

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

October 24, 2012

David Weisman
Vertical Development LLC
7 Sycamore Way, Unit 1
Branford, CT 06405

RE: **EM-SPRINT-NEXTEL-014-120927** – Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 21 Acorn Road, Branford, Connecticut.

Dear Mr. Weisman:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 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 September 25, 2012. 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,

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Anthony "Unk" DaRos, First Selectman, Town of Branford
Daniel Shapiro, Chm, Inland Wetland Commission, Town of Branford
Laura Magaraci, Zoning Enforcement Officer, Town of Branford
Crown Castle



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
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October 3, 2012

The Honorable Anthony "Unk" DaRos
First Selectman
Town of Branford
Town Hall
1019 Main Street
P. O. Box 150
Branford, CT 06405-0150

RE: **EM-SPRINT-NEXTEL-014-120927** – Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 21 Acorn Road, Branford, Connecticut.

Dear First Selectman DaRos:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by October 18, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

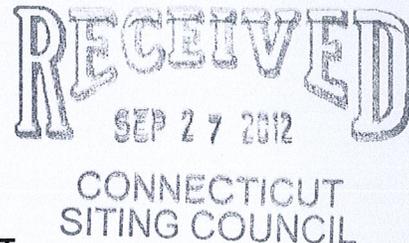
LR/jbw

Enclosure: Notice of Intent

c: Daniel Shapiro, Chm, Inland Wetland Commission, Town of Branford
Laura Magaraci, Zoning Enforcement Officer, Town of Branford

September 25, 2012

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Attn: Ms. Linda Roberts, Executive Director



Re: Notice of Exempt Modification for 21 Acorn Road, Branford, CT

Dear Ms. Roberts,

On behalf of Sprint Nextel Corporation ("Sprint"), enclosed for filing are an original and five (5) copies of Sprint's Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site.

I also enclose herewith a check in the amount of \$625.00 representing the fee for the Notice of Exempt Modification.

If you have any questions, please feel free to contact me.

Thank you,

By: 

Name: David Weisman
Vertical Development LLC, an authorized representative of Sprint Nextel
Vertical Development LLC
7 Sycamore Way, Unit 1
Branford, CT 06405
Phone – 401-743-9011
Fax – 401-633-6202

CC: Mr. Anthony DaRos, First Selectman
Town of Branford
1019 Main Street
Branford, CT 06405

Notice of Exempt Modification

21 Acorn Road, Branford, CT

Sprint Nextel Corporation ("Sprint") submits this Notice of Exempt Modification to the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-73 and 16-50j-72(b) of the Regulations of Connecticut State Agencies ("Regulations") in connection with Sprint's planned modification of antennas and associated equipment on an existing 150' monopole tower located at 21 Acorn Road in the Town of Branford. More particularly, Sprint plans to upgrade this site by adding 4G LTE technology to its facilities. The proposed modifications will not increase the tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six (6) decibels, or add radio frequency sending or receiving capability which increases the total radio frequency 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 Connecticut General Statutes § 22a-162.

To better meet the growing voice and data demands of its wireless customers, Sprint is upgrading their network nationwide to include 4G technology, which will provide faster service and better overall performance. Pursuant to the 4G upgrade at this site, Sprint will add antennas, install RRHs and notch filters, and install related equipment to its equipment area within the fenced compound at the base of the tower.

The 150' monopole tower located at 21 Acorn Road in the Town of Branford (lat. 41° 17' 35.11", long. 72° 45' 46.39") is owned by Global Signal Acquisitions II LLC. It is in a fenced compound within a 420 square foot area. Sprint currently has six (6) antennas (two (2) per sector) with a centerline of 149' installed on the tower and associated transmission lines (one (1) per antenna). Sprint's base station equipment is located adjacent to the base of the tower within the fenced compound. A site plan depicting this is attached.

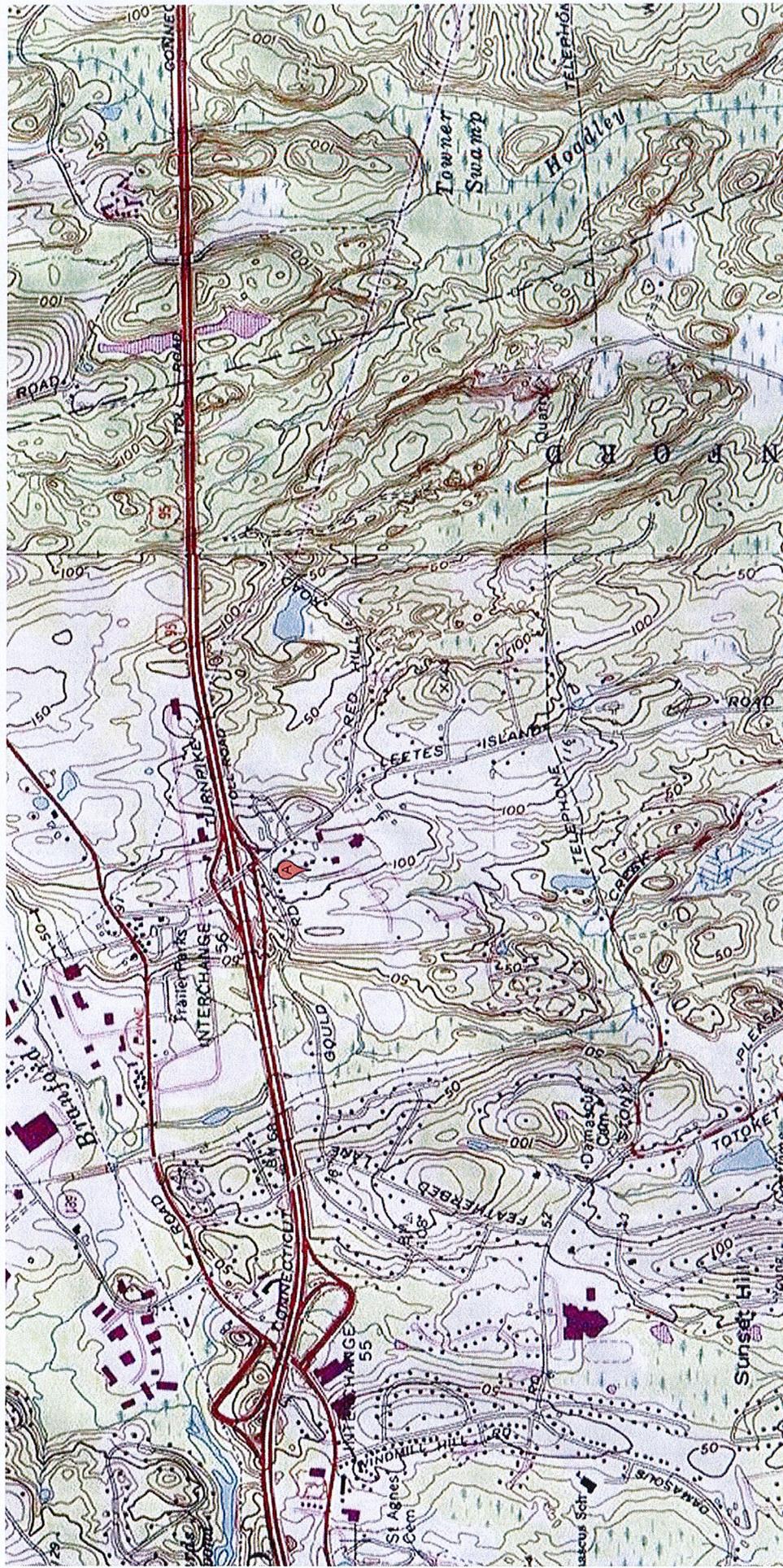
Sprint plans to add three (3) RFS APXVSP18-C-A20 antennas, one (1) per sector, all with a centerline of 149', and associated transmission lines (one (1) per antenna). Connected to each new RFS antenna will be one (1) ALU 800 MHz RRH with one (1) ALU 800 MHz notch filter attached to it and one (1) ALU 1900 MHz RRH, all of which will be located behind the antenna on a pipe mount. After the new antennas have been tested and are deployed on-air, the six (6) previously existing antennas and associated transmission lines will be removed. The height of the monopole will not need to be increased. Sprint also plans to install a new fiber junction box on a new H-frame and a new Ciena equipment enclosure into their equipment space within the tower compound's fenced border, and to extend the ice bridge and retrofit or replace the existing BTS cabinet. The compound's boundaries will not need to be extended. Other than brief, construction-related noise, these modifications will not increase noise levels at the tower site boundary by six (6) decibels.

Sprint commissioned Paul J. Ford and Company, Structural Engineers, to perform a structural analysis of the tower and foundation to verify that they can support the proposed loading. The tower and foundation were found to be of "Sufficient Capacity" (see the first page of Structural Analysis Report, May 31, 2012). The tower is rated at 91.4% of its capacity (see Page 5 of Structural Analysis Report, May 31, 2012).

The proposed modifications will not add radio frequency sending or receiving capability which increases the total radio frequency 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 Connecticut General Statutes § 22a-162. A radio frequency emissions analysis prepared by EBI Consulting indicates that the proposed final configuration (including other carriers on the tower) will emit 95.499% of the allowable FCC established general public limit sampled at the ground level (see the 5th page of Radio Frequency Emissions Analysis Report - Evaluation of Human Exposure Potential to Non-Ionizing Emissions, August 13, 2012). Emission values for the Sprint antennas have been calculated from the sample

point, which is the top of a six foot person standing at the base of the tower. Emissions values for additional carriers were based upon values listed in Connecticut Siting Council active database (see the 3rd and 4th page of Radio Frequency Emissions Analysis Report - Evaluation of Human Exposure Potential to Non-Ionizing Emissions, August 13, 2012). The information used in the report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1 (see the second page of Radio Frequency Emissions Analysis Report - Evaluation of Human Exposure Potential to Non-Ionizing Emissions, August 13, 2012).

In conclusion, Sprint's proposed modifications do not constitute a modification subject to the Council's review because Sprint will not change the height of the tower, will not extend the boundaries of the compound, will not increase the noise levels at the site, and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards. Therefore, Sprint respectfully requests that the Council acknowledge that this Notice of Exempt Modification meets the Council's exemption criteria.



21 Acorn Road, Branford, CT

SHEET INDEX

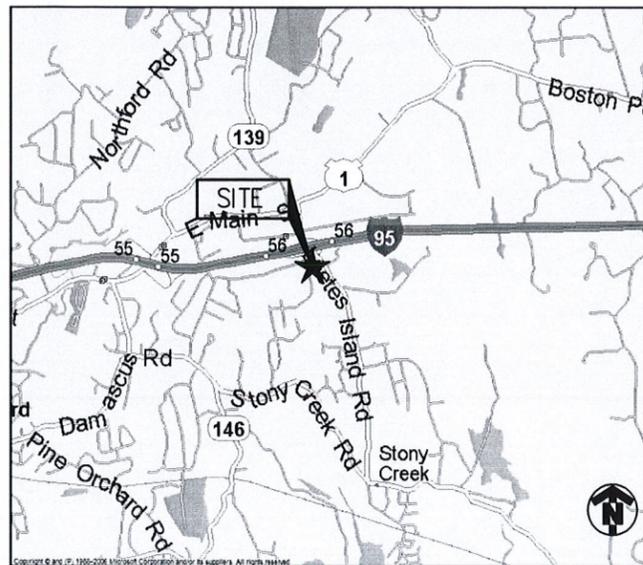
NO.	DESCRIPTION
T1	TITLE SHEET
AAV1	OVERALL AND ENLARGED SITE PLANS
AAV2	NOTES AND DETAILS
C1	GENERAL NOTES
C2	COMPOUND SITE PLAN
C3	EQUIPMENT SITE PLANS
C4	SITE ELEVATION AND ANTENNA/RRH DETAILS
C5	ANTENNA PLANS
C6	ANTENNA CABLE RISER AND H-FRAME DETAILS
C7	RF AND CABLE DETAILS
C8	JUNCTION BOX DETAILS
C9	DETAILS
E1	UTILITY SITE PLAN
E2	ONE-LINE DIAGRAMS AND DETAILS
E3	GROUNDING PLAN AND DETAILS

DRIVING DIRECTIONS

DEPART FROM SPRINT:
1 INTERNATIONAL BLVD. MAHWAH, NJ 07495

1. HEAD SOUTH ON INTERNATIONAL BLVD TOWARD AVE OF AMERICAS 0.1 MI 2. TURN RIGHT ONTO PARK LN 197 FT 3. CONTINUE STRAIGHT ONTO LEISURE LN 0.1 MI 4. SLIGHT RIGHT ONTO NJ-17 N 0.1 MI 5. TAKE THE EXIT TOWARD I-287 N/NJ-17 N 0.2 MI 6. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-287 N/I-87/NJ-17 N/N Y. THRUWAY AND MERGE ONTO I-287 N/NJ-17 N ENTERING NEW YORK 0.6 MI 7. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-87 S/I-287/TAPPAN ZEE BR/NEW YORK CITY/NEW YORK THRUWAY AND MERGE ONTO I-287 E/I-87 S CONTINUE TO FOLLOW I-287 E PARTIAL TOLL ROAD 30.2 MI 8. TAKE THE EXIT ONTO I-95 N ENTERING CONNECTICUT 56.6 MI 9. TAKE EXIT 56 FOR LEETES ISLAND RD TOWARD STONY CREEK 0.3 MI 10. TURN RIGHT ONTO LEETES ISLAND RD 108 FT 11. TAKE THE 1ST RIGHT ONTO GOULD LN 223 FT 12. TAKE THE 1ST LEFT ONTO ACORN RD DESTINATION WILL BE ON THE LEFT 0.2 mi.

VICINITY MAP



Sprint



NETWORK VISION MMBTS LAUNCH CONNECTICUT MARKET

SITE NAME

SECONDINO PROPERTY

SITE NUMBER

CT03XC021

SITE ADDRESS

21 ACORN ROAD
BRANFORD, CT 06405

STRUCTURE TYPE

MONOPOLE TOWER



UNDERGROUND
SERVICE ALERT
CALL TOLL FREE
1-800-922-4455

THREE WORKING DAYS BEFORE YOU DIG

PROJECT TEAM

ALCATEL-LUCENT 
808 AVIATION PARKWAY
SUITE 700
MORRISVILLE, NC 27650

PROJECT MANAGER

infinigy
engineering 

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
- SPRINT TO REPLACE EXISTING POWER CABINET WITH NEW SECOND BATTERY CABINET OR INSTALL NEW SECOND BATTERY CABINET IF THERE IS AVAILABLE SPACE IN EXISTING SPRINT LEASE AREA.

PROJECT SUMMARY

SITE NAME:	SECONDINO PROPERTY
SITE NO.:	CT03XC021
SITE ADDRESS:	21 ACORN ROAD BRANFORD, CT 06405
COUNTY:	NEW HAVEN
SITE COORDINATES:	
LATITUDE:	41° 17' 35.113" N (NAD 83)
LONGITUDE:	72° 45' 46.389" W (NAD 83)
GROUND ELEV.:	±116' (AMSL)
JURISDICTION:	TOWN OF BRANFORD
APPLICANT:	SPRINT 1 INTERNATIONAL BLVD. MAHWAH, NJ 07495
LANDLORD:	CROWN CASTLE (GLOBAL SIGNAL) 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CONSTRUCTION MANAGER:	TODD AMANN 914-715-9363
BUILDING CODE:	2003 INTERNATIONAL BUILDING CODE 2005 CONNECTICUT BUILDING CODE W/ 2009 AMENDMENT
ELECTRICAL CODE:	2005 NATIONAL ELECTRIC CODE

ENGINEER'S LICENSE

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

LICENSED ENGINEER - STATE OF CONNECTICUT



APPROVALS

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

A/E Consultant:

infinigy
engineering
11 Herbert Drive
Latham, NY 12110
(518) 690-0790

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No.	Submital / Revision	App'd	Date
3	FINAL CD'S	EKM	7/16/12
2	REVISED PER COMMENTS	EKM	6/21/12
1	REVISED PER COMMENTS	EKM	6/11/12
0	ISSUED FOR REVIEW	M.B	5/14/12

Drawn: M.B Date: 5/14/12
Designed: EKM Date: 5/14/12
Checked: C.W Date: 5/14/12

Project Number 286-013

Project Title

CT03XC021
SECONDINO
PROPERTY

21 ACORN ROAD
BRANFORD, CT 06405

Client: Implementation Team:



Drawing Scale: AS NOTED
Date: 7/16/12

Drawing Title

TITLE SHEET

Drawing Number

T1

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0	ISSUED FOR REVIEW	MJB	5/14/12

Drawn: MJB Date: 5/14/12
 Designed: EXM Date: 5/14/12
 Checked: C/W Date: 5/14/12

Project Number: 286-013

Project Title:

**CT03XC021
 SECONDINO
 PROPERTY**

21 ACORN ROAD
 BRANFORD, CT 06405

Client: Implementation Team:

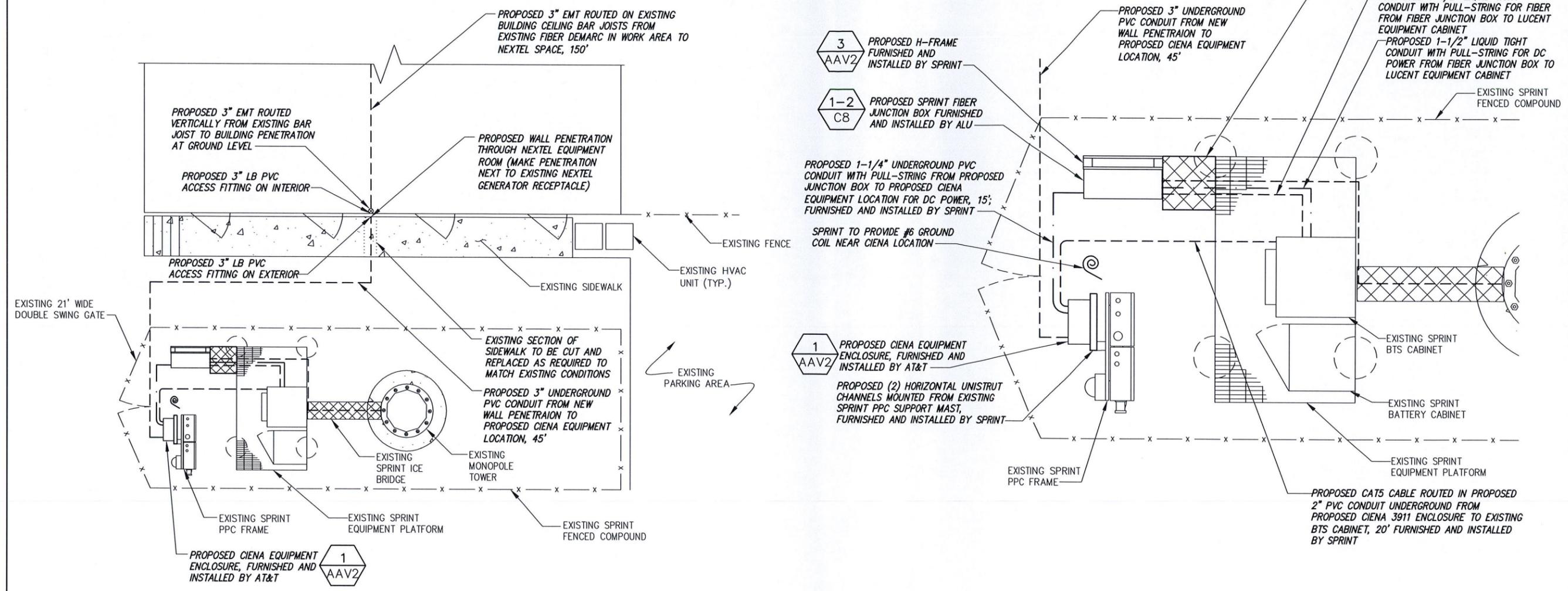


Drawing Scale: AS NOTED

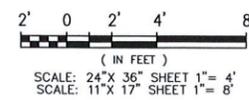
Date: 7/16/12

Drawing Title:
**OVERALL &
 ENLARGED
 SITE PLANS**

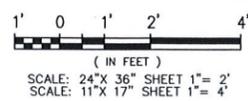
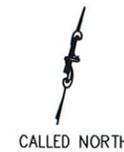
Drawing Number:
AAV1



1 OVERALL SITE PLAN
 SCALE:



1 EQUIPMENT AREA
 SCALE:



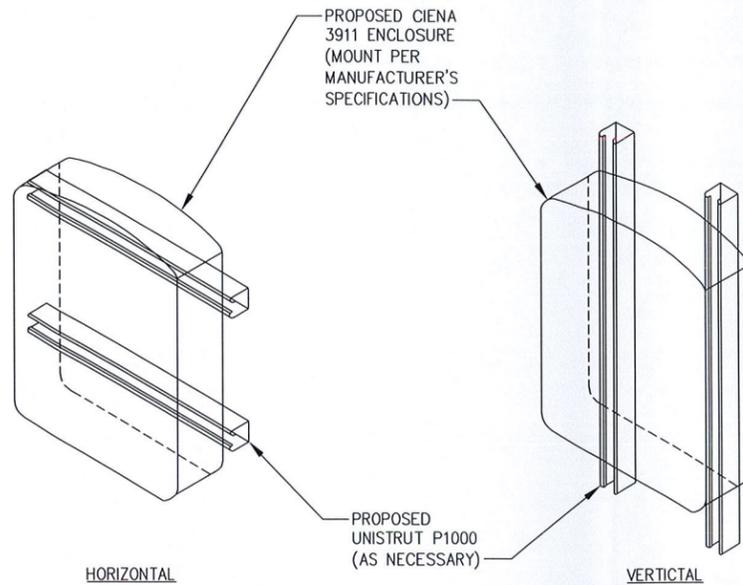
BASEMAPPING PREPARED FROM A SITE VISIT PERFORMED BY INFINIGY ENGINEERING, AND INFORMATION PROVIDED BY SPRINT NEXTEL, AND DOES NOT REPRESENT AN ACTUAL FIELD SURVEY.

