Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

July 27, 2018

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

RE: **Notice of Exempt Modification for Sprint DO Macro: 822765**
Sprint Site ID: CT52XC124
10 Sylvia Street, Branford, CT 06405
Latitude: 41° 17' 38.16"/ Longitude: -72° 47' 8.54"

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas and two (2) microwave dishes at the 90-foot level of the existing 125-foot monopole tower at 10 Sylvia Street in Bradford, CT. The tower is owned by Crown Castle. The property is owned by 322 East Main Street LLC. Sprint now intends to replace three (3) antennas with three (3) new antennas and add three (3) new antennas. These antennas would be installed at the 90-foot level of the tower. Sprint also intends to install twelve (12) RRH's, four (4) coaxial lines, one (1) Site Pro 1 Low Profile Platform Mount.

This facility was approved by the Town of Branford Planning and Zoning Commission in Application#98-9.3 on November 10, 1998. This approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to First-Selectman James B. Cosgrove, Town of Branford, Town Planner, Harry Smith, Town of Branford as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

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

cc: First-Selectman James B. Cosgrove
Town of Branford
1019 Main Street
Branford, CT 06405

Town Planner Harry Smith
Town of Branford
1019 Main Street
Branford, CT 06405

322 East Main Street LLC
375 Fairfield Ave Bldg. 1
Stamford, CT 06911

CTH-025

6740

VOL. 662 PAGE 502

PLANNING AND ZONING COMMISSION
TOWN OF BRANFORD TOWN HALL DRIVE P.O. BOX 150
Branford, Connecticut 06405 488-1255

NOTICE OF DECISION

November 10, 1998

J. Brendan Sharkey, Esq. For Omnipoint Communications, Inc.
25 VanZant Street #18E
East Norwalk, Connecticut 06855

SUBJECT: Special Exception APPLICATION # 98-9.3

LOCATION: 10 Sylvia Street

OWNERS OF RECORD: TKJ SYLVIA ASSOCIATES, LLC

Dear Sir:

At a meeting of the Branford Planning & Zoning Commission held on Thursday, November 5, 1998, the Commission voted to:

X Approve your above subject application with the conditions noted below.

Very truly yours,

Shirley Rasmussen

Shirley Rasmussen
Town Planner

NOTE: This Special Exception shall become effective only after it is filed on the Land Records in the office of the Town Clerk.

1. Omnipoint must construct tower so that it can easily be extended to provide spaces for two (2) other carriers for co-location purposes.

NOTE: Special Exception shall become null and void in the event the applicant fails to obtain a building permit within one (1) year of date of approval.
(Per Section 31.7 of the Branford Zoning Regulations)

RECEIVED FOR RECORD Nov. 19, 1998
at 3h 49m P M. AND RECORDED BY
GEORGETTE A. LASKE
BRANFORD TOWN CLERK

10 SYLVIA ST

Location	10 SYLVIA ST	**Mblu**	G05/F05 004/ 00017/ /
Acct#	000614	**Owner**	322 EAST MAIN STREET LLC
Assessment	$406,000	**Appraisal**	$580,000
PID	1103	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$112,500	$467,500	$580,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$78,700	$327,300	$406,000

Owner of Record

Owner	322 EAST MAIN STREET LLC	**Sale Price**	$468,000
Co-Owner		**Certificate**	
Address	375 FAIRFIELD AVE BUILDING 1 STAMFORD, CT 06902	**Book & Page**	1132/0054
		Sale Date	05/02/2013
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
322 EAST MAIN STREET LLC	$468,000		1132/0054	25	05/02/2013
T K J SYLVIA ASSOCIATES LLC	$0		0571/0583		06/07/1994

Building Information

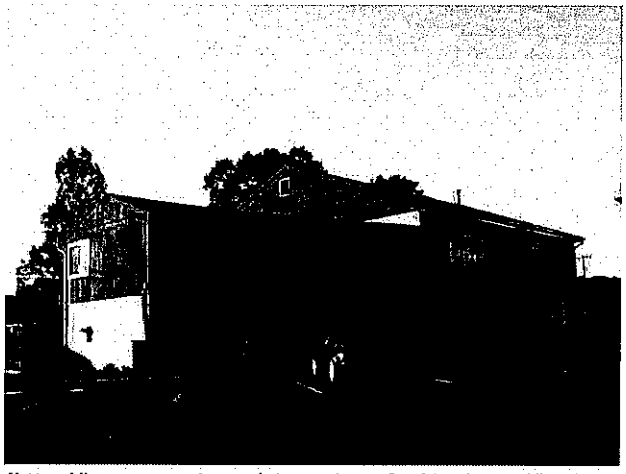
Building 1 : Section 1

Year Built:	1960
Living Area:	2,620
Replacement Cost:	$139,545
Building Percent Good:	63
Replacement Cost Less Depreciation:	$87,900

Building Attributes

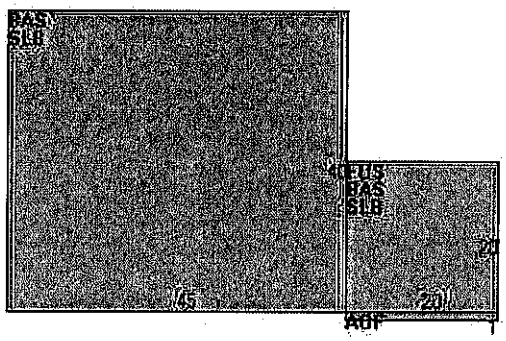
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm
Grade	C
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asphalt
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	Linoleum
Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	None
Bldg Use	COMM WHS MDL96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3160
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & MIN WL
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	0

Building Photo



(http://images.vgsi.com/photos/BranfordCTPhotos//\00\01\21/6

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,200	2,200
FUS	Upper Story, Finished	400	400
AOF	Office	20	20
SLB	Slab	2,200	0
		4,820	2,620

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
MEZ2	FINISHED	420 S.F.	$4,500	1
GEN2	GEN 15-30KW PRMT BKP	1 UNITS	$3,200	1

Land

Land Use

Land Line Valuation

Use Code	3160	**Size (Acres)**	0.95
Description	COMM WHS MDL96	**Frontage**	
Zone	BL	**Depth**	
Neighborhood	400	**Assessed Value**	$327,300
Alt Land Appr	No	**Appraised Value**	$467,500
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			18000 S.F.	$14,900	1
FN3	FENCE-6' CHAIN			200 L.F.	$1,000	1
PAV2	PAVING-CONC			72 S.F.	$200	1
SHD6	SHED COM MAS			36 S.F.	$800	1

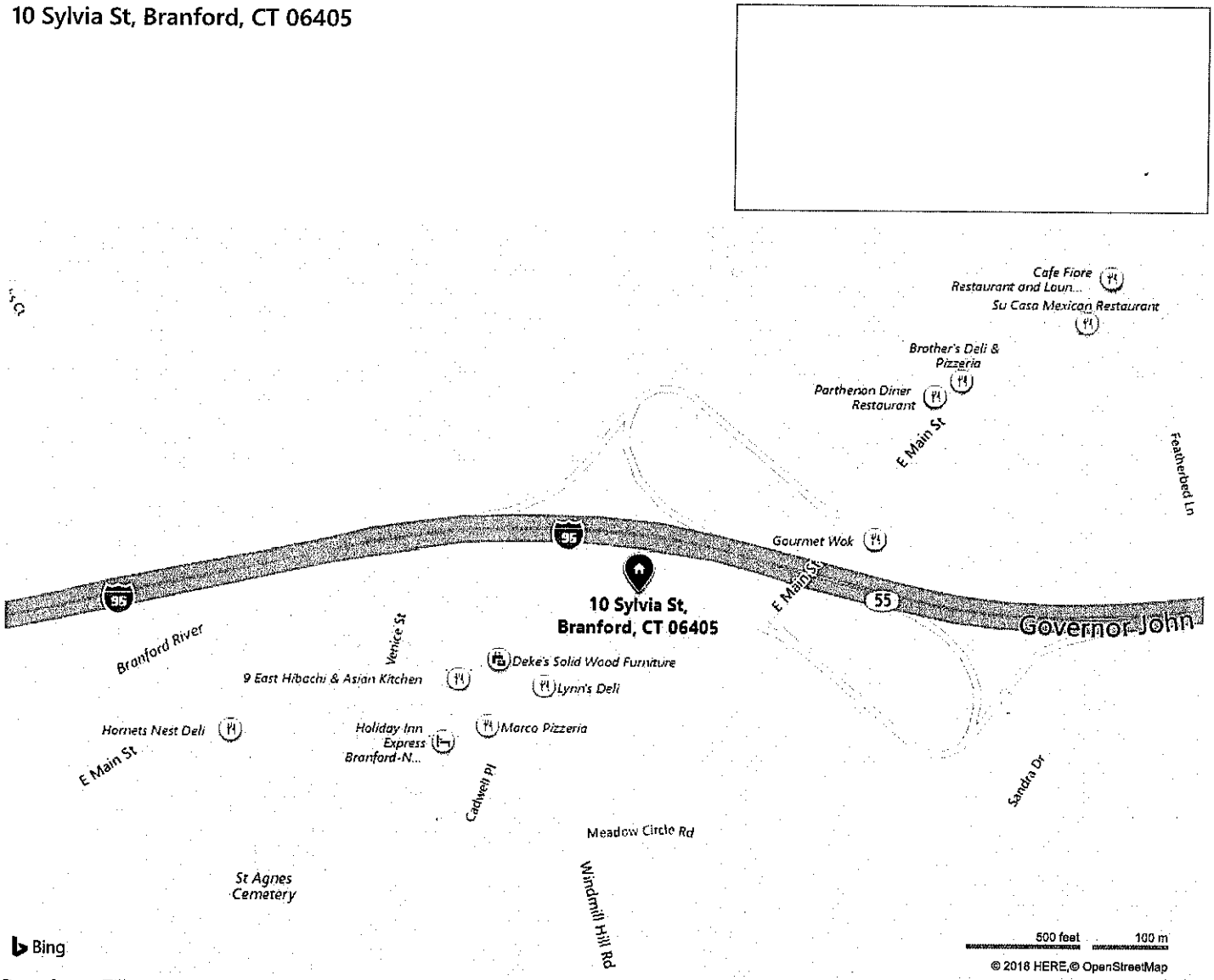
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$112,500	$467,500	$580,000
2016	$112,500	$467,500	$580,000
2015	$109,300	$467,500	$576,800

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$78,700	$327,300	$406,000
2016	$78,700	$327,300	$406,000
2015	$76,500	$327,300	$403,800

bing maps

10 Sylvia St, Branford, CT 06405



Data from: Zillow · GreatSchools

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	BRANFORD/I-95/X55/DTN1
SITE CASCADE:	CT52XC124
SITE NUMBER:	822765
SITE ADDRESS:	10 SYLVIA STREET BRANFORD, CT 06405
SITE TYPE:	MONOPOLE
MARKET:	N. ENGLAND

SITE INFORMATION

TOWER OWNER:
CROWN ATLANTIC COMPANY LLC
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
(704) 405-6555

LATITUDE (NAD83):
41° 17' 38.16" N
41.293933°

LONGITUDE (NAD83):
-72° 47' 8.54" W
-72.785705°

COUNTY:
NEW HAVEN

ZONING JURISDICTION:
CITY OF BRANFORD

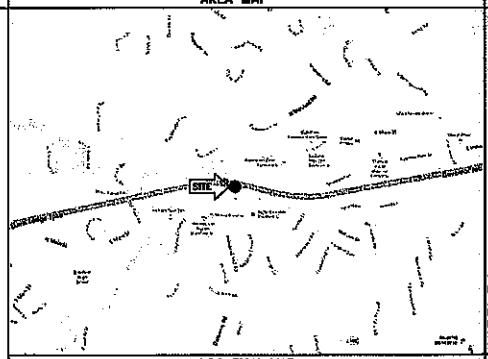
ZONING DISTRICT:
BL

POWER COMPANY:
CONNECTICUT LIGHT & POWER
(860) 947-2000

SPRINT CONSTRUCTION:
TBD

CROWN PM:
SCOTT WIATROSKI
(201) 236-9228

AREA MAP



LOCATION MAP

PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE EXISTING CLEARWIRE EQUIPMENT CABINET AND PAD
- INSTALL NEW ELTEK CABINET ON NEW PAD
- REMOVE EXISTING CLUSTER MOUNTS AND REPLACE W/ NEW PLATFORM
- REMOVE (3) EXISTING LLPX310R PANEL ANTENNAS FROM TOWER
- REMOVE (3) EXISTING RRH-C2Cs (WIMAX)
- INSTALL (3) NNVV-65B-R4 PANEL ANTENNAS ON TOWER
- INSTALL (3) APXVTM14-ALU-I20 PANEL ANTENNAS ON TOWER
- INSTALL (3) 1900MHz 4x45W-65MHz RRHs ON TOWER
- INSTALL (6) RRH 2x50-800MHz RRHs ON TOWER
- INSTALL (3) TD-RRH8x20-25 RRHs ON TOWER
- INSTALL (4) HYBRID CABLES
- REMOVE (10) COAX

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH STRUCTURE AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2015 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. LOCAL BUILDING CODE
7. CITY/COUNTY ORDINANCES

811 Know what's below. Call before you dig. www.call811.com

DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION & CABLE PLAN	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	CIVIL DETAILS	0
A-6	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING DETAILS	0
E-2	ELECTRICAL & GROUNDING DETAILS	0

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1933 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER: 526-16

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
LICENSED PROFESSIONAL ENGINEER
JUL 19 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	07/18/18	SL	0
CARRIER COMMENTS	06/27/18	SL	B
ISSUED FOR REVIEW	05/29/18	SL	A

SITE NAME:
BRANFORD/I-95/
X55/DTN1

SITE CASCADE:
CT52XC124

SITE ADDRESS:
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:
TITLE SHEET
& PROJECT DATA

SHEET NUMBER:
T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
2. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT 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.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 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.

1.9 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 RED 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.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 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.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED.

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 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.

3.2 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.

3.3 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.

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

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER 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.

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

TOWER OWNER NOTIFICATION
ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1533 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 238-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
LICENSED
PROFESSIONAL ENGINEER
No. 24080
JUL 7 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	07/06/18	SL	0
CARRIER COMMENTS	06/27/18	SL	B
ISSUED FOR REVIEW	05/30/18	SL	A

SITE NAME:

BRANDFORD/I-95/
X55/DTN1

SITE CASCADE:

CT52XC124

SITE ADDRESS:

10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-BRUSHING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. 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.

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

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. 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.
2. 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.

D. 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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
2. PROJECT PROGRESS REPORTS.
3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

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

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. COAX SWEEPS AND FIBER TESTS PER CURRENT VERSION OF SPRINT'S TS-0200 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;

1. AZIMUTH, DOWNTILT, AGL – UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. 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.
2. 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.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS – ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

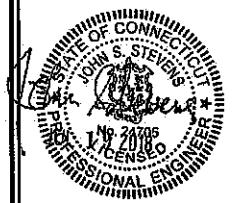
PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1023 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 328-183

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:



DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	07/18/16	SL	D
CARRIER COMMENTS	06/27/16	SL	B
ISSUED FOR REVIEW	05/30/16	SL	A

SITE NAME:

BRANDFORD/I-95/
X55/DTN1

SITE CASCADE:

CT52XC124

SITE ADDRESS:

10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
11. ALL AVAILABLE JURISDICTIONAL INFORMATION
12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
2. STRUCTURAL BACKFILL COMPACTION REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING—TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. 1SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION—FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING—TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING –TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING – WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

PLANS PREPARED FOR:

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Overland Park, Kansas 66251

PLANS PREPARED BY:

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www.infinigy.com
JOB NUMBER: 026-103

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
LICENSED
10-18-2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	07/18/18	SL	B
CARRIER COMMENTS	06/27/18	SL	B
ISSUED FOR REVIEW	05/08/18	SL	A

SITE NAME:

BRANDFORD/I-95/ X55/DTN1

SITE CASCADE:

CT52XC124

SITE ADDRESS:

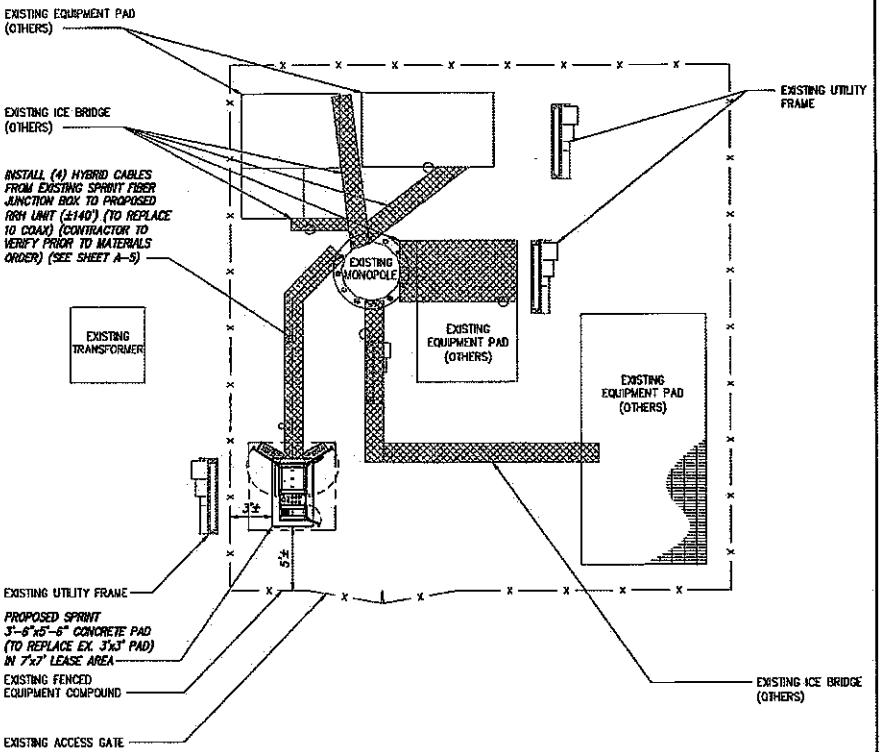
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

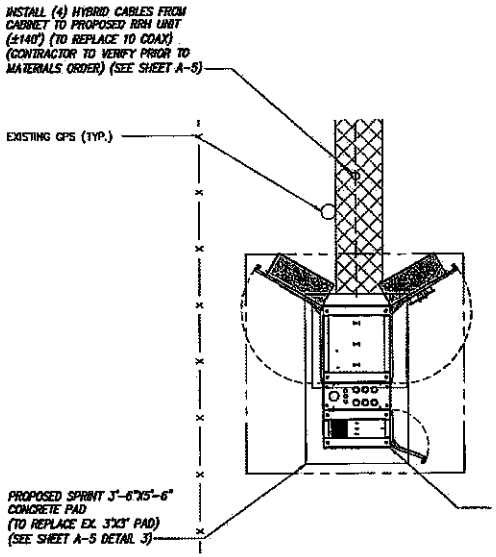
SP-3



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

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

OVERALL SITE PLAN | SCALE: AS NOTED | 1



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

NOTE:
NO LIQUID TIGHT FLEXIBLE METALLIC CONDUIT IS TO EXCEED 6 FEET PER SP-2 SECTION 26 200 ITEM E.

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

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Overland Park, Kansas 66251

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www.infinigy.com
JOB NUMBER: 526-103

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
4/9/2019

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DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	02/18/19	SL	D
CARRIER COMMENTS	06/27/18	SL	B
ISSUED FOR REVIEW	05/30/18	SL	A

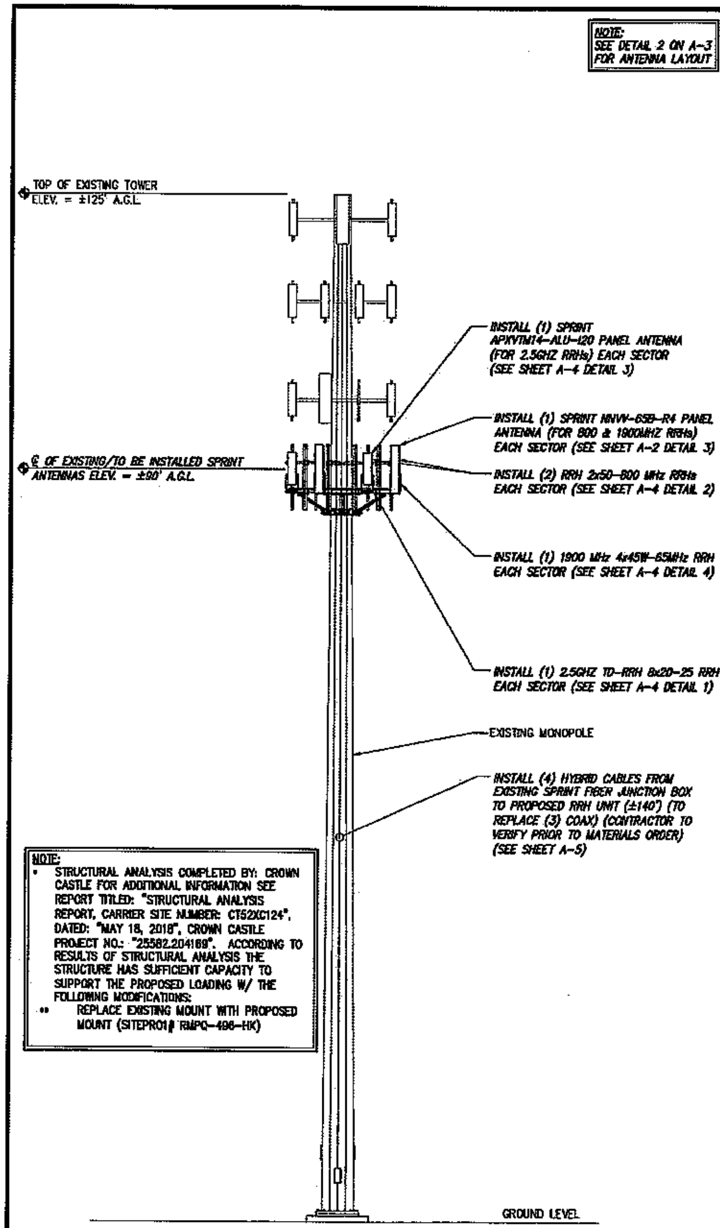
SITE NAME:
BRANDFORD/I-95/ X55/DTN1

SITE CASCADE:
CT52XC124

SITE ADDRESS:
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1



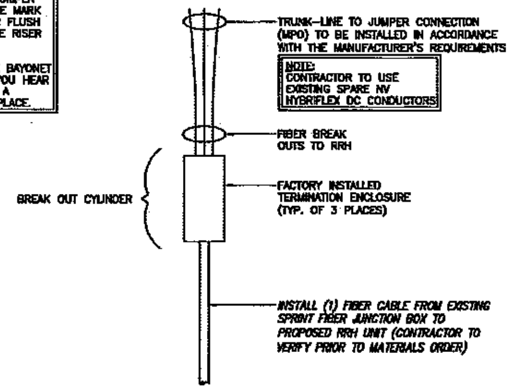
NOTE:

- STRUCTURAL ANALYSIS COMPLETED BY: CROWN CASTLE FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, CARRIER SITE NUMBER: CT52XC124", DATED: "MAY 18, 2018", CROWN CASTLE PROJECT NO.: "25582.204189". ACCORDING TO RESULTS OF STRUCTURAL ANALYSIS THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING W/ THE FOLLOWING MODIFICATIONS:
- ** REPLACE EXISTING MOUNT WITH PROPOSED MOUNT (SITEPRO1# RMPQ-496-HK)

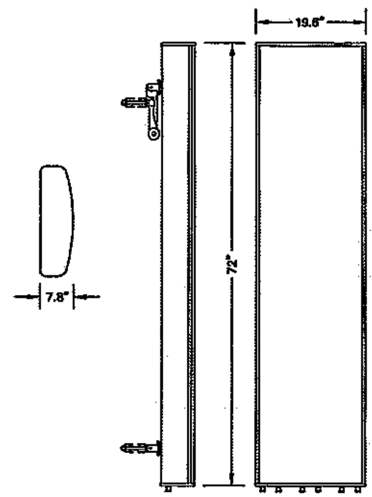
TOWER ELEVATION | NO SCALE | 1

NOTE:
CONTRACTOR TO LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTORS AND SLIDE THE RISER CONNECTOR TO THE JUMPER CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAIN THE RED SEAL ON THE RISER CONNECTOR.

CONTRACTOR TO ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL YOU HEAR A CLICK SOUND TO ENSURE A PROPER CONNECTION IS IN PLACE.



