz_No_of_Antennas		0	0	0
	800MHz_RADCenter(ft)		125	125	125
	800MHz_AntennaMake		RFS	RFS	RFS
	800MHz_AntennaModel		APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)
	800MHz_Horizontal_Beamwidth		65	65	65
	800MHz_Vertical_Beamwidth		11.5	11.5	11.5
	800MHz_AntennaHeight (ft)		6	6	6
	800MHz_AntennaGain (dBd)		13.4	13.4	13.4
	800MHz_E_Tilt		0	0	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 *		124	124	124
Comments	* If plumbing scenario does not match the material received, please contact your Construction Manager				
	11/9/2012				

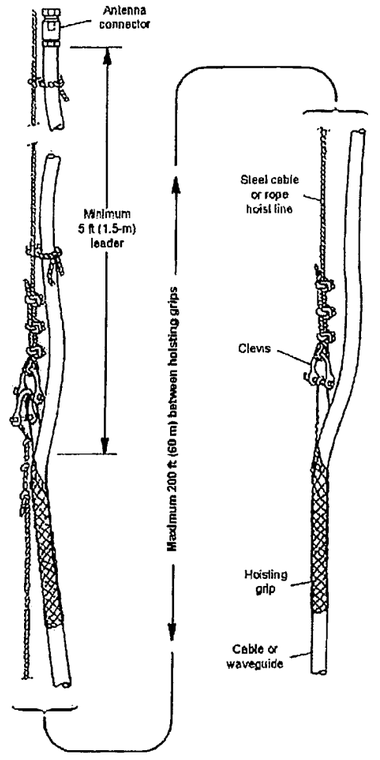
NOTE:
RFDS SHOWN PROVIDED BY SPRINT DATED 11/9/12.

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

1 SPRINT RFDS
NOT TO SCALE

CHECK FST FOR LATEST VERSION OF RFDS

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.

INFINIGY
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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 21765
LICENSED PROFESSIONAL ENGINEER

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Checked: AGF Date: 11/13/12

Project Number
284-054

Project Title
CROMWELL / FIRST LINE EMERGENCY
CT23XC558

201 MAIN STREET
CROMWELL, CT 06416

Prepared For
Sprint
VISION

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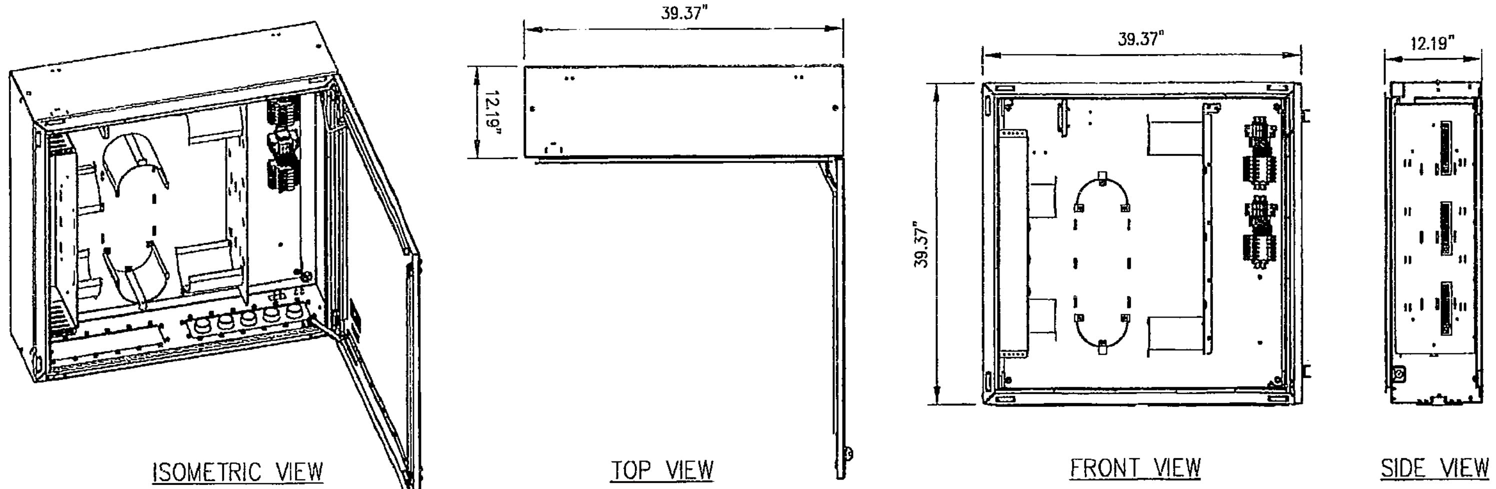
Drawing Scale:
AS NOTED

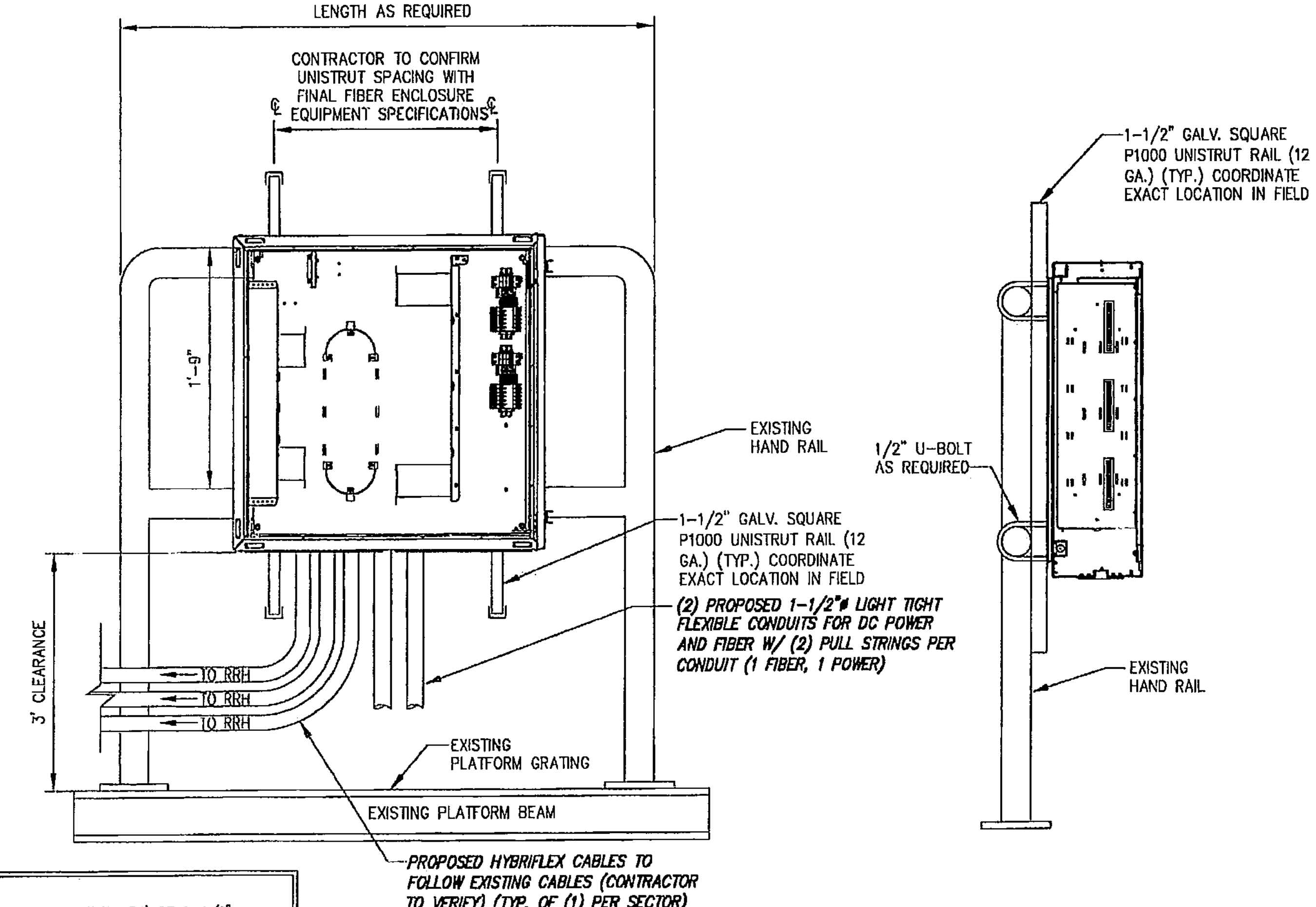
Date:
4/15/13

Drawing Title
RF AND CABLE DETAILS

Drawing Number
C7



1 DISTRIBUTION BOX DETAIL
NOT TO SCALE



ELEVATION

SECTION

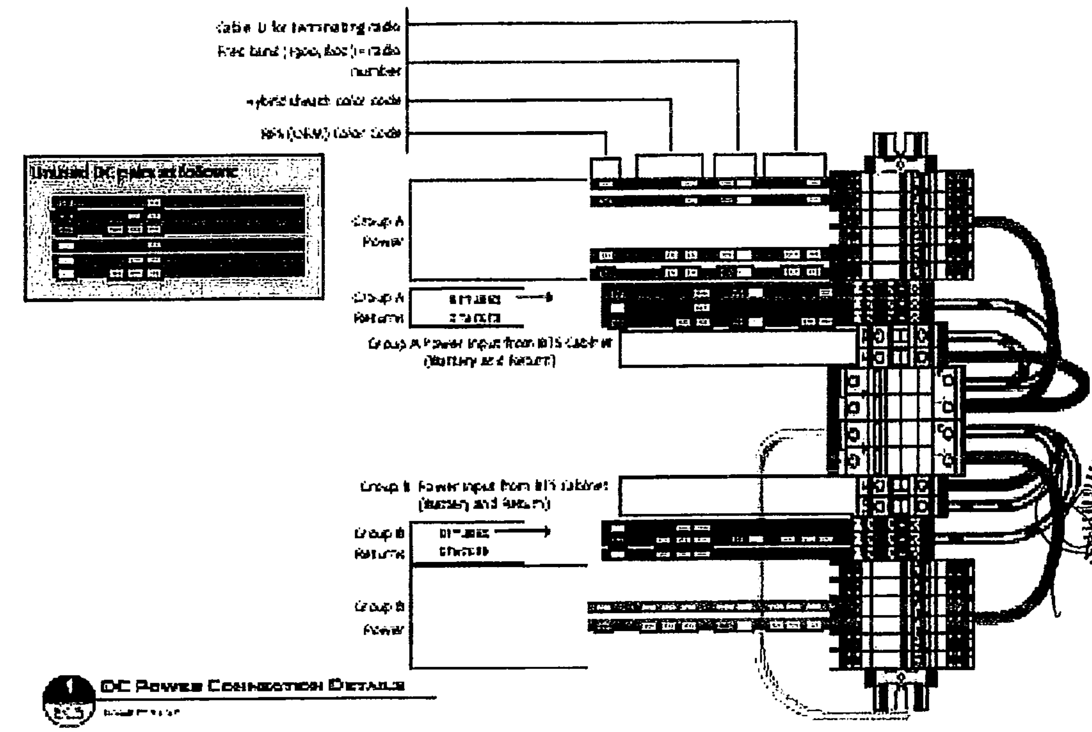
NOTE:
- DISTRIBUTION BOX IS KITTED WITH 50' OF 1-1/2" LIQUID-TIGHT CONDUIT AND CONNECTORS. THIS SHOULD BE:
* SPLIT IN HALF,
* TERMINATED TO THE DISTRIBUTION BOX AS SHOWN,
* RAN TO AND COILED AS CLOSE TO WHERE THE CABINET IS GOING TO BE MOUNTED AS POSSIBLE.

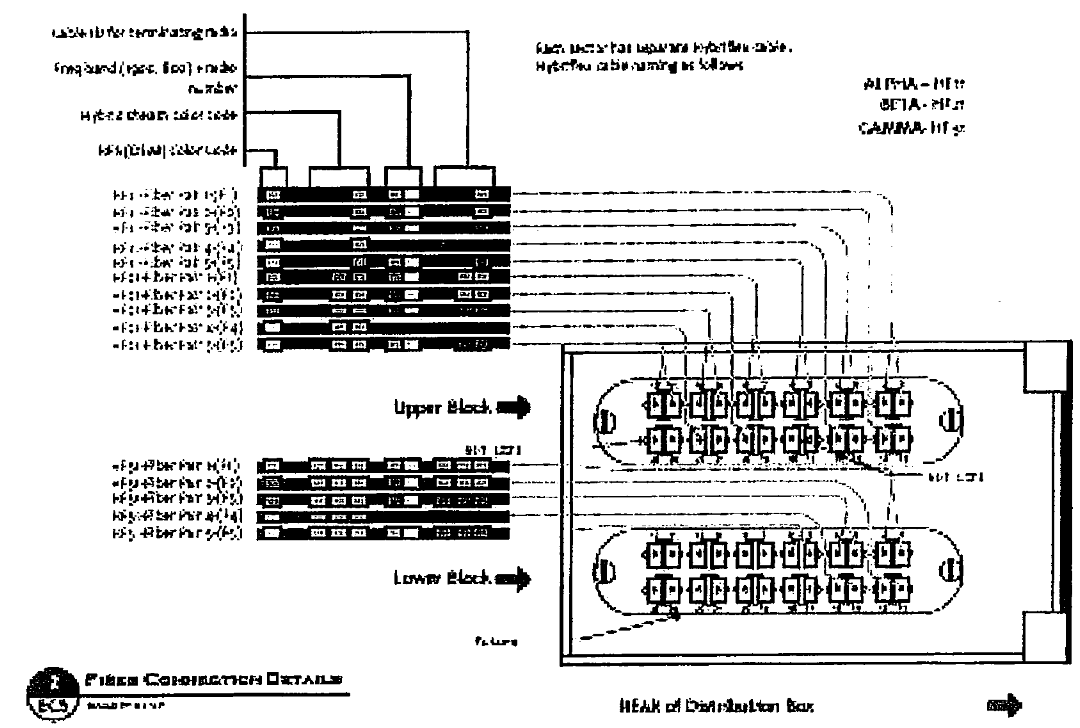
- DISTRIBUTION BOX IS KITTED WITH 2 AWG, POWER CABLE 35' x 2EA. RUNS RED AND 2EA. RUNS BLACK. THIS SHOULD BE COILED AND LEFT INSIDE DISTRIBUTION BOX.