GENERAL NOTES:

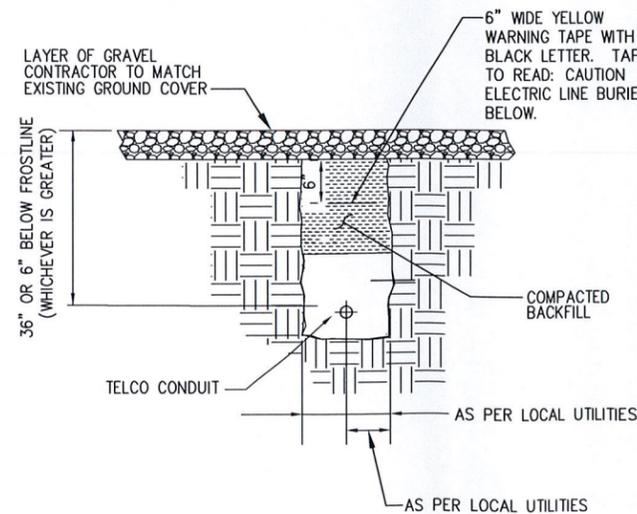
1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
4. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OF PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDORS SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
7. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
8. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
10. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
11. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
12. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
13. THE CONTRACTOR SHALL NOTIFY THE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE REPRESENTATIVE.
14. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
15. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD OR VIA A REPRESENTATIVE. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. SEE UNDERGROUND UTILITY COMPANY SHEET T-1 (DIG SAFE, MISS UTILITY, ETC.)
16. IF ASSUMED EXISTING CONDITION DIFFERS, ENGINEER MUST BE INFORMED OF ACTUAL FIELD CONDITION.
17. REFER TO THE SITE PLAN FOR APPROXIMATE LENGTH OF ALL U/G WORK AND LOCATION. FINAL LOCATION TO BE DETERMINED BY CLIENT. ALL MATERIALS TO BE USED AS ACCORDING TO DETAIL INSTRUCTIONS. ALL MATERIALS NOT INCLUDED IN THE DETAILS SHALL BE USED ACCORDING TO CODE AND/OR LOCAL JURISDICTION REGULATIONS INCLUDING MATERIALS, PREPARATION, EXACERBATION, EQUIPMENT AND INSTALLATION FOR UNDERGROUND WORK.
18. CONTRACTOR TO COORDINATE WITH SPRINT & PROVIDE GROUND BOND PER NE-250 & SPRINT STANDARDS FOR CLIENT EQUIPMENT AS REQUIRED.
19. ALL ELECTRICAL SPECIFICATIONS SHALL BE IN STRICT ACCORDANCE TO SECTIONS 16010, 16075, 16110, 16120, 16410 AND 16450 OF THE N.E.C.

ELECTRICAL AND GROUNDING NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AN PROCURED PER SPECIFICATION REQUIREMENTS. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
3. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIREMENT IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS
4. PROVISION OF AC/DC POWER IS UNDER SEPARATE SCOPE OF WORK
5. GROUNDING SHALL COMPLY WITH NEC ART. 250. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION FITTINGS. TEST COMPLETED GROUND SYSTEM AND ENSURE ADEQUACY.
6. CONTRACTOR TO PROVIDE GALV. P1000 UNISTRUT FRAMING AND 3/8" GALV. U-BOLTS/BOLTS AS NECESSARY FOR EXISTING CONDITIONS AND TO VERIFY SPACE IS APPROVED BY ALL NECESSARY PARTIES.

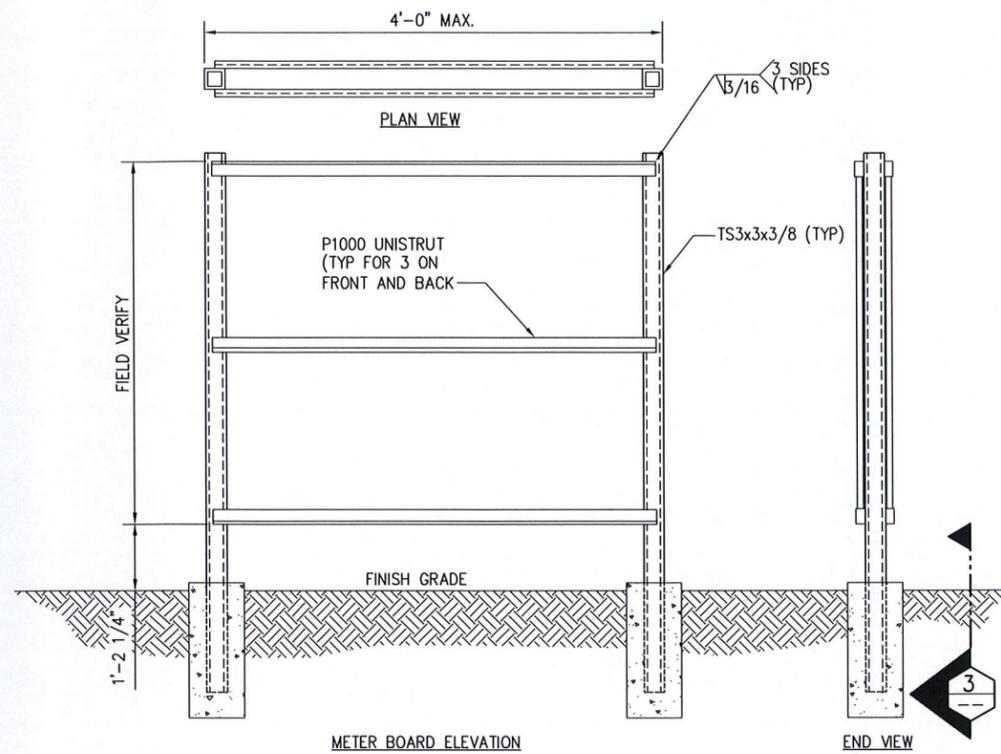


1 TYPICAL CIENA 3911 MOUNTING DETAIL
SCALE: NOT TO SCALE

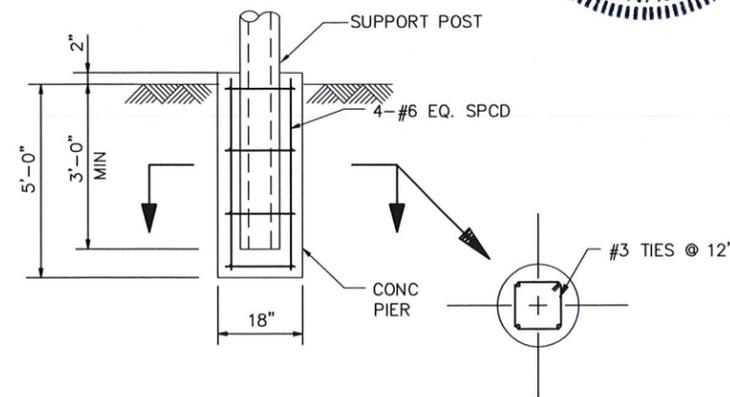


NOTE:
NUMBER AND SIZE OF CONDUITS MAY VARY. SEE DWG FOR CONDUIT SIZE AND LOCATION. CONFIRM CONDUIT SEPARATION AND DIMENSIONS SHOWN WITH LOCAL UTILITY COMPANY.

2 CONDUIT TRENCH DETAIL
NO SCALE



3 H-FRAME FABRICATION DETAIL
NOT TO SCALE



4 SUPPORT PIER
NOT TO SCALE



A/E Consultant:

infinigy
engineering
11 Herbert Drive
Latham, NY 12110
(518) 690-0790

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Drawn: MJB Date: 5/14/12
Designed: EXM Date: 5/14/12
Checked: C.W. Date: 5/14/12

Project Number: 286-013

Project Title: CT03XC021 SECONDINO PROPERTY

21 ACORN ROAD
BRANFORD, CT 06405

Client: Sprint
Implementation Team: Alcatel-Lucent
808 AVANTON PARKWAY
MORRISVILLE, NC 27650

Drawing Scale: AS NOTED
Date: 7/16/12

Drawing Title: **NOTES & DETAILS**

Drawing Number: **AAV2**

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 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 ROOTS, SOD, RUBBING, 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
	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
	TRANSFORMER
	KILOWATT HOUR METER
	JUNCTION BOX
	PULL BOX TO NEC/TELCO STANDARDS
-----	UNDERGROUND UTILITIES
	DENOTES REFERENCE NOTE
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION (E.G. LDKP) C-
	GROUND ROD
	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	PIN AND SLEEVE RECEPTACLE
	120AC DUPLEX RECEPTACLE
	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
PVC	POLYVINYL CHLORIDE

A/E Consultant:

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Drawn:	MLB	Date:	5/14/12
Designed:	EXM	Date:	5/14/12
Checked:	GM	Date:	5/14/12

Project Number	286-013
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Project Title	CT03XC021 SECONDINO PROPERTY
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Client:	21 ACORN ROAD BRANFORD, CT 06405
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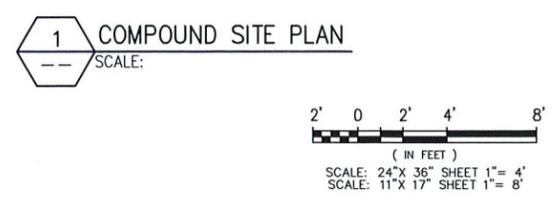
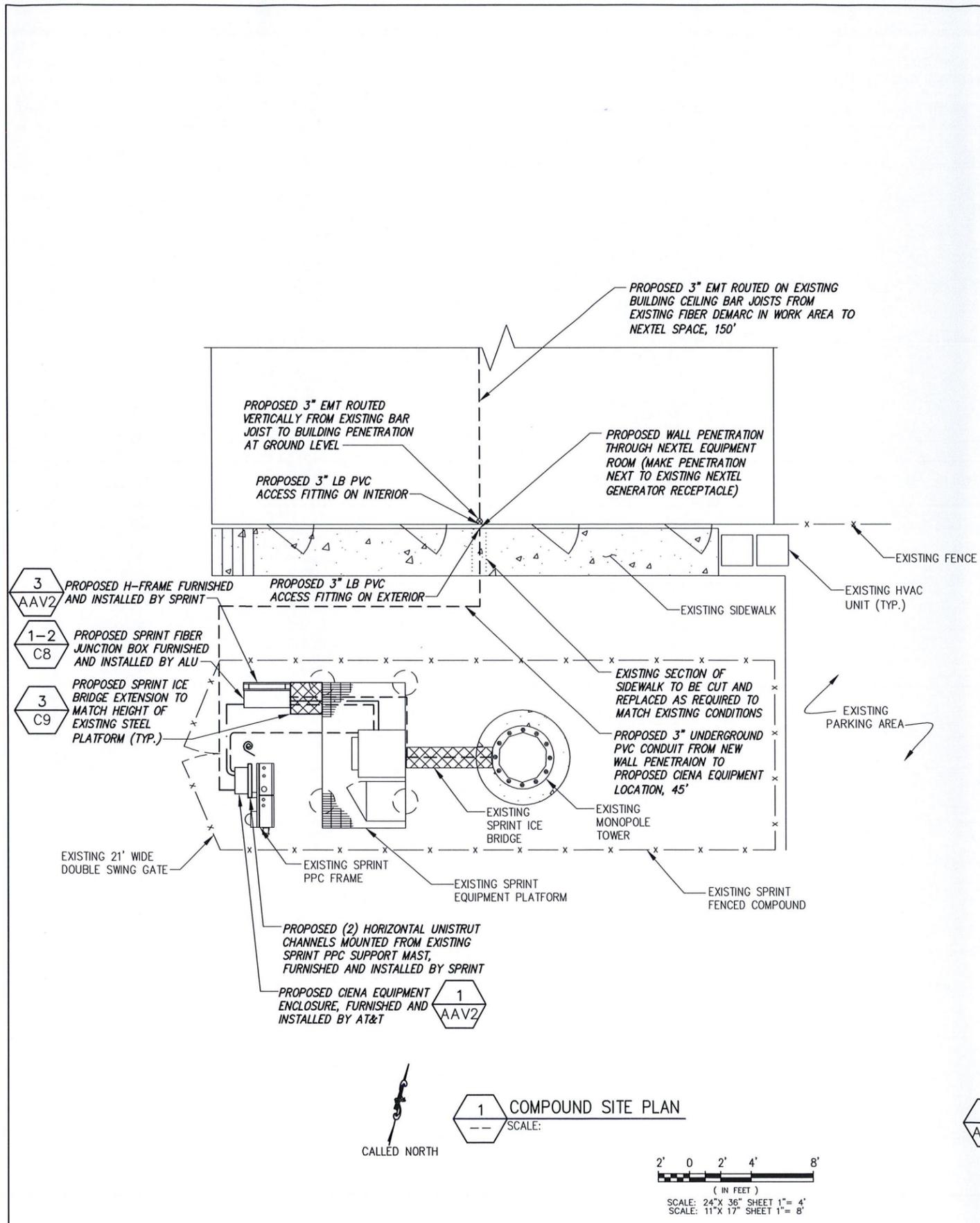
Implementation Team:	
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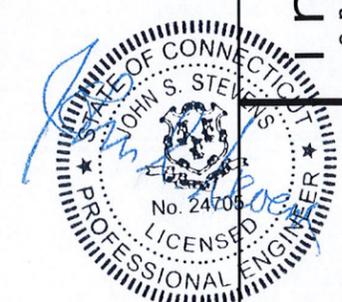
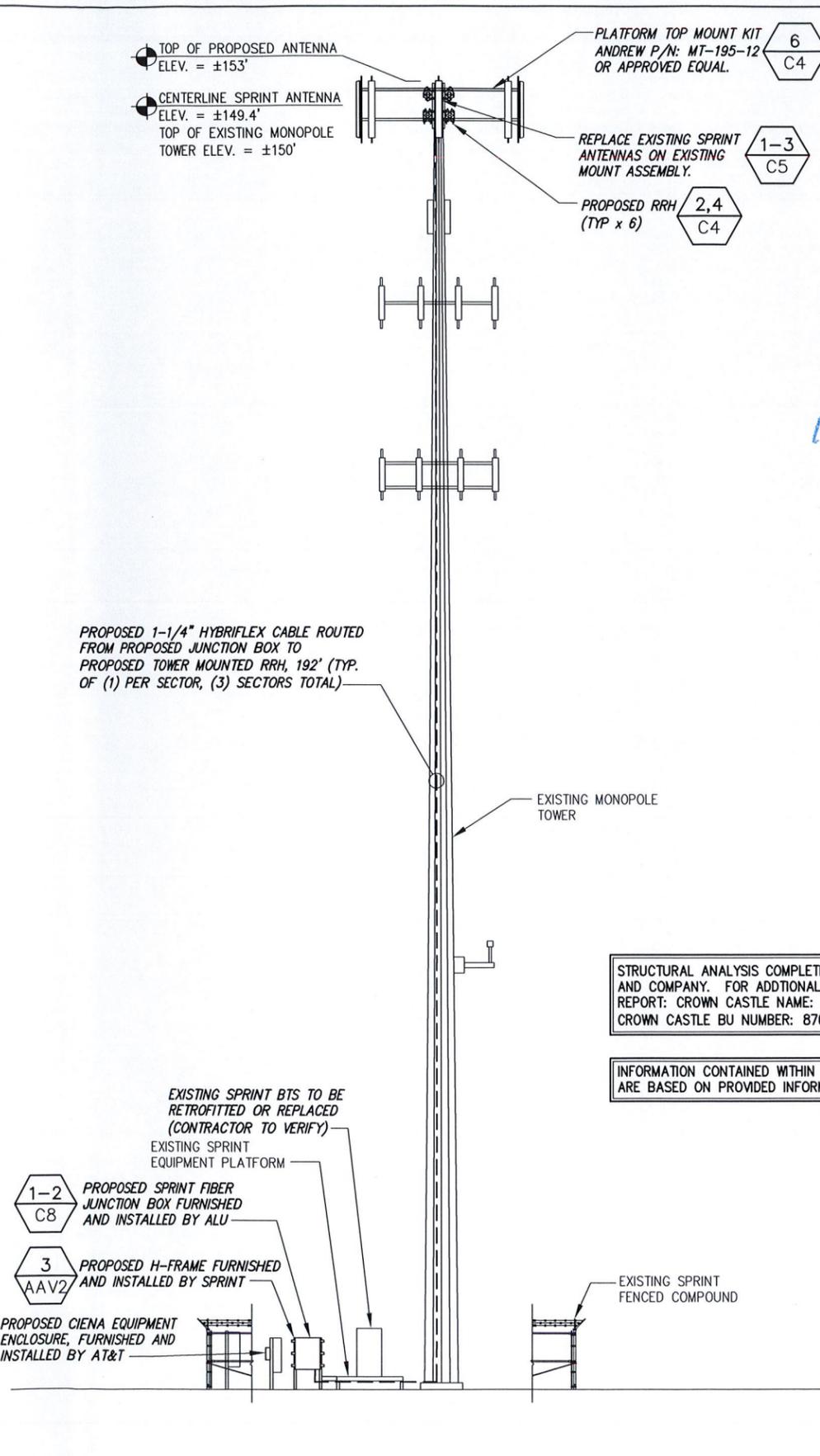
Drawing Scale:	AS NOTED
Date:	7/16/12

Drawing Title	GENERAL NOTES
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Drawing Number	C1
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BASEMAPPING PREPARED FROM A SITE VISIT PERFORMED BY INFINGY ENGINEERING, AND INFORMATION PROVIDED BY SPRINT NEXTEL, AND DOES NOT REPRESENT AN ACTUAL FIELD SURVEY.



A/E Consultant:

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Designed: EXM Date: 5/14/12
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Project Number: 286-013

Project Title: CT03XC021 SECONDINO PROPERTY

21 ACORN ROAD BRANFORD, CT 06405

Client: SPRINT
Implementation Team: ALCATEL-LUCENT
808 AVIATION PARKWAY SUITE 700 MORRISVILLE, NC 27650

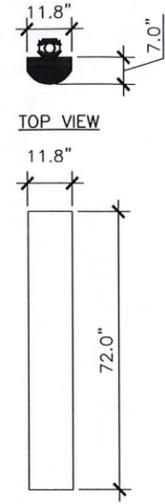
Structural Analysis Completed by Paul J. Ford and Company. For additional information, see report: Crown Castle Name: Secondino Property, Crown Castle BU Number: 876316 Dated: 5/31/12.

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION.