HYBRID BREAKOUT DETAIL | NO SCALE | 2



ANTENNA COMMSCOPE NNVV-65B-R4

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mlm):	72"x19.6"x7.8"
WEIGHT:	77.4 lbs
CONNECTORS:	(8) 4.3-10 DIN FEMALE

SPRINT PANEL ANTENNA | NO SCALE | 3

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JOB NUMBER 525-103

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT JOHN S. STEVENS No. 24705 LICENSED PROFESSIONAL ENGINEER
JUL 19 2018

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CARRIER COMMENTS	06/27/18	SL	B
ISSUED FOR REVIEW	05/30/18	SL	A

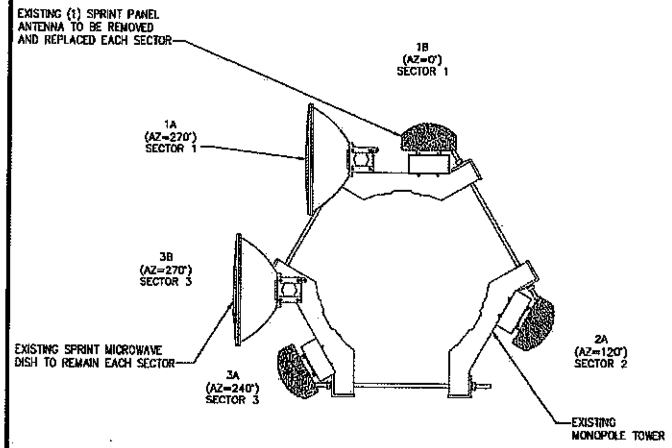
SITE NAME:
BRANDFORD/I-95/ X55/DTN1

SITE CASCADE:
CT52XC124

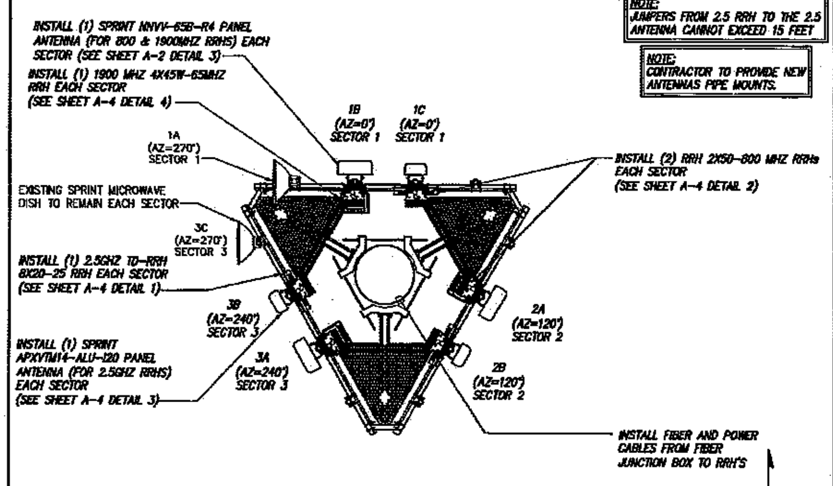
SITE ADDRESS:
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:
TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:
A-2



EXISTING ANTENNA LAYOUT | NO SCALE | 1



NOTE: JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET

NOTE: CONTRACTOR TO PROVIDE NEW ANTENNAS PIPE MOUNTS.

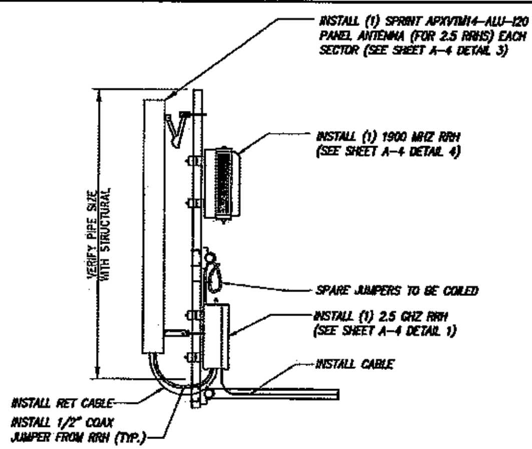
THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

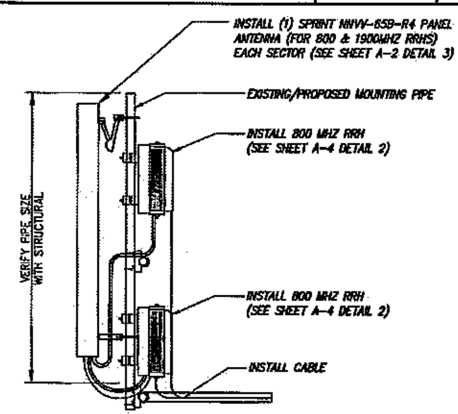
FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

NOTES:

1. ALL ANTENNA HEIGHTS ARE TO CENTER OF HORIZONTAL ANTENNA.
2. VERIFY AZIMUTH AND CL HEIGHT WITH AS-BUILT DRAWINGS IF AVAILABLE.
3. NO OBJECT IS TO BE WITHIN 45 DEGREES OF BORE-SIGHT OF 2.5G OR ANY OTHER TOWER ANTENNA. IF NECESSARY, 2.5G ANTENNA CAN BE PLACED AT FAR EDGE OF HORIZONTAL ANTENNA MOUNT MEMBER FOR CLEAR LINE OF SITE OR EVEN ON ANOTHER SECTOR FOR CLEAR LINE OF SITE.
4. 2.5G ANTENNA MUST BE AT LEAST 6" FROM 1900MHZ ANTENNA, 30" FROM 800MHZ ANTENNA AND 30MHZ FROM DUAL BAND 1900MHZ AND 800MHZ ANTENNA.
5. IF ANTENNAS ARE MOUNTED ON A FACE SURFACE SUCH AS A BUILDING WALL, PARAPET WALL, OR WATER TOWER WALL, THIS RFDS MUST BE ACCOMPANIED BY A SKETCH PROVIDED BY ITS ORIGINATING RF ENGINEER CALLING OUT THE EXACT LOCATION OF WHERE ANTENNA IS TO BE LOCATED. CONTACT SPRINT RF ENGINEER IF THE SKETCH IS MISSING.
6. GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT BELOW, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING CONTACT INFORMATION ABOVE FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5G ANTENNA AT SAME CL HEIGHT AS 1.9G ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900 MHZ AND 800 MHZ ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
7. AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5G. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
8. GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5G ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
9. GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREES. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/

NOTES | NO SCALE | 3





NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
3. DO NO EXCEED BEND RADIUS.

NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: SPARE DC CABLES ARE COILED UP ON NV RRHS AT SPRINT ARRAY. THESE ARE TO BE USED TO POWER UP THE 2.5 RRHS AND TIED INTO EXISTING DC BREAKERS INSIDE THE FIBER JUNCTION BOX LOCATED AT EQUIPMENT.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

TYPICAL ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 4

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR CONSTRUCTION	07/18/16	SL	0
CARRIER COMMENTS	06/27/16	SL	B
ISSUED FOR REVIEW	05/30/16	SL	A

SITE NAME: BRANDFORD/I-95/ X55/DTN1

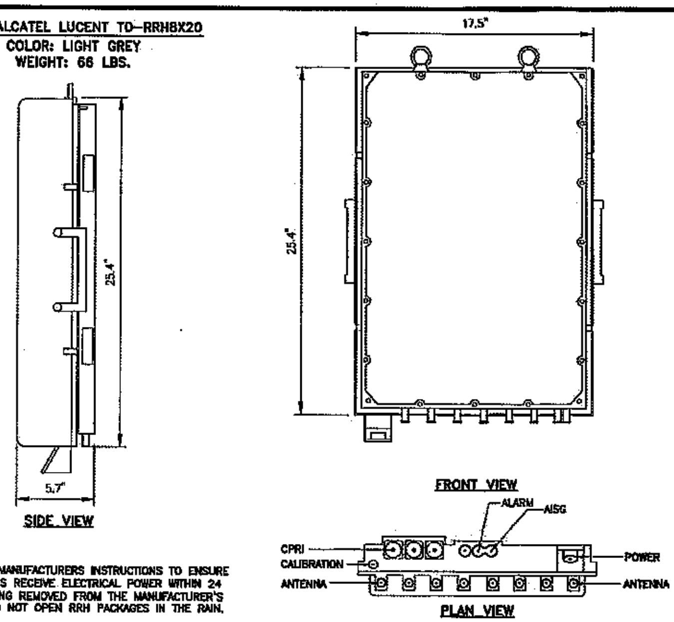
SITE CASCADE: CT52XC124

SITE ADDRESS: 10 SYLVIA ST BRANFORD, CT 06705

SHEET DESCRIPTION: ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER: A-3

RRH: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GREY
WEIGHT: 66 LBS.



NOTES

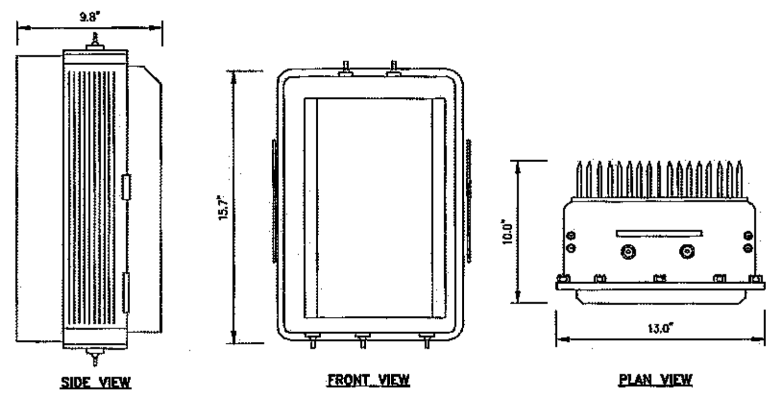
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

2.5 RRH'S	NO SCALE	1

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

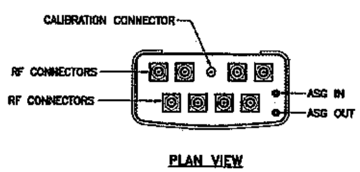
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

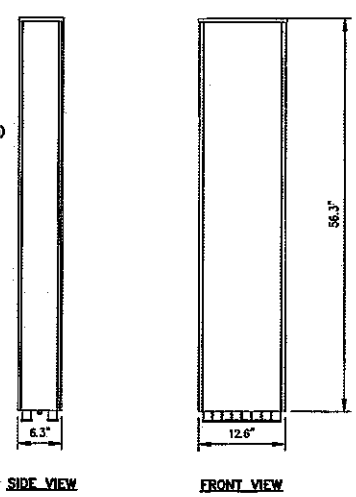


800 MHz RRH	NO SCALE	2

ANTENNA RFS APXVTM14-ALU-120

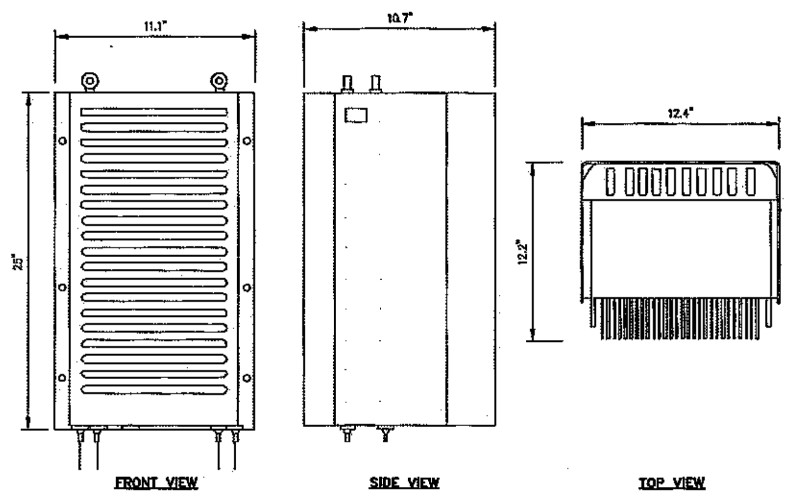
RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD,In(mm):	56.3"x12.6"x6.3" (1430x320x160mm)
WEIGHT:	56.2 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR





TRIBAND ANTENNA	NO SCALE	3

RRH: ALCATEL LUCENT 1900 MHz
COLOR: LIGHT GREY
WEIGHT: 60 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)



1900 MHz RRH	NO SCALE	4

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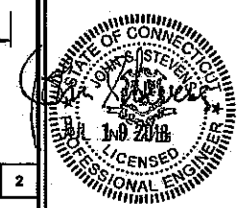

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ISSUED FOR CONSTRUCTION	07/10/18	SL	0
CARRIER COMMENTS	06/22/18	SL	B
ISSUED FOR REVIEW	05/30/18	SL	A

SITE NAME:

BRANDFORD/I-95/
X55/DTN1

SITE CASCADE:

CT52XC124

SITE ADDRESS:

10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-4

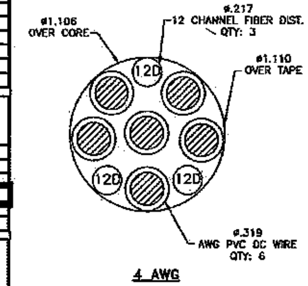
RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	Hybrid cable MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	Hybrid cable MN: HB114-13U3M12-225F 3x 6 AWG powerpair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	Hybrid cable MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

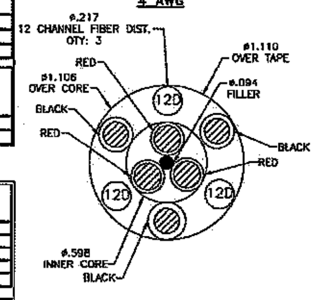
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	Hybrid Jumper cable MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	Hybrid Jumper cable MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

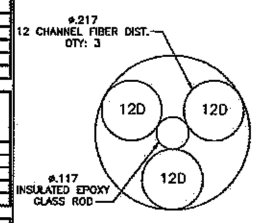
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

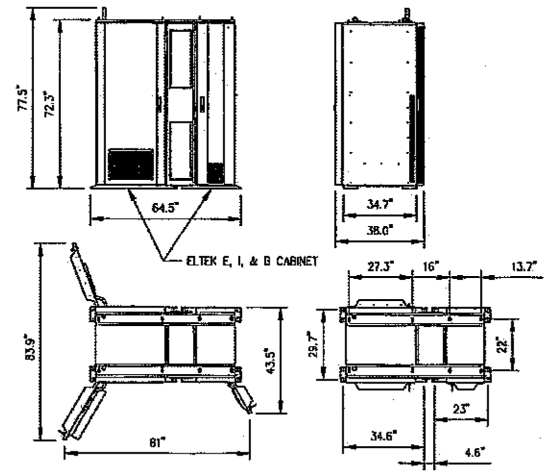


8 & 6 AWG

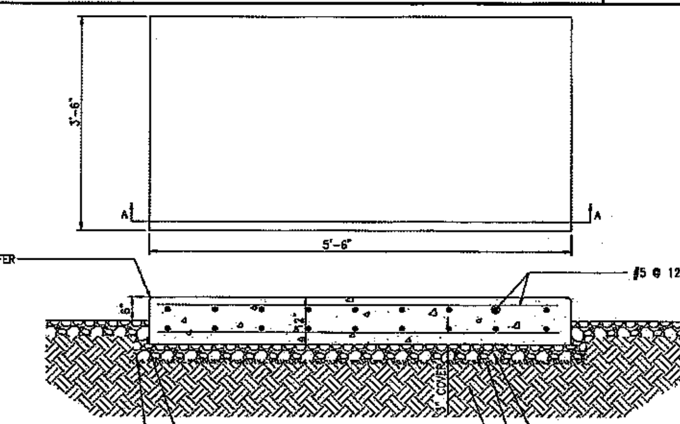


FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



ELTEK CABINET DETAIL | NO SCALE | 2



THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED TO AT LEAST 95% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C

EXCAVATE AS REQUIRED TO REMOVE VEGETATION & TOP SOIL. EXPOSE UNDISTURBED NATURAL SUB GRADE. PLACE A MINIMUM OF 4" GRAVEL. GRAVEL SHALL PASS A ONE INCH SIEVE.

4" THICK LAYER OF ¾" DIA. CRUSHED STONE BASE COMPACTED TO 95% MOD. PROCTOR DENSITY ON UNDISTURBED SOIL. FINAL GRADE SLOPE AWAY FROM CONCRETE

GEOTEXTILE FABRIC (MIRAFI 500X)

EXISTING UNDISTURBED VIRGIN SOIL OR COMPACTED GRANULAR FILL

CONCRETE PAD DETAIL | NO SCALE | 3

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
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JOB NUMBER 526-103

MLA PARTNER:
CROWN CASTLE

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN B. STEVENS
No. 1 5 2 0 5
LICENSED
PROFESSIONAL ENGINEER

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ISSUED FOR REVIEW	05/30/18	SL	A

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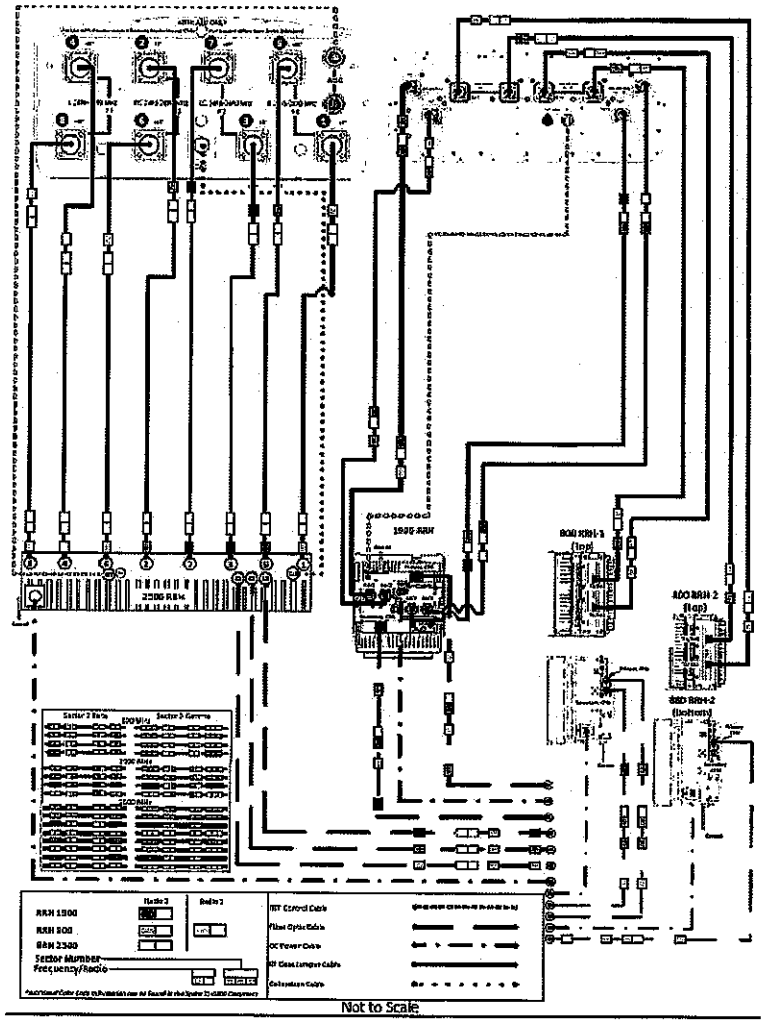
SITE CASCADE:
CT52XC124

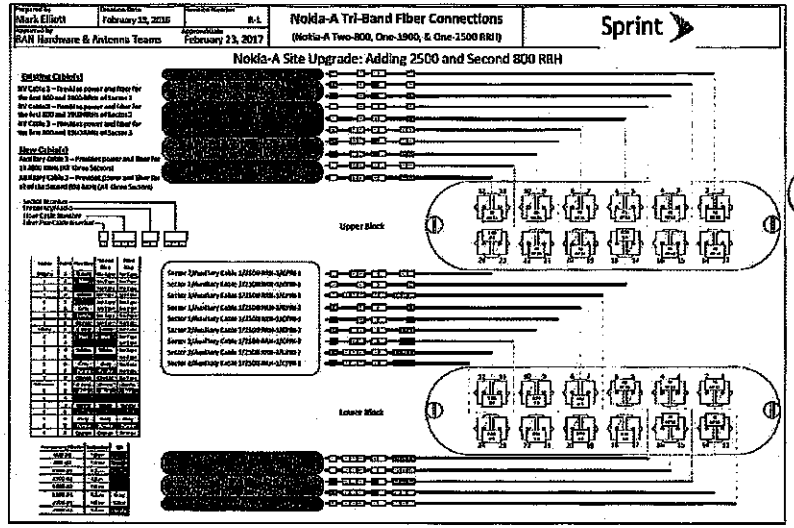
SITE ADDRESS:
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-5

ALU 211 APXVTM14-ALU-I20 & NNVV-65B-R4 wo Filters





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DATE: 10-2-2018

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SITE CASCADE:

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SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-6

FINAL EQUIPMENT CONFIGURATION

SECTOR	ANTENNA MANUFACTURER	ANTENNA MODEL	RAD CENTER	AZIMUTH	RRH/ODU MAKE AND MODEL
1	RFS	APXVTM14-ALU-I20	90'	0°	(1) ALU 2.5GHZ RRH8X20-25
	COMMSCOPE	NNVV-65B-R4	90'	0°	(1) ALU 1900MHZ 4X45W-65MHZ (2) ALU 800MHZ 2x50-800
	DRAGONWAVE	A-ANT-18G-2-C	90°	270°	(1) AIRPAIR ODU
2	RFS	APXVTM14-ALU-I20	90'	120°	(1) ALU 2.5GHZ RRH8X20-25
	COMMSCOPE	NNVV-65B-R4	90'	120°	(1) ALU 1900MHZ 4X45W-65MHZ (2) ALU 800MHZ 2x50-800
3	RFS	APXVTM14-ALU-I20	90'	240°	(1) ALU 2.5GHZ RRH8X20-25
	COMMSCOPE	NNVV-65B-R4	90'	240°	(1) ALU 1900MHZ 4X45W-65MHZ (2) ALU 800MHZ 2x50-800
	DRAGONWAVE	A-ANT-18G-2-C	90°	270°	(1) AIRPAIR ODU

FEEDER CABLES

MANUFACTURER	MODEL	LENGTH	QTY
RFS	HB114-13U5M12-17SF	140'±	(3)
RFS	HB114-21U5M12-17SF	140'±	(1)

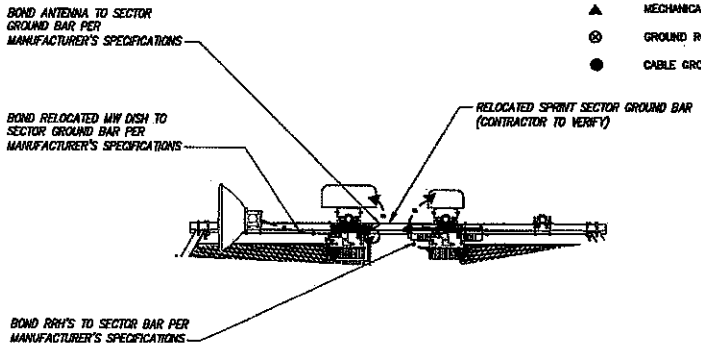
LEGEND
EXISTING
PROPOSED

NOTES:
1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT DATA AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS PRIOR TO CONSTRUCTION.