- 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 DISTRIBUTION BOX ON EXISTING HANDRAIL
NOT TO SCALE





SCENARIO 124 v2.3

3 FIBER & DC CONNECTION DETAILS
NOT TO SCALE

INFINIGY Design. Build. Deliver.
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Latham, NY 12110
Office # (518) 690-0790
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STATE OF CONNECTICUT JOHN S. STEVENS No. 24705 LICENSED PROFESSIONAL ENGINEER

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Drawing Scale: AS NOTED
Date: 4/15/13

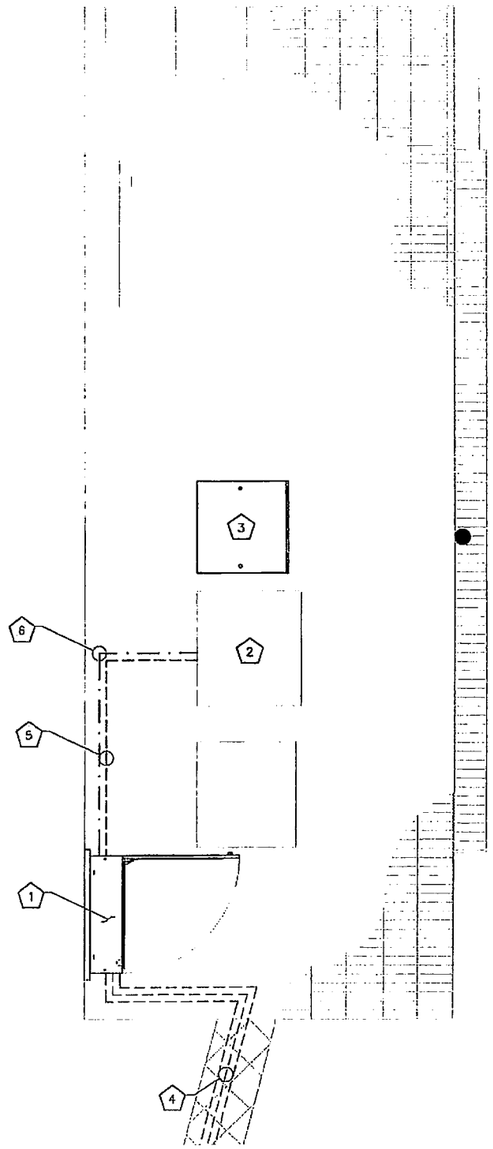
Drawing Title
FIBER DISTRIBUTION BOX DETAILS

Drawing Number
C8

CODED NOTES:

1. PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO EXISTING HANDRAIL
2. PROPOSED RETROFIT OF EXISTING 4.0 MODCELL
3. PROPOSED BATTERY BACKUP CABINET
4. PROPOSED HYBRIFLEX CABLES ROUTED FROM PROPOSED FIBER JUNCTION BOX TO PROPOSED TOWER MOUNTED RRH TO FOLLOW EXISTING CABLES (CONTRACTOR TO VERIFY) (TYP. OF (1) PER SECTOR)
5. PROPOSED 1-1/2" LIQUID TIGHT CONDUIT WITH PULL-STRING FOR TELCO FROM FIBER JUNCTION BOX TO RADIO EQUIPMENT CABINET, 9'
6. PROPOSED 1-1/2" LIQUID TIGHT CONDUIT WITH PULL-STRING FOR DC POWER FROM FIBER JUNCTION BOX TO RADIO EQUIPMENT CABINET, 9'

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



CALLED NORTH

1 UTILITY SITE PLAN
SCALE: AS NOTED

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

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

NOTES:
- CONTRACTOR TO USE EXISTING SPARE CONDUITS, IF AVAILABLE. CONDUIT SIZES MUST BE EQUAL TO OR GREATER THAN THAT ALLOWED BY CODE.
- EXISTING ALARMS NEED TO BE RE-ROUTED AND VERIFIED IN PROPER WORKING CONDITION WHEN NEW MMBTS EQUIPMENT IS INSTALLED.
- REMAINING GROUND LEADS FROM REMOVED CABINETS TO BE COILED (NOT ON WALKING SURFACE).
- REMAINING UNUSED CONDUITS FROM EXISTING CABINETS TO BE COVERED WITH WATERPROOF CAPS (NOT DUCT TAPE).

ELECTRICAL NOTES:

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

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

INFINIGY
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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24709
LICENSED PROFESSIONAL ENGINEER

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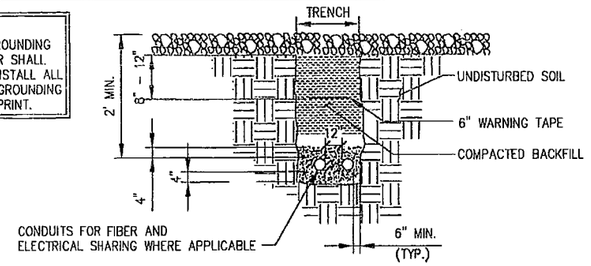
Drawing Scale:
AS NOTED

Date:
4/18/13

Drawing Title
UTILITY SITE PLAN

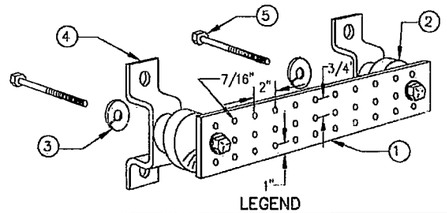
Drawing Number
E1

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



– SEPARATION DIMENSIONS MUST BE VERIFIED WITH LOCAL UTILITY CO. REQUIREMENTS.
*HAND DIG INSIDE COMPOUND

1 UTILITY TRENCH DETAIL
NOT TO SCALE

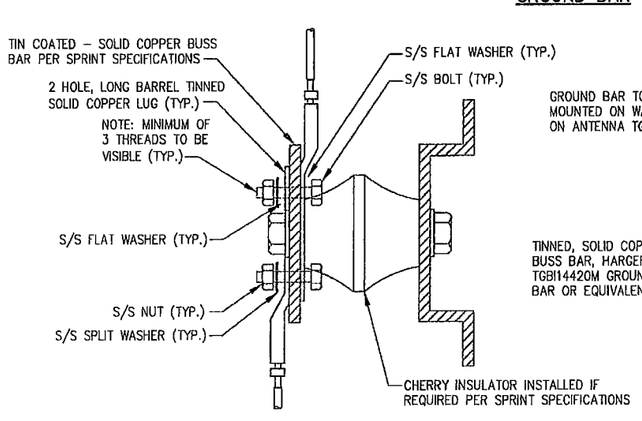


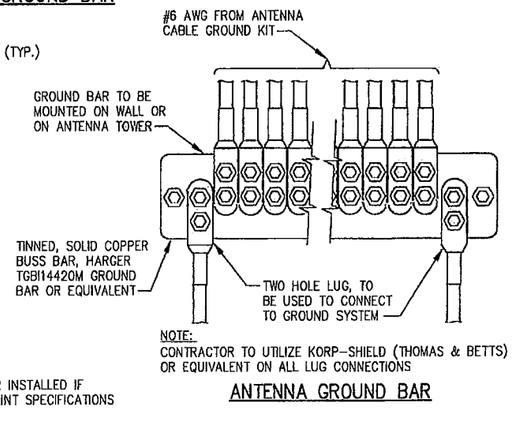
LEGEND

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

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

GROUND BAR





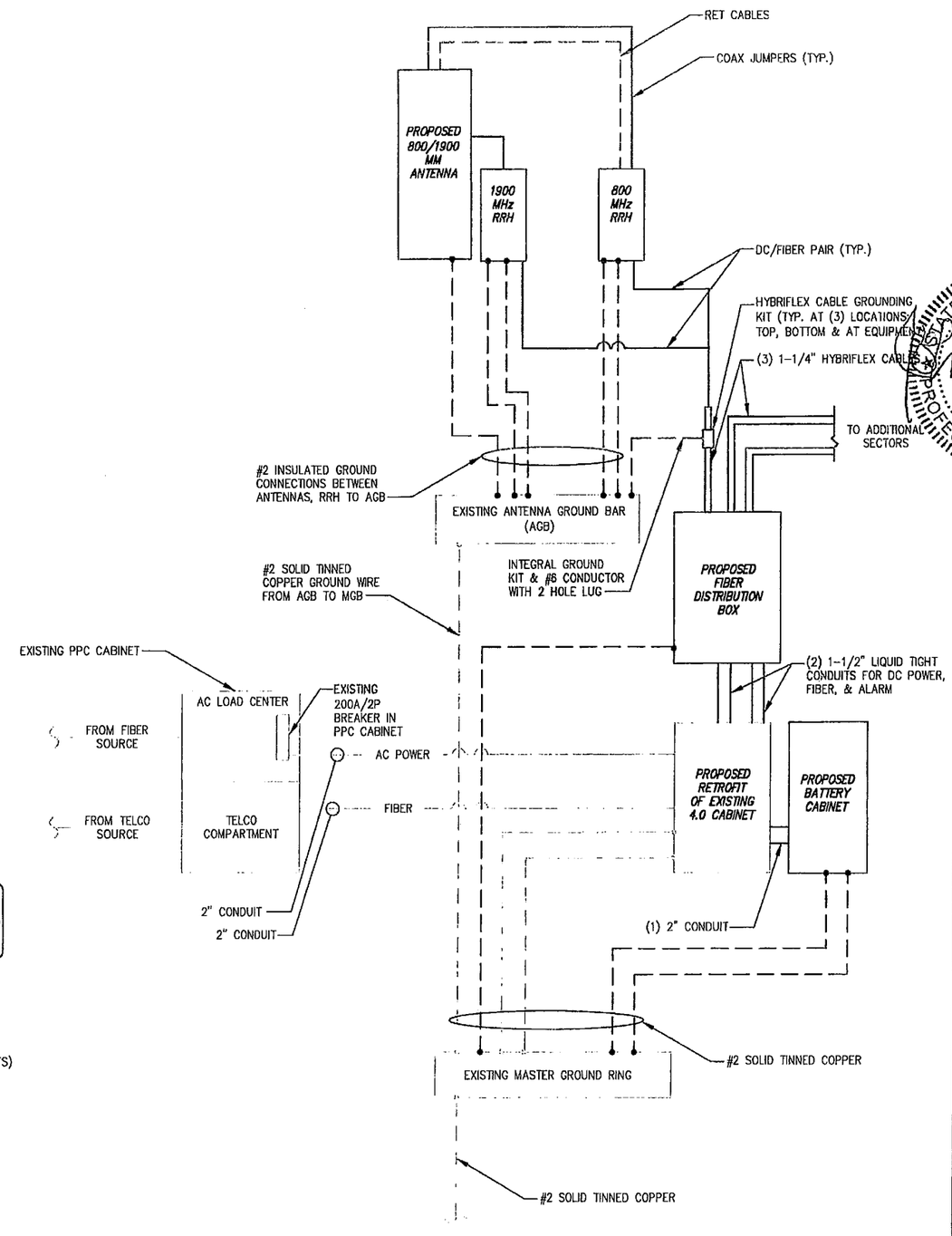
NOTE:
CONTRACTOR TO UTILIZE KORP–SHIELD (THOMAS & BETTS) OR EQUIVALENT ON ALL LUG CONNECTIONS

ANTENNA 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

2 GROUND BAR DETAILS
NOT TO SCALE



3 ONE–LINE DIAGRAM
NOT TO SCALE

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

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

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2	REVISED PER COMMENTS	AHS	4/05/13
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Drawn: AHS Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: ASF Date: 11/13/12

Project Number
294-054

Project Title
CROMWELL / FIRST LINE EMERGENCY
CT23XC558

201 MAIN STREET
CROMWELL, CT 06416

Prepared For
Sprint VISION

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Drawing Scale:
AS NOTED

Date:
4/15/13

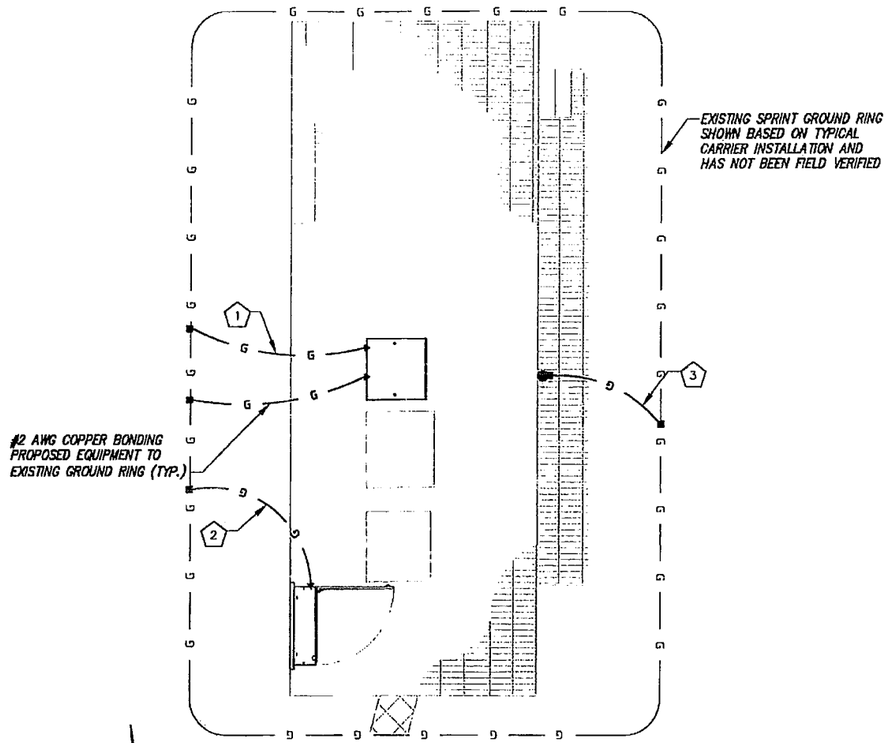
Drawing Title
DETAILS

Drawing Number
E2

CODED NOTES:

1. *PROPOSED BATTERY BACKUP CABINET*
2. *PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO EXISTING HANDRAIL*
3. *PROPOSED SPRINT GPS TO REPLACE EXISTING*

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



1 EQUIPMENT GROUNDING PLAN
SCALE: AS NOTED

GRAPHIC SCALE

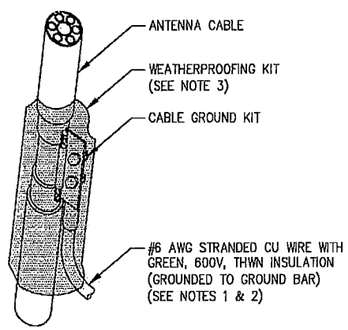
6' 3' 0 3' 6'

SCALE (11x17): 1" = 6'-0"
SCALE (22x34): 1" = 3'-0"

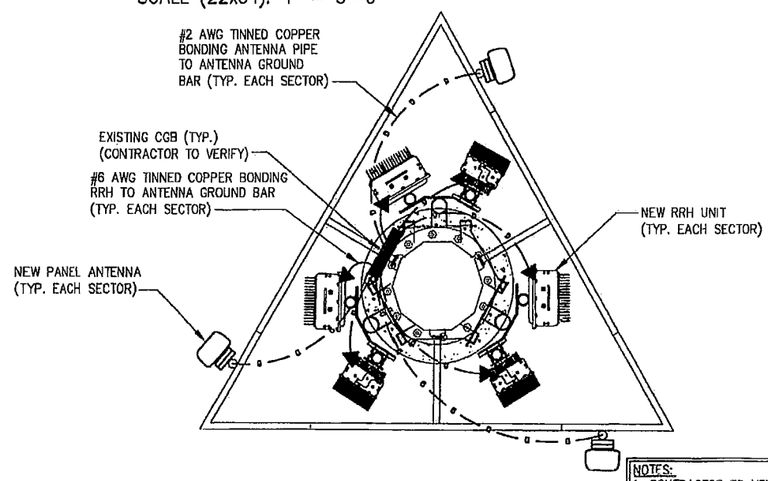
GROUNDING NOTES:

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

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



2 CONNECTION OF GROUND KIT TO ANTENNA CABLE
NOT TO SCALE



3 TYPICAL ANTENNA GROUNDING PLAN
NOT TO SCALE

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

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

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24105
LICENSED PROFESSIONAL ENGINEER

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294-054

Project Title
CROMWELL / FIRST LINE EMERGENCY
CT23XC558

201 MAIN STREET
CROMWELL, CT 06416

Prepared For
Sprint VISION

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Drawing Scale: AS NOTED
Date: 4/15/13

Drawing Title
GROUNDING PLAN AND DETAILS

Drawing Number
E3

Exhibit – 2

General Power Density Table – (RF Emissions Analysis Report)

(Insert MPE Certification – FST Task 37.5)

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT23XC558

Cromwell / First Line Emergency
201 Main Street
Cromwell, CT 06416

January 2, 2013

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

EBI Consulting
environmental | engineering | due diligence

January 2, 2013

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

Re: Emissions Values for Site: **CT23XC558 – Cromwell / First Line Emergency**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 201 Main Street, Cromwell, 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 201 Main Street, Cromwell, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

1) 3 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 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 **125 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	CT23XC558 - Cromwell / First Line Emergency
Site Addresss	201 Main Street, Cromwell, CT, 06416
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	3	60	15.9	125	119	1/2 "	0.5	0	2080.4211	52.81573	5.28157%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	125	119	1/2 "	0.5	0	389.96892	9.900156	1.74606%
														Sector total Power Density Value:			7.028%

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	3	60	15.9	125	119	1/2 "	0.5	0	2080.4211	52.81573	5.28157%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	125	119	1/2 "	0.5	0	389.96892	9.900156	1.74606%
														Sector total Power Density Value:			7.028%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	125	119	1/2 "	0.5	0	2080.4211	52.81573	5.28157%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	125	119	1/2 "	0.5	0	389.96892	9.900156	1.74606%
														Sector total Power Density Value:			7.028%

Site Composite MPE %

Carrier	MPE %
Sprint	21.083%
Clearwire	1.220%
MetroPCS	9.420%
Verizon Wireless	31.720%
Nextel	8.430%
AT&T	33.700%
Total Site MPE %	**105.573%**

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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 **21.083% (7.028% 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 **4.217% (1.406% 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 **105.573%** of the allowable FCC established general public limit sampled at the ground level. This is equal to **21.115%** 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

Exhibit – 3

Structural Modification Report

(Insert SA– FST Task 9.8)

March 1, 2013

Mr. Steve Tuttle
Crown Castle
The Piano Works 349 West Commercial Street
East Rochester, NY 14445
(585) 899-3445

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ctuttle@btgrp.com

Subject:	**Structural Modification Report**	
Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT23XC558
	Carrier Site Name:	CT23XC558
Crown Castle Designation:	**Crown Castle BU Number:**	876364
	Crown Castle Site Name:	Cromwell / First Line Emergenc
	Crown Castle JDE Job Number:	190531
	Crown Castle Work Order Number:	580884
	Crown Castle Application Number:	165640 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	84470.006.01
Site Data:	**201 Main St., Cromwell, CT, Middlesex County** **Latitude *41° 35' 0.11"*, Longitude *-72° 38' 59.14"*** **125 Foot - Monopole**	

Dear Mr. Tuttle,

B+T Group are pleased to submit this **"Structural Modification 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 525011, in accordance with application 165640, 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:

LC4: TSA specified load case with proposed modifications **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

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

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

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

Respectfully submitted by:
B+T Engineering, Inc.

