



June 12, 2017

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

Regarding: Notice of Exempt Modification – Swap of Antennas and Remote Radio Heads (“RRUS”)
Property Address: Christian Hill Road (100 Berlin Road) Cromwell, CT
AT&T Site: CT5144

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 111-foot self-support tower at the above-referenced address, latitude 41.606210, longitude -72.701206. Said self-support is owned by American Tower Corporation. The existing equipment shelter is 16’ by 8’, totaling 128 square feet.

AT&T desires to modify its existing telecommunications facility by swapping (3) antennas and (3) RRUs. The centerline height of said antennas is and will remain at 98 feet. Antennas are mounted utilizing a low-profile platform with handrails.

Please accept this application as notification pursuant to R.C.S.A. §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.C.S.A. §16-50j-73, a copy of this letter is being sent to the Honorable Enzo Faienza, Mayor of the Town of Cromwell and to the Director of Planning and Development Stuart B. Popper. A copy of this letter is also being sent to the tower and property owner 100 Berlin Holdings, LLC and the tower owner American Tower Corporation.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The antennas to be swapped will be installed at the existing height of 98 feet on the 111-foot self-support tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (attached) for AT&T's modified facility is herein provided.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The self-support tower and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by American Tower dated May 10, 2017).

For the foregoing reasons, AT&T respectfully requests that the proposed antenna and RRU swap be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Sarah Snell

Sarah Snell
Site Acquisition Specialist

cc: The Honorable Enzo Faienza, Mayor of the Town of Cromwell (municipality)
Director of Planning and Development Stuart B. Popper
100 Berlin Holdings, LLC (property owner)
American Tower Corporation (tower owner)

Google Directions Zoom

Google Maps Link
Town of Cromwell
Property Record Card

Property

Address 100 BERLIN ROAD
ID 00459100
Map ID 07 21

Ownership

Name 100 BERLIN HOLDINGS LLC
Address 12 TIDEWATER DRIVE
ORMOND BEACH, FL 32174

Valuation

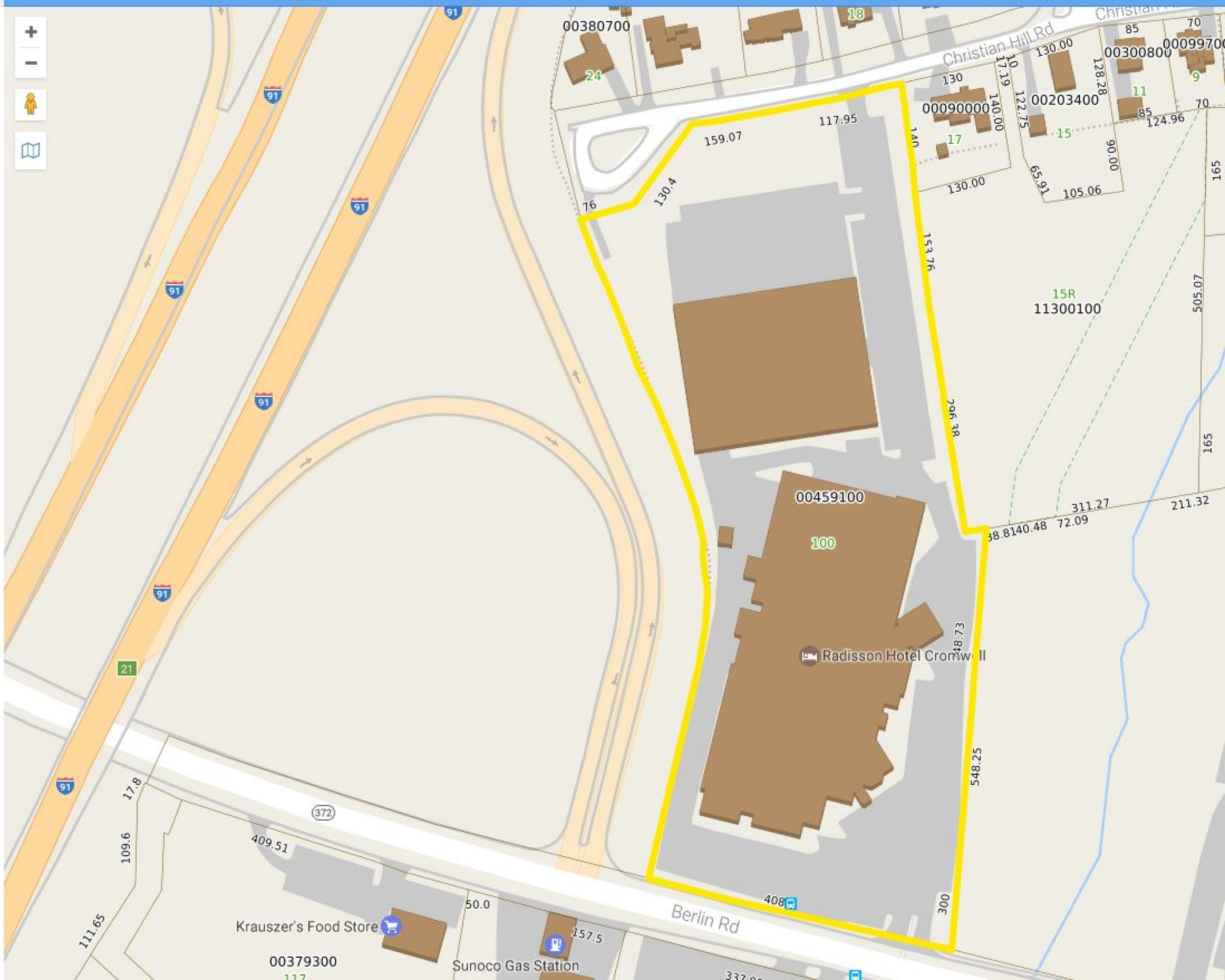
Total \$7,722,560
Land \$1,424,560
Last Sale \$7,500,000 on 2015-04-07
Book/Page 1520/134

Land

Sewer Laterals

Sewer Lateral Card

1498





WIRELESS COMMUNICATIONS FACILITY

CT5144- LTE BWE

CROMWELL SOUTH

AMERICAN TOWER CORPORATION SITE : 411261

100 CHRISTIAN HILL ROAD

CROMWELL, CT 06416

GENERAL NOTES

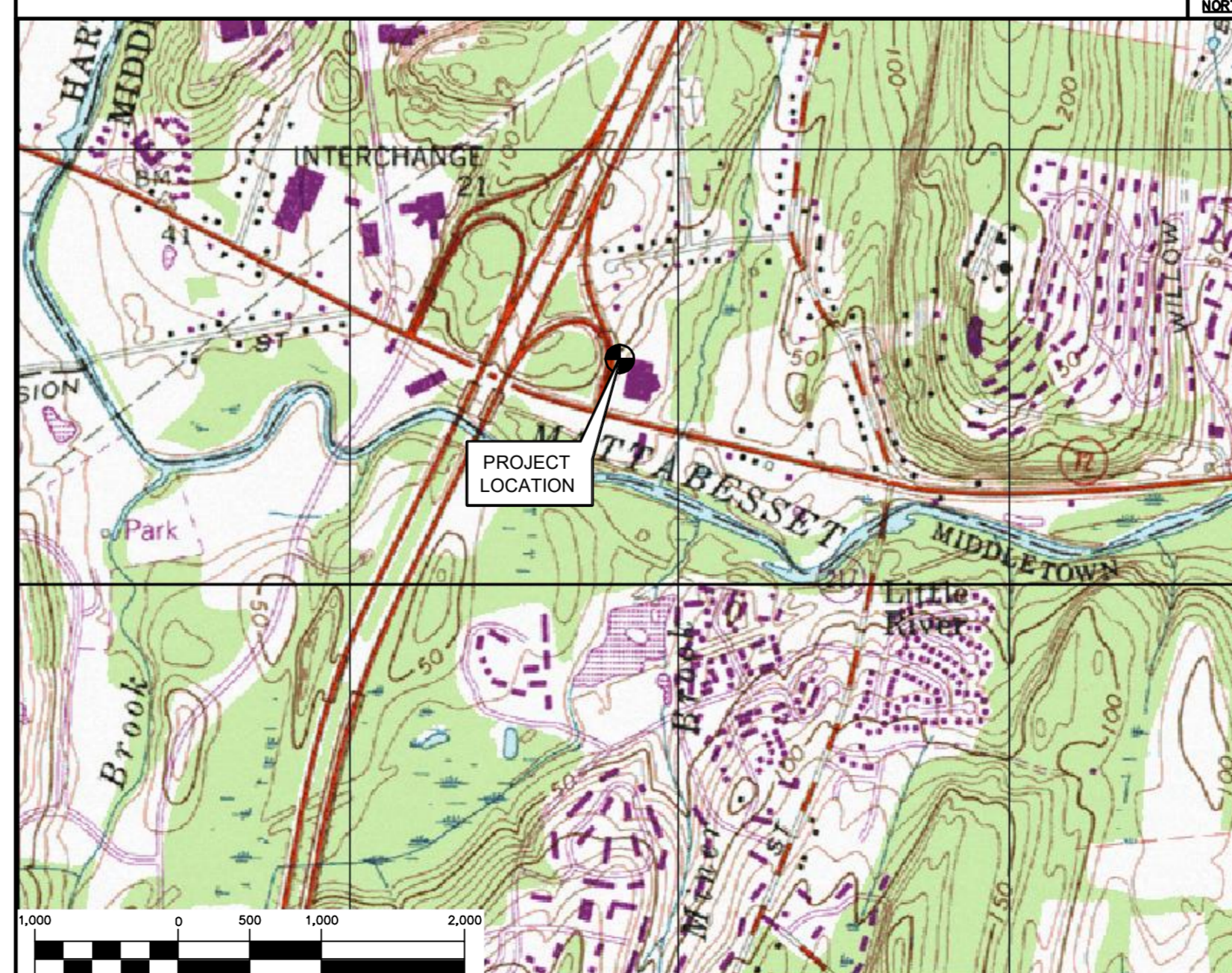
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE 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.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM:	500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	TO:	100 CHRISTIAN HILL ROAD CROMWELL, CONNECTICUT
1.	TAKE BROOK ST TO CT-3 S	1.5	MI
2.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.3	MI
3.	TURN RIGHT ONTO CAPITAL BLVD	0.2	MI
4.	TURN RIGHT ONTO HENKEL WAY	0.2	MI
5.	TURN RIGHT ONTO BROOK ST	0.8	MI
6.	TAKE COLES RD TO CHRISTIAN HILL RD IN CROMWELL	3.0	MI
7.	TURN LEFT ONTO CT-3 S	1.1	MI
8.	TURN RIGHT ONTO COLES RD	1.9	MI
9.	DRIVE TO CHRISTIAN HILL RD	0.2	MI
10.	TURN RIGHT ONTO CHRISTIAN HILL RD	0.2	MI
11.	TURN LEFT TO STAY ON CHRISTIAN HILL RD	10	FT
12.	ARRIVE AT 100 CHRISTIAN HILL ROAD		

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
 - A. REMOVE AND REPLACE EXISTING LTE ANTENNA FOR PROPOSED LTE (12) PORT ANTENNA, (1) PER SECTOR.
 - B. REMOVE AND REPLACE (3) EXISTING RRUS-11 AND INSTALL (3) PROPOSED RRUS-32 B2 BEHIND EXISTING ANTENNAS.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5144
AT&T SITE NAME:	CROMWELL SOUTH
SITE ADDRESS:	AMERICAN TOWER CORP. SITE NO.: 411261 100 CHRISTIAN HILL ROAD CROMWELL, CT 06416
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CEN TEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-36'-20.13" N LONGITUDE: 72°-42'-06.84" W GROUND ELEVATION: ±72' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS AND ELEVATION	0
C-2	LTE BWE EQUIPMENT DETAILS	0
E-1	ELECTRICAL DETAILS AND NOTES	0

PROFESSIONAL ENGINEER SEAL



CEN TEK engineering
 Centek on Solutions™
 (203) 488-0360
 (203) 488-8387 Fax
 63-2 North Branford Road
 Branford, CT 06405
 www.CentekEng.com

AT&T MOBILITY
 WIRELESS COMMUNICATIONS FACILITY
CROMWELL SOUTH
CT5144 - LTE BWE
100 CHRISTIAN HILL ROAD
CROMWELL, CT 06416

DATE: 11/15/16
 SCALE: AS NOTED
 JOB NO. 16071.88

TITLE SHEET

T-1
 Sheet No. 1 of 5

REV. DATE DRAWN BY CHK'D BY
 0 11/29/16 HMR
 CAG
 CONSTRUCTION DOCUMENTS - ISSUED FOR CLIENT REVIEW

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 100-120 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (V_{wd}) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

- ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
- DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
- DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
- ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
- AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
- THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
- THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
- ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
- NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
- REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
 - STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
 - STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
 - STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
 - STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
 - PIPE---ASTM A53 (FY = 35 KSI)
 - CONNECTION BOLTS---ASTM A325-N
 - U-BOLTS---ASTM A36
 - ANCHOR RODS---ASTM F 1554
 - WELDING ELECTRODE---ASTM E 70XX
- CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
- CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
- STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
- LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
- MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- FABRICATE BEAMS WITH MILL CAMBER UP.
- LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
- COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:

- SHERWIN WILLIAMS POLANE-B
- COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.

2. COAXIAL CABLES:

- ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
- TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
- COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

- DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
- VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
- TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
- PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
- CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
- IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
- ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH-PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
- FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
- GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON-PETROLEUM-BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
- ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
- COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

- COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

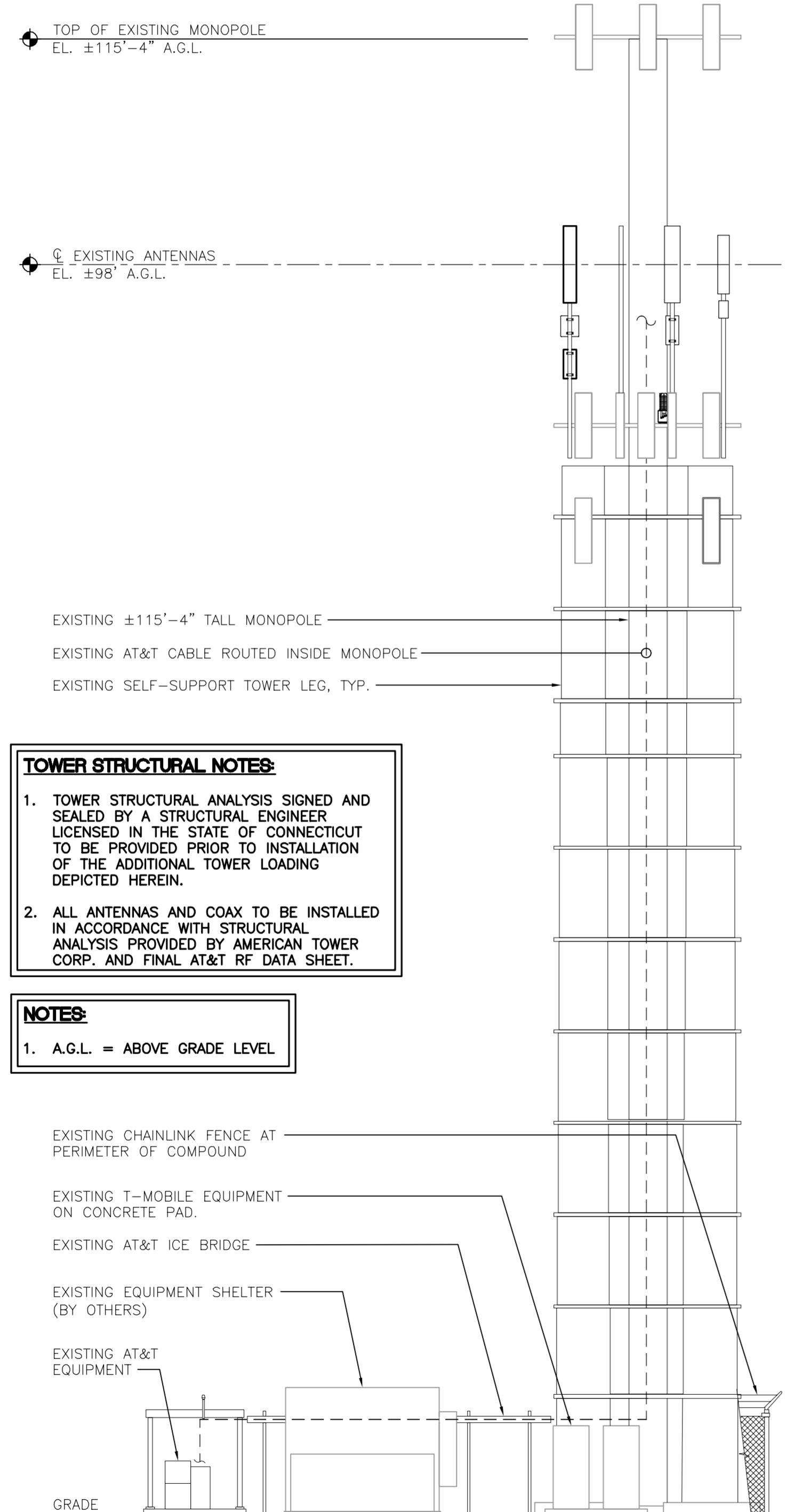
APPLICATION:

- APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
- APPLY EACH COAT TO UNIFORM FINISH.
- APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
- SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
- VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
- ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

- SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
- MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

ISSUED FOR CLIENT REVIEW	
CONSTRUCTION DOCUMENTS	CAG
DRAWN BY/CHK'D	HMR
DATE	11/29/16
REV.	0
PROFESSIONAL ENGINEER SEAL	
   <small>(203) 488-0360 (203) 488-8387 Fax 65-2 North Branford Road Branford, CT 06405 www.CentekEng.com</small>	
AT&T MOBILITY <small>WIRELESS COMMUNICATIONS FACILITY</small> CROMWELL SOUTH CT5144 - LTE BWE 100 CHRISTIAN HILL ROAD CROMWELL, CT 06416	
DATE:	11/15/16
SCALE:	AS NOTED
JOB NO.	16071.68
NOTES AND SPECIFICATIONS	
<h1 style="font-size: 2em;">N-1</h1>	
Sheet No. 2	of 5