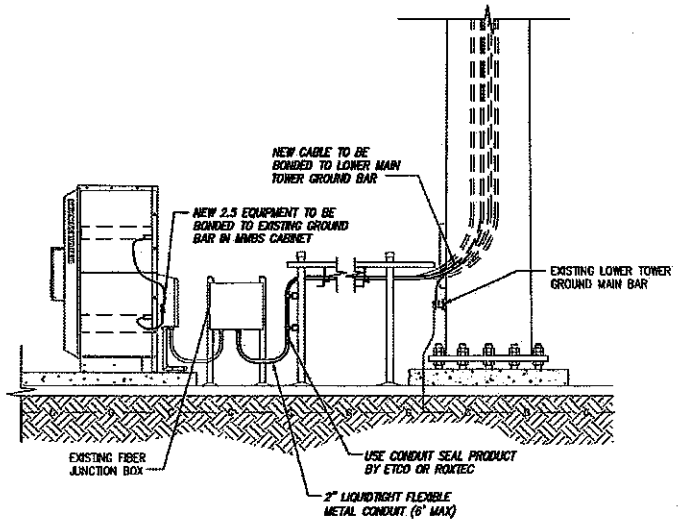
ANTENNA/CABLE SCHEDULE | NO SCALE | 1

LEGEND:

- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- MECHANICAL CONNECTION
- GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) | NO SCALE | 3

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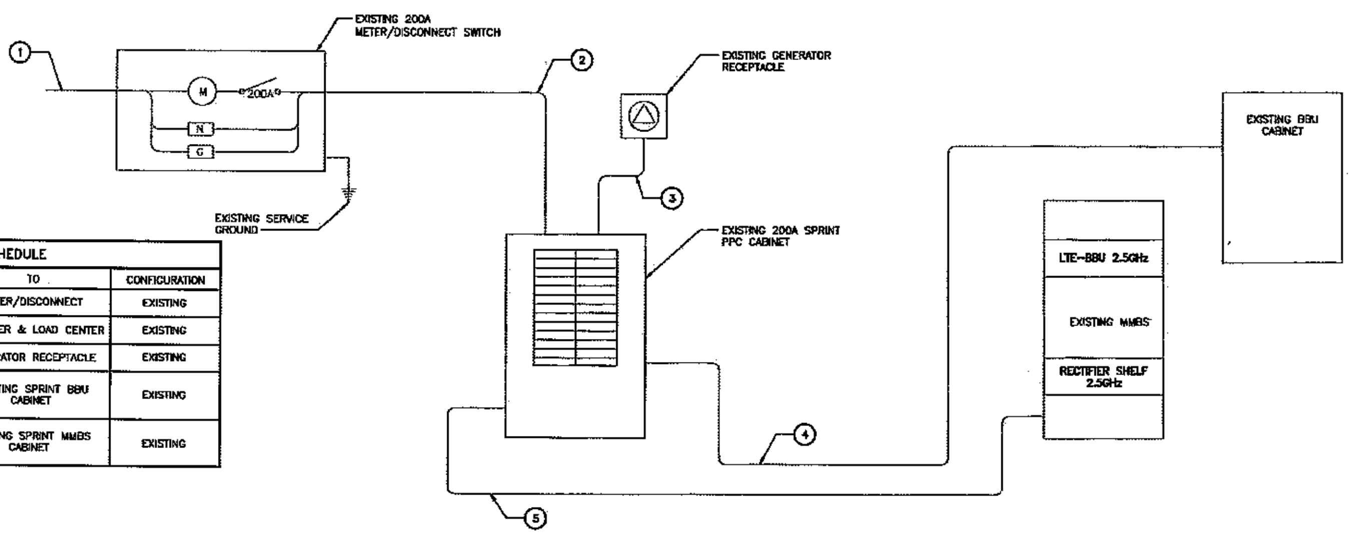
SITE CASCADE:
CT52XC124

SITE ADDRESS:
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING DETAILS

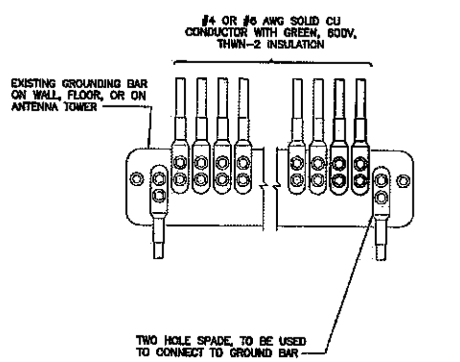
SHEET NUMBER:
E-1

NOTES
CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



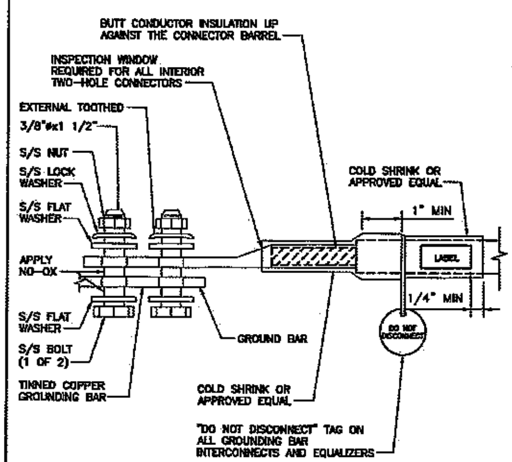
CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

ELECTRICAL ONE-LINE DIAGRAM — NO SCALE — 1

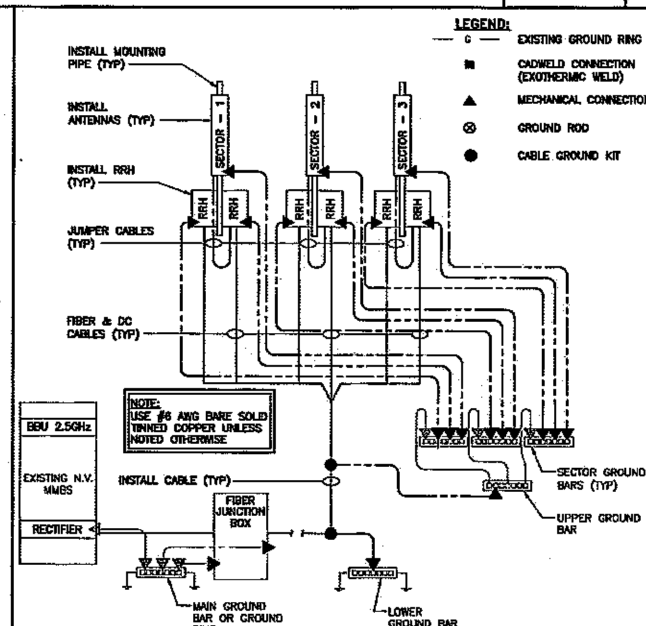


NOTES
1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR — NO SCALE — 2



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

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BRANDFORD/I-95/ X55/DTN1

SITE CASCADE:
CT52XC124

SITE ADDRESS:
10 SYLVIA ST
BRANFORD, CT 06705

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:
E-2

Date: **May 18, 2018**

Denice Nicholson
Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:	***Clearwire Corp* Co-Locate**	
	Carrier Site Number:	CT52XC124
	Carrier Site Name:	CT52XC124
Crown Castle Designation:	**Crown Castle BU Number:**	822765
	Crown Castle Site Name:	Branford/ I-95/ X55/ Dtn1
	Crown Castle JDE Job Number:	499047
	Crown Castle Work Order Number:	1572071
	Crown Castle Order Number:	436910 Rev. 1
Engineering Firm Designation:	**TEP Project Number:**	25582.204169
Site Data:	**10 Sylvia St., Branford, New Haven County, CT 06405** **Latitude *41° 17' 38.16"*, Longitude *-72° 47' 08.54"*** **125 Foot - Monopole Tower**	

Dear Denice Nicholson,

Tower Engineering Professionals 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 1189742, in accordance with order 436910, 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.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code (2012 International Building Code) based upon an ultimate 3-second gust wind speed of 128 mph converted to a nominal 3-second gust wind speed of 99 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Gautam Sopal, E.I. / MGY

Respectfully submitted by:

William H. Martin, P.E.

5/18/18

STATE OF CONNECTICUT
WILLIAM H. MARTIN
0029484
LICENSED
PROFESSIONAL ENGINEER

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TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 125-ft monopole tower designed by Pirod, Inc. in January of 1999. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F for the appurtenances listed in Table 3. TEP visited the site multiple times to perform various inspections. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a nominal 3-second gust wind speed of 99 mph with no ice, 50 mph with 0.75 inch ice thickness, and 60 mph under service loads with the following design criteria:

Type of Analysis: **Rigorous Structural Analysis**
Classification of Structure: **Class II**
Exposure Category: **Exposure B**
Topographic Category: **Category 1**
Earthquake Category: **Not Considered**
Earthquake effects may be ignored per this standard for site locations where Ss does not exceed 1.0. (New Haven County Max Ss = 0.32).

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
90.0	90.0	3	Commscope	NNVV-65B-R4 w/ Mount Pipe	4	1-1/4	1
		3	RFS Celwave	APXVTM14-ALU-I20 w/ Mount Pipe			
		6	Alcatel Lucent	RRH2X50-800			
		3	Alcatel Lucent	PCS 1900MHZ 4X45W-65MHZ			
		3	Alcatel Lucent	TD-RRH8X20-25			
		1	Site Pro 1	HRK12 Handrail Kit			
		1	Site Pro 1	RMQP Low Profile Platform Mount			

Notes:
1) See "Appendix B - Base Level Drawing" for assumed feed line configuration.

Table 2 - Existing 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
122.0	122.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	Commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	Ericsson	AIR 21 B4A B2P w/ Mount Pipe			
		3	Ericsson	RRUS 11 B12			
		3	Ericsson	KRY 112 144/1			
		1	Tower Mounts	Platform Mount [LP 405-1]			
112.0	113.0	6	Andrew	HBXX-6517DS-A2M w/ Mount Pipe	2	1-5/8	1
		6	Andrew	LNX-6514DS-A1M w/ Mount Pipe			
		3	Alcatel Lucent	B4 RRH2X60-4R			
		3	Alcatel Lucent	B13 RRH 4X30			
		2	Raycap	RXXDC-3315-PF-48			
	112.0	1	Tower Mounts	Platform Mount [LP 303-1]			
100.0	100.0	6	Powerwave Technologies	7770.00 w/ Mount Pipe	3 12	3/8 1-1/4	1
		1	CCI Antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		2	Andrew	SBNHH-1D65A w/ Mount Pipe			
		1	Raycap	DC6-48-60-18-8F			
		12	Powerwave Technologies	LGP21401			
		3	Ericsson	RRUS 12			
		3	Ericsson	RRUS-11			
		3	Ericsson	RRUS A2			
		1	Tower Mounts	T-Arm Mount [TA 602-3]			
90.0	90.0	3	Argus Technologies	LLPX310R w/ Mount Pipe	1 3 3 3	1/2 1/4 5/16 5/8	2
		3	Samsung Telecommunications	RRH-C2C			
		1	Tower Mounts	Side Arm Mount [SO 103-3]			
		2	Dragonwave	A-ANT-18G-2-C	2	1/2	1
		3	Dragonwave	AIRPAIR ODU			

Notes:
1) Existing equipment
2) Existing equipment to be removed; not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125.0	125.0	12	Allgon	ALP9212	12	1-5/8
		3	S4000	Smart Antennas	3	1

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	French & Parrello Associates, P.A.	3552247	CCISites
Tower Foundation Drawings	Pirod, Inc.	3910040	CCISites
Tower Manufacturer Drawings	Pirod, Inc.	3552248	CCISites
Tower Reinforcement Drawings	B&T Group	5952282	CCISites
Post Modification Inspection	Tower Engineering Professionals	6215120	CCISites

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

1) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation 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 "Appendix B – Base Level Drawing".
4) All tower components are in sufficient condition to carry their full design capacity.
5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance. See Table 7.
6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not analyze antennas supporting mounts as part of this structural analysis report.
7) The existing base plate grout was not considered in this analysis.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)[1]

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
125 - 120	Pole	TP24x24x0.375	Pole	1.7%	Pass
120 - 115	Pole	TP24x24x0.375	Pole	5.3%	Pass
115 - 110	Pole	TP24x24x0.375	Pole	11.4%	Pass
110 - 105	Pole	TP24x24x0.375	Pole	19.1%	Pass
105 - 100	Pole	TP24x24x0.375	Pole	27.0%	Pass
100 - 95	Pole	TP30x30x0.375	Pole	25.2%	Pass
95 - 90	Pole	TP30x30x0.375	Pole	32.5%	Pass
90 - 85	Pole	TP30x30x0.375	Pole	42.1%	Pass
85 - 84.75	Pole + Reinf.	TP30x30x0.5438	Reinf. 12 Tension Rupture	31.6%	Pass
84.75 - 80.5	Pole + Reinf.	TP30x30x0.5438	Reinf. 12 Tension Rupture	37.6%	Pass
80.5 - 80.25	Pole + Reinf.	TP30x30x0.6125	Reinf. 11 Tension Rupture	40.2%	Pass
80.25 - 80	Pole + Reinf.	TP30x30x0.6125	Reinf. 11 Tension Rupture	40.6%	Pass
80 - 79.75	Pole + Reinf.	TP36x36x0.5125	Reinf. 10 Tension Rupture	28.3%	Pass
79.75 - 79	Pole + Reinf.	TP36x36x0.5125	Reinf. 10 Tension Rupture	29.1%	Pass
79 - 78.75	Pole	TP36x36x0.375	Pole	38.6%	Pass
78.75 - 73.75	Pole	TP36x36x0.375	Pole	45.5%	Pass
73.75 - 73.5	Pole	TP36x36x0.375	Pole	45.9%	Pass
73.5 - 73.25	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	36.4%	Pass
73.25 - 68.25	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	42.0%	Pass
68.25 - 63.25	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	47.8%	Pass
63.25 - 60.5	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	50.9%	Pass
60.5 - 60.25	Pole + Reinf.	TP36x36x0.625	Reinf. 8 Tension Rupture	43.4%	Pass
60.25 - 60	Pole + Reinf.	TP36x36x0.625	Reinf. 8 Tension Rupture	43.7%	Pass
60 - 59.75	Pole + Reinf.	TP42x42x0.525	Pole	35.2%	Pass
59.75 - 54.75	Pole + Reinf.	TP42x42x0.525	Pole	39.1%	Pass
54.75 - 49.75	Pole + Reinf.	TP42x42x0.525	Pole	43.2%	Pass
49.75 - 44.75	Pole + Reinf.	TP42x42x0.525	Pole	47.3%	Pass
44.75 - 40.5	Pole + Reinf.	TP42x42x0.525	Pole	50.9%	Pass
40.5 - 40.25	Pole + Reinf.	TP42x42x0.65	Reinf. 6 Tension Rupture	43.2%	Pass
40.25 - 40	Pole + Reinf.	TP42x42x0.65	Reinf. 6 Tension Rupture	43.4%	Pass
40 - 39.75	Pole + Reinf.	TP48x48x0.5563	Pole	38.0%	Pass
39.75 - 34.75	Pole + Reinf.	TP48x48x0.5563	Pole	41.1%	Pass
34.75 - 29.75	Pole + Reinf.	TP48x48x0.5563	Pole	44.3%	Pass
29.75 - 24.75	Pole + Reinf.	TP48x48x0.5563	Pole	47.5%	Pass
24.75 - 20.5	Pole + Reinf.	TP48x48x0.5563	Pole	50.3%	Pass
20.5 - 20.25	Pole + Reinf.	TP48x48x0.675	Reinf. 4 Compression	45.3%	Pass
20.25 - 20	Pole + Reinf.	TP48x48x0.675	Reinf. 4 Compression	45.5%	Pass
20 - 19.75	Pole + Reinf.	TP54x54x0.5875	Pole	38.8%	Pass
19.75 - 14.75	Pole + Reinf.	TP54x54x0.5875	Pole	41.3%	Pass
14.75 - 9.75	Pole + Reinf.	TP54x54x0.5875	Pole	43.9%	Pass
9.75 - 4.75	Pole + Reinf.	TP54x54x0.5875	Pole	46.5%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
4.75 - 4.25	Pole + Reinf.	TP54x54x0.5875	Pole	46.8%	Pass
4.25 - 4	Pole + Reinf.	TP54x54x0.5125	Pole	53.2%	Pass
4 - 0	Pole + Reinf.	TP54x54x0.5125	Pole	55.6%	Pass
				Summary	
			Pole	55.6%	Pass
			Reinforcement	50.9%	Pass
			Overall	**55.6%**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Flange Connection	100.0	27.0	Pass
1	Flange Connection	80.0	35.7	Pass
1	Flange Connection	60.0	45.3	Pass
1	Flange Connection	40.0	48.3	Pass
1	Flange Connection	20.0	48.8	Pass
1	Original Anchor Rods	-	42.6	Pass
1	Reinforced Anchor Rods	-	46.0	Pass
1	Base Plate	-	51.6	Pass
1	Base Foundation Soil Interaction	-	51.0	Pass
1	Base Foundation Structural	-	67.0	Pass

Structure Rating (max from all components) =	67.0%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft. Flange plates have the same capacity as their respective splice bolts or shaft.

Table 7 - Dish Twist/Sway Results for 60 mph Service Wind Speed

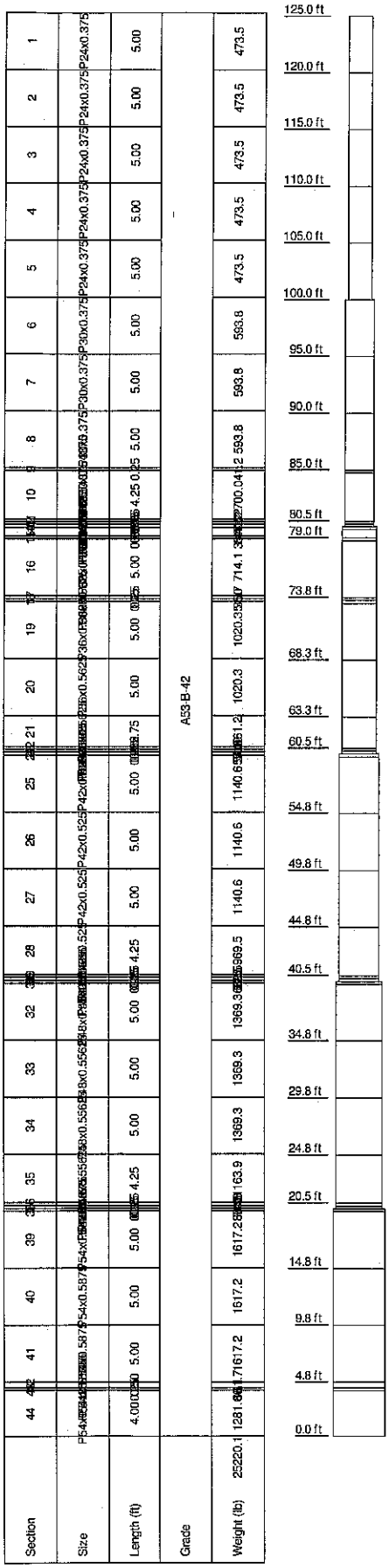
Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
90.0	(2) Dragonwave A-ANT-18G-2-C	3.144	0.3560	0.0005

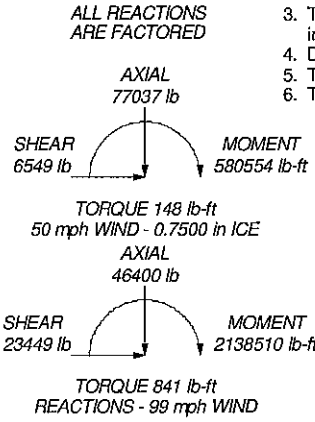
4.1) Recommendations

1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122	SBNHH-1D65A w/ Mount Pipe	100
		SBNHH-1D65A w/ Mount Pipe	100
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122	DC6-48-60-18-8F	100
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122	(2) LGP21401	100
		(2) LGP21401	100
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122	(2) LGP21401	100
		(2) LGP21401	100
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122	(2) LGP21401	100
		(2) LGP21401	100
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122	RRUS 12	100
		RRUS 12	100
LNX-6515DS-VTM w/ Mount Pipe	122	RRUS 12	100
LNX-6515DS-VTM w/ Mount Pipe	122	RRUS-11	100
LNX-6515DS-VTM w/ Mount Pipe	122	RRUS-11	100
KRY 112 144/1	122	RRUS-11	100
KRY 112 144/1	122	RRUS A2	100
KRY 112 144/1	122	RRUS A2	100
RRUS 11 B12	122	RRUS A2	100
RRUS 11 B12	122	2.4" Dia x 6-ft Pipe	100
RRUS 11 B12	122	2.4" Dia x 6-ft Pipe	100
Platform Mount [LP 405-1]	122	2.4" Dia x 6-ft Pipe	100
(2) HBXX-6517DS-A2M w/ Mount Pipe	112	T-Arm Mount [TA 602-3]	100
(2) HBXX-6517DS-A2M w/ Mount Pipe	112	NNVV-65B-R4 w/ Mount Pipe	90
(2) HBXX-6517DS-A2M w/ Mount Pipe	112	NNVV-65B-R4 w/ Mount Pipe	90
(2) LNX-6514DS-A1M w/ Mount Pipe	112	NNVV-65B-R4 w/ Mount Pipe	90
(2) LNX-6514DS-A1M w/ Mount Pipe	112	APXVTM14-ALU-I20 w/ Mount Pipe	90
(2) LNX-6514DS-A1M w/ Mount Pipe	112	APXVTM14-ALU-I20 w/ Mount Pipe	90
B4 RRH2X60-4R	112	APXVTM14-ALU-I20 w/ Mount Pipe	90
B4 RRH2X60-4R	112	(3) RRH2X50-800	90
B4 RRH2X60-4R	112	(3) RRH2X50-800	90
B13 RRH 4X30	112	AIRPAIR ODU	90
B13 RRH 4X30	112	AIRPAIR ODU	90
B13 RRH 4X30	112	AIRPAIR ODU	90
RXXDC-3315-PF-48	112	PCS 1900MHZ 4X45W-65MHZ	90
RXXDC-3315-PF-48	112	(2) PCS 1900MHZ 4X45W-65MHZ	90
Platform Mount [LP 303-1]	112	(2) TD-RRH8X20-25	90
7770.00 w/ Mount Pipe	100	TD-RRH8X20-25	90
7770.00 w/ Mount Pipe	100	2.4" Dia x 6-ft Pipe	90
7770.00 w/ Mount Pipe	100	2.4" Dia x 6-ft Pipe	90
7770.00 w/ Mount Pipe	100	2.4" Dia x 6-ft Pipe	90
7770.00 w/ Mount Pipe	100	Miscellaneous [NA 507-1]	90
7770.00 w/ Mount Pipe	100	Platform Mount [LP 303-1]	90
HPA-65R-BUU-H6 w/ Mount Pipe	100	A-ANT-18G-2-C	90
		A-ANT-18G-2-C	90

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 99 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: **Branford/ I-95/ X55/ Dtn1 (BU 822765)**			
Project: **TEP No. 25582.204169**			
Client: Crown Castle	Drawn by: myoung	App'd:	
Code: TIA-222-G	Date: 05/18/18	Scale: NTS	
Path: C:\Users\myoung\Desktop\tnx\822765-Branford\822765_LC5.eri		Dwg No. E-1	