Kiran K. Maroju, E.I.
Project Engineer

Chad E. Tuttle, P.E.
President

3/1/13

tnxTower Report - version 6.0.4.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 125 ft. monopole designed by Engineered Endeavors, Inc. in February of 2002. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower has been modified by B+T Engineering, Inc. in 2012 and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
125.0	127.0	3	RFS Celwave	APXVSPP18-C-A20	3	1 1/4	--
123.0	123.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	--	--	--
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
		1	--	Side Arm Mount [SO 102-3]			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
125.0	129.0	3	Argus Technologies	LLPX310R-V1	3 3 2	5/16 1/4 1/2	1
		3	Samsung Telecommunications	WIMAX DAP HEAD			
	124.0	1	Andrew	VHLP2-11			
		1	Andrew	VHLP2-18			
	127.0	**6**	**Decibel**	**DB980H90A-M**	**6**	**1 5/8**	**3**
	125.0	1	--	Platform Mount [LP 712-1]	--	--	1
115.0	117.0	6	Communication Components Inc.	DTMABP7819VG12A	2 1 6	3/4 3/8 1 1/4	2
		6	Ericsson	RRUS-11			
		9	KMW	AM-X-CD-16-65-00T-RET			
		1	Raycap	DC6-48-60-18-8F			
	115.0	1	--	Sector Mount [SM 308-3]			
		--	--	--	6	1 1/4	1
105.0	105.0	3	Antel	BXA-171063-8BF-EDIN-2	--	--	2
		2	Antel	BXA-70063-6CF-EDIN-0			
		6	RFS Celwave	FD9R6004/2C-3L			
		1	Swedcom	SLCP 2x6014			
		6	Andrew	DB846F65ZAXY	12	1 5/8	1
		1	--	Platform Mount [LP 712-1]			
95.0	95.0	12	Decibel	DB844H65E-XY	12	1 5/8	1
		1	--	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
85.0	85.0	3	Andrew	HBXX-6517DS-VTM	6	1 5/8	2
		1	--	Pipe Mount [PM 601-3]	6	1 5/8	1

Notes:
1) Existing Equipment
2) Reserved Equipment
3) **Equipment to be Removed**

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125	125	1	--	L.P.Platform	--	--
		6	decibel	DB980H65		
		3	decibel	DB980H90		
115	115	1	--	T-Arm	--	--
		6	Allgon	7250		
105	105	1	--	L.P.Platform	--	--
		12	decibel	DB844		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Sprint Co-Location Revision#1	165640	CCI Sites
Tower Manufacturer Drawings	EEI Job No.10554	2068958	CCI Sites
Tower Reinforcement Drawings	Semaan Engineering Solutions	2055765	CCI Sites
Post-Modification Inspection	VSI Job No. 2008-004-036	2182292	CCI Sites
Tower Modification Drawing	B+T Group, Project N0:84890.001	Date:7/11/2012	CCI Sites
Foundation Drawings	EEI Project No.6464	1613909	CCI Sites
Geotechnical Reports	Dr. Clarence Welti, P.E.	1532312	CCI Sites
Antenna Configuration	Crown CAD Package	Date:10/17/2012	CCI Sites

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary) - LC4

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	125 - 93.75	Pole	TP25.218x18.5x0.188	1	-7.569	774.402	93.1	Pass
L2	93.75 - 85.04	Pole	TP27.09x25.218x0.309	2	-8.222	1288.832	69.4	Pass
L3	85.04 - 73.5833	Pole	TP29.14x25.63x0.359	3	-11.333	1618.289	87.8	Pass
L4	73.5833 - 60.5	Pole	TP31.921x29.14x0.367	4	-13.791	1908.243	94.5	Pass
L5	60.5 - 40.457	Pole	TP36.18x31.921x0.436	5	-17.072	2492.137	88.2	Pass
L6	40.457 - 30.5	Pole	TP37.787x34.228x0.485	6	-21.580	2983.507	86.7	Pass
L7	30.5 - 0	Pole	TP44.25x37.787x0.456	7	-29.538	3297.309	96.7	Pass
							Summary	
						Pole (L7)	96.7	Pass
						RATING =	**96.7**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity - LC4

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	92.5	Pass
1	Base Plate	Base	89.3	Pass
1	Base Foundation	Base	86.8	Pass

Structure Rating (max from all components) =	96.7%

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) The percent capacities shown above (excluding foundations) include the 1/3 increase in allowable stresses as allowed by TIA/EIA-222-F

4.1) Recommendations

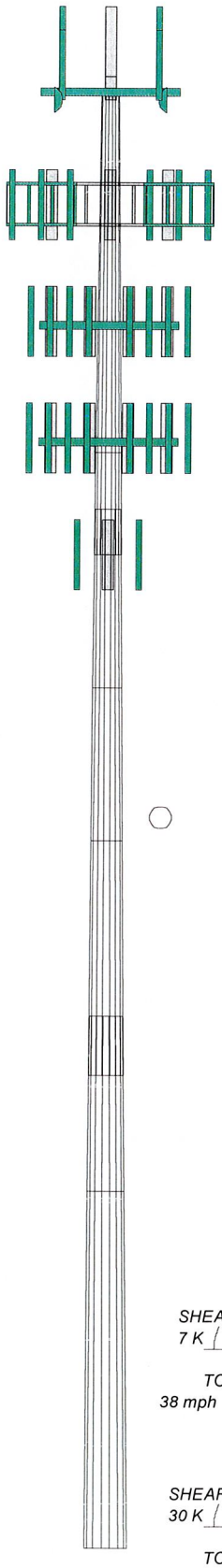
1) All modifications proposed in this report shall be installed in accordance with the attached drawings (Appendix D) for the determined available structural capacity to be effective.

APPENDIX A

tnxTOWER OUTPUT

Section	7	6	5	4	3	2	1
Length (ft)	30.500	15.040	20.043	13.083	15.374	8.710	31.250
Number of Sides	18	18	18	18	18	18	18
Thickness (in)	0.456	0.485	0.436	0.367	0.359	0.309	0.188
Socket Length (ft)			5.083		3.917		
Top Dia (in)	37.787	34.228	31.921	29.140	25.630	25.218	18.500
Bot Dia (in)	44.250	37.787	36.180	31.921	29.140	27.090	25.218
Grade	A572-65	A572-65	A572-65	61.7 ksi	63.3 ksi	A572-65	A572-65
Weight (K)	16.9	6.0	2.7	3.0	1.5	1.6	0.7	1.4

125.0 ft
93.8 ft
85.0 ft
73.6 ft
60.5 ft
40.5 ft
30.5 ft
0.0 ft



DESIGNED APPURTENANCE LOADING

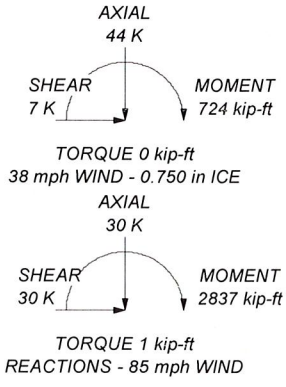
TYPE	ELEVATION	TYPE	ELEVATION
LLPX310R-V1 w/ Mount Pipe (E)	125	Sector Mount [SM 308-3] (R)	115
LLPX310R-V1 w/ Mount Pipe (E)	125	(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe (R)	115
LLPX310R-V1 w/ Mount Pipe (E)	125	(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe (R)	115
WIMAX DAP HEAD (E)	125	(2) DB846F65ZAXY w/ Mount Pipe (E)	105
WIMAX DAP HEAD (E)	125	BXA-70063-6CF-EDIN-0 w/ Mount Pipe (R)	105
WIMAX DAP HEAD (E)	125	BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	105
(2) 6' x 2" Mount Pipe (E)	125	BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	105
(2) 6' x 2" Mount Pipe (E)	125	BXA-70063-6CF-EDIN-0 w/ Mount Pipe (R)	105
(2) 6' x 2" Mount Pipe (E)	125	BXA-171063-8BF-EDIN-2 w/ Mount Pipe (R)	105
APXVSPP18-C-A20 w/ Mount Pipe (P)	125	SLCP 2x6014 w/ Mount Pipe (R)	105
APXVSPP18-C-A20 w/ Mount Pipe (P)	125	(2) FD9R6004/2C-3L (R)	105
APXVSPP18-C-A20 w/ Mount Pipe (P)	125	(2) FD9R6004/2C-3L (R)	105
Platform Mount [LP 712-1] (E)	125	(2) FD9R6004/2C-3L (R)	105
VHLP2-11 (E)	124	Platform Mount [LP 712-1] (E)	105
VHLP2-18 (E)	124	(2) DB846F65ZAXY w/ Mount Pipe (E)	105
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (P)	123	(2) DB846F65ZAXY w/ Mount Pipe (E)	105
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (P)	123	(4) DB844H65E-XY w/ Mount Pipe (E)	95
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (P)	123	Platform Mount [LP 303-1] (E)	95
PCS 1900MHz 4x45W-65MHz w / Mount Pipe (P)	123	(4) DB844H65E-XY w/ Mount Pipe (E)	95
Side Arm Mount [SO 102-3) (P)	123	(4) DB844H65E-XY w/ Mount Pipe (E)	95
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (P)	123	HBXX-6517DS-VTM w/ Mount Pipe (R)	85
800MHZ 2X50W RRH W/FILTER w / Mount Pipe (P)	123	Pipe Mount [PM 601-3] (E)	85
(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe (R)	115	HBXX-6517DS-VTM w/ Mount Pipe (R)	85
(2) RRUS-11 (R)	115	HBXX-6517DS-VTM w/ Mount Pipe (R)	85
(2) RRUS-11 (R)	115		
(2) RRUS-11 (R)	115		
(2) DTMABP7819VG12A (R)	115		
(2) DTMABP7819VG12A (R)	115		
(2) DTMABP7819VG12A (R)	115		
DC6-48-60-18-8F (R)	115		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	61.7 ksi	62 ksi	80 ksi
63.3 ksi	63 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 96.7%



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK
Phone: (918) 587-4630
FAX: (918) 295-0265

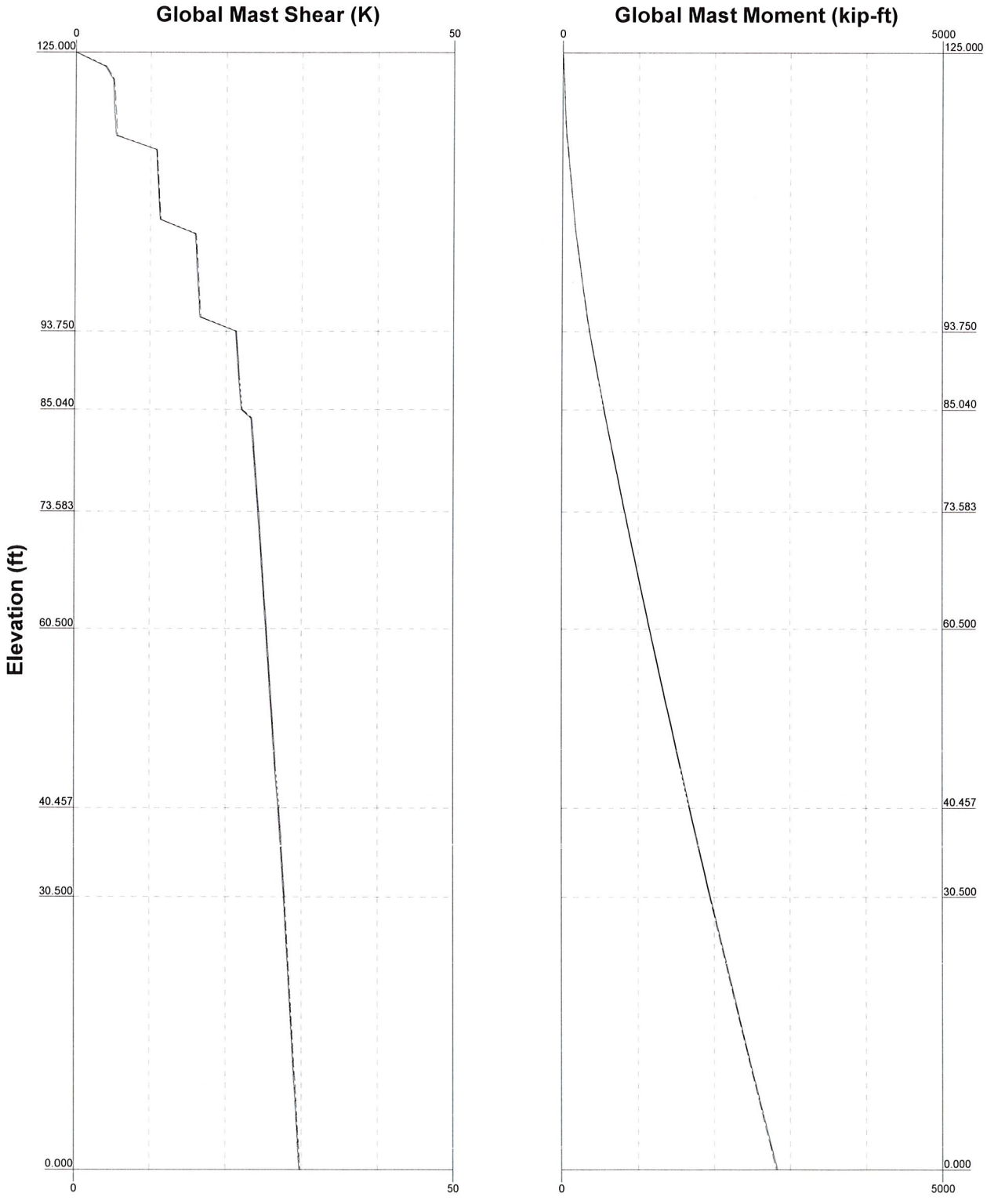
Job:	84470.006.01 - Cromweli, CT (BU# 876364)		
Project:	125' EEI Monopole / App ID: 165640; Rev# 1		
Client: Crown Castle	Drawn by: HKarande		App'd.
Code: TIA/EIA-222-F	Date: 02/27/13		Scale: NTS
Path:			Dwg No. E-1

