

CONNECTICUT SITING COUNCIL

PETITION OF NEW CINGULAR WIRELESS)
PCS, LLC ("AT&T") TO THE CONNECTICUT)
SITING COUNCIL FOR A DECLARATORY) PETITION NO. _____
RULING THAT NO CERTIFICATE OF)
ENVIRONMENTAL COMPATIBILITY AND)
PUBLIC NEED IS REQUIRED TO MODIFY)
AN EXISTING PUBLIC UTILITY TOWER)
LOCATED AT 5 TALL PINES DRIVE,)
WESTON, CONNECTICUT)
)

PETITION FOR DECLARATORY RULING TO MODIFY AN EXISTING PUBLIC UTILITY TOWER 5 TALL PINES DRIVE, WESTON, CONNECTICUT

I. Introduction

New Cingular Wireless PCS, LLC ("AT&T"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Section 16-50k of the Connecticut General Statutes ("C.G.S.")¹ to modify an existing public utility tower² owned by Eversource located at 5 Tall Pines Drive in Weston, Connecticut (the "Site"). Included in Attachment 1 is an August 26, 2019 letter from Eversource authorizing AT&T to file this Petition.

II. The Premises and Existing Public Utility Facility

The approximately 2.01-acre Site is located on the southeastern portion of the intersection of Tall Pines Drive and White Birch Road and is improved with a two-story house and public utility infrastructure within an electrical transmission right-of-way

¹ Pursuant to C.G.S. § 16-50k(a), if a proposed facility may have a "substantial adverse environmental impact", a Certificate of Environmental Compatibility and Public Need is required. Based on the information enclosed herein, we respectfully submit that the proposed facility will not have a substantial adverse environmental impact.

² The Connecticut Siting Council has jurisdiction over "facilities" as defined in Connecticut General Statute ("C.G.S.") § 16-50i, which are defined to include telecommunications towers. C.G.S. § 16-50i(a)(6). The Regulations of Connecticut State Agencies ("R.C.S.A.") § 16-50j-2a(23) provides in relevant part that: "tower means a structure, whether freestanding or attached to a building . . . that has a height greater than its diameter and that is high relative to its surroundings . . . which is . . . (B) owned or operated by . . . a public service company as defined in Section 16-1 of the Connecticut General Statutes . . ."

operated by Eversource on a utility easement. Eversource transmission lines bisect the southern portion of the Site in a southwest to northwest direction. The Site is located within a residential district with single-family homes and undeveloped wooded lots surrounding the property. Aerial photos are provided on Sheet Number T-1 of the enclosed drawings in Attachment 2, prepared by Maser Consulting Connecticut, dated December 7, 2018 and last revised September 20, 2019 (the "Site Drawings"), and the enclosed Viewshed Analysis Report in Attachment 3.

The existing public utility facility consists of an approximately 81-foot tall steel lattice public utility transmission tower (Eversource Structure No. 917) with associated equipment located at grade within a fenced equipment compound located at the edge of the proposed parking area northeast of the base of the tower. AT&T does not currently operate a facility on the tower and there are no other wireless carriers currently operating a facility on the tower.

III. AT&T's Proposed Facility

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. AT&T is proposing to attach a new 98-foot tall antenna mast within the center of the existing 81-foot tall lattice tower and install twelve (12) antennas on the antenna mast at a centerline height of approximately 95-feet above ground level ("AGL") with the top of the antennas extending to a height of approximately 99-feet AGL.

AT&T will also mount twenty-four (24) remote radio units ("RRUs") on the proposed antenna mast. Associated unmanned equipment is proposed within an approximately 432-square foot fenced equipment compound to be located in a gravel area northeast of the tower, adjacent to the proposed gravel parking area and access drive from White Birch Road. The equipment will include a Generac Industrial Diesel Generator as an emergency back-up power source for AT&T's facility, which will be located on a concrete pad within the equipment area. Specifications of the generator are provided in Attachment 5.

AT&T's proposed modification to the existing facility is detailed in the Site Drawings included as Attachment 2. Also, annexed hereto as Attachment 4 is the passing structural analysis for the proposed antenna mast and tower structure, prepared by Centek Engineering, Inc., dated December 19, 2018 and last revised March 1, 2019. The structural analysis demonstrates that the proposed modifications to the lattice tower will be designed to support AT&T's antenna mast installation.

IV. The Proposal Will Not Have a Substantial Adverse Environmental Effect

A comparison of the existing and proposed conditions reveals no substantial or significant environmental impacts associated with AT&T's proposed modification to the existing public utility tower. The proposed antenna mast will be consistent with the existing tower design, color and material. Photosimulations depicting the existing tower

and the proposed facility at 5 surrounding locations are included in Attachment 3. These photosimulations demonstrate that visibility of the proposed antenna mast is limited to locations immediately facing the transmission tower along White Birch Road. The existing transmission tower is not readily visible from other locations along White Birch Road or Tall Pines Drive and surrounding residences. Due to dense vegetation and undulating terrain, the additional height of the proposed facility will not create any substantive new views and would only be visible from locations immediately facing the transmission tower along White Birch Road.

Also enclosed in Attachment 6 is confirmation that the proposed modification of the existing public utility transmission tower will not require registration with the FAA.

A. Minimal Physical Impact

AT&T's proposed modification will result in limited disturbance to the site, which is currently improved with Eversource infrastructure, within the proposed approximately 432-square foot equipment area and the proposed parking area and gravel access drive connecting to White Birch Road. Enclosed as Attachment 7 is a Wetland Inspection Report, prepared by All-Points Technology Corporation, indicating that the proposed facility will not have an impact to offsite wetlands. Erosion and sediment controls will be implemented in accordance with the recommendations in the Wetland Inspection Report. The facility is unmanned and requires no water or wastewater connections and generates no waste.

B. Compliance with MPE Limits

The operation of AT&T's antennas on the proposed antenna mast will not produce radio frequency electromagnetic power density at the site to a level at or above applicable standards. A power density report is included in Attachment 8. The total radio frequency power density will be 14.91% of the allowable FCC established general public limit at ground level and well within standards adopted by the Connecticut Department of Energy & Environmental Protection as set forth in C.G.S. Section 22a-162.

V. AT&T's Need for the Proposed Modification to Provide Reliable Service

Included in Attachment 9 are AT&T radio frequency coverage maps which depict existing coverage from AT&T's facilities in the surrounding area and projected coverage from the proposed wireless facility. As shown in these maps, AT&T needs the proposed modification to provide reliable service within its network in this area of Weston.

As such, while the Council does not have to find a public need for the facility as part of a ruling on this Petition, it is respectfully submitted that the enclosed information fully demonstrates the need for the proposed modification to provide reliable wireless services to the public.

VI. Notice of Petition Filing

Pursuant to R.C.S.A. Section 16-50j-40(a), notice of AT&T's intent to file this Petition was sent to each person appearing of record as an owner of property that abuts the site, as well as the appropriate municipal officials and government agencies as listed in Section 16-50e of the C.G.S. Certification of such notice, a copy of the notice and the list of property owners is included in Attachment 10 along with the map from the Town's GIS website used to identify abutting property owners. Attachment 10 also includes a certification of service to municipal officials and government agencies to whom notice was sent.

VII. Conclusion

As set forth herein, AT&T's proposed modifications to the existing public utility transmission tower are wholly consistent with legislative findings outlined in C.G.S. Sections 16-50g and 16-50aa that seek to avoid the unnecessary proliferation of towers in the State. It is respectfully submitted that AT&T's proposed facility does not present any significant adverse environmental effects as listed in Section 16-50p of the General Statutes. Therefore, and for the foregoing reasons, AT&T petitions the Connecticut Siting Council for a determination that the proposed wireless telecommunications facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving same.

Respectfully Submitted,



Kristen Motel, Esq.
On behalf of the Petitioner, AT&T
Cuddy & Feder, LLP
445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
(914) 761-1300

Cc: AT&T
Lucia Chiocchio, Esq.

1



56 Prospect Street,
Hartford, CT 06103

P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

August 26, 2019

Mr. Mark Roberts
QC Development for AT&T
PO Box 916
Storrs, CT 06268

RE: AT&T Antenna Site, CT1845, Tall Pines Drive, Weston, CT, Eversource Structure 917

Dear Mr. Roberts:

Based on our reviews of the structural analysis, foundation modifications, and site drawings provided by Centek, and a third party review performed by Paul J. Ford & Company, we accept the proposed new site.

When QC Development secures necessary regulatory and zoning approvals, Eversource will be able to request transmission line outages as needed and work with AT&T and QC Development to schedule construction.

Please do not hesitate to contact us with questions or concerns. Christopher Gelinas of Eversource Real Estate can be contacted at 860-665-2008, and I can be contacted at 860-728-4503.

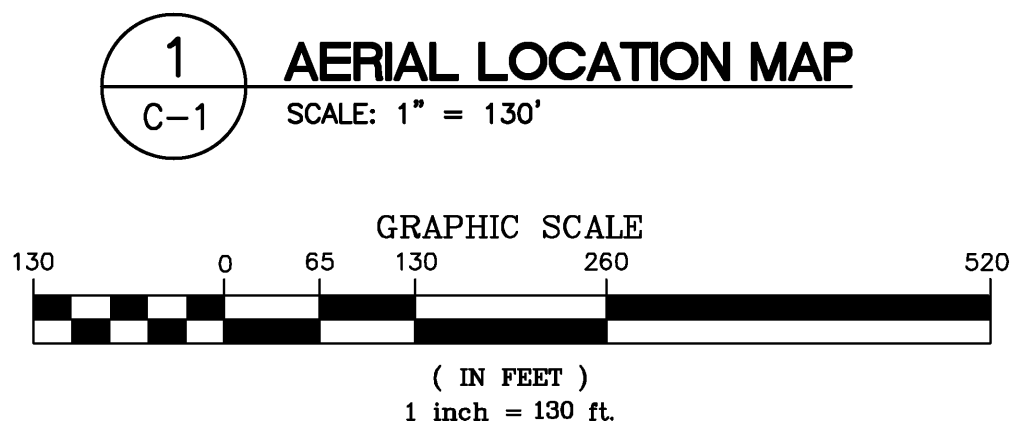
Sincerely,

A handwritten signature in black ink, appearing to read "Joel Szarkowicz".

Joel Szarkowicz
Transmission Line Engineering

Ref: 18123.00 CTSR1845 Weston - NSB - CDs REV 1_19.08.26 (SS)
18123.00 - CT1845 - Structural Analysis Rev3 19.03.01

2



MISCELLANEOUS SITE INFORMATION		
DISTANCE TO NEAREST OFF SITE RESIDENCE*	=	104' ±
DISTANCE TO NEAREST MUNICIPALITY (WESTPORT, CT)**	=	1,600' ±
ACCESS LENGTH OFF WHITE BIRCH ROAD	=	108' ±
NUMBER OF EXISTING RESIDENTIAL STRUCTURES WITHIN 1000' OF TOWER	=	30 ±
TOTAL NUMBER OF TREES TO BE REMOVED	=	0 ±
DISTANCE TO NEAREST PROPERTY LINE**	=	42' ±
<u>SCHOOL/DAYCARE FACILITY PROXIMITY:</u>		<u>DISTANCE:</u>
1. WESTON HIGH SCHOOL		1.90 mi.
2. WESTON MIDDLE SCHOOL		2.09 mi.
3. WESTON INTERMEDIATE SCHOOL		1.79 mi.
4. COLEYTOWN MIDDLE SCHOOL		1.17 mi.
5. STEPPING STONES PRESCHOOL		1.30 mi.
6. COLEYTOWN ELEMENTARY SCHOOL		1.31 mi.
7. TEMPLE ISRAEL NURSERY SCHOOL		1.32 mi.
8. WESTPORT WESTON CO-OP NURSERY		1.40 mi.
9. NORFIELD CHILDRENS CENTER		1.59 mi.
10. ST. PAUL CHRISTIAN SCHOOL		1.74 mi.
11. HURBUTT ELEMENTARY SCHOOL		1.76 mi.
12. ST. FRANCIS OF ASSISI PRESCHOOL		1.84 mi.
13. EMMANUEL NURSERY SCHOOL		1.86 mi.
14. COMMUNITY NURSERY SCHOOL		1.99 mi.

N/F
27-3-17
WILLIAM F TR LACY
30 WHITE BIRCH RD
WESTON, CT 06883

N/F
27-3-63
MARTHA E. H. DEEGAN
11 TALL PINES DRIVE
WESTON, CT 06883

TALL PINES DRIVE

SUBJECT PARCEL
N/F
27-3-61
DEAN & VICTORIA
CARPENTER
5 TALL PINES DRIVE
WESTON, CT 06883

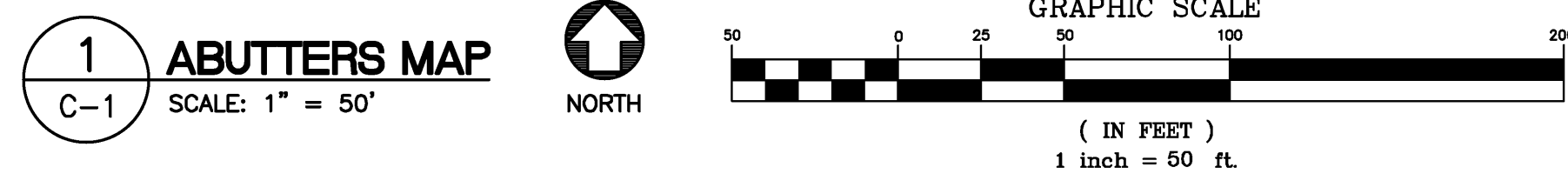
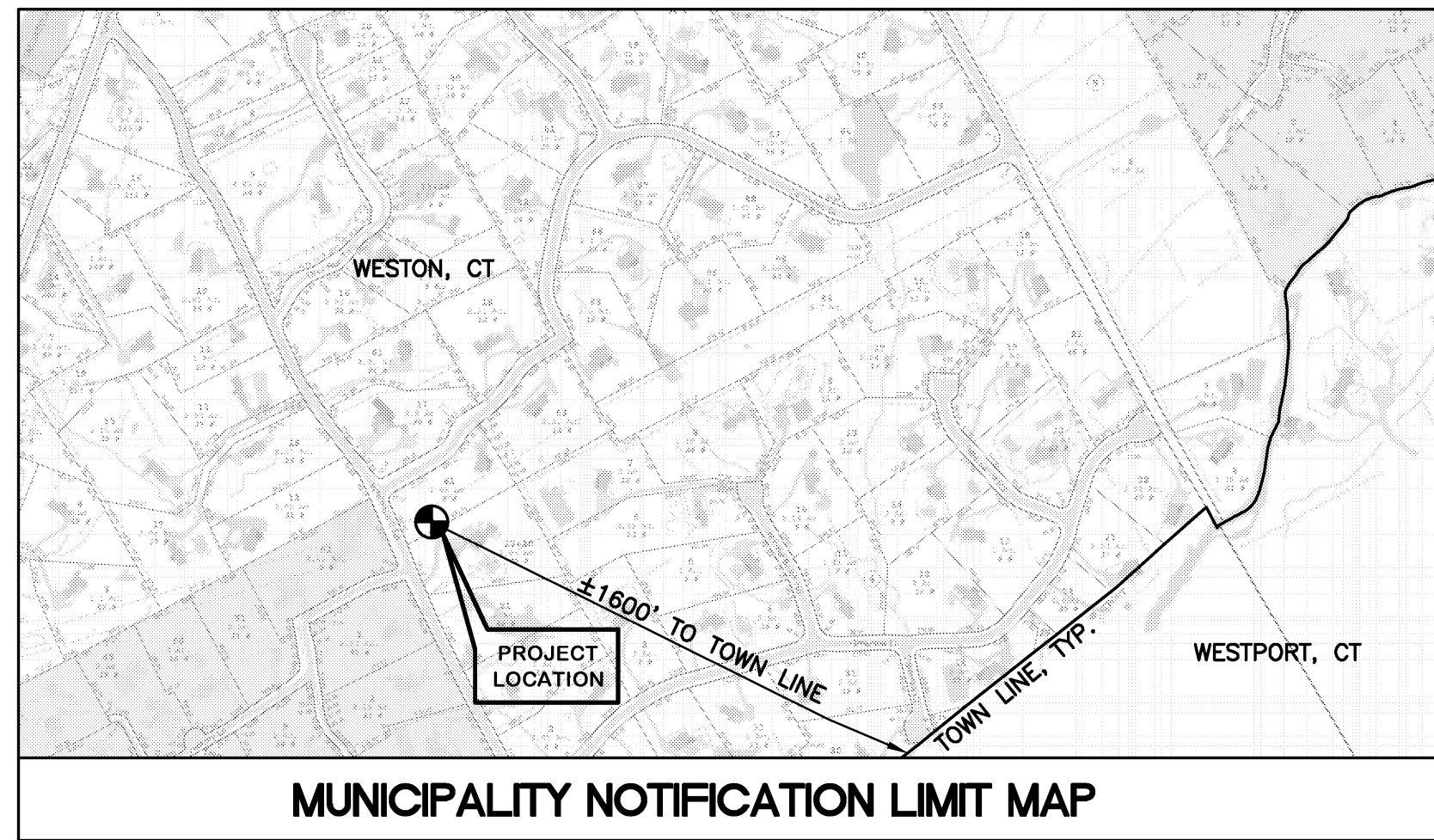
N/F
27-4-7
ROBERT LEVENE
12A NARROW BROOK RD
WESTON, CT 06752

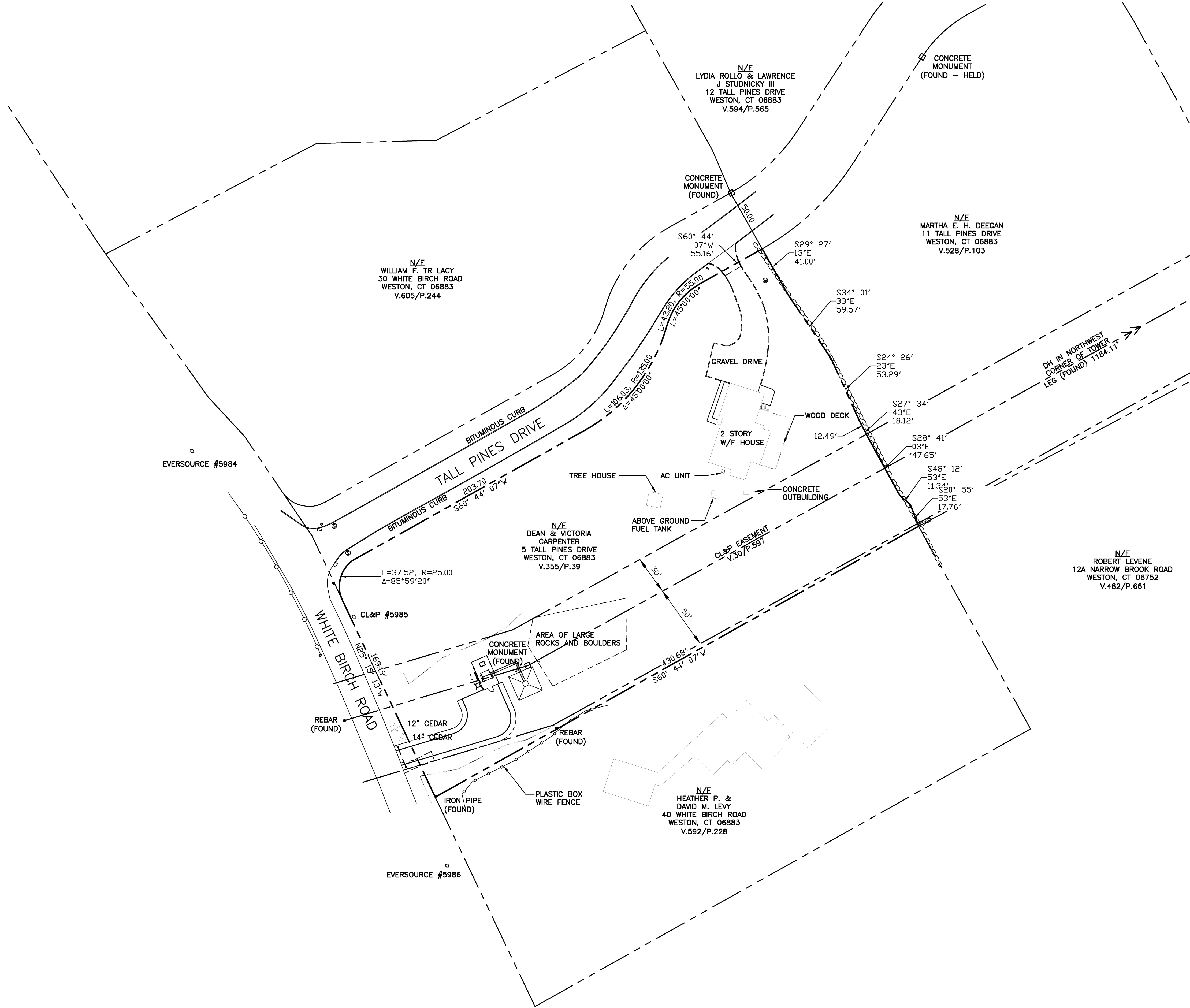
WHITE BIRCH ROAD

N/F
28-8-52
ALLEN DWIGHT PATRICK
5 HICKORY LANE
WESTON, CT 06883

N/F
27-3-19+20
HEATHER P & DAVID M
LEVY
40 WHITE BIRCH RD
WESTON, CT 06883

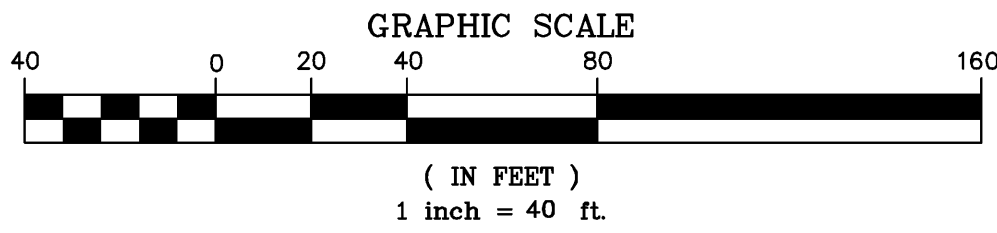
HICKORY LANE

[illegible]



TO MY KNOWLEDGE AND BELIEF, THIS MAP/ PLAN IS SUBSTANTIALLY COMPLETE AS NOTED HEREON. THIS MAP/ PLAN IS NOT VALID UNLESS IT BEARS THE EMBOSSED TYPE SEAL OVER A LIVE SIGNATURE OF THE SURVEYOR WHOSE NAME AND LICENSE NUMBER APPEARS ON THIS MAP/ PLAN.

DERRICK R. SCHULL P.E., L.S. #15566 DATE



SURVEY NOTES

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THRU 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996. IT IS AN SURVEY PLAN AND IS BASED UPON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2 AND THE LIMITED TOPOGRAPHY SURVEY CONFORMS TO A VERTICAL ACCURACY OF CLASS NA AND IS INTENDED TO BE USED TO DEPICT THE LOCATION OF A PROPOSED TELECOMMUNICATIONS FACILITY.

COORDINATES REFER TO NAD 83.

VERTICAL DATUM IS BASED ON NGVD 88.

PARCEL OWNER OF RECORD: DEAN AND VICTORIA CARPENTER
5 TALL PINE DRIVE
WESTON, CT 06883
DEED REFERENCES: VOL. 355 P. 39&40

PARCEL AREA = 2.01 ACRES.

PARCEL IS IN "R" ZONING DISTRICT.

PARCEL ID: MAP 27 LOT 61 WESTON ASSESSOR'S OFFICE.

UTILITIES SHOWN AS MARKED IN FIELD, NO SUBSURFACE INVESTIGATION WAS PERFORMED.

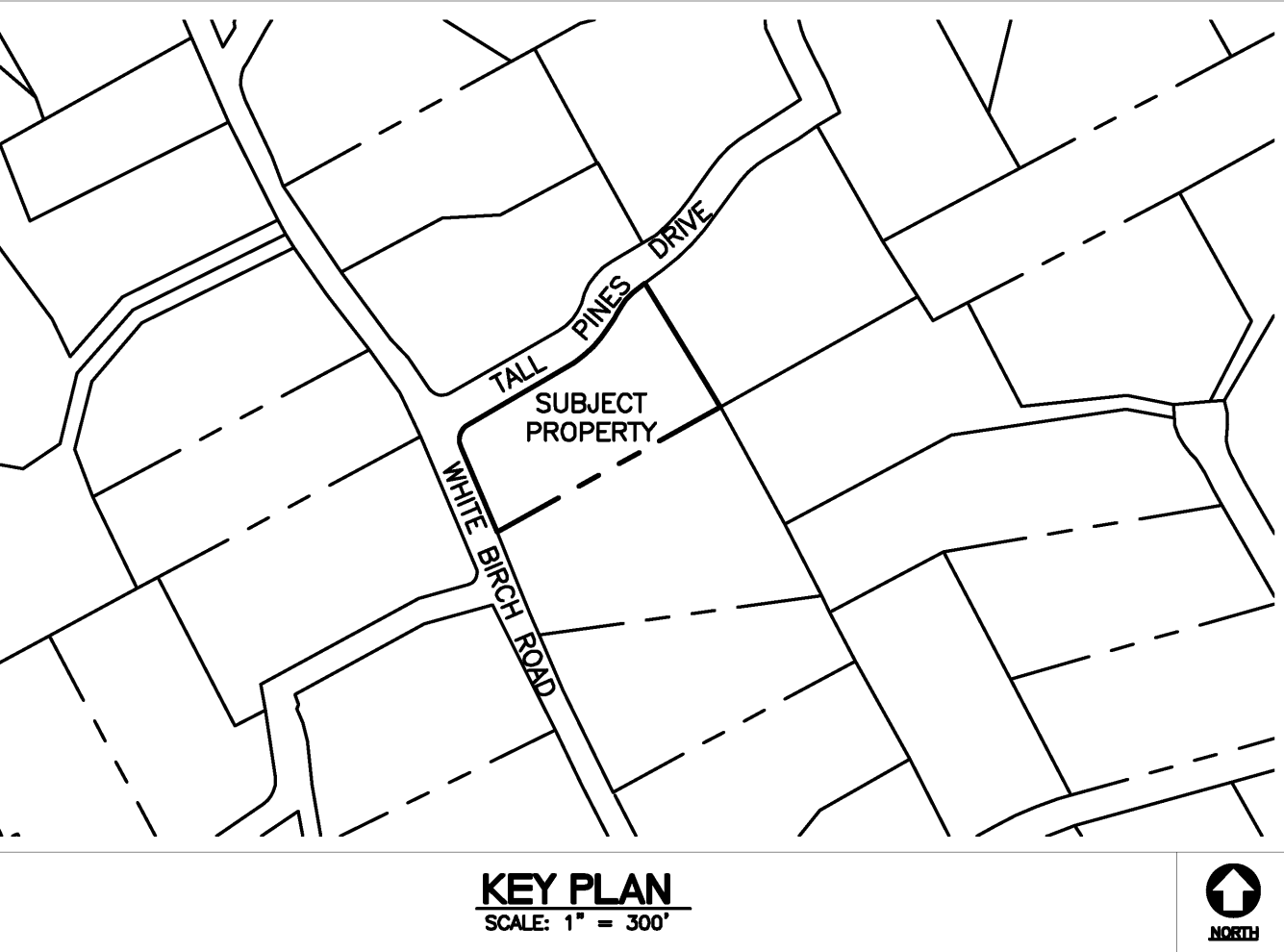
SUBJECT PARCEL IS NOT IN A FLOOD ZONE AS SHOWN OF THE FLOOD INSURANCE RATE MAP, FAIRFIELD COUNTY, CONNECTICUT PANEL 403 OF 606, MAP 09001C0403F, EFFECTIVE DATE JUNE 18, 2010, BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

NOT ALL IMPROVEMENTS SHOWN.

- MAP REFERENCES**
- 1) MAP ENTITLED "SUBDIVISION MAP OF PROPERTY PREPARED FOR STEVEN KIMBALL-SMITH". SCALE: 1"= 40'. REVISED JUNE 28, 1978. MAP IS ON FILE IN THE WESTON TOWN CLERK'S OFFICE #2538
 - 2) MAP ENTITLED "SUBDIVISION MAP OF PROPERTY PREPARED FOR JOHN D. PELLEGRINO & EDITH M. DORFMAN". BY SHAUGHNESSY AND PLAIN LAND SURVEYORS. SCALE: 1"= 40'. REVISED OCTOBER 2, 1981. MAP IS ON FILE IN THE WESTON TOWN CLERK'S OFFICE #2725
 - 3) MAP ENTITLED "MAP OF PROPERTY TO BE ACQUIRED BY RICHARD L. SCHEIDKER, FROM SAMUEL W. ANDERSON". 1"= 40'. REVISED JUNE 28, 1978. MAP IS ON FILE IN THE WESTON TOWN CLERK'S OFFICE #594
 - 4) MAP ENTITLED "LOCATION OF RIGHT OF WAY OF THE CONNECTICUT LIGHT AND POWER COMPANY ACROSS THE PROPERTY OS SALOME THORP, TOWN OF WESTON, COUNTY OF FAIRFIELD, STATE OF CONNECTICUT, SCALE 1"=200', DATED MAY 1923.

SYMBOLS LEGEND

- SUBJECT PROPERTY LINE
- ABUTTER PROPERTY LINE
- UTILITY R.O.W EASEMENT
- WOOD/WIRE GUARD RAIL
- BOX WIRE FENCE
- TREE LINE
- ROAD/ DRIVE
- UTILITY POLE
- CONIFEROUS TREE
- "C" CATCH BASIN
- "CL" CATCH BASIN
- DRAINAGE MANHOLE
- WELL
- SIGN POST



CSC - REVISED TO MATCH FINAL CDS		CSC - ISSUED FOR CLIENT REVIEW	
TLL	CAG	TLL	CAG
08/20/19	03/14/19	DATE	DATE
1	0	REV.	REV.

PROFESSIONAL ENGINEER SEAL

at&t

SAI communications

CENTEX engineering
Central Solutions
(203) 488-0380
(203) 488-3897 Fax
632 North Branford Road
Branford, CT 06405
www.CentExEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
TALL PINES DRIVE
SITE NUMBER: CTSR1845
5 TALL PINES DRIVE
WESTON, CT 06883

DATE: 03/14/19
SCALE: AS NOTED
JOB NO. 18123.00

SITE SURVEY PLAN

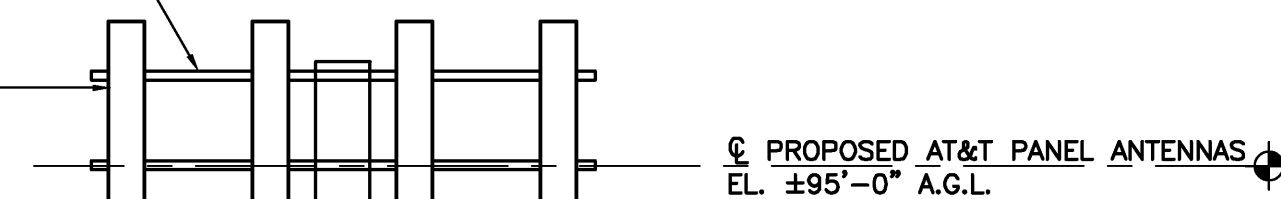
C-1A

Sheet No. 4 of 7



PLAN
NORTH

PROPOSED AT&T PANEL ANTENNA w/ (2) TMA's EA.
(TYP. OF 12/ 4 PER SECTOR). REFER TO RF
SCHEDULE.



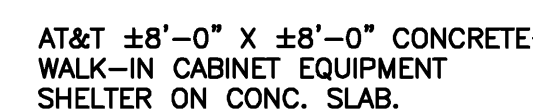
—AT&T ±98' TALL ANTENNA MAST.

- EXISTING ±81' TALL CL&P
TRANSMISSION TOWER #917.

TOWER NOTES:

1. EXISTING 82' TALL CL&P STEEL TRANSMISSION STRUCTURE NO. 917
2. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJECT NO. 18123.00, DATED 03.01.19 FOR ADDITIONAL REQUIREMENTS.
3. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS AND FINAL A1&L RF DATA SHEET.

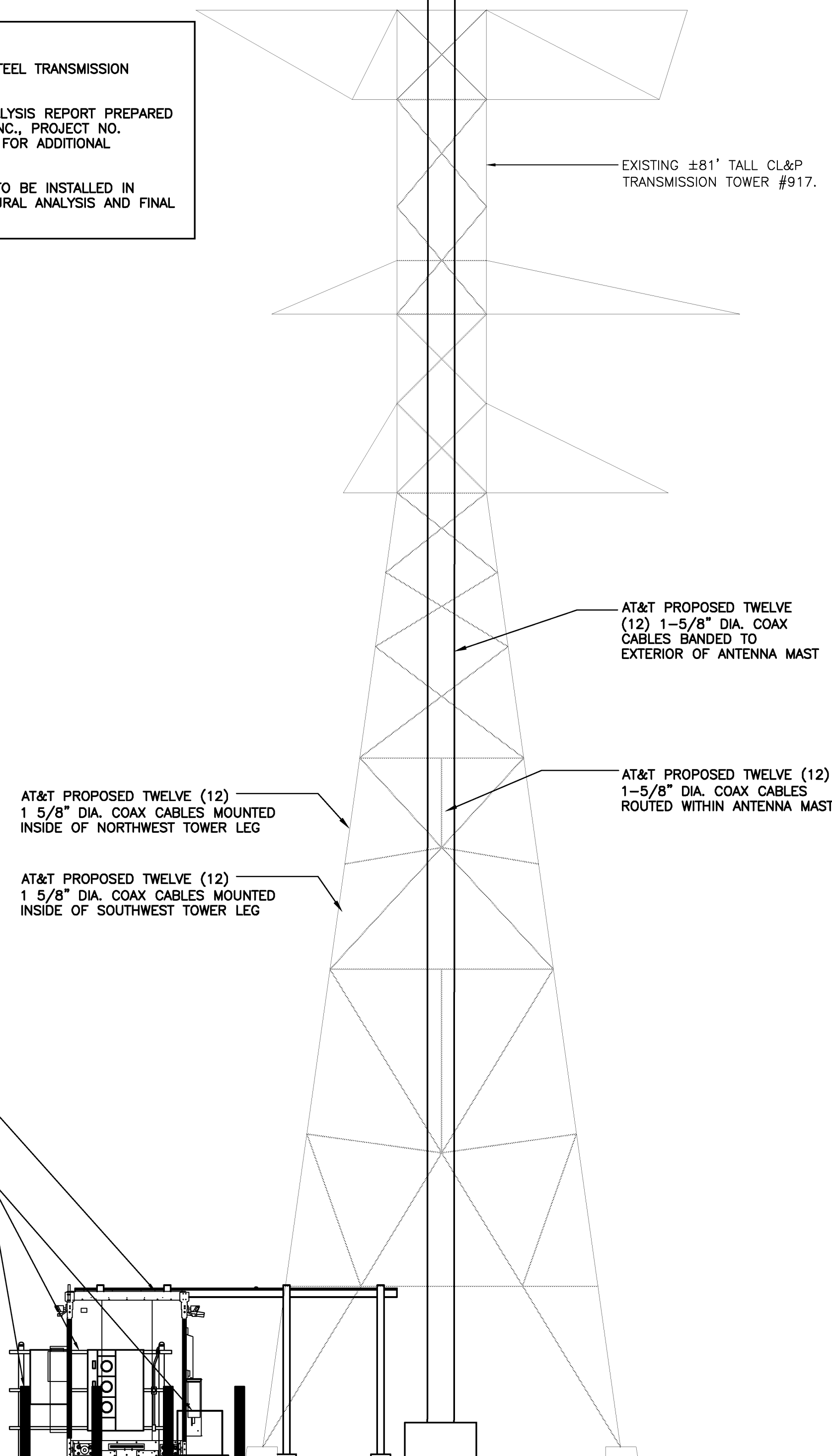
RF EQUIPMENT TABLE														
SECTOR	PANEL ANTENNAS					FILTER	FROM TMA				TMA		FROM SHELTER	
	AZIMUTH	QTY.	MAKE: MODEL	RAD CENTER (AGL)	DOWNTILT	QTY.	COAX QTY.	COAX SIZE	COAX LENGTH	RET QTY.	QTY.	MAKE & MODEL	COAX QTY.	FIBER & DC LENGTH
ALPHA	30°	4	CCI: HPA65R—BU8A	95.0'	0°M/0°E	0	16	1—5/8" Ø	169' ±	0	8	CCI TMABPDB7823VG12A	48	169' ±
BETA	150°	4	CCI: HPA65R—BU8A	95.0'	0°M/0°E	0	16	1—5/8" Ø	169' ±	0	8	CCI TMABPDB7823VG12A		169' ±
GAMMA	270°	4	CCI: HPA65R—BU8A	95.0'	0°M/0°E	0	16	1—5/8" Ø	169' ±	0	8	CCI TMABPDB7823VG12A		169' ±



UTILITY BACKBOARD AND TRANSFORMER
W/ BOLLARDS.

AT&T 50KW DIESEL FUELED BACKUP
POWER GENERATOR ON A CONCRETE
PAD.

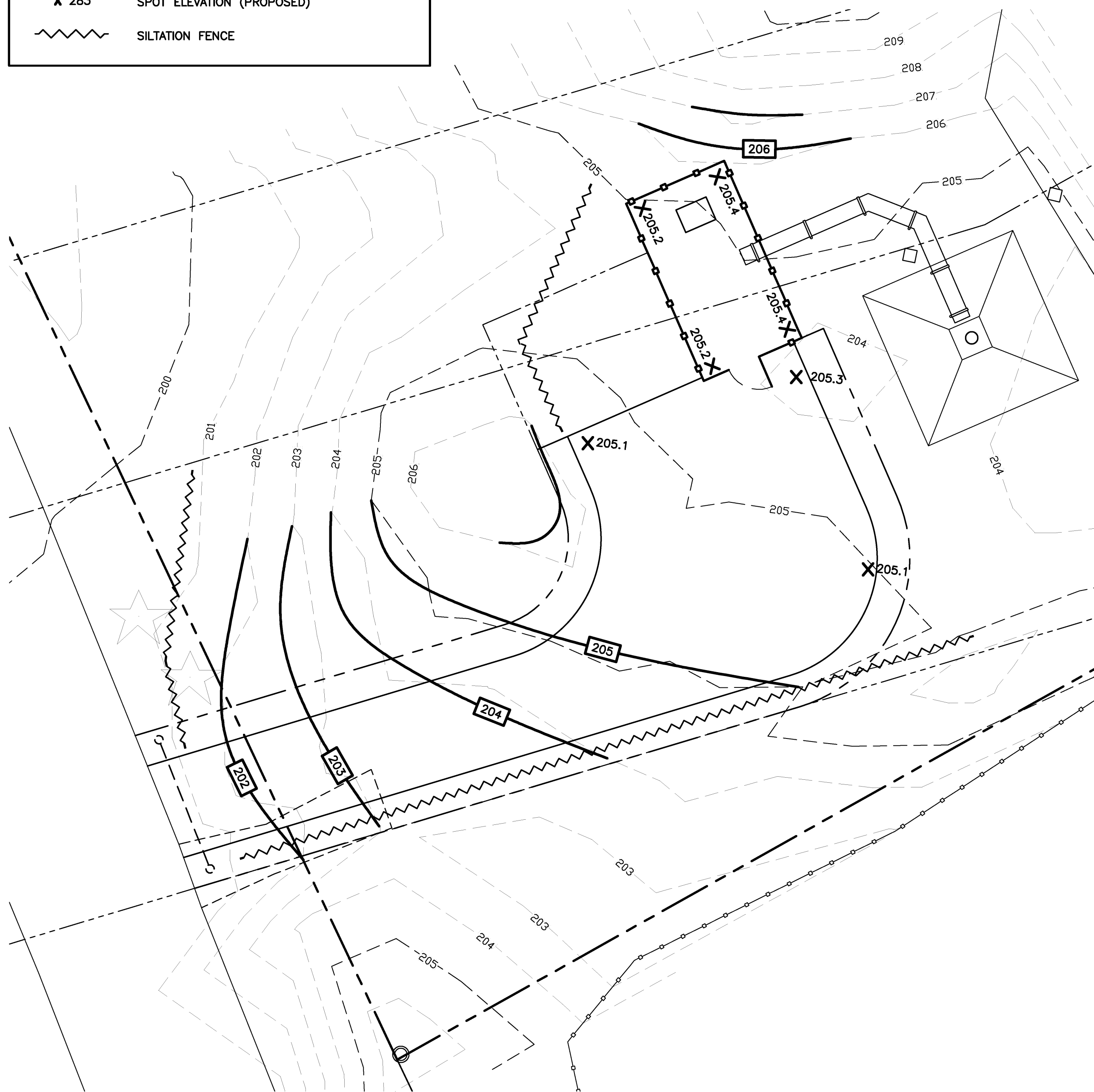
NOTE:
THE PROPOSED COMPOUND
FENCE NOT SHOWN FOR CLARITY.



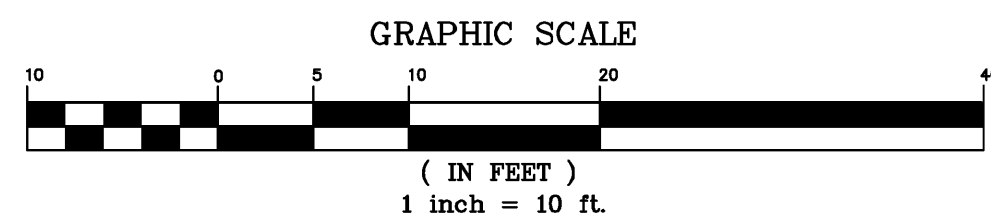
1 WEST ELEVATION
C-2 SCALE: 3/16" = 1' - 0"

GRADING PLAN SYMBOLS LEGEND

	ACCESS/UTILITY EASEMENT LINE (PROPOSED)
	UTILITY EASEMENT LINE (EXISTING)
	ACCESS DRIVE (PROPOSED)
	CONTOUR LINE
	GRADING LINE
	COMPOUND FENCE LINE
	SPOT ELEVATION (PROPOSED)
	SILTATION FENCE



TRUE
NORTH



9' TALL WOOD STOCKADE FENCE.

AT&T 20KW DIESEL FUELED BACKUP POWER GENERATOR ON A CONCRETE PAD ON GRADE. GENERATOR TO MAINTAIN A 5' MINIMUM DISTANCE FROM WALK-IN CABINET (WIC) AND A MINIMUM 3' DISTANCE FROM ALL FENCING.

AT&T ±8'-0" x ±8'-0" CONCRETE WALK-IN CABINET (WIC) EQUIPMENT SHELTER.

UTILITY BACKBOARD, TRANSFORMER AND PIPE BOLLARD, TYP.

AT&T GRAVEL ACCESS DRIVE AND VEHICLE TURN AROUND/PARKING AREA.

AT&T ACCESS/UTILITY EASEMENT LINE (TYP).

AT&T ±18'-0" x 24'-0" FENCED/GRAVEL COMPOUND.

AT&T ±98' TALL ANTENNA MAST ATTACHED TO EXISTING TRANSMISSION TOWER STRUCTURE.

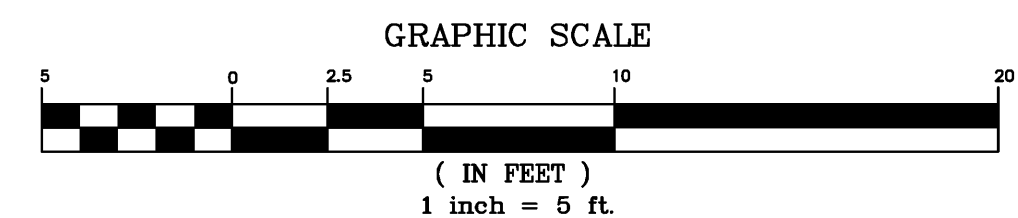
AT&T ICE BRIDGE.

(E) ABANDONED CONCRETE TOWER FOOTING (TYP).

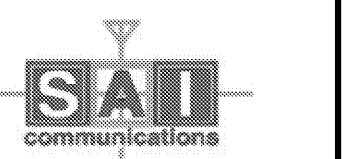
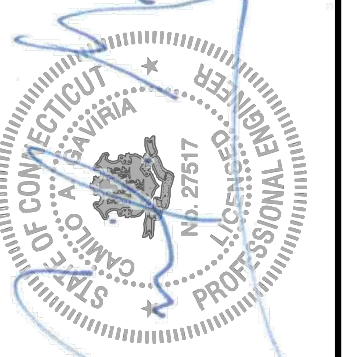
EXISTING ±81' TALL CL&P TRANSMISSION TOWER #917.



TRUE
NORTH

[illegible]

PROFESSIONAL ENGINEER SEAL



CENTEK engineering
Centered on Solutions™

(203) 488-0580
(203) 488-8387 Fax
63-2 North Branford Road
Branford, CT 06405

www.CentekEng.com

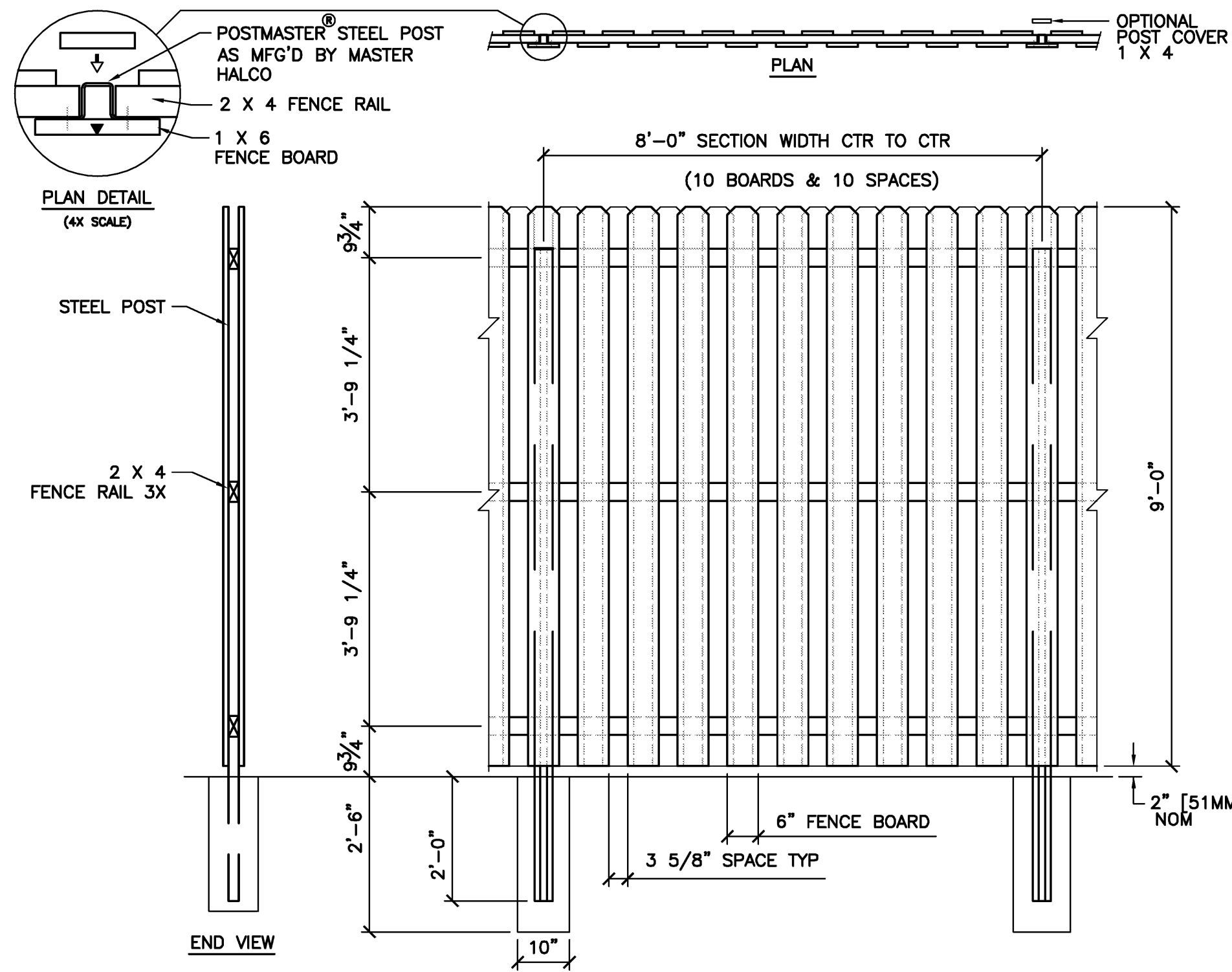
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
TALL PINES DRIVE
SITE NUMBER: CTSR1845
5 TALL PINES DRIVE
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DATE:	03/14/19
SCALE:	AS NOTED
JOB NO.	18123.00

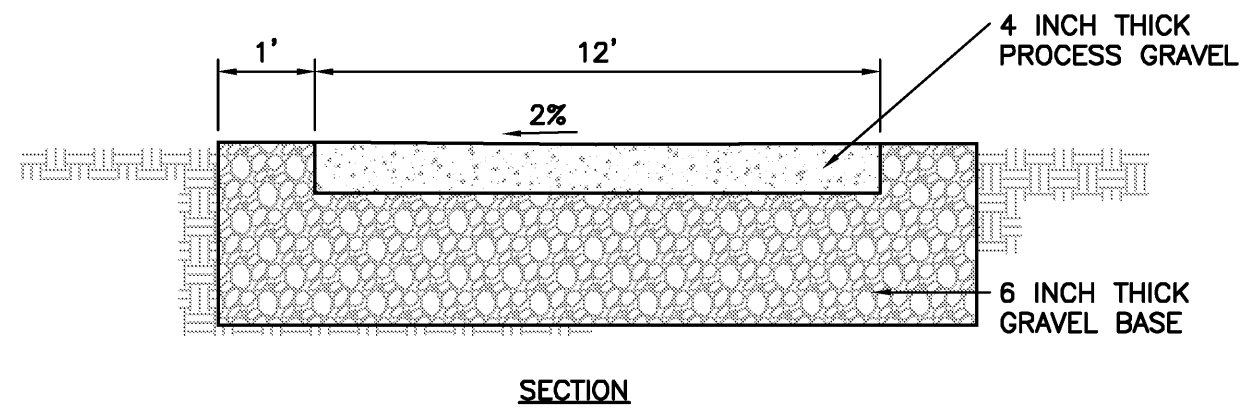
**COMPOUND PLAN AND
PARTIAL SITE /
GRADING PLAN**

C-3

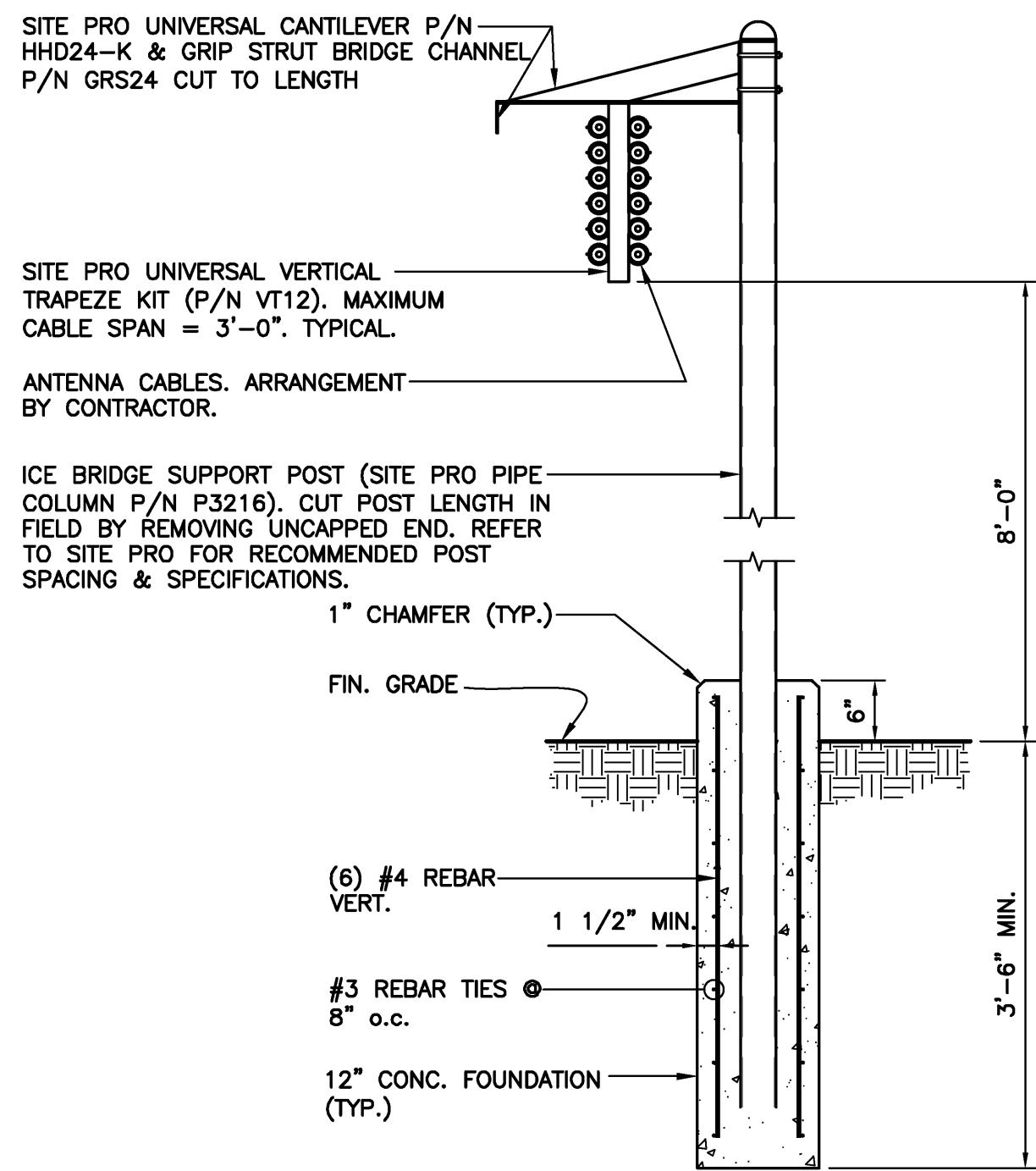
Sheet No. 6 of 7



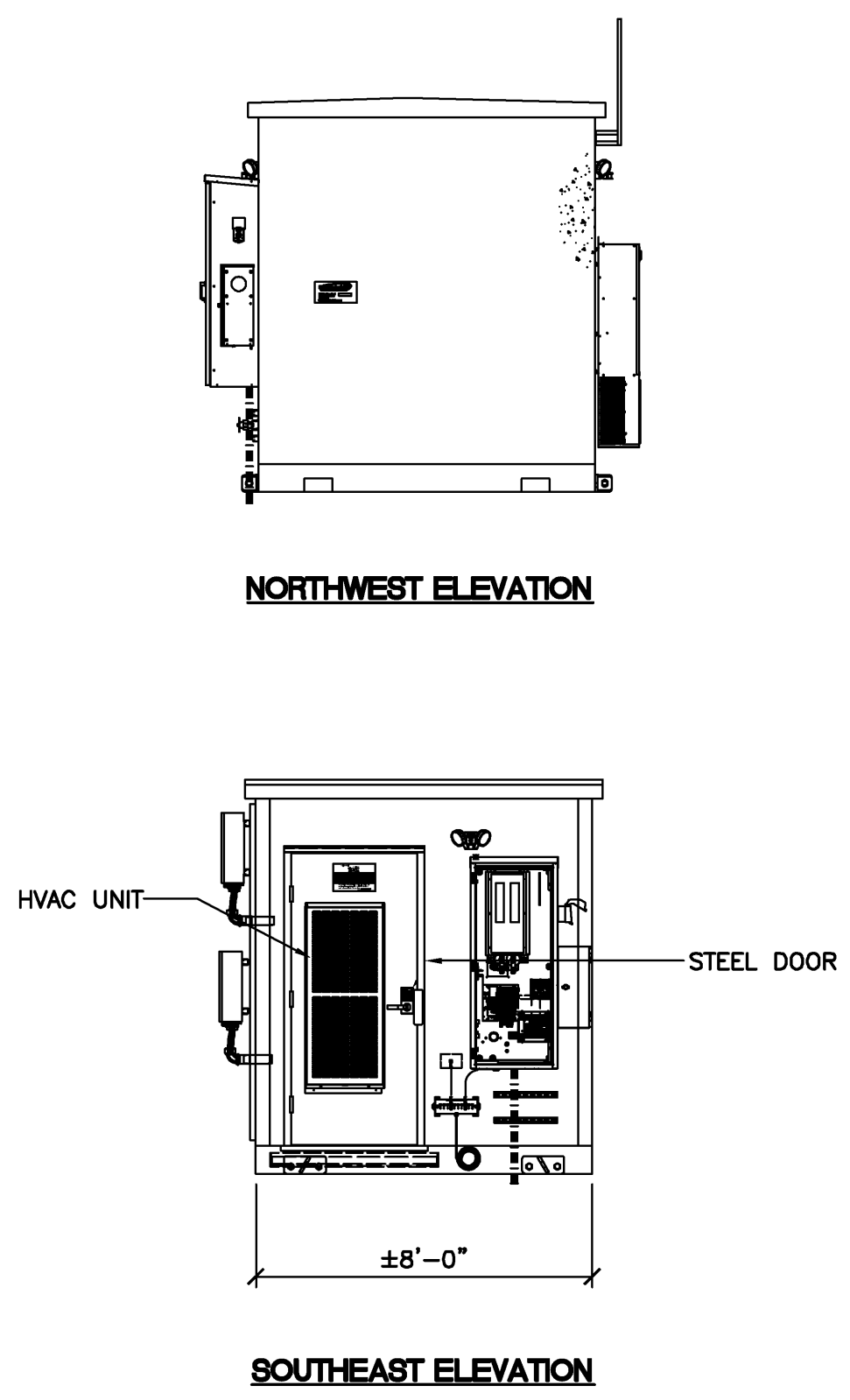
6 FENCE DETAIL
C-4 NOT TO SCALE



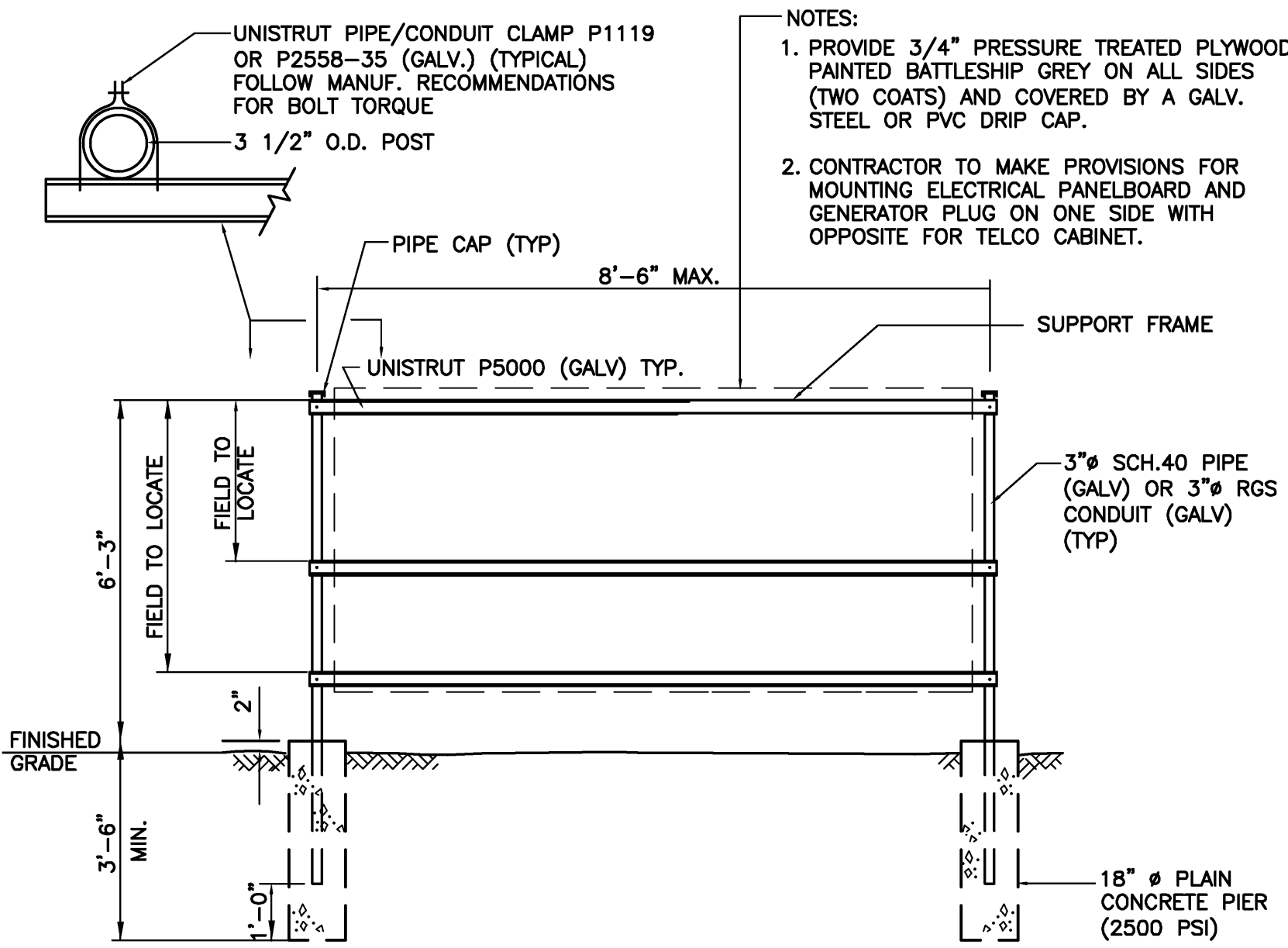
8 GRAVEL SURFACE PARKING AREA AND ACCESS DRIVE
C-4 NOT TO SCALE



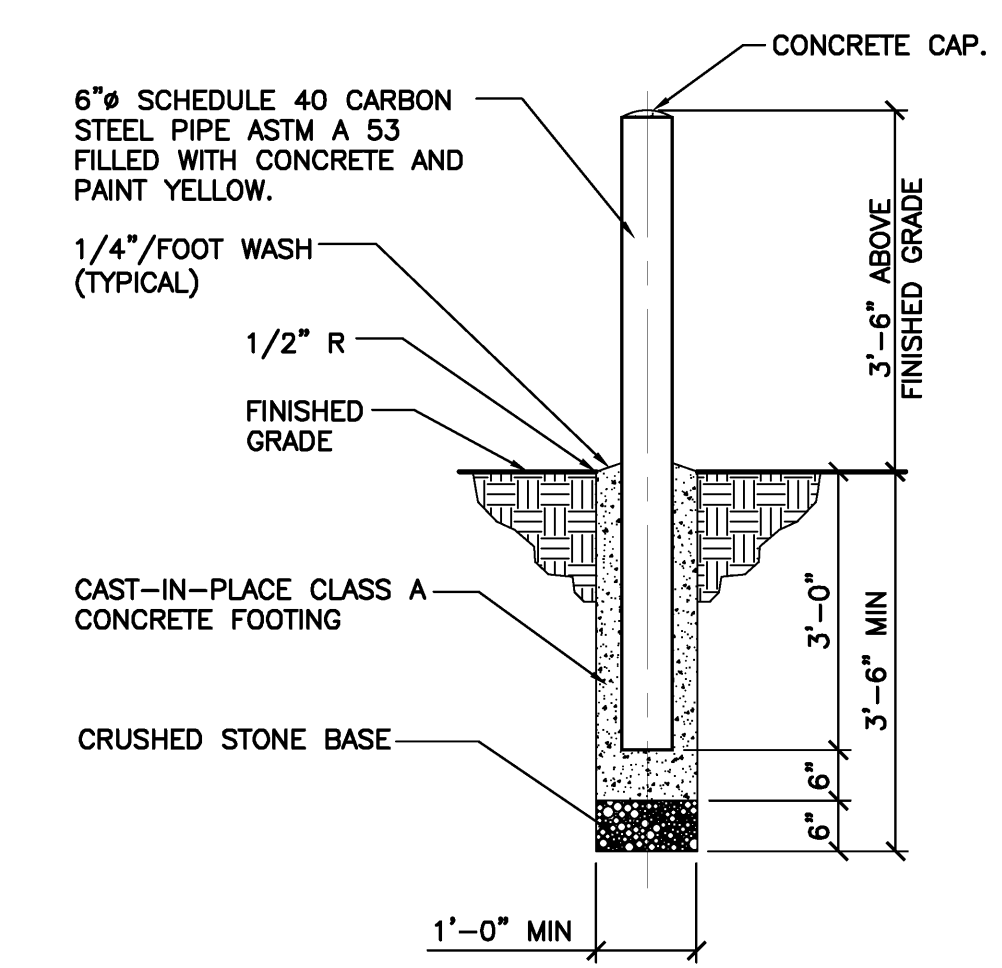
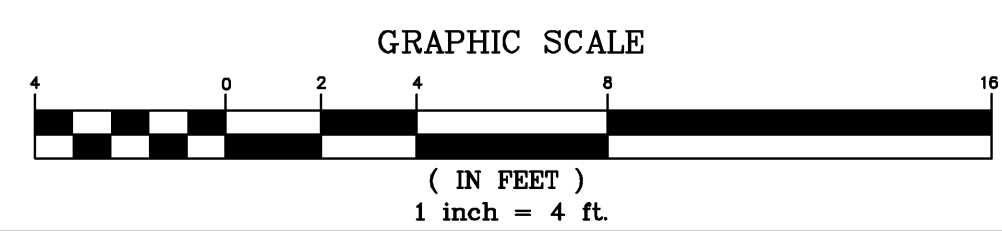
7 ICE BRIDGE DETAIL
C-4 NOT TO SCALE



