



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

June 2, 2016

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

RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 876334
AT&T Site ID: CT5250
625 Spring Street, Southington, CT 06489
Latitude: 41° 37' 56.9"/ Longitude: -72° 53' 39.3"

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 91-foot level of the existing 157-foot self-support tower at 625 Spring Street in Southington, CT. The tower and property is owned by Crown Castle. AT&T now intends to replace three (3) antennas with three (3) new antennas. These antennas would be installed at the 91-foot level of the tower. AT&T also intends to install three (3) RRU's, three (3) A2 modules, two (2) DC, one (1) fiber, and one (1) squid. In addition, the tower shaft and foundation are being modified to include, new bolts, stiffeners and anchor rods.

This facility was approved by the by the Town of Southington Planning and Zoning Department on May 18, 1998. There were no conditions listed in this approval.

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 The Honorable Enzo Faienza, Mayor, Town of Cromwell, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

Melanie A. Bachman

June 2, 2016

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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, AT&T 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. Garry Brumback, Town Manager
Town of Southington
75 Main Street
Southington, CT 06489

5/11/98
OK # 1003
Shim

PLANNING AND ZONING DEPARTMENT

P.O. BOX 610 • SOUTHTON, CONN. 06489 • 203/276-6248

TOWN FEE: \$10.00
STATE FEE: \$10.00
TOTAL FEE: \$20.00

Z.P. # 5625



ZONING PERMIT APPLICATION

Applicant (please print):

Owner (please print):

Sprint PCS
9 Barnes Industrial Road
Wallingford, CT. 06492
Telephone: 203-294-5676

Josephine Smoron
55 Smoron Drive
Southington, CT. 06489
Telephone: 860-628-6243

Address of Property: 625 Spring Street Zone: R-40
Utilities: Sewer N/A Septic System N/A Well N/A Town Water N/A

Proposed Activity: install Telecommunication Facility
Does proposed activity entail construction or land alteration within
50 feet of a wetland/wet area/waterbody? Yes X No

Date of following approvals: Special Permit* 12/9/95 Subdivision
Site Plan 12/9/97 Inland/Wetland 12/2/97 Filling of Floodplain
Variance Special Exception* Home Occupation*
Expansion of Non-Conforming Use*

Submit 7 set of plans. * NOTE: Provide one copy each of certain approval letters stamped by the Town Clerk and noting the volume and page number of the approval in the land records.

OFFICE USE ONLY	Approved	Denied
Planner/Inland Wetlands:	<u>5/18/98</u>	
Zoning Officer:	<u>5/18/98</u>	
Town Engineer:	<u>5/15/98</u>	
Water Department:	<u> </u>	
Health Department:	<u> </u>	

Approved for Zoning Permit. A copy of this approval shall be presented to the Building Official prior to issuance of a Building Permit.

Frank Vance 5/18/98
Zoning Enforcement Officer Date

CERTIFICATE OF ZONING COMPLIANCE Z.P. #
I hereby certify that all improvements were installed in compliance with the Zoning Permit.

	Approved	Denied
Planner/Inland Wetlands:		
Zoning Officer:		
Town Engineer:		
Water Department:		
Health Department:		

Approved for Certificate of Zoning Compliance. A copy of this approval shall be presented to the Building Official prior to issuance of a Certificate of Occupancy.

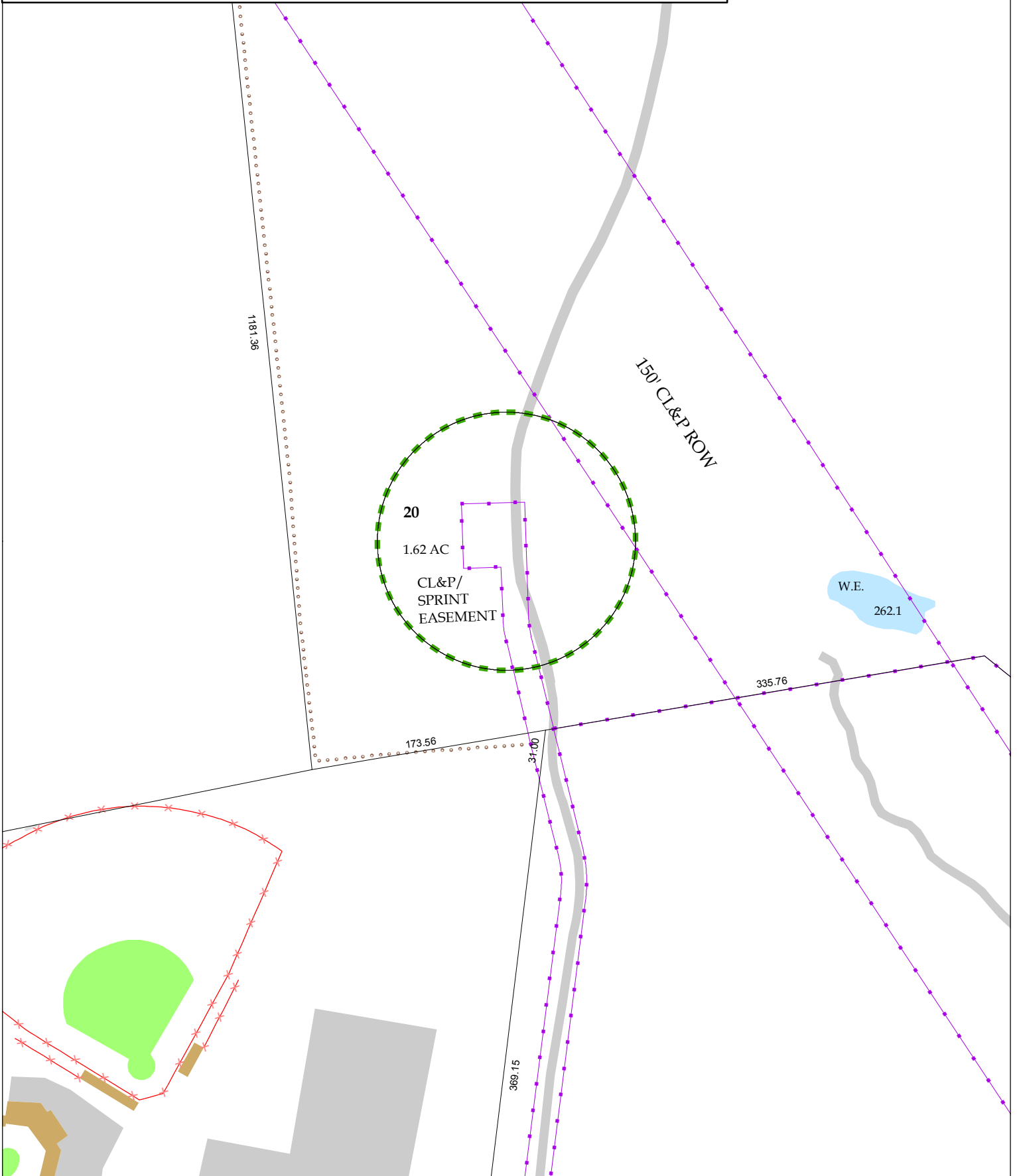
1/94 Zoning Enforcement Officer Date

** I have received a copy of the ordinance requiring the fencing of pools
Signed _____
Print _____

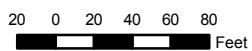
Town of Southington, Connecticut - Assessment Parcel Map

Parcel: 168020

Address: 625 SPRING ST



Approximate Scale:



Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Southington and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced May 2016



TOWN OF SOUTHINGTON CONNECTICUT
Geographic & Property Information Network

75 Main Street
Southington, CT 06489
ph (860) 276-6205
eMail: General Information

Property Search

Name: ex. Smith

House No:

Street:

Parcel Id: ex. 100139



Detailed Parcel Information

GIS ID
168020
Unique ID
15908
Account
19111
Owner
GLOBAL SIGNAL
ACQUISITIONS II LLC
Location
625 SPRING ST
MAILING ADDRESS
4017 WASHINGTON RD
PMB 331
CANONSBURG PA 15317



168 020 05/22/2015

Quick Links:

[Quick Map](#)

[Property Card](#)

[Assessor Tax Map](#)

Information Updates

GIS Parcel Maps Updated
Annually October 1st

Property Info Data Updated
Nightly

Current Parcel Count
18,307 +/-

Scroll Down For Complete Property Detail

PARCEL VALUATIONS

	Appraised Value	Assessed Value
Buildings	0	0
Land	206100	144200

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Designed and hosted by New England GeoSystems

PROJECT INFORMATION

SCOPE OF WORK:

- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS. (2) EXISTING ANTENNAS PER SECTOR TO REMAIN, FOR A TOTAL OF (2) EXISTING ANTENNAS. (1) EXISTING ANTENNA TO BE REMOVED.
- AT&T RRUS: (1) NEW RRUS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUS; (2) EXISTING RRUS PER SECTOR TO REMAIN, FOR A TOTAL OF (6) EXISTING RRUS.

SITE ADDRESS: 626 SPRING STREET
SOUTHINGTON, CT 06489

LATITUDE: 41.6296919 41° 37' 46.89"N
LONGITUDE: -72.8963989 -72° 53' 47.04"W

USID: 15583

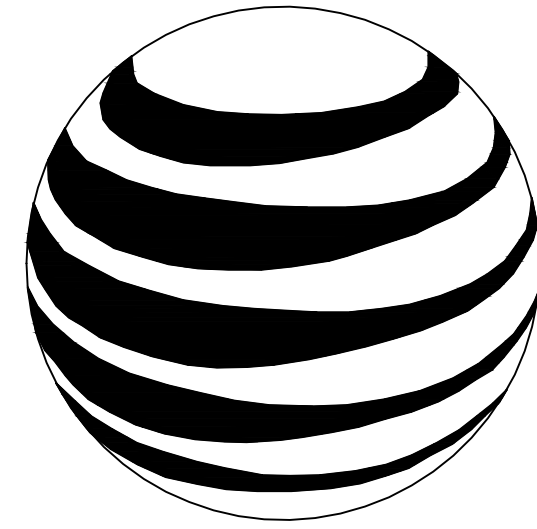
TOWER OWNER: CROWN CASTLE

TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 161'-0"±
RAD CENTER: 157'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



at&t
MOBILITY

FA CODE: 10071248
SITE NUMBER: CT5250
SITE NAME: SOUTHINGTON NORTH

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

ZONING:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617-639-4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:

COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46 SUITE E39
MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862-209-4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:

COMPANY: AT&T MOBILITY – NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484-683-1750
EMAIL: gdorman@empiretelecomm.com

DRAWING INDEX

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VICINITY MAP

HEAD EAST ON COCHITUATE RD TOWARD BURR ST (322 FT), TAKE THE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON (0.6 MI), KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE (0.5 MI), MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE (37.6 MI), TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY (0.9 MI), CONTINUE ONTO I-84 (59.1 MI), TAKE EXIT 32 FOR CT-10/QUEEN ST (0.3 MI), TURN LEFT ONTO CT-10 S/QUEEN ST (436 FT), TURN LEFT ONTO SPRING ST (1.2 MI), DESTINATION WILL BE ON THE LEFT.



GENERAL NOTES

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		



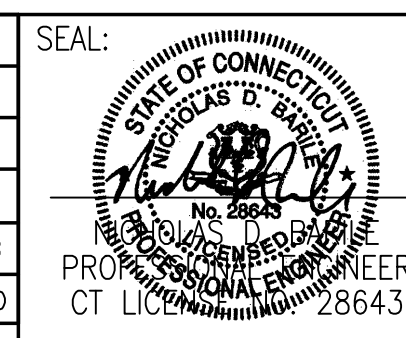
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



SITE NUMBER: CT5250
SITE NAME: SOUTHINGTON FLORIAN'S POND
626 SPRING STREET
SOUTHINGTON, CT 06489
HARTFORD COUNTY



0	05/31/16	ISSUED AS FINAL	KCD	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: TB	DRAWN BY: PAV		



AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER: 15196-EMP	DRAWING NUMBER: T-1	REV: 0

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - EMPIRE TELECOM
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER - AT&T MOBILITY
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

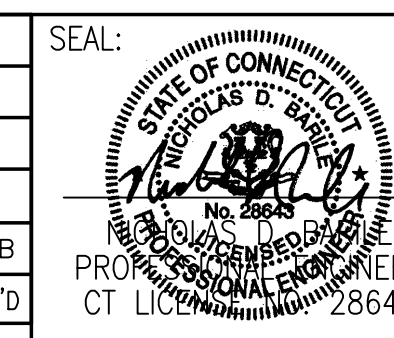
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
 - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
 - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
 - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
 - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
 - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
 - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
 - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
 - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
 - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
 - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.
22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
23. INFORMATION SHOWN ON THIS SET OF DRAWINGS TAKEN FROM PLANS PREPARED BY HUDSON DESIGN GROUP FOR AT&T DATED APRIL 9, 2013. CONTRACTOR TO NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO COMMENCEMENT OF CONSTRUCTION.



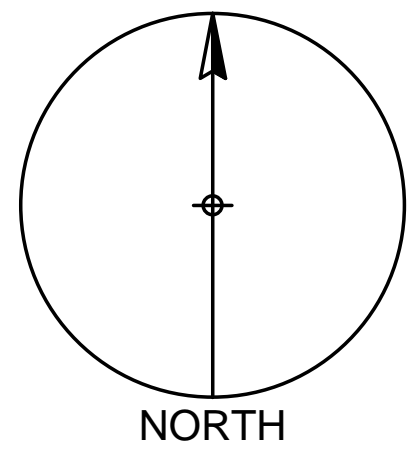
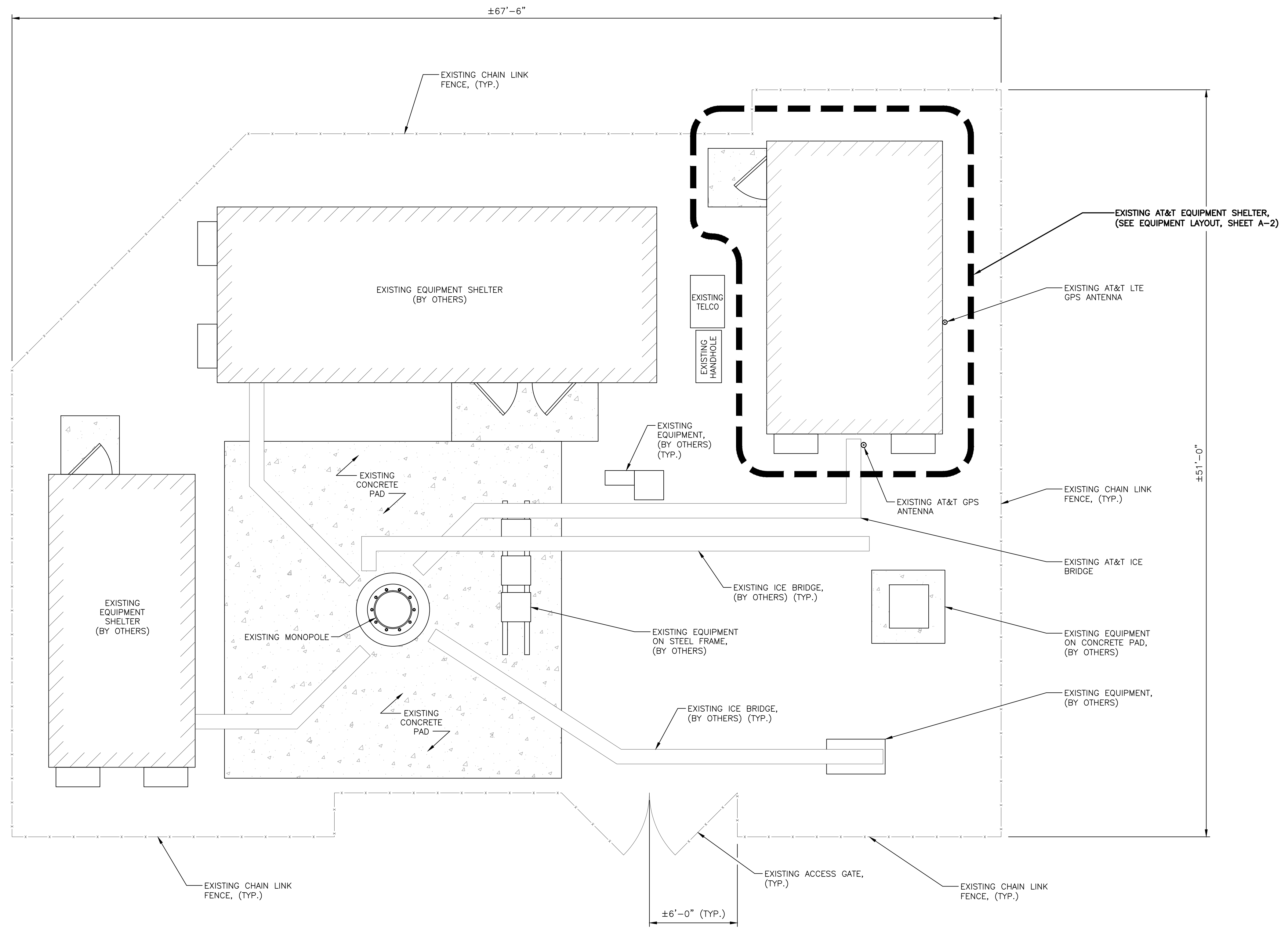
SITE NUMBER: CT5250
SITE NAME: SOUTHTON FLORIAN'S POND
 626 SPRING STREET
 SOUTHTON, CT 06489
 HARTFORD COUNTY



0	05/31/16	ISSUED AS FINAL	KCD	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: TB		DRAWN BY: PAV



AT&T		
DRAWING TITLE: GROUNDING & GENERAL NOTES		
JOB NUMBER 15196-EMP	DRAWING NUMBER GN-1	REV 0



COMPOUND LAYOUT

SCALE: 1" = 4'-0"



(IN FEET)
1/4 Inch = 1 Foot

NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5250
SITE NAME: SOUTHTON FLORIAN POND
626 SPRING STREET
SOUTHTON, CT 06489
HARTFORD COUNTY

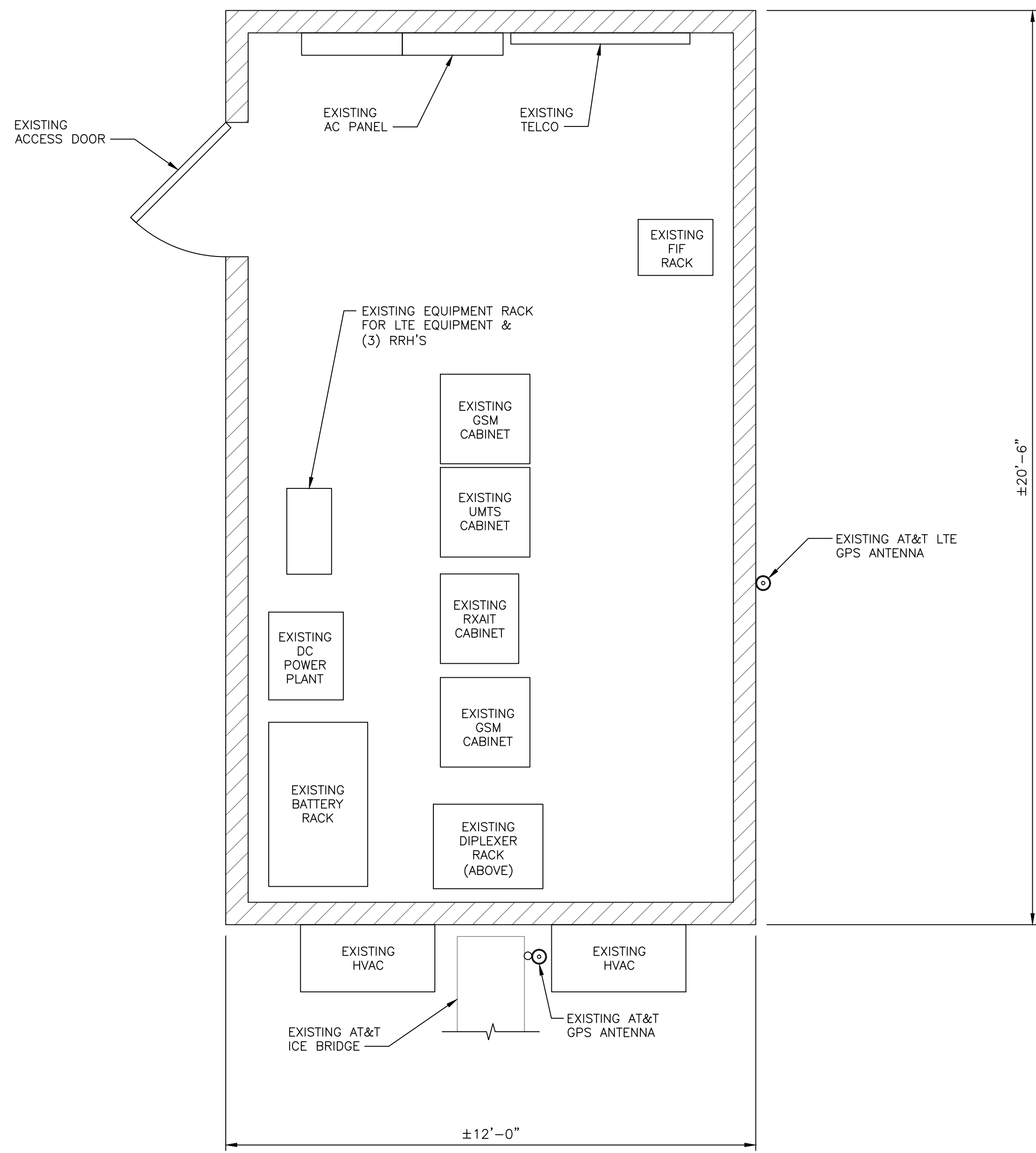
at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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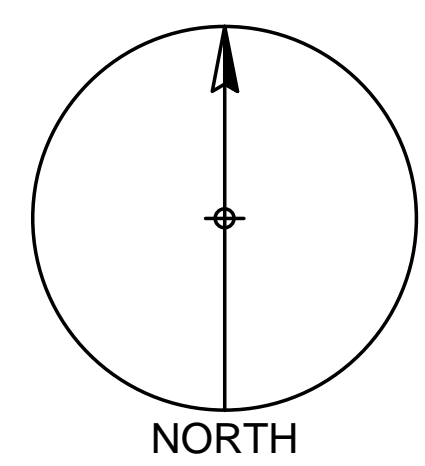
SEAL:

THOMAS B. PAVESI
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

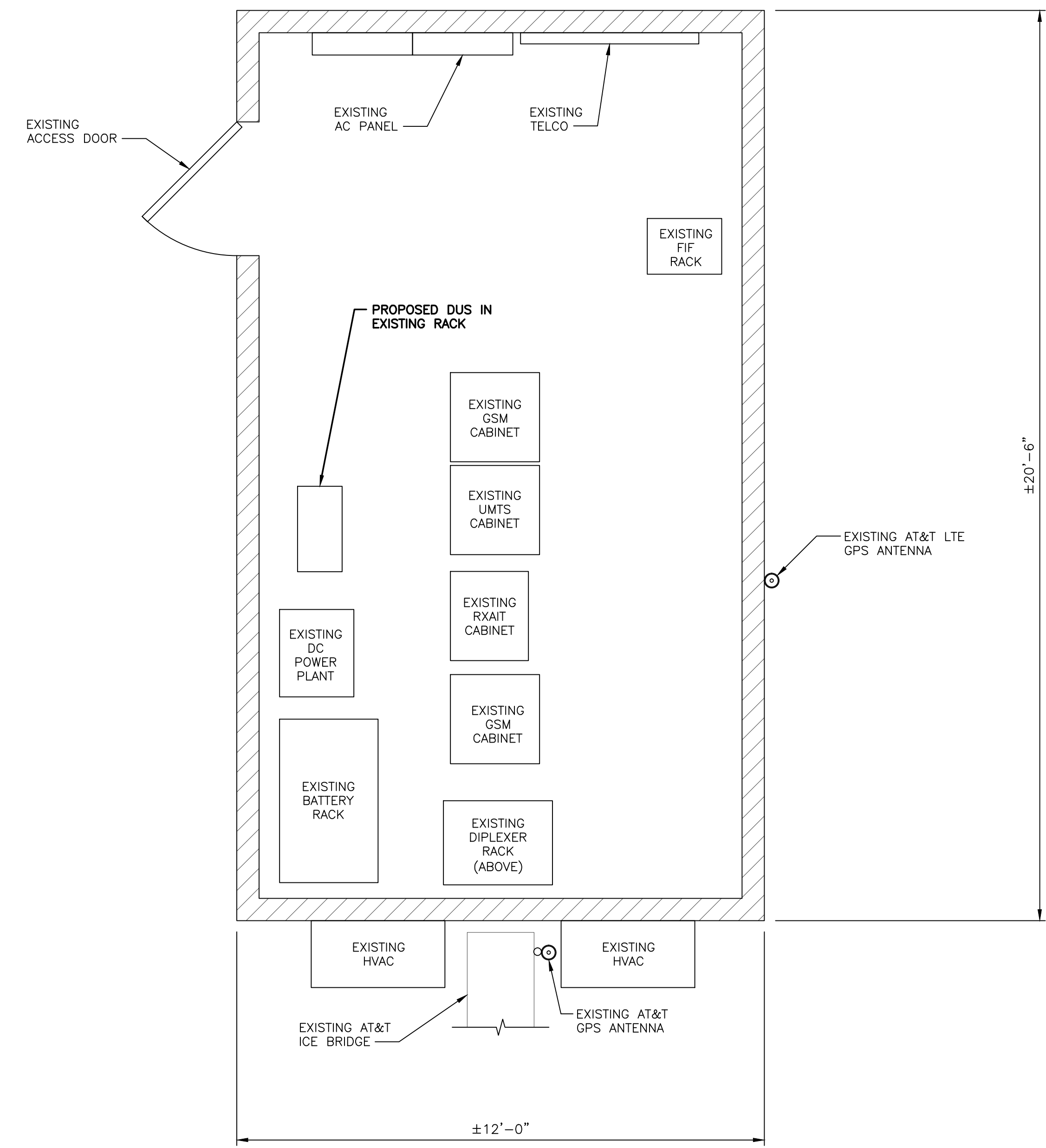
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COMPOUND LAYOUT		
JOB NUMBER	DRAWING NUMBER	REV
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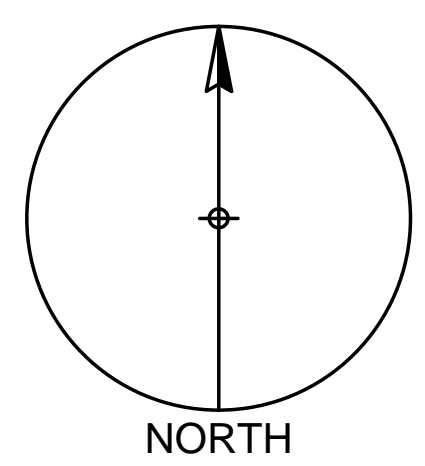
EXISTING EQUIPMENT LAYOUT
 SCALE: 1" = 2'-0"
 (IN FEET)
 1/2 Inch = 1 Foot



NORTH



PROPOSED EQUIPMENT LAYOUT
 SCALE: 1" = 2'-0"
 (IN FEET)
 1/2 Inch = 1 Foot



NORTH

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SITE NUMBER: CT5250
SITE NAME: SOUTHINGTON FLORIAN'S POND
 626 SPRING STREET
 SOUTHINGTON, CT 06489
 HARTFORD COUNTY

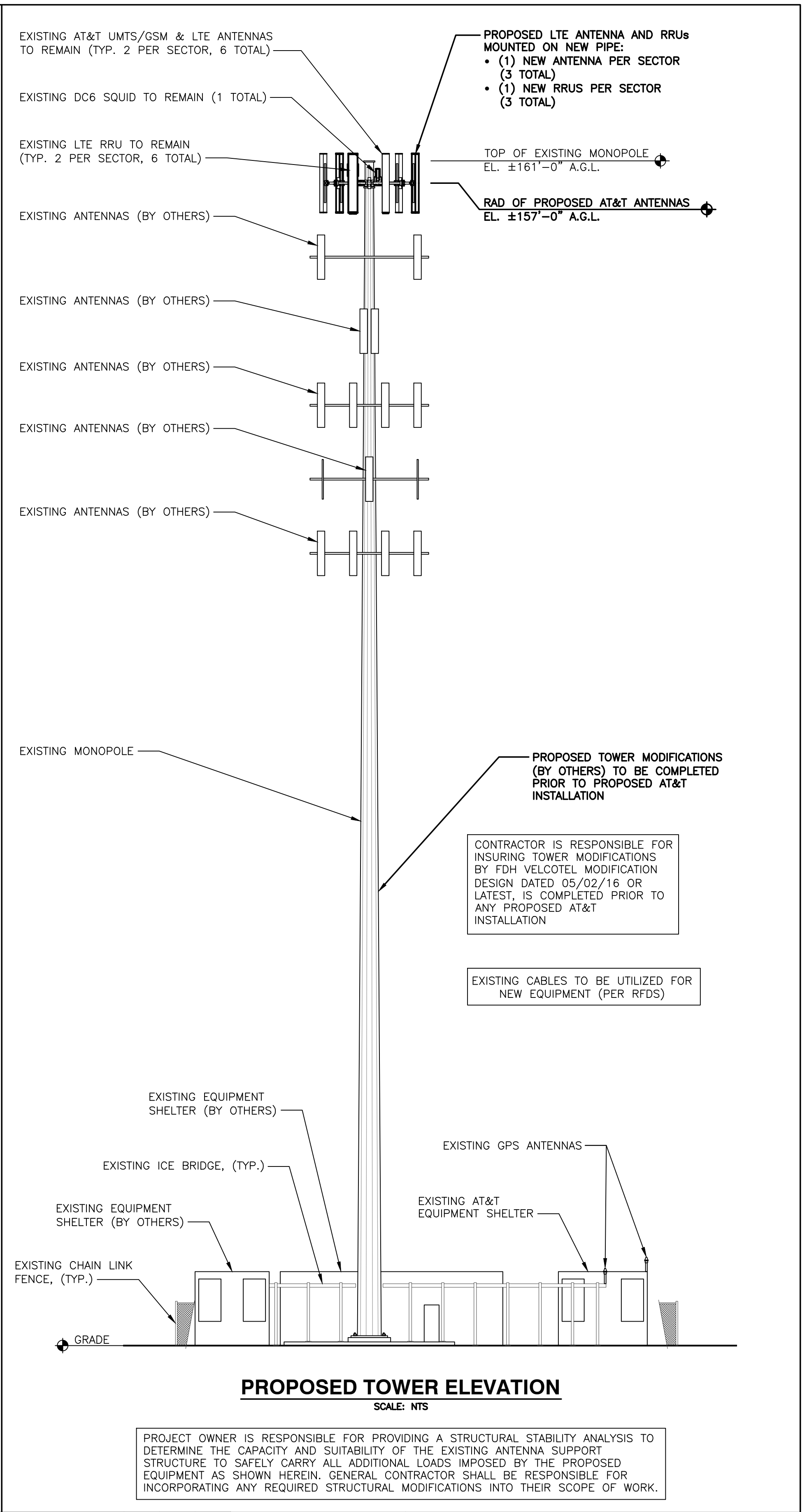
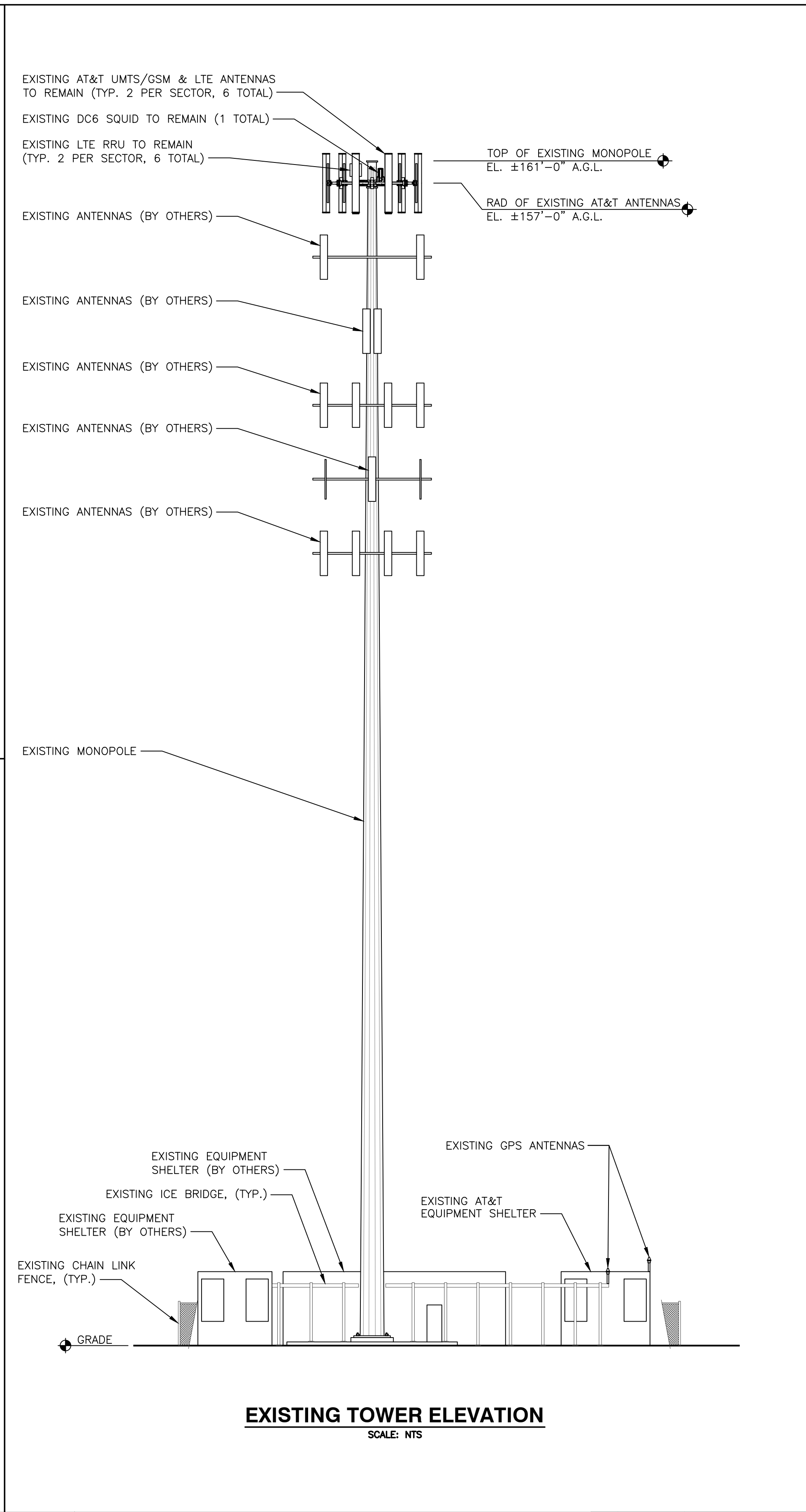
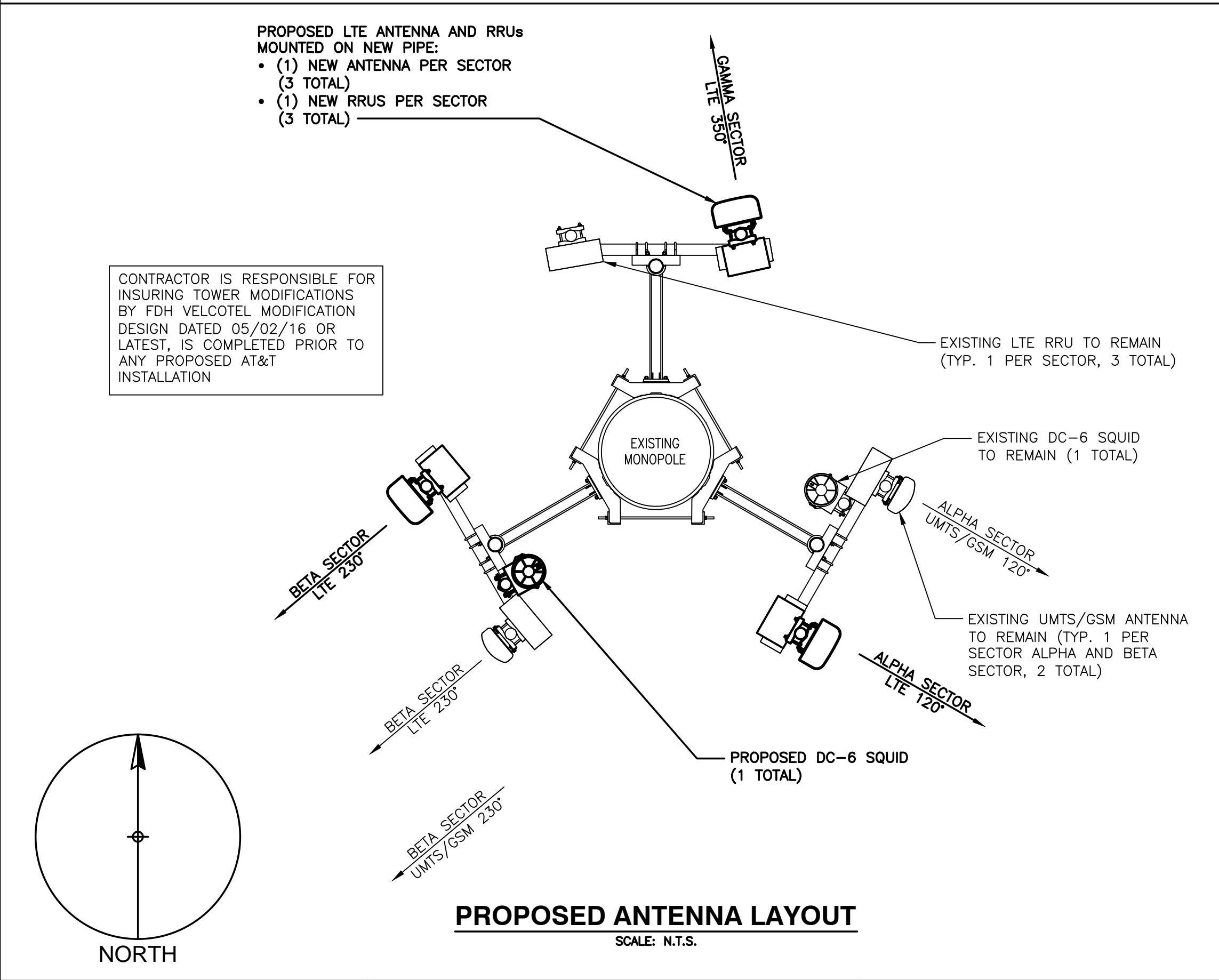
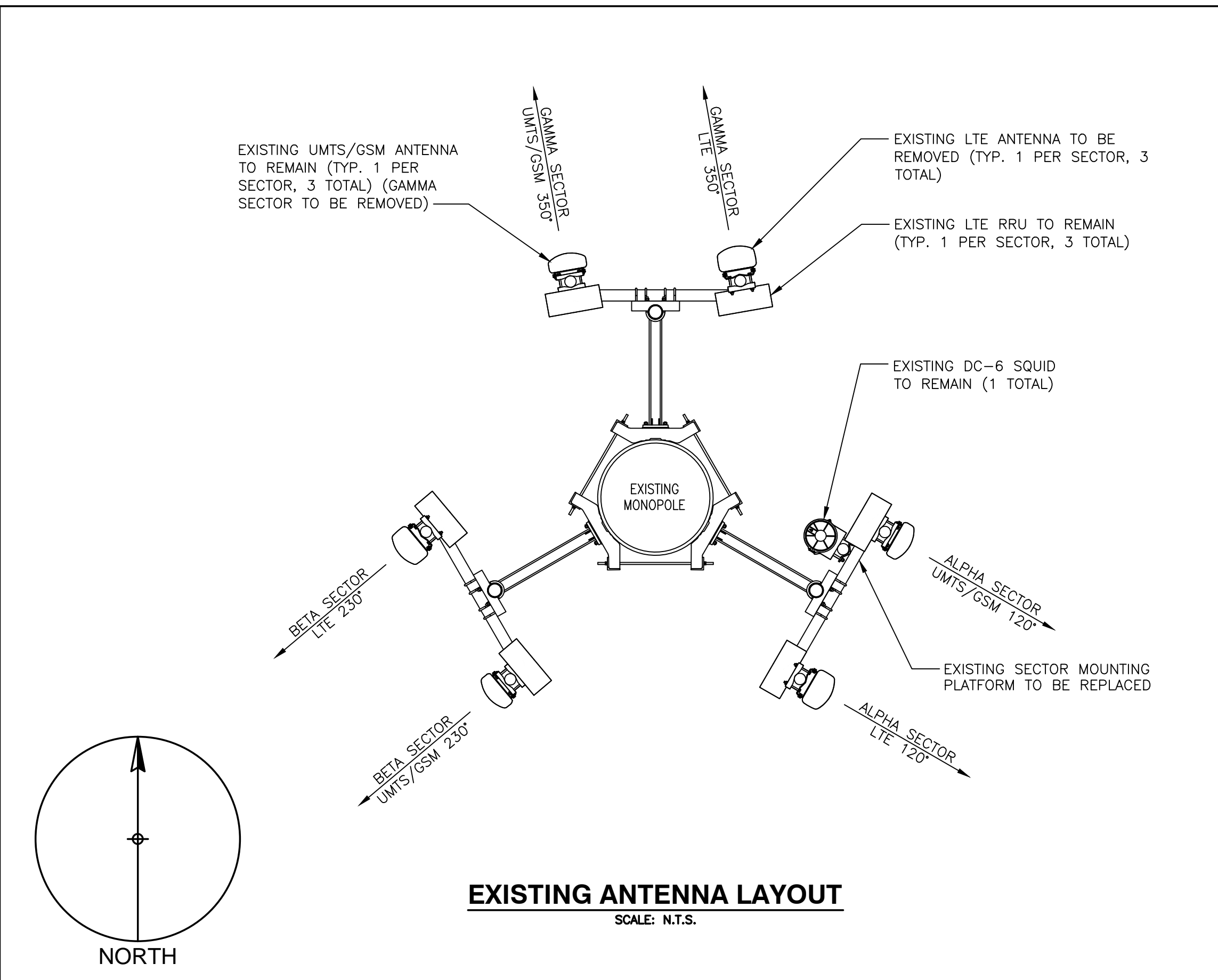
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 CT LICENSE NO. 28643

AT&T
 DRAWING TITLE:
EQUIPMENT LAYOUT
 JOB NUMBER: 15196-EMP
 DRAWING NUMBER: A-2
 REV: 0



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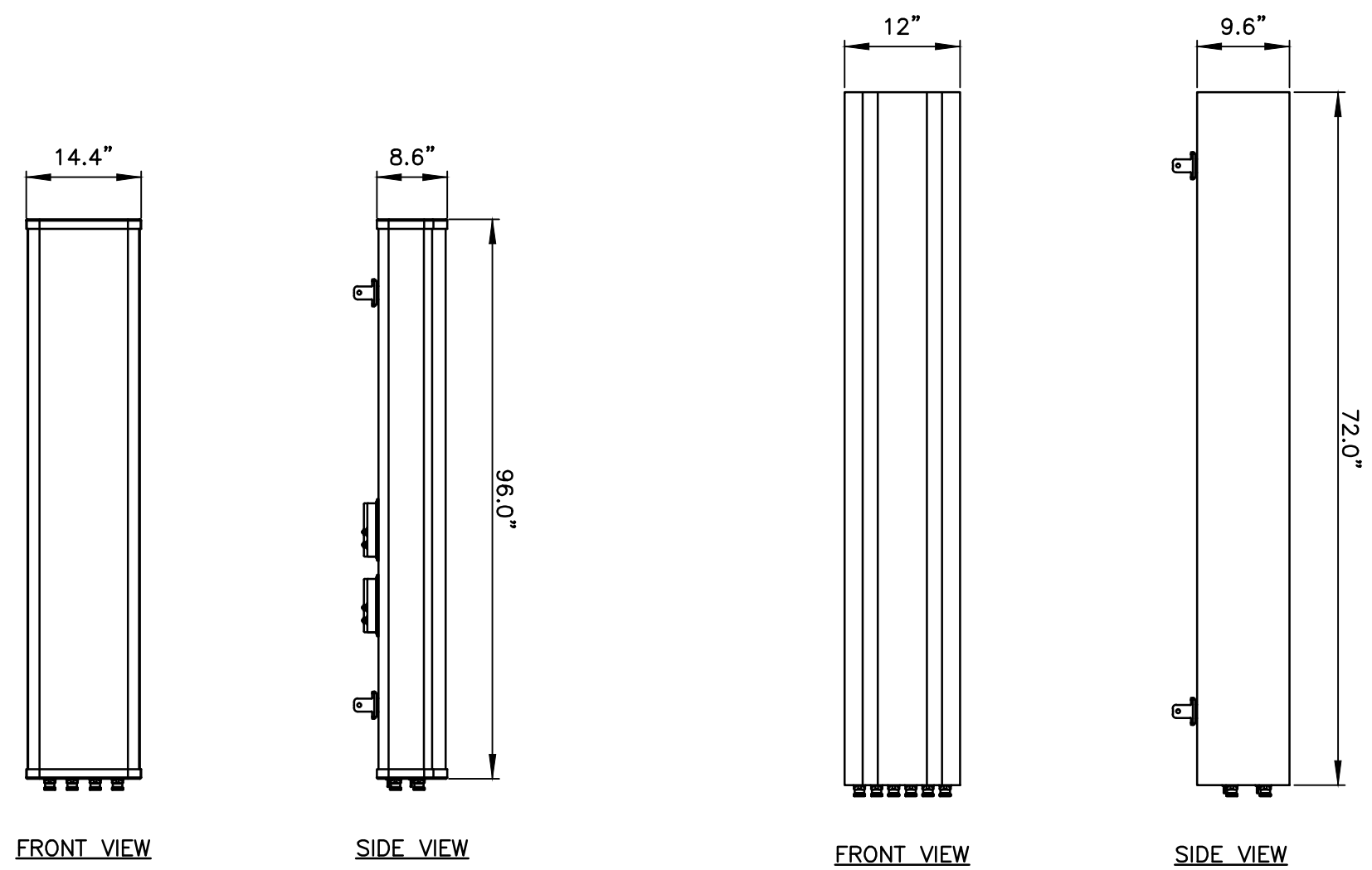
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SITE NAME: SOUTHTON FLORIAN POND
626 SPRING STREET
SOUTHTON, CT 06489
HARTFORD COUNTY

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MOBILITY
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SCALE: AS SHOWN		DESIGNED BY: TB	DRAWN BY: PAV		

SEAL:
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T
DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS
JOB NUMBER: 15196-EMP
DRAWING NUMBER: A-3
REV: 0

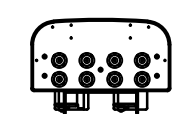


FRONT VIEW

SIDE VIEW

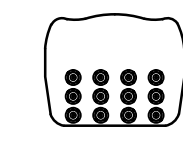
FRONT VIEW

SIDE VIEW



BOTTOM VIEW

MANUFACTURER	CCI
MODEL	TPA-65R-LCUUUU-H8
WEIGHT	75.0 LBS

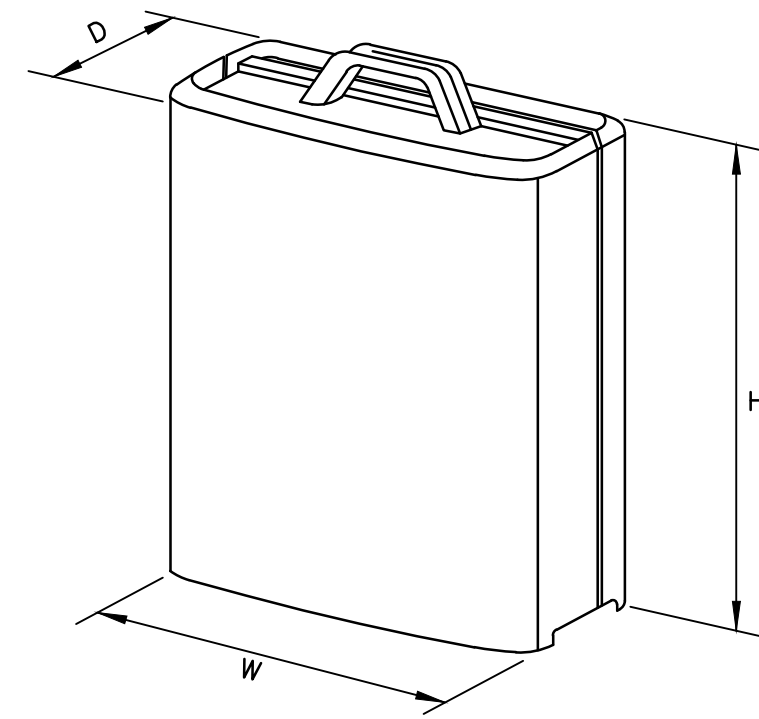


BOTTOM VIEW

MANUFACTURER	QUINTEL
MODEL	QS66512-2
WEIGHT	111 LBS

ANTENNA DETAIL

SCALE: N.T.S.

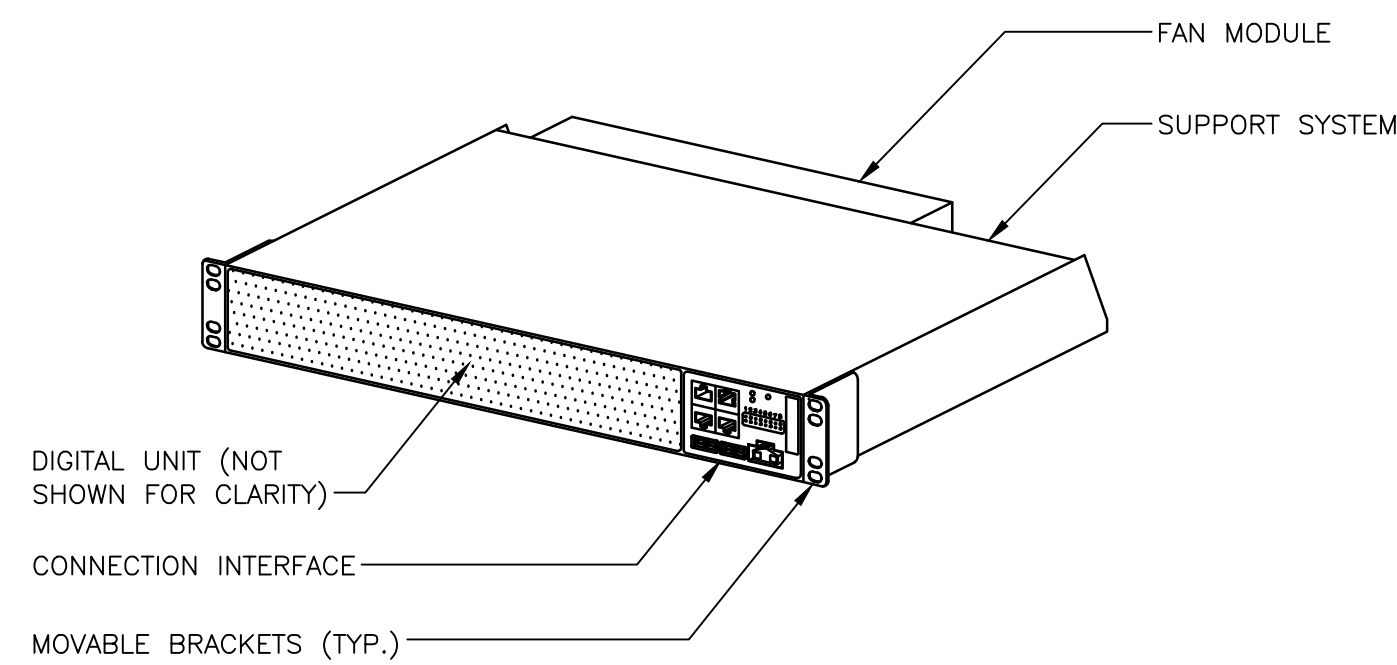


MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
*RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS
A2 MODULE	16.4" X 15.2" X 3.4"	22 LBS

* DENOTES EXISTING

RRUS DETAIL

SCALE: N.T.S.



PHYSICAL CHARACTERISTICS	
HEIGHT	2.59" (1.5 U)
WIDTH	19"
DEPTH	13.77"
WEIGHT (FULLY EQUIPPED)	<22 LBS.
COLOR	WHITE

DC POWER SUPPLY	
NOMINAL VOLTAGE	-48VDC
OPERATING VOLTAGE RANGE	-40.0 TO -57.6 VDC
NON-DESTRUCTIVE VOLTAGE RANGE	0 TO -60 VDC

RBS ERICSSON 6601 DETAIL

SCALE: N.T.S.