TIA/EIA-222-F - 85 mph/38 mph 0.750 in Ice

Vx Vz

Maximum Values

Mx Mz



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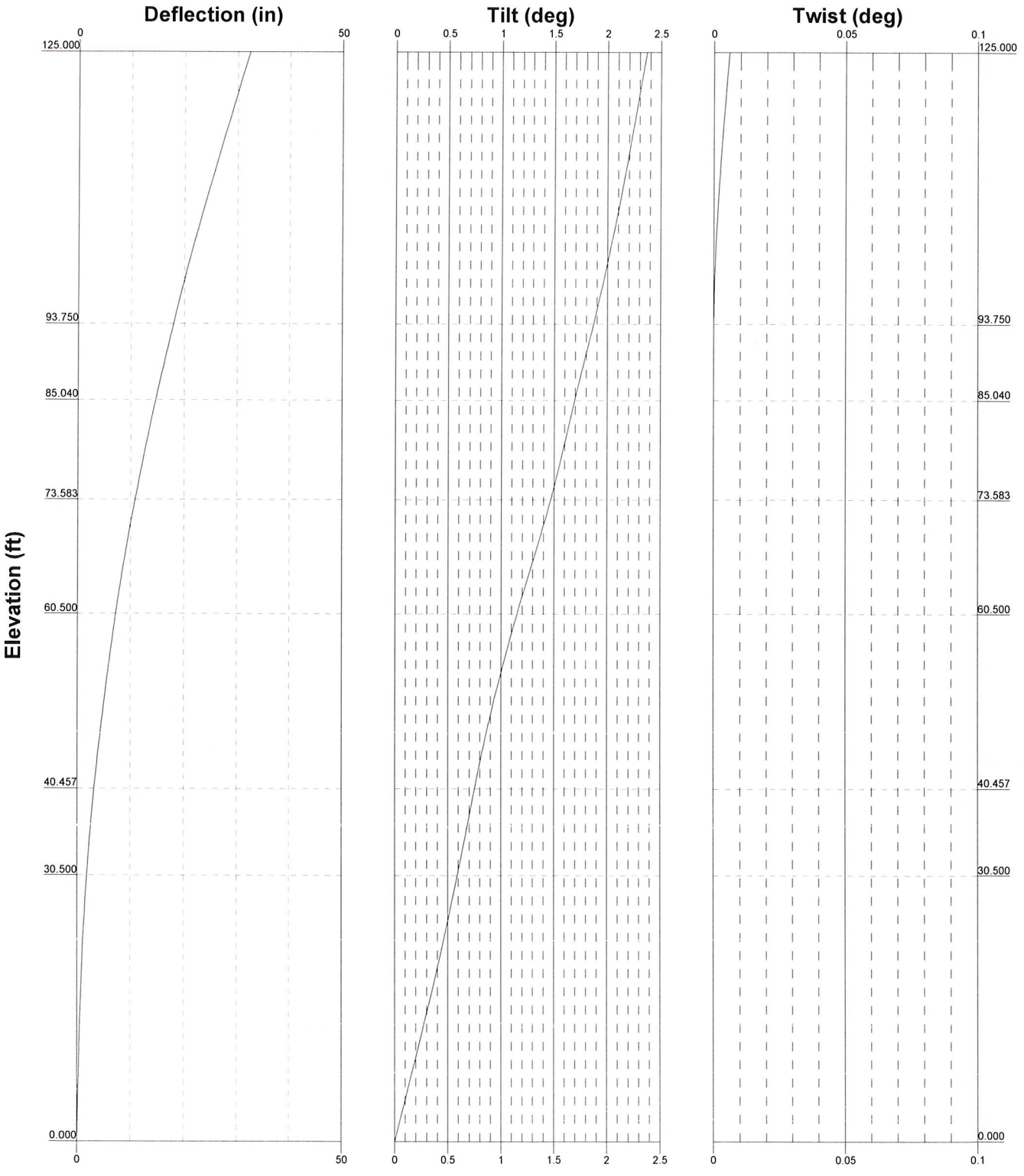
Project: 125' EEI Monopole / App ID: 165640; Rev# 1			
Client: Crown Castle	Drawn by: HKarande	App'd.	
Code: TIA/EIA-222-F	Date: 02/27/13	Scale: NTS	
Path:		Dwg No. E-4	

TIA/EIA-222-F - Service - 50 mph **Maximum Values**



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Phone: (918) 587-4630
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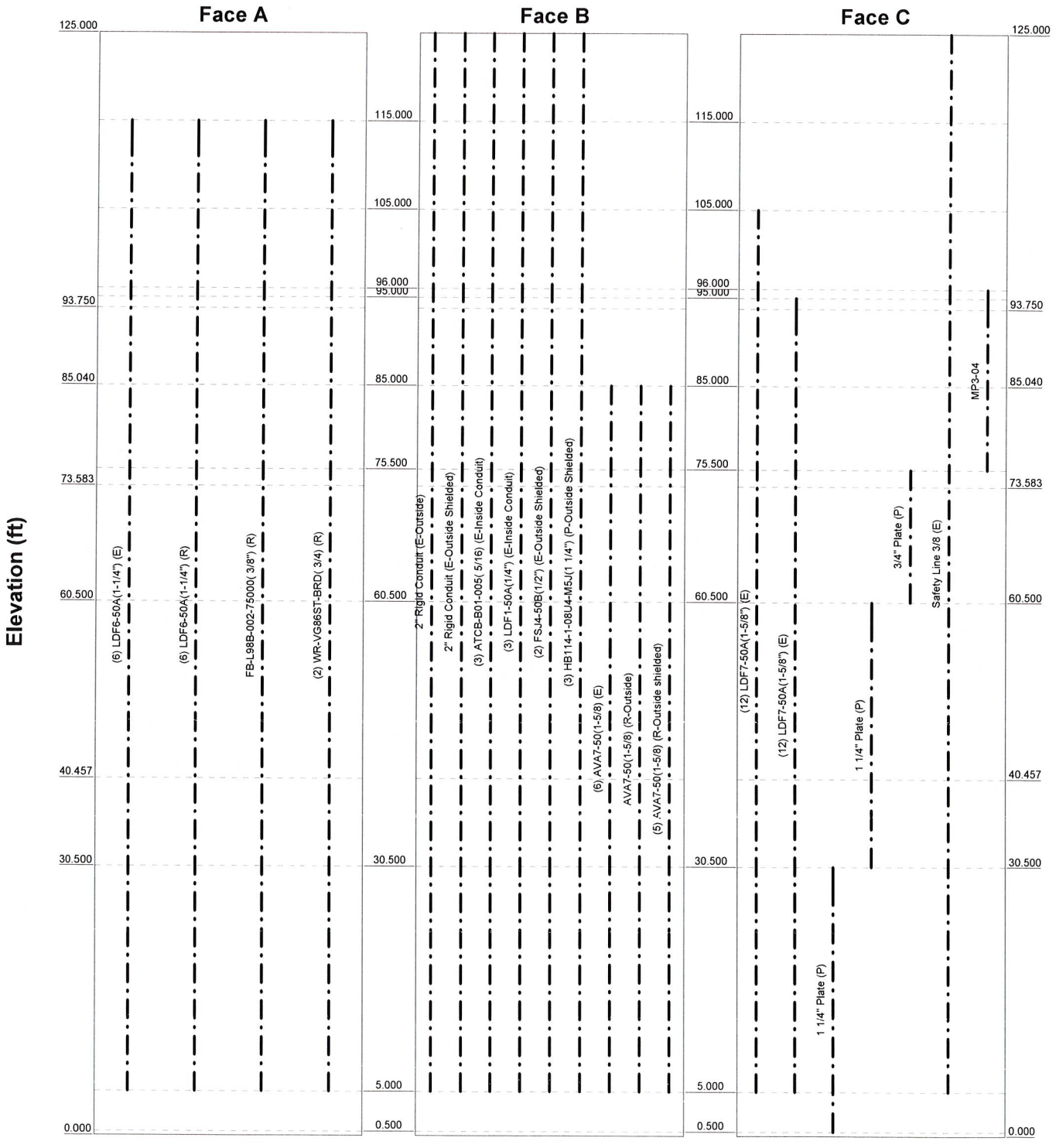
Job:	84470.006.01 - Cromwell, CT (BU# 876364)		
Project:	125' EEI Monopole / App ID: 165640; Rev# 1		
Client: Crown Castle		Drawn by: HKarande	App'd:
Code: TIA/EIA-222-F		Date: 02/27/13	Scale: NTS
Path:			Dwg No. E-5

Feedline Distribution Chart
0' - 125'

Round | Flat | App In Face | App Out Face | Truss Leg



B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK Phone: (918) 587-4630 FAX: (918) 295-0265	Job: ***84470.006.01 - Cromwell, CT (BU# 876364)***		
	Project: ***125' EEI Monopole / App ID: 165640; Rev# 1***		
	Client: Crown Castle	Drawn by: HKarande	App'd:
	Code: TIA/EIA-222-F	Date: 02/27/13	Scale: NTS
	Path:		Dwg No. E-7

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 Middlesex County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °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.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	125.000-93.750	31.250	0.000	18	18.500	25.218	0.188	0.750	A572-65 (65 ksi)
L2	93.750-85.040	8.710	3.917	18	25.218	27.090	0.309	1.237	63.3 ksi (63 ksi)
L3	85.040-73.583	15.374	0.000	18	25.630	29.140	0.359	1.436	61.7 ksi (62 ksi)
L4	73.583-60.500	13.083	0.000	18	29.140	31.921	0.367	1.466	A572-65 (65 ksi)
L5	60.500-40.457	20.043	5.083	18	31.921	36.180	0.436	1.743	A572-65 (65 ksi)
L6	40.457-30.500	15.040	0.000	18	34.228	37.787	0.485	1.939	A572-65 (65 ksi)
L7	30.500-0.000	30.500		18	37.787	44.250	0.456	1.825	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.785	10.898	461.730	6.501	9.398	49.131	924.069	5.450	2.926	15.605
	25.607	14.896	1179.061	8.886	12.811	92.038	2359.673	7.449	4.108	21.911
L2	25.607	24.446	1916.192	8.842	12.811	149.579	3834.906	12.225	3.894	12.594
	27.508	26.284	2381.603	9.507	13.762	173.060	4766.340	13.144	4.224	13.659
L3	26.933	28.794	2323.072	8.971	13.020	178.426	4649.200	14.399	3.879	10.806
	29.590	32.794	3431.956	10.217	14.803	231.839	6868.428	16.400	4.497	12.527
L4	29.590	33.472	3501.103	10.215	14.803	236.510	7006.813	16.739	4.484	12.234
	32.413	36.706	4617.275	11.202	16.216	284.742	9240.626	18.357	4.973	13.569
L5	32.413	43.541	5453.050	11.177	16.216	336.283	10913.275	21.775	4.851	11.134
	36.738	49.432	7979.124	12.689	18.379	434.133	15968.747	24.720	5.601	12.855

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L6	35.978	51.915	7468.127	11.979	17.388	429.499	14946.081	25.962	5.171	10.668
	38.370	57.389	10088.726	13.242	19.196	525.572	20190.728	28.700	5.797	11.96
L7	38.370	54.065	9518.850	13.252	19.196	495.884	19050.225	27.038	5.847	12.815
	44.933	63.426	15368.309	15.547	22.479	683.674	30756.839	31.719	6.985	15.308

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 125.000-93.750				1	1	1		
L2 93.750-85.040				1	1	0.954112		
L3 85.040-73.583				1	1	0.966816		
L4 73.583-60.500				1	1	0.976519		
L5 60.500-40.457				1	1	0.959022		
L6 40.457-30.500				1	1	0.966927		
L7 30.500-0.000				1	1	0.9761		

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 klf
+										

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 klf
2" Rigid Conduit (E-Outside)	B	No	CaAa (Out Of Face)	125.000 - 5.000	1	No Ice	0.200	0.003
						1/2" Ice	0.300	0.004
						1" Ice	0.400	0.006
						2" Ice	0.600	0.013
						4" Ice	1.000	0.032
2" Rigid Conduit (E-Outside Shielded)	B	No	CaAa (Out Of Face)	125.000 - 5.000	1	No Ice	0.000	0.003
						1/2" Ice	0.000	0.004
						1" Ice	0.000	0.006
						2" Ice	0.000	0.013
						4" Ice	0.000	0.032
ATCB-B01-005(5/16) (E-Inside Conduit)	B	No	CaAa (Out Of Face)	125.000 - 5.000	3	No Ice	0.000	0.000
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.002
						2" Ice	0.000	0.006
						4" Ice	0.000	0.021
LDF1-50A(1/4") (E-Inside Conduit)	B	No	CaAa (Out Of Face)	125.000 - 5.000	3	No Ice	0.000	0.000
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.002

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight klf
						2" Ice	0.000	0.006
						4" Ice	0.000	0.021
FSJ4-50B(1/2")	B	No	CaAa (Out Of	125.000 - 5.000	2	No Ice	0.000	0.000
(E-Outside Shielded)			Face)			1/2" Ice	0.000	0.001
						1" Ice	0.000	0.002
						2" Ice	0.000	0.006
						4" Ice	0.000	0.022
++*								
HB114-1-08U4-M5J(1	B	No	CaAa (Out Of	125.000 - 5.000	3	No Ice	0.000	0.001
1/4")			Face)			1/2" Ice	0.000	0.001
(P-Outside Shielded)						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
+								
LDF6-50A(1-1/4")	A	No	Inside Pole	115.000 - 5.000	6	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF6-50A(1-1/4")	A	No	Inside Pole	115.000 - 5.000	6	No Ice	0.000	0.001
(R)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-002-75000(	A	No	Inside Pole	115.000 - 5.000	1	No Ice	0.000	0.000
3/8")						1/2" Ice	0.000	0.000
(R)						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	115.000 - 5.000	2	No Ice	0.000	0.001
(R)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
+								
LDF7-50A(1-5/8")	C	No	Inside Pole	105.000 - 5.000	12	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
+								
LDF7-50A(1-5/8")	C	No	Inside Pole	95.000 - 5.000	12	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
+								
AVA7-50(1-5/8)	B	No	Inside Pole	85.000 - 5.000	6	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
AVA7-50(1-5/8)	B	No	CaAa (Out Of	85.000 - 5.000	1	No Ice	0.201	0.001
(R-Outside)			Face)			1/2" Ice	0.301	0.002
						1" Ice	0.401	0.004
						2" Ice	0.601	0.010
						4" Ice	1.001	0.030
AVA7-50(1-5/8)	B	No	CaAa (Out Of	85.000 - 5.000	5	No Ice	0.000	0.001
(R-Outside shielded)			Face)			1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						4" Ice	0.000	0.001
+								
1 1/4" Plate (P)	C	No	CaAa (Out Of Face)	30.500 - 0.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
1 1/4" Plate (P)	C	No	CaAa (Out Of Face)	60.500 - 30.500	1	No Ice	0.208	0.000
						1/2" Ice	0.292	0.000
						1" Ice	0.375	0.000
						2" Ice	0.542	0.000
						4" Ice	0.875	0.000
3/4" Plate (P)	C	No	CaAa (Out Of Face)	75.500 - 60.500	1	No Ice	0.125	0.000
						1/2" Ice	0.208	0.000
						1" Ice	0.292	0.000
						2" Ice	0.458	0.000
						4" Ice	0.792	0.000
+								
Safety Line 3/8 (E)	C	No	CaAa (Out Of Face)	125.000 - 5.000	1	No Ice	0.037	0.000
						1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004
+								
MP3-04	C	No	CaAa (Out Of Face)	96.000 - 75.500	1	No Ice	0.268	0.000
						1/2" Ice	0.352	0.000
						1" Ice	0.435	0.000
						2" Ice	0.602	0.000
						4" Ice	0.935	0.000
+								