Drawing Scale: AS NOTED
Date: 7/16/12

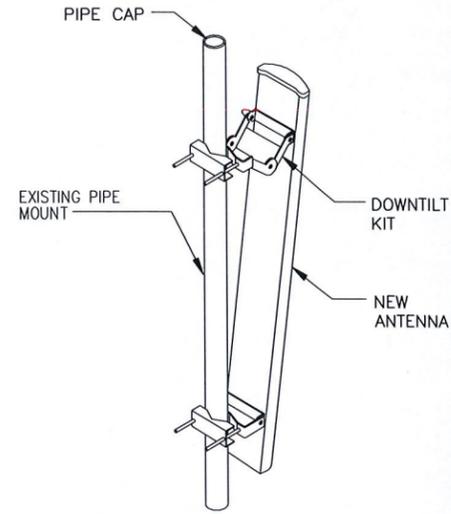
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Drawing Number: C2

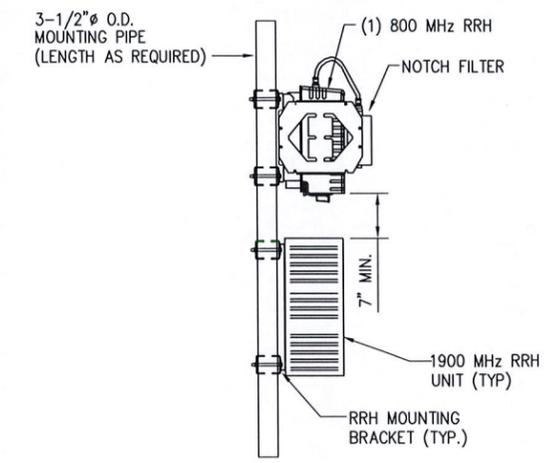
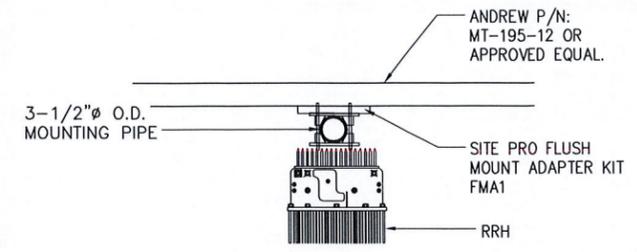


TOP VIEW
FRONT VIEW
800/1900
MULTI-MODE
RFS ANTENNA
P/N: APXVSP18-C-A20

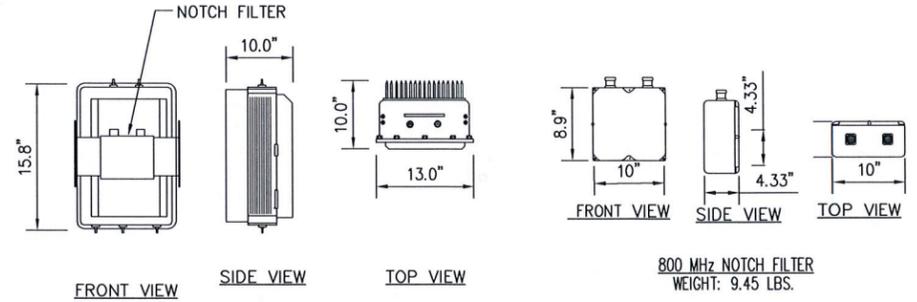
1 ANTENNA DETAILS
NOT TO SCALE



3 PANEL ANTENNA MOUNT DETAIL
NOT TO SCALE

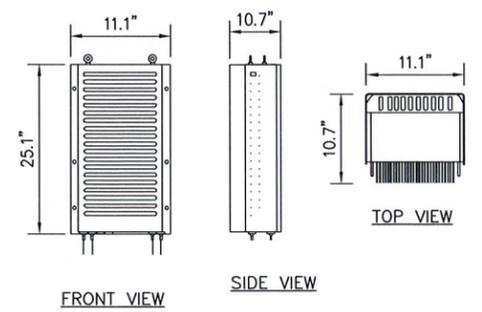


4 RRH MOUNTING DETAIL
NOT TO SCALE



800 MHz NOTCH FILTER
WEIGHT: 9.45 LBS.

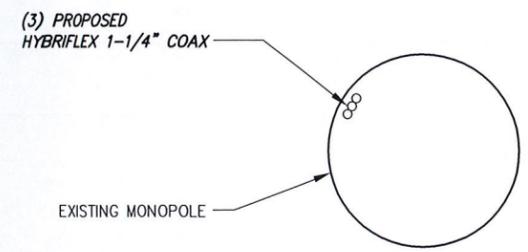
800 MHz RRH (ALU)
WEIGHT = 50.6 LBS.



1900 MHz RRH (ALU)
WEIGHT = 60 LBS.

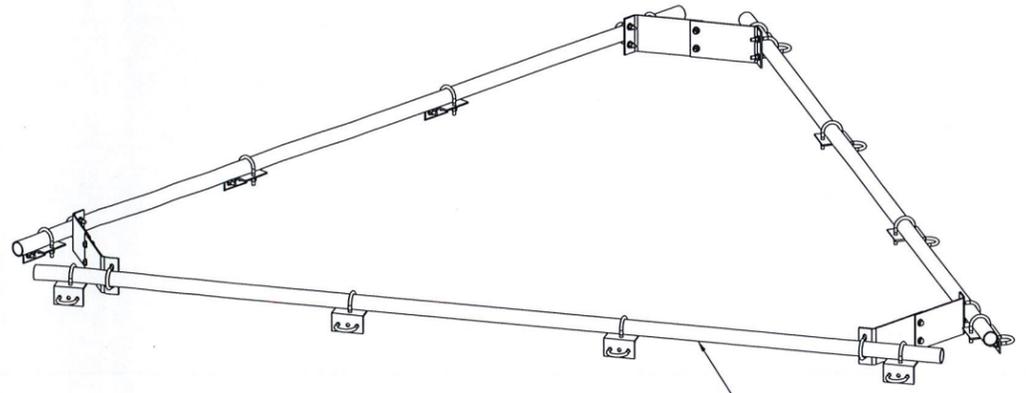
2 RRH EQUIPMENT DETAILS
NOT TO SCALE

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



5 COAX ROUTING DETAIL
NOT TO SCALE

NOTE:
1. SUBCONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.



6 PLATFORM TOP MOUNT KIT
NOT TO SCALE

ANDREW P/N:
MT-195-12 OR
APPROVED EQUAL.



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Project Number: 286-013
Project Title: CT03XC021 SECONDINO PROPERTY
21 ACORN ROAD BRANFORD, CT 06405

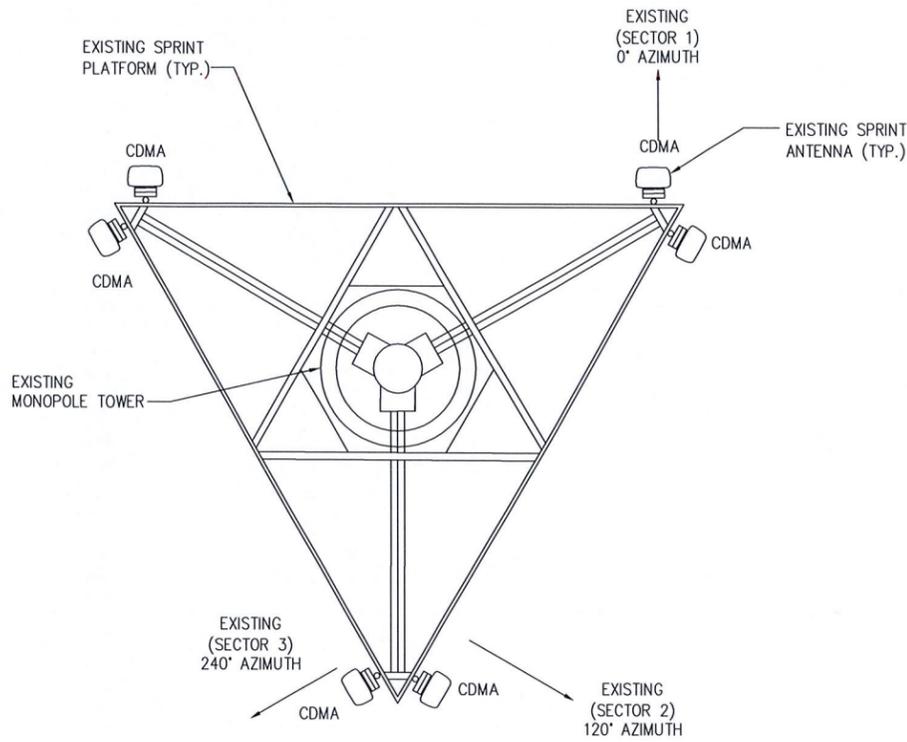
Client: Sprint
Implementation Team: Alcatel-Lucent
808 Aviation Parkway
Morrisville, NC 27650

Drawing Scale: AS NOTED
Date: 7/16/12

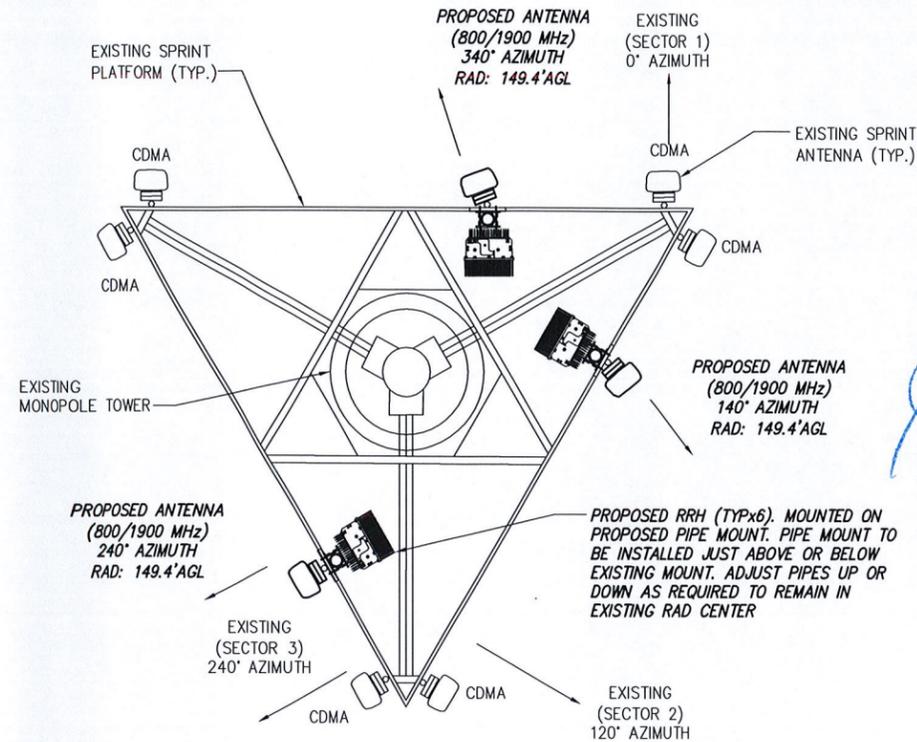
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Drawing Number: C4

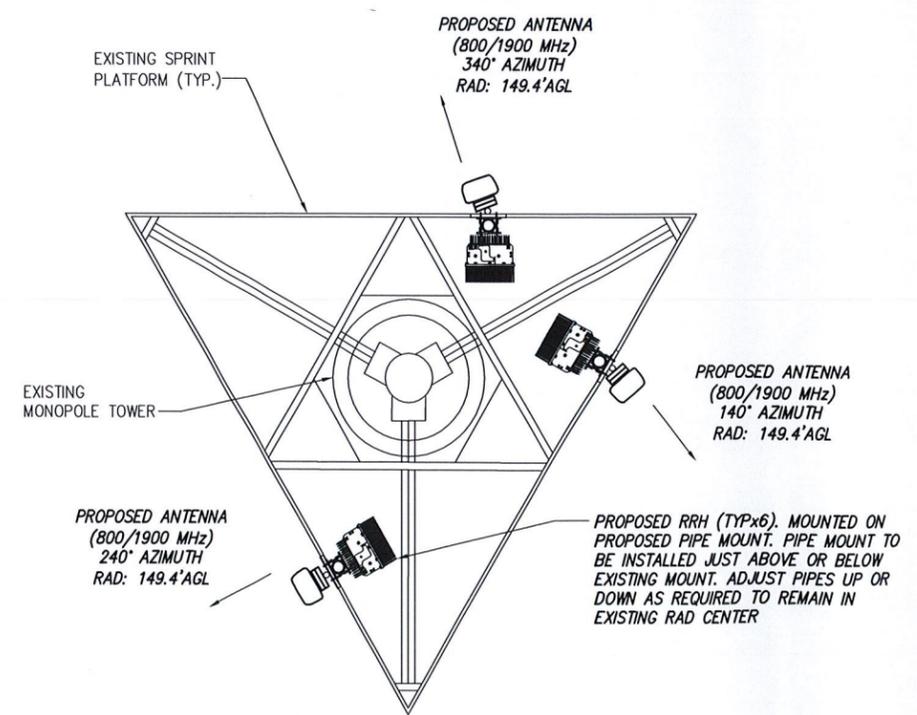
NOTE:
REQUIRED PIPE MOUNTS TO BE SUPPLIED BY CONTRACTOR.



1 ANTENNA CONFIGURATION (EXISTING)
NOT TO SCALE



2 ANTENNA CONFIGURATION (INTERIM/TEMPORARY)
NOT TO SCALE



3 ANTENNA CONFIGURATION (FINAL/PERMANENT)
NOT TO SCALE

NOTES:
EXISTING RF DATA PROVIDED BY SPRINT SIOP RF DATA SHEET, DATED MAY, 2012.

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 ANTENNA AND AZIMUTHS FOR ALL ANTENNAS.
 3. CONTRACTOR SHALL VERIFY NEW PARTS BEFORE ORDERING.
 4. REFER TO SHEET C7 FOR ANTENNAS SPECS.
 5. CONTRACTOR TO USE PROPER TORQUE WHEN INSTALLING AND TIGHTENING CONNECTORS TO INSURE PROPER FIT.
 6. 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 CABLE.
 7. CDMA ANTENNAS SHALL NOT BE REMOVED UNTIL ALL NEW MULTI-MODE ANTENNAS ARE INSTALLED AND ON-AIR.



A/E Consultant:
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Designed: EKM Date: 5/14/12
Checked: CMW Date: 5/14/12

Project Number: 286-013

Project Title:
**CT03XC021
SECONDINO
PROPERTY**
21 ACORN ROAD
BRANFORD, CT 06405

Client: Implementation Team:

ALCATEL-LUCENT
808 A NATION PARKWAY
SUITE 700
MORRISVILLE, NC 27550

Drawing Scale: AS NOTED
Date: 7/16/12

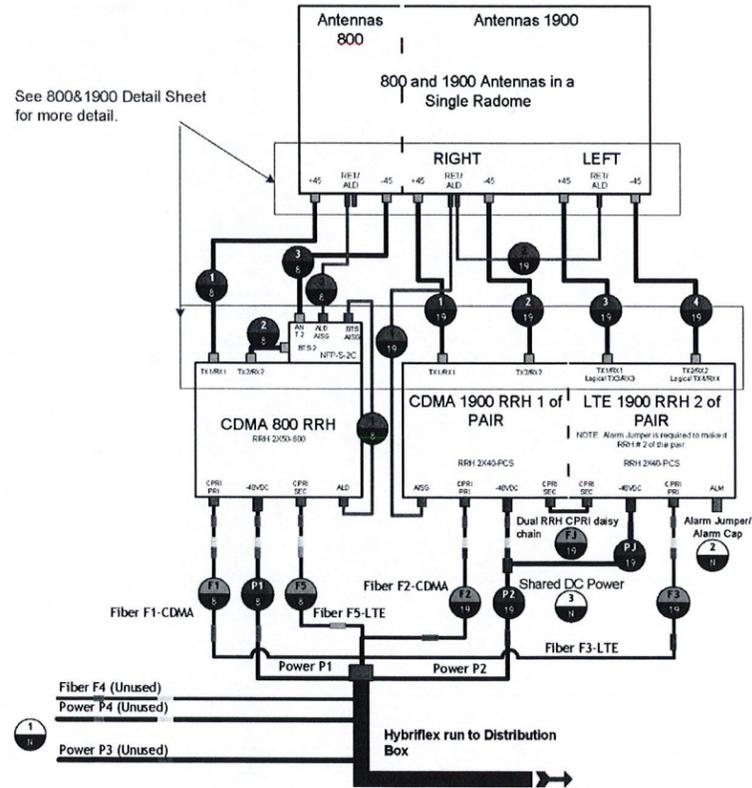
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**ANTENNA
PLANS**

Drawing Number:
C5

TOWER TOP SCENARIO 2

800 AND SINGLE 1900 RRH PAIR WITH SINGLE 800/1900 RADOME ANTENNA

See 800&1900 Detail Sheet for more detail.

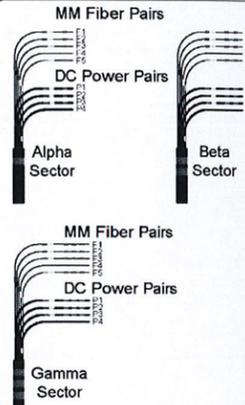


Power Feed Polarity Definition:
 Black= -48VDC Feed (Battery)
 Black/White Stripe= Return

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)

OEM COLOR CODE HYBRIFLEX

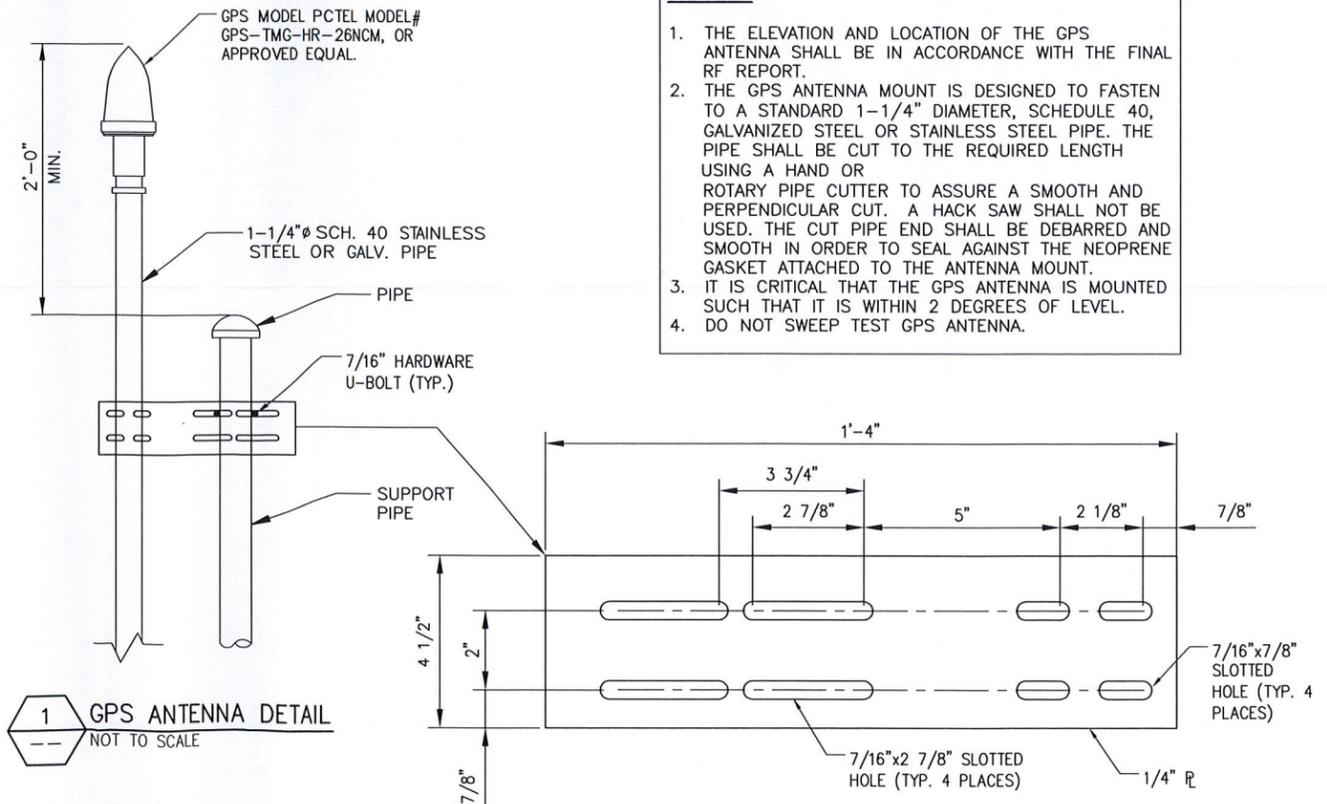


DRAWING LEGEND



SEE CONNECTION LEGEND FOR MORE DETAILS

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 STANDARD 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 DEBARRED 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 GPS ANTENNA.

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

PLUMBING DIAGRAM VERSION 1.9

WEATHERPROOFING CONNECTORS AND GROUND KITS NOTE:

- A. 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):
1. 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 1/2" AND EXTENDING PAST THE CONNECTION BY TWO INCHES AS DISCUSSED BELOW; OR
 2. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH LAYERS OR ELECTRICAL/BUTYL RUBBER/ELECTRICAL TAPE AS DISCUSSED BELOW; OR
 3. 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 JUMPERS 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.