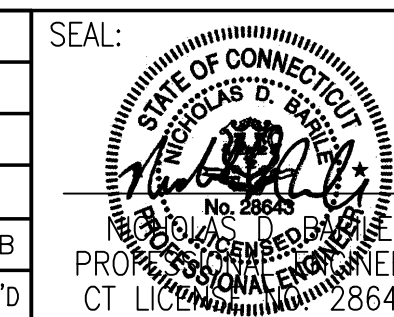
COM-EX
Consultants
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MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
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SITE NUMBER: CT5250
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HARTFORD COUNTY

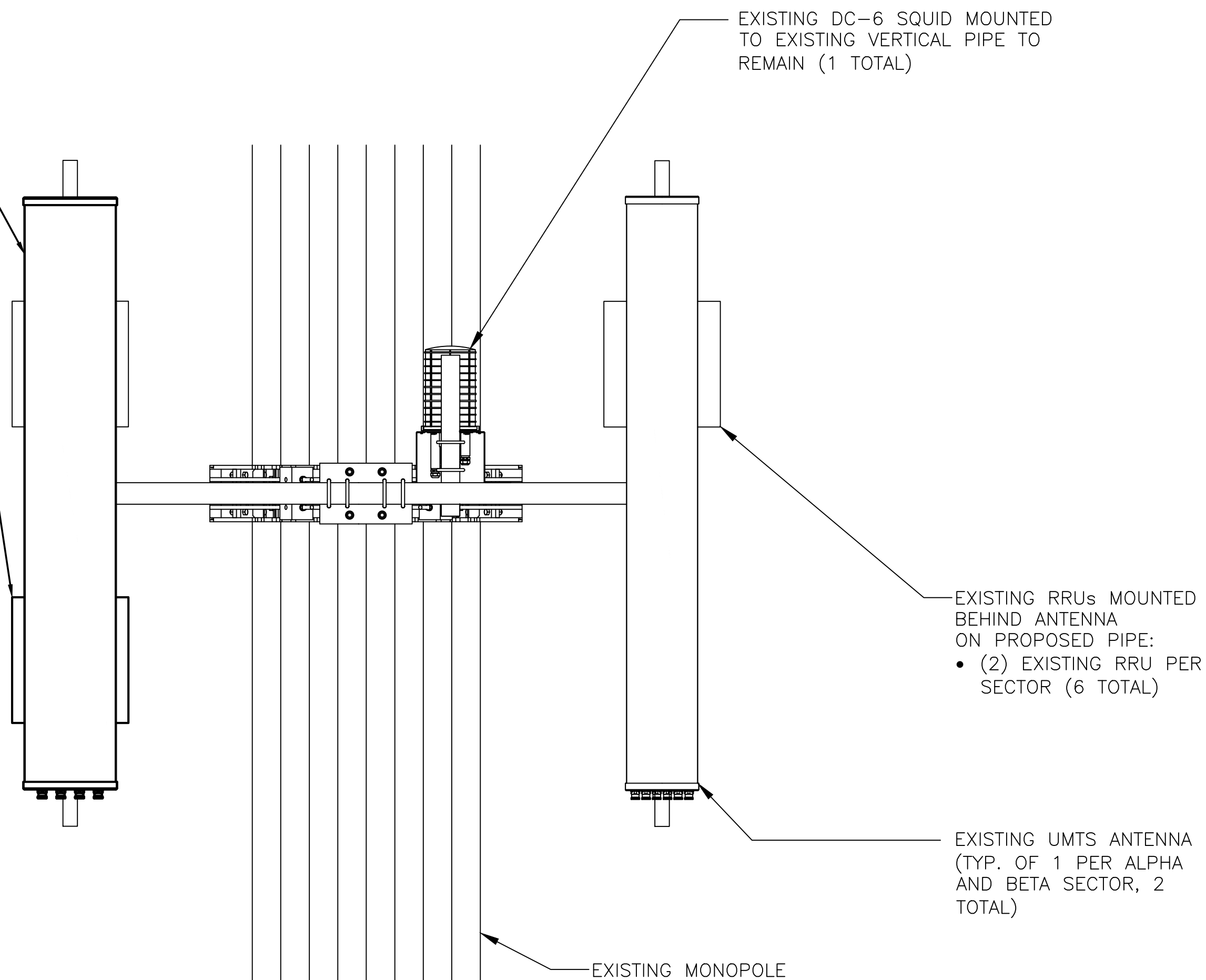
550 COCHITUATE ROAD
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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DRAWING TITLE:		
DETAILS		
JOB NUMBER	DRAWING NUMBER	REV
15196-EMP	A-4	0

PROPOSED LTE ANTENNA AND RRUs MOUNTED ON EXISTING PIPE:
 • (1) NEW ANTENNA PER SECTOR (3 TOTAL)
 • (1) NEW RRUS PER SECTOR (3 TOTAL)

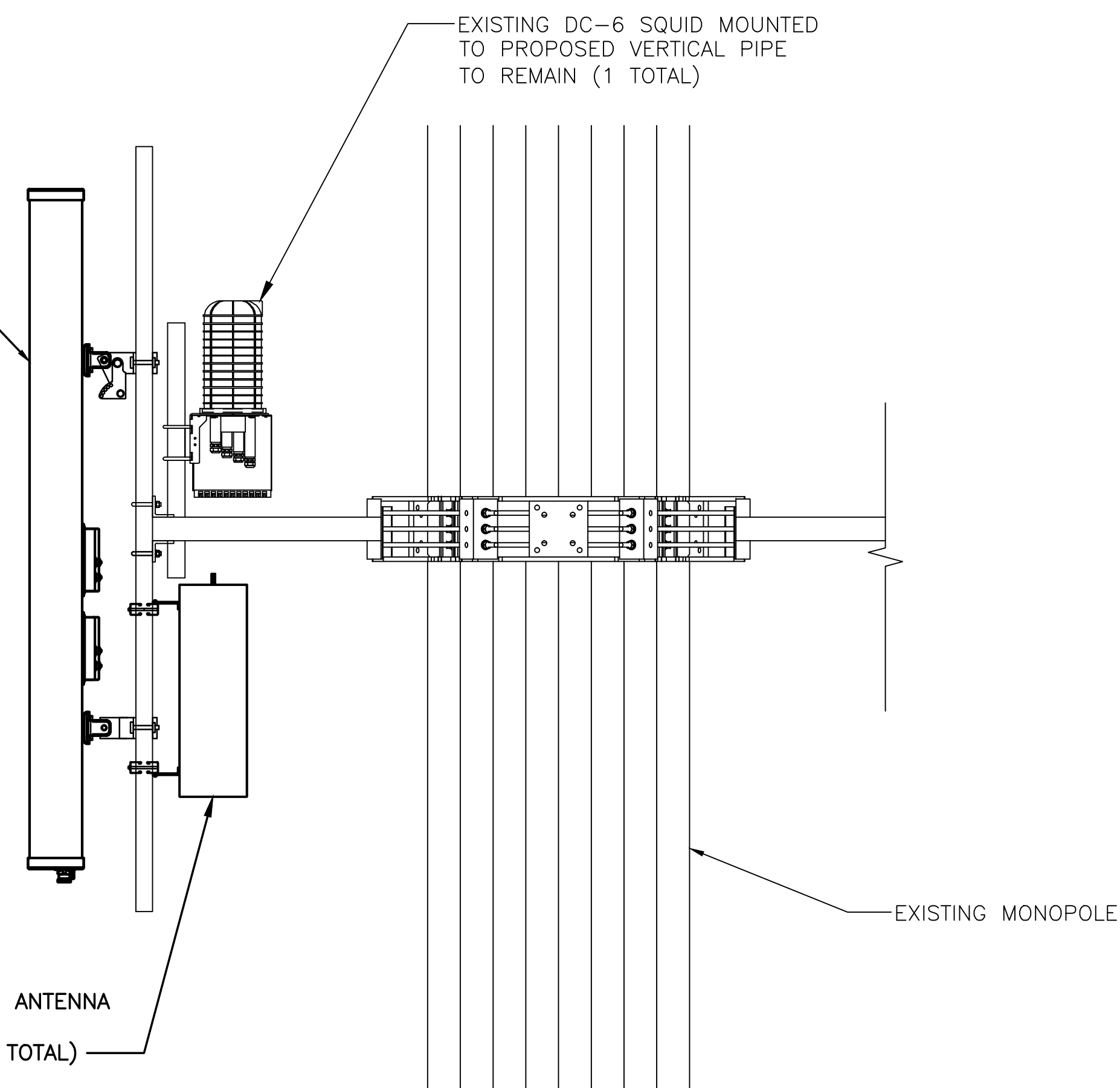


PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.

PROPOSED LTE ANTENNA MOUNTED ON EXISTING PIPE:
 • (1) NEW ANTENNA PER SECTOR (3 TOTAL)

PROPOSED RRUs MOUNTED BEHIND ANTENNA ON PROPOSED PIPE:
 • (1) NEW RRUS PER SECTOR (3 TOTAL)



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A2	-	-	-
	A3	-	-	-
	A4	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
BETA	B1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B2	-	-	-
	B3	-	-	-
	B4	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
GAMMA	G1	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	G2	-	-	-
	G3	-	-	-
	G4	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"

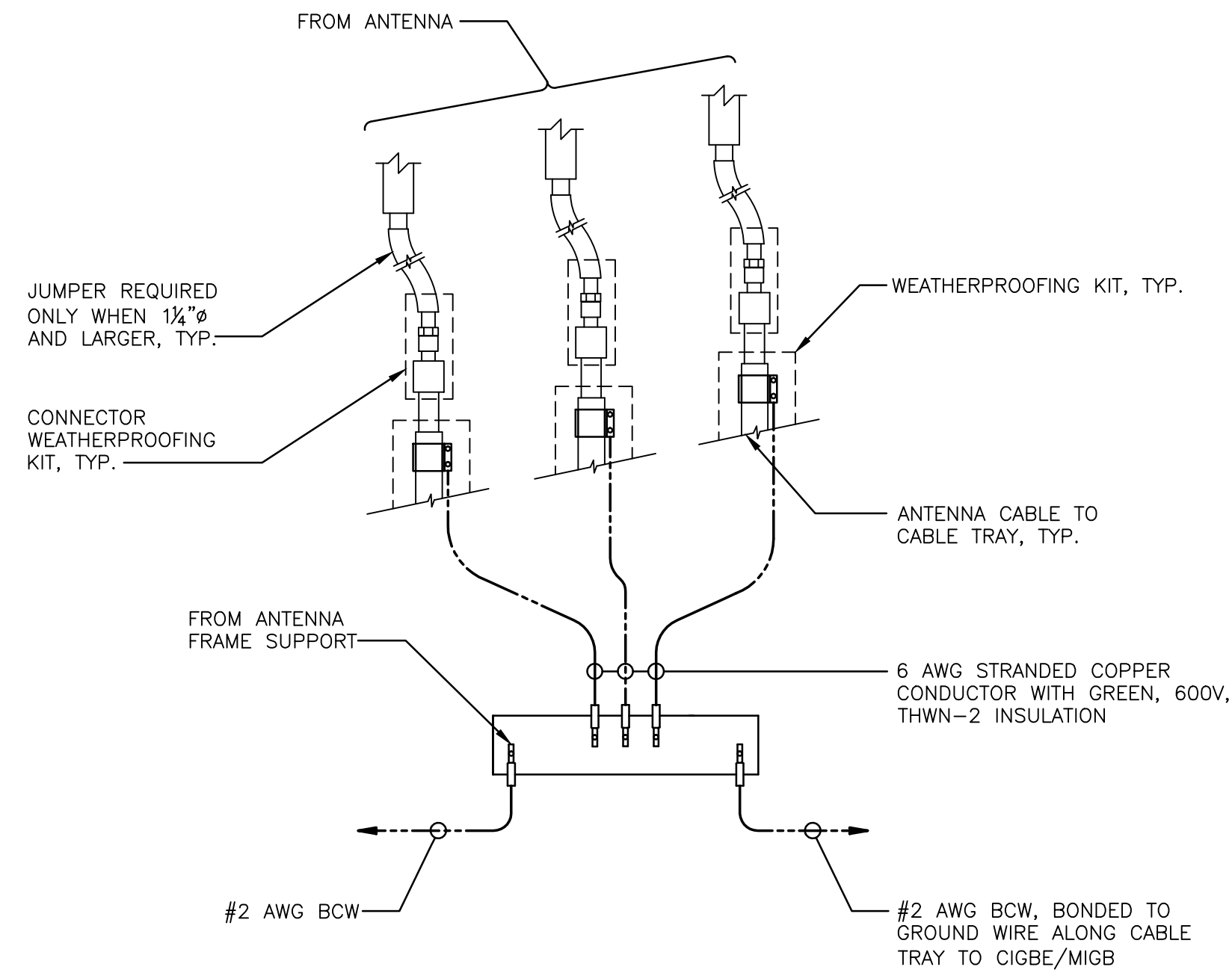
FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A2	-	-	-
	A3	-	-	-
	A4	CCI	TPA-65R-LCUUUU-H8	96"x14.4"x8.6"
BETA	B1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B2	-	-	-
	B3	-	-	-
	B4	QUINTEL	QS66512-2	72"x12"x9.6"
GAMMA	G1	-	-	-
	G2	-	-	-
	G3	-	-	-
	G4	CCI	TPA-65R-LCUUUU-H8	96"x14.4"x8.6"

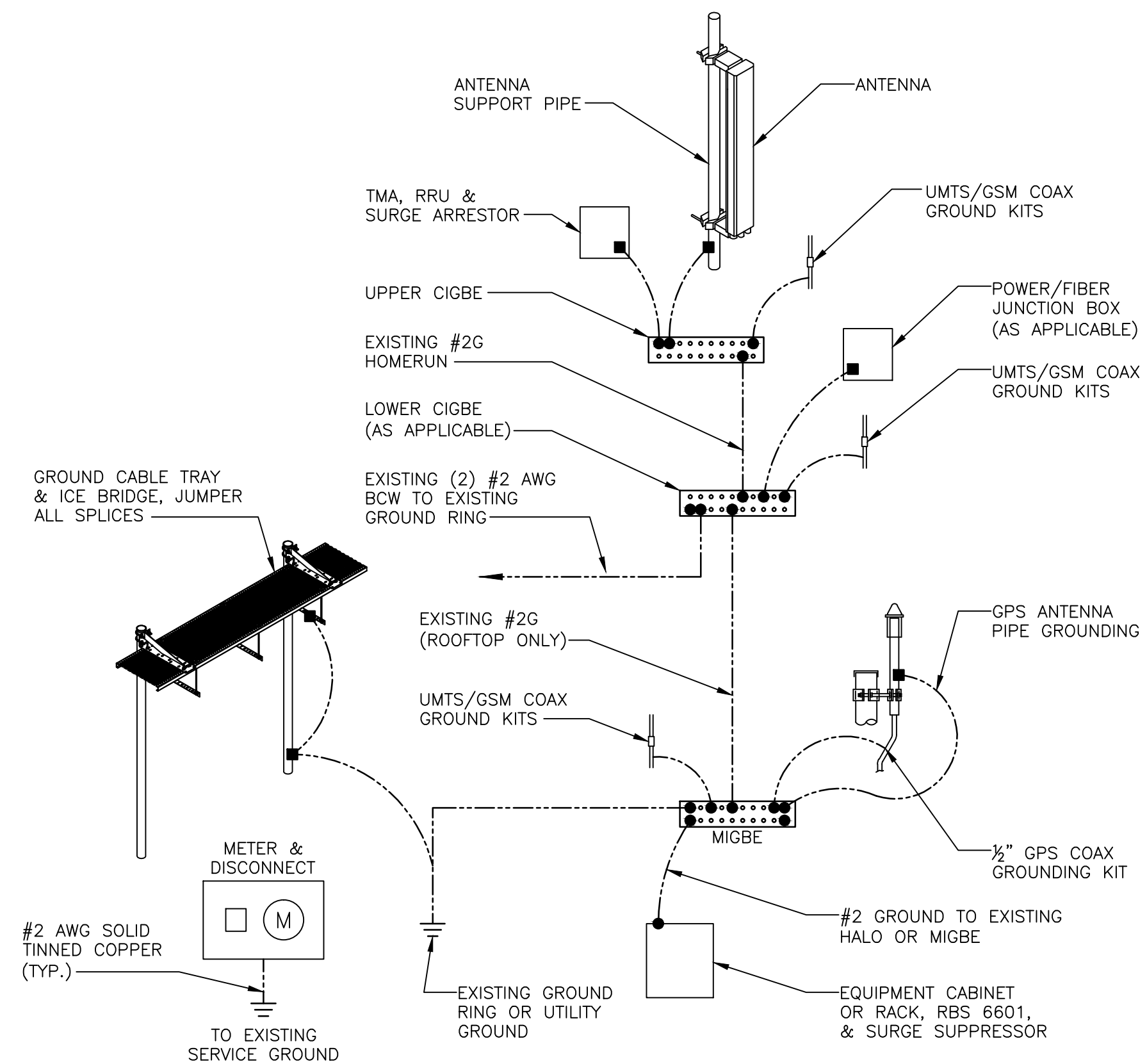
PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	A2 MODULE	16.4"x15.2"x3.4"
BETA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	A2 MODULE	16.4"x15.2"x3.4"
GAMMA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	A2 MODULE	16.4"x15.2"x3.4"

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



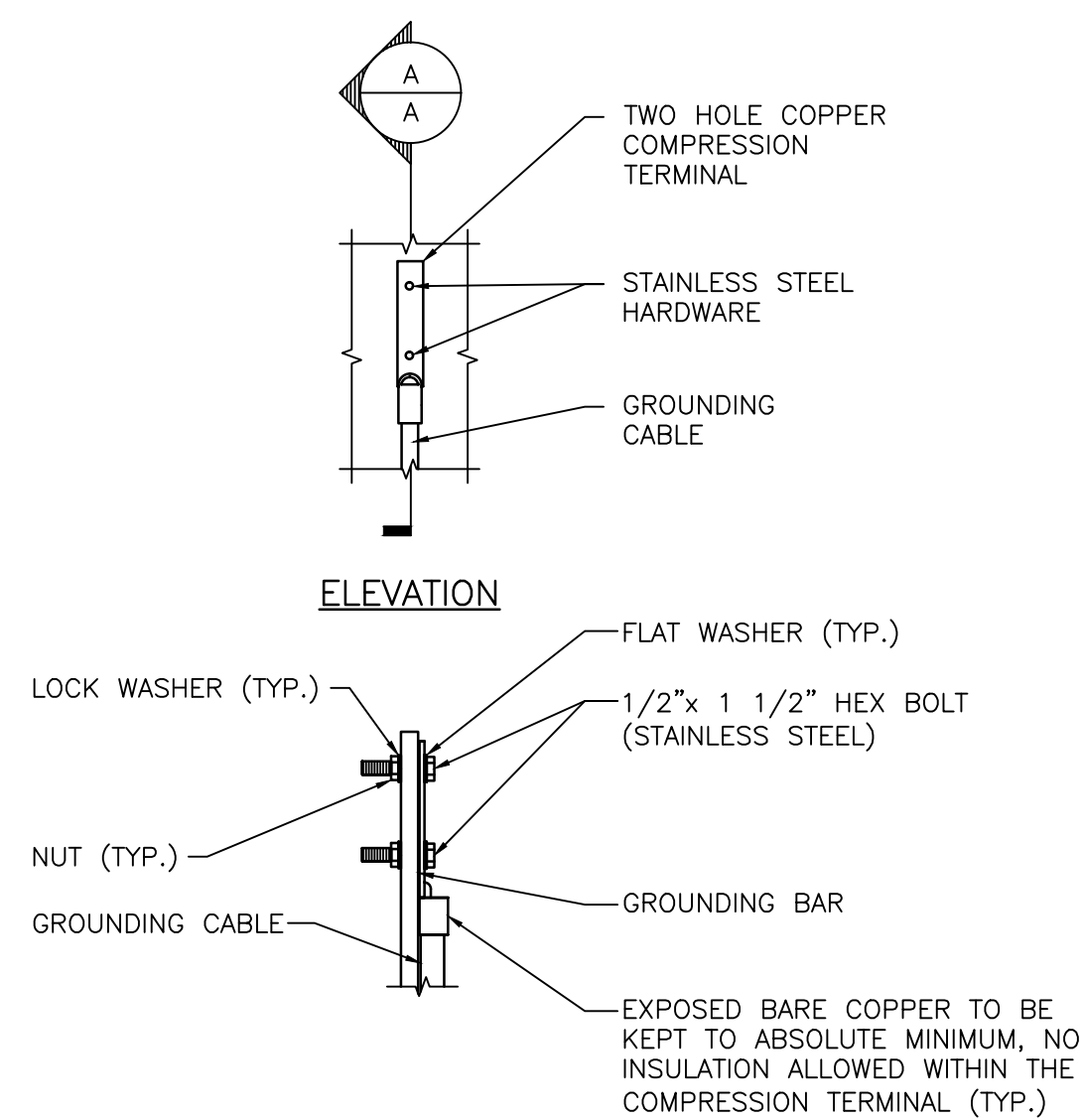
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



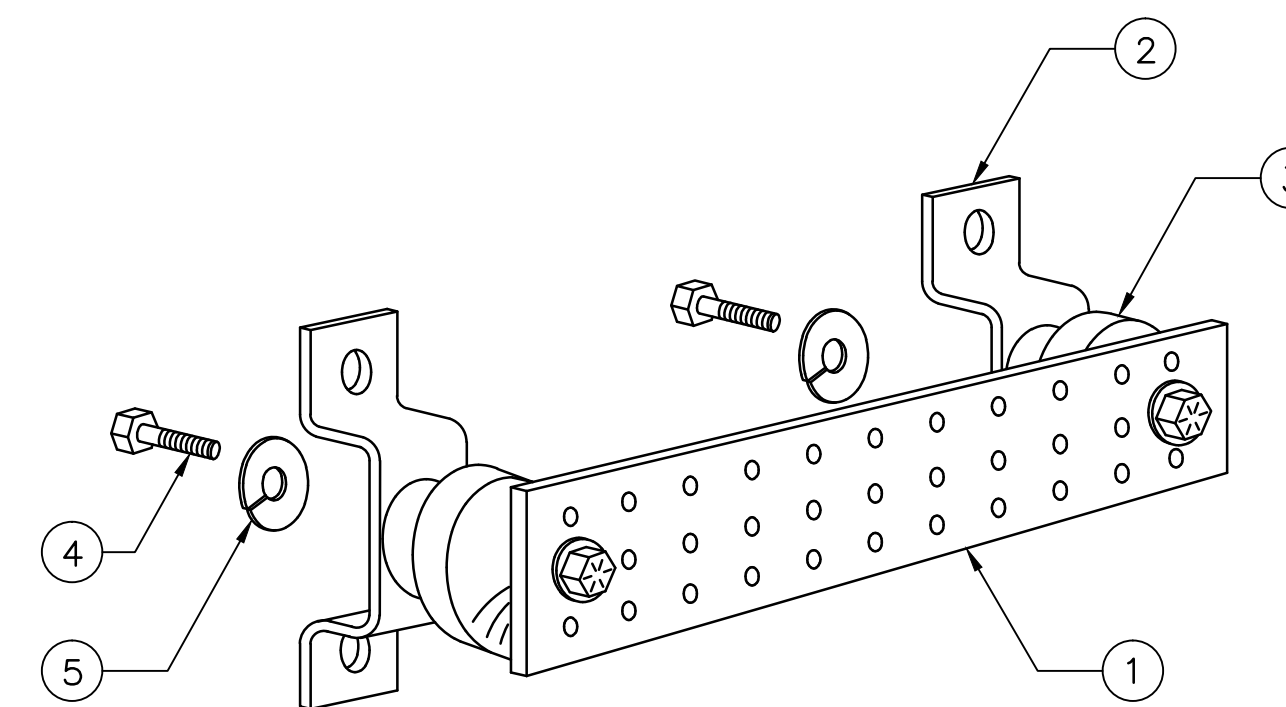
GROUNDING RISER DIAGRAM
SCALE: N.T.S.

TO BE PROVIDED BY RF

TYPICAL PLUMBING DIAGRAM (PER SECTOR)
SCALE: N.T.S.



TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	3/8"-11x1" H.H.C.S.
5	4	3/8" LOCK WASHER

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" - SURGE PRODUCERS

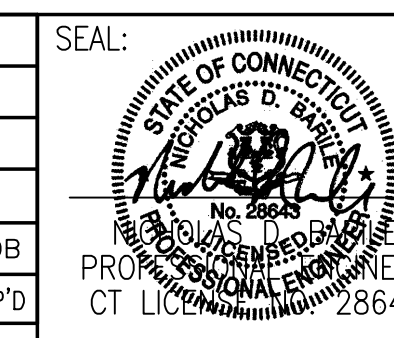
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- -48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL
SCALE: N.T.S.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
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AT&T		
DRAWING TITLE: GROUNDING, ONE-LINE DIAGRAM & DETAILS		
JOB NUMBER 15196-EMP	DRAWING NUMBER G-1	REV 0



ENGINEERING INNOVATION

Velocitel, Inc., d.b.a. FDH Velocitel
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012

Date: **May 2, 2016**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Subject: Structural Modification Report

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT5250
Carrier Site Name: Southington Florians Pond

Crown Castle Designation: **Crown Castle BU Number:** 876334
Crown Castle Site Name: SOUTHINGTON, SMORON
Crown Castle JDE Job Number: 358362
Crown Castle Work Order Number: 1208652
Crown Castle Application Number: 322871 Rev. 8

Engineering Firm Designation: **FDH Velocitel Project Number:** 16BFCG1400

Site Data: **625 Spring Street, SOUTHINGTON, Hartford County, CT**
Latitude 41° 37' 56.9", Longitude -72° 53' 39.3"
160 Foot - Monopole Tower

Dear Timothy Howell,

FDH Velocitel is pleased to submit this “**Structural Modification Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 883017, in accordance with application 322871, revision 8.

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

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 Connecticut State Building Code based upon a wind speed of 80 mph fastest mile.

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

Respectfully submitted by:

Brian Apple, EI
Project Engineer I

Reviewed by:

Dennis D. Abel, PE
Director of Structural Engineering
CT PE License No. 23247



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7) APPENDIX C

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Modification Drawings

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by SUMMIT in November of 1996. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-E&F. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
156.0	157.0	2	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe	2 2 1	1-5/8 3/4 3/8	--
		1	kathrein	80010798 w/ Mount Pipe			
		3	ericsson	RRUS 11			
		3	ericsson	RRUS A2			
		3	ericsson	RRUS 32			
		1	raycap	DC6-48-60-18-8F			

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
156.0	157.0	2	andrew	SBNH-1D6565C w/ Mount Pipe	6 2 1	1-5/8 3/4 3/8	1
		1	kmw comm	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	cci	DTMABP819VG12A			
		3	ericsson	RRUS 11 B2			
		1	raycap	DC6-48-60-18-8F			
	2	andrew	SBNH-1D6565C w/ Mount Pipe	--	--	3	
	1	kmw comm	AM-X-CD-16-65-00T-RET w/ Mount Pipe				
	3	ericsson	RRUS 11 B12				
	156.0	1	crown mounts	T-Arm Mount [TA 703-3]	--	--	1
148.0	148.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	--	--	1
		6	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	crown mounts	Side Arm Mount [SO 103-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
146.0	147.0	3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe	4	1-1/4	1	
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe				
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe				
		3	alcatel lucent	TD-RRH8x20-25				
		3	rfs celwave	IBC1900BB-1				
	3	rfs celwave	IBC1900HG-2A					
	146.0	1	crown mounts	Platform Mount [LP 1201-1]				
139.0	139.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1	
		1	crown mounts	Pipe Mount [PM 501-3]				
132.0	134.0	3	antel	BXA-80080-6CF-EDIN-X w/ Mount Pipe	19	1-5/8	1	
	133.0	3	antel	BXA-70063/6CFx2 w/ Mount Pipe				
		6	andrew	SBNHH-1D65B w/ Mount Pipe	1	1-5/8	2	
		3	alcatel lucent	RRH2X60-AWS				
		3	alcatel lucent	RRH2X60-PCS				
		3	alcatel lucent	RRH2x60-700				
	2	rfs celwave	DB-T1-6Z-8AB-0Z					
132.0	1	crown mounts	Platform Mount [LP 712-1]	--	--	1		
121.0	122.0	1	andrew	VHLP2-18	3	1/2	1	
		2	andrew	VHLP800-11				
		1	argus technologies	LLPX310R w/ Mount Pipe				
		1	kathrein	840 10054 w/ Mount Pipe				
		3	dragonwave	HORIZON COMPACT				
		2	samsung telecom	RRH-2WB				
	121.0	121.0	1	argus technologies				LLPX310R w/ Mount Pipe
			1	samsung telecom				RRH-2WB
		1	crown mounts	T-Arm Mount [TA 602-3]				
101.0	102.0	1	symmetricom	58532A	1	1/2	1	
	101.0	1	crown mounts	Side Arm Mount [SO 701-1]				

- Notes:
- 1) Existing Equipment
 - 2) Reserved Equipment
 - 3) Equipment To Be Removed; Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
146.0	146.0	1	Generic	14' Low Profile Platform	--	--
		12	Generic	DB980H PCS		
130.0	130.0	1	Generic	14' Low Profile Platform	--	--
		12	Generic	Panel Antennas		
110.0	110.0	1	Generic	14' Low Profile Platform	--	--
		12	Generic	Panel Antennas		
100.0	100.0	1	Generic	GPS Antenna w/ Mount	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford and Company	1614569	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford and Company / TEP (Mapping)	1999756	CCISITES
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	1530919	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	2588177	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	3363885	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Engineering, Inc.	5288062	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Velocitel	5755362	CCISITES
4-POST-MODIFICATION INSPECTION	Paul J. Ford and Company	2588175	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	3794196	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	5570676	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel	5888770	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel	Project No. 16BFMQ1400	--
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Velocitel	Project No. 16BFCG1400	Appendix D

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) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) The tower modifications listed in FDH Velocitel (Project No. 16BFCG1400) Modification Drawings for a 160' Monopole dated May 2, 2016 must be installed as specified per reinforcement drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP16x16x0.375	Pole	5.8%	Pass
155 - 150	Pole	TP16x16x0.375	Pole	20.9%	Pass
150 - 146	Pole	TP16x16x0.375	Pole	35.7%	Pass
146 - 141	Pole	TP22.924x22x0.25	Pole	31.3%	Pass
141 - 136	Pole	TP23.848x22.924x0.25	Pole	43.5%	Pass
136 - 131	Pole	TP24.772x23.848x0.25	Pole	57.4%	Pass
131 - 126	Pole	TP25.696x24.772x0.25	Pole	73.3%	Pass
126 - 123.08	Pole	TP26.236x25.696x0.25	Pole	81.8%	Pass
123.08 - 122.83	Pole + Reinf.	TP26.282x26.236x0.5	Reinf. 21 Compression	48.7%	Pass
122.83 - 117.83	Pole + Reinf.	TP27.206x26.282x0.4875	Reinf. 21 Compression	58.5%	Pass
117.83 - 117.5	Pole + Reinf.	TP27.267x27.206x0.4875	Reinf. 21 Compression	59.1%	Pass
117.5 - 117.25	Pole + Reinf.	TP27.313x27.267x0.5	Reinf. 22 Compression	55.2%	Pass
117.25 - 115.5	Pole + Reinf.	TP27.637x27.313x0.5	Reinf. 22 Compression	58.3%	Pass
115.5 - 115.25	Pole + Reinf.	TP27.683x27.637x0.6625	Reinf. 14 Compression	51.4%	Pass
115.25 - 110.25	Pole + Reinf.	TP28.607x27.683x0.65	Reinf. 14 Compression	59.1%	Pass
110.25 - 107.5	Pole + Reinf.	TP29.808x28.607x0.6375	Reinf. 14 Compression	63.3%	Pass
107.5 - 102.5	Pole + Reinf.	TP29.539x28.615x0.7	Reinf. 14 Compression	65.7%	Pass
102.5 - 100.5	Pole + Reinf.	TP29.908x29.539x0.7	Reinf. 14 Compression	68.3%	Pass
100.5 - 100.25	Pole + Reinf.	TP29.954x29.908x0.7625	Reinf. 13 Compression	65.1%	Pass
100.25 - 98.5	Pole + Reinf.	TP30.277x29.954x0.7625	Reinf. 13 Compression	67.2%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.324x30.277x0.6	Reinf. 6 Tension Rupture	80.1%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.247x30.324x0.5875	Reinf. 6 Tension Rupture	86.6%	Pass
93.25 - 90.5	Pole + Reinf.	TP31.755x31.247x0.5875	Reinf. 6 Tension Rupture	90.1%	Pass
90.5 - 90.25	Pole + Reinf.	TP31.801x31.755x0.6125	Reinf. 6 Tension Rupture	88.8%	Pass
90.25 - 85.25	Pole + Reinf.	TP32.725x31.801x0.6	Reinf. 6 Tension Rupture	94.8%	Pass
85.25 - 83.5	Pole + Reinf.	TP33.048x32.725x0.6	Reinf. 6 Tension Rupture	96.8%	Pass
83.5 - 83.25	Pole + Reinf.	TP33.094x33.048x0.8625	Reinf. 10 Bolt Shear	69.2%	Pass
83.25 - 80.75	Pole + Reinf.	TP33.556x33.094x0.85	Reinf. 10 Tension Rupture	70.9%	Pass
80.75 - 80.5	Pole + Reinf.	TP33.602x33.556x0.9875	Reinf. 6 Bolt Shear	59.0%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
80.5 - 80.25	Pole + Reinf.	TP33.649x33.602x0.975	Reinf. 7 Bolt Shear	59.2%	Pass
80.25 - 77.5	Pole + Reinf.	TP34.157x33.649x0.9625	Reinf. 7 Tension Rupture	60.8%	Pass
77.5 - 77.25	Pole + Reinf.	TP34.203x34.157x0.6875	Reinf. 7 Tension Rupture	85.2%	Pass
77.25 - 73	Pole + Reinf.	TP35.819x34.203x0.6875	Reinf. 7 Tension Rupture	89.1%	Pass
73 - 68	Pole + Reinf.	TP35.287x34.363x0.75	Reinf. 7 Tension Rupture	87.6%	Pass
68 - 65.25	Pole + Reinf.	TP35.795x35.287x0.7375	Reinf. 7 Tension Rupture	89.7%	Pass
65.25 - 65	Pole + Reinf.	TP35.841x35.795x1.1	Reinf. 7 Tension Rupture	60.6%	Pass
65 - 64.25	Pole + Reinf.	TP35.979x35.841x1.1	Reinf. 7 Tension Rupture	61.0%	Pass
64.25 - 64	Pole + Reinf.	TP36.026x35.979x0.95	Reinf. 11 Tension Rupture	71.9%	Pass
64 - 60.5	Pole + Reinf.	TP36.672x36.026x0.95	Reinf. 11 Tension Rupture	74.2%	Pass
60.5 - 60.25	Pole + Reinf.	TP36.718x36.672x1	Reinf. 11 Tension Rupture	70.5%	Pass
60.25 - 60.08	Pole + Reinf.	TP36.75x36.718x1	Reinf. 11 Tension Rupture	70.6%	Pass
60.08 - 59.83	Pole + Reinf.	TP36.796x36.75x1.05	Reinf. 11 Tension Rupture	68.5%	Pass
59.83 - 59.08	Pole + Reinf.	TP36.934x36.796x1.05	Reinf. 11 Tension Rupture	68.9%	Pass
59.08 - 58.83	Pole + Reinf.	TP36.981x36.934x1.125	Reinf. 11 Tension Rupture	63.2%	Pass
58.83 - 55.75	Pole + Reinf.	TP37.55x36.981x1.1	Reinf. 11 Bolt Shear	65.7%	Pass
55.75 - 55.4	Pole + Reinf.	TP37.614x37.55x0.825	Reinf. 8 Tension Rupture	85.9%	Pass
55.4 - 55.17	Pole + Reinf.	TP37.657x37.614x0.825	Reinf. 8 Tension Rupture	86.1%	Pass
55.17 - 50.17	Pole + Reinf.	TP38.581x37.657x0.8125	Reinf. 8 Tension Rupture	89.2%	Pass
50.17 - 45.17	Pole + Reinf.	TP39.504x38.581x0.8	Reinf. 8 Tension Rupture	92.3%	Pass
45.17 - 41.25	Pole + Reinf.	TP40.229x39.504x0.7875	Reinf. 8 Tension Rupture	94.6%	Pass
41.25 - 41	Pole + Reinf.	TP40.275x40.229x0.875	Reinf. 8 Tension Rupture	83.0%	Pass
41 - 39	Pole + Reinf.	TP41.568x40.275x0.875	Reinf. 8 Tension Rupture	84.1%	Pass
39 - 33	Pole + Reinf.	TP41.003x39.894x1.175	Reinf. 8 Tension Rupture	66.1%	Pass
33 - 31.5	Pole + Reinf.	TP41.28x41.003x1.15	Reinf. 8 Tension Rupture	66.8%	Pass
31.5 - 31.25	Pole + Reinf.	TP41.326x41.28x1.175	Reinf. 8 Tension Rupture	66.4%	Pass
31.25 - 30.5	Pole + Reinf.	TP41.465x41.326x1.175	Reinf. 8 Bolt Shear	67.6%	Pass
30.5 - 30.25	Pole + Reinf.	TP41.511x41.465x1.125	Reinf. 9 Bolt Shear	70.6%	Pass
30.25 - 25.75	Pole + Reinf.	TP42.342x41.511x1.1	Reinf. 9 Tension Rupture	72.0%	Pass
25.75 - 25.5	Pole + Reinf.	TP42.389x42.342x0.825	Reinf. 9 Bolt Shear	98.8%	Pass
25.5 - 25.25	Pole + Reinf.	TP42.435x42.389x1.125	Reinf. 18 Compression	67.0%	Pass
25.25 - 20.25	Pole + Reinf.	TP43.359x42.435x1.1	Reinf. 18 Compression	69.0%	Pass
20.25 - 15.25	Pole + Reinf.	TP44.282x43.359x1.075	Reinf. 18 Compression	70.9%	Pass
15.25 - 10.25	Pole + Reinf.	TP45.206x44.282x1.05	Reinf. 18 Compression	72.7%	Pass
10.25 - 5.25	Pole + Reinf.	TP46.13x45.206x1.025	Reinf. 18 Compression	74.5%	Pass
5.25 - 0.25	Pole + Reinf.	TP47.054x46.13x1	Reinf. 18 Compression	76.3%	Pass
0.25 - 0	Pole + Reinf.	TP47.1x47.054x1	Reinf. 18 Compression	76.4%	Pass
				Summary	
			Pole	85.3%	Pass
			Reinforcement	98.8%	Pass
			Overall	98.8%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	146.0	50.5	Pass
1	Flange Plate	146.0	87.6	Pass
1	Anchor Rods	0	95.7	Pass
1	Base Plate	0	83.3	Pass
1	Base Transfer Stiffeners	0	95.5	Pass
1	Base Foundation (Structural)	0	68.4	Pass
1	Base Foundation (Soil Interaction)	0	99.9	Pass

Structure Rating (max from all components) =	99.9%
-----------------------------------------------------	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

Table 7 - Critical Deflections and Radius of Curvature at Service Wind Speed

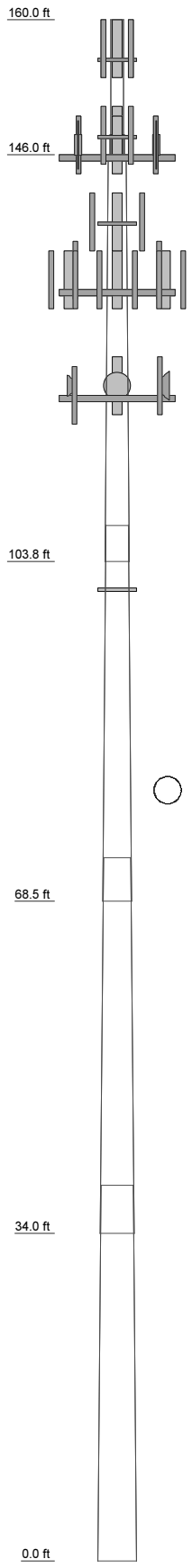
Elevation (ft)	Number of Dishes	Dish Manufacturer	Appurtenance	Gov. Load Comb.	Deflection (in)	Tilt (°)	Twist (°)	Radius of Curvature (ft)
122.0	2	andrew	VHLP800-11	32	21.32	1.74	0.00	3166
	1	andrew	VHLP2-18					

4.1) Recommendations

The tower modifications listed in FDH Velocitel (Project No. 16BFCG1400) Modification Drawings for a 160' Monopole dated May 2, 2016 must be installed as specified per reinforcement drawings for this analysis to be valid.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	5
Length (ft)	14.0000	42.2500	39.0000	39.0000	39.0000
Number of Sides	1	12	12	12	12
Thickness (in)	0.3750	0.2500	0.3125	0.3750	0.3750
Socket Length (ft)		3.7500	4.5000	5.0000	
Top Dia (in)	16.0000	22.0000	28.6150	34.3628	39.8943
Bot Dia (in)	16.0000	29.8080	35.8190	41.5680	47.1000
Grade	A53-B-35				
Weight (K)	0.9	3.0	4.3	6.0	6.9



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	156	5' x 2.4" Pipe Mount	146
TPA-65R-LCUIUUU-H8 w/ Mount Pipe	156	5' x 2.4" Pipe Mount	146
TPA-65R-LCUIUUU-H8 w/ Mount Pipe	156	5' x 2.4" Pipe Mount	146
80010798 w/ Mount Pipe	156	Platform Mount [LP 1201-1]	146
RRUS 11	156	APXV18-206517S-C	139
RRUS 11	156	APXV18-206517S-C	139
RRUS 11	156	APXV18-206517S-C	139
RRUS A2	156	Pipe Mount [PM 501-3]	139
RRUS A2	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS A2	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS 32	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS 32	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS 32	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
DC6-48-60-18-8F	156	BXA-70063/6CFx2 w/ Mount Pipe	132
SBNH-1D6565C w/ Mount Pipe	156	BXA-70063/6CFx2 w/ Mount Pipe	132
SBNH-1D6565C w/ Mount Pipe	156	BXA-70063/6CFx2 w/ Mount Pipe	132
AM-X-CD-16-65-00T-RET w/ Mount Pipe	156	(2) SBNHH-1D65B w/ Mount Pipe	132
DTMABP7819VG12A	156	(2) SBNHH-1D65B w/ Mount Pipe	132
DTMABP7819VG12A	156	(2) SBNHH-1D65B w/ Mount Pipe	132
DTMABP7819VG12A	156	RRH2X60-AWS	132
RRUS 11 B2	156	RRH2X60-AWS	132
RRUS 11 B2	156	RRH2X60-AWS	132
RRUS 11 B2	156	RRH2x60-700	132
DC6-48-60-18-8F	156	RRH2x60-700	132
T-Arm Mount [TA 703-3]	156	RRH2x60-700	132
(2) PCS 1900MHz 4x45W-65MHz	148	RRH2X60-PCS	132
(2) PCS 1900MHz 4x45W-65MHz	148	RRH2X60-PCS	132
(2) PCS 1900MHz 4x45W-65MHz	148	RRH2X60-PCS	132
800MHz 2X50W RRH W/FILTER	148	DB-T1-6Z-8AB-0Z	132
800MHz 2X50W RRH W/FILTER	148	DB-T1-6Z-8AB-0Z	132
800MHz 2X50W RRH W/FILTER	148	Platform Mount [LP 712-1]	132
(2) 4'x2.4" Pipe Mount	148	LLPX310R w/ Mount Pipe	121
(2) 4'x2.4" Pipe Mount	148	840 10054 w/Mount Pipe	121
(2) 4'x2.4" Pipe Mount	148	LLPX310R w/ Mount Pipe	121
Side Arm Mount [SO 103-3]	148	RRH-2WB	121
APXV9ERR18-C-A20 w/ Mount Pipe	146	RRH-2WB	121
APXVSP18-C-A20 w/ Mount Pipe	146	RRH-2WB	121
APXVSP18-C-A20 w/ Mount Pipe	146	HORIZON COMPACT	121
APXVTM14-C-120 w/ Mount Pipe	146	HORIZON COMPACT	121
APXVTM14-C-120 w/ Mount Pipe	146	HORIZON COMPACT	121
APXVTM14-C-120 w/ Mount Pipe	146	7' x 3.5" Pipe Mount	121
APXVTM14-C-120 w/ Mount Pipe	146	7' x 3.5" Pipe Mount	121
IBC1900BB-1	146	7' x 3.5" Pipe Mount	121
IBC1900BB-1	146	T-Arm Mount [TA 602-3]	121
IBC1900BB-1	146	VHLP800-11	121
IBC1900HG-2A	146	VHLP800-11	121
IBC1900HG-2A	146	VHLP2-18	121
IBC1900HG-2A	146	Side Arm Mount [SO 701-1]	101
TD-RRH8x20-25	146	58532A	101
TD-RRH8x20-25	146		
TD-RRH8x20-25	146		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A607-60	60 ksi	75 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

<p>FDH VELOCITEL ENGINEERING INNOVATION</p>	<p>FDH Velocitel 6521 Meriden Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>		<p>Job: BU# 876334, SOUTHINGTON, SMORON</p>	
	<p>TowerAnalysis</p>	<p>Project: 16BFCG1400</p>	<p>Client: Crown Castle</p>	<p>Drawn by: BApple</p>
		<p>Code: TIA/EIA-222-F</p>	<p>Date: 04/28/16</p>	<p>Scale: NTS</p>
				<p>Path:</p>
				<p>Dwg No. E-1</p>

DESIGNED APPURTENANCE LOADING

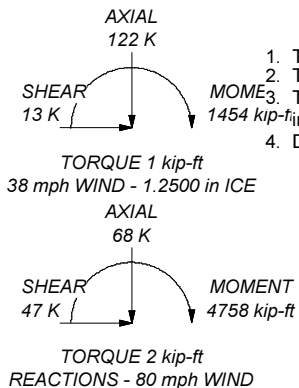
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	156	5' x 2.4" Pipe Mount	146
TPA-65R-LCUUUU-H8 w/ Mount Pipe	156	5' x 2.4" Pipe Mount	146
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80010798 w/ Mount Pipe	156	Platform Mount [LP 1201-1]	146
RRUS 11	156	APXV18-206517S-C	139
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RRUS 11	156	APXV18-206517S-C	139
RRUS A2	156	Pipe Mount [PM 501-3]	139
RRUS A2	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS A2	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS 32	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS 32	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
RRUS 32	156	BXA-80080-6CF-EDIN-X w/ Mount Pipe	132
DC6-48-60-18-8F	156	BXA-70063/6CFx2 w/ Mount Pipe	132
SBNH-1D6565C w/ Mount Pipe	156	BXA-70063/6CFx2 w/ Mount Pipe	132
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DTMABP7819VG12A	156	(2) SBNHH-1D65B w/ Mount Pipe	132
DTMABP7819VG12A	156	RRH2X60-AWS	132
RRUS 11 B2	156	RRH2X60-AWS	132
RRUS 11 B2	156	RRH2X60-AWS	132
RRUS 11 B2	156	RRH2x60-700	132
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(2) PCS 1900MHz 4x45W-65MHz	148	RRH2X60-PCS	132
(2) PCS 1900MHz 4x45W-65MHz	148	RRH2X60-PCS	132
800MHz 2X50W RRH W/FILTER	148	DB-T1-6Z-8AB-0Z	132
800MHz 2X50W RRH W/FILTER	148	DB-T1-6Z-8AB-0Z	132
800MHz 2X50W RRH W/FILTER	148	Platform Mount [LP 712-1]	132
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(2) 4x2.4" Pipe Mount	148	840 10054 w/ Mount Pipe	121
(2) 4x2.4" Pipe Mount	148	LLPX310R w/ Mount Pipe	121
Side Arm Mount [SO 103-3]	148	RRH-2WB	121
APXV9ERR18-C-A20 w/ Mount Pipe	146	RRH-2WB	121
APXVSP18-C-A20 w/ Mount Pipe	146	RRH-2WB	121
APXVSP18-C-A20 w/ Mount Pipe	146	HORIZON COMPACT	121
APXVTM14-C-120 w/ Mount Pipe	146	HORIZON COMPACT	121
APXVTM14-C-120 w/ Mount Pipe	146	HORIZON COMPACT	121
APXVTM14-C-120 w/ Mount Pipe	146	7' x 3.5" Pipe Mount	121
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IBC1900BB-1	146	7' x 3.5" Pipe Mount	121
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IBC1900HG-2A	146	VHLP2-18	121
TD-RRH8x20-25	146	Side Arm Mount [SO 701-1]	101
TD-RRH8x20-25	146	58532A	101
TD-RRH8x20-25	146		

MATERIAL STRENGTH


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A53-B-35	35 ksi	63 ksi	A607-60	60 ksi	75 ksi

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4. Deflections are based upon a 50 mph wind.



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	160.0						A53-B-35	0.3
2	155.0						A53-B-35	0.3
3	150.0						A53-B-35	0.3
4	146.0						A53-B-35	0.3
5	141.0						A53-B-35	0.3
6	136.0						A53-B-35	0.3
7	131.0						A53-B-35	0.3
8	126.0						A53-B-35	0.3
9	123.1						A53-B-35	0.3
10	117.8						A53-B-35	0.3
11	115.5						A53-B-35	0.3
12	110.3						A53-B-35	0.3
13	103.8						A53-B-35	0.3
14	100.5						A53-B-35	0.3
15	98.5						A53-B-35	0.3
16	93.3						A53-B-35	0.3
17	90.5						A53-B-35	0.3
18	85.3						A53-B-35	0.3
19	83.5						A53-B-35	0.3
20	80.8						A53-B-35	0.3
21	77.5						A53-B-35	0.3
22	68.5						A53-B-35	0.3
23	65.3						A53-B-35	0.3
24	60.5						A53-B-35	0.3
25	58.8						A53-B-35	0.3
26	55.8						A53-B-35	0.3
27	50.2						A53-B-35	0.3
28	45.2						A53-B-35	0.3
29	41.3						A53-B-35	0.3
30	34.0						A53-B-35	0.3
31	31.5						A53-B-35	0.3
32	25.8						A53-B-35	0.3
33	20.3						A53-B-35	0.3
34	15.3						A53-B-35	0.3
35	10.3						A53-B-35	0.3
36	5.3						A53-B-35	0.3
37	0.3						A53-B-35	0.3



FDH VELOCITEL
ENGINEERING INNOVATION

TowerAnalysis

FDH Velocitel

6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616

Phone: 9197551012
FAX: 9197551031

Job: **BU# 876334, SOUTHWINGTON, SMORON**

Project: **16BFCG1400**

Client: Crown Castle
Code: TIA/EIA-222-F
Path:

Drawn by: BApple
Date: 04/28/16

App'd:
Scale: NTS
Dwg No. E-1

tnxTower FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job BU# 876334, SOUTHLINGTON, SMORON	Page 1 of 49
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	Client Crown Castle	Designed by BApple

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 1.2500 in.

Ice thickness is considered to increase with height.

Ice density of 56.00 pcf.

