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

August 11, 2017

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

RE: **Notice of Exempt Modification for Sprint 2.5 Rework Crown Site BU: 876401**
Sprint Site ID: CT54XC702
47-51 Unity Street, Plainfield, CT 06374
Latitude: 41° 42′ 54.49″ / Longitude: -71° 53′ 46.73″

Dear Ms. Bachman:

Sprint currently maintains nine (9) antennas at the 159-foot level of the existing 160-foot monopole at 47-51 Unity Street in Plainfield, CT. The tower is owned by Crown Castle. The property is owned by the Town of Plainfield. Sprint intends to install three (3) antennas, three (3) RRHs, and one (1) hybrid cable.

This facility was approved by the Connecticut Siting Council in Docket 234 on April 9, 2003. This approval included the conditions that:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 160 fett above ground level. The tower shall also be constructed such a manner that , in the unlikely event of failure, it would collapse upon itself in a way that would effectively reduce the diameter of the fall zone.

This modification complies with the aforementioned condition(s).

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 Mr. Paul E. Sweet, First Selectman for the Town of Plainfield, the Department of Planning and Zoning for the Town of Plainfield, as the property 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: Mr. Paul E. Sweet
Town of Plainfield
8 Community Avenue
Plainfield, CT 06374

Department of Planning and Zoning
Town of Plainfield
8 Community Avenue
Plainfield, CT 06374

Connecticut Siting Council

Decisions

DOCKET NO. 234 – Sprint Spectrum, L.P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility in Plainfield, Connecticut.	}	Connecticut Siting Council

April 9, 2003

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes **§** 16-50k, be issued to Sprint Spectrum L. P. (Sprint) for the construction, maintenance and operation of a wireless telecommunications facility at proposed Candidate B site located at 47-51 Unity Street, Plainfield, Connecticut. We deny certification of the proposed Candidate A site (Saad property) located at 180 Town Farm Road, Plainfield, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 160 feet above ground level. The tower shall also be constructed in such a manner that, in the unlikely event of failure, it would collapse upon itself in a way that would effectively reduce the diameter of the fall zone.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

   a. a detailed site development plan that depicts the location of the access road, compound, tower, and utility line;

   b. specifications for the tower, tower foundation, antennas, equipment building, and security fence; and

   c. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council

worst-case modeling of electromagnetic radio frequency power densities of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide wireless services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes **§** 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Norwich Bulletin.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
Sprint Spectrum, L.P. d/b/a Sprint PCS	Thomas J. Regan, Esquire Brown Rudnick Berlack Israels LLP CityPlace I, 38th Floor 185 Asylum Street Hartford, CT 06103-3402 (860) 509-6522

Content Last Modified on 4/22/2003 12:15:21 PM

47-51 UNITY ST

Location	47-51 UNITY ST	**Mblu**	015/ 0071/ 0009/ /
Acct#	00145200	**Owner**	PLAINFIELD TOWN OF
Assessment	$627,590	**Appraisal**	$896,550
PID	1571	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$358,420	$538,130	$896,550
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$250,900	$376,690	$627,590

Owner of Record

Owner	PLAINFIELD TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	651 NORWICH RD PLAINFIELD, CT 06374	**Book & Page**	0025/0002
		Sale Date	04/01/1878

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
PLAINFIELD TOWN OF	$0		0025/0002	04/01/1878

Building Information

Building 1 : Section 1

Year Built:	1973
Living Area:	12,000
Replacement Cost:	$345,480
Building Percent Good:	68
Replacement Cost Less Depreciation:	$234,930

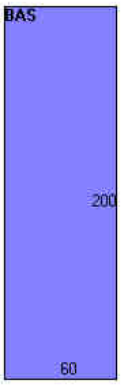
Building Attributes	
Field	**Description**
STYLE	Warehouse
MODEL	Comm/Ind

Building Photo

Grade	C
Stories:	1
Occupancy	
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	HEAT ONLY
Frame Type	STEEL
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	

(http://images.vgsi.com/photos/PlainfieldCTPhotos//\00\00\13/21.JPG)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	12,000	12,000
		12,000	12,000

Building 2 : Section 1

Year Built: 1975
Living Area: 3,150
Replacement Cost: $108,581
Building Percent Good: 69
Replacement Cost Less Depreciation: $74,920

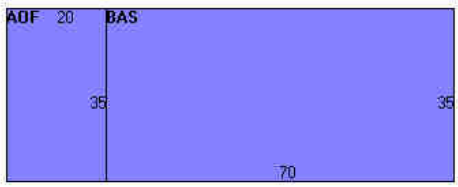
Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	Warehouse
MODEL	Comm/Ind
Grade	C
Stories:	1
Occupancy	
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	

Building Photo

(http://images.vgsi.com/photos/PlainfieldCTPhotos//\00\00\59/14.jpg)

Building Layout

Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Typical
Interior Wall 2	
Interior Floor 1	Average
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Type	None
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	NONE
Frame Type	NONE
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	2,450	2,450
AOF	Office	700	700
		3,150	3,150

Building 3 : Section 1

Year Built: 1975
Living Area: 378
Replacement Cost: $20,782
Building Percent Good: 69
Replacement Cost Less Depreciation: $14,340

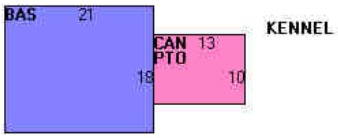
Building Attributes : Bldg 3 of 3	
Field	**Description**
STYLE	Office/Warehs
MODEL	Comm/Ind
Grade	D
Stories:	1
Occupancy	
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	

Building Photo

(http://images.vgsi.com/photos/PlainfieldCTPhotos//\00\00\59/15.jpg)

Building Layout

Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	MUNICIPAL MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	9030
Heat/AC	HEAT ONLY
Frame Type	REINF. CONCR
Baths/Plumbing	NONE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	378	378
CAN	Canopy	130	0
PTO	Patio	130	0
		638	378

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
OD1	Overhead Dr-Wood/Mtl	1 UNITS	$360	1
OD1	Overhead Dr-Wood/Mtl	1 UNITS	$380	2
A/C	AIR CONDITION	700 S.F.	$670	2
OD1	Overhead Dr-Wood/Mtl	3 UNITS	$1,080	1
MEZ1	MEZZANINE-UNF	1200 S.F.	$3,460	1

Land

Land Use

Use Code 903C
Description MUNICIPAL MDL-94
Zone IND
Neighborhood 2000
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 12
Frontage
Depth
Assessed Value $376,690
Appraised Value $538,130

Outbuildings

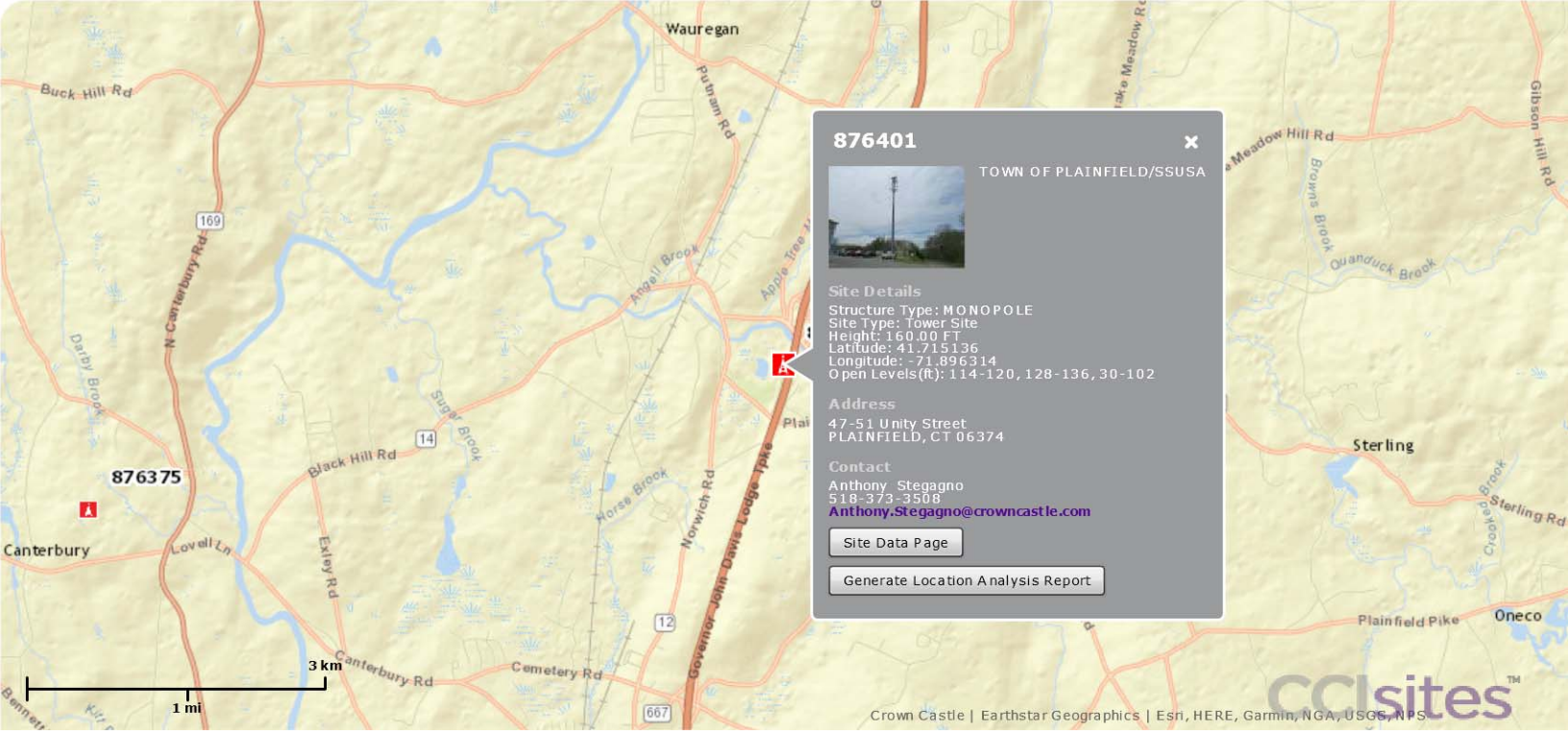
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
AQ1	Quonset Bldg			840 S.F.	$12,180	1
KEN2	KENNEL-GOOD			468 S.F.	$5,970	3
CNP1	CANOPY AVG			312 S.F.	$1,870	3
CNP1	CANOPY AVG			800 S.F.	$3,200	2

SH1	Frame Shed			128 S.F.	$800	1
SH1	Frame Shed			170 S.F.	$1,060	1
CNP1	CANOPY AVG			800 S.F.	$3,200	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$363,620	$538,130	$901,750
2014	$363,620	$538,130	$901,750
2013	$363,620	$538,130	$901,750

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$254,540	$376,690	$631,230
2014	$254,540	$376,690	$631,230
2013	$254,540	$376,690	$631,230


876401
TOWN OF PLAINFIELD/SSUSA
Site Details
Structure Type: MONOPOLE
Site Type: Tower Site
Height: 160.00 FT
Latitude: 41.715136
Longitude: -71.896314
Open Levels(ft): 114-120, 128-136, 30-102
Address
47-51 Unity Street
PLAINFIELD, CT 06374
Contact
Anthony Stegagno
518-373-3508
Anthony.Stegagno@crowncastle.com
Site Data Page
Generate Location Analysis Report
876375
Wauregan
Canterbury
Sterling
Oneco
Buck Hill Rd
N Canterbury Rd
Black Hill Rd
Lovell Ln
Exley Rd
Canterbury Rd
Cemetery Rd
Putnam Rd
Angell Brook
Sugar Brook
Horse Brook
Norwich Rd
Governor John Davis Lodge Tpke
Plainfield Pike
Sterling Rd
Gibson Hill Rd
Quanduck Brook
Browns Brook
Crooked Brook
169
14
12
667
3 km
1 mi
Crown Castle | Earthstar Geographics | Esri, HERE, Garmin, NGA, USGS, NPS
CCIsites

Sprint

CROWN CASTLE

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	TOWN OF PLAINFIELD/SSUSA
SITE CASCADE:	CT54XC702
SITE NUMBER:	876401
SITE ADDRESS:	47-51 UNITY STREET PLAINFIELD, CT 06374
SITE TYPE:	MONOPOLE
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 42' 54.49" N
41.71525°

LONGITUDE (NAD83):
-71° 53' 46.73" W
-71.896314°

COUNTY:
WINDHAM

ZONING JURISDICTION:
TOWN OF PLAINFIELD

ZONING DISTRICT:
RESIDENTIAL (RA-60)

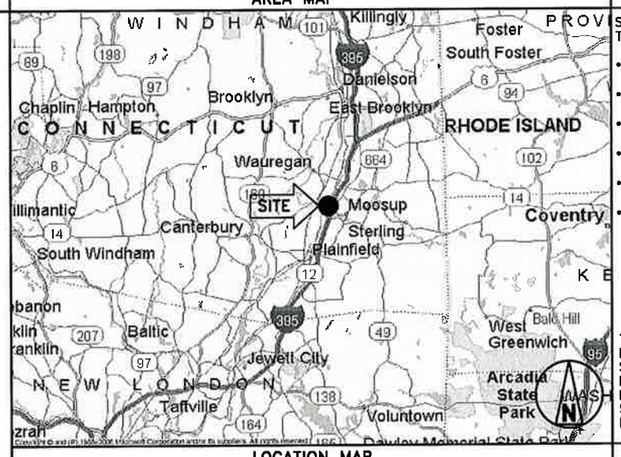
POWER COMPANY:
CL&P
(860) 947-2000

SPRINT PM:
PETER GIARD
(508) 801-0074
peter.giard@sprint.com

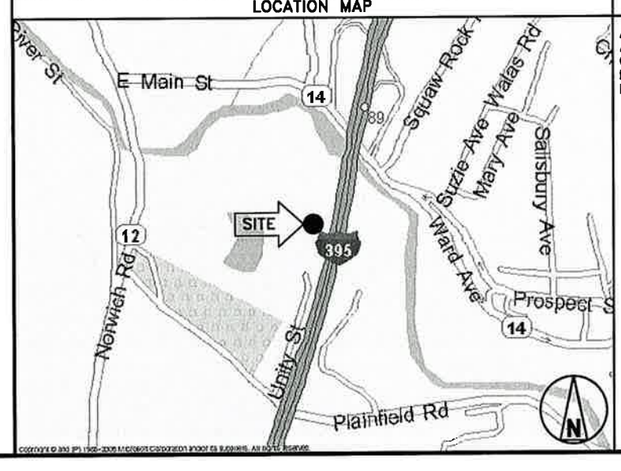
SPRINT CM:
PETER CULBERT
(603) 203-6446
(603) 969-0686
peter.culbert@sprint.com

CROWN CASTLE CM:
JASON D'AMICO
(860) 209-0104
JASON.D'AMICO@CROWNCASTLE.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL 2.5 EQUIPMENT IN EXISTING N.V. MMBS CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRU'S TO TOWER
- INSTALL (27) JUMPER CABLES
- INSTALL (1) FIBER CABLE
- INSTALL (4) BATTERIES IN EXISTING BBU CABINET

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 TOWER 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 (2012 IBC)
2. TIA-EIA-222-F 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. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. 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	COLOR CODING & NOTES	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING PLAN	0
E-2	ELECTRICAL & GROUNDING DETAILS	0

APPROVED
By Jason D'Amico at 1:22 pm, Jun 29, 2017

APPROVED
By Jeff Barbadora at 4:00 pm, May 25, 2014

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

PLANS PREPARED BY:
INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 353-XXX

MLA PARTNER:
CROWN CASTLE

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/23/14	MAP	0

SITE NAME:
TOWN OF PLAINFIELD/SSUSA

SITE CASCADE:
CT54XC702

SITE ADDRESS:
47-51 UNITY STREET
PLAINFIELD, CT 06374

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
5. 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 Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/23/14	MAP	0

SITE NAME:

TOWN OF PLAINFIELD/SSUSA

SITE CASCADE:

CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

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-GRUBBING; 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 TS-0200 REV 4 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 Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/23/14	MAP	0

SITE NAME:

TOWN OF PLAINFIELD/SSUSA

SITE CASCADE:

CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

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:

Sprint

6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	05/23/14	MAP	0

SITE NAME:

TOWN OF PLAINFIELD/SSUSA

SITE CASCADE:

CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

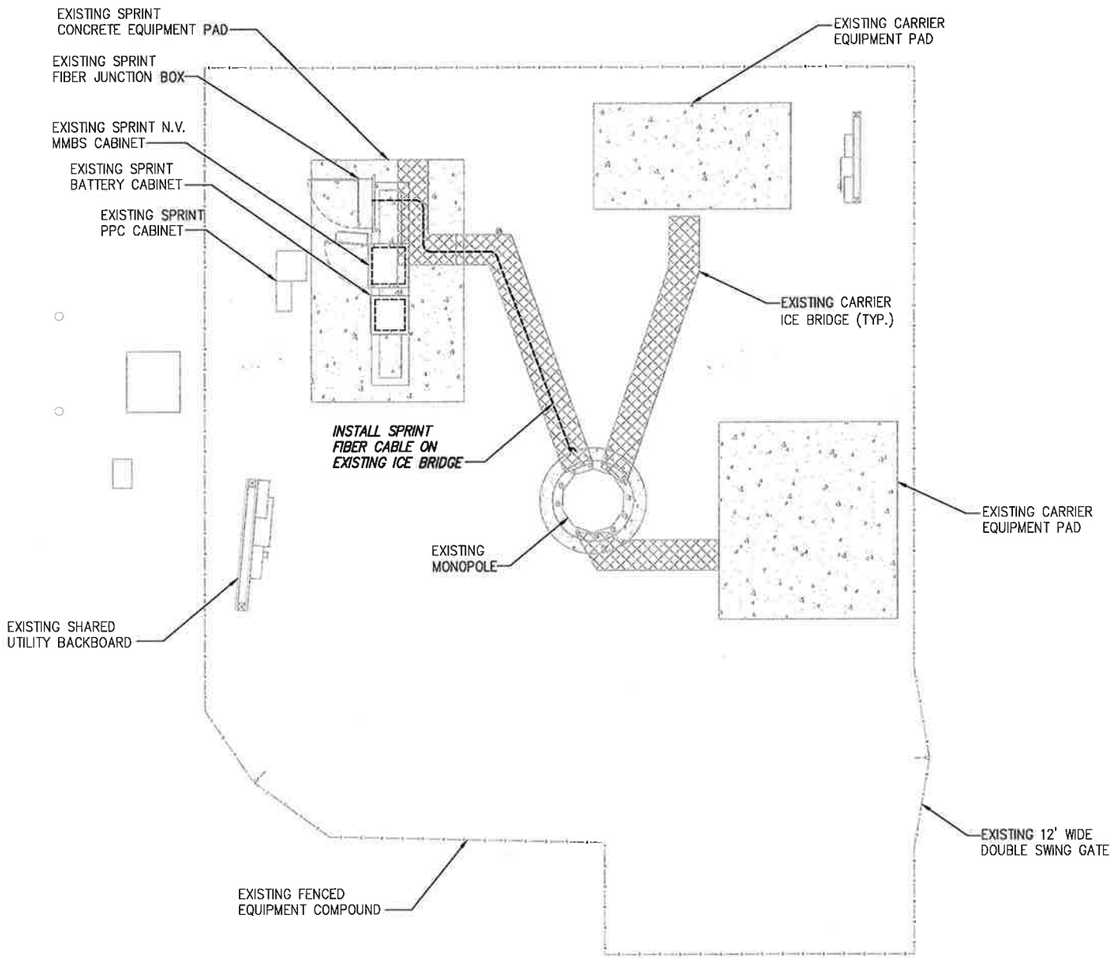
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

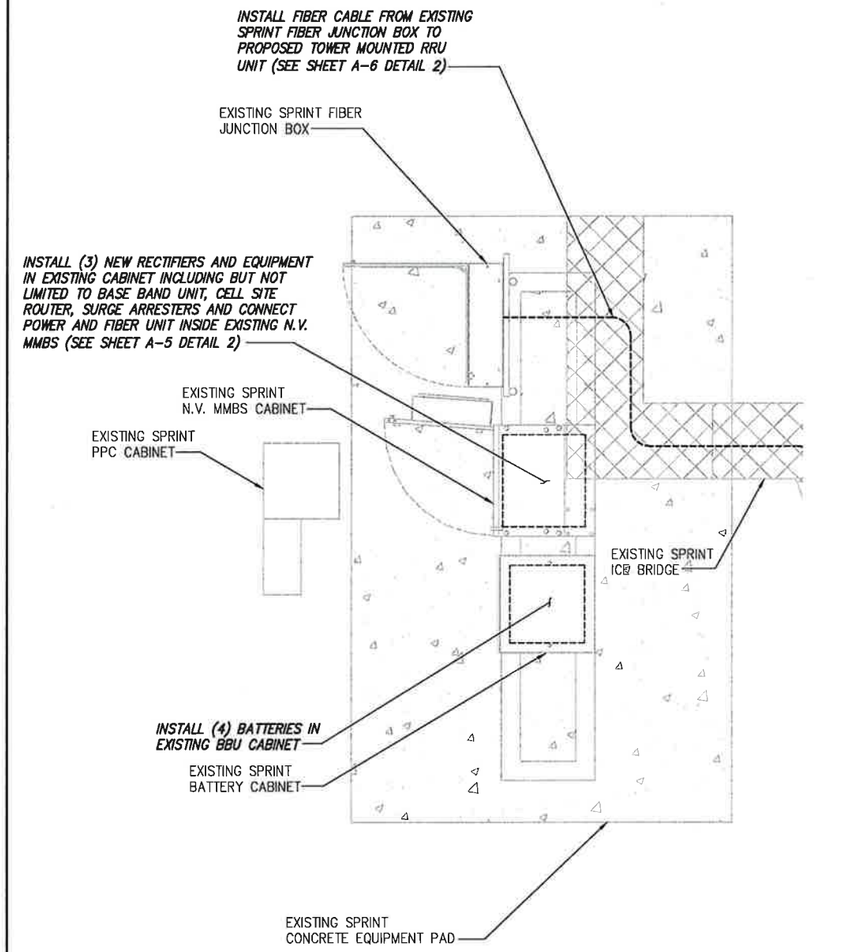
SP-3

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



2.5' 0 2.5' 5' 10'
(IN FEET)
SCALE: 24"x36" SHEET 1" = 5'-0"
SCALE: 11"x17" SHEET 1" = 10'-0"

OVERALL SITE PLAN | SCALE: AS NOTED | 1



1' 0 1' 2' 4'
(IN FEET)
SCALE: 24"x36" SHEET 1" = 2'-0"
SCALE: 11"x17" SHEET 1" = 4'-0"

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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No. 24705
LICENSED PROFESSIONAL ENGINEER

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CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

SITE PLAN

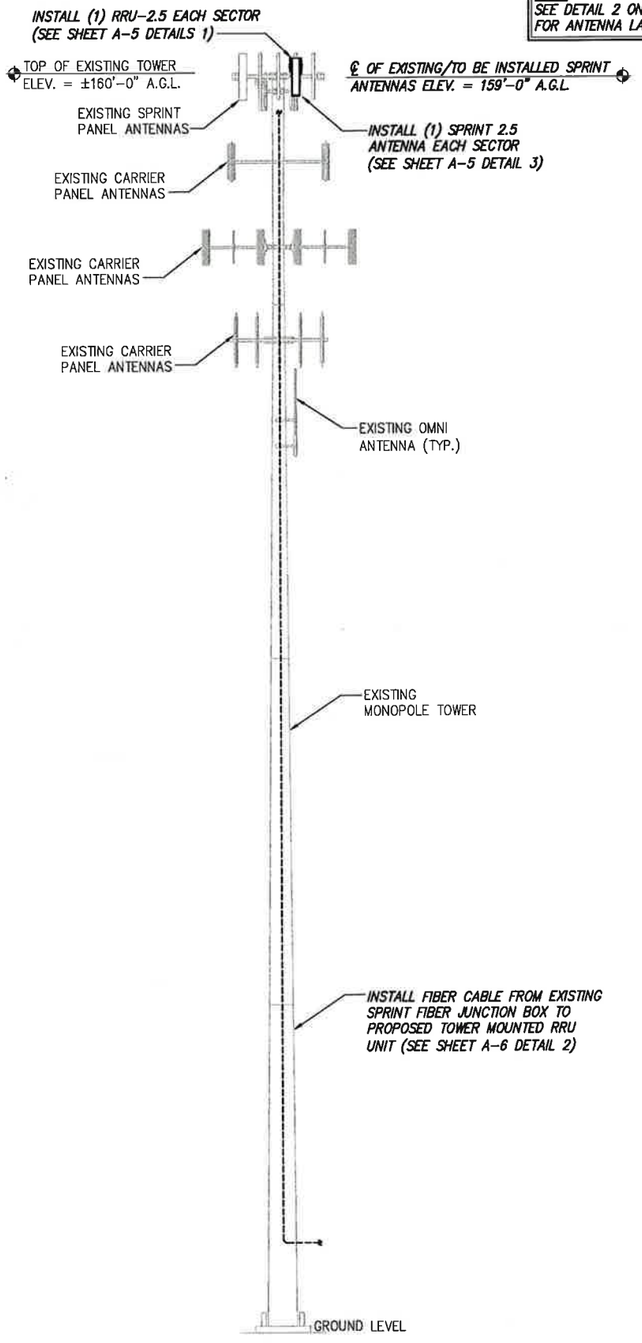
SHEET NUMBER:

A-1

NOTE:
SPRINT TOWER TOP WORK CONTINGENT ON FOLLOWING: COMPLETION OF STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, COMPLETION OF ANTENNA/RRH MOUNTING ASSESSMENT (PROVIDED BY AE)

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING TOWER OR MOUNT FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.

NOTE:
SEE DETAIL 2 ON A-3 FOR ANTENNA LAYOUT



TOWER ELEVATION | NO SCALE | 1

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

DETAIL NOT USED | NO SCALE | 2

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SITE CASCADE:

CT54XC702

SITE ADDRESS:

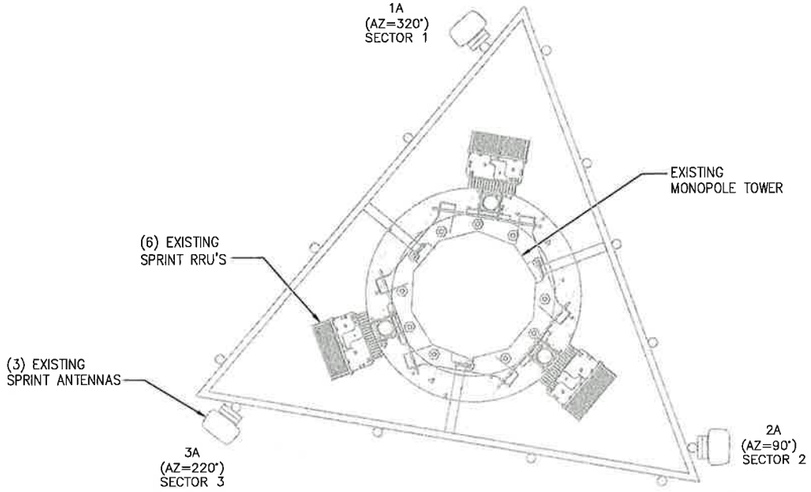
47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

TOWER ELEVATION & CABLE PLAN

SHEET NUMBER:

A-2

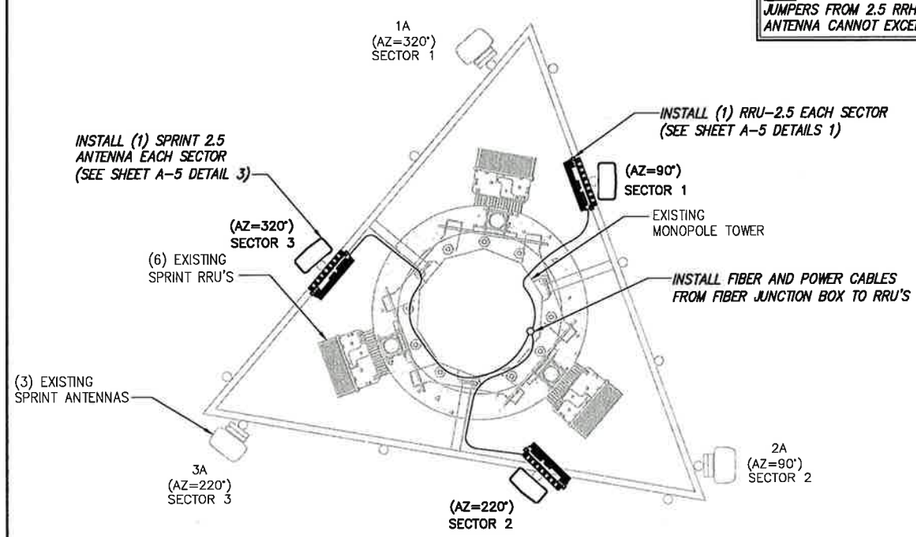


0° = TRUE NORTH

EXISTING ANTENNA & RRU LAYOUT | NO SCALE | 1

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

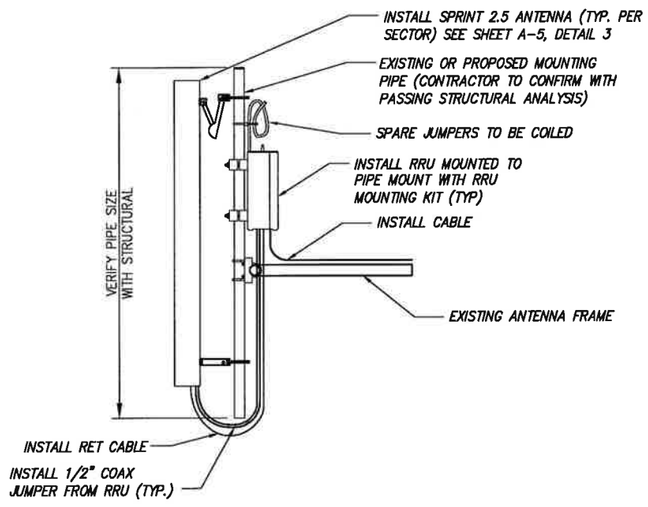
NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET



0° = TRUE NORTH

FINAL ANTENNA LAYOUT | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3



NOTES:

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

NOTE:
CONTRACTOR TO POSITION RRU ON MOUNT BEHIND ANTENNA SUCH THAT THE RRU 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 RRU MOUNTING DETAILS

TYPICAL ANTENNA & RRU MOUNTING DETAILS | NO SCALE | 4

PLANS PREPARED FOR:

Sprint
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Overland Park, Kansas 66251

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Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

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SITE NAME:

TOWN OF PLAINFIELD/SSUSA

SITE CASCADE:

CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

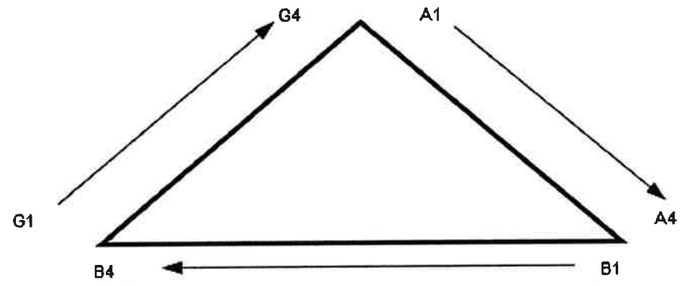
A-3

NV CABLES			
BAND	INDICATOR	PORT	COLOR
800-1	YEL GRN	NV-1	GRN
1900-1	YEL RED	NV-2	BLU
1900-2	YEL BRN	NV-3	BRN
1900-3	YEL BLU	NV-4	WHT
1900-4	YEL SLT	NV-5	RED
800-2	YEL ORG	NV-6	SLT
SPARE	YEL WHT	NV-7	PPL
2500	YEL PPL	NV-8	ORG

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

2.5 Band		
2500 Radio 1		COLOR
YEL	WHT	GRN
YEL	WHT	BLU
YEL	WHT	BRN
YEL	WHT	WHT
YEL	WHT	RED
YEL	WHT	SLT
YEL	WHT	PPL
YEL	WHT	ORG

Figure 1: Antenna Orientation



NOTES:

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.

2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAK-OUT CYLINDER. THERE SHALL BE A 1" SPACE BETWEEN EACH RING FOR THE CABLE IDENTIFIER, AND NO SPACES BETWEEN THE FREQUENCY BANDS.

3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.

4. THE 2" COLORED TAPE(S) SHALL EACH BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.

5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE NEXT COLOR IN THE SEQUENCE FOR ADDITIONAL CABLES IN EACH SECTOR.

6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.

7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.