A/E Consultant:
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 11 Herbert Drive
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Project Number: 286-013

Project Title:
CT03XC021 SECONDINO PROPERTY
 21 ACORN ROAD
 BRANFORD, CT 06405

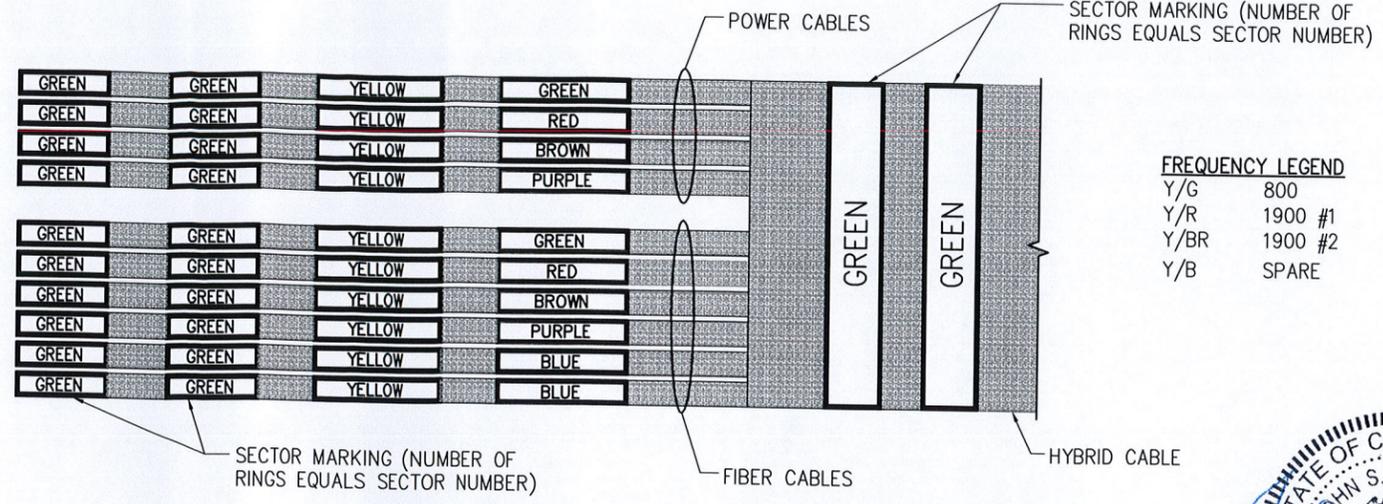
Client: **Sprint**
 Implementation Team: **ALCATEL-LUCENT**
 808 ALEXANDER PARKWAY
 SUITE 700
 MORRISVILLE, NC 27560

Drawing Scale: AS NOTED
 Date: 7/16/12

ANTENNA CABLE RISER AND H-FRAME DETAILS

Drawing Number: **C6**

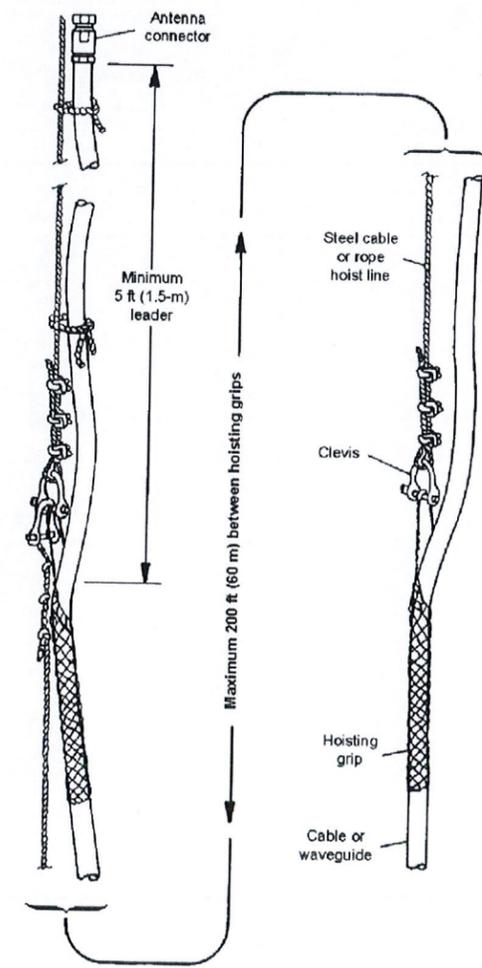
Market Southern Connecticut			
Cascade ID CT03XC021			
	SECTOR 1	SECTOR 2	SECTOR 3
Split sector present	No	No	No
1900MHz_Azimuth	340	140	240
1900MHz_No_of_Antennas	1	1	1
1900MHz_RADCenter(ft)	149.4	149.4	149.4
1900MHz_Antenna Make	RFS	RFS	RFS
1900MHz_Antenna Model	APXVSP18-C-A20	APXVSP18-C-A20	APXVSP18-C-A20
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	-1	-1	-2
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 Tower/Pole	Top of the Tower/Pole	Top of the Tower/Pole
1900MHz_Combiner Model	No Combiner needed	No Combiner needed	No Combiner needed
1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna, ft)	10	10	10
1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna)	LCF12-50J	LCF12-50J	LCF12-50J
1900MHz_Top_Jumper #2_Length (RRH-to-Combiner, ft)	N/A	N/A	N/A
1900MHz_Top_Jumper #2_Cable_Model (RRH-to-Combiner)	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-OR_Combiner-to-Main-Coax, ft)	N/A	N/A	N/A
1900MHz_Bottom_Jumper #1_Cable_Model (Ground-based-RRH-OR_Combiner-to-Main-Coax)	N/A	N/A	N/A
1900MHz_Bottom_Jumper #2_Length (Ground-based-Combiner-to-Main-Coax)	N/A	N/A	N/A
1900MHz_Bottom_Jumper #2_Cable_Model (Ground-based-Combiner-to-Main-Coax)	N/A	N/A	N/A
800MHz_Azimuth	340	140	240
800MHz_No_of_Antennas	0	0	0
800MHz_RADCenter(ft)	149.4	149.4	149.4
800MHz_AntennaMake	RFS	RFS	RFS
800MHz_AntennaModel	APXVSP18-C-A20 (Shared w/1900)	APXVSP18-C-A20 (Shared w/1900)	APXVSP18-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	-1	-3
800MHz_M_Tilt	0	0	0
800MHz_RRH Manufacturer	ALU	ALU	ALU
800MHz_RRH Model	TBD	TBD	TBD
800MHz_RRH Count	1	1	1
800MHz_RRH Location	Top of the Tower/Pole	Top of the Tower/Pole	Top of the Tower/Pole
800MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna, ft)	10	10	10
800MHz_Top_Jumper_Cable_Model (RRH or Combiner-to-Antenna)	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
800MHz_Bottom_Jumper #1_Length (Ground-based-RRH-Main-Coax, ft)	N/A	N/A	N/A
800MHz_Bottom_Jumper #1_Cable_Model (Ground-based-RRH-OR_Combiner-to-Main-Coax)	N/A	N/A	N/A



HYBRID CABLE WILL BE MARKED IN A SIMILAR MANNER AS COAX CABLES. THE MAIN TRUNK OF THE HYBRID CABLE IS TO BE MARKED WITH THE SECTOR MARKINGS ONLY. THE INDIVIDUAL POWER PAIRS AND FIBER CABLES WILL BE LABELED WITH BOTH THE SECTOR CABLE MARKINGS AND FREQUENCY (EXAMPLE ABOVE IS FOR SECTOR 2)

2 COLOR CODING
NOT TO SCALE

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



2 HOIST GRIP DETAIL
NOT TO SCALE

1 SPRINT RFDS
NOT TO SCALE

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

NOTE:
RFDS SHOWN PROVIDED BY SPRINT DATED 5/22/12.



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(518) 690-0790

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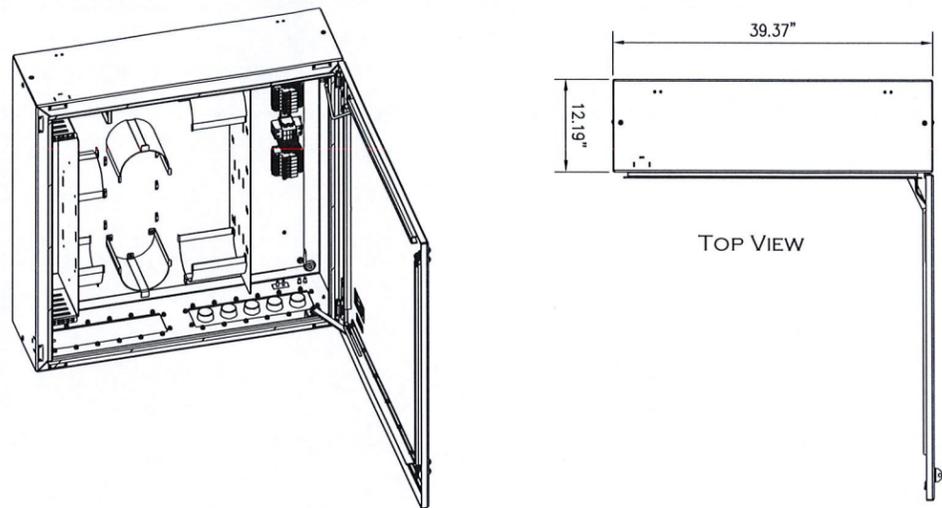
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Project Title: CT03XC021 SECONDINO PROPERTY
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BRANFORD, CT 06405

Client: Sprint
Implementation Team: ALCATEL-LUCENT
808 AVANTON PARKWAY
SUITE 700
MORRISVILLE, NC 27650

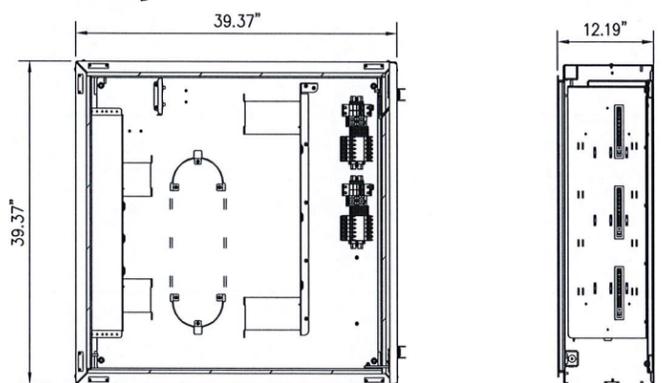
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Date: 7/16/12

Drawing Title: RF AND CABLE DETAILS

Drawing Number: C7



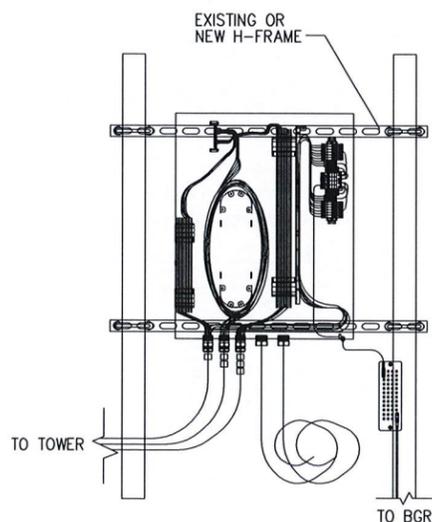
TOP VIEW



FRONT VIEW

SIDE VIEW

1 DISTRIBUTION BOX DETAIL
NOT TO SCALE



FRONT VIEW WITH DOOR REMOVED TO SHOW DETAIL

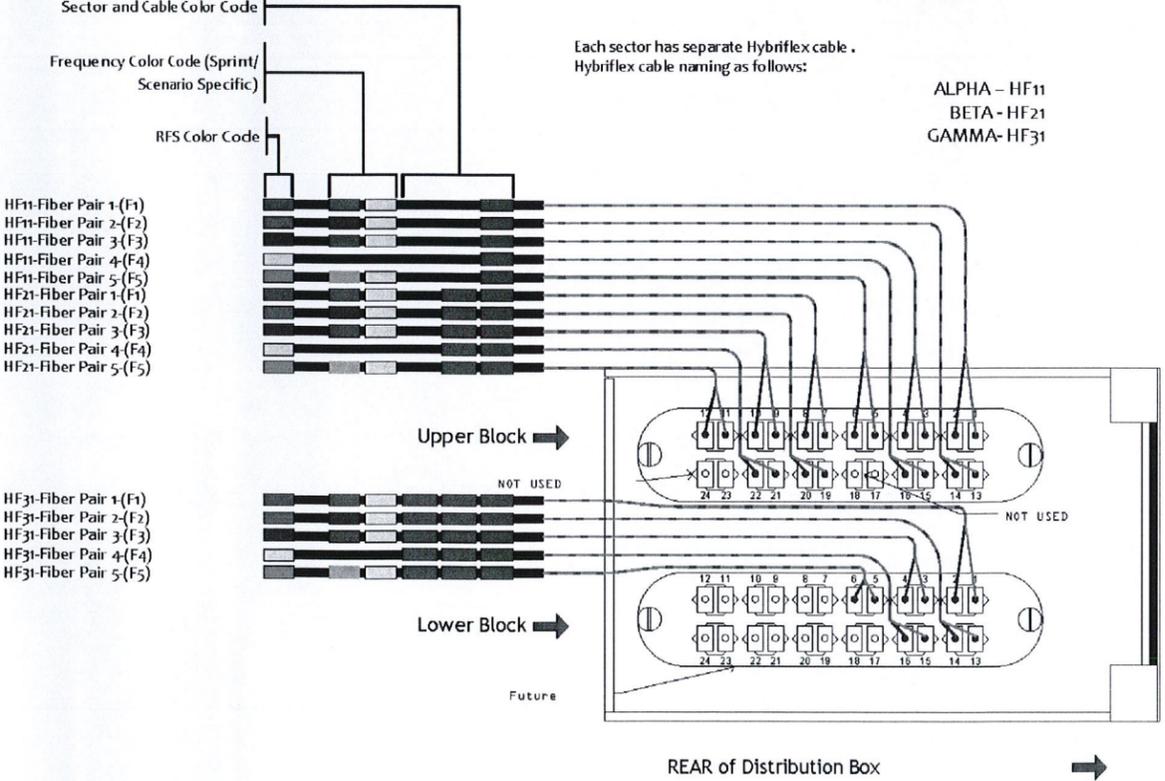
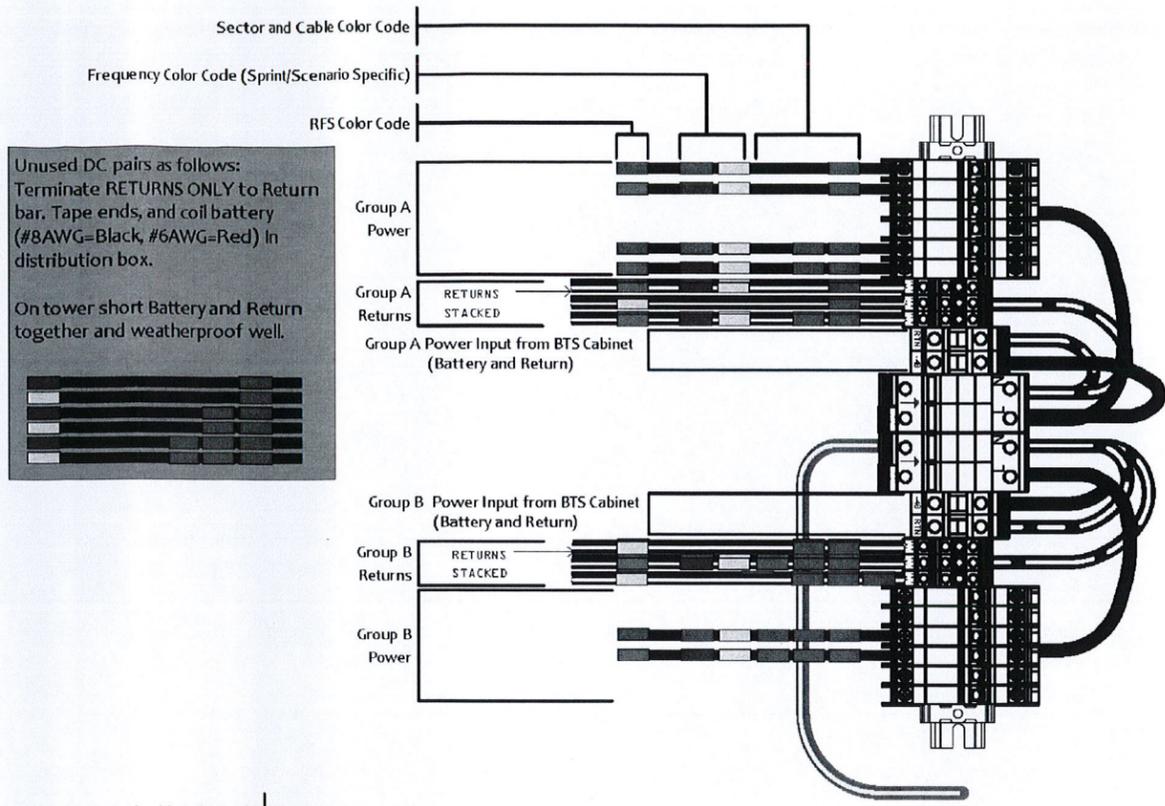
2 DISTRIBUTION BOX INSTALL COMPLETE VIEW
NOT TO SCALE

NOTES:

- DISTRIBUTION BOX IS ALU SUPPLIED WITH 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 24AWG, POWER CABLE 27' 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.

Unused DC pairs as follows:
Terminate RETURNS ONLY to Return bar. Tape ends, and coil battery (#8AWG=Black, #6AWG=Red) in distribution box.

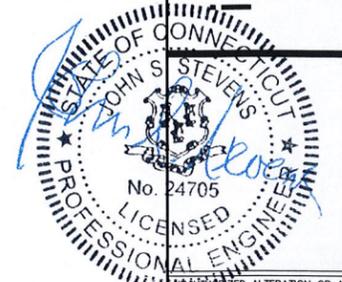
On tower short Battery and Return together and weatherproof well.



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

3 FIBER & DC CONNECTION DETAILS
NOT TO SCALE

PLUMBING DIAGRAM VERSION 1.9



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Project Number 286-013

Project Title
**CT03XC021
SECONDINO
PROPERTY**

21 ACORN ROAD
BRANFORD, CT 06405

Client: Sprint
Implementation Team: Alcatel-Lucent

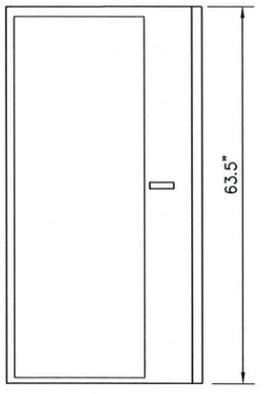
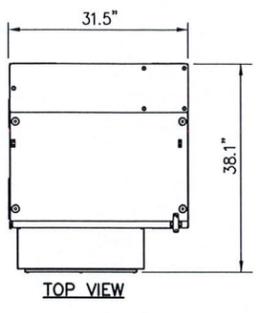
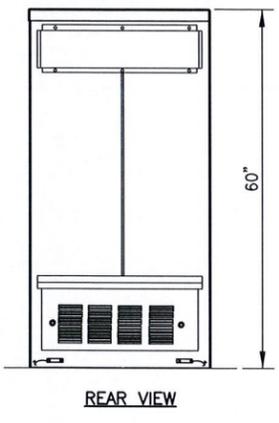
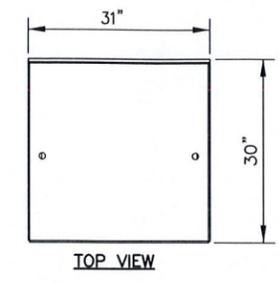


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Date: 7/16/12

Drawing Title
**JUNCTION
BOX
DETAILS**

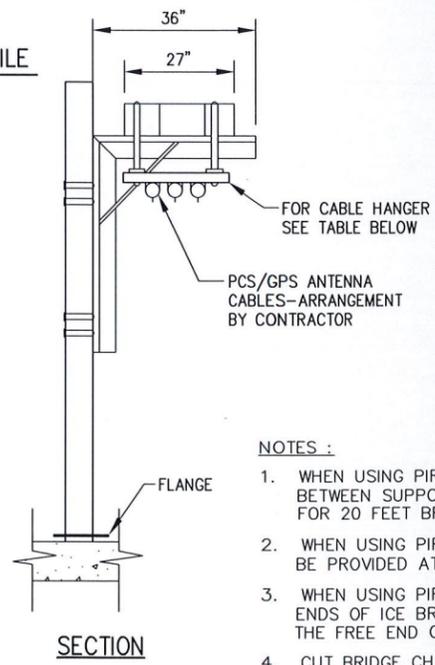
Drawing Number
C8

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Latham, NY 12110
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1 BATTERY CABINET PROFILE
NOT TO SCALE

2 CABINET PROFILE
NOT TO SCALE



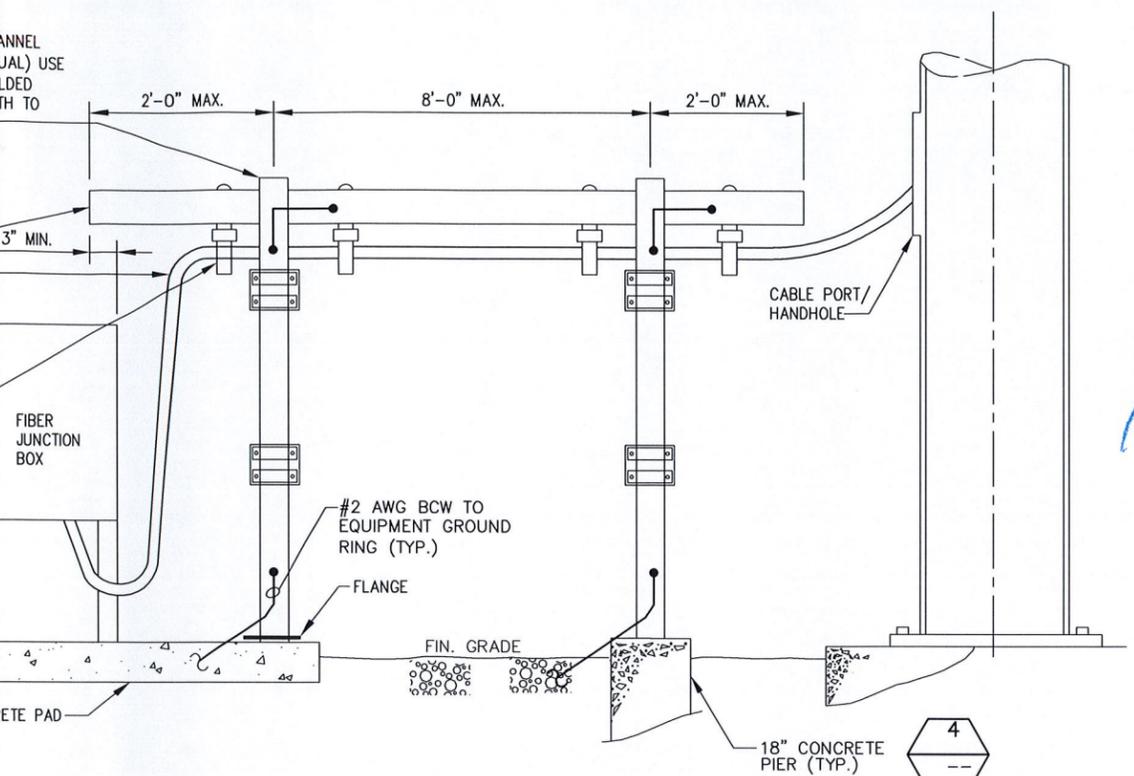
SECTION

SUPPORT POST + BRACKET FOR 27" CHANNEL (3-9" PART #802225 (PIROD INC OR EQUAL) USE PART #150410 FOR POST WITH 12" Ø WELDED FLANGE + BOLT HOLES. CUT POST LENGTH TO SUIT OR ORDER APPROPRIATE LENGTH)

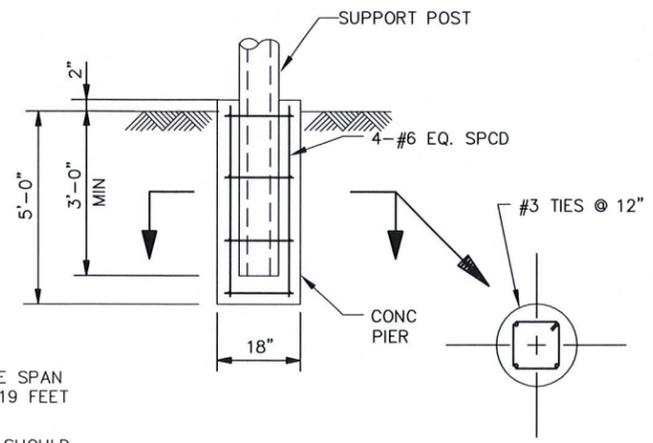
27" ICE BRIDGE 3-9" CHANNEL x 10' PART # 124470 (PIROD INC. OR EQUAL) CUT ICE BRIDGE CHANNEL LENGTH TO SUIT (SEE NOTE)

1-1/4" HYBRIFLEX CABLE

HANGER BRACKET TYPE LEVEL CHANNEL PART #802257 (PIROD INC OR EQUAL). MAXIMUM CABLE SPAN = 3' TYP.