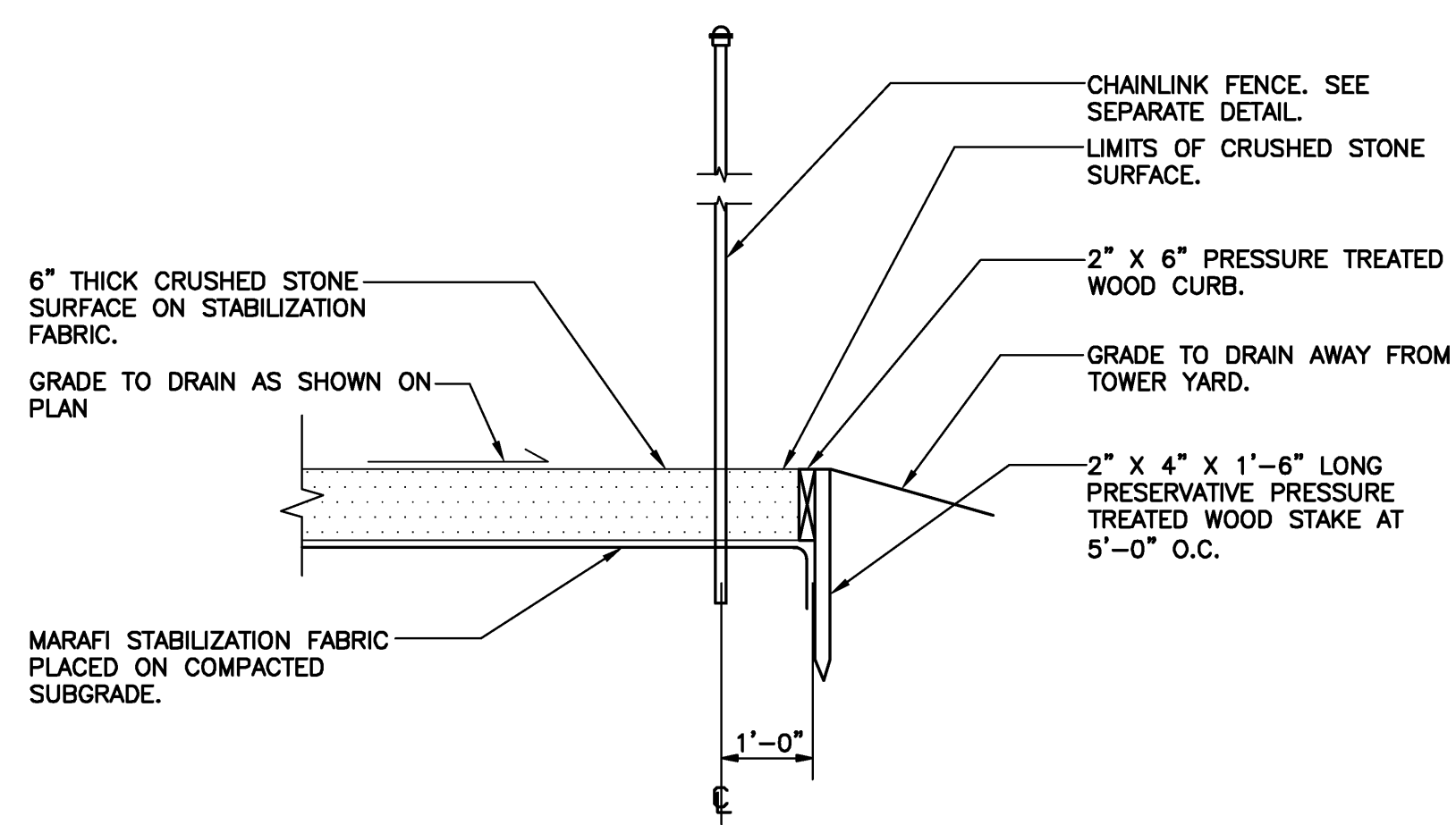
4 EQUIPMENT SHELTER ELEVATIONS
C-4 SCALE: 1/4" = 1'-0"



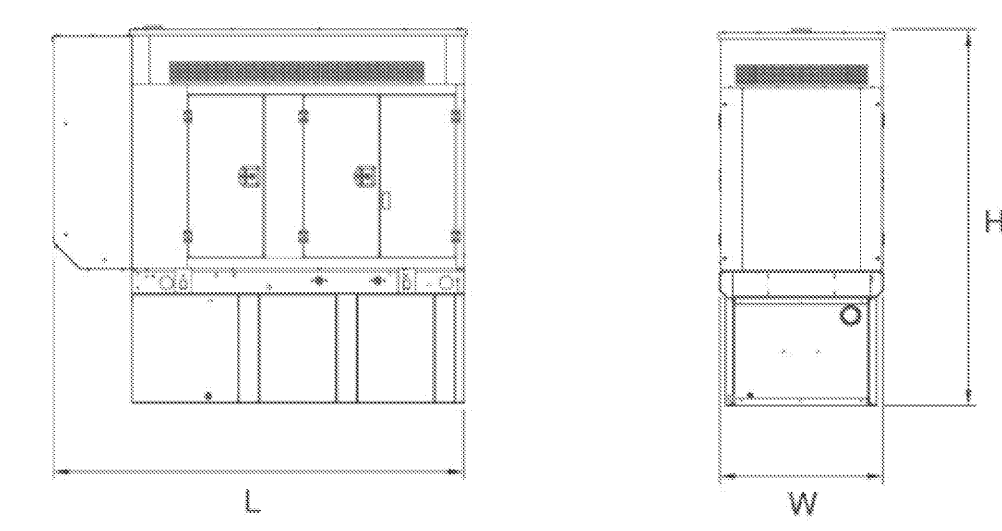
5 UTILITY SUPPORT FRAME (TYP)
C-4 NOT TO SCALE



3 BOLLARD DETAIL
C-4 NOT TO SCALE



2 COMPOUND SURFACING DETAIL
C-4 NOT TO SCALE



DIESEL FUELED BACKUP POWER GENERATOR		
EQUIPMENT	FUEL TANK SIZE (GAL.)	DIMENSIONS
MAKE: GENERAC	54	94.8"L x 38.0"W x 75.0"H
MODEL: SD020	75	94.8"L x 38.0"W x 87.0"H
(W/LEVEL 2 ACOUSTIC ENCLOSURE AND DOUBLE WALL FUEL TANK)	119	94.8"L x 38.0"W x 99.0"H
	170	94.8"L x 38.0"W x 102.5"H

NOTES:
1. FUEL LEVEL/SECONDARY CONTAINMENT SHALL BE ALARMED AND IN COMMUNICATION WITH AT&T'S NOC.
2. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION AND ALL OPTIONAL FEATURES WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

1 BACK-UP GENERATOR DETAIL
C-4 NOT TO SCALE

DATE: 03/14/19
SCALE: AS NOTED
JOB NO. 18123.00

TYPICAL DETAILS

CSC - REVISED TO MATCH FINAL CDS
CSC - ISSUED FOR CLIENT REVIEW

1 08/20/19 TLL
0 03/14/19 KAV
REV. DATE DRAWN BY CHKD BY DESCRIPTION

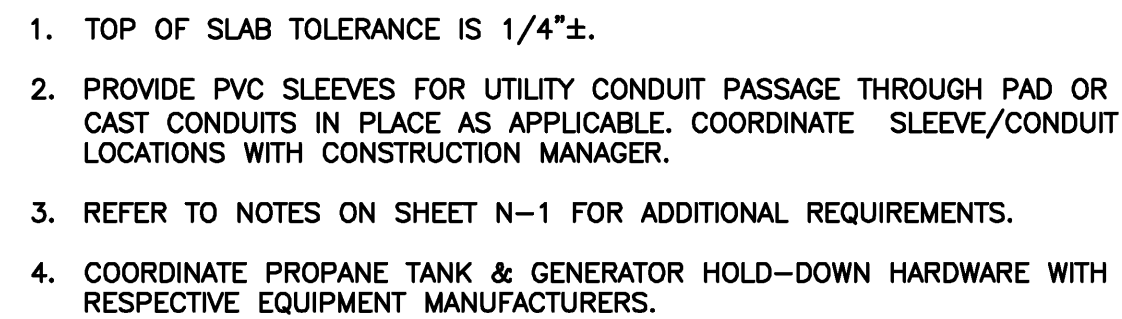
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
TALL PINES DRIVE
SITE NUMBER: CTSR1845
5 TALL PINES DRIVE
WESTON, CT 06883

C-4
Sheet No. 7 of 7

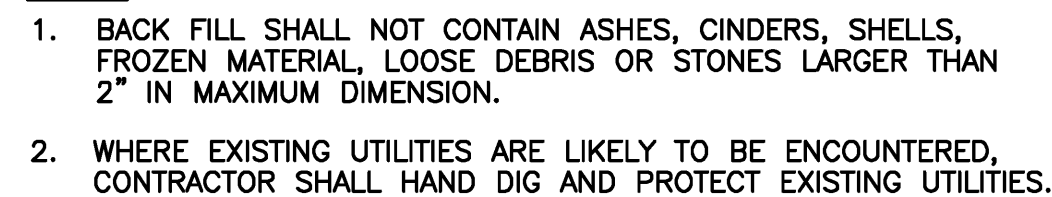
PROFESSIONAL ENGINEER SEAL
STATE OF CONNECTICUT
JAMES A. CENTEK
P.E. 27817

at&t
SAI communications
CENTEK engineering
Central Solutions
(203) 488-0080
(203) 488-8897 Fax
632 North Branford Road
Branford, CT 06405
www.CentekEng.com

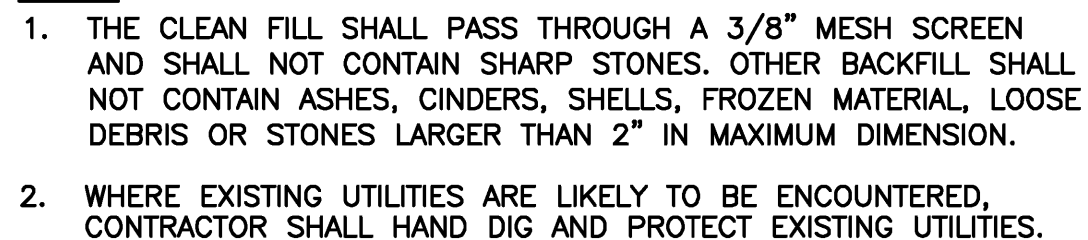
1. SLAB TOLERANCE IS 1/4"±.
2. REFER TO NOTES ON DWG. N-1 FOR ADDITIONAL REQUIREMENTS.
3. PER NEC REQUIREMENTS, THE REBAR IN FOUNDATION AND FOOTING SHALL BE BONDED TO GROUND RING WITH A #2 AWG SOLID CONDUCTOR USING LISTED AND APPROVED METHODS.
4. PROVIDE PVC SLEEVES FOR UTILITY CONDUIT PASSAGE THROUGH FOUNDATION OR CAST CONDUITS IN PLACE. REFER TO ELECTRICAL DRAWINGS FOR CONDUIT SIZES AND QUANTITIES.



C-5 NOT TO SCALE



C-5 NOT TO SCALE



C-5 NOT TO SCALE

1. PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES, A MANDATORY ON-SITE PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED WITH THE SITE OWNER'S CONSTRUCTION MANAGER AND CONTRACTOR'S CONSTRUCTION MANAGER.

THIS IS A GENERAL CONSTRUCTION SEQUENCE OUTLINE SOME ITEMS OF WHICH MAY NOT APPLY TO PARTICULAR SITES.

1. CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
2. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
3. REMOVE AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE SEEDED TO PREVENT EROSION.
4. CONSTRUCT DRAINAGE CONTROL SYSTEM.
5. PERFORM SITE GRADING, PLACING SILTATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
6. INSTALL UNDERGROUND UTILITIES.
7. BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION. NO AREA SHALL BE LEFT UNSTABILIZED FOR A TIME PERIOD OF MORE THAN 30 DAYS.
8. DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
9. BEGIN EXCAVATION FOR AND CONSTRUCTION OF TOWERS AND PLATFORMS.
10. FINISH PAVING ALL ROADWAYS, DRIVES, AND PARKING AREAS.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. NO FLOW SHALL BE DIVERTED TO ANY WETLANDS UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED IN REGARDED AREAS.
13. AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

1. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS CONSTRUCTION ENTRANCE / ANTI TRACKING PAD, SILTATION FENCE, AND SILTATION FENCE / STRAW BALE SHALL BE IN PLACE PRIOR TO ANY GRADING ACTIVITY, INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. MEASURES SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR AREA IS STABILIZED.
2. THE ENTRANCE TO THE PROJECT SITE IS TO BE PROTECTED BY STONE ANTI TRACKING PAD OF ASTM C-33, SIZE NO. 2 OR 3, OR D.O.T. #2 CRUSHED GRAVEL. THE STONE ANTI TRACKING PAD IS TO BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
3. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM AND RESTABILIZATIONS WILL BE SCHEDULED AS SOON AS PRACTICAL.
4. ALL SOIL EROSION AND SEDIMENT CONTROL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL INCLUDING THE LATEST DATE FROM THE COUNCIL ON SOIL AND WATER CONSERVATION.
5. ANY ADDITIONAL EROSION/SEDIMENTATION CONTROL DEEMED NECESSARY BY TOWN STAFF DURING CONSTRUCTION, SHALL BE INSTALLED BY THE DEVELOPER. IN ADDITION, THE DEVELOPER SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE TOWN STAFF.
6. IN ALL AREAS, REMOVAL OF TREES, BUSHES AND OTHER VEGETATION AS WELL AS DISTURBANCE OF THE SOIL IS TO BE KEPT TO AN ABSOLUTE MINIMUM WHILE ALLOWING PROPER DEVELOPMENT OF THE SITE. DURING CONSTRUCTION, EXPOSE AS SMALL AN AREA OF SOIL AS POSSIBLE FOR AS SHORT A TIME AS POSSIBLE.
7. SILTATION FENCE SHALL BE PLACED AS INDICATED BEFORE A CUT SLOPE HAS BEEN CREATED. SEDIMENT DEPOSITS SHOULD BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDES OF SILTATION FENCE, THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR TO BE USED IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. SILTATION FENCE IS TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE FENCE IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE EROSION CHECKS ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.
8. ALL FILL AREAS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
9. THE SOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING.
10. AFTER CONSTRUCTION IS COMPLETE AND GROUND IS STABLE, REMOVE EROSION AND SEDIMENT DEVICES.

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BUILD UP IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT SHALL BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACHED APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

C-5

Sheet No. 8 of 7

3

Photo-Documentation & Simulations

TALL PINES DRIVE
SITE NUMBER: CTSR1845
5 TALL PINES DRIVE
WESTON, CT 06883

Prepared in April 2019 by:
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419



Prepared For AT&T Mobility



VISUAL ASSESSMENT & PHOTO-SIMULATIONS

At the request of SAI Communications d/b/a AT&T (“AT&T”), All-Points Technology Corporation, P.C. (“APT”) completed a visual assessment and prepared computer-generated photo-simulations depicting a proposed wireless telecommunications facility located (“Facility”) at 5 Tall Pines Drive in Weston, Connecticut (“Host Property”).

Project Setting

The proposed Facility site (“Site”) is located within a Connecticut Light and Power (“CL&P”; dba Eversource Energy) electrical transmission right-of-way on a privately-owned parcel located on the south side of Tall Pines Drive, east of White Birch Road, and north of Greenlea Lane. The Site is currently occupied by a two-story residential home and one (1) steel lattice transmission tower (CL&P #917). CL&P transmission lines bisect the southern portion of the Host Property in a southwest to northwest direction. Land use within the immediate vicinity is primarily residential and undeveloped wooded lots. See Figure 1, *Site Location Map*.

The proposed Facility would include the installation of a new 98-foot-tall antenna mast within the center of the 81-foot tall CL&P steel lattice transmission tower. 12 panel antennas and associated equipment would be affixed to the antenna mast at centerline heights of 95 feet above ground level (“AGL”), with the tops of antennas extending to an overall maximum height of 99 feet AGL. Ground equipment, which includes a 50-kW diesel emergency backup generator, would be installed within a ± 13 -foot x ± 24 -foot fence-enclosed¹ gravel compound. Site access would be provided by a new gravel drive that would originate off White Birch Road to the east of the proposed Facility.

Methodology

On September 17, 2018, APT personnel conducted a field reconnaissance to photo-document existing conditions and evaluate the extent of visibility of the existing CL&P steel lattice transmission tower and the proposed Facility. The geographic coordinates of the camera’s position at each photo location were logged via GPS. Photographs were taken with a Canon EOS 6D digital camera body² and Canon EF 24 to 105 millimeter (“mm”) zoom lens. When practical, APT typically uses a standard focal length of 50mm to present a consistent field of view throughout the document. However, photos are sometimes taken at lower focal lengths to provide a greater depth of field and context to the scene by including surrounding

¹ Proposed 9-foot-tall wooden stockade fence.

² The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35mm cameras. As such, the images produced are comparable to those taken with a conventional 35 mm camera.



Legend

-  Site
-  Subject Property
-  Municipal Boundary

Map Notes:
GIS parcel data not available for mapped area

Base Map Source: 2016 CT ECO Imagery
Map Scale: 1 inch = 300 feet
Map Date: April 2019

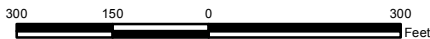


Figure 1 - Site Location Map

Proposed Wireless
Telecommunications Facility
Tall Pines Drive
5 Tall Pines Drive
Weston, Connecticut



features within the photograph. In this case, photo locations 2 and 3 were taken with a 50mm focal length, while photo locations 1, 4 and 5 were captured using a 24mm focal length.

Existing conditions photographs depicting views from publicly accessible roadways and nearby residences are presented in the attachment to this report. Three-dimensional computer models were developed for the steel lattice transmission tower and components of the proposed Facility from AutoCAD information. Representative photo-simulations³ were then prepared to provide representative views of the proposed Facility.

The photo-simulations provide a representation of the proposed Facility under similar settings as those encountered during the field reconnaissance. Views of the Facility can change throughout the seasons, as well as the time of day, and are dependent on weather and other atmospheric conditions including, but not necessarily limited to (a) haze, fog, and clouds; (b) the location, angle and intensity of the sun; (c) light conditions; and, (d) the specific viewer location.

Photo-Locations

The table below includes a description of each photo location presented in the attachment to this report, the view orientation, and the distance from where the photo was taken relative to the Site. A photolog map, the existing conditions photographs and photo-simulations are attached.

View	Location	Orientation	Distance to Site
1	Hickory Lane*	Northeast	±200 feet
2	White Birch Road	Northeast	±130 feet
3	White Birch Road	East	±130 feet
4	Tall Pines Drive*	Southeast	±185 Feet
5	Tall Pines Drive*	Southwest	±314 Feet
<i>*Proposed Facility Not Visible from this Location.</i>			
<i>Note: Photo locations 1, 4 and 5 shot at a focal length of 24mm while photo locations 2 and 3 were shot a 50mm.</i>			

³ Using field data, site plan information and image editing software, the Facility components were scaled to the correct location and height, relative to the existing structure and surrounding area.

Proximity to Schools And Commercial Child Day Care Centers

No schools or commercial child day care centers are located within 250 feet of the Site.⁴

Conclusion

The visibility of the proposed Facility would be limited to locations where the existing utility right-of-way crosses White Birch Road and where the CL&P steel lattice transmission tower can be seen today (photo locations 2 and 3). The existing transmission structure is not readily visible from locations along Tall Pines Drive and surrounding roads. The additional height of the proposed Facility would not create any substantive new views. A combination of existing dense vegetation and undulating terrain would limit views of the proposed Facility beyond these immediate locations. Construction of the new access road and equipment compound would not increase the visibility of the proposed Facility.

⁴ The nearest school and child day care locations are over one (1) mile from the Site.

ATTACHMENT



PHOTO LOG

Legend

■ Site ● Visible ● Not Visible



1 inch = 100 feet
100 50 0 100
Feet

ALL-POINTS
TECHNOLOGY CORPORATION





DOCUMENTATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	HICKORY LANE	24mm	NORTHEAST	+/- 200 FEET	NOT VISIBLE



DOCUMENTATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	WHITE BIRCH ROAD	50mm	NORTHEAST	+/- 130 FEET	YEAR ROUND



SIMULATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	WHITE BIRCH ROAD	50mm	NORTHEAST	+/- 130 FEET	YEAR ROUND



DOCUMENTATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	WHITE BIRCH ROAD	50mm	EAST	+/- 130 FEET	YEAR ROUND



SIMULATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	WHITE BIRCH ROAD	50mm	EAST	+/- 130 FEET	YEAR ROUND



DOCUMENTATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	TALL PINES DRIVE	24mm	SOUTHEAST	+/- 185 FEET	NOT VISIBLE



DOCUMENTATION

PHOTO	LOCATION	FOCAL LENGTH	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	TALL PINES DRIVE	24mm	SOUTHWEST	+/- 314 FEET	NOT VISIBLE

4

Structural Design of
Antenna Mast and Analysis
of Utility Tower

AT&T Site Ref: CT1845

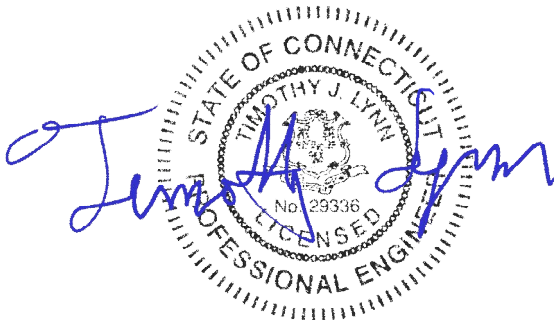
Eversource Structure No. 917
81' Electric Transmission Lattice Tower

5 Tall Pines Drive
Weston, CT

CENTEK Project No. 18123.00

~~*Date: December 19, 2018*~~

Rev 3: March 1, 2019



Prepared for:
AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

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Introduction

The purpose of this report is to design a proposed Antenna Mast and analyze the existing 81' tall utility tower located on 5 Tall Pines Drive in Weston, CT for the proposed antenna and equipment installation by AT&T.

The proposed loads consist of the following:

- **AT&T MOBILITY (Proposed):**
Antennas: Twelve (12) CCI HPA65R-BU8A panel antennas and twenty-four (24) CCI TMABPDB7823VG12A TMAs mounted on a Site-Pro Low Profile Platform w/ handrail p/n RMQLP-4096-HRK14 with a RAD center elevation of 95-ft above grade.
Coax Cables: Twelve (12) 1-5/8" Ø coax cables running within the proposed Antenna Mast, twelve (12) 1-5/8" Ø coax cables running on the exterior of the proposed Antenna Mast and twenty-four (24) 1-5/8" Ø coax cables running on (2) legs of the existing tower as indicated in section 4 of this report.
Antenna Mast: HSS16"x0.5" x 98-ft long pipe conforming to ASTM A500 Grade 42 (Fy = 42ksi)

Primary assumptions used in the analysis

- Design steel stresses are defined by AISC-LRFD 14th edition for design of the antenna Mast and antenna supporting elements.
- ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", defines allowable steel stresses for evaluation of the utility tower.
- All utility tower members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- All coaxial cable will be installed as indicated in Section 4 of this report.
- Antenna Mast will be properly installed and maintained.
- No residual stresses exist due to incorrect tower erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Antenna Mast and utility tower will be in plumb condition.
- Utility tower was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

A n a l y s i s

Structural design of the antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc. The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The proposed Antenna Mast consisting of a HSS16"x0.5" pipe conforming to ASTM A500 Grade 42 ($F_y = 42\text{ksi}$) connected at four elevations to the existing tower and supported on a structural steel support frame was designed for its ability to resist loads prescribed by the TIA standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA loading are listed in report Section 6.

Structural analysis of the existing Eversource tower structure was completed using the current version of PLS-Tower computer program licensed to CENTEK Engineering, Inc. The NESC program contains a library of all AISC angle shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing 81-ft tall Eversource lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the Antenna Mast and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

D e s i g n B a s i s

Our analysis was performed in accordance with TIA-222-G, ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", NESC C2-2012 and Eversource Design Criteria.

▪ UTILITY TOWER ANALYSIS

The purpose of this analysis is to determine the adequacy of the existing utility structure to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the NU Design Criteria Table, NESC C2-2012 ~ Construction Grade B, and ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures".

Load cases considered:

Load Case 1: NESC Heavy

Wind Pressure.....	4.0 psf
Radial Ice Thickness.....	0.5"
Vertical Overload Capacity Factor.....	1.50
Wind Overload Capacity Factor.....	2.50
Wire Tension Overload Capacity Factor.....	1.65

Load Case 2: NESC Extreme

Wind Speed.....	110 mph ⁽¹⁾
Radial Ice Thickness.....	0"

Note 1: NESC C2-2012, Section 25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

▪ **MAST ASSEMBLY ANALYSIS**

Mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with the Eversource Design Criteria Table, TIA-222-G and AISC standards.

Load cases considered:

Load Case 1:

Wind Speed..... 93 mph (2016 CSBC Appendix-N)
 Radial Ice Thickness..... 0"

Load Case 2:

Wind Pressure..... 50 mph wind pressure
 Radial Ice Thickness..... 0.75"

R e s u l t s

▪ **ANTENNA MAST**

The proposed antenna mast was determined to be structurally **adequate**.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
HSS16x0.5	Bending	47.0%	PASS
L2.5x2.5x3/8 Brace	Bending	32.4%	PASS
Connection	Shear	76.5%	PASS

▪ **UTILITY TOWER**

This analysis finds that the subject utility structure is adequate to support the proposed antenna mast and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 8 of this report. The analysis results are summarized as follows:

A maximum usage of **98.83%** occurs in the utility structure under the **NESC Extreme** loading condition.

TOWER SECTION:

The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g6xy	98.83%	PASS

▪ FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 1-ft-8-in square tapering to 2-ft-9-in square x 7-ft-6-in long reinforced concrete piers on four (4) 6-ft square x 2-ft-6-in thick reinforced concrete pads. The base of the tower is connected to the foundation by one (1) anchor stub per leg. Foundation information was obtained from NUSCO drawing # 01064-60003.

BASE REACTIONS:

From PLS-Tower analysis of structure based on NESC/Eversource prescribed loads.

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	16.04 kips	59.18 kips	75.90 kips
NESC Extreme Wind	24.16 kips	88.84 kips	100.5 kips

Note 1 – 10% increase applied to tower base reactions per OTRM 051

FOUNDATION:

The foundation **with the reinforcements detailed in section 4 of this report was found** to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading ⁽²⁾	Result
Concrete Pier	Uplift	1.0 FS ⁽¹⁾	1.26 FS ⁽¹⁾	PASS

Note 1: FS denotes Factor of Safety

Note 2: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.

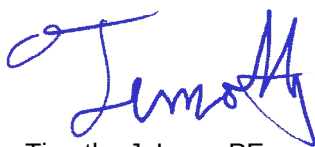
C o n c l u s i o n

This analysis shows that the subject utility tower **with the foundation reinforcements detailed in section 4 of this report is adequate** to support the proposed equipment installation.

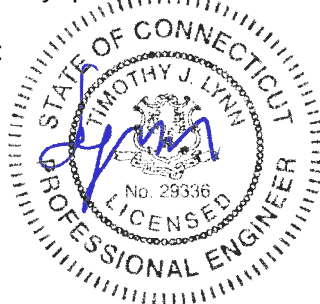
The analysis is based, in part, on the information provided to this office by Eversource and AT&T. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
 Structural Engineer



STANDARD CONDITIONS FOR FURNISHING OF
PROFESSIONAL ENGINEERING SERVICES ON
EXISTING STRUCTURES

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to CENTEK engineering, Inc. 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 are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. 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. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222.
- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA - 3 D

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features:

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids
- Versatile general truss generator
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking
- Saved selections to quickly recall desired selections
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files
- Export DXF, SDNF and ProSteel 3D files

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis
- Physical member modeling that does not require members to be broken up at intermediate joints
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress and design
- Automatic Top of Member offset modeling
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements
- 1-Way members, for tension only bracing, slipping, etc.

- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape
- Inactive members, plates, and diaphragms allows you to quickly remove parts of structures from consideration
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary “true to scale” rendering, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamic scrolling stops right where you want
- Plot & print virtually everything with color coding & labeling
- Rotate, zoom, pan, scroll and snap views
- Saved views to quickly restore frequent or desired views
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete, hot rolled steel, cold formed steel and wood
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000, EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location
- Saved solutions quickly restore analysis and design results.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS - TOWER

PLS-TOWER is a Microsoft Windows program for the analysis and design of steel latticed towers used in electric power lines or communication facilities. Both self-supporting and guyed towers can be modeled. The program performs design checks of structures under user specified loads. For electric power structures it can also calculate maximum allowable wind and weight spans and interaction diagrams between different ratios of allowable wind and weight spans.

Modeling Features:

- Powerful graphics module (stress usages shown in different colors)
- Graphical selection of joints and members allows graphical editing and checking
- Towers can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces
- Can extract geometry and connectivity information from a DXF CAD drawing
- CAD design drawings, title blocks, drawing borders or photos can be tied to structure model
- XML based post processor interface
- Steel Detailing Neutral File (SDNF) export to link with detailing packages
- Can link directly to line design program PLS-CADD
- Automatic generation of structure files for PLS-CADD
- Databases of steel angles, rounds, bolts, guys, etc.
- Automatic generation of joints and members by symmetries and interpolations
- Automated mast generation (quickly builds model for towers that have regular repeating sections) via graphical copy/paste
- Steel angles and rounds modeled either as truss, beam or tension-only elements
- Guys are easily handled (can be modeled as exact cable elements)

Analysis Features:

- Automatic handling of tension-only members
- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Automatic calculation of tower dead, ice, and wind loads as well as drag coefficients according to:
 - ASCE 74-1991
 - NESC 2002
 - NESC 2007
 - IEC 60826:2003
 - EN50341-1:2001 (CENELEC)
 - EN50341-3-9:2001 (UK NNA)
 - EN50341-3-17:2001 (Portugal NNA)
 - ESAA C(b)1-2003 (Australia)
 - TPNZ (New Zealand)
 - REE (Spain)
 - EIA/TIA 222-F
 - ANSI/TIA 222-G
 - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems
- Design checks according to (other standards can be added easily):
 - ASCE Standard 10-90

- AS 3995 (Australian Standard 3995)
- BS 8100 (British Standard 8100)
- EN50341-1 (CENELEC, both empirical and analytical methods are available)
- ECCS 1985
- NGT-ECCS
- PN-90/B-03200
- EIA/TIA 222-F
- ANSI/TIA 222-G
- CSA S37-01
- EDF/RTE Resal
- IS 802 (India Standard 802)

Results Features:

- Design summaries printed for each group of members
 - Easy to interpret text, spreadsheet and graphics design summaries
 - Automatic determination of allowable wind and weight spans
 - Automatic determination of interaction diagrams between allowable wind and weight spans
 - Capability to batch run multiple tower configurations and consolidate the results
 - Automated optimum angle member size selection and bolt quantity determination
- Tool for interactive angle member sizing and bolt quantity determination.

Criteria for Design of PCS Facilities On or
Extending Above Metal Electric Transmission
Towers & Analysis of Transmission Towers
Supporting PCS Masts ⁽¹⁾

Introduction

This criteria is the result from an evaluation of the methods and loadings specified by the separate standards, which are used in designing telecommunications towers and electric transmission towers. That evaluation is detailed elsewhere, but in summary; the methods and loadings are significantly different. This criteria specifies the manner in which the appropriate standard is used to design PCS facilities including masts and brackets (hereafter referred to as “masts”), and to evaluate the electric transmission towers to support PCS masts. The intent is to achieve an equivalent level of safety and security under the extreme design conditions expected in Connecticut and Massachusetts.

ANSI Standard TIA/EIA-222 covering the design of telecommunications structures specifies a working strength/allowable stress design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that it does not exceed some defined percentage of failure strength (allowable stress).

ANSI Standard C2-2007 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

Each standard defines the details of how loads are to be calculated differently. Most of the NU effort in “unifying” both codes was to establish what level of strength each approach would provide, and then increasing the appropriate elements of each to achieve a similar level of security under extreme weather loadings.

Two extreme weather conditions are considered. The first is an extreme wind condition (hurricane) based upon a 50-year recurrence (2% annual probability). The second is a winter condition combining wind and ice loadings.

The following sections describe the design criteria for any PCS mast extending above the top of an electric transmission tower, and the analysis criteria for evaluating the loads on the transmission tower from such a mast from the lower portions of such a mast, and loads on the pre-existing electric lower portions of such a mast, and loads on the pre-existing electric transmission tower and the conductors it supports.

| Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

The PCS facility (mast, external cable/trays, including the initial and any planned future support platforms, antennas, etc. extending the full height above the top level of the electric transmission structure) shall be designed in accordance with the provisions of TIA/EIA Standard 222 with two exceptions:

1. An 85 mph extreme wind speed shall be used for locations in all counties throughout the NU system.
2. The stress increase of TIA Section 3.1.1.1 is disallowed. The combined wind and ice condition shall consider ½" radial ice in combination with the wind load (0.75 W_i) as specified in TIA section 2.3.16.

E L E C T R I C T R A N S M I S S I O N T O W E R

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled "NU Design Criteria". This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

- PCS mast for its total height above ground level, including the initial and planned future support platforms, antennas, etc. above the top of an electric transmission structure.
- Conductors are related devices and hardware.
- Electric transmission structure. The loads from the PCS facility and from the electric conductors shall be applied to the structure at conductor and PCS mast attachment points, where those load transfer to the tower.

The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with the exceptions noted above. (Note that the NESC does not require the projected wind surfaces of structures and equipment to be increased by the ice covering.)

In the event that the electric transmission tower is not sufficient to support the additional loadings of the PCS mast, reinforcement will be necessary to upgrade the strength of the overstressed members.

Eversource Overhead Transmission Standards

Attachment A Eversource Design Criteria

		Attachment A NU Design Criteria	Basic Wind Speed	Pressure	Height factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor	
			V (MPH)	Q (PSF)	Kz	Gh			
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA	
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	—	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces	
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	—	4	1	1	2.50	1.6 Flat Surfaces 1.3 Round Surfaces	
	Conductors:		Conductor Loads Provided by NU						
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA	
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces	
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces	
	Conductors:		Conductor Loads Provided by NU						
NESC Extreme Ice with Wind Condition *		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 X Gust Response Factor Apply a 1.25 X Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces	
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces	
	Conductors:		Conductor Loads Provided by NU						
	* Only for structures installed after 2007								

Communication Antennas on Transmission Structures

Eversource Overhead Transmission Standards

mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition

With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "Eversource Design Criteria." This specifies uniform loadings (different from the TIA loadings) on each of the following components of the installed facility:

- a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA's etc.) above the top of an electric transmission structure.
- b) Conductors and related devices and hardware (wire loads will be provided by Eversource).
- c) Electric Transmission Structure
 - i) The loads from the wireless communication equipment components based on NESC and Eversource Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower.
 - ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	1.6

- iii) When Coaxial Cables are mounted alongside the pole structure, the shape multiplier shall be:

Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.6

- d) The uniform loadings and factors specified for the above components in Attachment A, "Eversource Design Criteria" are based upon the National Electric Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to the TIA and its loads and factors with the exceptions noted above.

Note: The NESC does not require ice load be included in the supporting structure. (Ice on conductors and shield wire only, and Eversource will provide these loads).

- e) Mast reaction loads shall be evaluated for local effects on the transmission structure members at the attachment points.

Communication Antennas on Transmission Structures

Project: 1714/1720 Lines, Structure 917
 Date:11/6/18
 Engineer: JS
 Purpose: Recalculate wire loads for AT&T site.

Shield Wires:
 1714: 7#9 Copperweld, sagged in PLS-CADD
 1720: FOCAS 0.738" OPGW, sagged in PLS-CADD

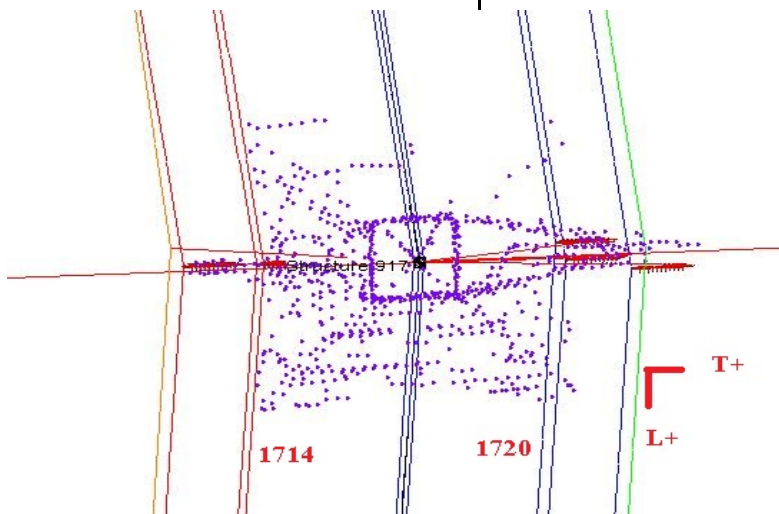
Conductors:
 1714: 556 Dove ACSR, sagged in PLS-CADD
 1720: 556 Dove ACSR, sagged in PLS-CADD

NESC 250B

1714 Line

1720 Line

Shield:	V	763		1322 V
	T	-1853		-3152 T
	L	-50		912 L
Top Phase:	V	1703		1662 V
	T	-3907		-3784 T
	L	-25		-50 L
Mid Phase:	V	1708		1668 V
	T	-4037		-3813 T
	L	-25		-50 L
Bot Phase:	V	1709		1676 V
	T	-3861		-3729 T
	L	-25		-50 L



Project: 1714/1720 Lines, Structure 917
 Date:11/6/18
 Engineer: JS
 Purpose: Recalculate wire loads for AT&T site.

Shield Wires:
 1714: 7#9 Copperweld, sagged in PLS-CADD
 1720: FOCAS 0.738" OPGW, sagged in PLS-CADD

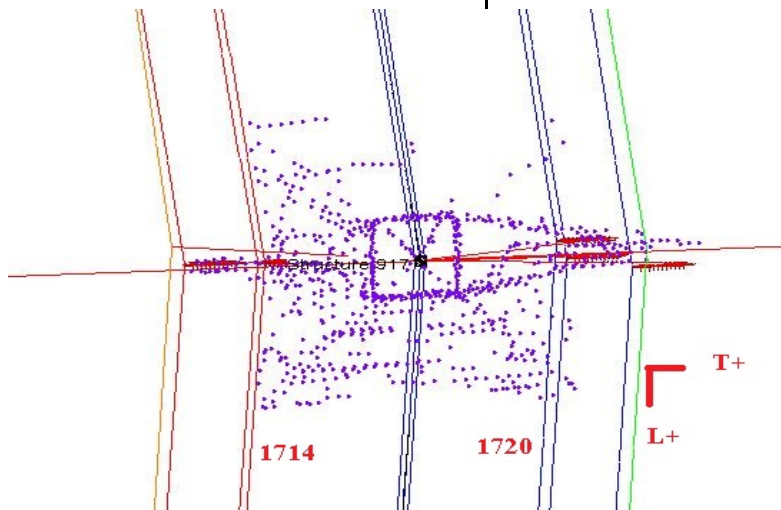
Conductors:
 1714: 556 Dove ACSR, sagged in PLS-CADD
 1720: 556 Dove ACSR, sagged in PLS-CADD

NESC 250C

1714 Line

1720 Line

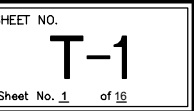
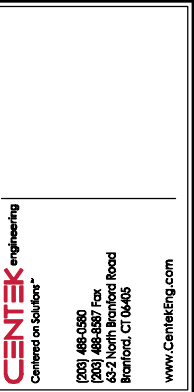
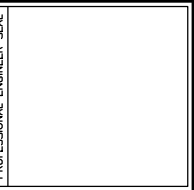
Shield:	V	180		403 V
	T	-978		-2249 T
	L	0		435 L
Top Phase:	V	576		544 V
	T	-2944		-2881 T
	L	-50		-50 L
Mid Phase:	V	550		550 V
	T	-2933		-2826 T
	L	-50		-50 L
Bot Phase:	V	584		557 V
	T	-2789		-2724 T
	L	-50		-50 L



An aerial photograph showing a wooded area with many bare trees. A road, labeled 'White Birch Rd', runs diagonally from the top left towards the bottom center. Another road, partially labeled 'Tall...', is visible at the top. A white callout box with a pointer indicates a specific location in the woods, labeled 'PROJECT LOCATION'. A portion of a building is visible in the bottom right corner.

SITE ADDRESS:	5 TALL PINES DRIVE WESTON, CT 06883
PROJECT COORDINATES:	LAT: 41°-11'-40.60"N LON: 73°-20'-52.90"W ELEV:±202' AMSL
EVERSOURCE STRUCT NO:	917
EVERSOURCE CONTACT:	JOEL SZARKOWICZ 860.728.4503
AT&T SITE REF.:	CT1845
AT&T CONTACT:	MARK ROBERTS 860.670.9068
ANTENNA CL HEIGHT:	95'-0" AGL
ENGINEER OF RECORD:	CEN TEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT 06405
CEN TEK CONTACT:	TIMOTHY LYNN, PE 203-433-7507

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
N-1	DESIGN BASIS & GENERAL NOTES	2
N-2	EARTHWORK & FOUNDATION CONSTRUCTION NOTES	2
N-3	CONCRETE CONSTRUCTION NOTES	2
N-4	STRUCTURAL STEEL NOTES	2
N-5	GROUNDING NOTES	2
MI-1	MODIFICATION INSPECTION REQUIREMENTS	2
S-1	TOWER ELEVATION & FEEDLINE PLAN	2
S-2	ANTENNA MAST FOUNDATION DETAILS	2
S-3	TOWER FOUNDATION REINFORCEMENT DETAILS	2
S-4	ANTENNA MAST DETAILS	2
S-5	ANTENNA MAST CONNECTION DETAILS	2
S-6	ANTENNA MAST CONNECTION DETAILS	2
S-7	INNER BRACE REPLACEMENT DETAILS	2
S-8	HAND HOLE DETAILS	2
E-1	GROUNDING DETAILS	2

[illegible]

DESIGN BASIS

1. GOVERNING CODE: 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CT STATE SUPPLEMENT.
2. TIA-222-G, ASCE MANUAL NO. 10-97 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2-2012 AND NORTHEAST UTILITIES DESIGN CRITERIA.
3. DESIGN CRITERIA

WIND LOAD: (ANTENNA MAST)

NOMINAL DESIGN WIND SPEED (V) = 93 MPH (2018 CSBC: APPENDIX 'N')

WIND LOAD: (UTILITY POLE & FOUNDATION)

BASIC WIND SPEED (V) = 110 MPH (3-SECOND GUST)
BASED ON NESC C2-2012, SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS AND REINFORCEMENT DESIGN PREPARED BY CENTEK ENGINEERING, INC., FOR AT&T DATED 12/19/18.
2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE ORIGINAL TOWER DESIGN DOCUMENTS PREPARED BY AMERICAN BRIDGE CO. ORDER NO. J6125 CIRCA 1949.
3. THE TEMPORARY DETACHMENT AND/OR REPLACEMENT OF TOWER MEMBERS SHALL BE DONE ONE AT A TIME AND SHALL BE CONDUCTED ON DAYS WITH LESS THAN 15 MPH WIND PRESENT. NO MEMBER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY.
4. ALL STEEL REINFORCEMENT SHOWN HEREIN APPLIES TO ALL SIDES OF THE TOWER.
5. ALL REPLACEMENT STEEL MEMBERS SHALL BE INSTALLED WITH A325-N BOLTS (SIZE TO MATCH EXISTING). UNLESS OTHERWISE NOTED BELOW.
6. THE TOWER STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER REINFORCEMENTS ARE COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE & SEQUENCE AND TO INSURE THE SAFETY OF THE TOWER STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, UNDERPINNING, TEMPORARY ANCHORS, GUYING, BARRICADES, ETC. AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY. MAINTAIN EXISTING SITE OPERATIONS AND COORDINATE WORK WITH TOWER OWNER.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.
8. 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 SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
9. 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. THIS INCLUDES VERIFYING ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.
10. TOWER REINFORCEMENTS SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF TRANSMISSION STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.
11. EXISTING COAXIAL CABLES AND ALL ACCESSORIES SHALL BE RELOCATED AS NECESSARY AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE WHERE THEY ARE IN CONFLICT WITH THE TOWER REINFORCEMENT WORK.
12. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.
13. 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.

REV.	DATE	DRAWN BY/CHKD BY	DESCRIPTION
	0 12/19/18	TUL CAG	ISSUED FOR REVIEW
	1 1/7/19	TUL CAG	ISSUED FOR REVIEW -- REVISED CABLE ROUTE
	2 2/26/19	TUL CAG	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



AT&T MOBILITY

CT1845

5 TALL PINES DRIVE
WESTON, CT 06883

DATE:	12/19/18
SCALE:	AS SHOWN
JOB NO.	18123.00

DESIGN BASIS AND GENERAL NOTES

SHEET NO.

N-1

Sheet No. 2 of 16

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.
2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSES OF COMPACTOR PER LIFT.
3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD
PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION
REQUIREMENTS:

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".
6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 10" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.
7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

1. ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING ADEQUATE BEARING CAPACITY AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL. ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.
2. SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE COMPACTION. DETERMINE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557-70 AND MAKE ONE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D2167-66 FOR EACH 50 CUBIC YARDS OF COMPACTED FILL. BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.
3. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.
4. WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.
5. ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.
6. FOUNDATION WATERPROOFING AND DAMPPROOFING SHALL COMPLY WITH BUILDING CODE REQUIREMENTS UNLESS A MORE SUBSTANTIAL SYSTEM IS INDICATED OR SPECIFIED.

SHEET NO.
N-2
Sheet No. 3 of 16

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:

ACI 301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE
FOR BUILDINGS.

ACI 304 – RECOMMENDED PRACTICE FOR MEASURING,
MIXING, TRANSPORTING, AND PLACING CONCRETE.

ACI 318 – BUILDING CODE REQUIREMENTS FOR
REINFORCED CONCRETE.

- ALL CONCRETE 3,500 PSI

4. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".

6. NO STEEL WIRE, METAL FORM TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.

8. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.

10. TOP OF FOOTING SURFACES SHALL RECEIVE A UNIFORM FLOAT FINISH. CURE FOOTING SURFACE WITH SONNEBORN KURE-N-SEAL WB OR APPROVED EQUAL, APPLIED AS RECOMMENDED BY MANUFACTURER.

- THE PERIMETER OF THE EXISTING CAISSON SHALL BE THOROUGHLY CLEANED OF ALL DIRT AND DELETERIOUS MATERIALS PRIOR TO APPLICATION OF BONDING AGENT. CONTRACTOR SHALL NOTIFY NORTHEAST UTILITIES 24 HOURS IN ADVANCE OF CLEANING.

CAULK JOINT BETWEEN EXISTING CONCRETE PIER AND NEW
CONCRETE WITH SIKAFLEX 1-A BY SIKA CORP. OR
ENGINEER APPROVED EQUAL.

12. NEW CONCRETE FOOTING SHALL BE ALLOWED TO CURE AT LEAST 14 DAYS BEFORE WIRELESS ANTENNA MOUNT, ANTENNAS, AND CABLES ARE INSTALLED.

13. INSPECTION AND TESTING OF CONCRETE WORK SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, APPROVED AND PAID BY THE OWNER. THE INSPECTOR SHALL OBSERVE THE CONDITION OF SOILS AND FORMWORK BEFORE FOOTINGS ARE PLACED, SIZE, SPACING AND LOCATION OF REINFORCEMENT, AND PLACEMENT OF CONCRETE.

14. THE TESTING COMPANY SHALL ALSO OBTAIN A MINIMUM OF THREE (3) COMPRESSIVE STRENGTH TEST SPECIMENS FOR EACH CONCRETE MIX DESIGN. ONE SPECIMEN TESTED AT 7 DAYS, ONE AT 28 DAYS, AND ONE HELD IN RESERVE FOR FUTURE TESTING, IF NEEDED.

15. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE OWNER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

2	2/26/19	TJL	CAG	ISSUED FOR CONSTRUCTION			
1	1/7//19	TJL	CAG	ISSUED FOR REVIEW – REVISED CABLE ROUTE			
0	12/19/18	TJL	CAG	ISSUED FOR REVIEW			
REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION			

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TEST MODELS

FRAGMENTS

ADAPTABILITY

STACBULL

DATE:	12/19/18
SCALE:	AS SHOWN
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CONCRETE CONSTRUCTION NOTES

SHEET NO.

N-3

Sheet No. 4 of 16

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD).
 2. MATERIAL SPECIFICATIONS
 - A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
 - B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
 - C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
 - D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
 - E. PIPE---ASTM A53 GRADE B (FY = 35 KSI)
 3. FASTENER SPECIFICATIONS
 - A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
 - B. U-BOLTS---ASTM A307
 - C. ANCHOR RODS---ASTM F1554
 - D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.
 4. 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.
 5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
 6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
 7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
 8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
 9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
 10. 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.
 11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
 12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
 13. 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.
 14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
 15. 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.
 16. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.
 17. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
 18. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
 19. FABRICATE BEAMS WITH MILL CAMBER UP.
 20. 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.
 21. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

[illegible]

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CT1845
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**STRUCTURAL
STEEL NOTES**

SHEET NO.
N-4
Sheet No. 5 of 16

TOWER GROUNDING SYSTEM NOTES

GENERAL

1. THE OWNER WILL FURNISH THE WIRE, CONNECTORS, AND MISCELLANEOUS MATERIAL ASSOCIATED WITH THE COUNTERPOISE GROUNDING SYSTEM.
2. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE GROUNDING SYSTEM AND TO REHABILITATE THE RIGHT-OF-WAY AS CLOSE AS POSSIBLE TO ITS ORIGINAL CONDITION.
3. THE CONTRACTOR SHALL HANDLE AND TRANSPORT THE OWNER SUPPLIED MATERIAL FROM THE OWNER'S STOREROOMS AND YARDS TO THE JOB SITE AND SHALL RETURN SURPLUS MATERIAL AND EMPTY REELS TO DESIGNATED STOREROOMS AND YARDS UPON COMPLETION OF THE CONTRACT.
4. NORTHEAST UTILITIES WILL BE RESPONSIBLE FOR PERFORMING TESTS FOR SURGE IMPEDANCE AND WAVE IMPEDENCE.

INSTALLATION

1. UNLESS OTHERWISE DURECTED BY THE OWNER'S REPRESENTATIVE, COUNTERPOISE SHALL BE BURIED A MINIMUM OF 24" IN CULTIVATED AREAS AND 18" IN WOODED OR OTHER AREAS. IN ROCKY AREAS OR WHERE OBSTRUCTIONS ARE ENCOUNTERED, THE COUNTERPOISE SHALL BE DIVERTED AROUND SUCH OBSTRUCTIONS. ALL INSTALLATIONS SHALL INCLUDE CONNECTIONS TO EXISTING OR PROPOSED STRUCTURES, AND SUCH CONNECTIONS SHALL BE MADE BELOW GROUND USING BOLTED PARALLEL GROVE CONNECTORS.
2. WHERE MULTIPLE STUCTURE GROUNDS EXIST AT MULTI POLE STRUCTURES, THEY SHALL BE CONNECTED TOGETHER WITH BURIED COPPERWELD WIRE, BUT ONLY IF SUCH GROUNDS HAVE METALLIC CONNECTIONS UP THE POLES TO THE SHIELD WIRE(S). AT STRUCTURES THAT HAVE PALE GROUNDS AND ALSO POLE GUY GROUNDS, CONNECTIONS SHALL BE MADE ONLY TO THE POLE GROUNDS, AND THE MINIMUM SPACING BETWEEN THE COUNTERPOISE AND ANCHOR RODS SHALL BE 10'. AT WOOD POLE STRUCTURES WHERE NO SUCH POLE GROUND EXISTS, COUNTERPOISE CONNECTIONS SHALL BE MADE TO THE POLE TOP GUYS.
3. FOR SINGLE COUNTINUOUS (TYPE A) AND SINGLE BROKEN (TYPE B) COUNTERPOISE, THE WIRE SHALL IN GENERAL BE LAYED AT THE CENTERLINE OF THE TRANSMISSION LINE. FOR DOUBLE CONTINUOUS (TYPE C) AND DOUBLE BROKEN (TYPE D) COUNTERPOISE, THE WIRES SHALL IN GENERAL SHALL BE LAYED UNDER THE OUTSIDE PHASE WIRES OF THE TRANSMISSION LINE. COUNTERPOISE SHALL NOT BE INSTALLED ACROSS BROOKS, RIVERS, HIGHWAYS, RAILROADS, OR IN THE VICINITY OF TELEPHONE CABLES OR PIPELINES.

4. AT STEEL POLE STRUCTURES, A BURIED GRADING RING AND SPOKES SHALL ALSO BE INSTALLED AROUND THE STRUCTURE UNLESS THE STRUCTURE HAS A PAD AND PIER FOUNDATION OR UNLESS A RING ALREADY EXISTS. COUNTERPOISE WIRE SHALL BE CONNECTED AT TWO PLACES TO EACH RING, AND COPPERWELD SPOKES SHALL SLOPE LINEARLY UP TO THE STRUCTURE GROUND.
5. AT WOOD POLE STRUCTURES, AN 8' LENGTH OF PLASTIC MOULDING SHALL BE STAPLED OVER THE BOTTOM WITH 8' OF DOWNLOAD.

GROUND RODS

1. WHERE GROUND RODS ARE REQUIRED, THEY SHALL BE SINGLE OR SECTIONAL WITH THE LENGTH SPECIFIED. THEY SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH WHICH WILL LEAVE THE TOP OF THE ROD AT LEAST 12" BELOW GRADE. ALL RODS SHALL BE CONNECTED TO COUNTERPOISE OR TO POLE GROUNDS USING BOLTED CONNECTORS.

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GROUNDING NOTES

SHEET NO.

N-5

Sheet No. 6 of 16

MODIFICATION INSPECTION REPORT REQUIREMENTS					
PRE-CONSTRUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	X	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED SHOP DRAWINGS	X	EARTHWORK: BACKFILL MATERIAL & COMPACTION	—	POST-INSTALLED ANCHOR ROD PULL-OUT TEST
—	EOR APPROVED POST-INSTALLED ANCHOR MPII	X	REBAR & FORMWORK GEOMETRY VERIFICATION	X	PHOTOGRAPHS
X	FABRICATION INSPECTION	X	CONCRETE TESTING		
X	FABRICATOR CERTIFIED WELDER INSPECTION	X	STEEL INSPECTION		
X	MATERIAL CERTIFICATIONS	—	POST INSTALLED ANCHOR ROD VERIFICATION		
		—	BASE PLATE GROUT VERIFICATION		
		—	CONTRACTOR’S CERTIFIED WELD INSPECTION		
		X	ON-SITE COLD GALVANIZING VERIFICATION		
		X	CONTRACTOR AS-BUILT REDLINE DRAWINGS		
NOTES: 1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS 2. "X" DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT. 3. "—" DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT. 4. EOR – ENGINEER OF RECORD 4. MPII – "MANUFACTURER’S PRINTED INSTALLATION GUIDELINES"					

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.
3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.
4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.
5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:
 - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
 - WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
 - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON-SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:
 - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
 - WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON-SITE INSPECTIONS.
 - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:

- CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
- WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS-BUILT CONDITION.

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:

- PRE-CONSTRUCTION: GENERAL CONDITION OF THE SITE.
- DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
- POST-CONSTRUCTION: FINAL CONDITION OF THE SITE

[illegible]

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MODIFICATION INSPECTION REQUIREMENTS

SHEET NO.
MI-1
Sheet No. 7 of 16

LEGEND:
1. A.G.L.= ABOVE GROUND LEVEL
2. A.T.B.= ABOVE TOWER BASE

CL AT&T ANTENNAS
EL. ±95'-0" AGL

CL ANTENNA MAST CONNECTION
EL. ±81'-0" ATB

CL ANTENNA MAST CONNECTION
EL. ±64'-0" ATB

CL ANTENNA MAST CONNECTION
EL. ±54'-0" ATB

EXISTING 81' TALL CL&P
STEEL TRANSMISSION
STRUCTURE NO. 917

CL ANTENNA MAST CONNECTION
EL. ±36'-6" ATB

AT&T PROPOSED TWELVE (12)
1 5/8" DIA. COAX CABLES MOUNTED
INSIDE OF NORTHWEST TOWER LEG

AT&T PROPOSED TWELVE (12)
1 5/8" DIA. COAX CABLES MOUNTED
INSIDE OF SOUTHWEST TOWER LEG

AT&T (PROPOSED): TWELVE (12) CCI
HPA65R-BU8A PANEL ANTENNAS AND
TWENTY-FOUR (24) CCI
TMABPDB7823VG12A TMAs ON A SITE
PRO LOW PROFILE PLATFORM W/
HANDRAIL P/N RMQLP-496-HRK14

CL FLANGE CONNECTION
EL. ±82'-9" AGL

1 2
S-4 S-4
HSS16"x0.5" X 98' TALL
FIVE SECTION ANTENNA MAST

CL FLANGE CONNECTION
EL. ±60'-9" AGL

AT&T PROPOSED TWELVE
(12) 1-5/8" DIA. COAX
CABLES BANDED TO
EXTERIOR OF ANTENNA MAST

CL FLANGE CONNECTION
EL. ±40'-9" AGL

AT&T PROPOSED TWELVE (12)
1-5/8" DIA. COAX CABLES
ROUTED WITHIN ANTENNA MAST

CL FLANGE CONNECTION
EL. ±20'-9" AGL

2
S-2
PROPOSED 3' SQ. X
4'-6" TALL REINFORCED
CONCRETE FOUNDATION

3
S-3
PROPOSED 10'X10'X4'
THICK CONCRETE MAT
(TYP. OF 4)

FINISHED GRADE

1

S-1

TOWER & ANTENNA MAST ELEVATION

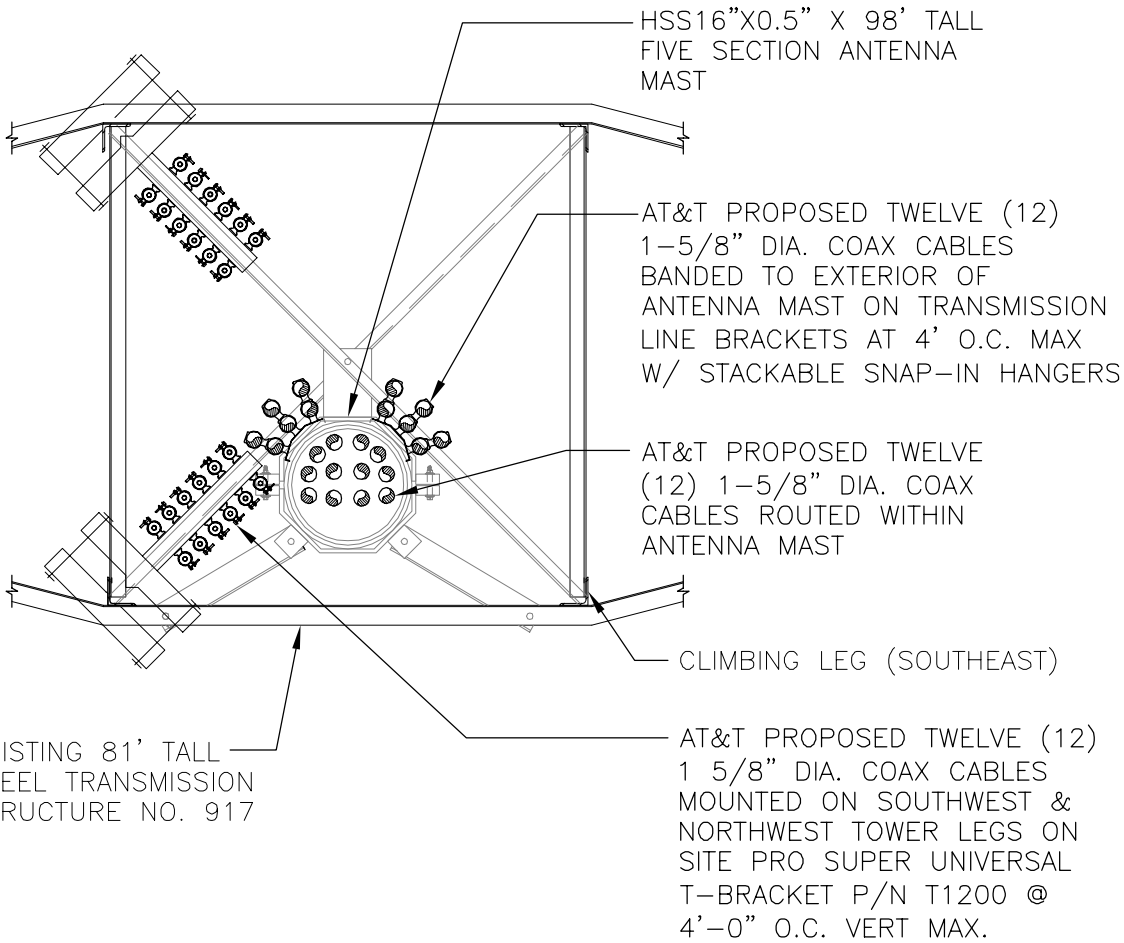
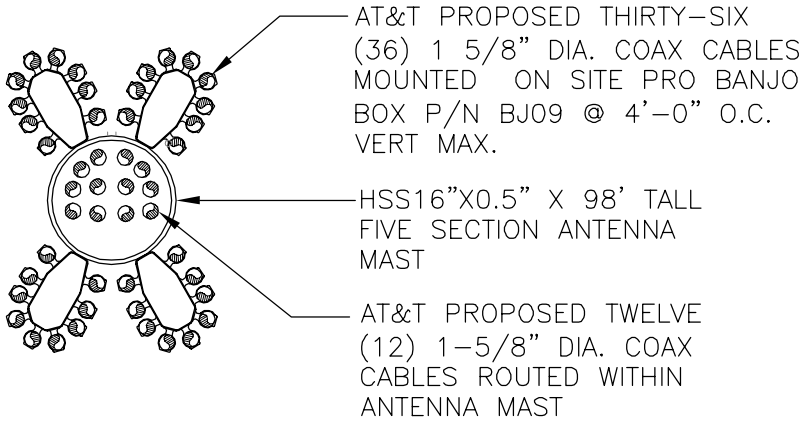
SCALE: NOT TO SCALE

3

S-1

FEEDLINE PLAN (ABOVE TOWER TOP)

SCALE: NOT TO SCALE



2

S-1

FEEDLINE PLAN

SCALE: NOT TO SCALE



TRUE
NORTH

REV.	DATE	BY	CHK'D	DESCRIPTION
2	2/26/19	TUL	CAG	ISSUED FOR CONSTRUCTION
1	1/7/19	TUL	CAG	ISSUED FOR REVIEW - REVISED CABLE ROUTE
0	12/19/18	TUL	CAG	ISSUED FOR REVIEW

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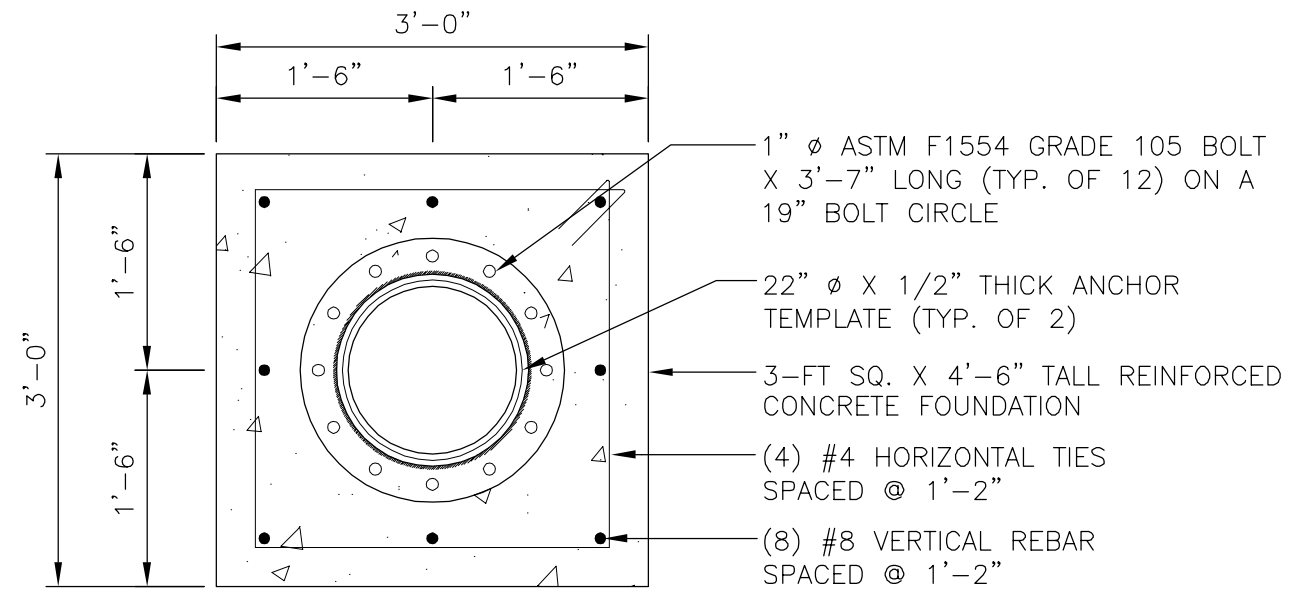
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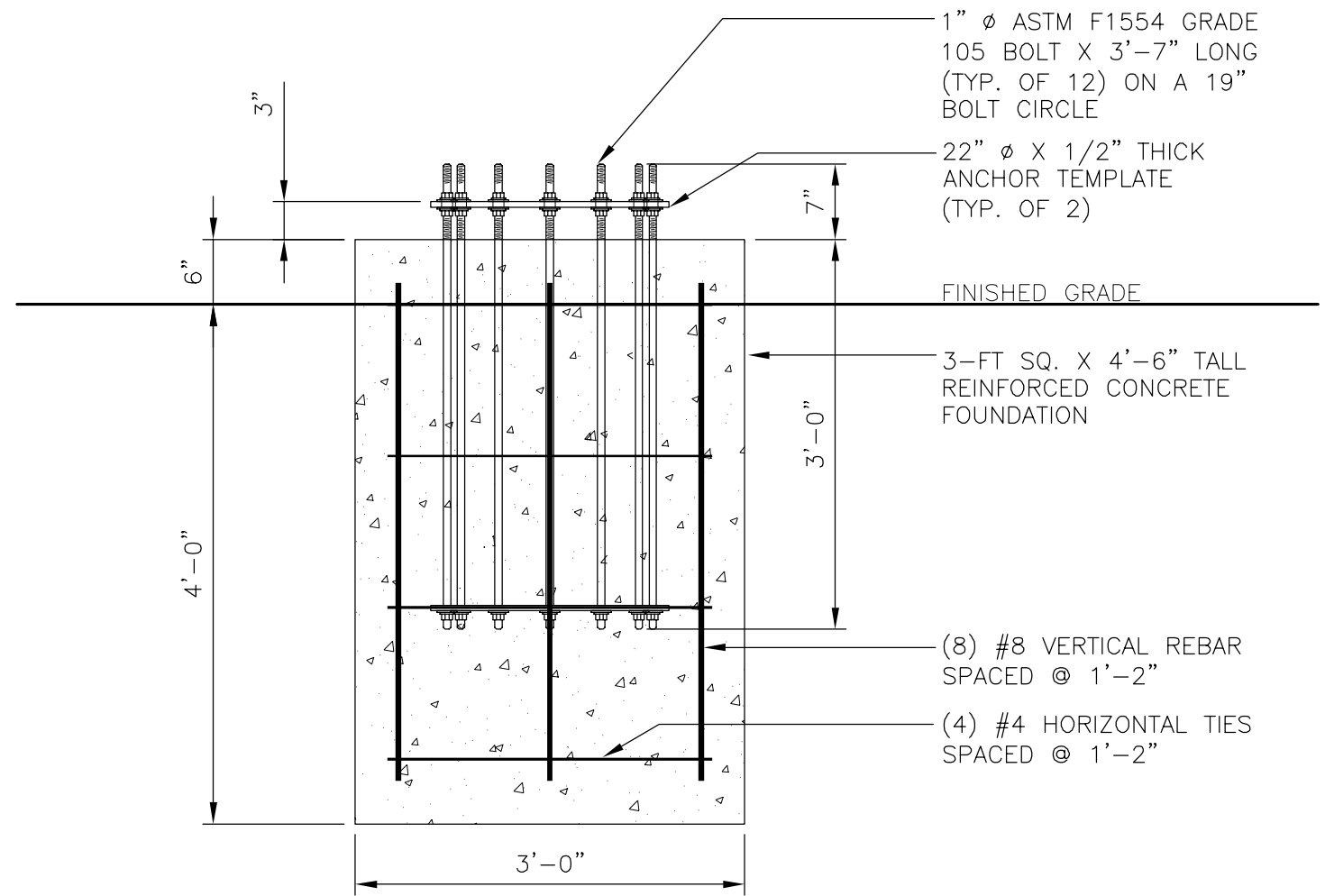
DATE: 12/19/18
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TOWER ELEVATION
AND FEEDLINE
PLAN

SHEET NO.
S-1
Sheet No. 8 of 16



1 FOUNDATION PLAN
S-2 SCALE: 3/4" = 1'-0"



2 FOUNDATION ELEVATION
S-2 SCALE: 3/4" = 1'-0"

REV.	DATE	DESCRIPTION
2	2/26/19	T.J.L. CAG ISSUED FOR CONSTRUCTION
1	1/7/19	T.J.L. CAG ISSUED FOR REVIEW - REVISED CABLE ROUTE
0	12/19/18	T.J.L. CAG ISSUED FOR REVIEW

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ANTENNA MAST
FOUNDATION
DETAILS

FOUNDATION PLAN NOTES:

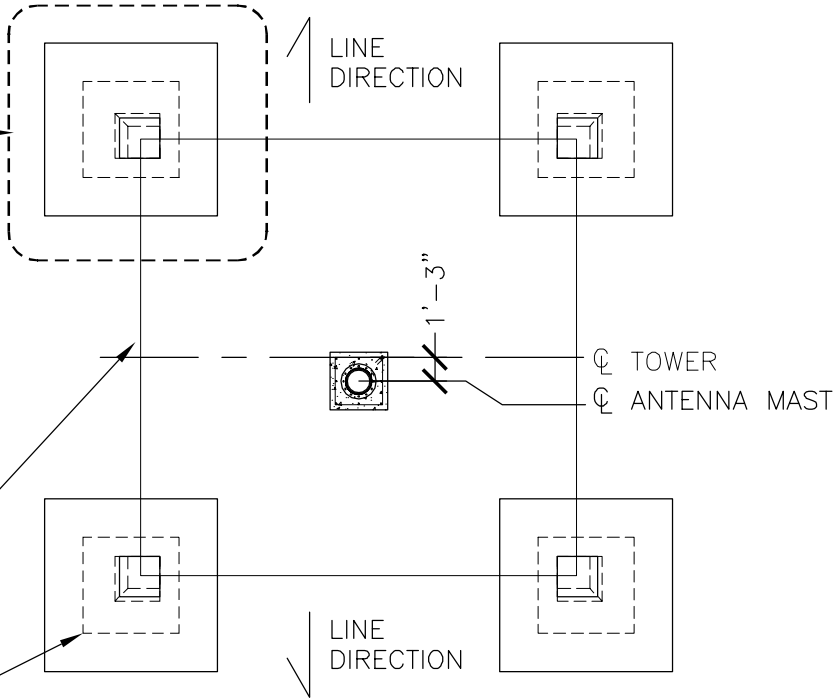
1. TOWER FOUNDATION SHALL BE CHECKED AND/OR TEMPORARY SHORING SHALL BE PROVIDED TO ENSURE TOWER STABILITY DURING CONSTRUCTION. LIMIT CONSTRUCTION DURATION TO MINIMIZE RISK. CONSTRUCTION SHALL BE CONDUCTED IN WIND SPEEDS LESS THAN 15 MPH AND IN LOW ICE ACCUMULATION PERIODS.
2. CONTRACTOR SHALL USE EXTREME CAUTION DURING EXCAVATION OF EXISTING FOUNDATION STRUCTURE. IMPLEMENT HAND DIGGING WHERE PRACTICABLE.
3. PROTECT EXISTING TOWER GROUND WIRE(S) FROM DAMAGE DUE TO NEW CONSTRUCTION. CONTRACTOR SHALL NOTIFY NU IF GROUNDING SYSTEM BECOMES DAMAGED OR DISCONNECTED.
4. NOTIFY NU REPRESENTATIVE TO BE PRESENT UPON COMPLETION OF REBAR PLACEMENT.