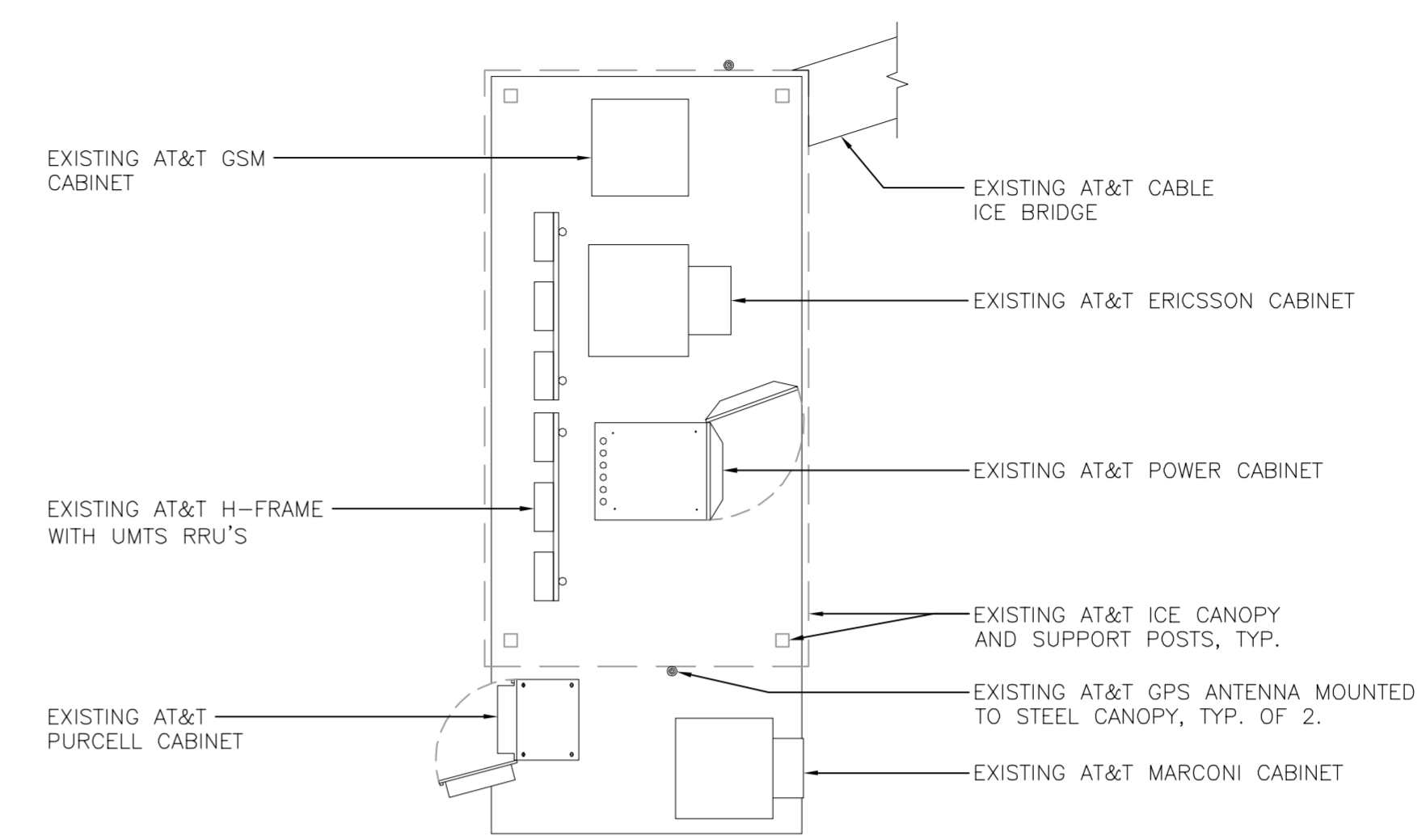
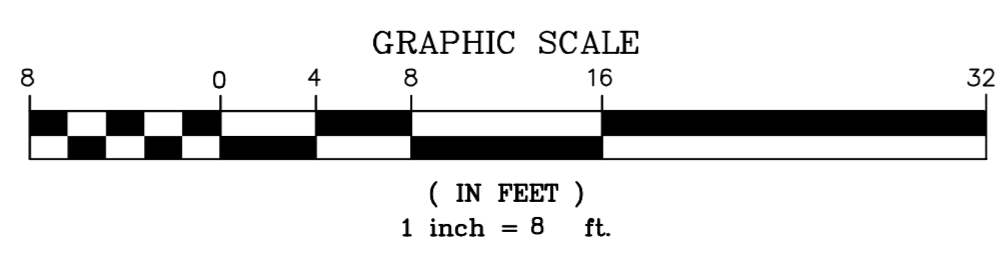
TOWER STRUCTURAL NOTES:

1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER CORP. AND FINAL AT&T RF DATA SHEET.

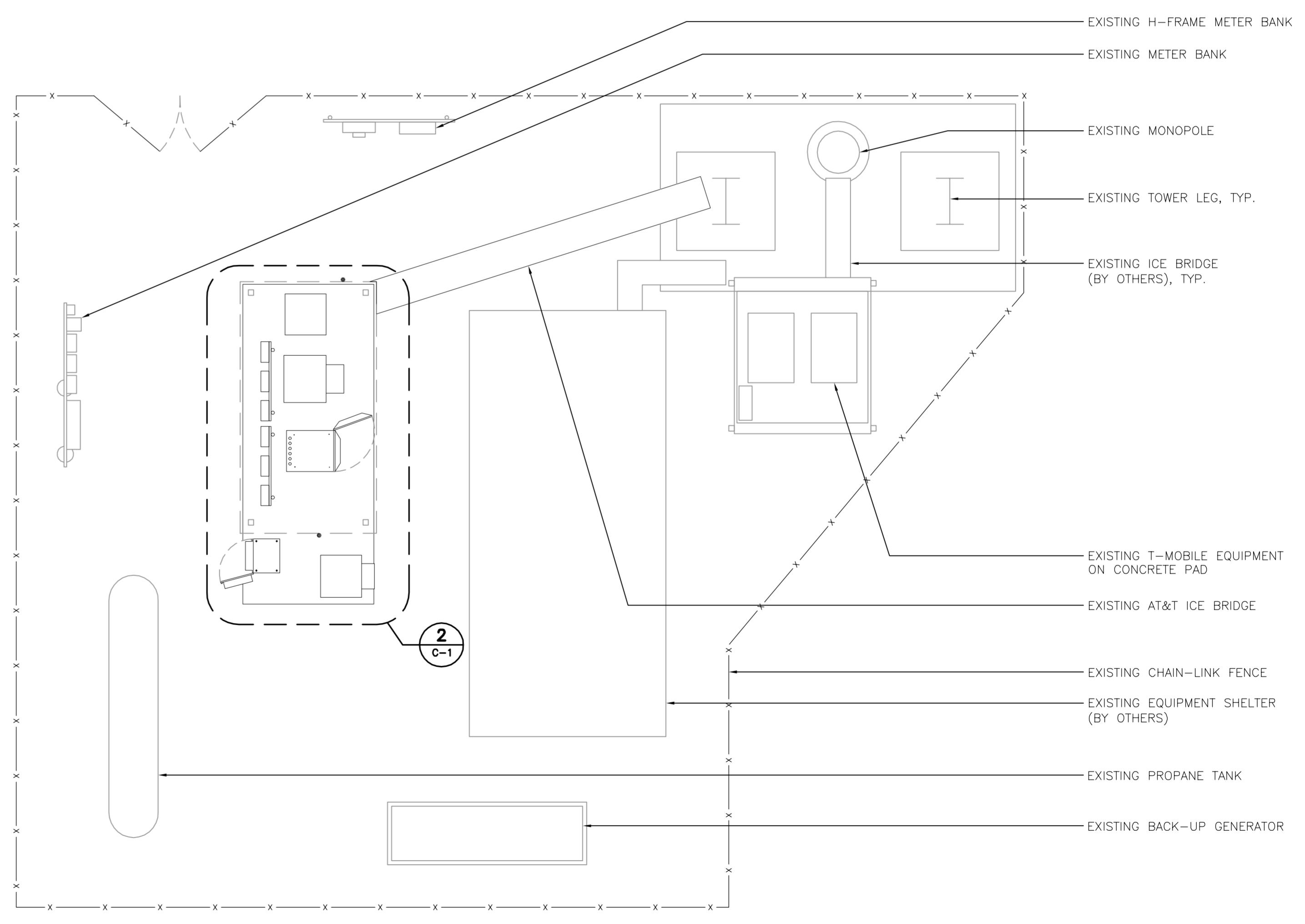
NOTES:

1. A.G.L. = ABOVE GRADE LEVEL

3 TOWER ELEVATION
SCALE: 1/8" = 1'-0"



2 EQUIPMENT LAYOUT PLAN
SCALE: 1/4" = 1'-0" TRUE NORTH



1 COMPOUND PLAN
SCALE: 3/16" = 1'-0" TRUE NORTH

REV.	DATE	BY	CHK'D	DESCRIPTION
0	11/29/16	HMR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CLIENT REVIEW

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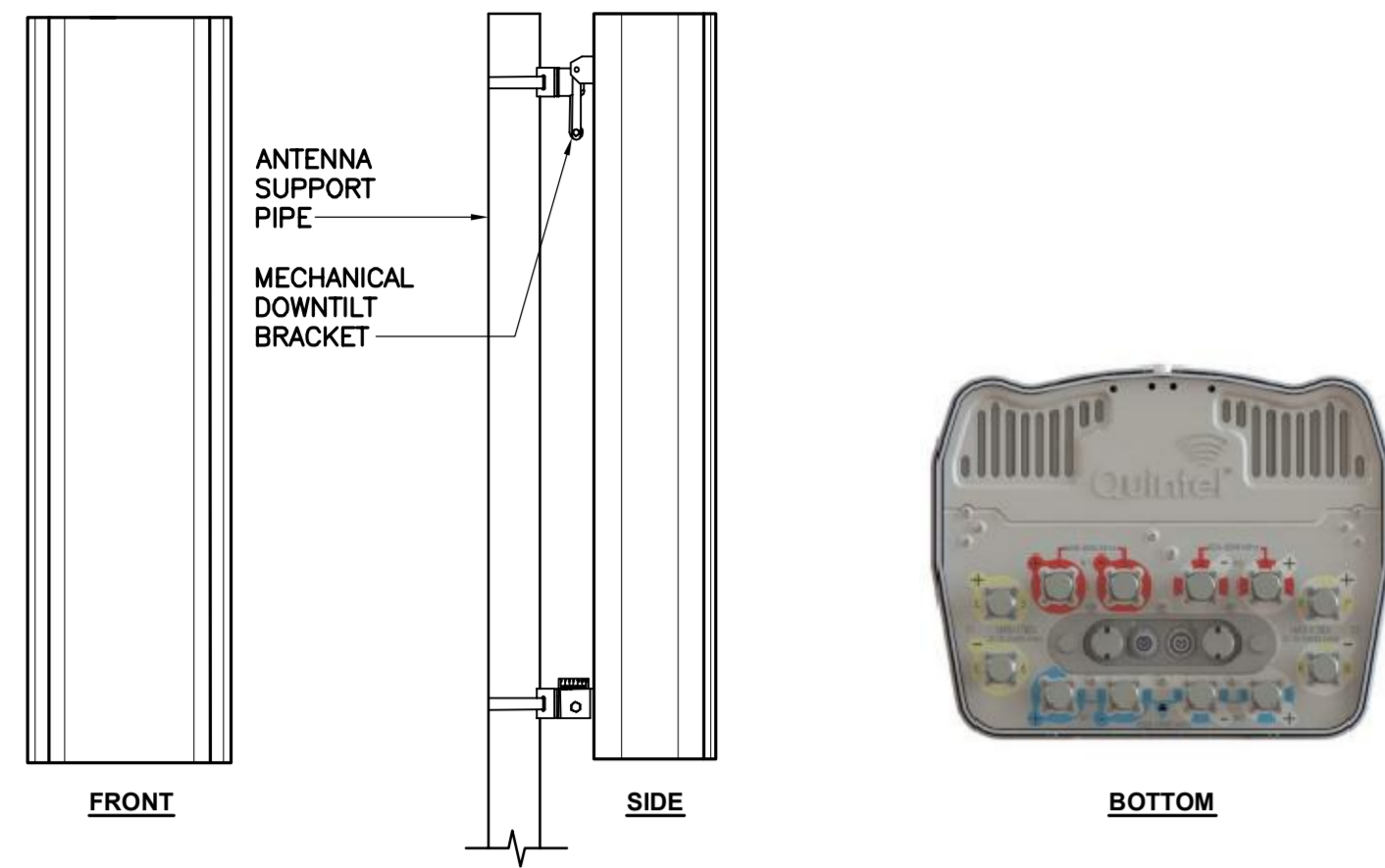
CENTEX engineering
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(203) 488-8387 Fax
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CROMWELL SOUTH
CT5144 - LTE BWE
100 CHRISTIAN HILL ROAD
CROMWELL, CT 06416

DATE: 11/15/16
SCALE: AS NOTED
JOB NO. 16071.68

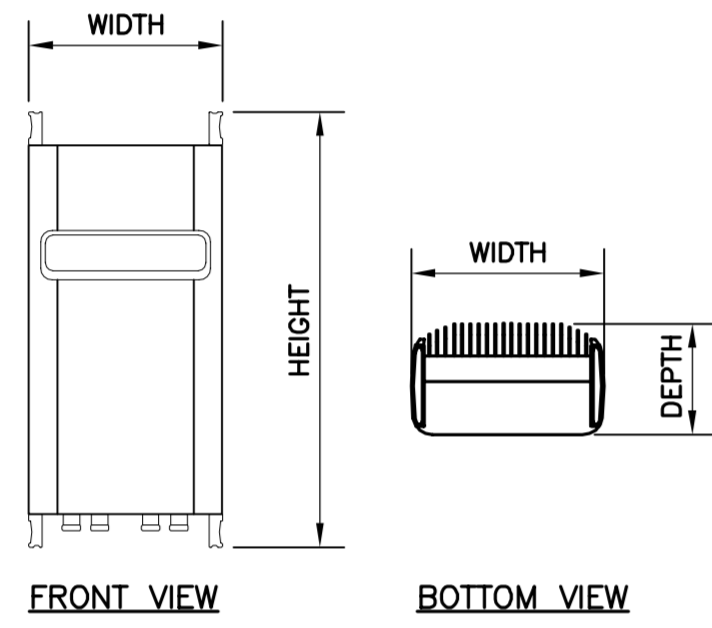
PLANS AND ELEVATION

C-1
Sheet No. 3 of 5



ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT	DIMENSIONS	WEIGHT	
MAKE: QUINTEL MODEL: QS66512-2	72.0"L x 12.0"W x 9.6"D	111 LBS.	

5 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"

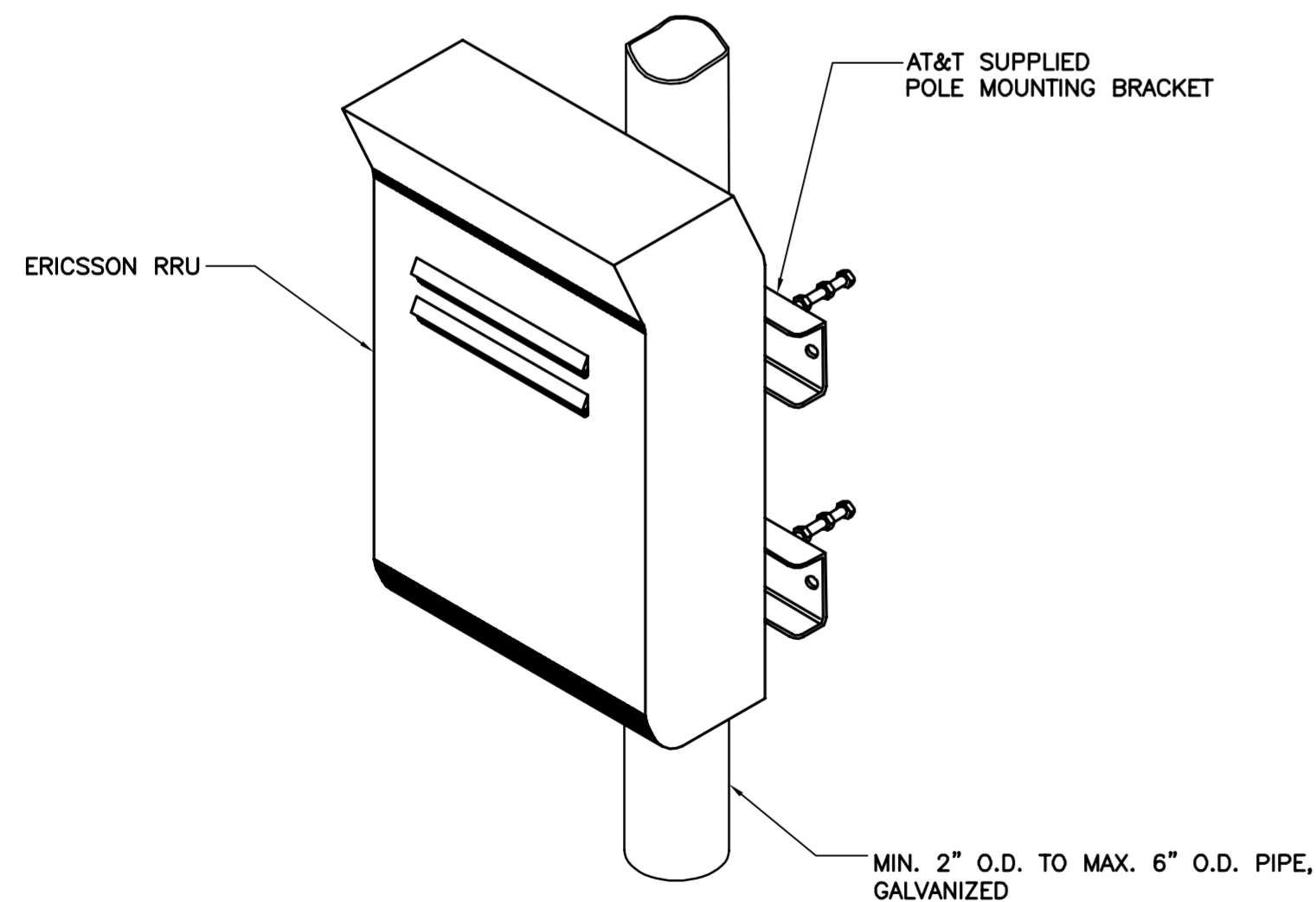


RRUS-32 B2

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B2	27.17"L x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 ERICSSON RRUS-32 B2 DETAIL
SCALE: 1" = 1'-0"