A wind speed of 38 mph is used in combination with ice.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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	160.0000-155.000	5.0000	0.00	Round	16.0000	16.0000	0.3750		A53-B-35 (35 ksi)
L2	155.0000-150.000	5.0000	0.00	Round	16.0000	16.0000	0.3750		A53-B-35 (35 ksi)
L3	150.0000-146.000	4.0000	0.00	Round	16.0000	16.0000	0.3750		A53-B-35 (35 ksi)
L4	146.0000-141.000	5.0000	0.00	12	22.0000	22.9240	0.2500	1.0000	A607-60 (60 ksi)
L5	141.0000-136.000	5.0000	0.00	12	22.9240	23.8480	0.2500	1.0000	A607-60 (60 ksi)

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	Client Crown Castle	Designed by BApple

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
L6	136.0000-131.000	5.0000	0.00	12	23.8480	24.7721	0.2500	1.0000	A607-60 (60 ksi)
L7	131.0000-126.000	5.0000	0.00	12	24.7721	25.6961	0.2500	1.0000	A607-60 (60 ksi)
L8	126.0000-123.080	2.9200	0.00	12	25.6961	26.2357	0.2500	1.0000	A607-60 (60 ksi)
L9	123.0800-122.830	0.2500	0.00	12	26.2357	26.2819	0.5000	2.0000	A607-60 (60 ksi)
L10	122.8300-117.830	5.0000	0.00	12	26.2819	27.2059	0.4875	1.9500	A607-60 (60 ksi)
L11	117.8300-117.500	0.3300	0.00	12	27.2059	27.2669	0.4875	1.9500	A607-60 (60 ksi)
L12	117.5000-117.250	0.2500	0.00	12	27.2669	27.3131	0.5000	2.0000	A607-60 (60 ksi)
L13	117.2500-115.500	1.7500	0.00	12	27.3131	27.6365	0.5000	2.0000	A607-60 (60 ksi)
L14	115.5000-115.250	0.2500	0.00	12	27.6365	27.6827	0.6625	2.6500	A607-60 (60 ksi)
L15	115.2500-110.250	5.0000	0.00	12	27.6827	28.6068	0.6500	2.6000	A607-60 (60 ksi)
L16	110.2500-103.750	6.5000	3.75	12	28.6068	29.8080	0.6375	2.5500	A607-60 (60 ksi)
L17	103.7500-102.500	5.0000	0.00	12	28.6150	29.5386	0.7000	2.8000	A607-60 (60 ksi)
L18	102.5000-100.500	2.0000	0.00	12	29.5386	29.9080	0.7000	2.8000	A607-60 (60 ksi)
L19	100.5000-100.250	0.2500	0.00	12	29.9080	29.9542	0.7625	3.0500	A607-60 (60 ksi)
L20	100.2500-98.500	1.7500	0.00	12	29.9542	30.2774	0.7625	3.0500	A607-60 (60 ksi)
L21	98.5000-98.250	0.2500	0.00	12	30.2774	30.3236	0.6000	2.4000	A607-60 (60 ksi)
L22	98.2500-93.250	5.0000	0.00	12	30.3236	31.2472	0.5875	2.3500	A607-60 (60 ksi)
L23	93.2500-90.500	2.7500	0.00	12	31.2472	31.7552	0.5875	2.3500	A607-60 (60 ksi)
L24	90.5000-90.250	0.2500	0.00	12	31.7552	31.8014	0.6125	2.4500	A607-60 (60 ksi)
L25	90.2500-85.250	5.0000	0.00	12	31.8014	32.7250	0.6000	2.4000	A607-60 (60 ksi)
L26	85.2500-83.500	1.7500	0.00	12	32.7250	33.0482	0.6000	2.4000	A607-60 (60 ksi)
L27	83.5000-83.250	0.2500	0.00	12	33.0482	33.0944	0.8625	3.4500	A607-60 (60 ksi)
L28	83.2500-80.750	2.5000	0.00	12	33.0944	33.5562	0.8500	3.4000	A607-60 (60 ksi)
L29	80.7500-80.500	0.2500	0.00	12	33.5562	33.6024	0.9875	3.9500	A607-60 (60 ksi)
L30	80.5000-80.250	0.2500	0.00	12	33.6024	33.6486	0.9750	3.9000	A607-60 (60 ksi)
L31	80.2500-77.500	2.7500	0.00	12	33.6486	34.1565	0.9625	3.8500	A607-60 (60 ksi)
L32	77.5000-77.250	0.2500	0.00	12	34.1565	34.2027	0.6875	2.7500	A607-60 (60 ksi)
L33	77.2500-68.500	8.7500	4.50	12	34.2027	35.8190	0.6875	2.7500	A607-60 (60 ksi)
L34	68.5000-68.000	5.0000	0.00	12	34.3628	35.2865	0.7500	3.0000	A607-60 (60 ksi)
L35	68.0000-65.250	2.7500	0.00	12	35.2865	35.7946	0.7375	2.9500	A607-60 (60 ksi)
L36	65.2500-65.000	0.2500	0.00	12	35.7946	35.8408	1.1000	4.4000	A607-60

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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
L37	65.0000-64.2500	0.7500	0.00	12	35.8408	35.9793	1.1000	4.4000	(60 ksi) A607-60
L38	64.2500-64.0000	0.2500	0.00	12	35.9793	36.0255	0.9500	3.8000	(60 ksi) A607-60
L39	64.0000-60.5000	3.5000	0.00	12	36.0255	36.6721	0.9500	3.8000	(60 ksi) A607-60
L40	60.5000-60.2500	0.2500	0.00	12	36.6721	36.7183	1.0000	4.0000	(60 ksi) A607-60
L41	60.2500-60.0800	0.1700	0.00	12	36.7183	36.7497	1.0000	4.0000	(60 ksi) A607-60
L42	60.0800-59.8300	0.2500	0.00	12	36.7497	36.7959	1.0500	4.2000	(60 ksi) A607-60
L43	59.8300-59.0800	0.7500	0.00	12	36.7959	36.9345	1.0500	4.2000	(60 ksi) A607-60
L44	59.0800-58.8300	0.2500	0.00	12	36.9345	36.9807	1.1250	4.5000	(60 ksi) A607-60
L45	58.8300-55.7500	3.0800	0.00	12	36.9807	37.5497	1.1000	4.4000	(60 ksi) A607-60
L46	55.7500-55.4000	0.3500	0.00	12	37.5497	37.6144	0.8250	3.3000	(60 ksi) A607-60
L47	55.4000-55.1700	0.2300	0.00	12	37.6144	37.6569	0.8250	3.3000	(60 ksi) A607-60
L48	55.1700-50.1700	5.0000	0.00	12	37.6569	38.5806	0.8125	3.2500	(60 ksi) A607-60
L49	50.1700-45.1700	5.0000	0.00	12	38.5806	39.5043	0.8000	3.2000	(60 ksi) A607-60
L50	45.1700-41.2500	3.9200	0.00	12	39.5043	40.2286	0.7875	3.1500	(60 ksi) A607-60
L51	41.2500-41.0000	0.2500	0.00	12	40.2286	40.2748	0.8750	3.5000	(60 ksi) A607-60
L52	41.0000-34.0000	7.0000	5.00	12	40.2748	41.5680	0.8750	3.5000	(60 ksi) A607-60
L53	34.0000-33.0000	6.0000	0.00	12	39.8943	41.0028	1.1750	4.7000	(60 ksi) A607-60
L54	33.0000-31.5000	1.5000	0.00	12	41.0028	41.2800	1.1500	4.6000	(60 ksi) A607-60
L55	31.5000-31.2500	0.2500	0.00	12	41.2800	41.3262	1.1750	4.7000	(60 ksi) A607-60
L56	31.2500-30.5000	0.7500	0.00	12	41.3262	41.4647	1.1750	4.7000	(60 ksi) A607-60
L57	30.5000-30.2500	0.2500	0.00	12	41.4647	41.5109	1.1250	4.5000	(60 ksi) A607-60
L58	30.2500-25.7500	4.5000	0.00	12	41.5109	42.3424	1.1000	4.4000	(60 ksi) A607-60
L59	25.7500-25.5000	0.2500	0.00	12	42.3424	42.3885	0.8250	3.3000	(60 ksi) A607-60
L60	25.5000-25.2500	0.2500	0.00	12	42.3885	42.4347	1.1250	4.5000	(60 ksi) A607-60
L61	25.2500-20.2500	5.0000	0.00	12	42.4347	43.3586	1.1000	4.4000	(60 ksi) A607-60
L62	20.2500-15.2500	5.0000	0.00	12	43.3586	44.2824	1.0750	4.3000	(60 ksi) A607-60
L63	15.2500-10.2500	5.0000	0.00	12	44.2824	45.2062	1.0500	4.2000	(60 ksi) A607-60
L64	10.2500-5.2500	5.0000	0.00	12	45.2062	46.1300	1.0250	4.1000	(60 ksi) A607-60
L65	5.2500-0.2500	5.0000	0.00	12	46.1300	47.0538	1.0000	4.0000	(60 ksi) A607-60
L66	0.2500-0.0000	0.2500		12	47.0538	47.1000	1.0000	4.0000	(60 ksi) A607-60

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Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	Iu/Q in ²	w in	w/t
L1	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L2	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L3	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L4	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.7327	18.2526	1197.7540	8.1173	11.8746	100.8665	2426.9743	8.9834	5.4736	21.895
L5	23.7327	18.2526	1197.7540	8.1173	11.8746	100.8665	2426.9743	8.9834	5.4736	21.895
	24.6893	18.9964	1350.2371	8.4481	12.3533	109.3018	2735.9464	9.3495	5.7213	22.885
L6	24.6893	18.9964	1350.2371	8.4481	12.3533	109.3018	2735.9464	9.3495	5.7213	22.885
	25.6459	19.7403	1515.1418	8.7789	12.8319	118.0759	3070.0880	9.7156	5.9689	23.876
L7	25.6459	19.7403	1515.1418	8.7789	12.8319	118.0759	3070.0880	9.7156	5.9689	23.876
	26.6026	20.4841	1692.9543	9.1097	13.3106	127.1887	3430.3845	10.0817	6.2166	24.866
L8	26.6026	20.4841	1692.9543	9.1097	13.3106	127.1887	3430.3845	10.0817	6.2166	24.866
	27.1612	20.9185	1802.9609	9.3029	13.5901	132.6672	3653.2877	10.2955	6.3612	25.445
L9	27.1612	20.9185	1802.9609	9.3029	13.5901	132.6672	3653.2877	10.2955	6.3612	25.445
	27.2091	41.4345	3502.8458	9.2134	13.5901	257.7497	7097.7153	20.3928	5.6912	11.382
L10	27.2091	41.4345	3502.8458	9.2134	13.5901	257.7497	7097.7153	20.3928	5.6912	11.382
	27.2091	41.5089	3521.7448	9.2299	13.6140	258.6848	7136.0098	20.4294	5.7036	11.407
L11	27.2091	41.5089	3521.7448	9.2299	13.6140	258.6848	7136.0098	20.4294	5.7036	11.407
	28.1657	40.4908	3438.6980	9.2344	13.6140	252.5847	6967.7343	19.9283	5.7371	11.768
L12	28.1657	40.4908	3438.6980	9.2344	13.6140	252.5847	6967.7343	19.9283	5.7371	11.768
	28.1657	41.9413	3821.6437	9.5652	14.0927	271.1793	7743.6862	20.6422	5.9847	12.276
L13	28.1657	41.9413	3821.6437	9.5652	14.0927	271.1793	7743.6862	20.6422	5.9847	12.276
	28.2288	42.0370	3847.8724	9.5870	14.1243	272.4298	7796.8328	20.6893	6.0010	12.31
L14	28.2288	42.0370	3847.8724	9.5870	14.1243	272.4298	7796.8328	20.6893	6.0010	12.31
	28.2288	43.0948	3941.0120	9.5826	14.1243	279.0241	7985.5587	21.2099	5.9675	11.935
L15	28.2288	43.0948	3941.0120	9.5826	14.1243	279.0241	7985.5587	21.2099	5.9675	11.935
	28.2766	43.1691	3961.4544	9.5991	14.1482	279.9970	8026.9807	21.2465	5.9799	11.96
L16	28.2766	43.1691	3961.4544	9.5991	14.1482	279.9970	8026.9807	21.2465	5.9799	11.96
	28.6115	43.6898	4106.5343	9.7149	14.3157	286.8547	8320.9518	21.5028	6.0666	12.133
L17	28.6115	43.6898	4106.5343	9.7149	14.3157	286.8547	8320.9518	21.5028	6.0666	12.133
	28.6115	57.5424	5343.9933	9.6567	14.3157	373.2952	10828.3793	28.3206	5.6311	8.5
L18	28.6115	57.5424	5343.9933	9.6567	14.3157	373.2952	10828.3793	28.3206	5.6311	8.5
	28.6593	57.6409	5371.5000	9.6732	14.3397	374.5904	10884.1153	28.3691	5.6435	8.518
L19	28.6593	57.6409	5371.5000	9.6732	14.3397	374.5904	10884.1153	28.3691	5.6435	8.518
	29.6159	58.5135	5837.3552	10.0085	14.8183	393.9286	11828.0643	28.7986	5.9246	9.115
L20	29.6159	58.5135	5837.3552	10.0085	14.8183	393.9286	11828.0643	28.7986	5.9246	9.115
	29.6159	57.4139	5732.7812	10.0130	14.8183	386.8716	11616.1690	28.2574	5.9581	9.346
L21	29.6159	57.4139	5732.7812	10.0130	14.8183	386.8716	11616.1690	28.2574	5.9581	9.346
	30.8595	59.8797	6503.5971	10.4430	15.4405	421.2026	13178.0510	29.4710	6.2800	9.851
L22	30.8595	59.8797	6503.5971	10.4430	15.4405	421.2026	13178.0510	29.4710	6.2800	9.851
	30.3415	62.9204	6258.2359	9.9936	14.8226	422.2102	12680.8826	30.9675	5.7928	8.275
L23	30.3415	62.9204	6258.2359	9.9936	14.8226	422.2102	12680.8826	30.9675	5.7928	8.275
	30.5806	65.0021	6900.1927	10.3242	15.3010	450.9641	13981.6611	31.9921	6.0403	8.629
L24	30.5806	65.0021	6900.1927	10.3242	15.3010	450.9641	13981.6611	31.9921	6.0403	8.629
	30.9631	65.8349	7168.7893	10.4565	15.4923	462.7309	14525.9107	32.4019	6.1393	8.77
L25	30.9631	65.8349	7168.7893	10.4565	15.4923	462.7309	14525.9107	32.4019	6.1393	8.77
	31.0109	71.6729	7795.7771	10.4506	15.5163	502.4260	15796.3580	35.2752	5.9842	7.848
L26	31.0109	71.6729	7795.7771	10.4506	15.5163	502.4260	15796.3580	35.2752	5.9842	7.848
	31.3455	72.4666	8057.6376	10.5664	15.6837	513.7581	16326.9584	35.6658	6.0709	7.962
L27	31.3455	72.4666	8057.6376	10.5664	15.6837	513.7581	16326.9584	35.6658	6.0709	7.962
	31.3455	57.3368	6445.7391	10.6245	15.6837	410.9829	13060.8150	28.2194	6.5064	10.844
L28	31.3455	57.3368	6445.7391	10.6245	15.6837	410.9829	13060.8150	28.2194	6.5064	10.844
	31.3933	57.4260	6475.8757	10.6411	15.7076	412.2756	13121.8798	28.2634	6.5187	10.865
L29	31.3933	57.4260	6475.8757	10.6411	15.7076	412.2756	13121.8798	28.2634	6.5187	10.865
	31.3933	56.2533	6348.9649	10.6455	15.7076	404.1960	12864.7241	27.6862	6.5522	11.153
L30	31.3933	56.2533	6348.9649	10.6455	15.7076	404.1960	12864.7241	27.6862	6.5522	11.153
	32.3495	58.0005	6959.1184	10.9762	16.1861	429.9452	14101.0606	28.5461	6.7998	11.574
L31	32.3495	58.0005	6959.1184	10.9762	16.1861	429.9452	14101.0606	28.5461	6.7998	11.574
	32.3495	58.0005	6959.1184	10.9762	16.1861	429.9452	14101.0606	28.5461	6.7998	11.574
L32	32.3495	58.0005	6959.1184	10.9762	16.1861	429.9452	14101.0606	28.5461	6.7998	11.574
	32.8754	58.9615	7310.7806	11.1580	16.4492	444.4462	14813.6236	29.0191	6.9359	11.806
L33	32.8754	58.9615	7310.7806	11.1580	16.4492	444.4462	14813.6236	29.0191	6.9359	11.806
	32.8754	61.4212	7603.5516	11.1491	16.4492	462.2447	15406.8570	30.2296	6.8689	11.215
L34	32.8754	61.4212	7603.5516	11.1491	16.4492	462.2447	15406.8570	30.2296	6.8689	11.215
	32.9232	61.5123	7637.4263	11.1656	16.4731	463.6298	15475.4963	30.2745	6.8813	11.235
L35	32.9232	61.5123	7637.4263	11.1656	16.4731	463.6298	15475.4963	30.2745	6.8813	11.235
	32.9232	60.2811	7490.5595	11.1701	16.4731	454.7143	15177.9044	29.6685	6.9148	11.525
L36	32.9232	60.2811	7490.5595	11.1701	16.4731	454.7143	15177.9044	29.6685	6.9148	11.525
	33.8794	62.0654	8175.6282	11.5007	16.9515	482.2943	16566.0392	30.5467	7.1623	11.937
L37	33.8794	62.0654	8175.6282	11.5007	16.9515	482.2943	16566.0392	30.5467	7.1623	11.937
	34.2140	62.6900	8424.9215	11.6165	17.1190	492.1392	17071.1751	30.8541	7.2489	12.082
L38	34.2140	62.6900	8424.9215	11.6165	17.1190	492.1392	17071.1751	30.8541	7.2489	12.082
	34.2140	89.3878	11819.2732	11.5225	17.1190	690.4192	23949.0519	43.9940	6.5454	7.589
L39	34.2140	89.3878	11819.2732	11.5225	17.1190	690.4192	23949.0519	43.9940	6.5454	7.589
	34.2618	89.5161	11870.2206	11.5390	17.1429	692.4278	24052.2851	44.0571	6.5578	7.603
L40	34.2618	89.5161	11870.2206	11.5390	17.1429	692.4278	24052.2851	44.0571	6.5578	7.603
	34.2618	88.2529	11711.8039	11.5435	17.1429	683.1868	23731.2899	43.4354	6.5913	7.754

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Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L29	34.7399	89.5169	12222.2453	11.7088	17.3821	703.1508	24765.5825	44.0575	6.7151	7.9
	34.7399	103.5603	14021.0384	11.6596	17.3821	806.6361	28410.4251	50.9692	6.3466	6.427
	34.7877	103.7072	14080.7649	11.6761	17.4060	808.9589	28531.4472	51.0415	6.3589	6.439
L30	34.7877	102.4337	13918.5184	11.6806	17.4060	799.6376	28202.6917	50.4147	6.3924	6.556
	34.8356	102.5786	13977.7013	11.6971	17.4300	801.9357	28322.6125	50.4861	6.4048	6.569
L31	34.8356	101.3023	13814.3429	11.7016	17.4300	792.5634	27991.6039	49.8579	6.4383	6.689
	35.3614	102.8766	14468.4723	11.8835	17.6931	817.7473	29317.0475	50.6327	6.5745	6.831
L32	35.3614	74.0921	10593.6122	11.9819	17.6931	598.7431	21465.5304	36.4659	7.3115	10.635
	35.4093	74.1943	10637.5230	11.9984	17.7170	600.4131	21554.5056	36.5162	7.3238	10.653
L33	35.4093	74.1943	10637.5230	11.9984	17.7170	600.4131	21554.5056	36.5162	7.3238	10.653
	37.0826	77.7724	12251.9327	12.5771	18.5542	660.3305	24825.7374	38.2772	7.7570	11.283
L34	36.4357	81.1748	11706.1986	12.0334	17.7999	657.6548	23719.9321	39.9518	7.1992	9.599
	36.5313	83.4057	12698.0964	12.3641	18.2784	694.7045	25729.7859	41.0497	7.4468	9.929
L35	36.5313	82.0453	12500.0243	12.3685	18.2784	683.8681	25328.4381	40.3802	7.4803	10.143
	37.0573	83.2518	13059.6316	12.5504	18.5416	704.3426	26462.3543	40.9740	7.6164	10.327
L36	37.0573	122.8882	18880.7512	12.4207	18.5416	1018.2919	38257.5208	60.4818	6.6449	6.041
	37.1051	123.0518	18956.2570	12.4372	18.5655	1021.0466	38410.5161	60.5623	6.6573	6.052
L37	37.1051	123.0518	18956.2570	12.4372	18.5655	1021.0466	38410.5161	60.5623	6.6573	6.052
	37.2485	123.5426	19183.9818	12.4868	18.6373	1029.3332	38871.9481	60.8039	6.6945	6.086
L38	37.2485	107.1547	16782.6588	12.5405	18.6373	900.4881	34006.2166	52.7383	7.0965	7.47
	37.2964	107.2960	16849.1319	12.5570	18.6612	902.8957	34140.9092	52.8078	7.1088	7.483
L39	37.2964	107.2960	16849.1319	12.5570	18.6612	902.8957	34140.9092	52.8078	7.1088	7.483
	37.9658	109.2740	17798.2667	12.7885	18.9962	936.9399	36064.1137	53.7813	7.2821	7.665
L40	37.9658	114.8643	18656.4579	12.7706	18.9962	982.1170	37803.0417	56.5327	7.1481	7.148
	38.0136	115.0130	18729.0195	12.7872	19.0201	984.6966	37950.0712	56.6059	7.1605	7.161
L41	38.0136	115.0130	18729.0195	12.7872	19.0201	984.6966	37950.0712	56.6059	7.1605	7.161
	38.0461	115.1141	18778.4687	12.7984	19.0364	986.4527	38050.2687	56.6557	7.1689	7.169
L42	38.0461	120.7008	19634.7769	12.7805	19.0364	1031.4354	39785.3812	59.4053	7.0349	6.7
	38.0939	120.8570	19711.0844	12.7970	19.0603	1034.1442	39940.0009	59.4821	7.0473	6.712
L43	38.0939	120.8570	19711.0844	12.7970	19.0603	1034.1442	39940.0009	59.4821	7.0473	6.712
	38.2374	121.3254	19941.1927	12.8466	19.1321	1042.2919	40406.2628	59.7127	7.0844	6.747
L44	38.2374	129.7198	21231.8788	12.8198	19.1321	1109.7539	43021.5427	63.8442	6.8834	6.119
	38.2852	129.8872	21314.1400	12.8363	19.1560	1112.6621	43188.2262	63.9265	6.8958	6.13
L45	38.2852	127.0893	20884.1153	12.8453	19.1560	1090.2135	42316.8796	62.5495	6.9628	6.33
	38.8743	129.1048	21893.5545	13.0490	19.4507	1125.5896	44362.2771	63.5415	7.1153	6.468
L46	38.8743	97.5592	16794.6299	13.1474	19.4507	863.4441	34030.4734	48.0156	7.8523	9.518
	38.9413	97.7309	16883.4987	13.1706	19.4842	866.5209	34210.5457	48.1002	7.8696	9.539
L47	38.9413	97.7309	16883.4987	13.1706	19.4842	866.5209	34210.5457	48.1002	7.8696	9.539
	38.9852	97.8438	16942.0686	13.1858	19.5062	868.5457	34329.2241	48.1557	7.8810	9.553
L48	38.9852	96.3940	16702.3644	13.1903	19.5062	856.2571	33843.5184	47.4422	7.9145	9.741
	39.9416	98.8108	17990.3905	13.5210	19.9848	900.2059	36453.4086	48.6317	8.1621	10.046
L49	39.9416	97.3228	17731.2090	13.5255	19.9848	887.2369	35928.2365	47.8993	8.1956	10.245
	40.8979	99.7024	19063.8695	13.8562	20.4633	931.6149	38628.5681	49.0705	8.4432	10.554
L50	40.8979	98.1762	18784.1845	13.8606	20.4633	917.9472	38061.8504	48.3194	8.4767	10.764
	41.6477	100.0127	19858.1281	14.1199	20.8384	952.9585	40237.9513	49.2232	8.6708	11.01
L51	41.6477	110.8787	21918.0615	14.0886	20.8384	1051.8113	44411.9348	54.5711	8.4363	9.641
	41.6955	111.0088	21995.3246	14.1051	20.8623	1054.3086	44568.4908	54.6352	8.4486	9.656
L52	41.6955	111.0088	21995.3246	14.1051	20.8623	1054.3086	44568.4908	54.6352	8.4486	9.656
	43.0344	114.6525	24233.1014	14.5681	21.5322	1125.4342	49102.8334	56.4285	8.7952	10.052
L53	42.2580	146.4943	28032.4187	13.8615	20.6652	1356.5021	56801.2803	72.1000	7.5427	6.419
	42.4493	150.6886	30509.8156	14.2584	21.2395	1436.4682	61821.1581	74.1643	7.8398	6.672
L54	42.4493	147.5750	29916.9367	14.2673	21.2395	1408.5541	60619.8246	72.6319	7.9068	6.875
	42.7362	148.6013	30545.4314	14.3665	21.3830	1428.4897	61893.3252	73.1370	7.9810	6.94
L55	42.7362	151.7372	31151.1706	14.3576	21.3830	1456.8177	63120.7171	74.6804	7.9140	6.735
	42.7840	151.9119	31258.9292	14.3741	21.4070	1460.2232	63339.0653	74.7664	7.9264	6.746
L56	42.7840	151.9119	31258.9292	14.3741	21.4070	1460.2232	63339.0653	74.7664	7.9264	6.746
	42.9275	152.4362	31583.6955	14.4237	21.4787	1470.4636	63997.1298	75.0245	7.9635	6.777
L57	42.9275	146.1307	30352.4316	14.4416	21.4787	1413.1388	61502.2554	71.9211	8.0975	7.198
	42.9753	146.2980	30456.8155	14.4582	21.5027	1416.4208	61713.7654	72.0034	8.1099	7.209
L58	42.9753	143.1355	29835.3355	14.4671	21.5027	1387.5184	60454.4785	70.4469	8.1769	7.434
	43.8360	146.0804	31715.0205	14.7648	21.9333	1445.9730	64263.2299	71.8963	8.3998	7.636
L59	43.8360	110.2909	24265.2586	14.8632	21.9333	1106.3183	49167.9925	54.2818	9.1368	11.075

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Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L60	43.8839	110.4136	24346.3386	14.8798	21.9573	1108.8054	49332.2826	54.3422	9.1491	11.09
	43.8839	149.4772	32485.8395	14.7724	21.9573	1479.5028	65825.1183	73.5681	8.3451	7.418
	43.9317	149.6445	32595.0563	14.7889	21.9812	1482.8609	66046.4210	73.6505	8.3575	7.429
L61	43.9317	146.4076	31928.6197	14.7978	21.9812	1452.5425	64696.0398	72.0574	8.4245	7.659
	44.8881	149.6798	34117.5946	15.1286	22.4597	1519.0562	69131.4965	73.6678	8.6721	7.884
L62	44.8881	146.3645	33401.4051	15.1375	22.4597	1487.1685	67680.3023	72.0362	8.7391	8.129
	45.8445	149.5623	35638.8529	15.4682	22.9383	1553.6855	72213.9782	73.6100	8.9867	8.36
L63	45.8445	146.1686	34870.5011	15.4772	22.9383	1520.1890	70657.0892	71.9398	9.0537	8.623
	46.8009	149.2921	37154.0067	15.8079	23.4168	1586.6388	75284.0906	73.4770	9.3013	8.858
L64	46.8009	145.8200	36331.0265	15.8169	23.4168	1551.4939	73616.5096	71.7682	9.3683	9.14
	47.7573	148.8690	38658.0211	16.1476	23.8953	1617.8060	78331.6314	73.2688	9.6158	9.381
L65	47.7573	145.3186	37777.8895	16.1565	23.8953	1580.9732	76548.2463	71.5214	9.6828	9.683
	48.7137	148.2933	40145.6503	16.4873	24.3739	1647.0772	81345.9715	72.9854	9.9304	9.93
L66	48.7137	148.2933	40145.6503	16.4873	24.3739	1647.0772	81345.9715	72.9854	9.9304	9.93
	48.7615	148.4420	40266.5664	16.5038	24.3978	1650.4179	81590.9803	73.0586	9.9428	9.943

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1				1	1	1			
160.0000-155.0000									
L2				1	1	1			
155.0000-150.0000									
L3				1	1	1			
150.0000-146.0000									
L4				1	1	1			
146.0000-141.0000									
L5				1	1	1			
141.0000-136.0000									
L6				1	1	1			
136.0000-131.0000									
L7				1	1	1			
131.0000-126.0000									
L8				1	1	1			
126.0000-123.0800									
L9				1	1	0.939112			
123.0800-122.8300									
L10				1	1	0.947166			
122.8300-117.8300									
L11				1	1	0.946176			
117.8300-117.5000									
L12				1	1	1.02661			
117.5000-117.2500									
L13				1	1	1.02034			
117.2500-115.5000									
L14				1	1	0.930389			

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	Client Crown Castle	Designed by BApple

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
00									
L54				1	1	0.959218			
33.0000-31.50									
00									
L55				1	1	0.948701			
31.5000-31.25									
00									
L56				1	1	0.946536			
31.2500-30.50									
00									
L57				1	1	0.963802			
30.5000-30.25									
00									
L58				1	1	0.972111			
30.2500-25.75									
00									
L59				1	1	1.06556			
25.7500-25.50									
00									
L60				1	1	0.766005			
25.5000-25.25									
00									
L61				1	1	0.773278			
25.2500-20.25									
00									
L62				1	1	0.781344			
20.2500-15.25									
00									
L63				1	1	0.79023			
15.2500-10.25									
00									
L64				1	1	0.799969			
10.2500-5.250									
0									
L65				1	1	0.810597			
5.2500-0.2500									
L66				1	1	0.81016			
0.2500-0.0000									

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
			ft						
MP3-04 (1.25")	A	Surface Af (CaAa)	61.5000 - 31.5000	1	1	0.500 0.500	1.6100	12.7800	0.00

MP3-05 (1.25")	A	Surface Af (CaAa)	31.5000 - 25.5000	1	1	0.500 0.500	2.0900	14.8400	0.00
MP3-05 (1.25")	A	Surface Af (CaAa)	25.5000 - 11.5000	1	1	0.500 0.500	2.0900	14.8400	0.02

MP3-04 (1.25")	B	Surface Af (CaAa)	60.5000 - 30.5000	1	1	0.500 0.500	1.6100	12.7800	0.00
MP3-04 (1.25")	C	Surface Af	60.5000 - 30.5000	1	1	0.500	1.6100	12.7800	0.00

tnxTower

FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
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Job	BU# 876334, SOUTHLINGTON, SMORON	Page	10 of 49
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Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
***		(CaAa)				0.500			
MP3-05 (1.25")	B	Surface Af (CaAa)	30.5000 - 25.5000	1	1	0.500	2.0900	14.8400	0.00
MP3-05 (1.25")	B	Surface Af (CaAa)	25.5000 - 0.5000	1	1	0.500	2.0900	14.8400	0.02
MP3-05 (1.25")	C	Surface Af (CaAa)	30.5000 - 25.5000	1	1	0.500	2.0900	14.8400	0.00
MP3-05 (1.25")	C	Surface Af (CaAa)	25.5000 - 0.5000	1	1	0.500	2.0900	14.8400	0.02

MP3-04 (1.25")	B	Surface Af (CaAa)	15.5000 - 0.5000	1	1	-0.250	1.6100	12.7800	0.01
MP3-04 (1.25")	A	Surface Af (CaAa)	15.5000 - 0.5000	1	1	0.250	1.6100	12.7800	0.01

MS-600 (1.25")	C	Surface Af (CaAa)	100.5000 - 80.5000	1	1	-0.250	1.0000	14.0000	0.00
MS-600 (1.25")	B	Surface Af (CaAa)	100.5000 - 80.5000	1	1	0.000	1.0000	14.0000	0.00
MS-600 (1.25")	A	Surface Af (CaAa)	100.5000 - 80.5000	1	1	0.000	1.0000	14.0000	0.00

MS-600 (1.25")	C	Surface Af (CaAa)	80.5000 - 60.5000	1	1	-0.250	1.0000	14.0000	0.00
MS-600 (1.25")	B	Surface Af (CaAa)	80.5000 - 60.5000	1	1	0.000	1.0000	14.0000	0.00
MS-600 (1.25")	A	Surface Af (CaAa)	80.5000 - 60.5000	1	1	0.000	1.0000	14.0000	0.00

MS-650 (1.25")	C	Surface Af (CaAa)	60.5000 - 30.5000	1	1	-0.250	1.2500	15.5000	0.00
MS-650 (1.25")	B	Surface Af (CaAa)	60.5000 - 30.5000	1	1	0.000	1.2500	15.5000	0.00
MS-650 (1.25")	A	Surface Af (CaAa)	60.5000 - 30.5000	1	1	0.000	1.2500	15.5000	0.00

MS-600 (1.25")	C	Surface Af (CaAa)	30.5000 - 25.5000	1	1	-0.250	1.0000	14.0000	0.00
MS-600 (1.25")	C	Surface Af (CaAa)	25.5000 - 0.5000	1	1	-0.250	1.0000	14.0000	0.02
MS-600 (1.25")	B	Surface Af (CaAa)	30.5000 - 25.5000	1	1	0.000	1.0000	14.0000	0.00
MS-600 (1.25")	B	Surface Af (CaAa)	25.5000 - 0.5000	1	1	0.000	1.0000	14.0000	0.02
MS-600 (1.25")	A	Surface Af (CaAa)	30.5000 - 25.5000	1	1	0.000	1.0000	14.0000	0.00
MS-600 (1.25")	A	Surface Af (CaAa)	25.5000 - 0.5000	1	1	0.000	1.0000	14.0000	0.02

MS-600 (1.25")	C	Surface Af (CaAa)	85.5000 - 75.5000	1	1	0.000	1.0000	14.0000	0.00
MS-600 (1.25")	B	Surface Af (CaAa)	85.5000 - 75.5000	1	1	0.250	1.0000	14.0000	0.00
MS-600 (1.25")	A	Surface Af (CaAa)	85.5000 - 75.5000	1	1	0.250	1.0000	14.0000	0.00

MS-650 (1.25")	C	Surface Af (CaAa)	68.0000 - 53.0000	1	1	0.000	1.2500	15.5000	0.00
MS-650 (1.25")	B	Surface Af (CaAa)	68.0000 - 53.0000	1	1	0.250	1.2500	15.5000	0.00

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Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf

LDF7-50A(1-5/8")	B	Surface Ar (CaAa)	156.0000 - 0.0000	6	1	-0.300 -0.050	1.9800		0.00
LDF7-50A(1-5/8")	B	Surface Ar (CaAa)	156.0000 - 0.0000	4	1	0.350 0.500	1.9800		0.00
2" Rigid Conduit	B	Surface Ar (CaAa)	156.0000 - 0.0000	1	1	-0.050 0.030	2.0000		0.00

HB114-1-08U4-M5J(1-1/4")	B	Surface Ar (CaAa)	146.0000 - 0.0000	4	1	0.080 0.280	1.5400		0.00

561(1-5/8")	A	Surface Ar (CaAa)	132.0000 - 0.0000	7	2	-0.200 -0.180	1.6250		0.00
FSJ4-50B(1/2")	A	Surface Ar (CaAa)	121.0000 - 0.0000	3	1	-0.350 -0.200	0.5200		0.00
2" Rigid Conduit	A	Surface Ar (CaAa)	121.0000 - 0.0000	3	1	-0.350 -0.200	2.0000		0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf

FB-L98B-002-75000(3/8")	B	No	Inside Pole	156.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0000 0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00 0.00
WR-VG86ST-BRD(3/4")	B	No	Inside Pole	156.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0000 0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00 0.00
FB-L98B-002-75000(3/8")	B	No	Inside Pole	156.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0000 0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00 0.00
WR-VG86ST-BRD(3/4")	B	No	Inside Pole	156.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0000 0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00 0.00

AVA7-50(1-5/8")	B	No	Inside Pole	139.0000 - 0.0000	6	No Ice 1/2" Ice	0.0000 0.0000	0.00 0.00

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight klf	
561(1-5/8")	A	No	Inside Pole	132.0000 - 0.0000	11	1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
HB158-1-08U8-S8J18(1-5/8")	A	No	Inside Pole	132.0000 - 0.0000	1	4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
HB158-1-08U8-S8J18(1-5/8")	A	No	Inside Pole	132.0000 - 0.0000	1	4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
*** FSJ1-50A(1/4")	A	No	Inside Pole	121.0000 - 0.0000	3	4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
9207(5/16")	A	No	Inside Pole	121.0000 - 0.0000	3	4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
*** LDF4-50A(1/2")	B	No	Inside Pole	101.0000 - 0.0000	1	4" Ice	0.0000	0.00
						No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
						2" Ice	0.0000	0.00
						4" Ice	0.0000	0.00
						No Ice	0.0000	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	160.0000-155.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.596	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L2	155.0000-150.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.980	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.00
L3	150.0000-146.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.384	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L4	146.0000-141.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.750	0.000	0.09
		C	0.000	0.000	0.000	0.000	0.00
L5	141.0000-136.0000 0	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.750	0.000	0.10
		C	0.000	0.000	0.000	0.000	0.00
L6	136.0000-131.0000	A	0.000	0.000	0.325	0.000	0.03

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
	0	B	0.000	0.000	3.750	0.000	0.11
		C	0.000	0.000	0.000	0.000	0.00
L7	131.0000-126.000	A	0.000	0.000	1.625	0.000	0.13
	0	B	0.000	0.000	3.750	0.000	0.11
		C	0.000	0.000	0.000	0.000	0.00
L8	126.0000-123.080	A	0.000	0.000	1.471	0.000	0.08
	0	B	0.000	0.000	2.712	0.000	0.06
		C	0.000	0.000	0.522	0.000	0.00
L9	123.0800-122.830	A	0.000	0.000	0.133	0.000	0.01
	0	B	0.000	0.000	0.240	0.000	0.01
		C	0.000	0.000	0.052	0.000	0.00
L10	122.8300-117.830	A	0.000	0.000	3.466	0.000	0.17
	0	B	0.000	0.000	4.987	0.000	0.11
		C	0.000	0.000	1.042	0.000	0.00
L11	117.8300-117.500	A	0.000	0.000	0.259	0.000	0.01
	0	B	0.000	0.000	0.371	0.000	0.01
		C	0.000	0.000	0.069	0.000	0.00
L12	117.5000-117.250	A	0.000	0.000	0.196	0.000	0.01
	0	B	0.000	0.000	0.281	0.000	0.01
		C	0.000	0.000	0.052	0.000	0.00
L13	117.2500-115.500	A	0.000	0.000	1.624	0.000	0.07
	0	B	0.000	0.000	1.969	0.000	0.04
		C	0.000	0.000	0.615	0.000	0.00
L14	115.5000-115.250	A	0.000	0.000	0.238	0.000	0.01
	0	B	0.000	0.000	0.281	0.000	0.01
		C	0.000	0.000	0.094	0.000	0.00
L15	115.2500-110.250	A	0.000	0.000	4.760	0.000	0.19
	0	B	0.000	0.000	5.625	0.000	0.11
		C	0.000	0.000	1.875	0.000	0.00
L16	110.2500-103.750	A	0.000	0.000	6.188	0.000	0.24
	0	B	0.000	0.000	7.313	0.000	0.14
		C	0.000	0.000	2.438	0.000	0.00
L17	103.7500-102.500	A	0.000	0.000	1.190	0.000	0.05
	0	B	0.000	0.000	1.406	0.000	0.03
		C	0.000	0.000	0.469	0.000	0.00
L18	102.5000-100.500	A	0.000	0.000	1.904	0.000	0.08
	0	B	0.000	0.000	2.250	0.000	0.04
		C	0.000	0.000	0.733	0.000	0.00
L19	100.5000-100.250	A	0.000	0.000	0.280	0.000	0.01
	0	B	0.000	0.000	0.323	0.000	0.01
		C	0.000	0.000	0.083	0.000	0.00
L20	100.2500-98.5000	A	0.000	0.000	1.958	0.000	0.07
		B	0.000	0.000	2.177	0.000	0.04
		C	0.000	0.000	0.583	0.000	0.00
L21	98.5000-98.2500	A	0.000	0.000	0.280	0.000	0.01
		B	0.000	0.000	0.281	0.000	0.01
		C	0.000	0.000	0.083	0.000	0.00
L22	98.2500-93.2500	A	0.000	0.000	4.968	0.000	0.19
		B	0.000	0.000	5.625	0.000	0.11
		C	0.000	0.000	1.042	0.000	0.00
L23	93.2500-90.5000	A	0.000	0.000	2.618	0.000	0.10
		B	0.000	0.000	3.094	0.000	0.06
		C	0.000	0.000	0.458	0.000	0.00
L24	90.5000-90.2500	A	0.000	0.000	0.238	0.000	0.01
		B	0.000	0.000	0.281	0.000	0.01
		C	0.000	0.000	0.042	0.000	0.00
L25	90.2500-85.2500	A	0.000	0.000	4.802	0.000	0.19
		B	0.000	0.000	5.667	0.000	0.11
		C	0.000	0.000	0.875	0.000	0.00
L26	85.2500-83.5000	A	0.000	0.000	1.958	0.000	0.07
		B	0.000	0.000	2.260	0.000	0.04

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i> ft ²	<i>A_F</i> ft ²	<i>C_AA_A</i> <i>In Face</i> ft ²	<i>C_AA_A</i> <i>Out Face</i> ft ²	<i>Weight</i> K
L27	83.5000-83.2500	C	0.000	0.000	0.896	0.000	0.00
		A	0.000	0.000	0.280	0.000	0.01
		B	0.000	0.000	0.323	0.000	0.01
		C	0.000	0.000	0.135	0.000	0.00
L28	83.2500-80.7500	A	0.000	0.000	2.797	0.000	0.09
		B	0.000	0.000	3.229	0.000	0.06
		C	0.000	0.000	1.354	0.000	0.00
L29	80.7500-80.5000	A	0.000	0.000	0.280	0.000	0.01
		B	0.000	0.000	0.323	0.000	0.01
		C	0.000	0.000	0.135	0.000	0.00
L30	80.5000-80.2500	A	0.000	0.000	0.280	0.000	0.01
		B	0.000	0.000	0.323	0.000	0.01
		C	0.000	0.000	0.135	0.000	0.00
L31	80.2500-77.5000	A	0.000	0.000	3.076	0.000	0.10
		B	0.000	0.000	3.552	0.000	0.06
		C	0.000	0.000	1.490	0.000	0.00
L32	77.5000-77.2500	A	0.000	0.000	0.280	0.000	0.01
		B	0.000	0.000	0.323	0.000	0.01
		C	0.000	0.000	0.135	0.000	0.00
L33	77.2500-68.5000	A	0.000	0.000	8.622	0.000	0.33
		B	0.000	0.000	10.135	0.000	0.19
		C	0.000	0.000	3.573	0.000	0.00
L34	68.5000-68.0000	A	0.000	0.000	0.476	0.000	0.02
		B	0.000	0.000	0.563	0.000	0.01
		C	0.000	0.000	0.188	0.000	0.00
L35	68.0000-65.2500	A	0.000	0.000	3.191	0.000	0.10
		B	0.000	0.000	3.667	0.000	0.06
		C	0.000	0.000	1.604	0.000	0.00
L36	65.2500-65.0000	A	0.000	0.000	0.290	0.000	0.01
		B	0.000	0.000	0.333	0.000	0.01
		C	0.000	0.000	0.146	0.000	0.00
L37	65.0000-64.2500	A	0.000	0.000	0.870	0.000	0.03
		B	0.000	0.000	1.000	0.000	0.02
		C	0.000	0.000	0.438	0.000	0.00
L38	64.2500-64.0000	A	0.000	0.000	0.290	0.000	0.01
		B	0.000	0.000	0.333	0.000	0.01
		C	0.000	0.000	0.146	0.000	0.00
L39	64.0000-60.5000	A	0.000	0.000	4.330	0.000	0.13
		B	0.000	0.000	4.667	0.000	0.08
		C	0.000	0.000	2.042	0.000	0.00
L40	60.5000-60.2500	A	0.000	0.000	0.368	0.000	0.01
		B	0.000	0.000	0.411	0.000	0.01
		C	0.000	0.000	0.223	0.000	0.00
L41	60.2500-60.0800	A	0.000	0.000	0.250	0.000	0.01
		B	0.000	0.000	0.279	0.000	0.00
		C	0.000	0.000	0.152	0.000	0.00
L42	60.0800-59.8300	A	0.000	0.000	0.368	0.000	0.01
		B	0.000	0.000	0.411	0.000	0.01
		C	0.000	0.000	0.188	0.000	0.00
L43	59.8300-59.0800	A	0.000	0.000	1.103	0.000	0.03
		B	0.000	0.000	1.232	0.000	0.02
		C	0.000	0.000	0.514	0.000	0.00
L44	59.0800-58.8300	A	0.000	0.000	0.368	0.000	0.01
		B	0.000	0.000	0.411	0.000	0.01
		C	0.000	0.000	0.171	0.000	0.00
L45	58.8300-55.7500	A	0.000	0.000	4.529	0.000	0.12
		B	0.000	0.000	5.061	0.000	0.07
		C	0.000	0.000	2.110	0.000	0.00
L46	55.7500-55.4000	A	0.000	0.000	0.515	0.000	0.01
		B	0.000	0.000	0.575	0.000	0.01
		C	0.000	0.000	0.240	0.000	0.00

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight K</i>
L47	55.4000-55.1700	A	0.000	0.000	0.338	0.000	0.01
		B	0.000	0.000	0.378	0.000	0.01
		C	0.000	0.000	0.158	0.000	0.00
L48	55.1700-50.1700	A	0.000	0.000	6.762	0.000	0.19
		B	0.000	0.000	7.627	0.000	0.11
		C	0.000	0.000	2.835	0.000	0.00
L49	50.1700-45.1700	A	0.000	0.000	6.310	0.000	0.19
		B	0.000	0.000	7.175	0.000	0.11
		C	0.000	0.000	2.452	0.000	0.00
L50	45.1700-41.2500	A	0.000	0.000	4.947	0.000	0.15
		B	0.000	0.000	5.625	0.000	0.09
		C	0.000	0.000	2.685	0.000	0.00
L51	41.2500-41.0000	A	0.000	0.000	0.316	0.000	0.01
		B	0.000	0.000	0.359	0.000	0.01
		C	0.000	0.000	0.171	0.000	0.00
L52	41.0000-34.0000	A	0.000	0.000	9.667	0.000	0.26
		B	0.000	0.000	10.878	0.000	0.15
		C	0.000	0.000	5.628	0.000	0.00
L53	34.0000-33.0000	A	0.000	0.000	1.470	0.000	0.04
		B	0.000	0.000	1.643	0.000	0.02
		C	0.000	0.000	0.893	0.000	0.00
L54	33.0000-31.5000	A	0.000	0.000	2.205	0.000	0.06
		B	0.000	0.000	2.465	0.000	0.03
		C	0.000	0.000	1.340	0.000	0.00
L55	31.5000-31.2500	A	0.000	0.000	0.388	0.000	0.01
		B	0.000	0.000	0.411	0.000	0.01
		C	0.000	0.000	0.223	0.000	0.00
L56	31.2500-30.5000	A	0.000	0.000	1.163	0.000	0.03
		B	0.000	0.000	1.232	0.000	0.02
		C	0.000	0.000	0.670	0.000	0.00
L57	30.5000-30.2500	A	0.000	0.000	0.377	0.000	0.01
		B	0.000	0.000	0.420	0.000	0.01
		C	0.000	0.000	0.233	0.000	0.00
L58	30.2500-25.7500	A	0.000	0.000	6.789	0.000	0.17
		B	0.000	0.000	7.567	0.000	0.10
		C	0.000	0.000	4.192	0.000	0.00
L59	25.7500-25.5000	A	0.000	0.000	0.377	0.000	0.01
		B	0.000	0.000	0.420	0.000	0.01
		C	0.000	0.000	0.233	0.000	0.00
L60	25.5000-25.2500	A	0.000	0.000	0.877	0.000	0.02
		B	0.000	0.000	0.920	0.000	0.02
		C	0.000	0.000	0.733	0.000	0.02
L61	25.2500-20.2500	A	0.000	0.000	16.935	0.000	0.39
		B	0.000	0.000	17.800	0.000	0.31
		C	0.000	0.000	14.085	0.000	0.38
L62	20.2500-15.2500	A	0.000	0.000	15.527	0.000	0.39
		B	0.000	0.000	16.392	0.000	0.31
		C	0.000	0.000	13.617	0.000	0.38
L63	15.2500-10.2500	A	0.000	0.000	16.366	0.000	0.43
		B	0.000	0.000	17.667	0.000	0.38
		C	0.000	0.000	13.606	0.000	0.38
L64	10.2500-5.2500	A	0.000	0.000	15.060	0.000	0.36
		B	0.000	0.000	17.667	0.000	0.38
		C	0.000	0.000	13.408	0.000	0.30
L65	5.2500-0.2500	A	0.000	0.000	14.951	0.000	0.35
		B	0.000	0.000	17.471	0.000	0.37
		C	0.000	0.000	13.280	0.000	0.29
L66	0.2500-0.0000	A	0.000	0.000	0.644	0.000	0.01
		B	0.000	0.000	0.688	0.000	0.01
		C	0.000	0.000	0.542	0.000	0.01

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	Client Crown Castle	Designed by BAApple

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} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	160.0000-155.0000	A	1.508	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	1.501	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L2	155.0000-150.0000	A	1.502	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	7.486	0.000	0.42
		C		0.000	0.000	0.000	0.000	0.00
L3	150.0000-146.0000	A	1.497	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	5.976	0.000	0.33
		C		0.000	0.000	0.000	0.000	0.00
L4	146.0000-141.0000	A	1.491	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	9.714	0.000	0.55
		C		0.000	0.000	0.000	0.000	0.00
L5	141.0000-136.0000	A	1.485	0.000	0.000	0.000	0.000	0.00
	0	B		0.000	0.000	9.689	0.000	0.56
		C		0.000	0.000	0.000	0.000	0.00
L6	136.0000-131.0000	A	1.478	0.000	0.000	1.493	0.000	0.04
	0	B		0.000	0.000	9.663	0.000	0.56
		C		0.000	0.000	0.000	0.000	0.00
L7	131.0000-126.0000	A	1.471	0.000	0.000	7.445	0.000	0.20
	0	B		0.000	0.000	9.636	0.000	0.56
		C		0.000	0.000	0.000	0.000	0.00
L8	126.0000-123.0800	A	1.466	0.000	0.000	6.084	0.000	0.15
	0	B		0.000	0.000	7.359	0.000	0.36
		C		0.000	0.000	1.745	0.000	0.03
L9	123.0800-122.8300	A	1.464	0.000	0.000	0.545	0.000	0.01
	0	B		0.000	0.000	0.654	0.000	0.03
		C		0.000	0.000	0.174	0.000	0.00
L10	122.8300-117.8300	A	1.460	0.000	0.000	13.539	0.000	0.39
	0	B		0.000	0.000	13.829	0.000	0.63
		C		0.000	0.000	3.475	0.000	0.06
L11	117.8300-117.5000	A	1.456	0.000	0.000	0.993	0.000	0.03
	0	B		0.000	0.000	1.076	0.000	0.04
		C		0.000	0.000	0.229	0.000	0.00
L12	117.5000-117.2500	A	1.456	0.000	0.000	0.752	0.000	0.02
	0	B		0.000	0.000	0.815	0.000	0.03
		C		0.000	0.000	0.173	0.000	0.00
L13	117.2500-115.5000	A	1.454	0.000	0.000	6.238	0.000	0.18
	0	B		0.000	0.000	5.701	0.000	0.23
		C		0.000	0.000	2.190	0.000	0.03
L14	115.5000-115.2500	A	1.453	0.000	0.000	0.914	0.000	0.03
	0	B		0.000	0.000	0.814	0.000	0.03
		C		0.000	0.000	0.336	0.000	0.01
L15	115.2500-110.2500	A	1.449	0.000	0.000	18.244	0.000	0.51
	0	B		0.000	0.000	16.248	0.000	0.66
		C		0.000	0.000	6.704	0.000	0.11
L16	110.2500-103.7500	A	1.439	0.000	0.000	23.623	0.000	0.65
	0	B		0.000	0.000	21.035	0.000	0.85
		C		0.000	0.000	8.675	0.000	0.14
L17	103.7500-102.5000	A	1.433	0.000	0.000	4.543	0.000	0.13
	0	B		0.000	0.000	4.045	0.000	0.16
		C		0.000	0.000	1.668	0.000	0.03
L18	102.5000-100.5000	A	1.430	0.000	0.000	7.240	0.000	0.20
	0	B		0.000	0.000	6.446	0.000	0.26
		C		0.000	0.000	2.600	0.000	0.04
L19	100.5000-100.2500	A	1.429	0.000	0.000	1.065	0.000	0.03

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
	0	B		0.000	0.000	0.966	0.000	0.03
		C		0.000	0.000	0.321	0.000	0.00
L20	100.2500-98.5000	A	1.427	0.000	0.000	7.449	0.000	0.19
		B		0.000	0.000	6.434	0.000	0.24
		C		0.000	0.000	2.248	0.000	0.03
L21	98.5000-98.2500	A	1.425	0.000	0.000	1.063	0.000	0.03
		B		0.000	0.000	0.804	0.000	0.03
		C		0.000	0.000	0.321	0.000	0.00
L22	98.2500-93.2500	A	1.420	0.000	0.000	18.819	0.000	0.52
		B		0.000	0.000	16.041	0.000	0.65
		C		0.000	0.000	4.001	0.000	0.06
L23	93.2500-90.5000	A	1.413	0.000	0.000	9.880	0.000	0.28
		B		0.000	0.000	8.795	0.000	0.36
		C		0.000	0.000	1.754	0.000	0.03
L24	90.5000-90.2500	A	1.411	0.000	0.000	0.897	0.000	0.03
		B		0.000	0.000	0.798	0.000	0.03
		C		0.000	0.000	0.159	0.000	0.00
L25	90.2500-85.2500	A	1.406	0.000	0.000	18.060	0.000	0.52
		B		0.000	0.000	16.092	0.000	0.66
		C		0.000	0.000	3.335	0.000	0.06
L26	85.2500-83.5000	A	1.399	0.000	0.000	7.355	0.000	0.20
		B		0.000	0.000	6.667	0.000	0.25
		C		0.000	0.000	3.228	0.000	0.06
L27	83.5000-83.2500	A	1.397	0.000	0.000	1.050	0.000	0.03
		B		0.000	0.000	0.952	0.000	0.04
		C		0.000	0.000	0.485	0.000	0.01
L28	83.2500-80.7500	A	1.394	0.000	0.000	10.484	0.000	0.28
		B		0.000	0.000	9.503	0.000	0.35
		C		0.000	0.000	4.840	0.000	0.09
L29	80.7500-80.5000	A	1.391	0.000	0.000	1.047	0.000	0.03
		B		0.000	0.000	0.949	0.000	0.03
		C		0.000	0.000	0.483	0.000	0.01
L30	80.5000-80.2500	A	1.391	0.000	0.000	1.047	0.000	0.03
		B		0.000	0.000	0.949	0.000	0.03
		C		0.000	0.000	0.483	0.000	0.01
L31	80.2500-77.5000	A	1.388	0.000	0.000	11.497	0.000	0.31
		B		0.000	0.000	10.422	0.000	0.38
		C		0.000	0.000	5.306	0.000	0.09
L32	77.5000-77.2500	A	1.385	0.000	0.000	1.044	0.000	0.03
		B		0.000	0.000	0.946	0.000	0.03
		C		0.000	0.000	0.482	0.000	0.01
L33	77.2500-68.5000	A	1.375	0.000	0.000	31.986	0.000	0.90
		B		0.000	0.000	28.578	0.000	1.13
		C		0.000	0.000	12.393	0.000	0.22
L34	68.5000-68.0000	A	1.364	0.000	0.000	1.765	0.000	0.05
		B		0.000	0.000	1.571	0.000	0.06
		C		0.000	0.000	0.646	0.000	0.01
L35	68.0000-65.2500	A	1.360	0.000	0.000	11.464	0.000	0.30
		B		0.000	0.000	10.398	0.000	0.38
		C		0.000	0.000	5.344	0.000	0.09
L36	65.2500-65.0000	A	1.356	0.000	0.000	1.040	0.000	0.03
		B		0.000	0.000	0.944	0.000	0.03
		C		0.000	0.000	0.485	0.000	0.01
L37	65.0000-64.2500	A	1.355	0.000	0.000	3.119	0.000	0.08
		B		0.000	0.000	2.829	0.000	0.10
		C		0.000	0.000	1.454	0.000	0.03
L38	64.2500-64.0000	A	1.354	0.000	0.000	1.039	0.000	0.03
		B		0.000	0.000	0.943	0.000	0.03
		C		0.000	0.000	0.484	0.000	0.01
L39	64.0000-60.5000	A	1.349	0.000	0.000	15.234	0.000	0.39
		B		0.000	0.000	13.165	0.000	0.47

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L40	60.5000-60.2500	C		0.000	0.000	6.763	0.000	0.12
		A	1.344	0.000	0.000	1.224	0.000	0.03
		B		0.000	0.000	1.128	0.000	0.04
		C		0.000	0.000	0.671	0.000	0.01
L41	60.2500-60.0800	A	1.343	0.000	0.000	0.832	0.000	0.02
		B		0.000	0.000	0.767	0.000	0.02
		C		0.000	0.000	0.456	0.000	0.01
L42	60.0800-59.8300	A	1.343	0.000	0.000	1.223	0.000	0.03
		B		0.000	0.000	1.127	0.000	0.04
		C		0.000	0.000	0.559	0.000	0.01
L43	59.8300-59.0800	A	1.342	0.000	0.000	3.668	0.000	0.09
		B		0.000	0.000	3.379	0.000	0.11
		C		0.000	0.000	1.520	0.000	0.02
L44	59.0800-58.8300	A	1.340	0.000	0.000	1.222	0.000	0.03
		B		0.000	0.000	1.126	0.000	0.04
		C		0.000	0.000	0.506	0.000	0.01
L45	58.8300-55.7500	A	1.336	0.000	0.000	15.020	0.000	0.37
		B		0.000	0.000	13.837	0.000	0.44
		C		0.000	0.000	6.223	0.000	0.09
L46	55.7500-55.4000	A	1.331	0.000	0.000	1.703	0.000	0.04
		B		0.000	0.000	1.569	0.000	0.05
		C		0.000	0.000	0.705	0.000	0.01
L47	55.4000-55.1700	A	1.330	0.000	0.000	1.119	0.000	0.03
		B		0.000	0.000	1.030	0.000	0.03
		C		0.000	0.000	0.463	0.000	0.01
L48	55.1700-50.1700	A	1.322	0.000	0.000	22.395	0.000	0.56
		B		0.000	0.000	20.482	0.000	0.68
		C		0.000	0.000	8.199	0.000	0.12
L49	50.1700-45.1700	A	1.306	0.000	0.000	20.834	0.000	0.53
		B		0.000	0.000	18.932	0.000	0.65
		C		0.000	0.000	6.950	0.000	0.10
L50	45.1700-41.2500	A	1.291	0.000	0.000	16.218	0.000	0.41
		B		0.000	0.000	14.735	0.000	0.50
		C		0.000	0.000	7.746	0.000	0.12
L51	41.2500-41.0000	A	1.283	0.000	0.000	1.031	0.000	0.03
		B		0.000	0.000	0.936	0.000	0.03
		C		0.000	0.000	0.492	0.000	0.01
L52	41.0000-34.0000	A	1.269	0.000	0.000	31.191	0.000	0.77
		B		0.000	0.000	28.563	0.000	0.92
		C		0.000	0.000	16.205	0.000	0.25
L53	34.0000-33.0000	A	1.252	0.000	0.000	4.726	0.000	0.11
		B		0.000	0.000	4.351	0.000	0.14
		C		0.000	0.000	2.586	0.000	0.04
L54	33.0000-31.5000	A	1.250	0.000	0.000	7.024	0.000	0.17
		B		0.000	0.000	6.465	0.000	0.20
		C		0.000	0.000	3.840	0.000	0.06
L55	31.5000-31.2500	A	1.250	0.000	0.000	1.191	0.000	0.03
		B		0.000	0.000	1.077	0.000	0.03
		C		0.000	0.000	0.640	0.000	0.01
L56	31.2500-30.5000	A	1.250	0.000	0.000	3.572	0.000	0.08
		B		0.000	0.000	3.232	0.000	0.10
		C		0.000	0.000	1.920	0.000	0.03
L57	30.5000-30.2500	A	1.250	0.000	0.000	1.180	0.000	0.03
		B		0.000	0.000	1.087	0.000	0.03
		C		0.000	0.000	0.650	0.000	0.01
L58	30.2500-25.7500	A	1.250	0.000	0.000	21.245	0.000	0.51
		B		0.000	0.000	19.567	0.000	0.60
		C		0.000	0.000	11.693	0.000	0.18
L59	25.7500-25.5000	A	1.250	0.000	0.000	1.180	0.000	0.03
		B		0.000	0.000	1.087	0.000	0.03
		C		0.000	0.000	0.650	0.000	0.01