2
S-3

PROPOSED 10'X10'X4' THICK
REINFORCED CONCRETE MAT
(TYP. OF 4)

EXISTING 81' TALL CL&P
STEEL TRANSMISSION
STRUCTURE NO. 917

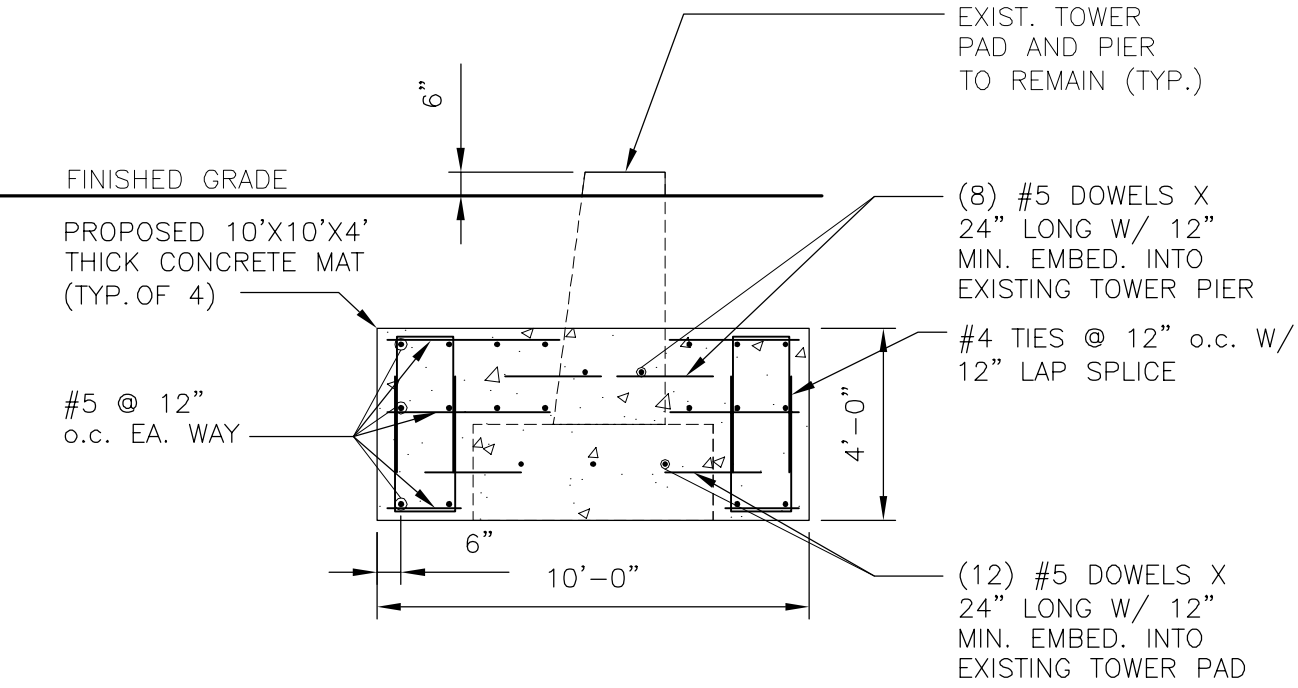
EXIST. CONCRETE PAD
AND PIER TO REMAIN
(TYP.)



1
S-3

KEY PLAN

SCALE: NOT TO SCALE



3
S-3

FOUNDATION REINFORCEMENT DETAIL

SCALE: 1/4" = 1'-0"

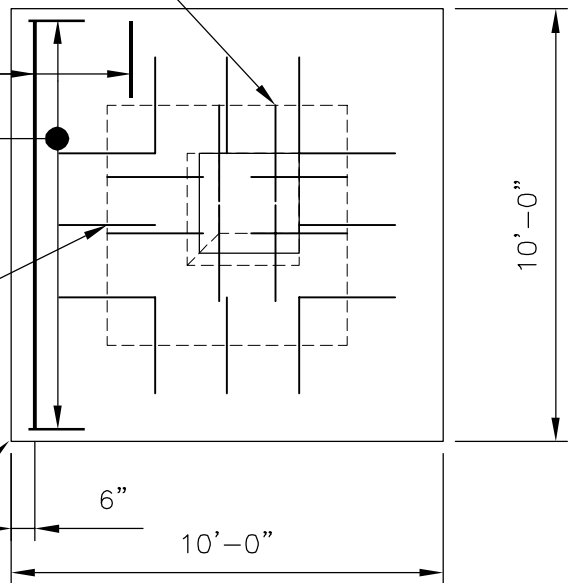
(8) #5 DOWELS X 24" LONG W/ 12" MIN. EMBED. INTO EXISTING TOWER PIER

#5 @ 12" o.c. EA. WAY (TYP. OF 4 FACES)

#4 TIES @ 12" o.c. W/ 12" LAP SPLICE (TYP. OF 4 FACES)

(12) #5 DOWELS X 24" LONG W/ 12" MIN. EMBED. INTO EXISTING TOWER PAD

PROPOSED 10'X10'X4' THICK CONCRETE MAT (TYP. OF 4)



2
S-3

FOUNDATION REINFORCEMENT PLAN

SCALE: 1/4" = 1'-0"

REV.	DATE	DESCRIPTION
0	12/19/18	ISSUED FOR REVIEW
1	1/7/19	ISSUED FOR REVIEW
2	2/26/19	ISSUED FOR CONSTRUCTION

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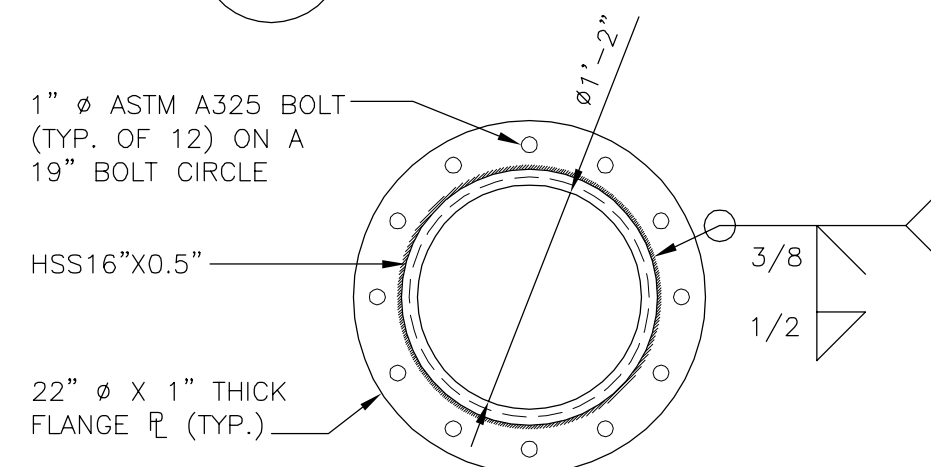
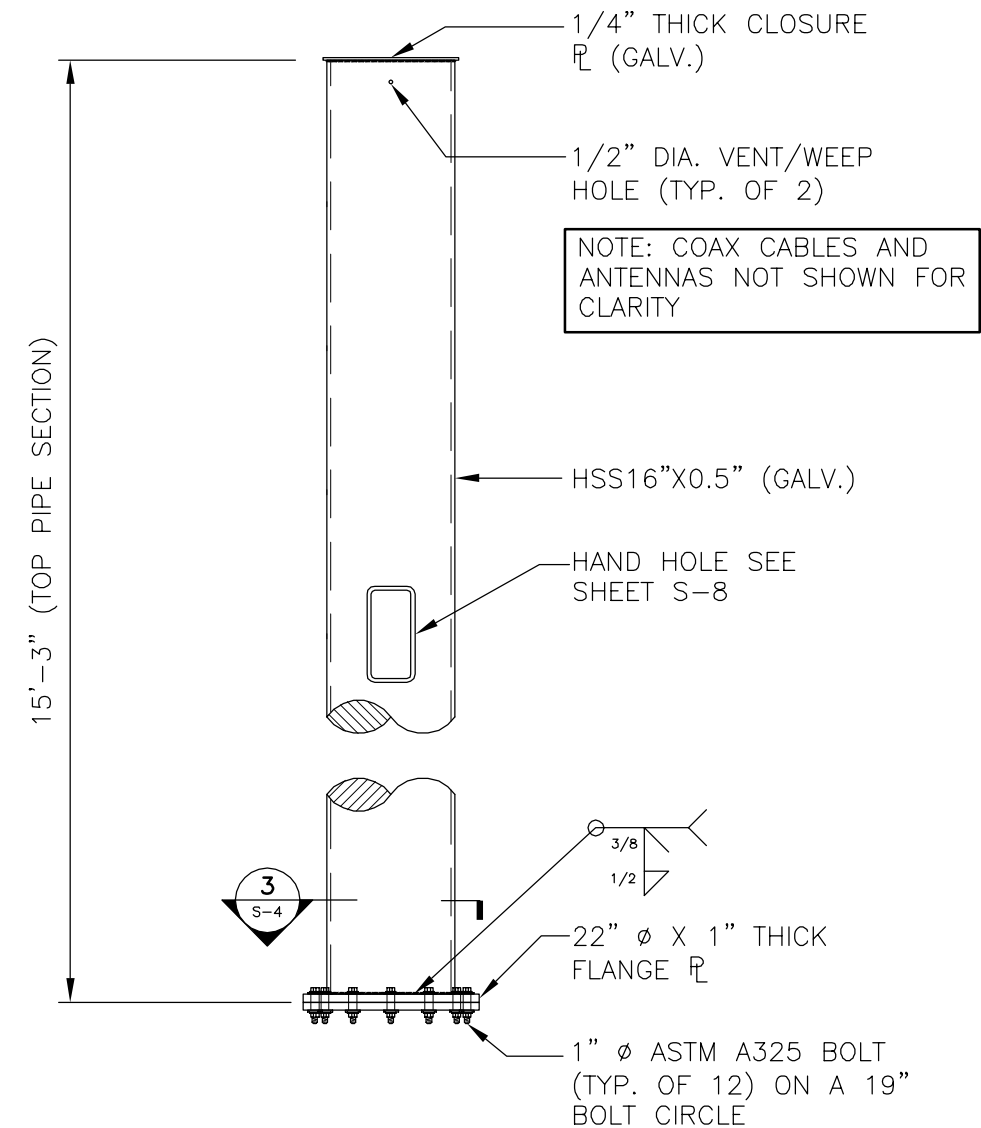
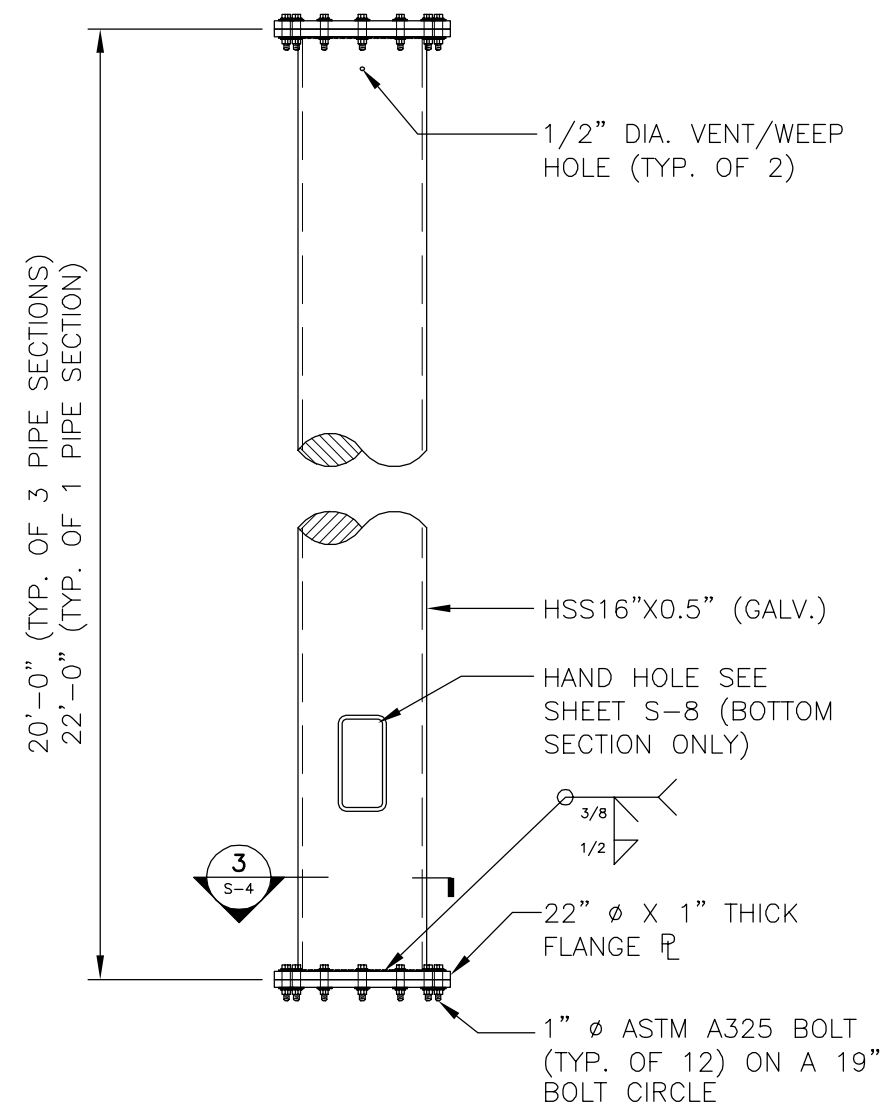
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ANTENNA MAST DESIGN
CT1845
CL&P STRUCTURE 917
5 TALL PIER DRIVE
WESTON, CT 06893

DATE: 12/19/18
SCALE: AS SHOWN
JOB NO. 18123.00

TOWER FOUNDATION REINFORCEMENT DETAILS

SHEET NO.
S-3
Sheet No. 10 of 16



2	2/26/19	TUL	CAG	ISSUED FOR CONSTRUCTION					
1	1/7/19	TUL	CAG	ISSUED FOR REVIEW -- REVISED CABLE ROUTE					
0	12/19/18	TUL	CAG	ISSUED FOR REVIEW					
REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION					

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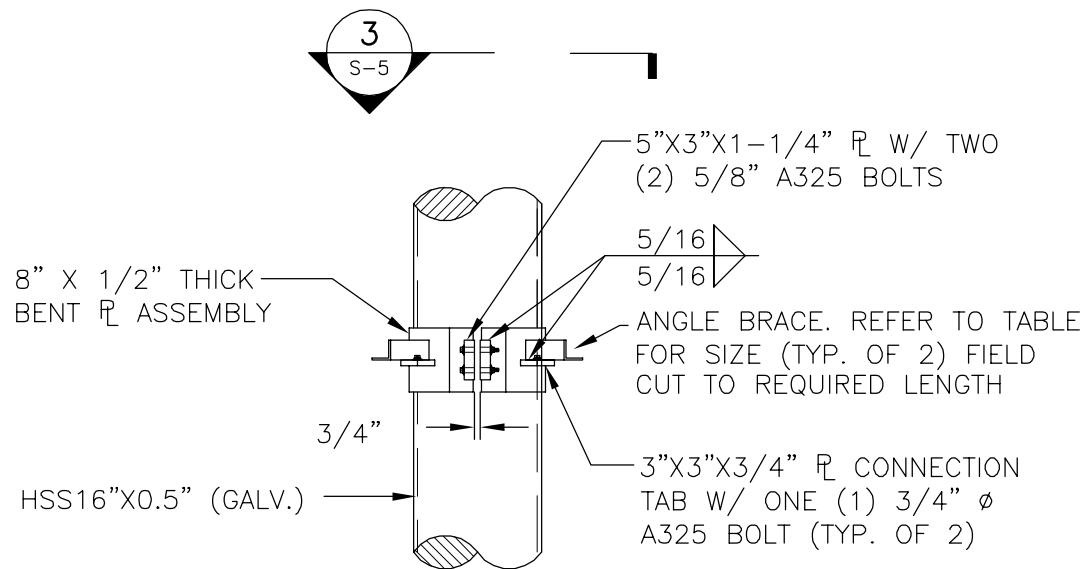
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SCALE:	AS SHOWN	
JOB NO.	18123.00	

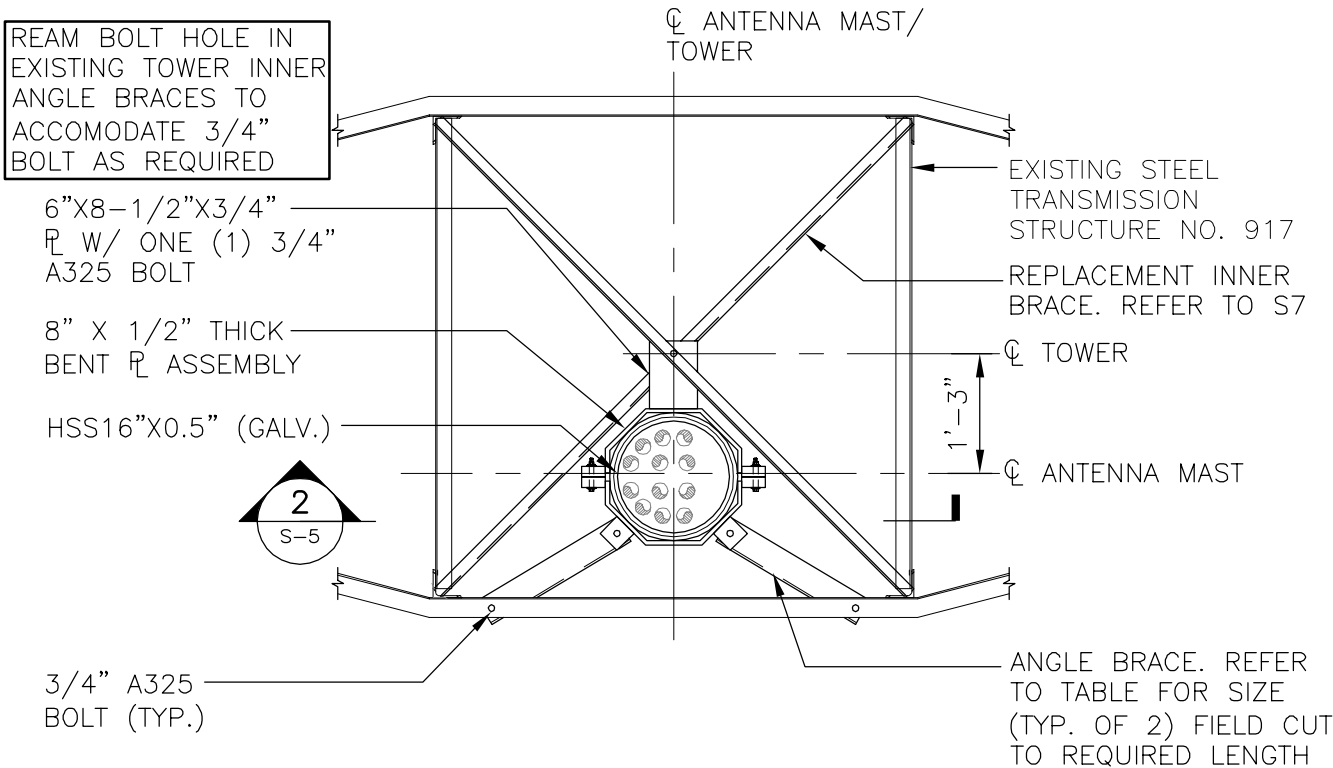
ANTENNA MAST DETAILS

SHEET NO.
S-4
Sheet No. 11 of 16

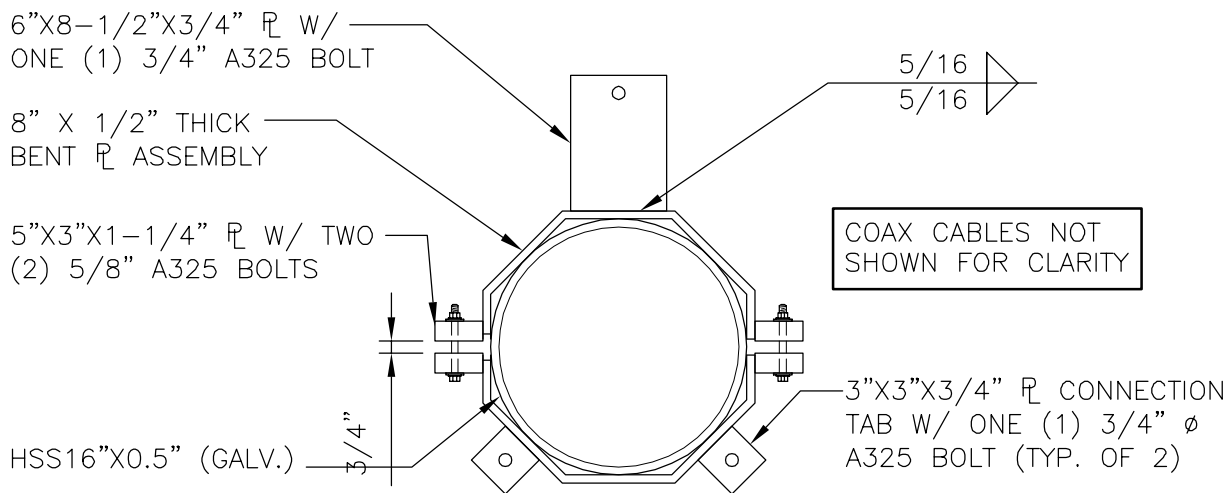


2 BRACKET ELEVATION
S-5 SCALE: 1/2" = 1'-0"

CONNECTION ELEVATION	ANGLE BRACE SIZE
81-FT (ATB)	L2-1/2X2-1/2-3/8
64-FT (ATB)	L2-1/2X2-1/2-3/8
54-FT (ATB)	L2-1/2X2-1/2-3/8



1 BRACKET PLAN
S-5 SCALE: 1/2" = 1'-0"



3 BRACKET DETAIL
S-5 SCALE: 1" = 1'-0"

REV.	DATE	DRAWN BY	CHECK'D BY	DESCRIPTION
2	2/26/19	T.J.L.	CAG	ISSUED FOR CONSTRUCTION
1	1/7/19	T.J.L.	CAG	ISSUED FOR REVIEW - REVISED CABLE ROUTE
0	12/19/18	T.J.L.	CAG	ISSUED FOR REVIEW

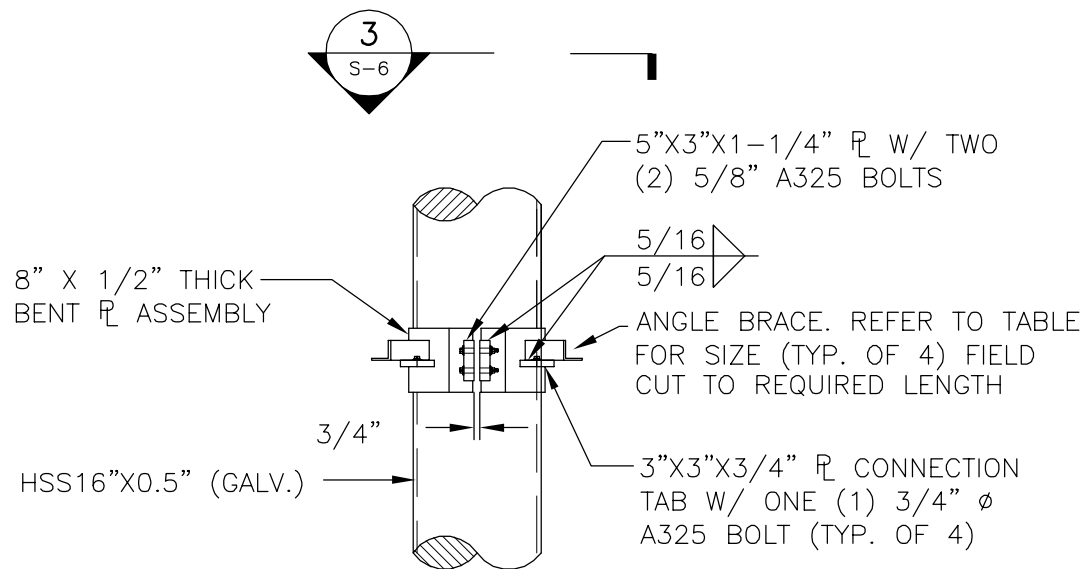
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CL&P STRUCTURE 917
5 TALL PNEUMATIC DRIVE
WESTON, CT 06883

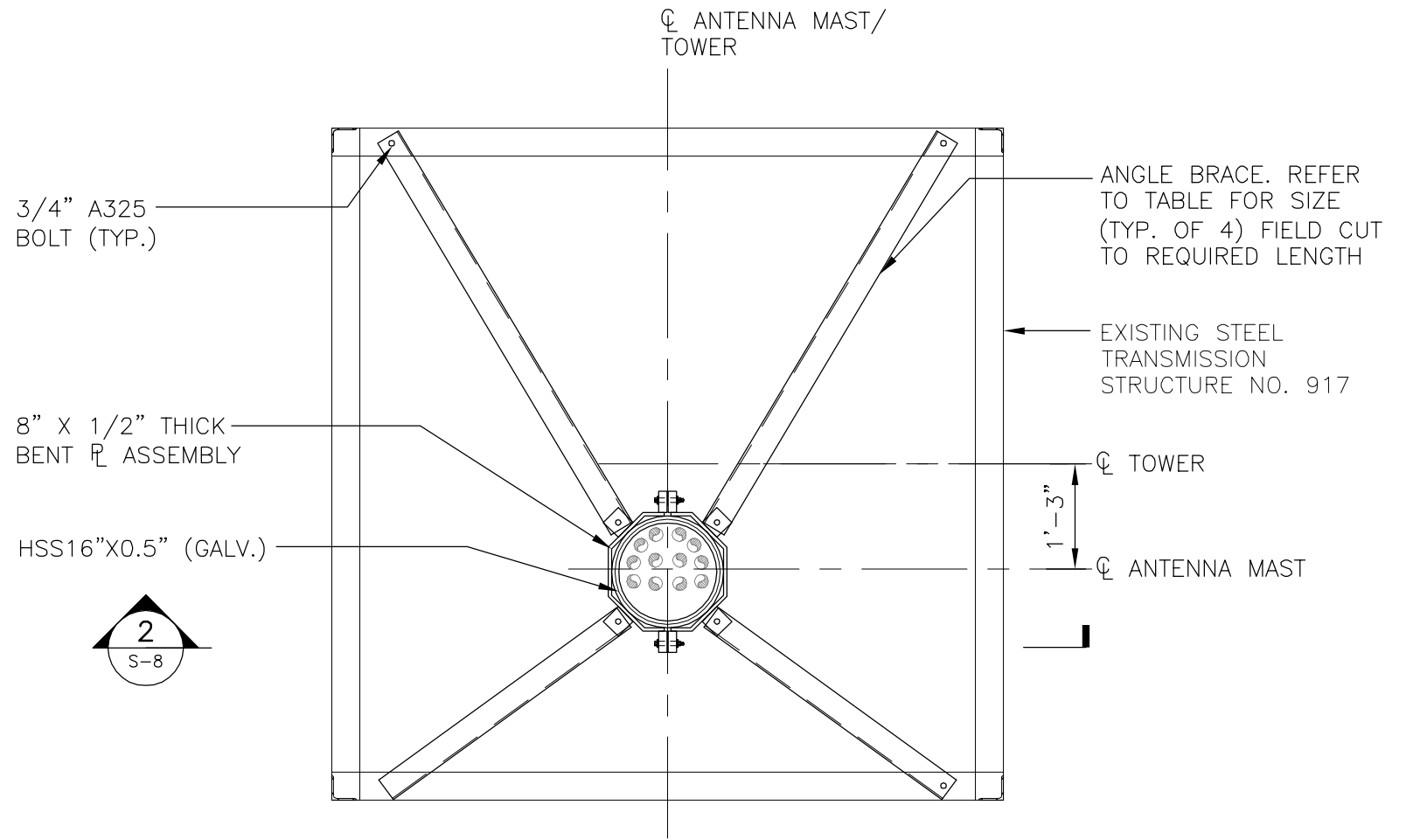
DATE: 12/19/18
SCALE: AS SHOWN
JOB NO. 18123.00

ANTENNA MAST CONNECTION DETAILS

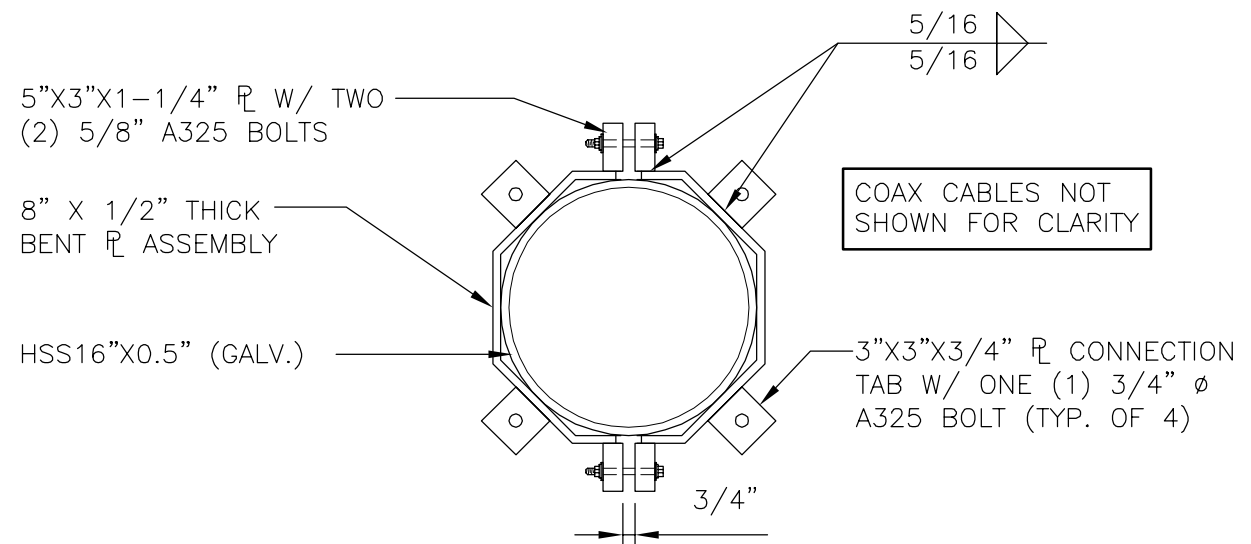


2
S-6
BRACKET ELEVATION
SCALE: 1/2" = 1'-0"

CONNECTION ELEVATION	ANGLE BRACE SIZE
36.5-FT (ATB)	L2-1/2X2-1/2-3/8



1
S-6
BRACKET PLAN
SCALE: 1/2" = 1'-0"



3
S-6
BRACKET DETAIL
SCALE: 1" = 1'-0"

REV.	DATE	BY	CHK'D	DESCRIPTION
2	2/26/19	TUL	CAG	ISSUED FOR CONSTRUCTION
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SCALE:	AS SHOWN
JOB NO.	18123.00

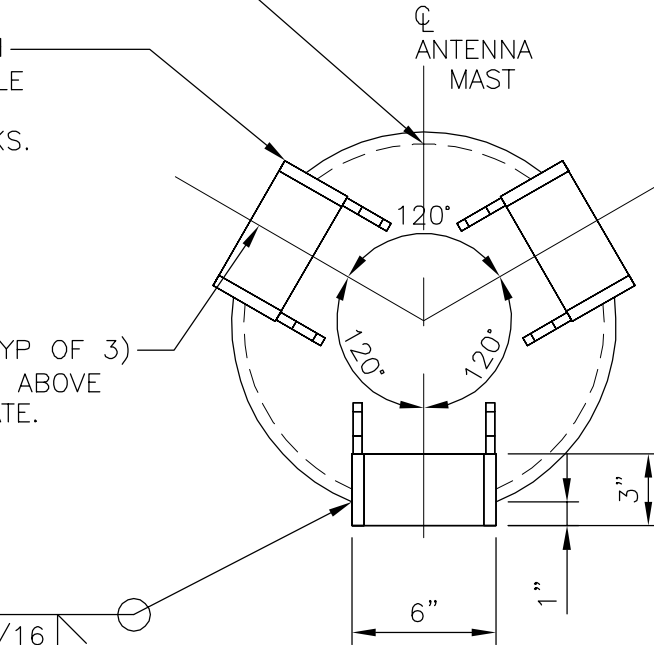
**ANTENNA MAST
CONNECTION
DETAILS**

SHEET NO.
S-6
Sheet No. 13 of 16

E-70
SMAW TYP.



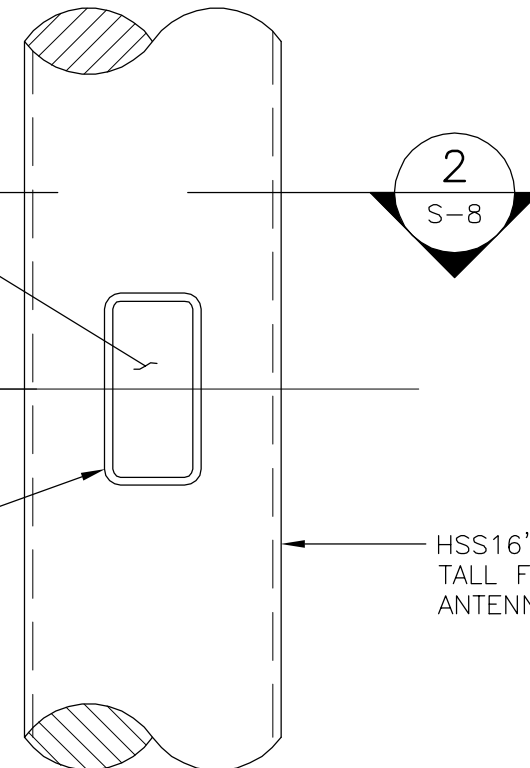
7/16
1/2
45



S-8

SCALE: $1-1/2'' = 1'-0''$

— HSS16"X0.5" X 98'
TALL FIVE SECTION
ANTENNA MAST



S-8

SCALE: 1/2" = 1'-0"

2	2/26/19	T/L	CAG	ISSUED FOR CONSTRUCTION						
1	1/7/19	T/L	CAG	ISSUED FOR REVIEW -- REVISED CABLE ROUTE						
			CAG	ISSUED FOR REVIEW						
	0 12/19/18	T/L	CAG	ISSUED FOR REVIEW						
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HAND HOLE DETAILS

SHEET NO.
S-7
Sheet No. 14 of 16



(NORTHEAST UTILITIES REQUIREMENTS)

- (A) STEEL HYBRID POLE
- (B) CONCRETE CAISSON TYPE FOUNDATION
- (C) STRANDED COPPERWELD SPOKE FROM POLE GROUND TO GRADING RING. SPOKES ARE A CONTINUATION OF STRANDED COPPERWELD COUNTERPOISE CONNECTING GRADING RING TO POLE GROUND. SPOKES TO SLOPE ON STRAIGHT LINE FROM GROUND LEVEL TO GRADING RING.
- (D) PARALLEL GROVE CONNECTOR, NU SC190052.
- (E) GRADING RING @ 18" MINIMUM BELOW GRADE AND 24" TO 30" FROM TOWER FOUNDATION. GRADING RING TO BE 3 NO. 8 STRANDED ANEALD COPPERWELD.
- (F) COUNTERPOISE, 3 NO. 8 STRANDED ANEALD COPPERWELD (TYPICAL).
- (G) COPPERWELD POLE GROUND

[illegible]

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GROUNDING DETAILS

SHEET NO.

E-1

Sheet No. 15 of 16

**Development of Design Heights, Exposure Coefficients,
and Velocity Pressures Per TIA-222-G****Wind Speeds**

Basic Wind Speed $V := 93$ mph (User Input - 2016 CSBC Appendix N)
 Basic Wind Speed with Ice $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = Structure_Type := Lattice (User Input)
 Structure Category = SC := III (User Input)
 Exposure Category = Exp := C (User Input)
 Structure Height = $h := 81$ ft (User Input)
 Height to Center of Antennas = $z_{ant} := 95$ ft (User Input)
 Height to Center of Mast = $z_{Mast5} := 90$ ft (User Input)
 Height to Center of Mast = $z_{Mast4} := 70$ ft (User Input) Mast Based on Max
 Height to Center of Mast = $z_{Mast3} := 50$ ft (User Input) 20-ft Section per
 Height to Center of Mast = $z_{Mast2} := 30$ ft (User Input) 2.6.9.1.3
 Height to Center of Mast = $z_{Mast1} := 10$ ft (User Input)
 Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)
 Radial Ice Density = $\rho_d := 56.00$ pcf (User Input)
 Topographic Factor = $K_{zt} := 1.0$ (User Input)
 $K_a := 1.0$ (User Input)
 Gust Response Factor = $G_H := 1.35$ (User Input)

Output

Wind Direction Probability Factor = $K_d := \begin{cases} 0.95 & \text{if Structure_Type} = \text{Pole} \\ 0.85 & \text{if Structure_Type} = \text{Lattice} \end{cases} = 0.85$ (Per Table 2-2 of TIA-222-G)
 Importance Factors = $I_{Wind} := \begin{cases} 0.87 & \text{if SC} = 1 \\ 1.00 & \text{if SC} = 2 \\ 1.15 & \text{if SC} = 3 \end{cases} = 1.15$ (Per Table 2-3 of TIA-222-G)
 $I_{Wind_w_Ice} := \begin{cases} 0 & \text{if SC} = 1 \\ 1.00 & \text{if SC} = 2 \\ 1.00 & \text{if SC} = 3 \end{cases} = 1$
 $I_{ice} := \begin{cases} 0 & \text{if SC} = 1 \\ 1.00 & \text{if SC} = 2 \\ 1.25 & \text{if SC} = 3 \end{cases} = 1.25$

$$K_{iz} := \left(\frac{z_{ant}}{33} \right)^{0.1} = 1.112$$

Velocity Pressure Coefficient Antennas =

Velocity Pressure w/o Ice Antennas =

Velocity Pressure with Ice Antennas =

$$K_{izMast5} := \left(\frac{z_{Mast5}}{33} \right)^{0.1} = 1.106$$

Velocity Pressure Coefficient Mast =

Velocity Pressure w/o Ice Mast =

Velocity Pressure with Ice Mast =

$$K_{izMast4} := \left(\frac{z_{Mast4}}{33} \right)^{0.1} = 1.078$$

Velocity Pressure Coefficient Mast =

Velocity Pressure w/o Ice Mast =

Velocity Pressure with Ice Mast =

$$K_{izMast3} := \left(\frac{z_{Mast3}}{33} \right)^{0.1} = 1.042$$

Velocity Pressure Coefficient Mast =

Velocity Pressure w/o Ice Mast =

Velocity Pressure with Ice Mast =

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.084$$

$$K_{z_{ant}} := 2.01 \left(\left(\frac{z_{ant}}{z_g} \right)^{\frac{2}{\alpha}} \right) = 1.252$$

$$q_{z_{ant}} := 0.00256 \cdot K_d \cdot K_{z_{ant}} \cdot V_i^2 \cdot I_{Wind} = 27.098$$

$$q_{z_{ice,ant}} := 0.00256 \cdot K_d \cdot K_{z_{ant}} \cdot V_i^2 \cdot I_{Wind_w_Ice} = 6.811$$

$$t_{izMast5} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast5} \cdot K_{zt}^{0.35} = 2.073$$

$$K_{z_{Mast5}} := 2.01 \left(\left(\frac{z_{Mast5}}{z_g} \right)^{\frac{2}{\alpha}} \right) = 1.238$$

$$q_{z_{Mast5}} := 0.00256 \cdot K_d \cdot K_{z_{Mast5}} \cdot V_i^2 \cdot I_{Wind} = 26.791$$

$$q_{z_{ice,Mast5}} := 0.00256 \cdot K_d \cdot K_{z_{Mast5}} \cdot V_i^2 \cdot I_{Wind_w_Ice} = 6.734$$

$$t_{izMast4} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast4} \cdot K_{zt}^{0.35} = 2.021$$

$$K_{z_{Mast4}} := 2.01 \left(\left(\frac{z_{Mast4}}{z_g} \right)^{\frac{2}{\alpha}} \right) = 1.174$$

$$q_{z_{Mast4}} := 0.00256 \cdot K_d \cdot K_{z_{Mast4}} \cdot V_i^2 \cdot I_{Wind} = 25.411$$

$$q_{z_{ice,Mast4}} := 0.00256 \cdot K_d \cdot K_{z_{Mast4}} \cdot V_i^2 \cdot I_{Wind_w_Ice} = 6.387$$

$$t_{izMast3} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast3} \cdot K_{zt}^{0.35} = 1.955$$

$$K_{z_{Mast3}} := 2.01 \left(\left(\frac{z_{Mast3}}{z_g} \right)^{\frac{2}{\alpha}} \right) = 1.094$$

$$q_{z_{Mast3}} := 0.00256 \cdot K_d \cdot K_{z_{Mast3}} \cdot V_i^2 \cdot I_{Wind} = 23.673$$

$$q_{z_{ice,Mast3}} := 0.00256 \cdot K_d \cdot K_{z_{Mast3}} \cdot V_i^2 \cdot I_{Wind_w_Ice} = 5.95$$

$$K_{izMast2} := \left(\frac{z_{Mast2}}{33} \right)^{0.1} = 0.991$$

$$t_{izMast2} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast2} \cdot K_{zt}^{0.35} = 1.857$$

Velocity Pressure Coefficient Mast =

$$K_{zMast2} := 2.01 \left(\left(\frac{z_{Mast2}}{z_g} \right)^{\frac{2}{\alpha}} \right) = 0.982$$

Velocity Pressure w/o Ice Mast =

$$q_{zMast2} := 0.00256 \cdot K_d \cdot K_{zMast2} \cdot V^2 \cdot I_{Wind} = 21.259$$

Velocity Pressure with Ice Mast =

$$q_{Z_{ice.Mast2}} := 0.00256 \cdot K_d \cdot K_{zMast2} \cdot V_i^2 \cdot I_{Wind_w_Ice} = 5.343$$

$$K_{izMast1} := \left(\frac{z_{Mast1}}{33} \right)^{0.1} = 0.887$$

$$t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 1.664$$

Velocity Pressure Coefficient Mast =

$$K_{zMast1} := 2.01 \left(\left(\frac{z_{Mast1}}{z_g} \right)^{\frac{2}{\alpha}} \right) = 0.779$$

Velocity Pressure w/o Ice Mast =

$$q_{zMast1} := 0.00256 \cdot K_d \cdot K_{zMast1} \cdot V^2 \cdot I_{Wind} = 16.869$$

Velocity Pressure with Ice Mast =

$$q_{Z_{ice.Mast1}} := 0.00256 \cdot K_d \cdot K_{zMast1} \cdot V_i^2 \cdot I_{Wind_w_Ice} = 4.24$$

Development of Wind & Ice Load on Mast

Mast Data:

	(HSS16x0.5)	(User Input)
Mast Shape =	Round	(User Input)
Mast Diameter =	$D_{mast} := 16$ in	(User Input)
Mast Length =	$L_{mast} := 98$ ft	(User Input)
Mast Thickness =	$t_{mast} := 0.5$ in	(User Input)
Velocity Coefficient =	$C := \sqrt{I \cdot K_z} \cdot V_{Mast1} \cdot \frac{D_{mast}}{12} = 109$	
Mast Force Coefficient =	$CF_{mast} = 0.6$	

Wind Load (without ice)

Mast Projected Surface Area = $A_{mast} := \frac{D_{mast}}{12} = 1.333$ s/ft

Total Mast Wind Force = $qZ_{Mast5} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 29$ plf **BLC 5**

Total Mast Wind Force = $qZ_{Mast4} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 27$ plf **BLC 5**

Total Mast Wind Force = $qZ_{Mast3} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 26$ plf **BLC 5**

Total Mast Wind Force = $qZ_{Mast2} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 23$ plf **BLC 5**

Total Mast Wind Force = $qZ_{Mast1} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 18$ plf **BLC 5**

Wind Load (with ice)

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast5})}{12} = 1.679$ s/ft

Total Mast Wind Force w/ Ice = $qZ_{ice.Mast5} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 9$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast4})}{12} = 1.67$ s/ft

Total Mast Wind Force w/ Ice = $qZ_{ice.Mast4} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 9$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast3})}{12} = 1.659$ s/ft

Total Mast Wind Force w/ Ice = $qZ_{ice.Mast3} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 8$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast2})}{12} = 1.643$ s/ft

Total Mast Wind Force w/ Ice = $qZ_{ice.Mast2} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$ plf **BLC 4**

Mast Projected Surface Area w/ Ice = $AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.611$ s/ft

Total Mast Wind Force w/ Ice = $qZ_{ice.Mast1} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 6$ plf **BLC 4**

Gravity Loads (without ice)

Weight of the mast =

Self Weight

(Computed internally by Risa-3D)

plf

BLC 1

Gravity Loads (ice only)

IceArea per Linear Foot =

$$A_{i_{mast}} := \frac{\pi}{4} \left[(D_{mast} + t_{izMast5} \cdot 2)^2 - D_{mast}^2 \right] = 117.7$$

sq in

Weight of Ice on Mast =

$$W_{ICEmast5} := Id \cdot \frac{A_{i_{mast}}}{144} = 46$$

plf

BLC 3

IceArea per Linear Foot =

$$A_{i_{mast}} := \frac{\pi}{4} \left[(D_{mast} + t_{izMast4} \cdot 2)^2 - D_{mast}^2 \right] = 114.4$$

sq in

Weight of Ice on Mast =

$$W_{ICEmast4} := Id \cdot \frac{A_{i_{mast}}}{144} = 45$$

plf

BLC 3

IceArea per Linear Foot =

$$A_{i_{mast}} := \frac{\pi}{4} \left[(D_{mast} + t_{izMast3} \cdot 2)^2 - D_{mast}^2 \right] = 110.2$$

sq in

Weight of Ice on Mast =

$$W_{ICEmast3} := Id \cdot \frac{A_{i_{mast}}}{144} = 43$$

plf

BLC 3

IceArea per Linear Foot =

$$A_{i_{mast}} := \frac{\pi}{4} \left[(D_{mast} + t_{izMast2} \cdot 2)^2 - D_{mast}^2 \right] = 104.2$$

sq in

Weight of Ice on Mast =

$$W_{ICEmast2} := Id \cdot \frac{A_{i_{mast}}}{144} = 41$$

plf

BLC 3

IceArea per Linear Foot =

$$A_{i_{mast}} := \frac{\pi}{4} \left[(D_{mast} + t_{izMast1} \cdot 2)^2 - D_{mast}^2 \right] = 92.3$$

sq in

Weight of Ice on Mast =

$$W_{ICEmast1} := Id \cdot \frac{A_{i_{mast}}}{144} = 36$$

plf

BLC 3

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI HPA65R-BU8A	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 96$	in (User Input)
Antenna Width =	$W_{ant} := 11.7$	in (User Input)
Antenna Thickness =	$T_{ant} := 7.6$	in (User Input)
Antenna Weight =	$WT_{ant} := 54$	lbs (User Input)
Number of Antennas =	$N_{ant} := 12$	(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 8.2$	
Antenna Force Coefficient =	$Ca_{ant} = 1.44$	

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 93.6$	sf

Total Antenna Wind Force =

$$F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 4931 \quad \text{lbs} \quad \text{BLC 5}$$

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 11$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 132.5$	sf

Total Antenna Wind Force w/ Ice =

$$F_{ant} := qz_{ice,ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 1754 \quad \text{lbs} \quad \text{BLC 4}$$

Gravity Load (without ice)

$$WT_{ant} \cdot N_{ant} = 648 \quad \text{lbs} \quad \text{BLC 2}$$

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8536$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz})(T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \times 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 330$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 3955$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI TMABPDB7823VG12A
Antenna Shape =	Flat (User Input)
Antenna Height =	$L_{ant} := 14.22$ in (User Input)
Antenna Width =	$W_{ant} := 11.56$ in (User Input)
Antenna Thickness =	$T_{ant} := 4.24$ in (User Input)
Antenna Weight =	$WT_{ant} := 26$ lbs (User Input)
Number of Antennas =	$N_{ant} := 24$ (User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.2$
Antenna Force Coefficient =	$Ca_{ant} = 1.2$

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 27.4$	sf

Total Antenna Wind Force =

$$F_{ant} := qz_{ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1203 \quad \text{lbs} \quad \text{BLC 5}$$

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 2$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 48.2$	sf

Total Antenna Wind Force w/ Ice =

$$F_{ant} := qz_{ice,ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 532 \quad \text{lbs} \quad \text{BLC 4}$$

Gravity Load (without ice)

Weight of All Antennas =

$$WT_{ant} \cdot N_{ant} = 624 \quad \text{lbs} \quad \text{BLC 2}$$

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 697$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1735$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot \rho_d = 56$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1349$	lbs

Development of Wind & Ice Load on Antenna Mounts**Mount Data:**

Mount Type: 14' Low Profile Platform w/ Handrail

Mount Shape = Flat (User Input)

Mount Projected Surface Area = $CaAa := 25$ sf (User Input)Mount Projected Surface Area w/ Ice = $CaAa_{ice} := 28$ sf (User Input)Mount Weight = $WT_{mnt} := 2900$ lbs (User Input)Mount Weight w/ Ice = $WT_{mnt,ice} := 3500$ lbs**Wind Load (without ice)**Total Mount Wind Force = $F_{mnt} := qz_{ant} \cdot G_H \cdot CaAa = 915$ lbs **BLC 5****Wind Load (with ice)**Total Mount Wind Force = $F_{mnt} := qz_{ice,ant} \cdot G_H \cdot CaAa_{ice} = 257$ lbs **BLC 4****Gravity Loads (without ice)**Weight of All Mounts = $WT_{mnt} = 2900$ lbs **BLC 2****Gravity Loads (ice only)**Weight of Ice on All Mounts = $WT_{mnt,ice} - WT_{mnt} = 600$ lbs **BLC 3**

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

(Above Top of Tower)

Coax Type =

HELIAX 1-5/8"

Shape =

Round

(User Input)

Coax Outside Diameter =

$D_{coax} := 1.98$ in

(User Input)

Coax Cable Length =

$L_{coax} := 10$ ft

(User Input)

Weight of Coax per foot =

$Wt_{coax} := 1.04$ plf

(User Input)

Total Number of Coax =

$N_{coax} := 48$

(User Input)

Total Number of Exterior Coax =

$Ne_{coax} := 36$

(User Input)

No. of Coax Projecting Outside Face of Mast =

$NP_{coax} := 6$

(User Input)

Coax aspect ratio,

$$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 60.6$$

Coax Cable Force Factor Coefficient =

$Ca_{coax} = 1.2$

Wind Load (without ice)

Coax projected surface area =

$$A_{coax} := \frac{(NP_{coax} \cdot D_{coax})}{12} = 1 \quad \text{sq/ft}$$

Total Coax Wind Force =

$$F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 41 \quad \text{plf} \quad \text{BLC 5}$$

Wind Load (with ice)

Coax projected surface area w/ Ice =

$$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{iz})}{12} = 1.3 \quad \text{sq/ft}$$

Total Coax Wind Force w/ Ice =

$$F_{i_{coax}} := Ca_{coax} \cdot qz_{ice} \cdot Mast4 \cdot G_H \cdot AICE_{coax} = 14 \quad \text{plf} \quad \text{BLC 4}$$

Gravity Loads (without ice)

Weight of all cables w/o ice

$$WT_{coax} := Wt_{coax} \cdot N_{coax} = 50 \quad \text{plf} \quad \text{BLC 2}$$

Gravity Loads (ice only)

Ice Area per Linear Foot =

$$Ai_{coax} := \frac{\pi}{4} [(D_{coax} + 2 \cdot t_{iz})^2 - D_{coax}^2] = 26.6 \quad \text{sq in}$$

Ice Weight All Coax per foot =

$$WT_{i_{coax}} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 497 \quad \text{plf} \quad \text{BLC 3}$$

Development of Wind & Ice Load on Coax Cables

Coax Cable Data:

(Below Top of Tower)

Coax Type =	HELIAX 1-5/8"	
Shape =	Round	(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in (User Input)
Coax Cable Length =	$L_{coax} := 120$	ft (User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf (User Input)
Total Number of Coax =	$N_{coax} := 24$	(User Input)
Total Number of Exterior Coax =	$Ne_{coax} := 12$	(User Input)
No. of Coax Projecting Outside Face of Mast =	$NP_{coax} := 4$	(User Input)

Coax aspect ratio,

$$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 727.3$$

Coax Cable Force Factor Coefficient =

$$Ca_{coax} = 1.2$$

Wind Load (without ice)

Coax projected surface area =

$$A_{coax} := \frac{(NP_{coax} \cdot D_{coax})}{12} = 0.7 \quad \text{sq/ft}$$

Total Coax Wind Force =

$$F_{coax} := Ca_{coax} \cdot qz_{Mast4} \cdot G_H \cdot A_{coax} = 27 \quad \text{plf} \quad \text{BLC 5}$$

Wind Load (with ice)

Coax projected surface area w/ Ice =

$$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{iz})}{12} = 1 \quad \text{sq/ft}$$

Total Coax Wind Force w/ Ice =

$$Fi_{coax} := Ca_{coax} \cdot qz_{ice} \cdot Mast4 \cdot G_H \cdot AICE_{coax} = 10 \quad \text{plf} \quad \text{BLC 4}$$

Gravity Loads (without ice)

Weight of all cables w/o ice

$$WT_{coax} := Wt_{coax} \cdot N_{coax} = 25 \quad \text{plf} \quad \text{BLC 2}$$

Gravity Loads (ice only)

Ice Area per Linear Foot =

$$Ai_{coax} := \frac{\pi}{4} \left[(D_{coax} + 2 \cdot t_{iz})^2 - D_{coax}^2 \right] = 26.6 \quad \text{sq in}$$

Ice Weight All Coax per foot =

$$WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 248 \quad \text{plf} \quad \text{BLC 3}$$

Development of Wind & Ice Load on Brace Member**Member Data:**

L2.5x2.5x3/8

Antenna Shape =

Flat

(User Input)

Height =

 $H_{mem} := 2.5$ in

(User Input)

Width =

 $W_{mem} := 2.5$ in

(User Input)

Thickness =

 $t_{mem} := 0.375$ in

(User Input)

Length =

 $L_{mem} := 96$ in

(User Input)

Member Aspect Ratio =

$$Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 38.4$$

Member Force Coefficient =

$$Ca_{mem} = 2$$

Wind Load (without ice)

Member Projected Surface Area =

$$A_{mem} := \frac{H_{mem}}{12} = 0.2$$

sq ft

Total Member Wind Force =

$$F_{mem} := qz_{Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 14$$

plf

BLC 5**Wind Load (with ice)**

Member Projected Surface Area w/ Ice =

$$A_{ICEmem} := \frac{(H_{mem} + 2 \cdot t_{izMast5})}{12} = 0.6$$

sq ft

Total Member Wind Force w/ Ice =

$$F_{mem} := qz_{ice.Mast4} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 10$$

plf

BLC 4**Gravity Load (without ice)**

Weight of Member =

Self Weight

plf

BLC 1**Gravity Loads (ice only)**

Ice Area per Linear foot =

$$A_{i_{mem}} := [(H_{mem} + 2 \cdot t_{izMast5}) + (W_{mem} - t_{mem})] \cdot (t_{mem} + 2 \cdot t_{izMast5}) - [H_{mem} + (W_{mem} + t_{mem})] \cdot t_{mem} = 38$$

sq in

Weight of Ice on Member =

$$W_{ICE.mem} := Id \cdot \frac{A_{i_{mem}}}{144} = 15$$

plf

BLC 3

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Om Z	1
Om X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1.5
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	58	1.2
7	A500 Gr. C 50	29000	11154	.3	.65	.49	50	1.1	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Antenna Mast	HSS16x0.500	Column	Pipe	A500 Gr.42	Typical	22.7	685	685	1370
2	L2.5x2.5x3/8	L2.5x2.5x6	Beam	Single Angle	A36 Gr.36	Typical	1.73	.972	.972	.083
3	Plate	Plate 6"x3/4"	Beam	RECT	A36 Gr.36	Typical	4.5	.211	13.5	.777

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Antenna Mast	98	Segment	Segment	Lbyy		Segme...				Lateral
2	M6	L2.5x2.5x3/8	6.153			Lbyy						Lateral
3	M7	L2.5x2.5x3/8	7.907			Lbyy						Lateral
4	M8	L2.5x2.5x3/8	6.153			Lbyy						Lateral
5	M9	L2.5x2.5x3/8	7.907			Lbyy						Lateral
6	M10	L2.5x2.5x3/8	2.795			Lbyy						Lateral
7	M12	L2.5x2.5x3/8	2.795			Lbyy						Lateral
8	M14	L2.5x2.5x3/8	2.795			Lbyy						Lateral
9	M16	L2.5x2.5x3/8	2.795			Lbyy						Lateral
10	M22	L2.5x2.5x3/8	2.795			Lbyy						Lateral
11	M24	L2.5x2.5x3/8	2.795			Lbyy						Lateral
12	M37A	Plate	1.25			Lbyy						Lateral
13	M39A	Plate	1.25			Lbyy						Lateral
14	M40A	Plate	1.25			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...)	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N8			Antenna Mast	Column	Pipe	A500 Gr...	Typical
2	M6	N3	N13			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
3	M7	N3	N14			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
4	M8	N3	N15			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
5	M9	N3	N16			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
6	M10	N4	N17			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
7	M12	N4	N18			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
8	M14	N5	N19			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
9	M16	N5	N20			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
10	M22	N7	N23			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
11	M24	N7	N24			L2.5x2.5x3/8	Beam	Single Angle	A36 Gr.36	Typical
12	M37A	N7	N54		90	Plate	Beam	RECT	A36 Gr.36	Typical
13	M39A	N5	N52		90	Plate	Beam	RECT	A36 Gr.36	Typical
14	M40A	N4	N51		90	Plate	Beam	RECT	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	1.25	0	
2	N3	0	36.5	1.25	0	
3	N4	0	54	1.25	0	
4	N5	0	64	1.25	0	
5	N7	0	81	1.25	0	
6	N8	0	98	1.25	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
7	N13	4.931	36.5	4.931	0	
8	N14	4.931	36.5	-4.931	0	
9	N15	-4.931	36.5	4.931	0	
10	N16	-4.931	36.5	-4.931	0	
11	N17	2.5	54	2.5	0	
12	N18	-2.5	54	2.5	0	
13	N19	2.5	64	2.5	0	
14	N20	-2.5	64	2.5	0	
15	N23	2.5	81	2.5	0	
16	N24	-2.5	81	2.5	0	
17	N51	0	54	0	0	
18	N52	0	64	0	0	
19	N54	0	81	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N14	Reaction	Reaction	Reaction			
2	N15	Reaction	Reaction	Reaction			
3	N18	Reaction	Reaction	Reaction			
4	N20	Reaction	Reaction	Reaction			
5	N13	Reaction	Reaction	Reaction			
6	N16	Reaction	Reaction	Reaction			
7	N17	Reaction	Reaction	Reaction			
8	N19	Reaction	Reaction	Reaction			
9	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
10	N5						
11	N24	Reaction	Reaction	Reaction			
12	N23	Reaction	Reaction	Reaction			
13	N52	Reaction		Reaction			
14	N54	Reaction		Reaction			
15	N51	Reaction		Reaction			
16	N7						

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-648	95
2	M1	Y	-624	95
3	M1	Y	-2.9	95

Member Point Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-3.955	95
2	M1	Y	-1.349	95
3	M1	Y	-.6	95