ELEVATION



4 SUPPORT POST FOOTING
NOT TO SCALE

NOTE: CONTRACTOR TO SUPPORT HYBRIFLEX CABLING IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

NOTES :

1. WHEN USING PIROD COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 19 FEET FOR 20 FEET BRIDGE CHANNEL, OR 9 FEET FOR 10 FEET BRIDGE CHANNEL.
2. WHEN USING PIROD COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
3. WHEN USING PIROD COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
4. CUT BRIDGE CHANNEL SECTIONS SHOULD HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM MANUFACTURERS OTHER THAN PIROD, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
7. ATTACH FLANGED END OF SUPPORT POST TO CONCRETE PAD USING 4 - 3/8" DIA. HILT-HY 150 ADHESIVE ANCHORS. PROVIDE MINIMUM OF 1/2" EMBEDMENT.
8. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS SHOWN ON SITE SPECIFIC DRAWINGS OR STANDARD DETAILS REQUIRE ENGINEERING APPROVAL.

3 ICE BRIDGE
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
S _s =0.152 S _i = 0.050	
SEISMIC IMPORTANCE FACTOR	1.0
SEISMIC DESIGN CATEGORY	B
CABINET WEIGHT:	
9927 MM BTS CABINET	594 lbs.
60EC V2 BATTERY CABINET	2830 lbs.
MATERIAL SPECIFICATIONS	
C-, M-, AND ANGLE SHAPES:	ASTM A36
HIGH-STRENGTH BOLTS:	ASTM A325SC OR (A325N)
STRUCTURAL WF SHAPES:	ASTM A572-GR50
TUBE STEEL & PIPE COLUMNS:	ASTM A500, GRADE B
WELDING ELECTRODES:	E70XX
W - SHAPES:	ASTM A992, GRADE 50
U-BOLTS:	ASTM A36

A/E Consultant:

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21 ACORN ROAD BRANFORD, CT 06405

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808 AVIATION PARKWAY SUITE 700 MORRISVILLE, NC 27650

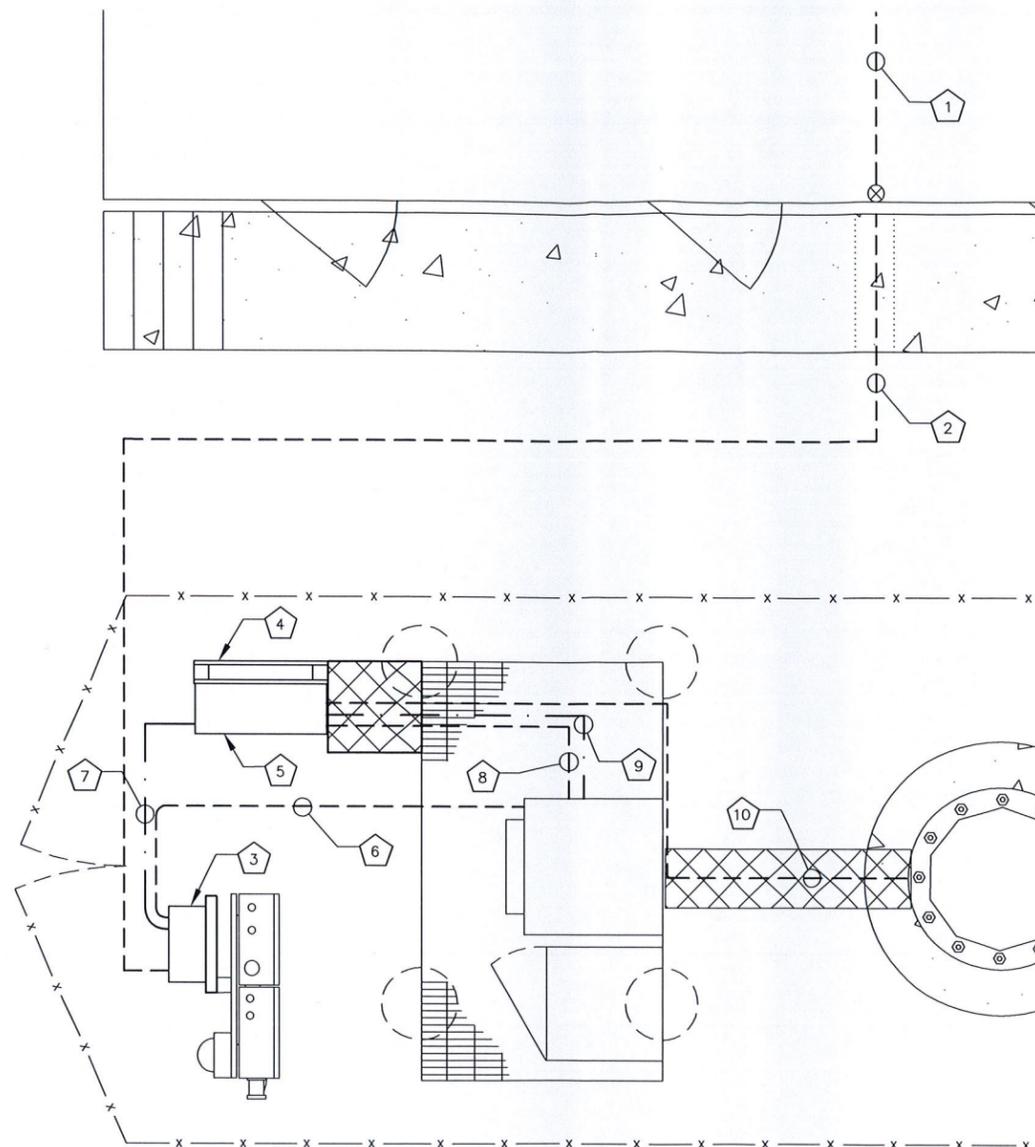
Drawing Scale: AS NOTED
Date: 7/16/12

Drawing Title: **DETAILS**

Drawing Number: **C9**

CODED NOTES:

- 1 PROPOSED 3" EMT ROUTED ON EXISTING BUILDING CEILING BAR JOISTS FROM EXISTING FIBER DEMARC IN WORK AREA TO NEXTEL SPACE, 150'
- 2 PROPOSED 3" UNDERGROUND PVC CONDUIT FROM NEW WALL PENETRAION TO PROPOSED CIENA EQUIPMENT LOCATION, 45'
- 3 PROPOSED CIENA EQUIPMENT ENCLOSURE, FURNISHED AND INSTALLED BY AT&T
- 4 PROPOSED H-FRAME FURNISHED AND INSTALLED BY SPRINT
- 5 PROPOSED SPRINT FIBER JUNCTION BOX FURNISHED AND INSTALLED BY ALU
- 6 PROPOSED CAT5 CABLE ROUTED IN PROPOSED 2" PVC CONDUIT UNDERGROUND FROM PROPOSED CIENA 3911 ENCLOSURE TO EXISTING BTS CABINET, 20' FURNISHED AND INSTALLED BY SPRINT
- 7 PROPOSED 1-1/4" UNDERGROUND PVC CONDUIT WITH PULL-STRING FROM PROPOSED JUNCTION BOX TO PROPOSED CIENA EQUIPMENT LOCATION FOR DC POWER, 15'; FURNISHED AND INSTALLED BY SPRINT
- 8 PROPOSED 1-1/2" LIQUID TIGHT CONDUIT FOR TELCO FROM WITH PULL-STRING FIBER JUNCTION BOX TO LUCENT EQUIPMENT CABINET
- 9 PROPOSED 1-1/2" LIQUID TIGHT CONDUIT FOR DC POWER FROM FIBER JUNCTION BOX TO LUCENT EQUIPMENT CABINET
- 10 PROPOSED 1-1/4" HYBRIFLEX CABLE ROUTED FROM PROPOSED JUNCTION BOX TO PROPOSED TOWER MOUNTED RRH, 192' (TYP. OF (1) PER SECTOR, (3) SECTORS TOTAL)



1 UTILITY SITE PLAN
SCALE:



NOTES:

- 1. CONTRACTOR TO USE EXISTING SPARE CONDUITS, IF AVAILABLE. CONDUIT SIZES MUST BE EQUAL TO OR GREATER THAN THAT ALLOWED BY CODE.
- 2. EXISTING ALARMS NEED TO BE RE-ROUTED AND VERIFIED IN PROPER WORKING CONDITION WHEN NEW MMBTS EQUIPMENT IS INSTALLED.
- 3. REMAINING GROUND LEADS FROM REMOVED CABINETS TO BE COILED (NOT ON WALKING SURFACE).
- 4. 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 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 DISCONNECT 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 5 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°.
- 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 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 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. PROJECT ADJACENT STRUCTURES AND FINISHES FROM DAMAGE. REPAIR TO ORIGINAL CONDITION ANY DAMAGED AREA.
- 18. REMOVE DEBRIS ON A DAILY BASIS. DEBRIS NOT REMOVED IN A TIMELY FASHION WILL BE REMOVED BY OTHERS AND THE RESPONSIBLE SUBCONTRACTOR SHALL BE CHARGED ACCORDINGLY. REMOVAL OF DEBRIS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE. DEBRIS SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF LEGALLY.
- 19. UPON COMPLETION OF WORK, THE SITE SHALL BE CLEAN AND FREE OF DUST AND FINGERPRINTS.
- 20. PRIOR TO ANY TRENCHING, CONTACT LOCAL UTILITY TO VERIFY LOCATION OF ANY EXISTING BURIED SERVICE CONDUITS.
- 21. DOCUMENT GROUND RING INSTALLATION AND CONNECTIONS TO IT WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PRESENT PHOTO ARCHIVE AT SITE "PUNCH LIST" WALK TO SPRINT'S REPRESENTATIVE.
- 22. ALL ABOVE GRADE CONDUIT TO BE RIGID METALLIC.



UNDERGROUND SERVICE ALERT
CALL TOLL FREE
1-800-922-4455

THREE WORKING DAYS BEFORE YOU DIG

A/E Consultant:

infinigy
engineering
11 Herbert Drive
Latham, NY 12110
(518) 690-0790

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1	REVISED PER COMMENTS	EKM	6/11/12
0	ISSUED FOR REVIEW	MJB	5/14/12

Drawn: MJB Date: 5/14/12
Designed: EKM Date: 5/14/12
Checked: C.W. Date: 5/14/12

Project Number
286-013

Project Title
**CT03XC021
SECONDINO
PROPERTY**

21 ACORN ROAD
BRANFORD, CT 06405

Client: Implementation Team:



Drawing Scale:
AS NOTED
Date:
7/16/12

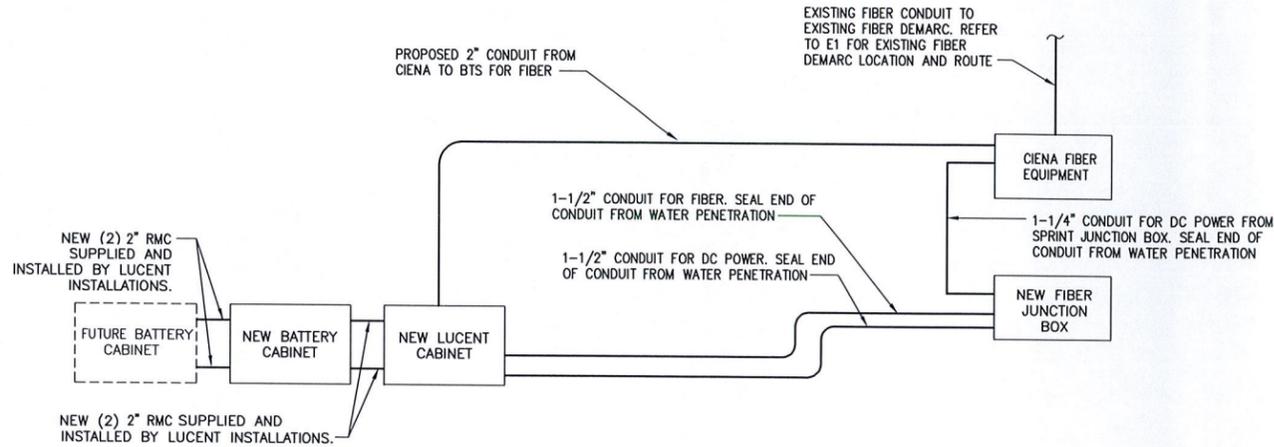
Drawing Title
**UTILITY
SITE PLAN**

Drawing Number

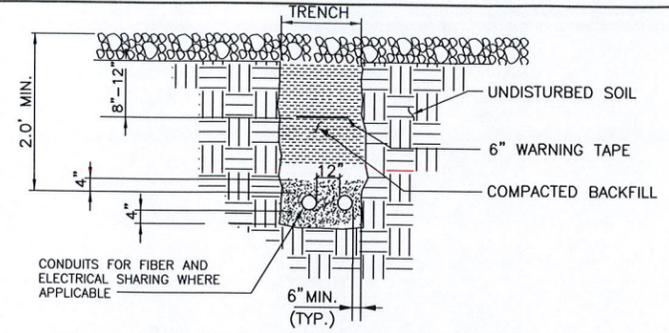
E1



GROUNDING NOTE:
 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

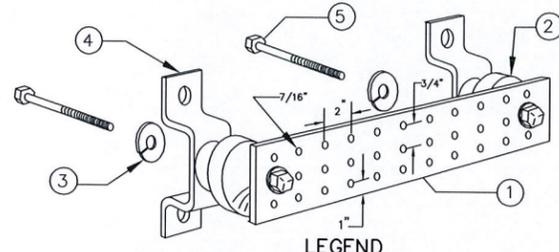


1 ONE-LINE DIAGRAM
 NOT TO SCALE



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

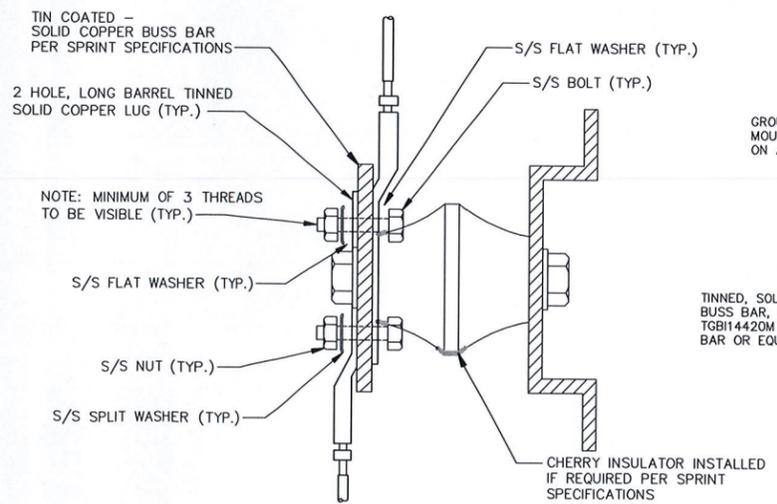
2 UTILITY TRENCH DETAIL
 NOT TO SCALE



1. TINNED COPPER GROUND BAR, 1/2" x 4" x 20", NEWTON INSTRUMENT Co., HARGER TGB114420M, 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.

NOTE:
 1) ALL MOUNTING HARDWARE CAN ALSO BE USED ON 6", 12", 18", ETC. GROUND BARS.
 2) ENTIRE ASSEMBLY AVAILABLE FROM NEWTON INSTRUMENT Co. CAT. NO. 2106060010 OR AS HARGER TGB114420M.