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	125.000-93.750	A	0.000	0.000	0.000	0.000	0.195
		B	0.000	0.000	0.000	6.250	0.298
		C	0.000	0.000	0.000	1.776	0.130
L2	93.750-85.040	A	0.000	0.000	0.000	0.000	0.080
		B	0.000	0.000	0.000	1.742	0.083
		C	0.000	0.000	0.000	2.664	0.173
L3	85.040-73.583	A	0.000	0.000	0.000	0.000	0.105
		B	0.000	0.000	0.000	4.586	0.205
		C	0.000	0.000	0.000	3.229	0.228
L4	73.583-60.500	A	0.000	0.000	0.000	0.000	0.120
		B	0.000	0.000	0.000	5.246	0.235
		C	0.000	0.000	0.000	2.126	0.260
L5	60.500-40.457	A	0.000	0.000	0.000	0.000	0.184
		B	0.000	0.000	0.000	8.037	0.359
		C	0.000	0.000	0.000	4.927	0.399
L6	40.457-30.500	A	0.000	0.000	0.000	0.000	0.091
		B	0.000	0.000	0.000	3.993	0.178
		C	0.000	0.000	0.000	2.448	0.198
L7	30.500-0.000	A	0.000	0.000	0.000	0.000	0.234
		B	0.000	0.000	0.000	10.226	0.457
		C	0.000	0.000	0.000	7.206	0.507

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	125.000-93.750	A	0.865	0.000	0.000	0.000	0.000	0.195
		B		0.000	0.000	0.000	11.659	0.834
		C		0.000	0.000	0.000	7.509	0.159
L2	93.750-85.040	A	0.845	0.000	0.000	0.000	0.000	0.080
		B		0.000	0.000	0.000	3.214	0.228
		C		0.000	0.000	0.000	5.363	0.181
L3	85.040-73.583	A	0.833	0.000	0.000	0.000	0.000	0.105
		B		0.000	0.000	0.000	8.453	0.430
		C		0.000	0.000	0.000	6.780	0.238
L4	73.583-60.500	A	0.816	0.000	0.000	0.000	0.000	0.120
		B		0.000	0.000	0.000	9.519	0.480
		C		0.000	0.000	0.000	6.043	0.272
L5	60.500-40.457	A	0.789	0.000	0.000	0.000	0.000	0.184
		B		0.000	0.000	0.000	14.362	0.718
		C		0.000	0.000	0.000	10.725	0.416
L6	40.457-30.500	A	0.756	0.000	0.000	0.000	0.000	0.091
		B		0.000	0.000	0.000	7.135	0.357
		C		0.000	0.000	0.000	5.328	0.206
L7	30.500-0.000	A	0.750	0.000	0.000	0.000	0.000	0.234
		B		0.000	0.000	0.000	17.875	0.882
		C		0.000	0.000	0.000	14.781	0.528

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	125.000-93.750	0.160	0.171	0.118	0.327
L2	93.750-85.040	-0.112	0.308	-0.211	0.487
L3	85.040-73.583	0.120	0.395	0.117	0.610
L4	73.583-60.500	0.254	0.346	0.227	0.587
L5	60.500-40.457	0.164	0.395	0.158	0.631
L6	40.457-30.500	0.166	0.400	0.162	0.646
L7	30.500-0.000	0.106	0.364	0.093	0.589

Discrete Tower Loads

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
LLPX310R-V1 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 4.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.429 5.990 6.506 7.574 9.862	3.382 4.151 4.796 6.194 9.254	0.051 0.090 0.139 0.255 0.597

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
LLPX310R-V1 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 4.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.429 5.990 6.506 7.574 9.862	3.382 4.151 4.796 6.194 9.254	0.051 0.090 0.139 0.255 0.597
LLPX310R-V1 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 4.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.429 5.990 6.506 7.574 9.862	3.382 4.151 4.796 6.194 9.254	0.051 0.090 0.139 0.255 0.597
WIMAX DAP HEAD (E)	A	From Leg	4.000 0.000 4.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.804 1.988 2.180 2.589 3.512	0.778 0.918 1.067 1.391 2.143	0.033 0.045 0.058 0.094 0.201
WIMAX DAP HEAD (E)	B	From Leg	4.000 0.000 4.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.804 1.988 2.180 2.589 3.512	0.778 0.918 1.067 1.391 2.143	0.033 0.045 0.058 0.094 0.201
WIMAX DAP HEAD (E)	C	From Leg	4.000 0.000 4.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.804 1.988 2.180 2.589 3.512	0.778 0.918 1.067 1.391 2.143	0.033 0.045 0.058 0.094 0.201
(2) 6' x 2" Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(2) 6' x 2" Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(2) 6' x 2" Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
++*									
APXVSPP18-C-A20 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 2.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.148 0.225 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 2.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.148 0.225 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe (P)	C	From Leg	4.000 0.000 2.000	0.000	125.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.148 0.225 0.406 0.909
Platform Mount [LP 712-1]	C	None		0.000	125.000	No Ice	24.530	24.530	1.335

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
(E)						1/2" Ice	29.940	29.940	1.646
						1" Ice	35.350	35.350	1.956
						2" Ice	46.170	46.170	2.577
						4" Ice	67.810	67.810	3.820
+									
800MHZ 2X50W RRH W/FILTER w / Mount Pipe	A	From Leg	2.000 0.000	0.000	123.000	No Ice 1/2" Ice	2.586 2.861	2.731 3.102	0.073 0.101
(P)			0.000			1" Ice	3.149	3.490	0.135
						2" Ice	3.780	4.371	0.216
						4" Ice	5.207	6.396	0.453
800MHZ 2X50W RRH W/FILTER w / Mount Pipe	B	From Leg	2.000 0.000	0.000	123.000	No Ice 1/2" Ice	2.586 2.861	2.731 3.102	0.073 0.101
(P)			0.000			1" Ice	3.149	3.490	0.135
						2" Ice	3.780	4.371	0.216
						4" Ice	5.207	6.396	0.453
800MHZ 2X50W RRH W/FILTER w / Mount Pipe	C	From Leg	2.000 0.000	0.000	123.000	No Ice 1/2" Ice	2.586 2.861	2.731 3.102	0.073 0.101
(P)			0.000			1" Ice	3.149	3.490	0.135
						2" Ice	3.780	4.371	0.216
						4" Ice	5.207	6.396	0.453
PCS 1900MHz 4x45W-65MHz w / Mount Pipe	A	From Leg	2.000 0.000	0.000	123.000	No Ice 1/2" Ice	2.905 3.206	3.218 3.647	0.071 0.101
(P)			0.000			1" Ice	3.519	4.094	0.138
						2" Ice	4.187	5.064	0.225
						4" Ice	5.703	7.343	0.480
PCS 1900MHz 4x45W-65MHz w / Mount Pipe	B	From Leg	2.000 0.000	0.000	123.000	No Ice 1/2" Ice	2.905 3.206	3.218 3.647	0.071 0.101
(P)			0.000			1" Ice	3.519	4.094	0.138
						2" Ice	4.187	5.064	0.225
						4" Ice	5.703	7.343	0.480
PCS 1900MHz 4x45W-65MHz w / Mount Pipe	C	From Leg	2.000 0.000	0.000	123.000	No Ice 1/2" Ice	2.905 3.206	3.218 3.647	0.071 0.101
(P)			0.000			1" Ice	3.519	4.094	0.138
						2" Ice	4.187	5.064	0.225
						4" Ice	5.703	7.343	0.480
Side Arm Mount [SO 102-3)	C	None		0.000	123.000	No Ice	3.000	3.000	0.081
(P)						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
						2" Ice	4.920	4.920	0.201
						4" Ice	6.840	6.840	0.321
+									
(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	115.000	No Ice 1/2" Ice	8.498 9.149	6.304 7.479	0.074 0.136
(R)			2.000			1" Ice	9.767	8.368	0.210
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	115.000	No Ice 1/2" Ice	8.498 9.149	6.304 7.479	0.074 0.136
(R)			2.000			1" Ice	9.767	8.368	0.210
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	115.000	No Ice 1/2" Ice	8.498 9.149	6.304 7.479	0.074 0.136
(R)			2.000			1" Ice	9.767	8.368	0.210
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2) RRUS-11	A	From Leg	4.000	0.000	115.000	No Ice	4.424	1.186	0.055

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
(R)			0.000 2.000			1/2" Ice	4.708	1.351	0.081
						1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
(2) RRUS-11	B	From Leg	4.000	0.000	115.000	No Ice	4.424	1.186	0.055
(R)			0.000 2.000			1/2" Ice	4.708	1.351	0.081
						1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
(2) RRUS-11	C	From Leg	4.000	0.000	115.000	No Ice	4.424	1.186	0.055
(R)			0.000 2.000			1/2" Ice	4.708	1.351	0.081
						1" Ice	5.001	1.526	0.110
						2" Ice	5.613	1.900	0.179
						4" Ice	6.940	2.753	0.368
(2) DTMABP7819VG12A	A	From Leg	4.000	0.000	115.000	No Ice	1.139	0.391	0.019
(R)			0.000 2.000			1/2" Ice	1.284	0.488	0.026
						1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
(2) DTMABP7819VG12A	B	From Leg	4.000	0.000	115.000	No Ice	1.139	0.391	0.019
(R)			0.000 2.000			1/2" Ice	1.284	0.488	0.026
						1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
(2) DTMABP7819VG12A	C	From Leg	4.000	0.000	115.000	No Ice	1.139	0.391	0.019
(R)			0.000 2.000			1/2" Ice	1.284	0.488	0.026
						1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
DC6-48-60-18-8F	A	From Leg	4.000	0.000	115.000	No Ice	2.567	4.317	0.019
(R)			0.000 2.000			1/2" Ice	2.798	4.596	0.050
						1" Ice	3.038	4.885	0.085
						2" Ice	3.543	5.488	0.167
						4" Ice	4.658	6.797	0.383
Sector Mount [SM 308-3]	C	None		0.000	115.000	No Ice	22.340	22.340	0.381
(R)						1/2" Ice	31.700	31.700	0.832
						1" Ice	41.060	41.060	1.284
						2" Ice	59.780	59.780	2.187
						4" Ice	97.220	97.220	3.992
+									
(2) DB846F65ZAXY w/	A	From Leg	4.000	0.000	105.000	No Ice	7.033	7.583	0.043
Mount Pipe			0.000			1/2" Ice	7.536	8.544	0.105
(E)			0.000			1" Ice	8.080	9.381	0.179
						2" Ice	9.195	11.166	0.352
						4" Ice	11.528	15.103	0.831
(2) DB846F65ZAXY w/	B	From Leg	4.000	0.000	105.000	No Ice	7.033	7.583	0.043
Mount Pipe			0.000			1/2" Ice	7.536	8.544	0.105
(E)			0.000			1" Ice	8.080	9.381	0.179
						2" Ice	9.195	11.166	0.352
						4" Ice	11.528	15.103	0.831
(2) DB846F65ZAXY w/	C	From Leg	4.000	0.000	105.000	No Ice	7.033	7.583	0.043
Mount Pipe			0.000			1/2" Ice	7.536	8.544	0.105
(E)			0.000			1" Ice	8.080	9.381	0.179
						2" Ice	9.195	11.166	0.352
						4" Ice	11.528	15.103	0.831
BXA-70063-6CF-EDIN-0 w/	A	From Leg	4.000	0.000	105.000	No Ice	7.969	5.801	0.042
Mount Pipe			0.000			1/2" Ice	8.609	6.953	0.100

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
(R)			0.000			1" Ice	9.216	7.819	0.170
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.803
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	105.000	No Ice 1/2" Ice	3.179 3.555	3.353 3.971	0.029 0.059
(R)			0.000			1" Ice	3.964	4.595	0.098
						2" Ice	4.853	5.893	0.193
						4" Ice	6.767	8.885	0.487
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	105.000	No Ice 1/2" Ice	3.179 3.555	3.353 3.971	0.029 0.059
(R)			0.000			1" Ice	3.964	4.595	0.098
						2" Ice	4.853	5.893	0.193
						4" Ice	6.767	8.885	0.487
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	105.000	No Ice 1/2" Ice	7.969 8.609	5.801 6.953	0.042 0.100
(R)			0.000			1" Ice	9.216	7.819	0.170
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.803
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	105.000	No Ice 1/2" Ice	3.179 3.555	3.353 3.971	0.029 0.059
(R)			0.000			1" Ice	3.964	4.595	0.098
						2" Ice	4.853	5.893	0.193
						4" Ice	6.767	8.885	0.487
SLCP 2x6014 w/ Mount Pipe	C	From Leg	4.000	0.000	105.000	No Ice	7.451	6.955	0.040
(R)			0.000 0.000			1/2" Ice 1" Ice	7.961 8.470	7.756 8.520	0.102 0.175
						2" Ice	9.519	10.100	0.343
						4" Ice	11.742	13.475	0.799
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000	105.000	No Ice	0.367	0.085	0.003
(R)			0.000 0.000			1/2" Ice 1" Ice	0.451 0.543	0.136 0.196	0.005 0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000	105.000	No Ice	0.367	0.085	0.003
(R)			0.000 0.000			1/2" Ice 1" Ice	0.451 0.543	0.136 0.196	0.005 0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	105.000	No Ice	0.367	0.085	0.003
(R)			0.000 0.000			1/2" Ice 1" Ice	0.451 0.543	0.136 0.196	0.005 0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
Platform Mount [LP 712-1]	C	None		0.000	105.000	No Ice	24.530	24.530	1.335
(E)						1/2" Ice	29.940	29.940	1.646
						1" Ice	35.350	35.350	1.956
						2" Ice	46.170	46.170	2.577
						4" Ice	67.810	67.810	3.820
+									
(4) DB844H65E-XY w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	95.000	No Ice 1/2" Ice	10.038 10.551	5.154 5.833	0.038 0.104
(E)			0.000			1" Ice	11.073	6.523	0.179
						2" Ice	12.150	7.959	0.351
						4" Ice	14.438	11.092	0.813
(4) DB844H65E-XY w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	95.000	No Ice 1/2" Ice	10.038 10.551	5.154 5.833	0.038 0.104
(E)			0.000			1" Ice	11.073	6.523	0.179

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
						2" Ice	12.150	7.959	0.351
						4" Ice	14.438	11.092	0.813
(4) DB844H65E-XY w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	95.000	No Ice	10.038	5.154	0.038
						1/2" Ice	10.551	5.833	0.104
						1" Ice	11.073	6.523	0.179
						2" Ice	12.150	7.959	0.351
						4" Ice	14.438	11.092	0.813
Platform Mount [LP 303-1] (E)	C	None		0.000	95.000	No Ice	14.660	14.660	1.250
						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
						2" Ice	31.500	31.500	2.175
						4" Ice	48.340	48.340	3.101
+									
HBXX-6517DS-VTM w/ Mount Pipe (R)	A	From Leg	2.000 0.000 0.000	0.000	85.000	No Ice	8.976	6.963	0.067
						1/2" Ice	9.647	8.182	0.134
						1" Ice	10.291	9.144	0.213
						2" Ice	11.595	11.022	0.398
						4" Ice	14.321	15.027	0.914
HBXX-6517DS-VTM w/ Mount Pipe (R)	B	From Leg	2.000 0.000 0.000	0.000	85.000	No Ice	8.976	6.963	0.067
						1/2" Ice	9.647	8.182	0.134
						1" Ice	10.291	9.144	0.213
						2" Ice	11.595	11.022	0.398
						4" Ice	14.321	15.027	0.914
HBXX-6517DS-VTM w/ Mount Pipe (R)	C	From Leg	2.000 0.000 0.000	0.000	85.000	No Ice	8.976	6.963	0.067
						1/2" Ice	9.647	8.182	0.134
						1" Ice	10.291	9.144	0.213
						2" Ice	11.595	11.022	0.398
						4" Ice	14.321	15.027	0.914
Pipe Mount [PM 601-3] (E)	C	None		0.000	85.000	No Ice	4.390	4.390	0.195
						1/2" Ice	5.480	5.480	0.237
						1" Ice	6.570	6.570	0.280
						2" Ice	8.750	8.750	0.365
						4" Ice	13.110	13.110	0.534
+									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-11 (E)	C	Paraboloid w/o Radome	From Leg	4.000 0.000 0.000	90.000		124.000	2.175	No Ice	3.715	0.027
									1/2" Ice	4.006	0.048
									1" Ice	4.296	0.068
									2" Ice	4.876	0.109
									4" Ice	6.037	0.191
VHLP2-18 (E)	B	Paraboloid w/o Radome	From Leg	4.000 0.000 0.000	62.000		124.000	2.175	No Ice	3.715	0.031
									1/2" Ice	4.006	0.052
									1" Ice	4.296	0.072
									2" Ice	4.876	0.113
									4" Ice	6.037	0.195
-											