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L60	25.5000-25.2500	A	1.250	0.000	0.000	1.889	0.000	0.04
		B		0.000	0.000	1.795	0.000	0.05
		C		0.000	0.000	1.358	0.000	0.03
L61	25.2500-20.2500	A	1.250	0.000	0.000	35.947	0.000	0.83
		B		0.000	0.000	34.083	0.000	0.93
		C		0.000	0.000	25.440	0.000	0.65
L62	20.2500-15.2500	A	1.250	0.000	0.000	31.694	0.000	0.75
		B		0.000	0.000	29.830	0.000	0.86
		C		0.000	0.000	24.033	0.000	0.62
L63	15.2500-10.2500	A	1.250	0.000	0.000	33.991	0.000	0.82
		B		0.000	0.000	33.083	0.000	0.96
		C		0.000	0.000	24.023	0.000	0.62
L64	10.2500-5.2500	A	1.250	0.000	0.000	31.122	0.000	0.72
		B		0.000	0.000	33.083	0.000	0.96
		C		0.000	0.000	23.825	0.000	0.53
L65	5.2500-0.2500	A	1.250	0.000	0.000	30.805	0.000	0.70
		B		0.000	0.000	32.575	0.000	0.94
		C		0.000	0.000	23.488	0.000	0.52
L66	0.2500-0.0000	A	1.250	0.000	0.000	1.239	0.000	0.02
		B		0.000	0.000	1.146	0.000	0.03
		C		0.000	0.000	0.854	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	160.0000-155.0000	0.1889	-0.0767	0.3667	-0.1488
L2	155.0000-150.0000	0.7111	-0.2888	1.1190	-0.4541
L3	150.0000-146.0000	0.7111	-0.2888	1.1181	-0.4537
L4	146.0000-141.0000	0.8792	-0.3007	1.4775	-0.4936
L5	141.0000-136.0000	0.8812	-0.3011	1.4944	-0.4987
L6	136.0000-131.0000	0.7744	-0.3057	1.2326	-0.4926
L7	131.0000-126.0000	0.3919	-0.3217	0.4267	-0.4659
L8	126.0000-123.0800	0.3374	-0.2769	0.3295	-0.3600
L9	123.0800-122.8300	0.3305	-0.2712	0.3188	-0.3484
L10	122.8300-117.8300	0.1986	-0.2350	0.1279	-0.2813
L11	117.8300-117.5000	0.2205	-0.1704	0.2010	-0.1637
L12	117.5000-117.2500	0.2206	-0.1705	0.2012	-0.1639
L13	117.2500-115.5000	0.0858	-0.2126	-0.0300	-0.2375
L14	115.5000-115.2500	0.0651	-0.2195	-0.0642	-0.2490
L15	115.2500-110.2500	0.0652	-0.2206	-0.0653	-0.2515
L16	110.2500-103.7500	0.0657	-0.2231	-0.0677	-0.2568
L17	103.7500-102.5000	0.0657	-0.2235	-0.0682	-0.2578
L18	102.5000-100.5000	0.0591	-0.2299	-0.0794	-0.2678
L19	100.5000-100.2500	0.0303	-0.3807	-0.0773	-0.4846
L20	100.2500-98.5000	-0.0092	-0.4023	-0.1456	-0.5228
L21	98.5000-98.2500	-0.1108	-0.4566	-0.3250	-0.6208
L22	98.2500-93.2500	-0.0044	-0.4332	-0.1575	-0.5959
L23	93.2500-90.5000	0.0334	-0.4269	-0.0962	-0.5920
L24	90.5000-90.2500	0.0280	-0.4371	-0.1051	-0.6090
L25	90.2500-85.2500	0.0349	-0.4338	-0.0926	-0.6030
L26	85.2500-83.5000	0.0108	-0.2298	-0.0763	-0.2615
L27	83.5000-83.2500	-0.0120	-0.2110	-0.1087	-0.2346
L28	83.2500-80.7500	-0.0121	-0.2115	-0.1093	-0.2357
L29	80.7500-80.5000	-0.0121	-0.2120	-0.1099	-0.2367
L30	80.5000-80.2500	-0.0121	-0.2121	-0.1101	-0.2369

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L31	80.2500-77.5000	-0.0122	-0.2127	-0.1108	-0.2381
L32	77.5000-77.2500	-0.0123	-0.2132	-0.1114	-0.2392
L33	77.2500-68.5000	-0.1225	-0.2742	-0.3232	-0.3521
L34	68.5000-68.0000	-0.1524	-0.2908	-0.3850	-0.3852
L35	68.0000-65.2500	0.0199	-0.1987	-0.0980	-0.2362
L36	65.2500-65.0000	0.0200	-0.1992	-0.0986	-0.2372
L37	65.0000-64.2500	0.0200	-0.1994	-0.0988	-0.2376
L38	64.2500-64.0000	0.0200	-0.1996	-0.0990	-0.2379
L39	64.0000-60.5000	0.0765	-0.2618	-0.0277	-0.3153
L40	60.5000-60.2500	0.0458	-0.1856	-0.0717	-0.2103
L41	60.2500-60.0800	0.0458	-0.1857	-0.0717	-0.2105
L42	60.0800-59.8300	0.1454	-0.2663	0.0701	-0.3290
L43	59.8300-59.0800	0.1938	-0.3056	0.1400	-0.3878
L44	59.0800-58.8300	0.1940	-0.3058	0.1402	-0.3883
L45	58.8300-55.7500	0.1947	-0.3067	0.1408	-0.3900
L46	55.7500-55.4000	0.1954	-0.3076	0.1413	-0.3918
L47	55.4000-55.1700	0.1955	-0.3078	0.1414	-0.3921
L48	55.1700-50.1700	0.1202	-0.3604	0.0222	-0.4794
L49	50.1700-45.1700	0.0460	-0.3970	-0.1012	-0.5454
L50	45.1700-41.2500	-0.1053	-0.2724	-0.3287	-0.3491
L51	41.2500-41.0000	-0.1058	-0.2734	-0.3306	-0.3510
L52	41.0000-34.0000	-0.0145	-0.2266	-0.1791	-0.2757
L53	34.0000-33.0000	0.0478	-0.1936	-0.0786	-0.2246
L54	33.0000-31.5000	0.0479	-0.1940	-0.0793	-0.2252
L55	31.5000-31.2500	0.1024	-0.2567	-0.0520	-0.2582
L56	31.2500-30.5000	0.1025	-0.2569	-0.0521	-0.2585
L57	30.5000-30.2500	0.0178	-0.1800	-0.0946	-0.2187
L58	30.2500-25.7500	0.0179	-0.1807	-0.0952	-0.2201
L59	25.7500-25.5000	0.0180	-0.1814	-0.0959	-0.2215
L60	25.5000-25.2500	0.0101	-0.1018	-0.0619	-0.1429
L61	25.2500-20.2500	-0.0333	-0.1216	-0.1418	-0.1795
L62	20.2500-15.2500	0.0131	-0.0920	-0.0690	-0.1273
L63	15.2500-10.2500	-0.0232	-0.3096	-0.1145	-0.4662
L64	10.2500-5.2500	-0.1187	-0.2103	-0.2561	-0.3333
L65	5.2500-0.2500	-0.1172	-0.2071	-0.2607	-0.3280
L66	0.2500-0.0000	-0.0460	-0.0793	-0.2710	-0.0786

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A ₁ Front	C _A A ₁ Side	Weight	
			Horz Lateral ft	Vert ft						°
Lightning Rod	A	From Leg	1.0000	0.00	0.00	156.0000	No Ice	0.2500	0.2500	0.03
							1/2" Ice	0.6635	0.6635	0.03
							1" Ice	0.9732	0.9732	0.04
							2" Ice	1.4936	1.4936	0.06
							4" Ice	2.6833	2.6833	0.14

TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	1.0000	0.00	0.00	156.0000	No Ice	13.7275	11.4097	0.13
							1/2" Ice	14.5510	12.9403	0.24

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K				
			Horz Lateral ft	Vert ft									
				1.00									
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg			1.0000	0.00	156.0000	1" Ice	15.3625	14.2934	0.36		
					0.00			2" Ice	16.9693	16.6417	0.63		
					1.00				4" Ice	20.2990	21.5382	1.34	
							0.00			No Ice	13.7275	11.4097	0.13
							0.00			1/2" Ice	14.5510	12.9403	0.24
							1.00			1" Ice	15.3625	14.2934	0.36
										2" Ice	16.9693	16.6417	0.63
80010798 w/ Mount Pipe	C	From Leg			1.0000	0.00	156.0000	4" Ice	20.2990	21.5382	1.34		
					0.00			No Ice	11.5328	7.4788	0.11		
					1.00				1/2" Ice	12.2456	8.7492	0.19	
							0.00			1" Ice	12.9372	9.8028	0.28
							1.00			2" Ice	14.3235	11.7587	0.49
										4" Ice	17.2146	15.8785	1.07
							0.00			No Ice	3.2486	1.3726	0.05
RRUS 11	A	From Leg			1.0000	0.00	156.0000	1/2" Ice	3.4905	1.5510	0.07		
					0.00			1" Ice	3.7411	1.7380	0.10		
					1.00				2" Ice	4.2682	2.1381	0.15	
							0.00			4" Ice	5.4260	3.0418	0.31
							0.00			No Ice	3.2486	1.3726	0.05
							0.00			1/2" Ice	3.4905	1.5510	0.07
							1.00			1" Ice	3.7411	1.7380	0.10
RRUS 11	B	From Leg			1.0000	0.00	156.0000	2" Ice	4.2682	2.1381	0.15		
					0.00			4" Ice	5.4260	3.0418	0.31		
					1.00				No Ice	3.2486	1.3726	0.05	
							0.00			1/2" Ice	3.4905	1.5510	0.07
							1.00			1" Ice	3.7411	1.7380	0.10
										2" Ice	4.2682	2.1381	0.15
										4" Ice	5.4260	3.0418	0.31
RRUS 11	C	From Leg			1.0000	0.00	156.0000	No Ice	3.2486	1.3726	0.05		
					0.00			1/2" Ice	3.4905	1.5510	0.07		
					1.00				1" Ice	3.7411	1.7380	0.10	
							0.00			2" Ice	4.2682	2.1381	0.15
							1.00			4" Ice	5.4260	3.0418	0.31
										No Ice	2.4107	0.5329	0.02
							0.00			1/2" Ice	2.6193	0.6652	0.03
RRUS A2	A	From Leg			1.0000	0.00	156.0000	1" Ice	2.8366	0.8062	0.05		
					0.00			2" Ice	3.2970	1.1140	0.09		
					1.00				4" Ice	4.3216	1.8335	0.20	
							0.00			No Ice	2.4107	0.5329	0.02
							0.00			1/2" Ice	2.6193	0.6652	0.03
							1.00			1" Ice	2.8366	0.8062	0.05
										2" Ice	3.2970	1.1140	0.09
RRUS A2	B	From Leg			1.0000	0.00	156.0000	4" Ice	4.3216	1.8335	0.20		
					0.00			No Ice	2.4107	0.5329	0.02		
					1.00				1/2" Ice	2.6193	0.6652	0.03	
							0.00			1" Ice	2.8366	0.8062	0.05
							1.00			2" Ice	3.2970	1.1140	0.09
										4" Ice	4.3216	1.8335	0.20
										No Ice	2.4107	0.5329	0.02
RRUS A2	C	From Leg			1.0000	0.00	156.0000	1/2" Ice	2.6193	0.6652	0.03		
					0.00			1" Ice	2.8366	0.8062	0.05		
					1.00				2" Ice	3.2970	1.1140	0.09	
							0.00			4" Ice	4.3216	1.8335	0.20
							1.00			No Ice	2.4107	0.5329	0.02
							0.00			1/2" Ice	2.6193	0.6652	0.03
							1.00			1" Ice	2.8366	0.8062	0.05
RRUS 32	A	From Leg			1.0000	0.00	156.0000	2" Ice	3.2970	1.1140	0.09		
					0.00			4" Ice	4.3216	1.8335	0.20		
					1.00				No Ice	3.3332	1.9828	0.06	
							0.00			1/2" Ice	3.5968	2.2137	0.08
							1.00			1" Ice	3.8690	2.4533	0.10
										2" Ice	4.4394	2.9583	0.16
										4" Ice	5.6838	4.0721	0.34
RRUS 32	B	From Leg			1.0000	0.00	156.0000	No Ice	3.3332	1.9828	0.06		
					0.00			1/2" Ice	3.5968	2.2137	0.08		
					1.00				1" Ice	3.8690	2.4533	0.10	
							0.00			2" Ice	4.4394	2.9583	0.16
							1.00			4" Ice	5.6838	4.0721	0.34
										No Ice	3.3332	1.9828	0.06
							0.00			1/2" Ice	3.5968	2.2137	0.08
RRUS 32	C	From Leg			1.0000	0.00	156.0000	1" Ice	3.8690	2.4533	0.10		
					0.00			2" Ice	4.4394	2.9583	0.16		
					1.00				4" Ice	5.6838	4.0721	0.34	
							0.00			No Ice	3.3332	1.9828	0.06

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A ₁ Front ft ²	C _A A ₂ Side ft ²	Weight K	
			Horz Lateral ft	Vert ft						
DC6-48-60-18-8F	B	From Leg	1.0000	0.00	0.00	156.0000	4" Ice	5.6838	4.0721	0.34
							No Ice	2.5667	2.5667	0.02
							1/2" Ice	2.7978	2.7978	0.05
							1" Ice	3.0377	3.0377	0.09
							2" Ice	3.5432	3.5432	0.17
							4" Ice	4.6580	4.6580	0.38

SBNH-1D6565C w/ Mount Pipe	A	From Leg	1.0000	0.00	0.00	156.0000	No Ice	11.6828	9.8418	0.10
							1/2" Ice	12.4043	11.3657	0.19
							1" Ice	13.1351	12.9138	0.29
							2" Ice	14.6007	15.2672	0.52
							4" Ice	17.8748	20.1392	1.17
							No Ice	11.6828	9.8418	0.10
SBNH-1D6565C w/ Mount Pipe	B	From Leg	1.0000	0.00	0.00	156.0000	1/2" Ice	12.4043	11.3657	0.19
							1" Ice	13.1351	12.9138	0.29
							2" Ice	14.6007	15.2672	0.52
							4" Ice	17.8748	20.1392	1.17
							No Ice	11.6828	9.8418	0.10
							1/2" Ice	12.4043	11.3657	0.19
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	1.0000	0.00	0.00	156.0000	1" Ice	9.7672	8.3676	0.21
							2" Ice	11.0311	10.1785	0.38
							4" Ice	13.6786	14.0237	0.87
							No Ice	8.4975	6.3042	0.07
							1/2" Ice	9.1490	7.4790	0.14
							1" Ice	9.7672	8.3676	0.21
DTMABP7819VG12A	A	From Leg	1.0000	0.00	0.00	156.0000	2" Ice	11.0311	10.1785	0.38
							4" Ice	13.6786	14.0237	0.87
							No Ice	1.1389	0.3907	0.02
							1/2" Ice	1.2835	0.4884	0.03
							1" Ice	1.4368	0.5947	0.04
							2" Ice	1.7693	0.8334	0.06
DTMABP7819VG12A	B	From Leg	1.0000	0.00	0.00	156.0000	4" Ice	2.5380	1.4144	0.14
							No Ice	1.1389	0.3907	0.02
							1/2" Ice	1.2835	0.4884	0.03
							1" Ice	1.4368	0.5947	0.04
							2" Ice	1.7693	0.8334	0.06
							4" Ice	2.5380	1.4144	0.14
DTMABP7819VG12A	C	From Leg	1.0000	0.00	0.00	156.0000	No Ice	1.1389	0.3907	0.02
							1/2" Ice	1.2835	0.4884	0.03
							1" Ice	1.4368	0.5947	0.04
							2" Ice	1.7693	0.8334	0.06
							4" Ice	2.5380	1.4144	0.14
							No Ice	1.1389	0.3907	0.02
RRUS 11 B2	A	From Leg	1.0000	0.00	0.00	156.0000	1" Ice	3.8025	1.7284	0.10
							2" Ice	4.3340	2.1302	0.15
							4" Ice	5.5006	3.0377	0.31
							No Ice	3.3056	1.3611	0.05
							1/2" Ice	3.5497	1.5404	0.07
							1" Ice	3.8025	1.7284	0.10
RRUS 11 B2	B	From Leg	1.0000	0.00	0.00	156.0000	2" Ice	4.3340	2.1302	0.15
							4" Ice	5.5006	3.0377	0.31
							No Ice	3.3056	1.3611	0.05
							1/2" Ice	3.5497	1.5404	0.07
							1" Ice	3.8025	1.7284	0.10
							2" Ice	4.3340	2.1302	0.15
RRUS 11 B2	C	From Leg	1.0000	0.00	0.00	156.0000	4" Ice	5.5006	3.0377	0.31
							No Ice	3.3056	1.3611	0.05
							1/2" Ice	3.5497	1.5404	0.07
							1" Ice	3.8025	1.7284	0.10
							2" Ice	4.3340	2.1302	0.15
							4" Ice	5.5006	3.0377	0.31
DC6-48-60-18-8F	B	From Leg	1.0000	0.00	0.00	156.0000	No Ice	2.5667	2.5667	0.02
							1/2" Ice	2.7978	2.7978	0.05
							1" Ice	3.0377	3.0377	0.09
							2" Ice	3.5432	3.5432	0.17
							4" Ice	4.6580	4.6580	0.38
							No Ice	2.5667	2.5667	0.02

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			Horz Lateral ft	Vert ft					
T-Arm Mount [TA 703-3]	C	None			0.00	156.0000	No Ice 14.2000 1/2" Ice 18.5000 1" Ice 22.8000 2" Ice 31.4000 4" Ice 48.6000	14.2000 18.5000 22.8000 31.4000 48.6000	0.45 0.65 0.84 1.24 2.03
*** *** ***									
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 2.7087 1/2" Ice 2.9477 1" Ice 3.1953 2" Ice 3.7164 4" Ice 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 2.7087 1/2" Ice 2.9477 1" Ice 3.1953 2" Ice 3.7164 4" Ice 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 2.7087 1/2" Ice 2.9477 1" Ice 3.1953 2" Ice 3.7164 4" Ice 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
800MHz 2X50W RRH W/FILTER	A	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 2.4014 1/2" Ice 2.6131 1" Ice 2.8335 2" Ice 3.3002 4" Ice 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 2.4014 1/2" Ice 2.6131 1" Ice 2.8335 2" Ice 3.3002 4" Ice 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 2.4014 1/2" Ice 2.6131 1" Ice 2.8335 2" Ice 3.3002 4" Ice 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
(2) 4'x2.4" Pipe Mount	A	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 0.8711 1/2" Ice 1.1161 1" Ice 1.3704 2" Ice 1.9067 4" Ice 3.2356	0.8711 1.1161 1.3704 1.9067 3.2356	0.03 0.03 0.04 0.07 0.17
(2) 4'x2.4" Pipe Mount	B	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 0.8711 1/2" Ice 1.1161 1" Ice 1.3704 2" Ice 1.9067 4" Ice 3.2356	0.8711 1.1161 1.3704 1.9067 3.2356	0.03 0.03 0.04 0.07 0.17
(2) 4'x2.4" Pipe Mount	C	From Leg	1.0000 0.00 0.00		0.00	148.0000	No Ice 0.8711 1/2" Ice 1.1161 1" Ice 1.3704 2" Ice 1.9067 4" Ice 3.2356	0.8711 1.1161 1.3704 1.9067 3.2356	0.03 0.03 0.04 0.07 0.17
Side Arm Mount [SO 103-3]	C	None			0.00	148.0000	No Ice 9.5000 1/2" Ice 11.8000 1" Ice 14.1000 2" Ice 18.7000	9.5000 11.8000 14.1000 18.7000	0.22 0.32 0.41 0.60

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz	Vert					
						ft	ft ²	ft ²	K
						4" Ice	27.9000	27.9000	0.97

APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.0000	0.00	146.0000	No Ice	8.4975	7.4708	0.09
			0.00			1/2" Ice	9.1490	8.6564	0.16
			1.00			1" Ice	9.7672	9.5559	0.24
						2" Ice	11.0311	11.3884	0.42
						4" Ice	13.6786	15.5274	0.94
APXVSPPI18-C-A20 w/ Mount Pipe	B	From Leg	4.0000	0.00	146.0000	No Ice	8.4975	6.9458	0.08
			0.00			1/2" Ice	9.1490	8.1266	0.15
			1.00			1" Ice	9.7672	9.0212	0.23
						2" Ice	11.0311	10.8440	0.41
						4" Ice	13.6786	14.8507	0.91
APXVSPPI18-C-A20 w/ Mount Pipe	C	From Leg	4.0000	0.00	146.0000	No Ice	8.4975	6.9458	0.08
			0.00			1/2" Ice	9.1490	8.1266	0.15
			1.00			1" Ice	9.7672	9.0212	0.23
						2" Ice	11.0311	10.8440	0.41
						4" Ice	13.6786	14.8507	0.91
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000	0.00	146.0000	No Ice	7.1342	4.9591	0.08
			0.00			1/2" Ice	7.6618	5.7544	0.13
			1.00			1" Ice	8.1830	6.4723	0.19
						2" Ice	9.2563	8.0099	0.34
						4" Ice	11.5262	11.4120	0.75
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000	0.00	146.0000	No Ice	7.1342	4.9591	0.08
			0.00			1/2" Ice	7.6618	5.7544	0.13
			1.00			1" Ice	8.1830	6.4723	0.19
						2" Ice	9.2563	8.0099	0.34
						4" Ice	11.5262	11.4120	0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000	0.00	146.0000	No Ice	7.1342	4.9591	0.08
			0.00			1/2" Ice	7.6618	5.7544	0.13
			1.00			1" Ice	8.1830	6.4723	0.19
						2" Ice	9.2563	8.0099	0.34
						4" Ice	11.5262	11.4120	0.75
IBC1900BB-1	A	From Leg	4.0000	0.00	146.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			1.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900BB-1	B	From Leg	4.0000	0.00	146.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			1.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900BB-1	C	From Leg	4.0000	0.00	146.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			1.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900HG-2A	A	From Leg	4.0000	0.00	146.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			1.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900HG-2A	B	From Leg	4.0000	0.00	146.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			1.00			1" Ice	1.4269	0.7699	0.04

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	Client		Crown Castle		Designed by		BApple	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A ₁ Front	C _A A ₁ Side	Weight
			Horz	Vert					
IBC1900HG-2A	C	From Leg	4.0000	0.00	146.0000	2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
						No Ice	1.1270	0.5329	0.02
						1/2" Ice	1.2726	0.6471	0.03
						1" Ice	1.4269	0.7699	0.04
TD-RRH8x20-25	A	From Leg	4.0000	0.00	146.0000	2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
						No Ice	4.7198	1.7001	0.07
						1/2" Ice	5.0138	1.9170	0.10
						1" Ice	5.3165	2.1426	0.13
TD-RRH8x20-25	B	From Leg	4.0000	0.00	146.0000	2" Ice	5.9478	2.6196	0.20
						4" Ice	7.3141	3.6774	0.40
						No Ice	4.7198	1.7001	0.07
						1/2" Ice	5.0138	1.9170	0.10
						1" Ice	5.3165	2.1426	0.13
TD-RRH8x20-25	C	From Leg	4.0000	0.00	146.0000	2" Ice	5.9478	2.6196	0.20
						4" Ice	7.3141	3.6774	0.40
						No Ice	4.7198	1.7001	0.07
						1/2" Ice	5.0138	1.9170	0.10
						1" Ice	5.3165	2.1426	0.13
5' x 2.4" Pipe Mount	A	From Leg	4.0000	0.00	146.0000	2" Ice	5.9478	2.6196	0.20
						4" Ice	7.3141	3.6774	0.40
						No Ice	1.2000	1.2000	0.02
						1/2" Ice	1.5024	1.5024	0.03
						1" Ice	1.8141	1.8141	0.04
5' x 2.4" Pipe Mount	B	From Leg	4.0000	0.00	146.0000	2" Ice	2.4652	2.4652	0.08
						4" Ice	3.9289	3.9289	0.20
						No Ice	1.2000	1.2000	0.02
						1/2" Ice	1.5024	1.5024	0.03
						1" Ice	1.8141	1.8141	0.04
5' x 2.4" Pipe Mount	C	From Leg	4.0000	0.00	146.0000	2" Ice	2.4652	2.4652	0.08
						4" Ice	3.9289	3.9289	0.20
						No Ice	1.2000	1.2000	0.02
						1/2" Ice	1.5024	1.5024	0.03
						1" Ice	1.8141	1.8141	0.04
Platform Mount [LP 1201-1]	C	None		0.00	146.0000	2" Ice	2.4652	2.4652	0.08
						4" Ice	3.9289	3.9289	0.20
						No Ice	23.1000	23.1000	2.10
						1/2" Ice	26.8000	26.8000	2.50
						1" Ice	30.5000	30.5000	2.90
APXV18-206517S-C	A	From Leg	2.0000	30.00	139.0000	2" Ice	37.9000	37.9000	3.70
						4" Ice	52.7000	52.7000	5.30
						No Ice	5.1667	3.0375	0.03
						1/2" Ice	5.6182	3.4693	0.05
						1" Ice	6.0772	3.9086	0.09
APXV18-206517S-C	B	From Leg	2.0000	30.00	139.0000	2" Ice	7.0173	4.8093	0.17
						4" Ice	9.1225	6.6995	0.40
						No Ice	5.1667	3.0375	0.03
						1/2" Ice	5.6182	3.4693	0.05
						1" Ice	6.0772	3.9086	0.09
APXV18-206517S-C	C	From Leg	2.0000	30.00	139.0000	2" Ice	7.0173	4.8093	0.17
						4" Ice	9.1225	6.6995	0.40
						No Ice	5.1667	3.0375	0.03
			0.00			1/2" Ice	5.6182	3.4693	0.05

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			Horz Lateral ft	Vert ft					
				0.00					
						1" Ice	6.0772	3.9086	0.09
						2" Ice	7.0173	4.8093	0.17
						4" Ice	9.1225	6.6995	0.40
Pipe Mount [PM 501-3]	C	None		0.00	139.0000	No Ice	5.7800	5.7800	0.16
						1/2" Ice	7.3700	7.3700	0.18
						1" Ice	8.9600	8.9600	0.20
						2" Ice	12.1400	12.1400	0.24
						4" Ice	18.5000	18.5000	0.32

BXA-80080-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice	6.0062	6.2035	0.04
						1/2" Ice	6.5619	7.3594	0.10
						1" Ice	7.0826	8.2293	0.16
						2" Ice	8.1672	10.0193	0.31
						4" Ice	10.6907	13.8398	0.75
BXA-80080-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice	6.0062	6.2035	0.04
						1/2" Ice	6.5619	7.3594	0.10
						1" Ice	7.0826	8.2293	0.16
						2" Ice	8.1672	10.0193	0.31
						4" Ice	10.6907	13.8398	0.75
BXA-80080-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice	6.0062	6.2035	0.04
						1/2" Ice	6.5619	7.3594	0.10
						1" Ice	7.0826	8.2293	0.16
						2" Ice	8.1672	10.0193	0.31
						4" Ice	10.6907	13.8398	0.75
BXA-70063/6CFx2 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	132.0000	No Ice	7.9686	5.3981	0.04
						1/2" Ice	8.6091	6.5465	0.10
						1" Ice	9.2158	7.4089	0.17
						2" Ice	10.4591	9.1837	0.33
						4" Ice	13.0655	12.9333	0.79
BXA-70063/6CFx2 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	132.0000	No Ice	7.9686	5.3981	0.04
						1/2" Ice	8.6091	6.5465	0.10
						1" Ice	9.2158	7.4089	0.17
						2" Ice	10.4591	9.1837	0.33
						4" Ice	13.0655	12.9333	0.79
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	132.0000	No Ice	8.8625	7.2963	0.07
						1/2" Ice	9.6164	8.5810	0.14
						1" Ice	10.3410	9.7177	0.22
						2" Ice	11.7309	11.6633	0.41
						4" Ice	14.6413	15.9185	0.94
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	132.0000	No Ice	8.8625	7.2963	0.07
						1/2" Ice	9.6164	8.5810	0.14
						1" Ice	10.3410	9.7177	0.22
						2" Ice	11.7309	11.6633	0.41
						4" Ice	14.6413	15.9185	0.94
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	132.0000	No Ice	8.8625	7.2963	0.07
						1/2" Ice	9.6164	8.5810	0.14
						1" Ice	10.3410	9.7177	0.22
						2" Ice	11.7309	11.6633	0.41
						4" Ice	14.6413	15.9185	0.94
RRH2X60-AWS	A	From Leg	4.0000	0.00	132.0000	No Ice	3.9569	1.8157	0.06

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
			0.00			1/2" Ice	4.2724	2.0752	0.08	
			1.00			1" Ice	4.5965	2.3603	0.11	
						2" Ice	5.2705	2.9566	0.17	
						4" Ice	6.7224	4.2529	0.35	
RRH2X60-AWS	B	From Leg	4.0000		0.00	132.0000	No Ice	3.9569	1.8157	0.06
			0.00				1/2" Ice	4.2724	2.0752	0.08
			1.00				1" Ice	4.5965	2.3603	0.11
							2" Ice	5.2705	2.9566	0.17
							4" Ice	6.7224	4.2529	0.35
RRH2X60-AWS	C	From Leg	4.0000		0.00	132.0000	No Ice	3.9569	1.8157	0.06
			0.00				1/2" Ice	4.2724	2.0752	0.08
			1.00				1" Ice	4.5965	2.3603	0.11
							2" Ice	5.2705	2.9566	0.17
							4" Ice	6.7224	4.2529	0.35
RRH2x60-700	A	From Leg	4.0000		0.00	132.0000	No Ice	3.9569	1.8157	0.06
			0.00				1/2" Ice	4.2724	2.0752	0.08
			1.00				1" Ice	4.5965	2.3603	0.11
							2" Ice	5.2705	2.9566	0.17
							4" Ice	6.7224	4.2529	0.35
RRH2x60-700	B	From Leg	4.0000		0.00	132.0000	No Ice	3.9569	1.8157	0.06
			0.00				1/2" Ice	4.2724	2.0752	0.08
			1.00				1" Ice	4.5965	2.3603	0.11
							2" Ice	5.2705	2.9566	0.17
							4" Ice	6.7224	4.2529	0.35
RRH2x60-700	C	From Leg	4.0000		0.00	132.0000	No Ice	3.9569	1.8157	0.06
			0.00				1/2" Ice	4.2724	2.0752	0.08
			1.00				1" Ice	4.5965	2.3603	0.11
							2" Ice	5.2705	2.9566	0.17
							4" Ice	6.7224	4.2529	0.35
RRH2X60-PCS	A	From Leg	4.0000		0.00	132.0000	No Ice	2.5667	1.9250	0.05
			0.00				1/2" Ice	2.7914	2.1302	0.07
			1.00				1" Ice	3.0247	2.3441	0.09
							2" Ice	3.5173	2.7978	0.14
							4" Ice	4.6062	3.8090	0.30
RRH2X60-PCS	B	From Leg	4.0000		0.00	132.0000	No Ice	2.5667	1.9250	0.05
			0.00				1/2" Ice	2.7914	2.1302	0.07
			1.00				1" Ice	3.0247	2.3441	0.09
							2" Ice	3.5173	2.7978	0.14
							4" Ice	4.6062	3.8090	0.30
RRH2X60-PCS	C	From Leg	4.0000		0.00	132.0000	No Ice	2.5667	1.9250	0.05
			0.00				1/2" Ice	2.7914	2.1302	0.07
			1.00				1" Ice	3.0247	2.3441	0.09
							2" Ice	3.5173	2.7978	0.14
							4" Ice	4.6062	3.8090	0.30
DB-T1-6Z-8AB-0Z	B	From Leg	4.0000		0.00	132.0000	No Ice	5.6000	2.3333	0.04
			0.00				1/2" Ice	5.9154	2.5580	0.08
			1.00				1" Ice	6.2395	2.7914	0.12
							2" Ice	6.9136	3.2840	0.21
							4" Ice	8.3654	4.3728	0.45
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000		0.00	132.0000	No Ice	5.6000	2.3333	0.04
			0.00				1/2" Ice	5.9154	2.5580	0.08
			1.00				1" Ice	6.2395	2.7914	0.12
							2" Ice	6.9136	3.2840	0.21
							4" Ice	8.3654	4.3728	0.45
Platform Mount [LP 712-1]	C	None			0.00	132.0000	No Ice	24.5300	24.5300	1.34
							1/2" Ice	29.9400	29.9400	1.65
							1" Ice	35.3500	35.3500	1.96

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz	Vert					
						ft	ft ²	ft ²	K
						2" Ice	46.1700	46.1700	2.58
						4" Ice	67.8100	67.8100	3.82

LLPX310R w/ Mount Pipe	A	From Leg	4.0000	0.00	121.0000	No Ice	5.0651	2.9846	0.05
			0.00			1/2" Ice	5.4799	3.5275	0.08
			1.00			1" Ice	5.9053	4.0872	0.13
						2" Ice	6.7882	5.3142	0.23
						4" Ice	8.7047	8.1325	0.54
840 10054 w/Mount Pipe	B	From Leg	4.0000	0.00	121.0000	No Ice	6.0171	3.0236	0.06
			0.00			1/2" Ice	6.7400	4.0104	0.10
			1.00			1" Ice	7.3248	4.7110	0.15
						2" Ice	8.5260	6.1458	0.26
						4" Ice	11.0876	9.3207	0.62
LLPX310R w/ Mount Pipe	C	From Leg	4.0000	0.00	121.0000	No Ice	5.0651	2.9846	0.05
			0.00			1/2" Ice	5.4799	3.5275	0.08
			0.00			1" Ice	5.9053	4.0872	0.13
						2" Ice	6.7882	5.3142	0.23
						4" Ice	8.7047	8.1325	0.54
RRH-2WB	A	From Leg	4.0000	0.00	121.0000	No Ice	2.6889	0.8506	0.04
			0.00			1/2" Ice	2.9121	1.0121	0.06
			1.00			1" Ice	3.1440	1.1823	0.08
						2" Ice	3.6338	1.5485	0.12
						4" Ice	4.7170	2.3846	0.25
RRH-2WB	B	From Leg	4.0000	0.00	121.0000	No Ice	2.6889	0.8506	0.04
			0.00			1/2" Ice	2.9121	1.0121	0.06
			1.00			1" Ice	3.1440	1.1823	0.08
						2" Ice	3.6338	1.5485	0.12
						4" Ice	4.7170	2.3846	0.25
RRH-2WB	C	From Leg	4.0000	0.00	121.0000	No Ice	2.6889	0.8506	0.04
			0.00			1/2" Ice	2.9121	1.0121	0.06
			0.00			1" Ice	3.1440	1.1823	0.08
						2" Ice	3.6338	1.5485	0.12
						4" Ice	4.7170	2.3846	0.25
HORIZON COMPACT	A	From Leg	4.0000	0.00	121.0000	No Ice	0.8409	0.4295	0.01
			0.00			1/2" Ice	0.9658	0.5249	0.02
			1.00			1" Ice	1.0993	0.6289	0.03
						2" Ice	1.3922	0.8629	0.05
						4" Ice	2.0819	1.4345	0.12
HORIZON COMPACT	B	From Leg	4.0000	0.00	121.0000	No Ice	0.8409	0.4295	0.01
			0.00			1/2" Ice	0.9658	0.5249	0.02
			1.00			1" Ice	1.0993	0.6289	0.03
						2" Ice	1.3922	0.8629	0.05
						4" Ice	2.0819	1.4345	0.12
HORIZON COMPACT	C	From Leg	4.0000	0.00	121.0000	No Ice	0.8409	0.4295	0.01
			0.00			1/2" Ice	0.9658	0.5249	0.02
			1.00			1" Ice	1.0993	0.6289	0.03
						2" Ice	1.3922	0.8629	0.05
						4" Ice	2.0819	1.4345	0.12
7' x 3.5" Pipe Mount	A	From Leg	4.0000	0.00	121.0000	No Ice	2.4046	2.4046	0.03
			0.00			1/2" Ice	2.8268	2.8268	0.05
			0.00			1" Ice	3.2582	3.2582	0.07
						2" Ice	4.1488	4.1488	0.13
						4" Ice	6.0410	6.0410	0.31
7' x 3.5" Pipe Mount	B	From Leg	4.0000	0.00	121.0000	No Ice	2.4046	2.4046	0.03
			0.00			1/2" Ice	2.8268	2.8268	0.05

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Load Combinations

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load <i>Comb.</i>	Tilt <i>o</i>	Twist <i>o</i>
L1	160 - 155	37.61	31	2.20	0.01
L2	155 - 150	35.31	31	2.20	0.01
L3	150 - 146	33.02	31	2.17	0.01
L4	146 - 141	31.21	31	2.13	0.00
L5	141 - 136	29.00	31	2.09	0.00
L6	136 - 131	26.85	31	2.02	0.00
L7	131 - 126	24.78	31	1.93	0.00
L8	126 - 123.08	22.81	32	1.83	0.00
L9	123.08 - 122.83	21.71	32	1.75	0.00

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	122.83 - 117.83	21.62	32	1.75	0.00
L11	117.83 - 117.5	19.83	32	1.67	0.00
L12	117.5 - 117.25	19.72	32	1.67	0.00
L13	117.25 - 115.5	19.63	32	1.66	0.00
L14	115.5 - 115.25	19.03	32	1.64	0.00
L15	115.25 - 110.25	18.94	32	1.63	0.00
L16	110.25 - 103.75	17.27	32	1.56	0.00
L17	107.5 - 102.5	16.38	32	1.52	0.00
L18	102.5 - 100.5	14.80	32	1.48	0.00
L19	100.5 - 100.25	14.19	32	1.45	0.00
L20	100.25 - 98.5	14.12	32	1.44	0.00
L21	98.5 - 98.25	13.59	32	1.42	0.00
L22	98.25 - 93.25	13.52	32	1.41	0.00
L23	93.25 - 90.5	12.09	32	1.32	0.00
L24	90.5 - 90.25	11.34	32	1.26	0.00
L25	90.25 - 85.25	11.28	32	1.26	0.00
L26	85.25 - 83.5	10.01	32	1.16	0.00
L27	83.5 - 83.25	9.59	32	1.13	0.00
L28	83.25 - 80.75	9.53	32	1.12	0.00
L29	80.75 - 80.5	8.95	32	1.09	0.00
L30	80.5 - 80.25	8.89	32	1.09	0.00
L31	80.25 - 77.5	8.84	32	1.08	0.00
L32	77.5 - 77.25	8.22	32	1.05	0.00
L33	77.25 - 68.5	8.17	32	1.04	0.00
L34	73 - 68	7.28	32	0.97	0.00
L35	68 - 65.25	6.29	32	0.92	0.00
L36	65.25 - 65	5.77	32	0.87	0.00
L37	65 - 64.25	5.73	32	0.87	0.00
L38	64.25 - 64	5.59	32	0.86	0.00
L39	64 - 60.5	5.55	32	0.85	0.00
L40	60.5 - 60.25	4.94	32	0.80	0.00
L41	60.25 - 60.08	4.90	32	0.80	0.00
L42	60.08 - 59.83	4.87	32	0.80	0.00
L43	59.83 - 59.08	4.83	32	0.79	0.00
L44	59.08 - 58.83	4.70	32	0.78	0.00
L45	58.83 - 55.75	4.66	32	0.78	0.00
L46	55.75 - 55.4	4.17	32	0.74	0.00
L47	55.4 - 55.17	4.12	32	0.74	0.00
L48	55.17 - 50.17	4.08	32	0.73	0.00
L49	50.17 - 45.17	3.35	32	0.65	0.00
L50	45.17 - 41.25	2.71	38	0.57	0.00
L51	41.25 - 41	2.27	38	0.50	0.00
L52	41 - 34	2.25	38	0.50	0.00
L53	39 - 33	2.04	38	0.47	0.00
L54	33 - 31.5	1.48	38	0.42	0.00
L55	31.5 - 31.25	1.35	38	0.41	0.00
L56	31.25 - 30.5	1.33	38	0.40	0.00
L57	30.5 - 30.25	1.27	38	0.39	0.00
L58	30.25 - 25.75	1.25	38	0.39	0.00
L59	25.75 - 25.5	0.90	38	0.33	0.00
L60	25.5 - 25.25	0.89	38	0.33	0.00
L61	25.25 - 20.25	0.87	38	0.33	0.00
L62	20.25 - 15.25	0.56	38	0.26	0.00
L63	15.25 - 10.25	0.32	38	0.20	0.00
L64	10.25 - 5.25	0.14	38	0.13	0.00
L65	5.25 - 0.25	0.04	38	0.07	0.00
L66	0.25 - 0	0.00	1	0.00	0.00

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Critical Deflections and Radius of Curvature - Service Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
156.0000	Lightning Rod	31	35.77	2.20	0.01	26268
148.0000	(2) PCS 1900MHz 4x45W-65MHz	31	32.11	2.15	0.00	6660
146.0000	APXV9ERR18-C-A20 w/ Mount Pipe	31	31.21	2.13	0.00	6088
139.0000	APXV18-206517S-C	31	28.13	2.06	0.00	4431
132.0000	BXA-80080-6CF-EDIN-X w/ Mount Pipe	31	25.18	1.95	0.00	3056
122.0000	VHLP800-11	32	21.32	1.74	0.00	3166
121.0000	LLPX310R w/ Mount Pipe	32	20.96	1.72	0.00	3404
101.0000	58532A	32	14.34	1.45	0.00	3973

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
L1	160 - 155	95.99	6	5.61	0.02
L2	155 - 150	90.13	6	5.61	0.02
L3	150 - 146	84.30	6	5.55	0.01
L4	146 - 141	79.70	6	5.45	0.01
L5	141 - 136	74.06	7	5.33	0.01
L6	136 - 131	68.58	7	5.16	0.01
L7	131 - 126	63.30	7	4.94	0.01
L8	126 - 123.08	58.28	7	4.66	0.01
L9	123.08 - 122.83	55.49	7	4.47	0.01
L10	122.83 - 117.83	55.26	7	4.47	0.01
L11	117.83 - 117.5	50.69	7	4.27	0.01
L12	117.5 - 117.25	50.39	7	4.26	0.01
L13	117.25 - 115.5	50.17	7	4.25	0.01
L14	115.5 - 115.25	48.63	7	4.18	0.01
L15	115.25 - 110.25	48.41	7	4.17	0.01
L16	110.25 - 103.75	44.14	7	4.00	0.01
L17	107.5 - 102.5	41.87	7	3.90	0.01
L18	102.5 - 100.5	37.84	7	3.78	0.00
L19	100.5 - 100.25	36.28	7	3.70	0.00
L20	100.25 - 98.5	36.09	7	3.69	0.00
L21	98.5 - 98.25	34.75	7	3.62	0.00
L22	98.25 - 93.25	34.56	7	3.61	0.00
L23	93.25 - 90.5	30.91	7	3.37	0.00
L24	90.5 - 90.25	29.01	7	3.23	0.00
L25	90.25 - 85.25	28.84	7	3.22	0.00
L26	85.25 - 83.5	25.60	7	2.97	0.00
L27	83.5 - 83.25	24.52	7	2.89	0.00
L28	83.25 - 80.75	24.37	7	2.88	0.00
L29	80.75 - 80.5	22.89	7	2.78	0.00
L30	80.5 - 80.25	22.75	7	2.78	0.00
L31	80.25 - 77.5	22.60	7	2.77	0.00
L32	77.5 - 77.25	21.03	7	2.68	0.00
L33	77.25 - 68.5	20.89	7	2.67	0.00
L34	73 - 68	18.61	7	2.47	0.00
L35	68 - 65.25	16.08	7	2.35	0.00
L36	65.25 - 65	14.76	7	2.22	0.00
L37	65 - 64.25	14.65	7	2.21	0.00

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L38	64.25 - 64	14.30	7	2.19	0.00
L39	64 - 60.5	14.19	7	2.18	0.00
L40	60.5 - 60.25	12.63	7	2.05	0.00
L41	60.25 - 60.08	12.53	7	2.05	0.00
L42	60.08 - 59.83	12.45	7	2.04	0.00
L43	59.83 - 59.08	12.35	7	2.03	0.00
L44	59.08 - 58.83	12.03	7	2.01	0.00
L45	58.83 - 55.75	11.93	7	2.00	0.00
L46	55.75 - 55.4	10.67	7	1.90	0.00
L47	55.4 - 55.17	10.53	7	1.89	0.00
L48	55.17 - 50.17	10.44	7	1.88	0.00
L49	50.17 - 45.17	8.58	7	1.67	0.00
L50	45.17 - 41.25	6.95	7	1.46	0.00
L51	41.25 - 41	5.82	7	1.29	0.00
L52	41 - 34	5.75	7	1.28	0.00
L53	39 - 33	5.23	7	1.20	0.00
L54	33 - 31.5	3.79	7	1.08	0.00
L55	31.5 - 31.25	3.45	7	1.04	0.00
L56	31.25 - 30.5	3.40	7	1.03	0.00
L57	30.5 - 30.25	3.24	7	1.01	0.00
L58	30.25 - 25.75	3.19	7	1.00	0.00
L59	25.75 - 25.5	2.31	7	0.85	0.00
L60	25.5 - 25.25	2.27	7	0.84	0.00
L61	25.25 - 20.25	2.23	7	0.83	0.00
L62	20.25 - 15.25	1.44	7	0.67	0.00
L63	15.25 - 10.25	0.82	7	0.51	0.00
L64	10.25 - 5.25	0.37	7	0.34	0.00
L65	5.25 - 0.25	0.10	7	0.18	0.00
L66	0.25 - 0	0.00	7	0.01	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.0000	Lightning Rod	6	91.30	5.61	0.02	10657
148.0000	(2) PCS 1900MHz 4x45W-65MHz	6	81.99	5.50	0.01	2678
146.0000	APXV9ERR18-C-A20 w/ Mount Pipe	6	79.70	5.45	0.01	2445
139.0000	APXV18-206517S-C	7	71.85	5.27	0.01	1773
132.0000	BXA-80080-6CF-EDIN-X w/ Mount Pipe	7	64.34	4.99	0.01	1218
122.0000	VHLP800-11	7	54.49	4.44	0.01	1255
121.0000	LLPX310R w/ Mount Pipe	7	53.56	4.40	0.01	1349
101.0000	58532A	7	36.67	3.72	0.00	1569

Compression Checks

Pole Design Data

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Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	160 - 159	TP16x16x0.375	5.0000	0.0000	0.0	21.00	18.4078	-0.11	386.56	0.000*
	159 - 158					21.00	18.4078	-0.22	386.56	0.001*
	158 - 157					21.00	18.4078	-0.18	386.56	0.000
	157 - 156					21.00	18.4078	-0.24	386.56	0.001
	156 - 155					21.00	18.4078	-1.58	386.56	0.004
L2	155 - 154	TP16x16x0.375	5.0000	0.0000	0.0	21.00	18.4078	-1.65	386.56	0.004
	154 - 153					21.00	18.4078	-1.72	386.56	0.004
	153 - 152					21.00	18.4078	-1.79	386.56	0.005
	152 - 151					21.00	18.4078	-1.86	386.56	0.005
	151 - 150					21.00	18.4078	-1.93	386.56	0.005
L3	150 - 149	TP16x16x0.375	4.0000	0.0000	0.0	21.00	18.4078	-2.01	386.56	0.005
	149 - 148					21.00	18.4078	-2.08	386.56	0.005
	148 - 147					21.00	18.4078	-2.94	386.56	0.008
	147 - 146					21.00	18.4078	-3.01	386.56	0.008
L4	146 - 145	TP22.924x22x0.25	5.0000	0.0000	0.0	36.00	17.6575	-5.72	635.67	0.009
	145 - 144					36.00	17.8063	-5.79	641.03	0.009
	144 - 143					36.00	17.9551	-5.86	646.38	0.009
	143 - 142					36.00	18.1038	-5.93	651.74	0.009
	142 - 141					36.00	18.2526	-6.01	657.09	0.009
L5	141 - 140	TP23.848x22.924x0.25	5.0000	0.0000	0.0	36.00	18.4014	-6.09	662.45	0.009
	140 - 139					36.00	18.5501	-6.16	667.80	0.009
	139 - 138					36.00	18.6989	-6.42	673.16	0.010
	138 - 137					36.00	18.8477	-6.50	678.52	0.010
	137 - 136					36.00	18.9964	-6.58	683.87	0.010
L6	136 - 135	TP24.7721x23.848x0.25	5.0000	0.0000	0.0	36.00	19.1452	-6.68	689.23	0.010
	135 - 134					36.00	19.2940	-6.77	694.58	0.010
	134 - 133					36.00	19.4427	-6.86	699.94	0.010
	133 - 132					36.00	19.5915	-6.95	705.29	0.010
	132 - 131					36.00	19.7403	-9.11	710.65	0.013
L7	131 - 130	TP25.6961x24.7721x0.25	5.0000	0.0000	0.0	36.00	19.8890	-9.23	716.01	0.013
	130 - 129					36.00	20.0378	-9.36	721.36	0.013
	129 - 128					36.00	20.1866	-9.48	726.72	0.013
	128 - 127					36.00	20.3353	-9.61	732.07	0.013
	127 - 126					36.00	20.4841	-9.74	737.43	0.013
L8	126 - 124.54	TP26.2357x25.6961x0.25	2.9200	0.0000	0.0	36.00	20.7013	-9.92	745.25	0.013
	124.54 - 123.08					36.00	20.9185	-10.11	753.07	0.013
L9	123.08 - 122.83 (9)	TP26.2819x26.2357x0.5	0.2500	0.0000	0.0	36.00	41.5089	-10.17	1494.32	0.007
L10	122.83 - 121.83	TP27.2059x26.2819x0.4875	5.0000	0.0000	0.0	36.00	40.7809	-10.40	1468.11	0.007
	121.83 - 120.83					36.00	41.0710	-11.63	1478.56	0.008
	120.83 - 119.83					36.00	41.3611	-11.82	1489.00	0.008
	119.83 - 118.83					36.00	41.6512	-12.01	1499.44	0.008
	118.83 - 117.83					36.00	41.9413	-12.20	1509.89	0.008
L11	117.83 - 117.5 (11)	TP27.2669x27.2059x0.4875	0.3300	0.0000	0.0	36.00	42.0370	-12.27	1513.33	0.008
L12	117.5 - 117.25 (12)	TP27.3131x27.2669x0.5	0.2500	0.0000	0.0	36.00	43.1691	-12.33	1554.09	0.008
L13	117.25 - 115.5 (13)	TP27.6365x27.3131x0.5	1.7500	0.0000	0.0	36.00	43.6898	-12.69	1572.83	0.008
L14	115.5 - 115.25 (14)	TP27.6827x27.6365x0.6625	0.2500	0.0000	0.0	36.00	57.6409	-12.76	2075.07	0.006
L15	115.25 - 114.25	TP28.6068x27.6827x0.65	5.0000	0.0000	0.0	36.00	56.9663	-13.00	2050.79	0.006
	114.25 - 113.25					36.00	57.3531	-13.24	2064.71	0.006
	113.25 - 112.25					36.00	57.7399	-13.46	2078.64	0.006
	112.25 - 111.25					36.00	58.1267	-13.70	2092.56	0.007
	111.25 - 110.25					36.00	58.5135	-13.95	2106.49	0.007
L16	110.25 - 108.875	TP29.808x28.6068x0.6375	6.5000	0.0000	0.0	36.00	57.9355	-14.28	2085.68	0.007
	108.875 - 107.5					36.00	58.4572	-14.63	2104.46	0.007
	107.5 - 103.75					36.00	59.8797	-7.89	2155.67	0.004