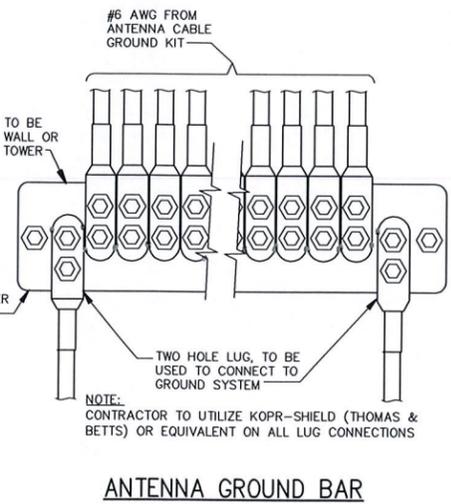
GROUND BAR



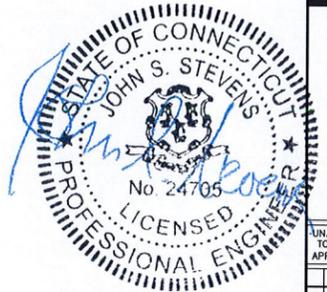
- NOTES:
- 1) ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
 - 2) COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
 - 3) APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

GROUND LUG

3 GROUND BAR DETAILS
 NOT TO SCALE



ANTENNA GROUND BAR



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 Designed: EXM Date: 5/14/12
 Checked: CFW Date: 5/14/12

Project Number 286-013

Project Title
CT03XC021 SECONDINO PROPERTY
 21 ACORN ROAD
 BRANFORD, CT 06405

Client: **Sprint**
 Implementation Team: **ALCATEL-LUCENT**

1 INTERNATIONAL BLVD.
 1 WATKINS, NJ 07095

808 AVIATION PARKWAY
 SUITE 700
 MORRISVILLE, NC 27650

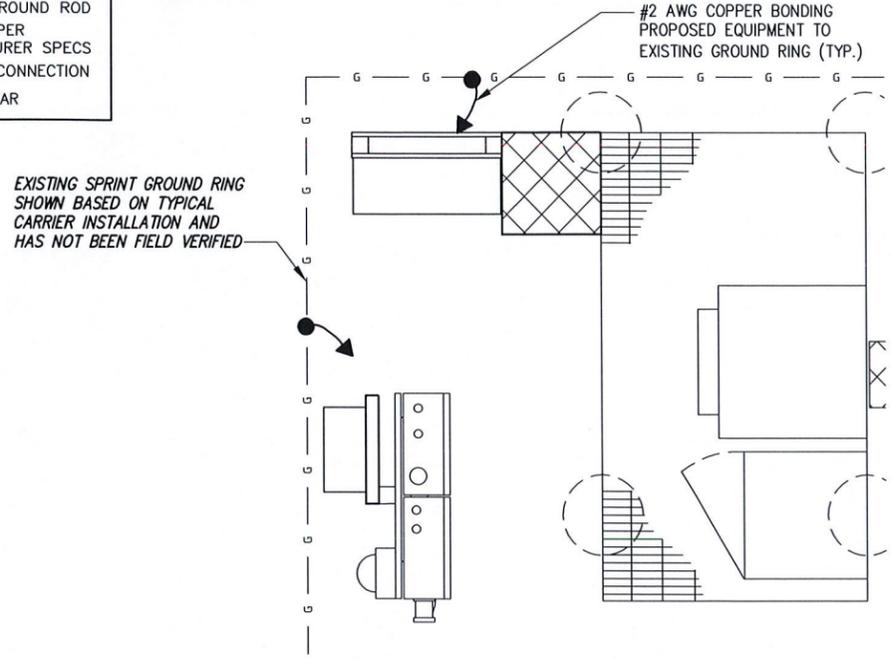
Drawing Scale: AS NOTED
 Date: 7/16/12

Drawing Title
ONE-LINE DIAGRAM AND DETAILS

Drawing Number
E2

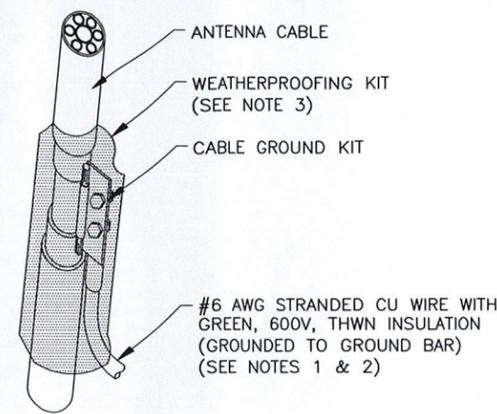
A/E Consultant:
infinigy engineering
 11 Herbert Drive
 Latham, NY 12110
 (518) 690-0790

SYMBOL	
⊗	COPPER GROUND ROD
▶	CONNECT PER MANUFACTURER SPECS
●	CADWELD CONNECTION
—	GROUND BAR



1 EQUIPMENT GROUNDING PLAN
NOT TO SCALE

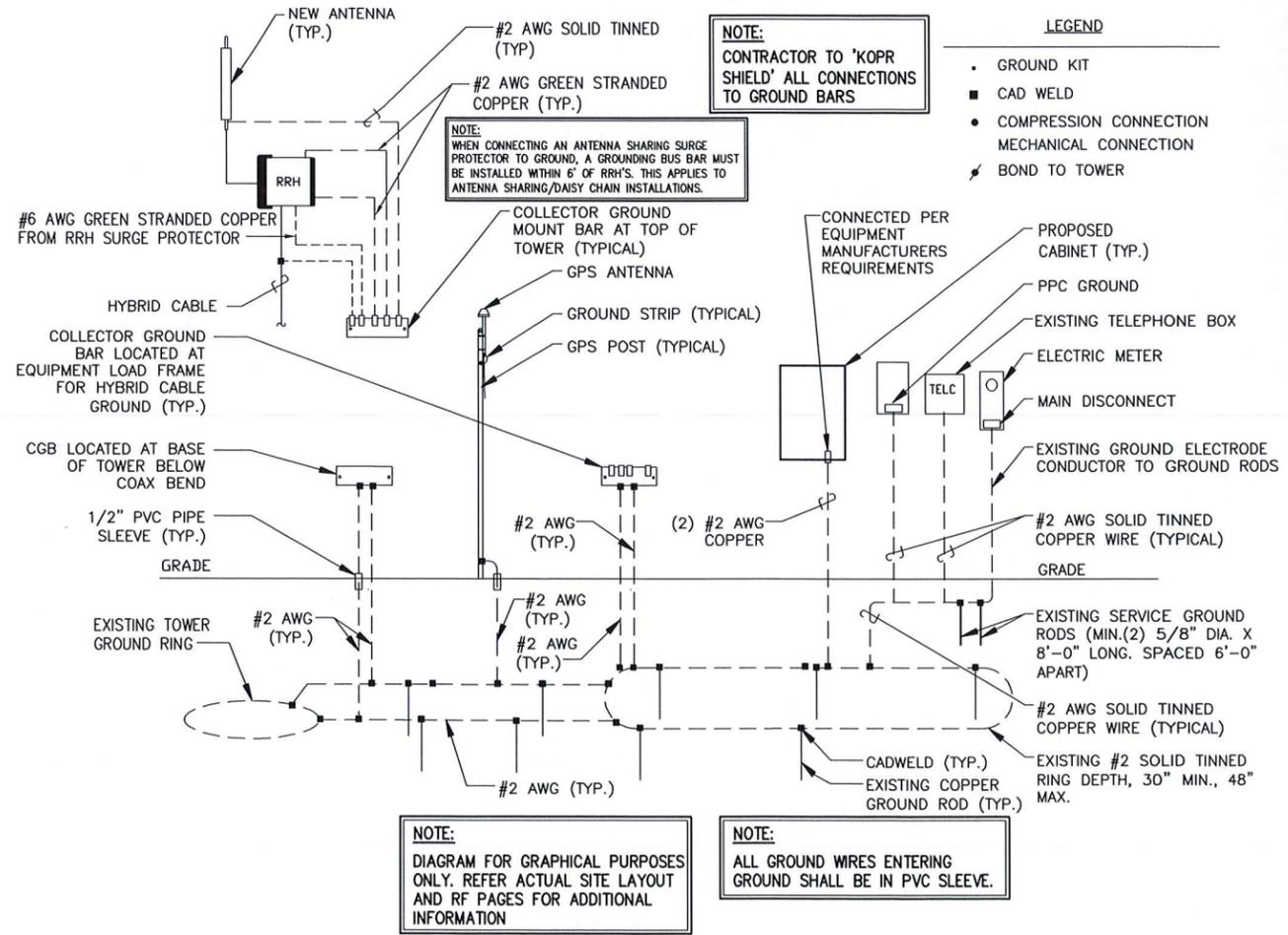
- NOTES:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 - GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
 - WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.



3 CONNECTION OF GROUND KIT TO ANTENNA CABLE
NOT TO SCALE

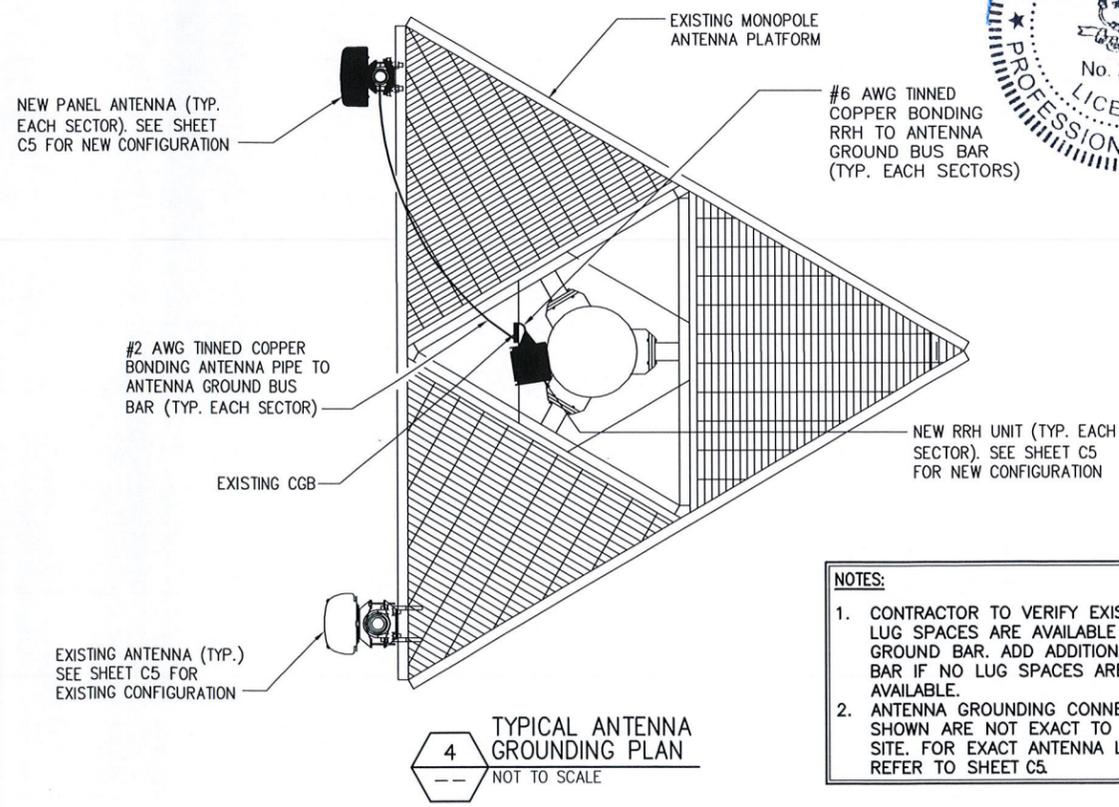
GROUNDING NOTES:

- ALL DOWN CONDUCTORS AND GROUND RING 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.
- WHERE MECHANICAL CONDUCTOR CONNECTIONS ARE SPECIFIED, BOLTED, COMPRESSION-TYPE CLAMPS OR SPLIT-BOLT TYPE CONNECTORS SHALL BE USED.
- GRIND OFF GALVANIZING IN AFFECTED AREA. EXOTHERMICALLY WELD #2 CONDUCTOR AT 6 INCHES ABOVE GRADE OR FOUNDATION, WHICHEVER IS HIGHER. COLD-GALV AFTER. EXOTHERMICALLY WELD OTHER END TO GROUND.
- GROUND CONDUCTORS ON EXTERIOR WALL OF SHELTER SHALL BE ENCASED IN 3/4" PVC CONDUIT TO GRADE. MOUNT PVC WITH GALVANIZED "C" CLAMPS. SEAL TOP ENDS.
- FOLLOWING COMPLETION OF WORK, CONDUCT GROUND TEST. SUBMIT WRITTEN TEST TO CONSTRUCTION MANAGER AND PROJECT MANAGER.
- ALL GROUNDING WORK SHALL COMPLY WITH CARRIER(S) STANDARDS.
- 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.
- UNLESS NOTED OTHERWISE, ALL GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT'S SSEO 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).
- UNLESS NOTED OTHERWISE, ALL GROUNDING CONNECTIONS SHALL BE MADE BY AN EXOTHERMIC WELD.
- RESISTANCE TO EARTH TESTING IS REQUIRED PER SPRINT STANDARDS ON ALL NEW SITES.



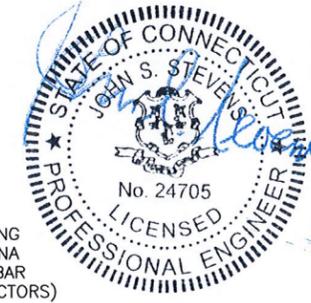
2 GROUNDING RISER DIAGRAM
NOT TO SCALE

- LEGEND**
- GROUND KIT
 - CAD WELD
 - COMPRESSION CONNECTION MECHANICAL CONNECTION
 - ⚡ BOND TO TOWER



4 TYPICAL ANTENNA GROUNDING PLAN
NOT TO SCALE

- NOTES:**
- CONTRACTOR TO VERIFY EXISTING LUG SPACES ARE AVAILABLE ON GROUND BAR. ADD ADDITIONAL BUS BAR IF NO LUG SPACES ARE AVAILABLE.
 - ANTENNA GROUNDING CONNECTIONS SHOWN ARE NOT EXACT TO THIS SITE. FOR EXACT ANTENNA LAYOUT REFER TO SHEET C5.



A/E Consultant:

infinigy engineering
11 Herbert Drive
Latham, NY 12110
(518) 680-0790

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Designed: EKM Date: 5/14/12
Checked: CWT Date: 5/14/12

Project Number: 286-013

Project Title: CT03XC021 SECONDINO PROPERTY

21 ACORN ROAD
BRANFORD, CT 06405

Client: Sprint
Implementation Team: Alcatel-Lucent
808 AVATION PARKWAY
SUITE 700
MORRISVILLE, NC 27650

Professional Engineer Seal: JOHN S. STEVENS, No. 24705, STATE OF CONNECTICUT

Drawing Scale: AS NOTED
Date: 7/16/12

Drawing Title: **GROUNDING PLAN AND DETAILS**

Drawing Number: **E3**



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

Date: **May 31, 2012**

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

Paul J Ford and Company
 250 E. Broad Street Suite 1500
 Columbus, OH 43221
 mbuske@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: *Sprint PCS Co-Locate-Interim Loading*
Carrier Site Number: CT03XC021
Carrier Site Name: N/A

Crown Castle Designation:
Crown Castle BU Number: 876316
Crown Castle Site Name: SECONDINO PROPERTY

Crown Castle JDE Job Number: 188859
Crown Castle Work Order Number: 498037
Crown Castle Application Number: 151332 Rev. 1

Engineering Firm Designation: **Paul J Ford and Company Project Number:** 37512-1569_A

Site Data: **21 Acorn Road, BRANFORD, New Haven County, CT**
Latitude 41° 17' 35.06", Longitude -72° 45' 46.4"
147 Foot - Monopole Tower

Dear Veronica Harris,

Paul J Ford and Company is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 466981, in accordance with application 151332, 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:

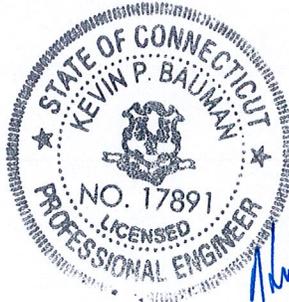
LC5: Existing + Proposed Equipment **Sufficient Capacity**
 Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard, 2005 Connecticut State Building Code, and based upon a wind speed of 85 mph fastest mile, a wind speed of 37.6 mph with a 0.75 inch ice thickness, and a wind speed of 50 mph under service loads.

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

Respectfully submitted by:

Matthew Buske, E.I.T.
 Structural Engineer



Handwritten signature and date: MB 023-2012

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tnxTower Output

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Additional Calculations

1) INTRODUCTION

This tower is a 147 ft Monopole tower designed by SUMMIT in August of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower was reinforced by PJF in May of 2008.

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
147.0	147.0	3	alcatel lucent	1900MHz RRH (25MHz)	3	1 1/4	-
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSP18-C-A20			
		1	handrail	NA 507-1			

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
147.0	147.0	1	tower mounts	Platform Mount [LP 712-1]	6	1 5/8	1
	144.0	2	decibel	DB950F85E-M			
		4	decibel	DB980H90E-M			
135.0	135.0	3	celwave	Celwave APXV18-206515L-03	6	1 5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
126.0	127.0	12	decibel	844G90VTA-SX	12	1 1/4	1
	126.0	1	tower mounts	Platform Mount [LP 712-1]			
116.0	116.0	2	adc	ClearGain Dual Band 800/1900 MHz	12	1 5/8	1
		3	antel	BXA-171085-8BF-EDIN-2			
		3	antel	BXA-70063-6CF-2			
		2	antel	LPA-80063/6CF			
		2	antel	LPA-80080/4CF			
		2	rfs celwave	APL868013			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
106.0	108.0	6	ericsson	RRUS-11	1 2 1 12	3/8 7/8 1/4 1 1/4	1
		3	kmw communications	AM-X-CD-14-65-00T-RET			
		6	powerwave technologies	Powerwave Technologies 7770 w/ Mount Pipe			
		12	powerwave technologies	Powerwave Technologies LGP2140X			
	1	raycap	DC6-48-60-18-8F				
	106.0	1	tower mounts	Platform Mount [LP 712-1]			
80.0	81.0	1	kathreinscala	Kathrein OG-860/1920/GPS-A	3	1/2	1
		2	lucent	KS24019-L112A			
	80.0	1	tower mounts	Side Arm Mount [SO 701-3]			

Notes:
 1) Existing Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	DR. Clarence Welti (12/16/1996)	1529736	CCISITES
4-POST-MODIFICATION INSPECTION	Global Signal (10/10/2005)	2031904	CCISITES
4-POST-MODIFICATION INSPECTION	PJF (3/15/2009)	2417887	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing (9/29/1997)	1632435	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing (9/29/1997)	1632399	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF (5/8/2008)	2251030	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	PJF (8/22/2011)	2965628	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.3.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	147 - 105	Pole	TP29.141x22x0.25	1	-8.25	1075.85	57.3	Pass
L2	105 - 89.75	Pole	TP31.2343x28.0034x0.3125	2	-13.34	1471.82	82.2	Pass
L3	89.75 - 88.25	Pole	TP31.4893x31.2343x0.3125	3	-13.58	1464.66	85.5	Pass
L4	88.25 - 86	Pole	TP31.8719x31.4893x0.5085	4	-14.08	2314.39	57.6	Pass
L5	86 - 84.25	Pole	TP32.1695x31.8719x0.5063	5	-14.46	2304.61	60.0	Pass
L6	84.25 - 73.75	Pole	TP33.955x32.1695x0.455	6	-15.98	2207.19	70.3	Pass
L7	73.75 - 42.75	Pole	TP38.601x32.3223x0.537	7	-24.42	2922.04	81.6	Pass
L8	42.75 - 8.25	Pole	TP43.7172x36.6809x0.5757	8	-37.45	3650.30	90.7	Pass
L9	8.25 - 6.25	Pole	TP44.0573x43.7172x0.596	9	-38.14	3777.23	88.8	Pass
L10	6.25 - 0	Pole	TP45.12x44.0573x0.5918	10	-40.28	3837.49	90.7	Pass
							Summary	
						Pole (L8)	90.7	Pass
						Rating =	90.7	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	91.4	Pass
1	Base Plate	0	82.3	Pass
1	Base Foundation Structural	0	56.3	Pass
1	Base Foundation Soil Interaction	0	90.9	Pass

Structure Rating (max from all components) =	91.4%
---	--------------

Notes:

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

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

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

- 1) Tower is located in New Haven County, Connecticut.
- 2) Basic wind speed of 85 mph.
- 3) Nominal ice thickness of 0.7500 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56 pcf.
- 6) A wind speed of 38 mph is used in combination with ice.
- 7) Deflections calculated using a wind speed of 50 mph.
- 8) A non-linear (P-delta) analysis was used.
- 9) Pressures are calculated at each section.
- 10) Stress ratio used in pole design is 1.333.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check <div style="background-color: #e0e0e0; text-align: center; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	--

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	147.00-105.00	42.00	3.75	18	22.0000	29.1410	0.2500	1.0000	A607-60 (60 ksi)
L2	105.00-89.75	19.00	0.00	18	28.0034	31.2343	0.3125	1.2500	A607-60 (60 ksi)
L3	89.75-88.25	1.50	0.00	18	31.2343	31.4893	0.3125	1.2500	Reinf 59.22 ksi (59 ksi)
L4	88.25-86.00	2.25	0.00	18	31.4893	31.8719	0.5085	2.0338	Reinf 57.17 ksi (57 ksi)
L5	86.00-84.25	1.75	0.00	18	31.8719	32.1695	0.5063	2.0252	Reinf 56.63 ksi (57 ksi)
L6	84.25-73.75	10.50	4.25	18	32.1695	33.9550	0.4550	1.8200	Reinf 58.30 ksi (58 ksi)
L7	73.75-42.75	35.25	4.75	18	32.3223	38.6010	0.5370	2.1481	Reinf 57.59 ksi (58 ksi)
L8	42.75-8.25	39.25	0.00	18	36.6809	43.7172	0.5757	2.3026	Reinf 57.90 ksi (58 ksi)
L9	8.25-6.25	2.00	0.00	18	43.7172	44.0573	0.5960	2.3841	Reinf 57.44 ksi (57 ksi)
L10	6.25-0.00	6.25		18	44.0573	45.1200	0.5918	2.3670	Reinf 57.37 ksi (57 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	I/Q in ²	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	29.5905	22.9250	2417.5313	10.2563	14.8036	163.3067	4838.2436	11.4647	4.6888	18.755
L2	29.0829	27.4659	2660.7623	9.8303	14.2257	187.0387	5325.0257	13.7356	4.3786	14.012
	31.7161	30.6705	3704.9933	10.9772	15.8670	233.5029	7414.8618	15.3382	4.9472	15.831
L3	31.7161	30.6705	3704.9933	10.9772	15.8670	233.5029	7414.8618	15.3382	4.9472	15.831
	31.9751	30.9235	3797.4379	11.0678	15.9966	237.3905	7599.8725	15.4647	4.9921	15.975
L4	31.9751	49.9986	6062.9281	10.9982	15.9966	379.0139	12133.833	25.0040	4.6472	9.14
	32.3636	50.6160	6290.3368	11.1340	16.1909	388.5095	12588.950	25.3128	4.7146	9.272
L5	32.3636	50.4045	6264.9089	11.1348	16.1909	386.9390	12538.061	25.2070	4.7184	9.319
	32.6658	50.8827	6444.9201	11.2404	16.3421	394.3749	12898.320	25.4462	4.7707	9.423
L6	32.6658	45.8012	5820.0967	11.2587	16.3421	356.1409	11647.851	22.9049	4.8610	10.684
	34.4788	48.3797	6859.4641	11.8925	17.2491	397.6699	13727.954	24.1944	5.1753	11.374
L7	33.5896	54.1791	6915.4595	11.2838	16.4197	421.1676	13840.018	27.0947	4.7436	8.833
	39.1965	64.8813	11876.409	13.5127	19.6093	605.6516	23768.446	32.4468	5.8486	10.891
L8	38.1114	65.9694	10864.757	12.8173	18.6339	583.0647	21743.811	32.9910	5.4427	9.455
	44.3916	78.8258	18535.203	15.3152	22.2083	834.6056	37094.796	39.4204	6.6811	11.606
L9	44.3916	81.5766	19163.909	15.3080	22.2083	862.9151	38353.034	40.7960	6.6452	11.149
	44.7369	82.2200	19620.909	15.4287	22.3811	876.6732	39267.636	41.1178	6.7051	11.25
L10	44.7369	81.6376	19485.770	15.4303	22.3811	870.6351	38997.180	40.8266	6.7126	11.344
	45.8160	83.6336	20950.265	15.8075	22.9210	914.0221	41928.096	41.8247	6.8996	11.66