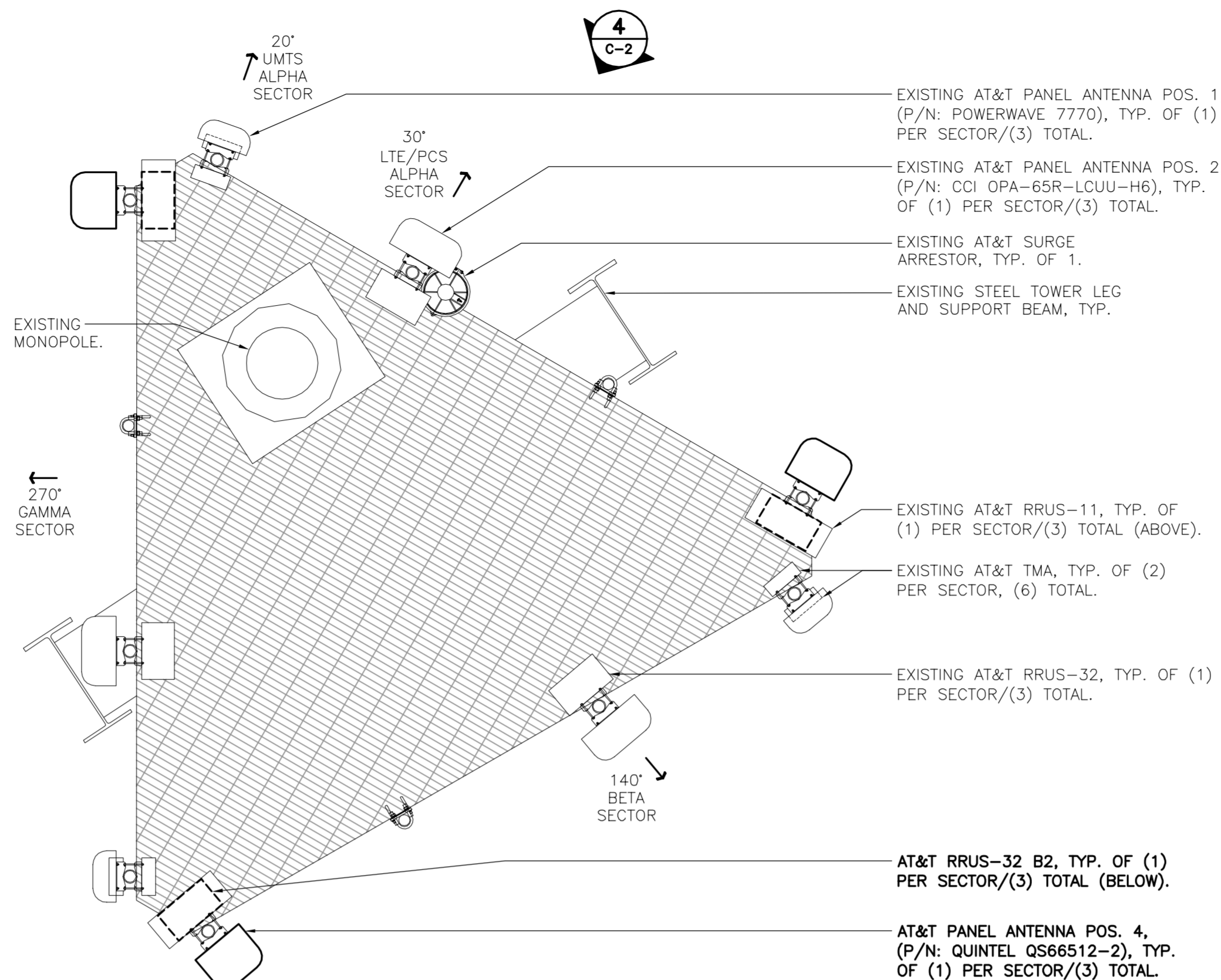


ISOMETRIC VIEW

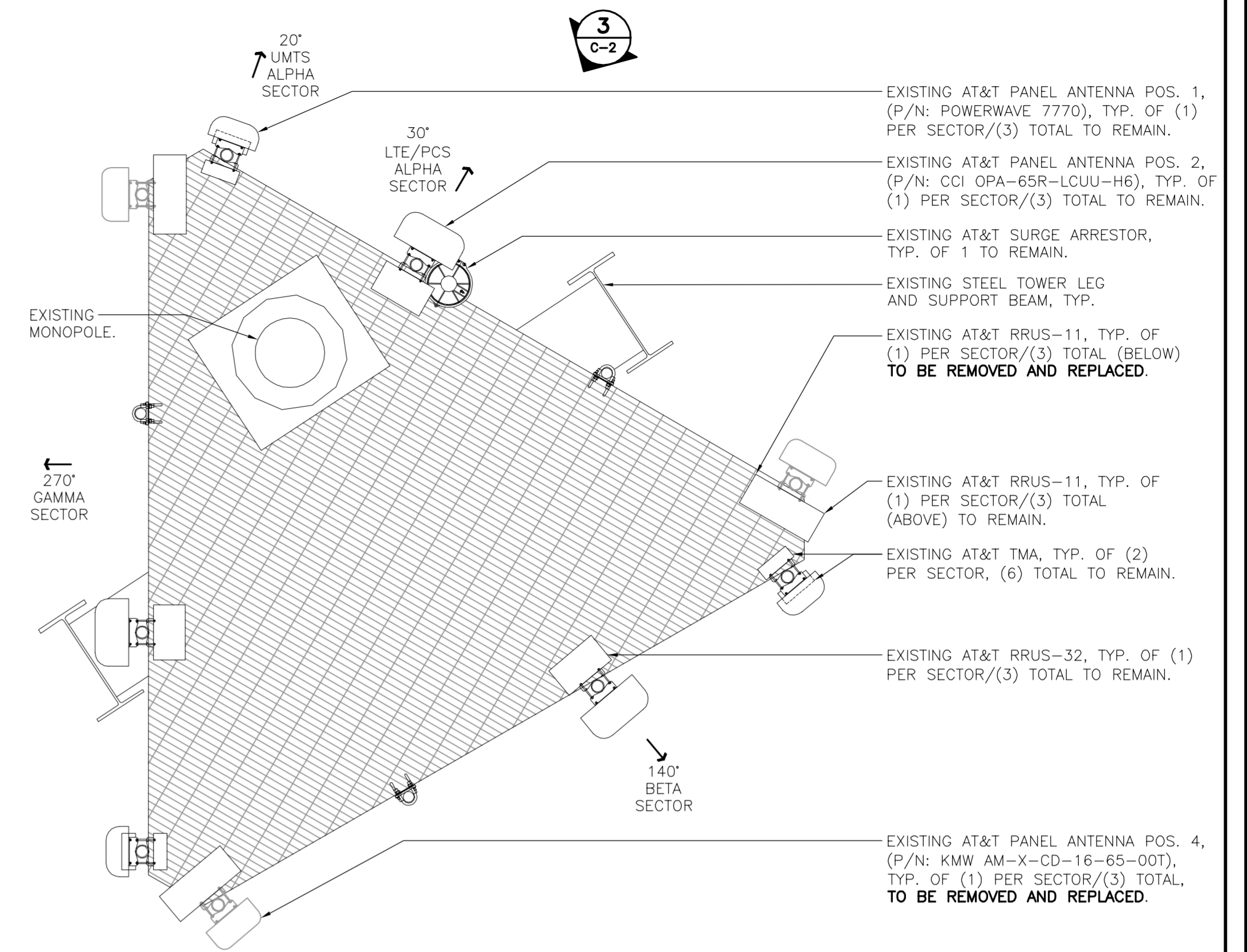
NOTES:

- AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
- NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

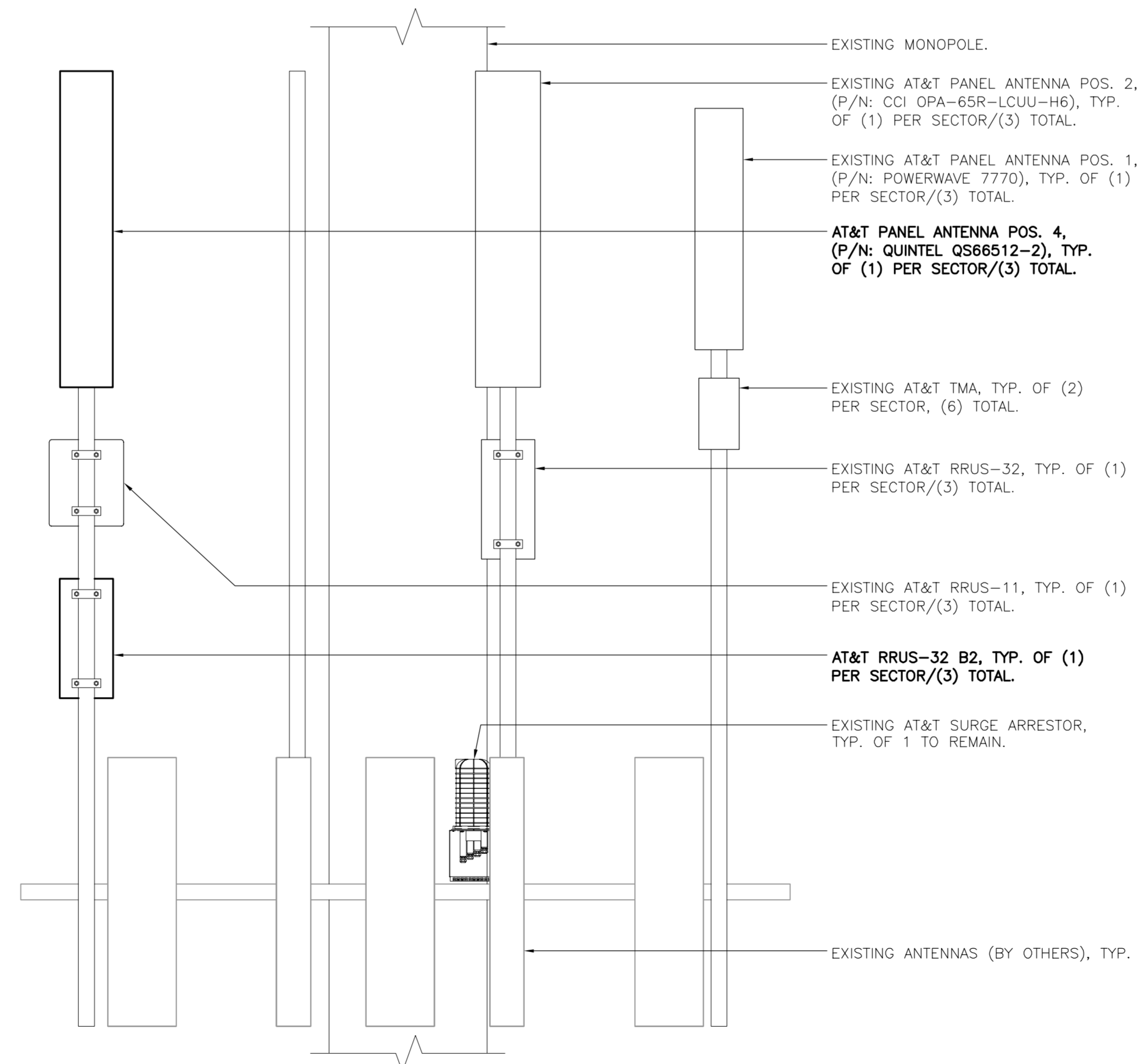
7 TYPICAL RRUS MOUNTING DETAILS
SCALE: NTS



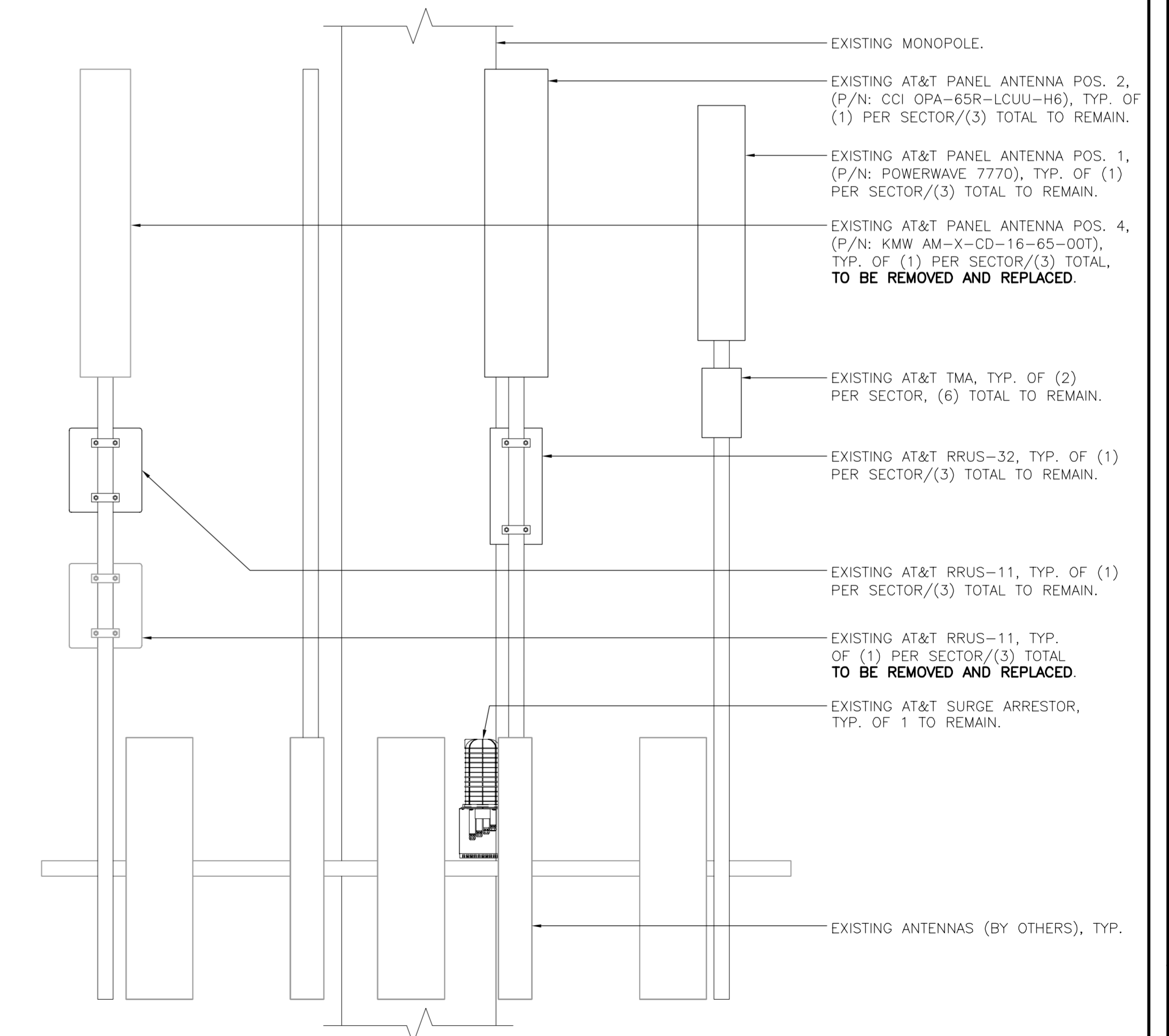
2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



1 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



4 PROPOSED ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"



3 EXISTING ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"

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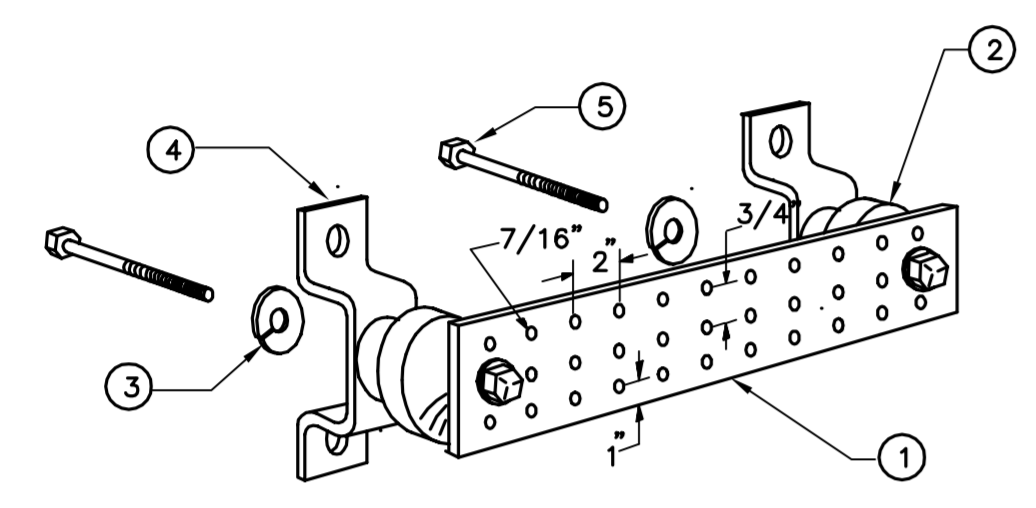
LTE BWE
EQUIPMENT
DETAILS

C-2
Sheet No. 4 of 5

ELECTRICAL NOTES

- PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
- CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
- ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
- PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

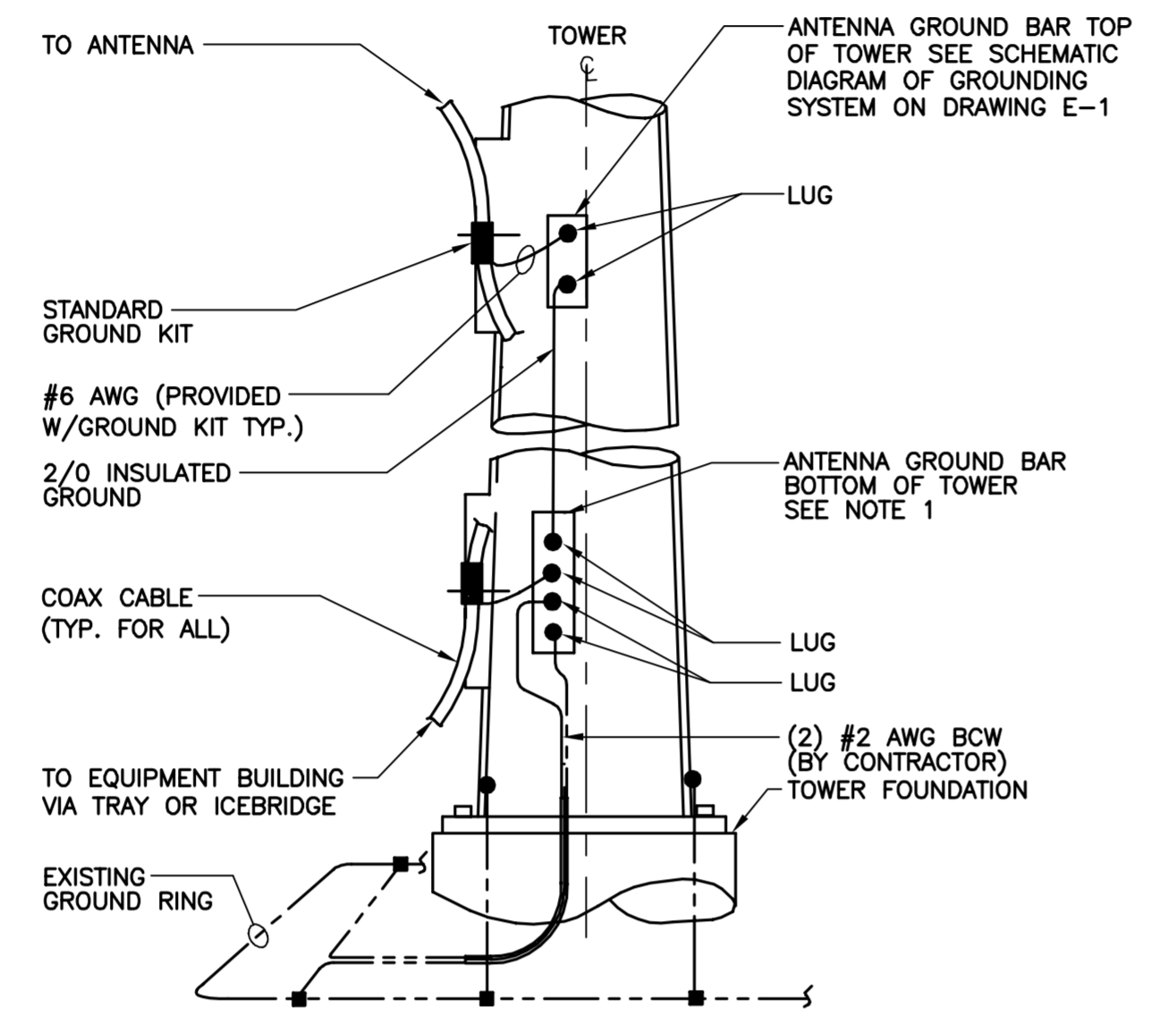
- TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM**
- CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:
 - TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM. THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:
 - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
 - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
 - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
 - TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
 - THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
 - CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.