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L17	107.5 - 103.75	TP29.5386x28.615x0.7	5.0000	0.0000	0.0	36.00	64.4817	-8.40	2321.34	0.004
	103.75 - 102.5					36.00	65.0021	-16.64	2340.08	0.007
L18	102.5 - 101.5	TP29.908x29.5386x0.7	2.0000	0.0000	0.0	36.00	65.4185	-16.92	2355.07	0.007
	101.5 - 100.5					36.00	65.8349	-17.25	2370.05	0.007
L19	100.5 - 100.25	TP29.9542x29.908x0.7625	0.2500	0.0000	0.0	36.00	71.6729	-17.33	2580.22	0.007
	(19)									
L20	100.25 - 98.5	TP30.2774x29.9542x0.7625	1.7500	0.0000	0.0	36.00	72.4666	-17.84	2608.80	0.007
	(20)									
L21	98.5 - 98.25 (21)	TP30.3236x30.2774x0.6	0.2500	0.0000	0.0	36.00	57.4260	-17.92	2067.34	0.009
L22	98.25 - 97.25	TP31.2472x30.3236x0.5875	5.0000	0.0000	0.0	36.00	56.6028	-18.19	2037.70	0.009
	97.25 - 96.25					36.00	56.9522	-18.47	2050.28	0.009
	96.25 - 95.25					36.00	57.3016	-18.74	2062.86	0.009
	95.25 - 94.25					36.00	57.6511	-19.02	2075.44	0.009
	94.25 - 93.25					36.00	58.0005	-19.30	2088.02	0.009
L23	93.25 - 91.875	TP31.7552x31.2472x0.5875	2.7500	0.0000	0.0	36.00	58.4810	-19.68	2105.32	0.009
	91.875 - 90.5					36.00	58.9615	-20.07	2122.61	0.009
L24	90.5 - 90.25 (24)	TP31.8014x31.7552x0.6125	0.2500	0.0000	0.0	36.00	61.5123	-20.17	2214.44	0.009
L25	90.25 - 89.25	TP32.725x31.8014x0.6	5.0000	0.0000	0.0	36.00	60.6379	-20.47	2182.97	0.009
	89.25 - 88.25					36.00	60.9948	-20.79	2195.81	0.009
	88.25 - 87.25					36.00	61.3517	-21.10	2208.66	0.010
	87.25 - 86.25					36.00	61.7086	-21.42	2221.51	0.010
	86.25 - 85.25					36.00	62.0654	-21.74	2234.36	0.010
L26	85.25 - 83.5 (26)	TP33.0482x32.725x0.6	1.7500	0.0000	0.0	36.00	62.6900	-22.29	2256.84	0.010
L27	83.5 - 80.25 (27)	TP33.0944x33.0482x0.8625	0.2500	0.0000	0.0	36.00	89.5161	-22.41	3222.58	0.007
L28	83.25 - 82	TP33.5562x33.0944x0.85	2.5000	0.0000	0.0	36.00	88.8849	-22.87	3199.86	0.007
	82 - 80.75					36.00	89.5169	-23.34	3222.61	0.007
L29	80.75 - 80.5 (29)	TP33.6024x33.5562x0.9875	0.2500	0.0000	0.0	36.00	103.7070	-23.45	3733.46	0.006
L30	80.5 - 80.25 (30)	TP33.6486x33.6024x0.975	0.2500	0.0000	0.0	36.00	102.5790	-23.55	3692.83	0.006
L31	80.25 - 78.875	TP34.1565x33.6486x0.9625	2.7500	0.0000	0.0	36.00	102.0890	-24.11	3675.22	0.007
	78.875 - 77.5					36.00	102.8770	-24.68	3703.56	0.007
L32	77.5 - 77.25 (32)	TP34.2027x34.1565x0.6875	0.2500	0.0000	0.0	36.00	74.1943	-24.78	2671.00	0.009
L33	77.25 - 76.1875	TP35.819x34.2027x0.6875	8.7500	0.0000	0.0	36.00	74.6288	-25.15	2686.64	0.009
	76.1875 - 75.125					36.00	75.0633	-25.53	2702.28	0.009
	75.125 - 74.0625					36.00	75.4977	-25.92	2717.92	0.010
	74.0625 - 73					36.00	75.9322	-26.31	2733.56	0.010
	73 - 68.5					36.00	77.7724	-14.21	2799.81	0.005
L34	73 - 68.5	TP35.2865x34.3628x0.75	5.0000	0.0000	0.0	36.00	83.1826	-15.07	2994.57	0.005
	68.5 - 68					36.00	83.4057	-29.50	3002.60	0.010
L35	68 - 66.625	TP35.7946x35.2865x0.7375	2.7500	0.0000	0.0	36.00	82.6485	-30.03	2975.35	0.010
	66.625 - 65.25					36.00	83.2518	-30.57	2997.06	0.010
L36	65.25 - 65 (36)	TP35.8408x35.7946x1.1	0.2500	0.0000	0.0	36.00	123.0520	-30.70	4429.86	0.007
L37	65 - 64.25 (37)	TP35.9793x35.8408x1.1	0.7500	0.0000	0.0	36.00	123.5430	-31.05	4447.53	0.007
L38	64.25 - 64 (38)	TP36.0255x35.9793x0.95	0.2500	0.0000	0.0	36.00	107.2960	-31.16	3862.66	0.008
L39	64 - 62.8333	TP36.6721x36.0255x0.95	3.5000	0.0000	0.0	36.00	107.9550	-31.66	3886.39	0.008
	62.8333 - 61.6667					36.00	108.6150	-32.17	3910.13	0.008
	61.6667 - 60.5					36.00	109.2740	-32.68	3933.86	0.008
L40	60.5 - 60.25 (40)	TP36.7183x36.6721x1	0.2500	0.0000	0.0	36.00	115.0130	-32.81	4140.47	0.008
L41	60.25 - 60.08	TP36.7497x36.7183x1	0.1700	0.0000	0.0	36.00	115.1140	-32.89	4144.11	0.008
	(41)									
L42	60.08 - 59.83	TP36.7959x36.7497x1.05	0.2500	0.0000	0.0	36.00	120.8570	-33.01	4350.85	0.008
	(42)									
L43	59.83 - 59.08	TP36.9345x36.7959x1.05	0.7500	0.0000	0.0	36.00	121.3250	-33.36	4367.72	0.008
	(43)									
L44	59.08 - 58.83	TP36.9807x36.9345x1.125	0.2500	0.0000	0.0	36.00	129.8870	-33.49	4675.94	0.007
	(44)									
L45	58.83 - 57.8033	TP37.5497x36.9807x1.1	3.0800	0.0000	0.0	36.00	127.7610	-33.99	4599.40	0.007
	57.8033 -					36.00	128.4330	-34.51	4623.59	0.007

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
	56.7767									
L46	56.7767 - 55.75	TP37.6144x37.5497x0.825	0.3500	0.0000	0.0	36.00	129.1050	-35.03	4647.77	0.008
L47	55.75 - 55.4 (46)	TP37.6569x37.6144x0.825	0.2300	0.0000	0.0	36.00	97.7309	-35.18	3518.31	0.010
L48	55.4 - 55.17 (47)	TP37.6569x37.6144x0.825	0.2300	0.0000	0.0	36.00	97.8438	-35.28	3522.38	0.010
	55.17 - 54.17	TP38.5806x37.6569x0.8125	5.0000	0.0000	0.0	36.00	96.8774	-35.70	3487.59	0.010
	54.17 - 53.17					36.00	97.3607	-36.13	3504.99	0.010
	53.17 - 52.17					36.00	97.8441	-36.56	3522.39	0.010
	52.17 - 51.17					36.00	98.3274	-36.99	3539.79	0.010
	51.17 - 50.17					36.00	98.8108	-37.43	3557.19	0.011
L49	50.17 - 49.17	TP39.5043x38.5806x0.8	5.0000	0.0000	0.0	36.00	97.7987	-37.86	3520.75	0.011
	49.17 - 48.17					36.00	98.2747	-38.29	3537.89	0.011
	48.17 - 47.17					36.00	98.7506	-38.73	3555.02	0.011
	47.17 - 46.17					36.00	99.2265	-39.17	3572.15	0.011
	46.17 - 45.17					36.00	99.7024	-39.61	3589.29	0.011
L50	45.17 - 43.8633	TP40.2286x39.5043x0.7875	3.9200	0.0000	0.0	36.00	98.7884	-40.18	3556.38	0.011
	43.8633 - 42.5567					36.00	99.4005	-40.76	3578.42	0.011
	42.5567 - 41.25					36.00	100.0130	-41.34	3600.46	0.011
L51	41.25 - 41 (51)	TP40.2748x40.2286x0.875	0.2500	0.0000	0.0	36.00	111.0090	-41.47	3996.32	0.010
L52	41 - 40	TP41.5688x40.2748x0.875	7.0000	0.0000	0.0	36.00	111.5290	-41.94	4015.06	0.010
	40 - 39					36.00	112.0500	-42.42	4033.80	0.011
	39 - 34					36.00	114.6530	-20.56	4127.49	0.005
L53	39 - 34	TP41.0028x39.8943x1.175	6.0000	0.0000	0.0	36.00	149.9900	-26.58	5399.62	0.005
	34 - 33					36.00	150.6890	-47.72	5424.79	0.009
L54	33 - 31.5 (54)	TP41.28x41.0028x1.15	1.5000	0.0000	0.0	36.00	148.6010	-48.56	5349.65	0.009
L55	31.5 - 31.25 (55)	TP41.3262x41.28x1.175	0.2500	0.0000	0.0	36.00	151.9120	-48.72	5468.83	0.009
L56	31.25 - 30.5 (56)	TP41.4647x41.3262x1.175	0.7500	0.0000	0.0	36.00	152.4360	-49.14	5487.70	0.009
L57	30.5 - 30.25 (57)	TP41.5109x41.4647x1.125	0.2500	0.0000	0.0	36.00	146.2980	-49.28	5266.73	0.009
L58	30.25 - 29.125	TP42.3424x41.5109x1.1	4.5000	0.0000	0.0	36.00	143.8720	-49.90	5179.38	0.010
	29.125 - 28					36.00	144.6080	-50.52	5205.89	0.010
	28 - 26.875					36.00	145.3440	-51.15	5232.39	0.010
	26.875 - 25.75					36.00	146.0800	-51.79	5258.90	0.010
L59	25.75 - 25.5 (59)	TP42.3885x42.3424x0.825	0.2500	0.0000	0.0	36.00	110.4140	-51.92	3974.89	0.013
L60	25.5 - 25.25 (60)	TP42.4347x42.3885x1.125	0.2500	0.0000	0.0	36.00	149.6450	-52.08	5387.20	0.010
L61	25.25 - 24.25	TP43.3586x42.4347x1.1	5.0000	0.0000	0.0	36.00	147.0620	-52.69	5294.24	0.010
	24.25 - 23.25					36.00	147.7170	-53.31	5317.79	0.010
	23.25 - 22.25					36.00	148.3710	-53.94	5341.35	0.010
	22.25 - 21.25					36.00	149.0250	-54.57	5364.91	0.010
	21.25 - 20.25					36.00	149.6800	-55.20	5388.47	0.010
L62	20.25 - 19.25	TP44.2824x43.3586x1.075	5.0000	0.0000	0.0	36.00	147.0040	-55.82	5292.15	0.011
	19.25 - 18.25					36.00	147.6440	-56.45	5315.17	0.011
	18.25 - 17.25					36.00	148.2830	-57.09	5338.20	0.011
	17.25 - 16.25					36.00	148.9230	-57.72	5361.22	0.011
	16.25 - 15.25					36.00	149.5620	-58.36	5384.24	0.011
L63	15.25 - 14.25	TP45.2062x44.2824x1.05	5.0000	0.0000	0.0	36.00	146.7930	-59.01	5284.56	0.011
	14.25 - 13.25					36.00	147.4180	-59.67	5307.05	0.011
	13.25 - 12.25					36.00	148.0430	-60.33	5329.54	0.011
	12.25 - 11.25					36.00	148.6670	-60.99	5352.03	0.011
	11.25 - 10.25					36.00	149.2920	-61.65	5374.51	0.011
L64	10.25 - 9.25	TP46.13x45.2062x1.025	5.0000	0.0000	0.0	36.00	146.4300	-62.28	5271.47	0.012
	9.25 - 8.25					36.00	147.0400	-62.91	5293.43	0.012
	8.25 - 7.25					36.00	147.6490	-63.55	5315.38	0.012
	7.25 - 6.25					36.00	148.2590	-64.18	5337.33	0.012
	6.25 - 5.25					36.00	148.8690	-64.82	5359.29	0.012
L65	5.25 - 4.25	TP47.0538x46.13x1	5.0000	0.0000	0.0	36.00	145.9140	-65.45	5252.89	0.012
	4.25 - 3.25					36.00	146.5080	-66.08	5274.30	0.013
	3.25 - 2.25					36.00	147.1030	-66.72	5295.72	0.013
	2.25 - 1.25					36.00	147.6980	-67.35	5317.14	0.013
	1.25 - 0.25					36.00	148.2930	-67.99	5338.56	0.013
L66	0.25 - 0 (66)	TP47.1x47.0538x1	0.2500	0.0000	0.0	36.00	148.4420	-68.13	5343.91	0.013

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
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* DL controls

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	160 - 159	TP16x16x0.375	0.01	0.00	23.10	0.000	0.00	0.00	23.10	0.000
	159 - 158		0.03	0.00	23.10	0.000	0.00	0.00	23.10	0.000
	158 - 157		0.21	0.04	23.10	0.002	0.00	0.00	23.10	0.000
	157 - 156		0.37	0.06	23.10	0.003	0.00	0.00	23.10	0.000
	156 - 155		10.00	1.71	23.10	0.074	0.00	0.00	23.10	0.000
L2	155 - 154	TP16x16x0.375	15.29	2.61	23.10	0.113	0.00	0.00	23.10	0.000
	154 - 153		20.65	3.53	23.10	0.153	0.00	0.00	23.10	0.000
	153 - 152		26.07	4.45	23.10	0.193	0.00	0.00	23.10	0.000
	152 - 151		31.57	5.39	23.10	0.233	0.00	0.00	23.10	0.000
	151 - 150		37.12	6.34	23.10	0.274	0.00	0.00	23.10	0.000
L3	150 - 149	TP16x16x0.375	42.75	7.30	23.10	0.316	0.00	0.00	23.10	0.000
	149 - 148		48.44	8.27	23.10	0.358	0.00	0.00	23.10	0.000
	148 - 147		55.87	9.54	23.10	0.413	0.00	0.00	23.10	0.000
	147 - 146		63.38	10.82	23.10	0.469	0.00	0.00	23.10	0.000
L4	146 - 145		TP22.924x22x0.25	77.33	9.83	36.00	0.273	0.00	0.00	36.00
	145 - 144	88.83		11.11	36.00	0.309	0.00	0.00	36.00	0.000
	144 - 143	100.44		12.35	36.00	0.343	0.00	0.00	36.00	0.000
	143 - 142	112.18		13.57	36.00	0.377	0.00	0.00	36.00	0.000
	142 - 141	124.04		14.76	36.00	0.410	0.00	0.00	36.00	0.000
L5	141 - 140	TP23.848x22.924x0.25	136.01	15.92	36.00	0.442	0.00	0.00	36.00	0.000
	140 - 139		148.10	17.06	36.00	0.474	0.00	0.00	36.00	0.000
	139 - 138		161.08	18.25	36.00	0.507	0.00	0.00	36.00	0.000
	138 - 137		174.18	19.43	36.00	0.540	0.00	0.00	36.00	0.000
	137 - 136		187.40	20.57	36.00	0.572	0.00	0.00	36.00	0.000
L6	136 - 135	TP24.7721x23.848x0.25	200.74	21.70	36.00	0.603	0.00	0.00	36.00	0.000
	135 - 134		214.20	22.79	36.00	0.633	0.00	0.00	36.00	0.000
	134 - 133		227.79	23.87	36.00	0.663	0.00	0.00	36.00	0.000
	133 - 132		241.49	24.92	36.00	0.692	0.00	0.00	36.00	0.000
	132 - 131		267.06	27.14	36.00	0.754	0.00	0.00	36.00	0.000
L7	131 - 130	TP25.6961x24.7721x0.25	287.15	28.75	36.00	0.798	0.00	0.00	36.00	0.000
	130 - 129		307.37	30.31	36.00	0.842	0.00	0.00	36.00	0.000
	129 - 128		327.73	31.84	36.00	0.885	0.00	0.00	36.00	0.000
	128 - 127		348.22	33.34	36.00	0.926	0.00	0.00	36.00	0.000
	127 - 126		368.84	34.80	36.00	0.967	0.00	0.00	36.00	0.000
L8	126 - 124.54	TP26.2357x25.6961x0.25	399.21	36.87	36.00	1.024	0.00	0.00	36.00	0.000
	124.54 - 123.08		429.90	38.89	36.00	1.080	0.00	0.00	36.00	0.000
L9	123.08 - 122.83 (9)	TP26.2819x26.2357x0.5	435.19	20.19	36.00	0.561	0.00	0.00	36.00	0.000
L10	122.83 - 121.83	TP27.2059x26.2819x0.4875	456.45	21.38	36.00	0.594	0.00	0.00	36.00	0.000
	121.83 - 120.83		478.97	22.11	36.00	0.614	0.00	0.00	36.00	0.000
	120.83 - 119.83		502.66	22.88	36.00	0.635	0.00	0.00	36.00	0.000
	119.83 - 118.83		526.51	23.63	36.00	0.656	0.00	0.00	36.00	0.000
	118.83 -		550.55	24.36	36.00	0.677	0.00	0.00	36.00	0.000

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Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	117.83									
L11	117.83 - 117.5 (11)	TP27.2669x27.2059x0.4875	558.51	24.60	36.00	0.683	0.00	0.00	36.00	0.000
L12	117.5 - 117.25 (12)	TP27.3131x27.2669x0.5	564.56	24.20	36.00	0.672	0.00	0.00	36.00	0.000
L13	117.25 - 115.5 (13)	TP27.6365x27.3131x0.5	607.24	25.40	36.00	0.706	0.00	0.00	36.00	0.000
L14	115.5 - 115.25 (14)	TP27.6827x27.6365x0.6625	613.38	19.65	36.00	0.546	0.00	0.00	36.00	0.000
L15	115.25 - 114.25 114.25 - 113.25 113.25 - 112.25 112.25 - 111.25 111.25 - 110.25	TP28.6068x27.6827x0.65	638.08	20.52	36.00	0.570	0.00	0.00	36.00	0.000
			662.96	21.03	36.00	0.584	0.00	0.00	36.00	0.000
			688.13	21.53	36.00	0.598	0.00	0.00	36.00	0.000
			713.62	22.03	36.00	0.612	0.00	0.00	36.00	0.000
			739.31	22.52	36.00	0.626	0.00	0.00	36.00	0.000
L16	110.25 - 108.875 108.875 - 107.5	TP29.808x28.6068x0.6375	774.94	23.60	36.00	0.656	0.00	0.00	36.00	0.000
			810.95	24.25	36.00	0.674	0.00	0.00	36.00	0.000
L17	107.5 - 103.75 107.5 - 103.75	TP29.5386x28.615x0.7	447.85	12.76	36.00	0.354	0.00	0.00	36.00	0.000
			463.29	12.53	36.00	0.348	0.00	0.00	36.00	0.000
			945.20	25.15	36.00	0.699	0.00	0.00	36.00	0.000
L18	102.5 - 101.5 101.5 - 100.5	TP29.908x29.5386x0.7	972.67	25.55	36.00	0.710	0.00	0.00	36.00	0.000
L19	100.5 - 100.25 (19)	TP29.9542x29.908x0.7625	1000.28	25.94	36.00	0.721	0.00	0.00	36.00	0.000
L20	100.25 - 98.5 (20)	TP30.2774x29.9542x0.7625	1007.23	24.06	36.00	0.668	0.00	0.00	36.00	0.000
L21	98.5 - 98.25 (21)	TP30.3236x30.2774x0.6	1056.32	24.67	36.00	0.685	0.00	0.00	36.00	0.000
L22	98.25 - 97.25 97.25 - 96.25 96.25 - 95.25 95.25 - 94.25 94.25 - 93.25	TP31.2472x30.3236x0.5875	1063.38	30.95	36.00	0.860	0.00	0.00	36.00	0.000
			1091.73	32.01	36.00	0.889	0.00	0.00	36.00	0.000
			1120.28	32.44	36.00	0.901	0.00	0.00	36.00	0.000
			1149.01	32.86	36.00	0.913	0.00	0.00	36.00	0.000
			1177.93	33.28	36.00	0.924	0.00	0.00	36.00	0.000
			1207.03	33.69	36.00	0.936	0.00	0.00	36.00	0.000
L23	93.25 - 91.875 91.875 - 90.5	TP31.7552x31.2472x0.5875	1247.35	34.24	36.00	0.951	0.00	0.00	36.00	0.000
L24	90.5 - 90.25 (24)	TP31.8014x31.7552x0.6125	1288.02	34.78	36.00	0.966	0.00	0.00	36.00	0.000
L25	89.25 - 88.25 88.25 - 87.25 87.25 - 86.25 86.25 - 85.25	TP32.725x31.8014x0.6	1295.45	33.53	36.00	0.931	0.00	0.00	36.00	0.000
			1325.28	34.56	36.00	0.960	0.00	0.00	36.00	0.000
			1355.30	34.93	36.00	0.970	0.00	0.00	36.00	0.000
			1385.50	35.29	36.00	0.980	0.00	0.00	36.00	0.000
			1415.88	35.64	36.00	0.990	0.00	0.00	36.00	0.000
			1446.44	35.99	36.00	1.000	0.00	0.00	36.00	0.000
L26	85.25 - 83.5 (26)	TP33.0482x32.725x0.6	1500.38	36.58	36.00	1.016	0.00	0.00	36.00	0.000
L27	83.5 - 83.25 (27)	TP33.0944x33.0482x0.8625	1508.14	26.14	36.00	0.726	0.00	0.00	36.00	0.000
L28	83.25 - 82 82 - 80.75	TP33.5562x33.0944x0.85	1547.11	26.78	36.00	0.744	0.00	0.00	36.00	0.000
			1586.39	27.07	36.00	0.752	0.00	0.00	36.00	0.000
L29	80.75 - 80.5 (29)	TP33.6024x33.5562x0.9875	1594.28	23.65	36.00	0.657	0.00	0.00	36.00	0.000
L30	80.5 - 80.25 (30)	TP33.6486x33.6024x0.975	1602.19	23.97	36.00	0.666	0.00	0.00	36.00	0.000
L31	80.25 - 78.875 78.875 - 77.5	TP34.1565x33.6486x0.9625	1645.92	24.53	36.00	0.681	0.00	0.00	36.00	0.000
			1690.03	24.80	36.00	0.689	0.00	0.00	36.00	0.000

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Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L32	77.5 - 77.25 (32)	TP34.2027x34.1565x0.6875	1698.08	33.94	36.00	0.943	0.00	0.00	36.00	0.000
L33	77.25 - 76.1875 76.1875 - 75.125 75.125 - 74.0625 74.0625 - 73 73 - 68.5	TP35.819x34.2027x0.6875	1732.47 1767.08 1801.90 1836.96 980.75	34.22 34.50 34.77 35.04 17.82	36.00 36.00 36.00 36.00 36.00	0.951 0.958 0.966 0.973 0.495	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	36.00 36.00 36.00 36.00 36.00	0.000 0.000 0.000 0.000 0.000
L34	73 - 68.5 68.5 - 68	TP35.2865x34.3628x0.75	1007.28 2005.08	17.49 34.63	36.00 36.00	0.486 0.962	0.00 0.00	0.00 0.00	36.00 36.00	0.000 0.000
L35	68 - 66.625 66.625 - 65.25	TP35.7946x35.2865x0.7375	2052.20 2099.68	35.48 35.77	36.00 36.00	0.986 0.994	0.00 0.00	0.00 0.00	36.00 36.00	0.000 0.000
L36	65.25 - 65 (36)	TP35.8408x35.7946x1.1	2108.35	24.78	36.00	0.688	0.00	0.00	36.00	0.000
L37	65 - 64.25 (37)	TP35.9793x35.8408x1.1	2134.45	24.88	36.00	0.691	0.00	0.00	36.00	0.000
L38	64.25 - 64 (38)	TP36.0255x35.9793x0.95	2143.17	28.48	36.00	0.791	0.00	0.00	36.00	0.000
L39	64 - 62.8333 62.8333 - 61.6667 61.6667 - 60.5 60.5 - 60.25 (40)	TP36.6721x36.0255x0.95	2184.03 2225.17 2266.57 2275.47	28.67 28.85 29.03 27.73	36.00 36.00 36.00 36.00	0.796 0.801 0.806 0.770	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	36.00 36.00 36.00 36.00	0.000 0.000 0.000 0.000
L40	60.25 - 60.08 (41)	TP36.7183x36.6721x1	2281.54	27.75	36.00	0.771	0.00	0.00	36.00	0.000
L42	60.08 - 59.83 (42)	TP36.7959x36.7497x1.05	2290.47	26.58	36.00	0.738	0.00	0.00	36.00	0.000
L43	59.83 - 59.08 (43)	TP36.9345x36.7959x1.05	2317.32	26.68	36.00	0.741	0.00	0.00	36.00	0.000
L44	59.08 - 58.83 (44)	TP36.9807x36.9345x1.125	2326.30	25.09	36.00	0.697	0.00	0.00	36.00	0.000
L45	58.83 - 57.8033 57.8033 - 56.7767 56.7767 - 55.75	TP37.5497x36.9807x1.1	2363.29 2400.50 2437.92	25.74 25.86 25.99	36.00 36.00 36.00	0.715 0.718 0.722	0.00 0.00 0.00	0.00 0.00 0.00	36.00 36.00 36.00	0.000 0.000 0.000
L46	55.75 - 55.4 (46)	TP37.6144x37.5497x0.825	2450.72	33.94	36.00	0.943	0.00	0.00	36.00	0.000
L47	55.4 - 55.17 (47)	TP37.6569x37.6144x0.825	2459.14	33.98	36.00	0.944	0.00	0.00	36.00	0.000
L48	55.17 - 54.17 54.17 - 53.17 53.17 - 52.17 52.17 - 51.17 51.17 - 50.17	TP38.5806x37.6569x0.8125	2495.89 2532.82 2569.94 2607.25 2644.75	34.63 34.79 34.95 35.10 35.26	36.00 36.00 36.00 36.00 36.00	0.962 0.966 0.971 0.975 0.979	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	36.00 36.00 36.00 36.00 36.00	0.000 0.000 0.000 0.000 0.000
L49	50.17 - 49.17 49.17 - 48.17 48.17 - 47.17 47.17 - 46.17 46.17 - 45.17	TP39.5043x38.5806x0.8	2682.43 2720.29 2758.34 2796.57 2834.98	35.92 36.08 36.23 36.37 36.52	36.00 36.00 36.00 36.00 36.00	0.998 1.002 1.006 1.010 1.014	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	36.00 36.00 36.00 36.00 36.00	0.000 0.000 0.000 0.000 0.000
L50	45.17 - 43.8633 43.8633 - 42.5567 42.5567 - 41.25	TP40.2286x39.5043x0.7875	2885.44 2936.21 2987.28	37.25 37.44 37.62	36.00 36.00 36.00	1.035 1.040 1.045	0.00 0.00 0.00	0.00 0.00 0.00	36.00 36.00 36.00	0.000 0.000 0.000
L51	41.25 - 41 (51)	TP40.2748x40.2286x0.875	2997.09	34.11	36.00	0.948	0.00	0.00	36.00	0.000
L52	41 - 40 40 - 39	TP41.568x40.2748x0.875	3036.43 3075.93	34.23 34.36	36.00 36.00	0.951 0.954	0.00 0.00	0.00 0.00	36.00 36.00	0.000 0.000

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Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	39 - 34		1462.63	15.60	36.00	0.433	0.00	0.00	36.00	0.000
L53	39 - 34	TP41.0028x39.8943x1.175	1813.83	15.30	36.00	0.425	0.00	0.00	36.00	0.000
	34 - 33		3317.15	27.71	36.00	0.770	0.00	0.00	36.00	0.000
L54	33 - 31.5 (54)	TP41.28x41.0028x1.15	3378.53	28.38	36.00	0.788	0.00	0.00	36.00	0.000
L55	31.5 - 31.25 (55)	TP41.3262x41.28x1.175	3388.79	27.85	36.00	0.774	0.00	0.00	36.00	0.000
L56	31.25 - 30.5 (56)	TP41.4647x41.3262x1.175	3419.65	27.91	36.00	0.775	0.00	0.00	36.00	0.000
L57	30.5 - 30.25 (57)	TP41.5109x41.4647x1.125	3429.97	29.06	36.00	0.807	0.00	0.00	36.00	0.000
L58	30.25 - 29.125	TP42.3424x41.5109x1.1	3476.49	29.76	36.00	0.827	0.00	0.00	36.00	0.000
	29.125 - 28		3523.24	29.85	36.00	0.829	0.00	0.00	36.00	0.000
	28 - 26.875		3570.21	29.93	36.00	0.831	0.00	0.00	36.00	0.000
	26.875 - 25.75		3617.39	30.02	36.00	0.834	0.00	0.00	36.00	0.000
L59	25.75 - 25.5 (59)	TP42.3885x42.3424x0.825	3627.91	39.26	36.00	1.091	0.00	0.00	36.00	0.000
L60	25.5 - 25.25 (60)	TP42.4347x42.3885x1.125	3638.44	29.44	36.00	0.818	0.00	0.00	36.00	0.000
L61	25.25 - 24.25	TP43.3586x42.4347x1.1	3680.67	30.13	36.00	0.837	0.00	0.00	36.00	0.000
	24.25 - 23.25		3723.07	30.21	36.00	0.839	0.00	0.00	36.00	0.000
	23.25 - 22.25		3765.66	30.28	36.00	0.841	0.00	0.00	36.00	0.000
	22.25 - 21.25		3808.42	30.35	36.00	0.843	0.00	0.00	36.00	0.000
	21.25 - 20.25		3851.35	30.42	36.00	0.845	0.00	0.00	36.00	0.000
L62	20.25 - 19.25	TP44.2824x43.3586x1.075	3894.46	31.15	36.00	0.865	0.00	0.00	36.00	0.000
	19.25 - 18.25		3937.73	31.22	36.00	0.867	0.00	0.00	36.00	0.000
	18.25 - 17.25		3981.19	31.29	36.00	0.869	0.00	0.00	36.00	0.000
	17.25 - 16.25		4024.83	31.36	36.00	0.871	0.00	0.00	36.00	0.000
	16.25 - 15.25		4068.64	31.42	36.00	0.873	0.00	0.00	36.00	0.000
L63	15.25 - 14.25	TP45.2062x44.2824x1.05	4112.58	32.18	36.00	0.894	0.00	0.00	36.00	0.000
	14.25 - 13.25		4156.70	32.25	36.00	0.896	0.00	0.00	36.00	0.000
	13.25 - 12.25		4200.99	32.32	36.00	0.898	0.00	0.00	36.00	0.000
	12.25 - 11.25		4245.46	32.38	36.00	0.900	0.00	0.00	36.00	0.000
	11.25 - 10.25		4290.10	32.45	36.00	0.901	0.00	0.00	36.00	0.000
L64	10.25 - 9.25	TP46.13x45.2062x1.025	4334.93	33.25	36.00	0.924	0.00	0.00	36.00	0.000
	9.25 - 8.25		4379.93	33.31	36.00	0.925	0.00	0.00	36.00	0.000
	8.25 - 7.25		4425.12	33.37	36.00	0.927	0.00	0.00	36.00	0.000
	7.25 - 6.25		4470.48	33.44	36.00	0.929	0.00	0.00	36.00	0.000
	6.25 - 5.25		4516.01	33.50	36.00	0.930	0.00	0.00	36.00	0.000
L65	5.25 - 4.25	TP47.0538x46.13x1	4561.73	34.34	36.00	0.954	0.00	0.00	36.00	0.000
	4.25 - 3.25		4607.61	34.40	36.00	0.956	0.00	0.00	36.00	0.000
	3.25 - 2.25		4653.68	34.46	36.00	0.957	0.00	0.00	36.00	0.000
	2.25 - 1.25		4699.92	34.52	36.00	0.959	0.00	0.00	36.00	0.000
	1.25 - 0.25		4746.34	34.58	36.00	0.961	0.00	0.00	36.00	0.000
L66	0.25 - 0 (66)	TP47.1x47.0538x1	4757.98	34.59	36.00	0.961	0.00	0.00	36.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	160 - 159	TP16x16x0.375	0.00	0.00	14.00	0.000	0.00	0.00	14.00	0.000
	159 - 158		0.00	0.00	14.00	0.000	0.00	0.00	14.00	0.000
	158 - 157		0.14	0.01	14.00	0.001	0.00	0.00	14.00	0.000
	157 - 156		0.18	0.01	14.00	0.001	0.00	0.00	14.00	0.000
	156 - 155		5.25	0.29	14.00	0.041	0.30	0.03	14.00	0.002
L2	155 - 154	TP16x16x0.375	5.32	0.29	14.00	0.041	0.31	0.03	14.00	0.002

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Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v / F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} / F _{vt}
L3	154 - 153	TP16x16x0.375	5.38	0.29	14.00	0.042	0.31	0.03	14.00	0.002
	153 - 152		5.45	0.30	14.00	0.042	0.31	0.03	14.00	0.002
	152 - 151		5.52	0.30	14.00	0.043	0.31	0.03	14.00	0.002
	151 - 150		5.58	0.30	14.00	0.043	0.31	0.03	14.00	0.002
	150 - 149		5.65	0.31	14.00	0.044	0.31	0.03	14.00	0.002
	149 - 148		5.71	0.31	14.00	0.044	0.31	0.03	14.00	0.002
L4	148 - 147	TP22.924x22x0.25	7.46	0.41	14.00	0.058	0.31	0.03	14.00	0.002
	147 - 146		7.53	0.41	14.00	0.058	0.31	0.03	14.00	0.002
	146 - 145		11.43	0.65	24.00	0.055	0.31	0.02	24.00	0.001
	145 - 144		11.54	0.65	24.00	0.055	0.22	0.01	24.00	0.001
	144 - 143		11.66	0.65	24.00	0.055	0.22	0.01	24.00	0.001
	143 - 142		11.78	0.65	24.00	0.055	0.22	0.01	24.00	0.001
L5	142 - 141	TP23.848x22.924x0.25	11.90	0.65	24.00	0.055	0.22	0.01	24.00	0.001
	141 - 140		12.02	0.65	24.00	0.055	0.23	0.01	24.00	0.001
	140 - 139		12.13	0.65	24.00	0.055	0.23	0.01	24.00	0.001
	139 - 138		13.03	0.70	24.00	0.059	0.23	0.01	24.00	0.001
	138 - 137		13.15	0.70	24.00	0.059	0.23	0.01	24.00	0.001
	137 - 136		13.27	0.70	24.00	0.059	0.23	0.01	24.00	0.001
L6	136 - 135	TP24.7721x23.848x0.25	13.39	0.70	24.00	0.059	0.23	0.01	24.00	0.000
	135 - 134		13.51	0.70	24.00	0.059	0.24	0.01	24.00	0.000
	134 - 133		13.63	0.70	24.00	0.059	0.24	0.01	24.00	0.000
	133 - 132		13.75	0.70	24.00	0.059	0.24	0.01	24.00	0.000
	132 - 131		20.02	1.01	24.00	0.086	0.68	0.03	24.00	0.001
	131 - 130		20.15	1.01	24.00	0.086	0.68	0.03	24.00	0.001
L7	130 - 129	TP25.6961x24.7721x0.25	20.29	1.01	24.00	0.086	0.67	0.03	24.00	0.001
	129 - 128		20.42	1.01	24.00	0.086	0.67	0.03	24.00	0.001
	128 - 127		20.55	1.01	24.00	0.086	0.67	0.03	24.00	0.001
	127 - 126		20.69	1.01	24.00	0.085	0.67	0.03	24.00	0.001
	126 - 124.54		20.91	1.01	24.00	0.086	0.67	0.03	24.00	0.001
	124.54 - 123.08		21.14	1.01	24.00	0.086	0.67	0.03	24.00	0.001
L9	123.08 - 122.83 (9)	TP26.2819x26.2357x0.5	21.17	0.51	24.00	0.043	0.67	0.01	24.00	0.001
L10	122.83 - 121.83	TP27.2059x26.2819x0.4875	21.66	0.53	24.00	0.045	0.67	0.01	24.00	0.001
	121.83 - 120.83		23.60	0.57	24.00	0.049	1.24	0.03	24.00	0.001
	120.83 - 119.83		23.78	0.57	24.00	0.049	1.24	0.03	24.00	0.001
	119.83 - 118.83		23.95	0.58	24.00	0.049	1.24	0.03	24.00	0.001
	118.83 - 117.83		24.13	0.58	24.00	0.049	1.23	0.03	24.00	0.001
	117.83 - 117.5 (11)		24.19	0.58	24.00	0.049	1.23	0.03	24.00	0.001
L12	117.5 - 117.25 (12)	TP27.3131x27.2669x0.5	24.23	0.56	24.00	0.048	1.23	0.02	24.00	0.001
L13	117.25 - 115.5 (13)	TP27.6365x27.3131x0.5	24.57	0.56	24.00	0.048	1.23	0.02	24.00	0.001
L14	115.5 - 115.25 (14)	TP27.6827x27.6365x0.6625	24.61	0.43	24.00	0.036	1.22	0.02	24.00	0.001
L15	115.25 - 114.25	TP28.6068x27.6827x0.65	24.80	0.44	24.00	0.037	1.22	0.02	24.00	0.001
	114.25 - 113.25		24.99	0.44	24.00	0.037	1.22	0.02	24.00	0.001
	113.25 - 112.25		25.41	0.44	24.00	0.037	0.58	0.01	24.00	0.000
	112.25 - 111.25		25.61	0.44	24.00	0.037	0.58	0.01	24.00	0.000
	111.25 -		25.80	0.44	24.00	0.037	0.57	0.01	24.00	0.000

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Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} F _{vt}
	110.25									
L16	110.25 - 108.875	TP29.808x28.6068x0.6375	26.07	0.45	24.00	0.038	0.57	0.01	24.00	0.000
	108.875 - 107.5		26.34	0.45	24.00	0.038	0.56	0.01	24.00	0.000
	107.5 - 103.75		13.53	0.23	24.00	0.019	0.28	0.00	24.00	0.000
L17	107.5 - 103.75	TP29.5386x28.615x0.7	13.62	0.21	24.00	0.018	0.28	0.00	24.00	0.000
	103.75 - 102.5		27.39	0.42	24.00	0.036	0.55	0.01	24.00	0.000
L18	102.5 - 101.5	TP29.908x29.5386x0.7	27.58	0.42	24.00	0.036	0.54	0.01	24.00	0.000
	101.5 - 100.5		27.84	0.42	24.00	0.036	0.54	0.01	24.00	0.000
L19	100.5 - 100.25	TP29.9542x29.908x0.7625	27.89	0.39	24.00	0.033	0.36	0.00	24.00	0.000
	(19)									
L20	100.25 - 98.5	TP30.2774x29.9542x0.7625	28.24	0.39	24.00	0.033	0.36	0.00	24.00	0.000
	(20)									
L21	98.5 - 98.25	TP30.3236x30.2774x0.6	28.28	0.49	24.00	0.042	0.35	0.00	24.00	0.000
	(21)									
L22	98.25 - 97.25	TP31.2472x30.3236x0.5875	28.47	0.50	24.00	0.043	0.35	0.00	24.00	0.000
	97.25 - 96.25		28.66	0.50	24.00	0.043	0.34	0.00	24.00	0.000
	96.25 - 95.25		28.84	0.50	24.00	0.043	0.33	0.00	24.00	0.000
	95.25 - 94.25		29.03	0.50	24.00	0.043	0.33	0.00	24.00	0.000
	94.25 - 93.25		29.22	0.50	24.00	0.043	0.32	0.00	24.00	0.000
L23	93.25 - 91.875	TP31.7552x31.2472x0.5875	29.47	0.50	24.00	0.043	0.32	0.00	24.00	0.000
	91.875 - 90.5		29.72	0.50	24.00	0.043	0.31	0.00	24.00	0.000
L24	90.5 - 90.25	TP31.8014x31.7552x0.6125	29.76	0.48	24.00	0.041	0.30	0.00	24.00	0.000
	(24)									
L25	90.25 - 89.25	TP32.725x31.8014x0.6	29.95	0.49	24.00	0.042	0.30	0.00	24.00	0.000
	89.25 - 88.25		30.13	0.49	24.00	0.042	0.29	0.00	24.00	0.000
	88.25 - 87.25		30.31	0.49	24.00	0.042	0.29	0.00	24.00	0.000
	87.25 - 86.25		30.49	0.49	24.00	0.042	0.28	0.00	24.00	0.000
	86.25 - 85.25		30.68	0.49	24.00	0.042	0.27	0.00	24.00	0.000
L26	85.25 - 83.5	TP33.0482x32.725x0.6	31.02	0.49	24.00	0.042	0.27	0.00	24.00	0.000
	(26)									
L27	83.5 - 83.25	TP33.0944x33.0482x0.8625	31.06	0.35	24.00	0.029	0.26	0.00	24.00	0.000
	(27)									
L28	83.25 - 82	TP33.5562x33.0944x0.85	31.32	0.35	24.00	0.030	0.26	0.00	24.00	0.000
	82 - 80.75		31.57	0.35	24.00	0.030	0.26	0.00	24.00	0.000
L29	80.75 - 80.5	TP33.6024x33.5562x0.9875	31.62	0.30	24.00	0.026	0.25	0.00	24.00	0.000
	(29)									
L30	80.5 - 80.25	TP33.6486x33.6024x0.975	31.67	0.31	24.00	0.026	0.25	0.00	24.00	0.000
	(30)									
L31	80.25 - 78.875	TP34.1565x33.6486x0.9625	31.96	0.31	24.00	0.027	0.25	0.00	24.00	0.000
	78.875 - 77.5		32.24	0.31	24.00	0.027	0.25	0.00	24.00	0.000
L32	77.5 - 77.25	TP34.2027x34.1565x0.6875	32.29	0.44	24.00	0.037	0.24	0.00	24.00	0.000
	(32)									
L33	77.25 - 76.1875	TP35.819x34.2027x0.6875	32.49	0.44	24.00	0.037	0.24	0.00	24.00	0.000
	76.1875 - 75.125		32.69	0.44	24.00	0.037	0.24	0.00	24.00	0.000
	75.125 - 74.0625		32.92	0.44	24.00	0.037	0.47	0.00	24.00	0.000
	74.0625 - 73		33.12	0.44	24.00	0.037	0.47	0.00	24.00	0.000
	73 - 68.5		17.05	0.22	24.00	0.019	0.23	0.00	24.00	0.000
L34	73 - 68.5	TP35.2865x34.3628x0.75	17.04	0.20	24.00	0.017	0.24	0.00	24.00	0.000
	68.5 - 68		34.16	0.41	24.00	0.035	0.47	0.00	24.00	0.000
L35	68 - 66.625	TP35.7946x35.2865x0.7375	34.43	0.42	24.00	0.035	0.47	0.00	24.00	0.000
	66.625 - 65.25		34.69	0.42	24.00	0.035	0.48	0.00	24.00	0.000
L36	65.25 - 65 (36)	TP35.8408x35.7946x1.1	34.73	0.28	24.00	0.024	0.48	0.00	24.00	0.000
L37	65 - 64.25 (37)	TP35.9793x35.8408x1.1	34.88	0.28	24.00	0.024	0.48	0.00	24.00	0.000
L38	64.25 - 64 (38)	TP36.0255x35.9793x0.95	34.93	0.33	24.00	0.028	0.48	0.00	24.00	0.000
L39	64 - 62.8333	TP36.6721x36.0255x0.95	35.17	0.33	24.00	0.028	0.48	0.00	24.00	0.000

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Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v / F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} / F _{vt}
	62.8333 - 61.6667		35.40	0.33	24.00	0.028	0.49	0.00	24.00	0.000
L40	61.6667 - 60.5 60.5 - 60.25 (40)	TP36.7183x36.6721x1	35.63 35.67	0.33 0.31	24.00 24.00	0.028 0.026	0.49 0.49	0.00 0.00	24.00 24.00	0.000 0.000
L41	60.25 - 60.08 (41)	TP36.7497x36.7183x1	35.70	0.31	24.00	0.026	0.49	0.00	24.00	0.000
L42	60.08 - 59.83 (42)	TP36.7959x36.7497x1.05	35.75	0.30	24.00	0.025	0.49	0.00	24.00	0.000
L43	59.83 - 59.08 (43)	TP36.9345x36.7959x1.05	35.90	0.30	24.00	0.025	0.50	0.00	24.00	0.000
L44	59.08 - 58.83 (44)	TP36.9807x36.9345x1.125	35.95	0.28	24.00	0.023	0.50	0.00	24.00	0.000
L45	58.83 - 57.8033 57.8033 - 56.7767 56.7767 - 55.75	TP37.5497x36.9807x1.1	36.16 36.36 36.57	0.28 0.28 0.28	24.00 24.00 24.00	0.024 0.024 0.024	0.50 0.51 0.51	0.00 0.00 0.00	24.00 24.00 24.00	0.000 0.000 0.000
L46	55.75 - 55.4 (46)	TP37.6144x37.5497x0.825	36.63	0.37	24.00	0.032	0.52	0.00	24.00	0.000
L47	55.4 - 55.17 (47)	TP37.6569x37.6144x0.825	36.67	0.37	24.00	0.032	0.52	0.00	24.00	0.000
L48	55.17 - 54.17 54.17 - 53.17 53.17 - 52.17 52.17 - 51.17 51.17 - 50.17	TP38.5806x37.6569x0.8125	36.87 37.05 37.24 37.43 37.62	0.38 0.38 0.38 0.38 0.38	24.00 24.00 24.00 24.00 24.00	0.032 0.032 0.032 0.032 0.032	0.52 0.53 0.53 0.54 0.54	0.00 0.00 0.00 0.00 0.00	24.00 24.00 24.00 24.00 24.00	0.000 0.000 0.000 0.000 0.000
L49	50.17 - 49.17 49.17 - 48.17 48.17 - 47.17 47.17 - 46.17 46.17 - 45.17	TP39.5043x38.5806x0.8	37.80 37.98 38.17 38.35 38.53	0.39 0.39 0.39 0.39 0.39	24.00 24.00 24.00 24.00 24.00	0.033 0.033 0.033 0.033 0.033	0.54 0.55 0.55 0.56 0.56	0.00 0.00 0.00 0.00 0.00	24.00 24.00 24.00 24.00 24.00	0.000 0.000 0.000 0.000 0.000
L50	45.17 - 43.8633 43.8633 - 42.5567 42.5567 - 41.25	TP40.2286x39.5043x0.7875	38.77 39.00 39.24	0.39 0.39 0.39	24.00 24.00 24.00	0.033 0.033 0.033	0.56 0.56 0.56	0.00 0.00 0.00	24.00 24.00 24.00	0.000 0.000 0.000
L51	41.25 - 41 (51)	TP40.2748x40.2286x0.875	39.27	0.35	24.00	0.030	0.56	0.00	24.00	0.000
L52	41 - 40 40 - 39 39 - 34	TP41.568x40.2748x0.875	39.45 39.63 18.43	0.35 0.35 0.16	24.00 24.00 24.00	0.030 0.030 0.014	0.56 0.57 0.26	0.00 0.00 0.00	24.00 24.00 24.00	0.000 0.000 0.000
L53	39 - 34 34 - 33	TP41.0028x39.8943x1.175	22.23 40.81	0.15 0.27	24.00 24.00	0.013 0.023	0.32 0.58	0.00 0.00	24.00 24.00	0.000 0.000
L54	33 - 31.5 (54)	TP41.28x41.0028x1.15	41.08	0.28	24.00	0.023	0.58	0.00	24.00	0.000
L55	31.5 - 31.25 (55)	TP41.3262x41.28x1.175	41.11	0.27	24.00	0.023	0.58	0.00	24.00	0.000
L56	31.25 - 30.5 (56)	TP41.4647x41.3262x1.175	41.24	0.27	24.00	0.023	0.58	0.00	24.00	0.000
L57	30.5 - 30.25 (57)	TP41.5109x41.4647x1.125	41.28	0.28	24.00	0.024	0.58	0.00	24.00	0.000
L58	30.25 - 29.125 29.125 - 28 28 - 26.875 26.875 - 25.75	TP42.3424x41.5109x1.1	41.49 41.68 41.88 42.07	0.29 0.29 0.29 0.29	24.00 24.00 24.00 24.00	0.024 0.024 0.024 0.024	0.59 0.59 0.59 0.59	0.00 0.00 0.00 0.00	24.00 24.00 24.00 24.00	0.000 0.000 0.000 0.000
L59	25.75 - 25.5 (59)	TP42.3885x42.3424x0.825	42.10	0.38	24.00	0.032	0.59	0.00	24.00	0.000
L60	25.5 - 25.25 (60)	TP42.4347x42.3885x1.125	42.15	0.28	24.00	0.024	0.59	0.00	24.00	0.000

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Section No.	Elevation ft	Size	Actual	Actual	Allow.	Ratio	Actual	Actual	Allow.	Ratio
			V K	f _v ksi	F _v ksi	f _v F _v	T kip-ft	f _{vt} ksi	F _{vt} ksi	f _{vt} F _{vt}
L61	25.25 - 24.25	TP43.3586x42.4347x1.1	42.33	0.29	24.00	0.024	0.59	0.00	24.00	0.000
	24.25 - 23.25		42.51	0.29	24.00	0.024	0.59	0.00	24.00	0.000
	23.25 - 22.25		42.68	0.29	24.00	0.024	0.59	0.00	24.00	0.000
	22.25 - 21.25		42.86	0.29	24.00	0.024	0.59	0.00	24.00	0.000
	21.25 - 20.25		43.04	0.29	24.00	0.024	0.59	0.00	24.00	0.000
L62	20.25 - 19.25	TP44.2824x43.3586x1.075	43.21	0.29	24.00	0.025	0.60	0.00	24.00	0.000
	19.25 - 18.25		43.39	0.29	24.00	0.025	0.60	0.00	24.00	0.000
	18.25 - 17.25		43.56	0.29	24.00	0.025	0.60	0.00	24.00	0.000
	17.25 - 16.25		43.74	0.29	24.00	0.025	0.60	0.00	24.00	0.000
	16.25 - 15.25		43.92	0.29	24.00	0.025	0.60	0.00	24.00	0.000
L63	15.25 - 14.25	TP45.2062x44.2824x1.05	44.09	0.30	24.00	0.025	0.60	0.00	24.00	0.000
	14.25 - 13.25		44.27	0.30	24.00	0.025	0.60	0.00	24.00	0.000
	13.25 - 12.25		44.45	0.30	24.00	0.025	0.61	0.00	24.00	0.000
	12.25 - 11.25		44.62	0.30	24.00	0.025	0.61	0.00	24.00	0.000
	11.25 - 10.25		44.80	0.30	24.00	0.025	0.61	0.00	24.00	0.000
L64	10.25 - 9.25	TP46.13x45.2062x1.025	44.98	0.31	24.00	0.026	0.61	0.00	24.00	0.000
	9.25 - 8.25		45.16	0.31	24.00	0.026	0.61	0.00	24.00	0.000
	8.25 - 7.25		45.33	0.31	24.00	0.026	0.61	0.00	24.00	0.000
	7.25 - 6.25		45.51	0.31	24.00	0.026	0.61	0.00	24.00	0.000
	6.25 - 5.25		45.69	0.31	24.00	0.026	0.61	0.00	24.00	0.000
L65	5.25 - 4.25	TP47.0538x46.13x1	45.86	0.31	24.00	0.027	0.61	0.00	24.00	0.000
	4.25 - 3.25		46.04	0.31	24.00	0.027	0.61	0.00	24.00	0.000
	3.25 - 2.25		46.22	0.31	24.00	0.027	0.61	0.00	24.00	0.000
	2.25 - 1.25		46.39	0.31	24.00	0.027	0.61	0.00	24.00	0.000
	1.25 - 0.25		46.57	0.31	24.00	0.027	0.61	0.00	24.00	0.000
L66	0.25 - 0 (66)	TP47.1x47.0538x1	46.60	0.31	24.00	0.027	0.61	0.00	24.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P P _a	f _{bx} F _{bx}	f _{by} F _{by}	f _v F _v	f _{vt} F _{vt}			
L1	160 - 159	0.000	0.000	0.000	0.000	0.000	0.000*	1.000	HI-3+VT
	159 - 158	0.001	0.000	0.000	0.000	0.000	0.001*	1.000	HI-3+VT
	158 - 157	0.000	0.002	0.000	0.001	0.000	0.002	1.333	HI-3+VT
	157 - 156	0.001	0.003	0.000	0.001	0.000	0.003	1.333	HI-3+VT
	156 - 155	0.004	0.074	0.000	0.041	0.002	0.078	1.333	HI-3+VT
L2	155 - 154	0.004	0.113	0.000	0.041	0.002	0.118	1.333	HI-3+VT
	154 - 153	0.004	0.153	0.000	0.042	0.002	0.158	1.333	HI-3+VT
	153 - 152	0.005	0.193	0.000	0.042	0.002	0.198	1.333	HI-3+VT
	152 - 151	0.005	0.233	0.000	0.043	0.002	0.239	1.333	HI-3+VT
	151 - 150	0.005	0.274	0.000	0.043	0.002	0.280	1.333	HI-3+VT
L3	150 - 149	0.005	0.316	0.000	0.044	0.002	0.322	1.333	HI-3+VT
	149 - 148	0.005	0.358	0.000	0.044	0.002	0.364	1.333	HI-3+VT
	148 - 147	0.008	0.413	0.000	0.058	0.002	0.422	1.333	HI-3+VT
	147 - 146	0.008	0.469	0.000	0.058	0.002	0.477	1.333	HI-3+VT
	146 - 145	0.009	0.273	0.000	0.055	0.001	0.283	1.333	HI-3+VT
L4	145 - 144	0.009	0.309	0.000	0.055	0.001	0.318	1.333	HI-3+VT
	144 - 143	0.009	0.343	0.000	0.055	0.001	0.353	1.333	HI-3+VT
	143 - 142	0.009	0.377	0.000	0.055	0.001	0.387	1.333	HI-3+VT
	142 - 141	0.009	0.410	0.000	0.055	0.001	0.420	1.333	HI-3+VT
	141 - 140	0.009	0.442	0.000	0.055	0.001	0.452	1.333	HI-3+VT
L5	140 - 139	0.009	0.474	0.000	0.055	0.001	0.484	1.333	HI-3+VT
	139 - 138	0.010	0.507	0.000	0.059	0.001	0.517	1.333	HI-3+VT
	138 - 137	0.010	0.540	0.000	0.059	0.001	0.550	1.333	HI-3+VT