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight plf
						No Ice	Ice	
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	147.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
HB114-1-0813U4-M5J(1 1/4")	C	No	Inside Pole	147.00 - 0.00	3	No Ice	0.00	1.20
						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
						2" Ice	0.00	1.20
						4" Ice	0.00	1.20
**								
LDF7-50A (1-5/8 FOAM)	C	No	CaAa (Out Of Face)	135.00 - 0.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF7-50A (1-5/8 FOAM)	C	No	CaAa (Out Of Face)	135.00 - 0.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF6-50A (1-1/4	C	No	Inside Pole	126.00 - 0.00	12	No Ice	0.00	0.66

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	plf	
FOAM)						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	116.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
VXL5-50 (7/8 FOAM)	C	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	0.29
						1/2" Ice	0.00	0.29
						1" Ice	0.00	0.29
						2" Ice	0.00	0.29
						4" Ice	0.00	0.29
LDF1-50A (1/4 FOAM)	C	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	106.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF2-50A(3/8")	C	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
LDF4RN-50A (1/2 FOAM)	C	No	Inside Pole	80.00 - 0.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
Aero MP3-05	C	No	CaAa (Out Of Face)	90.00 - 0.00	1	No Ice	0.35	0.00
						1/2" Ice	0.40	0.00
						1" Ice	0.66	0.00
						2" Ice	0.88	0.00
						4" Ice	1.32	0.00

**

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A		Weight K
			Horz Lateral ft ft ft	Vert ft			Front ft ²	Side ft ²	
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00	0.0000	147.00	No Ice	4.04	3.62	0.03
						1/2" Ice	4.50	4.48	0.06
						Ice	4.95	5.22	0.11
						1" Ice	5.87	6.74	0.22
						2" Ice	8.05	10.00	0.55
1900MHz RRH (25MHz)	A	From Leg	4.00	0.0000	147.00	No Ice	2.91	3.80	0.09
						1/2" Ice	3.14	4.06	0.12
						Ice	3.39	4.34	0.15
						1" Ice	3.91	4.91	0.24
						2" Ice	5.05	6.15	0.45
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	147.00	No Ice	0.77	0.37	0.01
						1/2" Ice	0.89	0.46	0.02
						Ice	1.02	0.56	0.02
						1" Ice	1.30	0.79	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K		
800MHZ RRH	A	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	1.97	1.34	0.11	
						4" Ice	2.49	2.07	0.05	
						No Ice	2.71	2.27	0.07	
						1/2" Ice	2.93	2.48	0.10	
						1" Ice	3.41	2.93	0.16	
(3) ACU-A20-N	A	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	4.46	3.93	0.32	
						4" Ice	No Ice	0.08	0.14	0.00
						No Ice	0.12	0.19	0.00	
						1/2" Ice	0.17	0.25	0.00	
						1" Ice	0.30	0.40	0.01	
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	0.67	0.80	0.04	
						4" Ice	No Ice	8.50	6.95	0.08
						No Ice	9.15	8.13	0.15	
						1/2" Ice	9.77	9.02	0.22	
						1" Ice	11.03	10.84	0.41	
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	147.00	2" Ice	13.68	14.85	0.91	
						4" Ice	No Ice	4.04	3.62	0.03
						No Ice	4.50	4.48	0.06	
						1/2" Ice	4.95	5.22	0.11	
						1" Ice	5.87	6.74	0.22	
1900MHz RRH (25MHz)	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	8.05	10.00	0.55	
						4" Ice	No Ice	2.91	3.80	0.09
						No Ice	3.14	4.06	0.12	
						1/2" Ice	3.39	4.34	0.15	
						1" Ice	3.91	4.91	0.24	
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	5.05	6.15	0.45	
						4" Ice	No Ice	0.77	0.37	0.01
						No Ice	0.89	0.46	0.02	
						1/2" Ice	1.02	0.56	0.02	
						1" Ice	1.30	0.79	0.04	
800MHZ RRH	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	1.97	1.34	0.11	
						4" Ice	No Ice	2.49	2.07	0.05
						No Ice	2.71	2.27	0.07	
						1/2" Ice	2.93	2.48	0.10	
						1" Ice	3.41	2.93	0.16	
(3) ACU-A20-N	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	4.46	3.93	0.32	
						4" Ice	No Ice	0.08	0.14	0.00
						No Ice	0.12	0.19	0.00	
						1/2" Ice	0.17	0.25	0.00	
						1" Ice	0.30	0.40	0.01	
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	0.67	0.80	0.04	
						4" Ice	No Ice	8.50	6.95	0.08
						No Ice	9.15	8.13	0.15	
						1/2" Ice	9.77	9.02	0.22	
						1" Ice	11.03	10.84	0.41	
(2) DB950F85E-M w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	147.00	2" Ice	13.68	14.85	0.91	
						4" Ice	No Ice	2.77	5.66	0.03
						No Ice	3.22	6.55	0.07	
						1/2" Ice	3.65	7.31	0.12	
						1" Ice	4.55	8.95	0.23	
1900MHz RRH (25MHz)	C	From Leg	4.00 0.00 0.00	0.0000	147.00	2" Ice	6.45	12.54	0.58	
						4" Ice	No Ice	2.91	3.80	0.09
						No Ice	3.14	4.06	0.12	
						Ice	3.39	4.34	0.15	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A Front	C _A A _A Side	Weight K
			Horz Lateral ft	Vert ft			ft ²	ft ²	
							1" Ice 3.91	4.91	0.24
							2" Ice 5.05	6.15	0.45
							4" Ice		
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	147.00	No Ice	0.77	0.37	0.01
			0.00			1/2"	0.89	0.46	0.02
			0.00			Ice	1.02	0.56	0.02
						1" Ice	1.30	0.79	0.04
						2" Ice	1.97	1.34	0.11
						4" Ice			
800MHZ RRH	C	From Leg	4.00	0.0000	147.00	No Ice	2.49	2.07	0.05
			0.00			1/2"	2.71	2.27	0.07
			0.00			Ice	2.93	2.48	0.10
						1" Ice	3.41	2.93	0.16
						2" Ice	4.46	3.93	0.32
						4" Ice			
(3) ACU-A20-N	C	From Leg	4.00	0.0000	147.00	No Ice	0.08	0.14	0.00
			0.00			1/2"	0.12	0.19	0.00
			0.00			Ice	0.17	0.25	0.00
						1" Ice	0.30	0.40	0.01
						2" Ice	0.67	0.80	0.04
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	147.00	No Ice	8.50	6.95	0.08
			0.00			1/2"	9.15	8.13	0.15
			0.00			Ice	9.77	9.02	0.22
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	147.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			
Miscellaneous (NA507-1)	C	None		0.0000	147.00	No Ice	4.80	4.80	0.25
						1/2"	6.70	6.70	0.29
						Ice	8.60	8.60	0.34
						1" Ice	12.40	12.40	0.44
						2" Ice	20.00	20.00	0.64
						4" Ice			

Pipe Mount [PM 601-3]	C	None		0.0000	135.00	No Ice	4.39	4.39	0.20
						1/2"	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice	8.75	8.75	0.36
						2" Ice	13.11	13.11	0.53
						4" Ice			
Celwave APXV18-206515L-03 w/Mount Pipe	A	From Face	0.50	0.0000	135.00	No Ice	3.48	3.24	0.04
			0.00			1/2"	3.90	3.97	0.07
			0.00			Ice	4.31	4.64	0.11
						1" Ice	5.23	6.03	0.21
						2" Ice	7.27	9.01	0.51
						4" Ice			
Celwave APXV18-206515L-03 w/Mount Pipe	B	From Face	0.50	0.0000	135.00	No Ice	3.48	3.24	0.04
			0.00			1/2"	3.90	3.97	0.07
			0.00			Ice	4.31	4.64	0.11
						1" Ice	5.23	6.03	0.21
						2" Ice	7.27	9.01	0.51
						4" Ice			
Celwave APXV18-206515L-03 w/Mount Pipe	C	From Face	0.50	0.0000	135.00	No Ice	3.48	3.24	0.04
			0.00			1/2"	3.90	3.97	0.07
			0.00			Ice	4.31	4.64	0.11
						1" Ice	5.23	6.03	0.21
						2" Ice	7.27	9.01	0.51
						4" Ice			

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight K	
(4) 844G90VTA-SX w/ Mount Pipe	A	From Face	4.00	0.0000	126.00	No Ice	3.30	4.92	0.03
			0.00			1/2"	3.69	5.60	0.07
			1.00			Ice	4.12	6.28	0.11
						1" Ice	5.01	7.71	0.23
						2" Ice	6.92	10.83	0.55
					4" Ice				
(4) 844G90VTA-SX w/ Mount Pipe	B	From Face	4.00	0.0000	126.00	No Ice	3.30	4.92	0.03
			0.00			1/2"	3.69	5.60	0.07
			1.00			Ice	4.12	6.28	0.11
						1" Ice	5.01	7.71	0.23
						2" Ice	6.92	10.83	0.55
					4" Ice				
(4) 844G90VTA-SX w/ Mount Pipe	C	From Face	4.00	0.0000	126.00	No Ice	3.30	4.92	0.03
			0.00			1/2"	3.69	5.60	0.07
			1.00			Ice	4.12	6.28	0.11
						1" Ice	5.01	7.71	0.23
						2" Ice	6.92	10.83	0.55
					4" Ice				
Platform Mount [LP 712-1]	C	None		0.0000	126.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
					4" Ice				
** (2) FD9R6004/2C-3L	A	From Face	4.00	0.0000	116.00	No Ice	0.37	0.08	0.00
0.00			1/2"			0.45	0.14	0.01	
0.00			Ice			0.54	0.20	0.01	
			1" Ice			0.75	0.34	0.02	
			2" Ice			1.28	0.74	0.06	
					4" Ice				
(2) FD9R6004/2C-3L	B	From Face	4.00	0.0000	116.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
					4" Ice				
(2) FD9R6004/2C-3L	C	From Face	4.00	0.0000	116.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice	1.28	0.74	0.06
					4" Ice				
(2) LPA-80080/4CF w/ Mount Pipe	A	From Face	4.00	0.0000	116.00	No Ice	2.86	7.23	0.03
			0.00			1/2"	3.22	7.92	0.07
			0.00			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
					4" Ice				
BXA-70063-6CF-2 w/ Mount Pipe	A	From Face	4.00	0.0000	116.00	No Ice	7.97	5.80	0.04
			0.00			1/2"	8.61	6.95	0.10
			0.00			Ice	9.22	7.82	0.17
						1" Ice	10.46	9.60	0.34
						2" Ice	13.07	13.37	0.80
					4" Ice				
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Face	4.00	0.0000	116.00	No Ice	3.18	3.35	0.03
			0.00			1/2"	3.56	3.97	0.06
			0.00			Ice	3.97	4.60	0.10
						1" Ice	4.86	5.90	0.19
						2" Ice	6.77	8.89	0.49
					4" Ice				
(2) LPA-80063/6CF w/ Mount Pipe	B	From Face	4.00	0.0000	116.00	No Ice	10.58	10.67	0.05
			0.00			1/2"	11.24	11.93	0.14
			0.00			Ice	11.87	12.91	0.24
						1" Ice	13.16	14.92	0.48

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
BXA-70063-6CF-2 w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	116.00	2" Ice	15.87	19.16	1.09
						4" Ice			
						No Ice	7.97	5.80	0.04
						1/2" Ice	8.61	6.95	0.10
						1" Ice	9.22	7.82	0.17
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	116.00	1" Ice	10.46	9.60	0.34
						2" Ice	13.07	13.37	0.80
						4" Ice			
						No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
(2) ClearGain Dual Band 800/1900 MHz	B	From Face	4.00 0.00 0.00	0.0000	116.00	Ice	3.97	4.60	0.10
						1" Ice	4.86	5.90	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
						No Ice	1.54	0.80	0.02
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	116.00	1/2" Ice	1.71	0.94	0.03
						Ice	1.89	1.08	0.05
						1" Ice	2.27	1.39	0.08
						2" Ice	3.14	2.11	0.18
						4" Ice			
BXA-70063/6CF-2 w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	116.00	No Ice	7.97	5.40	0.04
						1/2" Ice	8.61	6.55	0.10
						Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
(2) APL868013 w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	116.00	4" Ice			
						No Ice	3.10	4.92	0.02
						1/2" Ice	3.48	5.60	0.06
						Ice	3.88	6.28	0.11
						1" Ice	4.76	7.71	0.22
Platform Mount [LP 712-1]	C	None		0.0000	116.00	2" Ice	6.66	10.83	0.54
						4" Ice			
						No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
** AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	106.00	1" Ice	7.62	6.68	0.25
						2" Ice	9.67	9.74	0.61
						4" Ice			
						No Ice	5.74	4.02	0.03
						1/2" Ice	6.20	4.63	0.08
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	106.00	Ice	6.66	5.28	0.13
						1" Ice	7.62	6.68	0.25
						2" Ice	9.67	9.74	0.61
						4" Ice			
						No Ice	5.74	4.02	0.03
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	106.00	1/2" Ice	6.20	4.63	0.08
						Ice	6.66	5.28	0.13
						1" Ice	7.62	6.68	0.25
						2" Ice	9.67	9.74	0.61
						4" Ice			
(2) RRUS-11	A	From Face	4.00 0.00	0.0000	106.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			2.00			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
(2) RRUS-11	B	From Face	4.00	0.0000	106.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			2.00			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
(2) RRUS-11	C	From Face	4.00	0.0000	106.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			2.00			Ice	3.74	1.74	0.09
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
DC6-48-60-18-8F	A	From Face	4.00	0.0000	106.00	No Ice	2.57	4.32	0.02
			0.00			1/2"	2.80	4.60	0.05
			2.00			Ice	3.04	4.88	0.09
						1" Ice	3.54	5.49	0.17
						2" Ice	4.66	6.80	0.38
						4" Ice			
(2) Powerwave Technologies 7770 w/ Mount Pipe	A	From Face	4.00	0.0000	106.00	No Ice	6.01	4.42	0.07
			0.00			1/2"	6.46	5.08	0.12
			2.00			Ice	6.93	5.74	0.18
						1" Ice	7.89	7.13	0.32
						2" Ice	9.94	10.41	0.70
						4" Ice			
(2) Powerwave Technologies 7770 w/ Mount Pipe	B	From Face	4.00	0.0000	106.00	No Ice	6.01	4.42	0.07
			0.00			1/2"	6.46	5.08	0.12
			2.00			Ice	6.93	5.74	0.18
						1" Ice	7.89	7.13	0.32
						2" Ice	9.94	10.41	0.70
						4" Ice			
(2) Powerwave Technologies 7770 w/ Mount Pipe	C	From Face	4.00	0.0000	106.00	No Ice	6.01	4.42	0.07
			0.00			1/2"	6.46	5.08	0.12
			2.00			Ice	6.93	5.74	0.18
						1" Ice	7.89	7.13	0.32
						2" Ice	9.94	10.41	0.70
						4" Ice			
(4) Powerwave Technologies LGP2140X	A	From Face	4.00	0.0000	106.00	No Ice	1.23	0.37	0.02
			0.00			1/2"	1.38	0.48	0.02
			2.00			Ice	1.54	0.60	0.03
						1" Ice	1.89	0.87	0.06
						2" Ice	2.69	1.51	0.14
						4" Ice			
(4) Powerwave Technologies LGP2140X	B	From Face	4.00	0.0000	106.00	No Ice	1.23	0.37	0.02
			0.00			1/2"	1.38	0.48	0.02
			2.00			Ice	1.54	0.60	0.03
						1" Ice	1.89	0.87	0.06
						2" Ice	2.69	1.51	0.14
						4" Ice			
(4) Powerwave Technologies LGP2140X	C	From Face	4.00	0.0000	106.00	No Ice	1.23	0.37	0.02
			0.00			1/2"	1.38	0.48	0.02
			2.00			Ice	1.54	0.60	0.03
						1" Ice	1.89	0.87	0.06
						2" Ice	2.69	1.51	0.14
						4" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	106.00	No Ice	24.53	24.53	1.34
						1/2"	29.94	29.94	1.65
						Ice	35.35	35.35	1.96
						1" Ice	46.17	46.17	2.58
						2" Ice	67.81	67.81	3.82
						4" Ice			

**

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A		Weight K	
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²		
Side Arm Mount [SO 701-3]	C	None			0.0000	80.00	No Ice	2.83	2.83	0.20
							1/2" Ice	3.92	3.92	0.24
							1" Ice	5.01	5.01	0.28
							2" Ice	7.19	7.19	0.36
							4" Ice	11.55	11.55	0.53
KS24019-L112A	A	From Face	3.00 0.00 1.00	0.0000	80.00	No Ice	0.10	0.10	0.01	
						1/2" Ice	0.18	0.18	0.01	
						1" Ice	0.26	0.26	0.01	
						2" Ice	0.42	0.42	0.01	
						4" Ice	0.74	0.74	0.02	
Kathrein OG-860/1920/GPS-A	B	From Face	3.00 0.00 1.00	0.0000	80.00	No Ice	0.14	0.14	0.00	
						1/2" Ice	0.23	0.23	0.00	
						1" Ice	0.33	0.33	0.01	
						2" Ice	0.57	0.57	0.02	
						4" Ice	1.17	1.17	0.05	
KS24019-L112A	C	From Face	3.00 0.00 1.00	0.0000	80.00	No Ice	0.10	0.10	0.01	
						1/2" Ice	0.18	0.18	0.01	
						1" Ice	0.26	0.26	0.01	
						2" Ice	0.42	0.42	0.01	
						4" Ice	0.74	0.74	0.02	

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	147 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.46	-0.61	0.56
			Max. Mx	5	-8.27	-345.35	-3.25
			Max. My	2	-8.24	3.26	351.22
			Max. Vy	11	-16.31	344.90	3.57
			Max. Vx	2	-16.50	3.26	351.22
			Max. Torque	6			1.84
L2	105 - 89.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24.55	0.18	0.50
			Max. Mx	5	-13.37	-747.80	-1.52
			Max. My	2	-13.34	1.65	758.12
			Max. Vy	11	-22.24	747.72	1.86
			Max. Vx	2	-22.47	1.65	758.12
			Max. Torque	5			2.13
L3	89.75 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-24.84	0.22	0.48
			Max. Mx	5	-13.61	-781.24	-1.38
			Max. My	2	-13.58	1.52	791.91
			Max. Vy	11	-22.38	781.18	1.72
			Max. Vx	2	-22.60	1.52	791.91
			Max. Torque	5			2.12
L4	88.25 - 86	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.43	0.28	0.45
			Max. Mx	5	-14.11	-831.80	-1.18
			Max. My	2	-14.08	1.33	842.98
			Max. Vy	11	-22.59	831.76	1.51
			Max. Vx	2	-22.82	1.33	842.98
			Max. Torque	5			2.11
L5	86 - 84.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.89	0.33	0.42
			Max. Mx	5	-14.49	-871.46	-1.02
			Max. My	2	-14.46	1.17	883.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	84.25 - 73.75	Pole	Max. Vy	11	-22.76	871.45	1.34
			Max. Vx	2	-22.99	1.17	883.05
			Max. Torque	5			2.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-27.75	0.50	0.32
			Max. Mx	11	-16.01	1015.83	0.74
			Max. My	2	-15.98	0.64	1028.76
			Max. Vy	11	-23.48	1015.83	0.74
			Max. Vx	2	-23.71	0.64	1028.76
			Max. Torque	5			2.10
L7	73.75 - 42.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37.56	1.38	-0.19
			Max. Mx	11	-24.43	1775.18	-2.18
			Max. My	2	-24.42	-2.00	1794.71
			Max. Vy	11	-26.20	1775.18	-2.18
			Max. Vx	8	26.43	2.48	-1794.56
			Max. Torque	5			2.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.19	2.62	-0.90
			Max. Mx	11	-37.45	2860.43	-5.97
L8	42.75 - 8.25	Pole	Max. My	8	-37.45	6.40	-2888.43
			Max. Vy	11	-28.98	2860.43	-5.97
			Max. Vx	8	29.20	6.40	-2888.43
			Max. Torque	5			1.99
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.94	2.68	-0.94
			Max. Mx	11	-38.14	2918.47	-6.17
			Max. My	8	-38.14	6.60	-2946.91
			Max. Vy	11	-29.10	2918.47	-6.17
			Max. Vx	8	29.31	6.60	-2946.91
L9	8.25 - 6.25	Pole	Max. Torque	5			1.90
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-55.31	2.89	-1.06
			Max. Mx	11	-40.28	3101.54	-6.77
			Max. My	8	-40.28	7.22	-3131.31
			Max. Vy	11	-29.50	3101.54	-6.77
			Max. Vx	8	29.71	7.22	-3131.31
			Max. Torque	5			1.90
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-55.31	2.89	-1.06
L10	6.25 - 0	Pole	Max. Mx	11	-40.28	3101.54	-6.77
			Max. My	8	-40.28	7.22	-3131.31
			Max. Vy	11	-29.50	3101.54	-6.77
			Max. Vx	8	29.71	7.22	-3131.31
			Max. Torque	5			1.90
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-55.31	2.89	-1.06
			Max. Mx	11	-40.28	3101.54	-6.77
			Max. My	8	-40.28	7.22	-3131.31
			Max. Vy	11	-29.50	3101.54	-6.77