LEGEND

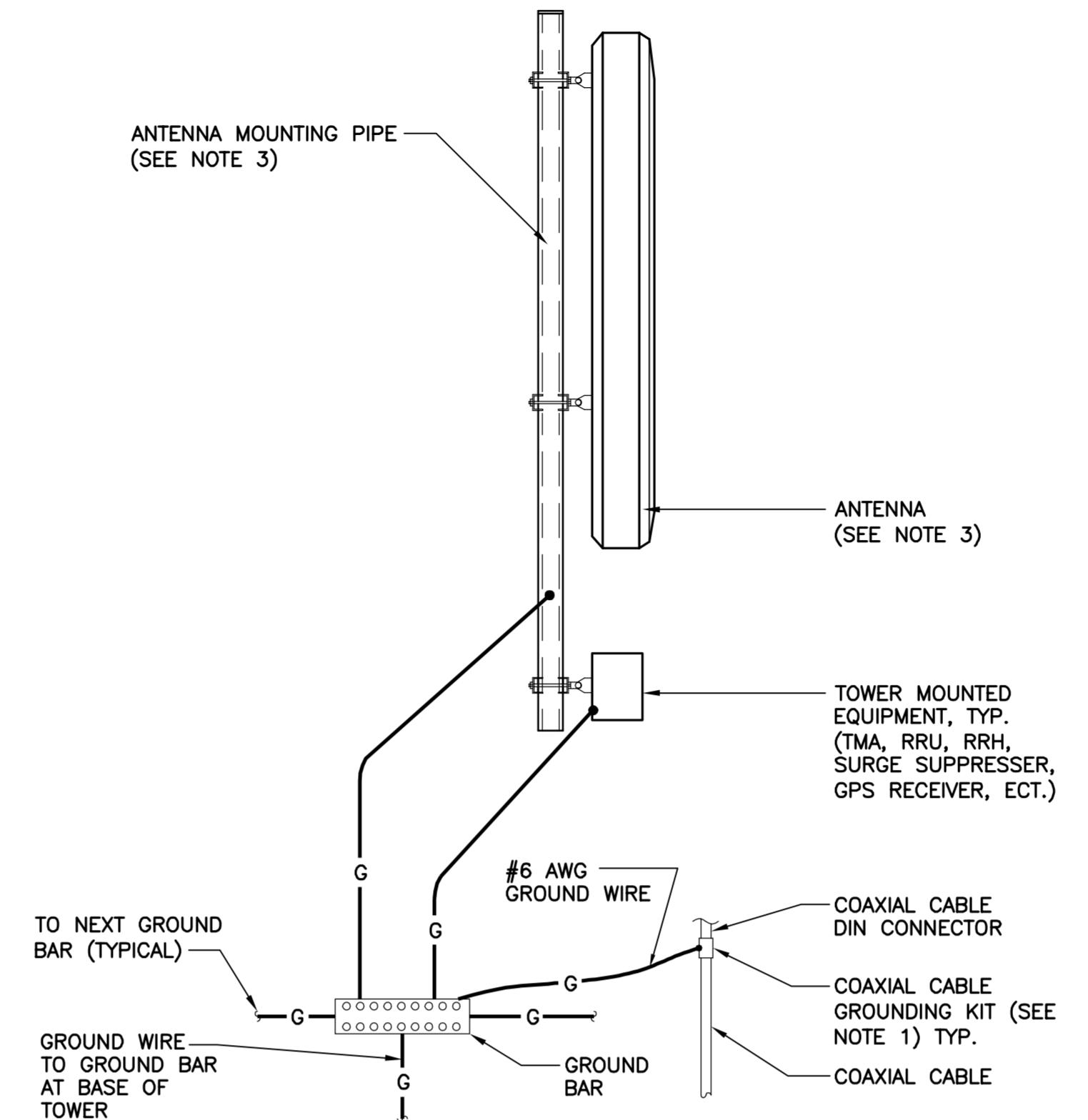
- TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG.
- INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
- 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.
- STAINLESS STEEL SECURITY SCREWS.

3 GROUND BAR DETAIL
E-1 NOT TO SCALE



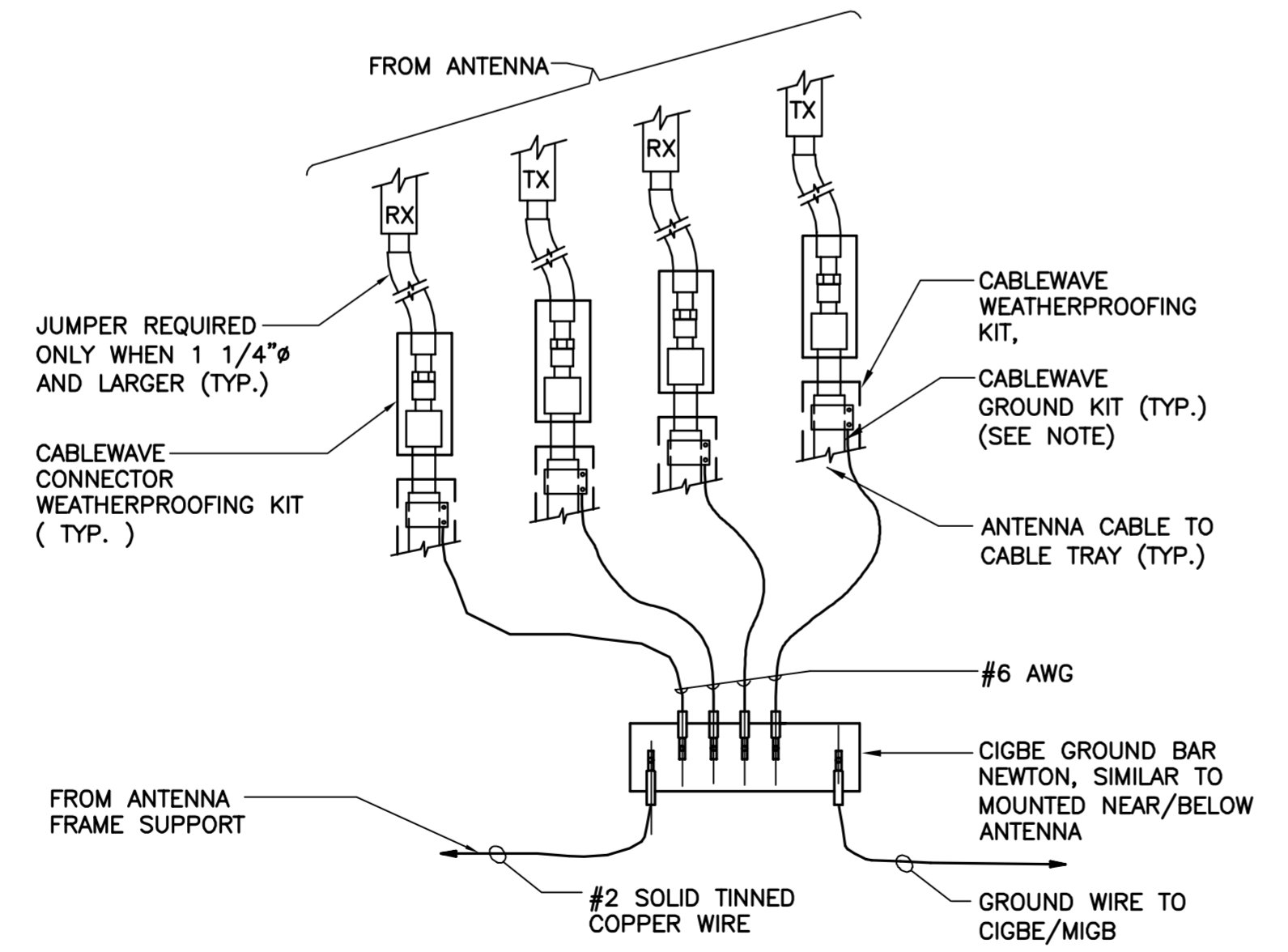
- NOTES:**
- NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
 - A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

2 ANTENNA CABLE GROUNDING - TOWER
E-1 NOT TO SCALE



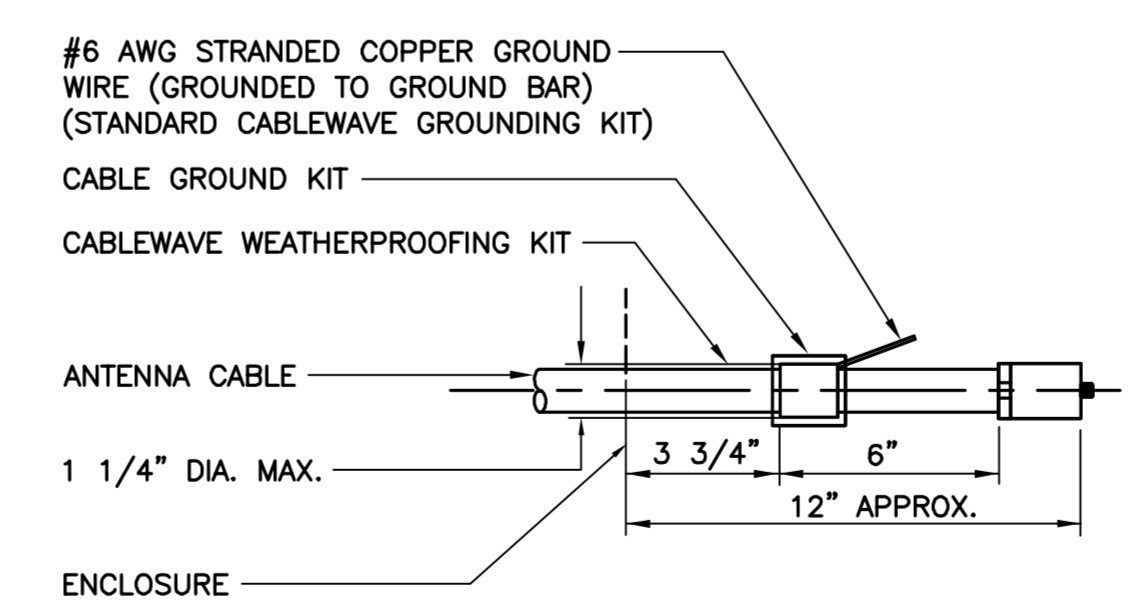
- NOTES:**
- BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
 - BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
 - DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 TYPICAL ANTENNA GROUNDING DETAIL
E-1 NOT TO SCALE



- NOTE:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

5 CONNECTION OF GROUND WIRES TO GROUND BAR
E-1 NOT TO SCALE



- NOTE:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

4 ANTENNA CABLE GROUNDING DETAIL
E-1 NOT TO SCALE

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AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY CROMWELL SOUTH CT5144 - LTE BWE 100 CHRISTIAN HILL ROAD CROMWELL, CT 06416		
DATE:	11/15/16	
SCALE:	AS NOTED	
JOB NO.	16071.68	
ELECTRICAL DETAILS AND NOTES		
E-1		
Sheet No. 5 of 5		



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 111 ft Self Supported Tower
ATC Site Name : CromwellSW CT, CT
ATC Site Number : 411261
Engineering Number : OAA702243_C3_01
Proposed Carrier : AT&T MOBILITY
Carrier Site Name : Cromwell South
Carrier Site Number : CT-5144/FA#10070987
Site Location : 100 Berlin Road
Cromwell, CT
41.606210, -72.701206
County : Middlesex
Date : May 22, 2017
Max Usage : 60%
Result : Pass

Prepared By:
Brian Davies, E.I.
Structural Engineer II

Reviewed By:

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
Conclusion.....	1
Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
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Structure Usages	3
Foundations	3
Deflection, Twist, and Sway.....	3
Standard Conditions	4
Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 111 ft self supported tower to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	Mapping by ETS, Job #150929.01, dated August 21, 2015
Foundation Drawing	Mapping by ETS, Job #150929.01, dated August 21, 2015 Mapping by ETS, Job #150929.01, dated June 13, 2016
Geotechnical Report	FDH Velocitel Project #15BWZR1600, dated August 18, 2015

Analysis

The tower was analyzed using Risa 3D tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

Basic Wind Speed:	85 mph (Fastest Mile)
Basic Wind Speed w/ Ice:	74 mph (Fastest Mile)w/ 1/2" radial ice concurrent
Code:	ANSI/TIA/EIA-222-F / 2012 IBC , Sec. 1609.1.1, Exception (4) & Sec. 3108.4 / 2016 Connecticut State Building Code

*The proposed equipment does not increase the structural usage by more than 5%, so per guidelines in TIA-222-G, Addendum 2, Sec. 15.4, this analysis may be run to TIA-222-F standards.

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
108.0	108.0	3	Ericsson KRY 112 71	Low Profile Platform	(18) 1 5/8" Coax (1) 1 5/8" Fiber	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21 B4A B2P			
		3	Ericsson AIR 21 B4A/12-B5P 2.4M			
98.0	98.0	3	Ericsson RRUS 11 B2	Platform w/ Handrails	-	AT&T Mobility
		3	Ericsson RRUS-32			
		3	Powerwave 7770.00			
		3	CCI OPA-65R-LCUU-H6			
95.0	95.0	2	Raycap DC6-48-60-18-8F	Leg/Flush	(12) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 1 5/8" Hybriflex	AT&T Mobility
		12	Powerwave LGP21401	Low Profile Platform		
83.0	83.0	1	GPS	Platform w/ Handrails	(18) 1 5/8" Coax (1) 1 5/8" Hybriflex (1) 1/2" Coax	Verizon
		3	Alcatel-Lucent RRH2x40-AWS			
		1	Raycap RRFDC-3315-PF-48			
		6	Antel BXA-171085-12BF-EDIN-X			
		4	Decibel DB846F65ZAXY			
		3	Antel BXA-70063/6CF_4			
2	Antel LPA-80080/6CF_					
80.0	80.0	3	RFS APXV18-206517S-C	-	(6) 1 5/8" Coax	Metro PCS
50.0	50.0	1	NAIS VIC-100	-	-	T-Mobile

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
98.0	98.0	3	KMW AM-X-CD-16-65-00T-RET	-	-	AT&T Mobility
		3	Ericsson RRUS 11 B2			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
98.0	98.0	3	Powerwave 7020.00 Dual Band RET	Low Profile Platform	-	AT&T Mobility
		3	Ericsson RRUS 32 B2	Platform w/ Handrails		
		3	Quintel QS66512-2			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax anywhere on tower.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	46%	Pass
Diagonals	60%	Pass
Horizontals	60%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	101.7	42%
Axial (Kips)	58.3	17%
Shear (Kips)	16.4	7%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



Standard Conditions

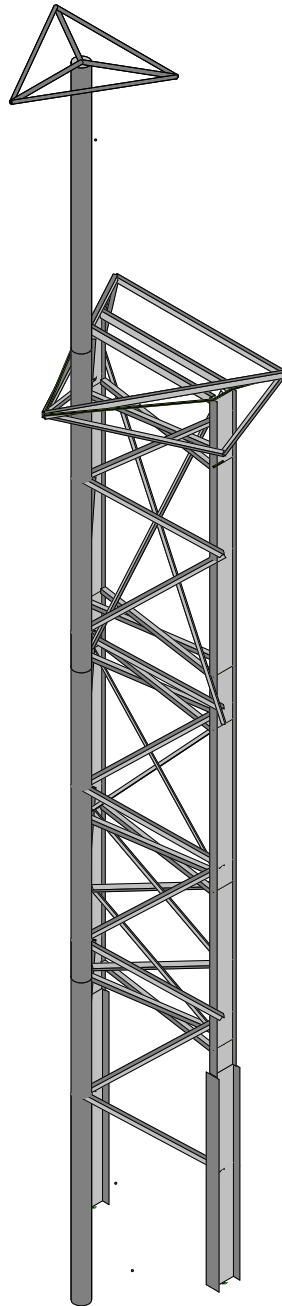
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



AT&T Mobility

DAVI

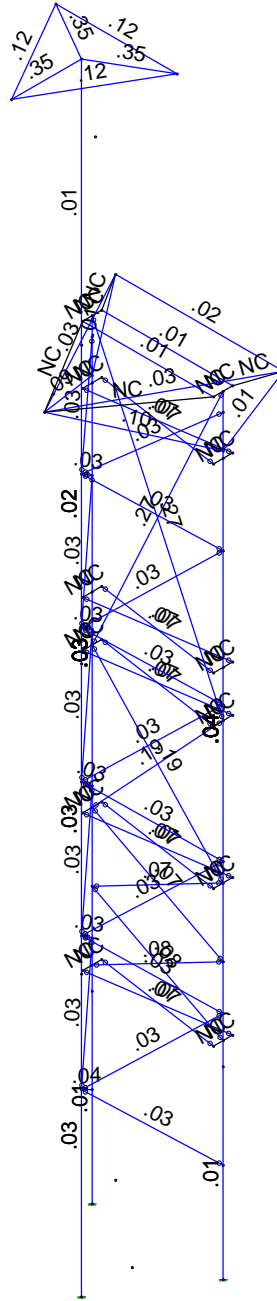
411261

Cromwell SW CT
Structure

SK - 1

May 22, 2017 at 1:53 PM

2017.5.22 - AT&T Mobility - OAA7...



Member Code Checks Displayed
Results for LC 1, D

AT&T Mobility	Cromwell SW CT Usage	SK - 2
DAVI		May 22, 2017 at 1:54 PM
411261		2017.5.22 - AT&T Mobility - OAA7...



Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W24x68 w...	W24x68 w...	Beam	Wide Flange	A572 Gr.50	Typical	51.845	753.17	6681.05	27.435
2	L3.5x3.5x0...	L3.5x3.5x5	Beam	Single Angle	A36 Gr.36	Typical	2.1	2.44	2.44	.073
3	L5x5x3/8 w...	L5x5x3/8 w...	Beam	Single Angle	A36 Gr.36	Typical	5.256	9.617	9.617	3.099
4	L3x3x5/16	L3x3x5	Beam	Single Angle	A36 Gr.36	Typical	1.78	1.5	1.5	.06
5	18"x0.5"	HSS18x0.5...	Beam	Pipe	A53 Gr.B	Typical	25.6	985	985	1970
6	WT6x15	WT6x15	Beam	W Tee	A36 Gr.36	Typical	4.4	10.2	13.5	.228
7	HSS6x4x1/4	HSS6x4x4	Beam	Tube	A36 Gr.36	Typical	4.3	11.1	20.9	23.6
8	HSS8x4x1/4	HSS8x4x4	Beam	Tube	A36 Gr.36	Typical	5.24	14.4	42.5	35.3
9	L5x5x3/4	L5x5x12	Beam	Single Angle	A36 Gr.36	Typical	6.98	15.7	15.7	1.33
10	3.5" Pipe	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
11	W24x68	W24x68	Beam	Wide Flange	A572 Gr.50	Typical	20.1	70.4	1830	1.87
12	L5x5x3/8	L5x5x6	Beam	Single Angle	A36 Gr.36	Typical	3.65	8.76	8.76	.183
13	L4x4x5/16 ...	L4x4x5/16 ...	Beam	Single Angle	A36 Gr.36	Typical	3.79	4.63	4.63	2.166
14	HSS4x4x1/4	HSS4x0.250	Beam	Pipe	A36 Gr.36	Typical	2.76	4.91	4.91	9.82

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	1	0	0	
2	N2	13.5	1	0	0	
3	N3	6.75	0	7.854167	0	
4	N4	0	11.208333	0	0	
5	N5	13.5	11.208333	0	0	
6	N8	0	22.333333	0	0	
7	N9	13.5	22.333333	0	0	
8	N10	0	24.75	0	0	
9	N11	13.5	24.75	0	0	
10	N6	0	20	0	0	
11	N7	13.5	20	0	0	
12	N12	0	29.375	0	0	
13	N13	13.5	29.375	0	0	
14	N14	0	36.416666	0	0	
15	N15	13.5	36.416666	0	0	
16	N16	0	38.333333	0	0	
17	N17	13.5	38.333333	0	0	
18	N18	0	50.916666	0	0	
19	N19	13.5	50.916666	0	0	
20	N20	0	52.333333	0	0	
21	N21	13.5	52.333333	0	0	
22	N22	0	55.666666	0	0	
23	N23	13.5	55.666666	0	0	
24	N24	0	66.083333	0	0	
25	N25	13.5	66.083333	0	0	
26	N26	0	74.336666	0	0	
27	N27	13.5	74.336666	0	0	
28	N28	0	78.458333	0	0	
29	N29	13.5	78.458333	0	0	
30	N30	0	80.336666	0	0	
31	N31	13.5	80.336666	0	0	
32	N32	6.75	18.5	7.854167	0	
33	N33	6.75	28.833333	7.854167	0	
34	N34	6.75	32.25	7.854167	0	
35	N35	6.75	46	7.854167	0	
36	N36	6.75	56.541667	7.854167	0	
37	N37	6.75	59.75	7.854167	0	



Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
38	N38	6.75	73.5	7.854167	0	
39	N39	6.75	85.020833	7.854167	0	
40	N40	6.75	110.5625	7.854167	0	
41	N41	0	22.333333	-0.9875	0	
42	N42	13.5	22.333333	-0.9875	0	
43	N43	0	22.333333	0.9875	0	
44	N44	13.5	22.333333	0.9875	0	
45	N45	0	36.416666	-0.9875	0	
46	N46	13.5	36.416666	-0.9875	0	
47	N47	0	36.416666	0.9875	0	
48	N48	13.5	36.416666	0.9875	0	
49	N49	0	50.916666	-0.9875	0	
50	N50	13.5	50.916666	-0.9875	0	
51	N51	0	50.916666	0.9875	0	
52	N52	13.5	50.916666	0.9875	0	
53	N53	0	55.666666	-0.9875	0	
54	N54	13.5	55.666666	-0.9875	0	
55	N55	0	55.666666	0.9875	0	
56	N56	13.5	55.666666	0.9875	0	
57	N57	0	74.336666	-0.9875	0	
58	N58	13.5	74.336666	-0.9875	0	
59	N59	0	74.336666	0.9875	0	
60	N60	13.5	74.336666	0.9875	0	
61	N61	0	80.336666	-0.9875	0	
62	N62	13.5	80.336666	-0.9875	0	
63	N63	0	80.336666	0.9875	0	
64	N64	13.5	80.336666	0.9875	0	
65	N67	-1.9103	80.92	-4.320833	0	
66	N68	15.4103	80.92	-4.320833	0	
67	N69	6.75	80.92	11.666667	0	
68	N68A	0	75.003333	0	0	
69	N69A	13.5	75.003333	0	0	
70	N93	.5	110.5625	4.2457	0	
71	N94	13	110.5625	4.2457	0	
72	N95	6.75	110.5625	15.071	0	
73	N75	-1.9103	1	15.071	0	
74	N76	15.4103	1	15.071	0	
75	N75A	-1.9103	111.5625	15.071	0	
76	N76A	15.4103	111.5625	15.071	0	
77	N77	-1.9103	-0.	-4.320833	0	
78	N78	-1.9103	110.5625	-4.320833	0	
79	N79	6.75	0	2.6181	0	

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(Plate/Wall)
1	Self Weight	DL		-1		8				
2	Wind Z	WLZ				6		64		
3	Wind X	WLX				6		85		
4	Appurtenance Ice ...	OL1		-1		8				
5	Wind Ice Z	OL2				6		64		
6	Wind Ice X	OL3				6		85		



Load Combinations

	Description	Solve P...	SR...	BLCFa...	BLC	Fa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...
1	D	Yes	Y	DL	1									
2	D + W (Z)	Yes	Y	DL	1	WLZ	1							
3	D + W (-Z)	Yes	Y	DL	1	WLZ	-1							
4	D + W (X)	Yes	Y	DL	1	WLX	1							
5	D + W (-X)	Yes	Y	DL	1	WLX	-1							
6	D + W Ice (Z)	Yes	Y	OL1	1	OL2	.75							
7	D + W Ice (-Z)	Yes	Y	OL1	1	OL2	-.75							
8	D + W Ice (X)	Yes	Y	OL1	1	OL3	.75							
9	D + W Ice (-X)	Yes	Y	OL1	1	OL3	-.75							

Joint Loads and Enforced Displacements (BLC 1 : Self Weight)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
1	N40	L	Y	-2592.66
2	N93	L	Y	-274.9
3	N94	L	Y	-274.9
4	N95	L	Y	-274.9
5	N31	L	Y	-3032.93
6	N67	L	Y	-647.833
7	N68	L	Y	-647.833
8	N69	L	Y	-647.833

Joint Loads and Enforced Displacements (BLC 2 : Wind Z)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
1	N95	L	Z	-229.7
2	N94	L	Z	-187
3	N93	L	Z	-187
4	N67	L	Z	-705.1
5	N68	L	Z	-595.8
6	N69	L	Z	-595.8

Joint Loads and Enforced Displacements (BLC 3 : Wind X)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
1	N95	L	X	-176.9
2	N94	L	X	-220
3	N93	L	X	-220
4	N67	L	X	-600.8
5	N68	L	X	-698.7
6	N69	L	X	-698.7

Joint Loads and Enforced Displacements (BLC 4 : Appurtenance Ice Dead)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
1	N40	L	Y	-2042.86
2	N95	L	Y	-545.3
3	N94	L	Y	-545.3
4	N93	L	Y	-545.3
5	N31	L	Y	-3032.93
6	N67	L	Y	-2087.3
7	N68	L	Y	-2087.3
8	N69	L	Y	2087.3

Joint Loads and Enforced Displacements (BLC 5 : Wind Ice Z)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
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Joint Loads and Enforced Displacements (BLC 5 : Wind Ice Z) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
1	N95	L	Z	-79.4
2	N94	L	Z	-91.7
3	N93	L	Z	-91.7
4	N67	L	Z	-236.1
5	N68	L	Z	-290.4
6	N69	L	Z	-290.4

Joint Loads and Enforced Displacements (BLC 6 : Wind Ice X)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2/ft, lb*s^2*ft)]
1	N95	L	X	-98.8
2	N94	L	X	-86.1
3	N93	L	X	-86.1
4	N67	L	X	-336.4
5	N68	L	X	-265.4
6	N69	L	X	-265.4

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
No Data to Print ...						

Member AISC 13th(360-05): ASD Steel Code Checks

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om ...	Mnyy/o...	Mnzz/o...	Cb	Eqn	
1	1	M1	W24x68 w...	.013	0	.000	19	y	1.1562...	1.5522...	375.833	1400.4...	1.058	H1-1b*
2	1	M2	W24x68 w...	.011	0	.000	19	y	1.1562...	1.5522...	375.833	1420.0...	1.078	H1-1b*
3	1	M3	W24x68	.036	0	.001	59.08	y	328006...	601796...	61.128	337.623	1	H1-1b*
4	1	M4	W24x68	.026	0	.001	59.08	y	328006...	601796...	61.128	337.623	1	H1-1b*
5	1	M5	HSS18x0...	.034	0	.000	18.622		457542...	536526...	249.75	249.75	1.958	H1-1b*
6	1	M6	HSS18x0...	.028	0	.000	0		463151...	536526...	249.75	249.75	1.111	H1-1b*
7	1	M7	HSS18x0...	.022	0	.000	3.263		459324...	536526...	249.75	249.75	2.092	H1-1b*
8	1	M8	HSS18x0...	.013	0	.000	0		473500...	536526...	249.75	249.75	1.667	H1-1b*
9	1	M29	L5x5x6	.067	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
10	1	M30	L5x5x6	.067	6.822	.003	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
11	1	M31	L5x5x6	.068	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
12	1	M32	L5x5x6	.068	6.822	.003	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
13	1	M33	L5x5x6	.070	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
14	1	M34	L5x5x6	.070	6.822	.003	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
15	1	M35	L5x5x6	.068	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
16	1	M36	L5x5x6	.068	6.822	.003	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
17	1	M37	L5x5x6	.067	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
18	1	M38	L5x5x6	.067	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
19	1	M39	L5x5x6	.076	7.613	.003	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
20	1	M40	L5x5x6	.076	7.613	.003	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
21	1	M41	L5x5x6	.075	7.613	.003	0	y	15976...	78682...	4.935	7.829	1.136	H2-1
22	1	M42	L5x5x6	.075	7.613	.003	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
23	1	M43	L3.5x3.5x5	.186	9.699	.003	0	y	10481...	45269...	1.918	2.577	1.136	H2-1
24	1	M44	L3.5x3.5x5	.186	9.699	.003	0	y	10481...	45269...	1.918	2.577	1.136	H2-1
25	1	M45	L5x5x3/8 ...	.272	15.848	.005	32.37	y	20518...	113307...	7.087	5.185	1.136	H2-1
26	1	M46	L5x5x3/8 ...	.272	15.848	.005	32.37	y	20518...	113307...	7.087	5.185	1.136	H2-1
27	1	M47	WT6x15	.032	6.333	.004	12.666	y	51096...	94850...	8.587	7.919	1.136	H1-1b
28	1	M48	WT6x15	.039	0	.004	0	y	51096...	94850...	8.587	4.949	2.56	H1-1b
29	1	M49	WT6x15	.030	6.048	.004	12.096	y	53179...	94850...	8.587	7.919	1.136	H1-1b
30	1	M50	WT6x15	.030	6.048	.004	12.096	y	53179...	94850...	8.587	7.919	1.136	H1-1b
31	1	M51	WT6x15	.032	6.393	.004	12.787	y	50651...	94850...	8.587	7.919	1.136	H1-1b



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc(ft)	Shear	Loc(ft)	Dir	Pnc/om	Pnt/om	Mnvy/o	Mnzz/o	Cb	Eqn	
32	1	M52	WT6x15	.032	6.393	.004	12.787	y	50651...	94850...	8.587	7.919	1.136	H1-1b
33	1	M53	WT6x15	.030	6.005	.004	0	y	53489...	94850...	8.587	7.919	1.136	H1-1b
34	1	M54	WT6x15	.030	6.005	.004	12.011	y	53489...	94850...	8.587	7.919	1.136	H1-1b
35	1	M55	WT6x15	.032	6.443	.004	0	y	50288...	94850...	8.587	7.919	1.136	H1-1b
36	1	M56	WT6x15	.032	6.443	.004	0	y	50288...	94850...	8.587	7.919	1.136	H1-1b
37	1	M57	WT6x15	.030	6.07	.004	12.139	y	53022...	94850...	8.587	7.919	1.136	H1-1b
38	1	M58	WT6x15	.030	6.07	.004	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
39	1	M59	WT6x15	.032	6.369	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
40	1	M60	WT6x15	.032	6.369	.004	0	y	50830...	94850...	8.587	7.919	1.136	H1-1b
41	1	M61	WT6x15	.031	6.07	.004	12.139	y	53022...	94850...	8.587	7.919	1.136	H1-1b
42	1	M62	WT6x15	.031	6.07	.004	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
43	1	M63	WT6x15	.032	6.369	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
44	1	M64	WT6x15	.032	6.369	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
45	1	M65	WT6x15	.030	5.741	.004	11.482	y	55390...	94850...	8.587	7.919	1.136	H1-1b
46	1	M66	WT6x15	.030	5.741	.004	0	y	55390...	94850...	8.587	7.919	1.136	H1-1b
47	1	M71	HSS8x4x4	.011	13.5	.003	13.5	y	68324...	112958...	14.731	23.892	2.381	H1-1b
48	1	M72	HSS8x4x4	.011	0	.003	0	y	68324...	112958...	14.731	23.892	2.381	H1-1b
49	1	M75	HSS6x4x4	.026	0	.004	0	y	35045...	92694...	11.587	15.323	2.381	H1-1b
50	1	M76	HSS6x4x4	.026	18.182	.004	18.182	y	35045...	92694...	11.587	15.323	2.381	H1-1b
51	1	M77	HSS6x4x4	.024	17.321	.004	17.321	y	38408...	92694...	11.587	15.323	2.381	H1-1b
52	1	M76A	L4x4x5/16...	.014	7.571	.001	7.571	y	39908...	81697...	3.706	6.632	1.979	H2-1
53	1	M77A	L4x4x5/16...	.014	0	.001	7.571	y	39908...	81697...	3.706	6.632	2.156	H2-1
54	1	M78	L4x4x5/16...	.099	14.72	.003	14.72	y	11074...	81697...	3.706	6.632	2.448	H2-1
55	1	M79	L4x4x5/16...	.089	14.72	.003	14.72	y	11074...	81697...	3.706	6.632	2.459	H2-1
56	1	M84	PIPE 3.0	.117	12.5	.003	12.5		18796...	43383...	3.825	3.825	1.264	H1-1b
57	1	M85	PIPE 3.0	.117	0	.003	0		18796...	43383...	3.825	3.825	1.264	H1-1b
58	1	M86	PIPE 3.0	.117	0	.003	0		18796...	43383...	3.825	3.825	1.264	H1-1b
59	1	M87	HSS4x0.2...	.351	0	.024	0		47654...	59497...	5.946	5.946	2.194	H1-1b
60	1	M88	HSS4x0.2...	.351	0	.024	0		47654...	59497...	5.946	5.946	2.194	H1-1b
61	1	M89	HSS4x0.2...	.351	0	.024	0		47654...	59497...	5.946	5.946	2.194	H1-1b
62	2	M1	W24x68 w...	.142	0	.039	0	y	1.1562...	1.5522...	375.833	1420.0...	1.952	H1-1b
63	2	M2	W24x68 w...	.143	0	.040	3.958	y	1.1562...	1.5522...	375.833	1420.0...	1.947	H1-1b
64	2	M3	W24x68	.173	0	.011	0	y	328006...	601796...	61.128	139.723	2.798	H1-1b
65	2	M4	W24x68	.167	0	.012	0	y	328006...	601796...	61.128	141.439	2.833	H1-1b
66	2	M5	HSS18x0...	.136	0	.008	0		457542...	536526...	249.75	249.75	1.456	H1-1b
67	2	M6	HSS18x0...	.070	3.175	.008	17.318		463151...	536526...	249.75	249.75	1.045	H1-1b
68	2	M7	HSS18x0...	.238	17.206	.032	16.91		459324...	536526...	249.75	249.75	2.114	H1-1b
69	2	M8	HSS18x0...	.146	0	.011	0		473500...	536526...	249.75	249.75	1.668	H1-1b
70	2	M29	L5x5x6	.094	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
71	2	M30	L5x5x6	.094	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
72	2	M31	L5x5x6	.082	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
73	2	M32	L5x5x6	.082	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
74	2	M33	L5x5x6	.085	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
75	2	M34	L5x5x6	.085	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
76	2	M35	L5x5x6	.086	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
77	2	M36	L5x5x6	.086	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
78	2	M37	L5x5x6	.087	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
79	2	M38	L5x5x6	.087	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
80	2	M39	L5x5x6	.092	7.613	.004	15.226	y	49600.6	78682...	4.935	7.829	1.136	H2-1
81	2	M40	L5x5x6	.060	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
82	2	M41	L5x5x6	.090	7.454	.004	15.226	y	15976...	78682...	4.935	7.829	1.136	H2-1
83	2	M42	L5x5x6	.063	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
84	2	M43	L3.5x3.5x5	.330	9.699	.005	0	z	10481...	45269...	1.918	2.577	1.136	H2-1
85	2	M44	L3.5x3.5x5	.359	9.699	.005	0	z	10481...	45269...	1.918	2.577	1.136	H2-1
86	2	M45	L5x5x3/8 ...	.443	15.848	.007	0	z	20518...	113307...	7.087	5.185	1.136	H2-1
87	2	M46	L5x5x3/8 ...	.361	15.848	.007	0	z	20518...	113307...	7.087	5.185	1.136	H2-1
88	2	M47	WT6x15	.158	0	.003	0	y	51096...	94850...	8.587	7.919	1.136	H1-1b*