Tower Input Data

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

Basic wind speed of 99 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	125.00-120.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L2	120.00-115.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L3	115.00-110.00	5.00	P24x0.375	A53-B-42	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
				(42 ksi)	
L4	110.00-105.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L5	105.00-100.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L6	100.00-95.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L7	95.00-90.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L8	90.00-85.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L9	85.00-84.75	0.25	P30x0.54375	A53-B-42 (42 ksi)	
L10	84.75-80.50	4.25	P30x0.54375	A53-B-42 (42 ksi)	
L11	80.50-80.25	0.25	P30x0.6125	A53-B-42 (42 ksi)	
L12	80.25-80.00	0.25	P30x0.6125	A53-B-42 (42 ksi)	
L13	80.00-79.75	0.25	P36x0.5125	A53-B-42 (42 ksi)	
L14	79.75-79.00	0.75	P36x0.5125	A53-B-42 (42 ksi)	
L15	79.00-78.75	0.25	P36x0.375	A53-B-42 (42 ksi)	
L16	78.75-73.75	5.00	P36x0.375	A53-B-42 (42 ksi)	
L17	73.75-73.50	0.25	P36x0.375	A53-B-42 (42 ksi)	
L18	73.50-73.25	0.25	P36x0.5625	A53-B-42 (42 ksi)	
L19	73.25-68.25	5.00	P36x0.5625	A53-B-42 (42 ksi)	
L20	68.25-63.25	5.00	P36x0.5625	A53-B-42 (42 ksi)	
L21	63.25-60.50	2.75	P36x0.5625	A53-B-42 (42 ksi)	
L22	60.50-60.25	0.25	P36x0.625	A53-B-42 (42 ksi)	
L23	60.25-60.00	0.25	P36x0.625	A53-B-42 (42 ksi)	
L24	60.00-59.75	0.25	P42x0.525	A53-B-42 (42 ksi)	
L25	59.75-54.75	5.00	P42x0.525	A53-B-42 (42 ksi)	
L26	54.75-49.75	5.00	P42x0.525	A53-B-42 (42 ksi)	
L27	49.75-44.75	5.00	P42x0.525	A53-B-42 (42 ksi)	
L28	44.75-40.50	4.25	P42x0.525	A53-B-42 (42 ksi)	
L29	40.50-40.25	0.25	P42x0.65	A53-B-42 (42 ksi)	
L30	40.25-40.00	0.25	P42x0.65	A53-B-42 (42 ksi)	
L31	40.00-39.75	0.25	P48x0.55625	A53-B-42 (42 ksi)	
L32	39.75-34.75	5.00	P48x0.55625	A53-B-42 (42 ksi)	
L33	34.75-29.75	5.00	P48x0.55625	A53-B-42 (42 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L34	29.75-24.75	5.00	P48x0.55625	A53-B-42 (42 ksi)	
L35	24.75-20.50	4.25	P48x0.55625	A53-B-42 (42 ksi)	
L36	20.50-20.25	0.25	P48x0.675	A53-B-42 (42 ksi)	
L37	20.25-20.00	0.25	P48x0.675	A53-B-42 (42 ksi)	
L38	20.00-19.75	0.25	P54x0.5875	A53-B-42 (42 ksi)	
L39	19.75-14.75	5.00	P54x0.5875	A53-B-42 (42 ksi)	
L40	14.75-9.75	5.00	P54x0.5875	A53-B-42 (42 ksi)	
L41	9.75-4.75	5.00	P54x0.5875	A53-B-42 (42 ksi)	
L42	4.75-4.25	0.50	P54x0.5875	A53-B-42 (42 ksi)	
L43	4.25-4.00	0.25	P54x0.5125	A53-B-42 (42 ksi)	
L44	4.00-0.00	4.00	P54x0.5125	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 125.00-120.00				1	1	1			
L2 120.00-115.00				1	1	1			
L3 115.00-110.00				1	1	1			
L4 110.00-105.00				1	1	1			
L5 105.00-100.00				1	1	1			
L6 100.00-95.00				1	1	1			
L7 95.00-90.00				1	1	1			
L8 90.00-85.00				1	1	1			
L9 85.00-84.75				1	1	0.961898			
L10 84.75-80.50				1	1	0.961898			
L11 80.50-80.25				1	1	0.855927			
L12 80.25-80.00				1	1	0.855927			
L13 80.00-79.75				1	1	0.970816			
L14 79.75-79.00				1	1	0.970816			
L15 79.00-78.75				1	1	1			
L16 78.75-73.75				1	1	1			
L17				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
73.75-73.50									
L18				1	1	0.957627			
73.50-73.25									
L19				1	1	0.957627			
73.25-68.25									
L20				1	1	0.957627			
68.25-63.25									
L21				1	1	0.957627			
63.25-60.50									
L22				1	1	0.863387			
60.50-60.25									
L23				1	1	0.863387			
60.25-60.00									
L24				1	1	0.980003			
60.00-59.75									
L25				1	1	0.980003			
59.75-54.75									
L26				1	1	0.980003			
54.75-49.75									
L27				1	1	0.980003			
49.75-44.75									
L28				1	1	0.980003			
44.75-40.50									
L29				1	1	0.869433			
40.50-40.25									
L30				1	1	0.869433			
40.25-40.00									
L31				1	1	0.970732			
40.00-39.75									
L32				1	1	0.970732			
39.75-34.75									
L33				1	1	0.970732			
34.75-29.75									
L34				1	1	0.970732			
29.75-24.75									
L35				1	1	0.970732			
24.75-20.50									
L36				1	1	0.876696			
20.50-20.25									
L37				1	1	0.876696			
20.25-20.00									
L38				1	1	0.96417			
20.00-19.75									
L39				1	1	0.96417			
19.75-14.75									
L40 14.75-9.75				1	1	0.96417			
L41 9.75-4.75				1	1	0.96417			
L42 4.75-4.25				1	1	0.96417			
L43 4.25-4.00				1	1	1.09283			
L44 4.00-0.00				1	1	1.09283			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HB114-1-0813U4-M5J(1-1/4)	A	Surface Ar (CaAa)	90.00 - 0.00	4	2	-0.250 -0.250	1.5400		1.20
Step & Safety									
PiRod Ladder	C	Surface Ar (CaAa)	125.00 - 0.00	1	1	0.000 0.000	0.5400		2.00
Safety Line 3/8	C	Surface Ar (CaAa)	125.00 - 0.00	1	1	0.000 0.000	0.3750		0.22
(Area) CCI-65FP-085125	B	Surface Ar (CaAa)	28.50 - 0.00	1	1	0.250 0.250	1.2500		0.00
(Area) CCI-65FP-085125	C	Surface Ar (CaAa)	28.50 - 0.00	1	1	0.000 0.000	1.2500		0.00
(Area) CCI-65FP-065125	B	Surface Ar (CaAa)	46.50 - 20.50	1	1	0.250 0.250	1.2500		0.00
(Area) CCI-65FP-065125	C	Surface Ar (CaAa)	46.50 - 20.50	1	1	0.000 0.000	1.2500		0.00
(Area) CCI-65FP-060100	B	Surface Ar (CaAa)	75.50 - 40.50	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-060100	C	Surface Ar (CaAa)	75.50 - 40.50	1	1	0.000 0.000	1.0000		0.00
(Area) CCI-65FP-060100	B	Surface Ar (CaAa)	66.50 - 60.50	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-060100	C	Surface Ar (CaAa)	66.50 - 60.50	1	1	0.000 0.000	1.0000		0.00
(Area) CCI-65FP-045100	B	Surface Ar (CaAa)	86.50 - 77.50	1	1	0.250 0.250	1.0000		0.00
(Area) CCI-65FP-045100	C	Surface Ar (CaAa)	86.50 - 77.50	1	1	0.000 0.000	1.0000		0.00
*****									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
122								
LDF7-50A(1-5/8")	A	No	Inside Pole	122.00 - 0.00	13	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
112								
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	112.00 - 0.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
100								
LDF2-50(3/8")	A	No	Inside Pole	100.00 - 0.00	3	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF6-50A(1-1/4")	A	No	Inside Pole	100.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
2" Flexible Conduit	A	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	0.34
						1/2" Ice	0.00	0.34
						1" Ice	0.00	0.34
90								
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	90.00 - 0.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
2" Flexible Conduit	A	No	CaAa (Out Of Face)	90.00 - 0.00	2	No Ice	0.00	0.34
						1/2" Ice	0.00	1.87

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	4.00
Mods *****								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	125.00-120.00	A	0.000	0.000	0.000	0.000	21
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.457	0.000	11
L2	120.00-115.00	A	0.000	0.000	0.000	0.000	53
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.457	0.000	11
L3	115.00-110.00	A	0.000	0.000	0.000	0.000	53
		B	0.000	0.000	0.000	0.000	5
		C	0.000	0.000	0.457	0.000	11
L4	110.00-105.00	A	0.000	0.000	0.000	0.000	53
		B	0.000	0.000	0.000	0.000	13
		C	0.000	0.000	0.457	0.000	11
L5	105.00-100.00	A	0.000	0.000	0.000	0.000	53
		B	0.000	0.000	0.000	0.000	13
		C	0.000	0.000	0.457	0.000	11
L6	100.00-95.00	A	0.000	0.000	0.000	0.000	96
		B	0.000	0.000	0.000	0.000	13
		C	0.000	0.000	0.457	0.000	11
L7	95.00-90.00	A	0.000	0.000	0.000	0.000	96
		B	0.000	0.000	0.000	0.000	13
		C	0.000	0.000	0.457	0.000	11
L8	90.00-85.00	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.150	0.000	13
		C	0.000	0.000	0.608	0.000	13
L9	85.00-84.75	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L10	84.75-80.50	A	0.000	0.000	1.309	0.000	105
		B	0.000	0.000	0.425	0.000	11
		C	0.000	0.000	0.814	0.000	11
L11	80.50-80.25	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L12	80.25-80.00	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L13	80.00-79.75	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L14	79.75-79.00	A	0.000	0.000	0.231	0.000	18
		B	0.000	0.000	0.075	0.000	2
		C	0.000	0.000	0.144	0.000	2
L15	79.00-78.75	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L16	78.75-73.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.300	0.000	13
		C	0.000	0.000	0.757	0.000	13
L17	73.75-73.50	A	0.000	0.000	0.077	0.000	6

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L18	73.50-73.25	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L19	73.25-68.25	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.500	0.000	13
		C	0.000	0.000	0.958	0.000	13
L20	68.25-63.25	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.825	0.000	13
		C	0.000	0.000	1.283	0.000	13
L21	63.25-60.50	A	0.000	0.000	0.847	0.000	68
		B	0.000	0.000	0.550	0.000	7
		C	0.000	0.000	0.802	0.000	7
L22	60.50-60.25	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L23	60.25-60.00	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L24	60.00-59.75	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.025	0.000	1
		C	0.000	0.000	0.048	0.000	1
L25	59.75-54.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.500	0.000	13
		C	0.000	0.000	0.958	0.000	13
L26	54.75-49.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.500	0.000	13
		C	0.000	0.000	0.958	0.000	13
L27	49.75-44.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.719	0.000	13
		C	0.000	0.000	1.176	0.000	13
L28	44.75-40.50	A	0.000	0.000	1.309	0.000	105
		B	0.000	0.000	0.956	0.000	11
		C	0.000	0.000	1.345	0.000	11
L29	40.50-40.25	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1
		C	0.000	0.000	0.054	0.000	1
L30	40.25-40.00	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1
		C	0.000	0.000	0.054	0.000	1
L31	40.00-39.75	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1
		C	0.000	0.000	0.054	0.000	1
L32	39.75-34.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.625	0.000	13
		C	0.000	0.000	1.083	0.000	13
L33	34.75-29.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.625	0.000	13
		C	0.000	0.000	1.083	0.000	13
L34	29.75-24.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	1.094	0.000	13
		C	0.000	0.000	1.551	0.000	13
L35	24.75-20.50	A	0.000	0.000	1.309	0.000	105
		B	0.000	0.000	1.063	0.000	11
		C	0.000	0.000	1.451	0.000	11
L36	20.50-20.25	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1
		C	0.000	0.000	0.054	0.000	1
L37	20.25-20.00	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	0.054	0.000	1
L38	20.00-19.75	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1
		C	0.000	0.000	0.054	0.000	1
L39	19.75-14.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.625	0.000	13
		C	0.000	0.000	1.083	0.000	13
L40	14.75-9.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.625	0.000	13
		C	0.000	0.000	1.083	0.000	13
L41	9.75-4.75	A	0.000	0.000	1.540	0.000	123
		B	0.000	0.000	0.625	0.000	13
		C	0.000	0.000	1.083	0.000	13
L42	4.75-4.25	A	0.000	0.000	0.154	0.000	12
		B	0.000	0.000	0.063	0.000	1
		C	0.000	0.000	0.108	0.000	1
L43	4.25-4.00	A	0.000	0.000	0.077	0.000	6
		B	0.000	0.000	0.031	0.000	1
		C	0.000	0.000	0.054	0.000	1
L44	4.00-0.00	A	0.000	0.000	1.232	0.000	99
		B	0.000	0.000	0.500	0.000	10
		C	0.000	0.000	0.866	0.000	10

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	125.00-120.00	A	1.710	0.000	0.000	0.000	0.000	21
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	3.878	0.000	56
L2	120.00-115.00	A	1.703	0.000	0.000	0.000	0.000	53
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	3.864	0.000	56
L3	115.00-110.00	A	1.696	0.000	0.000	0.000	0.000	53
		B		0.000	0.000	0.000	0.000	5
		C		0.000	0.000	3.849	0.000	56
L4	110.00-105.00	A	1.688	0.000	0.000	0.000	0.000	53
		B		0.000	0.000	0.000	0.000	13
		C		0.000	0.000	3.834	0.000	55
L5	105.00-100.00	A	1.680	0.000	0.000	0.000	0.000	53
		B		0.000	0.000	0.000	0.000	13
		C		0.000	0.000	3.818	0.000	55
L6	100.00-95.00	A	1.672	0.000	0.000	0.000	0.000	96
		B		0.000	0.000	0.000	0.000	13
		C		0.000	0.000	3.801	0.000	55
L7	95.00-90.00	A	1.663	0.000	0.000	0.000	0.000	96
		B		0.000	0.000	0.000	0.000	13
		C		0.000	0.000	3.783	0.000	54
L8	90.00-85.00	A	1.654	0.000	0.000	3.992	0.000	255
		B		0.000	0.000	0.646	0.000	21
		C		0.000	0.000	4.411	0.000	112
L9	85.00-84.75	A	1.649	0.000	0.000	0.199	0.000	13
		B		0.000	0.000	0.107	0.000	2
		C		0.000	0.000	0.295	0.000	7
L10	84.75-80.50	A	1.644	0.000	0.000	3.383	0.000	216
		B		0.000	0.000	1.823	0.000	34
		C		0.000	0.000	5.007	0.000	110

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L11	80.50-80.25	A	1.640	0.000	0.000	0.199	0.000	13
		B		0.000	0.000	0.107	0.000	2
		C		0.000	0.000	0.294	0.000	6
L12	80.25-80.00	A	1.639	0.000	0.000	0.199	0.000	13
		B		0.000	0.000	0.107	0.000	2
		C		0.000	0.000	0.294	0.000	6
L13	80.00-79.75	A	1.639	0.000	0.000	0.199	0.000	13
		B		0.000	0.000	0.107	0.000	2
		C		0.000	0.000	0.294	0.000	6
L14	79.75-79.00	A	1.638	0.000	0.000	0.596	0.000	38
		B		0.000	0.000	0.321	0.000	6
		C		0.000	0.000	0.881	0.000	19
L15	79.00-78.75	A	1.637	0.000	0.000	0.199	0.000	13
		B		0.000	0.000	0.107	0.000	2
		C		0.000	0.000	0.293	0.000	6
L16	78.75-73.75	A	1.631	0.000	0.000	3.964	0.000	252
		B		0.000	0.000	1.279	0.000	29
		C		0.000	0.000	4.998	0.000	118
L17	73.75-73.50	A	1.625	0.000	0.000	0.198	0.000	13
		B		0.000	0.000	0.106	0.000	2
		C		0.000	0.000	0.292	0.000	6
L18	73.50-73.25	A	1.625	0.000	0.000	0.198	0.000	13
		B		0.000	0.000	0.106	0.000	2
		C		0.000	0.000	0.292	0.000	6
L19	73.25-68.25	A	1.619	0.000	0.000	3.949	0.000	251
		B		0.000	0.000	2.119	0.000	39
		C		0.000	0.000	5.814	0.000	127
L20	68.25-63.25	A	1.607	0.000	0.000	3.934	0.000	250
		B		0.000	0.000	3.295	0.000	55
		C		0.000	0.000	6.967	0.000	142
L21	63.25-60.50	A	1.597	0.000	0.000	2.157	0.000	137
		B		0.000	0.000	2.156	0.000	35
		C		0.000	0.000	4.165	0.000	82
L22	60.50-60.25	A	1.593	0.000	0.000	0.196	0.000	12
		B		0.000	0.000	0.105	0.000	2
		C		0.000	0.000	0.287	0.000	6
L23	60.25-60.00	A	1.593	0.000	0.000	0.196	0.000	12
		B		0.000	0.000	0.105	0.000	2
		C		0.000	0.000	0.287	0.000	6
L24	60.00-59.75	A	1.592	0.000	0.000	0.196	0.000	12
		B		0.000	0.000	0.105	0.000	2
		C		0.000	0.000	0.287	0.000	6
L25	59.75-54.75	A	1.585	0.000	0.000	3.906	0.000	248
		B		0.000	0.000	2.085	0.000	38
		C		0.000	0.000	5.712	0.000	123
L26	54.75-49.75	A	1.571	0.000	0.000	3.888	0.000	246
		B		0.000	0.000	2.071	0.000	38
		C		0.000	0.000	5.669	0.000	121
L27	49.75-44.75	A	1.555	0.000	0.000	3.869	0.000	245
		B		0.000	0.000	2.818	0.000	47
		C		0.000	0.000	6.385	0.000	129
L28	44.75-40.50	A	1.539	0.000	0.000	3.271	0.000	207
		B		0.000	0.000	3.572	0.000	54
		C		0.000	0.000	6.577	0.000	122
L29	40.50-40.25	A	1.531	0.000	0.000	0.192	0.000	12
		B		0.000	0.000	0.108	0.000	2
		C		0.000	0.000	0.284	0.000	6
L30	40.25-40.00	A	1.530	0.000	0.000	0.192	0.000	12
		B		0.000	0.000	0.108	0.000	2
		C		0.000	0.000	0.284	0.000	6
L31	40.00-39.75	A	1.529	0.000	0.000	0.192	0.000	12

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	0.108	0.000	2
		C		0.000	0.000	0.283	0.000	6
L32	39.75-34.75	A	1.518	0.000	0.000	3.823	0.000	241
		B		0.000	0.000	2.143	0.000	39
		C		0.000	0.000	5.637	0.000	118
L33	34.75-29.75	A	1.497	0.000	0.000	3.796	0.000	239
		B		0.000	0.000	2.122	0.000	38
		C		0.000	0.000	5.572	0.000	115
L34	29.75-24.75	A	1.472	0.000	0.000	3.764	0.000	236
		B		0.000	0.000	3.669	0.000	56
		C		0.000	0.000	7.070	0.000	131
L35	24.75-20.50	A	1.444	0.000	0.000	3.171	0.000	199
		B		0.000	0.000	3.518	0.000	51
		C		0.000	0.000	6.362	0.000	113
L36	20.50-20.25	A	1.429	0.000	0.000	0.186	0.000	12
		B		0.000	0.000	0.103	0.000	2
		C		0.000	0.000	0.269	0.000	5
L37	20.25-20.00	A	1.428	0.000	0.000	0.185	0.000	12
		B		0.000	0.000	0.103	0.000	2
		C		0.000	0.000	0.268	0.000	5
L38	20.00-19.75	A	1.426	0.000	0.000	0.185	0.000	12
		B		0.000	0.000	0.103	0.000	2
		C		0.000	0.000	0.268	0.000	5
L39	19.75-14.75	A	1.406	0.000	0.000	3.682	0.000	230
		B		0.000	0.000	2.031	0.000	36
		C		0.000	0.000	5.300	0.000	105
L40	14.75-9.75	A	1.358	0.000	0.000	3.623	0.000	225
		B		0.000	0.000	1.983	0.000	35
		C		0.000	0.000	5.158	0.000	100
L41	9.75-4.75	A	1.289	0.000	0.000	3.536	0.000	218
		B		0.000	0.000	1.914	0.000	33
		C		0.000	0.000	4.950	0.000	93
L42	4.75-4.25	A	1.229	0.000	0.000	0.346	0.000	21
		B		0.000	0.000	0.185	0.000	3
		C		0.000	0.000	0.477	0.000	9
L43	4.25-4.00	A	1.218	0.000	0.000	0.172	0.000	11
		B		0.000	0.000	0.092	0.000	2
		C		0.000	0.000	0.237	0.000	4
L44	4.00-0.00	A	1.133	0.000	0.000	2.673	0.000	162
		B		0.000	0.000	1.407	0.000	24
		C		0.000	0.000	3.586	0.000	62

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	125.00-120.00	0.0000	0.1338	0.0000	0.7748
L2	120.00-115.00	0.0000	0.1338	0.0000	0.7730
L3	115.00-110.00	0.0000	0.1338	0.0000	0.7711
L4	110.00-105.00	0.0000	0.1338	0.0000	0.7691
L5	105.00-100.00	0.0000	0.1338	0.0000	0.7670
L6	100.00-95.00	0.0000	0.1345	0.0000	0.8179
L7	95.00-90.00	0.0000	0.1345	0.0000	0.8152
L8	90.00-85.00	-0.3911	0.1570	-0.5395	0.6487
L9	85.00-84.75	-0.2859	0.2375	-0.2818	0.7818
L10	84.75-80.50	-0.2859	0.2375	-0.2820	0.7809

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L11	80.50-80.25	-0.2859	0.2375	-0.2821	0.7800
L12	80.25-80.00	-0.2859	0.2375	-0.2821	0.7799
L13	80.00-79.75	-0.2895	0.2444	-0.3035	0.8581
L14	79.75-79.00	-0.2895	0.2444	-0.3035	0.8579
L15	79.00-78.75	-0.2895	0.2444	-0.3036	0.8576
L16	78.75-73.75	-0.3487	0.1974	-0.4544	0.7724
L17	73.75-73.50	-0.2895	0.2444	-0.3038	0.8550
L18	73.50-73.25	-0.2895	0.2444	-0.3038	0.8548
L19	73.25-68.25	-0.2895	0.2444	-0.3040	0.8534
L20	68.25-63.25	-0.1988	0.3165	-0.1187	0.9543
L21	63.25-60.50	-0.1525	0.3532	-0.0296	1.0020
L22	60.50-60.25	-0.2895	0.2444	-0.3046	0.8473
L23	60.25-60.00	-0.2895	0.2444	-0.3046	0.8471
L24	60.00-59.75	-0.2923	0.2496	-0.3227	0.9121
L25	59.75-54.75	-0.2923	0.2496	-0.3228	0.9101
L26	54.75-49.75	-0.2923	0.2496	-0.3231	0.9061
L27	49.75-44.75	-0.2297	0.3009	-0.1907	0.9807
L28	44.75-40.50	-0.1201	0.3906	0.0259	1.1058
L29	40.50-40.25	-0.2554	0.2799	-0.2994	0.9102
L30	40.25-40.00	-0.2554	0.2799	-0.2994	0.9100
L31	40.00-39.75	-0.2575	0.2847	-0.3137	0.9649
L32	39.75-34.75	-0.2575	0.2847	-0.3139	0.9617
L33	34.75-29.75	-0.2575	0.2847	-0.3142	0.9548
L34	29.75-24.75	-0.1282	0.3930	-0.0376	1.1208
L35	24.75-20.50	-0.0873	0.4273	0.0422	1.1634
L36	20.50-20.25	-0.2575	0.2847	-0.3151	0.9332
L37	20.25-20.00	-0.2575	0.2847	-0.3151	0.9327
L38	20.00-19.75	-0.2591	0.2886	-0.3272	0.9771
L39	19.75-14.75	-0.2591	0.2886	-0.3274	0.9699
L40	14.75-9.75	-0.2591	0.2886	-0.3279	0.9528
L41	9.75-4.75	-0.2591	0.2886	-0.3287	0.9271
L42	4.75-4.25	-0.2591	0.2886	-0.3293	0.9043
L43	4.25-4.00	-0.2591	0.2886	-0.3295	0.9002
L44	4.00-0.00	-0.2591	0.2886	-0.3304	0.8667