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	55.31	0.00	-0.00
	Max. H _x	11	40.29	29.48	-0.09
	Max. H _z	2	40.29	-0.09	29.70
	Max. M _x	2	3131.07	-0.09	29.70
	Max. M _z	5	3100.36	-29.48	0.09
	Max. Torsion	5	1.88	-29.48	0.09
	Min. Vert	2	40.29	-0.09	29.70
	Min. H _x	5	40.29	-29.48	0.09
	Min. H _z	8	40.29	0.09	-29.70
	Min. M _x	8	-3131.31	0.09	-29.70
	Min. M _z	11	-3101.54	29.48	-0.09
	Min. Torsion	10	-1.83	25.58	-14.93

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturing Moment, M _x	Overturing Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	40.29	-0.00	0.00	0.12	0.57	0.00
Dead+Wind 0 deg - No Ice	40.29	0.09	-29.70	-3131.07	-6.05	-0.43
Dead+Wind 30 deg - No Ice	40.29	14.82	-25.77	-2715.11	-1555.65	-1.29
Dead+Wind 60 deg - No Ice	40.29	25.58	-14.93	-1571.37	-2688.29	-1.83
Dead+Wind 90 deg - No Ice	40.29	29.48	-0.09	-6.51	-3100.36	-1.88
Dead+Wind 120 deg - No Ice	40.29	25.49	14.77	1560.13	-2681.65	-1.40
Dead+Wind 150 deg - No Ice	40.29	14.66	25.68	2708.72	-1544.14	-0.52
Dead+Wind 180 deg - No Ice	40.29	-0.09	29.70	3131.31	7.22	0.50
Dead+Wind 210 deg - No Ice	40.29	-14.82	25.77	2715.36	1556.81	1.36
Dead+Wind 240 deg - No Ice	40.29	-25.58	14.93	1571.63	2689.46	1.83
Dead+Wind 270 deg - No Ice	40.29	-29.48	0.09	6.77	3101.54	1.81
Dead+Wind 300 deg - No Ice	40.29	-25.49	-14.77	-1559.87	2682.83	1.33
Dead+Wind 330 deg - No Ice	40.29	-14.66	-25.68	-2708.47	1545.32	0.52
Dead+Ice	55.31	-0.00	0.00	1.06	2.89	0.00
Dead+Wind 0 deg+Ice	55.31	0.02	-7.15	-778.17	1.96	-0.12
Dead+Wind 30 deg+Ice	55.31	3.57	-6.20	-674.30	-384.20	-0.29
Dead+Wind 60 deg+Ice	55.31	6.16	-3.59	-389.47	-666.61	-0.38
Dead+Wind 90 deg+Ice	55.31	7.10	-0.02	0.01	-769.69	-0.37
Dead+Wind 120 deg+Ice	55.31	6.14	3.56	389.77	-665.54	-0.27
Dead+Wind 150 deg+Ice	55.31	3.54	6.18	675.38	-382.36	-0.08
Dead+Wind 180 deg+Ice	55.31	-0.02	7.15	780.31	4.09	0.12
Dead+Wind 210 deg+Ice	55.31	-3.57	6.20	676.45	390.25	0.29
Dead+Wind 240 deg+Ice	55.31	-6.16	3.59	391.61	672.65	0.38
Dead+Wind 270 deg+Ice	55.31	-7.10	0.02	2.14	775.63	0.37
Dead+Wind 300 deg+Ice	55.31	-6.14	-3.56	-387.62	671.59	0.26
Dead+Wind 330 deg+Ice	55.31	-3.54	-6.18	-673.24	388.40	0.08
Dead+Wind 0 deg - Service	40.29	0.03	-10.28	-1084.54	-1.71	-0.16
Dead+Wind 30 deg - Service	40.29	5.13	-8.92	-940.53	-538.54	-0.46
Dead+Wind 60 deg - Service	40.29	8.85	-5.17	-544.29	-930.92	-0.64
Dead+Wind 90 deg - Service	40.29	10.20	-0.03	-2.17	-1073.51	-0.65
Dead+Wind 120 deg - Service	40.29	8.82	5.11	540.56	-928.62	-0.48
Dead+Wind 150 deg - Service	40.29	5.07	8.88	938.47	-534.56	-0.18
Dead+Wind 180 deg - Service	40.29	-0.03	10.28	1084.78	2.88	0.17
Dead+Wind 210 deg - Service	40.29	-5.13	8.92	940.77	539.71	0.47
Dead+Wind 240 deg - Service	40.29	-8.85	5.17	544.53	932.09	0.64
Dead+Wind 270 deg - Service	40.29	-10.20	0.03	2.42	1074.69	0.64
Dead+Wind 300 deg - Service	40.29	-8.82	-5.11	-540.32	929.80	0.47
Dead+Wind 330 deg - Service	40.29	-5.07	-8.88	-938.24	535.74	0.18

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
147.00	(2) DB980H90E-M w/ Mount Pipe	27	33.251	1.9049	0.0036	33431
135.00	Pipe Mount [PM 601-3]	27	28.501	1.8410	0.0037	13929
126.00	(4) 844G90VTA-SX w/ Mount Pipe	27	25.012	1.7842	0.0038	7959
116.00	(2) FD9R6004/2C-3L	27	21.281	1.7039	0.0038	5391
106.00	AM-X-CD-14-65-00T-RET w/ Mount Pipe	27	17.771	1.5973	0.0034	4042
80.00	Side Arm Mount [SO 701-3]	27	10.173	1.1838	0.0017	4058

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	147 - 105 (1)	TP29.141x22x0.25	42.00	0.00	0.0	36.000	22.4191	-8.25	807.09	0.010
L2	105 - 89.75 (2)	TP31.2343x28.0034x0.312 5	19.00	0.00	0.0	36.000	30.6705	-13.34	1104.14	0.012
L3	89.75 - 88.25 (3)	TP31.4893x31.2343x0.312 5	1.50	0.00	0.0	35.532	30.9235	-13.58	1098.77	0.012
L4	88.25 - 86 (4)	TP31.8719x31.4893x0.508 5	2.25	0.00	0.0	34.302	50.6160	-14.08	1736.23	0.008
L5	86 - 84.25 (5)	TP32.1695x31.8719x0.506 3	1.75	0.00	0.0	33.978	50.8827	-14.46	1728.89	0.008
L6	84.25 - 73.75 (6)	TP33.955x32.1695x0.455	10.50	0.00	0.0	34.980	47.3360	-15.98	1655.81	0.010
L7	73.75 - 42.75 (7)	TP38.601x32.3223x0.537	35.25	0.00	0.0	34.554	63.4392	-24.42	2192.08	0.011
L8	42.75 - 8.25 (8)	TP43.7172x36.6809x0.575 7	39.25	0.00	0.0	34.740	78.8258	-37.45	2738.41	0.014
L9	8.25 - 6.25 (9)	TP44.0573x43.7172x0.596	2.00	0.00	0.0	34.464	82.2200	-38.14	2833.63	0.013
L10	6.25 - 0 (10)	TP45.12x44.0573x0.5918	6.25	0.00	0.0	34.422	83.6336	-40.28	2878.84	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	147 - 105 (1)	TP29.141x22x0.25	352.58	27.096	36.000	0.753	0.00	0.000	36.000	0.000
L2	105 - 89.75 (2)	TP31.2343x28.0034x0.312 25	758.12	38.961	36.000	1.082	0.00	0.000	36.000	0.000
L3	89.75 - 88.25 (3)	TP31.4893x31.2343x0.312 25	791.91	40.031	35.532	1.127	0.00	0.000	35.532	0.000
L4	88.25 - 86 (4)	TP31.8719x31.4893x0.508 85	842.98	26.037	34.302	0.759	0.00	0.000	34.302	0.000
L5	86 - 84.25 (5)	TP32.1695x31.8719x0.506 63	883.05	26.869	33.978	0.791	0.00	0.000	33.978	0.000
L6	84.25 - 73.75 (6)	TP33.955x32.1695x0.455	1028.7 6	32.437	34.980	0.927	0.00	0.000	34.980	0.000
L7	73.75 - 42.75 (7)	TP38.601x32.3223x0.537	1794.7 2	37.206	34.554	1.077	0.00	0.000	34.554	0.000
L8	42.75 - 8.25 (8)	TP43.7172x36.6809x0.575 57 3	2888.4 3	41.530	34.740	1.195	0.00	0.000	34.740	0.000
L9	8.25 - 6.25 (9)	TP44.0573x43.7172x0.596 6 2	2946.9 2	40.338	34.464	1.170	0.00	0.000	34.464	0.000
L10	6.25 - 0 (10)	TP45.12x44.0573x0.5918	3131.3 2	41.110	34.422	1.194	0.00	0.000	34.422	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	147 - 105 (1)	TP29.141x22x0.25	16.41	0.732	24.000	0.061	1.51	0.057	24.000	0.002
L2	105 - 89.75 (2)	TP31.2343x28.0034x0.312 25	22.47	0.733	24.000	0.061	0.03	0.001	24.000	0.000
L3	89.75 - 88.25 (3)	TP31.4893x31.2343x0.312 25	22.60	0.731	23.688	0.062	0.04	0.001	23.688	0.000
L4	88.25 - 86 (4)	TP31.8719x31.4893x0.508 85	22.82	0.451	22.868	0.039	0.05	0.001	22.868	0.000
L5	86 - 84.25 (5)	TP32.1695x31.8719x0.506 63	22.99	0.452	22.652	0.040	0.06	0.001	22.652	0.000
L6	84.25 - 73.75 (6)	TP33.955x32.1695x0.455	23.71	0.501	23.320	0.043	0.08	0.001	23.320	0.000

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_t ksi	Allow. F_t ksi	Ratio $\frac{f_t}{F_t}$
L7	73.75 - 42.75 (6)	TP38.601x32.3223x0.537	26.43	0.417	23.036	0.036	0.22	0.002	23.036	0.000
L8	42.75 - 8.25 (7)	TP43.7172x36.6809x0.57	29.20	0.370	23.160	0.032	0.46	0.003	23.160	0.000
L9	8.25 - 6.25 (8)	TP44.0573x43.7172x0.59	29.31	0.357	22.976	0.031	0.47	0.003	22.976	0.000
L10	6.25 - 0 (9)	TP45.12x44.0573x0.5918	29.71	0.355	22.948	0.031	0.50	0.003	22.948	0.000

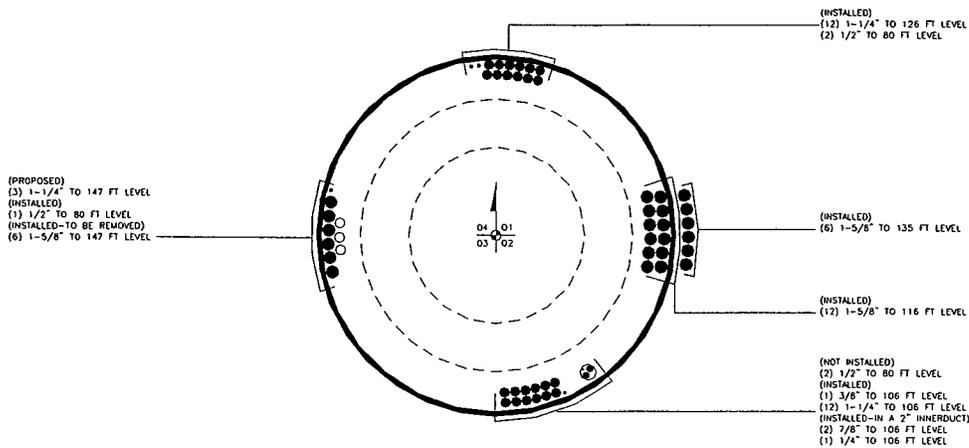
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_t	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147 - 105 (1)	0.010	0.753	0.000	0.061	0.002	0.764	1.333	H1-3+VT ✓
L2	105 - 89.75 (2)	0.012	1.082	0.000	0.061	0.000	1.095	1.333	H1-3+VT ✓
L3	89.75 - 88.25 (3)	0.012	1.127	0.000	0.062	0.000	1.140	1.333	H1-3+VT ✓
L4	88.25 - 86 (4)	0.008	0.759	0.000	0.039	0.000	0.768	1.333	H1-3+VT ✓
L5	86 - 84.25 (5)	0.008	0.791	0.000	0.040	0.000	0.800	1.333	H1-3+VT ✓
L6	84.25 - 73.75 (6)	0.010	0.927	0.000	0.043	0.000	0.937	1.333	H1-3+VT ✓
L7	73.75 - 42.75 (7)	0.011	1.077	0.000	0.036	0.000	1.088	1.333	H1-3+VT ✓
L8	42.75 - 8.25 (8)	0.014	1.195	0.000	0.032	0.000	1.209	1.333	H1-3+VT ✓
L9	8.25 - 6.25 (9)	0.013	1.170	0.000	0.031	0.000	1.184	1.333	H1-3+VT ✓
L10	6.25 - 0 (10)	0.014	1.194	0.000	0.031	0.000	1.209	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	147 - 105	Pole	TP29.141x22x0.25	1	-8.25	1075.85	57.3	Pass
L2	105 - 89.75	Pole	TP31.2343x28.0034x0.3125	2	-13.34	1471.82	82.2	Pass
L3	89.75 - 88.25	Pole	TP31.4893x31.2343x0.3125	3	-13.58	1464.66	85.5	Pass
L4	88.25 - 86	Pole	TP31.8719x31.4893x0.5085	4	-14.08	2314.39	57.6	Pass
L5	86 - 84.25	Pole	TP32.1695x31.8719x0.5063	5	-14.46	2304.61	60.0	Pass
L6	84.25 - 73.75	Pole	TP33.955x32.1695x0.455	6	-15.98	2207.19	70.3	Pass
L7	73.75 - 42.75	Pole	TP38.601x32.3223x0.537	7	-24.42	2922.04	81.6	Pass
L8	42.75 - 8.25	Pole	TP43.7172x36.6809x0.5757	8	-37.45	3650.30	90.7	Pass
L9	8.25 - 6.25	Pole	TP44.0573x43.7172x0.596	9	-38.14	3777.23	88.8	Pass
L10	6.25 - 0	Pole	TP45.12x44.0573x0.5918	10	-40.28	3837.49	90.7	Pass
Summary								
Pole (L8)							90.7	Pass
RATING =							90.7	Pass

APPENDIX B BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

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

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

Site Data

BU#:	876316	
Site Name:	SECONDINO PROPERTY	
App #:	151332 Rev# 1	
Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	52	in
Anchor Spacing:	6	in

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3131	ft-kips
Unfactored Axial, P:	40	kips
Unfactored Shear, V:	30	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	178.1 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	91.4% Pass

Plate Data

W=Side:	53	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	16	in

Base Plate Results

Base Plate Stress:	41.1 ksi	Flexural Check
Allowable PL Bending Stress:	50.0 ksi	
Base Plate Stress Ratio:	82.3% Pass	

PL Ref. Data	
Yield Line (in):	29.83
Max PL Length:	29.83

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

N/A - Unstiffened

Stiffener Results

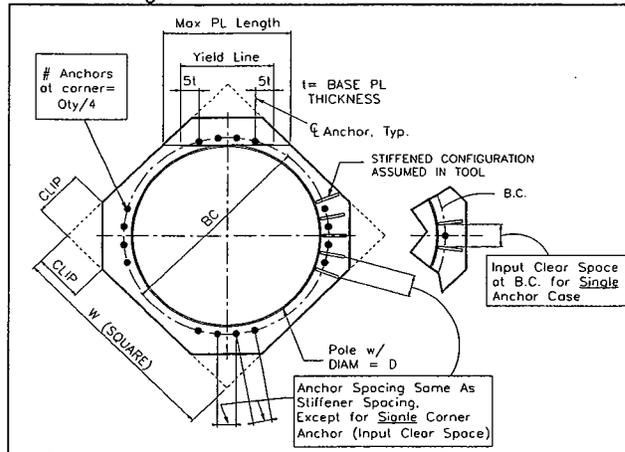
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A
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Pole Data

Diam:	45.12	in
Thick:	0.4375	in
Grade:	60	ksi
# of Sides:	18	"0" IF Round



Stress Increase Factor

ASD ASIF:	1.333
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** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



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

Unfactored Base Reactions from RISAs

	Comp. (+)	Tension (-)	
Moment, M =	3131.0		k-ft
Shear, V =	30.0		kips
Axial Load, P =	40.0		kips
OTM =	3146.0	0.0	k-ft @ Ground

Safety Factors / Load Factors / Φ Factors

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

Drilled Pier Parameters

Diameter =	7	ft
Height Above Grade =	0.5	ft
Depth Below Grade =	22.5	ft
fc' =	3	ksi
ec =	0.003	in/in
Mat Fdn. Cap Width =		ft
Mat Fdn. Cap Length =		ft
Depth Below Grade =		ft

	Safety Factor	Φ Factor
Soil Lateral Resistance =	2.00	0.75
Skin Friction =	2.00	0.75
End Bearing =	2.00	0.75
Concrete Wt. Resist Uplift =	1.25	

Load Combinations Checked per TIA/EIA-222-F

- Ult. Skin Friction/2.00 + Ult. End Bearing/2.00 + Effective Soil Wt. - Buoyant Conc. Wt. \geq Compression
- Ult. Skin Friction/2.00 + Buoyant Conc. Wt./1.25 \geq Uplift
- Ult. Skin Friction/1.50 + Buoyant Conc. Wt./1.50 \geq Uplift

Steel Parameters

Number of Bars =	32	
Rebar Size =	#11	
Rebar Fy =	60	ksi
Rebar MOE =	29000	ksi
Tie Size =	#5	
Side Clear Cover to Ties =	4	in

Soil Parameters

Water Table Depth =	7.50	ft
Depth to ignore Soil =	3.50	ft
Depth to Full Cohesion =	0	ft
Full Cohesion Starts at?	Ground	

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

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

Maximum Capacity Ratios

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

Define Soil Layers

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

Layer	Thickness ft	Unit Weight pcf	Cohesion psf	Friction Angle degrees	Soil Type	Ultimate End Bearing psf	Comp. Ult. Skin Friction psf	Tension Ult. Skin Friction psf	Depth ft
1	5	100	0	36	Sand				5
2	2.5	135	0	36	Sand				7.5
3	18.5	135	0	36	Sand	16000			26
4									
5									
6									
7									
8									
9									
10									
11									
12									

Soil Results: Overturning

Depth to COR =	15.92	ft, from Grade
Bending Moment, M =	3623.46	k-ft, from COR
Resisting Moment, Ma =	3986.51	k-ft, from COR

MOMENT RATIO = 90.9% OK

Shear, V =	30.00	kips
Resisting Shear, Va =	33.01	kips

SHEAR RATIO = 90.9% OK

Soil Results: Uplift

Uplift, T =	0.00	kips
Allowable Uplift Cap., Ta =	77.40	kips

UPLIFT RATIO = 0.0% OK

Soil Results: Compression

Compression, C =	40.00	kips
Allowable Comp. Cap., Ca =	285.27	kips

COMPRESSION RATIO = 14.0% OK

Steel Results (ACI 318-02):

Minimum Steel Area =	27.71	sq in
Actual Steel Area =	49.92	sq in

Allowable Min Axial, Pa =	-2073.60	kips, Where Ma = 0 k-ft
Allowable Max Axial, Pa =	6799.77	kips, Where Ma = 0 k-ft
Axial Load, P =	71.75	kips @ 5.00 ft Below Grade
Moment, M =	3279.46	k-ft @ 5.00 ft Below Grade
Allowable Moment, Ma =	5824.03	k-ft

MOMENT RATIO = 56.3% OK



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: CT03XC021

Secondino Property
21 Acorn Road
Branford, CT 06405

August 13, 2012

August 13, 2012

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

Re: Emissions Values for Site **CT03XC021 – Secondino Property**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 21 Acorn Road, Branford, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the cellular band is approximately $567 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band is $1000 \mu\text{W}/\text{cm}^2$. 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 21 Acorn Road, Branford, 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 RFS APXVSP18-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 **149.4 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

Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **14.519% (4.840% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **95.499%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

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



Scott Heffernan
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