8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

Example – Sector 2, Cable 2, 800mhz Radio #1

Example – Sector 3, Cable 1, 1900mhz Radio #1

Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

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ISSUED FOR REVIEW	05/23/14	MAP	0

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TOWN OF PLAINFIELD/SSUSA

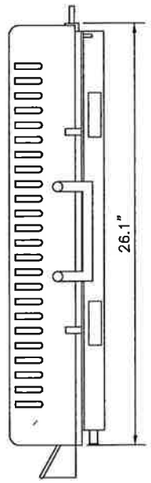
SITE CASCADE:
CT54XC702

SITE ADDRESS:
47-51 UNITY STREET
PLAINFIELD, CT 06374

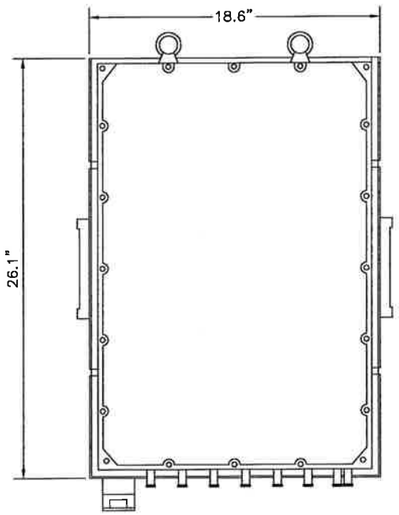
SHEET DESCRIPTION:
COLOR CODING AND NOTES

SHEET NUMBER:
A-4

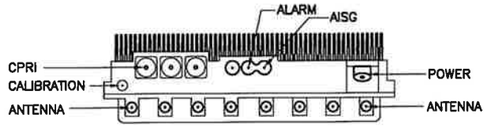
RRU: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW

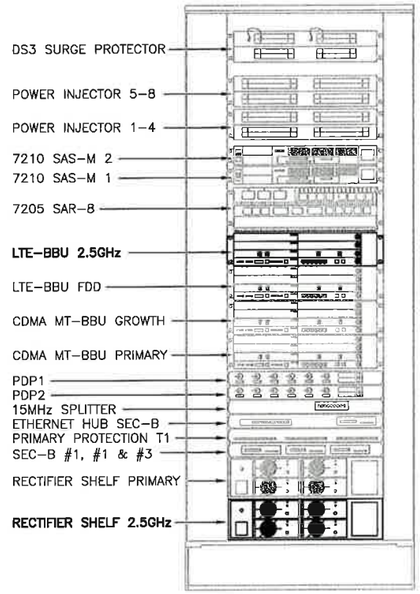


PLAN VIEW

NOTES

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

2.5 RRU	NO SCALE	1

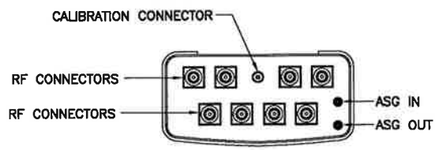


FRONT VIEW

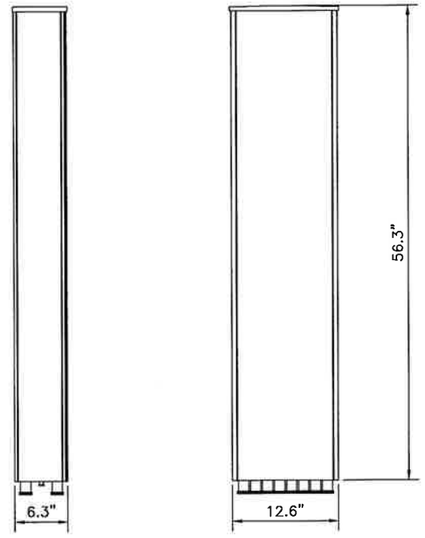
NEW EQUIPMENT IN EXISTING CABINET	NO SCALE	2

ANTENNA: RFS APXVTM14-C-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD.in(mim):	56.3"x12.6"x6.3" (1430x320x160mm)
WEIGHT:	52.9 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW



2.5 ANTENNA	NO SCALE	3

DETAIL NOT USED	NO SCALE	4

PLANS PREPARED FOR:

Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY Design. Build. Deliver.
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

JOB NUMBER 353-XXX

MLA PARTNER:

CROWN CASTLE

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV
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SITE NAME:

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SITE CASCADE:

CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-5

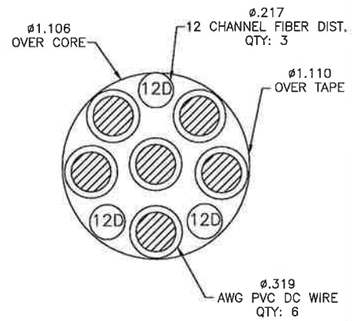
RFS HYBRIFLEX RISER CABLE SCHEDULE

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 power pair, 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

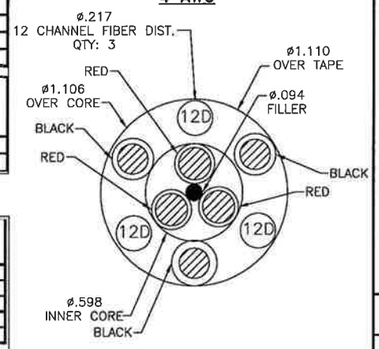
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

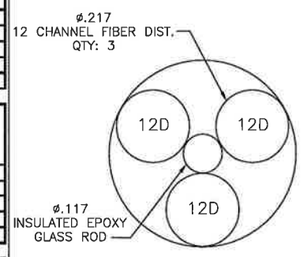
NOTE:
SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG

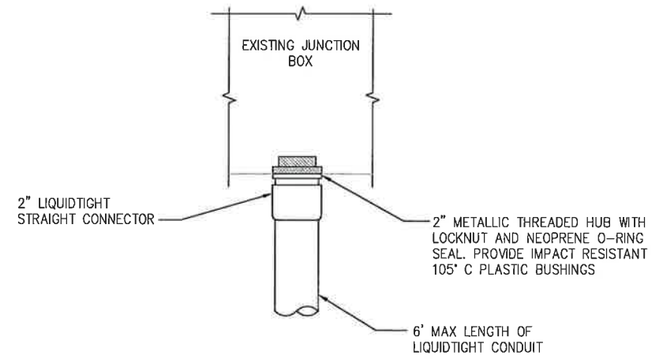


8 & 6 AWG



FIBER ONLY

2.5 CABLE CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX PENETRATION | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

PLANS PREPARED FOR:
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Albany, NY 12205
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JOB NUMBER 353-XXX

MLA PARTNER:
CROWN CASTLE

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

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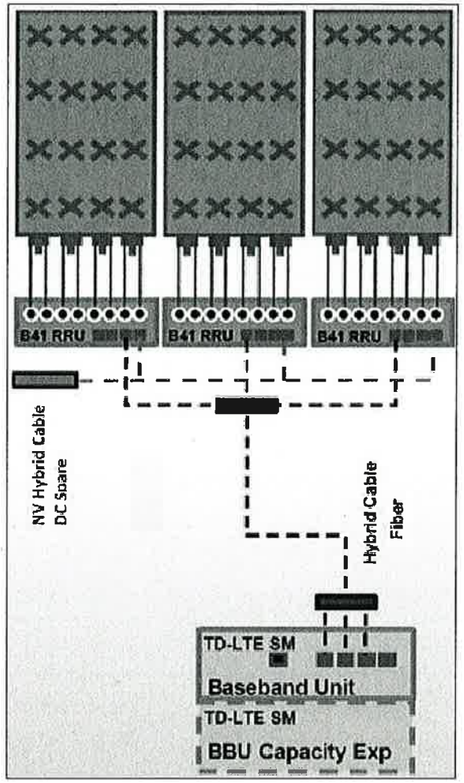
CT54XC702

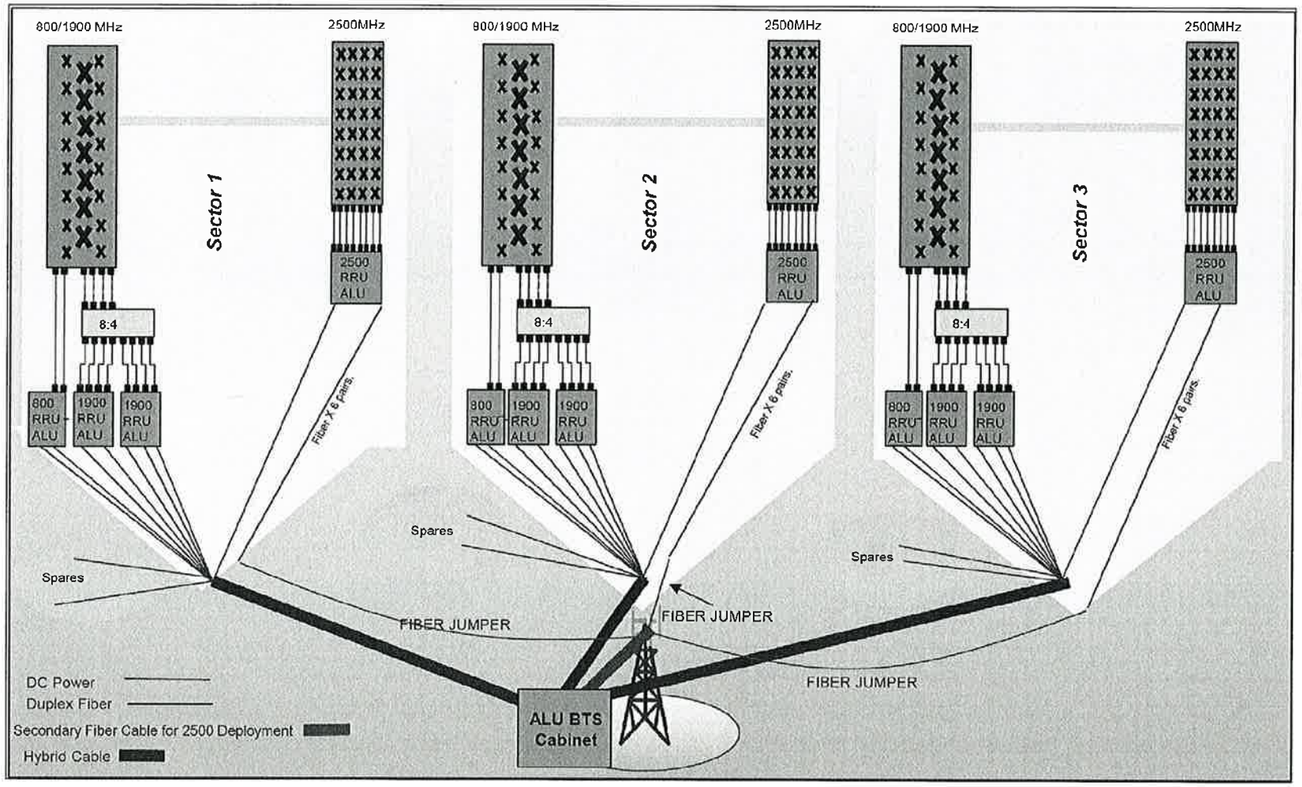
SITE ADDRESS:
47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:
CIVIL DETAILS

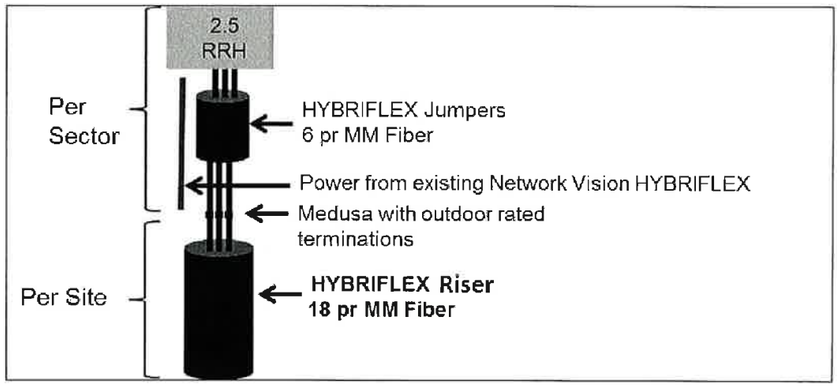
SHEET NUMBER:
A-6



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM

NO SCALE

1

PLANS PREPARED FOR:

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JOB NUMBER 353-XXX

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LICENSED PROFESSIONAL ENGINEER

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CT54XC702

SITE ADDRESS:

47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

CIVIL DETAILS

SHEET NUMBER:

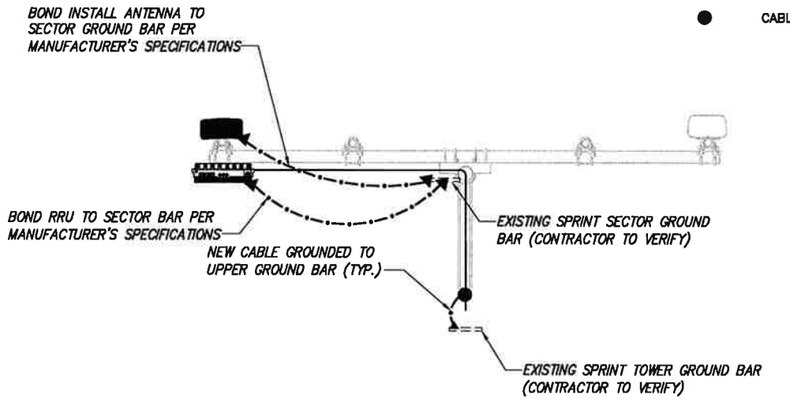
A-7

PLAN NOT USED

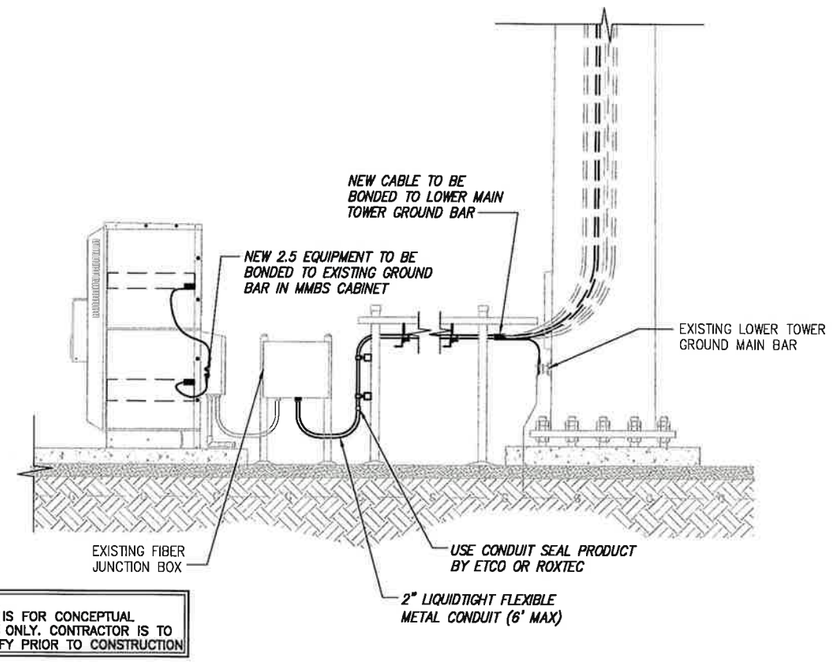
NO SCALE | 1

LEGEND:

- G — EXISTING GROUND RING
- ■ CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- ● CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



NOTE:
DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

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

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47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

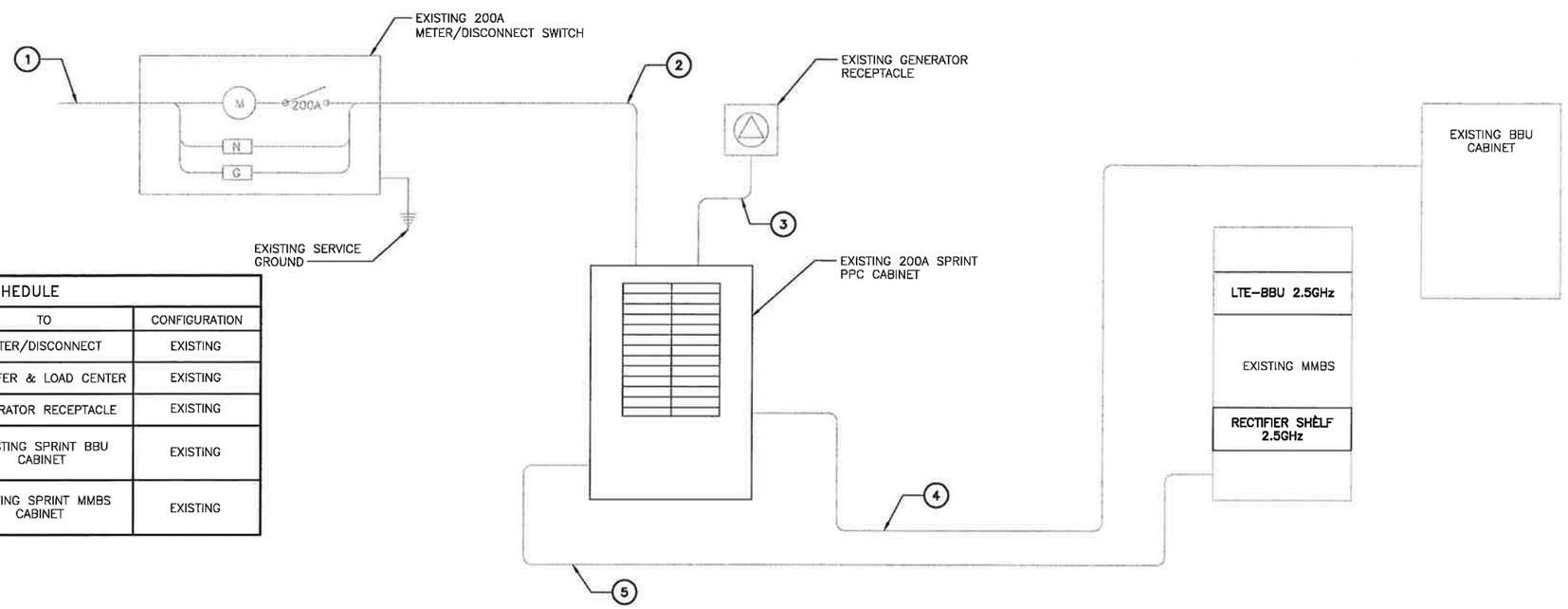
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

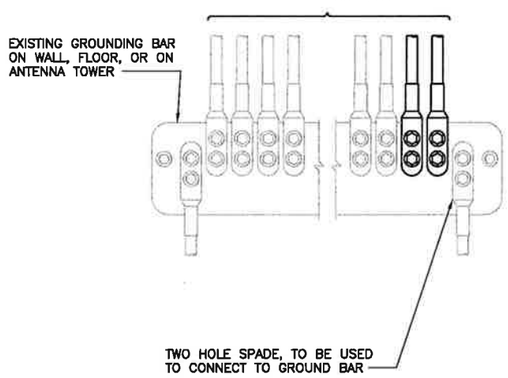
NOTES

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

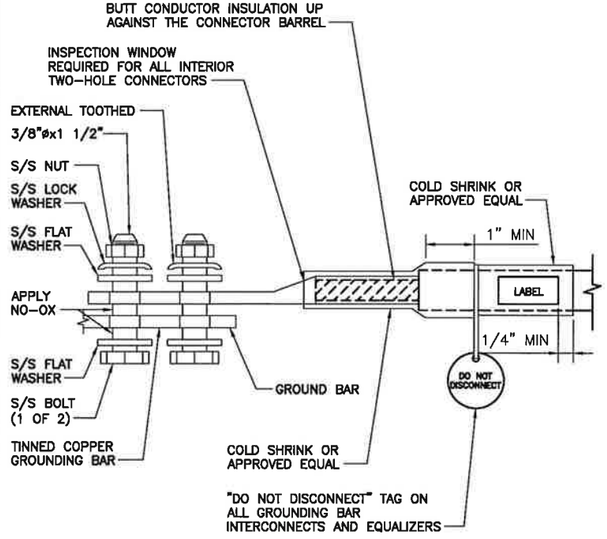
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



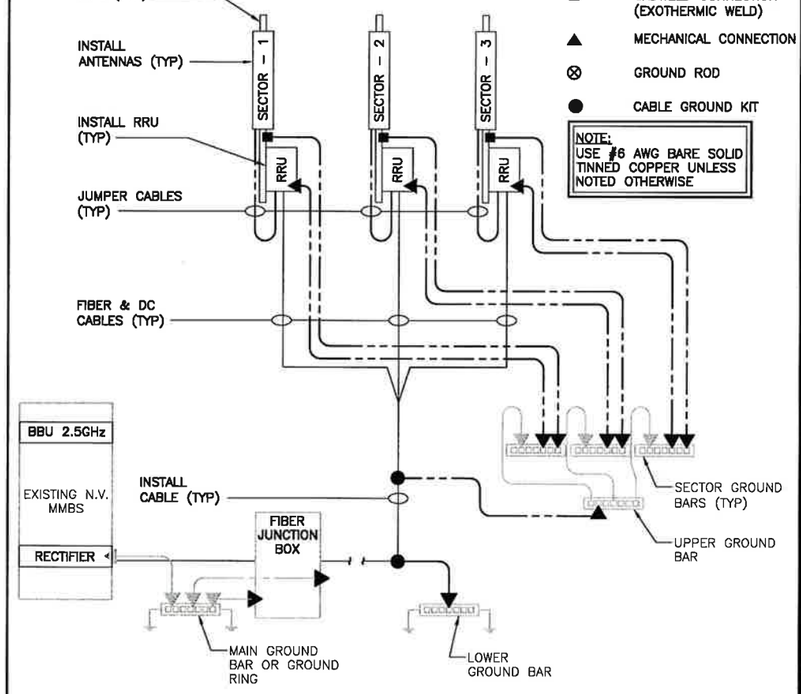
NOTES

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



LEGEND:

- G — EXISTING GROUND RING
- ■ CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- ● CABLE GROUND KIT

GROUNDING RISER DIAGRAM — NO SCALE — 4

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47-51 UNITY STREET
PLAINFIELD, CT 06374

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-2

Date: **June 15, 2017**

Cheryl Schultz
Crown Castle
3530 Toringdon WaySuite 300
Charlotte, NC 28277

Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-8145

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT54XC702
	Carrier Site Name:	CT54XC702
Crown Castle Designation:	**Crown Castle BU Number:**	876401
	Crown Castle Site Name:	TOWN OF PLAINFIELD/SSUSA
	Crown Castle JDE Job Number:	442137
	Crown Castle Work Order Number:	1418186
	Crown Castle Application Number:	393646 Rev. 0
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	194393
Site Data:	**47-51 Unity Street, Plainfield, Windham County, CT** **Latitude *41° 42' 54.49"*, Longitude *-71° 53' 46.73"*** **159.857 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Black & Veatch Corp. 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 1047131, in accordance with application 393646, revision 0.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 131 mph converted to a nominal 3-second gust wind speed of 101mph 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 C with a maximum topographic factor, K_{zt}, of 1.000 and Risk Category II were used in this analysis. Seismic forces have been evaluated based on site class D with spectral response factors S_s of 0.170g and S_1 of 0.061g.

We at *Black & Veatch Corp.* 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: Neeraj Jog / Mahesh K. Jadhav

Respectfully submitted by:

Ping Jiang, P.E.

Professional Engineer

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 159.854 ft Monopole tower designed by Engineered Endeavors Inc. in May of 2003. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

The tower has been modified per reinforcement drawing prepared by Semaan Endeavors in September of 2005. Reinforcement consists of installation of base plate stiffeners. These modifications are considered ineffective due to no PMI.

The tower was later reinforced per reinforcement drawing prepared by Vertical Solutions in August of 2008. Reinforcement consists of installation of plates from 0' to 127'.

The tower was later reinforced per reinforcement drawing prepared by PJF in February of 2013. Reinforcement consists of installation of channels from 0.6' to 76.5' and (3) new anchor rods with brackets. These modifications are considered effective per PMI prepared by TEP In September of 2013.

The tower was later reinforced per reinforcement drawing prepared by Black & Veatch Corp. in November of 2014. Reinforcement consists of installation of plates from 0' to 100' and (9) new anchor rods with brackets. These modifications are considered effective per PMI prepared by FDH Velocitel, Inc. in May of 2015.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 101 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet. Seismic forces have been evaluated based on site class D with spectral response factors S_s of 0.170g and S_1 of 0.061g.

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
159.0	159.0	3	alcatel lucent	TD-RRH8x20-25	1	1 1/4	1
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe			

Note:
1) See Appendix B for proposed coax configuration

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
159.0	159.0	1	cci tower mounts	Platform Mount [LP 712-1]	3	1 1/4	1
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
157.0	159.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	cci tower mounts	Pipe Mount [PM 601-3]			
		1	cci tower mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
152.0	152.0	6	ericsson	TME-RRUS-11	-	-	1
		1	cci tower mounts	Pipe Mount [PM 601-3]			
		1	cci tower mounts	Side Arm Mount [SO 102-3]			
150.0	150.0	1	cci tower mounts	Platform Mount [LP 303-1]	12 2 1	1 5/8 7/16 3/8	1
		3	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
139.0	139.0	1	cci tower mounts	T-Arm Mount [TA 602-3]	12	1 5/8	1
		3	commscope	ATBT-BOTTOM-24V			
		3	commscope	LNX-6512DS-VTM w/ Mount Pipe			
		3	commscope	TMAT7LA-11A			
		3	rfs celwave	APXV18-203219-C-A20 w/ Mount Pipe			
124.0	130.0	3	alcatel lucent	RRH2X60-PCS	2	1 5/8	1
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	commscope	LNX-6514DS-A1M w/ Mount Pipe			
		3	alcatel lucent	B66A RRH4X45	-	-	2
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		3	alcatel lucent	RRH2x60-700			
	124.0	1	cci tower mounts	Platform Mount [LP 303-1]	-	-	1
109.0	114.0	1	decibel	DB589	1	7/8	1
	109.0	1	cci tower mounts	Side Arm Mount [SO 201-1]			
		1	cci tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment

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)
160.0	160.0	12	dapa	48000	-	-
150.0	150.0	12	dapa	48000	-	-
140.0	140.0	12	dapa	48000	-	-
75.0	75.0	1	unknown	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	1610729	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	1615418	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	1615382	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solitons	2819430	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford & Comapany	3667143	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	3986355	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Black & Veatch Corp.	5422409	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel, Inc.	5666814	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Black & Veatch Corp.	6808422	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.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The existing base plate grout is not considered in this analysis.
5) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

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

4) ANALYSIS RESULTS

4.1) Wind Results

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
159.86 - 154.86	Pole	TP17.62x16.5x0.1875	Pole	7.2%	Pass
154.86 - 149.86	Pole	TP18.741x17.62x0.1875	Pole	15.6%	Pass
149.86 - 144.86	Pole	TP19.861x18.741x0.1875	Pole	28.2%	Pass
144.86 - 139.86	Pole	TP20.981x19.861x0.1875	Pole	38.7%	Pass
139.86 - 134.86	Pole	TP22.102x20.981x0.1875	Pole	49.9%	Pass
134.86 - 129.86	Pole	TP23.222x22.102x0.1875	Pole	59.7%	Pass
129.86 - 125.75	Pole	TP24.142x23.222x0.1875	Pole	66.8%	Pass
125.75 - 125.5	Pole	TP24.199x24.142x0.1875	Pole	67.2%	Pass
125.5 - 122.73	Pole	TP25.66x24.199x0.1875	Pole	77.5%	Pass
122.73 - 117.98	Pole	TP25.489x24.445x0.25	Pole	62.3%	Pass
117.98 - 112.98	Pole + Reinf.	TP26.588x25.489x0.4813	Reinf. 13 Tension Rupture	64.5%	Pass
112.98 - 107.98	Pole + Reinf.	TP27.688x26.588x0.475	Reinf. 13 Tension Rupture	70.5%	Pass
107.98 - 103	Pole + Reinf.	TP28.782x27.688x0.4625	Reinf. 13 Tension Rupture	76.0%	Pass
103 - 102.75	Pole + Reinf.	TP28.837x28.782x0.55	Reinf. 13 Tension Rupture	68.5%	Pass
102.75 - 100.21	Pole + Reinf.	TP29.396x28.837x0.5375	Reinf. 13 Tension Rupture	70.9%	Pass
100.21 - 100.02	Pole + Reinf.	TP30.39x29.396x0.6875	Reinf. 13 Tension Rupture	53.5%	Pass
100.02 - 94.69	Pole + Reinf.	TP30.119x28.937x0.7375	Reinf. 13 Tension Rupture	53.6%	Pass
94.69 - 93.5	Pole + Reinf.	TP30.382x30.119x0.7375	Reinf. 13 Tension Rupture	54.3%	Pass
93.5 - 93.25	Pole + Reinf.	TP30.437x30.382x0.9125	Reinf. 13 Tension Rupture	44.7%	Pass
93.25 - 89.25	Pole + Reinf.	TP31.323x30.437x0.8875	Reinf. 13 Tension Rupture	46.7%	Pass
89.25 - 89	Pole + Reinf.	TP31.379x31.323x0.9375	Reinf. 9 Tension Rupture	43.8%	Pass
89 - 86.5	Pole + Reinf.	TP31.933x31.379x0.925	Reinf. 9 Tension Rupture	44.9%	Pass
86.5 - 86.25	Pole + Reinf.	TP31.988x31.933x0.7625	Reinf. 12 Tension Rupture	51.2%	Pass
86.25 - 81.25	Pole + Reinf.	TP33.096x31.988x0.7375	Reinf. 12 Tension Rupture	53.4%	Pass
81.25 - 76.25	Pole + Reinf.	TP34.203x33.096x0.725	Reinf. 12 Tension Rupture	55.4%	Pass
76.25 - 75.42	Pole + Reinf.	TP34.388x34.203x0.725	Reinf. 12 Tension Rupture	55.7%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
75.42 - 75.17	Pole + Reinf.	TP34.443x34.388x0.8125	Reinf. 12 Tension Rupture	49.6%	Pass
75.17 - 70.17	Pole + Reinf.	TP35.551x34.443x0.8	Reinf. 12 Tension Rupture	51.4%	Pass
70.17 - 65.17	Pole + Reinf.	TP36.659x35.551x0.7875	Reinf. 12 Tension Rupture	53.0%	Pass
65.17 - 60.17	Pole + Reinf.	TP37.766x36.659x0.7625	Reinf. 12 Tension Rupture	54.5%	Pass
60.17 - 59.5	Pole + Reinf.	TP37.914x37.766x0.7625	Reinf. 12 Tension Rupture	54.7%	Pass
59.5 - 59.25	Pole + Reinf.	TP37.97x37.914x0.7625	Reinf. 11 Tension Rupture	54.7%	Pass
59.25 - 54.25	Pole + Reinf.	TP39.077x37.97x0.75	Reinf. 11 Tension Rupture	56.1%	Pass
54.25 - 53	Pole + Reinf.	TP39.354x39.077x0.7375	Reinf. 11 Tension Rupture	56.4%	Pass
53 - 52.75	Pole + Reinf.	TP39.41x39.354x0.7375	Reinf. 11 Tension Rupture	55.9%	Pass
52.75 - 52.64	Pole + Reinf.	TP40.67x39.41x0.7375	Reinf. 11 Tension Rupture	55.9%	Pass
52.64 - 46.06	Pole + Reinf.	TP40.27x38.808x0.7625	Reinf. 11 Tension Rupture	56.3%	Pass
46.06 - 41.06	Pole + Reinf.	TP41.381x40.27x0.75	Reinf. 11 Tension Rupture	57.3%	Pass
41.06 - 39.33	Pole + Reinf.	TP41.765x41.381x0.75	Reinf. 11 Tension Rupture	57.7%	Pass
39.33 - 39.08	Pole + Reinf.	TP41.821x41.765x0.825	Reinf. 11 Tension Rupture	52.6%	Pass
39.08 - 37.75	Pole + Reinf.	TP42.116x41.821x0.825	Reinf. 11 Tension Rupture	52.9%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.171x42.116x0.75	Reinf. 11 Tension Rupture	58.0%	Pass
37.5 - 32.5	Pole + Reinf.	TP43.282x42.171x0.7375	Reinf. 11 Tension Rupture	58.9%	Pass
32.5 - 29.75	Pole + Reinf.	TP43.893x43.282x0.725	Reinf. 11 Tension Rupture	59.3%	Pass
29.75 - 29.5	Pole + Reinf.	TP43.948x43.893x0.725	Reinf. 10 Tension Rupture	59.4%	Pass
29.5 - 24.5	Pole + Reinf.	TP45.059x43.948x0.7125	Reinf. 10 Tension Rupture	60.1%	Pass
24.5 - 21.25	Pole + Reinf.	TP45.781x45.059x0.7125	Reinf. 10 Tension Rupture	60.6%	Pass
21.25 - 21	Pole + Reinf.	TP45.836x45.781x0.725	Reinf. 7 Tension Rupture	57.9%	Pass
21 - 20	Pole + Reinf.	TP46.058x45.836x0.725	Reinf. 7 Tension Rupture	58.0%	Pass
20 - 19.75	Pole + Reinf.	TP46.114x46.058x0.825	Reinf. 10 Tension Rupture	54.0%	Pass
19.75 - 17	Pole + Reinf.	TP46.724x46.114x0.8125	Reinf. 10 Tension Rupture	54.4%	Pass
17 - 16.75	Pole + Reinf.	TP46.78x46.724x0.775	Reinf. 10 Tension Rupture	59.5%	Pass
16.75 - 11.75	Pole + Reinf.	TP47.89x46.78x0.7625	Reinf. 10 Tension Rupture	60.1%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
11.75 - 6.75	Pole + Reinf.	TP49.001x47.89x0.75	Reinf. 10 Tension Rupture	60.7%	Pass
6.75 - 1.75	Pole + Reinf.	TP50.111x49.001x0.7375	Reinf. 10 Tension Rupture	61.2%	Pass
1.75 - 0	Pole + Reinf.	TP50.5x50.111x0.7375	Reinf. 10 Tension Rupture	61.4%	Pass
				Summary	
			Pole	77.5%	Pass
			Reinforcement	76.0%	Pass
			Overall	77.5%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	41.6	Pass
1	Base Plate		51.4	Pass
1	Base Foundation	0	70.7	Pass
1	Base Foundation Soil Interaction		22.7	Pass

4.2) Seismic Results

Tower and foundation have been analyzed based on the seismic criteria outlined in section 2 of this report. Based on the analysis, seismic loading is not governing the tower and foundation stress. Wind loading governing the tower and foundation stress.

Structure Rating (max from all components) =	77.5%

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

4.3) Recommendations

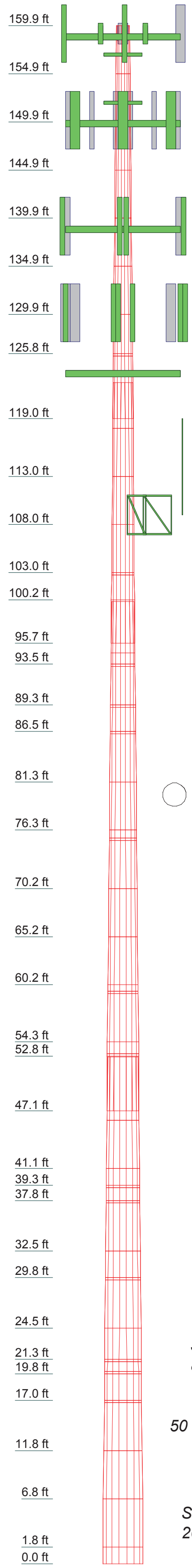
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875		16.5000	17.6204	A572-65	0.2
2	5.00	18	0.1875		17.6204	18.7407		0.2
3	5.00	18	0.1875		18.7407	19.8611		0.2
4	5.00	18	0.1875		19.8611	20.9814		0.2
5	5.00	18	0.1875		20.9814	22.1018		0.2
6	5.00	18	0.1875		22.1018	23.2221		0.2
7–10	[illegible]	18	[illegible]	3.75	[illegible]	[illegible]		[illegible]
11	5.00	18	[illegible]		25.4884?	26.5885		0.6
12	5.00	18	0.4750		26.5885	27.6878		0.6
13	4.98?	18	[illegible]		[illegible]	[illegible]		0.6
14–23	[illegible]	18	[illegible]	4.33	[illegible]	[illegible]		[illegible]
24	5.00	18	[illegible]		[illegible]	[illegible]		1.2
25	5.00	18	[illegible]		[illegible]	[illegible]		1.2
26–28	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
29	5.00	18	0.7875		35.5511	36.6588		1.4
30	5.00	18	[illegible]		36.6588	[illegible]		1.4
31–53	[illegible]	18	[illegible]	5.58	[illegible]	[illegible]		[illegible]
54	5.00	18	0.7500		47.8904	49.0009		2.0
55	5.00	18	0.7375		49.0009	50.1113		2.0
56	1.75	18	[illegible]		[illegible]	[illegible]		[illegible]

Total weight: 38.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 712-1]	159	APXV18-203219-C-A20 w/ Mount Pipe	139
APXVSPP18-C-A20 w/ Mount Pipe	159	APXV18-203219-C-A20 w/ Mount Pipe	139
APXVSPP18-C-A20 w/ Mount Pipe	159	LNX-6512DS-VTM w/ Mount Pipe	139
APXVSPP18-C-A20 w/ Mount Pipe	159	LNX-6512DS-VTM w/ Mount Pipe	139
APXVTM14-ALU-I20 w/ Mount Pipe	159	LNX-6512DS-VTM w/ Mount Pipe	139
APXVTM14-ALU-I20 w/ Mount Pipe	159	TMAT7LA-11A	139
APXVTM14-ALU-I20 w/ Mount Pipe	159	TMAT7LA-11A	139
TD-RRH8x20-25	159	TMAT7LA-11A	139
TD-RRH8x20-25	159	ATBT-BOTTOM-24V	139
TD-RRH8x20-25	159	ATBT-BOTTOM-24V	139
Side Arm Mount [SO 102-3]	157	ATBT-BOTTOM-24V	139
Pipe Mount [PM 601-3]	157	6' x 2" Mount Pipe	139
PCS 1900MHz 4x45W-65MHz	157	6' x 2" Mount Pipe	139
PCS 1900MHz 4x45W-65MHz	157	6' x 2" Mount Pipe	139
PCS 1900MHz 4x45W-65MHz	157	Platform Mount [LP 303-1]	124
800MHz 2X50W RRH W/FILTER	157	LNX-6514DS-A1M w/ Mount Pipe	124
800MHz 2X50W RRH W/FILTER	157	LNX-6514DS-A1M w/ Mount Pipe	124
800MHz 2X50W RRH W/FILTER	157	LNX-6514DS-A1M w/ Mount Pipe	124
Side Arm Mount [SO 102-3]	152	(2) SBNHH-1D65B w/ Mount Pipe	124
Pipe Mount [PM 601-3]	152	(2) SBNHH-1D65B w/ Mount Pipe	124
(2) TME-RRUS-11	152	(2) SBNHH-1D65B w/ Mount Pipe	124
(2) TME-RRUS-11	152	6' x 2" Mount Pipe	124
(2) TME-RRUS-11	152	6' x 2" Mount Pipe	124
Platform Mount [LP 303-1]	150	6' x 2" Mount Pipe	124
(2) 7770.00 w/ Mount Pipe	150	B66A RRH4X45	124
(2) 7770.00 w/ Mount Pipe	150	B66A RRH4X45	124
(2) 7770.00 w/ Mount Pipe	150	B66A RRH4X45	124
AM-X-CD-17-65-00T-RET w/ Mount Pipe	150	RRH2x60-700	124
AM-X-CD-17-65-00T-RET w/ Mount Pipe	150	RRH2x60-700	124
AM-X-CD-17-65-00T-RET w/ Mount Pipe	150	RRH2x60-700	124
(2) LGP21401	150	RRH2X60-PCS	124
(2) LGP21401	150	RRH2X60-PCS	124
(2) LGP21401	150	RRH2X60-PCS	124
(2) LGP21901	150	DB-T1-6Z-8AB-0Z	124
(2) LGP21901	150	DB-T1-6Z-8AB-0Z	124
(2) LGP21901	150	Side Arm Mount [SO 201-1]	109
DC6-48-60-18-8F	150	Side Arm Mount [SO 701-1]	109
T-Arm Mount [TA 602-3]	139	DB589	109
APXV18-203219-C-A20 w/ Mount Pipe	139		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED

AXIAL 100 K
SHEAR 8 K
MOMENT 868 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 61 K
SHEAR 26 K
MOMENT 3114 kip-ft
TORQUE 1 kip-ft
REACTIONS - 101 mph WIND

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FAX:

Job: TOWN OF PLAINFIELD/SSUSA (BU#876401)			
Project: 194393 (876401.1418186)			
Client: Crown Castle	Drawn by: Neeraj Jog		App'd:
Code: TIA-222-G	Date: 06/15/17		Scale: NTS
Path: Y:\TELECOM\2017\Engineering\Projects\CCI\SA Sites\876401\876401.1418186 - TSA\Structural\876401.1418186 Structural Analysis.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:

1. Tower is located in Windham County, Connecticut.
2. Basic wind speed of 101 mph.
3. Structure Class II.
4. Exposure Category B.
5. Topographic Category 1.
6. Crest Height 0.00 ft.
7. Nominal ice thickness of 0.7500 in.
8. Ice thickness is considered to increase with height.
9. Ice density of 56 pcf.
10. A wind speed of 50 mph is used in combination with ice.
11. Deflections calculated using a wind speed of 60 mph.
12. A non-linear (P-delta) analysis was used.
13. Pressures are calculated at each section.
14. Stress ratio used in pole design is 1.
15. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	159.86-154.86	5.00	0.00	18	16.5000	17.6204	0.1875	0.7500	A572-65 (65 ksi)
L2	154.86-149.86	5.00	0.00	18	17.6204	18.7407	0.1875	0.7500	A572-65 (65 ksi)
L3	149.86-144.86	5.00	0.00	18	18.7407	19.8611	0.1875	0.7500	A572-65 (65 ksi)
L4	144.86-139.86	5.00	0.00	18	19.8611	20.9814	0.1875	0.7500	A572-65 (65 ksi)
L5	139.86-134.86	5.00	0.00	18	20.9814	22.1018	0.1875	0.7500	A572-65 (65 ksi)
L6	134.86-129.86	5.00	0.00	18	22.1018	23.2221	0.1875	0.7500	A572-65 (65 ksi)
L7	129.86-125.75	4.11	0.00	18	23.2221	24.1425	0.1875	0.7500	A572-65 (65 ksi)
L8	125.75-125.50	0.25	0.00	18	24.1425	24.1985	0.1875	0.7500	A572-65 (65 ksi)
L9	125.50-118.98	6.52	3.75	18	24.1985	25.6600	0.1875	0.7500	A572-65 (65 ksi)
L10	118.98-117.98	4.75	0.00	18	24.4447	25.4891	0.2500	1.0000	A572-65 (65 ksi)
L11	117.98-112.98	5.00	0.00	18	25.4891	26.5885	0.4813	1.9250	A572-65 (65 ksi)
L12	112.98-107.98	5.00	0.00	18	26.5885	27.6878	0.4750	1.9000	A572-65 (65 ksi)
L13	107.98-103.00	4.98	0.00	18	27.6878	28.7822	0.4625	1.8500	A572-65 (65 ksi)
L14	103.00-102.75	0.25	0.00	18	28.7822	28.8372	0.5500	2.2000	A572-65 (65 ksi)
L15	102.75-100.21	2.54	0.00	18	28.8372	29.3961	0.5375	2.1500	A572-65 (65 ksi)
L16	100.21-95.69	4.52	4.33	18	29.3961	30.3900	0.6875	2.7500	A572-65 (65 ksi)
L17	95.69-94.69	5.33	0.00	18	28.9372	30.1188	0.7375	2.9500	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L18	94.69-93.50	1.19	0.00	18	30.1188	30.3819	0.7375	2.9500	A572-65 (65 ksi)
L19	93.50-93.25	0.25	0.00	18	30.3819	30.4372	0.9125	3.6500	A572-65 (65 ksi)
L20	93.25-89.25	4.00	0.00	18	30.4372	31.3234	0.8875	3.5500	A572-65 (65 ksi)
L21	89.25-89.00	0.25	0.00	18	31.3234	31.3788	0.9375	3.7500	A572-65 (65 ksi)
L22	89.00-86.50	2.50	0.00	18	31.3788	31.9326	0.9250	3.7000	A572-65 (65 ksi)
L23	86.50-86.25	0.25	0.00	18	31.9326	31.9880	0.7625	3.0500	A572-65 (65 ksi)
L24	86.25-81.25	5.00	0.00	18	31.9880	33.0957	0.7375	2.9500	A572-65 (65 ksi)
L25	81.25-76.25	5.00	0.00	18	33.0957	34.2034	0.7250	2.9000	A572-65 (65 ksi)
L26	76.25-75.42	0.83	0.00	18	34.2034	34.3880	0.7250	2.9000	A572-65 (65 ksi)
L27	75.42-75.17	0.25	0.00	18	34.3880	34.4434	0.8125	3.2500	A572-65 (65 ksi)
L28	75.17-70.17	5.00	0.00	18	34.4434	35.5511	0.8000	3.2000	A572-65 (65 ksi)
L29	70.17-65.17	5.00	0.00	18	35.5511	36.6588	0.7875	3.1500	A572-65 (65 ksi)
L30	65.17-60.17	5.00	0.00	18	36.6588	37.7665	0.7625	3.0500	A572-65 (65 ksi)
L31	60.17-59.50	0.67	0.00	18	37.7665	37.9142	0.7625	3.0500	A572-65 (65 ksi)
L32	59.50-59.25	0.25	0.00	18	37.9142	37.9696	0.7625	3.0500	A572-65 (65 ksi)
L33	59.25-54.25	5.00	0.00	18	37.9696	39.0773	0.7500	3.0000	A572-65 (65 ksi)
L34	54.25-53.00	1.25	0.00	18	39.0773	39.3542	0.7375	2.9500	A572-65 (65 ksi)
L35	53.00-52.75	0.25	0.00	18	39.3542	39.4096	0.7375	2.9500	A572-65 (65 ksi)
L36	52.75-47.06	5.69	5.58	18	39.4096	40.6700	0.7375	2.9500	A572-65 (65 ksi)
L37	47.06-46.06	6.58	0.00	18	38.8081	40.2702	0.7625	3.0500	A572-65 (65 ksi)
L38	46.06-41.06	5.00	0.00	18	40.2702	41.3807	0.7500	3.0000	A572-65 (65 ksi)
L39	41.06-39.33	1.73	0.00	18	41.3807	41.7651	0.7500	3.0000	A572-65 (65 ksi)
L40	39.33-39.08	0.25	0.00	18	41.7651	41.8206	0.8250	3.3000	A572-65 (65 ksi)
L41	39.08-37.75	1.33	0.00	18	41.8206	42.1160	0.8250	3.3000	A572-65 (65 ksi)
L42	37.75-37.50	0.25	0.00	18	42.1160	42.1715	0.7500	3.0000	A572-65 (65 ksi)
L43	37.50-32.50	5.00	0.00	18	42.1715	43.2820	0.7375	2.9500	A572-65 (65 ksi)
L44	32.50-29.75	2.75	0.00	18	43.2820	43.8927	0.7250	2.9000	A572-65 (65 ksi)
L45	29.75-29.50	0.25	0.00	18	43.8927	43.9482	0.7250	2.9000	A572-65 (65 ksi)
L46	29.50-24.50	5.00	0.00	18	43.9482	45.0587	0.7125	2.8500	A572-65 (65 ksi)
L47	24.50-21.25	3.25	0.00	18	45.0587	45.7805	0.7125	2.8500	A572-65 (65 ksi)
L48	21.25-21.00	0.25	0.00	18	45.7805	45.8360	0.7250	2.9000	A572-65 (65 ksi)
L49	21.00-20.00	1.00	0.00	18	45.8360	46.0581	0.7250	2.9000	A572-65 (65 ksi)
L50	20.00-19.75	0.25	0.00	18	46.0581	46.1137	0.8250	3.3000	A572-65 (65 ksi)
L51	19.75-17.00	2.75	0.00	18	46.1137	46.7244	0.8125	3.2500	A572-65 (65 ksi)
L52	17.00-16.75	0.25	0.00	18	46.7244	46.7799	0.7750	3.1000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L53	16.75-11.75	5.00	0.00	18	46.7799	47.8904	0.7625	3.0500	(65 ksi) A572-65 (65 ksi)
L54	11.75-6.75	5.00	0.00	18	47.8904	49.0009	0.7500	3.0000	(65 ksi) A572-65 (65 ksi)
L55	6.75-1.75	5.00	0.00	18	49.0009	50.1113	0.7375	2.9500	(65 ksi) A572-65 (65 ksi)
L56	1.75-0.00	1.75		18	50.1113	50.5000	0.7375	2.9500	(65 ksi) A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.7545	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728
	17.8922	10.3747	398.3373	6.1887	8.9511	44.5013	797.1988	5.1883	2.7712	14.78
L2	17.8922	10.3747	398.3373	6.1887	8.9511	44.5013	797.1988	5.1883	2.7712	14.78
	19.0298	11.0415	480.1782	6.5864	9.5203	50.4374	960.9882	5.5218	2.9684	15.831
L3	19.0298	11.0415	480.1782	6.5864	9.5203	50.4374	960.9882	5.5218	2.9684	15.831
	20.1674	11.7082	572.5248	6.9841	10.0894	56.7451	1145.8029	5.8552	3.1655	16.883
L4	20.1674	11.7082	572.5248	6.9841	10.0894	56.7451	1145.8029	5.8552	3.1655	16.883
	21.3051	12.3750	676.0115	7.3818	10.6586	63.4243	1352.9124	6.1887	3.3627	17.935
L5	21.3051	12.3750	676.0115	7.3818	10.6586	63.4243	1352.9124	6.1887	3.3627	17.935
	22.4427	13.0417	791.2726	7.7796	11.2277	70.4751	1583.5865	6.5221	3.5599	18.986
L6	22.4427	13.0417	791.2726	7.7796	11.2277	70.4751	1583.5865	6.5221	3.5599	18.986
	23.5804	13.7085	918.9427	8.1773	11.7968	77.8974	1839.0946	6.8555	3.7571	20.038
L7	23.5804	13.7085	918.9427	8.1773	11.7968	77.8974	1839.0946	6.8555	3.7571	20.038
	24.5149	14.2562	1033.5542	8.5040	12.2644	84.2728	2068.4683	7.1295	3.9191	20.902
L8	24.5149	14.2562	1033.5542	8.5040	12.2644	84.2728	2068.4683	7.1295	3.9191	20.902
	24.5718	14.2895	1040.8219	8.5239	12.2928	84.6690	2083.0133	7.1461	3.9289	20.954
L9	24.5718	14.2895	1040.8219	8.5239	12.2928	84.6690	2083.0133	7.1461	3.9289	20.954
	26.0558	15.1593	1242.6830	9.0427	13.0353	95.3323	2487.0012	7.5811	4.1862	22.326
L10	25.6591	19.1985	1419.8649	8.5891	12.4179	114.3399	2841.5982	9.6011	3.8623	15.449
	25.8823	20.0272	1611.7836	8.9599	12.9485	124.4768	3225.6880	10.0155	4.0461	16.184
L11	25.8823	38.1992	3018.1787	8.8778	12.9485	233.0915	6040.3288	19.1032	3.6391	7.562
	26.9986	39.8784	3433.9704	9.2681	13.5069	254.2375	6872.4593	19.9430	3.8326	7.964
L12	26.9986	39.3700	3391.8082	9.2703	13.5069	251.1160	6788.0794	19.6887	3.8436	8.092
	28.1149	41.0274	3838.4688	9.6605	14.0654	272.9014	7681.9883	20.5176	4.0371	8.499
L13	28.1149	39.9661	3742.6091	9.6650	14.0654	266.0861	7490.1428	19.9868	4.0591	8.776
	29.2262	41.5726	4212.3295	10.0535	14.6214	288.0942	8430.2018	20.7903	4.2517	9.193
L14	29.2262	49.2850	4962.9684	10.0224	14.6214	339.4327	9932.4673	24.6472	4.0977	7.45
	29.2820	49.3809	4992.0132	10.0419	14.6493	340.7684	9990.5950	24.6952	4.1073	7.468
L15	29.2820	48.2800	4885.0287	10.0464	14.6493	333.4654	9776.4852	24.1446	4.1293	7.682
	29.8496	49.2335	5180.2148	10.2448	14.9332	346.8923	10367.2458	24.6214	4.2277	7.866
L16	29.8496	62.6457	6523.0733	10.1915	14.9332	436.8166	13054.7299	31.3288	3.9637	5.765
	30.8588	64.8146	7224.3053	10.5444	15.4381	467.9524	14458.1165	32.4134	4.1386	6.02
L17	30.3585	66.0106	6631.9525	10.0109	14.7001	451.1497	13272.6314	33.0116	3.7950	5.146
	30.5834	68.7764	7500.9897	10.4304	15.3003	490.2498	15011.8494	34.3948	4.0029	5.428
L18	30.5834	68.7764	7500.9897	10.4304	15.3003	490.2498	15011.8494	34.3948	4.0029	5.428
	30.8505	69.3923	7704.2900	10.5237	15.4340	499.1770	15418.7175	34.7027	4.0492	5.49
L19	30.8505	85.3514	9364.6025	10.4616	15.4340	606.7521	18741.5271	42.6838	3.7412	4.1
	30.9068	85.5118	9417.5016	10.4813	15.4621	609.0692	18847.3950	42.7640	3.7510	4.111
L20	30.9068	83.2394	9182.7749	10.4902	15.4621	593.8885	18377.6327	41.6276	3.7950	4.276
	31.8066	85.7357	10033.9379	10.8047	15.9123	630.5779	20081.0788	42.8760	3.9509	4.452

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L21	31.8066	90.4171	10547.0789	10.7870	15.9123	662.8260	21108.0358	45.2171	3.8629	4.12
	31.8629	90.5819	10604.8572	10.8067	15.9404	665.2807	21223.6685	45.2995	3.8727	4.131
L22	31.8629	89.4108	10476.3541	10.8111	15.9404	657.2192	20966.4933	44.7139	3.8947	4.21
	32.4253	91.0369	11058.3996	11.0077	16.2218	681.7007	22131.3501	45.5271	3.9921	4.316
L23	32.4253	75.4372	9259.7767	11.0654	16.2218	570.8237	18531.7376	37.7258	4.2781	5.611
	32.4815	75.5712	9309.2245	11.0851	16.2499	572.8783	18630.6983	37.7928	4.2879	5.623
L24	32.4815	73.1520	9025.6479	11.0939	16.2499	555.4273	18063.1719	36.5830	4.3319	5.874
	33.6063	75.7449	10019.8342	11.4872	16.8126	595.9707	20052.8527	37.8797	4.5268	6.138
L25	33.6063	74.4899	9861.4261	11.4916	16.8126	586.5487	19735.8281	37.2520	4.5488	6.274
	34.7311	77.0389	10908.8138	11.8848	17.3753	627.8331	21831.9816	38.5268	4.7438	6.543
L26	34.7311	77.0389	10908.8138	11.8848	17.3753	627.8331	21831.9816	38.5268	4.7438	6.543
	34.9185	77.4635	11090.2078	11.9504	17.4691	634.8475	22195.0084	38.7391	4.7763	6.588
L27	34.9185	86.5869	12332.0154	11.9193	17.4691	705.9335	24680.2576	43.3017	4.6223	5.689
	34.9747	86.7298	12393.1436	11.9390	17.4972	708.2920	24802.5945	43.3731	4.6320	5.701
L28	34.9747	85.4272	12216.0913	11.9434	17.4972	698.1731	24448.2568	42.7217	4.6540	5.818
	36.0995	88.2399	13462.8927	12.3366	18.0599	745.4563	26943.5003	44.1283	4.8490	6.061
L29	36.0995	86.8924	13266.8410	12.3411	18.0599	734.6006	26551.1389	43.4544	4.8710	6.185
	37.2243	89.6611	14575.8778	12.7343	18.6226	782.6963	29170.9350	44.8391	5.0659	6.433
L30	37.2243	86.8752	14142.6801	12.7432	18.6226	759.4344	28303.9694	43.4459	5.1099	6.702
	38.3491	89.5561	15492.7584	13.1364	19.1854	807.5302	31005.9026	44.7865	5.3049	6.957
L31	38.3491	89.5561	15492.7584	13.1364	19.1854	807.5302	31005.9026	44.7865	5.3049	6.957
	38.4991	89.9137	15679.1015	13.1889	19.2604	814.0579	31378.8339	44.9654	5.3309	6.991
L32	38.4991	89.9137	15679.1015	13.1889	19.2604	814.0579	31378.8339	44.9654	5.3309	6.991
	38.5554	90.0477	15749.3283	13.2085	19.2886	816.5113	31519.3800	45.0324	5.3407	7.004
L33	38.5554	88.6013	15506.7610	13.2130	19.2886	803.9356	31033.9261	44.3091	5.3627	7.15
	39.6801	91.2382	16932.8742	13.6062	19.8513	852.9868	33888.0291	45.6278	5.5576	7.41
L34	39.6801	89.7468	16666.9562	13.6106	19.8513	839.5913	33355.8432	44.8819	5.5796	7.566
	39.9613	90.3950	17030.7231	13.7089	19.9920	851.8790	34083.8556	45.2061	5.6283	7.632
L35	39.9613	90.3950	17030.7231	13.7089	19.9920	851.8790	34083.8556	45.2061	5.6283	7.632
	40.0176	90.5247	17104.1058	13.7286	20.0201	854.3472	34230.7177	45.2709	5.6381	7.645
L36	40.0176	90.5247	17104.1058	13.7286	20.0201	854.3472	34230.7177	45.2709	5.6381	7.645
	41.2974	93.4750	18831.5427	14.1760	20.6604	911.4818	37687.8643	46.7464	5.8599	7.946
L37	40.6659	92.0769	16838.2294	13.5062	19.7145	854.1039	33698.6150	46.0472	5.4882	7.198
	40.8914	95.6155	18855.1037	14.0252	20.4573	921.6831	37735.0174	47.8168	5.7456	7.535
L38	40.8914	94.0778	18563.6127	14.0297	20.4573	907.4343	37151.6519	47.0478	5.7676	7.69

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	42.0190	96.7213	20172.8380	14.4239	21.0214	959.6347	40372.2199	48.3698	5.9630	7.951
L39	42.0190	96.7213	20172.8380	14.4239	21.0214	959.6347	40372.2199	48.3698	5.9630	7.951
	42.4094	97.6363	20750.8383	14.5603	21.2166	978.0450	41528.9811	48.8275	6.0307	8.041
L40	42.4094	107.2036	22700.9327	14.5337	21.2166	1069.9584	45431.7359	53.6120	5.8987	7.15
	42.4657	107.3490	22793.4199	14.5534	21.2449	1072.8913	45616.8320	53.6847	5.9084	7.162
L41	42.4657	107.3490	22793.4199	14.5534	21.2449	1072.8913	45616.8320	53.6847	5.9084	7.162
	42.7657	108.1225	23289.6771	14.6583	21.3949	1088.5615	46609.9994	54.0715	5.9604	7.225
L42	42.7657	98.4717	21288.0148	14.6849	21.3949	995.0037	42604.0410	49.2452	6.0924	8.123
	42.8221	98.6039	21373.8514	14.7046	21.4231	997.7004	42775.8270	49.3113	6.1022	8.136
L43	42.8221	96.9897	21036.6541	14.7091	21.4231	981.9605	42100.9887	48.5041	6.1242	8.304
	43.9497	99.5891	22773.7936	15.1033	21.9872	1035.7734	45577.5536	49.8040	6.3196	8.569
L44	43.9497	97.9299	22407.5362	15.1077	21.9872	1019.1157	44844.5569	48.9743	6.3416	8.747
	44.5698	99.3354	23386.1953	15.3245	22.2975	1048.8259	46803.1627	49.6771	6.4491	8.895
L45	44.5698	99.3354	23386.1953	15.3245	22.2975	1048.8259	46803.1627	49.6771	6.4491	8.895
	44.6262	99.4632	23476.5511	15.3442	22.3257	1051.5480	46983.9933	49.7410	6.4589	8.909
L46	44.6262	97.7765	23091.8056	15.3487	22.3257	1034.3147	46213.9960	48.8976	6.4809	9.096
	45.7538	100.2878	24917.1676	15.7429	22.8898	1088.5697	49867.1219	50.1534	6.6763	9.37
L47	45.7538	100.2878	24917.1676	15.7429	22.8898	1088.5697	49867.1219	50.1534	6.6763	9.37
	46.4867	101.9202	26153.7769	15.9991	23.2565	1124.5793	52341.9676	50.9698	6.8034	9.549
L48	46.4867	103.6795	26590.4775	15.9947	23.2565	1143.3568	53215.9435	51.8496	6.7814	9.354
	46.5431	103.8073	26688.9037	16.0144	23.2847	1146.1989	53412.9254	51.9135	6.7911	9.367
L49	46.5431	103.8073	26688.9037	16.0144	23.2847	1146.1989	53412.9254	51.9135	6.7911	9.367
	46.7686	104.3183	27085.0373	16.0933	23.3975	1157.6025	54205.7137	52.1691	6.8302	9.421
L50	46.7686	118.4452	30617.3913	16.0578	23.3975	1308.5737	61275.0697	59.2339	6.6542	8.066
	46.8250	118.5906	30730.2777	16.0775	23.4257	1311.8170	61500.9912	59.3066	6.6640	8.078
L51	46.8250	116.8260	30289.7342	16.0819	23.4257	1293.0111	60619.3244	58.4241	6.6860	8.229
	47.4452	118.4011	31531.4388	16.2987	23.7360	1328.4226	63104.3675	59.2118	6.7935	8.361
L52	47.4452	113.0287	30149.8988	16.3120	23.7360	1270.2182	60339.4695	56.5251	6.8595	8.851
	47.5016	113.1652	30259.3266	16.3318	23.7642	1273.3153	60558.4692	56.5934	6.8693	8.864
L53	47.5016	111.3702	29795.5470	16.3362	23.7642	1253.7994	59630.2998	55.6957	6.8913	9.038
	48.6292	114.0578	32005.0485	16.7304	24.3283	1315.5468	64052.2101	57.0397	7.0867	9.294
L54	48.6292	112.2177	31505.4314	16.7348	24.3283	1295.0104	63052.3185	56.1195	7.1087	9.478
	49.7568	114.8612	33784.7751	17.1291	24.8924	1357.2303	67614.0051	57.4415	7.3042	9.739
L55	49.7568	112.9761	33247.5217	17.1335	24.8924	1335.6473	66538.7914	56.4988	7.3262	9.934
	50.8844	115.5755	35595.6570	17.5277	25.4566	1398.2902	71238.1516	57.7987	7.5216	10.199

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L56	50.8844	115.5755	35595.6570	17.5277	25.4566	1398.2902	71238.1516	57.7987	7.5216	10.199
	51.2790	116.4853	36442.9033	17.6657	25.6540	1420.5544	72933.7592	58.2537	7.5900	10.292

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 159.86-154.86				1	1	1			
L2 154.86-149.86				1	1	1			
L3 149.86-144.86				1	1	1			
L4 144.86-139.86				1	1	1			
L5 139.86-134.86				1	1	1			
L6 134.86-129.86				1	1	1			
L7 129.86-125.75				1	1	1			
L8 125.75-125.50				1	1	1			
L9 125.50-118.98				1	1	1			
L10 118.98-117.98				1	1	1			
L11 117.98-112.98				1	1	0.935503			
L12 112.98-107.98				1	1	0.930567			
L13 107.98-103.00				1	1	0.939252			
L14 103.00-102.75				1	1	1.03463			
L15 102.75-100.21				1	1	1.04674			
L16 100.21-95.69				1	1	0.917623			
L17 95.69-94.69				1	1	0.930138			
L18 94.69-93.50				1	1	0.925644			
L19 93.50-93.25				1	1	0.909675			
L20 93.25-89.25				1	1	0.917552			
L21 89.25-89.00				1	1	0.910469			
L22 89.00-86.50				1	1	0.911953			
L23 86.50-86.25				1	1	0.920665			
L24 86.25-81.25				1	1	0.933059			
L25 81.25-76.25				1	1	0.931649			
L26 76.25-75.42				1	1	0.928904			
L27 75.42-75.17				1	1	0.931301			
L28 75.17-70.17				1	1	0.927814			
L29 70.17-65.17				1	1	0.925361			
L30 65.17-				1	1	0.938715			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
60.17									
L31 60.17-59.50				1	1	0.936611			
L32 59.50-59.25				1	1	0.935827			
L33 59.25-54.25				1	1	0.935659			
L34 54.25-53.00				1	1	0.947425			
L35 53.00-52.75				1	1	0.946675			
L36 52.75-47.06				1	1	0.946358			
L37 47.06-46.06				1	1	0.987321			
L38 46.06-41.06				1	1	0.989699			
L39 41.06-39.33				1	1	0.985109			
L40 39.33-39.08				1	1	0.978201			
L41 39.08-37.75				1	1	0.974455			
L42 37.75-37.50				1	1	0.980349			
L43 37.50-32.50				1	1	0.983922			
L44 32.50-29.75				1	1	0.993754			
L45 29.75-29.50				1	1	0.993141			
L46 29.50-24.50				1	1	0.998154			
L47 24.50-21.25				1	1	0.990597			
L48 21.25-21.00				1	1	1.07558			
L49 21.00-20.00				1	1	1.07285			
L50 20.00-19.75				1	1	1.02229			
L51 19.75-17.00				1	1	1.03007			
L52 17.00-16.75				1	1	1.02529			
L53 16.75-11.75				1	1	1.02885			
L54 11.75-6.75				1	1	1.03316			
L55 6.75-1.75				1	1	1.03821			
L56 1.75-0.00				1	1	1.03408			

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
Safety Line 3/8	B	Surface Ar (CaAa)	159.85 - 9.00	1	1	-0.010 0.010	0.3750		0.22
Reinforcement									
Aero Channel MP303	A	Surface Af (CaAa)	76.58 - 36.58	1	1	0.000 0.000	4.0625	11.2600	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Aero Channel MP303	B	Surface Af (CaAa)	76.58 - 36.58	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	C	Surface Af (CaAa)	76.58 - 36.58	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	A	Surface Af (CaAa)	40.50 - 0.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	B	Surface Af (CaAa)	40.50 - 0.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	C	Surface Af (CaAa)	40.50 - 0.50	1	1	0.000 0.000	4.0625	11.2600	0.00
PL1.25x5.375	A	Surface Af (CaAa)	89.25 - 0.00	1	1	0.000 0.000	5.3750	13.2500	0.00
PL1.25x5.375	B	Surface Af (CaAa)	89.25 - 0.00	1	1	0.000 0.000	5.3750	13.2500	0.00
PL1.25x5.375	C	Surface Af (CaAa)	89.25 - 0.00	1	1	0.000 0.000	5.3750	13.2500	0.00
PL1.25x4.375	A	Surface Af (CaAa)	119.00 - 89.25	1	1	0.000 0.000	4.3750	11.2500	0.00
PL1.25x4.375	B	Surface Af (CaAa)	119.00 - 89.25	1	1	0.000 0.000	4.3750	11.2500	0.00
PL1.25x4.375	C	Surface Af (CaAa)	119.00 - 89.25	1	1	0.000 0.000	4.3750	11.2500	0.00
PL1.25x3.125	A	Surface Af (CaAa)	127.00 - 119.00	1	1	0.000 0.000	3.1250	8.7500	0.00
PL1.25x3.125	B	Surface Af (CaAa)	127.00 - 119.00	1	1	0.000 0.000	3.1250	8.7500	0.00
PL1.25x3.125	C	Surface Af (CaAa)	127.00 - 119.00	1	1	0.000 0.000	3.1250	8.7500	0.00
CCI-SFP-085125	A	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	B	Surface Af (CaAa)	20.00 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-085125	C	Surface Af (CaAa)	20.00 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
CCI-SFP-060100	A	Surface Af (CaAa)	105.00 - 15.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	105.00 - 20.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	55.00 - 20.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	102.20 - 47.20	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-045100	A	Surface Af (CaAa)	95.00 - 85.00	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	B	Surface Af (CaAa)	95.00 - 85.00	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	Surface Af (CaAa)	95.00 - 85.00	1	1	0.000 0.000	4.5000	11.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB114-21U3M12-XXXF(1-1/4)	C	No	Inside Pole	159.00 - 8.50	1	No Ice	0.00	1.22
						1/2" Ice	0.00	1.22
						1" Ice	0.00	1.22
HB114-1-08U4-M5J(1-1/4)	C	No	Inside Pole	159.00 - 8.50	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
LDF7-50A(1-5/8)	C	No	Inside Pole	150.00 - 3.50	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98B-002-75000(3/8)	C	No	Inside Pole	150.00 - 3.50	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	C	No	Inside Pole	150.00 - 3.50	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
2" innerduct conduit	C	No	Inside Pole	150.00 - 3.50	1	No Ice	0.00	0.20
						1/2" Ice	0.00	0.20
						1" Ice	0.00	0.20
LDF7-50A(1-5/8)	A	No	Inside Pole	139.00 - 8.50	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	A	No	Inside Pole	125.00 - 10.50	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
CR 50 1070(7/8)	A	No	Inside Pole	109.00 - 8.50	1	No Ice	0.00	0.28
						1/2" Ice	0.00	0.28
						1" Ice	0.00	0.28

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	159.86-154.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.187	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L2	154.86-149.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	149.86-144.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L4	144.86-139.86	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L5	139.86-134.86	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L6	134.86-129.86	A	0.000	0.000	0.000	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07
L7	129.86-125.75	A	0.000	0.000	0.651	0.000	0.04
		B	0.000	0.000	0.805	0.000	0.00
		C	0.000	0.000	0.651	0.000	0.06
L8	125.75-125.50	A	0.000	0.000	0.130	0.000	0.00
		B	0.000	0.000	0.140	0.000	0.00
		C	0.000	0.000	0.130	0.000	0.00
L9	125.50-118.98	A	0.000	0.000	3.402	0.000	0.08
		B	0.000	0.000	3.646	0.000	0.00
		C	0.000	0.000	3.402	0.000	0.10
L10	118.98-117.98	A	0.000	0.000	0.729	0.000	0.01
		B	0.000	0.000	0.767	0.000	0.00
		C	0.000	0.000	0.729	0.000	0.01
L11	117.98-112.98	A	0.000	0.000	3.646	0.000	0.06
		B	0.000	0.000	3.833	0.000	0.00
		C	0.000	0.000	3.646	0.000	0.07
L12	112.98-107.98	A	0.000	0.000	3.646	0.000	0.06
		B	0.000	0.000	3.833	0.000	0.00
		C	0.000	0.000	3.646	0.000	0.07
L13	107.98-103.00	A	0.000	0.000	5.629	0.000	0.06
		B	0.000	0.000	3.816	0.000	0.00
		C	0.000	0.000	5.629	0.000	0.07
L14	103.00-102.75	A	0.000	0.000	0.432	0.000	0.00
		B	0.000	0.000	0.192	0.000	0.00
		C	0.000	0.000	0.432	0.000	0.00
L15	102.75-100.21	A	0.000	0.000	4.396	0.000	0.03
		B	0.000	0.000	3.941	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	4.396	0.000	0.04
L16	100.21-95.69	A	0.000	0.000	7.817	0.000	0.06
		B	0.000	0.000	7.986	0.000	0.00
		C	0.000	0.000	7.817	0.000	0.07
L17	95.69-94.69	A	0.000	0.000	1.964	0.000	0.01
		B	0.000	0.000	2.001	0.000	0.00
		C	0.000	0.000	1.964	0.000	0.01
L18	94.69-93.50	A	0.000	0.000	2.944	0.000	0.02
		B	0.000	0.000	2.989	0.000	0.00
		C	0.000	0.000	2.944	0.000	0.02
L19	93.50-93.25	A	0.000	0.000	0.620	0.000	0.00
		B	0.000	0.000	0.629	0.000	0.00
		C	0.000	0.000	0.620	0.000	0.00
L20	93.25-89.25	A	0.000	0.000	9.917	0.000	0.05
		B	0.000	0.000	10.067	0.000	0.00
		C	0.000	0.000	9.917	0.000	0.06
L21	89.25-89.00	A	0.000	0.000	0.661	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.661	0.000	0.00
L22	89.00-86.50	A	0.000	0.000	6.615	0.000	0.03
		B	0.000	0.000	6.708	0.000	0.00
		C	0.000	0.000	6.615	0.000	0.04
L23	86.50-86.25	A	0.000	0.000	0.661	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.661	0.000	0.00
L24	86.25-81.25	A	0.000	0.000	10.417	0.000	0.06
		B	0.000	0.000	10.604	0.000	0.00
		C	0.000	0.000	10.417	0.000	0.07
L25	81.25-76.25	A	0.000	0.000	9.705	0.000	0.06
		B	0.000	0.000	9.892	0.000	0.00
		C	0.000	0.000	9.705	0.000	0.07
L26	76.25-75.42	A	0.000	0.000	2.143	0.000	0.01
		B	0.000	0.000	2.174	0.000	0.00
		C	0.000	0.000	2.143	0.000	0.01
L27	75.42-75.17	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L28	75.17-70.17	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L29	70.17-65.17	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L30	65.17-60.17	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L31	60.17-59.50	A	0.000	0.000	1.716	0.000	0.01
		B	0.000	0.000	1.741	0.000	0.00
		C	0.000	0.000	1.716	0.000	0.01
L32	59.50-59.25	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L33	59.25-54.25	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.802	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L34	54.25-53.00	A	0.000	0.000	3.216	0.000	0.02
		B	0.000	0.000	4.513	0.000	0.00
		C	0.000	0.000	3.216	0.000	0.02
L35	53.00-52.75	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.903	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L36	52.75-47.06	A	0.000	0.000	14.638	0.000	0.07
		B	0.000	0.000	20.401	0.000	0.00
		C	0.000	0.000	14.638	0.000	0.08
L37	47.06-46.06	A	0.000	0.000	2.573	0.000	0.01
		B	0.000	0.000	2.610	0.000	0.00
		C	0.000	0.000	2.573	0.000	0.01
L38	46.06-41.06	A	0.000	0.000	12.865	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	12.865	0.000	0.07
L39	41.06-39.33	A	0.000	0.000	5.245	0.000	0.02
		B	0.000	0.000	5.310	0.000	0.00
		C	0.000	0.000	5.245	0.000	0.03
L40	39.33-39.08	A	0.000	0.000	0.813	0.000	0.00
		B	0.000	0.000	0.822	0.000	0.00
		C	0.000	0.000	0.813	0.000	0.00
L41	39.08-37.75	A	0.000	0.000	4.322	0.000	0.02
		B	0.000	0.000	4.372	0.000	0.00
		C	0.000	0.000	4.322	0.000	0.02
L42	37.75-37.50	A	0.000	0.000	0.813	0.000	0.00
		B	0.000	0.000	0.822	0.000	0.00
		C	0.000	0.000	0.813	0.000	0.00
L43	37.50-32.50	A	0.000	0.000	13.485	0.000	0.06
		B	0.000	0.000	13.673	0.000	0.00
		C	0.000	0.000	13.485	0.000	0.07
L44	32.50-29.75	A	0.000	0.000	7.076	0.000	0.03
		B	0.000	0.000	7.179	0.000	0.00
		C	0.000	0.000	7.076	0.000	0.04
L45	29.75-29.50	A	0.000	0.000	0.643	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L46	29.50-24.50	A	0.000	0.000	13.573	0.000	0.06
		B	0.000	0.000	13.052	0.000	0.00
		C	0.000	0.000	12.865	0.000	0.07
L47	24.50-21.25	A	0.000	0.000	12.966	0.000	0.04
		B	0.000	0.000	8.484	0.000	0.00
		C	0.000	0.000	8.362	0.000	0.05
L48	21.25-21.00	A	0.000	0.000	0.997	0.000	0.00
		B	0.000	0.000	0.653	0.000	0.00
		C	0.000	0.000	0.643	0.000	0.00
L49	21.00-20.00	A	0.000	0.000	3.990	0.000	0.01
		B	0.000	0.000	2.610	0.000	0.00
		C	0.000	0.000	2.573	0.000	0.01
L50	20.00-19.75	A	0.000	0.000	0.997	0.000	0.00
		B	0.000	0.000	0.757	0.000	0.00
		C	0.000	0.000	0.747	0.000	0.00
L51	19.75-17.00	A	0.000	0.000	10.971	0.000	0.03
		B	0.000	0.000	8.324	0.000	0.00
		C	0.000	0.000	8.221	0.000	0.04
L52	17.00-16.75	A	0.000	0.000	0.997	0.000	0.00
		B	0.000	0.000	0.757	0.000	0.00
		C	0.000	0.000	0.747	0.000	0.00
L53	16.75-11.75	A	0.000	0.000	16.698	0.000	0.06
		B	0.000	0.000	15.135	0.000	0.00
		C	0.000	0.000	14.948	0.000	0.07
L54	11.75-6.75	A	0.000	0.000	14.948	0.000	0.04
		B	0.000	0.000	15.051	0.000	0.00
		C	0.000	0.000	14.948	0.000	0.07
L55	6.75-1.75	A	0.000	0.000	14.948	0.000	0.00
		B	0.000	0.000	14.948	0.000	0.00
		C	0.000	0.000	14.948	0.000	0.03
L56	1.75-0.00	A	0.000	0.000	4.893	0.000	0.00
		B	0.000	0.000	4.893	0.000	0.00
		C	0.000	0.000	4.893	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	159.86-154.86	A	1.754	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.940	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.02
L2	154.86-149.86	A	1.748	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.935	0.000	0.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.02
L3	149.86-144.86	A	1.742	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.930	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L4	144.86-139.86	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.924	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L5	139.86-134.86	A	1.730	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.917	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L6	134.86-129.86	A	1.723	0.000	0.000	0.000	0.000	0.05
		B		0.000	0.000	1.911	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.07
L7	129.86-125.75	A	1.717	0.000	0.000	0.928	0.000	0.05
		B		0.000	0.000	2.493	0.000	0.03
		C		0.000	0.000	0.928	0.000	0.07
L8	125.75-125.50	A	1.715	0.000	0.000	0.185	0.000	0.01
		B		0.000	0.000	0.281	0.000	0.00
		C		0.000	0.000	0.185	0.000	0.01
L9	125.50-118.98	A	1.710	0.000	0.000	4.844	0.000	0.15
		B		0.000	0.000	7.319	0.000	0.10
		C		0.000	0.000	4.844	0.000	0.16
L10	118.98-117.98	A	1.705	0.000	0.000	1.071	0.000	0.02
		B		0.000	0.000	1.451	0.000	0.02
		C		0.000	0.000	1.071	0.000	0.03
L11	117.98-112.98	A	1.700	0.000	0.000	5.346	0.000	0.12
		B		0.000	0.000	7.234	0.000	0.08
		C		0.000	0.000	5.346	0.000	0.13
L12	112.98-107.98	A	1.693	0.000	0.000	5.338	0.000	0.12
		B		0.000	0.000	7.219	0.000	0.08
		C		0.000	0.000	5.338	0.000	0.13
L13	107.98-103.00	A	1.685	0.000	0.000	7.981	0.000	0.15
		B		0.000	0.000	7.171	0.000	0.08
		C		0.000	0.000	7.981	0.000	0.16
L14	103.00-102.75	A	1.681	0.000	0.000	0.600	0.000	0.01
		B		0.000	0.000	0.360	0.000	0.00
		C		0.000	0.000	0.600	0.000	0.01
L15	102.75-100.21	A	1.678	0.000	0.000	6.102	0.000	0.10
		B		0.000	0.000	6.316	0.000	0.07
		C		0.000	0.000	6.102	0.000	0.10
L16	100.21-95.69	A	1.672	0.000	0.000	10.841	0.000	0.17
		B		0.000	0.000	12.522	0.000	0.13
		C		0.000	0.000	10.841	0.000	0.18
L17	95.69-94.69	A	1.668	0.000	0.000	2.692	0.000	0.04
		B		0.000	0.000	3.064	0.000	0.03
		C		0.000	0.000	2.692	0.000	0.04
L18	94.69-93.50	A	1.666	0.000	0.000	3.962	0.000	0.06
		B		0.000	0.000	4.402	0.000	0.05
		C		0.000	0.000	3.962	0.000	0.06
L19	93.50-93.25	A	1.664	0.000	0.000	0.834	0.000	0.01
		B		0.000	0.000	0.927	0.000	0.01
		C		0.000	0.000	0.834	0.000	0.01
L20	93.25-89.25	A	1.661	0.000	0.000	13.335	0.000	0.19
		B		0.000	0.000	14.814	0.000	0.16
		C		0.000	0.000	13.335	0.000	0.20
L21	89.25-89.00	A	1.657	0.000	0.000	0.875	0.000	0.01
		B		0.000	0.000	0.967	0.000	0.01
		C		0.000	0.000	0.875	0.000	0.01
L22	89.00-86.50	A	1.654	0.000	0.000	8.743	0.000	0.12
		B		0.000	0.000	9.664	0.000	0.10
		C		0.000	0.000	8.743	0.000	0.13
L23	86.50-86.25	A	1.652	0.000	0.000	0.874	0.000	0.01
		B		0.000	0.000	0.966	0.000	0.01
		C		0.000	0.000	0.874	0.000	0.01
L24	86.25-81.25	A	1.646	0.000	0.000	13.946	0.000	0.20
		B		0.000	0.000	15.780	0.000	0.16
		C		0.000	0.000	13.946	0.000	0.22
L25	81.25-76.25	A	1.636	0.000	0.000	13.086	0.000	0.19
		B		0.000	0.000	14.910	0.000	0.15