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	17	PiRod Ladder	120.00 - 125.00	1.0000	1.0000
L1	18	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L2	17	PiRod Ladder	115.00 - 120.00	1.0000	1.0000
L2	18	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L3	17	PiRod Ladder	110.00 - 115.00	1.0000	1.0000
L3	18	Safety Line 3/8	110.00 - 115.00	1.0000	1.0000
L4	17	PiRod Ladder	105.00 - 110.00	1.0000	1.0000
L4	18	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L5	17	PiRod Ladder	100.00 - 105.00	1.0000	1.0000
L5	18	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L6	17	PiRod Ladder	95.00 - 100.00	1.0000	1.0000
L6	18	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000
L7	17	PiRod Ladder	90.00 - 95.00	1.0000	1.0000
L7	18	Safety Line 3/8	90.00 - 95.00	1.0000	1.0000
L8	15	HB114-1-0813U4-M5J(1-1/4)	85.00 - 90.00	1.0000	1.0000
L8	17	PiRod Ladder	85.00 - 90.00	1.0000	1.0000
L8	18	Safety Line 3/8	85.00 - 90.00	1.0000	1.0000
L8	32	(Area) CCI-65FP-045100	85.00 - 86.50	1.0000	1.0000
L8	33	(Area) CCI-65FP-045100	85.00 - 86.50	1.0000	1.0000
L9	15	HB114-1-0813U4-M5J(1-1/4)	84.75 - 85.00	1.0000	1.0000
L9	17	PiRod Ladder	84.75 - 85.00	1.0000	1.0000
L9	18	Safety Line 3/8	84.75 - 85.00	1.0000	1.0000
L9	32	(Area) CCI-65FP-045100	84.75 - 85.00	1.0000	1.0000
L9	33	(Area) CCI-65FP-045100	84.75 - 85.00	1.0000	1.0000
L10	15	HB114-1-0813U4-M5J(1-1/4)	80.50 - 84.75	1.0000	1.0000
L10	17	PiRod Ladder	80.50 - 84.75	1.0000	1.0000
L10	18	Safety Line 3/8	80.50 - 84.75	1.0000	1.0000
L10	32	(Area) CCI-65FP-045100	80.50 - 84.75	1.0000	1.0000
L10	33	(Area) CCI-65FP-045100	80.50 - 84.75	1.0000	1.0000
L11	15	HB114-1-0813U4-M5J(1-1/4)	80.25 - 80.50	1.0000	1.0000
L11	17	PiRod Ladder	80.25 - 80.50	1.0000	1.0000
L11	18	Safety Line 3/8	80.25 - 80.50	1.0000	1.0000
L11	32	(Area) CCI-65FP-045100	80.25 - 80.50	1.0000	1.0000
L11	33	(Area) CCI-65FP-045100	80.25 - 80.50	1.0000	1.0000
L12	15	HB114-1-0813U4-M5J(1-1/4)	80.00 - 80.25	1.0000	1.0000
L12	17	PiRod Ladder	80.00 - 80.25	1.0000	1.0000
L12	18	Safety Line 3/8	80.00 - 80.25	1.0000	1.0000
L12	32	(Area) CCI-65FP-045100	80.00 - 80.25	1.0000	1.0000
L12	33	(Area) CCI-65FP-045100	80.00 - 80.25	1.0000	1.0000
L13	15	HB114-1-0813U4-M5J(1-1/4)	79.75 - 80.00	1.0000	1.0000
L13	17	PiRod Ladder	79.75 - 80.00	1.0000	1.0000
L13	18	Safety Line 3/8	79.75 - 80.00	1.0000	1.0000
L13	32	(Area) CCI-65FP-045100	79.75 - 80.00	1.0000	1.0000
L13	33	(Area) CCI-65FP-045100	79.75 - 80.00	1.0000	1.0000
L14	15	HB114-1-0813U4-M5J(1-1/4)	79.00 - 79.75	1.0000	1.0000
L14	17	PiRod Ladder	79.00 - 79.75	1.0000	1.0000
L14	18	Safety Line 3/8	79.00 - 79.75	1.0000	1.0000
L14	32	(Area) CCI-65FP-045100	79.00 - 79.75	1.0000	1.0000
L14	33	(Area) CCI-65FP-045100	79.00 - 79.75	1.0000	1.0000
L15	15	HB114-1-0813U4-M5J(1-1/4)	78.75 - 79.00	1.0000	1.0000
L15	17	PiRod Ladder	78.75 - 79.00	1.0000	1.0000
L15	18	Safety Line 3/8	78.75 - 79.00	1.0000	1.0000
L15	32	(Area) CCI-65FP-045100	78.75 - 79.00	1.0000	1.0000
L15	33	(Area) CCI-65FP-045100	78.75 - 79.00	1.0000	1.0000
L16	15	HB114-1-0813U4-M5J(1-1/4)	73.75 - 78.75	1.0000	1.0000
L16	17	PiRod Ladder	73.75 - 78.75	1.0000	1.0000
L16	18	Safety Line 3/8	73.75 - 78.75	1.0000	1.0000
L16	27	(Area) CCI-65FP-060100	73.75 - 75.50	1.0000	1.0000
L16	28	(Area) CCI-65FP-060100	73.75 - 75.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	32	(Area) CCI-65FP-045100	77.50 - 78.75	1.0000	1.0000
L16	33	(Area) CCI-65FP-045100	77.50 - 78.75	1.0000	1.0000
L17	15	HB114-1-0813U4-M5J(1-1/4)	73.50 - 73.75	1.0000	1.0000
L17	17	PiRod Ladder	73.50 - 73.75	1.0000	1.0000
L17	18	Safety Line 3/8	73.50 - 73.75	1.0000	1.0000
L17	27	(Area) CCI-65FP-060100	73.50 - 73.75	1.0000	1.0000
L17	28	(Area) CCI-65FP-060100	73.50 - 73.75	1.0000	1.0000
L18	15	HB114-1-0813U4-M5J(1-1/4)	73.25 - 73.50	1.0000	1.0000
L18	17	PiRod Ladder	73.25 - 73.50	1.0000	1.0000
L18	18	Safety Line 3/8	73.25 - 73.50	1.0000	1.0000
L18	27	(Area) CCI-65FP-060100	73.25 - 73.50	1.0000	1.0000
L18	28	(Area) CCI-65FP-060100	73.25 - 73.50	1.0000	1.0000
L19	15	HB114-1-0813U4-M5J(1-1/4)	68.25 - 73.25	1.0000	1.0000
L19	17	PiRod Ladder	68.25 - 73.25	1.0000	1.0000
L19	18	Safety Line 3/8	68.25 - 73.25	1.0000	1.0000
L19	27	(Area) CCI-65FP-060100	68.25 - 73.25	1.0000	1.0000
L19	28	(Area) CCI-65FP-060100	68.25 - 73.25	1.0000	1.0000
L20	15	HB114-1-0813U4-M5J(1-1/4)	63.25 - 68.25	1.0000	1.0000
L20	17	PiRod Ladder	63.25 - 68.25	1.0000	1.0000
L20	18	Safety Line 3/8	63.25 - 68.25	1.0000	1.0000
L20	27	(Area) CCI-65FP-060100	63.25 - 68.25	1.0000	1.0000
L20	28	(Area) CCI-65FP-060100	63.25 - 68.25	1.0000	1.0000
L20	29	(Area) CCI-65FP-060100	63.25 - 66.50	1.0000	1.0000
L20	30	(Area) CCI-65FP-060100	63.25 - 66.50	1.0000	1.0000
L21	15	HB114-1-0813U4-M5J(1-1/4)	60.50 - 63.25	1.0000	1.0000
L21	17	PiRod Ladder	60.50 - 63.25	1.0000	1.0000
L21	18	Safety Line 3/8	60.50 - 63.25	1.0000	1.0000
L21	27	(Area) CCI-65FP-060100	60.50 - 63.25	1.0000	1.0000
L21	28	(Area) CCI-65FP-060100	60.50 - 63.25	1.0000	1.0000
L21	29	(Area) CCI-65FP-060100	60.50 - 63.25	1.0000	1.0000
L21	30	(Area) CCI-65FP-060100	60.50 - 63.25	1.0000	1.0000
L22	15	HB114-1-0813U4-M5J(1-1/4)	60.25 - 60.50	1.0000	1.0000
L22	17	PiRod Ladder	60.25 - 60.50	1.0000	1.0000
L22	18	Safety Line 3/8	60.25 - 60.50	1.0000	1.0000
L22	27	(Area) CCI-65FP-060100	60.25 - 60.50	1.0000	1.0000
L22	28	(Area) CCI-65FP-060100	60.25 - 60.50	1.0000	1.0000
L23	15	HB114-1-0813U4-M5J(1-1/4)	60.00 - 60.25	1.0000	1.0000
L23	17	PiRod Ladder	60.00 - 60.25	1.0000	1.0000
L23	18	Safety Line 3/8	60.00 - 60.25	1.0000	1.0000
L23	27	(Area) CCI-65FP-060100	60.00 - 60.25	1.0000	1.0000
L23	28	(Area) CCI-65FP-060100	60.00 - 60.25	1.0000	1.0000
L24	15	HB114-1-0813U4-M5J(1-1/4)	59.75 - 60.00	1.0000	1.0000
L24	17	PiRod Ladder	59.75 - 60.00	1.0000	1.0000
L24	18	Safety Line 3/8	59.75 - 60.00	1.0000	1.0000
L24	27	(Area) CCI-65FP-060100	59.75 - 60.00	1.0000	1.0000
L24	28	(Area) CCI-65FP-060100	59.75 - 60.00	1.0000	1.0000
L25	15	HB114-1-0813U4-M5J(1-1/4)	54.75 - 59.75	1.0000	1.0000
L25	17	PiRod Ladder	54.75 - 59.75	1.0000	1.0000
L25	18	Safety Line 3/8	54.75 - 59.75	1.0000	1.0000
L25	27	(Area) CCI-65FP-060100	54.75 - 59.75	1.0000	1.0000
L25	28	(Area) CCI-65FP-060100	54.75 - 59.75	1.0000	1.0000
L26	15	HB114-1-0813U4-M5J(1-1/4)	49.75 - 54.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	17	PiRod Ladder	49.75 - 54.75	1.0000	1.0000
L26	18	Safety Line 3/8	49.75 - 54.75	1.0000	1.0000
L26	27	(Area) CCI-65FP-060100	49.75 - 54.75	1.0000	1.0000
L26	28	(Area) CCI-65FP-060100	49.75 - 54.75	1.0000	1.0000
L27	15	HB114-1-0813U4-M5J(1-1/4)	44.75 - 49.75	1.0000	1.0000
L27	17	PiRod Ladder	44.75 - 49.75	1.0000	1.0000
L27	18	Safety Line 3/8	44.75 - 49.75	1.0000	1.0000
L27	24	(Area) CCI-65FP-065125	44.75 - 46.50	1.0000	1.0000
L27	25	(Area) CCI-65FP-065125	44.75 - 46.50	1.0000	1.0000
L27	27	(Area) CCI-65FP-060100	44.75 - 49.75	1.0000	1.0000
L27	28	(Area) CCI-65FP-060100	44.75 - 49.75	1.0000	1.0000
L28	15	HB114-1-0813U4-M5J(1-1/4)	40.50 - 44.75	1.0000	1.0000
L28	17	PiRod Ladder	40.50 - 44.75	1.0000	1.0000
L28	18	Safety Line 3/8	40.50 - 44.75	1.0000	1.0000
L28	24	(Area) CCI-65FP-065125	40.50 - 44.75	1.0000	1.0000
L28	25	(Area) CCI-65FP-065125	40.50 - 44.75	1.0000	1.0000
L28	27	(Area) CCI-65FP-060100	40.50 - 44.75	1.0000	1.0000
L28	28	(Area) CCI-65FP-060100	40.50 - 44.75	1.0000	1.0000
L29	15	HB114-1-0813U4-M5J(1-1/4)	40.25 - 40.50	1.0000	1.0000
L29	17	PiRod Ladder	40.25 - 40.50	1.0000	1.0000
L29	18	Safety Line 3/8	40.25 - 40.50	1.0000	1.0000
L29	24	(Area) CCI-65FP-065125	40.25 - 40.50	1.0000	1.0000
L29	25	(Area) CCI-65FP-065125	40.25 - 40.50	1.0000	1.0000
L30	15	HB114-1-0813U4-M5J(1-1/4)	40.00 - 40.25	1.0000	1.0000
L30	17	PiRod Ladder	40.00 - 40.25	1.0000	1.0000
L30	18	Safety Line 3/8	40.00 - 40.25	1.0000	1.0000
L30	24	(Area) CCI-65FP-065125	40.00 - 40.25	1.0000	1.0000
L30	25	(Area) CCI-65FP-065125	40.00 - 40.25	1.0000	1.0000
L31	15	HB114-1-0813U4-M5J(1-1/4)	39.75 - 40.00	1.0000	1.0000
L31	17	PiRod Ladder	39.75 - 40.00	1.0000	1.0000
L31	18	Safety Line 3/8	39.75 - 40.00	1.0000	1.0000
L31	24	(Area) CCI-65FP-065125	39.75 - 40.00	1.0000	1.0000
L31	25	(Area) CCI-65FP-065125	39.75 - 40.00	1.0000	1.0000
L32	15	HB114-1-0813U4-M5J(1-1/4)	34.75 - 39.75	1.0000	1.0000
L32	17	PiRod Ladder	34.75 - 39.75	1.0000	1.0000
L32	18	Safety Line 3/8	34.75 - 39.75	1.0000	1.0000
L32	24	(Area) CCI-65FP-065125	34.75 - 39.75	1.0000	1.0000
L32	25	(Area) CCI-65FP-065125	34.75 - 39.75	1.0000	1.0000
L33	15	HB114-1-0813U4-M5J(1-1/4)	29.75 - 34.75	1.0000	1.0000
L33	17	PiRod Ladder	29.75 - 34.75	1.0000	1.0000
L33	18	Safety Line 3/8	29.75 - 34.75	1.0000	1.0000
L33	24	(Area) CCI-65FP-065125	29.75 - 34.75	1.0000	1.0000
L33	25	(Area) CCI-65FP-065125	29.75 - 34.75	1.0000	1.0000
L34	15	HB114-1-0813U4-M5J(1-1/4)	24.75 - 29.75	1.0000	1.0000
L34	17	PiRod Ladder	24.75 - 29.75	1.0000	1.0000
L34	18	Safety Line 3/8	24.75 - 29.75	1.0000	1.0000
L34	21	(Area) CCI-65FP-085125	24.75 - 28.50	1.0000	1.0000
L34	22	(Area) CCI-65FP-085125	24.75 - 28.50	1.0000	1.0000
L34	24	(Area) CCI-65FP-065125	24.75 - 29.75	1.0000	1.0000
L34	25	(Area) CCI-65FP-065125	24.75 - 29.75	1.0000	1.0000
L35	15	HB114-1-0813U4-M5J(1-1/4)	20.50 - 24.75	1.0000	1.0000
L35	17	PiRod Ladder	20.50 - 24.75	1.0000	1.0000
L35	18	Safety Line 3/8	20.50 - 24.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	21	(Area) CCI-65FP-085125	20.50 - 24.75	1.0000	1.0000
L35	22	(Area) CCI-65FP-085125	20.50 - 24.75	1.0000	1.0000
L35	24	(Area) CCI-65FP-065125	20.50 - 24.75	1.0000	1.0000
L35	25	(Area) CCI-65FP-065125	20.50 - 24.75	1.0000	1.0000
L36	15	HB114-1-0813U4-M5J(1-1/4)	20.25 - 20.50	1.0000	1.0000
L36	17	PiRod Ladder	20.25 - 20.50	1.0000	1.0000
L36	18	Safety Line 3/8	20.25 - 20.50	1.0000	1.0000
L36	21	(Area) CCI-65FP-085125	20.25 - 20.50	1.0000	1.0000
L36	22	(Area) CCI-65FP-085125	20.25 - 20.50	1.0000	1.0000
L37	15	HB114-1-0813U4-M5J(1-1/4)	20.00 - 20.25	1.0000	1.0000
L37	17	PiRod Ladder	20.00 - 20.25	1.0000	1.0000
L37	18	Safety Line 3/8	20.00 - 20.25	1.0000	1.0000
L37	21	(Area) CCI-65FP-085125	20.00 - 20.25	1.0000	1.0000
L37	22	(Area) CCI-65FP-085125	20.00 - 20.25	1.0000	1.0000
L38	15	HB114-1-0813U4-M5J(1-1/4)	19.75 - 20.00	1.0000	1.0000
L38	17	PiRod Ladder	19.75 - 20.00	1.0000	1.0000
L38	18	Safety Line 3/8	19.75 - 20.00	1.0000	1.0000
L38	21	(Area) CCI-65FP-085125	19.75 - 20.00	1.0000	1.0000
L38	22	(Area) CCI-65FP-085125	19.75 - 20.00	1.0000	1.0000
L39	15	HB114-1-0813U4-M5J(1-1/4)	14.75 - 19.75	1.0000	1.0000
L39	17	PiRod Ladder	14.75 - 19.75	1.0000	1.0000
L39	18	Safety Line 3/8	14.75 - 19.75	1.0000	1.0000
L39	21	(Area) CCI-65FP-085125	14.75 - 19.75	1.0000	1.0000
L39	22	(Area) CCI-65FP-085125	14.75 - 19.75	1.0000	1.0000
L40	15	HB114-1-0813U4-M5J(1-1/4)	9.75 - 14.75	1.0000	1.0000
L40	17	PiRod Ladder	9.75 - 14.75	1.0000	1.0000
L40	18	Safety Line 3/8	9.75 - 14.75	1.0000	1.0000
L40	21	(Area) CCI-65FP-085125	9.75 - 14.75	1.0000	1.0000
L40	22	(Area) CCI-65FP-085125	9.75 - 14.75	1.0000	1.0000
L41	15	HB114-1-0813U4-M5J(1-1/4)	4.75 - 9.75	1.0000	1.0000
L41	17	PiRod Ladder	4.75 - 9.75	1.0000	1.0000
L41	18	Safety Line 3/8	4.75 - 9.75	1.0000	1.0000
L41	21	(Area) CCI-65FP-085125	4.75 - 9.75	1.0000	1.0000
L41	22	(Area) CCI-65FP-085125	4.75 - 9.75	1.0000	1.0000
L42	15	HB114-1-0813U4-M5J(1-1/4)	4.25 - 4.75	1.0000	1.0000
L42	17	PiRod Ladder	4.25 - 4.75	1.0000	1.0000
L42	18	Safety Line 3/8	4.25 - 4.75	1.0000	1.0000
L42	21	(Area) CCI-65FP-085125	4.25 - 4.75	1.0000	1.0000
L42	22	(Area) CCI-65FP-085125	4.25 - 4.75	1.0000	1.0000
L43	15	HB114-1-0813U4-M5J(1-1/4)	4.00 - 4.25	1.0000	1.0000
L43	17	PiRod Ladder	4.00 - 4.25	1.0000	1.0000
L43	18	Safety Line 3/8	4.00 - 4.25	1.0000	1.0000
L43	21	(Area) CCI-65FP-085125	4.00 - 4.25	1.0000	1.0000
L43	22	(Area) CCI-65FP-085125	4.00 - 4.25	1.0000	1.0000
L44	15	HB114-1-0813U4-M5J(1-1/4)	0.00 - 4.00	1.0000	1.0000
L44	17	PiRod Ladder	0.00 - 4.00	1.0000	1.0000
L44	18	Safety Line 3/8	0.00 - 4.00	1.0000	1.0000
L44	21	(Area) CCI-65FP-085125	0.00 - 4.00	1.0000	1.0000
L44	22	(Area) CCI-65FP-085125	0.00 - 4.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
122										
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Centroid-Face	4.00 7.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	112 169 233
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Centroid-Face	4.00 7.00 0.00		30.0000	122.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	112 169 233
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Centroid-Face	4.00 7.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	112 169 233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Centroid-Face	4.00 -7.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	112 169 233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Centroid-Face	4.00 -7.00 0.00		30.0000	122.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	112 169 233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Centroid-Face	4.00 -7.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	112 169 233
LNX-6515DS-VTM w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	83 173 273
LNX-6515DS-VTM w/ Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00		30.0000	122.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	83 173 273
LNX-6515DS-VTM w/ Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	83 173 273
KRY 112 144/1	A	From Centroid-Face	4.00 7.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.16 0.22 0.28	11 14 18
KRY 112 144/1	B	From Centroid-Face	4.00 7.00 0.00		30.0000	122.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.16 0.22 0.28	11 14 18
KRY 112 144/1	C	From Centroid-Face	4.00 7.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.16 0.22 0.28	11 14 18
RRUS 11 B12	A	From Centroid-Face	4.00 0.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	51 72 95
RRUS 11 B12	B	From Centroid-Face	4.00 0.00 0.00		30.0000	122.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	51 72 95
RRUS 11 B12	C	From Centroid-Face	4.00 0.00 0.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	51 72 95
Platform Mount [LP 405-1]	C	None			0.0000	122.00	No Ice 1/2" Ice 1" Ice	20.80 28.10 35.40	20.80 28.10 35.40	1800 2066 2332
112										
(2) HBXX-6517DS-A2M w/	A	From	4.00		0.0000	112.00	No Ice	8.77	6.96	67

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Mount Pipe		Centroid-Le	-2.00			1/2" Ice	9.34	8.18	137
		g	1.00			1" Ice	9.89	9.14	215
(2) HBXX-6517DS-A2M w/	B	From	4.00	25.0000	112.00	No Ice	8.77	6.96	67
Mount Pipe		Centroid-Le	-2.00			1/2" Ice	9.34	8.18	137
		g	1.00			1" Ice	9.89	9.14	215
(2) HBXX-6517DS-A2M w/	C	From	4.00	10.0000	112.00	No Ice	8.77	6.96	67
Mount Pipe		Centroid-Le	-2.00			1/2" Ice	9.34	8.18	137
		g	1.00			1" Ice	9.89	9.14	215
(2) LNX-6514DS-A1M w/	A	From	4.00	0.0000	112.00	No Ice	8.28	6.95	63
Mount Pipe		Centroid-Le	3.00			1/2" Ice	8.78	8.02	130
		g	1.00			1" Ice	9.27	8.88	206
(2) LNX-6514DS-A1M w/	B	From	4.00	25.0000	112.00	No Ice	8.28	6.95	63
Mount Pipe		Centroid-Le	3.00			1/2" Ice	8.78	8.02	130
		g	1.00			1" Ice	9.27	8.88	206
(2) LNX-6514DS-A1M w/	C	From	4.00	10.0000	112.00	No Ice	8.28	6.95	63
Mount Pipe		Centroid-Le	3.00			1/2" Ice	8.78	8.02	130
		g	1.00			1" Ice	9.27	8.88	206
B4 RRH2X60-4R	A	From	4.00	0.0000	112.00	No Ice	3.36	2.00	55
		Centroid-Le	-6.00			1/2" Ice	3.61	2.24	78
		g	1.00			1" Ice	3.88	2.48	105
B4 RRH2X60-4R	B	From	4.00	25.0000	112.00	No Ice	3.36	2.00	55
		Centroid-Le	-6.00			1/2" Ice	3.61	2.24	78
		g	1.00			1" Ice	3.88	2.48	105
B4 RRH2X60-4R	C	From	4.00	10.0000	112.00	No Ice	3.36	2.00	55
		Centroid-Le	-6.00			1/2" Ice	3.61	2.24	78
		g	1.00			1" Ice	3.88	2.48	105
B13 RRH 4X30	A	From	4.00	0.0000	112.00	No Ice	2.06	1.32	56
		Centroid-Le	0.00			1/2" Ice	2.24	1.48	73
		g	1.00			1" Ice	2.43	1.64	93
B13 RRH 4X30	B	From	4.00	25.0000	112.00	No Ice	2.06	1.32	56
		Centroid-Le	0.00			1/2" Ice	2.24	1.48	73
		g	1.00			1" Ice	2.43	1.64	93
B13 RRH 4X30	C	From	4.00	10.0000	112.00	No Ice	2.06	1.32	56
		Centroid-Le	3.00			1/2" Ice	2.24	1.48	73
		g	1.00			1" Ice	2.43	1.64	93
RXXDC-3315-PF-48	A	From	4.00	0.0000	112.00	No Ice	3.92	2.61	32
		Centroid-Le	6.00			1/2" Ice	4.18	2.83	64
		g	1.00			1" Ice	4.45	3.05	101
RXXDC-3315-PF-48	B	From	4.00	25.0000	112.00	No Ice	3.92	2.61	32
		Centroid-Le	6.00			1/2" Ice	4.18	2.83	64
		g	1.00			1" Ice	4.45	3.05	101
Platform Mount [LP 303-1]	C	None		0.0000	112.00	No Ice	14.66	14.66	1250
						1/2" Ice	18.87	18.87	1481
						1" Ice	23.08	23.08	1713
100									
7770.00 w/ Mount Pipe	A	From Leg	4.00	30.0000	100.00	No Ice	5.75	4.25	55
			-6.00			1/2" Ice	6.18	5.01	103
			0.00			1" Ice	6.61	5.71	157
7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	5.75	4.25	55
			6.00			1/2" Ice	6.18	5.01	103
			0.00			1" Ice	6.61	5.71	157
7770.00 w/ Mount Pipe	B	From Leg	4.00	20.0000	100.00	No Ice	5.75	4.25	55
			-6.00			1/2" Ice	6.18	5.01	103
			0.00			1" Ice	6.61	5.71	157
7770.00 w/ Mount Pipe	B	From Leg	4.00	-10.0000	100.00	No Ice	5.75	4.25	55
			6.00			1/2" Ice	6.18	5.01	103
			0.00			1" Ice	6.61	5.71	157