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Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
L6	137 - 136	0.010	0.572	0.000	0.059	0.001	0.582	1.333	H1-3+VT
	136 - 135	0.010	0.603	0.000	0.059	0.000	0.613	1.333	H1-3+VT
	135 - 134	0.010	0.633	0.000	0.059	0.000	0.644	1.333	H1-3+VT
	134 - 133	0.010	0.663	0.000	0.059	0.000	0.674	1.333	H1-3+VT
	133 - 132	0.010	0.692	0.000	0.059	0.000	0.703	1.333	H1-3+VT
	132 - 131	0.013	0.754	0.000	0.086	0.001	0.769	1.333	H1-3+VT
L7	131 - 130	0.013	0.798	0.000	0.086	0.001	0.813	1.333	H1-3+VT
	130 - 129	0.013	0.842	0.000	0.086	0.001	0.857	1.333	H1-3+VT
	129 - 128	0.013	0.885	0.000	0.086	0.001	0.899	1.333	H1-3+VT
	128 - 127	0.013	0.926	0.000	0.086	0.001	0.941	1.333	H1-3+VT
	127 - 126	0.013	0.967	0.000	0.085	0.001	0.982	1.333	H1-3+VT
L8	126 - 124.54	0.013	1.024	0.000	0.086	0.001	1.039	1.333	H1-3+VT
	124.54 - 123.08	0.013	1.080	0.000	0.086	0.001	1.095	1.333	H1-3+VT
L9	123.08 - 122.83 (9)	0.007	0.561	0.000	0.043	0.001	0.568	1.333	H1-3+VT
L10	122.83 - 121.83	0.007	0.594	0.000	0.045	0.001	0.601	1.333	H1-3+VT
	121.83 - 120.83	0.008	0.614	0.000	0.049	0.001	0.623	1.333	H1-3+VT
	120.83 - 119.83	0.008	0.635	0.000	0.049	0.001	0.644	1.333	H1-3+VT
	119.83 - 118.83	0.008	0.656	0.000	0.049	0.001	0.665	1.333	H1-3+VT
	118.83 - 117.83	0.008	0.677	0.000	0.049	0.001	0.685	1.333	H1-3+VT
L11	117.83 - 117.5 (11)	0.008	0.683	0.000	0.049	0.001	0.692	1.333	H1-3+VT
L12	117.5 - 117.25 (12)	0.008	0.672	0.000	0.048	0.001	0.681	1.333	H1-3+VT
L13	117.25 - 115.5 (13)	0.008	0.706	0.000	0.048	0.001	0.714	1.333	H1-3+VT
L14	115.5 - 115.25 (14)	0.006	0.546	0.000	0.036	0.001	0.552	1.333	H1-3+VT
L15	115.25 - 114.25	0.006	0.570	0.000	0.037	0.001	0.577	1.333	H1-3+VT
	114.25 - 113.25	0.006	0.584	0.000	0.037	0.001	0.591	1.333	H1-3+VT
	113.25 - 112.25	0.006	0.598	0.000	0.037	0.000	0.605	1.333	H1-3+VT
	112.25 - 111.25	0.007	0.612	0.000	0.037	0.000	0.619	1.333	H1-3+VT
	111.25 - 110.25	0.007	0.626	0.000	0.037	0.000	0.633	1.333	H1-3+VT
L16	110.25 - 108.875	0.007	0.656	0.000	0.038	0.000	0.663	1.333	H1-3+VT
	108.875 - 107.5	0.007	0.674	0.000	0.038	0.000	0.681	1.333	H1-3+VT
	107.5 - 103.75	0.004	0.354	0.000	0.019	0.000	0.358	1.333	H1-3+VT
L17	107.5 - 103.75	0.004	0.348	0.000	0.018	0.000	0.352	1.333	H1-3+VT
	103.75 - 102.5	0.007	0.699	0.000	0.036	0.000	0.706	1.333	H1-3+VT
L18	102.5 - 101.5	0.007	0.710	0.000	0.036	0.000	0.717	1.333	H1-3+VT
	101.5 - 100.5	0.007	0.721	0.000	0.036	0.000	0.728	1.333	H1-3+VT
L19	100.5 - 100.25 (19)	0.007	0.668	0.000	0.033	0.000	0.675	1.333	H1-3+VT
L20	100.25 - 98.5 (20)	0.007	0.685	0.000	0.033	0.000	0.692	1.333	H1-3+VT
L21	98.5 - 98.25 (21)	0.009	0.860	0.000	0.042	0.000	0.869	1.333	H1-3+VT
L22	98.25 - 97.25	0.009	0.889	0.000	0.043	0.000	0.899	1.333	H1-3+VT

tnxTower

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Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
	97.25 - 96.25	0.009	0.901	0.000	0.043	0.000	0.911	1.333	H1-3+VT
	96.25 - 95.25	0.009	0.913	0.000	0.043	0.000	0.922	1.333	H1-3+VT
	95.25 - 94.25	0.009	0.924	0.000	0.043	0.000	0.934	1.333	H1-3+VT
	94.25 - 93.25	0.009	0.936	0.000	0.043	0.000	0.945	1.333	H1-3+VT
L23	93.25 - 91.875	0.009	0.951	0.000	0.043	0.000	0.961	1.333	H1-3+VT
	91.875 - 90.5	0.009	0.966	0.000	0.043	0.000	0.976	1.333	H1-3+VT
L24	90.5 - 90.25	0.009	0.931	0.000	0.041	0.000	0.941	1.333	H1-3+VT
	(24)								
L25	90.25 - 89.25	0.009	0.960	0.000	0.042	0.000	0.970	1.333	H1-3+VT
	89.25 - 88.25	0.009	0.970	0.000	0.042	0.000	0.980	1.333	H1-3+VT
	88.25 - 87.25	0.010	0.980	0.000	0.042	0.000	0.990	1.333	H1-3+VT
	87.25 - 86.25	0.010	0.990	0.000	0.042	0.000	1.000	1.333	H1-3+VT
	86.25 - 85.25	0.010	1.000	0.000	0.042	0.000	1.010	1.333	H1-3+VT
L26	85.25 - 83.5	0.010	1.016	0.000	0.042	0.000	1.027	1.333	H1-3+VT
	(26)								
L27	83.5 - 83.25	0.007	0.726	0.000	0.029	0.000	0.733	1.333	H1-3+VT
	(27)								
L28	83.25 - 82	0.007	0.744	0.000	0.030	0.000	0.751	1.333	H1-3+VT
	82 - 80.75	0.007	0.752	0.000	0.030	0.000	0.759	1.333	H1-3+VT
L29	80.75 - 80.5	0.006	0.657	0.000	0.026	0.000	0.663	1.333	H1-3+VT
	(29)								
L30	80.5 - 80.25	0.006	0.666	0.000	0.026	0.000	0.673	1.333	H1-3+VT
	(30)								
L31	80.25 - 78.875	0.007	0.681	0.000	0.027	0.000	0.688	1.333	H1-3+VT
	78.875 - 77.5	0.007	0.689	0.000	0.027	0.000	0.696	1.333	H1-3+VT
L32	77.5 - 77.25	0.009	0.943	0.000	0.037	0.000	0.952	1.333	H1-3+VT
	(32)								
L33	77.25 - 76.1875	0.009	0.951	0.000	0.037	0.000	0.960	1.333	H1-3+VT
	76.1875 - 75.125	0.009	0.958	0.000	0.037	0.000	0.968	1.333	H1-3+VT
	75.125 - 74.0625	0.010	0.966	0.000	0.037	0.000	0.976	1.333	H1-3+VT
	74.0625 - 73	0.010	0.973	0.000	0.037	0.000	0.983	1.333	H1-3+VT
	73 - 68.5	0.005	0.495	0.000	0.019	0.000	0.500	1.333	H1-3+VT
L34	73 - 68.5	0.005	0.486	0.000	0.017	0.000	0.491	1.333	H1-3+VT
	68.5 - 68	0.010	0.962	0.000	0.035	0.000	0.972	1.333	H1-3+VT
L35	68 - 66.625	0.010	0.986	0.000	0.035	0.000	0.996	1.333	H1-3+VT
	66.625 - 65.25	0.010	0.994	0.000	0.035	0.000	1.004	1.333	H1-3+VT
L36	65.25 - 65 (36)	0.007	0.688	0.000	0.024	0.000	0.695	1.333	H1-3+VT
L37	65 - 64.25 (37)	0.007	0.691	0.000	0.024	0.000	0.698	1.333	H1-3+VT
L38	64.25 - 64 (38)	0.008	0.791	0.000	0.028	0.000	0.799	1.333	H1-3+VT
L39	64 - 62.8333	0.008	0.796	0.000	0.028	0.000	0.805	1.333	H1-3+VT
	62.8333 - 61.6667	0.008	0.801	0.000	0.028	0.000	0.810	1.333	H1-3+VT
	61.6667 - 60.5	0.008	0.806	0.000	0.028	0.000	0.815	1.333	H1-3+VT
L40	60.5 - 60.25	0.008	0.770	0.000	0.026	0.000	0.778	1.333	H1-3+VT
	(40)								
L41	60.25 - 60.08	0.008	0.771	0.000	0.026	0.000	0.779	1.333	H1-3+VT
	(41)								
L42	60.08 - 59.83	0.008	0.738	0.000	0.025	0.000	0.746	1.333	H1-3+VT
	(42)								
L43	59.83 - 59.08	0.008	0.741	0.000	0.025	0.000	0.749	1.333	H1-3+VT
	(43)								
L44	59.08 - 58.83	0.007	0.697	0.000	0.023	0.000	0.704	1.333	H1-3+VT
	(44)								
L45	58.83 - 57.8033	0.007	0.715	0.000	0.024	0.000	0.722	1.333	H1-3+VT
	57.8033 - 56.7767	0.007	0.718	0.000	0.024	0.000	0.726	1.333	H1-3+VT

tnxTower FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job BU# 876334, SOUTHLINGTON, SMORON	Page 48 of 49
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	Client Crown Castle	Designed by BApple

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
	56.7767 - 55.75	0.008	0.722	0.000	0.024	0.000	0.730	1.333	H1-3+VT
L46	55.75 - 55.4 (46)	0.010	0.943	0.000	0.032	0.000	0.953	1.333	H1-3+VT
L47	55.4 - 55.17 (47)	0.010	0.944	0.000	0.032	0.000	0.954	1.333	H1-3+VT
L48	55.17 - 54.17	0.010	0.962	0.000	0.032	0.000	0.972	1.333	H1-3+VT
	54.17 - 53.17	0.010	0.966	0.000	0.032	0.000	0.977	1.333	H1-3+VT
	53.17 - 52.17	0.010	0.971	0.000	0.032	0.000	0.981	1.333	H1-3+VT
	52.17 - 51.17	0.010	0.975	0.000	0.032	0.000	0.986	1.333	H1-3+VT
	51.17 - 50.17	0.011	0.979	0.000	0.032	0.000	0.990	1.333	H1-3+VT
L49	50.17 - 49.17	0.011	0.998	0.000	0.033	0.000	1.009	1.333	H1-3+VT
	49.17 - 48.17	0.011	1.002	0.000	0.033	0.000	1.013	1.333	H1-3+VT
	48.17 - 47.17	0.011	1.006	0.000	0.033	0.000	1.017	1.333	H1-3+VT
	47.17 - 46.17	0.011	1.010	0.000	0.033	0.000	1.022	1.333	H1-3+VT
	46.17 - 45.17	0.011	1.014	0.000	0.033	0.000	1.026	1.333	H1-3+VT
L50	45.17 - 43.8633	0.011	1.035	0.000	0.033	0.000	1.046	1.333	H1-3+VT
	43.8633 - 42.5567	0.011	1.040	0.000	0.033	0.000	1.052	1.333	H1-3+VT
	42.5567 - 41.25	0.011	1.045	0.000	0.033	0.000	1.057	1.333	H1-3+VT
L51	41.25 - 41 (51)	0.010	0.948	0.000	0.030	0.000	0.958	1.333	H1-3+VT
L52	41 - 40	0.010	0.951	0.000	0.030	0.000	0.962	1.333	H1-3+VT
	40 - 39	0.011	0.954	0.000	0.030	0.000	0.965	1.333	H1-3+VT
	39 - 34	0.005	0.433	0.000	0.014	0.000	0.438	1.333	H1-3+VT
L53	39 - 34	0.005	0.425	0.000	0.013	0.000	0.430	1.333	H1-3+VT
	34 - 33	0.009	0.770	0.000	0.023	0.000	0.779	1.333	H1-3+VT
L54	33 - 31.5 (54)	0.009	0.788	0.000	0.023	0.000	0.798	1.333	H1-3+VT
L55	31.5 - 31.25 (55)	0.009	0.774	0.000	0.023	0.000	0.783	1.333	H1-3+VT
L56	31.25 - 30.5 (56)	0.009	0.775	0.000	0.023	0.000	0.784	1.333	H1-3+VT
L57	30.5 - 30.25 (57)	0.009	0.807	0.000	0.024	0.000	0.817	1.333	H1-3+VT
L58	30.25 - 29.125	0.010	0.827	0.000	0.024	0.000	0.836	1.333	H1-3+VT
	29.125 - 28	0.010	0.829	0.000	0.024	0.000	0.839	1.333	H1-3+VT
	28 - 26.875	0.010	0.831	0.000	0.024	0.000	0.841	1.333	H1-3+VT
	26.875 - 25.75	0.010	0.834	0.000	0.024	0.000	0.844	1.333	H1-3+VT
L59	25.75 - 25.5 (59)	0.013	1.091	0.000	0.032	0.000	1.104	1.333	H1-3+VT
L60	25.5 - 25.25 (60)	0.010	0.818	0.000	0.024	0.000	0.828	1.333	H1-3+VT
L61	25.25 - 24.25	0.010	0.837	0.000	0.024	0.000	0.847	1.333	H1-3+VT
	24.25 - 23.25	0.010	0.839	0.000	0.024	0.000	0.849	1.333	H1-3+VT
	23.25 - 22.25	0.010	0.841	0.000	0.024	0.000	0.851	1.333	H1-3+VT
	22.25 - 21.25	0.010	0.843	0.000	0.024	0.000	0.853	1.333	H1-3+VT
	21.25 - 20.25	0.010	0.845	0.000	0.024	0.000	0.856	1.333	H1-3+VT
L62	20.25 - 19.25	0.011	0.865	0.000	0.025	0.000	0.876	1.333	H1-3+VT
	19.25 - 18.25	0.011	0.867	0.000	0.025	0.000	0.878	1.333	H1-3+VT
	18.25 - 17.25	0.011	0.869	0.000	0.025	0.000	0.880	1.333	H1-3+VT
	17.25 - 16.25	0.011	0.871	0.000	0.025	0.000	0.882	1.333	H1-3+VT
	16.25 - 15.25	0.011	0.873	0.000	0.025	0.000	0.884	1.333	H1-3+VT
L63	15.25 - 14.25	0.011	0.894	0.000	0.025	0.000	0.905	1.333	H1-3+VT
	14.25 - 13.25	0.011	0.896	0.000	0.025	0.000	0.907	1.333	H1-3+VT
	13.25 - 12.25	0.011	0.898	0.000	0.025	0.000	0.909	1.333	H1-3+VT
	12.25 - 11.25	0.011	0.900	0.000	0.025	0.000	0.911	1.333	H1-3+VT
	11.25 - 10.25	0.011	0.901	0.000	0.025	0.000	0.913	1.333	H1-3+VT
L64	10.25 - 9.25	0.012	0.924	0.000	0.026	0.000	0.935	1.333	H1-3+VT
	9.25 - 8.25	0.012	0.925	0.000	0.026	0.000	0.937	1.333	H1-3+VT

tnxTower FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job BU# 876334, SOUTHINGTON, SMORON	Page 49 of 49
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	Client Crown Castle	Designed by BApple

Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	8.25 - 7.25	0.012	0.927	0.000	0.026	0.000	0.939	1.333	H1-3+VT
	7.25 - 6.25	0.012	0.929	0.000	0.026	0.000	0.941	1.333	H1-3+VT
	6.25 - 5.25	0.012	0.930	0.000	0.026	0.000	0.943	1.333	H1-3+VT
L65	5.25 - 4.25	0.012	0.954	0.000	0.027	0.000	0.967	1.333	H1-3+VT
	4.25 - 3.25	0.013	0.956	0.000	0.027	0.000	0.968	1.333	H1-3+VT
	3.25 - 2.25	0.013	0.957	0.000	0.027	0.000	0.970	1.333	H1-3+VT
	2.25 - 1.25	0.013	0.959	0.000	0.027	0.000	0.972	1.333	H1-3+VT
	1.25 - 0.25	0.013	0.961	0.000	0.027	0.000	0.973	1.333	H1-3+VT
L66	0.25 - 0 (66)	0.013	0.961	0.000	0.027	0.000	0.974	1.333	H1-3+VT

* DL controls

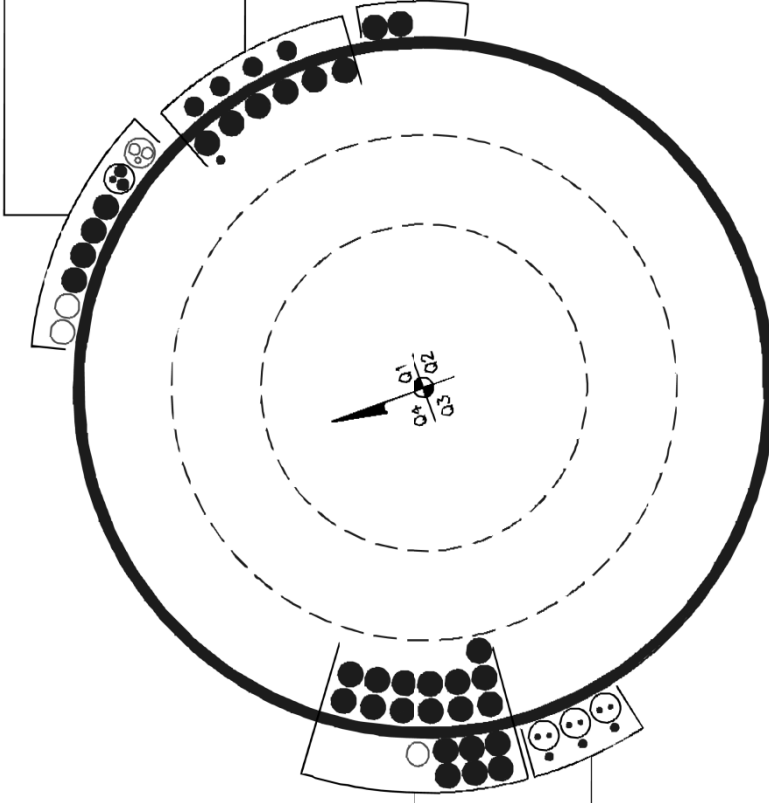
APPENDIX B
BASE LEVEL DRAWING



- (PROPOSED-IN 2" CONDUIT)
- (1) 3/8" TO 156 FT LEVEL
- (2) 3/4" TO 156 FT LEVEL
- (PROPOSED)
- (2) 1-5/8" TO 156 FT LEVEL
- (INSTALLED-IN CONDUIT)
- (1) 3/8" TO 156 FT LEVEL
- (2) 3/4" TO 156 FT LEVEL
- (INSTALLED)
- (6) 1-5/8" TO 156 FT LEVEL

- (INSTALLED)
- (1) 1/2" TO 101 FT LEVEL
- (4) 1-1/4" TO 146 FT LEVEL
- (INSTALLED)
- (6) 1-5/8" TO 139 FT LEVEL

- (INSTALLED)
- (2) 1-5/8" TO 156 FT LEVEL



- (NOT INSTALLED)
- (1) 1/2" TO 101 FT LEVEL
- (RESERVED)
- (1) 1-5/8" TO 132 FT LEVEL
- (INSTALLED)
- (19) 1-5/8" TO 132 FT LEVEL

- (INSTALLED-IN CONDUIT)
- (3) 1/4" TO 121 FT LEVEL
- (3) 5/16" TO 121 FT LEVEL
- (INSTALLED)
- (3) 1/2" TO 121 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Additional Calculations



Site BU: 876334
Work Order: 1193377



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Pole Geometry

Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Stiles	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	16.0	0	0	16	16	0.375	n/a	A53-B-35
2	146	42.25	12	22.00	29.808	0.25	1	A607-60
3	107.5	39	12	28.61	35.819	0.3125	1.25	A607-60
4	73	39	12	34.36	41.568	0.375	1.5	A607-60
5	39	39	12	39.89	47.1	0.375	1.5	A607-60

Reinforcement Configuration

Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Pole Flt Width (in)	1	2	3	4	5	6	7	8	9	10	11	12	
1	31.5	channel	MP3-04 (1.25")	9.85													
2	25.5	channel	MP3-05 (1.25")	11.06													
3	30.5	channel	MP3-04 (1.25")	9.9													
4	25.5	channel	MP3-05 (1.25")	11.11													
5																	
6	80.5	plate	MS-600 (1.25")	8.01													
7	60.5	plate	MS-600 (1.25")	9													
8	30.5	plate	MS-650 (1.25")	9.83													
9	25.5	plate	MS-600 (1.25")	11.11													
10	77.5	plate	MS-600 (1.25")	8.86													
11	55.75	plate	MS-650 (1.25")	9.59													
12	25.75	plate	MS-650 (1.25")	11.08													
13	98.5	plate	CC-SP-045100	7.41													
14	100.5	plate	CC-SP-045100	7.31													
15	64.25	plate	CC-AP-085125	8.99													
16	25.5	plate	CC-AP-085125	10.78													
17																	
18	0	plate	ST-060125	11.36													
19	25.5	plate	CG-AP-085125	10.08													
20	55.42	plate	CG-AP-085125	8.51													
21	90.5	plate	CG-AP-060100	7.03													
22	100.5	plate	CG-AP-060100	7.03													
23																	

Reinforcement Details

B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _t (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
2	5.33	5.65	0.79	29.000	29.000	18.000	4.994	1.2500	A572-65
3	4.78	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
4	5.33	5.65	0.79	29.000	29.000	18.000	4.994	1.2500	A572-65
6	6	6	0.5	24.000	24.000	16.375	4.688	1.2500	A572-65
7	6	6	0.5	24.000	24.000	16.375	4.688	1.2500	A572-65
8	6.5	8.125	0.625	33.000	33.000	19.250	6.484	1.2500	A572-65
9	6	6	0.5	24.000	24.000	16.375	4.688	1.2500	A572-65
10	6	6	0.5	24.000	24.000	16.375	4.688	1.2500	A572-65
11	6.5	8.125	0.625	33.000	33.000	19.250	6.484	1.2500	A572-65
12	6.5	8.125	0.625	33.000	33.000	19.250	6.484	1.2500	A572-65
13	4.5	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
14	4.5	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
15	8.5	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
16	8.5	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
18	1.25	10.625	4.25	n/a	n/a	0.000	10.625	0.0000	A572-65
19	8.5	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
20	8.5	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
21	6	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
22	6	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft):

	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	160 - 155	5		0	16.000	16.000	0.375	A53-B-35	1.000
2	155 - 150	5		0	16.000	16.000	0.375	A53-B-35	1.000
3	150 - 146	4	0	0	16.000	16.000	0.375	A53-B-35	1.000
4	146 - 141	5		12	22.000	22.924	0.25	A607-60	1.000
5	141 - 136	5		12	22.924	23.848	0.25	A607-60	1.000
6	136 - 131	5		12	23.848	24.772	0.25	A607-60	1.000
7	131 - 126	5		12	24.772	25.696	0.25	A607-60	1.000
8	126 - 123.08	2.92		12	25.696	26.236	0.25	A607-60	1.000
9	123.08 - 122.83	0.25		12	26.236	26.282	0.5	A607-60	0.939
10	122.83 - 117.83	5		12	26.282	27.206	0.4875	A607-60	0.947
11	117.83 - 117.5	0.33		12	27.206	27.267	0.4875	A607-60	0.946
12	117.5 - 117.25	0.25		12	27.267	27.313	0.5	A607-60	1.027
13	117.25 - 115.5	1.75		12	27.313	27.637	0.5	A607-60	1.020
14	115.5 - 115.25	0.25		12	27.637	27.683	0.6625	A607-60	0.930
15	115.25 - 110.25	5		12	27.683	28.607	0.65	A607-60	0.929
16	110.25 - 107.5	6.5	3.75	12	28.607	29.808	0.6375	A607-60	0.937
17	107.5 - 102.5	5		12	28.615	29.539	0.7	A607-60	0.938
18	102.5 - 100.5	2		12	29.539	29.908	0.7	A607-60	0.932
19	100.5 - 100.25	0.25		12	29.908	29.954	0.7625	A607-60	0.961
20	100.25 - 98.5	1.75		12	29.954	30.277	0.7625	A607-60	0.955
21	98.5 - 98.25	0.25		12	30.277	30.324	0.6	A607-60	1.049
22	98.25 - 93.25	5		12	30.324	31.247	0.5875	A607-60	1.055
23	93.25 - 90.5	2.75		12	31.247	31.755	0.5875	A607-60	1.046
24	90.5 - 90.25	0.25		12	31.755	31.801	0.6125	A607-60	1.154
25	90.25 - 85.25	5		12	31.801	32.725	0.6	A607-60	1.159
26	85.25 - 83.5	1.75		12	32.725	33.048	0.6	A607-60	1.152
27	83.5 - 83.25	0.25		12	33.048	33.094	0.8625	A607-60	1.009
28	83.25 - 80.75	2.5		12	33.094	33.556	0.85	A607-60	1.014
29	80.75 - 80.5	0.25		12	33.556	33.602	0.9875	A607-60	0.978
30	80.5 - 80.25	0.25		12	33.602	33.649	0.975	A607-60	0.990
31	80.25 - 77.5	2.75		12	33.649	34.157	0.9625	A607-60	0.992
32	77.5 - 77.25	0.25		12	34.157	34.203	0.6875	A607-60	1.133
33	77.25 - 73	8.75	4.5	12	34.203	35.819	0.6875	A607-60	1.117
34	73 - 68	5		12	34.363	35.287	0.75	A607-60	1.104
35	68 - 65.25	2.75		12	35.287	35.795	0.7375	A607-60	1.114
36	65.25 - 65	0.25		12	35.795	35.841	1.1	A607-60	0.952
37	65 - 64.25	0.75		12	35.841	35.979	1.1	A607-60	0.950
38	64.25 - 64	0.25		12	35.979	36.026	0.95	A607-60	0.995
39	64 - 60.5	3.5		12	36.026	36.672	0.95	A607-60	0.984
40	60.5 - 60.25	0.25		12	36.672	36.718	1	A607-60	0.991
41	60.25 - 60.08	0.17		12	36.718	36.750	1	A607-60	0.991
42	60.08 - 59.83	0.25		12	36.750	36.796	1.05	A607-60	0.978
43	59.83 - 59.08	0.75		12	36.796	36.934	1.05	A607-60	0.976
44	59.08 - 58.83	0.25		12	36.934	36.981	1.125	A607-60	0.976
45	58.83 - 55.75	3.08		12	36.981	37.550	1.1	A607-60	0.987
46	55.75 - 55.4	0.35		12	37.550	37.614	0.825	A607-60	1.055
47	55.4 - 55.17	0.23		12	37.614	37.657	0.825	A607-60	1.054
48	55.17 - 50.17	5		12	37.657	38.581	0.8125	A607-60	1.055
49	50.17 - 45.17	5		12	38.581	39.504	0.8	A607-60	1.057
50	45.17 - 41.25	3.92		12	39.504	40.229	0.7875	A607-60	1.062
51	41.25 - 41	0.25		12	40.229	40.275	0.875	A607-60	1.053
52	41 - 39	7	5	12	40.275	41.568	0.875	A607-60	1.047
53	39 - 33	6		12	39.894	41.003	1.175	A607-60	0.944
54	33 - 31.5	1.5		12	41.003	41.280	1.15	A607-60	0.959
55	31.5 - 31.25	0.25		12	41.280	41.326	1.175	A607-60	0.949
56	31.25 - 30.5	0.75		12	41.326	41.465	1.175	A607-60	0.947
57	30.5 - 30.25	0.25		12	41.465	41.511	1.125	A607-60	0.964
58	30.25 - 25.75	4.5		12	41.511	42.342	1.1	A607-60	0.972
59	25.75 - 25.5	0.25		12	42.342	42.389	0.825	A607-60	1.066
60	25.5 - 25.25	0.25		12	42.389	42.435	1.125	A607-60	0.766
61	25.25 - 20.25	5		12	42.435	43.359	1.1	A607-60	0.773
62	20.25 - 15.25	5		12	43.359	44.282	1.075	A607-60	0.781
63	15.25 - 10.25	5		12	44.282	45.206	1.05	A607-60	0.790
64	10.25 - 5.25	5		12	45.206	46.130	1.025	A607-60	0.800
65	5.25 - 0.25	5		12	46.130	47.054	1	A607-60	0.811
66	0.25 - 0	0.25		12	47.054	47.100	1	A607-60	0.810

TNX Section Forces

Increment (ft):		5	TNX Output		
	Section Height (ft)		P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	160 - 155		1.5798	9.9955	5.2512
2	155 - 150		1.9347	37.125	5.5815
3	150 - 146		3.0123	63.375	7.525
4	146 - 141		6.0077	124.04	11.898
5	141 - 136		6.5846	187.4	13.265
6	136 - 131		9.1111	267.06	20.022
7	131 - 126		9.738	368.84	20.685
8	126 - 123.08		10.112	429.9	21.136
9	123.08 - 122.83		10.173	435.19	21.171
10	122.83 - 117.83		12.203	550.55	24.128
11	117.83 - 117.5		12.274	558.51	24.185
12	117.5 - 117.25		12.328	564.56	24.231
13	117.25 - 115.5		12.689	607.24	24.566
14	115.5 - 115.25		12.763	613.38	24.608
15	115.25 - 110.25		13.949	739.31	25.802
16	110.25 - 107.5		14.627	810.95	26.336
17	107.5 - 102.5		16.642	945.2	27.385
18	102.5 - 100.5		17.251	1000.3	27.841
19	100.5 - 100.25		17.333	1007.2	27.887
20	100.25 - 98.5		17.843	1056.3	28.24
21	98.5 - 98.25		17.925	1063.4	28.281
22	98.25 - 93.25		19.302	1207	29.22
23	93.25 - 90.5		20.073	1288	29.723
24	90.5 - 90.25		20.167	1295.4	29.759
25	90.25 - 85.25		21.741	1446.4	30.677
26	85.25 - 83.5		22.292	1500.4	31.025
27	83.5 - 83.25		22.407	1508.1	31.061
28	83.25 - 80.75		23.337	1586.4	31.575
29	80.75 - 80.5		23.451	1594.3	31.619
30	80.5 - 80.25		23.554	1602.2	31.671
31	80.25 - 77.5		24.679	1690	32.244
32	77.5 - 77.25		24.779	1698.1	32.286
33	77.25 - 73		26.305	1837	33.12
34	73 - 68		29.502	2005.1	34.157
35	68 - 65.25		30.568	2099.7	34.694
36	65.25 - 65		30.702	2108.4	34.73
37	65 - 64.25		31.049	2134.4	34.885
38	64.25 - 64		31.163	2143.2	34.93
39	64 - 60.5		32.7	2266.6	35.6
40	60.5 - 60.25		32.8	2275.5	35.7
41	60.25 - 60.08		32.9	2281.5	35.7
42	60.08 - 59.83		33.0	2290.5	35.8
43	59.83 - 59.08		33.4	2317.3	35.9
44	59.08 - 58.83		33.5	2326.3	35.9
45	58.83 - 55.75		35.0	2437.9	36.6
46	55.75 - 55.4		35.2	2450.7	36.6
47	55.4 - 55.17		35.3	2459.1	36.7
48	55.17 - 50.17		37.4	2644.7	37.6
49	50.17 - 45.17		39.6	2835.0	38.5
50	45.17 - 41.25		41.3	2987.3	39.2
51	41.25 - 41		41.5	2997.1	39.3
52	41 - 39		42.4	3075.9	39.6
53	39 - 33		47.7	3317.2	40.8
54	33 - 31.5		48.6	3378.5	41.1
55	31.5 - 31.25		48.7	3388.8	41.1
56	31.25 - 30.5		49.1	3419.7	41.2
57	30.5 - 30.25		49.3	3430.0	41.3
58	30.25 - 25.75		51.8	3617.4	42.1
59	25.75 - 25.5		51.9	3627.9	42.1
60	25.5 - 25.25		52.1	3638.4	42.1
61	25.25 - 20.25		55.2	3851.3	43.0
62	20.25 - 15.25		58.4	4068.6	43.9
63	15.25 - 10.25		61.6	4290.1	44.8
64	10.25 - 5.25		64.8	4516.0	45.7
65	5.25 - 0.25		68.0	4746.3	46.6
66	0.25 - 0		68.1	4758.0	46.6

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP16x16x0.375	Pole	5.8%	Pass
155 - 150	Pole	TP16x16x0.375	Pole	20.9%	Pass
150 - 146	Pole	TP16x16x0.375	Pole	35.7%	Pass
146 - 141	Pole	TP22.924x22x0.25	Pole	31.3%	Pass
141 - 136	Pole	TP23.848x22.924x0.25	Pole	43.5%	Pass
136 - 131	Pole	TP24.772x23.848x0.25	Pole	57.4%	Pass
131 - 126	Pole	TP25.696x24.772x0.25	Pole	73.3%	Pass
126 - 123.08	Pole	TP26.236x25.696x0.25	Pole	81.8%	Pass
123.08 - 122.83	Pole + Reinf.	TP26.282x26.236x0.5	Reinf. 21 Compression	48.7%	Pass
122.83 - 117.83	Pole + Reinf.	TP27.206x26.282x0.4875	Reinf. 21 Compression	58.5%	Pass
117.83 - 117.5	Pole + Reinf.	TP27.267x27.206x0.4875	Reinf. 21 Compression	59.1%	Pass
117.5 - 117.25	Pole + Reinf.	TP27.313x27.267x0.5	Reinf. 22 Compression	55.2%	Pass
117.25 - 115.5	Pole + Reinf.	TP27.637x27.313x0.5	Reinf. 22 Compression	58.3%	Pass
115.5 - 115.25	Pole + Reinf.	TP27.683x27.637x0.6625	Reinf. 14 Compression	51.4%	Pass
115.25 - 110.25	Pole + Reinf.	TP28.607x27.683x0.65	Reinf. 14 Compression	59.1%	Pass
110.25 - 107.5	Pole + Reinf.	TP29.808x28.607x0.6375	Reinf. 14 Compression	63.3%	Pass
107.5 - 102.5	Pole + Reinf.	TP29.539x28.615x0.7	Reinf. 14 Compression	65.7%	Pass
102.5 - 100.5	Pole + Reinf.	TP29.908x29.539x0.7	Reinf. 14 Compression	68.3%	Pass
100.5 - 100.25	Pole + Reinf.	TP29.954x29.908x0.7625	Reinf. 13 Compression	65.1%	Pass
100.25 - 98.5	Pole + Reinf.	TP30.277x29.954x0.7625	Reinf. 13 Compression	67.2%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.324x30.277x0.6	Reinf. 6 Tension Rupture	80.1%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.247x30.324x0.5875	Reinf. 6 Tension Rupture	86.6%	Pass
93.25 - 90.5	Pole + Reinf.	TP31.755x31.247x0.5875	Reinf. 6 Tension Rupture	90.1%	Pass
90.5 - 90.25	Pole + Reinf.	TP31.801x31.755x0.6125	Reinf. 6 Tension Rupture	88.8%	Pass
90.25 - 85.25	Pole + Reinf.	TP32.725x31.801x0.6	Reinf. 6 Tension Rupture	94.8%	Pass
85.25 - 83.5	Pole + Reinf.	TP33.048x32.725x0.6	Reinf. 6 Tension Rupture	96.8%	Pass
83.5 - 83.25	Pole + Reinf.	TP33.094x33.048x0.8625	Reinf. 10 Bolt Shear	69.2%	Pass
83.25 - 80.75	Pole + Reinf.	TP33.556x33.094x0.85	Reinf. 10 Tension Rupture	70.9%	Pass
80.75 - 80.5	Pole + Reinf.	TP33.602x33.556x0.9875	Reinf. 6 Bolt Shear	59.0%	Pass
80.5 - 80.25	Pole + Reinf.	TP33.649x33.602x0.975	Reinf. 7 Bolt Shear	59.2%	Pass
80.25 - 77.5	Pole + Reinf.	TP34.157x33.649x0.9625	Reinf. 7 Tension Rupture	60.8%	Pass
77.5 - 77.25	Pole + Reinf.	TP34.203x34.157x0.6875	Reinf. 7 Tension Rupture	85.2%	Pass
77.25 - 73	Pole + Reinf.	TP35.819x34.203x0.6875	Reinf. 7 Tension Rupture	89.1%	Pass
73 - 68	Pole + Reinf.	TP35.287x34.363x0.75	Reinf. 7 Tension Rupture	87.6%	Pass
68 - 65.25	Pole + Reinf.	TP35.795x35.287x0.7375	Reinf. 7 Tension Rupture	89.7%	Pass
65.25 - 65	Pole + Reinf.	TP35.841x35.795x1.1	Reinf. 7 Tension Rupture	60.6%	Pass
65 - 64.25	Pole + Reinf.	TP35.979x35.841x1.1	Reinf. 7 Tension Rupture	61.0%	Pass
64.25 - 64	Pole + Reinf.	TP36.026x35.979x0.95	Reinf. 11 Tension Rupture	71.9%	Pass
64 - 60.5	Pole + Reinf.	TP36.672x36.026x0.95	Reinf. 11 Tension Rupture	74.2%	Pass
60.5 - 60.25	Pole + Reinf.	TP36.718x36.672x1	Reinf. 11 Tension Rupture	70.5%	Pass
60.25 - 60.08	Pole + Reinf.	TP36.75x36.718x1	Reinf. 11 Tension Rupture	70.6%	Pass
60.08 - 59.83	Pole + Reinf.	TP36.796x36.75x1.05	Reinf. 11 Tension Rupture	68.5%	Pass
59.83 - 59.08	Pole + Reinf.	TP36.934x36.796x1.05	Reinf. 11 Tension Rupture	68.9%	Pass
59.08 - 58.83	Pole + Reinf.	TP36.981x36.934x1.125	Reinf. 11 Tension Rupture	63.2%	Pass
58.83 - 55.75	Pole + Reinf.	TP37.55x36.981x1.1	Reinf. 11 Bolt Shear	65.7%	Pass
55.75 - 55.4	Pole + Reinf.	TP37.614x37.55x0.825	Reinf. 8 Tension Rupture	85.9%	Pass
55.4 - 55.17	Pole + Reinf.	TP37.657x37.614x0.825	Reinf. 8 Tension Rupture	86.1%	Pass
55.17 - 50.17	Pole + Reinf.	TP38.581x37.657x0.8125	Reinf. 8 Tension Rupture	89.2%	Pass
50.17 - 45.17	Pole + Reinf.	TP39.504x38.581x0.8	Reinf. 8 Tension Rupture	92.3%	Pass
45.17 - 41.25	Pole + Reinf.	TP40.229x39.504x0.7875	Reinf. 8 Tension Rupture	94.6%	Pass
41.25 - 41	Pole + Reinf.	TP40.275x40.229x0.875	Reinf. 8 Tension Rupture	83.0%	Pass
41 - 39	Pole + Reinf.	TP41.568x40.275x0.875	Reinf. 8 Tension Rupture	84.1%	Pass
39 - 33	Pole + Reinf.	TP41.003x39.894x1.175	Reinf. 8 Tension Rupture	66.1%	Pass
33 - 31.5	Pole + Reinf.	TP41.28x41.003x1.15	Reinf. 8 Tension Rupture	66.8%	Pass
31.5 - 31.25	Pole + Reinf.	TP41.326x41.28x1.175	Reinf. 8 Tension Rupture	66.4%	Pass
31.25 - 30.5	Pole + Reinf.	TP41.465x41.326x1.175	Reinf. 8 Bolt Shear	67.6%	Pass
30.5 - 30.25	Pole + Reinf.	TP41.511x41.465x1.125	Reinf. 9 Bolt Shear	70.6%	Pass
30.25 - 25.75	Pole + Reinf.	TP42.342x41.511x1.1	Reinf. 9 Tension Rupture	72.0%	Pass
25.75 - 25.5	Pole + Reinf.	TP42.389x42.342x0.825	Reinf. 9 Bolt Shear	98.8%	Pass
25.5 - 25.25	Pole + Reinf.	TP42.435x42.389x1.125	Reinf. 18 Compression	67.0%	Pass
25.25 - 20.25	Pole + Reinf.	TP43.359x42.435x1.1	Reinf. 18 Compression	69.0%	Pass
20.25 - 15.25	Pole + Reinf.	TP44.282x43.359x1.075	Reinf. 18 Compression	70.9%	Pass
15.25 - 10.25	Pole + Reinf.	TP45.206x44.282x1.05	Reinf. 18 Compression	72.7%	Pass
10.25 - 5.25	Pole + Reinf.	TP46.13x45.206x1.025	Reinf. 18 Compression	74.5%	Pass
5.25 - 0.25	Pole + Reinf.	TP47.054x46.13x1	Reinf. 18 Compression	76.3%	Pass
0.25 - 0	Pole + Reinf.	TP47.1x47.054x1	Reinf. 18 Compression	76.4%	Pass
				Summary	
			Pole	85.3%	Pass
			Reinforcement	98.8%	Pass
			Overall	98.8%	Pass

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

Site Data

BU#: 876334
 Site Name: SOUTHLINGTON, SMORON
 App #: 322871, Rev. 8

Reactions		
Moment:	63.38	ft-kips
Axial:	3.01	kips
Shear:	7.53	kips
Elevation:	146	feet

Pole Manufacturer:	Other
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If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Bolt Data		
Qty:	12	
Diameter (in.):	0.75	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	75	<-- Disregard Bolt Fty: 44.00
N/A:	55	<-- Disregard
Circle (in.):	19	

Flange Bolt Results		Rigid
Bolt Tension Capacity, B:	25.91 kips	Service, ASD
Max Bolt directly applied T:	13.09 Kips	Fty*ASIF
Min. PL "tc" for B cap. w/o Pry:	0.914 in	
Min PL "treq" for actual T w/ Pry:	0.483 in	
Min PL "t1" for actual T w/o Pry:	0.650 in	
T allowable w/o Prying:	25.91 kips	$\alpha' < 0$ case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	13.09 kips	
Non-Prying Bolt Stress Ratio, T/B:	50.5% Pass	

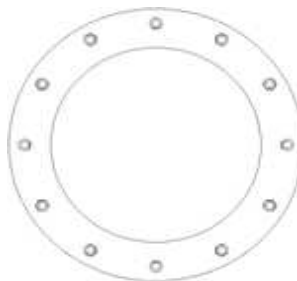
Plate Data		
Diam:	24	in
Thick, t:	1.5	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.19	in

Exterior Flange Plate Results		Flexural Check	Rigid
Compression Side Plate Stress:	8.0 ksi	Service ASD	0.75*Fy*ASIF
Allowable Plate Stress:	50.0 ksi	Comp. Y.L. Length:	10.25
Compression Plate Stress Ratio:	16.1% Pass		
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	10.4% Pass		

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	5.5	in
Height:	10	in
Thick:	0.5	in
Notch:	1	in
Grade:	50	ksi
Weld str.:	70	ksi

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

Pole Data		
Diam:	16	in
Thick:	0.375	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None



Stress Increase Factor	
ASIF:	1.333

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

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

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

Site Data

BU#: 876334
 Site Name: SOUTHLINGTON, SMORON
 App #: 322871, Rev. 8

Manufacturer: Other

Bolt Data

Qty:	12		
Diam:	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle:	19	in	

Reactions

Moment:	63.38	ft-kips
Axial:	3.01	kips
Shear:	7.53	kips
Exterior Flange Run, T+Q:	13.09	kips

Elevation: 146 feet

Interior Flange Bolt Results

Maximum Bolt Tension: 13.1 Kips, Ext. T=Interior T
 Allowable Tension: 25.9 Kips
 Bolt Stress Ratio: 50.5% Pass

Plate Data

Plate Outer Diam:	21.5	in
Plate Inner Diam:	14	in (Hole @ Ctr)
Thick:	0.75	in
Grade:	36	ksi
Effective Width:	5.75	in

Interior Flange Plate Results

Controlling Bolt Axial Force: 13.6 Kips, Ext. C= Interior C
 Plate Stress: 31.5 ksi
 Allowable Plate Stress: 36.0 ksi
 Plate Stress Ratio: 87.6% Pass

Flexural Check

Stiffener Data (Welding at Both Sides)

Config:	0	*
Weld Type:	Fillet	
Groove Depth:	0.375	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	18	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

n/a

Stiffener Results

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

Pole Results

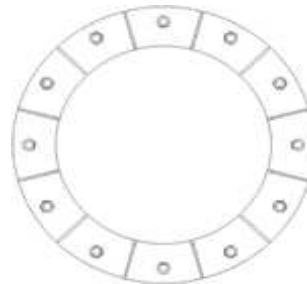
Pole Punching Shear Check: n/a

Pole Data

Pole OuterDiam:	22	in
Thick:	0.25	in
Pole Inner Diam:	21.5	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round
Fu	75	ksi

Stress Increase Factor

ASIF:	1.333
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* 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

Anchor Rod Design

Site Name:	SOUTINGTON, SMORON	
Project No.:	16BFCG1400	
Elevation:	0	
Tower Type:	Monopole	
Code (F or G):	F	
Anchor Bolts (Yes or No):	Yes	
P: Axial Load (TNX):	68	kips
V: Shear Load (TNX):	47	kips
M: Moment Load (TNX):	4758	ft-kips
Pier Diameter:	7	ft

Legend
Input
Output/Notes

Existing Rods		
y	27.1875	in
No. Bolts	16	
BC	54.375	in
I	23,533	in ⁴
Bolt Grade	A615-75	
Thread Form	Non-Upset	
Diameter (in)	2.25	
Ag	3.98	in ²
Ae	3.25	in ²
Fy	75	ksi
Fu	100	ksi

T	166.312	kips
V	2.938	kips

Itot	36,222	in ⁴
------	--------	-----------------

Capacity (%)				
Tn/Ω	195	kips	OK	85.3%
Tn/Ω, new	218.9	kips	OK	95.7%
φTn	260	kips		
φTn, new	325	kips		

Equations:

$T = (M*y*Ag)/Itot - P*(Ag/Atotal)$ for Self Supports

$T = (M*y*Ag)/Itot$ for Monopoles

$Tn/Ω = 0.33*Fu*Ag*(4/3)$ for Rev. F

$φTn = 0.8*Fu*Ae$ (anchor bolts only) for Rev. G

$φTn = 0.75*Fu*Ae$ (non anchor bolts)

$V = V*(Ag/(Ag*No. Bolts))$

$I = (No. Bolts/8)*BC^2*Ag$

Notes:

*Ag and Ae are taken from AISC 13th Ed. Manual (pg. 7-83)

*I calc. will only work for symmetric bolt group, otherwise use CAD

*All Axial and Shear Loads for MP are assumed to go to the existing rods

*Weight of Tower for SST will only be added to the compression load of the existing rods

New Rods		
y new	33.40625	in
No. Bolts new	4	
BC new	66.8125	in
I new	12,690	in ⁴
Bolt Grade	A193 B7	
Thread Form	Non-Upset	
Diameter, new (in)	2.25	
Ag new	3.98	in ²
Ae new	3.25	in ²
Fy new	105	ksi
Fu new	125	ksi

Tnew*	209.576	kips
Vnew*		

*It is assumed that all of the Axial and Shear loads will be taken by the existing rods only

Req'd Embedment Length for New Rods		
f _c , caisson's concrete strength	3000	psi
f _y , rebar yield strength	60000	psi
d _b , diameter of vertical rebar	1.41	in
vertical rebar cage BC ø	73.34	in
vertical rebar top cover distance	2	in
τ, Ultimate Hilti Bond Resistance	1.8	ksi
Clear Cover	5.33	in

Note For New Anchor Rods:

Williams Bars (Upset)

A722 (Fy=127.7 ksi, Fu=150 ksi)

A615-75 (Fy=75 ksi, Fu=100 ksi)

l _g (vertical rebar dev. Length)	46.337	in
l _{dh} (Hilti dev. length)	51.613	in
G/1.5	2.176	in

Total Embed. Length of New Bolts	63.42	in
	5.28	ft

Compression Strength Check of Anchor Rod Sleeve		
New Anchor Rod Diameter	2.25	in
Selected Pipe Sleeve Area	7.88	in ²
Selected Pipe Sleeve Fy	46	ksi
Rn/Ω (Rev F) or φRn (Rev G)	289.41	k
% Capacity (Analysis)	72.42%	OK
% Capacity (Design)	75.64%	OK

Equivalent BC		
No. Existing Rebar		
Existing Rebar BC		in
Area rebar		in ²
Irebar	0	in ⁴
Itot	12,690	in ⁴
Equivalent Area	3,980	in ²
Equivalent BC	79.854	in
Total Area	15.92	in ²

(assuming new bolts are reinforcement)

$$l_a = [(f_y * \psi_t * \psi_e * \lambda) / (20 * \sqrt{f_c})] * d_b \quad \text{PER ACI 12.2.2}$$

$$l_{dh} = (\phi T_n * F_S) / (\tau * \pi * d_{new})$$

See Worksheet "New (Design Procedure)"

Existing Anchor Rods

Detail Type (hover for detail)

d

Transfer Plate Design

Site Name:	SOUTINGTON, SMORON
Project No.:	16BF CG1400
Elevation:	0

Code (F or G):	F	
Anchor Bolts (Yes or No)	Yes	
P (from RISA):	68	kips
V (from RISA):	47	kips
M (from RISA):	4758	ft-kips

Pole / Pipe Properties		
Monopole ϕ	47.1	in
Monopole Thickness	0.375	in
No. of Sides	12	
I_{pole}	35,456.80	in ⁴
Pipe Sleeve ϕ	5	in
Is plate welded to base?	No	

Transfer Plate Properties		
Plate Thickness (t)	1.25	in
Plate Height (d)	30	in
Plate Length (W)	6.50	in
Fy	65	ksi
Fu	80	ksi
Are Anchor Rods considered to stiffen the base?	No	

Legend	
Input	Output/Notes

ϕ	0.9
Ω	1.67

Eccentric Weld Properties (H1)		
Weld Thk	4	No. of 1/16ths (whole number)
L_{weld}	30	in
e_x	9	in
a	0.30	use in Table 8-4, pg 8-66 AISC
C	3.09	From Table 8-4, pg. 8-66 AISC
C1	1.03	70 ksi weld = 1, 80 ksi = 1.03

(Design) Eccentric Weld (H1)		
T_n/Ω	218.90	k
R_n/Ω	254.55	k
%Capacity	85.99%	Pass

Eccentric Weld Properties (H2)		
Weld Thk	6	No. of 1/16ths (whole number)
L_{weld}	24.5	in
e_x	2.5	in
a	0.10	use in Table 8-4, pg 8-66 AISC
C	3.72	From Table 8-4, pg. 8-66 AISC
C1	1.03	70 ksi weld = 1, 80 ksi = 1.03

(Design) Eccentric Weld (H2)		
T_n/Ω	218.90	k
R_n/Ω	374.95	k
%Capacity	58.38%	Pass

(Design) Yielding / Lateral-Torsional Buckling		
M_u	1,970.10	k-in
M_n/Ω	10,946.86	k-in
%Capacity	18.00%	Pass

(Design) Shear		
R_n/Ω	81.25	k
V_n/Ω	875.75	k
%Capacity	9.28%	Pass

Anchor Rod Design

Site Name:	SOUTINGTON, SMORON	
Project No.:	16BFCG1400	
Elevation:	0	
Tower Type:	Monopole	
Code (F or G):	F	
Anchor Bolts (Yes or No):	Yes	
P: Axial Load (TNX):	68	kips
V: Shear Load (TNX):	47	kips
M: Moment Load (TNX):	4758	ft-kips
Pier Diameter:	7	ft

Legend
Input
Output/Notes

Existing Rods		
y	27.1875	in
No. Bolts	16	
BC	54.375	in
I	23,533	in ⁴
Bolt Grade	A615-75	
Thread Form	Non-Upset	
Diameter (in)	2.25	
Ag	3.98	in ²
Ae	3.25	in ²
Fy	75	ksi
Fu	100	ksi

T	166.312	kips
V	2.938	kips

Itot	36,222	in ⁴
------	--------	-----------------

Capacity (%)				
Tn/Ω	195	kips	OK	85.3%
Tn/Ω, new	132.55	kips	OK	84.7%
φTn	260	kips		
φTn, new	190	kips		

Equations:
 $T = (M \cdot y \cdot Ag) / (Itot \cdot P \cdot (Ag / A_{total}))$ for Self Supports
 $T = (M \cdot y \cdot Ag) / Itot$ for Monopoles
 $Tn / \Omega = 0.33 \cdot Fu \cdot Ag \cdot (4/3)$ for Rev. F
 $\phi Tn = 0.8 \cdot Fu \cdot Ae$ (anchor bolts only) for Rev. G
 $V = V \cdot (Ag / (Ag \cdot No. Bolts))$
 $I = (No. Bolts / 8) \cdot BC^2 \cdot Ag$
 $\phi Tn = 0.75 \cdot Fu \cdot Ae$ (non anchor bolts)

Notes:
 *Ag and Ae are taken from AISC 13th Ed. Manual (pg. 7-83)
 *I calc. will only work for symmetric bolt group, otherwise use CAD
 *All Axial and Shear Loads for MP are assumed to go to the existing rods
 *Weight of Tower for SST will only be added to the compression load of the existing rods

New Rods		
y new	29.5625	in
No. Bolts new	4	
BC new	59.125	in
I new	12,690	in ⁴
Bolt Grade	F1554 Gr. 105	
Thread Form	Non-Upset	
Diameter, new (in)	1.75	
Ag new	2.41	in ²
Ae new	1.90	in ²
Fy new	105	ksi
Fu new	125	ksi

Tnew*	112.302	kips
Vnew*		

*It is assumed that all of the Axial and Shear loads will be taken by the existing rods only

Req'd Embedment Length for New Rods		
f _c , caisson's concrete strength	3000	psi
f _y , rebar yield strength	60000	psi
d _b , diameter of vertical rebar	1.41	in
vertical rebar cage BC ø	73.34	in
vertical rebar top cover distance	2	in
τ, Ultimate Hilti Bond Resistance	1.8	ksi
Clear Cover	5.33	in

****Note For New Anchor Rods:****
Williams Bars (Upset)
 A722 (Fy=127.7 ksi, Fu=150 ksi)
 A615-75 (Fy=75 ksi, Fu=100 ksi)

l _g (vertical rebar dev. Length)	46.337	in
l _{dh} (Hilti dev. length)	40.183	in
G/1.5	4.738	in