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	13.086	0.000	0.20
L26	76.25-75.42	A	1.630	0.000	0.000	2.958	0.000	0.04
		B		0.000	0.000	3.261	0.000	0.03
		C		0.000	0.000	2.958	0.000	0.04
L27	75.42-75.17	A	1.629	0.000	0.000	0.888	0.000	0.01
		B		0.000	0.000	0.978	0.000	0.01
		C		0.000	0.000	0.888	0.000	0.01
L28	75.17-70.17	A	1.623	0.000	0.000	17.734	0.000	0.24
		B		0.000	0.000	19.545	0.000	0.20
		C		0.000	0.000	17.734	0.000	0.25
L29	70.17-65.17	A	1.612	0.000	0.000	17.700	0.000	0.24
		B		0.000	0.000	19.499	0.000	0.20
		C		0.000	0.000	17.700	0.000	0.25
L30	65.17-60.17	A	1.599	0.000	0.000	17.663	0.000	0.24
		B		0.000	0.000	19.449	0.000	0.20
		C		0.000	0.000	17.663	0.000	0.25
L31	60.17-59.50	A	1.592	0.000	0.000	2.353	0.000	0.03
		B		0.000	0.000	2.591	0.000	0.03
		C		0.000	0.000	2.353	0.000	0.03
L32	59.50-59.25	A	1.591	0.000	0.000	0.882	0.000	0.01
		B		0.000	0.000	0.971	0.000	0.01
		C		0.000	0.000	0.882	0.000	0.01
L33	59.25-54.25	A	1.584	0.000	0.000	17.615	0.000	0.24
		B		0.000	0.000	20.374	0.000	0.20
		C		0.000	0.000	17.615	0.000	0.25
L34	54.25-53.00	A	1.575	0.000	0.000	4.397	0.000	0.06
		B		0.000	0.000	6.481	0.000	0.06
		C		0.000	0.000	4.397	0.000	0.06
L35	53.00-52.75	A	1.572	0.000	0.000	0.879	0.000	0.01
		B		0.000	0.000	1.296	0.000	0.01
		C		0.000	0.000	0.879	0.000	0.01
L36	52.75-47.06	A	1.563	0.000	0.000	19.974	0.000	0.27
		B		0.000	0.000	29.251	0.000	0.28
		C		0.000	0.000	19.974	0.000	0.28
L37	47.06-46.06	A	1.553	0.000	0.000	3.511	0.000	0.05
		B		0.000	0.000	3.861	0.000	0.04
		C		0.000	0.000	3.511	0.000	0.05
L38	46.06-41.06	A	1.542	0.000	0.000	17.491	0.000	0.23
		B		0.000	0.000	19.221	0.000	0.19
		C		0.000	0.000	17.491	0.000	0.24
L39	41.06-39.33	A	1.530	0.000	0.000	7.192	0.000	0.09
		B		0.000	0.000	7.787	0.000	0.08
		C		0.000	0.000	7.192	0.000	0.10
L40	39.33-39.08	A	1.526	0.000	0.000	1.118	0.000	0.01
		B		0.000	0.000	1.203	0.000	0.01
		C		0.000	0.000	1.118	0.000	0.01
L41	39.08-37.75	A	1.523	0.000	0.000	5.943	0.000	0.07
		B		0.000	0.000	6.398	0.000	0.06
		C		0.000	0.000	5.943	0.000	0.08
L42	37.75-37.50	A	1.520	0.000	0.000	1.116	0.000	0.01
		B		0.000	0.000	1.202	0.000	0.01
		C		0.000	0.000	1.116	0.000	0.01
L43	37.50-32.50	A	1.509	0.000	0.000	18.288	0.000	0.24
		B		0.000	0.000	19.985	0.000	0.19
		C		0.000	0.000	18.288	0.000	0.25
L44	32.50-29.75	A	1.491	0.000	0.000	9.536	0.000	0.12
		B		0.000	0.000	10.459	0.000	0.10
		C		0.000	0.000	9.536	0.000	0.13
L45	29.75-29.50	A	1.484	0.000	0.000	0.866	0.000	0.01
		B		0.000	0.000	0.949	0.000	0.01
		C		0.000	0.000	0.866	0.000	0.01
L46	29.50-24.50	A	1.470	0.000	0.000	18.130	0.000	0.23
		B		0.000	0.000	18.933	0.000	0.18
		C		0.000	0.000	17.275	0.000	0.23
L47	24.50-21.25	A	1.446	0.000	0.000	16.726	0.000	0.19
		B		0.000	0.000	12.243	0.000	0.11
		C		0.000	0.000	11.182	0.000	0.15
L48	21.25-21.00	A	1.435	0.000	0.000	1.284	0.000	0.01
		B		0.000	0.000	0.940	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.858	0.000	0.01
L49	21.00-20.00	A	1.430	0.000	0.000	5.134	0.000	0.06
		B		0.000	0.000	3.755	0.000	0.03
		C		0.000	0.000	3.431	0.000	0.05
L50	20.00-19.75	A	1.426	0.000	0.000	1.283	0.000	0.01
		B		0.000	0.000	1.027	0.000	0.01
		C		0.000	0.000	0.946	0.000	0.01
L51	19.75-17.00	A	1.415	0.000	0.000	14.084	0.000	0.16
		B		0.000	0.000	11.274	0.000	0.10
		C		0.000	0.000	10.393	0.000	0.13
L52	17.00-16.75	A	1.403	0.000	0.000	1.278	0.000	0.01
		B		0.000	0.000	1.023	0.000	0.01
		C		0.000	0.000	0.943	0.000	0.01
L53	16.75-11.75	A	1.379	0.000	0.000	21.318	0.000	0.24
		B		0.000	0.000	20.374	0.000	0.18
		C		0.000	0.000	18.807	0.000	0.23
L54	11.75-6.75	A	1.321	0.000	0.000	18.910	0.000	0.19
		B		0.000	0.000	19.491	0.000	0.16
		C		0.000	0.000	18.661	0.000	0.22
L55	6.75-1.75	A	1.222	0.000	0.000	18.613	0.000	0.14
		B		0.000	0.000	18.414	0.000	0.14
		C		0.000	0.000	18.414	0.000	0.17
L56	1.75-0.00	A	1.043	0.000	0.000	5.884	0.000	0.04
		B		0.000	0.000	5.845	0.000	0.04
		C		0.000	0.000	5.845	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	159.86-154.86	0.0478	-0.0276	0.3448	-0.1991
L2	154.86-149.86	0.0478	-0.0276	0.3507	-0.2025
L3	149.86-144.86	0.0478	-0.0276	0.3559	-0.2055
L4	144.86-139.86	0.0478	-0.0276	0.3606	-0.2082
L5	139.86-134.86	0.0478	-0.0276	0.3647	-0.2106
L6	134.86-129.86	0.0478	-0.0276	0.3684	-0.2127
L7	129.86-125.75	0.0388	-0.0224	0.2963	-0.1711
L8	125.75-125.50	0.0273	-0.0158	0.2047	-0.1182
L9	125.50-118.98	0.0277	-0.0160	0.2078	-0.1200
L10	118.98-117.98	0.0239	-0.0138	0.1756	-0.1014
L11	117.98-112.98	0.0242	-0.0140	0.1778	-0.1026
L12	112.98-107.98	0.0247	-0.0143	0.1819	-0.1050
L13	107.98-103.00	-0.2159	0.1247	-0.0764	0.0441
L14	103.00-102.75	-0.4665	0.2694	-0.3495	0.2018
L15	102.75-100.21	-0.0777	0.0449	0.0255	-0.0147
L16	100.21-95.69	0.0158	-0.0091	0.1175	-0.0678
L17	95.69-94.69	0.0146	-0.0084	0.1086	-0.0627
L18	94.69-93.50	0.0124	-0.0072	0.0930	-0.0537
L19	93.50-93.25	0.0124	-0.0072	0.0933	-0.0539
L20	93.25-89.25	0.0126	-0.0073	0.0943	-0.0544
L21	89.25-89.00	0.0121	-0.0070	0.0918	-0.0530
L22	89.00-86.50	0.0122	-0.0070	0.0924	-0.0534
L23	86.50-86.25	0.0123	-0.0071	0.0931	-0.0537
L24	86.25-81.25	0.0148	-0.0085	0.1111	-0.0642
L25	81.25-76.25	0.0159	-0.0092	0.1185	-0.0684
L26	76.25-75.42	0.0132	-0.0076	0.0962	-0.0555
L27	75.42-75.17	0.0132	-0.0076	0.0964	-0.0556
L28	75.17-70.17	0.0134	-0.0077	0.0974	-0.0562
L29	70.17-65.17	0.0137	-0.0079	0.0993	-0.0574
L30	65.17-60.17	0.0140	-0.0081	0.1012	-0.0584
L31	60.17-59.50	0.0142	-0.0082	0.1022	-0.0590
L32	59.50-59.25	0.0142	-0.0082	0.1023	-0.0591
L33	59.25-54.25	0.0723	-0.0417	0.1602	-0.0925
L34	54.25-53.00	0.3739	-0.2158	0.4579	-0.2644

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L35	53.00-52.75	0.3750	-0.2165	0.4593	-0.2652
L36	52.75-47.06	0.3710	-0.2142	0.4565	-0.2636
L37	47.06-46.06	0.0148	-0.0085	0.1057	-0.0610
L38	46.06-41.06	0.0149	-0.0086	0.1060	-0.0612
L39	41.06-39.33	0.0135	-0.0078	0.0941	-0.0543
L40	39.33-39.08	0.0128	-0.0074	0.0892	-0.0515
L41	39.08-37.75	0.0129	-0.0074	0.0893	-0.0516
L42	37.75-37.50	0.0129	-0.0075	0.0895	-0.0517
L43	37.50-32.50	0.0149	-0.0086	0.1043	-0.0602
L44	32.50-29.75	0.0156	-0.0090	0.1089	-0.0629
L45	29.75-29.50	0.0157	-0.0090	0.1091	-0.0630
L46	29.50-24.50	-0.0452	-0.0441	0.0507	-0.0957
L47	24.50-21.25	-0.5356	-0.3257	-0.4258	-0.3596
L48	21.25-21.00	-0.5387	-0.3276	-0.4291	-0.3616
L49	21.00-20.00	-0.5398	-0.3283	-0.4303	-0.3624
L50	20.00-19.75	-0.3530	-0.2195	-0.3051	-0.2854
L51	19.75-17.00	-0.3548	-0.2206	-0.3069	-0.2864
L52	17.00-16.75	-0.3565	-0.2217	-0.3086	-0.2873
L53	16.75-11.75	-0.1215	-0.0869	-0.0608	-0.1495
L54	11.75-6.75	0.0083	-0.0048	0.0384	-0.0418
L55	6.75-1.75	0.0000	0.0000	-0.0142	-0.0082
L56	1.75-0.00	0.0000	0.0000	-0.0086	-0.0050

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	154.86 - 159.85	1.0000	1.0000
L2	1	Safety Line 3/8	149.86 - 154.86	1.0000	1.0000
L3	1	Safety Line 3/8	144.86 - 149.86	1.0000	1.0000
L4	1	Safety Line 3/8	139.86 - 144.86	1.0000	1.0000
L5	1	Safety Line 3/8	134.86 - 139.86	1.0000	1.0000
L6	1	Safety Line 3/8	129.86 - 134.86	1.0000	1.0000
L7	1	Safety Line 3/8	125.75 - 129.86	1.0000	1.0000
L7	24	PL1.25x3.125	125.75 - 127.00	1.0000	1.0000
L7	25	PL1.25x3.125	125.75 - 127.00	1.0000	1.0000
L7	26	PL1.25x3.125	125.75 - 127.00	1.0000	1.0000
L8	1	Safety Line 3/8	125.50 - 125.75	1.0000	1.0000
L8	24	PL1.25x3.125	125.50 - 125.75	1.0000	1.0000
L8	25	PL1.25x3.125	125.50 - 125.75	1.0000	1.0000
L8	26	PL1.25x3.125	125.50 - 125.75	1.0000	1.0000
L9	1	Safety Line 3/8	118.98 - 125.50	1.0000	1.0000
L9	21	PL1.25x4.375	118.98 - 119.00	1.0000	1.0000
L9	22	PL1.25x4.375	118.98 - 119.00	1.0000	1.0000
L9	23	PL1.25x4.375	118.98 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	24	PL1.25x3.125	119.00 - 119.00	1.0000	1.0000
L9	25	PL1.25x3.125	119.00 - 125.50	1.0000	1.0000
L9	26	PL1.25x3.125	119.00 - 125.50	1.0000	1.0000
L11	1	Safety Line 3/8	112.98 - 125.50	1.0000	1.0000
L11	21	PL1.25x4.375	112.98 - 117.98	1.0000	1.0000
L11	22	PL1.25x4.375	112.98 - 117.98	1.0000	1.0000
L11	23	PL1.25x4.375	112.98 - 117.98	1.0000	1.0000
L12	1	Safety Line 3/8	107.98 - 117.98	1.0000	1.0000
L12	21	PL1.25x4.375	107.98 - 112.98	1.0000	1.0000
L12	22	PL1.25x4.375	107.98 - 112.98	1.0000	1.0000
L12	23	PL1.25x4.375	107.98 - 112.98	1.0000	1.0000
L13	1	Safety Line 3/8	103.00 - 112.98	1.0000	1.0000
L13	21	PL1.25x4.375	103.00 - 107.98	1.0000	1.0000
L13	22	PL1.25x4.375	103.00 - 107.98	1.0000	1.0000
L13	23	PL1.25x4.375	103.00 - 107.98	1.0000	1.0000
L13	30	CCI-SFP-060100	103.00 - 105.00	1.0000	1.0000
L13	31	CCI-SFP-060100	103.00 - 105.00	1.0000	1.0000
L14	1	Safety Line 3/8	102.75 - 103.00	1.0000	1.0000
L14	21	PL1.25x4.375	102.75 - 103.00	1.0000	1.0000
L14	22	PL1.25x4.375	102.75 - 103.00	1.0000	1.0000
L14	23	PL1.25x4.375	102.75 - 103.00	1.0000	1.0000
L14	30	CCI-SFP-060100	102.75 - 103.00	1.0000	1.0000
L14	31	CCI-SFP-060100	102.75 - 103.00	1.0000	1.0000
L15	1	Safety Line 3/8	100.21 - 102.75	1.0000	1.0000
L15	21	PL1.25x4.375	100.21 - 102.75	1.0000	1.0000
L15	22	PL1.25x4.375	100.21 - 102.75	1.0000	1.0000
L15	23	PL1.25x4.375	100.21 - 102.75	1.0000	1.0000
L15	30	CCI-SFP-060100	100.21 - 102.75	1.0000	1.0000
L15	31	CCI-SFP-060100	100.21 - 102.75	1.0000	1.0000
L15	33	CCI-SFP-060100	100.21 - 102.20	1.0000	1.0000
L16	1	Safety Line 3/8	95.69 - 100.21	1.0000	1.0000
L16	21	PL1.25x4.375	95.69 - 100.21	1.0000	1.0000
L16	22	PL1.25x4.375	95.69 - 100.21	1.0000	1.0000
L16	23	PL1.25x4.375	95.69 - 100.21	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	30	CCI-SFP-060100	95.69 - 100.21	1.0000	1.0000
L16	31	CCI-SFP-060100	95.69 - 100.21	1.0000	1.0000
L16	33	CCI-SFP-060100	95.69 - 100.21	1.0000	1.0000
L16	34	CCI-SFP-045100	95.69 - 95.00	1.0000	1.0000
L16	35	CCI-SFP-045100	95.69 - 95.00	1.0000	1.0000
L16	36	CCI-SFP-045100	95.69 - 95.00	1.0000	1.0000
L18	1	Safety Line 3/8	93.50 - 94.69	1.0000	1.0000
L18	21	PL1.25x4.375	93.50 - 94.69	1.0000	1.0000
L18	22	PL1.25x4.375	93.50 - 94.69	1.0000	1.0000
L18	23	PL1.25x4.375	93.50 - 94.69	1.0000	1.0000
L18	30	CCI-SFP-060100	93.50 - 94.69	1.0000	1.0000
L18	31	CCI-SFP-060100	93.50 - 94.69	1.0000	1.0000
L18	33	CCI-SFP-060100	93.50 - 94.69	1.0000	1.0000
L18	34	CCI-SFP-045100	93.50 - 94.69	1.0000	1.0000
L18	35	CCI-SFP-045100	93.50 - 94.69	1.0000	1.0000
L18	36	CCI-SFP-045100	93.50 - 94.69	1.0000	1.0000
L19	1	Safety Line 3/8	93.25 - 93.50	1.0000	1.0000
L19	21	PL1.25x4.375	93.25 - 93.50	1.0000	1.0000
L19	22	PL1.25x4.375	93.25 - 93.50	1.0000	1.0000
L19	23	PL1.25x4.375	93.25 - 93.50	1.0000	1.0000
L19	30	CCI-SFP-060100	93.25 - 93.50	1.0000	1.0000
L19	31	CCI-SFP-060100	93.25 - 93.50	1.0000	1.0000
L19	33	CCI-SFP-060100	93.25 - 93.50	1.0000	1.0000
L19	34	CCI-SFP-045100	93.25 - 93.50	1.0000	1.0000
L19	35	CCI-SFP-045100	93.25 - 93.50	1.0000	1.0000
L19	36	CCI-SFP-045100	93.25 - 93.50	1.0000	1.0000
L20	1	Safety Line 3/8	89.25 - 93.25	1.0000	1.0000
L20	21	PL1.25x4.375	89.25 - 93.25	1.0000	1.0000
L20	22	PL1.25x4.375	89.25 - 93.25	1.0000	1.0000
L20	23	PL1.25x4.375	89.25 - 93.25	1.0000	1.0000
L20	30	CCI-SFP-060100	89.25 - 93.25	1.0000	1.0000
L20	31	CCI-SFP-060100	89.25 - 93.25	1.0000	1.0000
L20	33	CCI-SFP-060100	89.25 - 93.25	1.0000	1.0000
L20	34	CCI-SFP-045100	89.25 - 93.25	1.0000	1.0000
L20	35	CCI-SFP-045100	89.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L20	36	CCI-SFP-045100	89.25 - 93.25	1.0000	1.0000
L21	1	Safety Line 3/8	89.00 - 89.25	1.0000	1.0000
L21	18	PL1.25x5.375	89.00 - 89.25	1.0000	1.0000
L21	19	PL1.25x5.375	89.00 - 89.25	1.0000	1.0000
L21	20	PL1.25x5.375	89.00 - 89.25	1.0000	1.0000
L21	30	CCI-SFP-060100	89.00 - 89.25	1.0000	1.0000
L21	31	CCI-SFP-060100	89.00 - 89.25	1.0000	1.0000
L21	33	CCI-SFP-060100	89.00 - 89.25	1.0000	1.0000
L21	34	CCI-SFP-045100	89.00 - 89.25	1.0000	1.0000
L21	35	CCI-SFP-045100	89.00 - 89.25	1.0000	1.0000
L21	36	CCI-SFP-045100	89.00 - 89.25	1.0000	1.0000
L22	1	Safety Line 3/8	86.50 - 89.00	1.0000	1.0000
L22	18	PL1.25x5.375	86.50 - 89.00	1.0000	1.0000
L22	19	PL1.25x5.375	86.50 - 89.00	1.0000	1.0000
L22	20	PL1.25x5.375	86.50 - 89.00	1.0000	1.0000
L22	30	CCI-SFP-060100	86.50 - 89.00	1.0000	1.0000
L22	31	CCI-SFP-060100	86.50 - 89.00	1.0000	1.0000
L22	33	CCI-SFP-060100	86.50 - 89.00	1.0000	1.0000
L22	34	CCI-SFP-045100	86.50 - 89.00	1.0000	1.0000
L22	35	CCI-SFP-045100	86.50 - 89.00	1.0000	1.0000
L22	36	CCI-SFP-045100	86.50 - 89.00	1.0000	1.0000
L23	1	Safety Line 3/8	86.25 - 86.50	1.0000	1.0000
L23	18	PL1.25x5.375	86.25 - 86.50	1.0000	1.0000
L23	19	PL1.25x5.375	86.25 - 86.50	1.0000	1.0000
L23	20	PL1.25x5.375	86.25 - 86.50	1.0000	1.0000
L23	30	CCI-SFP-060100	86.25 - 86.50	1.0000	1.0000
L23	31	CCI-SFP-060100	86.25 - 86.50	1.0000	1.0000
L23	33	CCI-SFP-060100	86.25 - 86.50	1.0000	1.0000
L23	34	CCI-SFP-045100	86.25 - 86.50	1.0000	1.0000
L23	35	CCI-SFP-045100	86.25 - 86.50	1.0000	1.0000
L23	36	CCI-SFP-045100	86.25 - 86.50	1.0000	1.0000
L24	1	Safety Line 3/8	81.25 - 86.25	1.0000	1.0000
L24	18	PL1.25x5.375	81.25 - 86.25	1.0000	1.0000
L24	19	PL1.25x5.375	81.25 - 86.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	20	PL1.25x5.375	81.25 - 86.25	1.0000	1.0000
L24	30	CCI-SFP-060100	81.25 - 86.25	1.0000	1.0000
L24	31	CCI-SFP-060100	81.25 - 86.25	1.0000	1.0000
L24	33	CCI-SFP-060100	81.25 - 86.25	1.0000	1.0000
L24	34	CCI-SFP-045100	85.00 - 86.25	1.0000	1.0000
L24	35	CCI-SFP-045100	85.00 - 86.25	1.0000	1.0000
L24	36	CCI-SFP-045100	85.00 - 86.25	1.0000	1.0000
L25	1	Safety Line 3/8	76.25 - 81.25	1.0000	1.0000
L25	12	Aero Channel MP303	76.25 - 76.58	1.0000	1.0000
L25	13	Aero Channel MP303	76.25 - 76.58	1.0000	1.0000
L25	14	Aero Channel MP303	76.25 - 76.58	1.0000	1.0000
L25	18	PL1.25x5.375	76.25 - 81.25	1.0000	1.0000
L25	19	PL1.25x5.375	76.25 - 81.25	1.0000	1.0000
L25	20	PL1.25x5.375	76.25 - 81.25	1.0000	1.0000
L25	30	CCI-SFP-060100	76.25 - 81.25	1.0000	1.0000
L25	31	CCI-SFP-060100	76.25 - 81.25	1.0000	1.0000
L25	33	CCI-SFP-060100	76.25 - 81.25	1.0000	1.0000
L26	1	Safety Line 3/8	75.42 - 76.25	1.0000	1.0000
L26	12	Aero Channel MP303	75.42 - 76.25	1.0000	1.0000
L26	13	Aero Channel MP303	75.42 - 76.25	1.0000	1.0000
L26	14	Aero Channel MP303	75.42 - 76.25	1.0000	1.0000
L26	18	PL1.25x5.375	75.42 - 76.25	1.0000	1.0000
L26	19	PL1.25x5.375	75.42 - 76.25	1.0000	1.0000
L26	20	PL1.25x5.375	75.42 - 76.25	1.0000	1.0000
L26	30	CCI-SFP-060100	75.42 - 76.25	1.0000	1.0000
L26	31	CCI-SFP-060100	75.42 - 76.25	1.0000	1.0000
L26	33	CCI-SFP-060100	75.42 - 76.25	1.0000	1.0000
L27	1	Safety Line 3/8	75.17 - 75.42	1.0000	1.0000
L27	12	Aero Channel MP303	75.17 - 75.42	1.0000	1.0000
L27	13	Aero Channel MP303	75.17 - 75.42	1.0000	1.0000
L27	14	Aero Channel MP303	75.17 - 75.42	1.0000	1.0000
L27	18	PL1.25x5.375	75.17 - 75.42	1.0000	1.0000
L27	19	PL1.25x5.375	75.17 - 75.42	1.0000	1.0000
L27	20	PL1.25x5.375	75.17 - 75.42	1.0000	1.0000
L27	30	CCI-SFP-060100	75.17 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	31	CCI-SFP-060100	75.42 75.17 - 75.42	1.0000	1.0000
L27	33	CCI-SFP-060100	75.17 - 75.42	1.0000	1.0000
L28	1	Safety Line 3/8	70.17 - 75.17	1.0000	1.0000
L28	12	Aero Channel MP303	70.17 - 75.17	1.0000	1.0000
L28	13	Aero Channel MP303	70.17 - 75.17	1.0000	1.0000
L28	14	Aero Channel MP303	70.17 - 75.17	1.0000	1.0000
L28	18	PL1.25x5.375	70.17 - 75.17	1.0000	1.0000
L28	19	PL1.25x5.375	70.17 - 75.17	1.0000	1.0000
L28	20	PL1.25x5.375	70.17 - 75.17	1.0000	1.0000
L28	30	CCI-SFP-060100	70.17 - 75.17	1.0000	1.0000
L28	31	CCI-SFP-060100	70.17 - 75.17	1.0000	1.0000
L28	33	CCI-SFP-060100	70.17 - 75.17	1.0000	1.0000
L29	1	Safety Line 3/8	65.17 - 70.17	1.0000	1.0000
L29	12	Aero Channel MP303	65.17 - 70.17	1.0000	1.0000
L29	13	Aero Channel MP303	65.17 - 70.17	1.0000	1.0000
L29	14	Aero Channel MP303	65.17 - 70.17	1.0000	1.0000
L29	18	PL1.25x5.375	65.17 - 70.17	1.0000	1.0000
L29	19	PL1.25x5.375	65.17 - 70.17	1.0000	1.0000
L29	20	PL1.25x5.375	65.17 - 70.17	1.0000	1.0000
L29	30	CCI-SFP-060100	65.17 - 70.17	1.0000	1.0000
L29	31	CCI-SFP-060100	65.17 - 70.17	1.0000	1.0000
L29	33	CCI-SFP-060100	65.17 - 70.17	1.0000	1.0000
L30	1	Safety Line 3/8	60.17 - 65.17	1.0000	1.0000
L30	12	Aero Channel MP303	60.17 - 65.17	1.0000	1.0000
L30	13	Aero Channel MP303	60.17 - 65.17	1.0000	1.0000
L30	14	Aero Channel MP303	60.17 - 65.17	1.0000	1.0000
L30	18	PL1.25x5.375	60.17 - 65.17	1.0000	1.0000
L30	19	PL1.25x5.375	60.17 - 65.17	1.0000	1.0000
L30	20	PL1.25x5.375	60.17 - 65.17	1.0000	1.0000
L30	30	CCI-SFP-060100	60.17 - 65.17	1.0000	1.0000
L30	31	CCI-SFP-060100	60.17 - 65.17	1.0000	1.0000
L30	33	CCI-SFP-060100	60.17 - 65.17	1.0000	1.0000
L31	1	Safety Line 3/8	59.50 - 60.17	1.0000	1.0000
L31	12	Aero Channel MP303	59.50 - 60.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	13	Aero Channel MP303	59.50 - 60.17	1.0000	1.0000
L31	14	Aero Channel MP303	59.50 - 60.17	1.0000	1.0000
L31	18	PL1.25x5.375	59.50 - 60.17	1.0000	1.0000
L31	19	PL1.25x5.375	59.50 - 60.17	1.0000	1.0000
L31	20	PL1.25x5.375	59.50 - 60.17	1.0000	1.0000
L31	30	CCI-SFP-060100	59.50 - 60.17	1.0000	1.0000
L31	31	CCI-SFP-060100	59.50 - 60.17	1.0000	1.0000
L31	33	CCI-SFP-060100	59.50 - 60.17	1.0000	1.0000
L32	1	Safety Line 3/8	59.25 - 59.50	1.0000	1.0000
L32	12	Aero Channel MP303	59.25 - 59.50	1.0000	1.0000
L32	13	Aero Channel MP303	59.25 - 59.50	1.0000	1.0000
L32	14	Aero Channel MP303	59.25 - 59.50	1.0000	1.0000
L32	18	PL1.25x5.375	59.25 - 59.50	1.0000	1.0000
L32	19	PL1.25x5.375	59.25 - 59.50	1.0000	1.0000
L32	20	PL1.25x5.375	59.25 - 59.50	1.0000	1.0000
L32	30	CCI-SFP-060100	59.25 - 59.50	1.0000	1.0000
L32	31	CCI-SFP-060100	59.25 - 59.50	1.0000	1.0000
L32	33	CCI-SFP-060100	59.25 - 59.50	1.0000	1.0000
L33	1	Safety Line 3/8	54.25 - 59.25	1.0000	1.0000
L33	12	Aero Channel MP303	54.25 - 59.25	1.0000	1.0000
L33	13	Aero Channel MP303	54.25 - 59.25	1.0000	1.0000
L33	14	Aero Channel MP303	54.25 - 59.25	1.0000	1.0000
L33	18	PL1.25x5.375	54.25 - 59.25	1.0000	1.0000
L33	19	PL1.25x5.375	54.25 - 59.25	1.0000	1.0000
L33	20	PL1.25x5.375	54.25 - 59.25	1.0000	1.0000
L33	30	CCI-SFP-060100	54.25 - 59.25	1.0000	1.0000
L33	31	CCI-SFP-060100	54.25 - 59.25	1.0000	1.0000
L33	32	CCI-SFP-060100	54.25 - 55.00	1.0000	1.0000
L33	33	CCI-SFP-060100	54.25 - 59.25	1.0000	1.0000
L34	1	Safety Line 3/8	53.00 - 54.25	1.0000	1.0000
L34	12	Aero Channel MP303	53.00 - 54.25	1.0000	1.0000
L34	13	Aero Channel MP303	53.00 - 54.25	1.0000	1.0000
L34	14	Aero Channel MP303	53.00 - 54.25	1.0000	1.0000
L34	18	PL1.25x5.375	53.00 - 54.25	1.0000	1.0000
L34	19	PL1.25x5.375	53.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	20	PL1.25x5.375	54.25 53.00 -	1.0000	1.0000
L34	30	CCI-SFP-060100	54.25 53.00 -	1.0000	1.0000
L34	31	CCI-SFP-060100	54.25 53.00 -	1.0000	1.0000
L34	32	CCI-SFP-060100	54.25 53.00 -	1.0000	1.0000
L34	33	CCI-SFP-060100	54.25 53.00 -	1.0000	1.0000
L35	1	Safety Line 3/8	54.25 52.75 -	1.0000	1.0000
L35	12	Aero Channel MP303	53.00 52.75 -	1.0000	1.0000
L35	13	Aero Channel MP303	53.00 52.75 -	1.0000	1.0000
L35	14	Aero Channel MP303	53.00 52.75 -	1.0000	1.0000
L35	18	PL1.25x5.375	53.00 52.75 -	1.0000	1.0000
L35	19	PL1.25x5.375	53.00 52.75 -	1.0000	1.0000
L35	20	PL1.25x5.375	53.00 52.75 -	1.0000	1.0000
L35	30	CCI-SFP-060100	53.00 52.75 -	1.0000	1.0000
L35	31	CCI-SFP-060100	53.00 52.75 -	1.0000	1.0000
L35	32	CCI-SFP-060100	53.00 52.75 -	1.0000	1.0000
L35	33	CCI-SFP-060100	53.00 52.75 -	1.0000	1.0000
L36	1	Safety Line 3/8	53.00 47.06 -	1.0000	1.0000
L36	12	Aero Channel MP303	52.75 47.06 -	1.0000	1.0000
L36	13	Aero Channel MP303	52.75 47.06 -	1.0000	1.0000
L36	14	Aero Channel MP303	52.75 47.06 -	1.0000	1.0000
L36	18	PL1.25x5.375	52.75 47.06 -	1.0000	1.0000
L36	19	PL1.25x5.375	52.75 47.06 -	1.0000	1.0000
L36	20	PL1.25x5.375	52.75 47.06 -	1.0000	1.0000
L36	30	CCI-SFP-060100	52.75 47.06 -	1.0000	1.0000
L36	31	CCI-SFP-060100	52.75 47.06 -	1.0000	1.0000
L36	32	CCI-SFP-060100	52.75 47.06 -	1.0000	1.0000
L36	33	CCI-SFP-060100	52.75 47.20 -	1.0000	1.0000
L38	1	Safety Line 3/8	52.75 41.06 -	1.0000	1.0000
L38	12	Aero Channel MP303	46.06 41.06 -	1.0000	1.0000
L38	13	Aero Channel MP303	46.06 41.06 -	1.0000	1.0000
L38	14	Aero Channel MP303	46.06 41.06 -	1.0000	1.0000
L38	18	PL1.25x5.375	46.06 41.06 -	1.0000	1.0000
L38	19	PL1.25x5.375	46.06 41.06 -	1.0000	1.0000
L38	20	PL1.25x5.375	46.06 41.06 -	1.0000	1.0000
			46.06		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L38	30	CCI-SFP-060100	41.06 - 46.06	1.0000	1.0000
L38	31	CCI-SFP-060100	41.06 - 46.06	1.0000	1.0000
L38	32	CCI-SFP-060100	41.06 - 46.06	1.0000	1.0000
L39	1	Safety Line 3/8	39.33 - 41.06	1.0000	1.0000
L39	12	Aero Channel MP303	39.33 - 41.06	1.0000	1.0000
L39	13	Aero Channel MP303	39.33 - 41.06	1.0000	1.0000
L39	14	Aero Channel MP303	39.33 - 41.06	1.0000	1.0000
L39	15	Aero Channel MP303	39.33 - 40.50	1.0000	1.0000
L39	16	Aero Channel MP303	39.33 - 40.50	1.0000	1.0000
L39	17	Aero Channel MP303	39.33 - 40.50	1.0000	1.0000
L39	18	PL1.25x5.375	39.33 - 41.06	1.0000	1.0000
L39	19	PL1.25x5.375	39.33 - 41.06	1.0000	1.0000
L39	20	PL1.25x5.375	39.33 - 41.06	1.0000	1.0000
L39	30	CCI-SFP-060100	39.33 - 41.06	1.0000	1.0000
L39	31	CCI-SFP-060100	39.33 - 41.06	1.0000	1.0000
L39	32	CCI-SFP-060100	39.33 - 41.06	1.0000	1.0000
L40	1	Safety Line 3/8	39.08 - 39.33	1.0000	1.0000
L40	12	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	13	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	14	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	15	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	16	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	17	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L40	18	PL1.25x5.375	39.08 - 39.33	1.0000	1.0000
L40	19	PL1.25x5.375	39.08 - 39.33	1.0000	1.0000
L40	20	PL1.25x5.375	39.08 - 39.33	1.0000	1.0000
L40	30	CCI-SFP-060100	39.08 - 39.33	1.0000	1.0000
L40	31	CCI-SFP-060100	39.08 - 39.33	1.0000	1.0000
L40	32	CCI-SFP-060100	39.08 - 39.33	1.0000	1.0000
L41	1	Safety Line 3/8	37.75 - 39.08	1.0000	1.0000
L41	12	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	13	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	14	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	15	Aero Channel MP303	37.75 - 39.08	1.0000	1.0000
L41	16	Aero Channel MP303	37.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L41	17	Aero Channel MP303	39.08 37.75 - 39.08	1.0000	1.0000
L41	18	PL1.25x5.375	37.75 - 39.08	1.0000	1.0000
L41	19	PL1.25x5.375	37.75 - 39.08	1.0000	1.0000
L41	20	PL1.25x5.375	37.75 - 39.08	1.0000	1.0000
L41	30	CCI-SFP-060100	37.75 - 39.08	1.0000	1.0000
L41	31	CCI-SFP-060100	37.75 - 39.08	1.0000	1.0000
L41	32	CCI-SFP-060100	37.75 - 39.08	1.0000	1.0000
L42	1	Safety Line 3/8	37.50 - 37.75	1.0000	1.0000
L42	12	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	13	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	14	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	15	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	16	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	17	Aero Channel MP303	37.50 - 37.75	1.0000	1.0000
L42	18	PL1.25x5.375	37.50 - 37.75	1.0000	1.0000
L42	19	PL1.25x5.375	37.50 - 37.75	1.0000	1.0000
L42	20	PL1.25x5.375	37.50 - 37.75	1.0000	1.0000
L42	30	CCI-SFP-060100	37.50 - 37.75	1.0000	1.0000
L42	31	CCI-SFP-060100	37.50 - 37.75	1.0000	1.0000
L42	32	CCI-SFP-060100	37.50 - 37.75	1.0000	1.0000
L43	1	Safety Line 3/8	32.50 - 37.50	1.0000	1.0000
L43	12	Aero Channel MP303	36.58 - 37.50	1.0000	1.0000
L43	13	Aero Channel MP303	36.58 - 37.50	1.0000	1.0000
L43	14	Aero Channel MP303	36.58 - 37.50	1.0000	1.0000
L43	15	Aero Channel MP303	32.50 - 37.50	1.0000	1.0000
L43	16	Aero Channel MP303	32.50 - 37.50	1.0000	1.0000
L43	17	Aero Channel MP303	32.50 - 37.50	1.0000	1.0000
L43	18	PL1.25x5.375	32.50 - 37.50	1.0000	1.0000
L43	19	PL1.25x5.375	32.50 - 37.50	1.0000	1.0000
L43	20	PL1.25x5.375	32.50 - 37.50	1.0000	1.0000
L43	30	CCI-SFP-060100	32.50 - 37.50	1.0000	1.0000
L43	31	CCI-SFP-060100	32.50 - 37.50	1.0000	1.0000
L43	32	CCI-SFP-060100	32.50 - 37.50	1.0000	1.0000
L44	1	Safety Line 3/8	29.75 - 32.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	15	Aero Channel MP303	29.75 - 32.50	1.0000	1.0000
L44	16	Aero Channel MP303	29.75 - 32.50	1.0000	1.0000
L44	17	Aero Channel MP303	29.75 - 32.50	1.0000	1.0000
L44	18	PL1.25x5.375	29.75 - 32.50	1.0000	1.0000
L44	19	PL1.25x5.375	29.75 - 32.50	1.0000	1.0000
L44	20	PL1.25x5.375	29.75 - 32.50	1.0000	1.0000
L44	30	CCI-SFP-060100	29.75 - 32.50	1.0000	1.0000
L44	31	CCI-SFP-060100	29.75 - 32.50	1.0000	1.0000
L44	32	CCI-SFP-060100	29.75 - 32.50	1.0000	1.0000
L45	1	Safety Line 3/8	29.50 - 29.75	1.0000	1.0000
L45	15	Aero Channel MP303	29.50 - 29.75	1.0000	1.0000
L45	16	Aero Channel MP303	29.50 - 29.75	1.0000	1.0000
L45	17	Aero Channel MP303	29.50 - 29.75	1.0000	1.0000
L45	18	PL1.25x5.375	29.50 - 29.75	1.0000	1.0000
L45	19	PL1.25x5.375	29.50 - 29.75	1.0000	1.0000
L45	20	PL1.25x5.375	29.50 - 29.75	1.0000	1.0000
L45	30	CCI-SFP-060100	29.50 - 29.75	1.0000	1.0000
L45	31	CCI-SFP-060100	29.50 - 29.75	1.0000	1.0000
L45	32	CCI-SFP-060100	29.50 - 29.75	1.0000	1.0000
L46	1	Safety Line 3/8	24.50 - 29.50	1.0000	1.0000
L46	15	Aero Channel MP303	24.50 - 29.50	1.0000	1.0000
L46	16	Aero Channel MP303	24.50 - 29.50	1.0000	1.0000
L46	17	Aero Channel MP303	24.50 - 29.50	1.0000	1.0000
L46	18	PL1.25x5.375	24.50 - 29.50	1.0000	1.0000
L46	19	PL1.25x5.375	24.50 - 29.50	1.0000	1.0000
L46	20	PL1.25x5.375	24.50 - 29.50	1.0000	1.0000
L46	27	CCI-SFP-085125	24.50 - 25.00	1.0000	1.0000
L46	30	CCI-SFP-060100	24.50 - 29.50	1.0000	1.0000
L46	31	CCI-SFP-060100	24.50 - 29.50	1.0000	1.0000
L46	32	CCI-SFP-060100	24.50 - 29.50	1.0000	1.0000
L47	1	Safety Line 3/8	21.25 - 24.50	1.0000	1.0000
L47	15	Aero Channel MP303	21.25 - 24.50	1.0000	1.0000
L47	16	Aero Channel MP303	21.25 - 24.50	1.0000	1.0000
L47	17	Aero Channel MP303	21.25 - 24.50	1.0000	1.0000
L47	18	PL1.25x5.375	21.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L47	19	PL1.25x5.375	24.50 21.25 - 24.50	1.0000	1.0000
L47	20	PL1.25x5.375	21.25 - 24.50	1.0000	1.0000
L47	27	CCI-SFP-085125	21.25 - 24.50	1.0000	1.0000
L47	30	CCI-SFP-060100	21.25 - 24.50	1.0000	1.0000
L47	31	CCI-SFP-060100	21.25 - 24.50	1.0000	1.0000
L47	32	CCI-SFP-060100	21.25 - 24.50	1.0000	1.0000
L48	1	Safety Line 3/8	21.00 - 21.25	1.0000	1.0000
L48	15	Aero Channel MP303	21.00 - 21.25	1.0000	1.0000
L48	16	Aero Channel MP303	21.00 - 21.25	1.0000	1.0000
L48	17	Aero Channel MP303	21.00 - 21.25	1.0000	1.0000
L48	18	PL1.25x5.375	21.00 - 21.25	1.0000	1.0000
L48	19	PL1.25x5.375	21.00 - 21.25	1.0000	1.0000
L48	20	PL1.25x5.375	21.00 - 21.25	1.0000	1.0000
L48	27	CCI-SFP-085125	21.00 - 21.25	1.0000	1.0000
L48	30	CCI-SFP-060100	21.00 - 21.25	1.0000	1.0000
L48	31	CCI-SFP-060100	21.00 - 21.25	1.0000	1.0000
L48	32	CCI-SFP-060100	21.00 - 21.25	1.0000	1.0000
L49	1	Safety Line 3/8	20.00 - 21.00	1.0000	1.0000
L49	15	Aero Channel MP303	20.00 - 21.00	1.0000	1.0000
L49	16	Aero Channel MP303	20.00 - 21.00	1.0000	1.0000
L49	17	Aero Channel MP303	20.00 - 21.00	1.0000	1.0000
L49	18	PL1.25x5.375	20.00 - 21.00	1.0000	1.0000
L49	19	PL1.25x5.375	20.00 - 21.00	1.0000	1.0000
L49	20	PL1.25x5.375	20.00 - 21.00	1.0000	1.0000
L49	27	CCI-SFP-085125	20.00 - 21.00	1.0000	1.0000
L49	30	CCI-SFP-060100	20.00 - 21.00	1.0000	1.0000
L49	31	CCI-SFP-060100	20.00 - 21.00	1.0000	1.0000
L49	32	CCI-SFP-060100	20.00 - 21.00	1.0000	1.0000
L50	1	Safety Line 3/8	19.75 - 20.00	1.0000	1.0000
L50	15	Aero Channel MP303	19.75 - 20.00	1.0000	1.0000
L50	16	Aero Channel MP303	19.75 - 20.00	1.0000	1.0000
L50	17	Aero Channel MP303	19.75 - 20.00	1.0000	1.0000
L50	18	PL1.25x5.375	19.75 - 20.00	1.0000	1.0000
L50	19	PL1.25x5.375	19.75 - 20.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L50	20	PL1.25x5.375	19.75 - 20.00	1.0000	1.0000
L50	27	CCI-SFP-085125	19.75 - 20.00	1.0000	1.0000
L50	28	CCI-SFP-085125	19.75 - 20.00	1.0000	1.0000
L50	29	CCI-SFP-085125	19.75 - 20.00	1.0000	1.0000
L50	30	CCI-SFP-060100	19.75 - 20.00	1.0000	1.0000
L51	1	Safety Line 3/8	17.00 - 19.75	1.0000	1.0000
L51	15	Aero Channel MP303	17.00 - 19.75	1.0000	1.0000
L51	16	Aero Channel MP303	17.00 - 19.75	1.0000	1.0000
L51	17	Aero Channel MP303	17.00 - 19.75	1.0000	1.0000
L51	18	PL1.25x5.375	17.00 - 19.75	1.0000	1.0000
L51	19	PL1.25x5.375	17.00 - 19.75	1.0000	1.0000
L51	20	PL1.25x5.375	17.00 - 19.75	1.0000	1.0000
L51	27	CCI-SFP-085125	17.00 - 19.75	1.0000	1.0000
L51	28	CCI-SFP-085125	17.00 - 19.75	1.0000	1.0000
L51	29	CCI-SFP-085125	17.00 - 19.75	1.0000	1.0000
L51	30	CCI-SFP-060100	17.00 - 19.75	1.0000	1.0000
L52	1	Safety Line 3/8	16.75 - 17.00	1.0000	1.0000
L52	15	Aero Channel MP303	16.75 - 17.00	1.0000	1.0000
L52	16	Aero Channel MP303	16.75 - 17.00	1.0000	1.0000
L52	17	Aero Channel MP303	16.75 - 17.00	1.0000	1.0000
L52	18	PL1.25x5.375	16.75 - 17.00	1.0000	1.0000
L52	19	PL1.25x5.375	16.75 - 17.00	1.0000	1.0000
L52	20	PL1.25x5.375	16.75 - 17.00	1.0000	1.0000
L52	27	CCI-SFP-085125	16.75 - 17.00	1.0000	1.0000
L52	28	CCI-SFP-085125	16.75 - 17.00	1.0000	1.0000
L52	29	CCI-SFP-085125	16.75 - 17.00	1.0000	1.0000
L52	30	CCI-SFP-060100	16.75 - 17.00	1.0000	1.0000
L53	1	Safety Line 3/8	11.75 - 16.75	1.0000	1.0000
L53	15	Aero Channel MP303	11.75 - 16.75	1.0000	1.0000
L53	16	Aero Channel MP303	11.75 - 16.75	1.0000	1.0000
L53	17	Aero Channel MP303	11.75 - 16.75	1.0000	1.0000
L53	18	PL1.25x5.375	11.75 - 16.75	1.0000	1.0000
L53	19	PL1.25x5.375	11.75 - 16.75	1.0000	1.0000
L53	20	PL1.25x5.375	11.75 - 16.75	1.0000	1.0000
L53	27	CCI-SFP-085125	11.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L53	28	CCI-SFP-085125	16.75 11.75 - 16.75	1.0000	1.0000
L53	29	CCI-SFP-085125	11.75 - 16.75	1.0000	1.0000
L53	30	CCI-SFP-060100	15.00 - 16.75	1.0000	1.0000
L54	1	Safety Line 3/8	9.00 - 11.75	1.0000	1.0000
L54	15	Aero Channel MP303	6.75 - 11.75	1.0000	1.0000
L54	16	Aero Channel MP303	6.75 - 11.75	1.0000	1.0000
L54	17	Aero Channel MP303	6.75 - 11.75	1.0000	1.0000
L54	18	PL1.25x5.375	6.75 - 11.75	1.0000	1.0000
L54	19	PL1.25x5.375	6.75 - 11.75	1.0000	1.0000
L54	20	PL1.25x5.375	6.75 - 11.75	1.0000	1.0000
L54	27	CCI-SFP-085125	6.75 - 11.75	1.0000	1.0000
L54	28	CCI-SFP-085125	6.75 - 11.75	1.0000	1.0000
L54	29	CCI-SFP-085125	6.75 - 11.75	1.0000	1.0000
L55	15	Aero Channel MP303	1.75 - 6.75	1.0000	1.0000
L55	16	Aero Channel MP303	1.75 - 6.75	1.0000	1.0000
L55	17	Aero Channel MP303	1.75 - 6.75	1.0000	1.0000
L55	18	PL1.25x5.375	1.75 - 6.75	1.0000	1.0000
L55	19	PL1.25x5.375	1.75 - 6.75	1.0000	1.0000
L55	20	PL1.25x5.375	1.75 - 6.75	1.0000	1.0000
L55	27	CCI-SFP-085125	1.75 - 6.75	1.0000	1.0000
L55	28	CCI-SFP-085125	1.75 - 6.75	1.0000	1.0000
L55	29	CCI-SFP-085125	1.75 - 6.75	1.0000	1.0000
L56	15	Aero Channel MP303	0.50 - 1.75	1.0000	1.0000
L56	16	Aero Channel MP303	0.50 - 1.75	1.0000	1.0000
L56	17	Aero Channel MP303	0.50 - 1.75	1.0000	1.0000
L56	18	PL1.25x5.375	0.00 - 1.75	1.0000	1.0000
L56	19	PL1.25x5.375	0.00 - 1.75	1.0000	1.0000
L56	20	PL1.25x5.375	0.00 - 1.75	1.0000	1.0000
L56	27	CCI-SFP-085125	0.00 - 1.75	1.0000	1.0000
L56	28	CCI-SFP-085125	0.00 - 1.75	1.0000	1.0000
L56	29	CCI-SFP-085125	0.00 - 1.75	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
159									
Platform Mount [LP 712-1]	C	None		0.0000	159.00	No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	3.00 6.00 0.00	30.0000	159.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	3.00 6.00 0.00	40.0000	159.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	3.00 6.00 0.00	0.0000	159.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	3.00 -6.00 0.00	30.0000	159.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	3.00 -6.00 0.00	40.0000	159.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	3.00 -6.00 0.00	0.0000	159.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
TD-RRH8x20-25	A	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	3.00 0.00 0.00	0.0000	159.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
157 Side Arm Mount [SO 102-3]	C	None		0.0000	157.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
Pipe Mount [PM 601-3]	C	None		0.0000	157.00	No Ice 1/2" Ice 1" Ice	4.39 5.48 6.57	4.39 5.48 6.57	0.20 0.24 0.28
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 2.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
152 Side Arm Mount [SO 102-3]	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
Pipe Mount [PM 601-3]	C	None		0.0000	152.00	No Ice 1/2" Ice	4.39 5.48 6.57	4.39 5.48 6.57	0.20 0.24 0.28