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
7770.00 w/ Mount Pipe	C	From Leg	4.00 -6.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	55 103 157
7770.00 w/ Mount Pipe	C	From Leg	4.00 6.00 0.00	10.0000	100.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	55 103 157
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	8.11 9.30 10.21	77 158 248
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.00 1.00 0.00	20.0000	100.00	No Ice 1/2" Ice 1" Ice	6.29 6.74 7.20	5.59 6.31 7.03	68 126 191
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	6.29 6.74 7.20	5.59 6.31 7.03	68 126 191
DC6-48-60-18-8F	A	From Leg	4.00 -6.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	33 55 80
(2) LGP21401	A	From Leg	4.00 -6.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14 21 30
(2) LGP21401	A	From Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14 21 30
(2) LGP21401	B	From Leg	4.00 -6.00 0.00	20.0000	100.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14 21 30
(2) LGP21401	B	From Leg	4.00 6.00 0.00	-10.0000	100.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14 21 30
(2) LGP21401	C	From Leg	4.00 -6.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14 21 30
(2) LGP21401	C	From Leg	4.00 6.00 0.00	10.0000	100.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14 21 30
RRUS 12	A	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	58 81 108
RRUS 12	B	From Leg	4.00 1.00 0.00	20.0000	100.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	58 81 108
RRUS 12	C	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	58 81 108
RRUS-11	A	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	50 71 95
RRUS-11	B	From Leg	4.00 1.00 0.00	20.0000	100.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	50 71 95
RRUS-11	C	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	50 71 95
RRUS A2	A	From Leg	4.00 1.00 0.00	30.0000	100.00	No Ice 1/2" Ice 1" Ice	2.07 2.25 2.43	0.50 0.61 0.72	22 35 50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS A2	B	From Leg	4.00	20.0000	100.00	No Ice	2.07	0.50	22
			1.00			1/2" Ice	2.25	0.61	35
			0.00			1" Ice	2.43	0.72	50
RRUS A2	C	From Leg	4.00	30.0000	100.00	No Ice	2.07	0.50	22
			1.00			1/2" Ice	2.25	0.61	35
			0.00			1" Ice	2.43	0.72	50
2.4" Dia x 6-ft Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	1.43	1.43	22
			1.00			1/2" Ice	1.93	1.93	33
			0.00			1" Ice	2.30	2.30	48
2.4" Dia x 6-ft Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	1.43	1.43	22
			1.00			1/2" Ice	1.93	1.93	33
			0.00			1" Ice	2.30	2.30	48
2.4" Dia x 6-ft Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	1.43	1.43	22
			1.00			1/2" Ice	1.93	1.93	33
			0.00			1" Ice	2.30	2.30	48
T-Arm Mount [TA 602-3]	C	None		0.0000	100.00	No Ice	11.59	11.59	774
						1/2" Ice	15.44	15.44	990
						1" Ice	19.29	19.29	1206
90									
NNVV-65B-R4 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	90.00	No Ice	12.51	7.41	103
			-6.00			1/2" Ice	13.11	8.60	194
			0.00			1" Ice	13.67	9.50	293
NNVV-65B-R4 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	90.00	No Ice	12.51	7.41	103
			-6.00			1/2" Ice	13.11	8.60	194
			0.00			1" Ice	13.67	9.50	293
NNVV-65B-R4 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	90.00	No Ice	12.51	7.41	103
			-6.00			1/2" Ice	13.11	8.60	194
			0.00			1" Ice	13.67	9.50	293
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	90.00	No Ice	6.58	4.96	77
			6.00			1/2" Ice	7.03	5.75	132
			0.00			1" Ice	7.47	6.47	193
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	90.00	No Ice	6.58	4.96	77
			6.00			1/2" Ice	7.03	5.75	132
			0.00			1" Ice	7.47	6.47	193
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	90.00	No Ice	6.58	4.96	77
			6.00			1/2" Ice	7.03	5.75	132
			0.00			1" Ice	7.47	6.47	193
(3) RRH2X50-800	A	From Centroid-Leg	4.00	0.0000	90.00	No Ice	2.13	1.77	53
			-2.00			1/2" Ice	2.32	1.95	74
			0.00			1" Ice	2.51	2.13	98
(3) RRH2X50-800	C	From Centroid-Leg	4.00	0.0000	90.00	No Ice	2.13	1.77	53
			2.00			1/2" Ice	2.32	1.95	74
			0.00			1" Ice	2.51	2.13	98
AIRPAIR ODU	A	From Centroid-Leg	4.00	0.0000	90.00	No Ice	1.01	0.46	12
			6.00			1/2" Ice	1.14	0.56	19
			0.00			1" Ice	1.28	0.67	28
AIRPAIR ODU	B	From Centroid-Leg	4.00	-30.0000	90.00	No Ice	1.01	0.46	12
			6.00			1/2" Ice	1.14	0.56	19
			0.00			1" Ice	1.28	0.67	28
AIRPAIR ODU	C	From Centroid-Leg	4.00	30.0000	90.00	No Ice	1.01	0.46	12
			6.00			1/2" Ice	1.14	0.56	19
			0.00			1" Ice	1.28	0.67	28
PCS 1900MHZ 4X45W-65MHZ	A	From Centroid-Leg	4.00	0.0000	90.00	No Ice	2.32	2.24	60
			6.00			1/2" Ice	2.53	2.44	83
			0.00			1" Ice	2.74	2.65	110
(2) PCS 1900MHZ 4X45W-65MHZ	B	From Centroid-Le	4.00	0.0000	90.00	No Ice	2.32	2.24	60
			-6.00			1/2" Ice	2.53	2.44	83

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
		g	0.00			1" Ice	2.74	2.65	110
(2) TD-RRH8X20-25	B	From	4.00	0.0000	90.00	No Ice	4.05	1.53	70
		Centroid-Le	6.00			1/2" Ice	4.30	1.71	97
		g	0.00			1" Ice	4.56	1.90	128
TD-RRH8X20-25	C	From	4.00	0.0000	90.00	No Ice	4.05	1.53	70
		Centroid-Le	-6.00			1/2" Ice	4.30	1.71	97
		g	0.00			1" Ice	4.56	1.90	128
2.4" Dia x 6-ft Pipe	A	From	4.00	0.0000	90.00	No Ice	1.43	1.43	22
		Centroid-Le	0.00			1/2" Ice	1.93	1.93	33
		g	0.00			1" Ice	2.30	2.30	48
2.4" Dia x 6-ft Pipe	B	From	4.00	0.0000	90.00	No Ice	1.43	1.43	22
		Centroid-Le	0.00			1/2" Ice	1.93	1.93	33
		g	0.00			1" Ice	2.30	2.30	48
2.4" Dia x 6-ft Pipe	C	From	4.00	0.0000	90.00	No Ice	1.43	1.43	22
		Centroid-Le	0.00			1/2" Ice	1.93	1.93	33
		g	0.00			1" Ice	2.30	2.30	48
Miscellaneous [NA 507-1]	C	None		0.0000	90.00	No Ice	4.80	4.80	245
						1/2" Ice	6.70	6.70	294
						1" Ice	8.60	8.60	343
Platform Mount [LP 303-1]	C	None		0.0000	90.00	No Ice	14.66	14.66	1250
						1/2" Ice	18.87	18.87	1481
						1" Ice	23.08	23.08	1713
****									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
90											
A-ANT-18G-2-C	B	Paraboloid	From	4.00	90.0000		90.00	2.17	No Ice	3.72	27
		w/Shroud (HP)	Centroid	6.00					1/2" Ice	4.01	48
			-Leg	0.00					1" Ice	4.30	68
A-ANT-18G-2-C	C	Paraboloid	From	4.00	30.0000		90.00	2.17	No Ice	3.72	27
		w/Shroud (HP)	Centroid	6.00					1/2" Ice	4.01	48
			-Leg	0.00					1" Ice	4.30	68
****											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice

Comb. No.	Description
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	6.146	49	0.4347	0.0012
L2	120 - 115	5.691	49	0.4345	0.0012
L3	115 - 110	5.238	49	0.4316	0.0011
L4	110 - 105	4.789	49	0.4248	0.0010
L5	105 - 100	4.350	49	0.4114	0.0008
L6	100 - 95	3.930	49	0.3909	0.0006
L7	95 - 90	3.528	49	0.3760	0.0005

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	90 - 85	3.144	49	0.3560	0.0005
L9	85 - 84.75	2.784	49	0.3301	0.0004
L10	84.75 - 80.5	2.767	49	0.3291	0.0004
L11	80.5 - 80.25	2.482	49	0.3097	0.0003
L12	80.25 - 80	2.466	49	0.3086	0.0003
L13	80 - 79.75	2.450	49	0.3074	0.0003
L14	79.75 - 79	2.434	49	0.3067	0.0003
L15	79 - 78.75	2.386	49	0.3043	0.0003
L16	78.75 - 73.75	2.370	49	0.3032	0.0003
L17	73.75 - 73.5	2.065	49	0.2795	0.0003
L18	73.5 - 73.25	2.050	49	0.2782	0.0003
L19	73.25 - 68.25	2.036	49	0.2773	0.0003
L20	68.25 - 63.25	1.755	49	0.2582	0.0002
L21	63.25 - 60.5	1.496	49	0.2363	0.0002
L22	60.5 - 60.25	1.363	49	0.2230	0.0002
L23	60.25 - 60	1.352	49	0.2219	0.0002
L24	60 - 59.75	1.340	49	0.2208	0.0002
L25	59.75 - 54.75	1.329	49	0.2199	0.0002
L26	54.75 - 49.75	1.108	49	0.2020	0.0002
L27	49.75 - 44.75	0.906	49	0.1822	0.0001
L28	44.75 - 40.5	0.727	49	0.1603	0.0001
L29	40.5 - 40.25	0.593	49	0.1401	0.0001
L30	40.25 - 40	0.586	49	0.1391	0.0001
L31	40 - 39.75	0.578	49	0.1381	0.0001
L32	39.75 - 34.75	0.571	49	0.1373	0.0001
L33	34.75 - 29.75	0.436	49	0.1210	0.0001
L34	29.75 - 24.75	0.318	49	0.1033	0.0001
L35	24.75 - 20.5	0.220	49	0.0843	0.0001
L36	20.5 - 20.25	0.152	49	0.0670	0.0000
L37	20.25 - 20	0.149	49	0.0662	0.0000
L38	20 - 19.75	0.146	49	0.0653	0.0000
L39	19.75 - 14.75	0.142	49	0.0646	0.0000
L40	14.75 - 9.75	0.082	49	0.0502	0.0000
L41	9.75 - 4.75	0.037	49	0.0348	0.0000
L42	4.75 - 4.25	0.009	49	0.0185	0.0000
L43	4.25 - 4	0.008	49	0.0168	0.0000
L44	4 - 0	0.007	49	0.0158	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	49	5.873	0.4348	0.0012	204195
112.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	49	4.967	0.4281	0.0011	38296
100.00	7770.00 w/ Mount Pipe	49	3.930	0.3909	0.0006	15932
90.00	A-ANT-18G-2-C	49	3.144	0.3560	0.0005	12549

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	30.048	10	2.1265	0.0057
L2	120 - 115	27.822	10	2.1252	0.0057
L3	115 - 110	25.603	10	2.1111	0.0056
L4	110 - 105	23.408	10	2.0781	0.0052
L5	105 - 100	21.264	10	2.0122	0.0041
L6	100 - 95	19.208	10	1.9111	0.0031
L7	95 - 90	17.243	10	1.8385	0.0027
L8	90 - 85	15.367	10	1.7410	0.0023
L9	85 - 84.75	13.608	10	1.6142	0.0019
L10	84.75 - 80.5	13.524	10	1.6092	0.0019
L11	80.5 - 80.25	12.133	10	1.5143	0.0016
L12	80.25 - 80	12.053	10	1.5089	0.0016
L13	80 - 79.75	11.975	10	1.5034	0.0016
L14	79.75 - 79	11.896	10	1.4996	0.0016
L15	79 - 78.75	11.661	10	1.4880	0.0016
L16	78.75 - 73.75	11.584	10	1.4827	0.0016
L17	73.75 - 73.5	10.090	10	1.3665	0.0013
L18	73.5 - 73.25	10.019	10	1.3602	0.0013
L19	73.25 - 68.25	9.948	10	1.3558	0.0013
L20	68.25 - 63.25	8.576	10	1.2623	0.0011
L21	63.25 - 60.5	7.309	10	1.1552	0.0010
L22	60.5 - 60.25	6.662	10	1.0903	0.0009
L23	60.25 - 60	6.606	10	1.0847	0.0009
L24	60 - 59.75	6.549	10	1.0792	0.0009
L25	59.75 - 54.75	6.493	10	1.0751	0.0009
L26	54.75 - 49.75	5.412	10	0.9875	0.0008
L27	49.75 - 44.75	4.428	10	0.8904	0.0007
L28	44.75 - 40.5	3.551	10	0.7835	0.0005
L29	40.5 - 40.25	2.897	10	0.6848	0.0005
L30	40.25 - 40	2.861	10	0.6799	0.0005
L31	40 - 39.75	2.825	10	0.6750	0.0004
L32	39.75 - 34.75	2.790	10	0.6712	0.0004
L33	34.75 - 29.75	2.129	10	0.5912	0.0004
L34	29.75 - 24.75	1.554	10	0.5047	0.0003
L35	24.75 - 20.5	1.074	10	0.4118	0.0002
L36	20.5 - 20.25	0.745	10	0.3275	0.0002
L37	20.25 - 20	0.728	10	0.3233	0.0002
L38	20 - 19.75	0.711	10	0.3190	0.0002
L39	19.75 - 14.75	0.694	10	0.3156	0.0002
L40	14.75 - 9.75	0.400	10	0.2451	0.0001
L41	9.75 - 4.75	0.182	10	0.1700	0.0001
L42	4.75 - 4.25	0.046	10	0.0902	0.0000
L43	4.25 - 4	0.037	10	0.0820	0.0000
L44	4 - 0	0.033	10	0.0773	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	10	28.712	2.1267	0.0057	41921
112.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	10	24.282	2.0942	0.0054	7880
100.00	7770.00 w/ Mount Pipe	10	19.208	1.9111	0.0031	3266
90.00	A-ANT-18G-2-C	10	15.367	1.7410	0.0023	2571

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
L1	125 - 120 (1)	P24x0.375	5.00	0.00	0.0	27.8325	-3943	1052070	0.004
L2	120 - 115 (2)	P24x0.375	5.00	0.00	0.0	27.8325	-4579	1052070	0.004
L3	115 - 110 (3)	P24x0.375	5.00	0.00	0.0	27.8325	-7971	1052070	0.008
L4	110 - 105 (4)	P24x0.375	5.00	0.00	0.0	27.8325	-8631	1052070	0.008
L5	105 - 100 (5)	P24x0.375	5.00	0.00	0.0	27.8325	-9300	1052070	0.009
L6	100 - 95 (6)	P30x0.375	5.00	0.00	0.0	34.9011	-12427	1311060	0.009
L7	95 - 90 (7)	P30x0.375	5.00	0.00	0.0	34.9011	-13296	1311060	0.010
L8	90 - 85 (8)	P30x0.375	5.00	0.00	0.0	34.9011	-17583	1311060	0.013
L9	85 - 84.75 (9)	P30x0.54375	0.25	0.00	0.0	50.3184	-17647	1902030	0.009
L10	84.75 - 80.5 (10)	P30x0.54375	4.25	0.00	0.0	50.3184	-18653	1902030	0.010
L11	80.5 - 80.25 (11)	P30x0.6125	0.25	0.00	0.0	56.5482	-18716	2137520	0.009
L12	80.25 - 80 (12)	P30x0.6125	0.25	0.00	0.0	56.5482	-18776	2137520	0.009
L13	80 - 79.75 (13)	P36x0.5125	0.25	0.00	0.0	57.1372	-18842	2159790	0.009
L14	79.75 - 79 (14)	P36x0.5125	0.75	0.00	0.0	57.1372	-19040	2159790	0.009
L15	79 - 78.75 (15)	P36x0.375	0.25	0.00	0.0	41.9697	-19094	1490100	0.013
L16	78.75 - 73.75 (16)	P36x0.375	5.00	0.00	0.0	41.9697	-20155	1490100	0.014
L17	73.75 - 73.5 (17)	P36x0.375	0.25	0.00	0.0	41.9697	-20211	1490100	0.014
L18	73.5 - 73.25 (18)	P36x0.5625	0.25	0.00	0.0	62.6232	-20283	2367160	0.009
L19	73.25 - 68.25 (19)	P36x0.5625	5.00	0.00	0.0	62.6232	-21705	2367160	0.009
L20	68.25 - 63.25 (20)	P36x0.5625	5.00	0.00	0.0	62.6232	-23136	2367160	0.010
L21	63.25 - 60.5 (21)	P36x0.5625	2.75	0.00	0.0	62.6232	-23924	2367160	0.010
L22	60.5 - 60.25 (22)	P36x0.625	0.25	0.00	0.0	69.4586	-24001	2625540	0.009
L23	60.25 - 60 (23)	P36x0.625	0.25	0.00	0.0	69.4586	-24072	2625540	0.009
L24	60 - 59.75 (24)	P42x0.525	0.25	0.00	0.0	68.4062	-24151	2569670	0.009
L25	59.75 - 54.75 (25)	P42x0.525	5.00	0.00	0.0	68.4062	-25719	2569670	0.010
L26	54.75 - 49.75 (26)	P42x0.525	5.00	0.00	0.0	68.4062	-27294	2569670	0.011
L27	49.75 - 44.75 (27)	P42x0.525	5.00	0.00	0.0	68.4062	-28873	2569670	0.011
L28	44.75 - 40.5 (28)	P42x0.525	4.25	0.00	0.0	68.4062	-30219	2569670	0.012
L29	40.5 - 40.25 (29)	P42x0.65	0.25	0.00	0.0	84.4382	-30308	3191760	0.009
L30	40.25 - 40 (30)	P42x0.65	0.25	0.00	0.0	84.4382	-30394	3191760	0.010
L31	40 - 39.75 (31)	P48x0.55625	0.25	0.00	0.0	82.9085	-30486	3039700	0.010
L32	39.75 - 34.75 (32)	P48x0.55625	5.00	0.00	0.0	82.9085	-32331	3039700	0.011
L33	34.75 - 29.75 (33)	P48x0.55625	5.00	0.00	0.0	82.9085	-34181	3039700	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L34	29.75 - 24.75 (34)	P48x0.55625	5.00	0.00	0.0	82.9085	-36035	3039700	0.012
L35	24.75 - 20.5 (35)	P48x0.55625	4.25	0.00	0.0	82.9085	-37613	3039700	0.012
L36	20.5 - 20.25 (36)	P48x0.675	0.25	0.00	0.0	100.356 0	-37716	3793470	0.010
L37	20.25 - 20 (37)	P48x0.675	0.25	0.00	0.0	100.356 0	-37817	3793470	0.010
L38	20 - 19.75 (38)	P54x0.5875	0.25	0.00	0.0	98.5827	-37924	3545230	0.011
L39	19.75 - 14.75 (39)	P54x0.5875	5.00	0.00	0.0	98.5827	-40066	3545230	0.011
L40	14.75 - 9.75 (40)	P54x0.5875	5.00	0.00	0.0	98.5827	-42214	3545230	0.012
L41	9.75 - 4.75 (41)	P54x0.5875	5.00	0.00	0.0	98.5827	-44364	3545230	0.013
L42	4.75 - 4.25 (42)	P54x0.5875	0.50	0.00	0.0	98.5827	-44580	3545230	0.013
L43	4.25 - 4 (43)	P54x0.5125	0.25	0.00	0.0	86.1184	-44688	2978680	0.015
L44	4 - 0 (44)	P54x0.5125	4.00	0.00	0.0	86.1184	-46396	2978680	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	125 - 120 (1)	P24x0.375	8530	623717	0.014	0	623717	0.000
L2	120 - 115 (2)	P24x0.375	30195	623717	0.048	0	623717	0.000
L3	115 - 110 (3)	P24x0.375	66416	623717	0.106	0	623717	0.000
L4	110 - 105 (4)	P24x0.375	113882	623717	0.183	0	623717	0.000
L5	105 - 100 (5)	P24x0.375	162930	623717	0.261	0	623717	0.000
L6	100 - 95 (6)	P30x0.375	229564	947858	0.242	0	947858	0.000
L7	95 - 90 (7)	P30x0.375	297619	947858	0.314	0	947858	0.000
L8	90 - 85 (8)	P30x0.375	385638	947858	0.407	0	947858	0.000
L9	85 - 84.75 (9)	P30x0.54375	390078	1443458	0.270	0	1443458	0.000
L10	84.75 - 80.5 (10)	P30x0.54375	466500	1443458	0.323	0	1443458	0.000
L11	80.5 - 80.25 (11)	P30x0.6125	471030	1666500	0.283	0	1666500	0.000
L12	80.25 - 80 (12)	P30x0.6125	475563	1666500	0.285	0	1666500	0.000
L13	80 - 79.75 (13)	P36x0.5125	480101	1894725	0.253	0	1894725	0.000
L14	79.75 - 79 (14)	P36x0.5125	493739	1894725	0.261	0	1894725	0.000
L15	79 - 78.75 (15)	P36x0.375	498294	1338808	0.372	0	1338808	0.000
L16	78.75 - 73.75 (16)	P36x0.375	590268	1338808	0.441	0	1338808	0.000
L17	73.75 - 73.5 (17)	P36x0.375	594910	1338808	0.444	0	1338808	0.000
L18	73.5 - 73.25 (18)	P36x0.5625	599556	2105042	0.285	0	2105042	0.000
L19	73.25 - 68.25 (19)	P36x0.5625	693363	2105042	0.329	0	2105042	0.000
L20	68.25 - 63.25 (20)	P36x0.5625	788807	2105042	0.375	0	2105042	0.000
L21	63.25 - 60.5 (21)	P36x0.5625	841967	2105042	0.400	0	2105042	0.000
L22	60.5 - 60.25 (22)	P36x0.625	846825	2373917	0.357	0	2373917	0.000
L23	60.25 - 60 (23)	P36x0.625	851683	2373917	0.359	0	2373917	0.000
L24	60 - 59.75 (24)	P42x0.525	856542	2600925	0.329	0	2600925	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L25	59.75 - 54.75 (25)	P42x0.525	954767	2600925	0.367	0	2600925	0.000
L26	54.75 - 49.75 (26)	P42x0.525	1054742	2600925	0.406	0	2600925	0.000
L27	49.75 - 44.75 (27)	P42x0.525	1156375	2600925	0.445	0	2600925	0.000
L28	44.75 - 40.5 (28)	P42x0.525	1243983	2600925	0.478	0	2600925	0.000
L29	40.5 - 40.25 (29)	P42x0.65	1249175	3306625	0.378	0	3306625	0.000
L30	40.25 - 40 (30)	P42x0.65	1254367	3306625	0.379	0	3306625	0.000
L31	40 - 39.75 (31)	P48x0.55625	1259558	3569342	0.353	0	3569342	0.000
L32	39.75 - 34.75 (32)	P48x0.55625	1364392	3569342	0.382	0	3569342	0.000
L33	34.75 - 29.75 (33)	P48x0.55625	1470925	3569342	0.412	0	3569342	0.000
L34	29.75 - 24.75 (34)	P48x0.55625	1579050	3569342	0.442	0	3569342	0.000
L35	24.75 - 20.5 (35)	P48x0.55625	1672150	3569342	0.468	0	3569342	0.000
L36	20.5 - 20.25 (36)	P48x0.675	1677658	4429592	0.379	0	4429592	0.000
L37	20.25 - 20 (37)	P48x0.675	1683175	4429592	0.380	0	4429592	0.000
L38	20 - 19.75 (38)	P54x0.5875	1688692	4739867	0.356	0	4739867	0.000
L39	19.75 - 14.75 (39)	P54x0.5875	1800008	4739867	0.380	0	4739867	0.000
L40	14.75 - 9.75 (40)	P54x0.5875	1913092	4739867	0.404	0	4739867	0.000
L41	9.75 - 4.75 (41)	P54x0.5875	2027900	4739867	0.428	0	4739867	0.000
L42	4.75 - 4.25 (42)	P54x0.5875	2039475	4739867	0.430	0	4739867	0.000
L43	4.25 - 4 (43)	P54x0.5125	2045267	4080767	0.501	0	4080767	0.000
L44	4 - 0 (44)	P54x0.5125	2138508	4080767	0.524	0	4080767	0.000