Total Embed. Length of New Bolts	63.12	in
	5.26	ft

Compression Strength Check of Anchor Rod Sleeve		
New Anchor Rod Diameter	1.75	in
Selected Pipe Sleeve Area	6.02	in ²
Selected Pipe Sleeve Fy	46	ksi
Rn/Ω (Rev F) or φRn (Rev G)	221.09	k
% Capacity (Analysis)	50.79%	OK
% Capacity (Design)	59.95%	OK

Equivalent BC		
No. Existing Rebar		
Existing Rebar BC		in
Area rebar		in ²
Irebar	0	in ⁴
Itot	12,690	in ⁴
Equivalent Area	2,410	in ²
Equivalent BC	102,620	in
Total Area	9.64	in ²

(assuming new bolts are reinforcement)

$$l_a = [(f_y \cdot \psi_t \cdot \psi_e \cdot \lambda) / (20 \cdot \sqrt{f'_c})] \cdot d_b \quad \text{PER ACI 12.2.2}$$

$$l_{dh} = (\phi Tn \cdot FS) / (\tau \cdot \pi \cdot d_{new})$$

See Worksheet "New (Design Procedure)"

Existing Anchor Rods		
Detail Type (hover for detail)	d	

New Anchor Rods		
Interaction Equation Checks (Rev. G: Section 4.9.9)		
Detail Type (hover for detail)		
φ	0.5	
l _a , for Detail Type d only		in
φRnt	132.55	kips
φRns	80.325	kips
φRntns	63.826	kips-in
φRns	0	kips-in
(Pu+Vu/g)/φRnt < 1?	84.7%	OK
(Pu+Vu/g)/φRnt > 1?		NA
(Pu/φRnt) + ((Vu/φRntns)²)		

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

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

Site Data

Site BU#: 876334
 Site Name: SOUTHLINGTON, SMORON
 Job No. 16BFCG1400

Anchor Rod Data

Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	54.375	in
Anchor Spacing:	6	in

Plate Data

W=Side:	55	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	9	in

Stiffener Data (Welding at both sides)

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

Pole Data

Diam:	47.1	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor

ASD ASIF:	1.333	
-----------	-------	--

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

Base Reactions

TIA Revision:	F	
Unfactored Moment, M:	3089.17063	ft-kips
Unfactored Axial, P:	66	kips
Unfactored Shear, V:	47	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension: 166.3 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 85.3% **Pass**

Base Plate Results

Base Plate Stress: 41.7 ksi
 Allowable PL Bending Stress: 50.0 ksi
 Base Plate Stress Ratio: 83.3% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	30.68
Max PL Length:	30.68

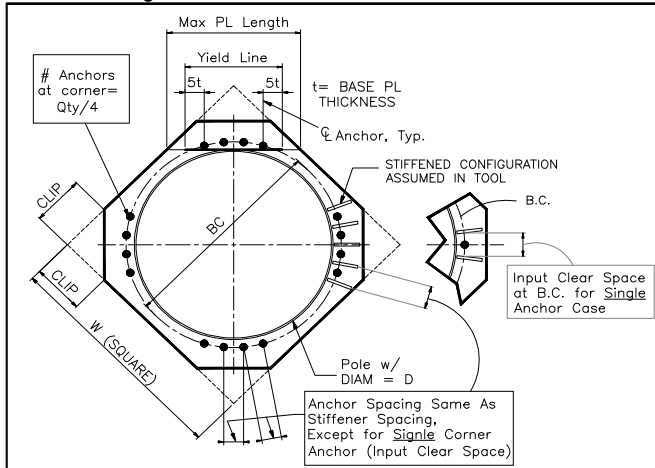
N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A



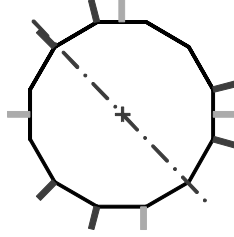
Base Transfer Stiffener

Project & Site Details	
Project No.	1GBFCG1400
Project Name	SOUTHINGTON, SMORON
Site ID	876334
Date	May 2, 2016
Code	TIA/EIA-222-F
Maximum Stress Ratio	100%

Pole Properties	
Pole Diameter	47.1 in
Pole Thickness	0.375 in
Pole Grade	A607-65
Number of Sides	12 Sided

Stiffener Properties	
Stiffener Quantity	10 Stiffeners
Any Symmetric Plates?	N (Y/N)

Tower Reactions	
Moment	4758 k-ft
Axial	68 kips
Shear	47 kips



Optional Inputs	
Axis Angle to 0° (°)	134
Additional Inertia (in ⁴)	0

Centroid	
x	0.0000 in
y	-0.2016 in

Moment of Inertia	
I (in ⁴)	Angle (°)
Min. 354511.3	138
Max. 366181.1	48
Current 354566.8	134

Individual Stiffener Input					
Stiffener Name	Angle to 0° (°)	Axis Angle of Max (°)	Controlling Case	Percentage	Pass/Fail
1. PL 5.875x1.25	15	108	Stress	93.7%	Pass
1. PL 5.875x1.25	105	12	Stress	93.2%	Pass
1. PL 5.875x1.25	135	46	Stress	92.5%	Pass
1. PL 5.875x1.25	225	134	Stress	95.5%	Pass
1. PL 5.875x1.25	255	162	Stress	94.7%	Pass
1. PL 5.875x1.25	345	78	Stress	92.2%	Pass
2. PL 4x1.25	0	93	Stress	84.7%	Pass
2. PL 4x1.25	90	177	Stress	85.5%	Pass
2. PL 4x1.25	180	93	Stress	85.9%	Pass
2. PL 4x1.25	282	10	Stress	86.8%	Pass
Pole		135	Stress	78.9%	Pass

Overall	Pass
Percentage	95.5%

Stiffener Input												
Stiffener Name	Width (in)	Thickness (in)	Considering Plate Capacity (Y/N)	Height (in)	Notch (in)	Grade	Weld Electrode (ksi)	Vertical Weld Size (in)	Horizontal Weld Type	Groove Angle (°)	Horizontal Groove Size (in)	Horizontal Fillet Size (in)
1. PL 5.875x1.25	5.875	1.25	Y	306	0.75	A572-65	80	1/4	CJP			
2. PL 4x1.25	4	1.25	Y	42	0.75	A607-65	80	1/4	CJP			

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

Site Data

Site BU#: 876334
Site Name: SOUTHLINGTON, SMORON
Project No.: 16BFCG1400

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDU:	68	kips
Factored WL Shear, Vu:	47	kips
Factored WL Moment, Mu:	1000	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	68	kips
0.90	0.9D+1.6W, Pu:	51	kips
1.00	Vu:	47	kips
	Mu:	1000	ft-kips

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	6	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	3	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	23	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	23	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	529.00	ft^2
Pier Height:	1.00	ft
Soil (above pad) Height:	0.00	ft

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	448.88	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	1203.74	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 2.68 ft
 Orthogonal qu= 1.24 ksf
 qu/φ*qn Ratio= **27.65% Pass**

Soil Parameters		
Unit Weight, γ:	100.0	pcf
Ultimate Bearing Capacity, qn:	6.00	ksf
Strength Reduct. factor, φ:	0.75	
Angle of Friction, Φ:	0.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: φ*qn:	4.50	ksf
Passive Pres. Coeff., Kp	1.00	

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 1.90 ft
 Diagonal qu= 1.22 ksf
 qu/φ*qn Ratio= **27.04% Pass**

<-- Press Upon Completing All Input

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	7.8	kips
Pad Force Location Above D:	1.00	ft
φ(Passive Pressure Moment):	7.76	ft-kips
Factored O.T. M(WL), "1.6W":	1211.5	ft-kips
Factored OT (MW-Msoil), M1	1203.74	ft-kips

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	336.66	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	1203.74	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	317.4	kips
Unfactored (Total ftg-soil Wt):	317.40	kips
1.2D. No Soil Wedges.	448.88	kips
0.9D. With Soil Wedges	336.66	kips

Orthogonal ecc3 = M2/P2 = 3.58 ft
 Ortho Non Bearing Length,NBL= 7.15 ft
 Orthogonal qu= 1.03 ksf
 Diagonal qu= 1.05 ksf

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

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	1000.00		
M Orthogonal:	3120.32	32.05%	Pass
M Diagonal:	3120.32	32.05%	Pass

BU:	876334
Site Name:	SOUTHINGTON, SMORON
App Number:	322871, Rev. 8
Work Order:	1208652

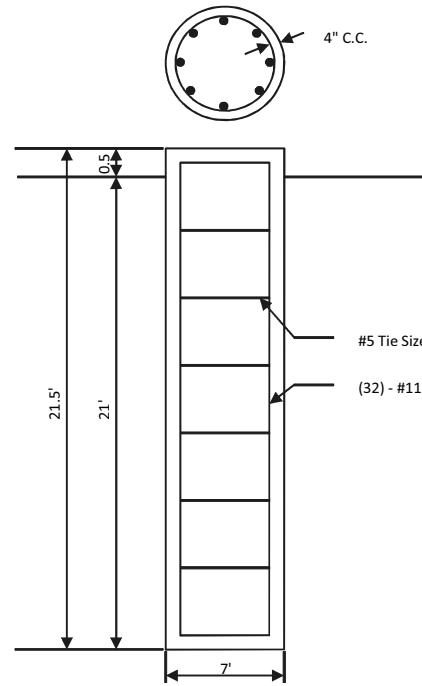


Monopole Drilled Pier

Input

Criteria	
TIA Revision:	F
ACI 318 Revision:	2002
Seismic Category:	B
Forces	
Compression	68 kips
Shear	47 kips
Moment	3758 k-ft
Swelling Force	0 kips
Foundation Dimensions	
Pier Diameter:	7 ft
Ext. above grade:	0.5 ft
Depth below grade:	21 ft
Material Properties	
Number of Rebar:	32
Rebar Size:	11
Tie Size	5
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	4 in

Soil Profile: 876334



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	1	0	1	110					0	
2	1	1	2	110					0	
3	1.33	2	3.33	130					0	
4	2.67	3.33	6	130		36	0.65	0.65	0	
5	2	6	8	120		30	0.9	0.9	0	
6	4.4	8	12.4	130		36	1.38	1.38	0	
7	8.6	12.4	21	145		40	3.97	3.97	54.9	

Analysis Results

Soil Lateral Capacity	
Depth to Zero Shear:	5.51 ft
Max Moment, Mu:	3976.23 k-ft
Soil Safety Factor:	2.00
Safety Factor Req'd:	2
RATING:	99.9%

Soil Axial Capacity	
Skin Friction (k):	481.05 kips
End Bearing (k):	1056.40 kips
Comp. Capacity (k), φCn:	1537.45 kips
Comp. (k), Cu:	88.40 kips
RATING:	5.7%

Concrete/Steel Check	
Mu (from soil analysis)	5169.09 k-ft
φMn	7559.72 k-ft
RATING:	68.4%

rho provided	0.90
rho required	0.33 OK

Rebar Spacing	5.79
Spacing required	22.56 OK

Dev. Length required	15.16
Dev. Length provided	61.78 OK

Overall Foundation Rating: 99.9%

APPENDIX D
MODIFICATION DRAWINGS

PROJECT DESCRIPTION:
MODIFICATION DRAWINGS FOR A 160' MONOPOLE

CROWN CASTLE

SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
 SOUTHINGTON, CT 06489**

COORDINATES:

**LAT: 41.6325°
 LONG: -72.8943°**

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT 800-788-7011.

PROJECT DATA

CODES AND STANDARDS

BUILDING CODE	2005 CONNECTICUT BUILDING CODE
TIA STANDARD	TIA/EIA-222-F
NOMINAL WIND SPEED WITHOUT ICE (MPH)	80
NOMINAL WIND SPEED WITH ICE (MPH)	38
SERVICE WIND SPEED (MPH)	50
ICE THICKNESS (IN)	1
EXPOSURE CATEGORY	-
RISK CATEGORY	-
TOPOGRAPHIC CATEGORY	-
CREST HEIGHT (FT)	-
S _s (G)	-
S ₁ (G)	-

PROJECT CONTACTS

CCI PROJECT MANAGER NAME	DAN VADNEY
CCI PROJECT MANAGER EMAIL ADDRESS	DAN.VADNEY@CROWNCastle.COM
CCI PROJECT MANAGER PHONE NUMBER	(518) 373-3510
CCI CONSTRUCTION MANAGER NAME	JASON D'AMICO
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FDH VELOCITEL PROJECT ENGINEER NAME	BRIAN APPLE, EI
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FDH VELOCITEL PROJECT ENGINEER PHONE NUMBER	(919) 755-1012

FAILING STRUCTURAL ANALYSIS

STRUCTURAL ANALYSIS COMPANY	FDH VELOCITEL
PROJECT NO.	16BCYS1400
DATE	FEBRUARY 16, 2016
WORK ORDER#	1193377
CCI DOC#	6101799

PASSING STRUCTURAL ANALYSIS / MODIFICATION DRAWINGS

STRUCTURAL ANALYSIS COMPANY	FDH VELOCITEL
PROJECT NO.	16BFCG1400
DATE	MAY 02, 2016
SDD WORK ORDER#	1208652
CARRIER NAME	AT&T MOBILITY
APPLICATION	322871 REV. 8
TOWER MANUFACTURER	PAUL J. FORD AND COMPANY
JOB#	29298-187

THIS REPORT WAS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATION PROVIDED BY THE TOWER OWNER. ANY CHANGE TO THIS INFORMATION MUST BE REVIEWED BY FDH VELOCITEL.

ALL CONSTRUCTION SHALL COMPLY WITH THE TIA-1019-A STANDARD

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PREPARED BY:



PREPARED FOR:

**CROWN
 CASTLE**



DENNIS D. ABEL, PE
 CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
 CHECKED BY: BA
 ENG APP'VD: DDA

SUBMITTALS

DATE	DESCRIPTION	REV.
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:

16BFCG1400

SITE NAME:
**SOUTHINGTON,
 SMORON**

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
 SOUTHINGTON, CT 06489**

SHEET TITLE

TITLE SHEET

SHEET NUMBER

S-1

MODIFICATION INSPECTION NOTES:

GENERAL:

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

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

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

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

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

MI INSPECTOR:

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

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

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

GENERAL CONTRACTOR:

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

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

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

RECOMMENDATIONS:

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

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

CANCELLATION OR DELAYS IN SCHEDULED MI:

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

CORRECTION OF FAILING MI'S:

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

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

MI VERIFICATION INSPECTIONS:

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

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

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

REQUIRED PHOTOS:

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

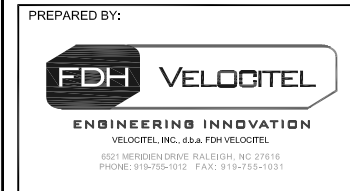
- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
 - RAW MATERIALS
 - PHOTOS OF ALL CRITICAL DETAILS
 - FOUNDATION MODIFICATIONS
 - WELD PREPARATION
 - BOLT INSTALLATION AND TORQUE
 - FINAL INSTALLED CONDITION
 - SURFACE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

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

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

MI CHECKLIST	
INSPECTIONS AND TESTING REQUIRED	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING
X	EOR APPROVAL
X	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTS
X	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION AND NDE REPORTS
N/A	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZATIONS
N/A	GUY WIRE TENSION REPORT
X	GC AS BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
X	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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



PREPARED FOR:
CROWN CASTLE



DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

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16BFCG1400

SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE
MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER
S-2

GENERAL NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO FDH VELOCITEL FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
- INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO FDH VELOCITEL PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE FDH VELOCITEL APPROVAL.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER THE COMPLETION OF THE PROJECT.
- CONTRACTOR SHALL PROMPTLY REMOVE ANY & ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRECONSTRUCTION CONDITION.
- ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSITIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSITIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

CONTRACTOR QUALIFICATION NOTES:

- ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE TIA/EIA 222-F "STRUCTURAL STANDARD FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
- CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, FDH VELOCITEL IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
- ALL SUBMITTAL INFORMATION MUST BE SENT TO FDH VELOCITEL 6521 MERIDIEN DRIVE, RALEIGH NC, 27616, TEL. (919) 755-1012, FAX. (919) 755-1031, E-MAIL INFO@FDHVELOCITEL.COM. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM FDH VELOCITEL WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS FDH VELOCITEL
- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THE TIA-1019-A STANDARD.

JOB SITE SAFETY & NOTES:

- NEITHER THE PROFESSIONAL ACTIVITIES OF FDH VELOCITEL NOR THE PRESENCE OF FDH VELOCITEL OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

STEEL:

- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
- ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-80XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE (UNLESS OTHERWISE NOTED).
- ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE SPECIFIED. WHEN "X" TYPE BOLTS ARE USED, CONTRACTOR MAY BE REQUIRED TO STACK ADDITIONAL WASHERS TO OBTAIN PROPER SNUG TIGHT INSTALLATION. ALL NUTS SHALL BE HEAVY HEX UNLESS OTHERWISE NOTED.
- ALL STEEL, AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH MULTIPLE COATS OF ZRC COLD GALVANIZING COMPOUND ACHIEVING A MINIMUM OF 4 MILS DRY FILM PER ASTM A 780.
- ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. CONTRACTOR IS REQUIRED TO PROVIDE FDH VELOCITEL WITH A PASSING CERTIFIED WELDING INSPECTION FOR ALL WELDS.
- STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.

MISC. NOTES:

- ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
- CONTRACTOR FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

FABRICATION NOTES:

- ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
- NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

SUBSTITUTES AND/OR EQUALS:

- IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL FIRST MAKE WRITTEN APPLICATION TO ENGINEER OF RECORD FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL PERFORM ADEQUATELY THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER OF RECORD IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER OF RECORD MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

COLD GALVANIZATION/SURFACE**PREPARATION NOTES:**

- CONTRACTOR TO USE ZINGA OR ZRC COLD GALVANIZATION COMPOUNDS OR APPROVED EQUIVALENT.
- PREPARE RUSTED/CORRODED SURFACE FOR TREATMENT ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR TO APPLY (2) COATS OF COLD GALVANIZATION COMPOUND PER MANUFACTURER'S RECOMMENDATION. DRYING AND CURING TIMES MUST BE UTILIZED PER MANUFACTURER'S RECOMMENDATION.
- APPLY ALL COATINGS BY BRUSH IN CALM WIND CONDITIONS. THE USE OF AEROSOL IS NOT PERMITTED.
- IF THE TOWER IS PAINTED, BRUSH PAINT ALL TREATED AREAS TO MATCH TOWER AFTER COLD GALVANIZATION COMPOUND IS ALLOWED TO CURE.

NEW MONOPOLE REINFORCEMENT NOTES:

- CONTRACTOR TO FIELD VERIFY PROPOSED LOCATION OF REINFORCEMENT TO ENSURE THAT PROPER SPACING CAN BE MET.
- CONTRACTOR TO REPLACE AND/OR RELOCATE ANY CLIMBING PEGS THAT INTERFERE WITH THE INSTALLATION OF FLAT PLATE.
- ALL BLIND BOLT CONNECTIONS TO USE HIGH TENSILE SLEEVE PROVIDED BY MANUFACTURER. BLIND BOLT ASSEMBLY TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS. SEE BLIND BOLT ASSEMBLY DETAILS ON SHEETS S-4 THROUGH S-6.
- ALL SHEAR SLEEVES TO BE HOT DIPPED GALVANIZED PRIOR TO INSTALLATION.
- PRIOR TO FLAT PLATE INSTALLATION, SLIP JOINTS MUST BE TIGHTENED WITH A MINIMUM JACKING FORCE OF 6000 LBS.
- NEW REINFORCEMENT TO BE INSTALLED ON THE CENTER OF PROPOSED SIDE UNLESS OTHERWISE NOTED.
- EXISTING COAX BANDS TO BE REPLACED AFTER REINFORCEMENT INSTALLATION. NEW FLAT PLATE TO BE INSTALLED BENEATH EXISTING COAX BANDS.
- SHIMS FOR MONOPOLE REINFORCEMENT MEMBERS SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES, MATCHING THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. THE MAXIMUM GAP SHIMMED SHALL BE NO MORE THAN 1/4" WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER OF RECORD.
- REINFORCEMENT PIECES SHALL NOT BE MADE BY SPLICING TOGETHER TWO SMALLER PIECES UNLESS SPECIFIED ON THIS DRAWING OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER ON RECORD.
- CONTRACTOR MUST UTILIZE THE SAME MANUFACTURER/TYPE OF BLIND BOLT FOR THE ENTIRETY OF THE MODIFICATION.
- REINFORCEMENT AT TOWER BASE MAY BE INSTALLED WITH A ±1" ELEVATION TOLERANCE FROM ELEVATIONS SPECIFIED IN DETAILS. ELEVATED REINFORCEMENT MAY BE INSTALLED WITH A ± 3" ELEVATION TOLERANCE. REINFORCEMENT INSTALLED WITHIN SPECIFIED TOLERANCES DOES NOT NEED EOR APPROVAL.

CONSTRUCTION NOTES:

- CONTRACTOR TO FIELD VERIFY PROPOSED REINFORCEMENT LAYOUT PRIOR TO CONSTRUCTION. IF ISSUES ARE PRESENT IN THE FIT OF THE REINFORCEMENT, CONTRACTOR TO CONTACT ENGINEER OF RECORD OR FDH VELOCITEL PROJECT MANAGER PRIOR TO PROCEEDING WITH PROPOSED MODIFICATION OR FABRICATION.

NDE INSPECTION:

- ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
- FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
- FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
- FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: *TOWER BASE PLATE NDE*, AND ENG-BUL-10051: *NDE REQUIREMENTS FOR MONOPOLE BASEPLATE TO PREVENT CONNECTION FAILURE*. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
- INSPECTION OF EXISTING WELDS MUST BE PERFORMED PRIOR TO THE INSTALLATION OF ANY PROPOSED REINFORCEMENT.
- ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

PREPARED BY:



PREPARED FOR:

CROWN CASTLE

DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR

CHECKED BY: BA

ENG APP'VD: DDA

SUBMITTALS

DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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16BFCG1400

SITE NAME:

SOUTHINGTON, SMORON

SITE NUMBER:

876334

SITE ADDRESS:

**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE

GENERAL NOTES I

SHEET NUMBER

S-3**STEEL GRADE SCHEDULE**

SCOPE	SHAPE	GRADE	YIELD STRENGTH (F _y)	ULTIMATE STRENGTH (F _u)
ALL	PLATE	A572-65	65 KSI	80 KSI
ANCHOR ROD SLEEVE	HSS TUBE (SQUARE)	A500 GR. C	50 KSI	62 KSI
ANCHOR RODS	THREADED ROD	A193 GR. B7	105 KSI	125 KSI

STIFFENER PLATE NOTES:

1. INSIDE POLE SHAFT TO BE SPRAYED WITH (2) COATS COLD GALVANIZATION PAINT WHERE ALL WELDED CONNECTIONS ARE PERFORMED.
2. AFTER STIFFENER INSTALLATION CONTRACTOR TO BRUSH PAINT (2) COATS OF COLD GALVANIZATION PAINT THEN FINISH WITH (1) COAT OF COLD GALVANIZATION SPRAY.

SURFACE PREPARATION:

1. PREPARE SURFACE TO BE WELDED BY REMOVING PAINT OR GALVANIZATION TO BARE METAL USING POWER WIRE BRUSHING IN ACCORDANCE WITH SSPC-SP11, (STEEL STRUCTURES PAINTING COUNCIL). FOLLOWING POWER WIRE BRUSHING CONTRACTOR SHALL POLISH METAL SURFACE WITH HIGH SPEED GRINDER WITH 400+ GRIT SANDPAPER.
2. AFTER NEW STEEL INSTALLATION CONTRACTOR TO BRUSH PAINT (2) COATS OF ZRC OR ZINGA COLD GALVANIZATION COMPOUND PER MANUFACTURER'S SPECIFICATIONS.

STIFFENER PLATE WELDING:

1. ALL WELDING TO THE EXISTING TOWER SHALL BE PERFORMED BY CERTIFIED WELDERS UTILIZING PROCEDURES QUALIFIED IN ACCORDANCE WITH AWS D1.1 AND AWS C5.4.
2. CONTRACTOR SHALL COMPLY WITH AWS D1.1 FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". CONTRACTOR SHALL SUBMIT CERTIFICATION OF WELDERS TO THE ENGINEER PRIOR TO COMMENCEMENT OF THE WORK.
3. CONTRACTOR RESPONSIBLE FOR TEMPORARY HEAT SHIELDING AS REQUIRED DURING WELDING.
4. ALL WELDS TO BE VISUALLY INSPECTED BY A CERTIFIED WELD INSPECTOR PER AWS D1.1.
5. CONTRACTOR RESPONSIBLE FOR VIEWING EXISTING POLE FOR LOOSE AND FLAMMABLE MATERIAL PRIOR TO WELDING.
6. CONTRACTOR TO VERIFY LOCATION OF ENTRY PORTHOLES PRIOR TO INSTALLATION.

PULLOUT TESTING OF POST INSTALLED ANCHOR RODS:

1. EPOXY AGENTS SHOULD BE ALLOWED TO CURE ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
2. CONTRACTOR SHALL ENSURE THAT CONSTRUCTION DOES NOT GO BEYOND POINT WHERE THE ANCHOR RODS CAN BE EFFECTIVELY TESTED. THE ANCHOR ROD SLEEVES AND TRANSFER PLATES SHOULD BE INSTALLED AFTER PULL-TESTING IS PERFORMED. CONSTRUCTION MAY PROCEED AFTER TESTING IS COMPLETED.
3. 50% OF POST INSTALLED ANCHOR RODS SHALL BE TESTED OR A TOTAL OF 4, WHICHEVER IS GREATER.
4. THE TARGET TENSION FOR THIS PULL TEST IS 190K.
5. MAINTAIN COMPLETE LOAD-DISPLACEMENT RECORDS THROUGHOUT THE TEST. LOAD THE ANCHOR IN INCREMENTS OF UP TO 15% OF THE TARGET TENSION.
6. STATIC LOAD TEST SHALL BE PERFORMED PER ASTM E488-96 (REAPPROVED 2003).
7. IF A DISPLACEMENT GREATER THAN 0.010" REMAINS AFTER THE INITIAL TEST CYCLE, ADDITIONAL TEST SHALL BE PERFORMED UP TO A MAXIMUM OF 4 TEST CYCLES TO DETERMINE IF THE MOVEMENT CONTINUES TO ACCUMULATE. INCREMENTAL RESIDUAL MOVEMENT RECORDED FROM EACH TEST CYCLE MUST BE DECREASING IN VALUE AND STABILIZE TO A VALUE NO MORE THAN 0.010", OTHERWISE THE ANCHOR SHALL BE CONSIDERED TO FAIL THE TEST. TOTAL RESIDUAL MOVEMENT SHALL NOT BE GREATER THAN 0.10" OR THE ANCHOR SHALL BE CONSIDERED TO FAIL THE TEST.
8. THIS INFORMATION SHALL BE DOCUMENTED AND INCLUDED IN THE POST MODIFICATION INSPECTION REPORT.
9. CONTACT FDH VELOCITEL IF ANY OF THE ANCHORS FAIL THE PULL TEST.
10. ALL HARDWARE ASSEMBLY AND MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED; ANY CONTRADICTION BETWEEN THE MANUFACTURER'S RECOMMENDATIONS AND THESE DRAWINGS ARE TO BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER AND OWNER.
11. ANY CONTRACTOR INSTALLING ADHESIVE ANCHORING SYSTEMS SHALL BE TRAINED, IN PERSON BY A MANUFACTURER'S REPRESENTATIVE, ON THE PROPER INSTALLATION TECHNIQUES. THIS TRAINING SHALL INCLUDE PROPER DRILLING, HOLE CLEANING, AND INSTALLATION METHODS FOR THE ADHESIVE ANCHORING SYSTEM AND CONSTRUCTION CONDITIONS ON THIS PROJECT. ALL TRAINING TO BE CONDUCTED PRIOR TO CREWS STEPPING ON SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT MANUFACTURER REPRESENTATIVE TO SET UP TRAINING. FDH IS NOT RESPONSIBLE FOR ANY COST OCCURRED FOR OR DURING ADHESIVE ANCHORING SYSTEM TRAINING.

PREPARED BY:



PREPARED FOR:

CROWN CASTLE



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
 CHECKED BY: BA
 ENG APP'VD: DDA

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:
16BFCG1400

SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE
GENERAL NOTES II

SHEET NUMBER
S-4

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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16BFCG1400

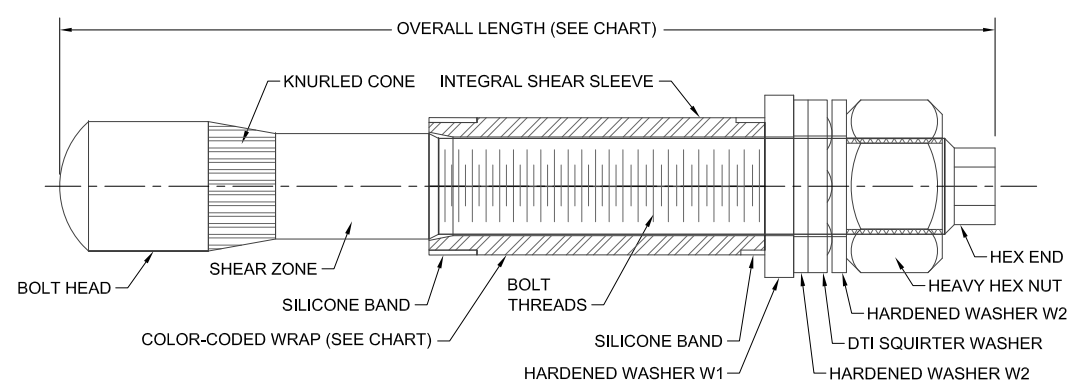
SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

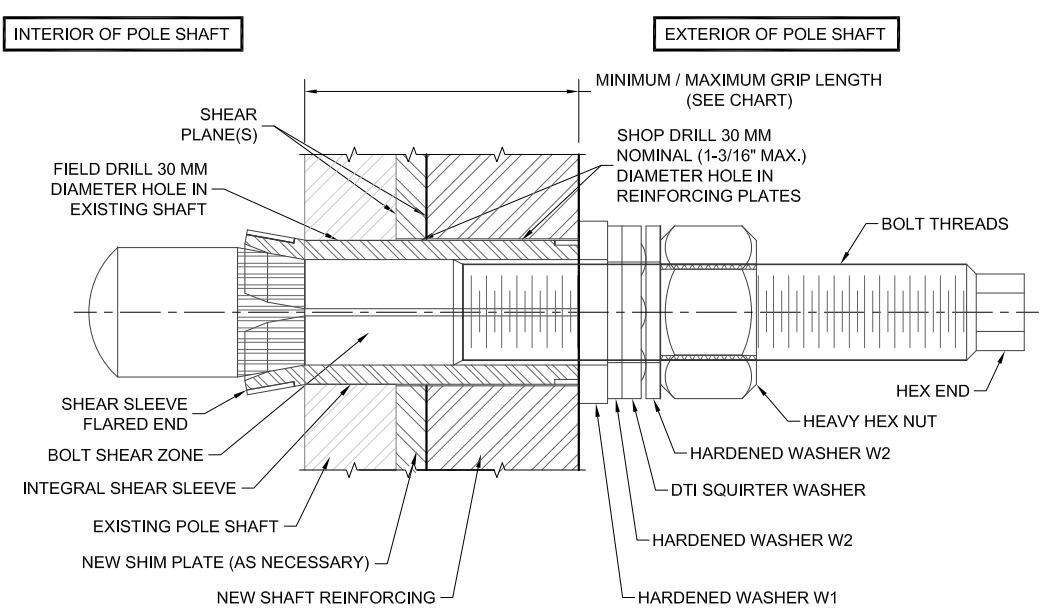
SITE ADDRESS:
**625 SPRING STREET
 SOUTHINGTON, CT 06489**

SHEET TITLE
 FORGBOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

SHEET NUMBER
S-5



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015; Rev. 1.0 04/23/2015

- NOTES:**
- ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.
 - ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.

FORGBolt™		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 102 ksi minimum)					
GROUP A	FORGBolt™ Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code	
FORGBolt™ A325 - PC8.8	1	135	5.31	1.3	3/8 to 1"	RED	
	2	160	6.30	1.6	3/4 to 1-1/2"	GREEN	
	3	195	7.68	1.9	1-1/4 to 2-1/4"	BLUE	
	4	260	10.24	2.6	2" to 3-1/2"	Splice Bolt	YELLOW
	5	365	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	ORANGE
	6	440	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	BLACK
DTI Note	Each Group A (A325/PC8.8) FORGBolt™ assembly shall have a 'Squirtier' DTI that is compatible with a M20-PC8.8 bolt.						

FORGBolt™ Installation

Follow all Manufacturer/Distributor Recommendations for Installation, Tightening, and Inspection.

- FIELD DRILL HOLES TO 30 MM DIAMETER.
- SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
- INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
- HAND TIGHTEN NUT TO FINGER TIGHT.
- TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
- PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.


DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
 PHONE: 888-926-4857
 EMAIL: info@precisiontowerproducts.com
 WEB: www.precisiontowerproducts.com

CONTAINS PROPRIETARY INFORMATION PATENT PENDING

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BOLT HOLE NOTES:

- ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
- ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.



05/02/16
 DENNIS D. ABEL, PE
 CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
 CHECKED BY: BA
 ENG APP'VD: DDA

SUBMITTALS		
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05/02/16	CONSTRUCTION	0

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16BFCG1400

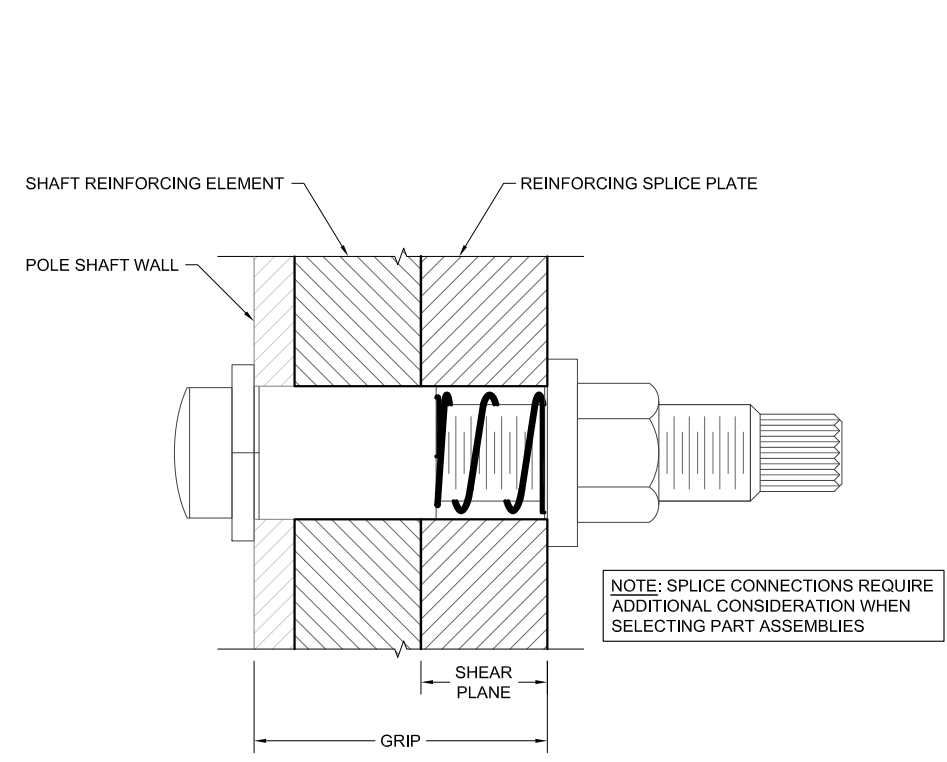
SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

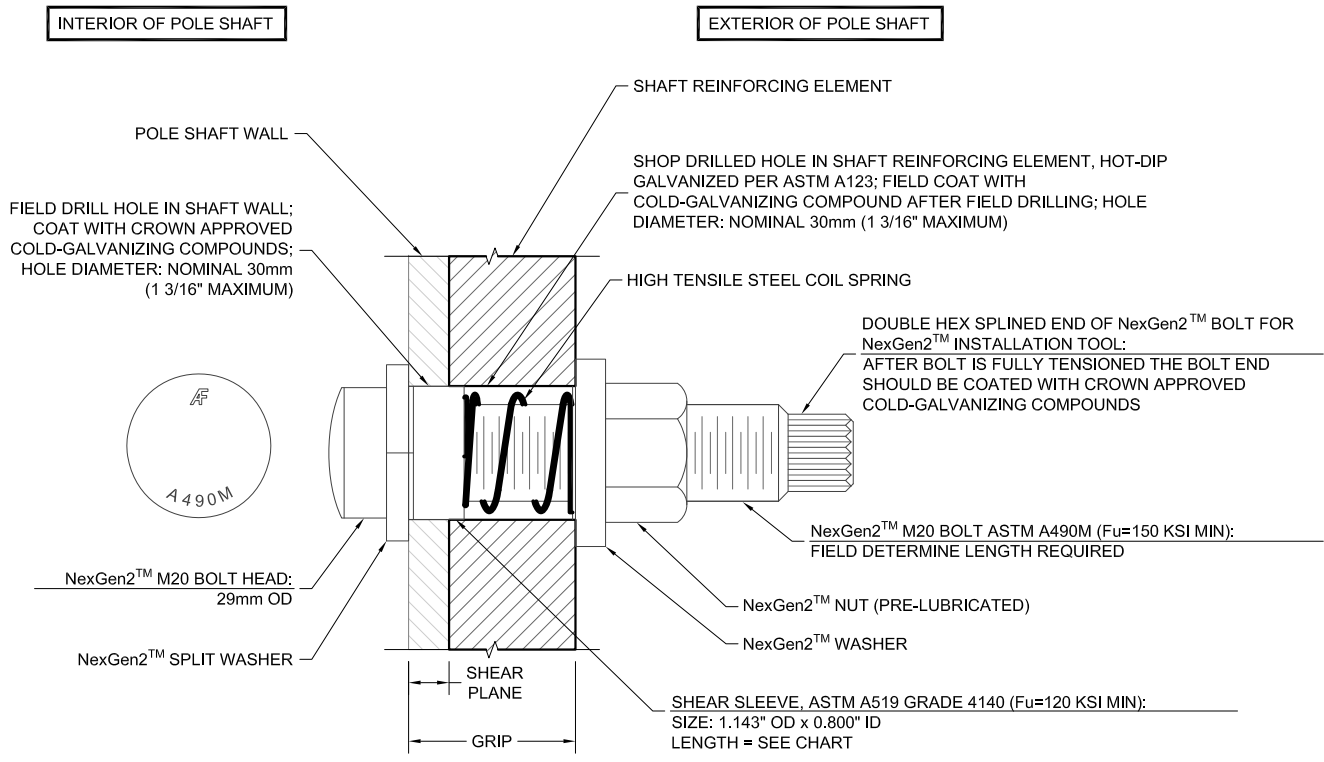
SITE ADDRESS:
**625 SPRING STREET
 SOUTHINGTON, CT 06489**

SHEET TITLE
 NEXGEN2 BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

SHEET NUMBER
S-6



NexGen2™ BOLT ASSEMBLY
 SCALE: NTS



NexGen2™ BOLT ASSEMBLY
 SCALE: NTS

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN. GRIP RANGE	MAX. GRIP RANGE
M20x36	M20x95	11/16"	15/16"	1-7/16"
M20x48	M20x95	1-3/16"	1-7/16"	1-7/8"
M20x57	M20x95	1-5/8"	1-7/8"	2-1/4"
M20x68	M20x135	2"	2-1/4"	2-11/16"
M20x96	M20x135	2-7/16"	2-11/16"	3-3/4"
M20x127	M20x165	3"	3-3/4"	5"
M20x212	M20x250	4"	5"	8-15/16"

MANUFACTURER:
ALLFASTENERS
 15401 COMMERCE PARK DRIVE
 BROOKPARK, OHIO, USA 44142
 PHONE: 440-232-6060
 WEBSITE: WWW.ALLFASTENERS.COM

- NEXGEN2 BLIND BOLT ASSEMBLY NOTES:**
- ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16"
 - NEXGEN2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.
 - INSTALL PER MANUFACTURER'S INSTRUCTIONS.

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

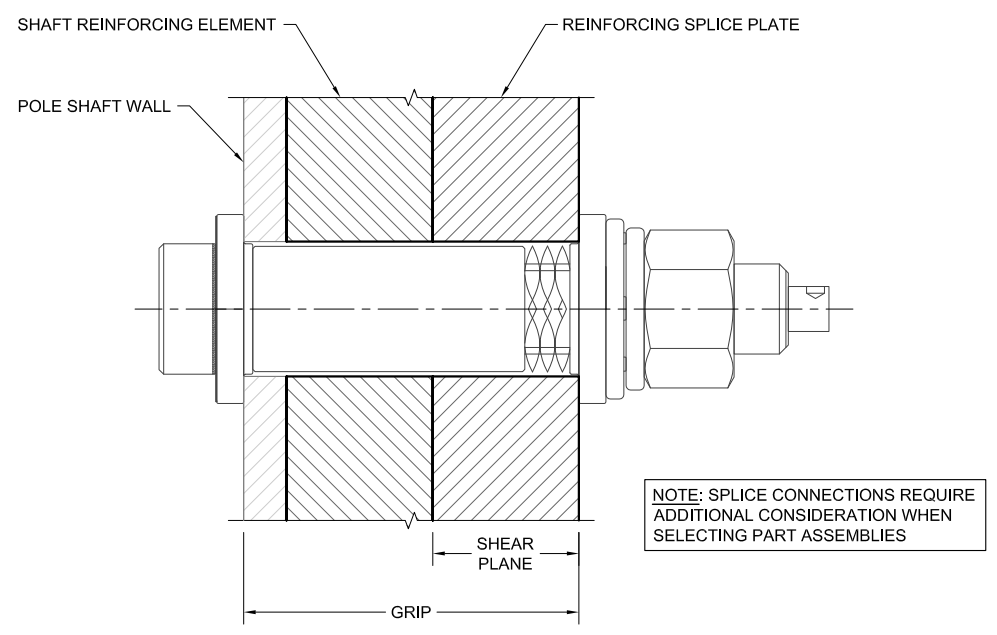
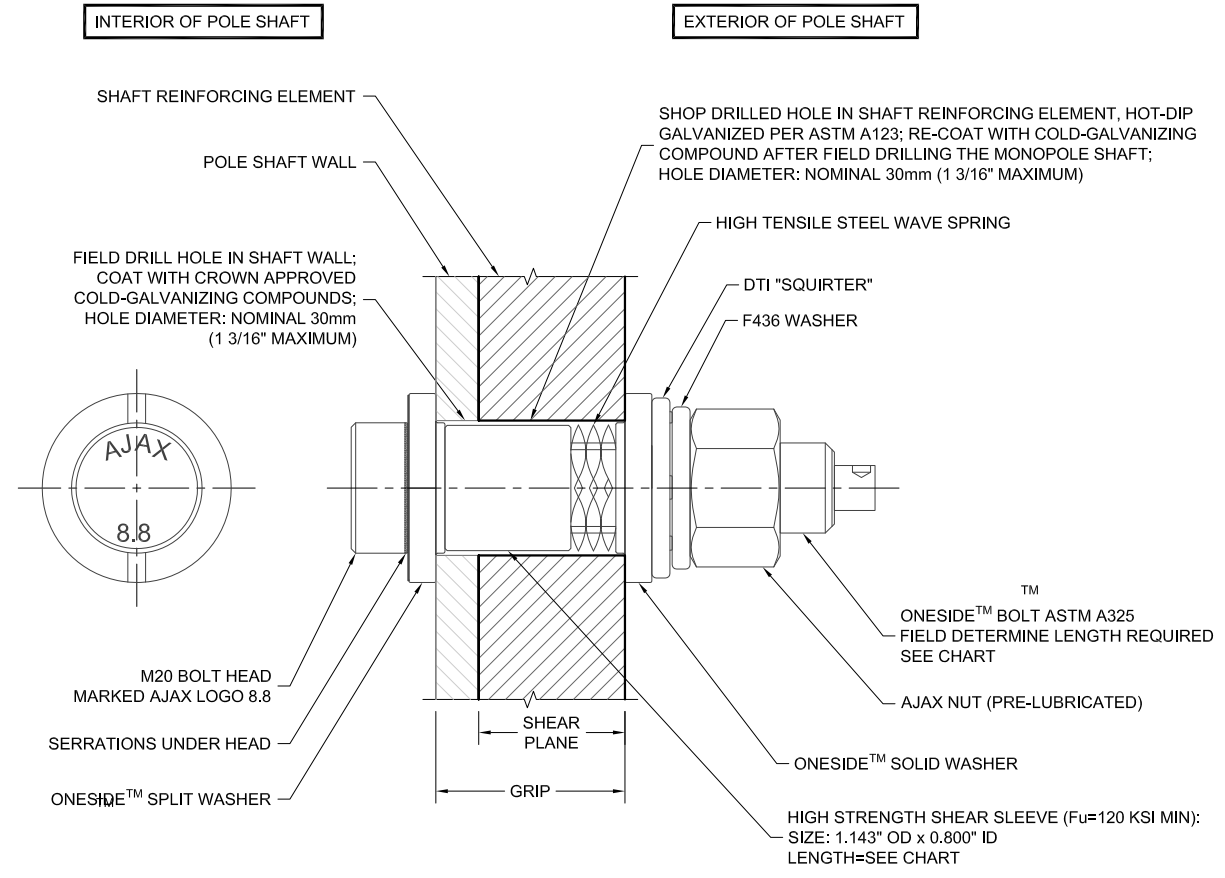
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16BFCG1400

SITE NAME:
SOUTHINGTON, SMORON
 SITE NUMBER:
876334
 SITE ADDRESS:
**625 SPRING STREET
 SOUTHINGTON, CT 06489**

SHEET TITLE
 AJAX ONESIDE™ BOLT
 SPECIFICATIONS AND
 TIGHTENING PROCEDURE

SHEET NUMBER
S-7



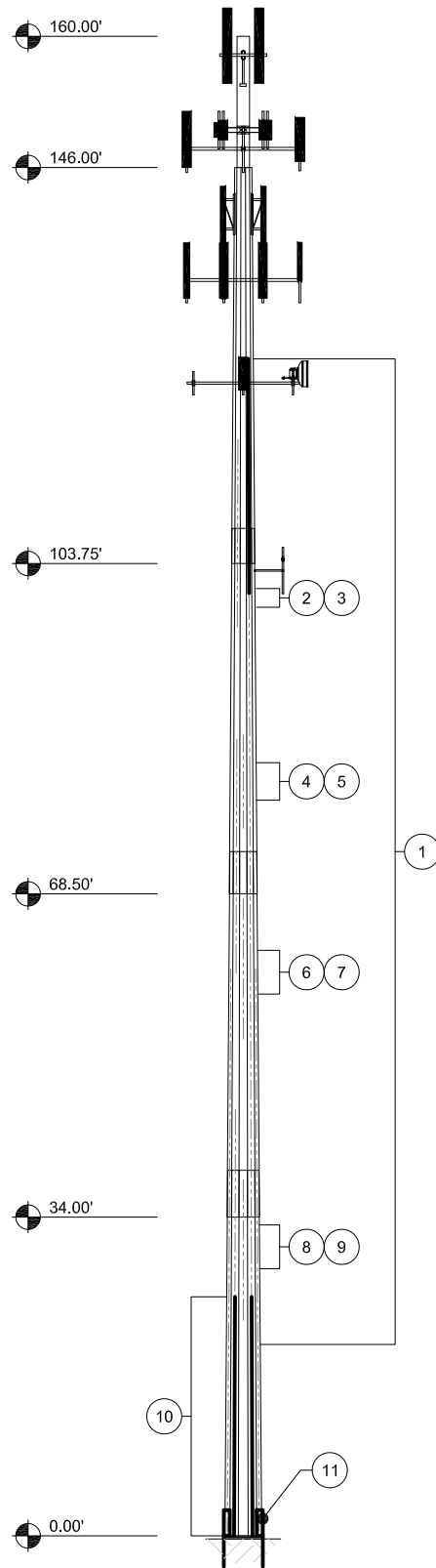
AJAX ONESIDE™ BOLT DETAIL
 SCALE: NTS

MANUFACTURER:
 AJAX FASTENERS
 SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR CONTACT:
 IRA SVENSGAARD AND ASSOCIATES
 PETER SVENSGAARD - PETERS@IRASVENS.COM
 JOHN KILLAM - JOHN@IRASVENS.COM
 PHONE: (530) 647-8225
 FAX: (530) 647-8229

- BOLT ASSEMBLY AND INSTALLATION:**
- BOLT MUST BE PURCHASED PRE-ASSEMBLED.
 - FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.
- BOLT ASSEMBLY AND INSTALLATION:**
- A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION
 - INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: MODIFICATION INSPECTION SOW.

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"



TOWER ELEVATION
SCALE: NTS

- CONTRACTOR SHALL VERIFY ALL APPURTENANCE CONDITIONS AND DIMENSIONS IN RELATIONSHIP TO THIS MODIFICATION. APPURTENANCES MAY NEED TO BE TEMPORARILY REMOVED OR MOVED DURING THE INSTALLATION OF THIS MODIFICATION. CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND CROWN CASTLE PRIOR TO PROCEEDING WITH THE WORK.
- ALL MODIFICATIONS TO BE INSTALLED CONTINUOUSLY THROUGH EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT NOT TO BE DAMAGED OR TAKEN OFF AIR DURING INSTALLATION.
- SEE STRUCTURAL ANALYSIS REPORT FOR EXISTING ANTENNA LOADING.
- CONTRACTOR TO FIELD VERIFY DIMENSIONS & LOCATIONS OF PROPOSED MODIFICATIONS PRIOR TO STEEL FABRICATION.

TOWER MODIFICATION SCHEDULE				
NO.	TYPE OF MODIFICATION	BTM. ELEV.	TOP ELEV.	SHEET
1	INSTALLATION OF NEW MONOPOLE REINFORCEMENT.	20.4'±	125.6'±	S-8 TO S-12
2	REMOVAL OF EXISTING BLIND BOLTS.	98.3'±	100.3'±	-
3	INSTALLATION OF NEW BLIND BOLTS.	98.3'±	100.3'±	-
4	REMOVAL OF EXISTING BLIND BOLTS.	78.5'±	82.5'±	-
5	INSTALLATION OF NEW BLIND BOLTS.	78.5'±	82.5'±	-
6	REMOVAL OF EXISTING BLIND BOLTS.	57.8'±	62.5'±	-
7	INSTALLATION OF NEW BLIND BOLTS.	57.8'±	62.5'±	-
8	REMOVAL OF EXISTING BLIND BOLTS.	28.5'±	33.3'±	-
9	INSTALLATION OF NEW BLIND BOLTS.	28.5'±	33.3'±	-
10	INSTALLATION OF NEW TRANSFER STIFFENER EXTENSIONS.	0.0'±	25.5'±	S-13
11	INSTALLATION OF NEW ANCHOR RODS.	-6.8'±	3.5'±	S-14 TO S-15

CROWN CASTLE SHAFT REINFORCEMENT INSTALLATION SCHEDULE						
ELEVATION ²	QTY.	FLAT NUMBER	CCI-65FP PLATE (65 KSI)	MAX STITCH BOLT SPACING	BLIND BOLT QUANTITY	STEEL WEIGHT (LBS.)
100'-7"± TO 125'-7"±	1	2	CCI-AFP-06010025	1'-4"	34 ¹	510.0 ¹
90'-7"± TO 125'-7"±	2	6 - 10	CCI-AFP-06010035	1'-4"	42 ¹	714.0 ¹
55'-6"± TO 90'-6"±	2	6 - 10	CCI-AFP-08512535	1'-5"	52 ¹	1264.4 ¹
20'-5"± TO 55'-5"±	2	6 - 10	CCI-AFP-08512535	1'-5"	52 ¹	1264.4 ¹
				TOTAL	326	6,995.6

1. QUANTITY SHOWN IS FOR (1) REINFORCEMENT PLATE.
2. SEE SHEET S-11 FOR SPLICE PLATE INFORMATION.

CROWN CASTLE ANCHOR ROD INSTALLATION SCHEDULE					
PART NO.	QTY.	DIAMETER	LENGTH	MATERIAL	EMBEDMENT DEPTH
CCI-AR-0225	4	2 1/4"Ø	11'-0"±	A193 GR. B7	6'-0"±

EXISTING STEEL GRADE SCHEDULE	
COMPONENT	YIELD STRENGTH
MONOPOLE	35 KSI (146'-160')
	60 KSI (34'-146')
	65 KSI (0'-39')
BASE PLATE	50 KSI

PREPARED BY:

ENGINEERING INNOVATION
VELOCITEL, INC., d.b.a. FDH VELOCITEL
6521 MERIDIAN DRIVE RALEIGH, NC 27618
PHONE: 919-755-1012 FAX: 919-755-1031

PREPARED FOR:

CROWN CASTLE

DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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16BFCG1400

SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE
MODIFICATION SCHEDULE & FLAT PLATE INSTALLATION DETAILS I

SHEET NUMBER
S-8

60.50'
CL OF INSTALLATION

55.50'
BTM OF INSTALLATION

30.50'
CL OF INSTALLATION

20.42'
BTM OF INSTALLATION



UNFOLDED MONOPOLE ELEVATION

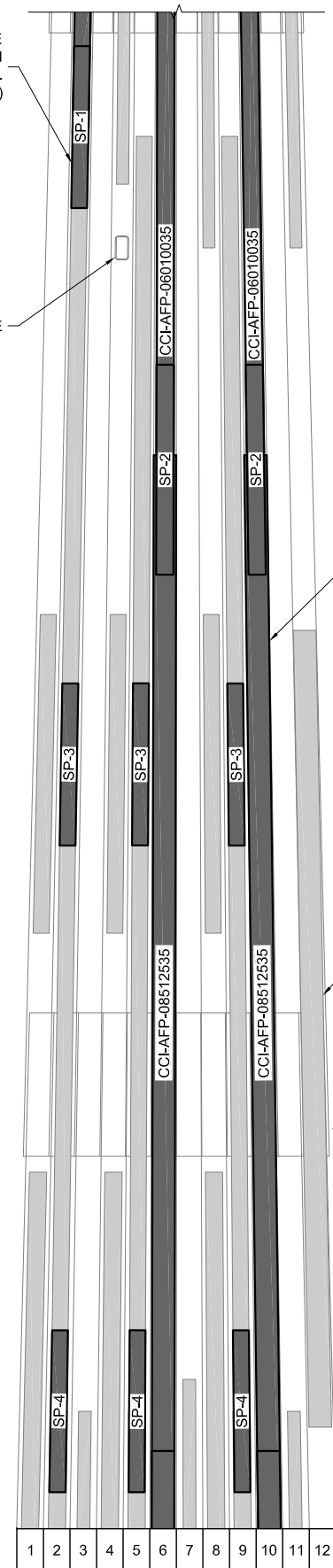
1
S-9
SCALE: 3/16" = 1'-0"

100.58'
BTM OF INSTALLATION

90.58'
BTM OF INSTALLATION

80.50'
CL OF INSTALLATION

60.50'
CL OF INSTALLATION



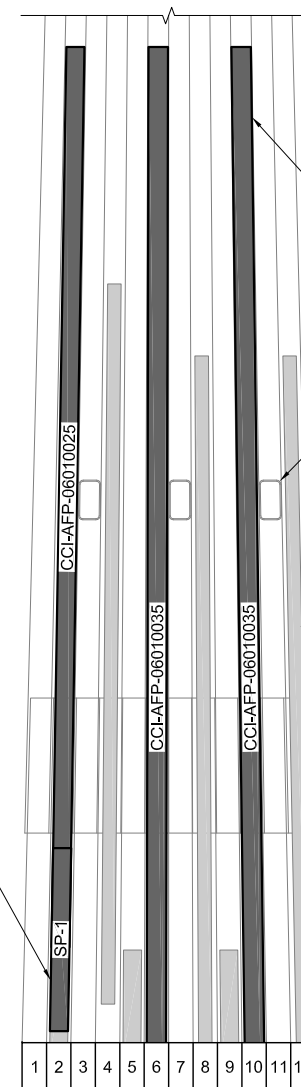
UNFOLDED MONOPOLE ELEVATION

2
S-9
SCALE: 3/16" = 1'-0"

125.58'
TOP OF INSTALLATION

100.58'
BTM OF INSTALLATION

CONTRACTOR TO REMOVE AND REPLACE EXISTING BLIND BOLTS AT THE LOCATIONS OF SPLICE PLATES SP-1, SP-3, SP-4 AND SP-6. SEE SHEETS S-11 AND S-12 FOR DETAILS.