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om ...	Mnyy/o...	Mnzz/o...	Cb	Eqn	
89	2	M48	WT6x15	.168	0	.005	0	y	51096...	94850...	8.587	4.949	2.308	H1-1b
90	2	M49	WT6x15	.096	6.048	.005	12.096	y	53179...	94850...	8.587	7.919	1.136	H1-1b
91	2	M50	WT6x15	.096	6.048	.005	12.096	y	53179...	94850...	8.587	7.919	1.136	H1-1b
92	2	M51	WT6x15	.239	6.26	.003	0	y	50651...	94850...	8.587	7.919	1.136	H1-1a
93	2	M52	WT6x15	.244	6.26	.002	12.787	y	50651...	94850...	8.587	7.919	1.136	H1-1a
94	2	M53	WT6x15	.099	6.005	.005	12.011	y	53489...	94850...	8.587	7.919	1.136	H1-1b
95	2	M54	WT6x15	.101	6.005	.005	12.011	y	53489...	94850...	8.587	7.919	1.136	H1-1b
96	2	M55	WT6x15	.172	0	.002	12.885	y	50288...	94850...	8.587	7.919	1.136	H1-1b*
97	2	M56	WT6x15	.176	0	.002	12.885	y	50288...	94850...	8.587	7.919	1.136	H1-1b*
98	2	M57	WT6x15	.089	6.07	.005	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
99	2	M58	WT6x15	.090	6.07	.005	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
100	2	M59	WT6x15	.105	0	.002	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b*
101	2	M60	WT6x15	.109	0	.003	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b*
102	2	M61	WT6x15	.102	6.07	.005	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
103	2	M62	WT6x15	.103	6.07	.005	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
104	2	M63	WT6x15	.186	0	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b*
105	2	M64	WT6x15	.189	0	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b*
106	2	M65	WT6x15	.062	5.741	.006	0	y	55390...	94850...	8.587	7.919	1.136	H1-1b
107	2	M66	WT6x15	.063	5.741	.006	0	y	55390...	94850...	8.587	7.919	1.136	H1-1b
108	2	M71	HSS8x4x4	.027	13.5	.005	0	z	68324...	112958...	14.731	23.892	2.381	H1-1b
109	2	M72	HSS8x4x4	.027	0	.005	13.5	z	68324...	112958...	14.731	23.892	2.381	H1-1b
110	2	M75	HSS6x4x4	.033	0	.004	0	y	35045...	92694...	11.587	15.323	2.381	H1-1b
111	2	M76	HSS6x4x4	.033	18.182	.004	18.182	y	35045...	92694...	11.587	15.323	2.381	H1-1b
112	2	M77	HSS6x4x4	.049	17.321	.005	0	z	38408...	92694...	11.587	15.323	2.381	H1-1b
113	2	M76A	L4x4x5/16...	.022	0	.002	0	y	39908...	81697...	3.706	6.632	3	H2-1
114	2	M77A	L4x4x5/16...	.034	0	.002	0	y	39908...	81697...	3.706	6.632	2.727	H2-1
115	2	M78	L4x4x5/16...	.084	14.72	.002	14.72	y	11074...	81697...	3.706	6.632	2.75	H2-1
116	2	M79	L4x4x5/16...	.061	14.72	.002	0	y	11074...	81697...	3.706	6.632	2.286	H2-1
117	2	M84	PIPE 3.0	.119	12.5	.004	12.5		18796...	43383...	3.825	3.825	1.267	H1-1b
118	2	M85	PIPE 3.0	.119	0	.004	0		18796...	43383...	3.825	3.825	1.267	H1-1b
119	2	M86	PIPE 3.0	.125	12.5	.005	12.5		18796...	43383...	3.825	3.825	1.267	H1-1b
120	2	M87	HSS4x0.2...	.349	0	.024	0		47654...	59497...	5.946	5.946	2.195	H1-1b
121	2	M88	HSS4x0.2...	.357	0	.024	0		47654...	59497...	5.946	5.946	2.194	H1-1b
122	2	M89	HSS4x0.2...	.349	0	.024	0		47654...	59497...	5.946	5.946	2.195	H1-1b
123	3	M1	W24x68 w...	.126	0	.039	0	y	1.1562...	1.5522...	375.833	1420.0...	1.905	H1-1b
124	3	M2	W24x68 w...	.129	0	.040	3.76	y	1.1562...	1.5522...	375.833	1420.0...	1.901	H1-1b
125	3	M3	W24x68	.083	2.514	.012	0	y	328006...	601796...	61.128	337.623	1	H1-1b
126	3	M4	W24x68	.087	2.514	.013	0	y	328006...	601796...	61.128	337.623	1	H1-1b
127	3	M5	HSS18x0...	.287	0	.008	0		457542...	536526...	249.75	249.75	2.105	H1-1a
128	3	M6	HSS18x0...	.177	0	.008	17.318		463151...	536526...	249.75	249.75	1.405	H1-1b*
129	3	M7	HSS18x0...	.255	16.91	.032	16.91		459324...	536526...	249.75	249.75	2.069	H1-1b
130	3	M8	HSS18x0...	.146	0	.011	0		473500...	536526...	249.75	249.75	1.665	H1-1b
131	3	M29	L5x5x6	.111	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
132	3	M30	L5x5x6	.111	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
133	3	M31	L5x5x6	.054	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
134	3	M32	L5x5x6	.054	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
135	3	M33	L5x5x6	.054	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
136	3	M34	L5x5x6	.054	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
137	3	M35	L5x5x6	.055	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
138	3	M36	L5x5x6	.055	6.822	.003	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
139	3	M37	L5x5x6	.057	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
140	3	M38	L5x5x6	.058	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
141	3	M39	L5x5x6	.066	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
142	3	M40	L5x5x6	.093	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
143	3	M41	L5x5x6	.060	7.613	.004	15.226	y	15976...	78682...	4.935	7.829	1.136	H2-1
144	3	M42	L5x5x6	.092	7.613	.004	15.226	y	49600.6	78682...	4.935	7.829	1.136	H2-1
145	3	M43	L3.5x3.5x5	.254	9.906	.005	0	z	10481...	45269...	1.918	2.577	1.136	H2-1



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om ...	Mnyv/o...	Mnzz/o...	Cb	Eqn
146	3	M44	L3.5x3.5x5	.205	9.906	.005	0	z	10481....	45269....	1.918	2.577	1.136 H2-1
147	3	M45	L5x5x3/8 ...	.269	16.185	.007	0	z	20518....	113307...	7.087	5.185	1.136 H2-1
148	3	M46	L5x5x3/8 ...	.339	16.185	.007	0	z	20518....	113307...	7.087	5.185	1.136 H2-1
149	3	M47	WT6x15	.099	6.333	.006	12.666	y	51096....	94850....	8.587	7.919	1.136 H1-1b
150	3	M48	WT6x15	.139	12.666	.008	12.666	y	51096....	94850....	8.587	4.949	2.592 H1-1b
151	3	M49	WT6x15	.149	0	.003	12.096	y	53179....	94850....	8.587	7.919	1.136 H1-1b*
152	3	M50	WT6x15	.150	0	.003	12.096	y	53179....	94850....	8.587	7.919	1.136 H1-1b*
153	3	M51	WT6x15	.115	6.393	.005	0	y	50651....	94850....	8.587	7.919	1.136 H1-1b
154	3	M52	WT6x15	.116	6.393	.005	0	y	50651....	94850....	8.587	7.919	1.136 H1-1b
155	3	M53	WT6x15	.167	0	.003	12.011	y	53489....	94850....	8.587	7.919	1.136 H1-1b*
156	3	M54	WT6x15	.172	0	.003	0	y	53489....	94850....	8.587	7.919	1.136 H1-1b*
157	3	M55	WT6x15	.106	6.443	.005	0	y	50288....	94850....	8.587	7.919	1.136 H1-1b
158	3	M56	WT6x15	.107	6.443	.005	0	y	50288....	94850....	8.587	7.919	1.136 H1-1b
159	3	M57	WT6x15	.127	0	.003	12.139	y	53022....	94850....	8.587	7.919	1.136 H1-1b*
160	3	M58	WT6x15	.131	0	.003	12.139	y	53022....	94850....	8.587	7.919	1.136 H1-1b*
161	3	M59	WT6x15	.089	6.369	.005	0	y	50830....	94850....	8.587	7.919	1.136 H1-1b
162	3	M60	WT6x15	.090	6.369	.005	0	y	50830....	94850....	8.587	7.919	1.136 H1-1b
163	3	M61	WT6x15	.177	0	.003	12.139	y	53022....	94850....	8.587	7.919	1.136 H1-1b*
164	3	M62	WT6x15	.181	0	.003	12.139	y	53022....	94850....	8.587	7.919	1.136 H1-1b*
165	3	M63	WT6x15	.111	6.369	.007	0	y	50830....	94850....	8.587	7.919	1.136 H1-1b
166	3	M64	WT6x15	.112	6.369	.007	0	y	50830....	94850....	8.587	7.919	1.136 H1-1b
167	3	M65	WT6x15	.062	5.741	.004	11.482	y	55390....	94850....	8.587	7.919	1.136 H1-1b
168	3	M66	WT6x15	.064	5.741	.005	0	y	55390....	94850....	8.587	7.919	1.136 H1-1b
169	3	M71	HSS8x4x4	.027	0	.005	0	z	68324....	112958..	14.731	23.892	2.381 H1-1b
170	3	M72	HSS8x4x4	.027	13.5	.005	13.5	z	68324....	112958..	14.731	23.892	2.381 H1-1b
171	3	M75	HSS6x4x4	.033	18.182	.004	0	y	35045....	92694....	11.587	15.323	2.381 H1-1b
172	3	M76	HSS6x4x4	.033	0	.004	18.182	y	35045....	92694....	11.587	15.323	2.381 H1-1b
173	3	M77	HSS6x4x4	.049	0	.005	0	z	38408....	92694....	11.587	15.323	2.381 H1-1b
174	3	M76A	L4x4x5/16...	.014	7.571	.001	7.571	y	39908....	81697....	3.706	6.632	1.693 H2-1
175	3	M77A	L4x4x5/16...	.007	7.571	.001	7.571	z	39908....	81697....	3.706	6.632	2.067 H2-1
176	3	M78	L4x4x5/16...	.114	14.72	.003	14.72	y	11074....	81697....	3.706	6.632	2.377 H2-1
177	3	M79	L4x4x5/16...	.117	14.72	.003	14.72	y	11074....	81697....	3.706	6.632	2.889 H2-1
178	3	M84	PIPE 3.0	.121	12.5	.004	12.5		18796....	43383....	3.825	3.825	1.269 H1-1b
179	3	M85	PIPE 3.0	.121	0	.004	0		18796....	43383....	3.825	3.825	1.269 H1-1b
180	3	M86	PIPE 3.0	.122	0	.005	0		18796....	43383....	3.825	3.825	1.265 H1-1b
181	3	M87	HSS4x0.2...	.353	0	.025	0		47654....	59497....	5.946	5.946	2.194 H1-1b
182	3	M88	HSS4x0.2...	.349	0	.024	0		47654....	59497....	5.946	5.946	2.196 H1-1b
183	3	M89	HSS4x0.2...	.353	0	.025	0		47654....	59497....	5.946	5.946	2.194 H1-1b
184	4	M1	W24x68 w...	.151	0	.021	19	y	1.1562...	1.5522...	375.833	1420.0...	1.172 H1-1b
185	4	M2	W24x68 w...	.136	0	.020	19	y	1.1562...	1.5522...	375.833	1420.0...	1.185 H1-1b
186	4	M3	W24x68	.183	5.028	.025	1.886	y	328006..	601796..	61.128	149.801	3 H1-1b
187	4	M4	W24x68	.111	0	.024	1.886	y	328006..	601796..	61.128	148.603	2.976 H1-1b
188	4	M5	HSS18x0....	.110	0	.015	0		457542..	536526..	249.75	249.75	2.289 H1-1b
189	4	M6	HSS18x0....	.028	0	.010	3.175		463151..	536526..	249.75	249.75	2.192 H1-1b*
190	4	M7	HSS18x0....	.039	16.91	.008	16.91		459324..	536526..	249.75	249.75	1.698 H1-1b
191	4	M8	HSS18x0....	.014	12.771	.005	0		473500..	536526..	249.75	249.75	1.164 H1-1b
192	4	M29	L5x5x6	.067	6.822	.005	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
193	4	M30	L5x5x6	.068	6.822	.005	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
194	4	M31	L5x5x6	.068	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
195	4	M32	L5x5x6	.068	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
196	4	M33	L5x5x6	.070	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
197	4	M34	L5x5x6	.070	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
198	4	M35	L5x5x6	.068	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
199	4	M36	L5x5x6	.068	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
200	4	M37	L5x5x6	.067	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
201	4	M38	L5x5x6	.068	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
202	4	M39	L5x5x6	.122	7.613	.005	0	y	49600.6	78682....	4.935	7.829	1.136 H2-1