Load Combinations

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 93.75	32.336	32	2.365	0.008
L2	93.75 - 85.04	17.955	32	1.870	0.002
L3	88.957 - 73.5833	16.127	32	1.773	0.002
L4	73.5833 - 60.5	10.847	32	1.469	0.001
L5	60.5 - 40.457	7.254	32	1.151	0.001
L6	45.54 - 30.5	4.140	32	0.836	0.001
L7	30.5 - 0	1.847	32	0.589	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.000	LLPX310R-V1 w/ Mount Pipe	32	32.336	2.365	0.008	11831
124.000	VHLP2-11	32	31.843	2.351	0.007	11831
123.000	800MHZ 2X50W RRH W/FILTER w / Mount Pipe	32	31.350	2.338	0.007	11831
115.000	(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe	32	27.437	2.225	0.005	5915
105.000	(2) DB846F65ZAXY w/ Mount Pipe	32	22.742	2.072	0.004	2957
95.000	(4) DB844H65E-XY w/ Mount Pipe	32	18.453	1.894	0.002	2081
85.000	HBXX-6517DS-VTM w/ Mount Pipe	32	14.680	1.696	0.002	3417

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 93.75	92.867	7	6.800	0.021
L2	93.75 - 85.04	51.637	7	5.380	0.007
L3	88.957 - 73.5833	46.386	7	5.101	0.006
L4	73.5833 - 60.5	31.216	7	4.228	0.004
L5	60.5 - 40.457	20.883	7	3.315	0.002
L6	45.54 - 30.5	11.922	7	2.409	0.001
L7	30.5 - 0	5.320	7	1.696	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.000	LLPX310R-V1 w/ Mount Pipe	7	92.867	6.800	0.021	4226
124.000	VHLP2-11	7	91.453	6.761	0.021	4226
123.000	800MHZ 2X50W RRH W/FILTER w / Mount Pipe	7	90.040	6.721	0.020	4226
115.000	(3) AM-X-CD-16-65-00T-RET w/ Mount Pipe	7	78.828	6.399	0.016	2112
105.000	(2) DB846F65ZAXY w/ Mount Pipe	7	65.367	5.961	0.011	1053
95.000	(4) DB844H65E-XY w/ Mount Pipe	7	53.064	5.451	0.007	739
85.000	HBXX-6517DS-VTM w/ Mount Pipe	7	42.229	4.880	0.005	1207

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	125 - 93.75 (1)	TP25.218x18.5x0.188	31.250	0.000	0.0	39.0000	14.896	-7.569	580.947	0.013
L2	93.75 - 85.04 (2)	TP27.09x25.218x0.309	8.710	0.000	0.0	37.9800	25.457	-8.222	966.866	0.009
L3	85.04 - 73.5833 (3)	TP29.14x25.63x0.359	15.374	0.000	0.0	37.0200	32.793	-11.333	1214.020	0.009
L4	73.5833 - 60.5 (4)	TP31.921x29.14x0.367	13.083	0.000	0.0	39.0000	36.706	-13.791	1431.540	0.010
L5	60.5 - 40.457 (5)	TP36.18x31.921x0.436	20.043	0.000	0.0	39.0000	47.938	-17.072	1869.570	0.009
L6	40.457 - 30.5 (6)	TP37.787x34.228x0.485	15.040	0.000	0.0	39.0000	57.389	-21.580	2238.190	0.010
L7	30.5 - 0 (7)	TP44.25x37.787x0.456	30.500	0.000	0.0	39.0000	63.426	-29.538	2473.600	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	125 - 93.75 (1)	TP25.218x18.5x0.188	366.274	47.7551	39.0000	1.224	0.000	0.0000	39.0000	0.000
L2	93.75 - 85.04 (2)	TP27.09x25.218x0.309	469.994	34.7525	37.9800	0.915	0.000	0.0000	37.9800	0.000
L3	85.04 - 73.5833 (3)	TP29.14x25.63x0.359	830.054	42.9636	37.0200	1.161	0.000	0.0000	37.0200	0.000
L4	73.5833 - 60.5 (4)	TP31.921x29.14x0.367	1156.250	48.7282	39.0000	1.249	0.000	0.0000	39.0000	0.000
L5	60.5 - 40.457 (5)	TP36.18x31.921x0.436	1546.017	45.4558	39.0000	1.166	0.000	0.0000	39.0000	0.000
L6	40.457 - 30.5 (6)	TP37.787x34.228x0.485	1956.667	44.6751	39.0000	1.146	0.000	0.0000	39.0000	0.000
L7	30.5 - 0 (7)	TP44.25x37.787x0.456	2837.075	49.7970	39.0000	1.277	0.000	0.0000	39.0000	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	125 - 93.75 (1)	TP25.218x18.5x0.188	21.446	1.4397	26.0000	0.111	0.693	0.0441	26.0000	0.002
L2	93.75 - 85.04 (2)	TP27.09x25.218x0.309	21.832	0.8576	25.3200	0.068	0.700	0.0252	25.3200	0.001
L3	85.04 - 73.5833 (3)	TP29.14x25.63x0.359	24.403	0.7442	24.6800	0.060	0.713	0.0179	24.6800	0.001
L4	73.5833 - 60.5 (4)	TP31.921x29.14x0.367	25.453	0.6934	26.0000	0.053	0.708	0.0145	26.0000	0.001
L5	60.5 - 40.457 (5)	TP36.18x31.921x0.436	26.647	0.5559	26.0000	0.043	0.712	0.0102	26.0000	0.000
L6	40.457 - 30.5 (6)	TP37.787x34.228x0.485	27.861	0.4855	26.0000	0.037	0.718	0.0080	26.0000	0.000
L7	30.5 - 0 (7)	TP44.25x37.787x0.456	29.881	0.4711	26.0000	0.036	0.737	0.0063	26.0000	0.000

Pole Interaction Design Data

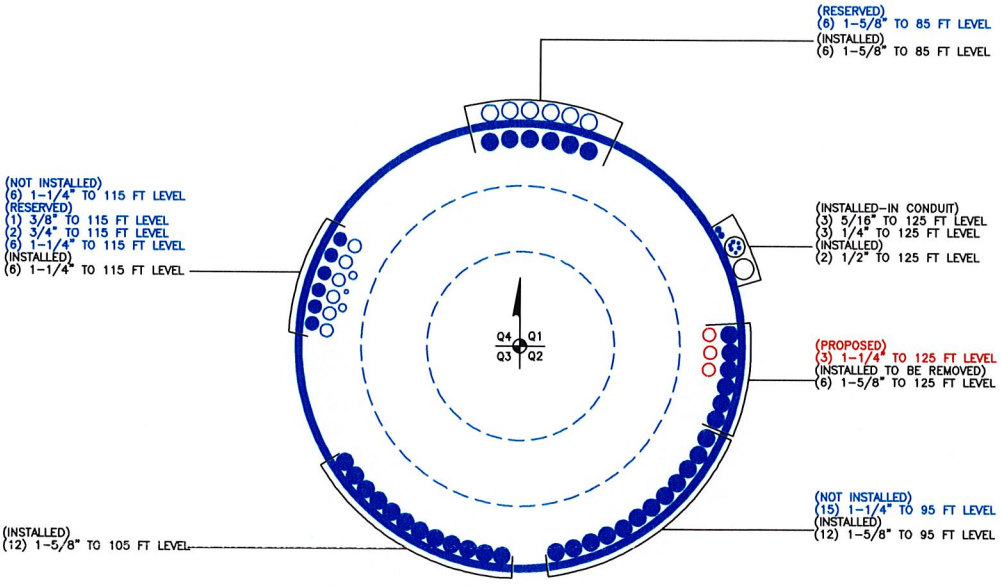
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	125 - 93.75 (1)	0.013	1.224	0.000	0.111	0.002	1.241 ✔	1.333	H1-3+VT ✔
L2	93.75 - 85.04 (2)	0.009	0.915	0.000	0.068	0.001	0.925 ✔	1.333	H1-3+VT ✔
L3	85.04 - 73.5833 (3)	0.009	1.161	0.000	0.060	0.001	1.171 ✔	1.333	H1-3+VT ✔
L4	73.5833 - 60.5 (4)	0.010	1.249	0.000	0.053	0.001	1.260 ✔	1.333	H1-3+VT ✔
L5	60.5 - 40.457 (5)	0.009	1.166	0.000	0.043	0.000	1.175 ✔	1.333	H1-3+VT ✔
L6	40.457 - 30.5 (6)	0.010	1.146	0.000	0.037	0.000	1.156 ✔	1.333	H1-3+VT ✔
L7	30.5 - 0 (7)	0.012	1.277	0.000	0.036	0.000	1.289 ✔	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	125 - 93.75	Pole	TP25.218x18.5x0.188	1	-7.569	774.402	93.1	Pass
L2	93.75 - 85.04	Pole	TP27.09x25.218x0.309	2	-8.222	1288.832	69.4	Pass
L3	85.04 - 73.5833	Pole	TP29.14x25.63x0.359	3	-11.333	1618.289	87.8	Pass
L4	73.5833 - 60.5	Pole	TP31.921x29.14x0.367	4	-13.791	1908.243	94.5	Pass
L5	60.5 - 40.457	Pole	TP36.18x31.921x0.436	5	-17.072	2492.137	88.2	Pass
L6	40.457 - 30.5	Pole	TP37.787x34.228x0.485	6	-21.580	2983.507	86.7	Pass
L7	30.5 - 0	Pole	TP44.25x37.787x0.456	7	-29.538	3297.309	96.7	Pass
							Summary	
						Pole (L7)	96.7	Pass
						RATING =	**96.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876364 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	30.5	3	MP406	F	T&C
30.5	60.5	3	MP406	F	T&C
60.5	73.5833	3	MP404	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		1						1						1			
			1						1						1		
		1						1						1			

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
73.5833	93.75	3	MP304	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
			1						1						1		

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Reinforcement Capacity

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
MP303	9.9	2.92	0.66	6.57	0.59	0	0.30	4.06	1.57	0.64	1.21875	65	80	0.80	18	1.00	18	96.4	128.6	Rupture	**144.7**	Rupture
MP304	14.1	4.13	0.91	11.86	0.61	0	0.43	4.78	1.61	0.84	1.21875	65	80	0.80	18	1.00	18	137.3	183.1	Rupture	**206.0**	Rupture
MP305	19.2	5.65	2.15	20.79	0.79	0	0.5	5.33	2.09	0.91	1.21875	65	80	0.80	18	1.00	18	194.5	259.3	Rupture	**291.8**	Rupture
MP306	28.8	8.47	4.95	52.50	0.93	0	0.64	6.89	2.61	1.01	1.21875	65	80	0.80	24	1.00	24	298.7	398.3	Rupture	**448.1**	Rupture
MP308	35.1	10.32	6.48	82.29	0.95	0	0.76	7.93	2.8	1.01	1.21875	65	80	0.80	24	1.00	24	366.0	487.9	Rupture	**548.9**	Rupture
MP404	12.1	3.56	0.17	6.70	0.375	0	0.75	4.75	0	0	1.21875	100	110	0.80	14	1.00	14	143.1	190.8	Rupture	**214.6**	Rupture
MP405	16.6	4.88	0.41	9.65	0.5	0	1	4.875	0	0	1.21875	100	110	0.80	18	1.00	18	197.7	263.5	Rupture	**296.5**	Rupture
MP406	20.7	6.09	0.79	12.07	0.625	0	1.25	4.875	0	0	1.21875	100	110	0.80	23	1.00	23	247.1	329.4	Rupture	**370.6**	Rupture
MP408	29.8	8.75	2.23	18.23	0.875	0	1.75	5	0	0	1.21875	100	110	0.80	32	1.00	32	357.9	477.2	Rupture	**536.9**	Rupture
MS400	10.2	3.00	0.14	4.00	0.375	0	0.75	4	0	0	1.21875	65	80	0.80	16.875	1.00	16.875	80.9	107.8	Compress.	**121.3**	Compress.
MS430	15.3	4.50	0.38	7.59	0.5	0	1	4.5	0	0	1.21875	65	80	0.80	20.625	1.00	20.625	127.6	170.2	Compress.	**193.0**	Compress.
MS600	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.21875	65	80	0.80	16.375	1.00	16.375	187.8	250.4	Compress.	**283.1**	Rupture
MS650	27.6	8.13	1.06	28.61	0.625	0	1.25	6.5	0	0	1.21875	65	80	0.80	19.25	1.00	19.25	259.4	345.9	Compress.	**391.4**	Rupture
MS850	36.2	10.63	1.38	63.97	0.625	0	1.25	8.5	0	0	1.21875	65	80	0.80	17.25	1.00	17.25	349.7	466.2	Compress.	**540.9**	Compress.
CCIPL1x5	17.0	5.00	0.42	10.42	0.5	0	1	5	0	0	1.21875	100	110	0.80	18	1.00	18	204.5	272.7	Rupture	**306.8**	Rupture
CCIPL1x6	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.21875	100	110	0.80	18	1.00	18	250.0	333.4	Compress.	**375.3**	Compress.
CCIPL1x7	23.8	7.00	0.58	28.58	0.5	0	1	7	0	0	1.21875	100	110	0.80	18	1.00	18	291.7	388.9	Compress.	**437.8**	Compress.

PROJECT	**84470.006.01 - Cromwell, CT - BU 876364**				
SUBJECT	**Proposed Anchor Rod Calcs**				
DATE	**02/27/13**	PAGE	1	OF	1

B&T Engineering, Inc.
1325 E. 15th St., Suite 202
Tulsa, OK 74120
(918) 587-4630

SSC

LOADS AND GEOMETRY:

M = 2837 k-ft = 34044 k-in (....RISA Output)

Check Proposed Anchor Rods:

(3) 2 1/4" Rods (Fy=105ksi):

I_{BC} = 19989.90 in^4

$\check{y}$ = 29.88 in

$$S_{BC} = \frac{I_{BC}}{\check{y}} = \frac{19989.90 \text{ ksi}}{29.88 \text{ in}^3}$$

$$= 669.12 \text{ in}^3$$

$T_b = f_t \times A_n$ = 50.9 x 2.40 = 122.11 k **Unity % = 92.5%**

Determine Equivalent Moment taken by Existing Anchor Rods:

$$M_{EQ} = \frac{I_{original}}{I_{combined}} \times M = 2379.8 \text{ k-ft}$$ **<= Enter This moment into Base Plate Tool**

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

TIA Rev F

Site Data

BU#: *876364*
Site Name: *Cromwell / First Line Emergenc,CT*
App #: *165640 Rev. 1*

Pole Manufacturer:	*Other*

Reactions		
Moment:	2379.8	ft-kips
Axial:	30	kips
Shear:	30	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	53	in

Plate Data		
Diam:	59	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.70	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.625	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	22	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	44.25	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

		Stiffened
Maximum Rod Tension:	177.1 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	90.8% **Pass**	

Base Plate Results

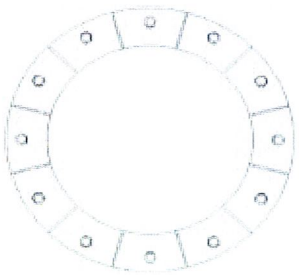
	Flexural Check	Stiffened
Base Plate Stress:	53.6 ksi	Service, ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	89.3% **Pass**	Y.L. Length: N/A, Roark

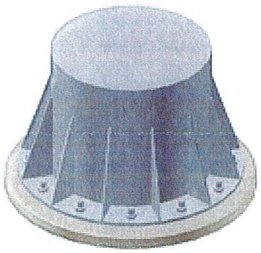
Stiffener Results

Horizontal Weld :	79.2% **Pass**
Vertical Weld:	42.2% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	17.3% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	69.5% **Pass**
Plate Comp. (AISC Bracket):	69.6% **Pass**

Pole Results

Pole Punching Shear Check:	13.1% **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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: 876364
Site Name: Cromwell / First Line Emergenc,CT
App #: 166148 Rev. 1