UNFOLDED MONOPOLE ELEVATION

3
S-9
SCALE: 3/16" = 1'-0"

PREPARED BY:

ENGINEERING INNOVATION
VELOCITEL, INC., d.b.a. FDH VELOCITEL
6521 MERIDIAN DRIVE RALEIGH, NC 27616
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PREPARED FOR:

CROWN CASTLE

05/02/16

DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
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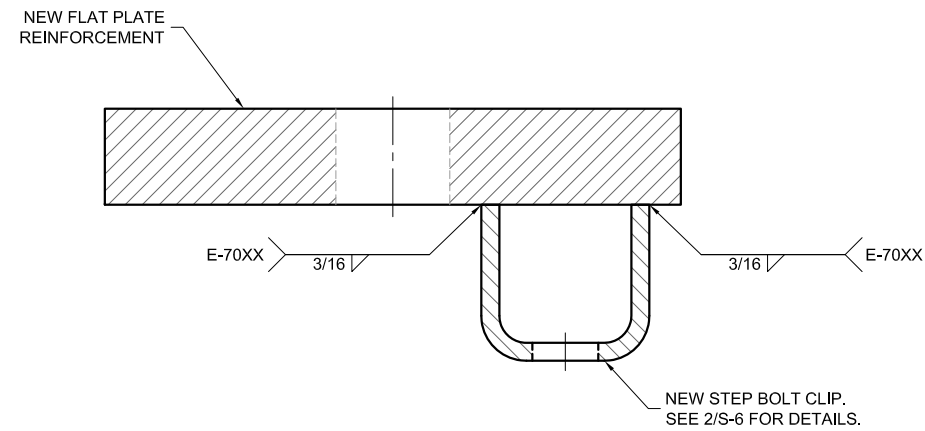
SITE NAME:
SOUTHINGTON, SMORON

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE
**FLAT PLATE
INSTALLATION DETAILS II**

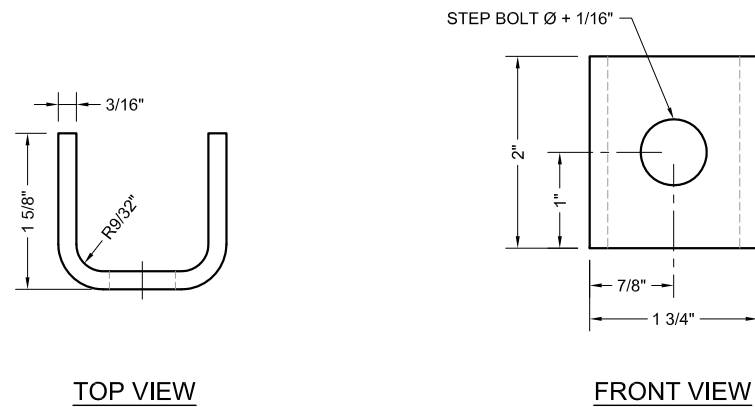
SHEET NUMBER
S-9



STEP BOLT CLIP INSTALLATION
TOP VIEW

1
S-10

DETAIL
SCALE: NTS



STEP BOLT CLIP
TOP & FRONT VIEW

2
S-10

DETAIL
SCALE: NTS

NOTES:

1. STEP BOLT CLIP WELDS ARE SUBJECT TO AWS D1.1 AND MUST BE CWI INSPECTED. REFER TO DOCUMENT "ENG-STD-10069 GC CWI REQUIREMENT STANDARD" FOR CWI REQUIREMENTS.
2. STEP BOLT CLIPS CAN BE FIELD WELDED, BUT IT IS ALSO ACCEPTABLE TO SHOP WELD THE STEP BOLT CLIPS TO THE FLAT PLATE, PROVIDED THAT THEY MEET THE CRITERIA NOTED HEREIN. IF STEP BOLT CLIPS ARE NOT NEEDED IN THE FIELD THEY CAN BE LEFT UNUSED.
3. SHOP WELDED STEP PEG CLIPS SHALL BE INSTALLED PRIOR TO HOT DIP GALVANIZING.
4. CONTRACTOR MAY REUSE EXISTING STEP BOLTS AND HARDWARE ONLY IF THEY ARE NOT DAMAGED OR SHOW SIGNIFICANT WEAR AND/OR CORROSION.
5. IF NEW STEP BOLTS ARE REQUIRED, MATCH EXISTING STEP BOLT SIZES. MINIMUM DIAMETER IS 5/8". MAXIMUM DIAMETER IS 3/4" AND MAXIMUM BOLT LENGTH IS 10".
6. CENTER TO CENTER STAGGERED SPACING SHOULD BE MATCHED TO EXISTING FIELD CONDITIONS. STAGGERED SPACING SHALL BE A MINIMUM OF 10" AND MAXIMUM OF 16".
7. MINIMUM CLEAR WIDTH OF STEP BOLTS IS 4 1/2" AND A BUTTON HEAD IS REQUIRED.
8. HORIZONTAL SPREAD IS TO NOT EXCEED 24".

PREPARED BY:



PREPARED FOR:

**CROWN
CASTLE**



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

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876334

SITE ADDRESS:

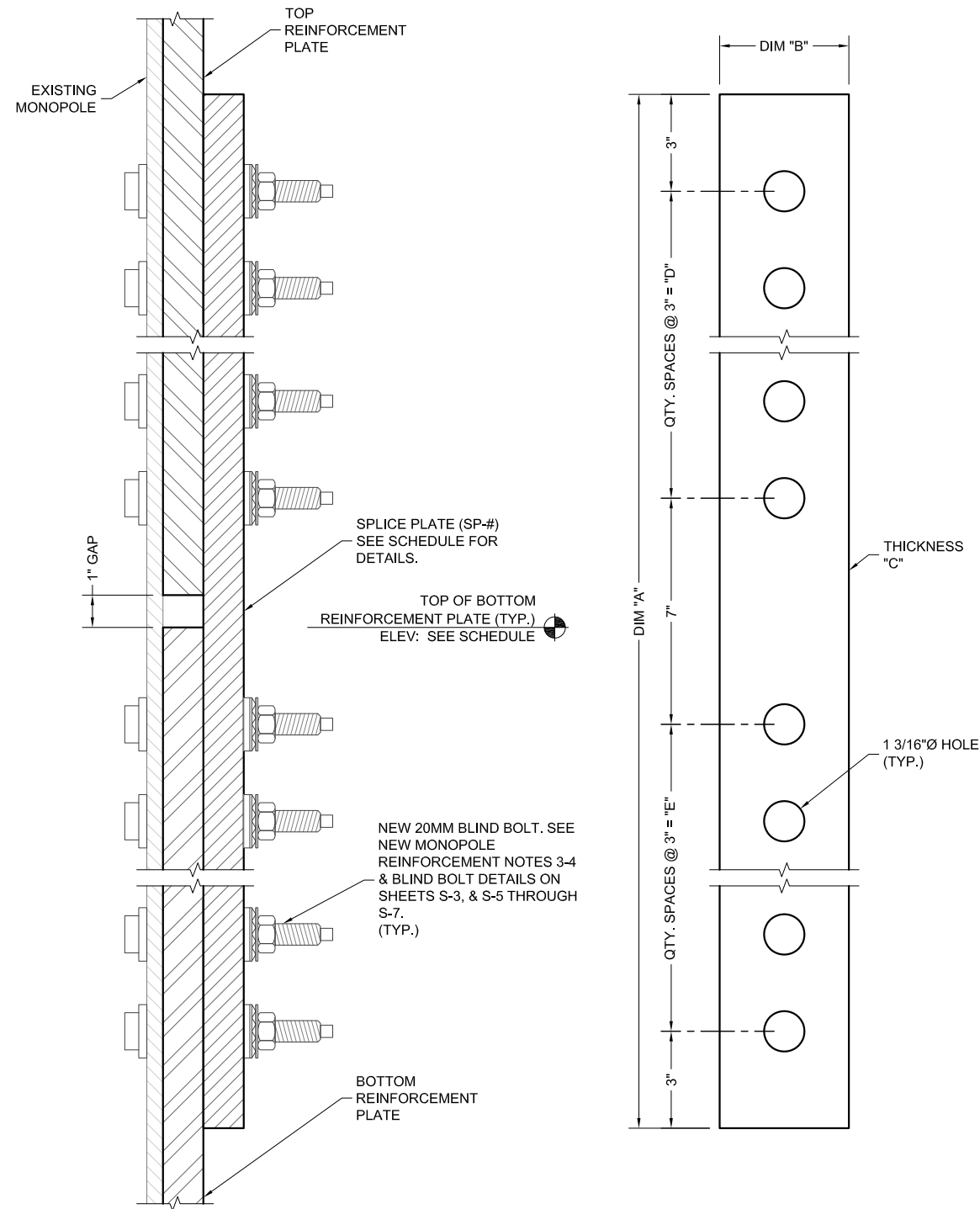
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE

STEP BOLT CLIP
INSTALLATION DETAILS

SHEET NUMBER

S-10



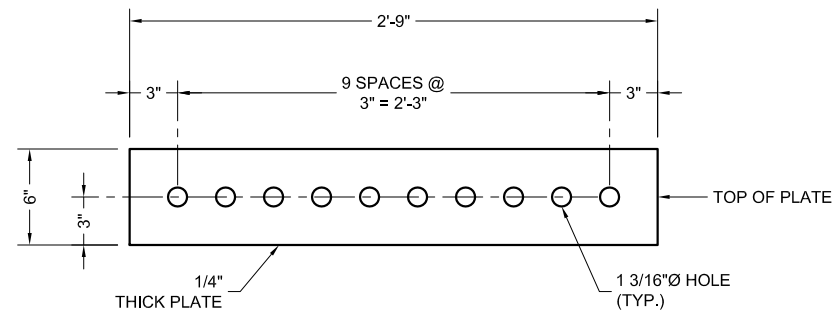
SPLICE PLATE ASSEMBLY
FRONT AND SIDE VIEW

1
S-11

DETAIL
NTS

SPLICE PLATE FABRICATION SCHEDULE								
ELEVATION	PART NO.	QUANTITY	DIMENSION "A"	DIMENSION "B"	THICKNESS "C"	QTY. SPACES @ 3" = "D"	QTY. SPACES @ 3" = "E"	TOP/BTM. REINF. PLATE
100'-6"	SP-1	1	5'-1"	6"	1"	9 SPACES @ 3" = 2'-3"	7 SPACES @ 3" = 1'-9"	CCI-AFP-06010025 / EXISTING FLAT PLATE
90'-6"	SP-2 ¹	2	7'-4"	6"	1"	9 SPACES @ 3" = 2'-3"	16 SPACES @ 3" = 4'-0"	CCI-AFP-06010035 / CCI-AFP-08512535
55'-5"	SP-5	2	9'-1"	8 1/2"	1 1/4"	16 SPACES @ 3" = 4'-0"	16 SPACES @ 3" = 4'-0"	CCI-AFP-08512535 / CCI-AFP-08512535

1. SPACER PLATE (SPL-1) TO BE ALIGNED WITH THE BOTTOM OF THE TOP REINFORCEMENT PIECE.



SPACER PLATE
FRONT VIEW

SPL-1
S-11

DETAIL
NTS

PREPARED BY:



PREPARED FOR:

**CROWN
CASTLE**



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

SUBMITTALS

DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:

16BFCG1400

SITE NAME:

**SOUTHINGTON,
SMORON**

SITE NUMBER:

876334

SITE ADDRESS:

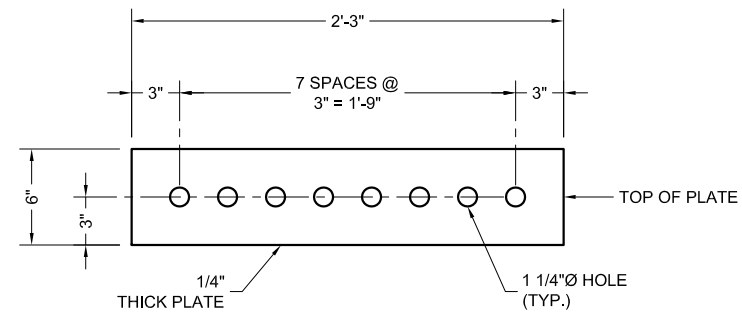
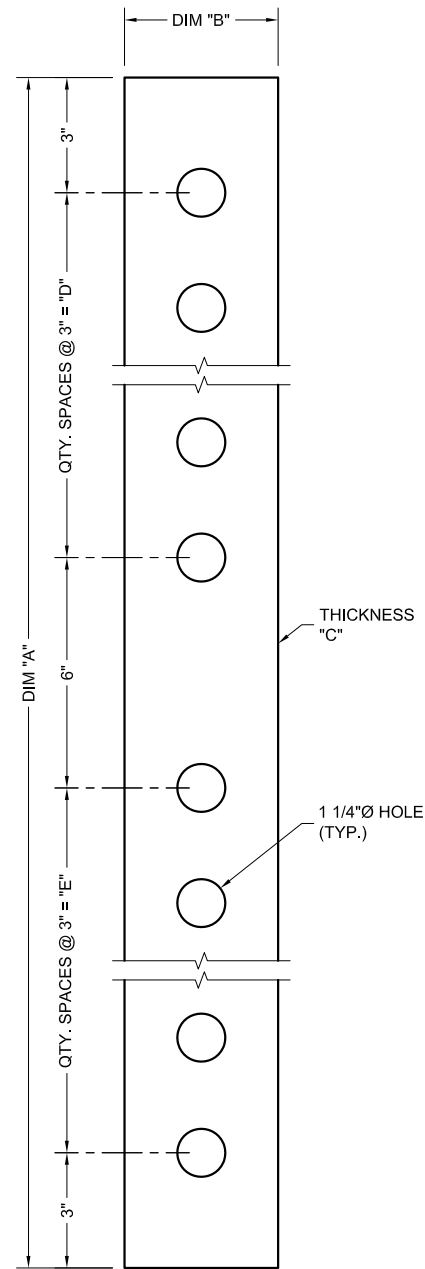
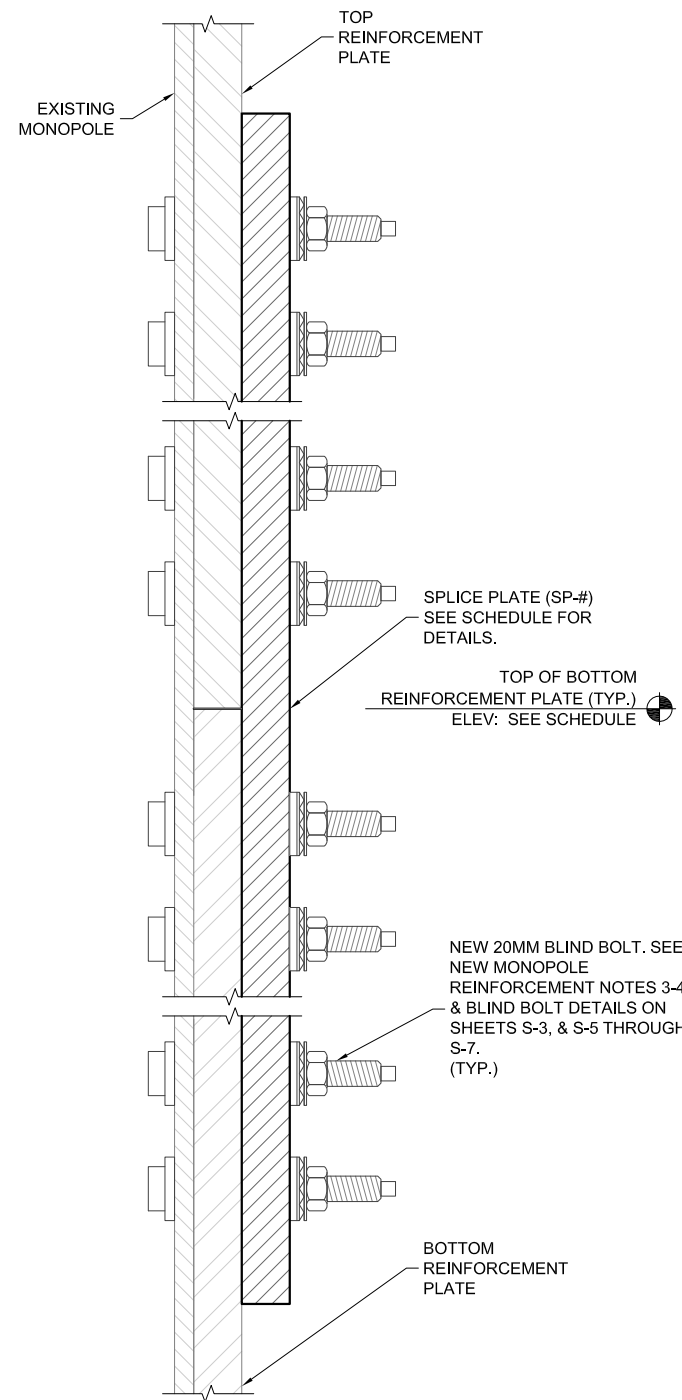
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE

SPLICE PLATE
INSTALLATION DETAILS I

SHEET NUMBER

S-11



SPLICE PLATE ASSEMBLY
FRONT AND SIDE VIEW

1
S-12

DETAIL
NTS

SPACER PLATE
FRONT VIEW

SPL-2
S-12

DETAIL
NTS

SPLICE PLATE FABRICATION SCHEDULE								
ELEVATION	PART NO.	QUANTITY	DIMENSION "A"	DIMENSION "B"	THICKNESS "C"	QTY. SPACES @ 3" = "D"	QTY. SPACES @ 3" = "E"	TOP/BTM. REINF. PLATE
80'-6"	SP-3	3	4'-6"	6"	1"	7 SPACES @ 3" = 1-9"	7 SPACES @ 3" = 1-9"	EXISTING FLAT PLATE / EXISTING FLAT PLATE
60'-6"	SP-4 ¹	3	5'-3"	6"	1"	7 SPACES @ 3" = 1-9"	10 SPACES @ 3" = 2-6"	EXISTING FLAT PLATE / EXISTING FLAT PLATE
30'-6"	SP-6 ²	3	5'-3"	6"	1"	10 SPACES @ 3" = 2-6"	7 SPACES @ 3" = 1-9"	EXISTING FLAT PLATE / EXISTING FLAT PLATE

1. SPACER PLATE (SPL-2) TO BE ALIGNED WITH THE BOTTOM OF THE TOP REINFORCEMENT PIECE.
2. SPACER PLATE (SPL-2) TO BE ALIGNED WITH THE TOP OF THE BOTTOM REINFORCEMENT PIECE.

PREPARED BY:



PREPARED FOR:

**CROWN
CASTLE**



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:

16BFCG1400

SITE NAME:

**SOUTHINGTON,
SMORON**

SITE NUMBER:

876334

SITE ADDRESS:

**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE


SPLICE PLATE
INSTALLATION DETAILS II

SHEET NUMBER

S-12

TRANSFER STIFFENER EXTENSION INSTALLATION SCHEDULE			
PART NO.	QUANTITY	DESCRIPTION	ELEVATION
TSE-1	4	TRANSFER STIFFENER EXTENSION	0'-1"± TO 25'-6"±

PREPARED BY:



ENGINEERING INNOVATION
VELOCITEL, INC., d.b.a. FDH VELOCITEL
6521 MERIDIAN DRIVE RALEIGH, NC 27618
PHONE: 919-755-1012 FAX: 919-755-1031

PREPARED FOR:

CROWN CASTLE



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'D: DDA

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:
16BFCG1400

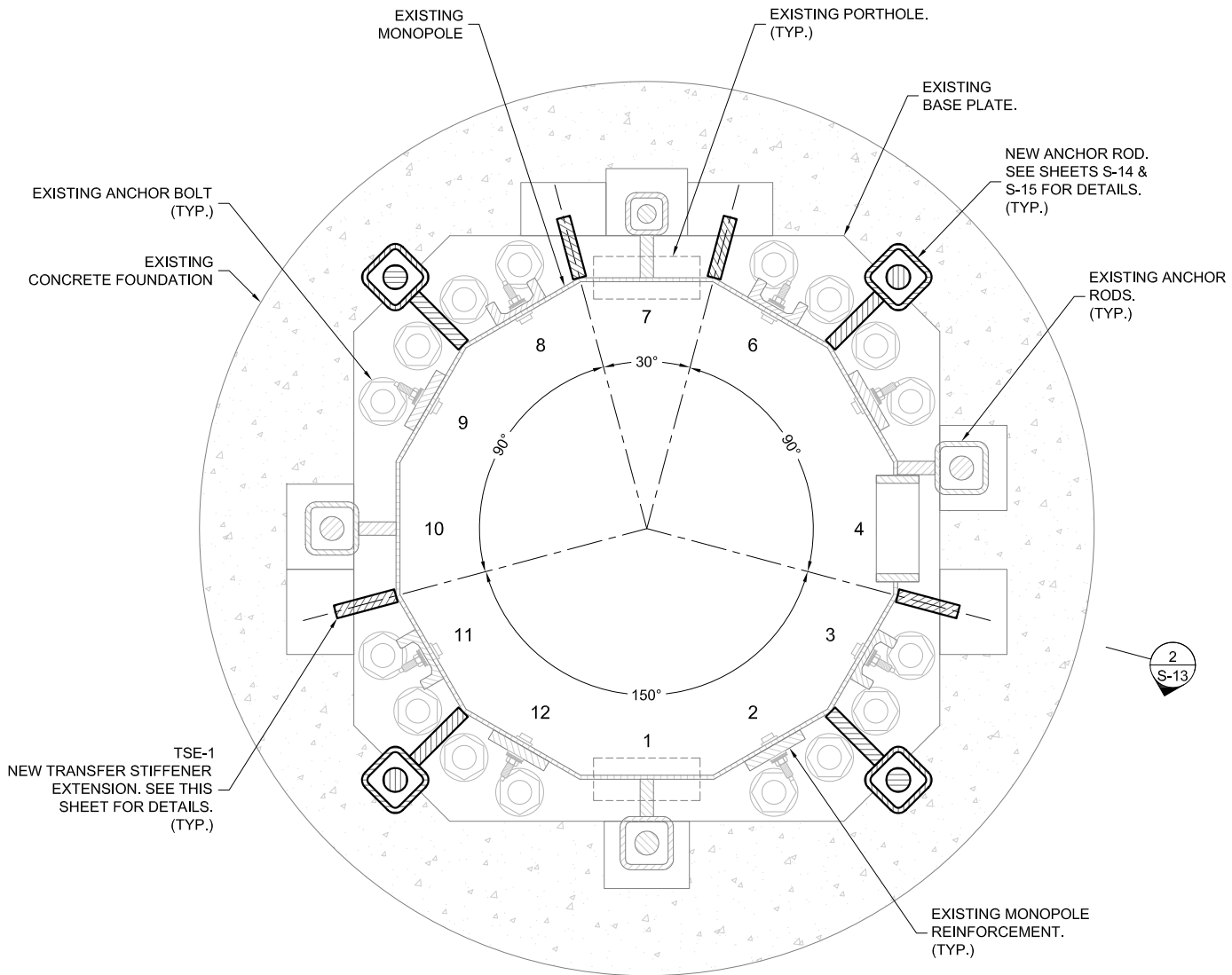
SITE NAME:
**SOUTHINGTON,
SMORON**

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE
TRANSFER STIFFENER EXTENSION
INSTALLATION DETAILS

SHEET NUMBER
S-13



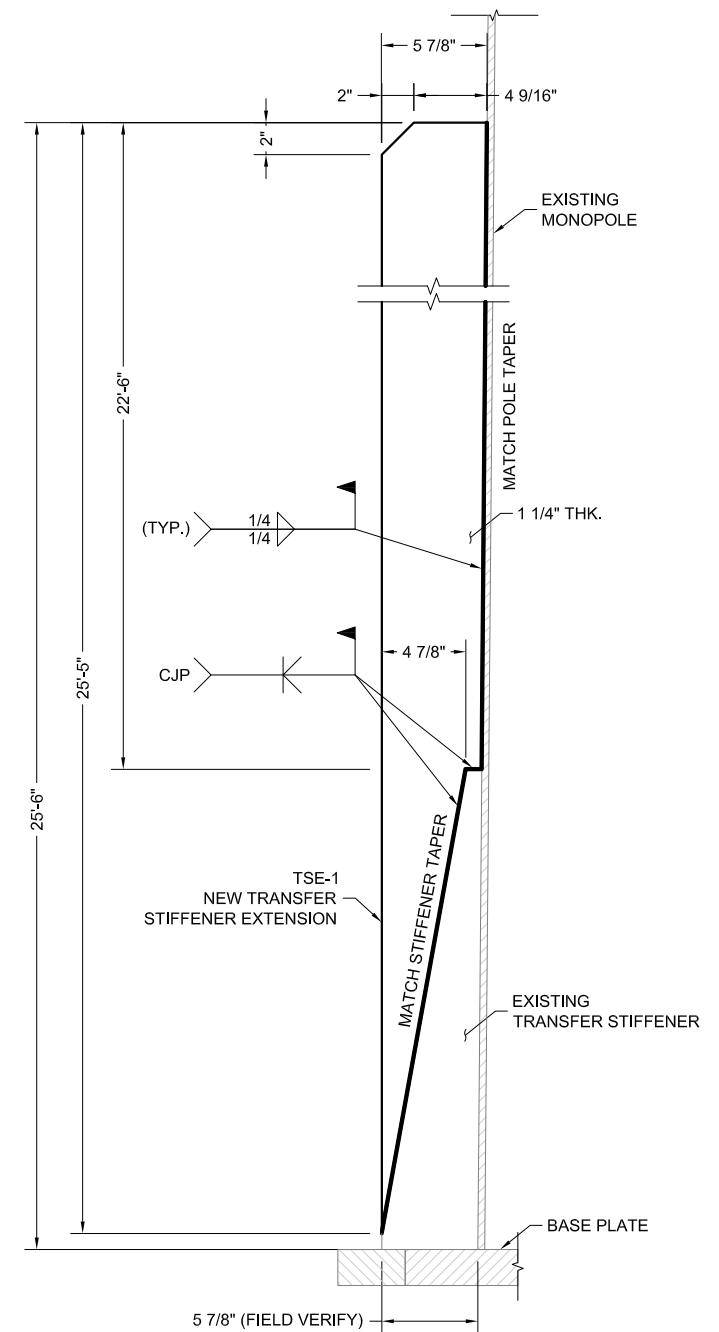
TRANSFER STIFFENER EXTENSION LAYOUT
SECTION VIEW

1 SECTION
S-13 NTS

TOP OF INSTALLATION
ELEV: SEE SCHEDULE

ANCHOR BOLTS NOT
SHOWN FOR CLARITY

BTM. OF INSTALLATION
ELEV: SEE SCHEDULE



TRANSFER STIFFENER
ELEVATION VIEW

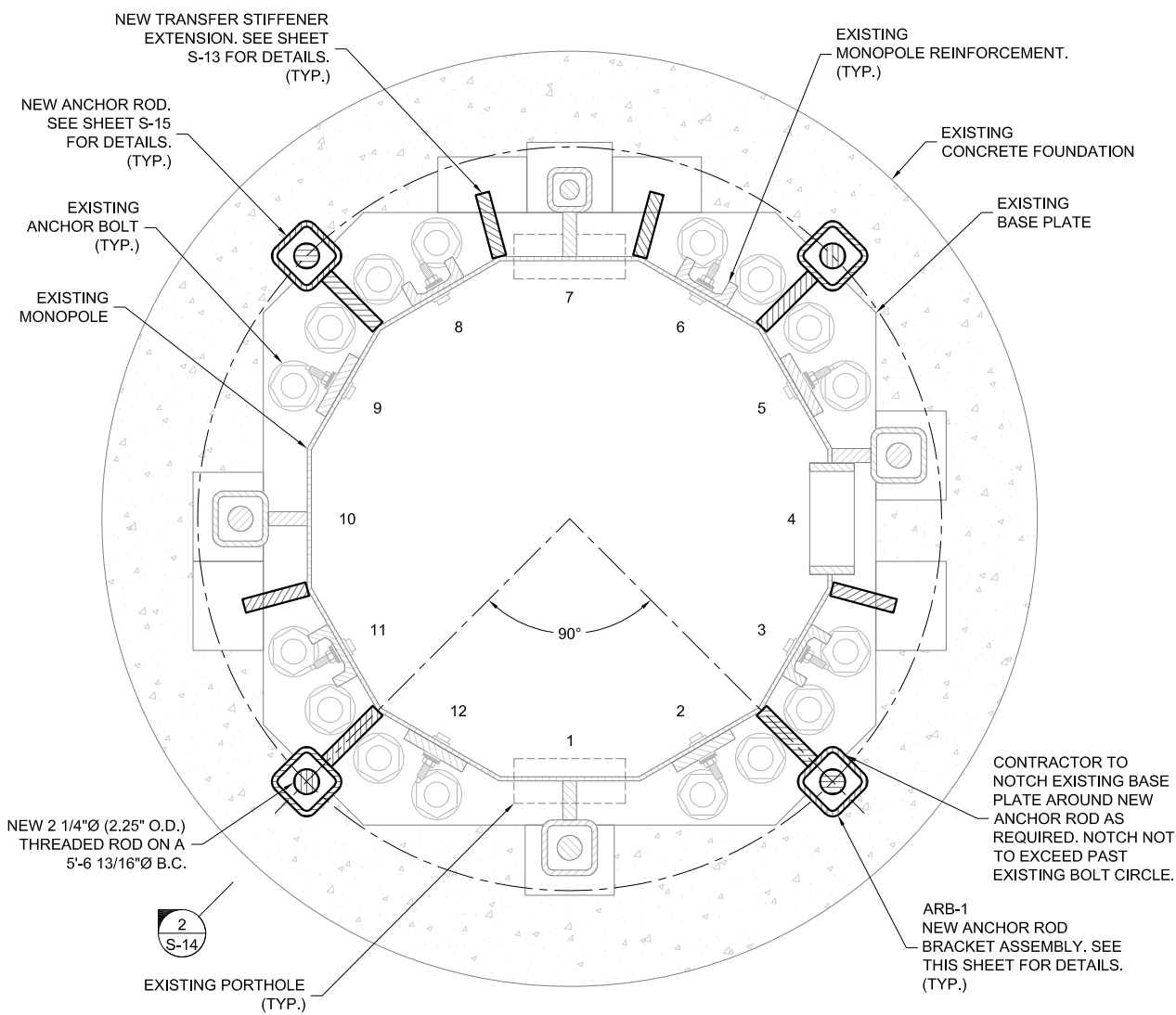
2 DETAIL
S-13 NTS

ANCHOR ROD INSTALLATION SCHEDULE

THREADED ROD ¹				ANCHOR ROD BRACKET	PLATE WASHER
ELEVATION	ASSEMBLY	DIA.	LENGTH	ASSEMBLY	SIZE
-6'-10"± TO 3'-6 1/2"±	(2) CCI-AR-0225	2 1/4" (2 1/4" O.D.)	10'-7 1/2"±	(2) ARB-1	(4) 5 1/2" x 5 1/2" x 1 1/4" W/ 2 1/2"Ø HOLE

1. ALL THREADED RODS TO RECEIVE (3) HEAVY HEX NUTS, (1) LOCK WASHER AND BOND BREAKER TAPE AS REQUIRED.

- CONTRACTOR TO PROVIDE PHOTOS OF THE ANCHOR ROD HOLES TO EOR PRIOR TO INSTALLING NEW ANCHOR RODS. PHOTOS MUST SHOW THE DEPTH AND DIAMETER OF ANCHOR ROD HOLES.
- PULL TEST SHOULD BE PERFORMED PER PULL TEST NOTES ON SHEET S-4. THE TARGET TENSION FOR THIS PULL TEST IS 190K.
- ANCHOR ROD CUT END TO BE INSTALLED INSIDE OF DRILLED HOLE.

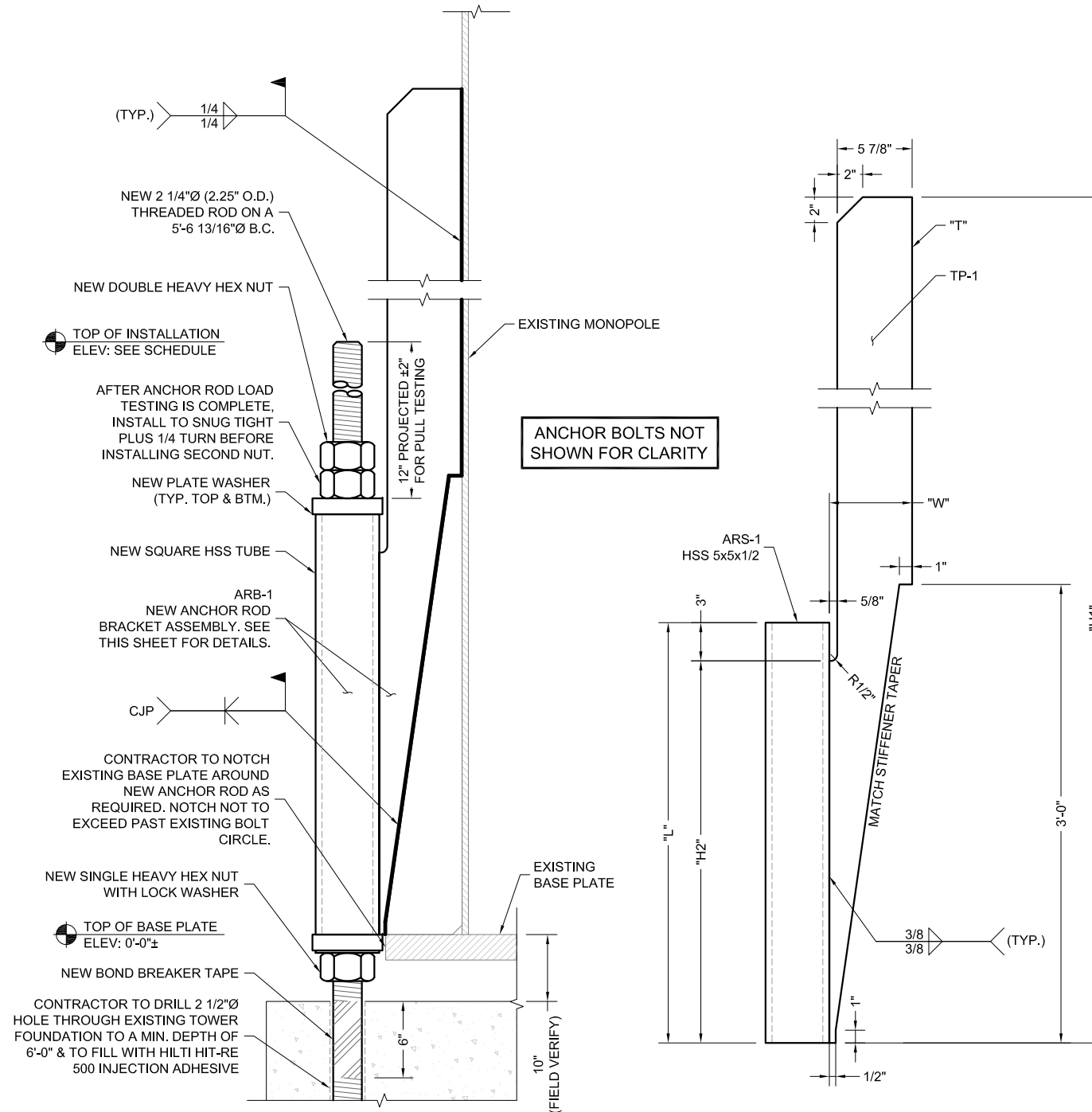


ANCHOR ROD LAYOUT PLAN VIEW

1 SECTION
S-14 NTS

ANCHOR ROD BRACKET FABRICATION SCHEDULE

ANCHOR ROD BRACKET	TRANSFER PLATE						ANCHOR ROD SLEEVE		
ASSEMBLY NO.	PART NO.	QTY.	HEIGHT "H1"	HEIGHT "H2"	WIDTH "W"	THICKNESS "T"	PART NO.	QTY.	LENGTH "L"
ARB-1	TP-1	1	25'-6"	2'-6"	6 1/2"	1 1/4"	ARS-1	1	2'-9"



ANCHOR ROD BRACKET WELD DETAIL ELEVATION VIEW

2 SECTION
S-14 NTS

ANCHOR ROD BRACKET TOP & SIDE VIEW

ARB-1 SECTION
S-14 NTS

PREPARED BY:



PREPARED FOR:

CROWN CASTLE



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:

16BFCG1400

SITE NAME:
**SOUTHINGTON,
SMORON**

SITE NUMBER:
876334

SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE

ANCHOR ROD
INSTALLATION DETAILS I

SHEET NUMBER

S-14

ANCHOR ROD INSTALLATION SCHEDULE

THREADED ROD ¹				ANCHOR ROD BRACKET	PLATE WASHER
ELEVATION	ASSEMBLY	DIA.	LENGTH	ASSEMBLY	SIZE
-6'-10"± TO 3'-6 1/2"±	(2) CCI-AR-0225	2 1/4" (2 1/4" O.D.)	10'-7 1/2"±	(2) ARB-2	(4) 5 1/2" x 5 1/2" x 1 1/4" W/ 2 1/2"Ø HOLE

1. ALL THREADED RODS TO RECEIVE (3) HEAVY HEX NUTS, (1) LOCK WASHER AND BOND BREAKER TAPE AS REQUIRED.

- CONTRACTOR TO PROVIDE PHOTOS OF THE ANCHOR ROD HOLES TO EOR PRIOR TO INSTALLING NEW ANCHOR RODS. PHOTOS MUST SHOW THE DEPTH AND DIAMETER OF ANCHOR ROD HOLES.
- PULL TEST SHOULD BE PERFORMED PER PULL TEST NOTES ON SHEET S-4. THE TARGET TENSION FOR THIS PULL TEST IS 190K.
- ANCHOR ROD CUT END TO BE INSTALLED INSIDE OF DRILLED HOLE.

ANCHOR ROD BRACKET FABRICATION SCHEDULE

ANCHOR ROD BRACKET	TRANSFER PLATE						ANCHOR ROD SLEEVE		
ASSEMBLY NO.	PART NO.	QTY.	HEIGHT "H1"	HEIGHT "H2"	WIDTH "W"	THICKNESS "T"	PART NO.	QTY.	LENGTH "L"
ARB-2	TP-2	1	2'-6"	2'-0 1/2"	6 1/2"	1 1/4"	ARS-2	1	2'-9 1/2"

PREPARED BY:



ENGINEERING INNOVATION
VELOCITEL, INC., d.b.a. FDH VELOCITEL
6521 MERIDIAN DRIVE RALEIGH, NC 27616
PHONE: 919-755-1012 FAX: 919-755-1031

PREPARED FOR:

CROWN CASTLE



DENNIS D. ABEL, PE
CONNECTICUT LIC. NO. 23247

DRAWN BY: JMR
CHECKED BY: BA
ENG APP'VD: DDA

SUBMITTALS		
DATE	DESCRIPTION	REV
05/02/16	CONSTRUCTION	0

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FDH VELOCITEL PROJECT NUMBER:

16BFCG1400

SITE NAME:
**SOUTHINGTON,
SMORON**

SITE NUMBER:
876334

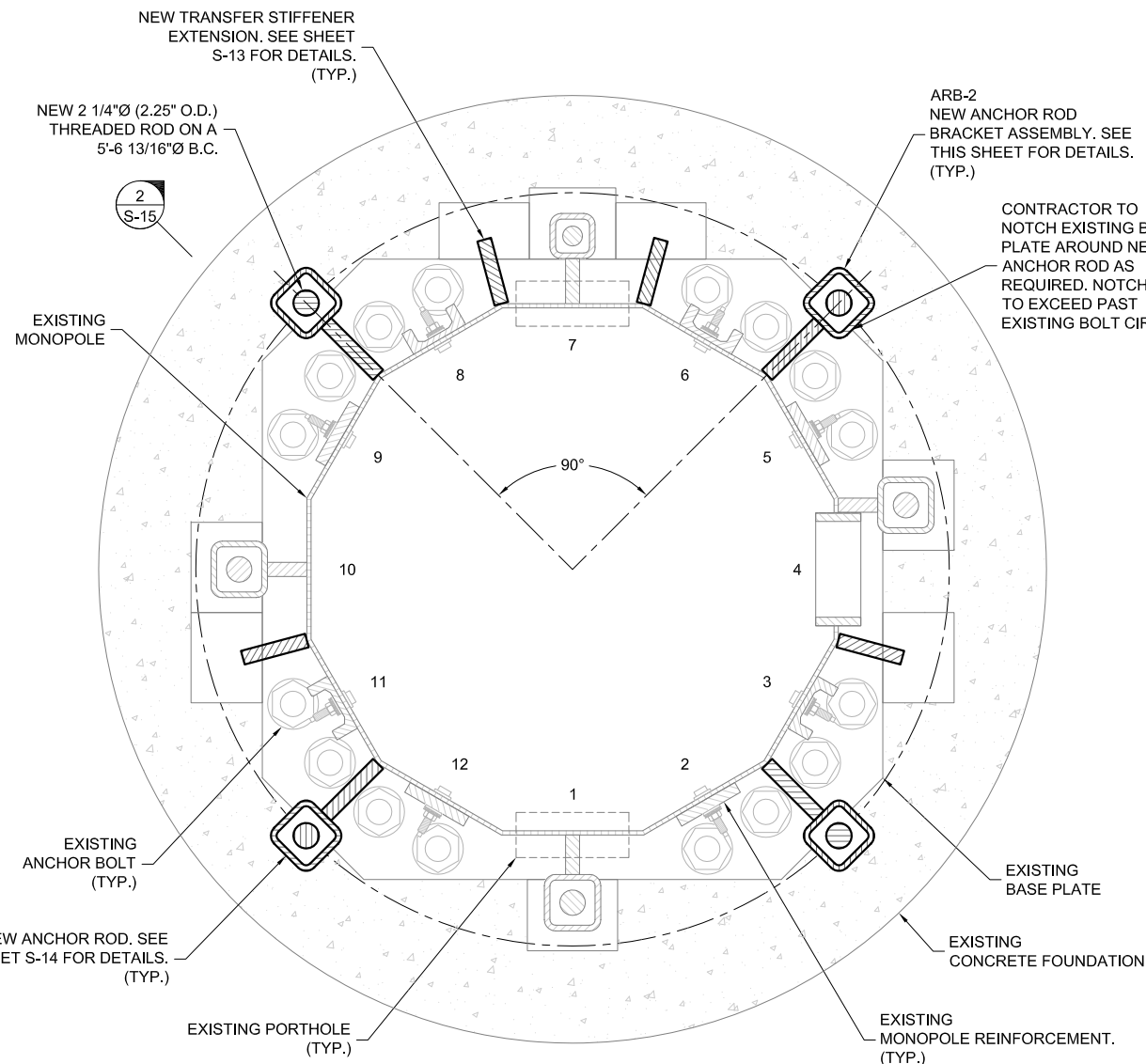
SITE ADDRESS:
**625 SPRING STREET
SOUTHINGTON, CT 06489**

SHEET TITLE

ANCHOR ROD
INSTALLATION DETAILS II

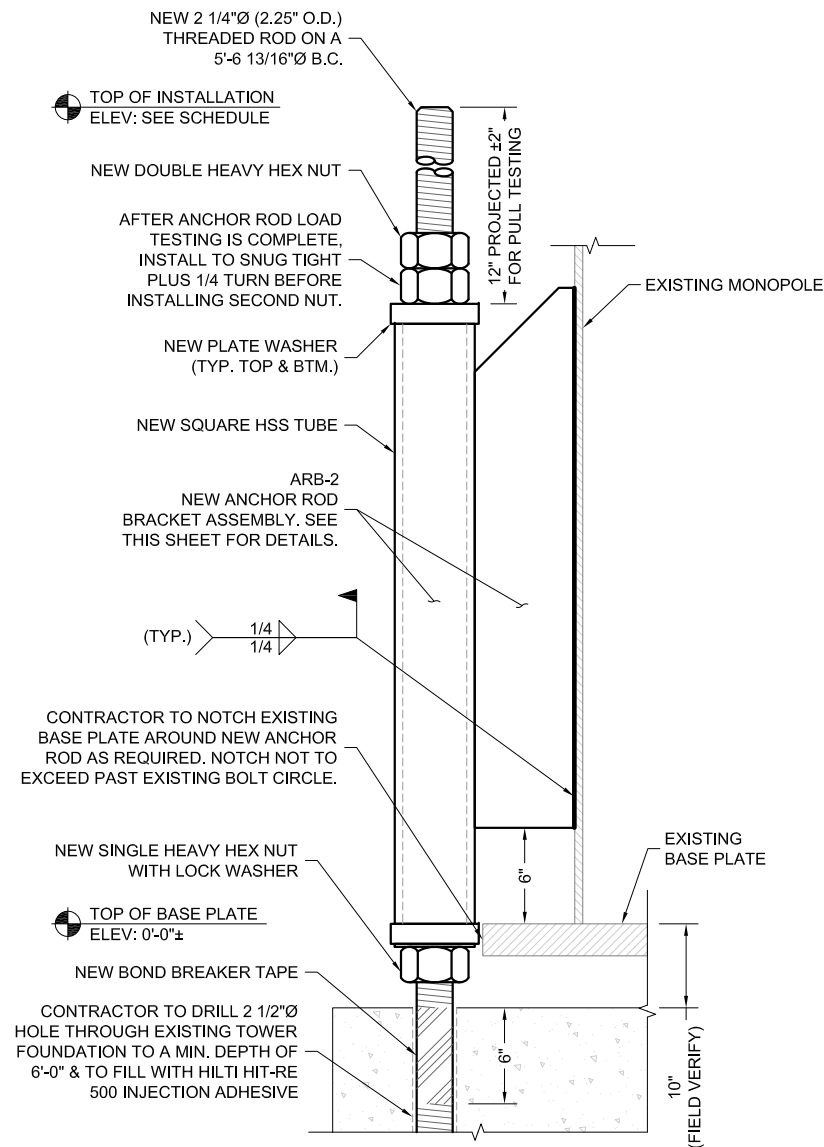
SHEET NUMBER

S-15



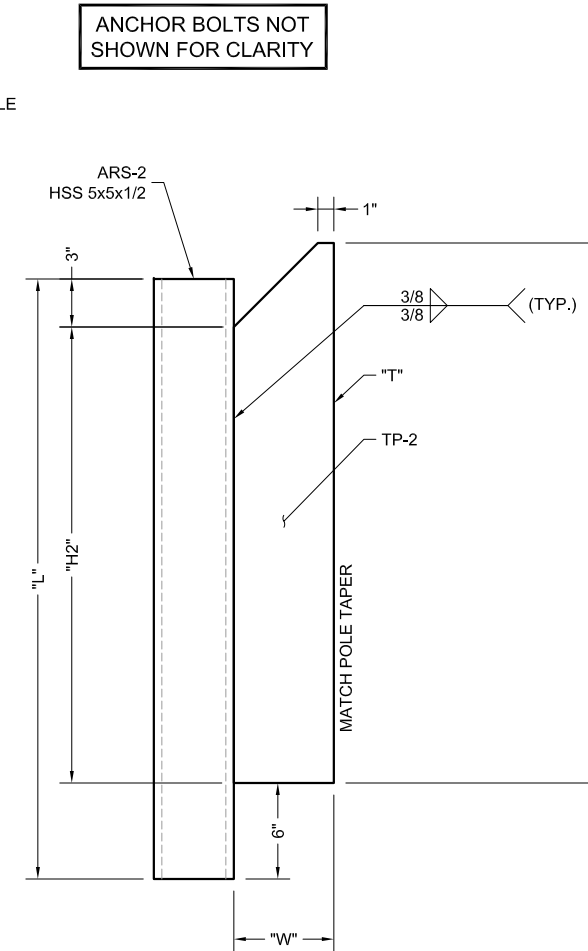
ANCHOR ROD LAYOUT
PLAN VIEW

1 SECTION
S-15 NTS



ANCHOR ROD BRACKET WELD DETAIL
ELEVATION VIEW

2 SECTION
S-15 NTS



ANCHOR ROD BRACKET
TOP & SIDE VIEW

ARB-2 SECTION
S-15 NTS

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

AT&T Existing Facility

Site ID: CT5250

**Southington North
626 Spring Street
Southington, CT 06489**

February 25, 2016

EBI Project Number: 6216000899

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.15 %

February 25, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5250 – Southington North**

EBI Consulting was directed to analyze the proposed AT&T facility located at **626 Spring Street, Southington, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **626 Spring Street, Southington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 GSM channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 7) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) 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.
- 9) For the following calculations the sample point was the top of a six 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.
- 10) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, Commscope SBNH-1D6565C and the KMW AM-X-CD-16-65-00T-RET** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) 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.
- 11) The antenna mounting height centerline of the proposed antennas is **157 feet** above ground level (AGL).
- 12) 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.

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope SBNH-1D6565C	Make / Model:	KMW AM-X-CD-16-65- 00T-RET	Make / Model:	Commscope SBNH-1D6565C
Gain:	14.45 / 15.85 dBd	Gain:	13.85 / 15.25 dBd	Gain:	14.45 / 15.85 dBd
Height (AGL):	157 feet	Height (AGL):	157 feet	Height (AGL):	157 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	7,958.45	ERP (W):	6,931.52	ERP (W):	7,958.45
Antenna A1 MPE%	1.66	Antenna B1 MPE%	1.44	Antenna C1 MPE%	1.66
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA- 65R-LCUU-H6	Make / Model:	CCI OPA- 65R-LCUU-H6
Gain:	15.45 / 14.85 dBd	Gain:	15.45 / 14.85 dBd	Gain:	15.45 / 14.85 dBd
Height (AGL):	157 feet	Height (AGL):	157 feet	Height (AGL):	157 feet
Frequency Bands	2300 MHz (WCS) / 1900 MHz (PCS)	Frequency Bands	2300 MHz (WCS) / 1900 MHz (PCS)	Frequency Bands	2300 MHz (WCS) / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	7,874.93	ERP (W):	7,874.93	ERP (W):	7,874.93
Antenna A2 MPE%	1.24	Antenna B2 MPE%	1.24	Antenna C2 MPE%	1.24
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope SBNH-1D6565C	Make / Model:	KMW AM-X-CD-16-65- 00T-RET	Make / Model:	Commscope SBNH-1D6565C
Gain:	13.65 dBd	Gain:	13.35 dBd	Gain:	13.65 dBd
Height (AGL):	157 feet	Height (AGL):	157 feet	Height (AGL):	157 feet
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	2	Channel Count	4	Channel Count	2
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,780.87	ERP (W):	2,595.26	ERP (W):	2,780.87
Antenna A3 MPE%	0.94	Antenna B3 MPE%	0.88	Antenna C3 MPE%	0.94

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	3.84 %
Sprint	0.94 %
MetroPCS	0.69 %
Verizon Wireless	4.20 %
Nextel	0.48 %
Site Total MPE %:	10.15 %

AT&T Sector 1 Total:	3.84 %
AT&T Sector 2 Total:	3.56 %
AT&T Sector 3 Total:	3.84 %
Site Total:	10.15 %

AT&T_Max Sectors (Sectors A & C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 2300 MHz (WCS) LTE	2	2104.51	157	6.64	2300	1000	0.66 %
AT&T 1900 MHz (PCS) LTE	2	1832.95	157	5.78	1900	1000	0.58 %
AT&T 700 MHz LTE	2	1390.44	157	4.38	700	467	0.94 %
AT&T 850 MHz UMTS	2	835.84	157	2.64	850	567	0.46 %
AT&T 1900 MHz (PCS) UMTS	2	1153.78	157	3.64	1900	1000	0.36 %
AT&T 850 MHz GSM	2	835.84	157	2.64	850	567	0.46 %
AT&T 1900 MHz (PCS) GSM	2	1153.78	157	3.64	1900	1000	0.36 %
						Total:	3.84 %

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 AT&T 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:

AT&T Sector	Power Density Value (%)
Sector 1:	3.84 %
Sector 2:	3.56 %
Sector 3 :	3.84 %
AT&T Maximum Total (per sector):	3.84 %
Site Total:	10.15 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **10.15%** 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.



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