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om ...	Mny/o...	Mnzz/o...	Cb	Eqn
203	4	M40	L5x5x6	.120	7.454	.003	15.226	y	49600.6	78682....	4.935	7.829	1.136 H2-1
204	4	M41	L5x5x6	.138	7.613	.004	0	y	15976....	78682....	4.935	7.829	1.136 H2-1
205	4	M42	L5x5x6	.142	7.454	.003	15.226	y	49600.6	78682....	4.935	7.829	1.136 H2-1
206	4	M43	L3.5x3.5x5	.323	9.08	.001	19.812	y	10481....	45269....	1.918	2.577	1.136 H2-1
207	4	M44	L3.5x3.5x5	.306	9.906	.006	19.812	y	10481....	45269....	1.918	2.577	1.136 H2-1
208	4	M45	L5x5x3/8 ...	.096	0	.000	32.37	y	20518....	113307...	7.087	5.185	1.136 H2-1
209	4	M46	L5x5x3/8 ...	.457	15.848	.010	32.37	y	20518....	113307...	7.087	5.185	1.136 H2-1
210	4	M47	WT6x15	.168	0	.004	0	y	51096....	94850....	8.587	7.919	1.136 H1-1b*
211	4	M48	WT6x15	.211	12.666	.010	12.666	y	51096....	94850....	8.587	4.949	2.152 H1-1b
212	4	M49	WT6x15	.106	6.048	.006	12.096	y	53179....	94850....	8.587	7.919	1.136 H1-1b
213	4	M50	WT6x15	.181	0	.004	12.096	y	53179....	94850....	8.587	7.919	1.136 H1-1b*
214	4	M51	WT6x15	.062	6.26	.004	0	y	50651....	94850....	8.587	7.919	1.136 H1-1b
215	4	M52	WT6x15	.071	6.393	.006	0	y	50651....	94850....	8.587	7.919	1.136 H1-1b
216	4	M53	WT6x15	.057	6.005	.005	12.011	y	53489....	94850....	8.587	7.919	1.136 H1-1b
217	4	M54	WT6x15	.043	6.005	.004	12.011	y	53489....	94850....	8.587	7.919	1.136 H1-1b
218	4	M55	WT6x15	.064	6.308	.004	12.885	y	50288....	94850....	8.587	7.919	1.136 H1-1b
219	4	M56	WT6x15	.073	6.443	.007	0	y	50288....	94850....	8.587	7.919	1.136 H1-1b
220	4	M57	WT6x15	.062	6.07	.006	0	y	53022....	94850....	8.587	7.919	1.136 H1-1b
221	4	M58	WT6x15	.051	6.07	.004	12.139	y	53022....	94850....	8.587	7.919	1.136 H1-1b
222	4	M59	WT6x15	.059	6.236	.004	12.738	y	50830....	94850....	8.587	7.919	1.136 H1-1b
223	4	M60	WT6x15	.071	6.369	.007	0	y	50830....	94850....	8.587	7.919	1.136 H1-1b
224	4	M61	WT6x15	.065	6.07	.006	0	y	53022....	94850....	8.587	7.919	1.136 H1-1b
225	4	M62	WT6x15	.059	6.07	.004	12.139	y	53022....	94850....	8.587	7.919	1.136 H1-1b
226	4	M63	WT6x15	.047	6.236	.004	12.738	y	50830....	94850....	8.587	7.919	1.136 H1-1b
227	4	M64	WT6x15	.066	6.369	.006	0	y	50830....	94850....	8.587	7.919	1.136 H1-1b
228	4	M65	WT6x15	.057	5.741	.006	0	y	55390....	94850....	8.587	7.919	1.136 H1-1b
229	4	M66	WT6x15	.040	5.741	.005	11.482	y	55390....	94850....	8.587	7.919	1.136 H1-1b
230	4	M71	HSS8x4x4	.011	0	.003	0	y	68324....	112958...	14.731	23.892	2.381 H1-1b
231	4	M72	HSS8x4x4	.011	13.5	.003	13.5	y	68324....	112958...	14.731	23.892	2.381 H1-1b
232	4	M75	HSS6x4x4	.046	0	.004	18.182	y	35045....	92694....	11.587	15.323	2.381 H1-1b
233	4	M76	HSS6x4x4	.046	0	.004	18.182	y	35045....	92694....	11.587	15.323	2.381 H1-1b
234	4	M77	HSS6x4x4	.024	0	.004	0	y	38408....	92694....	11.587	15.323	2.381 H1-1b
235	4	M76A	L4x4x5/16...	.017	7.571	.001	7.571	z	39908....	81697....	3.706	6.632	3 H2-1
236	4	M77A	L4x4x5/16...	.018	7.571	.001	7.571	y	39908....	81697....	3.706	6.632	3 H2-1
237	4	M78	L4x4x5/16...	.048	0	.003	0	y	11074....	81697....	3.706	6.632	2.415 H2-1
238	4	M79	L4x4x5/16...	.124	14.72	.003	0	y	11074....	81697....	3.706	6.632	2.452 H2-1
239	4	M84	PIPE 3.0	.122	12.5	.004	12.5		18796....	43383....	3.825	3.825	1.265 H1-1b
240	4	M85	PIPE 3.0	.120	0	.004	0		18796....	43383....	3.825	3.825	1.264 H1-1b
241	4	M86	PIPE 3.0	.118	0	.004	0		18796....	43383....	3.825	3.825	1.265 H1-1b
242	4	M87	HSS4x0.2...	.357	0	.024	0		47654....	59497....	5.946	5.946	2.194 H1-1b
243	4	M88	HSS4x0.2...	.354	0	.025	0		47654....	59497....	5.946	5.946	2.194 H1-1b
244	4	M89	HSS4x0.2...	.353	0	.024	0		47654....	59497....	5.946	5.946	2.195 H1-1b
245	5	M1	W24x68 w...	.133	0	.020	19	y	1.1562...	1.5522...	375.833	1420.0...	1.184 H1-1b
246	5	M2	W24x68 w...	.152	0	.021	19	y	1.1562...	1.5522...	375.833	1420.0...	1.174 H1-1b
247	5	M3	W24x68	.110	0	.024	1.886	y	328006...	601796...	61.128	148.62	2.976 H1-1b
248	5	M4	W24x68	.178	5.028	.025	1.886	y	328006...	601796...	61.128	149.801	3 H1-1b
249	5	M5	HSS18x0....	.109	0	.015	0		457542...	536526...	249.75	249.75	2.277 H1-1b
250	5	M6	HSS18x0....	.028	0	.010	3.175		463151...	536526...	249.75	249.75	2.478 H1-1b*
251	5	M7	HSS18x0....	.039	16.91	.008	16.91		459324...	536526...	249.75	249.75	1.715 H1-1b
252	5	M8	HSS18x0....	.014	12.771	.005	0		473500...	536526...	249.75	249.75	1.163 H1-1b
253	5	M29	L5x5x6	.067	6.822	.005	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
254	5	M30	L5x5x6	.066	6.822	.005	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
255	5	M31	L5x5x6	.068	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
256	5	M32	L5x5x6	.068	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
257	5	M33	L5x5x6	.070	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
258	5	M34	L5x5x6	.070	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
259	5	M35	L5x5x6	.068	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om...	Mnvy/o...	Mnzz/o...	Cb	Eqn	
260	5	M36	L5x5x6	.068	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
261	5	M37	L5x5x6	.068	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
262	5	M38	L5x5x6	.067	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
263	5	M39	L5x5x6	.120	7.454	.004	15.226	y	49600.6	78682...	4.935	7.829	1.136	H2-1
264	5	M40	L5x5x6	.122	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
265	5	M41	L5x5x6	.311	7.296	.003	15.226	y	15976...	78682...	4.935	7.829	1.136	H2-1
266	5	M42	L5x5x6	.138	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
267	5	M43	L3.5x3.5x5	.305	9.906	.006	19.812	y	10481...	45269...	1.918	2.577	1.136	H2-1
268	5	M44	L3.5x3.5x5	.322	9.08	.001	0	y	10481...	45269...	1.918	2.577	1.136	H2-1
269	5	M45	L5x5x3/8 ...	.457	15.848	.010	0	y	20518...	113307...	7.087	5.185	1.136	H2-1
270	5	M46	L5x5x3/8 ...	.096	0	.000	0	y	20518...	113307...	7.087	5.185	1.136	H2-1
271	5	M47	WT6x15	.103	6.333	.006	0	y	51096...	94850...	8.587	7.919	1.136	H1-1b
272	5	M48	WT6x15	.235	0	.008	0	y	51096...	94850...	8.587	4.949	2.622	H1-1b
273	5	M49	WT6x15	.181	0	.004	0	y	53179...	94850...	8.587	7.919	1.136	H1-1b*
274	5	M50	WT6x15	.106	6.048	.006	0	y	53179...	94850...	8.587	7.919	1.136	H1-1b
275	5	M51	WT6x15	.072	6.393	.006	12.787	y	50651...	94850...	8.587	7.919	1.136	H1-1b
276	5	M52	WT6x15	.062	6.26	.004	0	y	50651...	94850...	8.587	7.919	1.136	H1-1b
277	5	M53	WT6x15	.043	6.005	.004	0	y	53489...	94850...	8.587	7.919	1.136	H1-1b
278	5	M54	WT6x15	.057	6.005	.006	12.011	y	53489...	94850...	8.587	7.919	1.136	H1-1b
279	5	M55	WT6x15	.073	6.443	.007	0	y	50288...	94850...	8.587	7.919	1.136	H1-1b
280	5	M56	WT6x15	.064	6.308	.004	12.885	y	50288...	94850...	8.587	7.919	1.136	H1-1b
281	5	M57	WT6x15	.051	6.07	.004	12.139	y	53022...	94850...	8.587	7.919	1.136	H1-1b
282	5	M58	WT6x15	.062	6.07	.006	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
283	5	M59	WT6x15	.071	6.369	.007	0	y	50830...	94850...	8.587	7.919	1.136	H1-1b
284	5	M60	WT6x15	.059	6.236	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
285	5	M61	WT6x15	.059	6.07	.004	12.139	y	53022...	94850...	8.587	7.919	1.136	H1-1b
286	5	M62	WT6x15	.065	6.07	.006	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
287	5	M63	WT6x15	.066	6.369	.006	0	y	50830...	94850...	8.587	7.919	1.136	H1-1b
288	5	M64	WT6x15	.047	6.236	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
289	5	M65	WT6x15	.040	5.741	.005	11.482	y	55390...	94850...	8.587	7.919	1.136	H1-1b
290	5	M66	WT6x15	.057	5.741	.006	0	y	55390...	94850...	8.587	7.919	1.136	H1-1b
291	5	M71	HSS8x4x4	.011	13.5	.003	13.5	y	68324...	112958...	14.731	23.892	2.381	H1-1b
292	5	M72	HSS8x4x4	.011	0	.003	0	y	68324...	112958...	14.731	23.892	2.381	H1-1b
293	5	M75	HSS6x4x4	.046	18.182	.004	0	y	35045...	92694...	11.587	15.323	2.381	H1-1b
294	5	M76	HSS6x4x4	.046	18.182	.004	0	y	35045...	92694...	11.587	15.323	2.381	H1-1b
295	5	M77	HSS6x4x4	.024	17.321	.004	17.321	y	38408...	92694...	11.587	15.323	2.381	H1-1b
296	5	M76A	L4x4x5/16...	.022	7.571	.001	7.571	y	39908...	81697...	3.706	6.632	1.078	H2-1
297	5	M77A	L4x4x5/16...	.020	0	.001	0	z	39908...	81697...	3.706	6.632	1.249	H2-1
298	5	M78	L4x4x5/16...	.156	14.72	.003	14.72	y	11074...	81697...	3.706	6.632	2.811	H2-1
299	5	M79	L4x4x5/16...	.069	14.72	.003	14.72	y	11074...	81697...	3.706	6.632	2.722	H2-1
300	5	M84	PIPE 3.0	.120	12.5	.004	12.5	y	18796...	43383...	3.825	3.825	1.264	H1-1b
301	5	M85	PIPE 3.0	.122	0	.004	0	y	18796...	43383...	3.825	3.825	1.265	H1-1b
302	5	M86	PIPE 3.0	.118	12.5	.004	12.5	y	18796...	43383...	3.825	3.825	1.265	H1-1b
303	5	M87	HSS4x0.2...	.353	0	.024	0	y	47654...	59497...	5.946	5.946	2.195	H1-1b
304	5	M88	HSS4x0.2...	.354	0	.025	0	y	47654...	59497...	5.946	5.946	2.194	H1-1b
305	5	M89	HSS4x0.2...	.357	0	.024	0	y	47654...	59497...	5.946	5.946	2.194	H1-1b
306	6	M1	W24x68 w...	.052	0	.013	0	y	1.1562...	1.5522...	375.833	1420.0...	1.935	H1-1b
307	6	M2	W24x68 w...	.050	0	.012	4.354	y	1.1562...	1.5522...	375.833	1420.0...	1.942	H1-1b
308	6	M3	W24x68	.136	55.309	.016	59.08	y	328006...	601796...	61.128	149.801	3	H1-1b
309	6	M4	W24x68	.132	55.309	.015	59.08	y	328006...	601796...	61.128	149.801	3	H1-1b
310	6	M5	HSS18x0...	.038	0	.002	0	y	457542...	536526...	249.75	249.75	1.545	H1-1b
311	6	M6	HSS18x0...	.020	3.175	.002	17.318	y	463151...	536526...	249.75	249.75	1.094	H1-1b
312	6	M7	HSS18x0...	.082	17.206	.010	16.91	y	459324...	536526...	249.75	249.75	2.073	H1-1b
313	6	M8	HSS18x0...	.052	0	.004	0	y	473500...	536526...	249.75	249.75	1.667	H1-1b
314	6	M29	L5x5x6	.075	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
315	6	M30	L5x5x6	.075	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
316	6	M31	L5x5x6	.072	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om ...	Mny/o...	Mnzz/o...	Cb	Eqn
317	6	M32	L5x5x6	.072	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
318	6	M33	L5x5x6	.078	6.822	.003	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
319	6	M34	L5x5x6	.078	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
320	6	M35	L5x5x6	.074	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
321	6	M36	L5x5x6	.074	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
322	6	M37	L5x5x6	.093	6.822	.004	0	y	19897....	78682....	4.935	8.139	1.136 H2-1
323	6	M38	L5x5x6	.094	6.822	.004	0	z	19897....	78682....	4.935	8.139	1.136 H2-1
324	6	M39	L5x5x6	.079	7.613	.004	0	y	49600.6	78682....	4.935	7.829	1.136 H2-1
325	6	M40	L5x5x6	.071	7.613	.004	0	y	49600.6	78682....	4.935	7.829	1.136 H2-1
326	6	M41	L5x5x6	.082	7.454	.004	0	y	15976....	78682....	4.935	7.829	1.136 H2-1
327	6	M42	L5x5x6	.070	7.613	.004	0	y	49600.6	78682....	4.935	7.829	1.136 H2-1
328	6	M43	L3.5x3.5x5	.217	9.699	.003	0	y	10481....	45269....	1.918	2.577	1.136 H2-1
329	6	M44	L3.5x3.5x5	.243	9.699	.003	0	y	10481....	45269....	1.918	2.577	1.136 H2-1
330	6	M45	L5x5x3/8 ...	.315	15.848	.005	0	y	20518....	113307...	7.087	5.185	1.136 H2-1
331	6	M46	L5x5x3/8 ...	.291	15.848	.005	32.37	y	20518....	113307...	7.087	5.185	1.136 H2-1
332	6	M47	WT6x15	.058	6.333	.003	12.666	y	51096....	94850....	8.587	7.919	1.136 H1-1b
333	6	M48	WT6x15	.078	0	.004	0	y	51096....	94850....	8.587	4.949	2.508 H1-1b
334	6	M49	WT6x15	.051	6.048	.004	12.096	y	53179....	94850....	8.587	7.919	1.136 H1-1b
335	6	M50	WT6x15	.051	6.048	.004	12.096	y	53179....	94850....	8.587	7.919	1.136 H1-1b
336	6	M51	WT6x15	.069	0	.003	12.787	y	50651....	94850....	8.587	7.919	1.136 H1-1b*
337	6	M52	WT6x15	.067	0	.003	0	y	50651....	94850....	8.587	7.919	1.136 H1-1b*
338	6	M53	WT6x15	.052	6.005	.004	0	y	53489....	94850....	8.587	7.919	1.136 H1-1b
339	6	M54	WT6x15	.052	6.005	.004	0	y	53489....	94850....	8.587	7.919	1.136 H1-1b
340	6	M55	WT6x15	.057	6.308	.003	12.885	y	50288....	94850....	8.587	7.919	1.136 H1-1b
341	6	M56	WT6x15	.056	6.308	.003	12.885	y	50288....	94850....	8.587	7.919	1.136 H1-1b
342	6	M57	WT6x15	.047	6.07	.004	0	y	53022....	94850....	8.587	7.919	1.136 H1-1b
343	6	M58	WT6x15	.047	6.07	.004	0	y	53022....	94850....	8.587	7.919	1.136 H1-1b
344	6	M59	WT6x15	.060	6.369	.003	12.738	y	50830....	94850....	8.587	7.919	1.136 H1-1b
345	6	M60	WT6x15	.059	6.369	.003	12.738	y	50830....	94850....	8.587	7.919	1.136 H1-1b
346	6	M61	WT6x15	.058	6.07	.004	0	y	53022....	94850....	8.587	7.919	1.136 H1-1b
347	6	M62	WT6x15	.058	6.07	.004	0	y	53022....	94850....	8.587	7.919	1.136 H1-1b
348	6	M63	WT6x15	.098	0	.004	12.738	y	50830....	94850....	8.587	7.919	1.136 H1-1b*
349	6	M64	WT6x15	.096	0	.004	12.738	y	50830....	94850....	8.587	7.919	1.136 H1-1b*
350	6	M65	WT6x15	.048	5.741	.004	0	y	55390....	94850....	8.587	7.919	1.136 H1-1b
351	6	M66	WT6x15	.048	5.741	.004	11.482	y	55390....	94850....	8.587	7.919	1.136 H1-1b
352	6	M71	HSS8x4x4	.016	0	.003	0	y	68324....	112958...	14.731	23.892	2.381 H1-1b
353	6	M72	HSS8x4x4	.016	13.5	.003	13.5	y	68324....	112958...	14.731	23.892	2.381 H1-1b
354	6	M75	HSS6x4x4	.028	0	.004	0	y	35045....	92694....	11.587	15.323	2.381 H1-1b
355	6	M76	HSS6x4x4	.028	18.182	.004	18.182	y	35045....	92694....	11.587	15.323	2.381 H1-1b
356	6	M77	HSS6x4x4	.032	0	.004	0	y	38408....	92694....	11.587	15.323	2.381 H1-1b
357	6	M76A	L4x4x5/16...	.093	0	.002	0	y	39908....	81697....	3.706	6.632	2.892 H2-1
358	6	M77A	L4x4x5/16...	.104	0	.002	0	y	39908....	81697....	3.706	6.632	2.71 H2-1
359	6	M78	L4x4x5/16...	.084	0	.003	0	y	11074....	81697....	3.706	6.632	2.202 H2-1
360	6	M79	L4x4x5/16...	.084	0	.003	0	y	11074....	81697....	3.706	6.632	2.25 H2-1
361	6	M84	PIPE 3.0	.192	12.5	.004	12.5		18796....	43383....	3.825	3.825	1.148 H1-1b
362	6	M85	PIPE 3.0	.192	0	.004	0		18796....	43383....	3.825	3.825	1.148 H1-1b
363	6	M86	PIPE 3.0	.193	12.5	.004	12.5		18796....	43383....	3.825	3.825	1.147 H1-1b
364	6	M87	HSS4x0.2...	.596	0	.039	0		47654....	59497....	5.946	5.946	2.173 H1-1b
365	6	M88	HSS4x0.2...	.601	0	.039	0		47654....	59497....	5.946	5.946	2.173 H1-1b
366	6	M89	HSS4x0.2...	.596	0	.039	0		47654....	59497....	5.946	5.946	2.173 H1-1b
367	7	M1	W24x68 w...	.039	0	.013	0	y	1.1562...	1.5522...	375.833	1420.0...	1.909 H1-1b
368	7	M2	W24x68 w...	.038	0	.012	4.552	y	1.1562...	1.5522...	375.833	1420.0...	1.912 H1-1b
369	7	M3	W24x68	.135	54.68	.010	59.08	y	328006...	601796...	61.128	139.116	2.786 H1-1b
370	7	M4	W24x68	.128	54.68	.010	59.08	y	328006...	601796...	61.128	138.952	2.783 H1-1b
371	7	M5	HSS18x0....	.083	0	.003	0		457542...	536526...	249.75	249.75	1.967 H1-1b*
372	7	M6	HSS18x0....	.064	0	.003	17.318		463151...	536526...	249.75	249.75	1.128 H1-1b*
373	7	M7	HSS18x0....	.083	16.91	.011	16.91		459324...	536526...	249.75	249.75	2.093 H1-1b



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc(ft)	Shear	Loc(ft)	Dir	Pnc/om	Pnt/om	Mnvy/o	Mnzz/o	Cb	Eqn
374	7	M8	HSS18x0...	.052	0	.004	0	473500.	536526...	249.75	249.75	1.666	H1-1b
375	7	M29	L5x5x6	.080	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
376	7	M30	L5x5x6	.081	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
377	7	M31	L5x5x6	.063	6.822	.003	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
378	7	M32	L5x5x6	.063	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
379	7	M33	L5x5x6	.068	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
380	7	M34	L5x5x6	.068	6.822	.003	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
381	7	M35	L5x5x6	.067	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
382	7	M36	L5x5x6	.067	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
383	7	M37	L5x5x6	.078	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
384	7	M38	L5x5x6	.079	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
385	7	M39	L5x5x6	.071	7.613	.004	0	y 49600.6	78682...	4.935	7.829	1.136	H2-1
386	7	M40	L5x5x6	.082	7.613	.004	0	y 49600.6	78682...	4.935	7.829	1.136	H2-1
387	7	M41	L5x5x6	.071	7.613	.004	0	y 15976...	78682...	4.935	7.829	1.136	H2-1
388	7	M42	L5x5x6	.079	7.613	.004	15.226	y 49600.6	78682...	4.935	7.829	1.136	H2-1
389	7	M43	L3.5x3.5x5	.181	9.699	.004	0	y 10481...	45269...	1.918	2.577	1.136	H2-1
390	7	M44	L3.5x3.5x5	.155	9.699	.004	0	y 10481...	45269...	1.918	2.577	1.136	H2-1
391	7	M45	L5x5x3/8 ...	.252	15.848	.005	0	y 20518...	113307...	7.087	5.185	1.136	H2-1
392	7	M46	L5x5x3/8 ...	.277	15.848	.005	32.37	y 20518...	113307...	7.087	5.185	1.136	H2-1
393	7	M47	WT6x15	.052	6.333	.004	0	y 51096...	94850...	8.587	7.919	1.136	H1-1b
394	7	M48	WT6x15	.065	12.666	.005	12.666	y 51096...	94850...	8.587	4.949	2.672	H1-1b
395	7	M49	WT6x15	.054	6.048	.003	0	y 53179...	94850...	8.587	7.919	1.136	H1-1b
396	7	M50	WT6x15	.054	6.048	.003	0	y 53179...	94850...	8.587	7.919	1.136	H1-1b
397	7	M51	WT6x15	.058	6.393	.004	12.787	y 50651...	94850...	8.587	7.919	1.136	H1-1b
398	7	M52	WT6x15	.058	6.393	.004	12.787	y 50651...	94850...	8.587	7.919	1.136	H1-1b
399	7	M53	WT6x15	.058	6.005	.003	0	y 53489...	94850...	8.587	7.919	1.136	H1-1b
400	7	M54	WT6x15	.057	6.005	.003	0	y 53489...	94850...	8.587	7.919	1.136	H1-1b
401	7	M55	WT6x15	.057	6.443	.004	0	y 50288...	94850...	8.587	7.919	1.136	H1-1b
402	7	M56	WT6x15	.057	6.443	.004	0	y 50288...	94850...	8.587	7.919	1.136	H1-1b
403	7	M57	WT6x15	.055	6.07	.003	12.139	y 53022...	94850...	8.587	7.919	1.136	H1-1b
404	7	M58	WT6x15	.054	6.07	.003	12.139	y 53022...	94850...	8.587	7.919	1.136	H1-1b
405	7	M59	WT6x15	.044	6.369	.004	0	y 50830...	94850...	8.587	7.919	1.136	H1-1b
406	7	M60	WT6x15	.044	6.369	.004	0	y 50830...	94850...	8.587	7.919	1.136	H1-1b
407	7	M61	WT6x15	.051	6.07	.003	12.139	y 53022...	94850...	8.587	7.919	1.136	H1-1b
408	7	M62	WT6x15	.050	6.07	.004	12.139	y 53022...	94850...	8.587	7.919	1.136	H1-1b
409	7	M63	WT6x15	.047	6.369	.005	0	y 50830...	94850...	8.587	7.919	1.136	H1-1b
410	7	M64	WT6x15	.047	6.369	.005	0	y 50830...	94850...	8.587	7.919	1.136	H1-1b
411	7	M65	WT6x15	.033	5.741	.004	0	y 55390...	94850...	8.587	7.919	1.136	H1-1b
412	7	M66	WT6x15	.034	5.741	.004	0	y 55390...	94850...	8.587	7.919	1.136	H1-1b
413	7	M71	HSS8x4x4	.016	13.5	.003	13.5	y 68324...	112958...	14.731	23.892	2.381	H1-1b
414	7	M72	HSS8x4x4	.016	0	.003	0	y 68324...	112958...	14.731	23.892	2.381	H1-1b
415	7	M75	HSS6x4x4	.028	18.182	.004	0	y 35045...	92694...	11.587	15.323	2.381	H1-1b
416	7	M76	HSS6x4x4	.028	0	.004	18.182	y 35045...	92694...	11.587	15.323	2.381	H1-1b
417	7	M77	HSS6x4x4	.032	17.321	.004	17.321	y 38408...	92694...	11.587	15.323	2.381	H1-1b
418	7	M76A	L4x4x5/16...	.083	0	.001	0	y 39908...	81697...	3.706	6.632	2.509	H2-1
419	7	M77A	L4x4x5/16...	.093	0	.002	0	y 39908...	81697...	3.706	6.632	2.657	H2-1
420	7	M78	L4x4x5/16...	.086	0	.003	0	y 11074...	81697...	3.706	6.632	2.219	H2-1
421	7	M79	L4x4x5/16...	.092	0	.003	0	y 11074...	81697...	3.706	6.632	2.297	H2-1
422	7	M84	PIPE 3.0	.192	12.5	.004	0	18796...	43383...	3.825	3.825	1.148	H1-1b
423	7	M85	PIPE 3.0	.192	0	.004	12.5	18796...	43383...	3.825	3.825	1.148	H1-1b
424	7	M86	PIPE 3.0	.193	0	.004	0	18796...	43383...	3.825	3.825	1.147	H1-1b
425	7	M87	HSS4x0.2...	.599	0	.040	0	47654...	59497...	5.946	5.946	2.173	H1-1b
426	7	M88	HSS4x0.2...	.596	0	.039	0	47654...	59497...	5.946	5.946	2.173	H1-1b
427	7	M89	HSS4x0.2...	.599	0	.040	0	47654...	59497...	5.946	5.946	2.173	H1-1b
428	8	M1	W24x68 w...	.064	0	.008	19	y 1.1562...	1.5522...	375.833	1420.0...	1.184	H1-1b
429	8	M2	W24x68 w...	.053	0	.008	19	y 1.1562...	1.5522...	375.833	1420.0...	1.181	H1-1b
430	8	M3	W24x68	.141	54.68	.013	59.08	y 328006..	601796..	61.128	129.85	2.6	H1-1b