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
(2) TME-RRUS-11	A	From Face	2.00	0.0000	152.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			0.00			Ice	3.74	1.74	0.09
						1" Ice			
(2) TME-RRUS-11	B	From Face	2.00	0.0000	152.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			0.00			Ice	3.74	1.74	0.09
						1" Ice			
(2) TME-RRUS-11	C	From Face	2.00	0.0000	152.00	No Ice	3.25	1.37	0.05
			0.00			1/2"	3.49	1.55	0.07
			0.00			Ice	3.74	1.74	0.09
						1" Ice			
150									
Platform Mount [LP 303-1]	C	None		0.0000	150.00	No Ice	14.66	14.66	1.25
						1/2"	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
						1" Ice			
(2) 7770.00 w/ Mount Pipe	A	From Face	3.00	25.0000	150.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Face	3.00	35.0000	150.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Face	3.00	25.0000	150.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	A	From Face	3.00	25.0000	150.00	No Ice	11.55	8.94	0.09
			0.00			1/2"	12.27	10.45	0.18
			0.00			Ice	13.00	11.99	0.27
						1" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From Face	3.00	35.0000	150.00	No Ice	11.55	8.94	0.09
			0.00			1/2"	12.27	10.45	0.18
			0.00			Ice	13.00	11.99	0.27
						1" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	C	From Face	3.00	25.0000	150.00	No Ice	11.55	8.94	0.09
			0.00			1/2"	12.27	10.45	0.18
			0.00			Ice	13.00	11.99	0.27
						1" Ice			
(2) LGP21401	A	From Face	3.00	0.0000	150.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
						1" Ice			
(2) LGP21401	B	From Face	3.00	0.0000	150.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
						1" Ice			
(2) LGP21401	C	From Face	3.00	0.0000	150.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
						1" Ice			
(2) LGP21901	A	From Face	3.00	0.0000	150.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			0.00			Ice	0.36	0.28	0.01
						1" Ice			
(2) LGP21901	B	From Face	3.00	0.0000	150.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			0.00			Ice	0.36	0.28	0.01
						1" Ice			
(2) LGP21901	C	From Face	3.00	0.0000	150.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			0.00			Ice	0.36	0.28	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
DC6-48-60-18-8F	B	From Face	1.00	0.0000	150.00	No Ice	0.92	0.92	0.02
			0.00			1/2" Ice	1.46	1.46	0.04
			0.00			1" Ice	1.64	1.64	0.06
139									
T-Arm Mount [TA 602-3]	C	None		0.0000	139.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
APXV18-203219-C-A20 w/ Mount Pipe	A	From Leg	3.00	-30.0000	139.00	No Ice	5.76	4.00	0.06
			-6.00			1/2" Ice	6.19	4.74	0.11
			0.00			1" Ice	6.62	5.43	0.16
APXV18-203219-C-A20 w/ Mount Pipe	B	From Leg	3.00	10.0000	139.00	No Ice	5.76	4.00	0.06
			-6.00			1/2" Ice	6.19	4.74	0.11
			0.00			1" Ice	6.62	5.43	0.16
APXV18-203219-C-A20 w/ Mount Pipe	C	From Leg	3.00	0.0000	139.00	No Ice	5.76	4.00	0.06
			-6.00			1/2" Ice	6.19	4.74	0.11
			0.00			1" Ice	6.62	5.43	0.16
LNX-6512DS-VTM w/ Mount Pipe	A	From Leg	3.00	-30.0000	139.00	No Ice	5.33	4.53	0.05
			6.00			1/2" Ice	5.72	5.15	0.10
			0.00			1" Ice	6.12	5.77	0.15
LNX-6512DS-VTM w/ Mount Pipe	B	From Leg	3.00	10.0000	139.00	No Ice	5.33	4.53	0.05
			6.00			1/2" Ice	5.72	5.15	0.10
			0.00			1" Ice	6.12	5.77	0.15
LNX-6512DS-VTM w/ Mount Pipe	C	From Leg	3.00	0.0000	139.00	No Ice	5.33	4.53	0.05
			6.00			1/2" Ice	5.72	5.15	0.10
			0.00			1" Ice	6.12	5.77	0.15
TMAT7LA-11A	A	From Leg	3.00	0.0000	139.00	No Ice	0.64	0.35	0.02
			0.00			1/2" Ice	0.75	0.42	0.03
			0.00			1" Ice	0.86	0.51	0.04
TMAT7LA-11A	B	From Leg	3.00	0.0000	139.00	No Ice	0.64	0.35	0.02
			0.00			1/2" Ice	0.75	0.42	0.03
			0.00			1" Ice	0.86	0.51	0.04
TMAT7LA-11A	C	From Leg	3.00	0.0000	139.00	No Ice	0.64	0.35	0.02
			0.00			1/2" Ice	0.75	0.42	0.03
			0.00			1" Ice	0.86	0.51	0.04
ATBT-BOTTOM-24V	A	From Leg	3.00	0.0000	139.00	No Ice	0.10	0.06	0.00
			0.00			1/2" Ice	0.15	0.10	0.00
			0.00			1" Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	B	From Leg	3.00	0.0000	139.00	No Ice	0.10	0.06	0.00
			0.00			1/2" Ice	0.15	0.10	0.00
			0.00			1" Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	C	From Leg	3.00	0.0000	139.00	No Ice	0.10	0.06	0.00
			0.00			1/2" Ice	0.15	0.10	0.00
			0.00			1" Ice	0.20	0.15	0.01
6' x 2" Mount Pipe	A	From Leg	3.00	0.0000	139.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
6' x 2" Mount Pipe	B	From Leg	3.00	0.0000	139.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
6' x 2" Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	139.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
124									
Platform Mount [LP 303-1]	C	None		0.0000	124.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
LNX-6514DS-A1M w/ Mount Pipe	A	From Leg	3.00 -6.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.44 9.00 9.53	7.10 8.30 9.21	0.06 0.13 0.20
LNX-6514DS-A1M w/ Mount Pipe	B	From Leg	3.00 -6.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.44 9.00 9.53	7.10 8.30 9.21	0.06 0.13 0.20
LNX-6514DS-A1M w/ Mount Pipe	C	From Leg	3.00 -6.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.44 9.00 9.53	7.10 8.30 9.21	0.06 0.13 0.20
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.32 8.88 9.40	7.00 8.19 9.08	0.07 0.13 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.32 8.88 9.40	7.00 8.19 9.08	0.07 0.13 0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.32 8.88 9.40	7.00 8.19 9.08	0.07 0.13 0.21
6' x 2" Mount Pipe	A	From Leg	3.00 6.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	3.00 6.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	3.00 6.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
B66A RRH4X45	A	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.06 0.08 0.10
B66A RRH4X45	B	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.06 0.08 0.10
B66A RRH4X45	C	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.06 0.08 0.10
RRH2x60-700	A	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-700	B	From Leg	3.00 0.00 6.00	0.0000	124.00	No Ice 1/2" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
RRH2x60-700	C	From Leg	3.00	0.0000	124.00	No Ice	3.50	1.82	0.06
			0.00			1/2"	3.76	2.05	0.08
			6.00			Ice	4.03	2.29	0.11
						1" Ice			
RRH2X60-PCS	A	From Leg	3.00	0.0000	124.00	No Ice	2.20	1.72	0.06
			0.00			1/2"	2.39	1.90	0.08
			6.00			Ice	2.59	2.09	0.10
						1" Ice			
RRH2X60-PCS	B	From Leg	3.00	0.0000	124.00	No Ice	2.20	1.72	0.06
			0.00			1/2"	2.39	1.90	0.08
			6.00			Ice	2.59	2.09	0.10
						1" Ice			
RRH2X60-PCS	C	From Leg	3.00	0.0000	124.00	No Ice	2.20	1.72	0.06
			0.00			1/2"	2.39	1.90	0.08
			6.00			Ice	2.59	2.09	0.10
						1" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	3.00	0.0000	124.00	No Ice	4.80	2.00	0.04
			0.00			1/2"	5.07	2.19	0.08
			6.00			Ice	5.35	2.39	0.12
						1" Ice			
DB-T1-6Z-8AB-0Z	C	From Leg	3.00	0.0000	124.00	No Ice	4.80	2.00	0.04
			0.00			1/2"	5.07	2.19	0.08
			6.00			Ice	5.35	2.39	0.12
						1" Ice			
109									
Side Arm Mount [SO 201-1]	B	From Leg	0.50	0.0000	109.00	No Ice	2.96	2.11	0.10
			0.00			1/2"	4.10	2.93	0.12
			0.00			Ice	5.24	3.75	0.14
						1" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	3.00	0.0000	109.00	No Ice	0.85	1.67	0.07
			0.00			1/2"	1.14	2.34	0.08
			0.00			Ice	1.43	3.01	0.09
						1" Ice			
DB589	B	From Leg	6.00	0.0000	109.00	No Ice	2.13	2.13	0.01
			0.00			1/2"	3.00	3.00	0.03
			5.00			Ice	3.76	3.76	0.05
						1" Ice			
***									

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
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

Comb. No.	Description
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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	159.857 - 154.857	Pole	Max Tension	36	0.00	-0.00	0.00
			Max. Compression	26	-7.43	-0.02	0.01
			Max. Mx	8	-2.96	-18.29	0.28
			Max. My	2	-2.95	-0.29	18.71
			Max. Vy	8	4.73	-18.29	0.28
			Max. Vx	14	4.83	0.31	-18.71
			Max. Torque	11			0.24
L2	154.857 - 149.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.17	-0.18	0.10
			Max. Mx	8	-5.85	-45.18	0.64
			Max. My	2	-5.83	-0.67	46.10
			Max. Vy	8	9.48	-45.18	0.64
			Max. Vx	14	9.59	0.63	-46.05
			Max. Torque	10			0.44
L3	149.857 - 144.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.74	-0.20	0.11
			Max. Mx	8	-6.17	-93.26	0.82
			Max. My	2	-6.16	-0.86	94.70
			Max. Vy	8	9.75	-93.26	0.82
			Max. Vx	14	9.86	0.80	-94.66
			Max. Torque	10			0.44
L4	144.857 - 139.857	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-16.33	-0.22	0.12
			Max. Mx	8	-6.53	-142.68	1.00
			Max. My	2	-6.51	-1.04	144.64
			Max. Vy	8	10.02	-142.68	1.00
			Max. Vx	14	10.13	0.96	-144.60
			Max. Torque	10			0.44
L5	139.857 - 134.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.69	-0.23	0.14
			Max. Mx	8	-8.27	-201.84	0.98
			Max. My	2	-8.25	-1.00	204.26
			Max. Vy	8	12.32	-201.84	0.98
			Max. Vx	14	12.41	0.96	-204.21
			Max. Torque	12			0.66
L6	134.857 - 129.857	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.40	-0.25	0.15
			Max. Mx	8	-8.75	-264.08	0.92
			Max. My	2	-8.74	-0.94	266.93
			Max. Vy	8	12.59	-264.08	0.92
			Max. Vx	14	12.67	0.89	-266.88
			Max. Torque	12			0.66
L7	129.857 - 125.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.03	-0.27	0.16
			Max. Mx	8	-9.16	-316.20	0.86
			Max. My	2	-9.15	-0.89	319.42
			Max. Vy	8	12.81	-316.20	0.86
			Max. Vx	14	12.89	0.83	-319.37
			Max. Torque	12			0.66
L8	125.75 - 125.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.08	-0.27	0.16
			Max. Mx	8	-9.20	-319.40	0.86
			Max. My	2	-9.18	-0.89	322.64
			Max. Vy	8	12.81	-319.40	0.86
			Max. Vx	14	12.90	0.83	-322.59
			Max. Torque	12			0.66
L9	125.5 - 118.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.09	0.39	0.55
			Max. Mx	20	-12.21	383.29	-1.06
			Max. My	2	-12.20	-1.04	387.18
			Max. Vy	8	17.55	-383.06	1.24
			Max. Vx	14	17.70	1.26	-386.94
			Max. Torque	12			0.66
L10	118.978 - 117.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.50	0.37	0.57
			Max. Mx	20	-13.04	467.33	-1.21
			Max. My	2	-13.02	-1.20	471.89
			Max. Vy	8	17.84	-467.10	1.39
			Max. Vx	14	17.99	1.41	-471.65
			Max. Torque	10			0.61
L11	117.978 - 112.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.90	0.35	0.58
			Max. Mx	20	-14.01	557.31	-1.38
			Max. My	2	-13.99	-1.37	562.58
			Max. Vy	8	18.16	-557.08	1.55
			Max. Vx	14	18.31	1.56	-562.33
			Max. Torque	10			0.61
L12	112.978 - 107.978	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.73	-0.96	-0.15
			Max. Mx	8	-15.18	-649.95	1.45
			Max. My	14	-15.17	1.25	-655.69
			Max. Vy	8	18.76	-649.95	1.45
			Max. Vx	14	18.90	1.25	-655.69

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	2			-1.29
L13	107.978 - 103	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.23	-0.95	-0.16
			Max. Mx	8	-16.19	-744.11	1.61
			Max. My	14	-16.17	1.40	-750.54
			Max. Vy	8	19.08	-744.11	1.61
			Max. Vx	14	19.22	1.40	-750.54
			Max. Torque	2			-1.28
L14	103 - 102.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.33	-0.95	-0.16
			Max. Mx	8	-16.26	-748.88	1.61
			Max. My	14	-16.24	1.41	-755.35
			Max. Vy	8	19.09	-748.88	1.61
			Max. Vx	14	19.24	1.41	-755.35
			Max. Torque	2			-1.28
L15	102.75 - 100.208	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.29	-0.95	-0.15
			Max. Mx	8	-16.89	-797.64	1.69
			Max. My	14	-16.88	1.49	-804.46
			Max. Vy	8	19.28	-797.64	1.69
			Max. Vx	14	19.42	1.49	-804.46
			Max. Torque	2			-1.28
L16	100.208 - 95.6875	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.37	-0.96	-0.15
			Max. Mx	8	-16.95	-801.24	1.70
			Max. My	14	-16.94	1.49	-808.09
			Max. Vy	8	19.28	-801.24	1.70
			Max. Vx	14	19.42	1.49	-808.09
			Max. Torque	2			-1.28
L17	95.6875 - 94.6875	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.01	-0.98	-0.14
			Max. Mx	8	-19.54	-905.35	1.87
			Max. My	14	-19.53	1.66	-912.94
			Max. Vy	8	19.75	-905.35	1.87
			Max. Vx	14	19.89	1.66	-912.94
			Max. Torque	2			-1.28
L18	94.6875 - 93.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.57	-0.99	-0.14
			Max. Mx	8	-19.90	-928.84	1.91
			Max. My	14	-19.89	1.69	-936.60
			Max. Vy	8	19.84	-928.84	1.91
			Max. Vx	14	19.98	1.69	-936.60
			Max. Torque	2			-1.28
L19	93.5 - 93.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.70	-0.99	-0.13
			Max. Mx	8	-20.00	-933.80	1.91
			Max. My	14	-19.98	1.70	-941.60
			Max. Vy	8	19.85	-933.80	1.91
			Max. Vx	14	19.99	1.70	-941.60
			Max. Torque	2			-1.28
L20	93.25 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.81	-1.01	-0.12
			Max. Mx	8	-21.42	-1013.82	2.04
			Max. My	14	-21.41	1.82	-1022.16
			Max. Vy	8	20.16	-1013.82	2.04
			Max. Vx	14	20.30	1.82	-1022.16
			Max. Torque	2			-1.28
L21	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.95	-1.01	-0.12
			Max. Mx	8	-21.52	-1018.86	2.05
			Max. My	14	-21.50	1.83	-1027.24
			Max. Vy	8	20.18	-1018.86	2.05
			Max. Vx	14	20.32	1.83	-1027.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	2			-1.28
L22	89 - 86.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.33	-1.02	-0.12
			Max. Mx	8	-22.45	-1069.55	2.13
			Max. My	14	-22.44	1.91	-1078.26
			Max. Vy	8	20.38	-1069.55	2.13
			Max. Vx	14	20.51	1.91	-1078.26
			Max. Torque	2			-1.28
L23	86.5 - 86.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.45	-1.02	-0.11
			Max. Mx	8	-22.54	-1074.64	2.14
			Max. My	14	-22.53	1.91	-1083.39
			Max. Vy	8	20.39	-1074.64	2.14
			Max. Vx	14	20.53	1.91	-1083.39
			Max. Torque	2			-1.28
L24	86.25 - 81.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.83	-1.05	-0.10
			Max. Mx	8	-24.16	-1177.50	2.30
			Max. My	14	-24.15	2.07	-1186.92
			Max. Vy	8	20.76	-1177.50	2.30
			Max. Vx	14	20.90	2.07	-1186.92
			Max. Torque	2			-1.28
L25	81.25 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.20	-1.08	-0.08
			Max. Mx	8	-25.82	-1282.16	2.45
			Max. My	14	-25.81	2.22	-1292.26
			Max. Vy	8	21.12	-1282.16	2.45
			Max. Vx	14	21.25	2.22	-1292.26
			Max. Torque	2			-1.28
L26	76.25 - 75.417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.63	-1.08	-0.08
			Max. Mx	8	-26.10	-1299.78	2.48
			Max. My	14	-26.09	2.25	-1309.98
			Max. Vy	8	21.18	-1299.78	2.48
			Max. Vx	14	21.31	2.25	-1309.98
			Max. Torque	2			-1.28
L27	75.417 - 75.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.76	-1.08	-0.08
			Max. Mx	8	-26.19	-1305.07	2.49
			Max. My	14	-26.18	2.25	-1315.31
			Max. Vy	8	21.20	-1305.07	2.49
			Max. Vx	14	21.33	2.25	-1315.31
			Max. Torque	2			-1.28
L28	75.167 - 70.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.50	-1.11	-0.07
			Max. Mx	8	-28.04	-1411.98	2.65
			Max. My	14	-28.03	2.41	-1422.86
			Max. Vy	8	21.58	-1411.98	2.65
			Max. Vx	14	21.70	2.41	-1422.86
			Max. Torque	2			-1.28
L29	70.167 - 65.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.26	-1.14	-0.05
			Max. Mx	8	-29.92	-1520.76	2.81
			Max. My	14	-29.91	2.56	-1532.24
			Max. Vy	8	21.95	-1520.76	2.81
			Max. Vx	14	22.07	2.56	-1532.24
			Max. Torque	2			-1.28
L30	65.167 - 60.167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.05	-1.16	-0.03
			Max. Mx	8	-31.82	-1631.36	2.96
			Max. My	14	-31.82	2.72	-1643.43
			Max. Vy	8	22.31	-1631.36	2.96

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	22.43	2.72	-1643.43
			Max. Torque	2			-1.28
L31	60.167 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.43	-1.17	-0.03
			Max. Mx	8	-32.08	-1646.24	2.99
			Max. My	14	-32.08	2.74	-1658.40
			Max. Vy	8	22.35	-1646.24	2.99
			Max. Vx	14	22.47	2.74	-1658.40
			Max. Torque	2			-1.28
L32	59.5 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.57	-1.17	-0.03
			Max. Mx	8	-32.18	-1651.83	2.99
			Max. My	14	-32.17	2.74	-1664.01
			Max. Vy	8	22.37	-1651.83	2.99
			Max. Vx	14	22.49	2.74	-1664.01
			Max. Torque	2			-1.28
L33	59.25 - 54.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.39	-1.21	-0.01
			Max. Mx	8	-34.11	-1764.53	3.15
			Max. My	14	-34.10	2.90	-1777.30
			Max. Vy	8	22.72	-1764.53	3.15
			Max. Vx	14	22.84	2.90	-1777.30
			Max. Torque	2			-1.28
L34	54.25 - 53	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.12	-1.24	0.01
			Max. Mx	8	-34.60	-1792.98	3.19
			Max. My	14	-34.59	2.94	-1805.89
			Max. Vy	8	22.81	-1792.98	3.19
			Max. Vx	14	22.93	2.94	-1805.89
			Max. Torque	2			-1.28
L35	53 - 52.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.27	-1.25	0.01
			Max. Mx	8	-34.70	-1798.69	3.20
			Max. My	14	-34.70	2.94	-1811.63
			Max. Vy	8	22.82	-1798.69	3.20
			Max. Vx	14	22.94	2.94	-1811.63
			Max. Torque	2			-1.28
L36	52.75 - 47.0608	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.33	-1.25	0.02
			Max. Mx	8	-34.75	-1801.10	3.20
			Max. My	14	-34.74	2.95	-1814.05
			Max. Vy	8	22.83	-1801.10	3.20
			Max. Vx	14	22.95	2.95	-1814.05
			Max. Torque	2			-1.28
L37	47.0608 - 46.0608	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.76	-1.38	0.09
			Max. Mx	8	-39.47	-1953.23	3.41
			Max. My	14	-39.46	3.15	-1966.95
			Max. Vy	8	23.38	-1953.23	3.41
			Max. Vx	14	23.50	3.15	-1966.95
			Max. Torque	2			-1.28
L38	46.0608 - 41.0608	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.78	-1.41	0.11
			Max. Mx	8	-41.61	-2070.88	3.57
			Max. My	14	-41.61	3.30	-2085.19
			Max. Vy	8	23.70	-2070.88	3.57
			Max. Vx	14	23.82	3.30	-2085.19
			Max. Torque	2			-1.28
L39	41.0608 - 39.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.87	-1.42	0.12
			Max. Mx	8	-42.36	-2111.99	3.62
			Max. My	14	-42.36	3.36	-2126.49
			Max. Vy	8	23.82	-2111.99	3.62

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	23.93	3.36	-2126.49
			Max. Torque	2			-1.28
L40	39.33 - 39.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.04	-1.42	0.12
			Max. Mx	8	-42.49	-2117.94	3.63
			Max. My	14	-42.48	3.36	-2132.47
			Max. Vy	8	23.83	-2117.94	3.63
			Max. Vx	14	23.94	3.36	-2132.47
			Max. Torque	2			-1.28
L41	39.08 - 37.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.94	-1.43	0.12
			Max. Mx	8	-43.11	-2149.69	3.67
			Max. My	14	-43.11	3.40	-2164.36
			Max. Vy	8	23.93	-2149.69	3.67
			Max. Vx	14	24.03	3.40	-2164.36
			Max. Torque	2			-1.28
L42	37.75 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.10	-1.43	0.12
			Max. Mx	8	-43.23	-2155.67	3.68
			Max. My	14	-43.22	3.41	-2170.36
			Max. Vy	8	23.94	-2155.67	3.68
			Max. Vx	14	24.04	3.41	-2170.36
			Max. Torque	2			-1.28
L43	37.5 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.19	-1.46	0.14
			Max. Mx	8	-45.42	-2276.09	3.84
			Max. My	14	-45.41	3.56	-2291.27
			Max. Vy	8	24.24	-2276.09	3.84
			Max. Vx	14	24.34	3.56	-2291.27
			Max. Torque	2			-1.28
L44	32.5 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.88	-1.48	0.15
			Max. Mx	8	-46.64	-2342.94	3.92
			Max. My	14	-46.63	3.65	-2358.40
			Max. Vy	8	24.41	-2342.94	3.92
			Max. Vx	14	24.50	3.65	-2358.40
			Max. Torque	2			-1.28
L45	29.75 - 29.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.04	-1.48	0.15
			Max. Mx	8	-46.76	-2349.04	3.93
			Max. My	14	-46.75	3.66	-2364.52
			Max. Vy	8	24.41	-2349.04	3.93
			Max. Vx	14	24.51	3.66	-2364.52
			Max. Torque	2			-1.28
L46	29.5 - 24.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.14	-1.50	0.17
			Max. Mx	8	-48.99	-2471.77	4.09
			Max. My	14	-48.99	3.81	-2487.74
			Max. Vy	8	24.70	-2471.77	4.09
			Max. Vx	14	24.80	3.81	-2487.74
			Max. Torque	2			-1.28
L47	24.5 - 21.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.21	-1.44	0.23
			Max. Mx	8	-50.47	-2552.29	4.19
			Max. My	14	-50.46	3.91	-2568.58
			Max. Vy	8	24.88	-2552.29	4.19
			Max. Vx	14	24.98	3.91	-2568.58
			Max. Torque	2			-1.28
L48	21.25 - 21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.38	-1.43	0.23
			Max. Mx	8	-50.60	-2558.51	4.19
			Max. My	14	-50.59	3.91	-2574.82
			Max. Vy	8	24.89	-2558.51	4.19
			Max. Vx	14	24.98	3.91	-2574.82
			Max. Torque	2			-1.28
L49	21 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.06	-1.42	0.25

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-51.09	-2583.42	4.23
			Max. My	14	-51.09	3.94	-2599.83
			Max. Vy	8	24.95	-2583.42	4.23
			Max. Vx	14	25.05	3.94	-2599.83
			Max. Torque	2			-1.28
L50	20 - 19.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.24	-1.41	0.25
			Max. Mx	8	-51.23	-2589.66	4.23
			Max. My	14	-51.23	3.95	-2606.09
			Max. Vy	8	24.96	-2589.66	4.23
			Max. Vx	14	25.06	3.95	-2606.09
			Max. Torque	2			-1.28
L51	19.75 - 17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.23	-1.38	0.29
			Max. Mx	8	-52.71	-2658.52	4.32
			Max. My	14	-52.70	4.04	-2675.21
			Max. Vy	8	25.14	-2658.52	4.32
			Max. Vx	14	25.23	4.04	-2675.21
			Max. Torque	2			-1.28
L52	17 - 16.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.41	-1.38	0.29
			Max. Mx	8	-52.84	-2664.80	4.33
			Max. My	14	-52.84	4.04	-2681.52
			Max. Vy	8	25.14	-2664.80	4.33
			Max. Vx	14	25.24	4.04	-2681.52
			Max. Torque	2			-1.28
L53	16.75 - 11.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.87	-1.37	0.33
			Max. Mx	8	-55.42	-2791.22	4.48
			Max. My	14	-55.42	4.19	-2808.42
			Max. Vy	8	25.44	-2791.22	4.48
			Max. Vx	14	25.54	4.19	-2808.42
			Max. Torque	2			-1.28
L54	11.75 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.25	-1.39	0.34
			Max. Mx	8	-58.00	-2919.11	4.63
			Max. My	14	-58.00	4.34	-2936.79
			Max. Vy	8	25.74	-2919.11	4.63
			Max. Vx	14	25.83	4.34	-2936.79
			Max. Torque	2			-1.28
L55	6.75 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.51	-1.39	0.34
			Max. Mx	8	-60.51	-3048.46	4.78
			Max. My	14	-60.51	4.49	-3066.62
			Max. Vy	8	26.03	-3048.46	4.78
			Max. Vx	14	26.13	4.49	-3066.62
			Max. Torque	2			-1.28
L56	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-99.60	-1.39	0.34
			Max. Mx	8	-61.39	-3094.09	4.84
			Max. My	14	-61.39	4.55	-3112.41
			Max. Vy	8	26.14	-3094.09	4.84
			Max. Vx	14	26.24	4.55	-3112.41
			Max. Torque	2			-1.28