Member Point Loads (BLC 4 : (x) TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	1.754	95

Member Point Loads (BLC 4 : (x) TIA Wind with Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M1	X	.532	95
3	M1	X	.257	95

Member Point Loads (BLC 5 : (x) TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	4.931	95
2	M1	X	1.203	95
3	M1	X	.915	95

Member Point Loads (BLC 6 : (z) TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	1.754	95
2	M1	Z	.532	95
3	M1	Z	.257	95

Member Point Loads (BLC 7 : (z) TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	4.931	95
2	M1	Z	1.203	95
3	M1	Z	.915	95

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.025	-.025	0	81
2	M1	Y	-.05	-.05	81	91

Member Distributed Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.036	-.036	0	20
2	M1	Y	-.041	-.041	20	40
3	M1	Y	-.043	-.043	40	60
4	M1	Y	-.045	-.045	60	80
5	M1	Y	-.046	-.046	80	98
6	M1	Y	-.248	-.248	0	81
7	M1	Y	-.497	-.497	81	91
8	M6	Y	-.015	-.015	0	0
9	M7	Y	-.015	-.015	0	0
10	M8	Y	-.015	-.015	0	0
11	M9	Y	-.015	-.015	0	0
12	M10	Y	-.015	-.015	0	0
13	M12	Y	-.015	-.015	0	0
14	M14	Y	-.015	-.015	0	0
15	M16	Y	-.015	-.015	0	0
16	M22	Y	-.015	-.015	0	0
17	M24	Y	-.015	-.015	0	0

Member Distributed Loads (BLC 4 : (x) TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,%]	End Location[ft,%]
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Member Distributed Loads (BLC 4 : (x) TIA Wind with Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.006	.006	0	20
2	M1	X	.007	.007	20	40
3	M1	X	.008	.008	40	60
4	M1	X	.009	.009	60	80
5	M1	X	.009	.009	80	98
6	M1	X	.01	.01	0	81
7	M1	X	.014	.014	81	91
8	M6	X	.01	.01	0	0
9	M7	X	.01	.01	0	0
10	M8	X	.01	.01	0	0
11	M9	X	.01	.01	0	0
12	M10	X	.01	.01	0	0
13	M12	X	.01	.01	0	0
14	M14	X	.01	.01	0	0
15	M16	X	.01	.01	0	0
16	M22	X	.01	.01	0	0
17	M24	X	.01	.01	0	0

Member Distributed Loads (BLC 5 : (x) TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.018	.018	0	20
2	M1	X	.023	.023	20	40
3	M1	X	.026	.026	40	60
4	M1	X	.027	.027	60	80
5	M1	X	.029	.029	80	98
6	M1	X	.027	.027	0	81
7	M1	X	.041	.041	81	91
8	M6	X	.014	.014	0	0
9	M7	X	.014	.014	0	0
10	M8	X	.014	.014	0	0
11	M9	X	.014	.014	0	0
12	M10	X	.014	.014	0	0
13	M12	X	.014	.014	0	0
14	M14	X	.014	.014	0	0
15	M16	X	.014	.014	0	0
16	M22	X	.014	.014	0	0
17	M24	X	.014	.014	0	0

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.006	.006	0	20
2	M1	Z	.007	.007	20	40
3	M1	Z	.008	.008	40	60
4	M1	Z	.009	.009	60	80
5	M1	Z	.009	.009	80	98
6	M1	Z	.01	.01	0	81
7	M1	Z	.014	.014	81	91
8	M6	Z	.01	.01	0	0
9	M7	Z	.01	.01	0	0
10	M8	Z	.01	.01	0	0
11	M9	Z	.01	.01	0	0

Member Distributed Loads (BLC 6 : (z) TIA Wind with Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
12	M10	Z	.01	.01	0	0
13	M12	Z	.01	.01	0	0
14	M14	Z	.01	.01	0	0
15	M16	Z	.01	.01	0	0
16	M22	Z	.01	.01	0	0
17	M24	Z	.01	.01	0	0

Member Distributed Loads (BLC 7 : (z) TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.018	.018	0	20
2	M1	Z	.023	.023	20	40
3	M1	Z	.026	.026	40	60
4	M1	Z	.027	.027	60	80
5	M1	Z	.029	.029	80	98
6	M1	Z	.027	.027	0	81
7	M1	Z	.041	.041	81	91
8	M6	Z	.014	.014	0	0
9	M7	Z	.014	.014	0	0
10	M8	Z	.014	.014	0	0
11	M9	Z	.014	.014	0	0
12	M10	Z	.014	.014	0	0
13	M12	Z	.014	.014	0	0
14	M14	Z	.014	.014	0	0
15	M16	Z	.014	.014	0	0
16	M22	Z	.014	.014	0	0
17	M24	Z	.014	.014	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribu...	Area(M...	Surface...
1	Self Weight	DL		-1						
2	Weight of Appurtenances	DL					3	2		
3	Weight of Ice Only	DL					3	17		
4	(x) TIA Wind with Ice	WLX					3	17		
5	(x) TIA Wind	WLX					3	17		
6	(z) TIA Wind with Ice	WLZ					3	17		
7	(z) TIA Wind	WLZ					3	17		

Load Combinations

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D + 1.6W (X-direction)	Yes	Y		1	1.2	2	1.2	5	1.6	8	1.2								
2	0.9D + 1.6W (X-direction)	Yes	Y		1	.9	2	.9	5	1.6	8	1.2								
3	1.2D + 1.0Di + 1.0Wi (X...	Yes	Y		1	1.2	2	1.2	3	1	4	1	8	1.2						
4	1.2D + 1.6W (Z-direction)	Yes	Y		1	1.2	2	1.2	7	1.6	8	1.2								
5	0.9D + 1.6W (Z-direction)	Yes	Y		1	.9	2	.9	7	1.6	8	1.2								
6	1.2D + 1.0Di + 1.0Wi (Z...	Yes	Y		1	1.2	2	1.2	3	1	6	1	8	1.2						
7	Dead Only	Yes	Y		1	1.2	2	1.2					8	1.2						

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N14	max	.464	5	.087	6	.431	2	0	7	0	7	0	7
2		min	-.433	2	.021	2	-.67	5	0	1	0	1	0	1
3	N15	max	.586	5	.068	3	.545	2	0	7	0	7	0	7
4		min	-.799	2	.016	5	-.506	5	0	1	0	1	0	1
5	N18	max	.478	4	.032	3	1.621	1	0	7	0	7	0	7
6		min	-3.273	1	.007	5	-.27	4	0	1	0	1	0	1
7	N20	max	7.471	1	.031	6	.534	4	0	7	0	7	0	7
8		min	-1.131	4	.004	2	-3.752	1	0	1	0	1	0	1
9	N13	max	0	7	.068	6	0	7	0	7	0	7	0	7
10		min	-.799	2	.016	2	-.545	2	0	1	0	1	0	1
11	N16	max	0	7	.087	6	0	7	0	7	0	7	0	7
12		min	-.464	5	.021	2	-.67	5	0	1	0	1	0	1
13	N17	max	0	7	.031	6	0	7	0	7	0	7	0	7
14		min	-3.273	1	.006	2	-1.621	1	0	1	0	1	0	1
15	N19	max	7.472	1	.034	3	3.751	1	0	7	0	7	0	7
16		min	0	7	.008	5	0	7	0	1	0	1	0	1
17	N1	max	0	7	52.775	6	0	1	0	1	0	7	10.045	1
18		min	-1.484	1	13.011	2	-1.498	4	-10.222	4	-.171	2	0	4
19	N24	max	1.698	4	.037	3	6.131	1	0	7	0	7	0	7
20		min	-12.299	1	.006	5	-.88	4	0	1	0	1	0	1
21	N23	max	0	7	.03	6	0	7	0	7	0	7	0	7
22		min	-12.297	1	0	2	-6.135	1	0	1	0	1	0	1
23	N52	max	2.145	1	0	7	16.439	4	0	7	0	7	0	7
24		min	0	4	0	1	0	7	0	1	0	1	0	1
25	N54	max	0	7	0	7	.005	1	0	7	0	7	0	7
26		min	-1.755	1	0	1	-24.687	4	0	1	0	1	0	1
27	N51	max	0	7	0	7	0	2	0	7	0	7	0	7
28		min	-.527	1	0	1	-6.952	4	0	1	0	1	0	1
29	Totals:	max	0	7	53.27	6	0	7						
30		min	-20.282	1	13.13	2	-20.282	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	0	7	0	7	0	7	0	7	0	7	0	7
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N3	max	.002	2	-.009	2	.002	5	7.075e-08	7	5.898e-05	2	2.923e-04	1
4		min	0	4	-.038	6	0	2	-3.208e-04	4	0	4	0	4
5	N4	max	.003	1	-.013	2	0	4	4.36e-04	4	8.726e-05	2	0	7
6		min	0	4	-.051	6	0	2	-2.182e-07	1	0	4	-3.855e-04	1
7	N5	max	0	7	-.015	2	0	7	-4.281e-08	2	4.15e-05	2	1.503e-03	1
8		min	-.008	1	-.058	6	-.002	4	-1.477e-03	4	0	4	0	4
9	N7	max	.013	1	-.017	2	.004	4	7.339e-03	4	3.928e-04	1	0	7
10		min	0	4	-.066	6	0	1	-5.442e-07	1	0	4	-7.467e-03	1
11	N8	max	3.114	1	-.019	2	3.079	4	1.787e-02	4	3.928e-04	1	0	7
12		min	0	4	-.071	6	0	3	-5.468e-07	1	0	4	-1.8e-02	1
13	N13	max	0	7	0	7	0	7	1.575e-05	5	1.432e-03	5	2.377e-03	3
14		min	0	1	0	1	0	1	-1.726e-03	3	-1.802e-03	3	-4.506e-04	5
15	N14	max	0	7	0	7	0	7	3.177e-03	6	2.914e-03	2	2.591e-03	6
16		min	0	1	0	1	0	1	-8.507e-04	2	-1.352e-03	6	-3.865e-04	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
17	N15	max	0	7	0	7	0	7	-5.027e-04	7	-3.939e-04	7	-6.735e-04	7
18		min	0	1	0	1	0	1	-1.871e-03	6	-2.121e-03	4	-2.411e-03	6
19	N16	max	0	7	0	7	0	7	4.33e-03	6	2.914e-03	2	7.436e-04	2
20		min	0	1	0	1	0	1	-5.658e-04	2	-3.869e-03	6	-3.511e-03	6
21	N17	max	0	7	0	7	0	7	2.017e-04	5	1.777e-04	5	1.546e-03	3
22		min	0	1	0	1	0	1	-8.166e-04	3	-1.715e-04	1	3.566e-04	2
23	N18	max	0	7	0	7	0	7	1.08e-04	5	-3.692e-05	7	-5.106e-04	2
24		min	0	1	0	1	0	1	-7.469e-04	3	-2.423e-04	4	-1.623e-03	6
25	N19	max	0	7	0	7	0	7	3.609e-04	2	8.822e-05	5	1.802e-03	3
26		min	0	1	0	1	0	1	-1.423e-03	4	-1.316e-04	3	-2.511e-04	5
27	N20	max	0	7	0	7	0	7	-2.882e-04	7	-1.274e-05	2	6.377e-05	5
28		min	0	1	0	1	0	1	-1.516e-03	4	-1.809e-04	6	-1.666e-03	3
29	N23	max	0	7	0	7	0	7	5.662e-03	5	2.456e-04	5	3.504e-03	4
30		min	0	1	0	1	0	1	-3.341e-03	1	-2.972e-04	1	-9.482e-04	2
31	N24	max	0	7	0	7	0	7	5.568e-03	5	-3.691e-05	7	-6.616e-04	7
32		min	0	1	0	1	0	1	-3.313e-04	7	-3.103e-04	4	-3.691e-03	4
33	N51	max	0	7	-.008	5	0	7	2.549e-04	5	2.765e-04	1	0	7
34		min	0	1	-.053	3	0	1	-1.762e-04	1	0	4	-3.855e-04	1
35	N52	max	0	7	-.016	2	0	7	-1.32e-04	2	0	7	1.503e-03	1
36		min	0	1	-.065	6	0	1	-2.466e-03	4	-7.29e-04	1	0	4
37	N54	max	0	7	.062	5	0	7	4.219e-03	5	1.023e-03	1	0	7
38		min	0	1	-.068	3	0	1	-1.766e-04	1	0	4	-7.467e-03	1

Envelope AISC 14th(360-10): LRFD Steel Code Checks

Member	Shape	Code Check	Lo...	LC	She...	Lo...	phi*P...	phi*P...	phi*...	phi*...	Eqn
1	M1 HSS16x0.500	.470	80...	1	.059	80...	1	788...	858.06	352.8	H1-...
2	M6 L2.5x2.5x6	.107	3.2...	1	.004	0	y 6	16.584	56.052	1.512	H2-1
3	M7 L2.5x2.5x6	.139	4.1...	2	.005	7.9...	y 6	10.044	56.052	1.512	H2-1
4	M8 L2.5x2.5x6	.110	3.1...	4	.004	0	y 6	16.584	56.052	1.512	H2-1
5	M9 L2.5x2.5x6	.134	3.9...	6	.005	7.9...	y 6	10.044	56.052	1.512	H2-1
6	M10 L2.5x2.5x6	.092	1.4...	1	.002	0	y 6	43.393	56.052	1.512	H2-1
7	M12 L2.5x2.5x6	.073	1.4...	1	.002	0	y 6	43.393	56.052	1.512	H2-1
8	M14 L2.5x2.5x6	.158	1.3...	1	.002	0	y 6	43.393	56.052	1.512	H2-1
9	M16 L2.5x2.5x6	.202	1.3...	1	.002	0	y 6	43.393	56.052	1.512	H2-1
10	M22 L2.5x2.5x6	.324	1.4...	1	.002	0	y 6	43.393	56.052	1.512	H2-1
11	M24 L2.5x2.5x6	.253	1.4...	1	.002	0	y 6	43.393	56.052	1.512	H2-1
12	M37A Plate 6"x3/4"	.162	0	4	.030	0	y 1	113...	145.8	2.278	H1-...
13	M39A Plate 6"x3/4"	.153	0	1	.037	0	y 1	113...	145.8	2.278	H1-...
14	M40A Plate 6"x3/4"	.042	0	1	.009	0	y 1	113...	145.8	2.278	H1-...

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N14	-.432	.028	.431	0	0	0
2	1	N15	-.799	.022	.545	0	0	0
3	1	N18	-3.273	.012	1.621	0	0	0
4	1	N20	7.471	.005	-3.752	0	0	0
5	1	N13	-.799	.022	-.545	0	0	0
6	1	N16	-.433	.028	-.431	0	0	0
7	1	N17	-3.273	.008	-1.621	0	0	0
8	1	N19	7.472	.015	3.751	0	0	0
9	1	N1	-1.484	17.348	0	0	-.171	10.045
10	1	N24	-12.299	.019	6.131	0	0	0
11	1	N23	-12.297	0	-6.135	0	0	0
12	1	N52	2.145	0	.002	0	0	0
13	1	N54	-1.755	0	.005	0	0	0
14	1	N51	-.527	0	0	0	0	0
15	1	Totals:	-20.282	17.506	0			
16	1	COG (ft):	X: 0	Y: 62.287	Z: 1.241			

Joint Reactions

LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N14	-.433	.021	.431	0	0
2	2	N15	-.799	.016	.545	0	0
3	2	N18	-3.269	.009	1.619	0	0
4	2	N20	7.459	.004	-3.746	0	0
5	2	N13	-.799	.016	-.545	0	0
6	2	N16	-.433	.021	-.431	0	0
7	2	N17	-3.269	.006	-1.619	0	0
8	2	N19	7.46	.011	3.745	0	0
9	2	N1	-1.484	13.011	0	-.171	10.044
10	2	N24	-12.291	.014	6.127	0	0
11	2	N23	-12.288	0	-6.131	0	0
12	2	N52	2.142	0	.002	0	0
13	2	N54	-1.754	0	.005	0	0
14	2	N51	-.526	0	0	0	0
15	2	Totals:	-20.282	13.13	0		
16	2	COG (ft):	X: 0	Y: 62.287	Z: 1.241		

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N14	-.124	.087	.105	0	0	0
2	3	N15	-.209	.068	.133	0	0	0
3	3	N18	-.748	.032	.367	0	0	0
4	3	N20	1.681	.028	-.847	0	0	0
5	3	N13	-.209	.068	-.133	0	0	0
6	3	N16	-.124	.087	-.106	0	0	0
7	3	N17	-.748	.03	-.367	0	0	0
8	3	N19	1.681	.034	.847	0	0	0
9	3	N1	-.328	52.774	0	0	-.039	2.211
10	3	N24	-2.773	.037	1.379	0	0	0
11	3	N23	-2.772	.025	-1.379	0	0	0
12	3	N52	.484	0	0	0	0	0
13	3	N54	-.395	0	.001	0	0	0
14	3	N51	-.12	0	-.001	0	0	0
15	3	Totals:	-4.704	53.27	0			
16	3	COG (ft):	X: 0	Y: 58.868	Z: 1.243			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N14	.464	.028	-.67	0	0	0
2	4	N15	.586	.022	-.506	0	0	0
3	4	N18	.478	.01	-.27	0	0	0
4	4	N20	-1.131	.011	.534	0	0	0
5	4	N13	-.586	.022	-.506	0	0	0
6	4	N16	-.464	.028	-.67	0	0	0
7	4	N17	-.478	.01	-.27	0	0	0
8	4	N19	1.131	.011	.534	0	0	0
9	4	N1	0	17.349	-1.498	-10.222	0	0
10	4	N24	1.698	.009	-.88	0	0	0
11	4	N23	-1.698	.009	-.88	0	0	0
12	4	N52	0	0	16.439	0	0	0
13	4	N54	0	0	-24.687	0	0	0
14	4	N51	0	0	-6.952	0	0	0
15	4	Totals:	0	17.506	-20.282			
16	4	COG (ft):	X: 0	Y: 62.287	Z: 1.241			

Joint Reactions

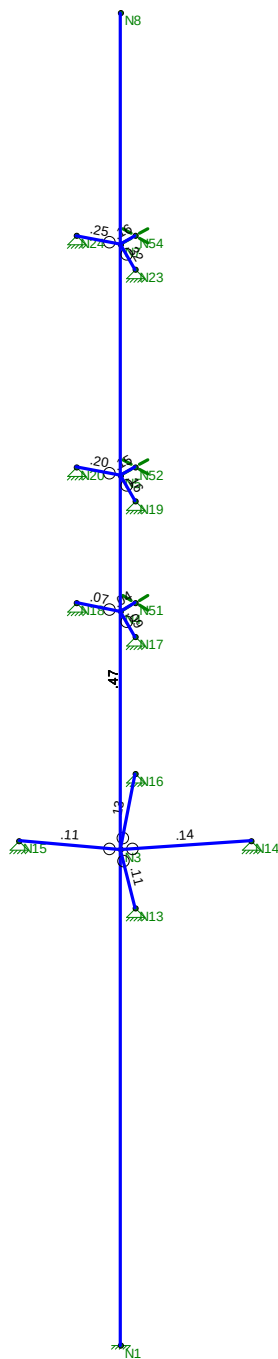
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N14	.464	.021	-.67	0	0	0
2	5	N15	.586	.016	-.506	0	0	0
3	5	N18	.477	.007	-.27	0	0	0
4	5	N20	-1.129	.008	.533	0	0	0
5	5	N13	-.586	.016	-.506	0	0	0
6	5	N16	-.464	.021	-.67	0	0	0
7	5	N17	-.477	.007	-.27	0	0	0
8	5	N19	1.129	.008	.533	0	0	0
9	5	N1	0	13.012	-1.498	-10.221	0	0
10	5	N24	1.697	.006	-.879	0	0	0
11	5	N23	-1.697	.006	-.879	0	0	0
12	5	N52	0	0	16.414	0	0	0
13	5	N54	0	0	-24.671	0	0	0
14	5	N51	0	0	-6.943	0	0	0
15	5	Totals:	0	13.13	-20.282			
16	5	COG (ft):	X: 0	Y: 62.287	Z: 1.241			

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N14	.114	.087	-.182	0	0	0
2	6	N15	.144	.068	-.138	0	0	0
3	6	N18	.108	.031	-.068	0	0	0
4	6	N20	-.255	.031	.114	0	0	0
5	6	N13	-.144	.068	-.138	0	0	0
6	6	N16	-.114	.087	-.182	0	0	0
7	6	N17	-.108	.031	-.068	0	0	0
8	6	N19	.255	.031	.114	0	0	0
9	6	N1	0	52.775	-.331	-2.251	0	0
10	6	N24	.382	.03	-.205	0	0	0
11	6	N23	-.382	.03	-.205	0	0	0
12	6	N52	0	0	3.715	0	0	0
13	6	N54	0	0	-5.552	0	0	0
14	6	N51	0	0	-1.575	0	0	0
15	6	Totals:	0	53.27	-4.704			
16	6	COG (ft):	X: 0	Y: 58.868	Z: 1.243			



Code Check (Env)	
No Calc	
> 1.0	
.90-1.0	
.75-.90	
.50-.75	
0-.50	



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CEN TEK Engineering, INC.

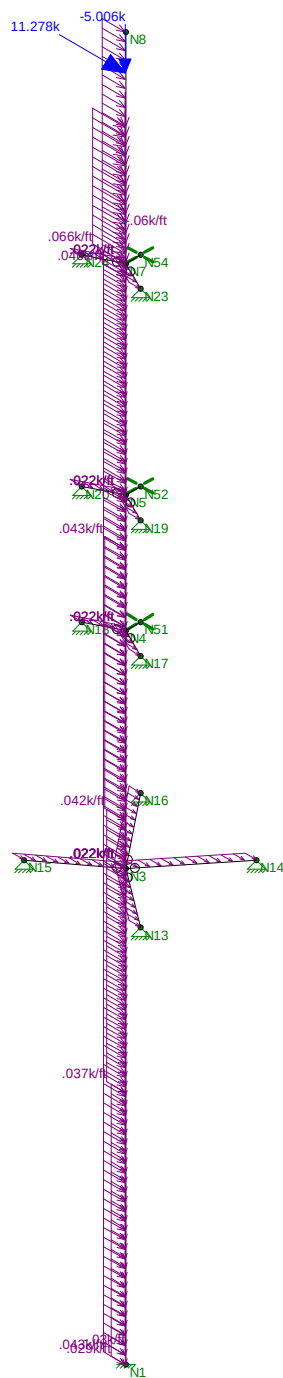
TJL

18123.00

Struct # 917- Antenna Mast
Unity Check

Feb 26, 2019 at 11:24 AM

Antenna Mast.r3d

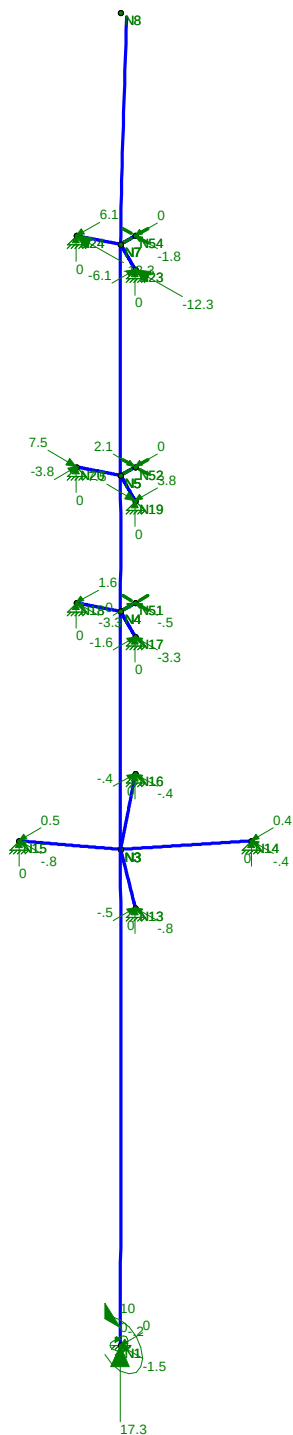


Loads: LC 1, 1.2D + 1.6W (X-direction)

CENTEK Engineering, INC.	Struct # 917- Antenna Mast LC #1 Loads	
TJL		Feb 26, 2019 at 11:22 AM
18123.00		Antenna Mast.r3d

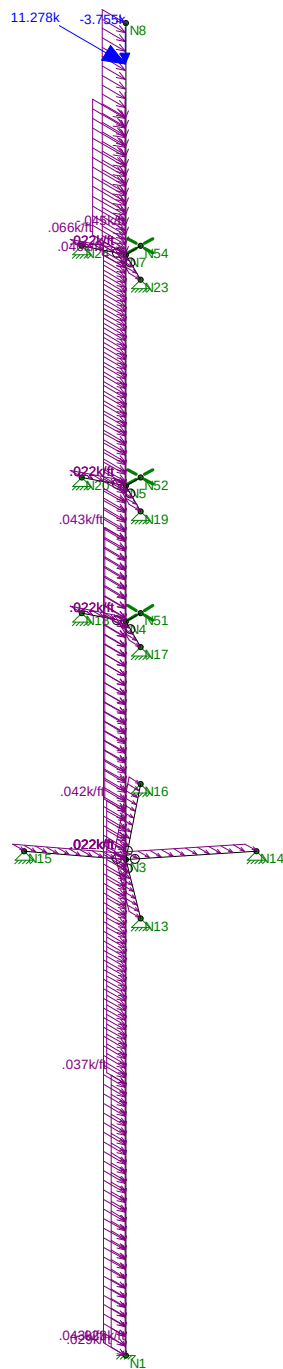


Code Check (LC 1)	
No Calc	> 1.0
	.90-1.0
	.75-.90
	.50-.75
	0-.50



Member Code Checks Displayed
Results for LC 1, 1.2D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	Struct # 917- Antenna Mast LC #1 Reactions and Deflected Shape	
TJL		Feb 26, 2019 at 11:24 AM
18123.00		Antenna Mast.r3d

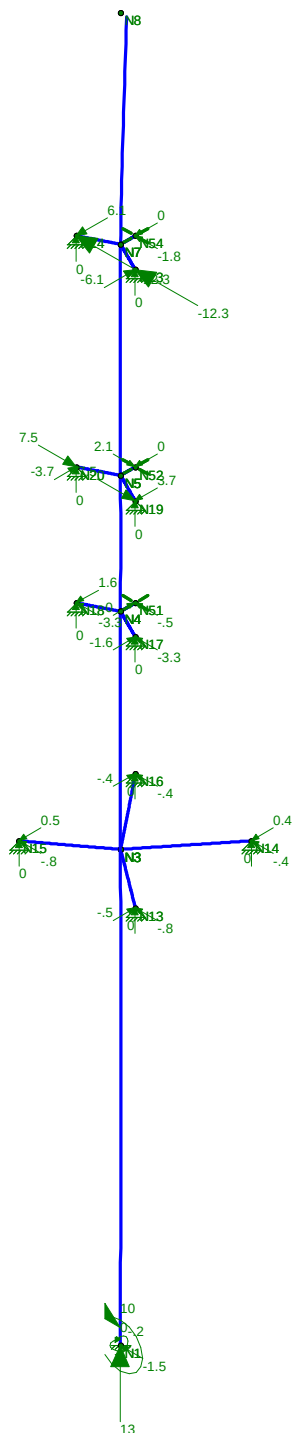


Loads: LC 2, 0.9D + 1.6W (X-direction)

CENTEK Engineering, INC.	Struct # 917- Antenna Mast LC #2 Loads	
TJL		Feb 26, 2019 at 11:22 AM
18123.00		Antenna Mast.r3d



Code Check (LC 2)	
No Calc	
> 1.0	
.90-1.0	
.75-.90	
.50-.75	
0-.50	



Member Code Checks Displayed
Results for LC 2, 0.9D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.

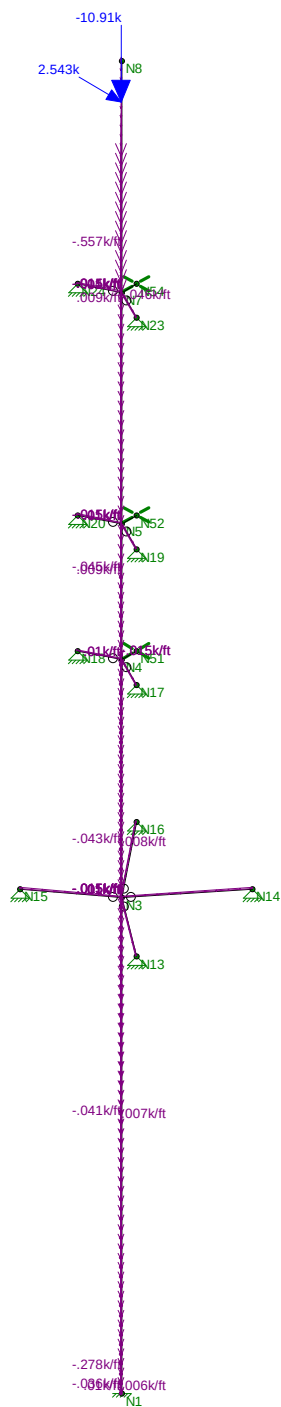
TJL

18123.00

Struct # 917- Antenna Mast
LC #2 Reactions and Deflected Shape

Feb 26, 2019 at 11:25 AM

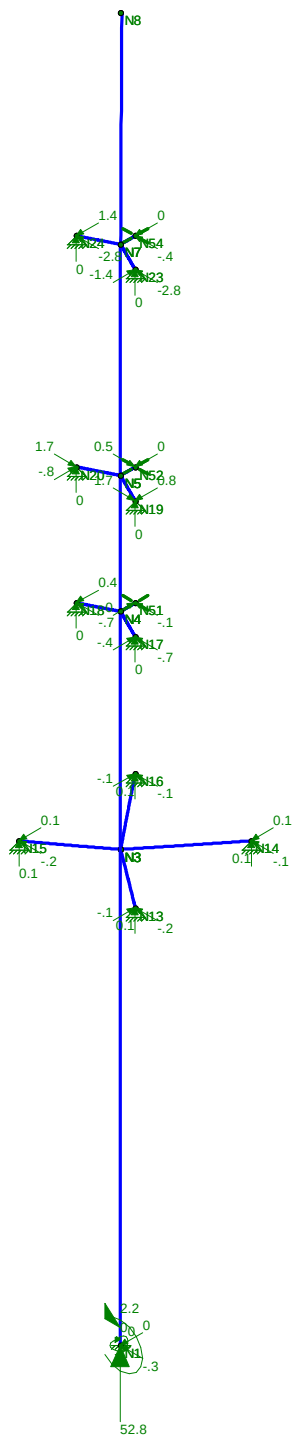
Antenna Mast.r3d



Antenna Mast.r3d



Code Check (LC 3)	
No Calc	> 1.0
	.90-1.0
	.75-.90
	.50-.75
	0-.50



Member Code Checks Displayed
Results for LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.

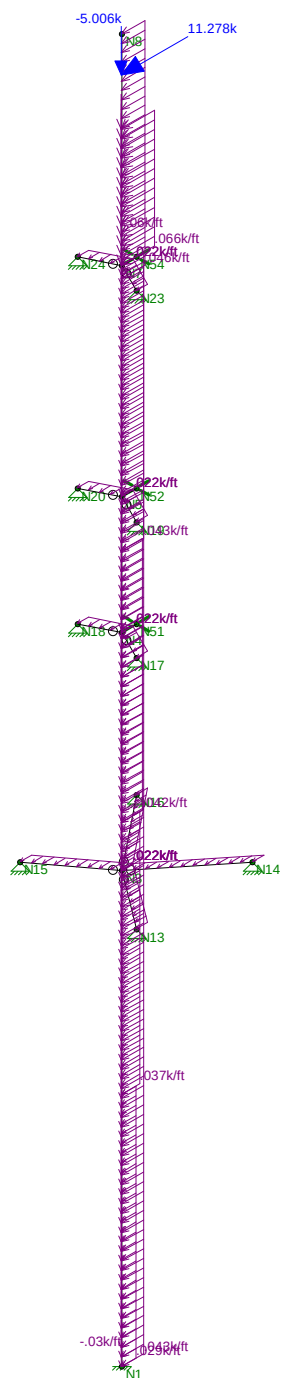
TJL

18123.00

Struct # 917- Antenna Mast
LC #3 Reactions and Deflected Shape

Feb 26, 2019 at 11:25 AM

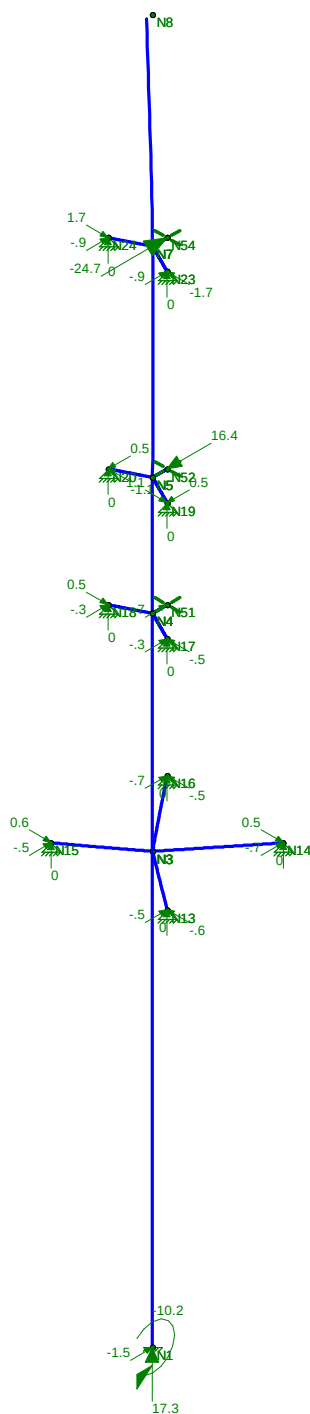
Antenna Mast.r3d



Antenna Mast.r3d

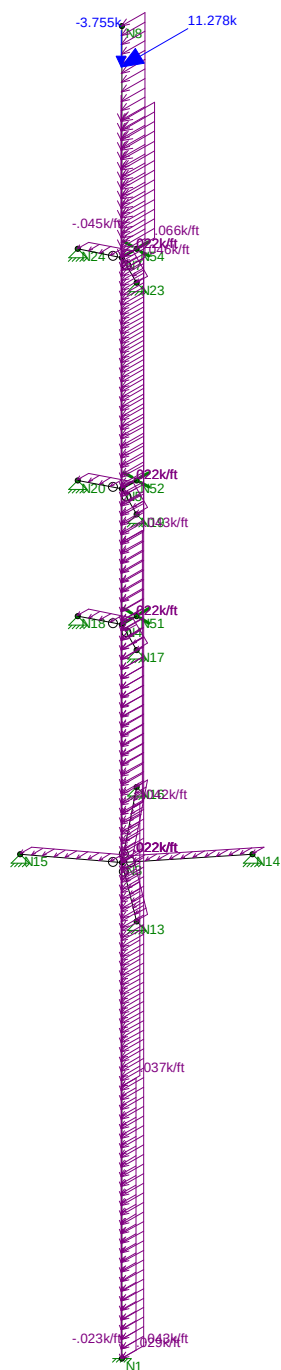


Code Check (LC 4)	
No Calc	> 1.0
	.90-1.0
	.75-.90
	.50-.75
	0-.50



Member Code Checks Displayed
Results for LC 4, 1.2D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	Struct # 917- Antenna Mast LC #4 Reactions and Deflected Shape	
TJL		Feb 26, 2019 at 11:26 AM
18123.00		Antenna Mast.r3d



Loads: LC 5, 0.9D + 1.6W (Z-direction)

CENTEK Engineering, INC.

TJL

18123.00

Struct # 917- Antenna Mast

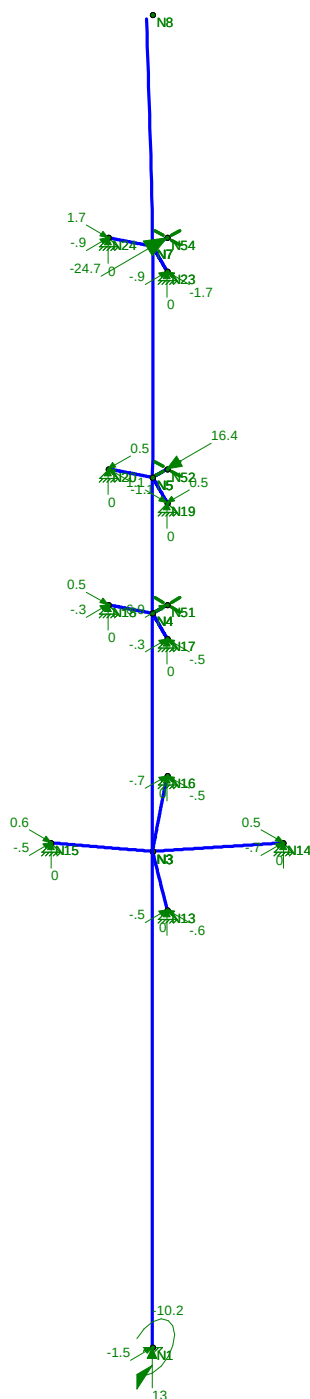
LC #5 Loads

Feb 26, 2019 at 11:23 AM

Antenna Mast.r3d



Code Check (LC 5)	
No Calc	> 1.0
> 1.0	.90-1.0
.90-1.0	.75-.90
.75-.90	.50-.75
.50-.75	0-.50



Member Code Checks Displayed
Results for LC 5, 0.9D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.

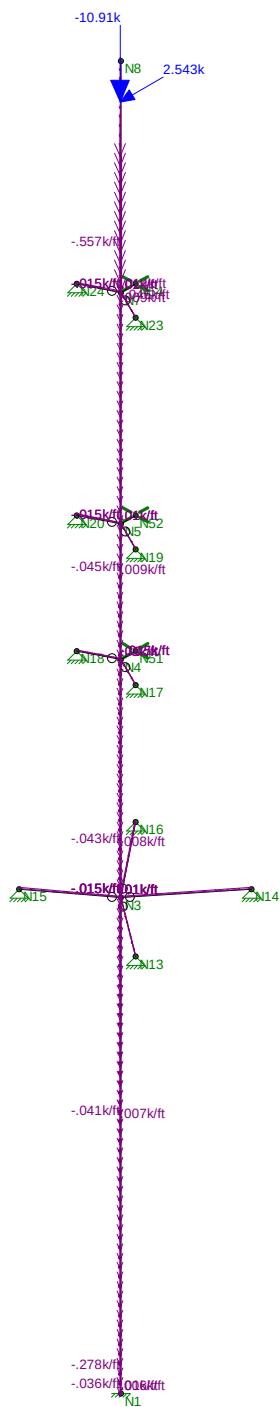
TJL

18123.00

Struct # 917- Antenna Mast
LC #5 Reactions and Deflected Shape

Feb 26, 2019 at 11:26 AM

Antenna Mast.r3d

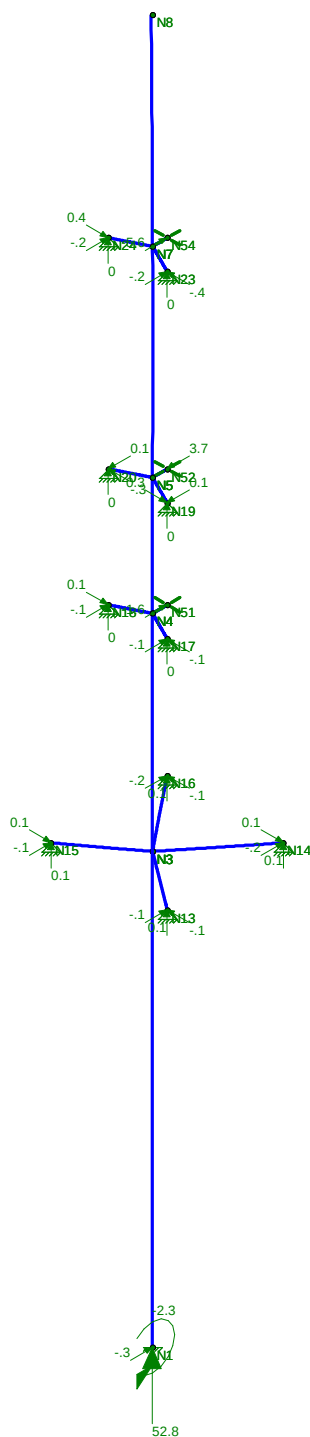


Loads: LC 6, 1.2D + 1.0Di + 1.0Wi (Z-direction)

CENTEK Engineering, INC.	Struct # 917- Antenna Mast LC #6 Loads	
TJL		Feb 26, 2019 at 11:23 AM
18123.00		Antenna Mast.r3d



Code Check (LC 6)	
No Calc	> 1.0
> 1.0	.90-1.0
.90-1.0	.75-.90
.75-.90	.50-.75
.50-.75	0-.50



Member Code Checks Displayed
Results for LC 6, 1.2D + 1.0Di + 1.0Wi (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.	Struct # 917- Antenna Mast LC #6 Reactions and Deflected Shape	
TJL		Feb 26, 2019 at 11:27 AM
18123.00		Antenna Mast.r3d

Subject:

Connection of Antenna Mast to Tower # 917

Location:

Weston, CT

Rev. 2: 2/26/19

Prepared by: T.J.L. Checked by: C.A.G.
 Job No. 18123.00

Antenna Mast Connection to Tower:

Reactions:

Horz = Horz := 26.5-kips (User Input)

Pipe Collar:

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = D := 0.625-in (User Input)

Number of Bolts = N_b := 4 (User Input)

Design Tensile Strength = F_t := 20.7-kips (User Input)

Design Shear Strength = F_v := 12.4-kips (User Input)

Plate Data:

Plate Width = W_{plt} := 5-in (User Input)

Plate Thickness = t_{plt} := 1.25-in (User Input)

Distance from Bolt to Collar = d_{st} := 1.75-in (User Input)

Yield Strength = F_y := 36-ksi (User Input)

Weld Data:

Weld Size = sw := $\frac{5}{16}$ -in (User Input)

Weld Length = l_w := 5-in (User Input)

Number of Welds = n_w := 2 (User Input)

Weld Strength = F_w := 70-ksi (User Input)

Check Pipe Collar Bolts:

Tension Force =

$$f_t := \frac{\text{Horz}}{N_b} = 6.6\text{-kips}$$

Bolt Tension % of Capacity =

$$\frac{f_t}{F_t} = 32\%$$

Check Bolt Tension =

$$\text{Bolt_Tension} := \text{if} \left(\frac{f_t}{F_t} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$$

Bolt_Tension = "OK"

Check Pipe Collar Plate:

Design Bending Strength =

$$F_b := 0.9F_y = 32.4\text{-ksi}$$

Plate Section Modulus =

$$Z_{plt} := \frac{1}{4} \cdot W_{plt} \cdot t_{plt}^2 = 1.953\text{-in}^3$$

Plate Bending Moment =

$$M := \frac{\text{Horz}}{2} \cdot d_{st} = 23.188\text{-in-kips}$$

Plate Bending Stress =

$$f_b := \frac{M}{Z_{plt}} = 11.872\text{-ksi}$$

$$\text{Plate_Bending} := \text{if} (f_b < F_b, \text{"OK"}, \text{"Overstressed"})$$

Plate_Bending = "OK"

Check Pipe Collar Weld:

Design Weld Strength =

$$F_w := 0.45 \cdot F_w = 31.5\text{-ksi}$$

Weld Section Modulus =

$$S_w := \frac{1}{6} \cdot .707 \cdot s_w \cdot l_w^2 = 0.921\text{-in}^3$$

WeldArea =

$$A_w := .707 \cdot s_w \cdot l_w = 1.105\text{-in}^2$$

Plate Stress =

$$f_w := \frac{\text{Horz}}{A_w \cdot n_w} = 11.994\text{-ksi}$$

$$\text{Weld} := \text{if} (f_w < F_w, \text{"OK"}, \text{"Overstressed"})$$

Weld = "OK"

Reactions:

Force = $F_{ab} := 13.7 \text{ kips}$ (User Input)

Angle Plate:

Bolt Data:

Bolt Type = $ASTMA325$ (User Input)

Bolt Diameter = $D := 0.75 \text{ in}$ (User Input)

Number of Bolts = $N_b := 1$ (User Input)

Design Tensile Strength = $F_t := 29.8 \text{ kips}$ (User Input)

Design Shear Strength = $F_v := 17.9 \text{ kips}$ (User Input)

Plate Data:

Plate Width = $W_{plt} := 3 \text{ in}$ (User Input)

Plate Thickness = $t_{plt} := 0.75 \text{ in}$ (User Input)

Distance from Bolt to Collar = $d_{st} := 1.5 \text{ in}$ (User Input)

Yield Strength = $F_y := 36 \text{ ksi}$ (User Input)

Tensile Strength = $F_u := 58 \text{ ksi}$ (User Input)

Hole Diameter = $Hole_d := .8125 \text{ in}$ (User Input)

Weld Data:

Weld Size = $sw := \frac{5}{16} \text{ in}$ (User Input)

Weld Length = $l_w := 3 \text{ in}$ (User Input)

Number of Welds = $n_w := 2$ (User Input)

Weld Strength = $F_w := 70 \text{ ksi}$ (User Input)

Check Angle Brace Bolts:

Shear Force =

$$f_v := \frac{F_{ab}}{N_b} = 13.7 \text{ kips}$$

Bolt Shear % of Capacity =

$$\frac{f_v}{F_v} = 76.54\%$$

Check Bolt Shear =

$$\text{Bolt_Shear} := \text{if} \left(\frac{f_v}{F_v} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$$

Bolt_Shear = "OK"

Check Angle Connection Plate:

Plate GrossArea =

$$A_g := W_{plt} \cdot t_{plt} = 2.25 \text{ in}^2$$

Plate NetArea =

$$A_n := [W_{plt} - (\text{Hole}_d + .0625 \text{ in})] \cdot t_{plt} = 1.594 \text{ in}^2$$

Shear Lag Factor =

$$U := 1.0$$

Plate Effective NetArea =

$$A_e := A_n \cdot U = 1.594 \text{ in}^2$$

Yielding Factor =

$$\phi_t := 0.9$$

Rupture Factor =

$$\phi_r := 0.75$$

Bearing Strength Factor =

$$\phi_b := 0.75$$

Clear Distance =

$$l_c := d_{st} - \frac{\text{Hole}_d}{2} = 1.094 \text{ in}$$

Tensile Yielding =

$$P_{at} := \phi_t \cdot F_y \cdot A_g = 72.9 \text{ kips}$$

Tensile Rupture =

$$P_{ar} := \phi_r \cdot F_u \cdot A_e = 69.328 \text{ kips}$$

Bearing Strength =

$$R_a := \phi_b \cdot 1.2 \cdot l_c \cdot t_{plt} \cdot F_u = 42.82 \text{ kips}$$

$$P_a := \min(P_{at}, P_{ar}, R_a) = 42.82 \text{ kips}$$

$$\text{Plate} := \text{if}(F_{ab} < P_a, \text{"OK"}, \text{"Overstressed"})$$

Plate = "OK"

Check Angle Connection Plate Weld:

Design Weld Strength =

$$F_w := 0.45 \cdot F_w = 31.5 \text{ ksi}$$

WeldArea =

$$A_w := .707 \cdot s_w \cdot l_w = 0.663 \text{ in}^2$$

Plate Stress =

$$f_w := \frac{F_{ab}}{A_w \cdot n_w} = 10.335 \text{ ksi}$$

$$\text{Weld} := \text{if}(f_w < F_w, \text{"OK"}, \text{"Overstressed"})$$

Weld = "OK"

Reactions:

Force = $F_{ab} := 24.7 \text{ kips}$ (User Input)

Center Plate:

Bolt Data:

Bolt Type = $ASTMA325$ (User Input)

Bolt Diameter = $D := 0.75 \text{ in}$ (User Input)

Number of Bolts = $N_b := 1$ (User Input)

Design Tensile Strength = $F_t := 29.8 \text{ kips}$ (User Input)

Design Shear Strength = $F_v := 35.8 \text{ kips}$ (User Input) Double Shear

Plate Data:

Plate Width = $W_{plt} := 6 \text{ in}$ (User Input)

Plate Thickness = $t_{plt} := 0.75 \text{ in}$ (User Input)

Distance from Bolt to Collar = $d_{st} := 7 \text{ in}$ (User Input)

Yield Strength = $F_y := 36 \text{ ksi}$ (User Input)

Tensile Strength = $F_u := 58 \text{ ksi}$ (User Input)

Hole Diameter = $Hole_d := .8125 \text{ in}$ (User Input)

Weld Data:

Weld Size = $sw := \frac{5}{16} \text{ in}$ (User Input)

Weld Length = $l_w := 3 \text{ in}$ (User Input)

Number of Welds = $n_w := 2$ (User Input)

Weld Strength = $F_w := 70 \text{ ksi}$ (User Input)

Check Angle Brace Bolts:

Shear Force =

$$f_v := \frac{F_{ab}}{N_b} = 24.7 \text{ kips}$$

Bolt Shear % of Capacity =

$$\frac{f_v}{F_v} = 68.99\%$$

Check Bolt Shear =

$$\text{Bolt_Shear} := \text{if} \left(\frac{f_v}{F_v} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right)$$

Bolt_Shear = "OK"

Check Angle Connection Plate:

Plate GrossArea =

$$A_g := W_{plt} \cdot t_{plt} = 4.5 \text{ in}^2$$

Plate NetArea =

$$A_n := [W_{plt} - (\text{Hole}_d + .0625 \text{ in})] \cdot t_{plt} = 3.844 \text{ in}^2$$

Shear Lag Factor =

$$U := 1.0$$

Plate Effective NetArea =

$$A_e := A_n \cdot U = 3.844 \text{ in}^2$$

Yielding Factor =

$$\phi_t := 0.9$$

Rupture Factor =

$$\phi_r := 0.75$$

Bearing Strength Factor =

$$\phi_b := 0.75$$

Clear Distance =

$$l_c := d_{st} - \frac{\text{Hole}_d}{2} = 6.594 \text{ in}$$

Tensile Yielding =

$$P_{at} := \phi_t \cdot F_y \cdot A_g = 145.8 \text{ kips}$$

Tensile Rupture =

$$P_{ar} := \phi_r \cdot F_u \cdot A_e = 167.203 \text{ kips}$$

Bearing Strength =

$$R_a := \phi_b \cdot 1.2 \cdot l_c \cdot t_{plt} \cdot F_u = 258.145 \text{ kips}$$

$$P_a := \min(P_{at}, P_{ar}, R_a) = 145.8 \text{ kips}$$

$$\text{Plate} := \text{if} (F_{ab} < P_a, \text{"OK"}, \text{"Overstressed"})$$

Plate = "OK"

Check Angle Connection Plate Weld:

Design Weld Strength =

$$F_w := 0.45 \cdot F_w = 31.5 \text{ ksi}$$

WeldArea =

$$A_w := .707 \cdot s_w \cdot l_w = 0.663 \text{ in}^2$$

Plate Stress =

$$f_w := \frac{F_{ab}}{A_w \cdot n_w} = 18.633 \text{ ksi}$$

$$\text{Weld} := \text{if} (f_w < F_w, \text{"OK"}, \text{"Overstressed"})$$

Weld = "OK"

Subject:

Connection of Antenna Mast to Tower # 917

Location:

Weston, CT

Rev. 2: 2/26/19

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 18123.00

Units

Angular

$$\text{rad} \equiv 1$$

$$\text{deg} \equiv \pi \cdot \frac{\text{rad}}{180}$$

Weight

$$\text{lb} \equiv \text{lbf}$$

$$\text{kips} \equiv 1000 \cdot \text{lb}$$

$$\text{k} \equiv \text{kips}$$

$$\text{tons} \equiv 2000 \cdot \text{lb}$$

Unit Weight

$$\text{plf} \equiv \frac{\text{lb}}{\text{ft}}$$

$$\text{klf} \equiv \frac{\text{kips}}{\text{ft}}$$

Pressure

$$\text{psf} \equiv \frac{\text{lb}}{\text{ft}^2}$$

$$\text{psi} \equiv \frac{\text{lb}}{\text{in}^2}$$

$$\text{ksf} \equiv \frac{\text{kips}}{\text{ft}^2}$$

$$\text{ksi} \equiv \frac{\text{kips}}{\text{in}^2}$$

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2012 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2012 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 57.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 98	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.25		(User Input - Only for NESC Extreme wind case)
NESC Factor =	kv := 1.43		(User Input from NESC 2012 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2012 Section 250.C.2)

Velocity Pressure Coefficient =	$K_z := 2.01 \cdot \left(\frac{TME}{900} \right)^{\frac{2}{9.5}} = 1.26$	(NESC 2012 Table 250-2)
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Exposure Factor =	$E_s := 0.346 \left[\frac{33}{(0.67 \cdot TME)} \right]^{\frac{1}{7}} = 0.314$	(NESC 2012 Table 250-3)
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Response Term =	$B_s := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220} \right)} = 0.857$	(NESC 2012 Table 250-3)
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Gust Response Factor =	$G_{rf} := \frac{\left[1 + \left(2.7 \cdot E_s \cdot B_s \cdot \frac{1}{2} \right) \right]}{k_v^2} = 0.872$	(NESC 2012 Table 250-3)
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Wind Pressure =	$q_z := 0.00256 \cdot K_z \cdot V^2 \cdot G_{rf} \cdot I = 34.1$	psf (NESC 2012 Section 250.C.2)
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Shape Factors

Shape Factor for Round Members =	Cd _R := 1.3	(User Input)
Shape Factor for Flat Members =	Cd _F := 1.6	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	Cd _{coax} := 1.6	(User Input)

Overload Factors

Overload Factors for Wind Loads:

NESC Heavy Loading =	2.5	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	1.0	(User Input)	Apply in Risa-3D Analysis

Overload Factors for Vertical Loads:

NESC Heavy Loading =	1.5	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	1.0	(User Input)	Apply in Risa-3D Analysis

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI HPA65R-BU8A	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 96$	in (User Input)
Antenna Width =	$W_{ant} := 11.7$	in (User Input)
Antenna Thickness =	$T_{ant} := 7.6$	in (User Input)
Antenna Weight =	$WT_{ant} := 54$	lbs (User Input)
Number of Antennas =	$N_{ant} := 12$	(User Input)

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant1} := WT_{ant} \cdot N_{ant} = 648$	lbs
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Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 8536$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 2058$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 68$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 815$	lbs

Wind Load (NESC Heavy)

*Assumes Maximum Possible Wind Pressure
Applied to all Antennas Simultaneously*

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 8.6$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 102.7$	sf
Total Antenna Wind Force w/ Ice =	$F_{ant1} := p \cdot C_d \cdot F \cdot A_{ICEant} = 657$	lbs

Wind Load (NESC Extreme)

*Assumes Maximum Possible Wind Pressure
Applied to all Antennas Simultaneously*

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 7.8$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 93.6$	sf
Total Antenna Wind Force =	$F_{ant1} := qz \cdot C_d \cdot F \cdot A_{ant} = 6375$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCIDTMABPDB7823VG12A
Antenna Shape =	Flat (User Input)
Antenna Height =	$L_{ant} := 14.25$ in (User Input)
Antenna Width =	$W_{ant} := 11.024$ in (User Input)
Antenna Thickness =	$T_{ant} := 4.11$ in (User Input)
Antenna Weight =	$WT_{ant} := 23$ lbs (User Input)
Number of Antennas =	$N_{ant} := 24$ (User Input)

Gravity Load (without ice)

Weight of All Antennas =	$Wt_{ant2} := WT_{ant} \cdot N_{ant} = 552$	lbs
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Gravity Load (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 646$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 291$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 10$	lbs
Weight of Ice on All Antennas =	$Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 231$	lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir)}{144} = 1.3$	sf
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 30.6$	sf
Total Antenna Wind Force w/ Ice =	$F_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 196$	lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.1$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 26.2$	sf
Total Antenna Wind Force =	$F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 1783$	lbs

Subject:

Load Analysis of Antenna Mast Structure # 917

Location:

Weston, CT

Rev. 2: 2/26/19

Prepared by: T.J.L Checked by: C.A.G.
 Job No. 18123.00

Development of Wind & Ice Load on Platform

Platform Data:

Platform Model = 14' Low Profile Platform w/ Handrail

Mount Shape = Flat

Mount Projected Surface Area = $CdAa := 25$ sf (User Input)

Mount Projected Surface Area w/ Ice = $CdAa_{ice} := 28$ sf (User Input)

Mount Weight = $WT_{mnt} := 2900$ lbs (User Input)

Mount Weight w/ Ice = $WT_{mnt.ice} := 3500$ lbs (User Input)

Gravity Loads (without ice)

Weight of All Mounts =

$$Wt_{mnt1} := WT_{mnt} = 2900$$

lbs

Gravity Load (ice only)

Weight of Ice on All Mounts =

$$Wt_{ice.mnt1} := (WT_{mnt.ice} - WT_{mnt}) = 600$$

lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice =

$$Fi_{mnt1} := p \cdot CdAa_{ice} = 112$$

lbs

Wind Load (NESC Extreme)

Total Mount Wind Force =

$$F_{mnt1} := qz \cdot CdAa \cdot m = 1064$$

lbs

Subject:

Load Analysis of Antenna Mast Structure # 917

Location:

Weston, CT

Rev. 2: 2/26/19

Prepared by: T.J.L Checked by: C.A.G.
 Job No. 18123.00

Total Equipment Loads:

NESC Heavy Wind Vertical =

$$(W_{t_{ant1}} + W_{t_{ice.ant1}} + W_{t_{ant2}} + W_{t_{ice.ant2}} + W_{t_{mnt1}} + W_{t_{ice.mnt1}}) \cdot 1.5 = 8618$$

NESC Heavy Wind Transverse =

$$(F_{i_{ant1}} + F_{i_{ant2}} + F_{i_{mnt1}}) \cdot 2.5 = 2412$$

NESC Extreme Wind Vertical =

$$(W_{t_{ant1}} + W_{t_{ant2}} + W_{t_{mnt1}}) = 4100$$

NESC Extreme Wind Transverse =

$$(F_{ant1} + F_{ant2} + F_{mnt1}) = 9222$$

Coax Cable on Antenna Mast

Basic Components

Heavy Wind Pressure =
 Basic Windspeed =
 Radial Ice Thickness =
 Radial Ice Density =

p := 4.00-psf (User Input NESC 2012 Figure 250-1 & Table 250-1)
 V := 110 mph (User Input NESC 2012 Figure 250-2(e))
 Ir := 0.50in (User Input)
 Id := 57.0-pcf (User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Cables Above Grade =

TME := 91 ft (User Input)

Multiplier Gust Response Factor =

m := 1.25 (User Input - Only for NESC Extreme wind case)

NESC Factor =

kv := 1.43 (User Input from NESC 2012 Table 250-3 equation)

Importance Factor =

I := 1.0 (User Input from NESC 2012 Section 250.C.2)

Velocity Pressure Coefficient =

$$K_z := 2.01 \cdot \left(\frac{0.67 TME}{900} \right)^{\frac{2}{9.5}} = 1.14 \quad (\text{NESC 2012 Table 250-2})$$

Exposure Factor =

$$E_s := 0.346 \left[\frac{33}{(0.67 \cdot TME)} \right]^{\frac{1}{7}} = 0.317 \quad (\text{NESC 2012 Table 250-3})$$

Response Term =

$$B_s := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220} \right)} = 0.866 \quad (\text{NESC 2012 Table 250-3})$$

Gust Response Factor =

$$G_{rf} := \frac{\left[1 + \left(2.7 \cdot E_s \cdot B_s \right)^{\frac{1}{2}} \right]}{k_v^2} = 0.878 \quad (\text{NESC 2012 Table 250-3})$$

Wind Pressure =

$$q_z := 0.00256 \cdot K_z \cdot V^2 \cdot G_{rf} \cdot I = 31 \quad \text{psf} \quad (\text{NESC 2012 Section 250.C.})$$

Shape Factors

Shape Factor for Round Members =

Cd_R := 1.3 (User Input)

Shape Factor for Flat Members =

Cd_F := 1.6 (User Input)

Shape Factor for Coax Cables Attached to Outside of Pole =

Cd_{coax} := 1.6 (User Input)

Overload Factors

Overload Factor for NESC Heavy Wind Transverse Load =

OF_{HWT} := 2.5 (User Input)

Overload Factor for NESC Heavy Wind Vertical Load =

OF_{HWV} := 1.5 (User Input)

Overload Factor for NESC Extreme Wind Transverse Load =

OF_{EWt} := 1.0 (User Input)

Overload Factor for NESC Extreme Wind Vertical Load =

OF_{EWV} := 1.0 (User Input)

Below Top of Tower

Distance Between Coax Cable Attach Points =

$$\text{Coax}_{\text{Span}} := \begin{pmatrix} 7.5 \\ 8.5 \\ 11 \\ 13.75 \\ 16 \\ 29.25 \end{pmatrix} \cdot \text{ft} \quad (\text{User Input})$$

Diameter of Coax Cable =

$$D_{\text{coax}} := 1.98 \cdot \text{in} \quad (\text{User Input})$$

Weight of Coax Cable =

$$W_{\text{coax}} := 1.04 \cdot \text{plf} \quad (\text{User Input})$$

Number of Coax Cables =

$$N_{\text{coax}} := 24 \quad (\text{User Input})$$

Number of Projected Coax Cables =

$$NP_{\text{coax}} := 4 \quad (\text{User Input})$$

Number of External Coax Cables =

$$NX_{\text{coax}} := 12 \quad (\text{User Input})$$

Wind Area without Ice =

$$A := (NP_{\text{coax}} \cdot D_{\text{coax}}) = 7.92 \cdot \text{in}$$

Wind Area with Ice =

$$A_{\text{ice}} := (NP_{\text{coax}} \cdot D_{\text{coax}} + 2 \cdot \text{Ir}) = 8.92 \cdot \text{in}$$

Ice Area per Liner Ft =

$$A_{\text{ice}} := \frac{\pi}{4} \cdot \left[(D_{\text{coax}} + 2 \cdot \text{Ir})^2 - D_{\text{coax}}^2 \right] = 0.027 \text{ft}^2$$

Weight of Ice on All Coax Cables =

$$W_{\text{ice}} := A_{\text{ice}} \cdot \text{ld} \cdot NX_{\text{coax}} = 18.504 \cdot \text{plf}$$

Heavy Wind Vertical Load =

$$\text{Heavy_Wind}_{\text{Vert}} := \left[(N_{\text{coax}} \cdot W_{\text{coax}} + W_{\text{ice}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HWV}} \right]$$

Heavy Wind Transverse Load =

$$\text{Heavy_Wind}_{\text{Trans}} := (p \cdot A_{\text{ice}} \cdot C_{\text{d}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HWT}})$$

$$\text{Heavy_Wind}_{\text{Vert}} = \begin{pmatrix} 489 \\ 554 \\ 717 \\ 896 \\ 1043 \\ 1907 \end{pmatrix} \text{lb} \quad \text{Heavy_Wind}_{\text{Trans}} = \begin{pmatrix} 89 \\ 101 \\ 131 \\ 164 \\ 190 \\ 348 \end{pmatrix} \text{lb}$$

Extreme Wind Vertical Load =

$$\text{Extreme_Wind}_{\text{Vert}} := (N_{\text{coax}} \cdot W_{\text{coax}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EWV}})$$

Extreme Wind Transverse Load =

$$\text{Extreme_Wind}_{\text{Trans}} := \left[(qz \cdot \text{psf} \cdot A \cdot C_{\text{d}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EWT}}) \right]$$

$$\text{Extreme_Wind}_{\text{Vert}} = \begin{pmatrix} 187 \\ 212 \\ 275 \\ 343 \\ 399 \\ 730 \end{pmatrix} \text{lb} \quad \text{Extreme_Wind}_{\text{Trans}} = \begin{pmatrix} 246 \\ 279 \\ 360 \\ 451 \\ 524 \\ 958 \end{pmatrix} \text{lb}$$

Subject:

Coax Cable on Antenna Mast Tower # 917

Location:

Weston, CT

Prepared by: T.J.L Checked by: C.A.G.
 Job No. 18123.00

Rev. 2: 2/26/19

Above Top of Tower

Distance Between Coax Cable Attach Points =

Coax_{Span} := 5-ft (User Input)

Diameter of Coax Cable =

D_{coax} := 1.98-in (User Input)

Weight of Coax Cable =

W_{coax} := 1.04-plf (User Input)

Number of Coax Cables =

N_{coax} := 48 (User Input)

Number of Projected Coax Cables =

NP_{coax} := 10 (User Input)

Number of External Coax Cables =

NX_{coax} := 36 (User Input)

Wind Area without Ice =

A := (NP_{coax} · D_{coax}) = 19.8-in

Wind Area with Ice =

A_{ice} := (NP_{coax} · D_{coax} + 2 · Ir) = 20.8-in

Ice Area per Liner Ft =

A_{i cox} := $\frac{\pi}{4} \cdot \left[(D_{coax} + 2 \cdot Ir)^2 - D_{coax}^2 \right] = 0.027 \text{ ft}^2$

Weight of Ice on All Coax Cables =

W_{ice} := A_{i cox} · Id · NX_{coax} = 55.512-plf

Heavy Wind Vertical Load =

$$\text{Heavy_Wind}_{\text{Vert}} := \overrightarrow{\left[(N_{coax} \cdot W_{coax} + W_{ice}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HWV}} \right]}$$

Heavy Wind Transverse Load =

$$\text{Heavy_Wind}_{\text{Trans}} := \overrightarrow{\left(p \cdot A_{ice} \cdot C_{d_{coax}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HWT}} \right)}$$

Heavy_Wind_{Vert} = 791lb

Heavy_Wind_{Trans} = 139lb

Extreme Wind Vertical Load =

$$\text{Extreme_Wind}_{\text{Vert}} := \overrightarrow{\left(N_{coax} \cdot W_{coax} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EWV}} \right)}$$

Extreme Wind Transverse Load =

$$\text{Extreme_Wind}_{\text{Trans}} := \overrightarrow{\left[(qz \cdot \text{psf} \cdot A \cdot C_{d_{coax}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EWT}} \right]}$$

Extreme_Wind_{Vert} = 250lb

Extreme_Wind_{Trans} = 410lb

Subject:

Coax Cable on Tower # 917

Location:

Weston, CT

Rev. 0: 12/18/18

Prepared by: T.J.L Checked by: C.A.G.
 Job No. 18123.00

Coax Cable on Tower

Basic Components

Heavy Wind Pressure =
 Basic Windspeed =
 Radial Ice Thickness =
 Radial Ice Density =

$p := 4.00$ psf (User Input NESC 2012 Figure 250-1 & Table 250-1)
 $V := 110$ mph (User Input NESC 2012 Figure 250-2(e))
 $I_r := 0.50$ in (User Input)
 $I_d := 57.0$ pcf (User Input)

Factors for Extreme Wind Calculation

Elevation of Cables Above Grade =

$TME := 81$ ft (User Input)

Multiplier Gust Response Factor =

$m := 1.25$ (User Input - Only for NESC Extreme wind case)

NESC Factor =

$k_v := 1.43$ (User Input from NESC 2012 Table 250-3 equation)

Importance Factor =

$I := 1.0$ (User Input from NESC 2012 Section 250.C.2)

Velocity Pressure Coefficient =

$K_z := 2.01 \cdot \left(\frac{0.67 TME}{900} \right)^{\frac{2}{9.5}} = 1.113$ (NESC 2012 Table 250-2)

Exposure Factor =

$E_s := 0.346 \left[\frac{33}{(0.67 \cdot TME)} \right]^{\frac{1}{7}} = 0.322$ (NESC 2012 Table 250-3)

Response Term =

$B_s := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220} \right)} = 0.879$ (NESC 2012 Table 250-3)

Gust Response Factor =

$G_{rf} := \frac{\left[1 + \left(2.7 \cdot E_s \cdot B_s \right)^{\frac{1}{2}} \right]}{k_v^2} = 0.888$ (NESC 2012 Table 250-3)

Wind Pressure =

$q_z := 0.00256 \cdot K_z \cdot V^2 \cdot G_{rf} \cdot I = 30.6$ psf (NESC 2012 Section 250.C.)