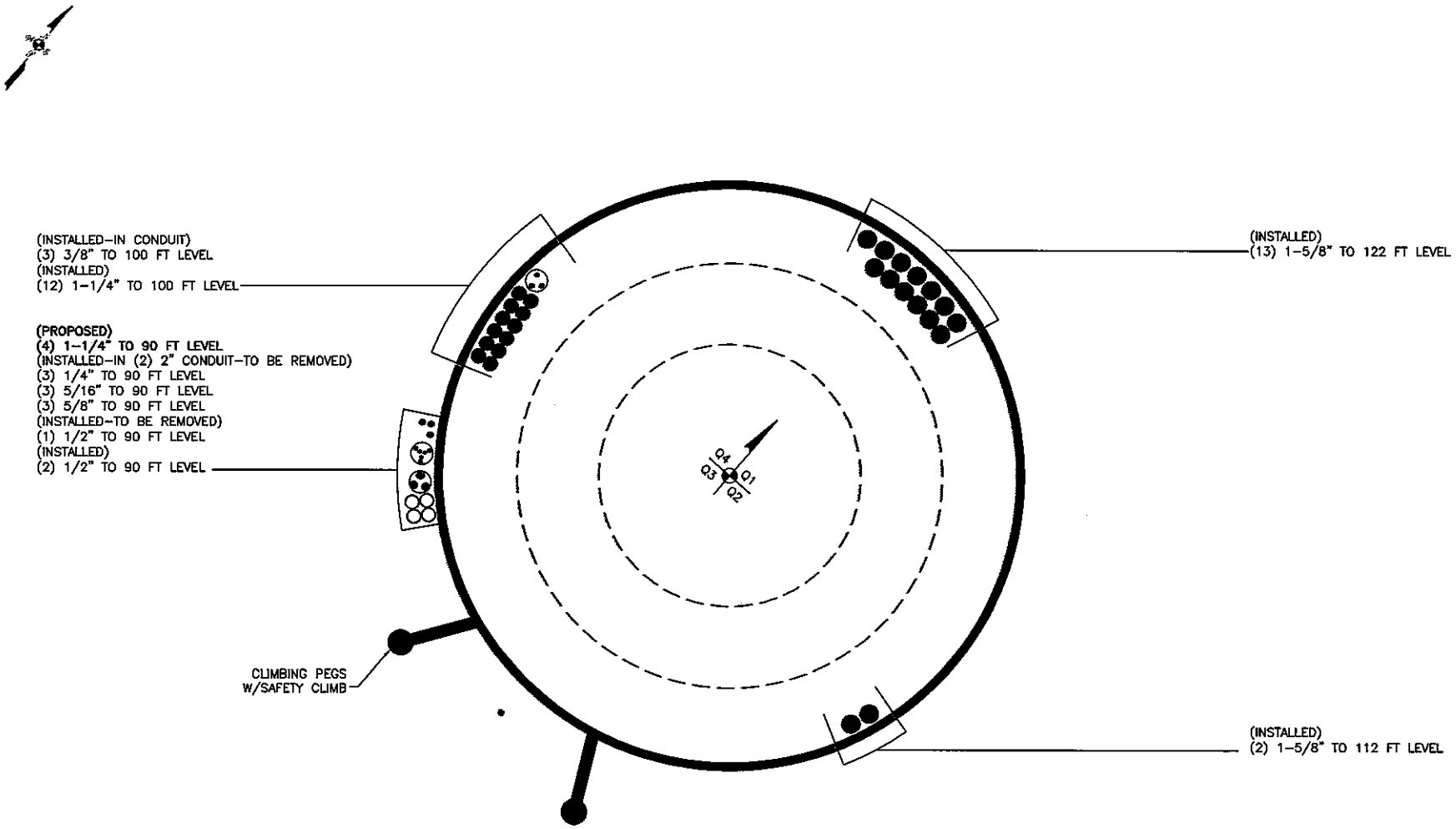
Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	125 - 120 (1)	P24x0.375	4190	526035	0.008	306	1019708	0.000
L2	120 - 115 (2)	P24x0.375	4473	526035	0.009	306	1019708	0.000
L3	115 - 110 (3)	P24x0.375	9346	526035	0.018	679	1019708	0.001
L4	110 - 105 (4)	P24x0.375	9680	526035	0.018	1017	1019708	0.001
L5	105 - 100 (5)	P24x0.375	9937	526035	0.019	1017	1019708	0.001
L6	100 - 95 (6)	P30x0.375	13461	655528	0.021	1045	1598367	0.001
L7	95 - 90 (7)	P30x0.375	13770	655528	0.021	1045	1598367	0.001
L8	90 - 85 (8)	P30x0.375	17758	655528	0.027	730	1598367	0.000
L9	85 - 84.75 (9)	P30x0.54375	17770	951017	0.019	730	2292917	0.000
L10	84.75 - 80.5 (10)	P30x0.54375	18122	951017	0.019	54	2292917	0.000
L11	80.5 - 80.25 (11)	P30x0.6125	18134	1068760	0.017	54	2565025	0.000
L12	80.25 - 80 (12)	P30x0.6125	18149	1068760	0.017	54	2565025	0.000
L13	80 - 79.75 (13)	P36x0.5125	18167	1079890	0.017	54	3148750	0.000
L14	79.75 - 79 (14)	P36x0.5125	18221	1079890	0.017	54	3148750	0.000
L15	79 - 78.75 (15)	P36x0.375	18237	745048	0.024	54	2189067	0.000
L16	78.75 - 73.75	P36x0.375	18571	745048	0.025	54	2189067	0.000

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	(16)							
L17	73.75 - 73.5	P36x0.375	18584	745048	0.025	54	2189067	0.000
	(17)							
L18	73.5 - 73.25	P36x0.5625	18602	1183580	0.016	54	3441508	0.000
	(18)							
L19	73.25 - 68.25	P36x0.5625	18940	1183580	0.016	54	3441508	0.000
	(19)							
L20	68.25 - 63.25	P36x0.5625	19259	1183580	0.016	54	3441508	0.000
	(20)							
L21	63.25 - 60.5	P36x0.5625	19429	1183580	0.016	54	3441508	0.000
	(21)							
L22	60.5 - 60.25	P36x0.625	19438	1312770	0.015	54	3803933	0.000
	(22)							
L23	60.25 - 60 (23)	P36x0.625	19454	1312770	0.015	54	3803933	0.000
L24	60 - 59.75 (24)	P42x0.525	19472	1284840	0.015	54	4385908	0.000
L25	59.75 - 54.75	P42x0.525	19835	1284840	0.015	54	4385908	0.000
	(25)							
L26	54.75 - 49.75	P42x0.525	20178	1284840	0.016	54	4385908	0.000
	(26)							
L27	49.75 - 44.75	P42x0.525	20500	1284840	0.016	54	4385908	0.000
	(27)							
L28	44.75 - 40.5	P42x0.525	20757	1284840	0.016	54	4385908	0.000
	(28)							
L29	40.5 - 40.25	P42x0.65	20767	1595880	0.013	54	5415375	0.000
	(29)							
L30	40.25 - 40 (30)	P42x0.65	20783	1595880	0.013	54	5415375	0.000
L31	40 - 39.75 (31)	P48x0.55625	20801	1519850	0.014	54	5940125	0.000
L32	39.75 - 34.75	P48x0.55625	21155	1519850	0.014	54	5940125	0.000
	(32)							
L33	34.75 - 29.75	P48x0.55625	21483	1519850	0.014	54	5940125	0.000
	(33)							
L34	29.75 - 24.75	P48x0.55625	21794	1519850	0.014	54	5940125	0.000
	(34)							
L35	24.75 - 20.5	P48x0.55625	22050	1519850	0.015	54	5940125	0.000
	(35)							
L36	20.5 - 20.25	P48x0.675	22060	1896730	0.012	54	7376550	0.000
	(36)							
L37	20.25 - 20 (37)	P48x0.675	22076	1896730	0.012	54	7376550	0.000
L38	20 - 19.75 (38)	P54x0.5875	22093	1772620	0.012	54	7805091	0.000
L39	19.75 - 14.75	P54x0.5875	22456	1772620	0.013	54	7805091	0.000
	(39)							
L40	14.75 - 9.75	P54x0.5875	22807	1772620	0.013	54	7805091	0.000
	(40)							
L41	9.75 - 4.75 (41)	P54x0.5875	23149	1772620	0.013	54	7805091	0.000
L42	4.75 - 4.25 (42)	P54x0.5875	23179	1772620	0.013	54	7805091	0.000
L43	4.25 - 4 (43)	P54x0.5125	23194	1489340	0.016	54	6576017	0.000
L44	4 - 0 (44)	P54x0.5125	23457	1489340	0.016	54	6576017	0.000

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 822765 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 822765

Work Order: 1572071

CROWN CASTLE

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	125	25		0	24	24	0.375	n/a	A53-B-42
2	100	20		0	30.00	30	0.375	n/a	A53-B-42
3	80	20		0	36.00	36	0.375	n/a	A53-B-42
4	60	20		0	42.00	42	0.375	n/a	A53-B-42
5	40	20		0	48.00	48	0.375	n/a	A53-B-42
6	20	20		0	54.00	54	0.375	n/a	A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	4.25	plate	(TS) 1.25x6.50 (65 ksi)	3						139				214								349
2	0	4.25	plate	TS) 1.25x1.6875 (65 ks	8	19			64		109		154		199	215				289		334	
3	4.25	20	plate	CFP-085125 - Lower F	3	0					120						240						
4	20	20.5	plate	CI-CFP-085125 - Offse	3	0					120						240						
5	20.5	40	plate	CFP-065125 - Lower F	3	0					120						240						
6	40	40.5	plate	CI-CFP-065125 - Offs	3	0					120						240						
7	40.5	60	plate	FP-060100-25 - Lower	3	0					120						240						
8	60	60.5	plate	I-CFP-060100-25 - Off	3	0					120						240						
9	60.5	73.5	plate	CCI-CFP-060100-15	3	0					120						240						
10	79	80	plate	Stiffener 4.5x1 - Lowe	3	0					120						240						
11	80	80.5	plate	ge Stiffener 4.5x1 - Of	3	0					120						240						
12	80.5	85	plate	Stiffener 4.5x1 - Uppe	3	0					120						240						
13																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	1.25	5.75	7.1875	3.625	n/a	n/a	0.750	7.188	0.0000	A572-65
2	1.25	0.9375	1.171875	1.21875	n/a	n/a	0.750	1.172	0.0000	A572-65
3	8.5	1.25	10.625	0.625	45.000	n/a	24.000	9.063	1.1875	A572-65
4	8.5	1.25	10.625	3.625	n/a	n/a	24.000	9.063	1.1875	A572-65
5	6.5	1.25	8.125	0.625	90.000	n/a	16.000	6.563	1.1875	A572-65
6	6.5	1.25	8.125	3.625	n/a	n/a	16.000	6.563	1.1875	A572-65
7	6	1	6	0.5	66.000	n/a	16.000	4.750	1.1875	A572-65
8	6	1	6	3.5	n/a	n/a	16.000	4.750	1.1875	A572-65
9	6	1	6	0.5	24.000	24.000	24.000	4.750	1.1875	A572-65
10	4.5	1	4.5	0.5	18.000	n/a	16.000	3.250	1.1875	A572-65
11	4.5	1	4.5	3.5	n/a	n/a	16.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	n/a	24.000	16.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	125 - 120	5		0	24.000	24.000	0.375	A53-B-42	1.000
2	120 - 115	5		0	24.000	24.000	0.375	A53-B-42	1.000
3	115 - 110	5		0	24.000	24.000	0.375	A53-B-42	1.000
4	110 - 105	5		0	24.000	24.000	0.375	A53-B-42	1.000
5	105 - 100	5	0	0	24.000	24.000	0.375	A53-B-42	1.000
6	100 - 95	5		0	30.000	30.000	0.375	A53-B-42	1.000
7	95 - 90	5		0	30.000	30.000	0.375	A53-B-42	1.000
8	90 - 85	5		0	30.000	30.000	0.375	A53-B-42	1.000
9	85 - 84.75	0.25		0	30.000	30.000	0.54375	A53-B-42	0.962
10	84.75 - 80.5	4.25		0	30.000	30.000	0.54375	A53-B-42	0.962
11	80.5 - 80.25	0.25		0	30.000	30.000	0.6125	A53-B-42	0.856
12	80.25 - 80	0.25	0	0	30.000	30.000	0.6125	A53-B-42	0.856
13	80 - 79.75	0.25		0	36.000	36.000	0.5125	A53-B-42	0.971
14	79.75 - 79	0.75		0	36.000	36.000	0.5125	A53-B-42	0.971
15	79 - 78.75	0.25		0	36.000	36.000	0.375	A53-B-42	1.000
16	78.75 - 73.75	5		0	36.000	36.000	0.375	A53-B-42	1.000
17	73.75 - 73.5	0.25		0	36.000	36.000	0.375	A53-B-42	1.000
18	73.5 - 73.25	0.25		0	36.000	36.000	0.5625	A53-B-42	0.958
19	73.25 - 68.25	5		0	36.000	36.000	0.5625	A53-B-42	0.958
20	68.25 - 63.25	5		0	36.000	36.000	0.5625	A53-B-42	0.958
21	63.25 - 60.5	2.75		0	36.000	36.000	0.5625	A53-B-42	0.958
22	60.5 - 60.25	0.25		0	36.000	36.000	0.625	A53-B-42	0.863
23	60.25 - 60	0.25	0	0	36.000	36.000	0.625	A53-B-42	0.863
24	60 - 59.75	0.25		0	42.000	42.000	0.525	A53-B-42	0.980
25	59.75 - 54.75	5		0	42.000	42.000	0.525	A53-B-42	0.980
26	54.75 - 49.75	5		0	42.000	42.000	0.525	A53-B-42	0.980
27	49.75 - 44.75	5		0	42.000	42.000	0.525	A53-B-42	0.980
28	44.75 - 40.5	4.25		0	42.000	42.000	0.525	A53-B-42	0.980
29	40.5 - 40.25	0.25		0	42.000	42.000	0.65	A53-B-42	0.869
30	40.25 - 40	0.25	0	0	42.000	42.000	0.65	A53-B-42	0.869
31	40 - 39.75	0.25		0	48.000	48.000	0.55625	A53-B-42	0.971
32	39.75 - 34.75	5		0	48.000	48.000	0.55625	A53-B-42	0.971
33	34.75 - 29.75	5		0	48.000	48.000	0.55625	A53-B-42	0.971
34	29.75 - 24.75	5		0	48.000	48.000	0.55625	A53-B-42	0.971
35	24.75 - 20.5	4.25		0	48.000	48.000	0.55625	A53-B-42	0.971
36	20.5 - 20.25	0.25		0	48.000	48.000	0.675	A53-B-42	0.877
37	20.25 - 20	0.25	0	0	48.000	48.000	0.675	A53-B-42	0.877
38	20 - 19.75	0.25		0	54.000	54.000	0.5875	A53-B-42	0.964
39	19.75 - 14.75	5		0	54.000	54.000	0.5875	A53-B-42	0.964
40	14.75 - 9.75	5		0	54.000	54.000	0.5875	A53-B-42	0.964
41	9.75 - 4.75	5		0	54.000	54.000	0.5875	A53-B-42	0.964
42	4.75 - 4.25	0.5		0	54.000	54.000	0.5875	A53-B-42	0.964
43	4.25 - 4	0.25		0	54.000	54.000	0.5125	A53-B-42	1.093
44	4 - 0	4		0	54.000	54.000	0.5125	A53-B-42	1.093

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	125 - 120	3.94	8.53	4.19
2	120 - 115	4.58	30.20	4.47
3	115 - 110	7.97	66.42	9.35
4	110 - 105	8.63	113.88	9.68
5	105 - 100	9.30	162.93	9.94
6	100 - 95	12.43	229.56	13.46
7	95 - 90	13.30	297.62	13.77
8	90 - 85	17.58	385.64	17.76
9	85 - 84.75	17.65	390.08	17.77
10	84.75 - 80.5	18.65	466.50	18.12
11	80.5 - 80.25	18.72	471.03	18.13
12	80.25 - 80	18.78	475.56	18.15
13	80 - 79.75	18.84	480.10	18.17
14	79.75 - 79	19.04	493.74	18.22
15	79 - 78.75	19.09	498.29	18.24
16	78.75 - 73.75	20.15	590.27	18.57
17	73.75 - 73.5	20.21	594.91	18.58
18	73.5 - 73.25	20.28	599.56	18.60
19	73.25 - 68.25	21.71	693.36	18.94
20	68.25 - 63.25	23.14	788.81	19.26
21	63.25 - 60.5	23.92	841.97	19.43
22	60.5 - 60.25	24.00	846.82	19.44
23	60.25 - 60	24.07	851.68	19.45
24	60 - 59.75	24.15	856.55	19.47
25	59.75 - 54.75	25.72	954.76	19.84
26	54.75 - 49.75	27.29	1054.74	20.18
27	49.75 - 44.75	28.87	1156.37	20.50
28	44.75 - 40.5	30.22	1243.99	20.76
29	40.5 - 40.25	30.31	1249.17	20.77
30	40.25 - 40	30.39	1254.37	20.78
31	40 - 39.75	30.49	1259.56	20.80
32	39.75 - 34.75	32.33	1364.39	21.16
33	34.75 - 29.75	34.18	1470.92	21.48
34	29.75 - 24.75	36.03	1579.05	21.79
35	24.75 - 20.5	37.61	1672.15	22.05
36	20.5 - 20.25	37.72	1677.66	22.06
37	20.25 - 20	37.82	1683.18	22.08
38	20 - 19.75	37.92	1688.69	22.09
39	19.75 - 14.75	40.07	1800.00	22.46
40	14.75 - 9.75	42.21	1913.09	22.81
41	9.75 - 4.75	44.36	2027.90	23.15
42	4.75 - 4.25	44.58	2039.47	23.18
43	4.25 - 4	44.69	2045.27	23.19
44	4 - 0	46.40	2138.51	23.46

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
125 - 120	Pole	TP24x24x0.375	Pole	1.7%	Pass
120 - 115	Pole	TP24x24x0.375	Pole	5.3%	Pass
115 - 110	Pole	TP24x24x0.375	Pole	11.4%	Pass
110 - 105	Pole	TP24x24x0.375	Pole	19.1%	Pass
105 - 100	Pole	TP24x24x0.375	Pole	27.0%	Pass
100 - 95	Pole	TP30x30x0.375	Pole	25.2%	Pass
95 - 90	Pole	TP30x30x0.375	Pole	32.5%	Pass
90 - 85	Pole	TP30x30x0.375	Pole	42.1%	Pass
85 - 84.75	Pole + Reinf.	TP30x30x0.5438	Reinf. 12 Tension Rupture	31.6%	Pass
84.75 - 80.5	Pole + Reinf.	TP30x30x0.5438	Reinf. 12 Tension Rupture	37.6%	Pass
80.5 - 80.25	Pole + Reinf.	TP30x30x0.6125	Reinf. 11 Tension Rupture	40.2%	Pass
80.25 - 80	Pole + Reinf.	TP30x30x0.6125	Reinf. 11 Tension Rupture	40.6%	Pass
80 - 79.75	Pole + Reinf.	TP36x36x0.5125	Reinf. 10 Tension Rupture	28.3%	Pass
79.75 - 79	Pole + Reinf.	TP36x36x0.5125	Reinf. 10 Tension Rupture	29.1%	Pass
79 - 78.75	Pole	TP36x36x0.375	Pole	38.6%	Pass
78.75 - 73.75	Pole	TP36x36x0.375	Pole	45.5%	Pass
73.75 - 73.5	Pole	TP36x36x0.375	Pole	45.9%	Pass
73.5 - 73.25	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	36.4%	Pass
73.25 - 68.25	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	42.0%	Pass
68.25 - 63.25	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	47.8%	Pass
63.25 - 60.5	Pole + Reinf.	TP36x36x0.5625	Reinf. 9 Compression	50.9%	Pass
60.5 - 60.25	Pole + Reinf.	TP36x36x0.625	Reinf. 8 Tension Rupture	43.4%	Pass
60.25 - 60	Pole + Reinf.	TP36x36x0.625	Reinf. 8 Tension Rupture	43.7%	Pass
60 - 59.75	Pole + Reinf.	TP42x42x0.525	Pole	35.2%	Pass
59.75 - 54.75	Pole + Reinf.	TP42x42x0.525	Pole	39.1%	Pass
54.75 - 49.75	Pole + Reinf.	TP42x42x0.525	Pole	43.2%	Pass
49.75 - 44.75	Pole + Reinf.	TP42x42x0.525	Pole	47.3%	Pass
44.75 - 40.5	Pole + Reinf.	TP42x42x0.525	Pole	50.9%	Pass
40.5 - 40.25	Pole + Reinf.	TP42x42x0.65	Reinf. 6 Tension Rupture	43.2%	Pass
40.25 - 40	Pole + Reinf.	TP42x42x0.65	Reinf. 6 Tension Rupture	43.4%	Pass
40 - 39.75	Pole + Reinf.	TP48x48x0.5563	Pole	38.0%	Pass
39.75 - 34.75	Pole + Reinf.	TP48x48x0.5563	Pole	41.1%	Pass
34.75 - 29.75	Pole + Reinf.	TP48x48x0.5563	Pole	44.3%	Pass
29.75 - 24.75	Pole + Reinf.	TP48x48x0.5563	Pole	47.5%	Pass
24.75 - 20.5	Pole + Reinf.	TP48x48x0.5563	Pole	50.3%	Pass
20.5 - 20.25	Pole + Reinf.	TP48x48x0.675	Reinf. 4 Compression	45.3%	Pass
20.25 - 20	Pole + Reinf.	TP48x48x0.675	Reinf. 4 Compression	45.5%	Pass
20 - 19.75	Pole + Reinf.	TP54x54x0.5875	Pole	38.8%	Pass
19.75 - 14.75	Pole + Reinf.	TP54x54x0.5875	Pole	41.3%	Pass
14.75 - 9.75	Pole + Reinf.	TP54x54x0.5875	Pole	43.9%	Pass
9.75 - 4.75	Pole + Reinf.	TP54x54x0.5875	Pole	46.5%	Pass
4.75 - 4.25	Pole + Reinf.	TP54x54x0.5875	Pole	46.8%	Pass
4.25 - 4	Pole + Reinf.	TP54x54x0.5125	Pole	53.2%	Pass
4 - 0	Pole + Reinf.	TP54x54x0.5125	Pole	55.6%	Pass
				Summary	
			Pole	55.6%	Pass
			Reinforcement	50.9%	Pass
			Overall	55.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
125 - 120	1942	n/a	1942	27.83	n/a	27.83	1.7%												
120 - 115	1942	n/a	1942	27.83	n/a	27.83	5.3%												
115 - 110	1942	n/a	1942	27.83	n/a	27.83	11.4%												
110 - 105	1942	n/a	1942	27.83	n/a	27.83	19.1%												
105 - 100	1942	n/a	1942	27.83	n/a	27.83	27.0%												
100 - 95	3829	n/a	3829	34.90	n/a	34.90	25.2%												
95 - 90	3829	n/a	3829	34.90	n/a	34.90	32.5%												
90 - 85	3829	n/a	3829	34.90	n/a	34.90	42.1%												
85 - 84.75	3829	1634	5463	34.90	13.50	48.40	29.8%												31.6%
84.75 - 80.5	3829	1634	5463	34.90	13.50	48.40	35.5%												37.6%
80.5 - 80.25	3829	2322	6152	34.90	13.50	48.40	31.9%											40.2%	
80.25 - 80	3829	2322	6152	34.90	13.50	48.40	32.2%											40.6%	
80 - 79.75	6659	2322	8981	41.97	13.50	55.47	27.5%										28.3%		
79.75 - 79	6659	2322	8981	41.97	13.50	55.47	28.3%										29.1%		
79 - 78.75	6659	n/a	6659	41.97	n/a	41.97	38.6%												
78.75 - 73.75	6659	n/a	6659	41.97	n/a	41.97	45.5%												
73.75 - 73.5	6659	n/a	6659	41.97	n/a	41.97	45.9%												
73.5 - 73.25	6659	3108	9767	41.97	18.00	59.97	31.5%									36.4%			
73.25 - 68.25	6659	3108	9767	41.97	18.00	59.97	36.3%									42.0%			
68.25 - 63.25	6659	3108	9767	41.97	18.00	59.97	41.3%									47.8%			
63.25 - 60.5	6659	3108	9767	41.97	18.00	59.97	44.0%									50.9%			
60.5 - 60.25	6659	4188	10847	41.97	18.00	59.97	39.9%								43.4%				
60.25 - 60	6659	4188	10847	41.97	18.00	59.97	40.1%								43.7%				
60 - 59.75	10622	4188	14810	49.04	18.00	67.04	35.2%							32.4%					
59.75 - 54.75	10622	4188	14810	49.04	18.00	67.04	38.1%							36.0%					
54.75 - 49.75	10622	4188	14810	49.04	18.00	67.04	43.2%							39.8%					
49.75 - 44.75	10622	4188	14810	49.04	18.00	67.04	47.3%							43.6%					
44.75 - 40.5	10622	4188	14810	49.04	18.00	67.04	50.9%							46.8%					
40.5 - 40.25	10622	7435	18056	49.04	24.38	73.41	42.0%						43.2%						
40.25 - 40	10622	7435	18056	49.04	24.38	73.41	42.1%						43.4%						
40 - 39.75	15908	7435	23343	56.11	24.38	80.48	38.0%					33.9%							
39.75 - 34.75	15908	7435	23343	56.11	24.38	80.48	41.1%					36.7%							
34.75 - 29.75	15908	7435	23343	56.11	24.38	80.48	44.3%					39.5%							
29.75 - 24.75	15908	7435	23343	56.11	24.38	80.48	47.5%					42.4%							
24.75 - 20.5	15908	7435	23343	56.11	24.38	80.48	50.3%					44.9%							
20.5 - 20.25	15908	12261	28169	56.11	31.88	87.98	42.0%				45.3%								
20.25 - 20	15908	12261	28169	56.11	31.88	87.98	42.1%				45.5%								
20 - 19.75	22710	12261	34970	63.18	31.88	95.05	38.8%			38.9%									
19.75 - 14.75	22710	12261	34970	63.18	31.88	95.05	41.3%			39.3%									
14.75 - 9.75	22710	12261	34970	63.18	31.88	95.05	43.9%			41.8%									
9.75 - 4.75	22710	12261	34970	63.18	31.88	95.05	46.5%			44.3%									
4.75 - 4.25	22710	12261	34970	63.18	31.88	95.05	46.8%			44.6%									
4.25 - 4	22718	8375	31093	63.18	30.94	94.11	53.2%	36.0%	39.3%										
4 - 0	22718	8375	31093	63.18	30.94	94.11	55.8%	37.7%	41.1%										

Note: Section capacity checked in 5 degree increments.