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	5	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	24	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	14	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	196.00	ft^2
Pier Height:	3.00	ft
Soil (above pad) Height:	2.00	ft

Soil Parameters		
Unit Weight, γ:	125.0	pcf
Ultimate Bearing Capacity, qn:	8.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	30.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	6.00	ksf
Passive Pres. Coeff., Kp	3.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	40.5	kips
Pad Force Location Above D:	1.29	ft
ϕ(Passive Pressure Moment):	52.07	ft-kips
Factored O.T. M(WL), "1.6W":	4073.0	ft-kips
Factored OT (MW-Msoil), M1	4020.88	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	1.15	ft
Sum of Soil Wedges Wt:	8.34	kips
Soil Wedges ecc, K1:	7.68	ft
Ftg+Soil above Pad wt:	442.4	kips
Unfactored (Total ftg-soil Wt):	450.74	kips
1.2D. **No Soil Wedges**.	566.88	kips
0.9D. **With Soil Wedges**	432.66	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	30	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	30	kips
Unfactored WL Moment, M:	2837	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	36	kips
0.90	0.9D+1.6W, Pu:	27	kips
1.35	Vu:	40.5	kips
	Mu:	3829.95	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	566.88	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	4020.88	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	7.09	ft
Orthogonal qu=	2.41	ksf
qu/ϕ*qn Ratio=	**40.11%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	5.01	ft
Diagonal qu=	2.90	ksf
qu/ϕ*qn Ratio=	**48.41%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	432.66	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	3963.27	ft-kips

Orthogonal ecc3 = M2/P2 =	9.16	ft
Ortho Non Bearing Length,NBL=	18.32	ft
Orthogonal qu=	3.17	ksf
Diagonal qu=	3.55	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	2837.00		
M Orthogonal:	3267.96	**86.81%**	**Pass**
M Diagonal:	3267.96	**86.81%**	**Pass**

APPENDIX D

TOWER MODIFICATION DRAWINGS

CROWN CASTLE

TOWER MODIFICATION DRAWINGS

SITE NAME: CROMWELL / FIRST LINE EMERGENC
BU NUMBER: 876364

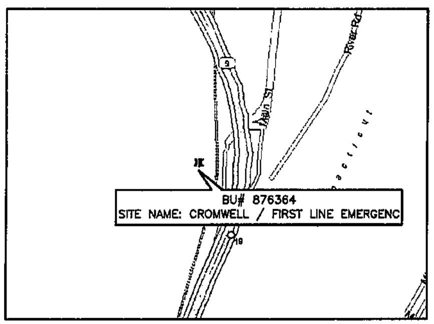
SITE ADDRESS:
201 MAIN STREET
CROMWELL, CT 06416
MIDDLESEX COUNTY , USA

PROJECT CONTACTS:

1. CROWN TOWER STRUCTURAL ANALYST
   STEVE TUTTLE
   (585) 899-3445
   STEVE.TUTTLE@CROWNCASTLE.COM
   THE PIANO WORKS 349 WEST COMMERCIAL STREET
   EAST ROCHESTER, NY 14445

2. B+T GROUP PROJECT ENGINEER
   KIRAN MAROJU
   (918) 587-4630
   KMAROJU@BTGRP.COM
   1717 S BOULDER AVENUE, SUITE 300
   TULSA, OKLA. 74119

3. B+T GROUP ENGINEER (EOR)
   CHAD E TUTTLE, P.E.
   (918) 587-4630
   CTUTTLE@BTGRP.COM
   1717 S BOULDER AVENUE, SUITE 300
   TULSA, OKLA. 74119



MAP

DIRECTIONS

FROM HWY 91 TAKE ROUTE 9 SOUTH, FIRST EXIT CROMWELL/PORTLAND (EXIT 19), TAKE A RIGHT ON MAIN STREET (ROUTE 99). FOLLOW 99 TO JUNCTION W/ROUTE 99. TOWER IS AT 200 MAIN STREET ON THE RIGHT.

TOWER INFORMATION

TOWER MANUFACTURER / DWG #:	EEI / GS52064
TOWER HEIGHT / TYPE:	125' MONOPOLE
TOWER LOCATION: DATUM: (NAD 1983)	LAT. 41° 35' 0.11" LONG. -72° 38' 59.14" ELEV. 6 FT AMSL
STRUCTURAL DESIGN DRAWING REPORT:	B+T GROUP / WO. # 580884
STRUCTURAL ANALYSIS REPORT:	B+T GROUP / WO. # 540426
STRUCTURAL ANALYSIS DATE:	10/23/12
CCISITES DOCUMENT ID:	3356051

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF TIA/EIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES USING A FASTEST MILE WIND SPEED OF 85 MPH WITH NO ICE, 37.6 MPH WITH 0.75 INCH ICE THICKNESS AND 50 MPH UNDER SERVICE LOADS.

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S1	TITLE SHEET
S2	MODIFICATION INSPECTION NOTES AND CHECKLIST
S3	GENERAL NOTES, AJAX BOLT NOTES AND DETAIL
S4	TOWER ELEV., SCHEDULES & TX LINE DIST. DIAG.
S5	ANCHOR ROD DETAILS
S6	TOWER SECTION (71'-96')

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	03/01/13	ISSUED FOR CONSTRUCTION

PROJECT NO:	84470.008.01
PROJECT ENG:	KIRAN MAROJU
DRAWN BY:	VAT / TEW
CHECKED BY:	SSC / SSV

B+T ENGINEERING, INC.

STATE OF CONNECTICUT ★ CHAD E. TUTTLE No. 23024 LICENSED PROFESSIONAL ENGINEER 3/1/13

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

CROMWELL / FIRST LINE EMERGENC
876364
201 MAIN STREET
CROMWELL, CT
EXISTING 125' MONOPOLE

SHEET TITLE
TITLE SHEET

SHEET NUMBER: S1
REVISION: 0

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MI CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
PRE-CONSTRUCTION		
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR CERTIFIED WELD INSPECTION	A VISUAL OBSERVATION BY A CWI OF A PORTION OF WELDING ON THE PROPOSED STRUCTURAL MEMBERS IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DRAWINGS AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING (PER ENG-STD-10069) ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	NDE REPORT OF MONOPOLE BASE PLATE	A NDE (PER ENG-SOW-10033) OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
CONSTRUCTION		
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	POST INSTALLED ANCHOR ROD VERIFICATION	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	BASE PLATE GROUT VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH CROWN ENG-PRC-10012 FOR INCLUSION IN THE MI REPORT.
X	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH ENG-BUL-10149.
N/A	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE AS PART OF PLUMB AND TENSION PROCEDURE FOR INCLUSION IN THE MI REPORT.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
POST-CONSTRUCTION		
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
X	POST INSTALLED ANCHOR ROD PULL-OUT TESTING	POST-INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH ENG-PRC-10119 AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
ADDITIONAL TESTING AND INSPECTIONS:		

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT
N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MI INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOW-10007.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

CROWN RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEV/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	03/01/13	ISSUED FOR CONSTRUCTION

PROJECT NO:	84470.006.01
PROJECT ENG:	KIRAN MAROJU
DRAWN BY:	VAT / TEW
CHECKED BY:	SSC / SSV

B+T ENGINEERING, INC.

3/1/13

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

CROWWELL / FIRST LINE EMERGENC
876364
201 MAIN STREET
CROMWELL, CT
EXISTING 125' MONOPOLE

SHEET TITLE
MODIFICATION INSPECTION NOTES AND CHECKLIST

SHEET NUMBER: S2
REVISION: 0

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NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRE-TENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

3. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRE-TENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAIL BELOW FOR THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

4. ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. DTI'S SHALL BE THE SQUIRTER® STYLE, MADE TO ASTM F959 LATEST REVISION; AND HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A HARDNESS OF RC 38 OF HIGHER.

<u>NOTES FOR AJAX M20 'ONE-SIDE' BOLTS WITH DIRECT TENSION INDICATORS (DTI'S):</u>

<u>DTI'S REQUIRED:</u> DTI'S SHALL BE "SELF-INDICATING" SQUIRTER® STYLE DTI'S MADE WITH SILICONE EMBEDDED IN THEM, INSPECTED BY MEANS OF THE VISUAL EJECTION OF SILICONE AS THE DTI PROTRUSIONS COMPRESS. SQUIRTER® DTI'S SHALL BE CALIBRATED PER MANUFACTURES'S INSTRUCTIONS PRIOP TO USE.

THE DIRECT TENSION INDICATOR (DTI) WASHERS SHALL BE THE "SQUIRTER® STYLE" AS MANUFACTURED BY:

APPLIED BOLTING TECHNOLOGY PRODUCTS, INC.
1413 ROCKINGHAM ROAD
BELLOWS FALLS, VERMONT 05101, USA
PHONE 1-800-552-1999
WEBSITE: WWW.APPLIEDBOLTING.COM

DISTRIBUTORS OF SQUIRTER® DTI'S:
HTTP://WWW.APPLIEDBOLTING.COM/APPLIED-BOLTING-DISTRUBUTORS.HTML

<u>DTI:</u> USE DIRECT TENSION INDICATOR (DTI) WASHERS COMPATIBLE WITH 3/4" NOMINAL A325 BOLTS FOR THE AJAX M20 BOLTS. DTI'S SHALL NOT BE HOT-DIP GALVANIZED. DTI'S SHALL BE MECHANICALLY GALVANIZED (MG) BY THE COLD MECHANICAL PROCESS ONLY AS PROVIDED BY THE DTI MANUFACTURER.

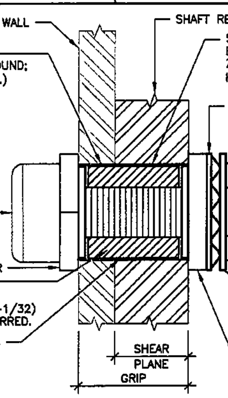
<u>HARDENED WASHERS REQUIRED:</u> USE A HARDENED WASHER FOR A 3/4" NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLT. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF RE 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY GALVANIZED BY THE COLD MECHANICAL PROCESS. ALTERNATIVELY, CORRECTLY MADE HOT DIP GALVANIZED HARDENED FLAT WASHERS HAVING A MINIMUM HARDNESS OF RC 38 CAN BE USED; CONTRACTOR SHALL PROVIDE DOCUMENTATION OF WASHER SPECIFICATION AND HARDNESS.

<u>NUT LUBRICATION REQUIRED:</u> PROPERLY LUBRICATE THE THREADS OF THE NUT OF THE AJAX BOLT SO THAT IT CAN BE PROPERLY TIGHTENED WITHOUT GALLING AND/OR LOCKING UP ON THE BOLT THREADS. CONTRACTOR SHALL FOLLOW DTI MANUFACTURER INSTRUCTIONS FOR PROPER LUBRICATION AND TIGHTENING.

NOTE: COMPLETELY COMPRESSED DTI'S SHOWING NO VISIBLE REMAINING GAP ARE ACCEPTABLE. DTI WASHERS SHALL BE PLACED DIRECTLY AGAINST THE OUTER AJAX WASHER WITH THE DTI BUMPS FACING AWAY FROM THE AJAX WASHER. PLACE A HARDENED WASHER BETWEEN THE DTI AND AJAX NUT. THE DTI BUMPS SHALL BEAR AGAINST THE UNDERSIDE OF A HARDENED FLAT WASHER, NEVER DIRECTLY AGAINST THE NUT.

CONTRACTOR SHALL FOLLOW DTI MANUFACTURES'S INSTRUCTIONS FOR INSTALLATION, LUBRICATION, TIGHTENING AND INSPECTION.

<u>INSPECTION REQUIRED:</u> ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 32, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENTI THE SHOP-DRILLED AND FIELD-DRILLED HOE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.



1 TYPICAL AJAX BOLT DETAIL
SCALE: N.T.S.

GENERAL NOTES

1.1 ALL WORK SHALL COMPLY WITH THE TIA/EIA-222-F STANDARD AS WELL AS ANY OTHER GOVERNING BUILDING CODES.
1.2 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE.
1.3 A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT) SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES.
1.4 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.
1.5 IN LIEU OF TEMPORARY BRACING CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3-SEC) PER TIA-1019.

<u>FABRICATION</u>

2.1 ALL WORK SHALL BE DONE IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
A. STEEL SHAPES AND PLATES, U.N.O.	65ksi	A572
B. STEEL PIPE	50ksi	A53-B

2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.
2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE E80 SERIES.
2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 2 WEEKS PRIOR TO FABRICATION.

KEY NOTES

(#) TOWER MODIFICATION I.D.

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	03/01/13	ISSUED FOR CONSTRUCTION

PROJECT NO:	84470.008.01
PROJECT ENG:	KIRAN MAROJU
DRAWN BY:	VAT / TEW
CHECKED BY:	SSC / SSV

B+T ENGINEERING, INC.

STATE OF CONNECTICUT ★ No. 23924 LICENSED PROFESSIONAL ENGINEER 3/1/13

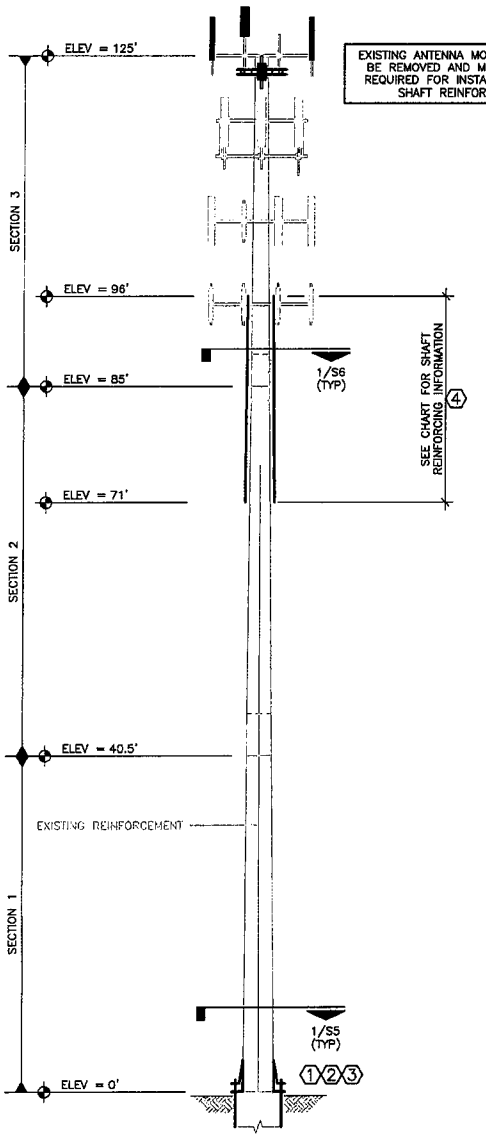
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

CROMWELL / FIRST LINE EMERGENC
876364
201 MAIN STREET
CROMWELL, CT
EXISTING 125' MONOPOLE

SHEET TITLE
GENERAL NOTES, AJAX BOLT NOTES AND DETAILS

SHEET NUMBER: S3
REVISION: 0

S:\Projects\Crown Castle\84470_876364_Cromwell\TWR MOD\84470.008.01 CROMWELL FIRST LINE EMERGENC 876364 TWR MOD.dwg - SheetS3 - User: Twilliams - March 1, 2013 - 1:51 PM



EXISTING ANTENNA MOUNTS SHALL BE REMOVED AND MODIFIED AS REQUIRED FOR INSTALLATION OF SHAFT REINFORCING.

1 TOWER ELEVATION
SCALE: N.T.S.

CCI: FLAT PLATE-BILL OF MATERIALS

BOTTOM ELEVATION	TOP ELEVATION	FLAT PLATE THICKNESS	FLAT PLATE WIDTH	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	AJAX BOLTS PER PLATE	TOTAL AJAX BOLT QTY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	TOTAL STEEL WEIGHT
71'-0"	96'-0"	1"	5	25'-0"	3	32	96	9	9	18"	1276 LBS.