Shape Factors

Shape Factor for Round Members =

$C_{dR} := 1.3$ (User Input)

Shape Factor for Flat Members =

$C_{dF} := 1.6$ (User Input)

Shape Factor for Coax Cables Attached to Outside of Pole =

$C_{d_{coax}} := 1.6$ (User Input)

Overload Factors

Overload Factor for NESC Heavy Wind Transverse Load =

$OF_{HWT} := 2.5$ (User Input)

Overload Factor for NESC Heavy Wind Vertical Load =

$OF_{HWV} := 1.5$ (User Input)

Overload Factor for NESC Extreme Wind Transverse Load =

$OF_{EWT} := 1.0$ (User Input)

Overload Factor for NESC Extreme Wind Vertical Load =

$OF_{EWV} := 1.0$ (User Input)

Distance Between Coax Cable Attach Points =

$$\text{Coax}_{\text{Span}} := \begin{pmatrix} 10.5 \\ 11 \\ 10.5 \\ 11.25 \\ 13.5 \\ 29.25 \end{pmatrix} \cdot \text{ft} \quad (\text{User Input})$$

Diameter of Coax Cable =

$$D_{\text{coax}} := 1.98 \cdot \text{in} \quad (\text{User Input})$$

Weight of Coax Cable =

$$W_{\text{coax}} := 1.04 \cdot \text{plf} \quad (\text{User Input})$$

Number of Coax Cables =

$$N_{\text{coax}} := 12 \quad (\text{User Input})$$

Number of Projected Coax Cables =

$$NP_{\text{coax}} := 6 \quad (\text{User Input})$$

Number of External Coax Cables =

$$NX_{\text{coax}} := 12 \quad (\text{User Input})$$

Wind Area without Ice =

$$A := (NP_{\text{coax}} \cdot D_{\text{coax}}) = 11.88 \cdot \text{in}$$

Wind Area with Ice =

$$A_{\text{ice}} := (NP_{\text{coax}} \cdot D_{\text{coax}} + 2 \cdot \text{lr}) = 12.88 \cdot \text{in}$$

Ice Area per Liner Ft =

$$A_{\text{ice}} := \frac{\pi}{4} \cdot \left[(D_{\text{coax}} + 2 \cdot \text{lr})^2 - D_{\text{coax}}^2 \right] = 0.027 \text{ft}^2$$

Weight of Ice on All Coax Cables =

$$W_{\text{ice}} := A_{\text{ice}} \cdot \text{ld} \cdot NX_{\text{coax}} = 18.504 \cdot \text{plf}$$

Heavy Wind Vertical Load =

$$\text{Heavy_Wind}_{\text{Vert}} := \overrightarrow{\left[(N_{\text{coax}} \cdot W_{\text{coax}} + W_{\text{ice}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HWV}} \right]}$$

Heavy Wind Transverse Load =

$$\text{Heavy_Wind}_{\text{Trans}} := \overrightarrow{\left(p \cdot A_{\text{ice}} \cdot C_{d_{\text{coax}}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{HWT}} \right)}$$

$$\text{Heavy_Wind}_{\text{Vert}} = \begin{pmatrix} 488 \\ 511 \\ 488 \\ 523 \\ 627 \\ 1359 \end{pmatrix} \text{lb} \quad \text{Heavy_Wind}_{\text{Trans}} = \begin{pmatrix} 180 \\ 189 \\ 180 \\ 193 \\ 232 \\ 502 \end{pmatrix} \text{lb}$$

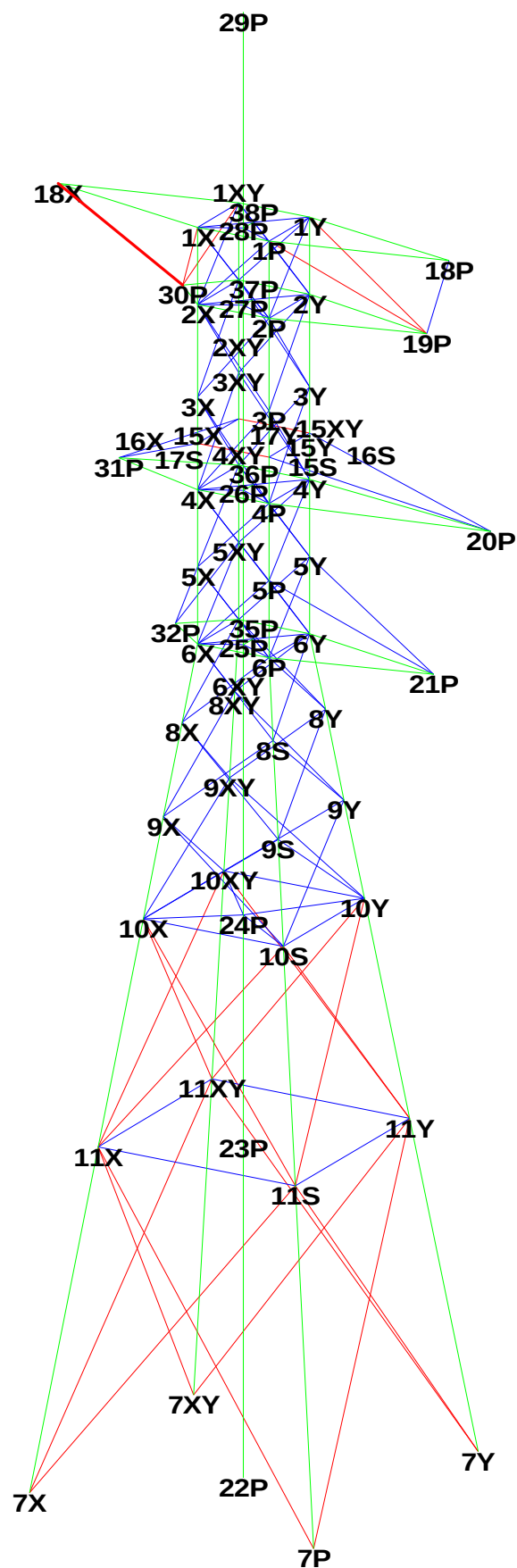
Extreme Wind Vertical Load =

$$\text{Extreme_Wind}_{\text{Vert}} := \overrightarrow{\left(N_{\text{coax}} \cdot W_{\text{coax}} \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EWV}} \right)}$$

Extreme Wind Transverse Load =

$$\text{Extreme_Wind}_{\text{Trans}} := \overrightarrow{\left[(qz \cdot \text{psf} \cdot A \cdot C_{d_{\text{coax}}}) \cdot \text{Coax}_{\text{Span}} \cdot \text{OF}_{\text{EWT}} \right]}$$

$$\text{Extreme_Wind}_{\text{Vert}} = \begin{pmatrix} 131 \\ 137 \\ 131 \\ 140 \\ 168 \\ 365 \end{pmatrix} \text{lb} \quad \text{Extreme_Wind}_{\text{Trans}} = \begin{pmatrix} 509 \\ 533 \\ 509 \\ 545 \\ 654 \\ 1418 \end{pmatrix} \text{lb}$$



Project Name : 18123.00 - Weston, CT
 Project Notes: Structure # 917/ AT&T CT1845
 Project File : J:\Jobs\1812300.WI\04_Structural\Calcs\Rev (3)\PLS Tower\pls tower 917 w_Antenna Mast.tow
 Date run : 8:17:41 AM Friday, March 01, 2019
 by : Tower Version 12.50
 Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 244.31 exceeds maximum of 200.00 for member "g52P" ??
 Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
 The model has 2 warnings. ??

Member check option: ASCE 10
 Connection rupture check: ASCE 10
 Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
 Included angle check: None
 Climbing load check: None
 Redundant members checked with: Actual Force

Loads from file: j:\jobs\1812300.wi\04_structural\calcs\rev (3)\pls tower\weston w_antenna mast.lca

*** Analysis Results:

Maximum element usage is 98.83% for Angle "g6XY" in load case "NESC Extreme"
 Maximum insulator usage is 21.79% for Clamp "9" in load case "NESC Extreme"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	7P	-10.48	-10.42	-75.90	14.78	0.31	0.00	0.31	0.03	0.00
NESC Heavy	22P	-0.00	-0.49	-28.05	0.49	0.00	0.00	0.00	0.00	0.00
NESC Heavy	7X	10.75	-10.65	55.72	15.13	0.37	0.02	0.37	0.04	0.00
NESC Heavy	7XY	-11.10	-11.58	59.18	16.04	0.39	-0.01	0.39	-0.02	0.00
NESC Heavy	7Y	10.20	-10.13	-73.83	14.38	0.33	-0.08	0.34	-0.02	0.00
NESC Extreme	7P	-13.67	-14.29	-100.55	19.77	0.46	0.89	1.00	0.13	0.00
NESC Extreme	22P	0.03	-0.53	-9.32	0.53	0.00	0.00	0.00	0.00	0.00
NESC Extreme	7X	16.83	-17.34	88.84	24.16	0.56	0.02	0.56	0.02	0.00
NESC Extreme	7XY	-16.97	-16.53	88.80	23.69	0.49	-0.04	0.49	-0.05	0.00
NESC Extreme	7Y	13.65	-14.06	-98.79	19.60	0.43	0.78	0.89	0.06	0.00

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg (kips)	Residual Perpendicular (kips)	Shear To Leg (kips)	Residual Horizontal To Leg (kips)	Shear Horizontal - Res. (kips)	Residual Horizontal To Leg (kips)	Shear Horizontal - Long. (kips)	Residual Horizontal To Leg (kips)	Shear Horizontal - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	7P	11S	g11P	77.328		0.136		0.138		-0.060		-0.125	-10.48	-10.42	-75.90
NESC Heavy	7X	11X	g11X	-57.593		4.106		4.184		-3.010		2.906	10.75	-10.65	55.72
NESC Heavy	7XY	11XY	g11XY	-61.158		4.348		4.430		2.883		3.364	-11.10	-11.58	59.18
NESC Heavy	7Y	11Y	g11Y	75.217		0.133		0.135		0.051		-0.125	10.20	-10.13	-73.83
NESC Extreme	7P	11S	g11P	102.474		0.442		0.442		-0.299		0.326	-13.67	-14.29	-100.55
NESC Extreme	7X	11X	g11X	-91.832		6.596		6.722		-4.486		5.006	16.83	-17.34	88.84
NESC Extreme	7XY	11XY	g11XY	-91.698		6.136		6.253		4.640		4.192	-16.97	-16.53	88.80
NESC Extreme	7Y	11Y	g11Y	100.717		0.343		0.345		0.071		0.338	13.65	-14.06	-98.79

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	95.000	49.000	53	167	0.00	6.39	198.472	0.00	6.39	507.308
2	49.000	0.000	24	63	6.39	20.00	646.528	6.39	20.00	646.528

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage
which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group RLZ	Group L/R	KL/R	Length	Group Curve	Angle No.	Angle Size	Steel Strength	Max Usage	Max Use	Comp. Control	Comp. Force	Comp. Control	L/R Capacity	Comp. Connect.	Comp. Connect.	RLX	RLY			
Comp.	No.	Of		Desc.	Type		(ksi)	%	%	In Member	(kips)	Case	(kips)	(kips)	(kips)					
Member		Bolts																		
Comp.																				
(ft)																				
Leg1	1.000	45.28	45.28	3.000	Leg1	SAE	4X4X0.25	33.0	77.63	Tens	72.63	g4P	-43.747	NESC	Ext	60.236	127.400	196.875	1.000	1.000
Leg2	1.000	60.36	60.36	5.000	Leg2	SAE	5X5X0.3125	33.0	98.83	Tens	81.75	g6P	-73.154	NESC	Ext	89.489	163.800	316.406	1.000	1.000
Leg3	1.000	80.29	80.29	6.624	Leg3	SAE	5X5X0.375	33.0	94.12	Tens	89.84	g9P	-87.133	NESC	Ext	96.992	145.600	337.499	1.000	1.000
Leg4	0.333	75.29	75.29	22.420	Leg4	SAE	6X6X0.375	33.0	85.10	Comp	85.10	g11P	-102.432	NESC	Ext	120.373	163.800	379.687	0.333	0.333
XBrace1	0.500	123.69	122.85	7.071	XBrace1	SAE	1.75X1.75X0.1875	33.0	79.56	Comp	79.56	g12X	-9.196	NESC	Ext	11.559	18.200	21.094	0.750	0.500
XBrace2	0.500	122.46	121.91	7.810	XBrace2	SAU	3X2X0.25	33.0	60.99	Comp	60.99	g14X	-13.690	NESC	Ext	22.446	27.300	42.187	0.500	0.750
XBrace3	0.561	118.75	119.37	7.610	XBrace3	SAE	2.5X2.5X0.25	33.0	22.69	Cross	22.69	g25P	-5.251	NESC	Ext	23.140	27.300	42.187	1.000	0.561
XBrace4	0.549	171.28	151.54	11.105	XBrace4	SAE	2.5X2.5X0.1875	33.0	20.32	Cross	20.32	g29P	-2.284	NESC	Ext	11.242	18.200	21.094	1.000	0.549
XBrace5	0.577	371.43	274.63	18.850	XBrace5	SAE	2X2X0.25	33.0	33.84	Tens	17.62	g31P	-0.628	NESC	Ext	3.567	27.300	42.187	1.000	0.577
XBrace6	0.409	430.90	311.20	27.937	XBrace6	SAE	2.5X2.5X0.1875	33.0	40.74	Tens	0.00	g33Y	0.000			2.666	27.300	31.641	1.000	0.409
XBrace7	1.000	122.46	121.91	3.905	XBrace7	SAU	3X2X0.25	33.0	63.44	Comp	63.44	g17P	-14.240	NESC	Ext	22.446	27.300	42.187	1.000	1.500
Horz1	1.000	174.93	174.93	5.000	Horizontal 1	SAE	1.75X1.75X0.1875	33.0	78.82	Comp	78.82	g37P	-4.571	NESC	Ext	5.799	9.100	10.547	1.000	1.000
Horz2	0.500	149.22	149.22	9.861	Horizontal 2	SAU	2.5X2X0.1875	33.0	49.85	Comp	49.85	g38X	-5.190	NESC	Ext	10.412	18.200	21.094	1.000	0.500
Horz3	0.500	176.37	176.37	13.889	Horizontal 3	SAU	3X2.5X0.25	33.0	86.39	Comp	86.39	g40X	-10.414	NESC	Ext	12.054	18.200	28.125	1.000	0.500
Horz4					Horizontal 4	Bar	2x1/4	33.0	42.93	Tens	0.00	g43Y	0.000			12.648	9.100	14.062	1.000	2.000

Leg4			Leg4	SAE	6X6X0.375	33.0	85.10	Comp	68.00	g11XY	77.959NESC Ext	114.644	163.800	379.687	407.952
22.420	18	3.150	0.75	XBrace1	SAE 1.75X1.75X0.1875	33.0	79.56	Comp	62.15	g12P	8.849NESC Ext	14.237	18.200	21.094	15.363
7.071	2	1.000	0.75	XBrace2	SAU 3X2X0.25	33.0	60.99	Comp	48.38	g14P	13.207NESC Ext	29.440	27.300	42.187	37.500
7.810	3	1.060	0.75	XBrace3	SAE 2.5X2.5X0.25	33.0	22.69	Cross	18.53	g25X	4.516NESC Ext	29.774	27.300	42.187	24.375
7.610	3	1.000	0.75	XBrace4	SAE 2.5X2.5X0.1875	33.0	20.32	Cross	18.65	g27Y	3.409NESC Ext	22.613	27.300	31.641	18.281
9.426	3	1.000	0.75	XBrace5	SAE 2X2X0.25	33.0	33.84	Tens	33.84	g31X	7.562NESC Ext	22.349	27.300	42.187	24.375
18.850	3	1.000	0.75	XBrace6	SAE 2.5X2.5X0.1875	33.0	40.74	Tens	40.74	g33X	9.212NESC Ext	22.613	27.300	31.641	22.992
27.937	3	1.000	0.75	XBrace7	SAU 3X2X0.25	33.0	63.44	Comp	50.33	g16P	13.740NESC Ext	29.440	27.300	42.187	37.500
3.905	3	1.060	0.75	Horizontal 1	SAE 1.75X1.75X0.1875	33.0	78.82	Comp	55.87	g37X	4.086NESC Ext	14.237	9.100	10.547	7.312
5.000	1	1.000	0.75	Horizontal 2	SAU 2.5X2X0.1875	33.0	49.85	Comp	19.73	g38P	3.108NESC Ext	17.096	18.200	21.094	15.750
9.861	2	1.000	0.75	Horizontal 3	SAU 3X2.5X0.25	33.0	86.39	Comp	0.00	g41Y	0.000	29.626	18.200	28.125	20.719
13.889	2	1.000	0.75	Horizontal 4	Bar 2x1/4	33.0	42.93	Tens	42.93	g43Y	3.906NESC Hea	9.281	9.100	14.062	10.781
2.500	1	1.000	0.75	Ground Wire Arm	SAU 3X2.5X0.25	33.0	27.26	Tens	27.26	g44XY	4.961NESC Hea	33.338	18.200	28.125	28.125
11.524	2	1.000	0.75	Top Cross Arm	SAU 5X3.5X0.3125	33.0	17.83	Comp	0.00	g47Y	0.000	62.110	27.300	52.734	24.961
5.000	3	2.000	0.75	Middle Cross Arm	SAU 5X3.5X0.3125	33.0	23.65	Comp	1.11	g49P	0.278NESC Ext	62.110	27.300	52.734	24.961
5.000	3	2.000	0.75	Bottom Cross Arm	SAU 5X3.5X0.3125	33.0	15.38	Comp	0.00	g51Y	0.000	62.110	27.300	52.734	26.250
5.000	3	2.000	0.75	Ground Wire Arm Brace	SAE 2.5X2.5X0.1875	33.0	64.77	Comp	0.00	g52P	0.000	22.613	9.100	10.547	9.375
10.078	1	1.000	0.75	Top Cross Arm Brace	Bar 1.75x1/4	33.0	39.59	Tens	39.59	g53Y	2.939NESC Hea	7.425	9.100	14.062	9.750
11.167	1	1.000	0.75	Middle Cross Arm Brace	Bar 1.75x1/4	33.0	59.77	Tens	59.77	g54Y	4.438NESC Hea	7.425	9.100	14.062	9.750
14.695	1	1.000	0.75	Bottom Cross Arm Brace	Bar 1.75x1/4	33.0	31.91	Tens	31.91	g55Y	2.369NESC Hea	7.425	9.100	14.062	9.750
11.602	1	1.000	0.75	HSS 16"x0.5" Powermount	Pwmnt Pipe HSS16"x0.5"	42.0	3.04	Comp	0.00	g69P	0.000	953.399	0.000	0.000	0.000
14.000	0	0.000	0	Powermount Brace	SAE 2.5X2.5X0.375	36.0	58.29	Tens	58.29	g75P	9.793NESC Ext	47.699	16.800	20.391	18.125
2.795	1	1.000	0.6875	Top Cross Arm	SAE 2.5X2.5X0.1875	33.0	8.26	Tens	8.26	g56P	1.492NESC Ext	22.613	18.200	21.094	18.070
3.536	2	1.000	0.75	Middle Cross Arm	SAE 3X3X0.1875	33.0	4.37	Tens	4.37	g58P	1.080NESC Ext	28.196	27.300	31.641	24.680
7.433	3	1.000	0.75	Bottom Cross Arm	SAE 2.5X2.5X0.1875	33.0	10.78	Tens	10.78	g57Y	1.948NESC Hea	22.613	18.200	21.094	18.070
3.905	2	1.000	0.75	Ground Wire Arm Brace	SAU 2.5X2X0.1875	33.0	9.58	Comp	0.00	g59P	0.000	19.880	9.100	10.547	9.375
5.245	1	1.000	0.75	Powermount Brace 2	Bar 6x3/4	36.0	2.69	Comp	2.07	g76P	0.494NESC Hea	124.537	23.900	48.937	54.375
1.250	1	1.000	0.875	L1.75x1.75x3/16	SAE 1.75X1.75X0.1875	36.0	43.01	Tens	43.01	g81Y	2.480NESC Ext	15.532	11.150	10.195	5.766
3.536	1	1.000	0.75	XBrace8	SAU 3X2.5X0.25	33.0	34.84	Tens	34.84	g22Y	10.296NESC Ext	29.551	36.400	56.250	30.844
7.071	4	1.680	0.75	L2.5x2.5x3/8	SAE 2.5X2.5X0.375	36.0	42.37	Tens	42.37	g80Y	4.724NESC Ext	46.939	11.150	20.391	11.531
Inner1R															

3.536 1 1.000 0.75

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	67.79	g9P	Angle
NESC Extreme	98.83	g6XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	7.15	NESC Heavy	0.0
2	Clamp	4.15	NESC Heavy	0.0
3	Clamp	8.54	NESC Heavy	0.0
4	Clamp	8.57	NESC Heavy	0.0
5	Clamp	8.60	NESC Heavy	0.0
6	Clamp	8.81	NESC Heavy	0.0
7	Clamp	8.42	NESC Heavy	0.0
8	Clamp	8.47	NESC Heavy	0.0
9	Clamp	21.79	NESC Extreme	0.0
10	Clamp	0.46	NESC Extreme	0.0
11	Clamp	0.46	NESC Extreme	0.0
12	Clamp	0.46	NESC Extreme	0.0
13	Clamp	1.81	NESC Extreme	0.0
14	Clamp	1.35	NESC Extreme	0.0
15	Clamp	1.60	NESC Heavy	0.0
16	Clamp	1.47	NESC Extreme	0.0
17	Clamp	1.52	NESC Extreme	0.0
18	Clamp	1.49	NESC Heavy	0.0
19	Clamp	2.86	NESC Extreme	0.0
20	Clamp	2.63	NESC Extreme	0.0
21	Clamp	4.77	NESC Heavy	0.0
22	Clamp	3.56	NESC Heavy	0.0
23	Clamp	3.35	NESC Heavy	0.0
24	Clamp	4.41	NESC Heavy	0.0
25	Clamp	5.71	NESC Heavy	0.0
26	Clamp	6.97	NESC Heavy	0.0
27	Clamp	9.10	NESC Heavy	0.0
28	Clamp	1.47	NESC Extreme	0.0
29	Clamp	1.52	NESC Extreme	0.0
30	Clamp	1.49	NESC Heavy	0.0
31	Clamp	2.86	NESC Extreme	0.0
32	Clamp	2.63	NESC Extreme	0.0
33	Clamp	4.77	NESC Heavy	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	18363.4
Total:	18363.4

*** End of Report

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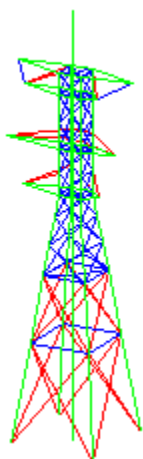
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Project Name : 18123.00 - Weston, CT
 Project Notes: Structure # 917/ AT&T CT1845
 Project File : J:\Jobs\1812300.WI\04_Structural\Calcs\Rev (3)\PLS Tower\pls tower 917 w_Antenna Mast.tow
 Date run : 8:17:40 AM Friday, March 01, 2019
 by : Tower Version 12.50
 Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 244.31 exceeds maximum of 200.00 for member "g52P" ??
 Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
 The model has 2 warnings. ??



Nonlinear convergence parameters: Use Standard Parameters
 Tension only member maximum compression load as a percent of compression capacity: 100%
 Member check option: ASCE 10
 Connection rupture check: ASCE 10
 Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
 Included angle check: None
 Climbing load check: None
 Redundant members checked with: Actual Force

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	2.5	2.5	81	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2.5	2.5	76	Free	Free	Free	Free	Free	Free
3P	XY-Symmetry	2.5	2.5	70	Free	Free	Free	Free	Free	Free

4P	XY-Symmetry	2.5	2.5	64	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	2.5	59	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	2.5	54	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	10	10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18P	X-Symmetry	0	13.75	81	Free	Free	Free	Free	Free	Free
19P	None	0	-12.17	76	Free	Free	Free	Free	Free	Free
20P	None	0	-16.67	64	Free	Free	Free	Free	Free	Free
21P	None	0	-12.67	54	Free	Free	Free	Free	Free	Free
22P	None	1.25	0	0	Fixed	Fixed	Fixed	Free	Free	Free
23P	None	1.25	0	22	Free	Free	Free	Free	Free	Free
24P	None	1.25	0	36.5	Free	Free	Free	Free	Free	Free
25P	None	1.25	0	54	Free	Free	Free	Free	Free	Free
26P	None	1.25	0	64	Free	Free	Free	Free	Free	Free
27P	None	1.25	0	76	Free	Free	Free	Free	Free	Free
28P	None	1.25	0	81	Free	Free	Free	Free	Free	Free
29P	None	1.25	0	95	Free	Free	Free	Free	Free	Free
30P	None	0	5	76	Free	Free	Free	Free	Free	Free
31P	None	0	9.5	64	Free	Free	Free	Free	Free	Free
32P	None	0	5.5	54	Free	Free	Free	Free	Free	Free
35P	None	0	0	54	Free	Free	Free	Free	Free	Free
36P	None	0	0	64	Free	Free	Free	Free	Free	Free
37P	None	0	0	76	Free	Free	Free	Free	Free	Free
38P	None	0	0	81	Free	Free	Free	Free	Free	Free
1X	X-GenXY	2.5	-2.5	81	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	-2.5	81	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	2.5	81	Free	Free	Free	Free	Free	Free
2X	X-GenXY	2.5	-2.5	76	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-2.5	-2.5	76	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2.5	2.5	76	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	-2.5	70	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	-2.5	70	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	2.5	70	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2.5	-2.5	64	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2.5	-2.5	64	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2.5	2.5	64	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	-2.5	59	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	-2.5	59	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	2.5	59	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	-2.5	54	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	-2.5	54	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	2.5	54	Free	Free	Free	Free	Free	Free
7X	X-GenXY	10	-10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
7XY	XY-GenXY	-10	-10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
7Y	Y-GenXY	-10	10	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18X	X-Gen	0	-13.75	81	Free	Free	Free	Free	Free	Free

Secondary Joints:

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation	X	Disp. Rest.	Y	Disp. Rest.	Z	Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
(ft)														
8S	XY-Symmetry	6P	7P	0	49	Free	Free	Free	Free	Free	Free	Free	Free	Free
9S	XY-Symmetry	6P	7P	0	43	Free	Free	Free	Free	Free	Free	Free	Free	Free
10S	XY-Symmetry	6P	7P	0	36.5	Free	Free	Free	Free	Free	Free	Free	Free	Free
11S	XY-Symmetry	6P	7P	0	22	Free	Free	Free	Free	Free	Free	Free	Free	Free
15S	XY-Symmetry	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free	Free	Free	Free
16S	X-Symmetry	3P	4Y	0.5	0	Free	Free	Free	Free	Free	Free	Free	Free	Free
17S	Y-Symmetry	3P	4X	0.5	0	Free	Free	Free	Free	Free	Free	Free	Free	Free

8X	X-GenXY	6P	7P	0	49	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	6P	7P	0	49	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	6P	7P	0	49	Free	Free	Free	Free	Free	Free
9X	X-GenXY	6P	7P	0	43	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	6P	7P	0	43	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	6P	7P	0	43	Free	Free	Free	Free	Free	Free
10X	X-GenXY	6P	7P	0	36.5	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	6P	7P	0	36.5	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	6P	7P	0	36.5	Free	Free	Free	Free	Free	Free
11X	X-GenXY	6P	7P	0	22	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	6P	7P	0	22	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	6P	7P	0	22	Free	Free	Free	Free	Free	Free
15X	X-GenXY	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
16X	X-Gen	3P	4Y	0.5	0	Free	Free	Free	Free	Free	Free
17Y	Y-Gen	3P	4X	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 48 primary and 24 secondary joints for a total of 72 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member Stress All. Hyp. 1 (ksi)	Member Stress All. Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A 36	2.9e+004	36	58	0	0	0	0	0	0
A7	2.9e+004	33	60	0	0	0	0	0	0
A500 Grade B (42)	2.9e+004	42	58	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
5/8 A394 TYPE0 N	0.625	0.75	11.15	1.125	1.5	0	0
5/8 A394	0.625	0.75	9.1	1.125	1.5	0	0
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0
3/4 A325	0.75	0.875	23.9	1	2.25	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
5/8 A394	708
5/8 A325	10
3/4 A325	3
5/8 A394 TYPE0 N	16

Angle Properties:

Angle Type	Angle Size (in)	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Number of Angles	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
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SAE	6X6X0.375	6	6	0.375	14.9	4.36	13.67	1.88	1.88	1.19	1	6	3	0	1.0000	0
SAE	5X5X0.375	5	5	0.375	12.3	3.61	11	1.56	1.56	0.99	1	5	2.5	0	1.0000	0
SAE	5X5X0.3125	5	5	0.3125	10.3	3.03	13.4	1.57	1.57	0.994	1	5	2.5	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	1	4	2	0	1.0000	0
SAE	3X3X0.1875	3	3	0.1875	3.71	1.09	13.33	0.939	0.939	0.596	1	3	1.5	0	1.0000	0
SAE	2.5X2.5X0.375	2.5	2.5	0.375	5.9	1.73	4.83	0.753	0.753	0.487	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.25	2.5	2.5	0.25	4.1	1.19	7.75	0.769	0.769	0.491	1	2.5	1.25	0	1.0000	0
SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	1	2.5	1.25	0	1.0000	0
SAE	2X2X0.25	2	2	0.25	3.19	0.94	5	0.609	0.609	0.391	1	2	1	0	1.0000	0
SAE	1.75X1.75X0.1875	1.75	1.75	0.1875	2.12	0.62	6	0.537	0.537	0.343	1	1.75	0.875	0	1.0000	0
SAU	5X3.5X0.3125	5	3.5	0.3125	8.7	2.56	13.4	1.61	1.03	0.766	1	5	1.75	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	1	3	1.25	0	1.0000	0
SAU	3X2X0.25	3	2	0.25	4.1	1.19	9.75	0.957	0.574	0.435	1	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	1	2.5	1	0	1.0000	0
Bar	6x3/4	6	0.75	0.75	15.3	4.5	8	0.2165	1.732	1.732	1	6	0	0	0.0000	0
Bar	2x1/4	2	0	0.25	1.7	0.5	8	1	1	1	1	2	0	0	0.0000	0
Bar	1.75x1/4	1.75	0	0.25	1.5	0.4375	7	0.305	0.061	0.305	1	1.75	0	0	0.0000	0
Pwmnt Pipe	HSS16"x0.5"	16	15.07	0	82.85	22.7	1	5.49	5.49	5.49	1	16	0	0	0.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Angle Width For Optimize (in)
Leg1	Leg1	SAE	4X4X0.25	A7	Beam	Leg	None	0.000
Leg2	Leg2	SAE	5X5X0.3125	A7	Beam	Leg	None	0.000
Leg3	Leg3	SAE	5X5X0.375	A7	Beam	Leg	None	0.000
Leg4	Leg4	SAE	6X6X0.375	A7	Beam	Leg	None	0.000
XBrace1	XBrace1	SAE	1.75X1.75X0.1875	A7	Truss Crossing	Diagonal	None	0.000
XBrace2	XBrace2	SAU	3X2X0.25	A7	Truss Crossing	Diagonal	None	0.000
XBrace3	XBrace3	SAE	2.5X2.5X0.25	A7	Truss Crossing	Diagonal	None	0.000
XBrace4	XBrace4	SAE	2.5X2.5X0.1875	A7	Truss Crossing	Diagonal	None	0.000
XBrace5	XBrace5	SAE	2X2X0.25	A7	T-Only	Other	None	0.000
XBrace6	XBrace6	SAE	2.5X2.5X0.1875	A7	T-Only	Other	None	0.000
XBrace7	XBrace7	SAU	3X2X0.25	A7	Truss	Other	None	0.000
Horz1	Horizontal 1	SAE	1.75X1.75X0.1875	A7	Truss	Other	None	0.000
Horz2	Horizontal 2	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
Horz3	Horizontal 3	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
Horz4	Horizontal 4	Bar	2x1/4	A7	T-Only	Other	None	0.000
Arm1	Ground Wire Arm	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
Arm2	Top Cross Arm	SAU	5X3.5X0.3125	A7	Beam	Other	None	0.000
Arm3	Middle Cross Arm	SAU	5X3.5X0.3125	A7	Beam	Other	None	0.000
Arm4	Bottom Cross Arm	SAU	5X3.5X0.3125	A7	Beam	Other	None	0.000
ArmBr1	Ground Wire Arm Brace	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
ArmBr2	Top Cross Arm Brace	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
ArmBr3	Middle Cross Arm Brace	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
ArmBr4	Bottom Cross Arm Brace	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
PWMount	HSS 16"x0.5" Powermount	Pwmnt	Pipe HSS16"x0.5"	A500 Grade B (42)	Beam	Other	None	0.000
PWMBrace	Powermount Brace	SAE	2.5X2.5X0.375	A 36	Truss	Other	None	0.000
Arm5	Top Cross Arm	SAE	2.5X2.5X0.1875	A7	Beam	Other	None	0.000
Arm6	Middle Cross Arm	SAE	3X3X0.1875	A7	Beam	Other	None	0.000
Arm7	Bottom Cross Arm	SAE	2.5X2.5X0.1875	A7	Beam	Other	None	0.000
ArmBr5	Ground Wire Arm Brace	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
PMBrace2	Powermount Brace 2	Bar	6x3/4	A 36	Beam	Other	None	0.000
Inner1	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	A 36	Truss	Other	None	0.000
XBrace8	XBrace8	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000

Inner1R L2.5x2.5x3/8 SAE 2.5X2.5X0.375 A 36 Truss Other None 0.000

Aggregate Angle Information:

Note: Estimate of surface area reported for painting purposes, not wind loading.

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAE	4X4X0.25	A7	68.00	90.67	448.80
SAE	5X5X0.3125	A7	40.00	66.67	412.00
SAE	5X5X0.375	A7	71.34	118.90	877.45
SAE	6X6X0.375	A7	148.79	297.58	2216.97
SAE	1.75X1.75X0.1875	A7	106.57	62.16	225.93
SAU	3X2X0.25	A7	124.96	104.14	512.35
SAU	3X2.5X0.25	A7	224.79	206.06	1011.56
SAE	2.5X2.5X0.25	A7	60.88	50.73	249.60
SAE	2.5X2.5X0.1875	A7	412.70	343.92	1266.99
SAE	2X2X0.25	A7	150.80	100.53	481.05
SAU	2.5X2X0.1875	A7	44.69	33.52	122.89
Bar	2x1/4	A7	10.00	3.33	17.00
SAU	5X3.5X0.3125	A7	99.68	141.22	867.23
Bar	1.75x1/4	A7	115.90	33.80	173.85
SAE	3X3X0.1875	A7	14.87	14.87	55.15
Pwmnt Pipe	HSS16"x0.5" A500 Grade B (42)		95.00	491.94	7870.75
SAE	2.5X2.5X0.375	A 36	87.32	72.76	515.16
Bar	6x3/4	A 36	3.75	4.22	57.38
SAE	1.75X1.75X0.1875	A 36	14.14	8.25	29.98

Sections:

The adjustment factors below only apply to dead load and wind areas that are calculated for members in the model. They do not apply to equipment or to manually input dead load and drag areas.

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Factor For EIA Only	Flat Face Factor For EIA Only	Ar Round Face Factor For EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	8S	1.000	3.200	3.200	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	None
2	7P	1.100	3.300	3.300	1.000	1.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000	None

Angle Member Connectivity:

Member Bolt Label Spacing	Group Shear Tension Rest. Label Path	Section Label Path	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Holes	Bolt # Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)
0	g1P	Leg1	XY-Symmetry	1P	2P	1	4	1	1	1	5/8 A394	0	4	1		0	0	0
0	g1X	Leg1	X-GenXY	1X	2X	1	4	1	1	1	5/8 A394	0	4	1		0	0	0

0	g1XY	Leg1	0	XY-GenXY	1XY	2XY	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g1Y	Leg1	0	Y-GenXY	1Y	2Y	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g2P	Leg1	0	XY-Symmetry	2P	3P	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g2X	Leg1	0	X-GenXY	2X	3X	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g2XY	Leg1	0	XY-GenXY	2XY	3XY	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g2Y	Leg1	0	Y-GenXY	2Y	3Y	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g3P	Leg1	0	XY-Symmetry	3P	15S	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g3X	Leg1	0	X-GenXY	3X	15X	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g3XY	Leg1	0	XY-GenXY	3XY	15XY	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
0	g3Y	Leg1	0	Y-GenXY	3Y	15Y	1	4	1	1	1	5/8 A394	0	2	1	0	0	0	
4	g4P	Leg1	22.25	XY-Symmetry	15S	4P	1	4	1	1	1	5/8 A394	14	2.91	1	Both	0.875	2.375	1.5
4	g4X	Leg1	22.25	X-GenXY	15X	4X	1	4	1	1	1	5/8 A394	14	2.91	1	Both	0.875	2.375	1.5
4	g4XY	Leg1	22.25	XY-GenXY	15XY	4XY	1	4	1	1	1	5/8 A394	14	2.91	1	Both	0.875	2.375	1.5
4	g4Y	Leg1	22.25	Y-GenXY	15Y	4Y	1	4	1	1	1	5/8 A394	14	2.91	1	Both	0.875	2.375	1.5
0	g5P	Leg2	0	XY-Symmetry	4P	5P	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g5X	Leg2	0	X-GenXY	4X	5X	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g5XY	Leg2	0	XY-GenXY	4XY	5XY	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g5Y	Leg2	0	Y-GenXY	4Y	5Y	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
4	g6P	Leg2	21.375	XY-Symmetry	5P	6P	1	4	1	1	1	5/8 A394	18	4	1	Both	1.375	3	1.5
4	g6X	Leg2	21.375	X-GenXY	5X	6X	1	4	1	1	1	5/8 A394	18	4	1	Both	1.375	3	1.5
4	g6XY	Leg2	21.375	XY-GenXY	5XY	6XY	1	4	1	1	1	5/8 A394	18	4	1	Both	1.375	3	1.5
4	g6Y	Leg2	21.375	Y-GenXY	5Y	6Y	1	4	1	1	1	5/8 A394	18	4	1	Both	1.375	3	1.5
0	g7P	Leg3	0	XY-Symmetry	6P	8S	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g7X	Leg3	0	X-GenXY	6X	8X	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g7XY	Leg3	0	XY-GenXY	6XY	8XY	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g7Y	Leg3	0	Y-GenXY	6Y	8Y	1	4	1	1	1	5/8 A394	0	4	1	0	0	0	
0	g8P	Leg3	0	XY-Symmetry	8S	9S	1	4	1	1	1	5/8 A394	0	3.5	1	0	0	0	
0	g8X	Leg3	0	X-GenXY	8X	9X	1	4	1	1	1	5/8 A394	0	3.5	1	0	0	0	
0	g8XY	Leg3	0	XY-GenXY	8XY	9XY	1	4	1	1	1	5/8 A394	0	3.5	1	0	0	0	
0	g8Y	Leg3	0	Y-GenXY	8Y	9Y	1	4	1	1	1	5/8 A394	0	3.5	1	0	0	0	

0	0	0	0																
3	g9P	Leg3	0	XY-Symmetry	9S	10S	1	4	1	1	1	5/8 A394	16	3	1	Both	0.9375	2.5625	1.5
3	19.75	2.875	0																
3	g9X	Leg3	0	X-GenXY	9X	10X	1	4	1	1	1	5/8 A394	16	3	1	Both	0.9375	2.5625	1.5
3	19.75	2.875	0																
3	g9XY	Leg3	0	XY-GenXY	9XY	10XY	1	4	1	1	1	5/8 A394	16	3	1	Both	0.9375	2.5625	1.5
3	19.75	2.875	0																
3	g9Y	Leg3	0	Y-GenXY	9Y	10Y	1	4	1	1	1	5/8 A394	16	3	1	Both	0.9375	2.5625	1.5
3	19.75	2.875	0																
4	g10P	Leg4	0	XY-Symmetry	10S	11S	1	4	0.5	0.5	0.5	5/8 A394	18	2.92	1	Both	2.375	4	1.5
4	27.25	5.75	0																
4	g10X	Leg4	0	X-GenXY	10X	11X	1	4	0.5	0.5	0.5	5/8 A394	18	2.92	1	Both	2.375	4	1.5
4	27.25	5.75	0																
4	g10XY	Leg4	0	XY-GenXY	10XY	11XY	1	4	0.5	0.5	0.5	5/8 A394	18	2.92	1	Both	2.375	4	1.5
4	27.25	5.75	0																
4	g10Y	Leg4	0	Y-GenXY	10Y	11Y	1	4	0.5	0.5	0.5	5/8 A394	18	2.92	1	Both	2.375	4	1.5
4	27.25	5.75	0																
4	g11P	Leg4	0	XY-Symmetry	11S	7P	1	4	0.333	0.333	0.333	5/8 A394	18	3.15	1	Both	1.9375	3.5625	1.5
4	25.75	4.875	0																
4	g11X	Leg4	0	X-GenXY	11X	7X	1	4	0.333	0.333	0.333	5/8 A394	18	3.15	1	Both	1.9375	3.5625	1.5
4	25.75	4.875	0																
4	g11XY	Leg4	0	XY-GenXY	11XY	7XY	1	4	0.333	0.333	0.333	5/8 A394	18	3.15	1	Both	1.9375	3.5625	1.5
4	25.75	4.875	0																
4	g11Y	Leg4	0	Y-GenXY	11Y	7Y	1	4	0.333	0.333	0.333	5/8 A394	18	3.15	1	Both	1.9375	3.5625	1.5
4	25.75	4.875	0																
2	g12P	XBrace1	0	XY-Symmetry	1P	2X	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g12X	XBrace1	0	X-GenXY	1X	2P	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g12XY	XBrace1	0	XY-GenXY	1XY	2Y	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g12Y	XBrace1	0	Y-GenXY	1Y	2XY	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g13P	XBrace1	0	XY-Symmetry	1P	2Y	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g13X	XBrace1	0	X-GenXY	1X	2XY	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g13XY	XBrace1	0	XY-GenXY	1XY	2X	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
2	g13Y	XBrace1	0	Y-GenXY	1Y	2P	2	5	0.75	0.5	0.5	5/8 A394	2	1	1	Short only	0.8125	0	1
2	0	0	0																
3	g14P	XBrace2	0	XY-Symmetry	2P	3X	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g14X	XBrace2	0	X-GenXY	2X	3P	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g14XY	XBrace2	0	XY-GenXY	2XY	3Y	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g14Y	XBrace2	0	Y-GenXY	2Y	3XY	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g15P	XBrace2	0	XY-Symmetry	2P	3Y	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g15X	XBrace2	0	X-GenXY	2X	3XY	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g15XY	XBrace2	0	XY-GenXY	2XY	3X	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g15Y	XBrace2	0	Y-GenXY	2Y	3P	2	5	0.5	0.75	0.5	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g16P	XBrace7	0	XY-Symmetry	3P	17S	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																

3	g16X	XBrace7	0	X-GenXY	3X	17S	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g16XY	XBrace7	0	XY-GenXY	3XY	17Y	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g16Y	XBrace7	0	Y-GenXY	3Y	17Y	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g17P	XBrace7	0	XY-Symmetry	17S	4P	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g17X	XBrace7	0	X-GenXY	17S	4X	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g17XY	XBrace7	0	XY-GenXY	17Y	4XY	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g17Y	XBrace7	0	Y-GenXY	17Y	4Y	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g18P	XBrace7	0	XY-Symmetry	3P	16S	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g18X	XBrace7	0	X-GenXY	3X	16X	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g18XY	XBrace7	0	XY-GenXY	3XY	16X	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g18Y	XBrace7	0	Y-GenXY	3Y	16S	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g19P	XBrace7	0	XY-Symmetry	16S	4P	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g19X	XBrace7	0	X-GenXY	16X	4X	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g19XY	XBrace7	0	XY-GenXY	16X	4XY	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
3	g19Y	XBrace7	0	Y-GenXY	16S	4Y	2	5	1	1.5	1	5/8 A394	3	1.06	1	Long only	0.875	1.4375	1
3	3.875	0.5	0																
2	g20P	XBrace8	0	XY-Symmetry	4P	5X	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g20X	XBrace8	0	X-GenXY	4X	5P	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g20XY	XBrace8	0	XY-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g20Y	XBrace8	0	Y-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g21P	XBrace8	0	XY-Symmetry	4P	5Y	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g21X	XBrace8	0	X-GenXY	4X	5XY	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g21XY	XBrace8	0	XY-GenXY	4XY	5X	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g21Y	XBrace8	0	Y-GenXY	4Y	5P	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g22P	XBrace8	0	XY-Symmetry	5P	6X	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g22X	XBrace8	0	X-GenXY	5X	6P	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g22XY	XBrace8	0	XY-GenXY	5XY	6Y	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g22Y	XBrace8	0	Y-GenXY	5Y	6XY	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g23P	XBrace8	0	XY-Symmetry	5P	6Y	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g23X	XBrace8	0	X-GenXY	5X	6XY	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1
2	2.625	0.875	0																
2	g23XY	XBrace8	0	XY-GenXY	5XY	6X	2	5	0.5	0.75	0.5	5/8 A394	4	1.68	1	Long only	0.875	2	1

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g31P	XBrace5		XY-Symmetry	10S	11Y	3	6	1	0.577	0.577	5/8 A394	3	1	1 Short only	0.875	0	1
1.5625	0	0	0														
g31X	XBrace5		X-GenXY	10X	11XY	3	6	1	0.577	0.577	5/8 A394	3	1	1 Short only	0.875	0	1
1.5625	0	0	0														
g31XY	XBrace5		XY-GenXY	10XY	11X	3	6	1	0.577	0.577	5/8 A394	3	1	1 Short only	0.875	0	1
1.5625	0	0	0														
g31Y	XBrace5		Y-GenXY	10Y	11S	3	6	1	0.577	0.577	5/8 A394	3	1	1 Short only	0.875	0	1
1.5625	0	0	0														
g32P	XBrace6		XY-Symmetry	11S	7X	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g32X	XBrace6		X-GenXY	11X	7P	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g32XY	XBrace6		XY-GenXY	11XY	7Y	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g32Y	XBrace6		Y-GenXY	11Y	7XY	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g33P	XBrace6		XY-Symmetry	11S	7Y	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g33X	XBrace6		X-GenXY	11X	7XY	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g33XY	XBrace6		XY-GenXY	11XY	7X	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g33Y	XBrace6		Y-GenXY	11Y	7P	3	6	1	0.409	0.409	5/8 A394	3	1	1 Short only	1.5	0	1
1.625	0	0	0														
g34P	Horz1		X-Symmetry	1P	1Y	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g34X	Horz1		X-Gen	1X	1XY	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g35P	Horz1		X-Symmetry	2P	2Y	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g35X	Horz1		X-Gen	2X	2XY	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g36P	Horz1		X-Symmetry	4P	4Y	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g36X	Horz1		X-Gen	4X	4XY	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g37P	Horz1		X-Symmetry	6P	6Y	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g37X	Horz1		X-Gen	6X	6XY	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g38P	Horz2		X-Symmetry	10S	10Y	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	0.875	0	1
2	0	0	0														
g38X	Horz2		X-Gen	10X	10XY	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	0.875	0	1
2	0	0	0														
g39P	Horz2		Y-Symmetry	10X	10S	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	0.875	0	1
2	0	0	0														
g39Y	Horz2		Y-Gen	10XY	10Y	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	0.875	0	1
2	0	0	0														
g40P	Horz3		X-Symmetry	11S	11Y	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	1.25	0	1
1.625	0	0	0														
g40X	Horz3		X-Gen	11X	11XY	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	1.25	0	1
1.625	0	0	0														
g41P	Horz3		Y-Symmetry	11X	11S	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	1.25	0	1
1.625	0	0	0														
g41Y	Horz3		Y-Gen	11XY	11Y	3	4	1	0.5	0.5	5/8 A394	2	1	1 Short only	1.25	0	1
1.625	0	0	0														
g42P	Horz1		XY-Symmetry	15S	16S	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
0	0	0	0														
g42X	Horz1		X-GenXY	15X	16X	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1

0	0	0	0															
g42XY	Horz1	0	0	XY-GenXY	15XY	16X	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
g42Y	Horz1	0	0	Y-GenXY	15Y	16S	3	4	1	1	1	5/8 A394	1	1	1 Short only	0.875	0	1
g43P	Horz4	0	0	XY-Symmetry	15X	17S	3	4	1	2	1	5/8 A394	1	1	1 Long only	1	0	1
g43X	Horz4	0	0	X-GenXY	15S	17S	3	4	1	2	1	5/8 A394	1	1	1 Long only	1	0	1
g43XY	Horz4	0	0	XY-GenXY	15Y	17Y	3	4	1	2	1	5/8 A394	1	1	1 Long only	1	0	1
g43Y	Horz4	0	0	Y-GenXY	15XY	17Y	3	4	1	2	1	5/8 A394	1	1	1 Long only	1	0	1
g44P	Arm1	0	0	XY-Symmetry	18X	1X	3	5	1	0.5	0.5	5/8 A394	2	1	1 Long only	1.25	0	2.375
g44X	Arm1	0	0	X-GenXY	18P	1P	3	5	1	0.5	0.5	5/8 A394	2	1	1 Long only	1.25	0	2.375
g44XY	Arm1	0	0	XY-GenXY	18P	1Y	3	5	1	0.5	0.5	5/8 A394	2	1	1 Long only	1.25	0	2.375
g44Y	Arm1	0	0	Y-GenXY	18X	1XY	3	5	1	0.5	0.5	5/8 A394	2	1	1 Long only	1.25	0	2.375
g45P	Arm1	0	0	Y-Symmetry	1X	1P	3	5	1	1	1	5/8 A394	2	1	1 Long only	1.25	0	2.375
g45Y	Arm1	0	0	Y-Gen	1XY	1Y	3	5	1	1	1	5/8 A394	2	1	1 Long only	1.25	0	2.375
g46P	Arm2	0.375	0	Y-Symmetry	19P	2X	3	5	1	0.5	0.5	5/8 A394	3	2	1 Long only	1	3	2.375
g46Y	Arm2	0.375	0	Y-Gen	19P	2XY	3	5	1	0.5	0.5	5/8 A394	3	2	1 Long only	1	3	2.375
g47P	Arm2	0.375	0	Y-Symmetry	2X	2P	3	5	1	1	1	5/8 A394	3	2	1 Long only	1	3	2.75
g47Y	Arm2	0.375	0	Y-Gen	2XY	2Y	3	5	1	1	1	5/8 A394	3	2	1 Long only	1	3	2.75
g48P	Arm3	0.375	0	Y-Symmetry	20P	4X	3	5	1	0.5	0.5	5/8 A394	3	2	1 Long only	1	3	2.75
g48Y	Arm3	0.375	0	Y-Gen	20P	4XY	3	5	1	0.5	0.5	5/8 A394	3	2	1 Long only	1	3	2.75
g49P	Arm3	0.375	0	Y-Symmetry	4X	4P	3	5	1	1	1	5/8 A394	3	2	1 Long only	1	3	2.375
g49Y	Arm3	0.375	0	Y-Gen	4XY	4Y	3	5	1	1	1	5/8 A394	3	2	1 Long only	1	3	2.375
g50P	Arm4	0.5	0	Y-Symmetry	21P	6X	3	4	1	0.5	0.5	5/8 A394	3	2	1 Long only	1	3	3.125
g50Y	Arm4	0.5	0	Y-Gen	21P	6XY	3	4	1	0.5	0.5	5/8 A394	3	2	1 Long only	1	3	3.125
g51P	Arm4	0.5	0	Y-Symmetry	6X	6P	3	4	1	1	1	5/8 A394	3	2	1 Long only	1	3	3.125
g51Y	Arm4	0.5	0	Y-Gen	6XY	6Y	3	4	1	1	1	5/8 A394	3	2	1 Long only	1	3	3.125
g52P	ArmBr1	0	0	None	18P	30P	2	4	1	1	1	5/8 A394	1	1	1 Short only	1.25	0	1
g53P	ArmBr2	0	0	Y-Symmetry	19P	1X	2	4	1	1	1	5/8 A394	1	1	1 Long only	0.875	0	1
g53Y	ArmBr2	0	0	Y-Gen	19P	1XY	2	4	1	1	1	5/8 A394	1	1	1 Long only	0.875	0	1
g54P	ArmBr3	0	0	Y-Symmetry	20P	15X	2	4	1	1	1	5/8 A394	1	1	1 Long only	0.875	0	1
g54Y	ArmBr3	0	0	Y-Gen	20P	15XY	2	4	1	1	1	5/8 A394	1	1	1 Long only	0.875	0	1

0	g55P	ArmBr4	0	0	Y-Symmetry	21P	5X	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g55Y	ArmBr4	0	0	Y-Gen	21P	5XY	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
2	g56P	Arm5	0	0	Y-Symmetry	30P	2P	3	5	1	1	1	5/8 A394	2	1	1	Short only	1.25	0	1
2	g56Y	Arm5	0	0	Y-Gen	30P	2Y	3	5	1	1	1	5/8 A394	2	1	1	Short only	1.25	0	1
2	g57P	Arm7	0	0	Y-Symmetry	32P	6P	3	5	1	1	1	5/8 A394	2	1	1	Short only	1.25	0	1
2	g57Y	Arm7	0	0	Y-Gen	32P	6Y	3	5	1	1	1	5/8 A394	2	1	1	Short only	1.25	0	1
1.75	g58P	Arm6	0	0	Y-Symmetry	31P	4P	3	5	1	1	1	5/8 A394	3	1	1	Short only	1.5	0	1
1.75	g58Y	Arm6	0	0	Y-Gen	31P	4Y	3	5	1	1	1	5/8 A394	3	1	1	Short only	1.5	0	1
0	g59P	ArmBr5	0	0	None	18X	19P	3	4	1	1	1	5/8 A394	1	1	1	Long only	1.25	0	1
0	g60P	ArmBr2	0	0	Y-Symmetry	30P	1P	3	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g60Y	ArmBr2	0	0	Y-Gen	30P	1Y	3	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g61P	ArmBr3	0	0	Y-Symmetry	31P	15S	3	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g61Y	ArmBr3	0	0	Y-Gen	31P	15Y	3	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g62P	ArmBr4	0	0	Y-Symmetry	32P	5P	3	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g62Y	ArmBr4	0	0	Y-Gen	32P	5Y	3	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1
0	g63P	PWMount	0	0	None	22P	23P	1	4	1	1	1		0	0	0		0	0	0
0	g64P	PWMount	0	0	None	23P	24P	1	4	1	1	1		0	0	0		0	0	0
0	g65P	PWMount	0	0	None	24P	25P	1	4	1	1	1		0	0	0		0	0	0
0	g66P	PWMount	0	0	None	25P	26P	1	4	1	1	1		0	0	0		0	0	0
0	g67P	PWMount	0	0	None	26P	27P	1	4	1	1	1		0	0	0		0	0	0
0	g68P	PWMount	0	0	None	27P	28P	1	4	1	1	1		0	0	0		0	0	0
0	g69P	PWMount	0	0	None	28P	29P	1	4	1	1	1		0	0	0		0	0	0
0	g71P	PWMBrace	0	0	X-Symmetry	10X	24P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g71X	PWMBrace	0	0	X-Gen	10S	24P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g72P	PWMBrace	0	0	X-Symmetry	6X	25P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g72X	PWMBrace	0	0	X-Gen	6P	25P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g73P	PWMBrace	0	0	X-Symmetry	4X	26P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g73X	PWMBrace	0	0	X-Gen	4P	26P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g75P	PWMBrace	0	0	X-Symmetry	1X	28P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	g75X	PWMBrace	0	0	X-Gen	1P	28P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1

0	0	0	0																
0	g76P	PMBrace2	0	None	28P	38P	3	4	1	1	1	3/4 A325	1	1	1	Long only	3	0	1.5
0	0	0	0																
0	g78P	PMBrace2	0	None	26P	36P	3	4	1	1	1	3/4 A325	1	1	1	Long only	3	0	1.5
0	0	0	0																
0	g79P	PMBrace2	0	None	25P	35P	3	4	1	1	1	3/4 A325	1	1	1	Long only	3	0	1.5
0	0	0	0																
0	g80P	Inner1R	0	XY-Symmetry	1X	38P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g80X	Inner1R	0	X-GenXY	1P	38P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g80XY	Inner1R	0	XY-GenXY	1Y	38P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g80Y	Inner1R	0	Y-GenXY	1XY	38P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g81P	Inner1	0	XY-Symmetry	2X	37P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g81X	Inner1	0	X-GenXY	2P	37P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g81XY	Inner1	0	XY-GenXY	2Y	37P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g81Y	Inner1	0	Y-GenXY	2XY	37P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g82P	Inner1R	0	XY-Symmetry	4X	36P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g82X	Inner1R	0	X-GenXY	4P	36P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g82XY	Inner1R	0	XY-GenXY	4Y	36P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g82Y	Inner1R	0	Y-GenXY	4XY	36P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g83P	Inner1R	0	XY-Symmetry	6X	35P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g83X	Inner1R	0	X-GenXY	6P	35P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g83XY	Inner1R	0	XY-GenXY	6Y	35P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g83Y	Inner1R	0	Y-GenXY	6XY	35P	3	4	1	1	1	5/8 A394 TYPE0 N	1	1	1	Short only	0.625	0	1
0	0	0	0																
0	g84P	PWMBrace	0	X-Symmetry	10XY	24P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	0	0	0																
0	g84X	PWMBrace	0	X-Gen	10Y	24P	3	4	1	1	1	5/8 A325	1	1	1	Short only	1.25	0	1
0	0	0	0																

Member Capacities and Overrides:

Member Override Label Comp. Capacity	Group Override Label Comp. Capacity	Design Override Comp. Tension Capacity	Comp. Override Control Tension Criterion Control	Design Override Tension Face Capacity Member	Tension Control Criterion	L/r	Length (ft)	L/r	Connection Comp. Capacity	Connection Shear Capacity	Connection Bearing Capacity	Net Warnings Section or Errors Tension Capacity	Rupture Tension Capacity	RTE Dist. Tension	End Dist. Tension	Edge Dist. Tension	Override Comp. Capacity
Unsup. (kips)	Criterion (kips)	Criterion (kips)	ship (kips)						(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)
g1P	Leg1	53.509	L/r	39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000

0.000		0.000	Automatic											
g1X	Leg1	53.509	L/r 39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g1XY	Leg1	53.509	L/r 39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g1Y	Leg1	53.509	L/r 39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g2P	Leg1	48.884	L/r 51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g2X	Leg1	48.884	L/r 51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g2XY	Leg1	48.884	L/r 51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g2Y	Leg1	48.884	L/r 51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g3P	Leg1	60.236	L/r 51.645	Net Sect	45	3.00	60.236	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g3X	Leg1	60.236	L/r 51.645	Net Sect	45	3.00	60.236	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g3XY	Leg1	60.236	L/r 51.645	Net Sect	45	3.00	60.236	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g3Y	Leg1	60.236	L/r 51.645	Net Sect	45	3.00	60.236	0.000	0.000	51.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g4P	Leg1	60.236	L/r 46.014	Net Sect	45	3.00	60.236	127.400	196.875	46.014	180.147	0.000	0.000	0.000
0.000		0.000	Automatic											
g4X	Leg1	60.236	L/r 46.014	Net Sect	45	3.00	60.236	127.400	196.875	46.014	180.147	0.000	0.000	0.000
0.000		0.000	Automatic											
g4XY	Leg1	60.236	L/r 46.014	Net Sect	45	3.00	60.236	127.400	196.875	46.014	180.147	0.000	0.000	0.000
0.000		0.000	Automatic											
g4Y	Leg1	60.236	L/r 46.014	Net Sect	45	3.00	60.236	127.400	196.875	46.014	180.147	0.000	0.000	0.000
0.000		0.000	Automatic											
g5P	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	0.000	0.000	69.052	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g5X	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	0.000	0.000	69.052	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g5XY	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	0.000	0.000	69.052	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g5Y	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	0.000	0.000	69.052	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g6P	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	163.800	316.406	69.052	271.406	0.000	0.000	0.000
0.000		0.000	Automatic											
g6X	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	163.800	316.406	69.052	271.406	0.000	0.000	0.000
0.000		0.000	Automatic											
g6XY	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	163.800	316.406	69.052	271.406	0.000	0.000	0.000
0.000		0.000	Automatic											
g6Y	Leg2	89.489	L/r 69.052	Net Sect	60	5.00	89.489	163.800	316.406	69.052	271.406	0.000	0.000	0.000
0.000		0.000	Automatic											
g7P	Leg3	106.030	L/r 82.005	Net Sect	62	5.10	106.030	0.000	0.000	82.005	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g7X	Leg3	106.030	L/r 82.005	Net Sect	62	5.10	106.030	0.000	0.000	82.005	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g7XY	Leg3	106.030	L/r 82.005	Net Sect	62	5.10	106.030	0.000	0.000	82.005	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g7Y	Leg3	106.030	L/r 82.005	Net Sect	62	5.10	106.030	0.000	0.000	82.005	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g8P	Leg3	100.267	L/r 86.645	Net Sect	74	6.11	100.267	0.000	0.000	86.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g8X	Leg3	100.267	L/r 86.645	Net Sect	74	6.11	100.267	0.000	0.000	86.645	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											

g8XY	Leg3	100.267	L/r	86.645	Net Sect	74	6.11	100.267	0.000	0.000	86.645	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g8Y	Leg3	100.267	L/r	86.645	Net Sect	74	6.11	100.267	0.000	0.000	86.645	0.000	0.000	0.000	0.000
0.000		0.000		Automatic											
g9P	Leg3	96.992	L/r	91.286	Net Sect	80	6.62	96.992	145.600	337.499	91.286	302.203	0.000	0.000	0.000
0.000		0.000		Automatic											
g9X	Leg3	96.992	L/r	91.286	Net Sect	80	6.62	96.992	145.600	337.499	91.286	302.203	0.000	0.000	0.000
0.000		0.000		Automatic											
g9XY	Leg3	96.992	L/r	91.286	Net Sect	80	6.62	96.992	145.600	337.499	91.286	302.203	0.000	0.000	0.000
0.000		0.000		Automatic											
g9Y	Leg3	96.992	L/r	91.286	Net Sect	80	6.62	96.992	145.600	337.499	91.286	302.203	0.000	0.000	0.000
0.000		0.000		Automatic											
g10P	Leg4	120.858	L/r	116.779	Net Sect	75	14.78	120.858	163.800	379.687	116.779	439.031	0.000	0.000	0.000
0.000		0.000		Automatic											
g10X	Leg4	120.858	L/r	116.779	Net Sect	75	14.78	120.858	163.800	379.687	116.779	439.031	0.000	0.000	0.000
0.000		0.000		Automatic											
g10XY	Leg4	120.858	L/r	116.779	Net Sect	75	14.78	120.858	163.800	379.687	116.779	439.031	0.000	0.000	0.000
0.000		0.000		Automatic											
g10Y	Leg4	120.858	L/r	116.779	Net Sect	75	14.78	120.858	163.800	379.687	116.779	439.031	0.000	0.000	0.000
0.000		0.000		Automatic											
g11P	Leg4	120.373	L/r	114.644	Net Sect	75	22.42	120.373	163.800	379.687	114.644	407.952	0.000	0.000	0.000
0.000		0.000		Automatic											
g11X	Leg4	120.373	L/r	114.644	Net Sect	75	22.42	120.373	163.800	379.687	114.644	407.952	0.000	0.000	0.000
0.000		0.000		Automatic											
g11XY	Leg4	120.373	L/r	114.644	Net Sect	75	22.42	120.373	163.800	379.687	114.644	407.952	0.000	0.000	0.000
0.000		0.000		Automatic											
g11Y	Leg4	120.373	L/r	114.644	Net Sect	75	22.42	120.373	163.800	379.687	114.644	407.952	0.000	0.000	0.000
0.000		0.000		Automatic											
g12P	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g12X	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g12XY	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g12Y	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g13P	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g13X	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g13XY	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g13Y	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000
0.000		0.000		Automatic											
g14P	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g14X	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g14XY	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g14Y	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g15P	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g15X	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g15XY	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000
0.000		0.000		Automatic											
g15Y	XBrace2	22.446	L/r	27.300	Shear	122	7.81	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000