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

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Reactions		
Mu	162.93	ft-kips
Axial, Pu:	9.30	kips
Shear, Vu:	9.94	kips
Elevation:	100	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	27		

Plate Data		
Diam:	30	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

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

Pole Data		
Diam:	24	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

		Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54 kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.54 kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	14.02 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.052 in	
Min PL "treq" for actual **T w/ Pry:**	0.407 in	
Min PL "t1" for actual **T w/o Pry:**	0.534 in	
T allowable w/o Prying:	54.54 kips	α'<0 case
Prying Force, q:	0.00 kips	
Total Bolt Tension=Tu+q:	14.02 kips	
Non-Prying Bolt Stress Ratio, Tu/B:	25.7% **Pass**	

Exterior Flange Plate Results Flexural Check

		Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	TIA G
Allowable Plate Stress:	32.4 ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		12.37
Tension Side Stress Ratio, (treq/t)^2:	10.6% **Pass**	

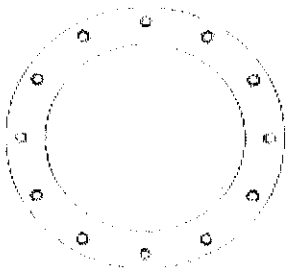
n/a

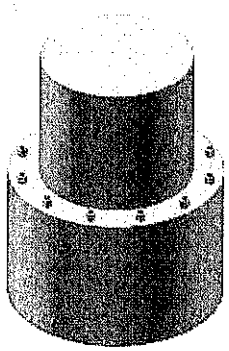
Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Manufacturer:	Pirod

Bolt Data			
Qty:	20		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle:	27	in	

Plate Data		
Plate Outer Diam:	29.25	in
Plate Inner Diam:	24	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.59	in

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

Pole Data		
Pole OuterDiam:	30	in
Thick:	0.375	in
Pole Inner Diam:	29.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	162.93	ft-kips
Axial:	9.30	kips
Shear:	9.94	kips
Exterior Flange Run, T+q:	14.02	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 100 feet

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	14.0	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty), I	54.5	Kips
Bolt Stress Ratio:	25.7%	**Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	14.9	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

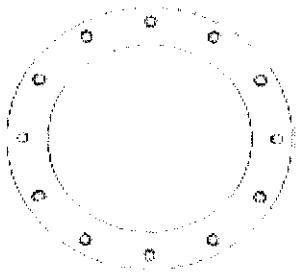
n/a

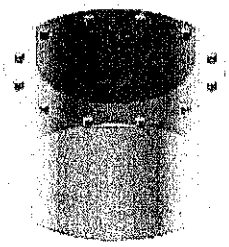
Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A





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

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

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

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Reactions		
Mu	296.04	ft-kips
Axial, Pu:	13.54	kips
Shear, Vu:	13.09	kips
Elevation:	80	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Other

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	33		

Plate Data		
Diam:	36	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.93	in

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

Pole Data		
Diam:	30	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	17.38	Kips	
Min. PL "tc" for **B** cap. w/o Pry:	1.031	in	
Min PL "treq" for actual **T w/ Pry:**	0.443	in	
Min PL "t1" for actual **T w/o Pry:**	0.582	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	17.38	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	31.9%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	11.4	ksi	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	35.2%	**Pass**	Comp. Y.L. Length:
No Prying			13.75
Tension Side Stress Ratio, (treq/t)^2:	12.5%	**Pass**	

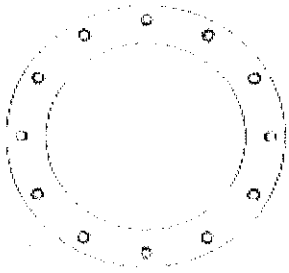
n/a

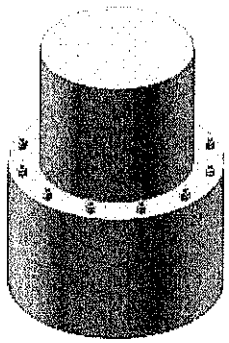
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Manufacturer:	Other

Reactions		
Moment:	296.04	ft-kips
Axial:	13.54	kips
Shear:	13.09	kips
Exterior Flange Run, T+q:	17.38	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 80 feet

Bolt Data			
Qty:	24		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle:	33	in	

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	17.4	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty), I	54.5	Kips
Bolt Stress Ratio:	31.9%	**Pass**

Plate Data		
Plate Outer Diam:	35.25	in
Plate Inner Diam:	30	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.61	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	18.5	Kips, Ext. Cu=Interior Cu
Plate Stress:	11.6	ksi
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	35.7%	**Pass**

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

n/a

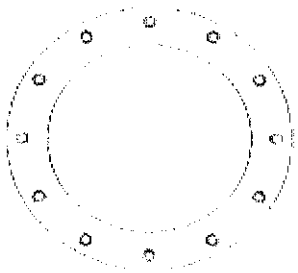
Stiffener Results

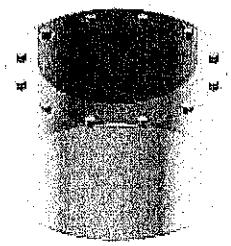
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a

Pole Data		
Pole OuterDiam:	36	in
Thick:	0.375	in
Pole Inner Diam:	35.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





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

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

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

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Reactions		
Mu	522.85	ft-kips
Axial, Pu:	16.85	kips
Shear, Vu:	13.62	kips
Elevation:	60	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Other

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	28		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	39		

Plate Data		
Diam:	42	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.04	in

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

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	Rigid: φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.54	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	22.38	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.017	in	
Min PL "treq" for actual **T w/ Pry:**	0.494	in	
Min PL "t1" for actual **T w/o Pry:**	0.651	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	22.38	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	41.0%	**Pass**	

Exterior Flange Plate Results Flexural Check — Rigid: TIA G

Compression Side Plate Stress:	14.1	ksi	φ*Fy
Allowable Plate Stress:	32.4	ksi	
Compression Plate Stress Ratio:	43.5%	**Pass**	Comp. Y.L. Length: 15.00
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	15.6%	**Pass**	

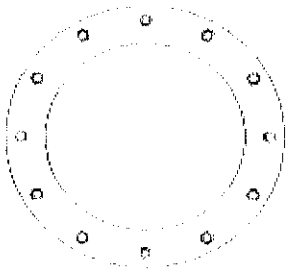
n/a

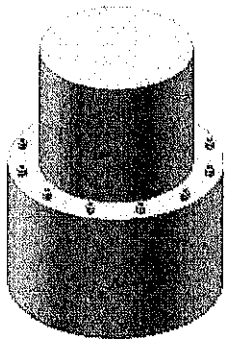
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Manufacturer:	Other

Reactions		
Moment:	522.85	ft-kips
Axial:	16.85	kips
Shear:	13.62	kips
Exterior Flange Run, T+q:	22.38	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 60 feet

Bolt Data			
Qty:	28		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle:	39	in	

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	22.4	Kips, Ext. Tu=Interior Tu
Adjusted φ*Tn (due to Vu=Vu/Qty), I	54.5	Kips
Bolt Stress Ratio:	41.0%	**Pass**

Plate Data		
Plate Outer Diam:	41.25	in
Plate Inner Diam:	36	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.63	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	23.6	Kips, Ext. Cu=Interior Cu
Plate Stress:	14.7	ksi
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	45.3%	**Pass**

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

n/a

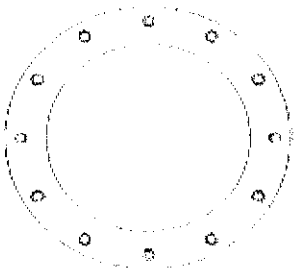
Stiffener Results

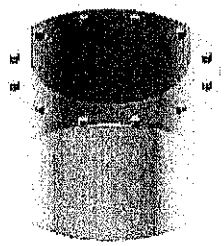
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a

Pole Data		
Pole OuterDiam:	42	in
Thick:	0.375	in
Pole Inner Diam:	41.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





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

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

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

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Reactions		
Mu	737.87	ft-kips
Axial, Pu:	20.30	kips
Shear, Vu:	13.88	kips
Elevation:	40	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Other

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	32		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	45		

Plate Data		
Diam:	48	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.12	in

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

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,B1:	54.54	kips	Rigid / φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), B:	54.54	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	23.96	Kips	
Min. PL "tc" for B cap. w/o Pry:	1.006	in	
Min PL "treq" for actual T w/ Pry:	0.505	in	
Min PL "t1" for actual T w/o Pry:	0.667	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	23.96	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	43.9%	**Pass**	

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	15.1	ksi	Rigid / TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	46.7%	**Pass**	Comp. Y.L. Length: 16.16
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	16.3%	**Pass**	

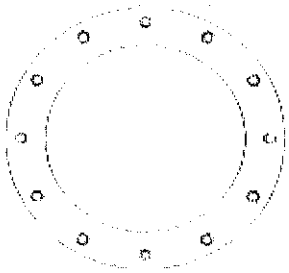
n/a

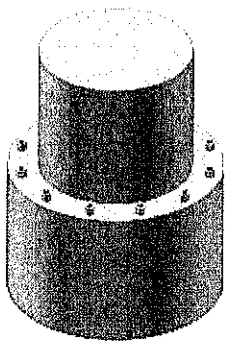
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Manufacturer:	Other

Reactions		
Moment:	737.87	ft-kips
Axial:	20.30	kips
Shear:	13.88	kips
Exterior Flange Run, T+q:	23.96	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 40 feet

Bolt Data			
Qty:	32		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle:	45	in	

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	24.0	Kips, Ext. Tu=Interior Tu
Adjusted φ*Tn (due to Vu=Vu/Qty), I	54.5	Kips
Bolt Stress Ratio:	43.9%	**Pass**

Plate Data		
Plate Outer Diam:	47.25	in
Plate Inner Diam:	42	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.64	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	25.2	Kips, Ext. Cu=Interior Cu
Plate Stress:	15.7	ksi
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	48.3%	**Pass**

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

n/a

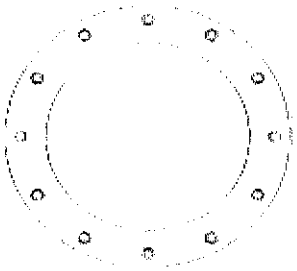
Stiffener Results

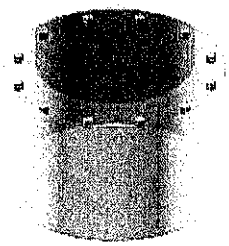
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Pole OuterDiam:	48	in
Thick:	0.375	in
Pole Inner Diam:	47.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





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

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

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

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Reactions		
Mu	950.57	ft-kips
Axial, Pu:	24.12	kips
Shear, Vu:	14.08	kips
Elevation:	20	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Other

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	36		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	51		

Plate Data		
Diam:	54	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.19	in

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

Pole Data		
Diam:	48	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.54	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	24.18	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	0.998	in	
Min PL "treq" for actual **T w/ Pry:**	0.503	in	
Min PL "t1" for actual **T w/o Pry:**	0.665	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	24.18	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	44.3%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	15.2	ksi	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	47.0%	**Pass**	Comp. Y.L. Length:
No Prying			17.23
Tension Side Stress Ratio, (treq/t)^2:	16.2%	**Pass**	

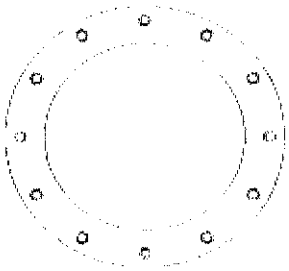
n/a

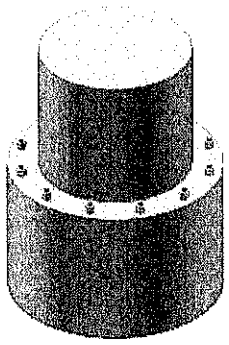
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Manufacturer:	Other

Reactions		
Moment:	950.57	ft-kips
Axial:	24.12	kips
Shear:	14.08	kips
Exterior Flange Run, T+q:	24.18	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 20 feet

Bolt Data			
Qty:	36		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle:	51	in	

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	24.2 Kips, Ext. Tu=Interior Tu
Adjusted φ*Tn (due to Vu=Vu/Qty), I	54.5 Kips
Bolt Stress Ratio:	44.3% **Pass**

Plate Data		
Plate Outer Diam:	53.25	in
Plate Inner Diam:	48	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.65	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	25.5 Kips, Ext. Cu=Interior Cu
Plate Stress:	15.8 ksi
Allowable Plate Stress, φ*Fy:	32.4 ksi
Plate Stress Ratio:	48.8% **Pass**

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

n/a

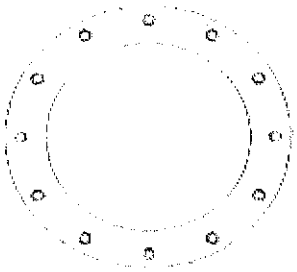
Stiffener Results

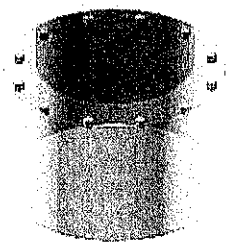
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a

Pole Data		
Pole OuterDiam:	54	in
Thick:	0.375	in
Pole Inner Diam:	53.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





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

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

Capacity: 46.0% PASS

Branford/ I-95/ X55/ Dtn1 (BU 822765)
TEP #: 25582.204169
Analysis: GJS 5/18/2018
Check: MGY 5/18/2018

Custom Anchor Rod Capacity Check_v0.0

Factored Tower Base Reactions

	LC1	LC2	
Moment:	2,138.51	580.554	kip-ft
Axial (Download):	46.40	77.037	kip
Shear:	23.45	6.549	kip
Axial (Uplift):			kip

Load Centroid

X: 0.00 in
Y: 0.00 in

Code Revision
(●) TIA-222-G
( ) TIA-222-F

Pole/Base Plate Geometry

Pole Shape:	Round	
Pole OD:	54.000	in
Pole Thickness:	0.375	in
Plate Shape:	Round	
Plate Diameter:	60.125	in
Plate Thickness:	1.00	in
	3.00	

Anchor Size	A_{NET} (in^2)	F_Y (ksi)	F_U (ksi)	Config.	T/C	Qty.	Bolt Circle (in)	Spacing (in)	l_{ar} (in)	Bolt One Angle (Round) or Locations (Custom) (°)
1"	0.606	105.0	125.0	Round	T/C	48	57.000		1.000	0
1-3/4"	1.899	105.0	125.0	Custom	T/C	8	60.250		1.000	19 64 109 154 199 215 289 334

Bolt Group	A_{NET} (in^2)	Y_{CONT} (in)	Tu (k)	Cu (k)	Mu (k-ft)	Vu (k)	ϕR_{NT} (k)	ϕR_{NM} (k-ft)	ϕR_{NV} (k)	Orientation (°)	Capacity (%)
1	0.606	-28.499	24.22	25.38	0.01	0.21	60.57	0.89	33.13	262.0	42.6%
2	**1.899**	**-30.107**	**79.75**	**83.36**	**0.11**	**2.07**	**189.95**	**4.94**	**101.47**	**253.0**	**46.0%**

Tower Engineering Professionals, Inc.
326 Tryon Road | Raleigh, NC 27603-3530 | Office: (919) 661-6351 | Fax: (919) 661-6350 | www.tepgroup.net

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

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *822765*
Site Name: *Branford/ I-95/ X55/ Dtn1*
App #: *436910 Rev. 1*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	48	
Diam:	1	in
Rod Material:	Other	
Strength (Fu):	125	ksi
Yield (Fy):	105	ksi
Bolt Circle:	57	in

Plate Data		
Diam:	60.125	in
Thick:	1	in
Grade:	60	ksi
Single-Rod B-eff:	3.53	in

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

Pole Data		
Diam:	54	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	1446.66	ft-kips
Axial, Pu:	0	kips
Shear, Vu:	0	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	25.4 Kips	Rigid / AISC LRFD / φ*Tn

Base Plate Results Flexural Check

Base Plate Stress:	27.9 ksi	Rigid / AISC LRFD / φ*Fy
Allowable Plate Stress:	54.0 ksi	
Base Plate Stress Ratio:	51.6% **Pass**	Y.L. Length: 18.25

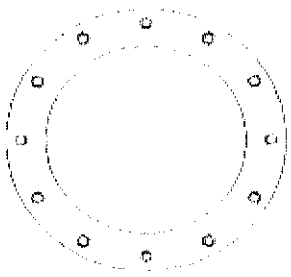
n/a

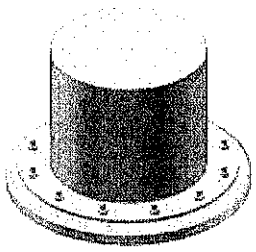
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Drilled Pier Foundation

BU # :	822765
Site Name:	Branford/ I-95/ X55/ Dt
App. Number:	436910 Rev. 1

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2138.51	
Axial Force (kips)	46.4	
Shear Force (kips)	23.449	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	21	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 21' below grade		
Pier Diameter	6	ft
Rebar Quantity	24	
Rebar Size	9	
Clear Cover to Ties	3	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.70	-
Soil Safety Factor	2.61	-
Max Moment (kip-ft)	2272.19	-
Rating	*51.0%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	393.87	-
End Bearing (kips)	254.47	-
Weight of Concrete (kips)	109.42	-
Total Capacity (kips)	648.34	-
Axial (kips)	155.82	-
Rating	*24.0%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.65	-
Critical Moment (kip-ft)	2272.18	-
Critical Moment Capacity	3391.84	-
Rating	*67.0%*	-

Soil Interaction Rating	**51.0%**
Structural Foundation Rating	**67.0%**

Soil Profile

Groundwater Depth	n/a	ft	# of Layers: 3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	120	150	0		0.000	0.000					Cohesionless
2	3.33	11	7.67	120	150		34	0.979	0.979				20	Cohesionless
3	11	21	10	160	150		33	2.035	2.035			12	100	Cohesionless

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: CT52XC124

Branford/I-95/X55/DTN1
10 Sylvia Street
Branford, CT 06405

July 22, 2018

EBI Project Number: 6218005254

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**18.41 %**

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

EBI Consulting
environmental | engineering | due diligence

July 22, 2018

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

Emissions Analysis for Site: **CT52XC124 – Branford/I-95/X55/DTN1**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **10 Sylvia Street, Branford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 population 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 population 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.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS) and 18 GHz microwave bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **10 Sylvia Street, Branford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. 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 equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) 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.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands and the **Dragonwave A-ANT-18G-2-C** for the 18 GHz microwave backhaul links. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas (directional panel antennas and parabolic microwave dishes) are **90 feet** above ground level (AGL) for **Sector A**, **90 feet** above ground level (AGL) for **Sector B** and **90 feet** above ground level (AGL) for Sector C.

10) 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 calculations were done with respect to uncontrolled / general population threshold limits.

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SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	1	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**90 feet**	Height (AGL):	**90 feet**	Height (AGL):	**90 feet**
Frequency Bands:	850 MHz / 1900 MHz (PCS)	Frequency Bands:	850 MHz / 1900 MHz (PCS)	Frequency Bands:	850 MHz / 1900 MHz (PCS)
Channel Count:	10	Channel Count:	10	Channel Count:	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%:	**4.63 %**	Antenna B1 MPE%:	**4.63 %**	Antenna C1 MPE%:	**4.63 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**90 feet**	Height (AGL):	**90 feet**	Height (AGL):	**90 feet**
Frequency Bands:	2500 MHz (BRS)	Frequency Bands:	2500 MHz (BRS)	Frequency Bands:	2500 MHz (BRS)
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%:	**3.17 %**	Antenna B2 MPE%:	**3.17 %**	Antenna C2 MPE%:	**3.17 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Dragonwave A-ANT-18G-2-C	36.45 dBd	90	18 GHz	1	1	4,415.70	**0.23**	C
Dragonwave A-ANT-18G-2-C	36.45 dBd	90	18 GHz	1	1	4,415.70	**0.23**	C

Site Composite MPE%	
Carrier	MPE%
SPRINT – Sector C	**8.26 %**
AT&T	4.63 %
Verizon Wireless	4.24 %
T-Mobile	1.02 %
Clearwire	0.26 %
Site Total MPE %:	**18.41 %**

SPRINT Sector A Total:	7.81 %
SPRINT Sector B Total:	7.81 %
SPRINT Sector C Total:	**8.26 %**
Site Total:	18.41 %

Sprint Max Power Values (Sector C)

SPRINT Frequency Band / Technology Max Power Values (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	90	1.92	850 MHz	567	0.34%
Sprint 850 MHz LTE	2	941.82	90	9.60	850 MHz	567	1.69%
Sprint 1900 MHz (PCS) CDMA	5	511.82	90	13.04	1900 MHz (PCS)	1000	1.30%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	90	13.04	1900 MHz (PCS)	1000	1.30%
Sprint 2500 MHz (BRS) LTE	8	778.09	90	31.72	2500 MHz (BRS)	1000	3.17%
Sprint 18 GHz Microwave	1	4,415.70	90	2.25	18 GHz	1000	0.23%
Sprint 18 GHz Microwave	1	4,415.70	90	2.25	18 GHz	1000	0.23%
						Total:	**8.26%**

Summary

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

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	7.81 %
Sector B:	7.81 %
Sector C:	**8.26 %**
SPRINT Maximum Total (Sector C):	8.26 %
Site Total:	18.41 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.41 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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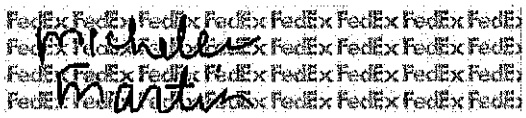

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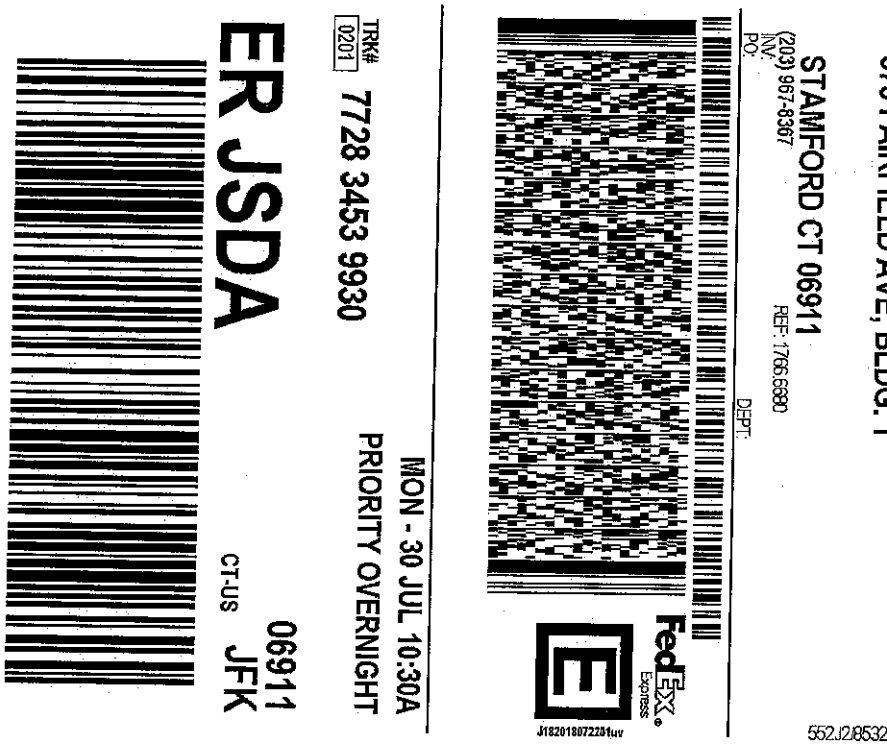

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