NOTES:
1. AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.
2. ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATOR IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH GOLD GALVANIZING COMPOUND. FILM THICKNESS. 1-800-831-3275 FOR PRODUCT INFORMATION.
3. ALL REINFORCING SHALL BE ASTM A516 OR A514 GR B (Fy = 100 ksi, Fu = 110 ksi)
4. ALL SHIMS SHALL BE ASTM A36.
5. HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.
6. SHOP WELDS ARE ASSUMED E80XX OR GREATER, PER STANDARD SPLICE DETAIL.

EXISTING MEMBER SCHEDULE

SECTION	NUMBER OF SIDES	THICKNESS	BOTTOM DIAMETER	TOP DIAMETER
1	18	0.313"	44.250"	34.600"
2	18	0.250"	36.160"	25.873"
3	18	0.188"	27.090"	18.500"

NDE OF THE CIRCUMFERENTIAL WELD OF THE BASE PLATE TO SHAFT CONNECTION IS REQUIRED. PLEASE SEE ENG-SOW-1033: TOWER BASE PLATE NDE AND ENG-BUL-10051: NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING REINFORCEMENTS THAT HAVE BEEN WELDED TO THE BASE PLATE. FULL PENETRATION WELDING TO THE BASE PLATE REQUIRED AS PART OF THIS ACTIVE REINFORCEMENT DESIGN SHALL BE INCLUDED IN THE NDE SCOPE OF WORK.

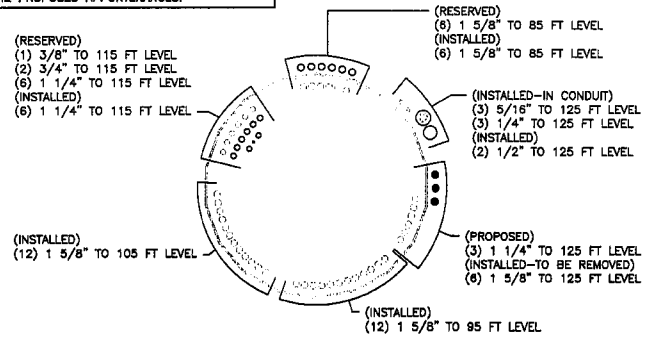
EXISTING TOWER HAS BEEN PREVIOUSLY MODIFIED.
REFERENCE DRAWINGS BY VERTICAL STRUCTURES, INC DATED 10/09/07

EXISTING TOWER HAS BEEN PREVIOUSLY MODIFIED.
REFERENCE DRAWINGS BY B+T GROUP DATED 07/11/12

TOWER MODIFICATIONS:

1. CONTRACTOR SHALL BUDGET A SITE VISIT TO CHECK CRITICAL DIMENSIONS AND VERIFY UNKNOWN CONDITIONS PRIOR TO STEEL FABRICATION.
2. THE NEW AND EXISTING TRANSMISSION LINES MUST BE DISTRIBUTED AS SHOWN IN THE TX LINE DIST. DIAGRAM RE: DETAIL 2/S4.
3. INSTALL NEW ANCHOR RODS AND ANCHOR ROD BRACKETS RE: SHEET S5.
4. INSTALL NEW REINFORCING ELEMENTS RE: SHEET S6.

* CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR ALL REMOVE AND REPLACE PROCEDURES.
** MODIFICATIONS SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES.



2 TX LINE DISTRIBUTION DIAGRAM
SCALE: N.T.S.

NEW CCI FLAT PLATE (100 KSI) REINFORCING ELEMENTS

START ELEVATION	END ELEVATION	QTY	FLAT #	FLAT PLATE
71'-0"	96'-0"	3	1, 7 & 13	1"x5"

NOTES FOR CROWN REINFORCING OPTION (100 KSI) MATERIAL:
1. DO NOT FIELD WELD DIRECTLY TO THE 100 KSI MATERIAL.
2. THE 100 KSI MATERIAL SHALL CONFORM TO THE FOLLOWING:
A) MATERIALS SHALL BE ASTM A514, GRADE A, GRADE E OR GRADE P, HAVING A MINIMUM TENSILE STRENGTH (Fu) OF 110 KSI AND A MINIMUM YIELD STRENGTH (Fy) OF 100 KSI.
B) MATERIAL SHALL BE HEAT TREATED, QUENCHED AND TEMPERED PER ASTM A514.
C) MATERIAL SHALL HAVE CHARPY V-NOTCH (CVN) IMPACT VALUES OF NOT LESS THAN 15 FT-LB AT -20 DEGREES F. IN ACCORDANCE WITH ASTM A370.
D) MINIMUM INSIDE BEND RADIUS FOR COLD BENDING, PER ASTM A6 TABLE X.4.2, SHALL BE 4.5t MINIMUM.
E) AND AND ALL WILDING TO THE MATERIAL SHALL BE PERFORMED ACCORDING TO AN APPROVED WELDING PROCEDURE SPECIFICATION (WPS) SUITABLE FOR THE GRADE AND INTENDED USE AND SERVICE. THE WPS SHALL BE DEVELOPED BY A QUALIFIED CWI AND IN ACCORDANCE WITH AWS D1.1. PRIOR TO ANY WORK, FABRICATION OR WELDING, THE WPS SHALL BE SUBMITTED TO CROWN CASTLE AND B+T GROUP FOR REVIEW.

NEW AEROSOLUTIONS MP3 REINFORCING ELEMENTS

START ELEVATION	END ELEVATION	QTY	FLAT #	MP3
71'-0"	96'-0"	3	1, 7 & 13	MP304

ALL BOLTS SHALL BE AJAX M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A519 WITH MIN. Fu=105 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE AND BOLTS) AND INSTALLATION PROCEDURES.

NEW SABRE FLAT PLATE REINFORCING ELEMENTS

START ELEVATION	END ELEVATION	QTY	FLAT #	FLAT PLATE
71'-0"	96'-0"	3	1, 7 & 13	MS600

ALL BOLTS SHALL BE AJAX M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A519 WITH MIN. Fu=105 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE AND BOLTS) AND INSTALLATION PROCEDURES.

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

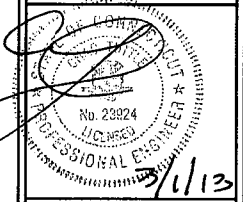
CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	03/01/13	ISSUED FOR CONSTRUCTION

PROJECT NO:	84470.006.01
PROJECT ENG:	KIRAN MAROJU
DRAWN BY:	VAT / TEW
CHECKED BY:	SSC / SSV

B+T ENGINEERING, INC.



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CROMWELL / FIRST LINE EMERGENC
876364
201 MAIN STREET
CROMWELL, CT
EXISTING 125' MONOPOLE

SHEET TITLE
TOWER ELEV., SCHEDULES AND TX LINE DIST. DIAGRAM

SHEET NUMBER:	REVISION:
S4	0

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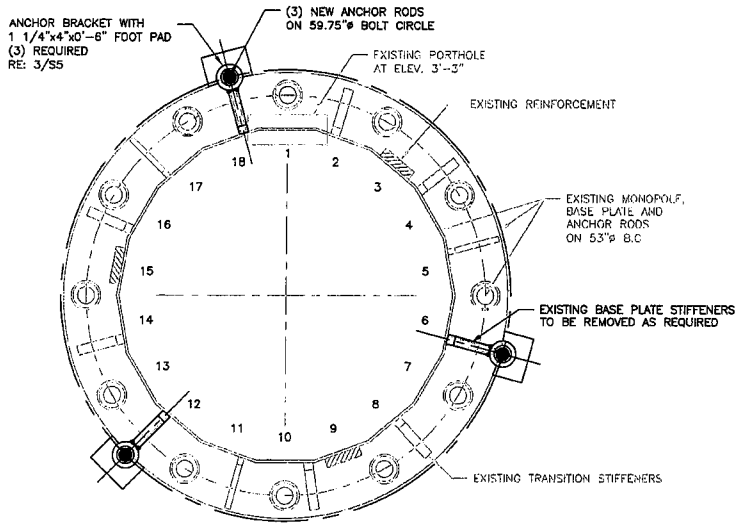
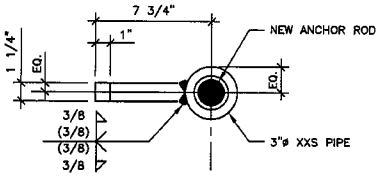
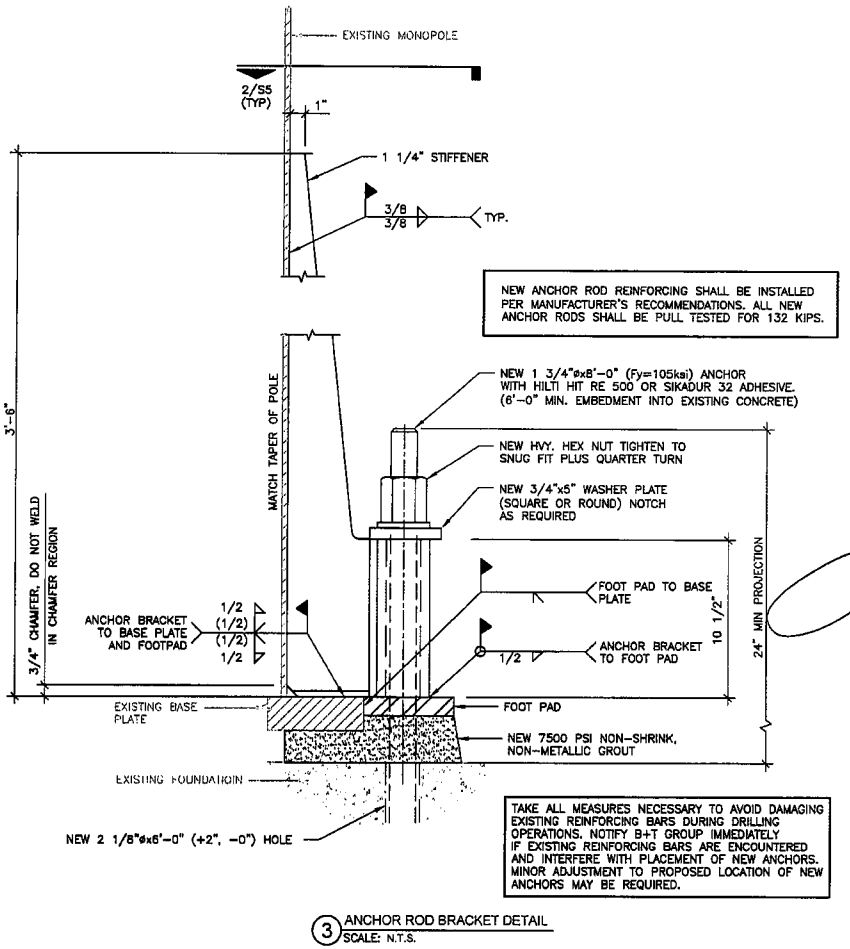


1 TOWER SECTION (ELEV. 0')
SCALE: N.T.S.



2 ANCHOR ROD BRACKET PLAN
SCALE: N.T.S.



3 ANCHOR ROD BRACKET DETAIL
SCALE: N.T.S.

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TULSA, OK 74119
PH: (918) 587-4630
www.bigrp.com

CROWN CASTLE

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PROJECT NO:	84470.006.01
PROJECT ENG:	KIRAN MAROJU
DRAWN BY:	VAT / TEW
CHECKED BY:	SSC / SSV

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
No. 23934
REGISTERED
PROFESSIONAL ENGINEER
3/1/13

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CROMWELL / FIRST LINE EMERGENC
876364
201 MAIN STREET
CROMWELL, CT
EXISTING 125' MONOPOLE

SHEET TITLE
ANCHOR ROD DETAILS

SHEET NUMBER: S5
REVISION: 0

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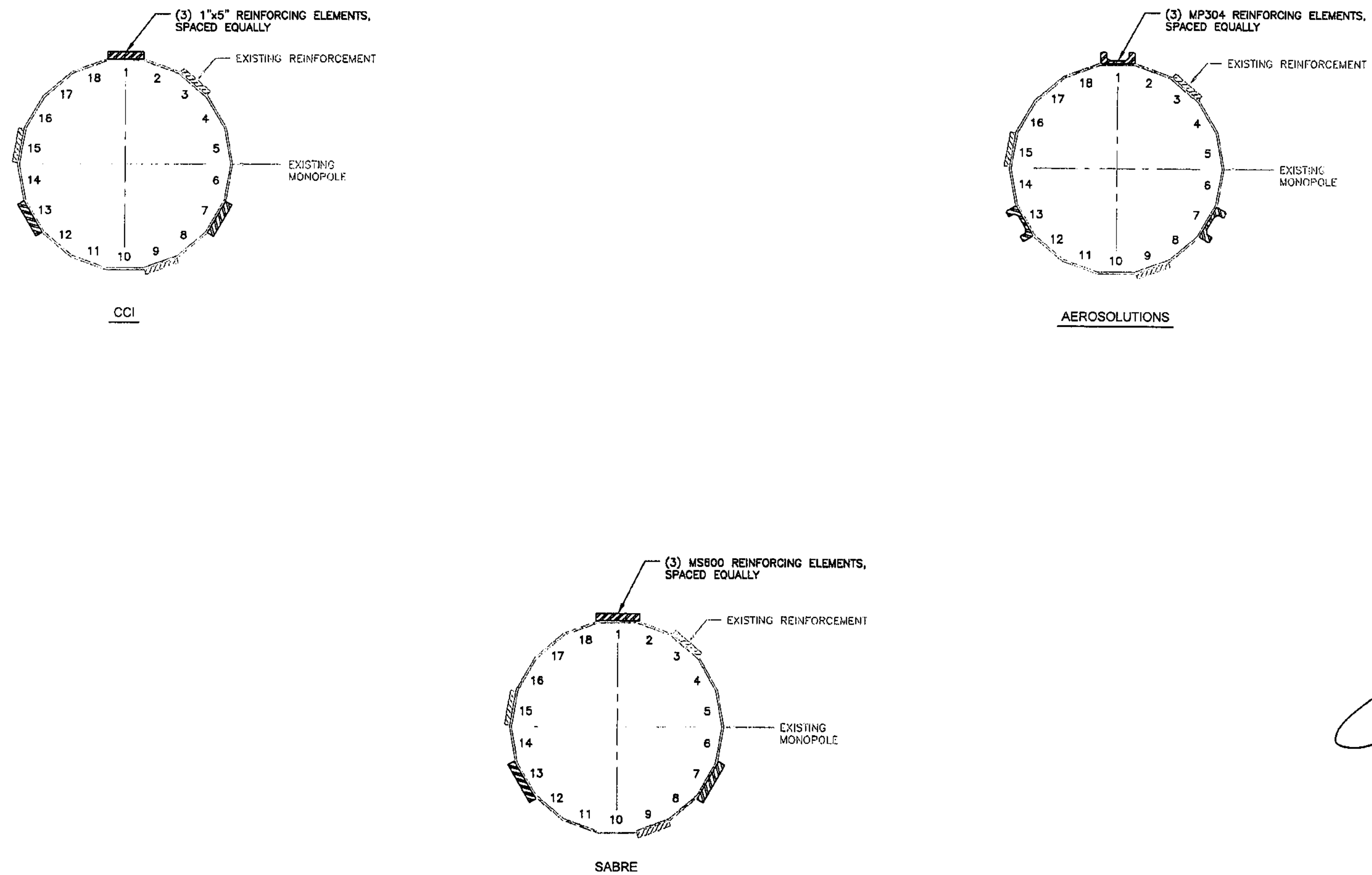

1 TOWER SECTION (71'-96')
SCALE: N.T.S.

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CROWN CASTLE

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PROJECT NO:	84470.006.01
PROJECT ENG:	KIRAN MAROJU
DRAWN BY:	VAT / TEW
CHECKED BY:	SSC / SSV

B+T ENGINEERING, INC.

STATE OF CONNECTICUT ★ LICENSED PROFESSIONAL ENGINEER No. 23924

3/1/13

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CROMWELL / FIRST LINE EMERGENC
876364
201 MAIN STREET
CROMWELL, CT
EXISTING 125' MONOPOLE

SHEET TITLE
TOWER SECTION
71'-96'

SHEET NUMBER: S6
REVISION: 0