0.000		0.000	Automatic												
g16P	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g16X	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g16XY	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g16Y	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g17P	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g17X	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g17XY	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g17Y	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g18P	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g18X	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g18XY	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g18Y	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g19P	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g19X	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g19XY	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g19Y	XBrace7	22.446	L/r 27.300	Shear	122	3.91	22.446	27.300	42.187	29.440	37.500	0.000	0.000	0.000	
0.000		0.000	Automatic												
g20P	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g20X	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g20XY	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g20Y	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g21P	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g21X	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g21XY	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g21Y	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g22P	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g22X	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g22XY	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g22Y	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												
g23P	XBrace8	32.363	L/r 29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000	
0.000		0.000	Automatic												

g23X	XBrace8	32.363	L/r	29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000
0.000		0.000		Automatic											
g23XY	XBrace8	32.363	L/r	29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000
0.000		0.000		Automatic											
g23Y	XBrace8	32.363	L/r	29.551	Net Sect	85	7.07	32.363	36.400	56.250	29.551	30.844	0.000	0.000	0.000
0.000		0.000		Automatic											
g24P	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g24X	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g24XY	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g24Y	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g25P	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g25X	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g25XY	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g25Y	XBrace3	26.005	L/r	24.375	Rupture	104	7.61	26.005	27.300	42.187	29.774	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g26P	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g26X	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g26XY	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g26Y	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g27P	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g27X	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g27XY	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g27Y	XBrace4	15.779	L/r	18.281	Rupture	130	9.43	15.779	27.300	31.641	22.613	18.281	0.000	0.000	0.000
0.000		0.000		Automatic											
g28P	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g28X	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g28XY	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g28Y	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g29P	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g29X	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g29XY	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g29Y	XBrace4	12.945	L/r	18.200	Shear	148	11.10	12.945	18.200	21.094	22.613	18.750	0.000	0.000	0.000
0.000		0.000		Automatic											
g30P	XBrace5	3.567	L/r	22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g30X	XBrace5	3.567	L/r	22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000		Automatic											
g30XY	XBrace5	3.567	L/r	22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000

0.000		0.000	Automatic											
g30Y	XBrace5	3.567	L/r 22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000	Automatic											
g31P	XBrace5	3.567	L/r 22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000	Automatic											
g31X	XBrace5	3.567	L/r 22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000	Automatic											
g31XY	XBrace5	3.567	L/r 22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000	Automatic											
g31Y	XBrace5	3.567	L/r 22.349	Net Sect	371	18.85	3.567	27.300	42.187	22.349	24.375	0.000	0.000	0.000
0.000		0.000	Automatic											
g32P	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g32X	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g32XY	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g32Y	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g33P	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g33X	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g33XY	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g33Y	XBrace6	2.666	L/r 22.613	Net Sect	431	27.94	2.666	27.300	31.641	22.613	22.992	0.000	0.000	0.000
0.000		0.000	Automatic											
g34P	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g34X	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g35P	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g35X	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g36P	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g36X	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g37P	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g37X	Horz1	5.799	L/r 7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic											
g38P	Horz2	10.412	L/r 15.750	Rupture	149	9.86	10.412	18.200	21.094	17.096	15.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g38X	Horz2	10.412	L/r 15.750	Rupture	149	9.86	10.412	18.200	21.094	17.096	15.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g39P	Horz2	10.412	L/r 15.750	Rupture	149	9.86	10.412	18.200	21.094	17.096	15.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g39Y	Horz2	10.412	L/r 15.750	Rupture	149	9.86	10.412	18.200	21.094	17.096	15.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g40P	Horz3	12.054	L/r 18.200	Shear	176	13.89	12.054	18.200	28.125	29.626	20.719	0.000	0.000	0.000
0.000		0.000	Automatic											
g40X	Horz3	12.054	L/r 18.200	Shear	176	13.89	12.054	18.200	28.125	29.626	20.719	0.000	0.000	0.000
0.000		0.000	Automatic											
g41P	Horz3	12.054	L/r 18.200	Shear	176	13.89	12.054	18.200	28.125	29.626	20.719	0.000	0.000	0.000
0.000		0.000	Automatic											
g41Y	Horz3	12.054	L/r 18.200	Shear	176	13.89	12.054	18.200	28.125	29.626	20.719	0.000	0.000	0.000
0.000		0.000	Automatic											

g42P	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic												
g42X	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic												
g42XY	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic												
g42Y	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000
0.000		0.000	Automatic												
g43P	Horz4	9.100	Shear	9.100	Shear	60	2.50	12.648	9.100	14.062	9.281	10.781	0.000	0.000	0.000
0.000		0.000	Automatic												
g43X	Horz4	9.100	Shear	9.100	Shear	60	2.50	12.648	9.100	14.062	9.281	10.781	0.000	0.000	0.000
0.000		0.000	Automatic												
g43XY	Horz4	9.100	Shear	9.100	Shear	60	2.50	12.648	9.100	14.062	9.281	10.781	0.000	0.000	0.000
0.000		0.000	Automatic												
g43Y	Horz4	9.100	Shear	9.100	Shear	60	2.50	12.648	9.100	14.062	9.281	10.781	0.000	0.000	0.000
0.000		0.000	Automatic												
g44P	Arm1	18.200	Shear	18.200	Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
g44X	Arm1	18.200	Shear	18.200	Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
g44XY	Arm1	18.200	Shear	18.200	Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
g44Y	Arm1	18.200	Shear	18.200	Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
g45P	Arm1	18.200	Shear	18.200	Shear	114	5.00	26.226	18.200	28.125	33.338	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
g45Y	Arm1	18.200	Shear	18.200	Shear	114	5.00	26.226	18.200	28.125	33.338	28.125	0.000	0.000	0.000
0.000		0.000	Automatic												
g46P	Arm2	27.300	Shear	24.961	Rupture	78	9.99	60.563	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g46Y	Arm2	27.300	Shear	24.961	Rupture	78	9.99	60.563	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g47P	Arm2	27.300	Shear	24.961	Rupture	78	5.00	60.534	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g47Y	Arm2	27.300	Shear	24.961	Rupture	78	5.00	60.534	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g48P	Arm3	27.300	Shear	24.961	Rupture	113	14.39	51.520	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g48Y	Arm3	27.300	Shear	24.961	Rupture	113	14.39	51.520	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g49P	Arm3	27.300	Shear	24.961	Rupture	78	5.00	60.534	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g49Y	Arm3	27.300	Shear	24.961	Rupture	78	5.00	60.534	27.300	52.734	62.110	24.961	0.000	0.000	0.000
0.000		0.000	Automatic												
g50P	Arm4	27.300	Shear	26.250	Rupture	82	10.47	59.638	27.300	52.734	62.110	26.250	0.000	0.000	0.000
0.000		0.000	Automatic												
g50Y	Arm4	27.300	Shear	26.250	Rupture	82	10.47	59.638	27.300	52.734	62.110	26.250	0.000	0.000	0.000
0.000		0.000	Automatic												
g51P	Arm4	27.300	Shear	26.250	Rupture	78	5.00	60.534	27.300	52.734	62.110	26.250	0.000	0.000	0.000
0.000		0.000	Automatic												
g51Y	Arm4	27.300	Shear	26.250	Rupture	78	5.00	60.534	27.300	52.734	62.110	26.250	0.000	0.000	0.000
0.000		0.000	Automatic												
g52P	ArmBr1	4.325	L/r	9.100	Shear	244	10.08	4.325	9.100	10.547	22.613	9.375	0.000	0.000	0.000
0.000		0.000	Automatic		KL/R value of 244.31 exceeds maximum of 200.00 for member "g52P" ??										
g53P	ArmBr2	0.026	L/r	7.425	Net Sect	2197	11.17	0.026	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic												
g53Y	ArmBr2	0.026	L/r	7.425	Net Sect	2197	11.17	0.026	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic												
g54P	ArmBr3	0.015	L/r	7.425	Net Sect	2891	14.70	0.015	9.100	14.062	7.425	9.750	0.000	0.000	0.000

0.000		0.000	Automatic											
g54Y	ArmBr3	0.015	L/r 7.425	Net Sect	2891	14.70	0.015	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g55P	ArmBr4	0.024	L/r 7.425	Net Sect	2282	11.60	0.024	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g55Y	ArmBr4	0.024	L/r 7.425	Net Sect	2282	11.60	0.024	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g56P	Arm5	18.200	Shear 18.070	Rupture	86	3.54	20.689	18.200	21.094	22.613	18.070	0.000	0.000	0.000
0.000		0.000	Automatic											
g56Y	Arm5	18.200	Shear 18.070	Rupture	86	3.54	20.689	18.200	21.094	22.613	18.070	0.000	0.000	0.000
0.000		0.000	Automatic											
g57P	Arm7	18.200	Shear 18.070	Rupture	95	3.91	19.881	18.200	21.094	22.613	18.070	0.000	0.000	0.000
0.000		0.000	Automatic											
g57Y	Arm7	18.200	Shear 18.070	Rupture	95	3.91	19.881	18.200	21.094	22.613	18.070	0.000	0.000	0.000
0.000		0.000	Automatic											
g58P	Arm6	15.334	L/r 24.680	Rupture	150	7.43	15.334	27.300	31.641	28.196	24.680	0.000	0.000	0.000
0.000		0.000	Automatic											
g58Y	Arm6	15.334	L/r 24.680	Rupture	150	7.43	15.334	27.300	31.641	28.196	24.680	0.000	0.000	0.000
0.000		0.000	Automatic											
g59P	ArmBr5	9.100	Shear 9.100	Shear	147	5.24	10.672	9.100	10.547	19.880	9.375	0.000	0.000	0.000
0.000		0.000	Automatic											
g60P	ArmBr2	0.086	L/r 7.425	Net Sect	1205	6.12	0.086	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g60Y	ArmBr2	0.086	L/r 7.425	Net Sect	1205	6.12	0.086	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g61P	ArmBr3	0.050	L/r 7.425	Net Sect	1577	8.02	0.050	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g61Y	ArmBr3	0.050	L/r 7.425	Net Sect	1577	8.02	0.050	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g62P	ArmBr4	0.080	L/r 7.425	Net Sect	1248	6.34	0.080	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g62Y	ArmBr4	0.080	L/r 7.425	Net Sect	1248	6.34	0.080	9.100	14.062	7.425	9.750	0.000	0.000	0.000
0.000		0.000	Automatic											
g63P	PWMount	872.521	L/r 953.399	Net Sect	48	22.00	872.521	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g64P	PWMount	918.265	L/r 953.399	Net Sect	32	14.50	918.265	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g65P	PWMount	902.223	L/r 953.399	Net Sect	38	17.50	902.223	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g66P	PWMount	936.688	L/r 953.399	Net Sect	22	10.00	936.688	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g67P	PWMount	929.336	L/r 953.399	Net Sect	26	12.00	929.336	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g68P	PWMount	949.221	L/r 953.399	Net Sect	11	5.00	949.221	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g69P	PWMount	920.646	L/r 953.399	Net Sect	31	14.00	920.646	0.000	0.000	953.399	0.000	0.000	0.000	0.000
0.000		0.000	Automatic											
g71P	PWMBrace	16.800	Shear 16.800	Shear	152	6.15	21.542	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000		0.000	Automatic											
g71X	PWMBrace	16.800	Shear 16.800	Shear	152	6.15	21.542	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000		0.000	Automatic											
g72P	PWMBrace	16.800	Shear 16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000		0.000	Automatic											
g72X	PWMBrace	16.800	Shear 16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000		0.000	Automatic											
g73P	PWMBrace	16.800	Shear 16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000		0.000	Automatic											
g73X	PWMBrace	16.800	Shear 16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000		0.000	Automatic											

g75P PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000	0.000	Automatic												
g75X PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000	0.000	Automatic												
g76P PMBrace2	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000
0.000	0.000	Automatic												
g78P PMBrace2	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000
0.000	0.000	Automatic												
g79P PMBrace2	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000
0.000	0.000	Automatic												
g80P Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g80X Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g80XY Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g80Y Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g81P Inner1	10.195	Bearing	5.766	Rupture	124	3.54	11.582	11.150	10.195	15.532	5.766	0.000	0.000	0.000
0.000	0.000	Automatic												
g81X Inner1	10.195	Bearing	5.766	Rupture	124	3.54	11.582	11.150	10.195	15.532	5.766	0.000	0.000	0.000
0.000	0.000	Automatic												
g81XY Inner1	10.195	Bearing	5.766	Rupture	124	3.54	11.582	11.150	10.195	15.532	5.766	0.000	0.000	0.000
0.000	0.000	Automatic												
g81Y Inner1	10.195	Bearing	5.766	Rupture	124	3.54	11.582	11.150	10.195	15.532	5.766	0.000	0.000	0.000
0.000	0.000	Automatic												
g82P Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g82X Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g82XY Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g82Y Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g83P Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g83X Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g83XY Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g83Y Inner1R	11.150	Shear	11.150	Shear	87	3.54	41.278	11.150	20.391	46.939	11.531	0.000	0.000	0.000
0.000	0.000	Automatic												
g84P PWMBrace	13.046	L/r	16.800	Shear	195	7.91	13.046	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000	0.000	Automatic												
g84X PWMBrace	13.046	L/r	16.800	Shear	195	7.91	13.046	16.800	20.391	47.699	18.125	0.000	0.000	0.000
0.000	0.000	Automatic												

The model contains 230 angle members.

Sum of Unfactored Dead Load and Drag Areas From Equipment, Input and Calculated:

Joint Label	Dead Load (kips)	X-Drag Area (ft^2)	Y-Drag Area (ft^2)
1P	0.0972	4.673	3.189
2P	0.12	5.924	5.247
3P	0.0777	4.089	4.089
4P	0.143	6.351	4.981

5P	0.12	5.526	5.509
6P	0.172	6.792	5.933
7P	0.253	10.759	10.759
18P	0.0673	3.862	1.146
19P	0.111	6.161	2.378
20P	0.147	8.015	1.611
21P	0.108	5.889	1.857
22P	0.911	14.667	14.667
23P	1.51	24.333	24.333
24P	1.41	23.388	23.388
25P	1.17	18.854	18.906
26P	0.937	15.188	15.240
27P	0.704	11.333	11.333
28P	0.813	13.187	13.240
29P	0.58	9.333	9.333
30P	0.0355	2.386	1.857
31P	0.0396	2.861	1.194
32P	0.0215	1.475	1.336
35P	0.0513	1.042	1.354
36P	0.0513	1.042	1.354
37P	0.015	0.729	0.729
38P	0.0513	1.042	1.354
1X	0.101	5.059	3.189
1XY	0.0928	4.799	3.059
1Y	0.089	4.413	3.059
2X	0.158	7.678	5.508
2XY	0.158	7.678	5.508
2Y	0.12	5.924	5.247
3X	0.0777	4.089	4.089
3XY	0.0777	4.089	4.089
3Y	0.0777	4.089	4.089
4X	0.192	8.428	5.190
4XY	0.184	8.167	5.060
4Y	0.135	6.091	4.851
5X	0.124	5.927	5.509
5XY	0.124	5.927	5.509
5Y	0.12	5.526	5.509
6X	0.211	8.598	6.193
6XY	0.203	8.338	6.063
6Y	0.164	6.532	5.803
7X	0.253	10.759	10.759
7XY	0.253	10.759	10.759
7Y	0.253	10.759	10.759
18X	0.0591	3.359	1.146
8S	0.129	5.238	5.238
9S	0.141	6.075	6.075
10S	0.29	11.186	11.056
11S	0.486	18.937	18.937
15S	0.0306	1.764	1.467
16S	0.0373	1.500	2.317
17S	0.0363	2.369	1.500
8X	0.129	5.238	5.238
8XY	0.129	5.238	5.238
8Y	0.129	5.238	5.238
9X	0.141	6.075	6.075
9XY	0.141	6.075	6.075
9Y	0.141	6.075	6.075
10X	0.29	11.186	11.056
10XY	0.295	11.186	11.316

10Y	0.295	11.186	11.316
11X	0.486	18.937	18.937
11XY	0.486	18.937	18.937
11Y	0.486	18.937	18.937
15X	0.0356	2.264	1.467
15XY	0.0356	2.264	1.467
15Y	0.0306	1.764	1.467
16X	0.0373	1.500	2.317
17Y	0.0363	2.369	1.500
Total	17.4	537.427	486.508

Unadjusted Dead Load and Drag Areas by Section:

Section Label	Unfactored Dead Load (kips)	X-Drag Area All (ft^2)	Y-Drag Area All (ft^2)	X-Drag Area Face (ft^2)	Y-Drag Area Face (ft^2)
1	7.899	264.062	213.143	86.315	112.312
2	9.513	273.365	273.365	79.235	151.235
Total	17.412	537.427	486.508	165.551	263.547

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
1	7.899	7.899	1014.960	1014.960
2	9.513	10.465	1136.292	1249.921
Total	17.412	18.363	2151.251	2264.880

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)
1	1P	81.000
1	2P	76.000
1	1X	81.000
1	2X	76.000
1	1XY	81.000
1	2XY	76.000
1	1Y	81.000
1	2Y	76.000
1	3P	70.000
1	3X	70.000
1	3XY	70.000
1	3Y	70.000
1	15S	67.000
1	15X	67.000
1	15XY	67.000
1	15Y	67.000
1	4P	64.000
1	4X	64.000
1	4XY	64.000
1	4Y	64.000
1	5P	59.000
1	5X	59.000

1	5XY	59.000
1	5Y	59.000
1	6P	54.000
1	6X	54.000
1	6XY	54.000
1	6Y	54.000
1	8S	49.000
1	8X	49.000
1	8XY	49.000
1	8Y	49.000
1	17S	67.000
1	17Y	67.000
1	16S	67.000
1	16X	67.000
1	18X	81.000
1	18P	81.000
1	19P	76.000
1	20P	64.000
1	21P	54.000
1	30P	76.000
1	32P	54.000
1	31P	64.000
1	25P	54.000
1	26P	64.000
1	27P	76.000
1	28P	81.000
1	29P	95.000
1	38P	81.000
1	36P	64.000
1	35P	54.000
1	37P	76.000
2	8S	49.000
2	9S	43.000
2	8X	49.000
2	9X	43.000
2	8XY	49.000
2	9XY	43.000
2	8Y	49.000
2	9Y	43.000
2	10S	36.500
2	10X	36.500
2	10XY	36.500
2	10Y	36.500
2	11S	22.000
2	11X	22.000
2	11XY	22.000
2	11Y	22.000
2	7P	0.000
2	7X	0.000
2	7XY	0.000
2	7Y	0.000
2	22P	0.000
2	23P	22.000
2	24P	36.500
2	25P	54.000

Sections Information:

Section	Top	Bottom	Joint	Member	Tran. Face	Tran. Face	Tran. Face	Long. Face	Long. Face	Long. Face
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Label	Z (ft)	Z Count	Count	Top Width (ft)	Bot Width (ft)	Gross Area (ft^2)	Top Width (ft)	Bot Width (ft)	Gross Area (ft^2)	
1	95.000	49.000	53	167	0.00	6.39	198.472	0.00	6.39	507.308
2	49.000	0.000	24	63	6.39	20.00	646.528	6.39	20.00	646.528

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)
C-EX1		5e+004

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	18P	C-EX1	No Limit
2	18X	C-EX1	No Limit
3	19P	C-EX1	No Limit
4	30P	C-EX1	No Limit
5	20P	C-EX1	No Limit
6	31P	C-EX1	No Limit
7	21P	C-EX1	No Limit
8	32P	C-EX1	No Limit
9	29P	C-EX1	No Limit
10	1P	C-EX1	No Limit
11	3P	C-EX1	No Limit
12	5P	C-EX1	No Limit
13	8S	C-EX1	No Limit
14	10S	C-EX1	No Limit
15	11S	C-EX1	No Limit
16	1X	C-EX1	No Limit
17	3X	C-EX1	No Limit
18	5X	C-EX1	No Limit
19	8X	C-EX1	No Limit
20	10X	C-EX1	No Limit
21	11X	C-EX1	No Limit
22	28P	C-EX1	No Limit
23	27P	C-EX1	No Limit
24	26P	C-EX1	No Limit
25	25P	C-EX1	No Limit
26	24P	C-EX1	No Limit
27	23P	C-EX1	No Limit
28	1XY	C-EX1	No Limit
29	3XY	C-EX1	No Limit
30	5XY	C-EX1	No Limit
31	8XY	C-EX1	No Limit
32	10XY	C-EX1	No Limit
33	11XY	C-EX1	No Limit

*** Loads Data

Loads from file: j:\jobs\1812300.wi\04_structural\calcs\rev (3)\pls tower\weston w_antenna mast.lca

Insulator dead and wind loads are already included in the point loads printed below.

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):

Z of ground for wind height adjust 0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.
 Ground elevation shift 0.00 (ft)
 Z of ground with shift 0.00 (ft)
 Z of structure top (highest joint) 95.00 (ft)
 Structure height 95.00 (ft)
 Structure height above ground 95.00 (ft)
 Tower Shape Rectangular

Load distributed evenly among joints in section for section based load cases

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles and Towers	SF for Guys and Cables	SF for Insuls.	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	1.0000	28 loads	Wind on Face	4	0	0.000	0.000	60.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000	28 loads	NESC 2012	31	0	0.000	0.000	60.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
18P	1322	3152	912	Shield Wire
18X	763	1853	-50	Shield Wire
19P	1662	3784	-50	Conductor
30P	1703	3907	-25	Conductor
20P	1668	3813	-50	Conductor
31P	1708	4037	-25	Conductor
21P	1676	3729	-50	Conductor
32P	1709	3861	-25	Conductor
29P	8742	2432	0	AT&T
1X	488	180	0	Coax Cables on Tower
3X	511	189	0	Coax Cables on Tower
5X	488	180	0	Coax Cables on Tower
8X	523	193	0	Coax Cables on Tower
10X	627	232	0	Coax Cables on Tower
11X	1359	502	0	Coax Cables on Tower
29P	791	139	0	Coax Cables on Antenna Mast
28P	489	89	0	Coax Cables on Antenna Mast
27P	554	101	0	Coax Cables on Antenna Mast
26P	717	131	0	Coax Cables on Antenna Mast
25P	896	164	0	Coax Cables on Antenna Mast

24P	1043	190	0	Coax Cables on Antenna Mast
23P	1907	348	0	Coax Cables on Antenna Mast
1XY	488	180	0	Coax Cables on Tower
3XY	511	189	0	Coax Cables on Tower
5XY	488	180	0	Coax Cables on Tower
8XY	523	193	0	Coax Cables on Tower
10XY	627	232	0	Coax Cables on Tower
11XY	1359	502	0	Coax Cables on Tower

Section Load Case Information (Standard) for "NESC Heavy":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	95.00	49.00	72.00	10.00	10.00	3.200	3594.0	0.00	3.200	0.0	0	11848
2	49.00	0.00	24.50	10.00	10.00	3.300	4990.8	0.00	3.300	0.0	0	15697

Point Loads for Load Case "NESC Extreme":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
18P	403	2249	435	Shield Wire
18X	180	978	0	Shield Wire
19P	544	2881	-50	Conductor
30P	576	2944	-50	Conductor
20P	550	2826	-50	Conductor
31P	550	2933	-50	Conductor
21P	557	2724	-50	Conductor
32P	584	2789	-50	Conductor
29P	4172	9305	0	AT&T
1X	131	509	0	Coax Cables on Tower
3X	137	533	0	Coax Cables on Tower
5X	131	509	0	Coax Cables on Tower
8X	140	545	0	Coax Cables on Tower
10X	168	654	0	Coax Cables on Tower
11X	365	1418	0	Coax Cables on Tower
29P	250	410	0	Coax Cables on Antenna Mast
28P	187	246	0	Coax Cables on Antenna Mast
27P	212	279	0	Coax Cables on Antenna Mast
26P	275	360	0	Coax Cables on Antenna Mast
25P	343	451	0	Coax Cables on Antenna Mast
24P	399	524	0	Coax Cables on Antenna Mast
23P	730	958	0	Coax Cables on Antenna Mast
1XY	131	509	0	Coax Cables on Tower
3XY	137	533	0	Coax Cables on Tower
5XY	131	509	0	Coax Cables on Tower
8XY	140	545	0	Coax Cables on Tower
10XY	168	654	0	Coax Cables on Tower
11XY	365	1418	0	Coax Cables on Tower

Section Load Case Information (Code) for "NESC Extreme":

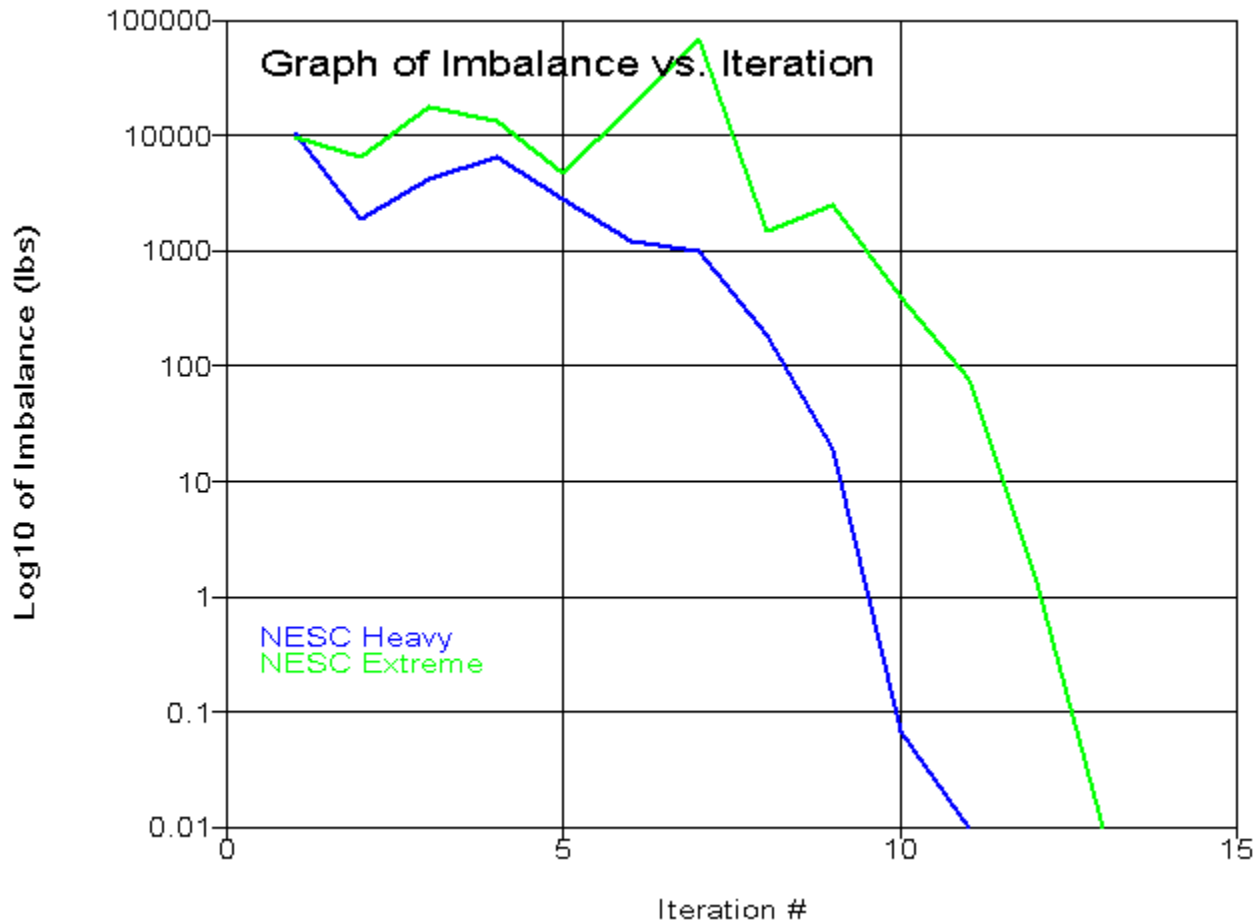
Section Total	Z	Z	Ave.	Res.	Tran	Tran	Tran	Tran	Tran	Tran	Tran	Tran	Long	Long	Long	Long	Long	Long	Long	Long	Long	Long	Ice
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Label Weight (lbs)		of	of	Elev.	Adj.	Adj.	Angle	Round	Gross	Soli-	Angle	Round	Wind	Adj.	Angle	Round	Gross	Soli-	Angle	Round	Wind	Weight
		Top	Bottom	Above	Wind	Wind	Face	Face	Area	dity	Drag	Drag	Load	Wind	Face	Face	Area	dity	Drag	Drag	Load	
		(ft)	(ft)	Ground	Pres.	Pres.	Area	Area	(ft^2)	(ft^2)	(ft^2)	Ratio	Coef	Coef	(lbs)	(psf)	(ft^2)	(ft^2)	(ft^2)	Ratio	Coef	Coef

-																						
7899	1	95.00	49.00	72.00	31.18	31.18	57.65	54.67	198.47	0.566	3.200	2.000	9161.3	0.00	86.32	0.00	507.31	0.170	3.200	2.000	0.0	0
10465	2	49.00	0.00	24.50	31.18	31.18	79.24	72.00	646.53	0.234	3.200	2.000	12396.6	0.00	79.24	0.00	646.53	0.123	3.200	2.000	0.0	0

*** Analysis Results:

Maximum element usage is 98.83% for Angle "g6XY" in load case "NESC Extreme"
Maximum insulator usage is 21.79% for Clamp "9" in load case "NESC Extreme"



Angle Forces For All Load Cases:

Positive for tension - negative for compression

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
Leg1	g1P	11.24	0.000	-6.017	-3.936	-6.017
Leg1	g1X	12.38	4.863	0.000	0.513	4.863
Leg1	g1XY	13.18	5.174	0.000	0.562	5.174
Leg1	g1Y	11.68	0.000	-6.250	-3.315	-6.250

Leg1	g2P	42.82	0.000	-20.933	-13.054	-20.933
Leg1	g2X	44.65	23.059	0.000	9.438	23.059
Leg1	g2XY	44.81	23.142	0.000	10.460	23.142
Leg1	g2Y	40.81	0.000	-19.951	-11.496	-19.951
Leg1	g3P	71.95	0.000	-43.339	-25.344	-43.339
Leg1	g3X	70.16	36.232	0.000	17.198	36.232
Leg1	g3XY	69.96	36.133	0.000	18.943	36.133
Leg1	g3Y	68.74	0.000	-41.405	-23.141	-41.405
Leg1	g4P	72.63	0.000	-43.747	-26.288	-43.747
Leg1	g4X	77.63	35.723	0.000	16.245	35.723
Leg1	g4XY	77.55	35.683	0.000	17.973	35.683
Leg1	g4Y	69.62	0.000	-41.935	-24.005	-41.935
Leg2	g5P	68.35	0.000	-61.170	-39.065	-61.170
Leg2	g5X	81.04	55.963	0.000	28.177	55.963
Leg2	g5XY	82.03	56.646	0.000	30.897	56.646
Leg2	g5Y	66.31	0.000	-59.336	-36.114	-59.336
Leg2	g6P	81.75	0.000	-73.154	-49.558	-73.154
Leg2	g6X	96.44	66.593	0.000	36.061	66.593
Leg2	g6XY	98.83	68.246	0.000	39.357	68.246
Leg2	g6Y	80.35	0.000	-71.905	-46.087	-71.905
Leg3	g7P	76.21	0.000	-80.805	-57.537	-80.805
Leg3	g7X	91.31	74.882	0.000	44.225	74.882
Leg3	g7XY	93.91	77.010	0.000	47.831	77.010
Leg3	g7Y	75.34	0.000	-79.883	-53.667	-79.883
Leg3	g8P	87.61	0.000	-87.845	-65.078	-87.845
Leg3	g8X	91.79	79.532	0.000	49.437	79.532
Leg3	g8XY	94.12	81.551	0.000	52.665	81.551
Leg3	g8Y	86.97	0.000	-87.202	-61.215	-87.202
Leg3	g9P	89.84	0.000	-87.133	-65.751	-87.133
Leg3	g9X	86.24	78.722	0.000	50.721	78.722
Leg3	g9XY	88.25	80.561	0.000	53.671	80.561
Leg3	g9Y	89.37	0.000	-86.681	-61.913	-86.681
Leg4	g10P	78.66	0.000	-95.064	-72.057	-95.064
Leg4	g10X	63.40	74.040	0.000	47.681	74.040
Leg4	g10XY	65.21	76.154	0.000	50.210	76.154
Leg4	g10Y	77.14	0.000	-93.232	-69.218	-93.232
Leg4	g11P	85.10	0.000	-102.432	-76.919	-102.432
Leg4	g11X	67.15	76.982	0.000	48.430	76.982
Leg4	g11XY	68.00	77.959	0.000	51.428	77.959
Leg4	g11Y	83.26	0.000	-100.219	-74.808	-100.219
XBrace1	g12P	62.15	8.849	0.000	2.856	8.849
XBrace1	g12X	79.56	0.000	-9.196	-3.447	-9.196
XBrace1	g12XY	64.39	0.000	-7.443	-3.756	-7.443
XBrace1	g12Y	51.25	7.297	0.000	3.715	7.297
XBrace1	g13P	10.29	0.000	-0.888	-0.103	-0.888
XBrace1	g13X	7.03	1.001	0.000	0.057	1.001
XBrace1	g13XY	4.02	0.268	-0.465	0.268	-0.465
XBrace1	g13Y	12.45	0.000	-1.075	-1.075	-0.219
XBrace2	g14P	48.38	13.207	0.000	7.361	13.207
XBrace2	g14X	60.99	0.000	-13.690	-6.721	-13.690
XBrace2	g14XY	49.59	0.000	-11.131	-7.781	-11.131
XBrace2	g14Y	39.43	10.764	0.000	8.263	10.764
XBrace2	g15P	18.82	0.014	-2.982	0.014	-2.982
XBrace2	g15X	14.46	0.000	-2.292	-2.292	-2.257
XBrace2	g15XY	29.23	0.000	-4.631	-1.882	-4.631
XBrace2	g15Y	9.56	0.000	-1.515	-1.515	-1.080
XBrace7	g16P	50.33	13.740	0.000	6.540	13.740
XBrace7	g16X	63.18	0.000	-14.182	-7.670	-14.182
XBrace7	g16XY	51.98	0.000	-11.668	-8.542	-11.668

XBrace7	g16Y	41.29	11.273	0.000	7.684	11.273
XBrace7	g17P	63.44	0.000	-14.240	-6.424	-14.240
XBrace7	g17X	49.70	13.568	0.000	5.212	13.568
XBrace7	g17XY	42.32	11.553	0.000	6.156	11.553
XBrace7	g17Y	54.23	0.000	-12.172	-7.098	-12.172
XBrace7	g18P	3.92	1.071	0.000	1.071	0.461
XBrace7	g18X	19.18	5.237	0.000	2.230	5.237
XBrace7	g18XY	10.61	2.896	0.000	2.653	2.896
XBrace7	g18Y	8.61	2.349	-0.445	-0.445	2.349
XBrace7	g19P	7.89	2.154	-0.443	-0.443	2.154
XBrace7	g19X	10.48	2.860	0.000	2.597	2.860
XBrace7	g19XY	18.65	5.090	0.000	2.216	5.090
XBrace7	g19Y	3.65	0.995	0.000	0.995	0.462
XBrace8	g20P	34.60	10.225	0.000	8.373	10.225
XBrace8	g20X	30.75	0.000	-9.951	-7.154	-9.951
XBrace8	g20XY	30.78	0.000	-9.960	-8.737	-9.960
XBrace8	g20Y	34.62	10.231	0.000	10.003	10.231
XBrace8	g21P	6.51	1.923	0.000	1.923	0.954
XBrace8	g21X	5.22	0.000	-1.689	-1.689	-0.956
XBrace8	g21XY	5.36	0.000	-1.734	-0.849	-1.734
XBrace8	g21Y	4.51	1.333	0.000	0.166	1.333
XBrace8	g22P	34.71	10.257	0.000	7.756	10.257
XBrace8	g22X	32.06	0.000	-10.376	-6.880	-10.376
XBrace8	g22XY	31.63	0.000	-10.235	-7.902	-10.235
XBrace8	g22Y	34.84	10.296	0.000	9.155	10.296
XBrace8	g23P	7.97	0.000	-2.578	-1.538	-2.578
XBrace8	g23X	9.89	2.923	0.000	1.138	2.923
XBrace8	g23XY	7.20	2.129	0.000	1.844	2.129
XBrace8	g23Y	9.58	0.000	-3.100	-3.100	-2.211
XBrace3	g24P	7.97	1.942	0.000	1.942	0.668
XBrace3	g24X	12.23	0.000	-3.180	-3.180	-1.842
XBrace3	g24XY	14.87	0.000	-3.866	-3.866	-0.520
XBrace3	g24Y	11.20	2.729	-0.536	2.729	-0.536
XBrace3	g25P	22.69	0.000	-5.251	-2.683	-5.251
XBrace3	g25X	18.53	4.516	0.000	1.920	4.516
XBrace3	g25XY	13.96	3.402	0.000	3.009	3.402
XBrace3	g25Y	16.17	0.000	-3.742	-3.391	-3.742
XBrace4	g26P	12.31	2.251	0.000	2.251	1.891
XBrace4	g26X	12.83	0.000	-2.024	-2.024	-1.987
XBrace4	g26XY	16.42	0.000	-2.591	-2.591	-1.046
XBrace4	g26Y	15.45	2.824	0.000	2.824	0.871
XBrace4	g27P	11.88	2.171	0.000	2.171	2.125
XBrace4	g27X	13.97	0.000	-1.960	-1.960	-1.951
XBrace4	g27XY	20.02	0.000	-2.810	-1.115	-2.810
XBrace4	g27Y	18.65	3.409	0.000	1.639	3.409
XBrace4	g28P	10.72	1.951	0.000	1.485	1.951
XBrace4	g28X	17.85	0.000	-2.311	-2.029	-2.311
XBrace4	g28XY	19.39	0.000	-2.510	-2.510	-1.523
XBrace4	g28Y	10.47	1.905	0.000	1.905	1.205
XBrace4	g29P	20.32	0.000	-2.284	-1.155	-2.284
XBrace4	g29X	10.04	1.827	0.000	0.659	1.827
XBrace4	g29XY	7.14	1.300	0.000	1.300	1.169
XBrace4	g29Y	14.85	0.000	-1.669	-1.578	-1.669
XBrace5	g30P	31.76	7.098	0.000	4.658	7.098
XBrace5	g30X	0.00	0.000	0.000	0.000	0.000
XBrace5	g30XY	0.00	0.000	0.000	0.000	0.000
XBrace5	g30Y	26.31	5.881	0.000	5.881	4.891
XBrace5	g31P	17.62	0.000	-0.628	0.000	-0.628
XBrace5	g31X	33.84	7.562	0.000	4.563	7.562

XBrace5	g31XY	31.95	7.140	0.000	4.923	7.140
XBrace5	g31Y	0.00	0.000	0.000	0.000	0.000
XBrace6	g32P	38.01	8.594	0.000	5.025	8.594
XBrace6	g32X	0.00	0.000	0.000	0.000	0.000
XBrace6	g32XY	0.00	0.000	0.000	0.000	0.000
XBrace6	g32Y	30.91	6.989	0.000	5.932	6.989
XBrace6	g33P	0.00	0.000	0.000	0.000	0.000
XBrace6	g33X	40.74	9.212	0.000	5.677	9.212
XBrace6	g33XY	39.29	8.884	0.000	5.933	8.884
XBrace6	g33Y	2.32	0.525	0.000	0.000	0.525
Horz1	g34P	29.87	2.184	-0.535	-0.535	2.184
Horz1	g34X	50.81	0.000	-2.946	-1.462	-2.946
Horz1	g35P	8.24	0.497	-0.478	0.497	-0.478
Horz1	g35X	24.16	1.767	0.000	1.767	0.812
Horz1	g36P	49.96	0.000	-2.897	-0.832	-2.897
Horz1	g36X	17.83	1.304	0.000	1.188	1.304
Horz1	g37P	78.82	0.000	-4.571	-3.011	-4.571
Horz1	g37X	55.87	4.086	0.000	3.069	4.086
Horz2	g38P	19.73	3.108	0.000	2.243	3.108
Horz2	g38X	49.85	0.000	-5.190	-3.509	-5.190
Horz2	g39P	9.31	0.000	-0.969	-0.504	-0.969
Horz2	g39Y	13.93	0.000	-1.450	-1.450	-1.012
Horz3	g40P	0.95	0.000	-0.114	-0.114	-0.091
Horz3	g40X	86.39	0.000	-10.414	-6.927	-10.414
Horz3	g41P	48.55	0.000	-5.852	-3.792	-5.852
Horz3	g41Y	39.01	0.000	-4.703	-4.440	-4.703
Horz1	g42P	5.51	0.403	-0.416	-0.416	0.403
Horz1	g42X	8.99	0.000	-0.818	-0.818	-0.611
Horz1	g42XY	9.28	0.000	-0.845	-0.845	-0.542
Horz1	g42Y	4.01	0.276	-0.365	-0.365	0.276
Horz4	g43P	42.41	3.860	0.000	3.860	1.228
Horz4	g43X	24.29	2.210	0.000	2.210	0.982
Horz4	g43XY	22.01	2.003	0.000	2.003	1.258
Horz4	g43Y	42.93	3.906	0.000	3.906	0.929
Arm1	g44P	3.95	0.000	-0.719	-0.719	-0.543
Arm1	g44X	4.25	0.773	0.000	0.773	0.697
Arm1	g44XY	27.26	4.961	0.000	4.961	2.717
Arm1	g44Y	5.24	0.000	-0.954	-0.954	-0.540
Arm1	g45P	7.07	1.287	0.000	1.287	0.488
Arm1	g45Y	17.79	3.238	0.000	3.238	1.246
Arm2	g46P	16.82	0.000	-4.591	-4.591	-3.064
Arm2	g46Y	17.83	0.000	-4.867	-4.867	-2.178
Arm2	g47P	10.51	0.000	-2.870	-2.870	-2.261
Arm2	g47Y	11.10	0.000	-3.032	-3.032	-2.186
Arm3	g48P	22.30	0.000	-6.089	-6.089	-3.119
Arm3	g48Y	23.65	0.000	-6.457	-6.457	-3.104
Arm3	g49P	7.62	0.278	-2.080	-2.080	0.278
Arm3	g49Y	9.73	0.000	-2.657	-2.657	-0.276
Arm4	g50P	13.03	0.000	-3.558	-3.558	-2.133
Arm4	g50Y	15.38	0.000	-4.200	-4.200	-2.442
Arm4	g51P	4.39	0.000	-1.198	-1.198	-0.096
Arm4	g51Y	5.21	0.000	-1.422	-1.422	-0.230
ArmBr1	g52P	64.77	0.000	-2.801	-2.801	-1.041
ArmBr2	g53P	38.53	2.861	0.000	2.861	1.708
ArmBr2	g53Y	39.59	2.939	0.000	2.939	0.502
ArmBr3	g54P	58.73	4.361	0.000	4.361	1.765
ArmBr3	g54Y	59.77	4.438	0.000	4.438	1.475
ArmBr4	g55P	25.53	1.896	0.000	1.896	0.825
ArmBr4	g55Y	31.91	2.369	0.000	2.369	0.936

Arm5	g56P	8.26	1.492	-0.205	-0.205	1.492
Arm5	g56Y	4.47	0.807	0.000	0.134	0.807
Arm7	g57P	9.77	1.765	0.000	1.765	1.711
Arm7	g57Y	10.78	1.948	0.000	1.948	1.623
Arm6	g58P	4.37	1.080	-0.032	-0.032	1.080
Arm6	g58Y	2.56	0.631	0.000	0.084	0.631
ArmBr5	g59P	9.58	0.000	-0.872	-0.872	-0.327
ArmBr2	g60P	29.76	2.210	0.000	2.210	0.172
ArmBr2	g60Y	20.94	1.555	0.000	1.555	1.247
ArmBr3	g61P	32.27	2.396	0.000	2.396	0.695
ArmBr3	g61Y	29.40	2.183	0.000	2.183	1.021
ArmBr4	g62P	16.59	1.232	0.000	1.232	0.381
ArmBr4	g62Y	11.72	0.870	0.000	0.870	0.411
PwMount	g63P	3.04	0.000	-26.548	-26.548	-8.880
PwMount	g64P	2.41	0.000	-22.148	-22.148	-7.717
PwMount	g65P	2.08	0.000	-18.787	-18.787	-6.894
PwMount	g66P	1.70	0.000	-15.961	-15.961	-5.822
PwMount	g67P	1.48	0.000	-13.769	-13.769	-5.265
PwMount	g68P	1.28	0.000	-12.166	-12.166	-4.950
PwMount	g69P	1.13	0.000	-10.370	-10.370	-4.338
PwMBrace	g71P	12.80	0.000	-2.150	-1.557	-2.150
PwMBrace	g71X	16.59	0.000	-2.786	-1.982	-2.786
PwMBrace	g72P	23.78	3.995	0.000	1.268	3.995
PwMBrace	g72X	26.12	0.000	-4.388	-2.279	-4.388
PwMBrace	g73P	37.00	0.000	-6.217	-2.314	-6.217
PwMBrace	g73X	29.94	5.030	0.000	0.845	5.030
PwMBrace	g75P	58.29	9.793	0.000	3.950	9.793
PwMBrace	g75X	54.95	0.000	-9.232	-2.688	-9.232
PMBrace2	g76P	2.07	0.494	0.000	0.494	0.208
PMBrace2	g78P	2.69	0.000	-0.643	-0.643	-0.449
PMBrace2	g79P	1.26	0.000	-0.301	-0.301	-0.249
Inner1R	g80P	29.83	0.000	-3.326	-1.135	-3.326
Inner1R	g80X	29.31	3.268	0.000	1.013	3.268
Inner1R	g80XY	40.24	0.000	-4.487	-0.614	-4.487
Inner1R	g80Y	42.37	4.724	0.000	1.192	4.724
Inner1	g81P	36.72	2.117	0.000	0.766	2.117
Inner1	g81X	40.86	2.356	0.000	0.704	2.356
Inner1	g81XY	34.57	1.993	0.000	0.766	1.993
Inner1	g81Y	43.01	2.480	0.000	0.704	2.480
Inner1R	g82P	6.46	0.720	0.000	0.147	0.720
Inner1R	g82X	23.47	0.000	-2.617	-0.780	-2.617
Inner1R	g82XY	17.81	1.986	0.000	0.183	1.986
Inner1R	g82Y	40.51	0.000	-4.517	-1.725	-4.517
Inner1R	g83P	16.70	0.000	-1.862	-0.635	-1.862
Inner1R	g83X	11.28	1.258	0.000	0.057	1.258
Inner1R	g83XY	24.09	0.000	-2.686	-1.512	-2.686
Inner1R	g83Y	15.49	1.727	0.000	0.506	1.727
PwMBrace	g84P	14.32	0.000	-1.868	-0.938	-1.868
PwMBrace	g84X	14.58	0.000	-1.902	-1.902	-1.810

Equilibrium Joint Positions and Rotations for Load Case "NESC Heavy":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.01062	0.3113	-0.0273	-0.4790	0.0216	-0.0417	2.511	2.811	80.97
2P	0.00912	0.2696	-0.02677	-0.4615	0.0021	-0.0334	2.509	2.77	75.97
3P	0.0085	0.2216	-0.02519	-0.4600	0.0503	-0.0289	2.509	2.722	69.97
4P	0.005613	0.1769	-0.02227	-0.3805	-0.0296	-0.0235	2.506	2.677	63.98
5P	0.007173	0.1448	-0.01994	-0.3583	0.0245	-0.0214	2.507	2.645	58.98
6P	0.003349	0.1159	-0.01704	-0.2842	0.0075	-0.0191	2.503	2.616	53.98
7P	0	0	0	0.0000	0.0000	0.0000	10	10	0
18P	0.02127	0.3135	-0.1259	-0.5186	0.0166	-0.0595	0.02127	14.06	80.87
19P	4.046e-005	0.2725	0.08627	-0.4194	0.0136	-0.0359	4.046e-005	-11.89	76.09
20P	-0.003741	0.1798	0.0746	-0.2019	0.0101	-0.0304	-0.003741	-16.49	64.07
21P	-0.001456	0.1177	0.05925	-0.3007	0.0068	-0.0194	-0.001456	-12.55	54.06
22P	0	0	0	-0.0851	0.0035	-0.0153	1.25	0	0
23P	0.001291	0.03206	-0.0009106	-0.0804	0.0029	-0.0153	1.251	0.03206	22
24P	0.001914	0.05563	-0.001418	-0.1225	0.0019	-0.0153	1.252	0.05563	36.5
25P	0.002885	0.1163	-0.002022	-0.2974	0.0065	-0.0153	1.253	0.1163	54
26P	0.004561	0.1775	-0.002452	-0.3859	0.0119	-0.0217	1.255	0.1775	64
27P	0.007539	0.2669	-0.003036	-0.4863	0.0154	-0.0237	1.258	0.2669	76
28P	0.008924	0.3124	-0.003336	-0.5617	0.0156	-0.0245	1.259	0.3124	81
29P	0.01283	0.4697	-0.00444	-0.6834	0.0158	-0.0244	1.263	0.4697	95
30P	0.0106	0.2709	-0.04856	-0.5147	0.0147	-0.0353	0.0106	5.271	75.95
31P	0.009154	0.178	-0.07712	-0.4744	0.0100	-0.0291	0.009154	9.678	63.92
32P	0.004751	0.1174	-0.03586	-0.3878	0.0056	-0.0181	0.004751	5.617	53.96
35P	0.002889	0.1164	-0.003059	-0.2974	-0.0744	0.0005	0.002889	0.1164	54
36P	0.004568	0.1781	-0.003366	-0.3860	-0.0683	-0.0326	0.004568	0.1781	64
37P	0.007531	0.271	-0.03339	0.0000	0.0000	0.0000	0.007531	0.271	75.97
38P	0.008919	0.313	-0.004173	-0.5618	-0.0649	-0.0277	0.008919	0.313	81
1X	0.007029	0.3113	0.01267	-0.4703	0.0012	-0.0375	2.507	-2.189	81.01
1XY	0.007436	0.3144	0.01392	-0.4707	0.0261	-0.0370	-2.493	-2.186	81.01
1Y	0.01077	0.3147	-0.02592	-0.4816	0.0155	-0.0400	-2.489	2.815	80.97
2X	0.006265	0.2699	0.0128	-0.4545	0.0245	-0.0344	2.506	-2.23	76.01
2XY	0.005775	0.273	0.01404	-0.4534	0.0028	-0.0351	-2.494	-2.227	76.01
2Y	0.008983	0.2726	-0.02545	-0.4633	0.0314	-0.0372	-2.491	2.773	75.97
3X	0.002378	0.2209	0.01199	-0.4740	0.0013	-0.0293	2.502	-2.279	70.01
3XY	0.006892	0.2238	0.01313	-0.4797	0.0236	-0.0317	-2.493	-2.276	70.01
3Y	0.006029	0.2242	-0.02403	-0.4619	-0.0173	-0.0323	-2.494	2.724	69.98
4X	0.003597	0.1772	0.01037	-0.3668	0.0281	-0.0246	2.504	-2.323	64.01
4XY	0.003268	0.1796	0.01132	-0.3674	-0.0091	-0.0282	-2.497	-2.32	64.01
4Y	0.005845	0.1794	-0.02135	-0.3841	0.0538	-0.0284	-2.494	2.679	63.98
5X	0.0004693	0.1438	0.008877	-0.3638	0.0013	-0.0221	2.5	-2.356	59.01
5XY	0.00483	0.1459	0.009678	-0.3705	0.0146	-0.0243	-2.495	-2.354	59.01
5Y	0.002115	0.1466	-0.01918	-0.3638	-0.0014	-0.0241	-2.498	2.647	58.98
6X	0.002449	0.1161	0.006902	-0.2775	0.0050	-0.0197	2.502	-2.384	54.01
6XY	0.001596	0.1177	0.007519	-0.2790	0.0060	-0.0203	-2.498	-2.382	54.01
6Y	0.004187	0.1175	-0.01647	-0.2867	0.0080	-0.0201	-2.496	2.618	53.98
7X	0	0	0	0.0000	0.0000	0.0000	10	-10	0
7XY	0	0	0	0.0000	0.0000	0.0000	-10	-10	0
7Y	0	0	0	0.0000	0.0000	0.0000	-10	10	0
18X	9.8e-007	0.3134	0.09884	-0.4203	0.0141	-0.0367	9.8e-007	-13.44	81.1
8S	0.005672	0.09375	-0.01689	-0.2205	-0.0248	-0.0170	3.2	3.288	48.98
9S	0.004799	0.07222	-0.01609	-0.1757	0.0149	-0.0085	4.033	4.1	42.98

10S	0.00349	0.05413	-0.01452	-0.1362	0.0040	-0.0078	4.934	4.985	36.49
11S	0.001797	0.02278	-0.0105	-0.0981	0.0020	-0.0070	6.946	6.967	21.99
15S	0.005327	0.198	-0.02374	-0.4299	0.0354	-0.0264	2.505	2.698	66.98
16S	0.006385	0.1273	-0.0221	0.0000	0.0000	0.0000	0.006385	2.627	66.98
17S	0.008327	0.1977	-0.006054	0.0000	0.0000	0.0000	2.508	0.1977	66.99
8X	-0.0005556	0.09345	0.007484	-0.2295	0.0278	-0.0189	3.194	-3.101	49.01
8XY	0.003447	0.09539	0.008035	-0.2325	-0.0225	-0.0150	-3.191	-3.099	49.01
8Y	0.001125	0.09538	-0.01641	-0.2248	0.0360	-0.0170	-3.193	3.29	48.98
9X	-0.0001666	0.0717	0.007654	-0.1733	-0.0087	-0.0089	4.028	-3.956	43.01
9XY	0.002132	0.07361	0.008148	-0.1759	0.0118	-0.0187	-4.026	-3.954	43.01
9Y	0.001451	0.07413	-0.01573	-0.1782	-0.0088	-0.0200	-4.026	4.102	42.98
10X	-0.0001053	0.05437	0.006822	-0.1295	0.0076	-0.0084	4.93	-4.876	36.51
10XY	0.001368	0.05656	0.007183	-0.1318	-0.0054	-0.0125	-4.929	-4.874	36.51
10Y	0.002549	0.05592	-0.01439	-0.1421	0.0028	-0.0130	-4.928	4.986	36.49
11X	-0.001159	0.02418	0.00522	-0.1003	0.0028	-0.0079	6.943	-6.92	22.01
11XY	0.001374	0.02535	0.005569	-0.1073	-0.0022	-0.0038	-6.943	-6.919	22.01
11Y	0.001839	0.02372	-0.01049	-0.1034	0.0123	-0.0039	-6.943	6.968	21.99
15X	0.003482	0.1971	0.01117	-0.4153	-0.0250	-0.0267	2.503	-2.303	67.01
15XY	0.004481	0.1997	0.01221	-0.4207	0.0474	-0.0302	-2.496	-2.3	67.01
15Y	0.007509	0.2006	-0.0227	-0.4308	-0.0068	-0.0301	-2.492	2.701	66.98
16X	0.004002	0.2421	0.01038	0.0000	0.0000	0.0000	0.004002	-2.258	67.01
17Y	0.002272	0.2003	-0.005079	0.0000	0.0000	0.0000	-2.498	0.2003	66.99

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
7P	-10.48	0.0	-10.42	0.0	0.0	-75.90	0.0	0.0	77.33	0.0	0.31	0.0	0.0	0.0	0.0	0.03	0.0	0.0
22P	-0.00	0.0	-0.49	0.0	0.0	-28.05	0.0	0.0	28.06	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
7X	10.75	0.0	-10.65	0.0	0.0	55.72	0.0	0.0	57.74	0.0	0.37	0.0	0.0	0.0	0.0	0.04	0.0	0.0
7XY	-11.10	0.0	-11.58	0.0	0.0	59.18	0.0	0.0	61.31	0.0	0.39	0.0	-0.0	0.0	0.0	-0.02	0.0	0.0
7Y	10.20	0.0	-10.13	0.0	0.0	-73.83	0.0	0.0	75.22	0.0	0.33	0.0	-0.1	0.0	0.0	-0.02	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Heavy":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.0000	-0.1459	0.0000	0.0000	0.1459	0.0106	0.3113	-0.0273
2P	0.0000	0.0000	-0.1793	-0.0000	0.0000	0.1793	0.0091	0.2696	-0.0268
3P	0.0000	0.0000	-0.1166	-0.0000	0.0000	0.1166	0.0085	0.2216	-0.0252
4P	0.0000	0.0000	-0.2145	0.0000	0.0000	0.2145	0.0056	0.1769	-0.0223
5P	0.0000	0.0000	-0.1798	0.0000	0.0000	0.1798	0.0072	0.1448	-0.0199
6P	0.0000	0.0000	-0.2577	-0.0000	0.0000	0.2577	0.0033	0.1159	-0.0170
7P	0.0000	0.0000	-0.4171	10.4822	10.4174	-75.4857	0.0000	0.0000	0.0000
18P	0.9120	3.1520	-1.4230	-0.9120	-3.1520	1.4230	0.0213	0.3135	-0.1259
19P	-0.0500	3.8601	-1.8282	0.0500	-3.8601	1.8282	0.0000	0.2725	0.0863
20P	-0.0500	3.8646	-1.8888	0.0500	-3.8646	1.8888	-0.0037	0.1798	0.0746
21P	-0.0500	3.7884	-1.8387	0.0500	-3.7884	1.8387	-0.0015	0.1177	0.0592
22P	0.0000	0.4840	-1.5037	0.0046	0.0081	-26.5481	0.0000	0.0000	0.0000
23P	0.0000	1.1510	-4.4018	-0.0000	-1.1510	4.4018	0.0013	0.0321	-0.0009
24P	0.0000	0.8940	-3.3671	-0.0000	-0.8940	3.3671	0.0019	0.0556	-0.0014
25P	0.0000	0.7623	-2.7526	-0.0000	-0.7623	2.7526	0.0029	0.1163	-0.0020
26P	0.0000	0.6003	-2.1231	0.0000	-0.6003	2.1231	0.0046	0.1775	-0.0025
27P	0.0000	0.4637	-1.6103	0.0000	-0.4637	1.6103	0.0075	0.2669	-0.0030

28P	0.0000	0.4943	-1.7087	-0.0000	-0.4943	1.7087	0.0089	0.3124	-0.0033
29P	0.0000	2.8697	-10.4029	0.0000	-2.8697	10.4029	0.0128	0.4697	-0.0044
30P	-0.0250	3.9070	-1.7563	0.0250	-3.9070	1.7563	0.0106	0.2709	-0.0486
31P	-0.0250	4.0370	-1.7674	0.0250	-4.0370	1.7674	0.0092	0.1780	-0.0771
32P	-0.0250	3.8610	-1.7413	0.0250	-3.8610	1.7413	0.0048	0.1174	-0.0359
35P	0.0000	0.0000	-0.0769	-0.0000	-0.0000	0.0769	0.0029	0.1164	-0.0031
36P	0.0000	0.0000	-0.0769	-0.0000	0.0000	0.0769	0.0046	0.1781	-0.0034
37P	0.0000	0.0000	-0.0225	0.0000	0.0000	0.0225	0.0075	0.2710	-0.0334
38P	0.0000	0.0000	-0.0769	0.0000	0.0000	0.0769	0.0089	0.3130	-0.0042
1X	0.0000	0.2462	-0.6395	0.0000	-0.2462	0.6395	0.0070	0.3113	0.0127
1XY	0.0000	0.2462	-0.6272	-0.0000	-0.2462	0.6272	0.0074	0.3144	0.0139
1Y	0.0000	0.0000	-0.1335	-0.0000	0.0000	0.1335	0.0108	0.3147	-0.0259
2X	0.0000	0.1231	-0.2363	-0.0000	-0.1231	0.2363	0.0063	0.2699	0.0128
2XY	0.0000	0.1231	-0.2363	0.0000	-0.1231	0.2363	0.0058	0.2730	0.0140
2Y	0.0000	0.0000	-0.1793	0.0000	0.0000	0.1793	0.0090	0.2726	-0.0255
3X	0.0000	0.2839	-0.6276	-0.0000	-0.2839	0.6276	0.0024	0.2209	0.0120
3XY	0.0000	0.2839	-0.6276	0.0000	-0.2839	0.6276	0.0069	0.2238	0.0131
3Y	0.0000	0.0000	-0.1166	0.0000	0.0000	0.1166	0.0060	0.2242	-0.0240
4X	0.0000	0.1099	-0.2877	0.0000	-0.1099	0.2877	0.0036	0.1772	0.0104
4XY	0.0000	0.1099	-0.2753	-0.0000	-0.1099	0.2753	0.0033	0.1796	0.0113
4Y	0.0000	0.0000	-0.2021	-0.0000	0.0000	0.2021	0.0058	0.1794	-0.0213
5X	0.0000	0.3163	-0.6738	0.0000	-0.3163	0.6738	0.0005	0.1438	0.0089
5XY	0.0000	0.3163	-0.6738	-0.0000	-0.3163	0.6738	0.0048	0.1459	0.0097
5Y	0.0000	0.0000	-0.1798	-0.0000	0.0000	0.1798	0.0021	0.1466	-0.0192
6X	0.0000	0.1372	-0.3171	-0.0000	-0.1372	0.3171	0.0024	0.1161	0.0069
6XY	0.0000	0.1372	-0.3047	0.0000	-0.1372	0.3047	0.0016	0.1177	0.0075
6Y	0.0000	0.0000	-0.2454	0.0000	0.0000	0.2454	0.0042	0.1175	-0.0165
7X	0.0000	0.2787	-0.4171	-10.7490	10.3669	56.1391	0.0000	0.0000	0.0000
7XY	0.0000	0.2787	-0.4171	11.1019	11.3039	59.5927	0.0000	0.0000	0.0000
7Y	0.0000	0.0000	-0.4171	-10.2027	10.1291	-73.4130	0.0000	0.0000	0.0000
18X	-0.0500	1.8897	-0.8516	0.0500	-1.8897	0.8516	0.0000	0.3134	0.0988
8S	0.0000	0.0000	-0.2036	-0.0000	0.0000	0.2036	0.0057	0.0937	-0.0169
9S	0.0000	0.0000	-0.2333	0.0000	0.0000	0.2333	0.0048	0.0722	-0.0161
10S	0.0000	0.0000	-0.4790	-0.0000	0.0000	0.4790	0.0035	0.0541	-0.0145
11S	0.0000	0.0000	-0.8011	-0.0000	0.0000	0.8011	0.0018	0.0228	-0.0105
15S	0.0000	0.0000	-0.0459	0.0000	0.0000	0.0459	0.0053	0.1980	-0.0237
16S	0.0000	0.0000	-0.0560	0.0000	0.0000	0.0560	0.0064	0.1273	-0.0221
17S	0.0000	0.0000	-0.0544	0.0000	0.0000	0.0544	0.0083	0.1977	-0.0061
8X	0.0000	0.3258	-0.7266	-0.0000	-0.3258	0.7266	-0.0006	0.0934	0.0075
8XY	0.0000	0.3258	-0.7266	-0.0000	-0.3258	0.7266	0.0034	0.0954	0.0080
8Y	0.0000	0.0000	-0.2036	-0.0000	0.0000	0.2036	0.0011	0.0954	-0.0164
9X	0.0000	0.1571	-0.2333	-0.0000	-0.1571	0.2333	-0.0002	0.0717	0.0077
9XY	0.0000	0.1571	-0.2333	-0.0000	-0.1571	0.2333	0.0021	0.0736	0.0081
9Y	0.0000	0.0000	-0.2333	-0.0000	0.0000	0.2333	0.0015	0.0741	-0.0157
10X	0.0000	0.5214	-1.1060	0.0000	-0.5214	1.1060	-0.0001	0.0544	0.0068
10XY	0.0000	0.5214	-1.1146	-0.0000	-0.5214	1.1146	0.0014	0.0566	0.0072
10Y	0.0000	0.0000	-0.4876	-0.0000	0.0000	0.4876	0.0025	0.0559	-0.0144
11X	0.0000	1.0103	-2.1601	0.0000	-1.0103	2.1601	-0.0012	0.0242	0.0052
11XY	0.0000	1.0103	-2.1601	0.0000	-1.0103	2.1601	0.0014	0.0253	0.0056
11Y	0.0000	0.0000	-0.8011	-0.0000	0.0000	0.8011	0.0018	0.0237	-0.0105
15X	0.0000	0.0469	-0.0534	-0.0000	-0.0469	0.0534	0.0035	0.1971	0.0112
15XY	0.0000	0.0469	-0.0534	0.0000	-0.0469	0.0534	0.0045	0.1997	0.0122
15Y	0.0000	0.0000	-0.0459	-0.0000	0.0000	0.0459	0.0075	0.2006	-0.0227
16X	0.0000	0.0741	-0.0560	0.0000	-0.0741	0.0560	0.0040	0.2421	0.0104
17Y	0.0000	0.0000	-0.0544	-0.0000	0.0000	0.0544	0.0023	0.2003	-0.0051

Crossing Diagonal Check for Load Case "NESC Heavy" (RL0UT controls):

Comp.	Tens.	Connect	Force	Force	-----Original-----	-----Alternate-----
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Member Label	Member Label	Leg for Comp. Member	In Comp. Member (kips)	In Tens. Member (kips)	-----Supported-----							-----Unsupported-----				
					L/R Cap. (kips)	RLX	RLY	RLZ	L/R	KL/R	Curve No.	L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.
g13P	g13Y	Short only	-0.10	-1.08	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g13Y	g13P	Short only	-1.08	-0.10	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g15X	g15XY	Long only	-2.29	-1.88	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g15XY	g15X	Long only	-1.88	-2.29	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g15Y	g15P	Long only	-1.52	0.01	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g25P	g25Y	Short only	-2.68	-3.39	26.01	0.781	0.561	0.561	104.34	108.25	2	23.14	1.000	118.75	119.37	3
g25Y	g25P	Short only	-3.39	-2.68	26.01	0.781	0.561	0.561	104.34	108.25	2	23.14	1.000	118.75	119.37	3
g27X	g27XY	Short only	-1.96	-1.12	15.78	0.785	0.569	0.569	130.03	127.68	5	14.04	1.000	145.39	135.62	6
g27XY	g27X	Short only	-1.12	-1.96	15.78	0.785	0.569	0.569	130.03	127.68	5	14.04	1.000	145.39	135.62	6
g29P	g29Y	Short only	-1.16	-1.58	12.95	0.774	0.549	0.549	147.79	141.22	5	11.24	1.000	171.28	151.54	6
g29Y	g29P	Short only	-1.58	-1.16	12.95	0.774	0.549	0.549	147.79	141.22	5	11.24	1.000	171.28	151.54	6