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	99.60	-7.20	0.01
	Max. H_x	20	61.40	26.12	-0.03
	Max. H_z	2	61.40	-0.03	26.22
	Max. M_x	2	3112.09	-0.03	26.22

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. M_z	8	3094.09	-26.12	0.03
	Max. Torsion	14	1.27	0.03	-26.22
	Min. Vert	23	46.05	22.57	13.08
	Min. H_x	8	61.40	-26.12	0.03
	Min. H_z	14	61.40	0.03	-26.22
	Min. M_x	14	-3112.41	0.03	-26.22
	Min. M_z	20	-3093.17	26.12	-0.03
	Min. Torsion	2	-1.28	-0.03	26.22

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	51.16	0.00	0.00	0.13	-0.36	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	61.40	0.03	-26.22	-3112.09	-5.45	1.28
0.9 Dead+1.6 Wind 0 deg - No Ice	46.05	0.03	-26.22	-3082.18	-5.27	1.28
1.2 Dead+1.6 Wind 30 deg - No Ice	61.40	13.09	-22.77	-2700.00	-1551.74	1.12
0.9 Dead+1.6 Wind 30 deg - No Ice	46.05	13.09	-22.77	-2674.06	-1536.70	1.12
1.2 Dead+1.6 Wind 60 deg - No Ice	61.40	22.60	-13.13	-1560.31	-2680.01	0.67
0.9 Dead+1.6 Wind 60 deg - No Ice	46.05	22.60	-13.13	-1545.32	-2654.12	0.66
1.2 Dead+1.6 Wind 90 deg - No Ice	61.40	26.12	-0.03	-4.84	-3094.09	0.03
0.9 Dead+1.6 Wind 90 deg - No Ice	46.05	26.12	-0.03	-4.82	-3064.23	0.03
1.2 Dead+1.6 Wind 120 deg - No Ice	61.40	22.57	13.08	1551.99	-2675.03	-0.60
0.9 Dead+1.6 Wind 120 deg - No Ice	46.05	22.57	13.08	1537.02	-2649.20	-0.60
1.2 Dead+1.6 Wind 150 deg - No Ice	61.40	13.10	22.84	2702.34	-1547.12	-1.08
0.9 Dead+1.6 Wind 150 deg - No Ice	46.05	13.10	22.84	2676.33	-1532.17	-1.07
1.2 Dead+1.6 Wind 180 deg - No Ice	61.40	-0.03	26.22	3112.41	4.55	-1.27
0.9 Dead+1.6 Wind 180 deg - No Ice	46.05	-0.03	26.22	3082.42	4.61	-1.26
1.2 Dead+1.6 Wind 210 deg - No Ice	61.40	-13.09	22.77	2700.32	1550.83	-1.12
0.9 Dead+1.6 Wind 210 deg - No Ice	46.05	-13.09	22.77	2674.30	1536.03	-1.12
1.2 Dead+1.6 Wind 240 deg - No Ice	61.40	-22.60	13.13	1560.63	2679.10	-0.68
0.9 Dead+1.6 Wind 240 deg - No Ice	46.05	-22.60	13.13	1545.56	2653.44	-0.67
1.2 Dead+1.6 Wind 270 deg - No Ice	61.40	-26.12	0.03	5.16	3093.17	-0.05
0.9 Dead+1.6 Wind 270 deg - No Ice	46.05	-26.12	0.03	5.06	3063.55	-0.05
1.2 Dead+1.6 Wind 300 deg - No Ice	61.40	-22.57	-13.08	-1551.65	2674.12	0.60
0.9 Dead+1.6 Wind 300 deg - No Ice	46.05	-22.57	-13.08	-1536.77	2648.52	0.60
1.2 Dead+1.6 Wind 330 deg - No Ice	61.40	-13.10	-22.84	-2702.01	1546.22	1.09
0.9 Dead+1.6 Wind 330 deg - No Ice	46.05	-13.10	-22.84	-2676.09	1531.50	1.09
1.2 Dead+1.0 Ice	99.60	0.00	0.00	-0.34	-1.39	0.00
1.2 Dead+1.0 Wind 0	99.60	0.01	-6.99	-829.85	-2.33	0.35

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice						
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	99.60	3.63	-6.29	-733.64	-424.62	0.38
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	99.60	6.05	-3.50	-415.79	-719.02	0.31
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	99.60	7.20	-0.01	-1.15	-845.30	0.16
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	99.60	6.04	3.49	413.70	-718.23	-0.03
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	99.60	3.79	6.58	751.07	-434.19	-0.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	99.60	-0.01	6.99	829.12	-0.76	-0.35
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	99.60	-3.63	6.29	732.91	421.53	-0.38
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	99.60	-6.05	3.50	415.06	715.93	-0.31
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	99.60	-7.20	0.01	0.42	842.19	-0.16
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	99.60	-6.04	-3.49	-414.43	715.14	0.03
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	99.60	-3.79	-6.58	-751.79	431.10	0.22
Dead+Wind 0 deg - Service	51.16	0.01	-5.17	-610.65	-1.36	0.25
Dead+Wind 30 deg - Service	51.16	2.58	-4.49	-529.78	-304.83	0.22
Dead+Wind 60 deg - Service	51.16	4.46	-2.59	-306.11	-526.25	0.13
Dead+Wind 90 deg - Service	51.16	5.16	-0.01	-0.85	-607.51	0.01
Dead+Wind 120 deg - Service	51.16	4.45	2.58	304.68	-525.27	-0.12
Dead+Wind 150 deg - Service	51.16	2.59	4.51	530.45	-303.92	-0.21
Dead+Wind 180 deg - Service	51.16	-0.01	5.17	610.92	0.60	-0.25
Dead+Wind 210 deg - Service	51.16	-2.58	4.49	530.05	304.07	-0.22
Dead+Wind 240 deg - Service	51.16	-4.46	2.59	306.38	525.49	-0.13
Dead+Wind 270 deg - Service	51.16	-5.16	0.01	1.11	606.75	-0.01
Dead+Wind 300 deg - Service	51.16	-4.45	-2.58	-304.41	524.51	0.12
Dead+Wind 330 deg - Service	51.16	-2.59	-4.51	-530.18	303.16	0.22

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-51.16	0.00	0.00	51.16	0.00	0.000%
2	0.03	-61.40	-26.22	-0.03	61.40	26.22	0.000%
3	0.03	-46.05	-26.22	-0.03	46.05	26.22	0.000%
4	13.09	-61.40	-22.77	-13.09	61.40	22.77	0.000%
5	13.09	-46.05	-22.77	-13.09	46.05	22.77	0.000%
6	22.60	-61.40	-13.13	-22.60	61.40	13.13	0.000%
7	22.60	-46.05	-13.13	-22.60	46.05	13.13	0.000%
8	26.12	-61.40	-0.03	-26.12	61.40	0.03	0.000%
9	26.12	-46.05	-0.03	-26.12	46.05	0.03	0.000%
10	22.57	-61.40	13.08	-22.57	61.40	-13.08	0.000%
11	22.57	-46.05	13.08	-22.57	46.05	-13.08	0.000%
12	13.10	-61.40	22.84	-13.10	61.40	-22.84	0.000%
13	13.10	-46.05	22.84	-13.10	46.05	-22.84	0.000%
14	-0.03	-61.40	26.22	0.03	61.40	-26.22	0.000%
15	-0.03	-46.05	26.22	0.03	46.05	-26.22	0.000%
16	-13.09	-61.40	22.77	13.09	61.40	-22.77	0.000%
17	-13.09	-46.05	22.77	13.09	46.05	-22.77	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
18	-22.60	-61.40	13.13	22.60	61.40	-13.13	0.000%
19	-22.60	-46.05	13.13	22.60	46.05	-13.13	0.000%
20	-26.12	-61.40	0.03	26.12	61.40	-0.03	0.000%
21	-26.12	-46.05	0.03	26.12	46.05	-0.03	0.000%
22	-22.57	-61.40	-13.08	22.57	61.40	13.08	0.000%
23	-22.57	-46.05	-13.08	22.57	46.05	13.08	0.000%
24	-13.10	-61.40	-22.84	13.10	61.40	22.84	0.000%
25	-13.10	-46.05	-22.84	13.10	46.05	22.84	0.000%
26	0.00	-99.60	0.00	0.00	99.60	0.00	0.000%
27	0.01	-99.60	-6.99	-0.01	99.60	6.99	0.000%
28	3.63	-99.60	-6.29	-3.63	99.60	6.29	0.000%
29	6.05	-99.60	-3.50	-6.05	99.60	3.50	0.000%
30	7.20	-99.60	-0.01	-7.20	99.60	0.01	0.000%
31	6.04	-99.60	3.49	-6.04	99.60	-3.49	0.000%
32	3.79	-99.60	6.58	-3.79	99.60	-6.58	0.000%
33	-0.01	-99.60	6.99	0.01	99.60	-6.99	0.000%
34	-3.63	-99.60	6.29	3.63	99.60	-6.29	0.000%
35	-6.05	-99.60	3.50	6.05	99.60	-3.50	0.000%
36	-7.20	-99.60	0.01	7.20	99.60	-0.01	0.000%
37	-6.04	-99.60	-3.49	6.04	99.60	3.49	0.000%
38	-3.79	-99.60	-6.58	3.79	99.60	6.58	0.000%
39	0.01	-51.16	-5.17	-0.01	51.16	5.17	0.000%
40	2.58	-51.16	-4.49	-2.58	51.16	4.49	0.000%
41	4.46	-51.16	-2.59	-4.46	51.16	2.59	0.000%
42	5.16	-51.16	-0.01	-5.16	51.16	0.01	0.000%
43	4.45	-51.16	2.58	-4.45	51.16	-2.58	0.000%
44	2.59	-51.16	4.51	-2.59	51.16	-4.51	0.000%
45	-0.01	-51.16	5.17	0.01	51.16	-5.17	0.000%
46	-2.58	-51.16	4.49	2.58	51.16	-4.49	0.000%
47	-4.46	-51.16	2.59	4.46	51.16	-2.59	0.000%
48	-5.16	-51.16	0.01	5.16	51.16	-0.01	0.000%
49	-4.45	-51.16	-2.58	4.45	51.16	2.58	0.000%
50	-2.59	-51.16	-4.51	2.59	51.16	4.51	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00050758
3	Yes	5	0.00000001	0.00023822
4	Yes	6	0.00000001	0.00034519
5	Yes	6	0.00000001	0.00011815
6	Yes	6	0.00000001	0.00033005
7	Yes	6	0.00000001	0.00011266
8	Yes	5	0.00000001	0.00022789
9	Yes	5	0.00000001	0.00008504
10	Yes	6	0.00000001	0.00032776
11	Yes	6	0.00000001	0.00011200
12	Yes	6	0.00000001	0.00034324
13	Yes	6	0.00000001	0.00011761
14	Yes	5	0.00000001	0.00044821
15	Yes	5	0.00000001	0.00020809
16	Yes	6	0.00000001	0.00032719
17	Yes	6	0.00000001	0.00011147
18	Yes	6	0.00000001	0.00034015
19	Yes	6	0.00000001	0.00011643
20	Yes	5	0.00000001	0.00023096
21	Yes	5	0.00000001	0.00008684
22	Yes	6	0.00000001	0.00033697
23	Yes	6	0.00000001	0.00011553
24	Yes	6	0.00000001	0.00032532
25	Yes	6	0.00000001	0.00011095
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00068165

28	Yes	6	0.00000001	0.00015954
29	Yes	6	0.00000001	0.00014367
30	Yes	5	0.00000001	0.00066540
31	Yes	6	0.00000001	0.00014671
32	Yes	6	0.00000001	0.00015945
33	Yes	5	0.00000001	0.00067951
34	Yes	6	0.00000001	0.00014458
35	Yes	6	0.00000001	0.00015296
36	Yes	5	0.00000001	0.00066210
37	Yes	6	0.00000001	0.00014694
38	Yes	6	0.00000001	0.00015023
39	Yes	4	0.00000001	0.00093790
40	Yes	5	0.00000001	0.00008715
41	Yes	5	0.00000001	0.00007925
42	Yes	4	0.00000001	0.00085253
43	Yes	5	0.00000001	0.00007870
44	Yes	5	0.00000001	0.00008656
45	Yes	4	0.00000001	0.00093371
46	Yes	5	0.00000001	0.00007810
47	Yes	5	0.00000001	0.00008421
48	Yes	4	0.00000001	0.00085105
49	Yes	5	0.00000001	0.00008313
50	Yes	5	0.00000001	0.00007752

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load*	*Tilt*	*Twist*
	ft	*in*	*Comb.*	*°*	*°*
L1	159.857 - 154.857	16.505	40	1.1415	0.0026
L2	154.857 - 149.857	15.311	40	1.1361	0.0024
L3	149.857 - 144.857	14.131	40	1.1161	0.0022
L4	144.857 - 139.857	12.980	40	1.0789	0.0019
L5	139.857 - 134.857	11.877	45	1.0254	0.0017
L6	134.857 - 129.857	10.837	45	0.9593	0.0014
L7	129.857 - 125.75	9.872	45	0.8825	0.0011
L8	125.75 - 125.5	9.142	45	0.8138	0.0009
L9	125.5 - 118.978	9.100	45	0.8095	0.0009
L10	122.728 - 117.978	8.644	45	0.7592	0.0008
L11	117.978 - 112.978	7.910	45	0.7102	0.0008
L12	112.978 - 107.978	7.189	45	0.6656	0.0008
L13	107.978 - 103	6.517	45	0.6186	0.0007
L14	103 - 102.75	5.897	45	0.5695	0.0006
L15	102.75 - 100.208	5.868	45	0.5674	0.0006
L16	100.208 - 95.6875	5.571	40	0.5454	0.0006
L17	100.021 - 94.6875	5.550	40	0.5441	0.0006
L18	94.6875 - 93.5	4.953	40	0.5225	0.0005
L19	93.5 - 93.25	4.824	40	0.5145	0.0005
L20	93.25 - 89.25	4.797	40	0.5132	0.0005
L21	89.25 - 89	4.377	40	0.4903	0.0005
L22	89 - 86.5	4.351	40	0.4890	0.0005
L23	86.5 - 86.25	4.099	40	0.4754	0.0004
L24	86.25 - 81.25	4.074	40	0.4737	0.0004
L25	81.25 - 76.25	3.595	40	0.4405	0.0004
L26	76.25 - 75.417	3.151	40	0.4072	0.0003
L27	75.417 - 75.167	3.081	40	0.4017	0.0003
L28	75.167 - 70.167	3.060	40	0.4002	0.0003

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L29	70.167 - 65.167	2.656	40	0.3705	0.0003
L30	65.167 - 60.167	2.284	40	0.3409	0.0003
L31	60.167 - 59.5	1.943	40	0.3110	0.0002
L32	59.5 - 59.25	1.900	40	0.3071	0.0002
L33	59.25 - 54.25	1.884	40	0.3056	0.0002
L34	54.25 - 53	1.579	40	0.2760	0.0002
L35	53 - 52.75	1.508	40	0.2687	0.0002
L36	52.75 - 47.0608	1.494	40	0.2672	0.0002
L37	52.6442 - 46.0608	1.488	40	0.2666	0.0002
L38	46.0608 - 41.0608	1.134	40	0.2444	0.0002
L39	41.0608 - 39.33	0.893	40	0.2152	0.0001
L40	39.33 - 39.08	0.817	40	0.2054	0.0001
L41	39.08 - 37.75	0.806	40	0.2041	0.0001
L42	37.75 - 37.5	0.750	40	0.1972	0.0001
L43	37.5 - 32.5	0.740	40	0.1958	0.0001
L44	32.5 - 29.75	0.550	40	0.1674	0.0001
L45	29.75 - 29.5	0.458	40	0.1518	0.0001
L46	29.5 - 24.5	0.450	40	0.1504	0.0001
L47	24.5 - 21.25	0.307	44	0.1222	0.0001
L48	21.25 - 21	0.230	44	0.1042	0.0001
L49	21 - 20	0.225	44	0.1029	0.0001
L50	20 - 19.75	0.204	44	0.0976	0.0001
L51	19.75 - 17	0.199	44	0.0964	0.0001
L52	17 - 16.75	0.147	44	0.0833	0.0000
L53	16.75 - 11.75	0.143	44	0.0820	0.0000
L54	11.75 - 6.75	0.070	44	0.0572	0.0000
L55	6.75 - 1.75	0.023	44	0.0327	0.0000
L56	1.75 - 0	0.002	44	0.0083	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	Platform Mount [LP 712-1]	40	16.299	1.1411	0.0026	22351
157.00	Side Arm Mount [SO 102-3]	40	15.822	1.1395	0.0025	22351
152.00	Side Arm Mount [SO 102-3]	40	14.634	1.1268	0.0023	13578
150.00	Platform Mount [LP 303-1]	40	14.164	1.1169	0.0023	10379
139.00	T-Arm Mount [TA 602-3]	45	11.694	1.0149	0.0017	4624
124.00	Platform Mount [LP 303-1]	45	8.850	0.7816	0.0009	3820
109.00	Side Arm Mount [SO 201-1]	45	6.650	0.6287	0.0007	6030

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	159.857 - 154.857	84.098	14	5.8230	0.0123
L2	154.857 - 149.857	78.023	14	5.7952	0.0115
L3	149.857 - 144.857	72.015	14	5.6934	0.0107
L4	144.857 - 139.857	66.156	14	5.5035	0.0094
L5	139.857 - 134.857	60.540	14	5.2307	0.0084
L6	134.857 - 129.857	55.241	14	4.8938	0.0069

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L7	129.857 - 125.75	50.323	14	4.5018	0.0056
L8	125.75 - 125.5	46.603	14	4.1509	0.0047
L9	125.5 - 118.978	46.387	14	4.1290	0.0046
L10	122.728 - 117.978	44.064	14	3.8724	0.0042
L11	117.978 - 112.978	40.322	14	3.6222	0.0040
L12	112.978 - 107.978	36.649	14	3.3942	0.0039
L13	107.978 - 103	33.222	14	3.1546	0.0036
L14	103 - 102.75	30.064	14	2.9042	0.0031
L15	102.75 - 100.208	29.913	14	2.8934	0.0030
L16	100.208 - 95.6875	28.403	4	2.7813	0.0028
L17	100.021 - 94.6875	28.294	4	2.7748	0.0028
L18	94.6875 - 93.5	25.250	4	2.6646	0.0026
L19	93.5 - 93.25	24.593	4	2.6240	0.0025
L20	93.25 - 89.25	24.455	4	2.6169	0.0025
L21	89.25 - 89	22.313	4	2.5006	0.0023
L22	89 - 86.5	22.182	4	2.4938	0.0023
L23	86.5 - 86.25	20.895	4	2.4242	0.0022
L24	86.25 - 81.25	20.769	4	2.4160	0.0022
L25	81.25 - 76.25	18.329	4	2.2464	0.0019
L26	76.25 - 75.417	16.067	4	2.0765	0.0017
L27	75.417 - 75.167	15.707	4	2.0487	0.0017
L28	75.167 - 70.167	15.600	4	2.0412	0.0017
L29	70.167 - 65.167	13.543	4	1.8895	0.0015
L30	65.167 - 60.167	11.644	4	1.7384	0.0013
L31	60.167 - 59.5	9.904	4	1.5860	0.0012
L32	59.5 - 59.25	9.684	4	1.5660	0.0011
L33	59.25 - 54.25	9.602	4	1.5585	0.0011
L34	54.25 - 53	8.050	4	1.4075	0.0010
L35	53 - 52.75	7.686	4	1.3701	0.0009
L36	52.75 - 47.0608	7.615	4	1.3626	0.0009
L37	52.6442 - 46.0608	7.584	4	1.3594	0.0009
L38	46.0608 - 41.0608	5.779	4	1.2460	0.0008
L39	41.0608 - 39.33	4.553	4	1.0971	0.0007
L40	39.33 - 39.08	4.164	4	1.0471	0.0007
L41	39.08 - 37.75	4.110	4	1.0405	0.0007
L42	37.75 - 37.5	3.825	4	1.0056	0.0006
L43	37.5 - 32.5	3.772	4	0.9984	0.0006
L44	32.5 - 29.75	2.803	4	0.8534	0.0005
L45	29.75 - 29.5	2.334	4	0.7740	0.0005
L46	29.5 - 24.5	2.294	4	0.7668	0.0005
L47	24.5 - 21.25	1.567	4	0.6229	0.0004
L48	21.25 - 21	1.174	4	0.5314	0.0003
L49	21 - 20	1.146	4	0.5245	0.0003
L50	20 - 19.75	1.039	4	0.4973	0.0003
L51	19.75 - 17	1.013	4	0.4913	0.0003
L52	17 - 16.75	0.750	4	0.4244	0.0002
L53	16.75 - 11.75	0.728	4	0.4181	0.0002
L54	11.75 - 6.75	0.356	4	0.2917	0.0002
L55	6.75 - 1.75	0.117	4	0.1664	0.0001
L56	1.75 - 0	0.008	4	0.0422	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	Platform Mount [LP 712-1]	14	83.054	5.8207	0.0135	4483
157.00	Side Arm Mount [SO 102-3]	14	80.622	5.8129	0.0131	4483

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	Side Arm Mount [SO 102-3]	14	74.576	5.7479	0.0122	2724
150.00	Platform Mount [LP 303-1]	14	72.185	5.6975	0.0118	2082
139.00	T-Arm Mount [TA 602-3]	14	59.607	5.1771	0.0087	923
124.00	Platform Mount [LP 303-1]	14	45.114	3.9870	0.0044	756
109.00	Side Arm Mount [SO 201-1]	14	33.902	3.2058	0.0037	1189

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	159.857 - 154.857 (1)	TP17.6204x16.5x0.1875	5.00	0.00	0.0	10.3747	-2.94	770.79	0.004
L2	154.857 - 149.857 (2)	TP18.7407x17.6204x0.1875	5.00	0.00	0.0	11.0415	-5.83	820.33	0.007
L3	149.857 - 144.857 (3)	TP19.8611x18.7407x0.1875	5.00	0.00	0.0	11.7082	-6.15	859.25	0.007
L4	144.857 - 139.857 (4)	TP20.9814x19.8611x0.1875	5.00	0.00	0.0	12.3750	-6.51	894.41	0.007
L5	139.857 - 134.857 (5)	TP22.1018x20.9814x0.1875	5.00	0.00	0.0	13.0417	-8.26	928.08	0.009
L6	134.857 - 129.857 (6)	TP23.2221x22.1018x0.1875	5.00	0.00	0.0	13.7085	-8.74	960.27	0.009
L7	129.857 - 125.75 (7)	TP24.1425x23.2221x0.1875	4.11	0.00	0.0	14.2562	-9.15	985.60	0.009
L8	125.75 - 125.5 (8)	TP24.1985x24.1425x0.1875	0.25	0.00	0.0	14.2895	-9.18	987.11	0.009
L9	125.5 - 118.978 (9)	TP25.66x24.1985x0.1875	6.52	0.00	0.0	14.6593	-12.20	1003.60	0.012
L10	118.978 - 117.978 (10)	TP25.4891x24.4447x0.25	4.75	0.00	0.0	20.0272	-13.02	1484.59	0.009
L11	117.978 - 112.978 (11)	TP26.5885x25.4891x0.4813	5.00	0.00	0.0	39.8784	-13.99	2962.77	0.005
L12	112.978 - 107.978 (12)	TP27.6878x26.5885x0.475	5.00	0.00	0.0	41.0274	-15.17	3048.13	0.005
L13	107.978 - 103 (13)	TP28.7822x27.6878x0.4625	4.98	0.00	0.0	41.5726	-16.17	3088.64	0.005
L14	103 - 102.75 (14)	TP28.8372x28.7822x0.55	0.25	0.00	0.0	49.3809	-16.24	3668.76	0.004
L15	102.75 - 100.208 (15)	TP29.3961x28.8372x0.5375	2.54	0.00	0.0	49.2335	-16.88	3657.80	0.005
L16	100.208 - 95.6875 (16)	TP30.39x29.3961x0.6875	4.52	0.00	0.0	62.7355	-16.94	4660.94	0.004
L17	95.6875 - 94.6875 (17)	TP30.1188x28.9372x0.7375	5.33	0.00	0.0	68.7764	-19.53	5109.75	0.004
L18	94.6875 - 93.5 (18)	TP30.3819x30.1188x0.7375	1.19	0.00	0.0	69.3923	-19.89	5155.50	0.004
L19	93.5 - 93.25 (19)	TP30.4372x30.3819x0.9125	0.25	0.00	0.0	85.5118	-19.98	6353.10	0.003
L20	93.25 - 89.25 (20)	TP31.3234x30.4372x0.8875	4.00	0.00	0.0	85.7357	-21.41	6369.73	0.003
L21	89.25 - 89 (21)	TP31.3788x31.3234x0.9375	0.25	0.00	0.0	90.5819	-21.50	6729.78	0.003
L22	89 - 86.5 (22)	TP31.9326x31.3788x0.925	2.50	0.00	0.0	91.0369	-22.44	6763.59	0.003
L23	86.5 - 86.25 (23)	TP31.988x31.9326x0.7625	0.25	0.00	0.0	75.5712	-22.52	5614.57	0.004
L24	86.25 - 81.25 (24)	TP33.0957x31.988x0.7375	5.00	0.00	0.0	75.7449	-24.15	5627.47	0.004
L25	81.25 - 76.25	TP34.2034x33.0957x0.72	5.00	0.00	0.0	77.038	-25.81	5723.60	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(25)	5				9			
L26	76.25 - 75.417 (26)	TP34.388x34.2034x0.725	0.83	0.00	0.0	77.463 5	-26.09	5755.15	0.005
L27	75.417 - 75.167 (27)	TP34.4434x34.388x0.812 5	0.25	0.00	0.0	86.729 8	-26.18	6443.59	0.004
L28	75.167 - 70.167 (28)	TP35.5511x34.4434x0.8	5.00	0.00	0.0	88.239 9	-28.03	6555.78	0.004
L29	70.167 - 65.167 (29)	TP36.6588x35.5511x0.78 75	5.00	0.00	0.0	89.661 1	-29.91	6661.37	0.004
L30	65.167 - 60.167 (30)	TP37.7665x36.6588x0.76 25	5.00	0.00	0.0	89.556 1	-31.82	6653.57	0.005
L31	60.167 - 59.5 (31)	TP37.9142x37.7665x0.76 25	0.67	0.00	0.0	89.913 7	-32.08	6680.14	0.005
L32	59.5 - 59.25 (32)	TP37.9696x37.9142x0.76 25	0.25	0.00	0.0	90.047 7	-32.17	6690.10	0.005
L33	59.25 - 54.25 (33)	TP39.0773x37.9696x0.75	5.00	0.00	0.0	91.238 2	-34.10	6778.54	0.005
L34	54.25 - 53 (34)	TP39.3542x39.0773x0.73 75	1.25	0.00	0.0	90.395 0	-34.59	6715.90	0.005
L35	53 - 52.75 (35)	TP39.4096x39.3542x0.73 75	0.25	0.00	0.0	90.524 7	-34.70	6725.53	0.005
L36	52.75 - 47.0608 (36)	TP40.67x39.4096x0.7375	5.69	0.00	0.0	90.579 6	-34.74	6729.61	0.005
L37	47.0608 - 46.0608 (37)	TP40.2702x38.8081x0.76 25	6.58	0.00	0.0	95.615 5	-39.46	7103.75	0.006
L38	46.0608 - 41.0608 (38)	TP41.3807x40.2702x0.75	5.00	0.00	0.0	96.721 3	-41.61	7185.91	0.006
L39	41.0608 - 39.33 (39)	TP41.7651x41.3807x0.75	1.73	0.00	0.0	97.636 3	-42.36	7253.89	0.006
L40	39.33 - 39.08 (40)	TP41.8206x41.7651x0.82 5	0.25	0.00	0.0	107.34 90	-42.48	7975.49	0.005
L41	39.08 - 37.75 (41)	TP42.116x41.8206x0.825	1.33	0.00	0.0	108.12 20	-43.11	8032.96	0.005
L42	37.75 - 37.5 (42)	TP42.1715x42.116x0.75	0.25	0.00	0.0	98.603 9	-43.22	7325.77	0.006
L43	37.5 - 32.5 (43)	TP43.282x42.1715x0.737 5	5.00	0.00	0.0	99.589 1	-45.41	7398.97	0.006
L44	32.5 - 29.75 (44)	TP43.8927x43.282x0.725	2.75	0.00	0.0	99.335 4	-46.63	7380.12	0.006
L45	29.75 - 29.5 (45)	TP43.9482x43.8927x0.72 5	0.25	0.00	0.0	99.463 2	-46.75	7389.62	0.006
L46	29.5 - 24.5 (46)	TP45.0587x43.9482x0.71 25	5.00	0.00	0.0	99.283 3	-48.10	7376.25	0.007
L47	24.5 - 21.25 (47)	TP45.7805x45.0587x0.71 25	3.25	0.00	0.0	100.28 80	-49.00	7450.89	0.007
L48	21.25 - 21 (48)	TP45.836x45.7805x0.725	0.25	0.00	0.0	103.67 90	-50.47	7702.87	0.007
L49	21 - 20 (49)	TP46.0581x45.836x0.725	1.00	0.00	0.0	103.80 70	-50.60	7712.36	0.007
L50	20 - 19.75 (50)	TP46.1137x46.0581x0.82 5	0.25	0.00	0.0	118.44 50	-51.10	8799.89	0.006
L51	19.75 - 17 (51)	TP46.7244x46.1137x0.81 25	2.75	0.00	0.0	116.82 60	-51.24	8679.59	0.006
L52	17 - 16.75 (52)	TP46.7799x46.7244x0.77 5	0.25	0.00	0.0	113.02 90	-52.71	8397.46	0.006
L53	16.75 - 11.75 (53)	TP47.8904x46.7799x0.76 25	5.00	0.00	0.0	111.37 00	-52.84	8274.25	0.006
L54	11.75 - 6.75 (54)	TP49.0009x47.8904x0.75	5.00	0.00	0.0	112.21 80	-55.43	8337.22	0.007
L55	6.75 - 1.75 (55)	TP50.1113x49.0009x0.73 75	5.00	0.00	0.0	112.97 60	-58.01	8393.56	0.007
L56	1.75 - 0 (56)	TP50.5x50.1113x0.7375	1.75	0.00	0.0	115.57 60	-60.53	8586.68	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	159.857 - 154.857 (1)	TP17.6204x16.5x0.1875	18.87	275.52	0.068	0.00	275.52	0.000
L2	154.857 - 149.857 (2)	TP18.7407x17.6204x0.1875	46.44	312.27	0.149	0.00	312.27	0.000
L3	149.857 - 144.857 (3)	TP19.8611x18.7407x0.1875	95.07	347.04	0.274	0.00	347.04	0.000
L4	144.857 - 139.857 (4)	TP20.9814x19.8611x0.1875	145.03	382.00	0.380	0.00	382.00	0.000
L5	139.857 - 134.857 (5)	TP22.1018x20.9814x0.1875	204.51	417.93	0.489	0.00	417.93	0.000
L6	134.857 - 129.857 (6)	TP23.2221x22.1018x0.1875	267.02	454.72	0.587	0.00	454.72	0.000
L7	129.857 - 125.75 (7)	TP24.1425x23.2221x0.1875	319.42	485.52	0.658	0.00	485.52	0.000
L8	125.75 - 125.5 (8)	TP24.1985x24.1425x0.1875	322.64	487.40	0.662	0.00	487.40	0.000
L9	125.5 - 118.978 (9)	TP25.66x24.1985x0.1875	387.18	508.47	0.761	0.00	508.47	0.000
L10	118.978 - 117.978 (10)	TP25.4891x24.4447x0.25	471.89	768.94	0.614	0.00	768.94	0.000
L11	117.978 - 112.978 (11)	TP26.5885x25.4891x0.4813	562.58	1574.05	0.357	0.00	1574.05	0.000
L12	112.978 - 107.978 (12)	TP27.6878x26.5885x0.475	655.69	1689.60	0.388	0.00	1689.60	0.000
L13	107.978 - 103 (13)	TP28.7822x27.6878x0.4625	750.54	1783.67	0.421	0.00	1783.67	0.000
L14	103 - 102.75 (14)	TP28.8372x28.7822x0.55	755.35	2109.78	0.358	0.00	2109.78	0.000
L15	102.75 - 100.208 (15)	TP29.3961x28.8372x0.5375	804.46	2147.70	0.375	0.00	2147.70	0.000
L16	100.208 - 95.6875 (16)	TP30.39x29.3961x0.6875	808.09	2712.29	0.298	0.00	2712.29	0.000
L17	95.6875 - 94.6875 (17)	TP30.1188x28.9372x0.7375	912.94	3035.26	0.301	0.00	3035.26	0.000
L18	94.6875 - 93.5 (18)	TP30.3819x30.1188x0.7375	936.60	3090.53	0.303	0.00	3090.53	0.000
L19	93.5 - 93.25 (19)	TP30.4372x30.3819x0.9125	941.60	3770.90	0.250	0.00	3770.90	0.000
L20	93.25 - 89.25 (20)	TP31.3234x30.4372x0.8875	1022.16	3904.07	0.262	0.00	3904.07	0.000
L21	89.25 - 89 (21)	TP31.3788x31.3234x0.9375	1027.24	4118.92	0.249	0.00	4118.92	0.000
L22	89 - 86.5 (22)	TP31.9326x31.3788x0.925	1078.27	4220.58	0.255	0.00	4220.58	0.000
L23	86.5 - 86.25 (23)	TP31.988x31.9326x0.7625	1083.39	3546.83	0.305	0.00	3546.83	0.000
L24	86.25 - 81.25 (24)	TP33.0957x31.988x0.7375	1186.93	3689.80	0.322	0.00	3689.80	0.000
L25	81.25 - 76.25 (25)	TP34.2034x33.0957x0.725	1292.26	3887.07	0.332	0.00	3887.07	0.000
L26	76.25 - 75.417 (26)	TP34.388x34.2034x0.725	1309.98	3930.50	0.333	0.00	3930.50	0.000
L27	75.417 - 75.167 (27)	TP34.4434x34.388x0.8125	1315.31	4385.22	0.300	0.00	4385.22	0.000
L28	75.167 - 70.167 (28)	TP35.5511x34.4434x0.8	1422.86	4615.31	0.308	0.00	4615.31	0.000
L29	70.167 - 65.167 (29)	TP36.6588x35.5511x0.7875	1532.24	4845.87	0.316	0.00	4845.87	0.000
L30	65.167 - 60.167 (30)	TP37.7665x36.6588x0.7625	1643.43	4999.63	0.329	0.00	4999.63	0.000
L31	60.167 - 59.5 (31)	TP37.9142x37.7665x0.7625	1658.40	5040.03	0.329	0.00	5040.03	0.000
L32	59.5 - 59.25 (32)	TP37.9696x37.9142x0.7625	1664.02	5055.23	0.329	0.00	5055.23	0.000
L33	59.25 - 54.25 (33)	TP39.0773x37.9696x0.75	1777.30	5281.06	0.337	0.00	5281.06	0.000
L34	54.25 - 53 (34)	TP39.3542x39.0773x0.7375	1805.89	5274.19	0.342	0.00	5274.19	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L35	53 - 52.75 (35)	TP39.4096x39.3542x0.7375	1811.63	5289.48	0.342	0.00	5289.48	0.000
L36	52.75 - 47.0608 (36)	TP40.67x39.4096x0.7375	1814.06	5295.95	0.343	0.00	5295.95	0.000
L37	47.0608 - 46.0608 (37)	TP40.2702x38.8081x0.7625	1966.97	5706.37	0.345	0.00	5706.37	0.000
L38	46.0608 - 41.0608 (38)	TP41.3807x40.2702x0.75	2085.29	5941.34	0.351	0.00	5941.34	0.000
L39	41.0608 - 39.33 (39)	TP41.7651x41.3807x0.75	2126.63	6055.32	0.351	0.00	6055.32	0.000
L40	39.33 - 39.08 (40)	TP41.8206x41.7651x0.825	2132.61	6642.54	0.321	0.00	6642.54	0.000
L41	39.08 - 37.75 (41)	TP42.116x41.8206x0.825	2164.53	6739.56	0.321	0.00	6739.56	0.000
L42	37.75 - 37.5 (42)	TP42.1715x42.116x0.75	2170.55	6177.02	0.351	0.00	6177.02	0.000
L43	37.5 - 32.5 (43)	TP43.282x42.1715x0.7375	2291.63	6412.73	0.357	0.00	6412.73	0.000
L44	32.5 - 29.75 (44)	TP43.8927x43.282x0.725	2358.84	6493.54	0.363	0.00	6493.54	0.000
L45	29.75 - 29.5 (45)	TP43.9482x43.8927x0.725	2364.97	6510.40	0.363	0.00	6510.40	0.000
L46	29.5 - 24.5 (46)	TP45.0587x43.9482x0.7125	2438.83	6604.22	0.369	0.00	6604.22	0.000
L47	24.5 - 21.25 (47)	TP45.7805x45.0587x0.7125	2488.35	6739.61	0.369	0.00	6739.61	0.000
L48	21.25 - 21 (48)	TP45.836x45.7805x0.725	2569.31	7078.81	0.363	0.00	7078.81	0.000
L49	21 - 20 (49)	TP46.0581x45.836x0.725	2575.56	7096.40	0.363	0.00	7096.40	0.000
L50	20 - 19.75 (50)	TP46.1137x46.0581x0.825	2600.61	8101.71	0.321	0.00	8101.71	0.000
L51	19.75 - 17 (51)	TP46.7244x46.1137x0.8125	2606.88	8005.36	0.326	0.00	8005.36	0.000
L52	17 - 16.75 (52)	TP46.7799x46.7244x0.775	2676.13	7864.24	0.340	0.00	7864.24	0.000
L53	16.75 - 11.75 (53)	TP47.8904x46.7799x0.7625	2682.45	7762.58	0.346	0.00	7762.58	0.000
L54	11.75 - 6.75 (54)	TP49.0009x47.8904x0.75	2809.59	8017.73	0.350	0.00	8017.73	0.000
L55	6.75 - 1.75 (55)	TP50.1113x49.0009x0.7375	2938.20	8269.32	0.355	0.00	8269.32	0.000
L56	1.75 - 0 (56)	TP50.5x50.1113x0.7375	3068.28	8657.17	0.354	0.00	8657.17	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	159.857 - 154.857 (1)	TP17.6204x16.5x0.1875	4.87	385.39	0.013	0.00	551.71	0.000
L2	154.857 - 149.857 (2)	TP18.7407x17.6204x0.1875	9.59	410.16	0.023	0.03	625.30	0.000
L3	149.857 - 144.857 (3)	TP19.8611x18.7407x0.1875	9.86	429.63	0.023	0.03	694.92	0.000
L4	144.857 - 139.857 (4)	TP20.9814x19.8611x0.1875	10.13	447.20	0.023	0.03	764.94	0.000
L5	139.857 - 134.857 (5)	TP22.1018x20.9814x0.1875	12.37	464.04	0.027	0.27	836.88	0.000
L6	134.857 - 129.857 (6)	TP23.2221x22.1018x0.1875	12.64	480.13	0.026	0.27	910.56	0.000
L7	129.857 - 125.75 (7)	TP24.1425x23.2221x0.1875	12.89	489.68	0.026	0.53	972.22	0.001
L8	125.75 - 125.5 (8)	TP24.1985x24.1425x0.1875	12.90	492.80	0.026	0.53	976.00	0.001
L9	125.5 -	TP25.66x24.1985x0.1875	17.70	501.80	0.035	0.53	1018.18	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L10	118.978 (9) 118.978 - 117.978 (10)	TP25.4891x24.4447x0.25	17.99	742.29	0.024	0.27	1539.76	0.000
L11	117.978 - 112.978 (11)	TP26.5885x25.4891x0.48 13	18.30	1481.38	0.012	0.27	3151.95	0.000
L12	112.978 - 107.978 (12)	TP27.6878x26.5885x0.47 5	18.90	1524.06	0.012	1.27	3383.33	0.000
L13	107.978 - 103 (13)	TP28.7822x27.6878x0.46 25	19.22	1544.32	0.012	1.27	3571.69	0.000
L14	103 - 102.75 (14)	TP28.8372x28.7822x0.55	19.23	1834.38	0.010	1.27	4224.73	0.000
L15	102.75 - 100.208 (15)	TP29.3961x28.8372x0.53 75	19.42	1828.90	0.011	1.27	4300.65	0.000
L16	100.208 - 95.6875 (16)	TP30.39x29.3961x0.6875	19.42	2330.47	0.008	1.27	5431.22	0.000
L17	95.6875 - 94.6875 (17)	TP30.1188x28.9372x0.73 75	19.89	2554.87	0.008	1.27	6077.94	0.000
L18	94.6875 - 93.5 (18)	TP30.3819x30.1188x0.73 75	19.98	2577.75	0.008	1.27	6188.62	0.000
L19	93.5 - 93.25 (19)	TP30.4372x30.3819x0.91 25	19.99	3176.55	0.006	1.27	7551.02	0.000
L20	93.25 - 89.25 (20)	TP31.3234x30.4372x0.88 75	20.30	3184.87	0.006	1.27	7817.68	0.000
L21	89.25 - 89 (21)	TP31.3788x31.3234x0.93 75	20.32	3364.89	0.006	1.27	8247.92	0.000
L22	89 - 86.5 (22)	TP31.9326x31.3788x0.92 5	20.51	3381.79	0.006	1.27	8451.50	0.000
L23	86.5 - 86.25 (23)	TP31.988x31.9326x0.762 5	20.53	2807.28	0.007	1.27	7102.34	0.000
L24	86.25 - 81.25 (24)	TP33.0957x31.988x0.737 5	20.90	2813.74	0.007	1.27	7388.63	0.000
L25	81.25 - 76.25 (25)	TP34.2034x33.0957x0.72 5	21.25	2861.80	0.007	1.27	7783.65	0.000
L26	76.25 - 75.417 (26)	TP34.388x34.2034x0.725	21.31	2877.58	0.007	1.27	7870.62	0.000
L27	75.417 - 75.167 (27)	TP34.4434x34.388x0.812 5	21.33	3221.79	0.007	1.27	8781.17	0.000
L28	75.167 - 70.167 (28)	TP35.5511x34.4434x0.8	21.70	3277.89	0.007	1.27	9241.92	0.000
L29	70.167 - 65.167 (29)	TP36.6588x35.5511x0.78 75	22.07	3330.69	0.007	1.27	9703.58	0.000
L30	65.167 - 60.167 (30)	TP37.7665x36.6588x0.76 25	22.43	3326.78	0.007	1.27	10011.50	0.000
L31	60.167 - 59.5 (31)	TP37.9142x37.7665x0.76 25	22.47	3340.07	0.007	1.27	10092.42	0.000
L32	59.5 - 59.25 (32)	TP37.9696x37.9142x0.76 25	22.49	3345.05	0.007	1.27	10122.83	0.000
L33	59.25 - 54.25 (33)	TP39.0773x37.9696x0.75	22.84	3389.27	0.007	1.27	10575.00	0.000
L34	54.25 - 53 (34)	TP39.3542x39.0773x0.73 75	22.93	3357.95	0.007	1.27	10561.25	0.000
L35	53 - 52.75 (35)	TP39.4096x39.3542x0.73 75	22.94	3362.77	0.007	1.27	10591.92	0.000
L36	52.75 - 47.0608 (36)	TP40.67x39.4096x0.7375	22.95	3364.80	0.007	1.27	10604.83	0.000
L37	47.0608 - 46.0608 (37)	TP40.2702x38.8081x0.76 25	23.51	3551.88	0.007	1.13	11426.67	0.000
L38	46.0608 - 41.0608 (38)	TP41.3807x40.2702x0.75	23.83	3592.95	0.007	1.13	11897.25	0.000
L39	41.0608 - 39.33 (39)	TP41.7651x41.3807x0.75	23.96	3626.95	0.007	1.13	12125.42	0.000
L40	39.33 - 39.08 (40)	TP41.8206x41.7651x0.82 5	23.96	3987.75	0.006	1.13	13301.33	0.000
L41	39.08 - 37.75 (41)	TP42.116x41.8206x0.825	24.06	4016.48	0.006	1.13	13495.58	0.000
L42	37.75 - 37.5 (42)	TP42.1715x42.116x0.75	24.07	3662.89	0.007	1.13	12369.17	0.000
L43	37.5 - 32.5 (43)	TP43.282x42.1715x0.737 5	24.38	3699.49	0.007	1.13	12841.17	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L44	32.5 - 29.75 (44)	TP43.8927x43.282x0.725	24.54	3690.06	0.007	1.13	13003.00	0.000
L45	29.75 - 29.5 (45)	TP43.9482x43.8927x0.725	24.54	3694.81	0.007	1.13	13036.75	0.000
L46	29.5 - 24.5 (46)	TP45.0587x43.9482x0.7125	24.77	3706.78	0.007	1.13	13224.58	0.000
L47	24.5 - 21.25 (47)	TP45.7805x45.0587x0.7125	24.89	3745.66	0.007	1.13	13495.67	0.000
L48	21.25 - 21 (48)	TP45.836x45.7805x0.725	25.02	3856.18	0.006	1.13	14174.92	0.000
L49	21 - 20 (49)	TP46.0581x45.836x0.725	25.09	3875.17	0.006	1.13	14210.17	0.000
L50	20 - 19.75 (50)	TP46.1137x46.0581x0.825	25.10	4405.34	0.006	1.13	16223.25	0.000
L51	19.75 - 17 (51)	TP46.7244x46.1137x0.8125	25.20	4369.05	0.006	1.12	16030.25	0.000
L52	17 - 16.75 (52)	TP46.7799x46.7244x0.775	25.28	4203.81	0.006	1.12	15747.75	0.000
L53	16.75 - 11.75 (53)	TP47.8904x46.7799x0.7625	25.35	4157.09	0.006	1.12	15544.17	0.000
L54	11.75 - 6.75 (54)	TP49.0009x47.8904x0.75	25.65	4188.25	0.006	1.12	16055.08	0.000
L55	6.75 - 1.75 (55)	TP50.1113x49.0009x0.7375	25.94	4216.09	0.006	1.12	16558.92	0.000
L56	1.75 - 0 (56)	TP50.5x50.1113x0.7375	26.29	4327.14	0.006	1.12	17335.50	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	159.857 - 154.857 (1)	0.004	0.068	0.000	0.013	0.000	0.072	1.000	4.8.2
L2	154.857 - 149.857 (2)	0.007	0.149	0.000	0.023	0.000	0.156	1.000	4.8.2
L3	149.857 - 144.857 (3)	0.007	0.274	0.000	0.023	0.000	0.282	1.000	4.8.2
L4	144.857 - 139.857 (4)	0.007	0.380	0.000	0.023	0.000	0.387	1.000	4.8.2
L5	139.857 - 134.857 (5)	0.009	0.489	0.000	0.027	0.000	0.499	1.000	4.8.2
L6	134.857 - 129.857 (6)	0.009	0.587	0.000	0.026	0.000	0.597	1.000	4.8.2
L7	129.857 - 125.75 (7)	0.009	0.658	0.000	0.026	0.001	0.668	1.000	4.8.2
L8	125.75 - 125.5 (8)	0.009	0.662	0.000	0.026	0.001	0.672	1.000	4.8.2
L9	125.5 - 118.978 (9)	0.012	0.761	0.000	0.035	0.001	0.775	1.000	4.8.2
L10	118.978 - 117.978 (10)	0.009	0.614	0.000	0.024	0.000	0.623	1.000	4.8.2
L11	117.978 - 112.978 (11)	0.005	0.357	0.000	0.012	0.000	0.362	1.000	4.8.2
L12	112.978 - 107.978 (12)	0.005	0.388	0.000	0.012	0.000	0.393	1.000	4.8.2
L13	107.978 - 103 (13)	0.005	0.421	0.000	0.012	0.000	0.426	1.000	4.8.2
L14	103 - 102.75 (14)	0.004	0.358	0.000	0.010	0.000	0.363	1.000	4.8.2
L15	102.75 - 100.208 (15)	0.005	0.375	0.000	0.011	0.000	0.379	1.000	4.8.2
L16	100.208 - 95.6875 (16)	0.004	0.298	0.000	0.008	0.000	0.302	1.000	4.8.2
L17	95.6875 -	0.004	0.301	0.000	0.008	0.000	0.305	1.000	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	94.6875 (17)								
L18	94.6875 - 93.5 (18)	0.004	0.303	0.000	0.008	0.000	0.307	1.000	4.8.2
L19	93.5 - 93.25 (19)	0.003	0.250	0.000	0.006	0.000	0.253	1.000	4.8.2
L20	93.25 - 89.25 (20)	0.003	0.262	0.000	0.006	0.000	0.265	1.000	4.8.2
L21	89.25 - 89 (21)	0.003	0.249	0.000	0.006	0.000	0.253	1.000	4.8.2
L22	89 - 86.5 (22)	0.003	0.255	0.000	0.006	0.000	0.259	1.000	4.8.2
L23	86.5 - 86.25 (23)	0.004	0.305	0.000	0.007	0.000	0.310	1.000	4.8.2
L24	86.25 - 81.25 (24)	0.004	0.322	0.000	0.007	0.000	0.326	1.000	4.8.2
L25	81.25 - 76.25 (25)	0.005	0.332	0.000	0.007	0.000	0.337	1.000	4.8.2
L26	76.25 - 75.417 (26)	0.005	0.333	0.000	0.007	0.000	0.338	1.000	4.8.2
L27	75.417 - 75.167 (27)	0.004	0.300	0.000	0.007	0.000	0.304	1.000	4.8.2
L28	75.167 - 70.167 (28)	0.004	0.308	0.000	0.007	0.000	0.313	1.000	4.8.2
L29	70.167 - 65.167 (29)	0.004	0.316	0.000	0.007	0.000	0.321	1.000	4.8.2
L30	65.167 - 60.167 (30)	0.005	0.329	0.000	0.007	0.000	0.334	1.000	4.8.2
L31	60.167 - 59.5 (31)	0.005	0.329	0.000	0.007	0.000	0.334	1.000	4.8.2
L32	59.5 - 59.25 (32)	0.005	0.329	0.000	0.007	0.000	0.334	1.000	4.8.2
L33	59.25 - 54.25 (33)	0.005	0.337	0.000	0.007	0.000	0.342	1.000	4.8.2
L34	54.25 - 53 (34)	0.005	0.342	0.000	0.007	0.000	0.348	1.000	4.8.2
L35	53 - 52.75 (35)	0.005	0.342	0.000	0.007	0.000	0.348	1.000	4.8.2
L36	52.75 - 47.0608 (36)	0.005	0.343	0.000	0.007	0.000	0.348	1.000	4.8.2
L37	47.0608 - 46.0608 (37)	0.006	0.345	0.000	0.007	0.000	0.350	1.000	4.8.2
L38	46.0608 - 41.0608 (38)	0.006	0.351	0.000	0.007	0.000	0.357	1.000	4.8.2
L39	41.0608 - 39.33 (39)	0.006	0.351	0.000	0.007	0.000	0.357	1.000	4.8.2
L40	39.33 - 39.08 (40)	0.005	0.321	0.000	0.006	0.000	0.326	1.000	4.8.2
L41	39.08 - 37.75 (41)	0.005	0.321	0.000	0.006	0.000	0.327	1.000	4.8.2
L42	37.75 - 37.5 (42)	0.006	0.351	0.000	0.007	0.000	0.357	1.000	4.8.2
L43	37.5 - 32.5 (43)	0.006	0.357	0.000	0.007	0.000	0.364	1.000	4.8.2
L44	32.5 - 29.75 (44)	0.006	0.363	0.000	0.007	0.000	0.370	1.000	4.8.2
L45	29.75 - 29.5 (45)	0.006	0.363	0.000	0.007	0.000	0.370	1.000	4.8.2
L46	29.5 - 24.5 (46)	0.007	0.369	0.000	0.007	0.000	0.376	1.000	4.8.2
L47	24.5 - 21.25 (47)	0.007	0.369	0.000	0.007	0.000	0.376	1.000	4.8.2
L48	21.25 - 21 (48)	0.007	0.363	0.000	0.006	0.000	0.370	1.000	4.8.2
L49	21 - 20 (49)	0.007	0.363	0.000	0.006	0.000	0.370	1.000	4.8.2
L50	20 - 19.75 (50)	0.006	0.321	0.000	0.006	0.000	0.327	1.000	4.8.2
L51	19.75 - 17 (51)	0.006	0.326	0.000	0.006	0.000	0.332	1.000	4.8.2
L52	17 - 16.75 (52)	0.006	0.340	0.000	0.006	0.000	0.347	1.000	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L53	16.75 - 11.75 (53)	0.006	0.346	0.000	0.006	0.000	0.352	1.000	4.8.2
L54	11.75 - 6.75 (54)	0.007	0.350	0.000	0.006	0.000	0.357	1.000	4.8.2
L55	6.75 - 1.75 (55)	0.007	0.355	0.000	0.006	0.000	0.362	1.000	4.8.2
L56	1.75 - 0 (56)	0.007	0.354	0.000	0.006	0.000	0.362	1.000	4.8.2