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om ...	Mny/o...	Mnz/z/o...	Cb	Eqn	
431	8	M4	W24x68	.131	55.309	.012	59.08	y	328006...	601796...	61.128	149.801	3	H1-1b
432	8	M5	HSS18x0...	.048	0	.005	0		457542...	536526...	249.75	249.75	2.303	H1-1b
433	8	M6	HSS18x0...	.017	0	.003	3.175		463151...	536526...	249.75	249.75	1.773	H1-1b*
434	8	M7	HSS18x0...	.024	17.206	.003	16.91		459324...	536526...	249.75	249.75	1.604	H1-1b
435	8	M8	HSS18x0...	.013	0	.001	0		473500...	536526...	249.75	249.75	2.219	H1-1b*
436	8	M29	L5x5x6	.067	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
437	8	M30	L5x5x6	.067	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
438	8	M31	L5x5x6	.067	6.822	.003	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
439	8	M32	L5x5x6	.067	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
440	8	M33	L5x5x6	.073	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
441	8	M34	L5x5x6	.073	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
442	8	M35	L5x5x6	.071	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
443	8	M36	L5x5x6	.071	6.822	.003	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
444	8	M37	L5x5x6	.086	6.822	.004	0	y	19897...	78682...	4.935	8.139	1.136	H2-1
445	8	M38	L5x5x6	.086	6.822	.004	0	z	19897...	78682...	4.935	8.139	1.136	H2-1
446	8	M39	L5x5x6	.093	7.613	.004	0	y	49600.6	78682...	4.935	7.829	1.136	H2-1
447	8	M40	L5x5x6	.092	7.613	.003	15.226	y	49600.6	78682...	4.935	7.829	1.136	H2-1
448	8	M41	L5x5x6	.099	7.613	.004	0	y	15976...	78682...	4.935	7.829	1.136	H2-1
449	8	M42	L5x5x6	.101	7.613	.003	15.226	y	49600.6	78682...	4.935	7.829	1.136	H2-1
450	8	M43	L3.5x3.5x5	.253	9.699	.003	19.812	y	10481...	45269...	1.918	2.577	1.136	H2-1
451	8	M44	L3.5x3.5x5	.204	9.906	.004	0	y	10481...	45269...	1.918	2.577	1.136	H2-1
452	8	M45	L5x5x3/8 ...	.216	15.51	.003	0	y	20518...	113307...	7.087	5.185	1.136	H2-1
453	8	M46	L5x5x3/8 ...	.352	15.848	.007	32.37	y	20518...	113307...	7.087	5.185	1.136	H2-1
454	8	M47	WT6x15	.068	0	.004	12.666	y	51096...	94850...	8.587	7.919	1.136	H1-1b*
455	8	M48	WT6x15	.100	12.666	.006	12.666	y	51096...	94850...	8.587	4.949	2.298	H1-1b
456	8	M49	WT6x15	.059	6.048	.004	12.096	y	53179...	94850...	8.587	7.919	1.136	H1-1b
457	8	M50	WT6x15	.071	0	.004	12.096	y	53179...	94850...	8.587	7.919	1.136	H1-1b*
458	8	M51	WT6x15	.044	6.393	.004	12.787	y	50651...	94850...	8.587	7.919	1.136	H1-1b
459	8	M52	WT6x15	.047	6.393	.005	12.787	y	50651...	94850...	8.587	7.919	1.136	H1-1b
460	8	M53	WT6x15	.040	6.005	.004	0	y	53489...	94850...	8.587	7.919	1.136	H1-1b
461	8	M54	WT6x15	.035	6.005	.004	12.011	y	53489...	94850...	8.587	7.919	1.136	H1-1b
462	8	M55	WT6x15	.041	6.443	.004	12.885	y	50288...	94850...	8.587	7.919	1.136	H1-1b
463	8	M56	WT6x15	.050	6.443	.005	0	y	50288...	94850...	8.587	7.919	1.136	H1-1b
464	8	M57	WT6x15	.041	6.07	.004	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
465	8	M58	WT6x15	.042	6.07	.004	12.139	y	53022...	94850...	8.587	7.919	1.136	H1-1b
466	8	M59	WT6x15	.053	6.369	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
467	8	M60	WT6x15	.044	6.369	.005	0	y	50830...	94850...	8.587	7.919	1.136	H1-1b
468	8	M61	WT6x15	.049	6.07	.005	0	y	53022...	94850...	8.587	7.919	1.136	H1-1b
469	8	M62	WT6x15	.033	6.07	.004	12.139	y	53022...	94850...	8.587	7.919	1.136	H1-1b
470	8	M63	WT6x15	.057	6.369	.004	12.738	y	50830...	94850...	8.587	7.919	1.136	H1-1b
471	8	M64	WT6x15	.054	6.369	.005	0	y	50830...	94850...	8.587	7.919	1.136	H1-1b
472	8	M65	WT6x15	.043	5.741	.005	0	y	55390...	94850...	8.587	7.919	1.136	H1-1b
473	8	M66	WT6x15	.041	5.741	.004	11.482	y	55390...	94850...	8.587	7.919	1.136	H1-1b
474	8	M71	HSS8x4x4	.011	0	.003	0	y	68324...	112958...	14.731	23.892	2.382	H1-1b
475	8	M72	HSS8x4x4	.011	13.5	.003	13.5	y	68324...	112958...	14.731	23.892	2.382	H1-1b
476	8	M75	HSS6x4x4	.034	0	.004	18.182	y	35045...	92694...	11.587	15.323	2.381	H1-1b
477	8	M76	HSS6x4x4	.034	0	.004	18.182	y	35045...	92694...	11.587	15.323	2.381	H1-1b
478	8	M77	HSS6x4x4	.024	0	.004	0	y	38408...	92694...	11.587	15.323	2.381	H1-1b
479	8	M76A	L4x4x5/16...	.085	0	.001	0	y	39908...	81697...	3.706	6.632	2.582	H2-1
480	8	M77A	L4x4x5/16...	.099	0	.002	0	y	39908...	81697...	3.706	6.632	2.793	H2-1
481	8	M78	L4x4x5/16...	.081	0	.003	0	y	11074...	81697...	3.706	6.632	2.25	H2-1
482	8	M79	L4x4x5/16...	.086	0	.003	0	y	11074...	81697...	3.706	6.632	2.315	H2-1
483	8	M84	PIPE 3.0	.193	12.5	.004	0		18796...	43383...	3.825	3.825	1.147	H1-1b
484	8	M85	PIPE 3.0	.192	0	.004	12.5		18796...	43383...	3.825	3.825	1.147	H1-1b
485	8	M86	PIPE 3.0	.191	0	.004	0		18796...	43383...	3.825	3.825	1.147	H1-1b
486	8	M87	HSS4x0.2...	.599	0	.039	0		47654...	59497...	5.946	5.946	2.173	H1-1b
487	8	M88	HSS4x0.2...	.597	0	.039	0		47654...	59497...	5.946	5.946	2.173	H1-1b



Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir	Pnc/om...	Pnt/om...	Mnvy/o...	Mnzz/o...	Cb	Eqn
488	8	M89	HSS4x0.2...	.597	0	.039	0	47654...	59497...	5.946	5.946	2.173	H1-1b
489	9	M1	W24x68 w...	.053	0	.008	19	y 1.1562...	1.5522...	375.833	1420.0...	1.182	H1-1b
490	9	M2	W24x68 w...	.063	0	.008	19	y 1.1562...	1.5522...	375.833	1420.0...	1.187	H1-1b
491	9	M3	W24x68	.137	55.309	.012	59.08	y 328006...	601796...	61.128	149.801	3	H1-1b
492	9	M4	W24x68	.138	54.68	.013	59.08	y 328006...	601796...	61.128	129.622	2.596	H1-1b
493	9	M5	HSS18x0...	.047	0	.005	0	457542...	536526...	249.75	249.75	2.272	H1-1b
494	9	M6	HSS18x0...	.017	0	.003	3.175	463151...	536526...	249.75	249.75	2.423	H1-1b*
495	9	M7	HSS18x0...	.024	17.206	.003	16.91	459324...	536526...	249.75	249.75	1.632	H1-1b
496	9	M8	HSS18x0...	.013	0	.001	0	473500...	536526...	249.75	249.75	2.206	H1-1b*
497	9	M29	L5x5x6	.067	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
498	9	M30	L5x5x6	.066	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
499	9	M31	L5x5x6	.067	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
500	9	M32	L5x5x6	.067	6.822	.003	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
501	9	M33	L5x5x6	.073	6.822	.003	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
502	9	M34	L5x5x6	.073	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
503	9	M35	L5x5x6	.071	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
504	9	M36	L5x5x6	.071	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
505	9	M37	L5x5x6	.085	6.822	.004	0	y 19897...	78682...	4.935	8.139	1.136	H2-1
506	9	M38	L5x5x6	.087	6.822	.004	0	z 19897...	78682...	4.935	8.139	1.136	H2-1
507	9	M39	L5x5x6	.092	7.613	.004	15.226	y 49600.6	78682...	4.935	7.829	1.136	H2-1
508	9	M40	L5x5x6	.093	7.613	.004	0	y 49600.6	78682...	4.935	7.829	1.136	H2-1
509	9	M41	L5x5x6	.165	7.454	.003	15.226	y 15976...	78682...	4.935	7.829	1.136	H2-1
510	9	M42	L5x5x6	.099	7.613	.004	0	y 49600.6	78682...	4.935	7.829	1.136	H2-1
511	9	M43	L3.5x3.5x5	.204	9.906	.004	0	y 10481...	45269...	1.918	2.577	1.136	H2-1
512	9	M44	L3.5x3.5x5	.253	9.699	.003	0	y 10481...	45269...	1.918	2.577	1.136	H2-1
513	9	M45	L5x5x3/8 ...	.351	15.848	.007	32.37	y 20518...	113307...	7.087	5.185	1.136	H2-1
514	9	M46	L5x5x3/8 ...	.216	15.51	.003	0	y 20518...	113307...	7.087	5.185	1.136	H2-1
515	9	M47	WT6x15	.059	6.333	.005	12.666	y 51096...	94850...	8.587	7.919	1.136	H1-1b
516	9	M48	WT6x15	.114	0	.005	0	y 51096...	94850...	8.587	4.949	2.682	H1-1b
517	9	M49	WT6x15	.072	0	.004	0	y 53179...	94850...	8.587	7.919	1.136	H1-1b*
518	9	M50	WT6x15	.059	6.048	.005	12.096	y 53179...	94850...	8.587	7.919	1.136	H1-1b
519	9	M51	WT6x15	.047	6.393	.005	12.787	y 50651...	94850...	8.587	7.919	1.136	H1-1b
520	9	M52	WT6x15	.044	6.393	.004	0	y 50651...	94850...	8.587	7.919	1.136	H1-1b
521	9	M53	WT6x15	.035	6.005	.004	12.011	y 53489...	94850...	8.587	7.919	1.136	H1-1b
522	9	M54	WT6x15	.040	6.005	.004	0	y 53489...	94850...	8.587	7.919	1.136	H1-1b
523	9	M55	WT6x15	.050	6.443	.005	0	y 50288...	94850...	8.587	7.919	1.136	H1-1b
524	9	M56	WT6x15	.041	6.443	.004	12.885	y 50288...	94850...	8.587	7.919	1.136	H1-1b
525	9	M57	WT6x15	.042	6.07	.004	12.139	y 53022...	94850...	8.587	7.919	1.136	H1-1b
526	9	M58	WT6x15	.041	6.07	.004	0	y 53022...	94850...	8.587	7.919	1.136	H1-1b
527	9	M59	WT6x15	.044	6.369	.005	0	y 50830...	94850...	8.587	7.919	1.136	H1-1b
528	9	M60	WT6x15	.053	6.369	.004	12.738	y 50830...	94850...	8.587	7.919	1.136	H1-1b
529	9	M61	WT6x15	.033	6.07	.004	12.139	y 53022...	94850...	8.587	7.919	1.136	H1-1b
530	9	M62	WT6x15	.049	6.07	.005	0	y 53022...	94850...	8.587	7.919	1.136	H1-1b
531	9	M63	WT6x15	.054	6.369	.004	0	y 50830...	94850...	8.587	7.919	1.136	H1-1b
532	9	M64	WT6x15	.057	6.369	.004	12.738	y 50830...	94850...	8.587	7.919	1.136	H1-1b
533	9	M65	WT6x15	.041	5.741	.004	0	y 55390...	94850...	8.587	7.919	1.136	H1-1b
534	9	M66	WT6x15	.043	5.741	.005	11.482	y 55390...	94850...	8.587	7.919	1.136	H1-1b
535	9	M71	HSS8x4x4	.011	13.5	.003	13.5	y 68324...	112958...	14.731	23.892	2.382	H1-1b
536	9	M72	HSS8x4x4	.011	0	.003	0	y 68324...	112958...	14.731	23.892	2.381	H1-1b
537	9	M75	HSS6x4x4	.034	18.182	.004	0	y 35045...	92694...	11.587	15.323	2.381	H1-1b
538	9	M76	HSS6x4x4	.034	18.182	.004	0	y 35045...	92694...	11.587	15.323	2.381	H1-1b
539	9	M77	HSS6x4x4	.024	17.321	.004	17.321	y 38408...	92694...	11.587	15.323	2.381	H1-1b
540	9	M76A	L4x4x5/16...	.090	0	.001	0	y 39908...	81697...	3.706	6.632	3	H2-1
541	9	M77A	L4x4x5/16...	.098	0	.002	0	y 39908...	81697...	3.706	6.632	2.553	H2-1
542	9	M78	L4x4x5/16...	.090	0	.003	0	y 11074...	81697...	3.706	6.632	2.155	H2-1
543	9	M79	L4x4x5/16...	.090	0	.003	0	y 11074...	81697...	3.706	6.632	2.209	H2-1
544	9	M84	PIPE 3.0	.192	12.5	.004	0	18796...	43383...	3.825	3.825	1.147	H1-1b



Company : AT&T Mobility
 Designer : DAVI
 Job Number : 411261
 Model Name : Cromwell SW CT

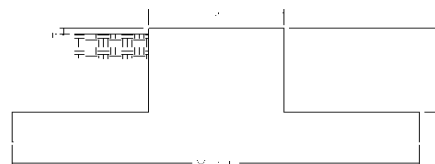
May 22, 2017
 2:42 PM
 Checked By: TAN

Member AISC 13th(360-05): ASD Steel Code Checks (Continued)

LC	Member	Shape	UC Max	Loc[ft]	Shear ...	Loc[ft]	Dir Pnc/om...	Pnt/om ...	Mnyy/o...	Mnzz/o...	Cb	Eqn
545	9	M85	PIPE 3.0	.193	0	.004	12.5	18796....	43383....	3.825	3.825	1.147 H1-1b
546	9	M86	PIPE 3.0	.191	12.5	.004	12.5	18796....	43383....	3.825	3.825	1.147 H1-1b
547	9	M87	HSS4x0.2...	.597	0	.039	0	47654....	59497....	5.946	5.946	2.173 H1-1b
548	9	M88	HSS4x0.2...	.597	0	.039	0	47654....	59497....	5.946	5.946	2.173 H1-1b
549	9	M89	HSS4x0.2...	.599	0	.039	0	47654....	59497....	5.946	5.946	2.173 H1-1b

Site Name: Cromwell SW CT, CT
 Site Number: 411261
 Engineering Number: OAA702243_C3_01
 Engineer: DAVI
 Date: 05/22/17
 Tower Type: SST w/3 Legs

Program Last Updated: 11/15/2012



Design Loads (Unfactored)

Design / Analysis / Mapping:	Mapping
Compression/Leg:	58.3 k
Uplift/Leg:	101.7 k
Total Shear:	16.4 k
Moment:	909.6 k-ft
Tower + Appurtenance Weight:	34.5 k
Depth to Base of Foundation:	3.00 ft
Diameter of Pier (d):	0.75 ft
Height of Pier above Ground (h):	0.50
Width of Pad (W):	26.50 ft
Length of Pad (L):	16.00 ft
Thickness of Pad (t):	3.00 ft
Tower Leg Center to Center:	13.00 ft
Number of Tower Legs:	3.0 (1 if MP or GT)
Tower Center from Mat Center:	0.00 ft
Depth Below Ground Surface to Water Table:	99.00 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	110.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	47.6 pcf
Friction Angle of Uplift:	15.00 Degrees
Ultimate Coefficient of Shear Friction:	0.30
Allowable Compressive Bearing Pressure:	10000.0 psf
Ultimate Passive Pressure on Pad Face:	0.0 psf
Allowable Capacity Increase:	1.00

Overturning Factor of Safety

Design OTM:	966.8 k-ft
OTM Resistance:	4682.8 k-ft
OTM Resistance / Design OTM Factor of Safety:	4.84 Result: OK

Soil Bearing Pressure Usage:

Net Bearing Pressure:	1653 psf
Allowable Bearing Pressure:	10000 psf
Net Bearing Pressure/Allowable Bearing Pressure:	0.17 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

Sliding Factor of Safety

Total Ultimate Sliding Resistance:	67.6 k
Sliding Resistance/Sliding Design Factor of Safety:	4.14 Result: OK



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5144

Cromwell South
100 Christian Hill Road
Cromwell, CT 6416

June 12, 2017

Centerline Communications Project Number: 950006-056

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	25.31 %



June 12, 2017

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

Emissions Analysis for Site: **CT5144 – Cromwell South**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **100 Christian Hill Road, Cromwell, 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 population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population 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 performed for the proposed AT&T Wireless antenna facility located at **100 Christian Hill Road, Cromwell, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	2300 MHz (WCS)	2	60
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	98
A	2	CCI OPA-65R-LCUU-H6	98
A	3	Quintel QS66512-2	98
B	1	Powerwave 7770	98
B	2	CCI OPA-65R-LCUU-H6	98
B	3	Quintel QS66512-2	98
C	1	Powerwave 7770	98
C	2	CCI OPA-65R-LCUU-H6	98
C	3	Quintel QS66512-2	98

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.18
Antenna A2	CCI OPA-65R-LCUU-H6	2300 MHz (WCS)	15.45	2	120	4,209.02	1.79
Antenna A3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	4	240	4,371.36	2.56
Sector A Composite MPE%							5.53
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.18
Antenna B2	CCI OPA-65R-LCUU-H6	2300 MHz (WCS)	15.45	2	120	4,209.02	1.79
Antenna B3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	4	240	4,371.36	2.56
Sector B Composite MPE%							5.53
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.18
Antenna C2	CCI OPA-65R-LCUU-H6	2300 MHz (WCS)	15.45	2	120	4,209.02	1.79
Antenna C3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	4	240	4,371.36	2.56
Sector C Composite MPE%							5.53

Table 3: AT&T Emissions Levels



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	5.53 %
MetroPCS	2.41 %
T-Mobile	2.36 %
Verizon Wireless	15.01 %
Site Total MPE %:	25.31 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.53 %
AT&T Sector B Total:	5.53 %
AT&T Sector C Total:	5.53 %
Site Total:	25.31 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# 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 850 MHz UMTS	2	414.12	98	3.52	850 MHz	567	0.62%
AT&T 1900 MHz (PCS) UMTS	2	656.33	98	5.58	1900 MHz (PCS)	1000	0.56%
AT&T 2300 MHz (WCS) LTE	2	2,104.51	98	17.88	2300 MHz (WCS)	1000	1.79%
AT&T 700 MHz LTE	2	729.71	98	6.20	700 MHz	467	1.33%
AT&T 1900 MHz (PCS) LTE	2	1,455.97	98	12.37	1900 MHz (PCS)	1000	1.24%
						Total:	5.53%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

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

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	5.53 %
Sector B:	5.53 %
Sector C:	5.53 %
AT&T Maximum Total (per sector):	5.53 %
Site Total:	25.31 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **25.31 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the contact information.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
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Raynham, MA 02767