Summary of Clamp Capacities and Usages for Load Case "NESC Heavy":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	3.577	50.00	50.00	7.15
2	2.073	50.00	50.00	4.15
3	4.271	50.00	50.00	8.54
4	4.284	50.00	50.00	8.57
5	4.302	50.00	50.00	8.60
6	4.407	50.00	50.00	8.81
7	4.211	50.00	50.00	8.42
8	4.236	50.00	50.00	8.47
9	10.791	50.00	50.00	21.58
10	0.146	50.00	50.00	0.29
11	0.117	50.00	50.00	0.23
12	0.180	50.00	50.00	0.36
13	0.204	50.00	50.00	0.41
14	0.479	50.00	50.00	0.96
15	0.801	50.00	50.00	1.60
16	0.685	50.00	50.00	1.37
17	0.689	50.00	50.00	1.38
18	0.744	50.00	50.00	1.49
19	0.796	50.00	50.00	1.59
20	1.223	50.00	50.00	2.45
21	2.385	50.00	50.00	4.77
22	1.779	50.00	50.00	3.56
23	1.676	50.00	50.00	3.35
24	2.206	50.00	50.00	4.41
25	2.856	50.00	50.00	5.71
26	3.484	50.00	50.00	6.97
27	4.550	50.00	50.00	9.10
28	0.674	50.00	50.00	1.35
29	0.689	50.00	50.00	1.38
30	0.744	50.00	50.00	1.49
31	0.796	50.00	50.00	1.59
32	1.230	50.00	50.00	2.46
33	2.385	50.00	50.00	4.77

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	0.002642	0.4746	-0.03929	-0.7890	0.0245	0.0537	2.503	2.975	80.96
2P	0.001444	0.4055	-0.03827	-0.7456	-0.0103	0.0547	2.501	2.905	75.96
3P	0.00264	0.3272	-0.03553	-0.7461	0.0700	0.0484	2.503	2.827	69.96
4P	-0.0004218	0.2569	-0.03047	-0.5837	-0.0642	0.0445	2.5	2.757	63.97
5P	0.003481	0.2074	-0.02674	-0.5419	0.0266	0.0384	2.503	2.707	58.97
6P	-0.001837	0.1647	-0.02239	-0.4175	0.0086	0.0330	2.498	2.665	53.98
7P	0	0	0	0.0000	0.0000	0.0000	10	10	0
18P	-0.009932	0.471	-0.1945	-0.7993	0.0146	0.0643	-0.009932	14.22	80.81
19P	0.01641	0.4048	0.1553	-0.7751	0.0098	0.0599	0.01641	-11.76	76.16
20P	0.01254	0.2569	0.1635	-0.5723	0.0111	0.0335	0.01254	-16.41	64.16
21P	0.008738	0.164	0.09906	-0.5107	0.0089	0.0407	0.008738	-12.5	54.1
22P	0	0	0	-0.1150	-0.0049	0.0581	1.25	0	0
23P	-0.001544	0.04373	-0.0003403	-0.1117	-0.0019	0.0581	1.248	0.04373	22
24P	-0.001461	0.0767	-0.0005477	-0.1705	0.0033	0.0581	1.249	0.0767	36.5
25P	0.0003166	0.164	-0.000949	-0.4446	0.0079	0.0581	1.25	0.164	54
26P	0.001795	0.2556	-0.001457	-0.5672	0.0101	0.0531	1.252	0.2556	64
27P	0.004027	0.3925	-0.002334	-0.8223	0.0126	0.0667	1.254	0.3925	76
28P	0.004992	0.4743	-0.003041	-1.0700	0.0126	0.0724	1.255	0.4743	81
29P	0.007661	0.8026	-0.006983	-1.4772	0.0126	0.0725	1.258	0.8026	94.99
30P	-0.001069	0.403	-0.07272	-0.7973	0.0138	0.0594	-0.001069	5.403	75.93
31P	-0.004628	0.2552	-0.1106	-0.6748	0.0076	0.0357	-0.004628	9.755	63.89
32P	-0.003275	0.1638	-0.04952	-0.5552	0.0066	0.0421	-0.003275	5.664	53.95
35P	0.0003216	0.1625	-0.003038	-0.4444	-0.1481	0.0715	0.0003216	0.1625	54
36P	0.001801	0.2551	-0.003492	-0.5670	-0.1451	0.0149	0.001801	0.2551	64
37P	0.003964	0.4024	-0.06403	0.0000	0.0000	0.0000	0.003964	0.4024	75.94
38P	0.004994	0.4722	-0.005118	-1.0697	-0.1516	0.1030	0.004994	0.4722	80.99
1X	0.007272	0.475	0.02525	-0.7832	-0.0050	0.0590	2.507	-2.025	81.03
1XY	0.008095	0.4688	0.02618	-0.7727	0.0364	0.0638	-2.492	-2.031	81.03
1Y	0.002038	0.4686	-0.0382	-0.7798	-0.0024	0.0649	-2.498	2.969	80.96
2X	0.006552	0.406	0.02529	-0.7467	0.0412	0.0588	2.507	-2.094	76.03
2XY	0.006328	0.401	0.02618	-0.7422	-0.0137	0.0548	-2.494	-2.099	76.03
2Y	0.001579	0.4004	-0.03718	-0.7400	0.0315	0.0572	-2.498	2.9	75.96
3X	0.0007469	0.3278	0.02334	-0.7461	-0.0173	0.0533	2.501	-2.172	70.02
3XY	0.009323	0.3239	0.02421	-0.7350	0.0464	0.0443	-2.491	-2.176	70.02
3Y	-0.001287	0.3232	-0.03455	-0.7333	-0.0523	0.0487	-2.501	2.823	69.97
4X	0.003813	0.2571	0.01993	-0.5847	0.0504	0.0464	2.504	-2.243	64.02
4XY	0.003452	0.254	0.02079	-0.5844	-0.0266	0.0350	-2.497	-2.246	64.02
4Y	0.0003849	0.2537	-0.0297	-0.5847	0.0792	0.0377	-2.5	2.754	63.97
5X	-0.001026	0.2072	0.01699	-0.5408	-0.0019	0.0434	2.499	-2.293	59.02
5XY	0.006455	0.204	0.01782	-0.5433	0.0232	0.0321	-2.494	-2.296	59.02
5Y	-0.004782	0.204	-0.02608	-0.5438	-0.0112	0.0369	-2.505	2.704	58.97
6X	0.002424	0.1649	0.01338	-0.4197	0.0088	0.0402	2.502	-2.335	54.01
6XY	0.001289	0.1615	0.01412	-0.4200	0.0100	0.0295	-2.499	-2.339	54.01
6Y	-0.000565	0.1613	-0.0218	-0.4178	0.0019	0.0354	-2.501	2.661	53.98
7X	0	0	0	0.0000	0.0000	0.0000	10	-10	0
7XY	0	0	0	0.0000	0.0000	0.0000	-10	-10	0
7Y	0	0	0	0.0000	0.0000	0.0000	-10	10	0
18X	0.02159	0.473	0.1763	-0.7640	0.0101	0.0754	0.02159	-13.28	81.18
8S	0.001314	0.133	-0.02226	-0.3199	-0.0373	0.0289	3.196	3.327	48.98
9S	-0.0005486	0.1029	-0.0214	-0.2516	0.0129	0.0309	4.027	4.131	42.98

10S	-0.003055	0.07742	-0.01961	-0.1978	0.0455	0.0274	4.928	5.008	36.48
11S	-0.02073	0.03318	-0.01682	-0.1433	0.0056	0.0099	6.924	6.978	21.98
15S	-0.001964	0.2894	-0.03298	-0.6756	0.0433	0.0459	2.498	2.789	66.97
16S	0.0002027	0.3948	-0.0328	0.0000	0.0000	0.0000	0.0002027	2.895	66.97
17S	0.03782	0.2897	-0.005724	0.0000	0.0000	0.0000	2.538	0.2897	66.99
8X	-0.001681	0.1332	0.0136	-0.3240	0.0486	0.0345	3.193	-3.061	49.01
8XY	0.00465	0.1292	0.01441	-0.3193	-0.0316	0.0253	-3.19	-3.065	49.01
8Y	-0.005261	0.129	-0.02157	-0.3162	0.0501	0.0305	-3.2	3.323	48.98
9X	-0.0006943	0.1024	0.01335	-0.2537	-0.0088	0.0370	4.027	-3.925	43.01
9XY	0.002869	0.09803	0.01422	-0.2521	0.0228	0.0123	-4.025	-3.93	43.01
9Y	-0.004975	0.09841	-0.02059	-0.2501	-0.0240	0.0150	-4.033	4.126	42.98
10X	-0.000338	0.07788	0.01178	-0.1866	0.0153	0.0260	4.93	-4.853	36.51
10XY	0.001842	0.07305	0.01268	-0.1814	-0.0054	0.0111	-4.929	-4.858	36.51
10Y	-0.004358	0.07257	-0.01862	-0.1900	0.0463	0.0200	-4.935	5.003	36.48
11X	-0.001562	0.03535	0.008758	-0.1460	0.0073	0.0113	6.943	-6.909	22.01
11XY	0.002245	0.03209	0.009297	-0.1323	-0.0018	0.0097	-6.942	-6.912	22.01
11Y	-0.0207	0.03034	-0.01105	-0.1292	0.0187	0.0126	-6.965	6.975	21.99
15X	0.003732	0.2899	0.02165	-0.6796	-0.0502	0.0507	2.504	-2.21	67.02
15XY	0.004922	0.2865	0.02252	-0.6715	0.0798	0.0388	-2.495	-2.214	67.02
15Y	0.002532	0.286	-0.03211	-0.6667	-0.0289	0.0438	-2.497	2.786	66.97
16X	0.004297	0.3388	0.01964	0.0000	0.0000	0.0000	0.004297	-2.161	67.02
17Y	-0.03186	0.2862	-0.004858	0.0000	0.0000	0.0000	-2.532	0.2862	67

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Z Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage % (ft-k)	X Moment Usage %	X-M. Moment (ft-k)	Y Usage %	Y-M. Moment Usage %	H-Bend-M Usage % (ft-k)	Z Moment Usage % (ft-k)	Z-M. Usage %	Max. Usage %
7P	-13.67	0.0	-14.29	0.0	0.0	-100.55	0.0	0.0	102.47	0.0	0.46	0.0	0.9	0.0	0.0	0.13	0.0	0.0
22P	0.03	0.0	-0.53	0.0	0.0	-9.32	0.0	0.0	9.33	0.0	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.0
7X	16.83	0.0	-17.34	0.0	0.0	88.84	0.0	0.0	92.07	0.0	0.56	0.0	0.0	0.0	0.0	0.02	0.0	0.0
7XY	-16.97	0.0	-16.53	0.0	0.0	88.80	0.0	0.0	91.90	0.0	0.49	0.0	-0.0	0.0	0.0	-0.05	0.0	0.0
7Y	13.65	0.0	-14.06	0.0	0.0	-98.79	0.0	0.0	100.72	0.0	0.43	0.0	0.8	0.0	0.0	0.06	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Extreme":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0026	0.4746	-0.0393
2P	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0014	0.4055	-0.0383
3P	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0026	0.3272	-0.0355
4P	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	-0.0004	0.2569	-0.0305
5P	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0035	0.2074	-0.0267
6P	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	-0.0018	0.1647	-0.0224
7P	0.0000	0.5165	-0.4360	13.6662	13.7742	-100.1129	0.0000	0.0000	0.0000
18P	0.4350	2.4219	-0.5520	-0.4350	-2.4219	0.5520	-0.0099	0.4710	-0.1945
19P	-0.0500	3.0539	-0.6930	0.0500	-3.0539	0.6930	0.0164	0.4048	0.1553
20P	-0.0500	2.9989	-0.6990	0.0500	-2.9989	0.6990	0.0125	0.2569	0.1635
21P	-0.0500	2.8969	-0.7060	0.0500	-2.8969	0.7060	0.0087	0.1640	0.0991
22P	0.0000	0.5165	-0.4360	-0.0289	0.0145	-8.8801	0.0000	0.0000	0.0000
23P	0.0000	1.4745	-1.1660	-0.0000	-1.4745	1.1660	-0.0015	0.0437	-0.0003
24P	0.0000	1.0405	-0.8350	-0.0000	-1.0405	0.8350	-0.0015	0.0767	-0.0005
25P	0.0000	1.1404	-0.9281	-0.0000	-1.1404	0.9281	0.0003	0.1640	-0.0009
26P	0.0000	0.5329	-0.4240	0.0000	-0.5329	0.4240	0.0018	0.2556	-0.0015
27P	0.0000	0.4519	-0.3610	0.0000	-0.4519	0.3610	0.0040	0.3925	-0.0023

28P	0.0000	0.4189	-0.3360	-0.0000	-0.4189	0.3360	0.0050	0.4743	-0.0030
29P	0.0000	9.8879	-4.5710	0.0000	-9.8879	4.5710	0.0077	0.8026	-0.0070
30P	-0.0500	3.1169	-0.7250	0.0500	-3.1169	0.7250	-0.0011	0.4030	-0.0727
31P	-0.0500	3.1059	-0.6990	0.0500	-3.1059	0.6990	-0.0046	0.2552	-0.1106
32P	-0.0500	2.9619	-0.7330	0.0500	-2.9619	0.7330	-0.0033	0.1638	-0.0495
35P	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0003	0.1625	-0.0030
36P	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0018	0.2551	-0.0035
37P	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0040	0.4024	-0.0640
38P	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0050	0.4722	-0.0051
1X	0.0000	0.6819	-0.2800	0.0000	-0.6819	0.2800	0.0073	0.4750	0.0252
1XY	0.0000	0.6819	-0.2800	-0.0000	-0.6819	0.2800	0.0081	0.4688	0.0262
1Y	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0020	0.4686	-0.0382
2X	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0066	0.4060	0.0253
2XY	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0063	0.4010	0.0262
2Y	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0016	0.4004	-0.0372
3X	0.0000	0.7059	-0.2860	-0.0000	-0.7059	0.2860	0.0007	0.3278	0.0233
3XY	0.0000	0.7059	-0.2860	0.0000	-0.7059	0.2860	0.0093	0.3239	0.0242
3Y	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	-0.0013	0.3232	-0.0346
4X	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0038	0.2571	0.0199
4XY	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0035	0.2540	0.0208
4Y	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0004	0.2537	-0.0297
5X	0.0000	0.6819	-0.2800	-0.0000	-0.6819	0.2800	-0.0010	0.2072	0.0170
5XY	0.0000	0.6819	-0.2800	0.0000	-0.6819	0.2800	0.0065	0.2040	0.0178
5Y	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	-0.0048	0.2040	-0.0261
6X	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0024	0.1649	0.0134
6XY	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0013	0.1615	0.0141
6Y	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	-0.0006	0.1613	-0.0218
7X	0.0000	0.5165	-0.4360	-16.8252	16.8280	89.2771	0.0000	0.0000	0.0000
7XY	0.0000	0.5165	-0.4360	16.9729	16.0088	89.2338	0.0000	0.0000	0.0000
7Y	0.0000	0.5165	-0.4360	-13.6500	13.5427	-98.3572	0.0000	0.0000	0.0000
18X	0.0000	1.1509	-0.3290	0.0000	-1.1509	0.3290	0.0216	0.4730	0.1763
8S	0.0000	0.6894	-0.5851	0.0000	-0.6894	0.5851	0.0013	0.1330	-0.0223
9S	0.0000	0.5165	-0.4360	-0.0000	-0.5165	0.4360	-0.0005	0.1029	-0.0214
10S	0.0000	0.5165	-0.4360	0.0000	-0.5165	0.4360	-0.0031	0.0774	-0.0196
11S	0.0000	0.5165	-0.4360	0.0000	-0.5165	0.4360	-0.0207	0.0332	-0.0168
15S	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	-0.0020	0.2894	-0.0330
16S	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0002	0.3948	-0.0328
17S	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0378	0.2897	-0.0057
8X	0.0000	1.2344	-0.7251	-0.0000	-1.2344	0.7251	-0.0017	0.1332	0.0136
8XY	0.0000	1.2344	-0.7251	0.0000	-1.2344	0.7251	0.0047	0.1292	0.0144
8Y	0.0000	0.6894	-0.5851	-0.0000	-0.6894	0.5851	-0.0053	0.1290	-0.0216
9X	0.0000	0.5165	-0.4360	-0.0000	-0.5165	0.4360	-0.0007	0.1024	0.0134
9XY	0.0000	0.5165	-0.4360	0.0000	-0.5165	0.4360	0.0029	0.0980	0.0142
9Y	0.0000	0.5165	-0.4360	0.0000	-0.5165	0.4360	-0.0050	0.0984	-0.0206
10X	0.0000	1.1705	-0.6040	-0.0000	-1.1705	0.6040	-0.0003	0.0779	0.0118
10XY	0.0000	1.1705	-0.6040	0.0000	-1.1705	0.6040	0.0018	0.0730	0.0127
10Y	0.0000	0.5165	-0.4360	-0.0000	-0.5165	0.4360	-0.0044	0.0726	-0.0186
11X	0.0000	1.9345	-0.8010	-0.0000	-1.9345	0.8010	-0.0016	0.0354	0.0088
11XY	0.0000	1.9345	-0.8010	0.0000	-1.9345	0.8010	0.0022	0.0321	0.0093
11Y	0.0000	0.5165	-0.4360	0.0000	-0.5165	0.4360	-0.0207	0.0303	-0.0110
15X	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0037	0.2899	0.0217
15XY	0.0000	0.1729	-0.1490	-0.0000	-0.1729	0.1490	0.0049	0.2865	0.0225
15Y	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0025	0.2860	-0.0321
16X	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	0.0043	0.3388	0.0196
17Y	0.0000	0.1729	-0.1490	0.0000	-0.1729	0.1490	-0.0319	0.2862	-0.0049

Crossing Diagonal Check for Load Case "NESC Extreme" (RL0UT controls):

Comp.	Tens.	Connect	Force	Force	-----Original-----	-----Alternate-----
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Member Label	Member Label	Leg for Comp. Member	In Comp. Member (kips)	In Tens. Member (kips)	-----Supported-----							-----Unsupported-----					
					L/R Cap. (kips)	RLX	RLY	RLZ	L/R	KL/R	Curve No.	L/R Cap. (kips)	RLOUT	L/R	KL/R	Curve No.	
g13P	g13Y	Short	only	-0.89	-0.22	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g13Y	g13P	Short	only	-0.22	-0.89	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g15P	g15Y	Long	only	-2.98	-1.08	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g15X	g15XY	Long	only	-2.26	-4.63	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g15XY	g15X	Long	only	-4.63	-2.26	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g15Y	g15P	Long	only	-1.08	-2.98	22.45	0.500	0.750	0.500	122.46	121.91	5	15.84	1.000	163.28	146.62	6
g24XY	g24Y	Short	only	-0.52	-0.54	26.01	0.781	0.561	0.561	104.34	108.25	2	23.14	1.000	118.75	119.37	3
g24Y	g24XY	Short	only	-0.54	-0.52	26.01	0.781	0.561	0.561	104.34	108.25	2	23.14	1.000	118.75	119.37	3
g25P	g25Y	Short	only	-5.25	-3.74	26.01	0.781	0.561	0.561	104.34	108.25	2	23.14	1.000	118.75	119.37	3
g25Y	g25P	Short	only	-3.74	-5.25	26.01	0.781	0.561	0.561	104.34	108.25	2	23.14	1.000	118.75	119.37	3
g27X	g27XY	Short	only	-1.95	-2.81	15.78	0.785	0.569	0.569	130.03	127.68	5	14.04	1.000	145.39	135.62	6
g27XY	g27X	Short	only	-2.81	-1.95	15.78	0.785	0.569	0.569	130.03	127.68	5	14.04	1.000	145.39	135.62	6
g29P	g29Y	Short	only	-2.28	-1.67	12.95	0.774	0.549	0.549	147.79	141.22	5	11.24	1.000	171.28	151.54	6
g29Y	g29P	Short	only	-1.67	-2.28	12.95	0.774	0.549	0.549	147.79	141.22	5	11.24	1.000	171.28	151.54	6

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Usage %
1	2.522	50.00	50.00	5.04
2	1.197	50.00	50.00	2.39
3	3.132	50.00	50.00	6.26
4	3.200	50.00	50.00	6.40
5	3.080	50.00	50.00	6.16
6	3.184	50.00	50.00	6.37
7	2.982	50.00	50.00	5.96
8	3.052	50.00	50.00	6.10
9	10.893	50.00	50.00	21.79
10	0.228	50.00	50.00	0.46
11	0.228	50.00	50.00	0.46
12	0.228	50.00	50.00	0.46
13	0.904	50.00	50.00	1.81
14	0.676	50.00	50.00	1.35
15	0.676	50.00	50.00	1.35
16	0.737	50.00	50.00	1.47
17	0.762	50.00	50.00	1.52
18	0.737	50.00	50.00	1.47
19	1.432	50.00	50.00	2.86
20	1.317	50.00	50.00	2.63
21	2.094	50.00	50.00	4.19
22	0.537	50.00	50.00	1.07
23	0.578	50.00	50.00	1.16
24	0.681	50.00	50.00	1.36
25	1.470	50.00	50.00	2.94
26	1.334	50.00	50.00	2.67
27	1.880	50.00	50.00	3.76
28	0.737	50.00	50.00	1.47
29	0.762	50.00	50.00	1.52
30	0.737	50.00	50.00	1.47

31	1.432	50.00	50.00	2.86
32	1.317	50.00	50.00	2.63
33	2.094	50.00	50.00	4.19

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage
which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group	Group	Angle	Steel	Max	Usage	Max	Comp.	Comp.	Comp.	L/R	Comp.	Comp.	RLX	RLY					
RLZ	L/R	KL/R	Length	Curve	No.	Angle	Strength	Usage	Cont-	Use	Control	Force	Control	Capacity	Connect.	Connect.			
Comp.	No.	Of		Desc.	Type	Size	(ksi)	%	rol	In	Member	(kips)	Load	(kips)	Shear	Bearing			
Member	Bolts									Comp.		Case		Capacity	Capacity	Capacity			
Comp.							(ksi)	%				(kips)		(kips)	(kips)	(kips)			
(ft)																			
Leg1				Leg1	SAE	4X4X0.25	33.0	77.63	Tens	72.63	g4P	-43.747NESC	Ext	60.236	127.400	196.875	1.000	1.000	
1.000	45.28	45.28	3.000	1	14														
Leg2				Leg2	SAE	5X5X0.3125	33.0	98.83	Tens	81.75	g6P	-73.154NESC	Ext	89.489	163.800	316.406	1.000	1.000	
1.000	60.36	60.36	5.000	1	18														
Leg3				Leg3	SAE	5X5X0.375	33.0	94.12	Tens	89.84	g9P	-87.133NESC	Ext	96.992	145.600	337.499	1.000	1.000	
1.000	80.29	80.29	6.624	1	16														
Leg4				Leg4	SAE	6X6X0.375	33.0	85.10	Comp	85.10	g11P	-102.432NESC	Ext	120.373	163.800	379.687	0.333	0.333	
0.333	75.29	75.29	22.420	1	18														
XBrace1				XBrace1	SAE	1.75X1.75X0.1875	33.0	79.56	Comp	79.56	g12X	-9.196NESC	Ext	11.559	18.200	21.094	0.750	0.500	
0.500	123.69	122.85	7.071	5	2														
XBrace2				XBrace2	SAU	3X2X0.25	33.0	60.99	Comp	60.99	g14X	-13.690NESC	Ext	22.446	27.300	42.187	0.500	0.750	
0.500	122.46	121.91	7.810	5	3														
XBrace3				XBrace3	SAE	2.5X2.5X0.25	33.0	22.69	Cross	22.69	g25P	-5.251NESC	Ext	23.140	27.300	42.187	1.000	0.561	
0.561	118.75	119.37	7.610	3	3														
XBrace4				XBrace4	SAE	2.5X2.5X0.1875	33.0	20.32	Cross	20.32	g29P	-2.284NESC	Ext	11.242	18.200	21.094	1.000	0.549	
0.549	171.28	151.54	11.105	6	2														
XBrace5				XBrace5	SAE	2X2X0.25	33.0	33.84	Tens	17.62	g31P	-0.628NESC	Ext	3.567	27.300	42.187	1.000	0.577	
0.577	371.43	274.63	18.850	6	3														
XBrace6				XBrace6	SAE	2.5X2.5X0.1875	33.0	40.74	Tens	0.00	g33Y	0.000		2.666	27.300	31.641	1.000	0.409	
0.409	430.90	311.20	27.937	6	3														
XBrace7				XBrace7	SAU	3X2X0.25	33.0	63.44	Comp	63.44	g17P	-14.240NESC	Ext	22.446	27.300	42.187	1.000	1.500	
1.000	122.46	121.91	3.905	5	3														
Horz1				Horizontal	1	SAE	1.75X1.75X0.1875	33.0	78.82	Comp	78.82	g37P	-4.571NESC	Ext	5.799	9.100	10.547	1.000	1.000
1.000	174.93	174.93	5.000	4	1														
Horz2				Horizontal	2	SAU	2.5X2X0.1875	33.0	49.85	Comp	49.85	g38X	-5.190NESC	Ext	10.412	18.200	21.094	1.000	0.500
0.500	149.22	149.22	9.861	4	2														
Horz3				Horizontal	3	SAU	3X2.5X0.25	33.0	86.39	Comp	86.39	g40X	-10.414NESC	Ext	12.054	18.200	28.125	1.000	0.500
0.500	176.37	176.37	13.889	4	2														
Horz4				Horizontal	4	Bar	2x1/4	33.0	42.93	Tens	0.00	g43Y	0.000	12.648	9.100	14.062	1.000	2.000	
1.000	60.00	90.00	2.500	3	1														
Arm1				Ground Wire	Arm	SAU	3X2.5X0.25	33.0	27.26	Tens	5.24	g44Y	-0.954NESC	Hea	19.099	18.200	28.125	1.000	0.500
0.500	146.34	140.11	11.524	5	2														
Arm2				Top Cross	Arm	SAU	5X3.5X0.3125	33.0	17.83	Comp	17.83	g46Y	-4.867NESC	Hea	60.563	27.300	52.734	1.000	0.500
0.500	78.21	99.11	9.985	3	3														
Arm3				Middle Cross	Arm	SAU	5X3.5X0.3125	33.0	23.65	Comp	23.65	g48Y	-6.457NESC	Hea	51.520	27.300	52.734	1.000	0.500
0.500	112.68	116.34	14.386	3	3														
Arm4				Bottom Cross	Arm	SAU	5X3.5X0.3125	33.0	15.38	Comp	15.38	g50Y	-4.200NESC	Hea	59.638	27.300	52.734	1.000	0.500

0.500	82.01	101.00	10.470	3	3														
	ArmBr1	Ground Wire Arm Brace			SAE	2.5X2.5X0.1875	33.0	64.77	Comp	64.77	g52P	-2.801NESC	Hea	4.325	9.100	10.547	1.000	1.000	
1.000	244.31	244.31	10.078	4	1														
	ArmBr2	Top Cross Arm Brace			Bar	1.75x1/4	33.0	39.59	Tens	0.00	g60Y	0.000		0.086	9.100	14.062	1.000	1.000	
1.000	1204.67	1204.67	6.124	4	1														
	ArmBr3	Middle Cross Arm Brace			Bar	1.75x1/4	33.0	59.77	Tens	0.00	g61Y	0.000		0.050	9.100	14.062	1.000	1.000	
1.000	1576.84	1576.84	8.016	4	1														
	ArmBr4	Bottom Cross Arm Brace			Bar	1.75x1/4	33.0	31.91	Tens	0.00	g62Y	0.000		0.080	9.100	14.062	1.000	1.000	
1.000	1248.06	1248.06	6.344	4	1														
	PWMount	HSS 16"x0.5" Powermount			Pwmnt	Pipe HSS16"x0.5"	42.0	3.04	Comp	3.04	g63P	-26.548NESC	Hea	872.521	0.000	0.000	1.000	1.000	
1.000	48.09	48.09	22.000	1	0														
	PWMBrace	Powermount Brace			SAE	2.5X2.5X0.375	36.0	58.29	Tens	54.95	g75X	-9.232NESC	Ext	44.815	16.800	20.391	1.000	1.000	
1.000	68.87	94.44	2.795	3	1														
	Arm5	Top Cross Arm			SAE	2.5X2.5X0.1875	33.0	8.26	Tens	1.12	g56P	-0.205NESC	Hea	20.689	18.200	21.094	1.000	1.000	
1.000	85.71	102.85	3.536	3	2														
	Arm6	Middle Cross Arm			SAE	3X3X0.1875	33.0	4.37	Tens	0.21	g58P	-0.032NESC	Hea	15.334	27.300	31.641	1.000	1.000	
1.000	149.66	142.64	7.433	5	3														
	Arm7	Bottom Cross Arm			SAE	2.5X2.5X0.1875	33.0	10.78	Tens	0.00	g57Y	0.000		19.881	18.200	21.094	1.000	1.000	
1.000	94.67	107.33	3.905	3	2														
	ArmBr5	Ground Wire Arm Brace			SAU	2.5X2X0.1875	33.0	9.58	Comp	9.58	g59P	-0.872NESC	Hea	10.672	9.100	10.547	1.000	1.000	
1.000	147.39	147.39	5.245	4	1														
	PMBrace2	Powermount Brace 2			Bar	6x3/4	36.0	2.69	Comp	2.69	g78P	-0.643NESC	Hea	116.372	23.900	48.937	1.000	1.000	
1.000	69.28	94.64	1.250	3	1														
	Inner1	L1.75x1.75x3/16			SAE	1.75X1.75X0.1875	36.0	43.01	Tens	0.00	g81Y	0.000		11.582	11.150	10.195	1.000	1.000	
1.000	123.69	123.69	3.536	4	1														
	XBrace8	XBrace8			SAU	3X2.5X0.25	33.0	34.84	Tens	32.06	g22X	-10.376NESC	Ext	32.363	36.400	56.250	0.500	0.750	
0.500	84.51	93.39	7.071	2	4														
	Inner1R	L2.5x2.5x3/8			SAE	2.5X2.5X0.375	36.0	42.37	Tens	40.51	g82Y	-4.517NESC	Ext	41.278	11.150	20.391	1.000	1.000	
1.000	87.12	103.56	3.536	3	1														

Group Summary (Tension Portion):

Group Length	Group No.	No.	Hole Diameter	Group Desc.	Angle Type	Angle Size	Steel Strength	Max Usage	Max Tension	Tension Control	Tension Force	Tension Control	Net Section	Tension Connect.	Tension Connect.	Tension Connect.		
Tens.	Of	Of																
Member	Bolts	Holes																
Tens.																		
(ft)			(in)				(ksi)	%		%		(kips)		(kips)	(kips)	(kips)		

3.000	Leg1	14	2.910	0.75	Leg1	SAE	4X4X0.25	33.0	77.63	Tens	77.63	g4X	35.723NESC	Ext	46.014	127.400	196.875	180.147
5.000	Leg2	18	4.000	0.75	Leg2	SAE	5X5X0.3125	33.0	98.83	Tens	98.83	g6XY	68.246NESC	Ext	69.052	163.800	316.406	271.406
6.115	Leg3	0	3.500	0.75	Leg3	SAE	5X5X0.375	33.0	94.12	Tens	94.12	g8XY	81.551NESC	Ext	86.645	0.000	0.000	0.000
22.420	Leg4	18	3.150	0.75	Leg4	SAE	6X6X0.375	33.0	85.10	Comp	68.00	g11XY	77.959NESC	Ext	114.644	163.800	379.687	407.952
7.071	XBrace1	2	1.000	0.75	XBrace1	SAE	1.75X1.75X0.1875	33.0	79.56	Comp	62.15	g12P	8.849NESC	Ext	14.237	18.200	21.094	15.363
7.810	XBrace2	3	1.060	0.75	XBrace2	SAU	3X2X0.25	33.0	60.99	Comp	48.38	g14P	13.207NESC	Ext	29.440	27.300	42.187	37.500
7.610	XBrace3	3	1.000	0.75	XBrace3	SAE	2.5X2.5X0.25	33.0	22.69	Cross	18.53	g25X	4.516NESC	Ext	29.774	27.300	42.187	24.375

XBrace4	9.426	3	1.000	0.75	XBrace4	SAE	2.5X2.5X0.1875	33.0	20.32	Cross	18.65	g27Y	3.409	NESC	Ext	22.613	27.300	31.641	18.281
XBrace5	18.850	3	1.000	0.75	XBrace5	SAE	2X2X0.25	33.0	33.84	Tens	33.84	g31X	7.562	NESC	Ext	22.349	27.300	42.187	24.375
XBrace6	27.937	3	1.000	0.75	XBrace6	SAE	2.5X2.5X0.1875	33.0	40.74	Tens	40.74	g33X	9.212	NESC	Ext	22.613	27.300	31.641	22.992
XBrace7	3.905	3	1.060	0.75	XBrace7	SAU	3X2X0.25	33.0	63.44	Comp	50.33	g16P	13.740	NESC	Ext	29.440	27.300	42.187	37.500
Horz1	5.000	1	1.000	0.75	Horizontal 1	SAE	1.75X1.75X0.1875	33.0	78.82	Comp	55.87	g37X	4.086	NESC	Ext	14.237	9.100	10.547	7.312
Horz2	9.861	2	1.000	0.75	Horizontal 2	SAU	2.5X2X0.1875	33.0	49.85	Comp	19.73	g38P	3.108	NESC	Ext	17.096	18.200	21.094	15.750
Horz3	13.889	2	1.000	0.75	Horizontal 3	SAU	3X2.5X0.25	33.0	86.39	Comp	0.00	g41Y	0.000			29.626	18.200	28.125	20.719
Horz4	2.500	1	1.000	0.75	Horizontal 4	Bar	2x1/4	33.0	42.93	Tens	42.93	g43Y	3.906	NESC	Hea	9.281	9.100	14.062	10.781
Arm1	11.524	2	1.000	0.75	Ground Wire Arm	SAU	3X2.5X0.25	33.0	27.26	Tens	27.26	g44XY	4.961	NESC	Hea	33.338	18.200	28.125	28.125
Arm2	5.000	3	2.000	0.75	Top Cross Arm	SAU	5X3.5X0.3125	33.0	17.83	Comp	0.00	g47Y	0.000			62.110	27.300	52.734	24.961
Arm3	5.000	3	2.000	0.75	Middle Cross Arm	SAU	5X3.5X0.3125	33.0	23.65	Comp	1.11	g49P	0.278	NESC	Ext	62.110	27.300	52.734	24.961
Arm4	5.000	3	2.000	0.75	Bottom Cross Arm	SAU	5X3.5X0.3125	33.0	15.38	Comp	0.00	g51Y	0.000			62.110	27.300	52.734	26.250
ArmBr1	10.078	1	1.000	0.75	Ground Wire Arm Brace	SAE	2.5X2.5X0.1875	33.0	64.77	Comp	0.00	g52P	0.000			22.613	9.100	10.547	9.375
ArmBr2	11.167	1	1.000	0.75	Top Cross Arm Brace	Bar	1.75x1/4	33.0	39.59	Tens	39.59	g53Y	2.939	NESC	Hea	7.425	9.100	14.062	9.750
ArmBr3	14.695	1	1.000	0.75	Middle Cross Arm Brace	Bar	1.75x1/4	33.0	59.77	Tens	59.77	g54Y	4.438	NESC	Hea	7.425	9.100	14.062	9.750
ArmBr4	11.602	1	1.000	0.75	Bottom Cross Arm Brace	Bar	1.75x1/4	33.0	31.91	Tens	31.91	g55Y	2.369	NESC	Hea	7.425	9.100	14.062	9.750
PwMount	14.000	0	0.000	0	HSS 16"x0.5" Powermount	Pwmnt	Pipe HSS16"x0.5"	42.0	3.04	Comp	0.00	g69P	0.000			953.399	0.000	0.000	0.000
PWMBrace	2.795	1	1.000	0.6875	Powermount Brace	SAE	2.5X2.5X0.375	36.0	58.29	Tens	58.29	g75P	9.793	NESC	Ext	47.699	16.800	20.391	18.125
Arm5	3.536	2	1.000	0.75	Top Cross Arm	SAE	2.5X2.5X0.1875	33.0	8.26	Tens	8.26	g56P	1.492	NESC	Ext	22.613	18.200	21.094	18.070
Arm6	7.433	3	1.000	0.75	Middle Cross Arm	SAE	3X3X0.1875	33.0	4.37	Tens	4.37	g58P	1.080	NESC	Ext	28.196	27.300	31.641	24.680
Arm7	3.905	2	1.000	0.75	Bottom Cross Arm	SAE	2.5X2.5X0.1875	33.0	10.78	Tens	10.78	g57Y	1.948	NESC	Hea	22.613	18.200	21.094	18.070
ArmBr5	5.245	1	1.000	0.75	Ground Wire Arm Brace	SAU	2.5X2X0.1875	33.0	9.58	Comp	0.00	g59P	0.000			19.880	9.100	10.547	9.375
PMBrace2	1.250	1	1.000	0.875	Powermount Brace 2	Bar	6x3/4	36.0	2.69	Comp	2.07	g76P	0.494	NESC	Hea	124.537	23.900	48.937	54.375
Inner1	3.536	1	1.000	0.75	L1.75x1.75x3/16	SAE	1.75X1.75X0.1875	36.0	43.01	Tens	43.01	g81Y	2.480	NESC	Ext	15.532	11.150	10.195	5.766
XBrace8	7.071	4	1.680	0.75	XBrace8	SAU	3X2.5X0.25	33.0	34.84	Tens	34.84	g22Y	10.296	NESC	Ext	29.551	36.400	56.250	30.844
Inner1R	3.536	1	1.000	0.75	L2.5x2.5x3/8	SAE	2.5X2.5X0.375	36.0	42.37	Tens	42.37	g80Y	4.724	NESC	Ext	46.939	11.150	20.391	11.531

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	67.79	g9P	Angle
NESC Extreme	98.83	g6XY	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	7.15	NESC Heavy	0.0
2	Clamp	4.15	NESC Heavy	0.0
3	Clamp	8.54	NESC Heavy	0.0
4	Clamp	8.57	NESC Heavy	0.0
5	Clamp	8.60	NESC Heavy	0.0
6	Clamp	8.81	NESC Heavy	0.0
7	Clamp	8.42	NESC Heavy	0.0
8	Clamp	8.47	NESC Heavy	0.0
9	Clamp	21.79	NESC Extreme	0.0
10	Clamp	0.46	NESC Extreme	0.0
11	Clamp	0.46	NESC Extreme	0.0
12	Clamp	0.46	NESC Extreme	0.0
13	Clamp	1.81	NESC Extreme	0.0
14	Clamp	1.35	NESC Extreme	0.0
15	Clamp	1.60	NESC Heavy	0.0
16	Clamp	1.47	NESC Extreme	0.0
17	Clamp	1.52	NESC Extreme	0.0
18	Clamp	1.49	NESC Heavy	0.0
19	Clamp	2.86	NESC Extreme	0.0
20	Clamp	2.63	NESC Extreme	0.0
21	Clamp	4.77	NESC Heavy	0.0
22	Clamp	3.56	NESC Heavy	0.0
23	Clamp	3.35	NESC Heavy	0.0
24	Clamp	4.41	NESC Heavy	0.0
25	Clamp	5.71	NESC Heavy	0.0
26	Clamp	6.97	NESC Heavy	0.0
27	Clamp	9.10	NESC Heavy	0.0
28	Clamp	1.47	NESC Extreme	0.0
29	Clamp	1.52	NESC Extreme	0.0
30	Clamp	1.49	NESC Heavy	0.0
31	Clamp	2.86	NESC Extreme	0.0
32	Clamp	2.63	NESC Extreme	0.0
33	Clamp	4.77	NESC Heavy	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	1	Clamp	18P	0.912	3.152	1.423	3.577
NESC Heavy	2	Clamp	18X	-0.050	1.890	0.852	2.073
NESC Heavy	3	Clamp	19P	-0.050	3.860	1.828	4.271
NESC Heavy	4	Clamp	30P	-0.025	3.907	1.756	4.284

NESC Heavy	5	Clamp	20P	-0.050	3.865	1.889	4.302
NESC Heavy	6	Clamp	31P	-0.025	4.037	1.767	4.407
NESC Heavy	7	Clamp	21P	-0.050	3.788	1.839	4.211
NESC Heavy	8	Clamp	32P	-0.025	3.861	1.741	4.236
NESC Heavy	9	Clamp	29P	0.000	2.870	10.403	10.791
NESC Heavy	10	Clamp	1P	0.000	0.000	0.146	0.146
NESC Heavy	11	Clamp	3P	0.000	0.000	0.117	0.117
NESC Heavy	12	Clamp	5P	0.000	0.000	0.180	0.180
NESC Heavy	13	Clamp	8S	0.000	0.000	0.204	0.204
NESC Heavy	14	Clamp	10S	0.000	0.000	0.479	0.479
NESC Heavy	15	Clamp	11S	0.000	0.000	0.801	0.801
NESC Heavy	16	Clamp	1X	0.000	0.246	0.640	0.685
NESC Heavy	17	Clamp	3X	0.000	0.284	0.628	0.689
NESC Heavy	18	Clamp	5X	0.000	0.316	0.674	0.744
NESC Heavy	19	Clamp	8X	0.000	0.326	0.727	0.796
NESC Heavy	20	Clamp	10X	0.000	0.521	1.106	1.223
NESC Heavy	21	Clamp	11X	0.000	1.010	2.160	2.385
NESC Heavy	22	Clamp	28P	0.000	0.494	1.709	1.779
NESC Heavy	23	Clamp	27P	0.000	0.464	1.610	1.676
NESC Heavy	24	Clamp	26P	0.000	0.600	2.123	2.206
NESC Heavy	25	Clamp	25P	0.000	0.762	2.753	2.856
NESC Heavy	26	Clamp	24P	0.000	0.894	3.367	3.484
NESC Heavy	27	Clamp	23P	0.000	1.151	4.402	4.550
NESC Heavy	28	Clamp	1XY	0.000	0.246	0.627	0.674
NESC Heavy	29	Clamp	3XY	0.000	0.284	0.628	0.689
NESC Heavy	30	Clamp	5XY	0.000	0.316	0.674	0.744
NESC Heavy	31	Clamp	8XY	0.000	0.326	0.727	0.796
NESC Heavy	32	Clamp	10XY	0.000	0.521	1.115	1.230
NESC Heavy	33	Clamp	11XY	0.000	1.010	2.160	2.385
NESC Extreme	1	Clamp	18P	0.435	2.422	0.552	2.522
NESC Extreme	2	Clamp	18X	0.000	1.151	0.329	1.197
NESC Extreme	3	Clamp	19P	-0.050	3.054	0.693	3.132
NESC Extreme	4	Clamp	30P	-0.050	3.117	0.725	3.200
NESC Extreme	5	Clamp	20P	-0.050	2.999	0.699	3.080
NESC Extreme	6	Clamp	31P	-0.050	3.106	0.699	3.184
NESC Extreme	7	Clamp	21P	-0.050	2.897	0.706	2.982
NESC Extreme	8	Clamp	32P	-0.050	2.962	0.733	3.052
NESC Extreme	9	Clamp	29P	0.000	9.888	4.571	10.893
NESC Extreme	10	Clamp	1P	0.000	0.173	0.149	0.228
NESC Extreme	11	Clamp	3P	0.000	0.173	0.149	0.228
NESC Extreme	12	Clamp	5P	0.000	0.173	0.149	0.228
NESC Extreme	13	Clamp	8S	0.000	0.689	0.585	0.904
NESC Extreme	14	Clamp	10S	0.000	0.517	0.436	0.676
NESC Extreme	15	Clamp	11S	0.000	0.517	0.436	0.676
NESC Extreme	16	Clamp	1X	0.000	0.682	0.280	0.737
NESC Extreme	17	Clamp	3X	0.000	0.706	0.286	0.762
NESC Extreme	18	Clamp	5X	0.000	0.682	0.280	0.737
NESC Extreme	19	Clamp	8X	0.000	1.234	0.725	1.432
NESC Extreme	20	Clamp	10X	0.000	1.171	0.604	1.317
NESC Extreme	21	Clamp	11X	0.000	1.935	0.801	2.094
NESC Extreme	22	Clamp	28P	0.000	0.419	0.336	0.537
NESC Extreme	23	Clamp	27P	0.000	0.452	0.361	0.578
NESC Extreme	24	Clamp	26P	0.000	0.533	0.424	0.681
NESC Extreme	25	Clamp	25P	0.000	1.140	0.928	1.470
NESC Extreme	26	Clamp	24P	0.000	1.041	0.835	1.334
NESC Extreme	27	Clamp	23P	0.000	1.475	1.166	1.880
NESC Extreme	28	Clamp	1XY	0.000	0.682	0.280	0.737
NESC Extreme	29	Clamp	3XY	0.000	0.706	0.286	0.762
NESC Extreme	30	Clamp	5XY	0.000	0.682	0.280	0.737

NESC Extreme	31	Clamp	8XY	0.000	1.234	0.725	1.432
NESC Extreme	32	Clamp	10XY	0.000	1.171	0.604	1.317
NESC Extreme	33	Clamp	11XY	0.000	1.935	0.801	2.094

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0 (i.e. a single pole).

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC Heavy	34.682	0.637	35.342	2264.680	74.196	-10.310
NESC Extreme	41.193	0.135	12.656	2784.626	24.045	8.610

*** Weight of structure (lbs):
 Weight of Angles*Section DLF: 18363.4
 Total: 18363.4

*** End of Report

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear (Compression Leg) =	$\text{Shear}_{\text{comp}} := 19.77 \cdot 1.1 \cdot \text{kips} = 21.7 \cdot \text{kips}$	(User Input from PLS Tower)
Shear (Uplift Leg) =	$\text{Shear}_{\text{up}} := 24.16 \cdot 1.1 \cdot \text{kips} = 26.6 \cdot \text{kips}$	(User Input from PLS Tower)
Compression =	$\text{Comp} := 100.55 \cdot 1.1 \cdot \text{kips} = 110.6 \cdot \text{kips}$	(User Input from PLS Tower)
Uplift =	$\text{Uplift} := 88.84 \cdot 1.1 \cdot \text{kips} = 97.7 \cdot \text{kips}$	(User Input from PLS Tower)

Tower Properties:

Tower Height =	$H_t := 81 \cdot \text{ft}$	(User Input)
----------------	-----------------------------	--------------

Foundation Properties:

Pier Height =	$P_H := 6 \cdot \text{ft}$	(User Input)
Pier Width Top =	$P_{W1} := 1.67 \cdot \text{ft}$	(User Input)
Pier Width Bottom =	$P_{W2} := 2.53 \cdot \text{ft}$	(User Input)
Pier Projection Above Grade =	$P_P := 2 \cdot \text{ft}$	(User Input)
Pad Width =	$Pd_W := 10 \cdot \text{ft}$	(User Input)
Pad Thickness =	$Pd_t := 4 \cdot \text{ft}$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma_c := 150 \cdot \text{pcf}$	(User Input)
Water Unit Weight =	$\gamma_w := 62.4 \cdot \text{pcf}$	(User Input)
Soil Unit Weight =	$\gamma_s := 100 \cdot \text{pcf}$	(User Input)
Uplift Angle =	$\phi := 30.0 \cdot \text{deg}$	(User Input)
Soil Bearing Capacity =	$BC_{\text{Soil}} := 7000 \cdot \text{psf}$	(User Input)
Coefficient of Friction =	$\mu := 0.45$	(User Input)
Coefficient of Lateral Soil Pressure =	$K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)} = 3$	

Calculated Data:

Volume of the Concrete Pad =	$V_{pad} := P_{dW}^2 \cdot P_{dt} = 400 \cdot ft^3$
Volume of the Concrete Pier =	$V_{pier} := \frac{(P_H)}{3} \cdot (P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}) = 26.83 \cdot ft^3$
Resisting Pyramid Base 1 =	$B_1 := P_{dW}^2 = 100 \cdot ft^2$
Resisting Pyramid Base 2 =	$B_2 := [2 \cdot \tan(\phi) \cdot (P_H - P_P) + P_{dW}]^2 = 214 \cdot ft^2$
Volume of Soil =	$V_{soil} := \left[\frac{(P_H - P_P)}{3} \cdot (B_1 + B_2 + \sqrt{B_1 \cdot B_2}) \right] - V_{pier} = 586 \cdot ft^3$
Total Volume of Concrete =	$V_{Conc} := V_{pad} + V_{pier} = 427 \cdot ft^3$
Mass of Concrete =	$Mass_{Conc} := V_{Conc} \cdot \gamma_C = 64 \cdot kips$
Mass of Soil =	$Mass_{Soil} := V_{soil} \cdot \gamma_S = 59 \cdot kips$
Total Mass =	$Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 123 \cdot kips$

Check Uplift:

Required Factor of Safety =	$F_S := 1.0$
	$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.26$
	$Uplift_Check := \text{if} \left(\frac{Mass_{tot}}{Uplift} \geq F_S, "OK", "Overstressed" \right)$
	Uplift_Check = "OK"

Check Bearing:

Cross Sectional Area of Pad =	$A_{pad} := P_{dW}^2 = 100 \cdot ft^2$
Section Modulus of Pad =	$S_{pad} := \frac{(P_{dW})^3}{6} = 167 \cdot ft^3$
	$Bearing := \frac{Comp + Mass_{Conc}}{A_{pad}} = 1.75 \cdot ksf$
	$Bearing_Check := \text{if} (Bearing \leq BC_{soil}, "OK", "No Good")$
	Bearing_Check = "OK"

Check Sliding:

Sliding Resistance =	$S_R := \mu \cdot (Mass_{Conc} + Comp) = 78.583 \cdot kips$
	$Sliding_Check := \text{if} (Shear_{comp} \leq S_R, "OK", "No Good")$
	Sliding_Check = "OK"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT1845	DATE:	05/15/2018	RF DESIGN ENG:	Radu Alecsandru	RF PERF ENG:		RFDS PROGRAM TYPE:	2019 New Site		
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:		RF PERF PHONE:		RFDS TECHNOLOGY:	New		
REVISION:	Preliminary	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	RA9161@ATT.COM	RF PERF EMAIL:		STATE/STATUS:	Preliminary/in Progress		
INITIATIVE /PROJECT:	5/15/2018 initial release of the RFDS 5/23/2018 updated WCS radio due to end of life cycle to 4415 B30					RFDS VERSION:	1.00	RFDS ID:		2380765	
						GSM FREQUENCY:		Created By:	ra9161	Updated By:	ra9161
						UMTS FREQUENCY:		Date Created:	5/15/2018 9:34:28 AM	Date Updated:	5/23/2018 1:01:44 PM
						LTE FREQUENCY:	700, 850, 1900, WCS				
						5G FREQUENCY:					
						I-PLAN JOB # 1:	NER-RCTB-18-00006	IPLAN PRD GRP SUB GRP #1:		New Site LTE Only 1C	
						I-PLAN JOB # 2:	NER-RCTB-18-01940	IPLAN PRD GRP SUB GRP #2:		LTE Next Carrier LTE 2C	
						I-PLAN JOB # 3:	NER-RCTB-18-02060	IPLAN PRD GRP SUB GRP #3:		LTE Next Carrier LTE 3C	
						I-PLAN JOB # 4:	NER-RCTB-18-02176	IPLAN PRD GRP SUB GRP #4:		LTE Next Carrier LTE 4C	
						I-PLAN JOB # 5:		IPLAN PRD GRP SUB GRP #5:			
I-PLAN JOB # 6:		IPLAN PRD GRP SUB GRP #6:									
I-PLAN JOB # 7:		IPLAN PRD GRP SUB GRP #7:									
I-PLAN JOB # 8:		IPLAN PRD GRP SUB GRP #8:									

Section 2 - LOCATION INFORMATION

USID:	157861	FA LOCATION CODE:	12685511	LOCATION NAME:	WESTON TALL PINES DRIVE	ORACLE PTN # 1:	2051A0FKFT	PACE JOB # 1:	MRCTB028440
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PTN # 2:	2051A0GB04	PACE JOB # 2:	MRCTB029933
ADDRESS:	5 TALL PINES DRIVE	CITY:	WESTON	STATE:	CT	ORACLE PTN # 3:	2051A0GA5D	PACE JOB # 3:	MRCTB029832
ZIP CODE:	06883	COUNTY:	FAIRFIELD	LONG (DEC. DEG.):	-73.3480080	ORACLE PTN # 4:	2051A0GA54	PACE JOB # 4:	MRCTB029853
LATITUDE (D-M-S):	41d 11m40.632s	LONGITUDE (D-M-S):	-73d -20m-52.8288s	LAT (DEC. DEG.):	41.1946200	ORACLE PTN # 5:		PACE JOB # 5:	
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	CL&P CANDIDATE					ORACLE PTN # 6:		PACE JOB # 6:	
						ORACLE PTN # 7:		PACE JOB # 7:	
						ORACLE PTN # 8:		PACE JOB # 8:	
						BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:	FAIRFIELD WESTPORT TURNPIKE
						AM STUDY REQ'D (Y/N):	No	SEARCH RING ID:	S1845
						FREQ COORD:		BTA:	MSA / RSA:
						OPS DISTRICT:		LAC(GSM):	
						OPS ZONE:		LAC(UMTS):	
						RF DISTRICT:		BSC(GSM):	
						RF ZONE:		RNC(UMTS):	
PARENT NAME(GSM):		MME POOL ID(LTE):	FF01						
PARENT NAME(UMTS):									

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	No	GROUND ELEVATION (ft):		STRUCTURE TYPE:		MARKET LOCATION 700 MHz Band:			
ADDITIONAL REGULATORY?:	No	HEIGHT OVERALL (ft):		FCC ASR NUMBER:		MARKET LOCATION 850 MHz Band:			
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):				MARKET LOCATION 1900 MHz Band:			
LIGHTING TYPE:						MARKET LOCATION AWS Band:			
						MARKET LOCATION WCS Band:			
						MARKET LOCATION Future Band:			

Section 5 - E-911 INFORMATION - existing

[illegible][illegible]

[illegible]

Section 7 - RBS SPECIFIC INFORMATION - existing

[illegible][illegible]

[illegible]

[illegible]

Section 9 - Cell Number - existing

[illegible]

Section 9 - Cell Number - final

[illegible]

Section 10 - CID/SAC - existing

[illegible][illegible]

[illegible][illegible]

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?													
ANTENNA MAKE - MODEL		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A					
ANTENNA VENDOR		CCI		CCI		CCI		CCI					
ANTENNA SIZE (H x W x D)		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6					
ANTENNA WEIGHT		57		57		57		57					
AZIMUTH		30		30		30		30					
MAGNETIC DECLINATION													
RADIATION CENTER (feet)		95		95		95		95					
ANTENNA TIP HEIGHT		99		99		99		99					
MECHANICAL DOWNTILT		0		0		0		0					
FEEDER AMOUNT		4		4		4		4					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)													
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)													
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)													
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)													
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # i # of inches)		36											
Antenna RET Motor (QTY/MODEL)													
SURGE ARRESTOR (QTY/MODEL)		2		Polyphaser TSXDC-4310-FM		2		Polyphaser TSXDC-4310-FM					
DIPLEXER (QTY/MODEL)		2		Kaelus DBC0055F1V51-1		2		Kaelus DBC0055F1V51-1					
DUPLEXER (QTY/MODEL)													
Antenna RET CONTROL UNIT (QTY/MODEL)				1		CCU - Kathrein 860 10006		1		CCU - Kathrein 860 10006			
DC BLOCK (QTY/MODEL)													
TMA/LNA (QTY/MODEL)		2		CCI - TMABPDB7823VG12A (Twin-LBP)		2		CCI - TMABPDB7823VG12A (Twin-LBP)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)													
PDU FOR TMA5 (QTY/MODEL)													
FILTER (QTY/MODEL)													
SQUID (QTY/MODEL)													
FIBER TRUNK (QTY/MODEL)													
DC TRUNK (QTY/MODEL)													
REPEATER (QTY/MODEL)													
RRH - 700 band (QTY/MODEL)		1		B14 4478				1		B5/B12 4449			
RRH - 850 band (QTY/MODEL)													
RRH - 1900 band (QTY/MODEL)								1		4415 B25			
RRH - AWS band (QTY/MODEL)													
RRH - WCS band (QTY/MODEL)				1		4415 B30							
Additional RRH #1 - any band (QTY/MODEL)													
Additional RRH #2 - any band (QTY/MODEL)													
Additional Component 1 (QTY/MODEL)													
Additional Component 2 (QTY/MODEL)													
Additional Component 3 (QTY/MODEL)													
Local Market Note 1		16 feeders 1 5/8" per sector											
Local Market Note 2													
Local Market Note 3													

[illegible]

ANTENNA POSITION 3	PORT 1	157861.A.850.4G.tmp1		CTL01845_8A_1	CTL01845_8A_1	TxRx/ TxRx	LTE 850	HPA65R- BUBA_850MHz_02DT	15.3	30	2	BOTTOM	1-5/8" COAX	140	0				NO					
ANTENNA POSITION 4	PORT 1	157861.A.700.4G.tmp1		CTL01845_7A_1	CTL01845_7A_1	TxRx/ TxRx	LTE 700	HPA65R- BUBA_725MHz_02DT	14.9	30	2	BOTTOM	1-5/8" COAX	140	0				NO					
	PORT 3	157861.A.1900.4G.tmp1,1578 61.A.1900.4G.tmp4		CTL01845_9A_1,CTL 01845_9A_2	CTL01845_9A_1,CTL 01845_9A_2	TxRx/ TxRx	LTE 1900	HPA65R- BUBA_1930MHz_02DT	17.1	30	2	BOTTOM	1-5/8" COAX	140	0				NO					

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)		ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?															
ANTENNA MAKE - MODEL		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A							
ANTENNA VENDOR		CCI		CCI		CCI		CCI							
ANTENNA SIZE (H x W x D)		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6							
ANTENNA WEIGHT		57		57		57		57							
AZIMUTH		150		150		150		150							
MAGNETIC DECLINATION															
RADIATION CENTER (feet)		95		95		95		95							
ANTENNA TIP HEIGHT		99		99		99		99							
MECHANICAL DOWNTILT		0		0		0		0							
FEEDER AMOUNT		4		4		4		4							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)															
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)															
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)															
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)															
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36													
Antenna RET Motor (QTY/MODEL)															
SURGE ARRESTOR (QTY/MODEL)		2 Polyphaser TSXDC-4310-FM		4 Polyphaser TSXDC-4310-FM		2 Polyphaser TSXDC-4310-FM		2 Polyphaser TSXDC-4310-FM							
DIPLEXER (QTY/MODEL)		2 Kaelus DBC0055F1V51-1		4 Kaelus DBC0055F1V51-1		2 Kaelus DBC0055F1V51-1		2 Kaelus DBC0055F1V51-1							
DUPLEXER (QTY/MODEL)															
Antenna RET CONTROL UNIT (QTY/MODEL)															
DC BLOCK (QTY/MODEL)															
TMA/LNA (QTY/MODEL)		2 CCI - TMABPDB7823VG12A (Twin-LBP)		2 CCI - TMABPDB7823VG12A (Twin-LBP)		2 CCI - TMABPDB7823VG12A (Twin-LBP)		2 CCI - TMABPDB7823VG12A (Twin-LBP)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)															
PDU FOR TMAS (QTY/MODEL)															
FILTER (QTY/MODEL)															
SQUID (QTY/MODEL)															
FIBER TRUNK (QTY/MODEL)															
DC TRUNK (QTY/MODEL)															
REPEATER (QTY/MODEL)															
RRH - 700 band (QTY/MODEL)		1 B14 4478						1 B5/B12 4449							
RRH - 850 band (QTY/MODEL)															
RRH - 1900 band (QTY/MODEL)								1 4415 B25							
RRH - AWS band (QTY/MODEL)															
RRH - WCS band (QTY/MODEL)				1 4415 B30											
Additional RRH #1 - any band (QTY/MODEL)															
Additional RRH #2 - any band (QTY/MODEL)															
Additional Component 1 (QTY/MODEL)															
Additional Component 2 (QTY/MODEL)															
Additional Component 3 (QTY/MODEL)															
Local Market Note 1		16 feeders 1 5/8" per sector													
Local Market Note 2															
Local Market Note 3															

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	157861.B.700.4G.tmp5		CTL01845_7B_3_F	CTL01845_7B_3_F	TxRx/ TxRx	LTE 700	HPA65R-BU8A_770MHz_02DT	15.1	150	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 5	157861.B.WCS.4G.tmp1		CTL01845_3B_1	CTL01845_3B_1	TxRx/ TxRx	LTE WCS	HPA65R-BU8A_2355MHz_03DT	16.9	150	3	BOTTOM	1-5/8" COAX	140	0			NO					

ANTENNA POSITION 3	PORT 1	157861.B.850.4G.tmp1		CTL01845_8B_1	CTL01845_8B_1	TxRx/ TxRx	LTE 850	HPA65R- BU8A_850MHz_02DT	15.3	150	2	BOTTOM	1-5/8" COAX	140	0			NO						
ANTENNA POSITION 4	PORT 1	157861.B.700.4G.tmp1		CTL01845_7B_1	CTL01845_7B_1	TxRx/ TxRx	LTE 700	HPA65R- BU8A_725MHz_02DT	14.9	150	2	BOTTOM	1-5/8" COAX	140	0			NO						
	PORT 3	157861.B.1900.4G.tmp1,1578 61.B.1900.4G.tmp4		CTL01845_9B_1,CTL 01845_9B_2	CTL01845_9B_1,CTL 01845_9B_2	TxRx/ TxRx	LTE 1900	HPA65R- BU8A_1930MHz_02D T	17.1	150	2	BOTTOM	1-5/8" COAX	140	0			NO						

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)		ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?															
ANTENNA MAKE - MODEL		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A							
ANTENNA VENDOR		CCI		CCI		CCI		CCI							
ANTENNA SIZE (H x W x D)		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6							
ANTENNA WEIGHT		57		57		57		57							
AZIMUTH		270		270		270		270							
MAGNETIC DECLINATION															
RADIATION CENTER (feet)		95		95		95		95							
ANTENNA TIP HEIGHT		99		99		99		99							
MECHANICAL DOWNTILT		0		0		0		0							
FEEDER AMOUNT		4		4		4		4							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)															
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)															
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)															
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)															
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36													
Antenna RET Motor (QTY/MODEL)															
SURGE ARRESTOR (QTY/MODEL)		2Polyphaser TSXDC-4310-FM		4Polyphaser TSXDC-4310-FM		2Polyphaser TSXDC-4310-FM		2Polyphaser TSXDC-4310-FM							
DIPLEXER (QTY/MODEL)		2Kaelus DBC0055F1V51-1		4Kaelus DBC0055F1V51-1		2Kaelus DBC0055F1V51-1		2Kaelus DBC0055F1V51-1							
DUPLEXER (QTY/MODEL)															
Antenna RET CONTROL UNIT (QTY/MODEL)															
DC BLOCK (QTY/MODEL)															
TMA/LNA (QTY/MODEL)		2CCI - TMABPDB7823VG12A (Twin-LBP)		2CCI - TMABPDB7823VG12A (Twin-LBP)		2CCI - TMABPDB7823VG12A (Twin-LBP)		2CCI - TMABPDB7823VG12A (Twin-LBP)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)															
PDU FOR TMAS (QTY/MODEL)															
FILTER (QTY/MODEL)															
SQUID (QTY/MODEL)															
FIBER TRUNK (QTY/MODEL)															
DC TRUNK (QTY/MODEL)															
REPEATER (QTY/MODEL)															
RRH - 700 band (QTY/MODEL)		1B14 4478						1B5/B12 4449							
RRH - 850 band (QTY/MODEL)															
RRH - 1900 band (QTY/MODEL)								14415 B25							
RRH - AWS band (QTY/MODEL)															
RRH - WCS band (QTY/MODEL)				14415 B30											
Additional RRH #1 - any band (QTY/MODEL)															
Additional RRH #2 - any band (QTY/MODEL)															
Additional Component 1 (QTY/MODEL)															
Additional Component 2 (QTY/MODEL)															
Additional Component 3 (QTY/MODEL)															
Local Market Note 1		16 feeders 1 5/8" per sector													
Local Market Note 2															
Local Market Note 3															

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	157861.C.700.4G.tmp5		CTL01845_7C_3_F	CTL01845_7C_3_F	TxRx/ TxRx	LTE 700	HPA65R-BU8A_770MHz_02DT	15.1	270	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 5	157861.C.WCS.4G.tmp1		CTL01845_3C_1	CTL01845_3C_1	TxRx/ TxRx	LTE WCS	HPA65R-BU8A_2355MHz_03DT	16.9	270	3	BOTTOM	1-5/8" COAX	140	0			NO					

ANTENNA POSITION 3	PORT 1	157861.C.850.4G.tmp1		CTL01845_8C_1	CTL01845_8C_1	TxRx/ TxRx	LTE 850	HPA65R- BUBA_850MHz_02DT	15.3	270	2	BOTTOM	1-5/8" COAX	140	0			NO						
ANTENNA POSITION 4	PORT 1	157861.C.700.4G.tmp1		CTL01845_7C_1	CTL01845_7C_1	TxRx/ TxRx	LTE 700	HPA65R- BUBA_725MHz_02DT	14.9	270	2	BOTTOM	1-5/8" COAX	140	0			NO						
	PORT 3	157861.C.1900.4G.tmp1.157861.C.1900.4G.tmp4		CTL01845_9C_1,CTL01845_9C_2	CTL01845_9C_1,CTL01845_9C_2	TxRx/ TxRx	LTE 1900	HPA65R- BUBA_1930MHz_02DT	17.1	270	2	BOTTOM	1-5/8" COAX	140	0			NO						