Section Capacity Table

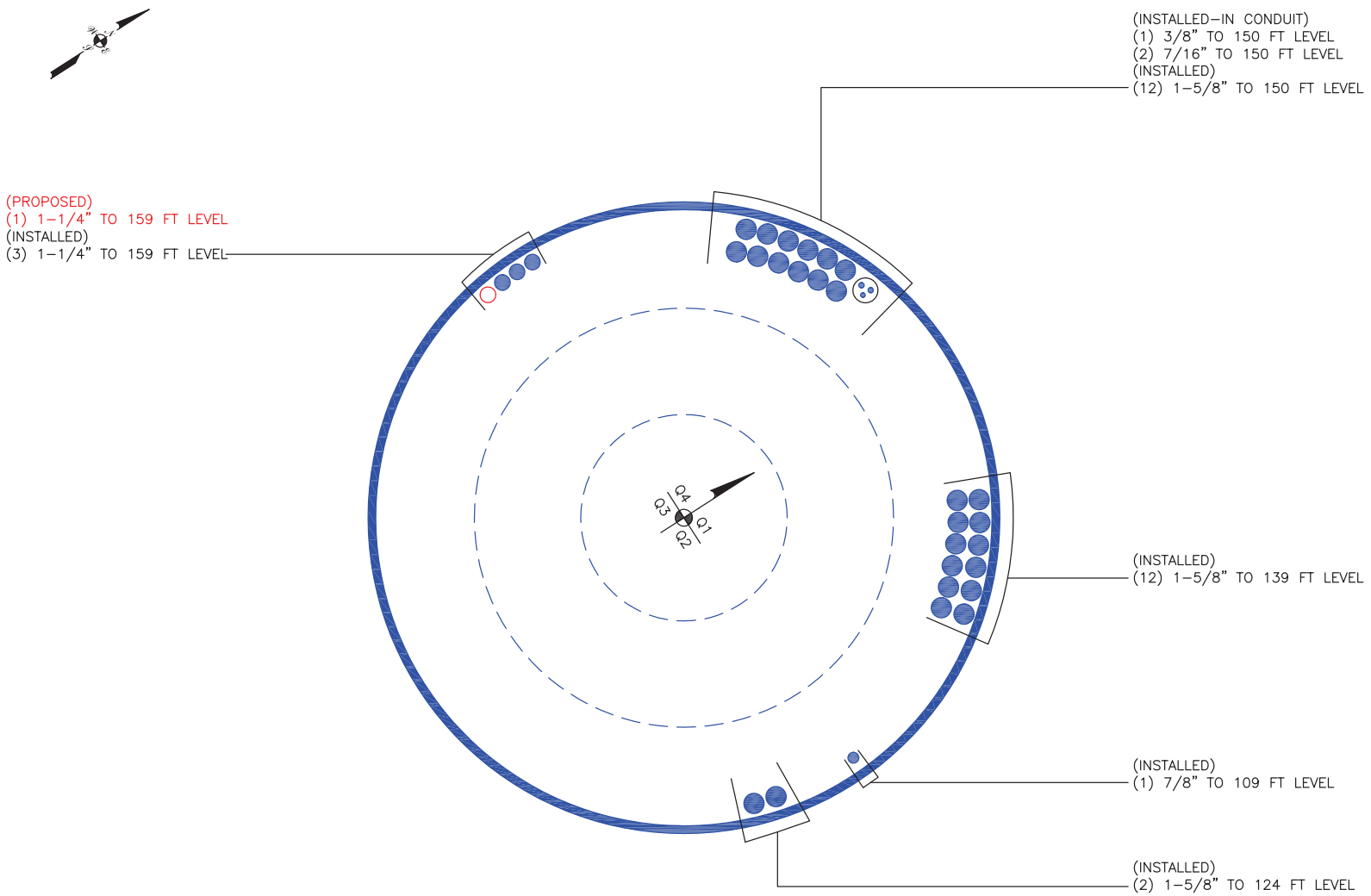
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	159.857 - 154.857	Pole	TP17.6204x16.5x0.1875	1	-2.94	770.79	7.2	Pass
L2	154.857 - 149.857	Pole	TP18.7407x17.6204x0.1875	2	-5.83	820.33	15.6	Pass
L3	149.857 - 144.857	Pole	TP19.8611x18.7407x0.1875	3	-6.15	859.25	28.2	Pass
L4	144.857 - 139.857	Pole	TP20.9814x19.8611x0.1875	4	-6.51	894.41	38.7	Pass
L5	139.857 - 134.857	Pole	TP22.1018x20.9814x0.1875	5	-8.26	928.08	49.9	Pass
L6	134.857 - 129.857	Pole	TP23.2221x22.1018x0.1875	6	-8.74	960.27	59.7	Pass
L7	129.857 - 125.75	Pole	TP24.1425x23.2221x0.1875	7	-9.15	985.60	66.8	Pass
L8	125.75 - 125.5	Pole	TP24.1985x24.1425x0.1875	8	-9.18	987.11	67.2	Pass
L9	125.5 - 118.978	Pole	TP25.66x24.1985x0.1875	9	-12.20	1003.60	77.5	Pass
L10	118.978 - 117.978	Pole	TP25.4891x24.4447x0.25	10	-13.02	1484.59	62.3	Pass
L11	117.978 - 112.978	Pole	TP26.5885x25.4891x0.4813	11	-13.99	2962.77	36.2	Pass
L12	112.978 - 107.978	Pole	TP27.6878x26.5885x0.475	12	-15.17	3048.13	39.3	Pass
L13	107.978 - 103	Pole	TP28.7822x27.6878x0.4625	13	-16.17	3088.64	42.6	Pass
L14	103 - 102.75	Pole	TP28.8372x28.7822x0.55	14	-16.24	3668.76	36.3	Pass
L15	102.75 - 100.208	Pole	TP29.3961x28.8372x0.5375	15	-16.88	3657.80	37.9	Pass
L16	100.208 - 95.6875	Pole	TP30.39x29.3961x0.6875	16	-16.94	4660.94	30.2	Pass
L17	95.6875 - 94.6875	Pole	TP30.1188x28.9372x0.7375	17	-19.53	5109.75	30.5	Pass
L18	94.6875 - 93.5	Pole	TP30.3819x30.1188x0.7375	18	-19.89	5155.50	30.7	Pass
L19	93.5 - 93.25	Pole	TP30.4372x30.3819x0.9125	19	-19.98	6353.10	25.3	Pass
L20	93.25 - 89.25	Pole	TP31.3234x30.4372x0.8875	20	-21.41	6369.73	26.5	Pass
L21	89.25 - 89	Pole	TP31.3788x31.3234x0.9375	21	-21.50	6729.78	25.3	Pass
L22	89 - 86.5	Pole	TP31.9326x31.3788x0.925	22	-22.44	6763.59	25.9	Pass
L23	86.5 - 86.25	Pole	TP31.988x31.9326x0.7625	23	-22.52	5614.57	31.0	Pass
L24	86.25 - 81.25	Pole	TP33.0957x31.988x0.7375	24	-24.15	5627.47	32.6	Pass
L25	81.25 - 76.25	Pole	TP34.2034x33.0957x0.725	25	-25.81	5723.60	33.7	Pass
L26	76.25 - 75.417	Pole	TP34.388x34.2034x0.725	26	-26.09	5755.15	33.8	Pass
L27	75.417 - 75.167	Pole	TP34.4434x34.388x0.8125	27	-26.18	6443.59	30.4	Pass
L28	75.167 - 70.167	Pole	TP35.5511x34.4434x0.8	28	-28.03	6555.78	31.3	Pass
L29	70.167 - 65.167	Pole	TP36.6588x35.5511x0.7875	29	-29.91	6661.37	32.1	Pass
L30	65.167 - 60.167	Pole	TP37.7665x36.6588x0.7625	30	-31.82	6653.57	33.4	Pass
L31	60.167 - 59.5	Pole	TP37.9142x37.7665x0.7625	31	-32.08	6680.14	33.4	Pass
L32	59.5 - 59.25	Pole	TP37.9696x37.9142x0.7625	32	-32.17	6690.10	33.4	Pass
L33	59.25 - 54.25	Pole	TP39.0773x37.9696x0.75	33	-34.10	6778.54	34.2	Pass
L34	54.25 - 53	Pole	TP39.3542x39.0773x0.7375	34	-34.59	6715.90	34.8	Pass
L35	53 - 52.75	Pole	TP39.4096x39.3542x0.7375	35	-34.70	6725.53	34.8	Pass
L36	52.75 - 47.0608	Pole	TP40.67x39.4096x0.7375	36	-34.74	6729.61	34.8	Pass
L37	47.0608 -	Pole	TP40.2702x38.8081x0.7625	37	-39.46	7103.75	35.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	46.0608							
L38	46.0608 - 41.0608	Pole	TP41.3807x40.2702x0.75	38	-41.61	7185.91	35.7	Pass
L39	41.0608 - 39.33	Pole	TP41.7651x41.3807x0.75	39	-42.36	7253.89	35.7	Pass
L40	39.33 - 39.08	Pole	TP41.8206x41.7651x0.825	40	-42.48	7975.49	32.6	Pass
L41	39.08 - 37.75	Pole	TP42.116x41.8206x0.825	41	-43.11	8032.96	32.7	Pass
L42	37.75 - 37.5	Pole	TP42.1715x42.116x0.75	42	-43.22	7325.77	35.7	Pass
L43	37.5 - 32.5	Pole	TP43.282x42.1715x0.7375	43	-45.41	7398.97	36.4	Pass
L44	32.5 - 29.75	Pole	TP43.8927x43.282x0.725	44	-46.63	7380.12	37.0	Pass
L45	29.75 - 29.5	Pole	TP43.9482x43.8927x0.725	45	-46.75	7389.62	37.0	Pass
L46	29.5 - 24.5	Pole	TP45.0587x43.9482x0.7125	46	-48.10	7376.25	37.6	Pass
L47	24.5 - 21.25	Pole	TP45.7805x45.0587x0.7125	47	-49.00	7450.89	37.6	Pass
L48	21.25 - 21	Pole	TP45.836x45.7805x0.725	48	-50.47	7702.87	37.0	Pass
L49	21 - 20	Pole	TP46.0581x45.836x0.725	49	-50.60	7712.36	37.0	Pass
L50	20 - 19.75	Pole	TP46.1137x46.0581x0.825	50	-51.10	8799.89	32.7	Pass
L51	19.75 - 17	Pole	TP46.7244x46.1137x0.8125	51	-51.24	8679.59	33.2	Pass
L52	17 - 16.75	Pole	TP46.7799x46.7244x0.775	52	-52.71	8397.46	34.7	Pass
L53	16.75 - 11.75	Pole	TP47.8904x46.7799x0.7625	53	-52.84	8274.25	35.2	Pass
L54	11.75 - 6.75	Pole	TP49.0009x47.8904x0.75	54	-55.43	8337.22	35.7	Pass
L55	6.75 - 1.75	Pole	TP50.1113x49.0009x0.7375	55	-58.01	8393.56	36.2	Pass
L56	1.75 - 0	Pole	TP50.5x50.1113x0.7375	56	-60.53	8586.68	36.2	Pass
							Summary	
						Pole (L9)	77.5	Pass
						RATING =	**77.5**	**Pass**

NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876401 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 876401

Work Order: 1418186

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	159.8575	40.88	3.75	18	16.5	25.66	0.1875	0.75	A572-65
2	122.7275	27.04	4.333333	18	24.44	30.39	0.25	1	A572-65
3	100.020833	52.96	5.583333	18	28.94	40.67	0.3125	1.25	A572-65
4	52.644166	52.644166	0	18	38.81	50.5	0.375	1.5	A572-65

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	39.33	channel	MP3-03 (1.1875")	3						E						E						E
2	37.75	75.417	channel	MP3-03 (1.1875")	3	E						E						E					
3	0	20	plate	CCI-WSFP-085125	2										E					E			
4	0	21.25	plate	CCI-WSFP-085125	1		E																
5	17	103	plate	CCI-SFP-060100	1			E															
6	20	53	plate	CCI-SFP-060100	1										E								
7	20	103	plate	CCI-SFP-060100	1															E			
8	49.208	100.208	plate	CCI-SFP-060100	1									E									
9	86.5	93.5	plate	CCI-SFP-045100	3	E						E						E					
10	0	29.75	plate	PL 5.375x1.25" (1)	3					E						E						E	
11	29.75	59.5	plate	PL 5.375x1.25" (2)	3					E						E						E	
12	59.5	89.25	plate	PL 5.375x125" (3)	3					E						E						E	
13	89.25	119	plate	PL4.375"x1.25"	3					E						E						E	
14	119	125.75	plate	PL3.125"x1.25"	3					E						E						E	
15																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_c (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
2	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
3	8.5	1.25	10.625	0.625	n/a	45.000	17.000	9.063	1.1875	A572-65
4	8.5	1.25	10.625	0.625	n/a	45.000	17.000	9.063	1.1875	A572-65
5	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
7	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
8	6	1	6	0.5	24.000	24.000	5.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
10	5.375	1.25	6.71875	0.625	n/a	30.000	15.000	5.156	1.1875	A572-65
11	5.375	1.25	6.71875	0.625	n/a	30.000	15.000	5.156	1.1875	A572-65
12	5.375	1.25	6.71875	0.625	n/a	24.000	15.000	5.156	1.1875	A572-65
13	4.375	1.25	5.46875	0.625	n/a	15.000	21.000	3.906	1.1875	A572-65
14	3.125	1.25	3.90625	0.625	n/a	15.000	24.000	2.344	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	159.8575 - 154.8575	5		18	16.500	17.620	0.1875	A572-65	1.000
2	154.8575 - 149.8575	5		18	17.620	18.741	0.1875	A572-65	1.000
3	149.8575 - 144.8575	5		18	18.741	19.861	0.1875	A572-65	1.000
4	144.8575 - 139.8575	5		18	19.861	20.981	0.1875	A572-65	1.000
5	139.8575 - 134.8575	5		18	20.981	22.102	0.1875	A572-65	1.000
6	134.8575 - 129.8575	5		18	22.102	23.222	0.1875	A572-65	1.000
7	129.8575 - 125.75	4.1075		18	23.222	24.142	0.1875	A572-65	1.000
8	125.75 - 125.5	0.25		18	24.142	24.199	0.1875	A572-65	1.000
9	125.5 - 122.7275	6.5225	3.75	18	24.199	25.660	0.1875	A572-65	1.000
10	122.7275 - 117.9775	4.75		18	24.445	25.489	0.25	A572-65	1.000
11	117.9775 - 112.9775	5		18	25.489	26.588	0.48125	A572-65	0.936
12	112.9775 - 107.9775	5		18	26.588	27.688	0.475	A572-65	0.931
13	107.9775 - 103	4.9775		18	27.688	28.782	0.4625	A572-65	0.939
14	103 - 102.75	0.25		18	28.782	28.837	0.55	A572-65	1.035
15	102.75 - 100.208	2.542		18	28.837	29.396	0.5375	A572-65	1.047
16	100.208 - 100.0208	4.5205	4.333333	18	29.396	30.390	0.6875	A572-65	0.918
17	100.0208 - 94.6875	5.333333		18	28.937	30.119	0.7375	A572-65	0.930
18	94.6875 - 93.5	1.1875		18	30.119	30.382	0.7375	A572-65	0.926
19	93.5 - 93.25	0.25		18	30.382	30.437	0.9125	A572-65	0.910
20	93.25 - 89.25	4		18	30.437	31.323	0.8875	A572-65	0.918
21	89.25 - 89	0.25		18	31.323	31.379	0.9375	A572-65	0.910
22	89 - 86.5	2.5		18	31.379	31.933	0.925	A572-65	0.912
23	86.5 - 86.25	0.25		18	31.933	31.988	0.7625	A572-65	0.921
24	86.25 - 81.25	5		18	31.988	33.096	0.7375	A572-65	0.933
25	81.25 - 76.25	5		18	33.096	34.203	0.725	A572-65	0.932
26	76.25 - 75.417	0.833		18	34.203	34.388	0.725	A572-65	0.929
27	75.417 - 75.167	0.25		18	34.388	34.443	0.8125	A572-65	0.931
28	75.167 - 70.167	5		18	34.443	35.551	0.8	A572-65	0.928
29	70.167 - 65.167	5		18	35.551	36.659	0.7875	A572-65	0.925
30	65.167 - 60.167	5		18	36.659	37.766	0.7625	A572-65	0.939
31	60.167 - 59.5	0.667		18	37.766	37.914	0.7625	A572-65	0.937
32	59.5 - 59.25	0.25		18	37.914	37.970	0.7625	A572-65	0.936
33	59.25 - 54.25	5		18	37.970	39.077	0.75	A572-65	0.936
34	54.25 - 53	1.25		18	39.077	39.354	0.7375	A572-65	0.947
35	53 - 52.75	0.25		18	39.354	39.410	0.7375	A572-65	0.947
36	52.75 - 52.64417	5.689167	5.583333	18	39.410	40.670	0.7375	A572-65	0.946
37	52.64417 - 46.06083	6.583333		18	38.808	40.270	0.7625	A572-65	0.987
38	46.06083 - 41.06083	5		18	40.270	41.381	0.75	A572-65	0.990
39	41.06083 - 39.33	1.730833		18	41.381	41.765	0.75	A572-65	0.985
40	39.33 - 39.08	0.25		18	41.765	41.821	0.825	A572-65	0.978
41	39.08 - 37.75	1.33		18	41.821	42.116	0.825	A572-65	0.974
42	37.75 - 37.5	0.25		18	42.116	42.171	0.75	A572-65	0.980
43	37.5 - 32.5	5		18	42.171	43.282	0.7375	A572-65	0.984
44	32.5 - 29.75	2.75		18	43.282	43.893	0.725	A572-65	0.994
45	29.75 - 29.5	0.25		18	43.893	43.948	0.725	A572-65	0.993
46	29.5 - 24.5	5		18	43.948	45.059	0.7125	A572-65	0.998
47	24.5 - 21.25	3.25		18	45.059	45.781	0.7125	A572-65	0.991
48	21.25 - 21	0.25		18	45.781	45.836	0.725	A572-65	1.076
49	21 - 20	1		18	45.836	46.058	0.725	A572-65	1.073
50	20 - 19.75	0.25		18	46.058	46.114	0.825	A572-65	1.022
51	19.75 - 17	2.75		18	46.114	46.724	0.8125	A572-65	1.030
52	17 - 16.75	0.25		18	46.724	46.780	0.775	A572-65	1.025
53	16.75 - 11.75	5		18	46.780	47.890	0.7625	A572-65	1.029
54	11.75 - 6.75	5		18	47.890	49.001	0.75	A572-65	1.033
55	6.75 - 1.75	5		18	49.001	50.111	0.7375	A572-65	1.038
56	1.75 - 0	1.75		18	50.111	50.500	0.7375	A572-65	1.034

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	TNX Output M_{ux} (kip-ft)	TNX Output V_u (K)
1	159.8575 - 154.8575	2.9449	18.866	4.8659
2	154.8575 - 149.8575	5.8279	46.445	9.5935
3	149.8575 - 144.8575	6.1545	95.07	9.8609
4	144.8575 - 139.8575	6.5104	145.03	10.13
5	139.8575 - 134.8575	8.2571	204.51	12.374
6	134.8575 - 129.8575	8.7386	267.02	12.642
7	129.8575 - 125.75	9.1509	319.42	12.895
8	125.75 - 125.5	9.1844	322.64	12.903
9	125.5 - 122.7275	12.196	387.18	17.695
10	122.7275 - 117.9775	13.025	471.89	17.985
11	117.9775 - 112.9775	13.992	562.58	18.305
12	112.9775 - 107.9775	15.167	655.69	18.903
13	107.9775 - 103	16.173	750.54	19.225
14	103 - 102.75	16.245	755.35	19.235
15	102.75 - 100.208	16.88	804.46	19.416
16	100.208 - 100.0208	16.94	808.09	19.423
17	100.0208 - 94.6875	19.531	912.94	19.89
18	94.6875 - 93.5	19.889	936.6	19.977
19	93.5 - 93.25	19.984	941.6	19.99
20	93.25 - 89.25	21.406	1022.2	20.3
21	89.25 - 89	21.504	1027.2	20.316
22	89 - 86.5	22.439	1078.3	20.514
23	86.5 - 86.25	22.525	1083.4	20.528
24	86.25 - 81.25	24.15	1186.9	20.895
25	81.25 - 76.25	25.805	1292.3	21.255
26	76.25 - 75.417	26.086	1310	21.313
27	75.417 - 75.167	26.183	1315.3	21.328
28	75.167 - 70.167	28.033	1422.9	21.702
29	70.167 - 65.167	29.912	1532.2	22.067
30	65.167 - 60.167	31.816	1643.4	22.426
31	60.167 - 59.5	32.076	1658.4	22.47
32	59.5 - 59.25	32.175	1664	22.485
33	59.25 - 54.25	34.104	1777.3	22.842
34	54.25 - 53	34.592	1805.9	22.93
35	53 - 52.75	34.696	1811.6	22.939
36	52.75 - 52.64417	34.739	1814.1	22.949
37	52.64417 - 46.06083	39.462	1967	23.513
38	46.06083 - 41.06083	41.609	2085.3	23.833
39	41.06083 - 39.33	42.4	2126.6	24.0
40	39.33 - 39.08	42.5	2132.6	24.0
41	39.08 - 37.75	43.1	2164.5	24.1
42	37.75 - 37.5	43.2	2170.5	24.1
43	37.5 - 32.5	45.4	2291.6	24.4
44	32.5 - 29.75	46.6	2358.8	24.5
45	29.75 - 29.5	46.8	2365.0	24.5
46	29.5 - 24.5	49.0	2488.3	24.8
47	24.5 - 21.25	50.5	2569.3	25.0
48	21.25 - 21	50.6	2575.6	25.0
49	21 - 20	51.1	2600.6	25.1
50	20 - 19.75	51.2	2606.9	25.1
51	19.75 - 17	52.7	2676.1	25.3
52	17 - 16.75	52.8	2682.4	25.3
53	16.75 - 11.75	55.4	2809.6	25.6
54	11.75 - 6.75	58.0	2938.2	25.9
55	6.75 - 1.75	60.5	3068.3	26.2
56	1.75 - 0	61.4	3114.1	26.3

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
159.86 - 154.86	Pole	TP17.62x16.5x0.1875	Pole	7.2%	Pass
154.86 - 149.86	Pole	TP18.741x17.62x0.1875	Pole	15.6%	Pass
149.86 - 144.86	Pole	TP19.861x18.741x0.1875	Pole	28.2%	Pass
144.86 - 139.86	Pole	TP20.981x19.861x0.1875	Pole	38.7%	Pass
139.86 - 134.86	Pole	TP22.102x20.981x0.1875	Pole	49.9%	Pass
134.86 - 129.86	Pole	TP23.222x22.102x0.1875	Pole	59.7%	Pass
129.86 - 125.75	Pole	TP24.142x23.222x0.1875	Pole	66.8%	Pass
125.75 - 125.5	Pole	TP24.199x24.142x0.1875	Pole	67.2%	Pass
125.5 - 122.73	Pole	TP25.66x24.199x0.1875	Pole	77.5%	Pass
122.73 - 117.98	Pole	TP25.489x24.445x0.25	Pole	62.3%	Pass
117.98 - 112.98	Pole + Reinf.	TP26.588x25.489x0.4813	Reinf. 13 Tension Rupture	64.5%	Pass
112.98 - 107.98	Pole + Reinf.	TP27.688x26.588x0.475	Reinf. 13 Tension Rupture	70.5%	Pass
107.98 - 103	Pole + Reinf.	TP28.782x27.688x0.4625	Reinf. 13 Tension Rupture	76.0%	Pass
103 - 102.75	Pole + Reinf.	TP28.837x28.782x0.55	Reinf. 13 Tension Rupture	68.5%	Pass
102.75 - 100.21	Pole + Reinf.	TP29.396x28.837x0.5375	Reinf. 13 Tension Rupture	70.9%	Pass
100.21 - 100.02	Pole + Reinf.	TP30.39x29.396x0.6875	Reinf. 13 Tension Rupture	53.5%	Pass
100.02 - 94.69	Pole + Reinf.	TP30.119x28.937x0.7375	Reinf. 13 Tension Rupture	53.6%	Pass
94.69 - 93.5	Pole + Reinf.	TP30.382x30.119x0.7375	Reinf. 13 Tension Rupture	54.3%	Pass
93.5 - 93.25	Pole + Reinf.	TP30.437x30.382x0.9125	Reinf. 13 Tension Rupture	44.7%	Pass
93.25 - 89.25	Pole + Reinf.	TP31.323x30.437x0.8875	Reinf. 13 Tension Rupture	46.7%	Pass
89.25 - 89	Pole + Reinf.	TP31.379x31.323x0.9375	Reinf. 9 Tension Rupture	43.8%	Pass
89 - 86.5	Pole + Reinf.	TP31.933x31.379x0.925	Reinf. 9 Tension Rupture	44.9%	Pass
86.5 - 86.25	Pole + Reinf.	TP31.988x31.933x0.7625	Reinf. 12 Tension Rupture	51.2%	Pass
86.25 - 81.25	Pole + Reinf.	TP33.096x31.988x0.7375	Reinf. 12 Tension Rupture	53.4%	Pass
81.25 - 76.25	Pole + Reinf.	TP34.203x33.096x0.725	Reinf. 12 Tension Rupture	55.4%	Pass
76.25 - 75.42	Pole + Reinf.	TP34.388x34.203x0.725	Reinf. 12 Tension Rupture	55.7%	Pass
75.42 - 75.17	Pole + Reinf.	TP34.443x34.388x0.8125	Reinf. 12 Tension Rupture	49.6%	Pass
75.17 - 70.17	Pole + Reinf.	TP35.551x34.443x0.8	Reinf. 12 Tension Rupture	51.4%	Pass
70.17 - 65.17	Pole + Reinf.	TP36.659x35.551x0.7875	Reinf. 12 Tension Rupture	53.0%	Pass
65.17 - 60.17	Pole + Reinf.	TP37.766x36.659x0.7625	Reinf. 12 Tension Rupture	54.5%	Pass
60.17 - 59.5	Pole + Reinf.	TP37.914x37.766x0.7625	Reinf. 12 Tension Rupture	54.7%	Pass
59.5 - 59.25	Pole + Reinf.	TP37.97x37.914x0.7625	Reinf. 11 Tension Rupture	54.7%	Pass
59.25 - 54.25	Pole + Reinf.	TP39.077x37.97x0.75	Reinf. 11 Tension Rupture	56.1%	Pass
54.25 - 53	Pole + Reinf.	TP39.354x39.077x0.7375	Reinf. 11 Tension Rupture	56.4%	Pass
53 - 52.75	Pole + Reinf.	TP39.41x39.354x0.7375	Reinf. 11 Tension Rupture	55.9%	Pass
52.75 - 52.64	Pole + Reinf.	TP40.67x39.41x0.7375	Reinf. 11 Tension Rupture	55.9%	Pass
52.64 - 46.06	Pole + Reinf.	TP40.27x38.808x0.7625	Reinf. 11 Tension Rupture	56.3%	Pass
46.06 - 41.06	Pole + Reinf.	TP41.381x40.27x0.75	Reinf. 11 Tension Rupture	57.3%	Pass
41.06 - 39.33	Pole + Reinf.	TP41.765x41.381x0.75	Reinf. 11 Tension Rupture	57.7%	Pass
39.33 - 39.08	Pole + Reinf.	TP41.821x41.765x0.825	Reinf. 11 Tension Rupture	52.6%	Pass
39.08 - 37.75	Pole + Reinf.	TP42.116x41.821x0.825	Reinf. 11 Tension Rupture	52.9%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.171x42.116x0.75	Reinf. 11 Tension Rupture	58.0%	Pass
37.5 - 32.5	Pole + Reinf.	TP43.282x42.171x0.7375	Reinf. 11 Tension Rupture	58.9%	Pass
32.5 - 29.75	Pole + Reinf.	TP43.893x43.282x0.725	Reinf. 11 Tension Rupture	59.3%	Pass
29.75 - 29.5	Pole + Reinf.	TP43.948x43.893x0.725	Reinf. 10 Tension Rupture	59.4%	Pass
29.5 - 24.5	Pole + Reinf.	TP45.059x43.948x0.7125	Reinf. 10 Tension Rupture	60.1%	Pass
24.5 - 21.25	Pole + Reinf.	TP45.781x45.059x0.7125	Reinf. 10 Tension Rupture	60.6%	Pass
21.25 - 21	Pole + Reinf.	TP45.836x45.781x0.725	Reinf. 7 Tension Rupture	57.9%	Pass
21 - 20	Pole + Reinf.	TP46.058x45.836x0.725	Reinf. 7 Tension Rupture	58.0%	Pass
20 - 19.75	Pole + Reinf.	TP46.114x46.058x0.825	Reinf. 10 Tension Rupture	54.0%	Pass
19.75 - 17	Pole + Reinf.	TP46.724x46.114x0.8125	Reinf. 10 Tension Rupture	54.4%	Pass
17 - 16.75	Pole + Reinf.	TP46.78x46.724x0.775	Reinf. 10 Tension Rupture	59.5%	Pass
16.75 - 11.75	Pole + Reinf.	TP47.89x46.78x0.7625	Reinf. 10 Tension Rupture	60.1%	Pass
11.75 - 6.75	Pole + Reinf.	TP49.001x47.89x0.75	Reinf. 10 Tension Rupture	60.7%	Pass
6.75 - 1.75	Pole + Reinf.	TP50.111x49.001x0.7375	Reinf. 10 Tension Rupture	61.2%	Pass
1.75 - 0	Pole + Reinf.	TP50.5x50.111x0.7375	Reinf. 10 Tension Rupture	61.4%	Pass
				Summary	
			Pole	77.5%	Pass
			Reinforcement	76.0%	Pass
			Overall	77.5%	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	R13	R14
159.86 - 154.86	398	n/a	398	10.37	n/a	10.37	7.2%														
154.86 - 149.86	480	n/a	480	11.04	n/a	11.04	15.6%														
149.86 - 144.86	572	n/a	572	11.71	n/a	11.71	28.2%														
144.86 - 139.86	676	n/a	676	12.37	n/a	12.37	38.7%														
139.86 - 134.86	791	n/a	791	13.04	n/a	13.04	49.9%														
134.86 - 129.86	919	n/a	919	13.71	n/a	13.71	59.7%														
129.86 - 125.75	1033	n/a	1033	14.26	n/a	14.26	66.8%														
125.75 - 125.5	1040	n/a	1040	14.29	n/a	14.29	67.2%														
125.5 - 122.73	1123	n/a	1123	14.66	n/a	14.66	77.5%														
122.73 - 117.98	1611	n/a	1611	20.03	n/a	20.03	62.3%														
117.98 - 112.98	1831	1603	3435	20.90	16.41	37.31	36.3%													64.5%	
112.98 - 107.98	2070	1731	3802	21.77	16.41	38.18	40.2%													70.5%	
107.98 - 103	2328	1864	4192	22.64	16.41	39.05	43.9%													76.0%	
103 - 102.75	2398	2615	5013	22.68	28.41	51.09	41.4%					46.6%		46.6%						68.5%	
102.75 - 100.21	2541	2713	5254	23.13	28.41	51.53	43.1%					48.4%		48.4%						70.9%	
100.21 - 100.02	2492	4058	6549	23.16	34.41	57.57	31.1%					47.9%		47.9%	47.9%					53.5%	
100.02 - 94.69	3317	4239	7556	29.56	34.41	63.97	29.9%					48.0%		48.0%	48.0%					53.6%	
94.69 - 93.5	3406	4310	7715	29.82	34.41	64.23	30.3%					48.6%		48.6%	48.6%					54.3%	
93.5 - 93.25	3425	6004	9429	29.88	47.91	77.79	25.0%					40.1%		40.1%	40.1%	43.9%				44.7%	
93.25 - 89.25	3736	6344	10080	30.76	47.91	78.66	26.1%					41.9%		41.9%	41.9%	45.8%				46.7%	
89.25 - 89	3756	6876	10632	30.81	51.66	82.47	24.9%					40.0%		40.0%	40.0%	43.8%			43.2%		
89 - 86.5	3960	7110	11070	31.36	51.66	83.02	25.7%					41.0%		41.0%	41.0%	44.9%			42.6%		
86.5 - 86.25	3981	5285	9266	31.42	38.16	69.57	30.8%					49.2%		49.2%	49.2%				51.2%		
86.25 - 81.25	4414	5641	10055	32.52	38.16	70.67	32.5%					51.4%		51.4%	51.4%				53.4%		
81.25 - 76.25	4876	6009	10885	33.61	38.16	71.77	34.1%					53.4%		53.4%	53.4%				55.4%		
76.25 - 75.42	4956	6071	11027	33.80	38.16	71.95	34.3%					53.7%		53.7%	53.7%				55.7%		
75.42 - 75.17	4981	7482	12463	33.85	46.92	80.77	30.6%		45.9%			47.8%		47.8%	47.8%				49.6%		
75.17 - 70.17	5481	7952	13433	34.95	46.92	81.87	32.0%		47.5%			49.5%		49.5%	49.5%				51.4%		
70.17 - 65.17	6015	8436	14450	36.05	46.92	82.97	33.3%		49.0%			51.0%		51.0%	51.0%				53.0%		
65.17 - 60.17	6582	8934	15515	37.15	46.92	84.06	34.6%		50.4%			52.5%		52.5%	52.5%				54.5%		
60.17 - 59.5	6660	9001	15661	37.29	46.92	84.21	34.8%		50.6%			52.7%		52.7%	52.7%				54.7%		
59.5 - 59.25	6689	9027	15716	37.35	46.92	84.27	34.9%		50.6%			52.7%		52.7%	52.7%			54.7%			
59.25 - 54.25	7297	9542	16839	38.45	46.92	85.36	36.1%		51.9%			54.1%		54.1%	54.1%			56.1%			
54.25 - 53	7455	9673	17128	38.72	46.92	85.64	36.4%		52.2%			54.4%		54.4%	54.4%			56.4%			
53 - 52.75	7488	9702	17190	38.78	46.92	85.69	36.9%		52.3%			54.5%		54.5%	54.5%			56.5%			
52.75 - 52.64	7502	9713	17215	38.80	46.92	85.72	36.9%		52.3%			54.5%		54.5%	54.5%			56.5%			
52.64 - 46.06	9548	9354	18902	47.48	46.92	94.40	35.5%		53.9%			51.5%	52.1%	53.4%				56.3%			
46.06 - 41.06	10367	9859	20226	48.81	46.92	95.72	36.4%		54.8%			52.5%	53.1%	54.4%				57.3%			
41.06 - 39.33	10661	10037	20699	49.26	46.92	96.18	36.7%		55.1%			52.8%	53.4%	54.7%				57.7%			
39.33 - 39.08	10704	12091	22795	49.33	55.68	105.01	33.4%	49.7%	50.2%			48.4%	48.9%	50.0%				52.6%			
39.08 - 37.75	10935	12257	23192	49.68	55.68	105.36	33.7%	49.9%	50.4%			48.6%	49.1%	50.2%				52.9%			
37.75 - 37.5	10979	10227	21206	49.75	46.92	96.66	37.0%	54.9%				53.1%	53.7%	55.0%				58.0%			
37.5 - 32.5	11877	10755	22632	51.07	46.92	97.98	37.9%	55.7%				54.0%	54.6%	55.9%				58.9%			
32.5 - 29.75	12391	11051	23442	51.80	46.92	98.71	38.3%	56.1%				54.4%	55.0%	56.3%				59.3%			
29.75 - 29.5	12439	11078	23517	51.86	46.92	98.78	38.4%	56.1%				54.4%	55.0%	56.3%			59.4%				
29.5 - 24.5	13414	11627	25042	53.18	46.92	100.10	39.2%	56.8%				55.2%	55.8%	57.1%			60.1%				
24.5 - 21.25	14075	11992	26066	54.04	46.92	100.96	39.7%	57.3%				55.6%	56.2%	57.5%			60.6%				
21.25 - 21	14123	12518	26642	54.11	57.54	111.65	38.6%	56.6%			39.6%	44.2%	53.0%	57.9%			56.8%				
21 - 20	14331	12636	26967	54.37	57.54	111.91	38.7%	56.7%			39.7%	44.3%	53.1%	58.0%			57.0%				
20 - 19.75	14402	16056	30458	54.44	66.79	121.23	35.8%	52.7%		47.9%	38.6%	43.6%					54.0%				
19.75 - 17	14987	16469	31456	55.17	66.79	121.96	36.2%	53.1%		48.2%	38.9%	44.0%					54.4%				
17 - 16.75	15128	15010	30138	55.23	60.79	116.02	39.1%	56.0%		48.5%	44.6%						59.5%				
16.75 - 11.75	16237	15708	31945	56.55	60.79	117.34	39.8%	56.6%		49.1%	45.2%						60.1%				
11.75 - 6.75	17399	16422	33821	57.87	60.79	118.67	40.6%	57.2%		49.7%	45.7%						60.7%				
6.75 - 1.75	18616	17152	35768	59.20	60.79	119.99	41.3%	57.7%		50.2%	46.2%						61.2%				
1.75 - 0	19055	17411	36466	59.66	60.79	120.45	41.5%	57.9%		50.3%	46.4%						61.4%				

Note: Section capacity checked in 5 degree increments.

ANCHOR ROD ANALYSIS

Anchor Rod Information

TIA Code	G
eta Factor	0.5
Number of Bolt Circles	3
Base Plate Type	Circular

Reactions

Moment	3114	kip-ft
Axial	61	kip
Shear	26	kip

	1st BC	2nd BC	3rd BC	
Anchor Rod Quantity	14	3	9	
Anchor Rod Diameter	2.25	2	2.25	in
Anchor Rod Material	#18J	A193 B7	#18J	ksi
Bolt Circle Diameter	59	62.5	71.1	in
Base Plate or Bracketed Connection?				

Bolt #	Orientation of Anchor Bolts (Degrees)		
1	0.0	15	5
2	25.7	135	45
3	51.4	255	75
4	77.1		105
5	102.9		149
6	128.6		195
7	154.3		239
8	180.0		270
9	205.7		310
10	231.4		
11	257.1		
12	282.9		
13	308.6		
14	334.3		

Anchor Rod Results

	1st BC	2nd BC	3rd BC	
Moment on Bolt Group	1554.9	295.4	1263.7	kip-ft
Axial on Bolt Group	61.0	0.0	0.0	kip
Shear on Bolt Group	26.0	0.0	0.0	kip
Max Tension per Anchor Rod	86.6	55.9	101.6	kip
Max Compression per Anchor Rod	85.2	71.8	108.0	kip
Anchor Rod Capacity	259.8	249.8	259.8	kip
Stress Ratio	**35.1%**	**28.7%**	**41.6%**	

(it is assumed that all Axial and Shear loads will go to the original anchor rods)

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#:	*876401*
Site Name:	*TOWN OF PLAINFIELD/SSUSA*
App #:	*393646 Rev.0*
Pole Manufacturer:	*Other*

Reactions		
Mu:	1554	ft-kips
Axial, Pu:	61	kips
Shear, Vu:	26	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	14	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	59	in

Plate Data		
Diam:	65	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.45	in

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

Pole Data		
Diam:	50.5	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Base Plate Results	Flexural Check	
Base Plate Stress:	27.8 ksi	
Allowable Plate Stress:	54.0 ksi	
Base Plate Stress Ratio:	51.4% **Pass**	

Non-Rigid
AISC LRFD
φ*Fy
Y.L. Length: 30.51

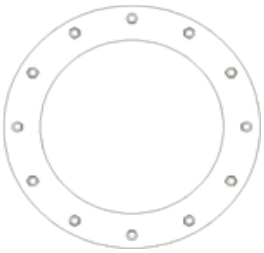
n/a

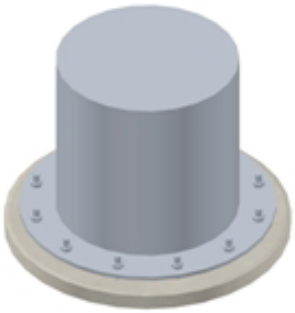
Stiffener Results

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

Additional Anchor Rods: Division of Forces

Base Reactions from tnxTower:

$Moment := 295.4 \cdot kip \cdot ft$

$Axial := 0 \cdot kip$

$Shear := 0 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 0$ $D_{existing} := 0$

$BC_{existing} := 0$ $A_{existing} := 0$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 0 \cdot in^4$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 3$ $D_{new} := 2 \cdot in$ $Fu_{rod} := 125ksi$

$BC_{new} := 62.5 \cdot in$ $A_{new} := (2.5in)^2$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 9155.27 \cdot in^4$$

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the full capacity of the additional anchors.

Bracket Design Load (Anchor Tensile Capacity):

$\phi := 0.8$

$\phi P_n := 71.8kip$

Tube Design (Square HSS)

Member Size: HSS 4" x 4" x 1/2"

Member Properties (AISC 13th Ed., Table 1-12):

Outside Length: $OD_{HSS} := 4 \cdot in$

Area: $A_{HSS} := 6.02 \cdot in^2$ $A_{e\_HSS} := 0.75 \cdot A_{HSS} = 4.51 \cdot in^2$

Thickness: $t_{HSS} := 0.5 \cdot in$

Yield Strength: $F_{y\_HSS} := 46 \cdot ksi$ $F_{u\_HSS} := 58 \cdot ksi$

Length: $L_{HSS} := 12 \cdot in$

Moment of Inertia: $I_{HSS} := 11.9 \cdot in^4$

Radius of Gyration: $r_{HSS} := 1.41 \cdot in$

Inside Dimension: $ID_{HSS} := OD_{HSS} - 2 \cdot t_{HSS} = 3 \cdot in$

Bearing Check (AISC 13th Ed., Equation J7-1):

$\phi_b := .75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pb}$

$$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y\_HSS}} = 1.16 \cdot in^2$$

$$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{HSS} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 13th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{K \cdot L_{HSS}}{r_{HSS}}\right)^2} = 3951.6 \cdot ksi$$

$$\frac{K \cdot L_{HSS}}{r_{HSS}} = 8.51 \quad < \quad 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{y\_HSS}}} = 118.26$$

$$\therefore \quad F_{cr} := 0.658^{\frac{F_{y\_HSS}}{F_e}} \cdot F_{y\_HSS} = 45.78 \cdot ksi$$

(AISC 13th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{y\_HSS} \cdot A_{HSS} & \text{if } \frac{K \cdot L_{HSS}}{r_{HSS}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{HSS} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 249.23 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$$\frac{\phi P_n}{\phi P_{n\_comp}} = 28.81 \cdot \%$$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 4 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 30in$

$L_{plate2} := 18in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check (AISC 13th Ed., Equation J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 22.5 \cdot in^2$

$A_{nv} := A_g = 22.5 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 877.5 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 8.18 \cdot \%$

Shear Rupture

$\phi_v := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 810 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 8.86 \cdot \%$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 60ksi$ $Fu_{base} := 75ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 30 \cdot in$

$Notch := 0.75 \cdot in$

Gap between Base Plate and HSS: $Gap := 0in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 6$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{3}{8}$

Weld Material Grade: $F_{EXX} := 80ksi$

$$Check := \begin{cases} \text{"OK"} & \text{if Capacity} < 100\% \\ \text{"INSUFFICIENT"} & \text{otherwise} \end{cases}$$

Check = "OK"

Gusset Plate to HSS Weld Design
(AISC 13th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 8$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{1}{2}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 2.5 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.14$$

$C_1 := 1.00$

$Coeff_1 := 3.71$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 2$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{1}{8}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \wedge D_1 \leq Max_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld} = \text{"OK"}$

$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 400.68 \cdot kip$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld1} = \text{"OK"}$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 17.92 \cdot \%$$

Gusset Plate to Pole Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_1 := w_{plate} + OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 6.5 \cdot in$$

$$\phi_v := 0.90$$

$$M_1 := \phi P_n \cdot ecc_1 = 466.7 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 187.5 \cdot in^3$$

$$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 3.11 \cdot kip$$

$$\phi F_v := \phi_v \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 26.32 \cdot kip$$

$$\frac{f_v}{\phi F_v} = 11.82 \cdot \%$$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

Gusset Plate to HSS Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 2.5 \cdot in$$

$$\phi_v := 0.90$$

$$M_2 := \phi P_n \cdot ecc_2 = 179.5 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 67.5 \cdot in^3$$

$$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 3.32 \cdot kip$$

$$\phi F_v := \phi_v \cdot 0.6 \cdot F_{y\_HSS} \cdot 2 \cdot t_{HSS} \cdot 1in = 24.84 \cdot kip$$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = \text{"OK"}$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 17.5 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f'_c := 4000psi$	
Transverse Reinforcement Index:	$k_{rt} := 0$	k_{rt} can be taken as 0 for design per ACI 318
Rebar Location Factor:	$\psi_t := 1$	
Rebar Coating Factor:	$\psi_e := 1$	1.0 non coated rebar
Rebar Size Factor:	$\psi_s := 1$	0.8 for No. 6 and smaller bars, 1.0 for No. 7 and larger bars
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	1.0 for normal weight concrete
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	$d_b := \frac{d_s}{8}in = 1.38 \cdot in$
Tie Size:	$Tie := 5$	
Number of Vertical Rebar:	$n := 18$	

Development Length (ACI 318-08 Chapter 12):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.38 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 12.806 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8}in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 5.31 \cdot in$$

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{rt}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 39.13 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 6.403\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 5.437\cdot in$$

$$G := \sqrt{A^2 + B^2} = 8.4\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 3.98\,ft$$

Epoxy Development Length:

Bond Strength:

$$\phi_{bond} := 0.55$$

$$S_b = 1450\,psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 14.33\cdot in$$

Required Embedment Length:

$$L_{min} := \max\left(L_{be} + 6in, l'_d + 0.25\cdot L_{be}\right) = 4.28\,ft$$

$$L_{min} := ceil\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 4.5\,ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \le L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

$$Pullout := \frac{\phi_p\cdot Fu_{rod}\cdot A_{new}}{1.6} = 366\cdot kip$$

BU: 876401
WO: 1418186

Done By: Neeraj
Checked By: Mahesh
Date: 06-15-2017

Additional Anchor Rods: Division of Forces

Base Reactions from tnxTower:

$Moment := 1263.7 \cdot kip \cdot ft$

$Axial := 0 \cdot kip$

$Shear := 0 \cdot kip$

Existing Anchor Rod Group Moment of Inertia:

$N_{existing} := 0$

$D_{existing} := 0$

$BC_{existing} := 0 \cdot in$

$A_{existing} := 0$

$$I_{existing} := \left(\frac{N_{existing}}{8}\right) \cdot \left(BC_{existing}^{2}\right) \cdot \left(A_{existing}\right) = 0 \cdot in^{4}$$

Additonal (New) Anchor Rod Group Moment of Inertia:

$N_{new} := 9$

$D_{new} := 2.25 \cdot in$

$Fu_{rod} := 100ksi$

$BC_{new} := 71.1 \cdot in$

$A_{new} := (3.25in)^{2}$

$$I_{new} := \left(\frac{N_{new}}{8}\right) \cdot \left(BC_{new}^{2}\right) \cdot \left(A_{new}\right) = 60070.11 \cdot in^{4}$$

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the full capacity of the additional anchors.

Bracket Design Load (Anchor Tensile Capacity):

$\phi := 0.8$

$\phi P_n := 108.0kip$

Tube Design (Square HSS)

Member Size: HSS 5" x 5" x 1/2"

Member Properties (AISC 13th Ed., Table 1-12):

Outside Length: $OD_{HSS} := 5 \cdot in$

Area: $A_{HSS} := 7.88 \cdot in^2$ $A_{e\_HSS} := 0.75 \cdot A_{HSS} = 5.91 \cdot in^2$

Thickness: $t_{HSS} := 0.5 \cdot in$

Yield Strength: $F_{y\_HSS} := 46 \cdot ksi$ $F_{u\_HSS} := 58 \cdot ksi$

Length: $L_{HSS} := 45 \cdot in$

Moment of Inertia: $I_{HSS} := 26 \cdot in^4$

Radius of Gyration: $r_{HSS} := 1.82 \cdot in$

Inside Dimension: $ID_{HSS} := OD_{HSS} - 2 \cdot t_{HSS} = 4 \cdot in$

Bearing Check (AISC 13th Ed., Equation J7-1):

$\phi_b := .75$

$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{ypipe} \cdot A_{pb}$

$$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y\_HSS}} = 1.74 \cdot in^2$$

$$Check_{bear} := \begin{cases} \text{"OK"} & \text{if } A_{HSS} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{bear} = \text{"OK"}$

Compression Check
(AISC 13th Ed., Eqs. E3-1 to E3-4):

$\phi_c := 0.9$

$K := 1$

$\phi P_{n\_comp} = \phi_c \cdot F_{cr} \cdot A_g$

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{K \cdot L_{HSS}}{r_{HSS}}\right)^2} = 468.18 \cdot ksi$$

$$\frac{K \cdot L_{HSS}}{r_{HSS}} = 24.73 < 4.71 \cdot \sqrt{\frac{29000 \cdot ksi}{F_{y\_HSS}}} = 118.26$$

$$\therefore \quad F_{cr} := 0.658^{\frac{F_{y\_HSS}}{F_e}} \cdot F_{y\_HSS} = 44.15 \cdot ksi$$

(AISC 13th Ed., Equation J4-6):

$$\phi P_{n\_comp} := \begin{cases} \phi_c \cdot F_{y\_HSS} \cdot A_{HSS} & \text{if } \frac{K \cdot L_{HSS}}{r_{HSS}} \le 25 \\ \phi_c \cdot F_{cr} \cdot A_{HSS} & \text{otherwise} \end{cases}$$

$\phi P_{n\_comp} = 326.23 \cdot kip$

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n\_comp} \ge \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$$\frac{\phi P_n}{\phi P_{n\_comp}} = 33.11 \cdot \%$$

Gusset Plate Design

Gusset Plate width: $w_{plate} := 8.25 \cdot in$

Gusset Plate thickness: $t_{plate} := 1.25in$

$L_{plate1} := 44in$

$L_{plate2} := 36in$

Gusset Plate Strength: $Fy_{plate} := 65ksi$

$Fu_{plate} := 80ksi$

Pole thickness: $t_{pole} := 0.375in$

Shear Check (AISC 13th Ed., Equation J4-3 and J4-4):

$A_g := t_{plate} \cdot L_{plate2} = 45 \cdot in^2$

$A_{nv} := A_g = 45 \cdot in^2$

Shear Yielding

$\phi_v := 1$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot Fy_{plate} = 1755 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 6.15 \cdot \%$

Shear Rupture

$\phi_w := 0.75$

$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot Fu_{plate} = 1620 \cdot kip$

$Check_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$

$Check_{shear} = \text{"OK"}$

$\frac{\phi P_n}{\phi V_{plate}} = 6.67 \cdot \%$

Gusset Plate to Pole and Base Plate Weld Design (Horizontal and Vertical Weld)

Gusset plate thickness: $t_{plate} = 1.25 \cdot in$

Pole Grade: $Fy_{pole} := 65ksi$ $Fu_{pole} := 80ksi$

Base Plate Grade: $Fy_{base} := 60ksi$ $Fu_{base} := 75ksi$

Gussett Plate Grade: $Fy_{plate} = 65 \cdot ksi$ $Fu_{plate} = 80 \cdot ksi$

Height of vertical weld from base plate: $H := L_{plate1} = 44 \cdot in$

$Notch := 0 \cdot in$

Gap between Base Plate and HSS: $Gap := 0.25in$

Vertical fillet weld size to pole: (in sixteenths of an inch) $D_{vpole} := 5$

$weldsize_{pole} := \frac{D_{vpole}}{16} = \frac{5}{16}$

Weld Material Grade: $F_{EXX} := 80ksi$

$$Check := \begin{cases} \text{"OK"} & \text{if Capacity} < 100\% \\ \text{"INSUFFICIENT"} & \text{otherwise} \end{cases}$$

Check = "OK"

Gusset Plate to HSS Weld Design
(AISC 13th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80ksi$

Weld Size (in sixteenths of an inch): $D_1 := 5$ $\quad weldsize_1 := \frac{D_1}{16} = \frac{5}{16}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 3.38 \cdot in$$

Load not in plane with weld group: $k := 0$

$$a := \frac{ecc_2}{L_{plate2}} = 0.09$$

$C_1 := 1.00$

$Coeff_1 := 3.71$

$\phi_w := 0.75$

$$D_{min1} := ceil\left(\frac{\phi P_n \cdot in}{\phi_w \cdot Coeff_1\, C_1 \cdot L_{plate2} \cdot kip}\right) = 2$$

$$minweldsize := \frac{D_{min1}}{16} = \frac{1}{8}$$

$$Check_{weld} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{min1} \wedge D_1 \geq Min_{weldsize} \wedge D_1 \leq Max_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld} = \text{"OK"}$

$\phi Rn_{weld1} := \phi_w \cdot Coeff_1\, ksi \cdot in \cdot C_1 \cdot D_1 \cdot L_{plate2} = 500.85 \cdot kip$

$$Check_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{weld1} = \text{"OK"}$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 21.56 \cdot \%$$

Gusset Plate to Pole Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_1 := w_{plate} + OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 11.63 \cdot in$$

$$\phi_v := 0.90$$

$$M_1 := \phi P_n \cdot ecc_1 = 1255.5 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 403.33 \cdot in^3$$

$$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 3.89 \cdot kip$$

$$\phi F_v := \phi_v \cdot 0.6 \cdot Fy_{pole} \cdot 2 \cdot t_{pole} \cdot 1in = 26.32 \cdot kip$$

$$\frac{f_v}{\phi F_v} = 14.78 \cdot \%$$

$$Check_{PS1} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS1} = \text{"OK"}$

Gusset Plate to HSS Punching Shear Check (max per unit length):

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := OD_{HSS} - t_{HSS} - \frac{D_{new}}{2} = 3.38 \cdot in$$

$$\phi_v := 0.90$$

$$M_2 := \phi P_n \cdot ecc_2 = 364.5 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 270 \cdot in^3$$

$$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 1.69 \cdot kip$$

$$\phi F_v := \phi_v \cdot 0.6 \cdot F_{y\_HSS} \cdot 2 \cdot t_{HSS} \cdot 1in = 24.84 \cdot kip$$

$$Check_{PS2} := \begin{cases} \text{"OK"} & \text{if } \phi F_v \geq f_v \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{PS2} = \text{"OK"}$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 18 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f'_c := 4000psi$	
Transverse Reinforcement Index:	$k_{rt} := 0$	k_{rt} can be taken as 0 for design per ACI 318
Rebar Location Factor:	$\psi_t := 1$	
Rebar Coating Factor:	$\psi_e := 1$	1.0 non coated rebar
Rebar Size Factor:	$\psi_s := 1$	0.8 for No. 6 and smaller bars, 1.0 for No. 7 and larger bars
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	1.0 for normal weight concrete
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	$d_b := \frac{d_s}{8} in = 1.38 \cdot in$
Tie Size:	$Tie := 5$	
Number of Vertical Rebar:	$n := 18$	

Development Length (ACI 318-08 Chapter 12):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.38 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 12.806 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 5.31 \cdot in$$

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f'_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{rt}}{d_b}\right), 2.5\right]}\right] \cdot d_b = 39.13 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2}\cdot S_{rebar} = 6.403\cdot in$$

$$B := \frac{BC_{rebar}}{2} - \frac{BC_{new}}{2} = 1.137\cdot in$$

$$G := \sqrt{A^2 + B^2} = 6.503\cdot in$$

$$l'_d := l_d + \frac{G}{1.5} + 3in = 3.87\,ft$$

Epoxy Development Length:

Bond Strength:

$$\phi_{bond} := 0.55$$

$$S_b = 1325\,psi$$

$$L_{be} := \frac{\phi P_n}{\pi\cdot D_{new}\cdot S_b\cdot \phi_{bond}} = 20.97\cdot in$$

Required Embedment Length:

$$L_{min} := \max\left(L_{be} + 6in, l'_d + 0.25\cdot L_{be}\right) = 4.31\,ft$$

$$L_{min} := ceil\left(\frac{L_{min}}{0.5ft}\right)\cdot 0.5ft$$

$$L_{min} = 4.5\,ft$$

$$Check := \begin{cases} \text{"OK"} & \text{if } L_{min} \le L_{em} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

$$Pullout := \frac{\phi_p\cdot Fu_{rod}\cdot A_{new}}{1.6} = 495\cdot kip$$

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 06-15-2017

BU:	876401
Site Name:	TOWN OF PLAINFIELD/SSUSA
App Number:	393646 Rev.0
Work Order:	1418186

Monopole Drilled Pier

Input

Criteria

TIA Revision:	G
ACI 318 Revision:	2011
Seismic Category:	B

Forces

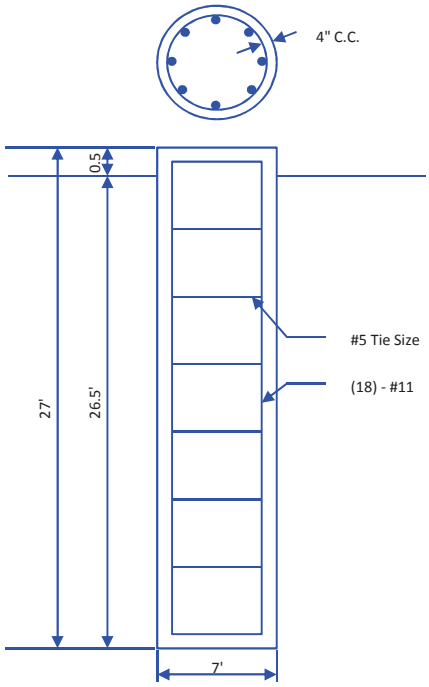
Compression	61	kips
Shear	26	kips
Moment	3114	k-ft
Swelling Force	0	kips

Foundation Dimensions

Pier Diameter:	7	ft
Ext. above grade:	0.5	ft
Depth below grade:	26.5	ft

Material Properties

Number of Rebar:	18	
Rebar Size:	11	
Tie Size	5	
Rebar tensile strength:	60	ksi
Concrete Strength:	4000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	4	in



Soil Profile: A

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	115	0	28	0	0	0	
2	2.5	3.5	6	115		32			0	
3	4	6	10	120		38			0	
4	16.5	10	26.5	125		43			16	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	6.29	ft
Max Moment, Mu:	3294.88	k-ft
Soil Safety Factor:	5.87	
Safety Factor Req'd:	1.33	
RATING:	22.7%	

Soil Axial Capacity

Skin Friction (k):	372.38	kips
End Bearing (k):	461.81	kips
Comp. Capacity (k), ϕCn:	834.19	kips
Comp. (k), Cu:	61.00	kips
RATING:	7.3%	

Concrete/Steel Check

Mu (from soil analysis)	3294.88	k-ft
ϕMn	4659.09	k-ft
RATING:	70.7%	

rho provided	0.51	
rho required	0.33	OK

Overall Foundation Rating: 70.7%

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: CT54XC702

Town of Plainfield / SSUSA
47-51 Unity Street
Plainfield, CT 06374

July 21, 2017

EBI Project Number: 6217003212

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.73 %

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

EBI Consulting
environmental | engineering | due diligence

July 21, 2017

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

Emissions Analysis for Site: **CT54XC702 – Town of Plainfield / SSUSA**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **47-51 Unity Street, Plainfield, 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 public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 **47-51 Unity Street, Plainfield, 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, 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 20 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 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 **RFS APXVSPP18-C-A20 and RFS APXVTM14-C-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. 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, 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 are **159 feet** above ground level (AGL) for **Sector A**, **159 feet** above ground level (AGL) for **Sector B** and **159 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 public threshold limits.

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**159 feet**	Height (AGL):	**159 feet**	Height (AGL):	**159 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):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	**1.31 %**	Antenna B1 MPE%	**1.31 %**	Antenna C1 MPE%	**1.31 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**159 feet**	Height (AGL):	**159 feet**	Height (AGL):	**159 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%	**0.96 %**	Antenna B2 MPE%	**0.96 %**	Antenna C2 MPE%	**0.96 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.27 %**
MetroPCS	0.49 %
AT&T	1.71 %
Town	0.28 %
T-Mobile	2.53 %
Verizon Wireless	3.45 %
Site Total MPE %:	**10.73 %**

SPRINT Sector A Total:	2.27 %
SPRINT Sector B Total:	2.27 %
SPRINT Sector C Total:	2.27 %
Site Total:	10.73 %

SPRINT _ Max Values per Frequency Band / Technology	# 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	437.55	159	0.67	850 MHz	567	0.12%
Sprint 850 MHz LTE	2	437.55	159	1.34	850 MHz	567	0.24%
Sprint 1900 MHz (PCS) CDMA	5	622.47	159	4.78	1900 MHz (PCS)	1000	0.48%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	159	4.78	1900 MHz (PCS)	1000	0.48%
Sprint 2500 MHz (BRS) LTE	8	778.09	159	9.56	2500 MHz (BRS)	1000	0.96%
						Total:*	**2.27%**

*NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.27 %
Sector B:	2.27 %
Sector C:	2.27 %
SPRINT Maximum Total (per sector):	2.27 %
Site Total:	10.73 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.73 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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