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A							
ANTENNA VENDOR	CCI		CCI		CCI		CCI							
ANTENNA SIZE (H x W x D)	96X11.7X7.6		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6							
ANTENNA WEIGHT	57		57		57		57							
AZIMUTH	30		30		30		30							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	95		95		95		95							
ANTENNA TIP HEIGHT	99		99		99		99							
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	4		4		4		4							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36												
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)	2	Polyphaser TSXDC-4310-FM	4	Polyphaser TSXDC-4310-FM	2	Polyphaser TSXDC-4310-FM	2	Polyphaser TSXDC-4310-FM						
DIPLEXER (QTY/MODEL)	2	Kaelus DBC0055F1V51-1	4	Kaelus DBC0055F1V51-1	2	Kaelus DBC0055F1V51-1	2	Kaelus DBC0055F1V51-1						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)			1	CCU - Kathrein 860 10006	1	CCU - Kathrein 860 10006								
DC BLOCK (QTY/MODEL)														
TMAILNA (QTY/MODEL)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMA5 (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	B14 4478					1	B5/B12 4449						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	4415 B25						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	4415 B30										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	16 feeders 1 5/8" per sector													
Local Market Note 2														
Local Market Note 3														

[illegible]

ANTENNA POSITION 3	PORT 1	157861.A.850.4G.tmp1		CTL01845_8A_1	CTL01845_8A_1	TxRx/ TxRx	LTE 850	HPA65R- BUBA_850MHz_02DT	15.3	30	2	BOTTOM	1-5/8" COAX	140	0			NO						
ANTENNA POSITION 4	PORT 1	157861.A.700.4G.tmp1		CTL01845_7A_1	CTL01845_7A_1	TxRx/ TxRx	LTE 700	HPA65R- BUBA_725MHz_02DT	14.9	30	2	BOTTOM	1-5/8" COAX	140	0			NO						
	PORT 3	157861.A.1900.4G.tmp1.1578 61.A.1900.4G.tmp4		CTL01845_9A_1.CTL 01845_9A_2	CTL01845_9A_1.CTL 01845_9A_2	TxRx/ TxRx	LTE 1900	HPA65R- BUBA_1930MHz_02DT	17.1	30	2	BOTTOM	1-5/8" COAX	140	0			NO						

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A							
ANTENNA VENDOR	CCI		CCI		CCI		CCI							
ANTENNA SIZE (H x W x D)	96X11.7X7.6		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6							
ANTENNA WEIGHT	57		57		57		57							
AZIMUTH	150		150		150		150							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	95		95		95		95							
ANTENNA TIP HEIGHT	99		99		99		99							
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	4		4		4		4							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36												
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)	2	Polyphaser TSXDC-4310-FM	4	Polyphaser TSXDC-4310-FM	2	Polyphaser TSXDC-4310-FM	2	Polyphaser TSXDC-4310-FM						
DIPLEXER (QTY/MODEL)	2	Kaelus DBC0055F1V51-1	4	Kaelus DBC0055F1V51-1	2	Kaelus DBC0055F1V51-1	2	Kaelus DBC0055F1V51-1						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMAILNA (QTY/MODEL)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMA5 (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	B14 4478					1	B5/B12 4449						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	4415 B25						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	4415 B30										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	16 feeders 1 5/8" per sector													
Local Market Note 2														
Local Market Note 3														

[illegible]

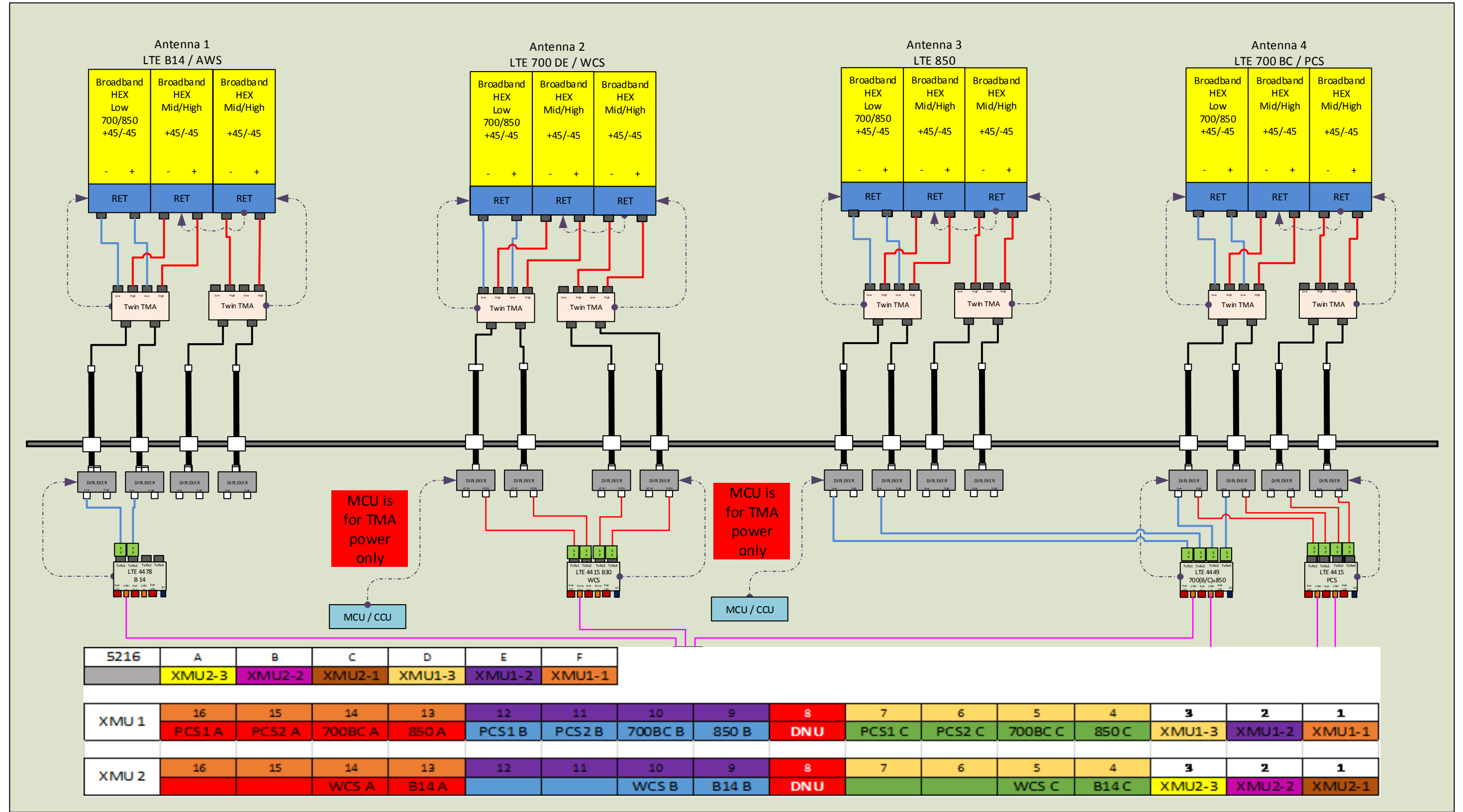
ANTENNA POSITION 3	PORT 1	157861.B.850.4G.tmp1		CTL01845_8B_1	CTL01845_8B_1	TxRx/ TxRx	LTE 850	HPA65R- BU8A_850MHz_02DT	15.3	150	2	BOTTOM	1-5/8" COAX	140	0			NO						
ANTENNA POSITION 4	PORT 1	157861.B.700.4G.tmp1		CTL01845_7B_1	CTL01845_7B_1	TxRx/ TxRx	LTE 700	HPA65R- BU8A_725MHz_02DT	14.9	150	2	BOTTOM	1-5/8" COAX	140	0			NO						
	PORT 3	157861.B.1900.4G.tmp1,1578 61.B.1900.4G.tmp4		CTL01845_9B_1,CTL 01845_9B_2	CTL01845_9B_1,CTL 01845_9B_2	TxRx/ TxRx	LTE 1900	HPA65R- BU8A_1930MHz_02D T	17.1	150	2	BOTTOM	1-5/8" COAX	140	0			NO						

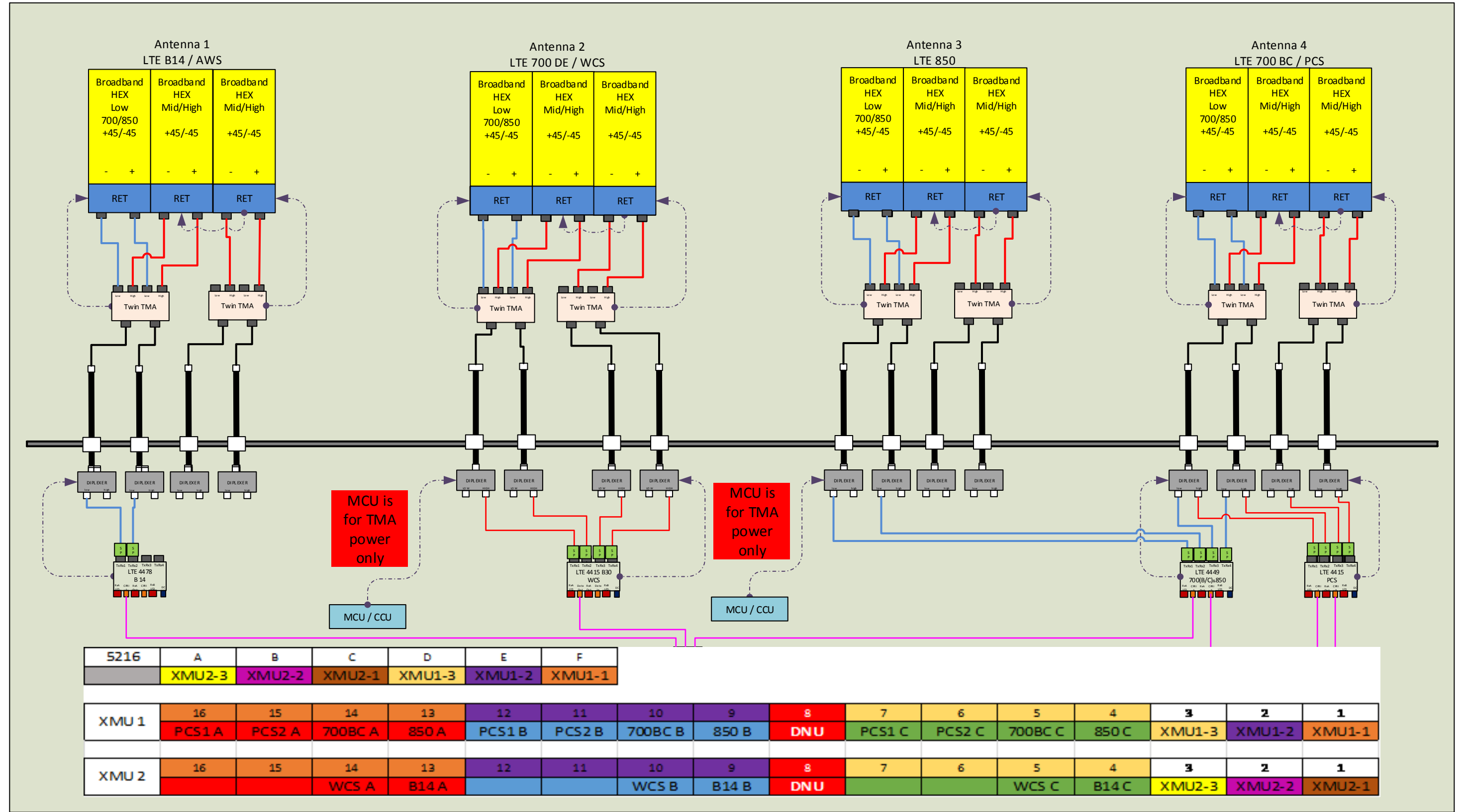
Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

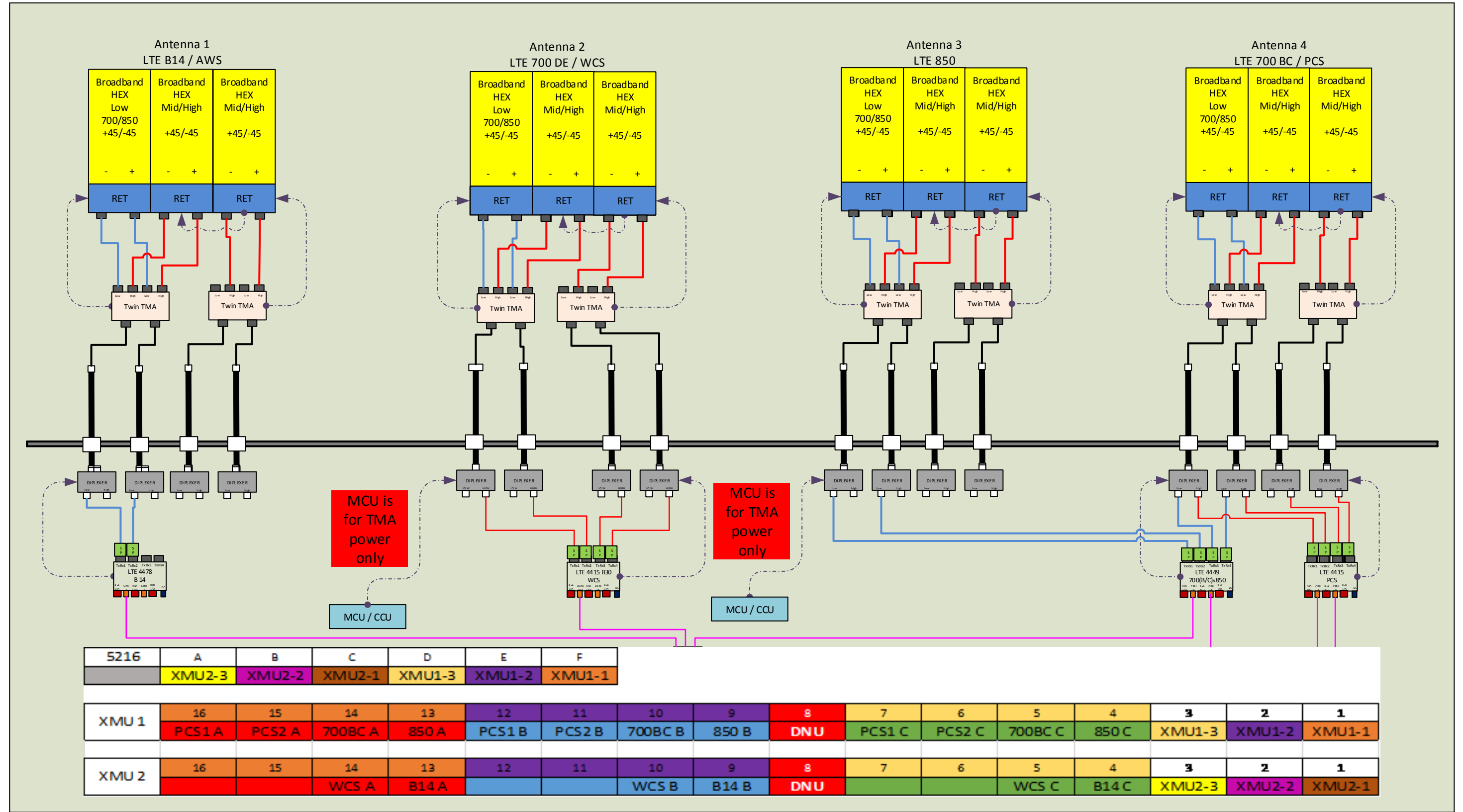
ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A		HPA65R-BU8A							
ANTENNA VENDOR	CCI		CCI		CCI		CCI							
ANTENNA SIZE (H x W x D)	96X11.7X7.6		96X11.7X7.6		96X11.7X7.6		96X11.7X7.6							
ANTENNA WEIGHT	57		57		57		57							
AZIMUTH	270		270		270		270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	95		95		95		95							
ANTENNA TIP HEIGHT	99		99		99		99							
MECHANICAL DOWNTILT	0		0		0		0							
FEEDER AMOUNT	4		4		4		4							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36												
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)	2	Polyphaser TSXDC-4310-FM	4	Polyphaser TSXDC-4310-FM	2	Polyphaser TSXDC-4310-FM	2	Polyphaser TSXDC-4310-FM						
DIPLEXER (QTY/MODEL)	2	Kaelus DBC0055F1V51-1	4	Kaelus DBC0055F1V51-1	2	Kaelus DBC0055F1V51-1	2	Kaelus DBC0055F1V51-1						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMAILNA (QTY/MODEL)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMA5 (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	B14 4478					1	B5/B12 4449						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	4415 B25						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	4415 B30										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	16 feeders 1 5/8" per sector													
Local Market Note 2														
Local Market Note 3														

[illegible]

ANTENNA POSITION 3	PORT 1	157861.C.850.4G.tmp1		CTL01845_8C_1	CTL01845_8C_1	TxRx/ TxRx	LTE 850	HPA65R- BUBA_850MHz_02DT	15.3	270	2	BOTTOM	1-5/8" COAX	140	0			NO						
ANTENNA POSITION 4	PORT 1	157861.C.700.4G.tmp1		CTL01845_7C_1	CTL01845_7C_1	TxRx/ TxRx	LTE 700	HPA65R- BUBA_725MHz_02DT	14.9	270	2	BOTTOM	1-5/8" COAX	140	0			NO						
	PORT 3	157861.C.1900.4G.tmp1.157861.C.1900.4G.tmp4		CTL01845_9C_1,CTL01845_9C_2	CTL01845_9C_1,CTL01845_9C_2	TxRx/ TxRx	LTE 1900	HPA65R- BUBA_1930MHz_02DT	17.1	270	2	BOTTOM	1-5/8" COAX	140	0			NO						









DATA SHEET

HexPort Multi-Band Antenna

HPA65R-BU8A



- Eight foot (2.4 m) multiband, six port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Four wide high band ports covering 1695-2400 MHz and two wide low band ports covering 698-896 MHz in a single antenna
- New enclosure with <12" (305 mm) width, narrowest enclosure in the industry
- Full Spectrum Compliance for WCS and AWS-3 frequencies and upcoming Band 14 Operations
- LTE Optimized FBR and SPR performance, providing for an efficient use of valuable radio capacity
- LTE Optimized Boresight and Sector XPD and USL performance, essential for LTE Performance
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Ordering options for 2 or 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 1 External)

Overview

The CCI HexPort multiband array is a six port antenna, with four wide high band ports covering 1695-2400 MHz and two wide low band ports covering 698-896 MHz. The CCI HexPort provides the capability to deploy 4x4 Multiple-input Multiple-output (MIMO) in the high band and 2x2 Multiple-input Multiple-output in the low band. The CCI HexPort allows separate tilt control between the low band ports and high band ports. With the use of three RET controllers, the paired high band ports can be tilted independently, enabling maximum flexibility in network deployment.

CCI antennas are designed and produced to ISO 9001:2008 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- 4x4 MIMO for the high band and 2x2 MIMO for the low band
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs



SPECIFICATIONS

HexPort Multi-Band Antenna

HPA65R-BU8A

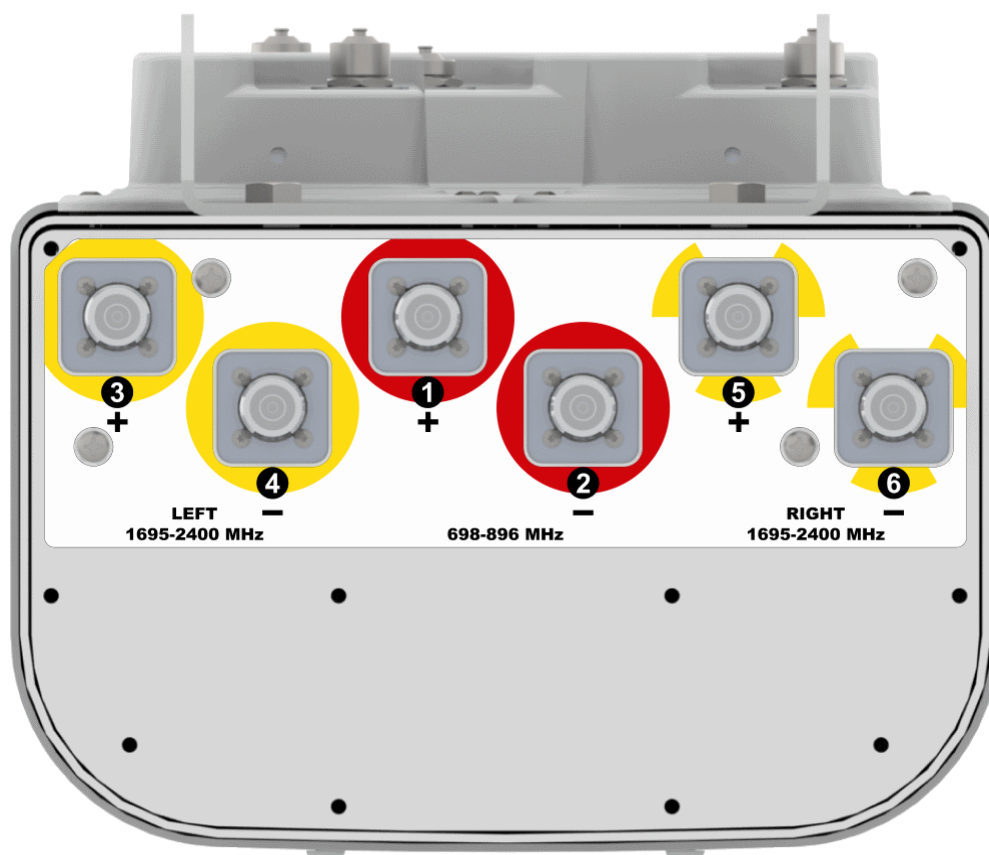
Mechanical

Dimensions (LxWxD)	96.0x11.7x7.6 in (2437x297x193 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	287 lbs (1278 N) @ 100 mph (161 kph)
Side Wind Load	206 lbs (916 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	11.2 ft ² (1.0 m ²)
Weight *	54.0 lbs (24.5 kg)
RET Weight	3.3 lbs (1.5 kg) for two RET's
	5.0 lbs (2.3 kg) for three RET's
Connector	6 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

* Weight excludes mounting and RET

Bottom View

HPA65R-BU8A model



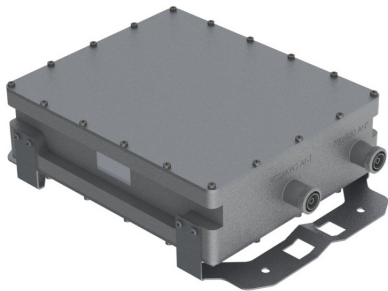
Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass

Tel: 201-342-3338

Fax: 201-342-3339

www.cciproduts.com

General Information



CCI's Triple Band TMA with 700/850 bypass contains two triple band TMA's in a single housing. The TMA's are fully duplexed and share a single LNA for all three bands. The bypass path provides excellent isolation to the TMA path. Separate antenna ports for the bypass path and TMA path are combined onto a single BTS port. Low noise high linearity

amplifiers improve the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports CDMA, EDGE/GSM, UMTS and LTE BTS equipment. The TMA is ideally suited for sites upgraded to quad-band using the existing infrastructure. The TMA allows the sharing of feeder lines for both AWS and PCS bands thus reducing tower loading, leasing, and installation costs. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.



Model TMABPDB7823VG12A

Contents:

General Info and Technical Description	1
Elect & Mech. Specs	2
Block Diagram & Outline Drawing	3

Features:

- Small lightweight unit
- Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass
- Independent Gain Control
- High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

Technical Description

The TMA system is an outdoor quad band tower mount unit which provides low noise amplification of PCS, AWS, and WCS uplink signals combined with 700/850 bypassed signals from separate antenna ports to a common BTS port. The tower mount unit consists of 14 band-pass filters, two redundant low noise amplifiers (LNA) with bypass failure circuitry, two bias tees, AISG control circuitry, and lightning protection circuitry all housed in an IP68 enclosure suited to long life masthead mounting. The AWS, PCS and WCS paths are dual duplexed to separate the low power uplink signals from the high power down link signals at the BTS and antenna ports. The AWS, PCS, and WCS uplink signals are amplified with a dedicated ultra-low noise PHEMT LNA with adjustable gain control. The unit provides protection against lightning strikes via a multistage surge protection circuit. DC power and AISG 2.0 control is provided via the BTS feeder cable. The unit operates in current window alarm (CWA) mode until a valid AISG message is detected, at which point it automatically switches to AISG mode. Once in AISG mode, the unit can only switch back to CWA mode with the receipt of an AISG CCI vendor defined command. In CWA mode, the unit requires 12VDC at each BTS port and follows typical current window convention. In AISG mode, the unit will accept 10-30 VDC from either BTS port. In AISG mode, the unit does not require an AISG 2.0 compatible site control unit (SCU) and may also be powered by a standard power distribution unit (PDU).

An optional Site Control Unit (SCU) is available to power up to 32 AISG modules per sector and to provide the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains dual redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

CCI Confidential

CCI Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass Typical Specifications



Description	Typical Specifications			
Electrical Specifications	700/850	PCS	AWS	WCS
Receive Frequency Range	-	1850 – 1910 MHz	1710 – 1755 MHz	2305 – 2320 MHz
Transmit Frequency Range	-	1930 – 1990 MHz	2110 – 2155 MHz	2345 – 2360 MHz
Bypass Frequency Range	698 - 894 MHz	-	-	-
Amplifier Gain	-	6 to 12 dB Adjustable in 0.25 dB steps via AISG	6 to 12 dB Adjustable in 0.25 dB steps via AISG	6 to 12 dB Adjustable in 0.25 dB steps via AISG
Gain Variation	-	±1.0 dB	±1.0 dB	±1.0 dB
System Noise Figure	-	1.4 dB Typ.	1.3 dB Typ.	1.3 dB Typ.
Input Third Order Intercept Point	-	+12 dBm Min at Max. Gain		
Input / Output Return Loss	18 dB Min all ports, 12 dB Min. Bypass Mode			
Insertion Loss	0.25 dB Typ.			
Transmit Passband	-	0.5 dB Typical	0.4 dB Typical	0.4 dB Typical
Bypass Mode, (PCS/AWS/WCS) Rx Passband	-	2.5 dB Typ.	2.5 dB Typ.	2.5 dB Typ.
Filter Characteristics				
Continuous Average Power	200 Watts max			
Peak Envelope Power	2 KW max			
Intermodulation Performance				
IMD at ANT port in Rx Band	< -112 dBm (-155 dBc) [2 tones at +43 dBm]			
Operating Voltage	+10V to +30V DC provided via coax or AISG			
Power Consumption	<2.0 Watts			
Mechanical Specifications				
Connectors	DIN 7-16 female x 2; AISG x 1			
Dimensions (Body Only)	10.63" (H) x 11.024" (W) x 3.72" (D); (290.60 (H) x 280.00 (W) x 95.0 (D) mm)			
Dimensions (with Conn. & Bracket)	14.25" (H) x 11.024" (W) x 4.11" (D); (362.00 (H) x 280.00 (W) x 104.40 (D) mm)			
Weight	23.1 Lbs. (10.5 Kg) - with Brackets; 22 Lbs. (10 Kg) - without brackets			
Mounting	Pole/Wall Mounting Bracket			
Environmental Specifications				
Operating Temperature	-40° C to +65° C			
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5			
Enclosure	IP68			
MTBF	>500,000 hours			

All specifications are subject to change. The latest specifications are available at www.cciproductions.com

Communication Components Inc.

Tel: 201-342-3338

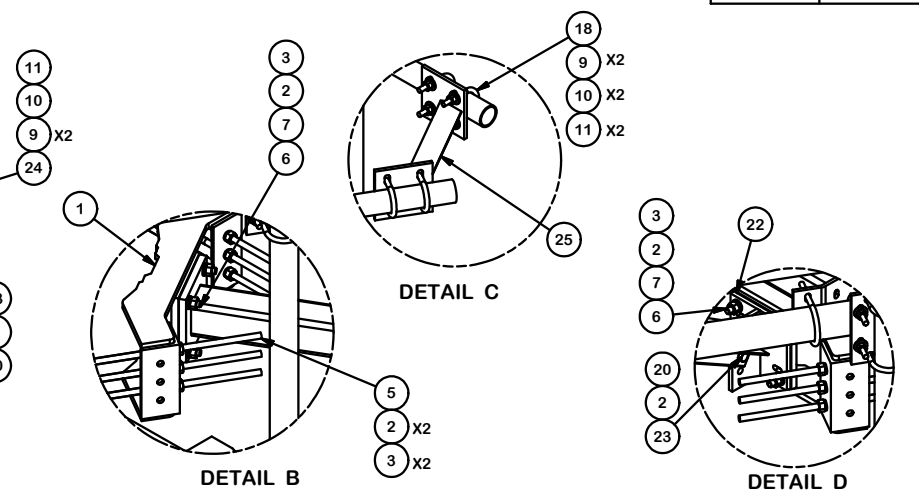
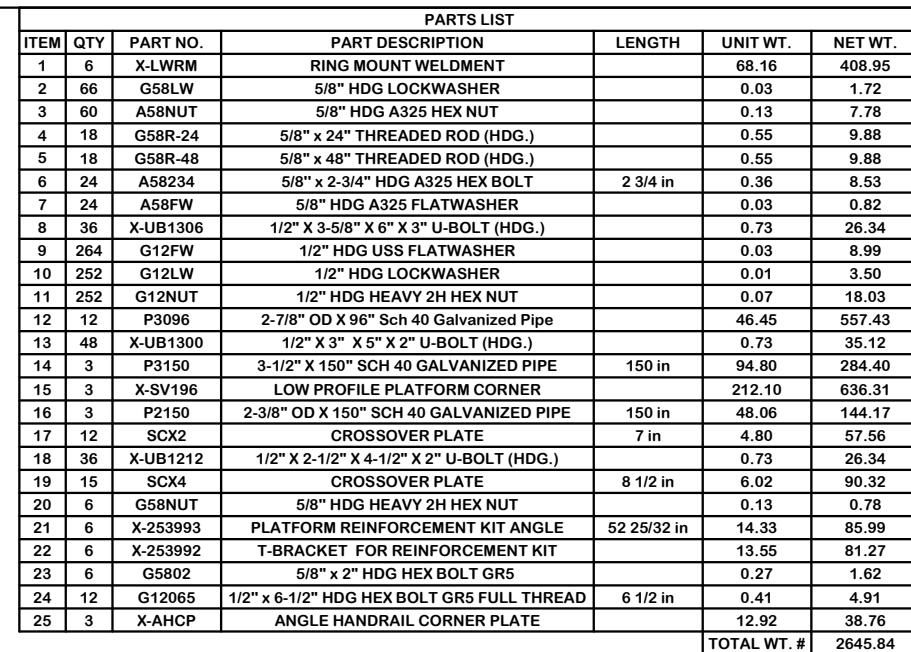
CCI Confidential

Fax: 201-342-3339

3/4/2014

Page 2

Revision 0.75



					TOLERANCE NOTES TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE: SAWED, SHEARED AND GAS CUT EDGES (± 0.030") DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES BENDS ARE ± 1/2 DEGREE ALL OTHER MACHINING (± 0.030") ALL OTHER ASSEMBLY (± 0.060") PROPRIETARY NOTE: THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS PROHIBITED.					DESCRIPTION 12' 6" LOW PROFILE PLATFORM WITH TWELVE 2-7/8" ANTENNA MOUTING PIPES, AND HANDRAIL					SITE PRO 1 A valmont COMPANY Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX Engineering Support Team: 1-888-753-7446				
A	REPLACED HCP WITH X-AHCP			4488	CEK	7/14/2014		CPD NO.	4488		DRAWN BY	CEK 3/24/2014		ENG. APPROVAL	PART NO.	RMQP-4096-HK		1 OF 3	
REV	DESCRIPTION OF REVISIONS			CPD	BY	DATE		CLASS	81 02		DRAWING USAGE CUSTOMER		CHECKED BY BMC 7/14/2014		DWG. NO.	RMQP-4096-HK			
REVISION HISTORY																			

5

SDC20 | 2.5L | 20 kW - AC INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL
POWER

Model G007098-0 (Steel)

Standby Power Rating

20 kW AC, 60 Hz



*Built in the USA using domestic and foreign parts



Image used for illustration purposes only

Codes and Standards

Generac products are designed to the following standards:



UL2200, UL508, UL142, UL489



NFPA 37, 70, 99, 110



NEC700, 701, 702, 708



ISO 3046, 7637, 8528, 9001



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41

Powering Ahead

For over 50 years, Generac has provided innovative design and superior manufacturing.

Generac ensures superior quality by designing and manufacturing most of its generator components, including alternators, enclosures and base tanks, control systems and communications software.

Generac gensets utilize a wide variety of options, configurations and arrangements, allowing us to meet the standby power needs of practically every application.

Generac searched globally to ensure the most reliable engines power our generators. We choose only engines that have already been proven in heavy-duty industrial applications under adverse conditions.

Generac is committed to ensuring our customers' service support continues after their generator purchase.

STANDARD FEATURES

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner with Service Indicator
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Exhaust Silencer with Drain
- Factory Filled Oil & Coolant

Fuel System

- Primary Fuel Filter

Cooling System

- 120V AC Coolant Heater
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

Electrical System

- Battery Charging Alternator
- AGM Spill Proof Battery
- Battery Cables
- Sealed/Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor
- Output Circuit Breaker

ALTERNATOR SYSTEM

- Class H Insulation Material
- Vented Rotor
- 2/3 Pitch
- Skewed Stator
- Amortisseur Winding
- Brushless Excitation
- Sealed Bearings
- Rotor Dynamically Spin Balanced
- Full Load Capacity Alternator
- Protective Thermal Shutdown

GENERATOR SET

- Single Side Service
- Internal Genset Vibration Isolators
- Separation of Circuits- High/Low Voltage
- Silencer Heat Shield
- High Heat Wrapped Exhaust Piping
- Silencer Enclosed Within Generator
- 5 Year Extended Warranty
- Extended Factory Testing
- 12 Gallon System Spill Containment
- 2.5 Gallon Fuel Fill Spill Containment

ENCLOSURE

- Serviceable Items Accessible Through Lift-Off Door
- High Performance Sound-Absorbing Material
- Gasketed Door
- Stamped Air-Intake Louvers
- Single Door Latch Lockable with Key & Padlock
- Rhino Coat™ - Textured Polyester Powder Coat
- 150 MPH Wind Rating
- 36" Snow Rating

FUEL TANK

- UL 142 Compliant
- Double Wall Construction
- Factory Pressure Tested (5 psi)
- Rupture Basin Alarm
- Fuel Level Gauge and Sender
- Check Valve in Supply Line
- Rhino Coat™ - Textured Polyester Powder Coat
- Stainless Steel Hardware
- Integrated Fork Pockets

CONTROL SYSTEM

- Digital H Control Panel - Dual 4x20 Display
- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable PLC
- RS-232/485 Communications
- All-Phase Sensing Voltage Regulator
- Full System Status
- 2-Wire Start Compatible
- Power Output (kW)
- Power Factor
- kW Hours, Total & Last Run
- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage

- Frequency
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/Sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground Connections
- 15 Channel Data Logging
- 0.2 msec High Speed Data Logging
- Alarm Information Automatically Comes Up On the Display

Alarms

- Generator Run- Dry Contact
- Major Alarm- Dry Contact
- Minor Alarm- Dry Contact
- Low Fuel Alarm- Dry Contact
- Rupture Basin Alarm- Dry Contact
- Alarms & Warnings Time and Date Stamped
- Alarms & Warnings for Transient and Steady State Conditions
- Snap Shots of Key Operation Parameters During Alarms & Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)

MODEL OPTIONS

CONTROL SYSTEM

- 21 Light Annunciator- Shipped Loose Kit and Field Installed
- External E-Stop-Shipped Loose Kit and Field Installed

ENCLOSURE

- Aluminum Enclosure
- Extreme Cold Weather Kit - Shipped Loose Kit and Field Installed

TANKS

- External Fuel Vent- Shipped Loose Kit and Field Installed

SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

Model G007098-0 (Steel)

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Mitsubishi
EPA Emissions Compliance	Interim Tier 4
Cylinder #	4
Type	In-Line
Displacement - L (Cu In)	2.5 (158)
Bore - mm (in)	88 (3.5)
Stroke - mm (in)	103 (4.1)
Compression Ratio	22:1
Intake Air Method	Naturally Aspirated

Engine Governing

Governor	Electronic Isochronous
Frequency Regulation (Steady State)	± 0.25%

Lubrication System

Oil Pump Type	Trochoid Gear Pump
Oil Filter Type	Filtering Paper, Full Flow
Crankcase Capacity - L (qts)	6.5 (6.9)

Cooling System

Cooling System Type	Forced Circulation
Water Pump Type	Centrifugal Pump
Fan Type	Pusher
Fan Speed (rpm)	2100
Fan Diameter - mm (in)	431.8 (17)
Coolant Heater Wattage	1000
Coolant Heater Voltage	120

Fuel System

Fuel Type	Ultra Low Sulfur Diesel #2
Fuel Specifications	ASTM
Fuel Filtering (microns)	6
Fuel Inject Pump Make	Bosch
Injector Type	Engine Driven Gear
Engine Type	Diesel
Fuel Supply Line - mm (in.)	6.6 (0.26)

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	12V-50A
Battery Size	650 CCA
Battery Group	35
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	Mecc Alte ECP 28-2L/4
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<45
Standard Excitation	Brushless

Bearings	Dual Sealed
Coupling	Belt, Pulley
Load Capacity - Standby	100%
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.5%

RATING DEFINITIONS

Standby - Applicable for a varying emergency load for the duration of a utility power outage with no overload capability.

SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency



Model G007098-0 (Steel)

OPERATING DATA

POWER RATINGS

Single-Phase 120/240 VAC @1.0pf	20 kW	Amps: 83
Circuit Breaker Size	100A	

FUEL CONSUMPTION RATES*

Diesel - gph (lph)	
Percent Load	Standby
25%	0.74 (2.80)
50%	0.99 (3.75)
75%	1.41 (5.30)
100%	1.90 (7.19)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

Coolant Flow per Minute	gpm (lpm)	Standby 11.9 (45)
Coolant System Capacity	gal (L)	3.5 (13.2)
Heat Rejection to Coolant	BTU/hr	238,200
Inlet Air	cfm (m³/min)	2365 (67)
Max. Operating Ambient Temperature (Before Derate)	°F (°C)	77° (25°)
Maximum Radiator Backpressure	in H ₂ O	0.50

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm (m³/min)	88 (2.49)

ENGINE

		Standby
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	33.5
Piston Speed	ft/min	1220.47
BMEP	psi	96.5

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m³/min)	193 (328)
Max. Backpressure (Post Silencer)	inHg (kPa)	1.38 (4.67)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	928 (497.7)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

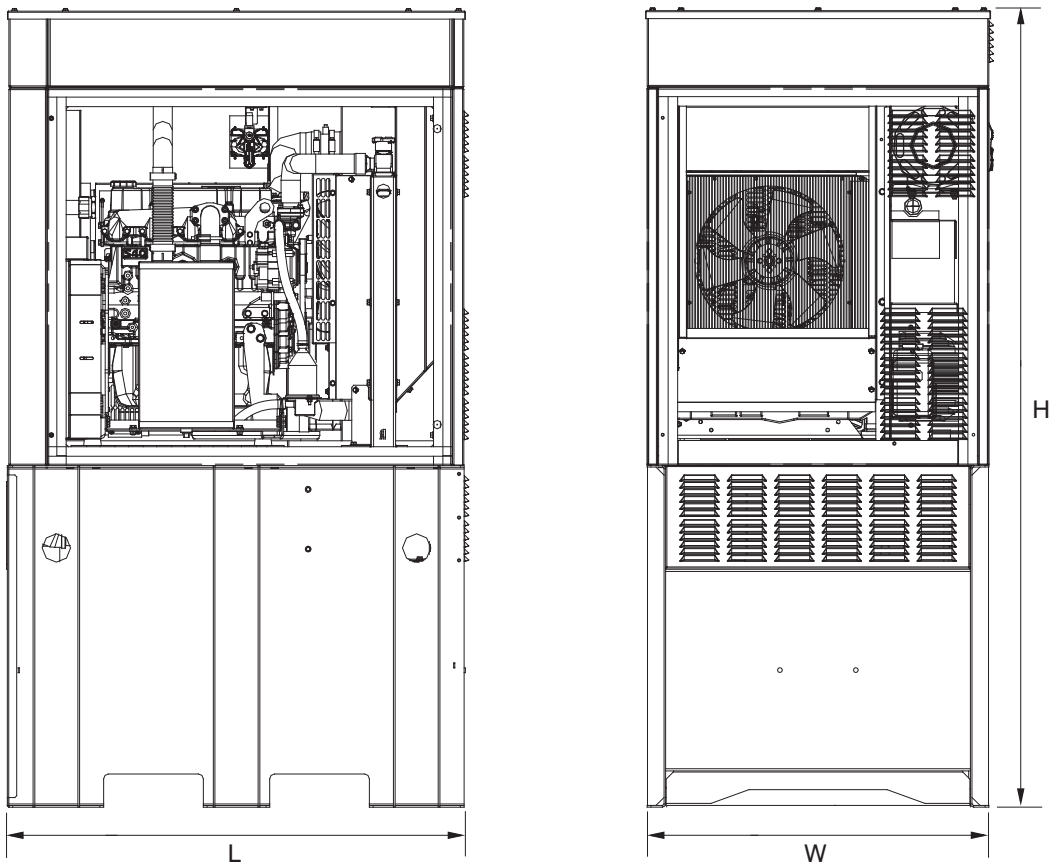
SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

Model G007098-0 (Steel)

DIMENSIONS AND WEIGHTS*



Level 2 Sound Attenuation Enclosure

Run Time Hours	48
Usable Capacity Gal (L)	92 (348.2)
L x W x H in (mm)	48 x 36 x 90 (1219.2 x 914.4 x 2286)
Weight lbs (kg)	2400 (1089)
Sound Level	71 dBA

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

SDC20 | 2.5L | 20 kW - AC

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC® | **INDUSTRIAL**
POWER

Model G007098-0 (Steel)

6



**Federal Aviation
Administration**

The system will be going offline at 7pm ET on Thursday, August 15, 2019 for upgrades. We apologize for any inconvenience.

« OE/AAA

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

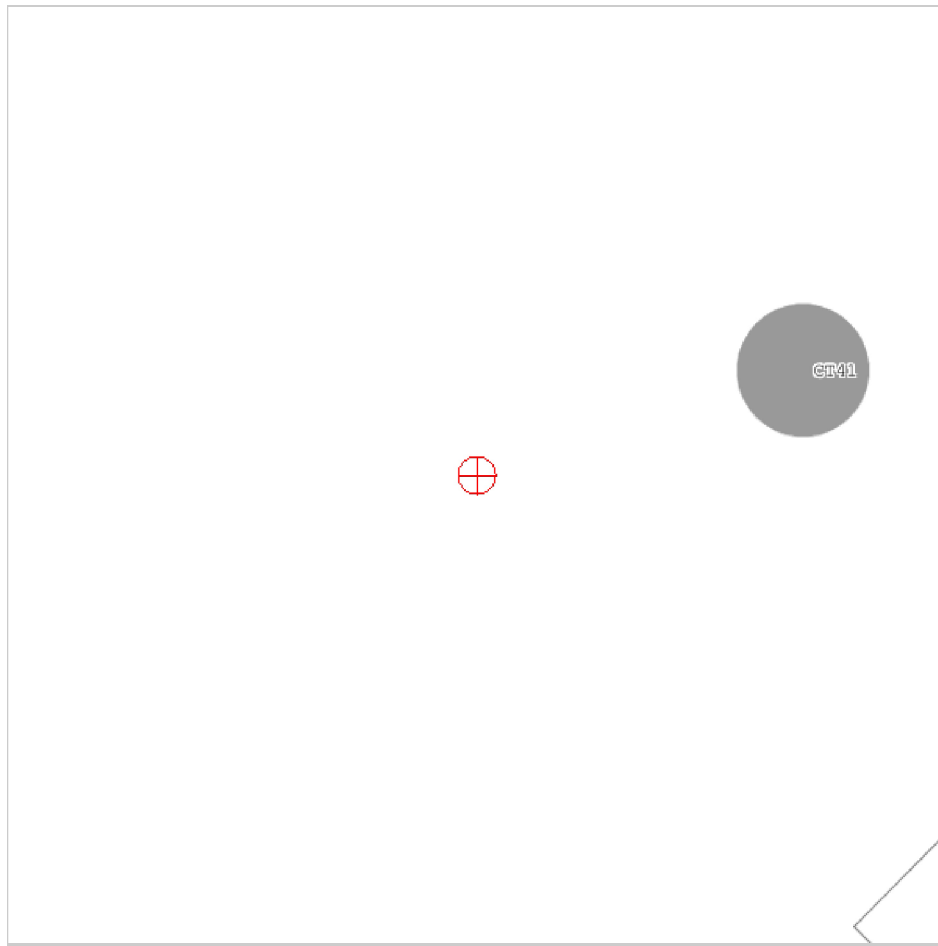
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	41	Deg	11	M	40.7	S	N	▼
Longitude:	73	Deg	20	M	52.9	S	W	▼
Horizontal Datum:	NAD83 ▼							
Site Elevation (SE):	205 (nearest foot)							
Structure Height :	99 (nearest foot)							
Traverseway:	No Traverseway ▼ (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway							
Is structure on airport:	☒ No ☐ Yes							

Results

You do not exceed Notice Criteria.





WETLAND INSPECTION

May 7, 2019

APT Project No.: CT1931440

Prepared For: AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

AT&T Site Name: SR-1845 CT - Weston

Site Address: Eversource Str. No. 917
5 Tall Pines Drive, Weston, Connecticut

Date(s) of Investigation: 4/25/2019

Field Conditions: **Weather:** sunny, high 50's
Soil Moisture: moist

Wetland/Watercourse Inspection Methodology*:

- ☒ Connecticut Inland Wetlands and Watercourses
- ☐ Connecticut Tidal Wetlands
- ☐ U.S. Army Corps of Engineers

The wetlands inspection was performed by[†]:

Matthew Gustafson, Registered Soil Scientist

Enclosures: Wetland Inspection Field Form & Wetland Inspection Map

This report is provided as a brief summary of findings from APT's wetland investigation of the referenced study area that consists of proposed development activities and areas generally within 200 feet.[‡] If applicable, APT is available to provide a more comprehensive wetland impact analysis upon receipt of site plans depicting the proposed development activities and surveyed location of identified wetland and watercourse resources.

* Wetlands and watercourses were delineated in accordance with applicable local, state and federal statutes, regulations and guidance.

† All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.

‡ APT has relied upon the accuracy of information provided by AT&T, SAI and its contractors regarding proposed lease area and access road/utility easement locations for identifying wetlands and watercourses within the study area.

Attachments

- Wetland Inspection Field Form
- Wetland Inspection Map

Wetland Inspection Field Form

Wetlands Identified within Study Area:	Yes ☐	No ☒
Nearest Wetland Resource:	105 feet to the northwest	
Identification Method:	Remote sensing ☒ Type: CTDEEP Wetland Mapping	Field identified ☒

SITE CONDITIONS:

DEVELOPED ☒

Paved ☐	Gravel ☐	Maintained Lawn ☐
Agriculture ☐	Cultivated ☐	Hayfield/Pasture ☐
Comments: Proposed access/telecommunications facility is located with a maintained electrical transmission ROW.		

UNDEVELOPED UPLAND HABITAT ☐

Forest ☐	Scrub/Shrub ☐	Field ☐
Other: None		
Comments: None		

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☒	No ☐
If no, describe field identified soils		

NEAREST WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☐	Scrub-shrub ☒	Forested ☒
Open Water ☒	Disturbed ☐	Wet Meadow ☐
Comments: None		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Watercourse Name: None		
Comments: None		

Wetland Inspection Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☐ No ☐ Potential ☒	Other ☐
Vernal Pool Habitat Type: 'Classic'	
Comments: Being located on private property, this wetland was not inspected to determine if it supports breeding by vernal pool indicator species. However, as viewed from White Birch Road it has the physical characteristics to be a potential vernal pool.	

GENERAL COMMENTS:

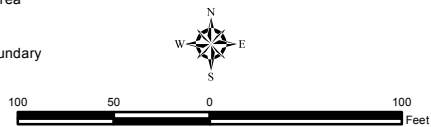
AT&T is proposing to mount telecommunication antennae onto an existing electrical transmission structure located off White Birch Road in Weston, CT. Proposed ground equipment within a 13' by 24' fenced/gravel compound area would be located directly adjacent to existing electrical transmission structure No. 917 to the west. An existing maintenance road will be upgraded to a 12-foot wide gravel access to the proposed telecommunications facility. No wetlands or watercourses are located on the subject property through which the electrical transmission ROW traverses. The nearest wetland to the proposed facility is located on an adjoining property to the northwest across White Birch Road consisting of a large open water feature with edge forested and scrub/shrub habitats. This wetland receives untreated roadway runoff from a curb leak off along the west side of White Birch Road. Provided erosion and sedimentation controls are installed and maintained during construction in accordance with the Connecticut Department of Energy and Environmental Protection's 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control, no likely adverse impact to this nearby wetland would result from the proposed AT&T development. APT recommends that particular attention should be made to providing erosion controls for improvements proposed to the existing maintenance road to avoid discharge of sediment onto White Birch Road, which would eventually drain into the nearby wetland. This preliminary wetland impact assessment is based on APT's current understanding of the proposed development, which did not include a review of detailed project site plans. APT is available to review project site plans and details of the proposed erosion control plan to determine if this preliminary wetland impact assessment should be modified and/or if additional wetland protection measures should be implemented.



Legend

- | | | | |
|--|---------------------------------------|--|------------------------------|
| | Proposed AT&T Compound | | Approximate Wetland Boundary |
| | Proposed AT&T Equipment | | Wetland Flag* |
| | Proposed AT&T Access/Utility Easement | | Delineated Wetland Boundary* |
| | Existing Equipment (By Others) | | Approximate Wetland Area* |
| | Proposed AT&T Access Drive | | Subject Property |
| | | | Approximate Parcel Boundary |

Map Notes:
 *Legend item not located in mapped area
 Base Map Source: 2016 CT Aerial Imagery (CTECO)
 Map Scale: 1 inch = 100 feet
 Map Date: April 2019



Wetland Inspection Map

Proposed Wireless
 Telecommunications Facility
 5 Tall Pines Drive
 Weston, Connecticut



8



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

January 24, 2019

Connecticut Siting Council

Subject: New Cingular Wireless PCS, LLC ("AT&T") – (CT1845) – 5 Tall Pines Drive, Weston, CT 06883

Dear Connecticut Siting Council:

C Squared Systems has been retained by New Cingular Wireless PCS, LLC ("AT&T") to investigate RF Power Density levels for the AT&T antenna arrays, to be installed on the existing CL&P transmission tower (# 917), located at 5 Tall Pines Drive, Weston, CT.

Calculations were done in accordance with FCC OET Bulletin 65. These worst-case calculations assume that all transmitters are simultaneously operating at full power and that there is 0 dB of cable loss. The calculation point is 6 feet above ground level to model the RF power density at the head of a person standing at ground level, and the calculations do not take into account building penetration losses.

Due to the directional nature of the proposed AT&T antennas, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to the Attachment for the vertical patterns of the proposed AT&T antennas. The calculated results below include a nominal 10 dB off-beam pattern loss to account for the lower relative gain directly below the antennas.

Location	Carrier	Vertical Distance to Antenna (Ft.)	Operating Frequency (MHz)	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
Ground Level	AT&T LTE	95	734	1	3460	0.0157	0.4893	3.21%
	AT&T LTE	95	758	1	3460	0.0157	0.5053	3.11%
	AT&T LTE	95	880	1	3794	0.0172	0.5867	2.94%
	AT&T LTE	95	1900	1	6297	0.0286	1.0000	2.86%
	AT&T LTE	95	2300	1	6153	0.0279	1.0000	2.79%
	Total							14.91%

Summary: Under worst-case assumptions, RF Power Density levels for the proposed AT&T antenna arrays will not exceed **14.91%**¹ of the FCC MPE limit for General Public/Uncontrolled Environments.

Sincerely,

Martin J. Lavin

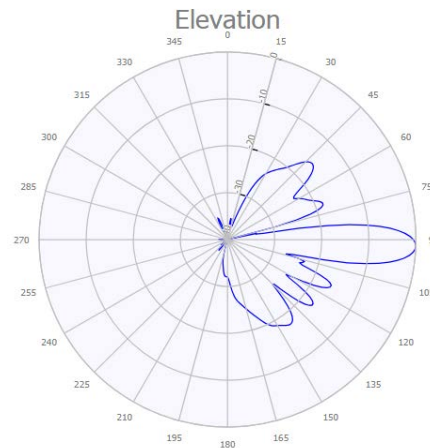
Senior RF Engineer
C Squared Systems, LLC

¹ The total % MPE is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

Attachment: AT&T's Antenna Data Sheets and Electrical Patterns

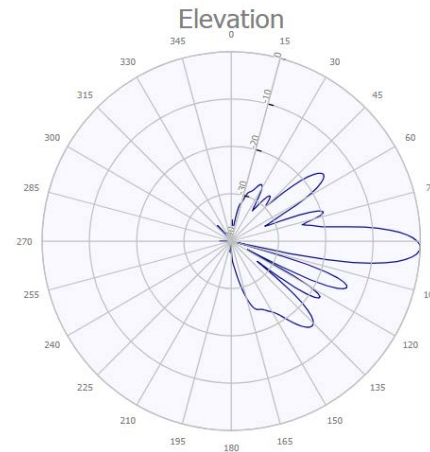
734/758 MHz

Manufacturer: CCI Products
Model #: HPA65R-BU8A
Frequency Band: 698-806 MHz
Gain: 13.35 dBd
Vertical Beamwidth: 9.7°
Horizontal Beamwidth: 67°
Polarization: Dual Linear 45°
Size L x W x D: 96" x 11.7" x 7.6"



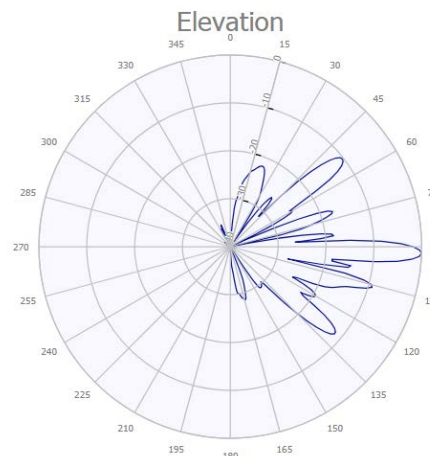
880 MHz

Manufacturer: CCI Products
Model #: HPA65R-BU8A
Frequency Band: 824-896 MHz
Gain: 13.75 dBd
Vertical Beamwidth: 8.1°
Horizontal Beamwidth: 67°
Polarization: Dual Linear 45°
Size L x W x D: 96" x 11.7" x 7.6"



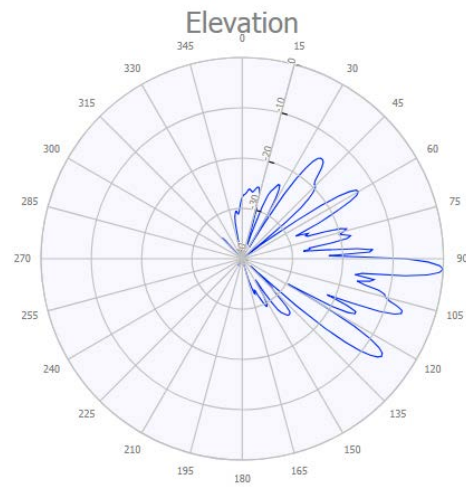
1900 MHz

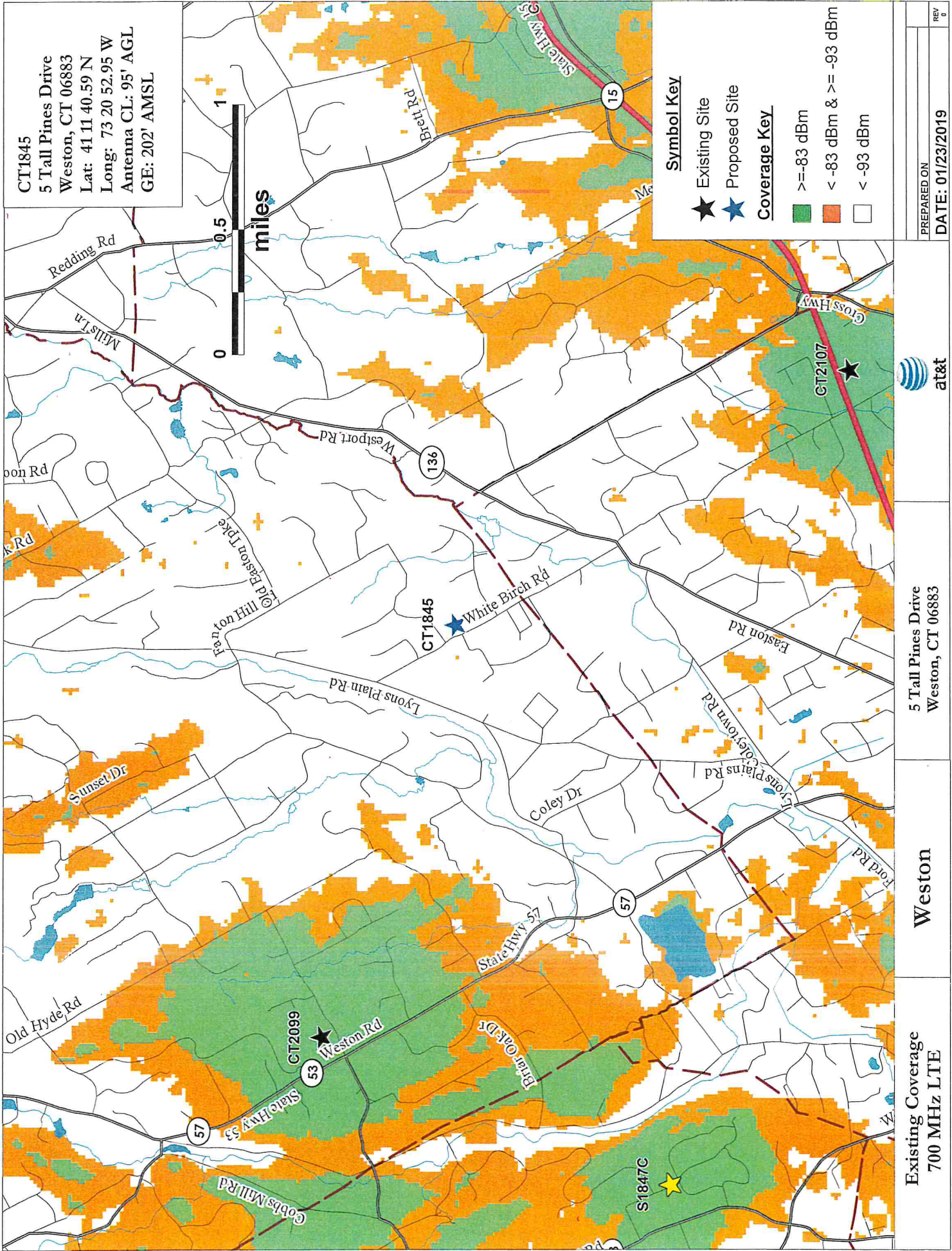
Manufacturer: CCI Products
Model #: HPA65R-BU8A
Frequency Band: 1850-1990 MHz
Gain: 15.95 dBd
Vertical Beamwidth: 5.1°
Horizontal Beamwidth: 62°
Polarization: Dual Linear 45°
Size L x W x D: 96.0" x 11.7" x 7.6"



2300 MHz

Manufacturer: CCI Products
Model #: HPA65R-BU8A
Frequency Band: 2300-2400 MHz
Gain: 15.85 dBd
Vertical Beamwidth: 4.0°
Horizontal Beamwidth: 60°
Polarization: Dual Linear 45°
Size L x W x D: 96.0" x 11.7" x 7.6"





Existing Coverage 700 MHz LTE	Weston	5 Tall Pines Drive Weston, CT 06883	at&t	PREPARED ON	REV
				DATE: 01/23/2019	0

CT1845

5 Tall Pines Drive

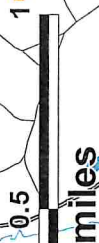
Weston, CT 06883

Lat: 41 11 40.59 N

Long: 73 20 52.95 W

Antenna CL: 95' AGL

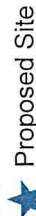
GE: 202' AMSL



Symbol Key



Existing Site

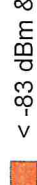


Proposed Site

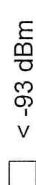
Coverage Key



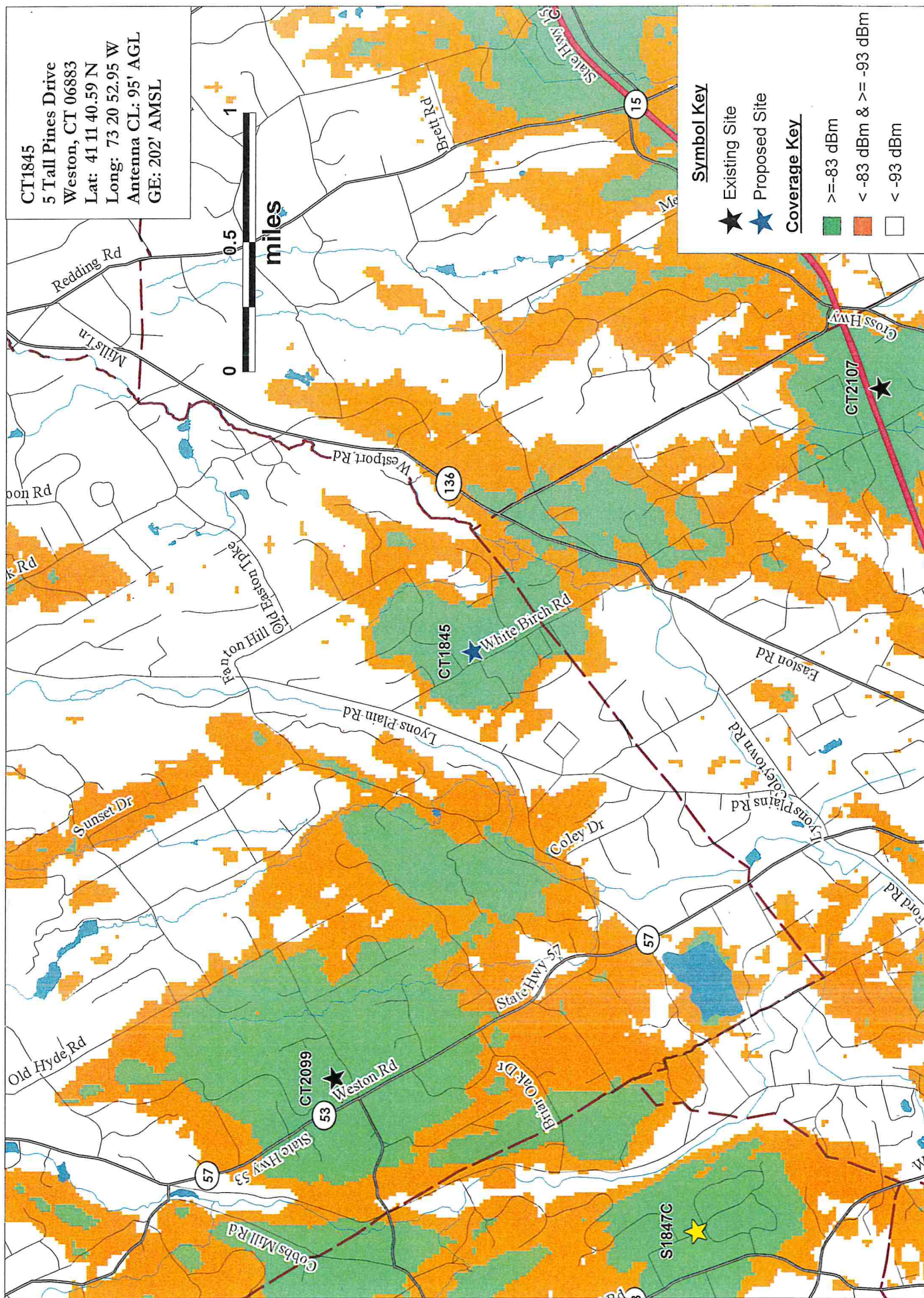
>= -83 dBm



< -83 dBm & >= -93 dBm



< -93 dBm



Existing & Proposed
700 MHz LTE Coverage

Weston

5 Tall Pines Drive
Weston, CT 06883



PREPARED ON

DATE: 01/23/2019

REV

0

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CERTIFICATION OF SERVICE

I hereby certify that on the 11th day of October 2019, a copy of the following letter and notice of the intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested, to the attached list of abutting property owners:

Dated: 10/11/2019



Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
New Cingular Wireless PCS, LLC (AT&T)

JANET PARMAR 7 EAST KIRKE STREET CHEVY CHASE, MD 20815	DEAN CARPENTER AND VICTORIA CARPENTER 5 TALL PINES DRIVE WESTON, CT 06883
MARTHA DEEGAN E H 11 TALL PINES DRIVE WESTON, CT 06883	ROBERT LEVENE 12A NARROW BROOK ROAD WESTON, CT 06883
HEATHER P AND DAVID M LEVY 40 WHITE BIRCH ROAD WESTON, CT 06883	VALARIE AUSTIN PATRICK AND ALLEN DWIGHT PATRICK 5 HICKORY LANE WESTON, CT 06883

NOTICE

Notice is hereby given, pursuant to Section 16-50j-40(a) of the Regulations of Connecticut State Agencies of a Petition being filed with the Connecticut Siting Council ("Siting Council") on or after October 10, 2019 by New Cingular Wireless PCS, LLC ("AT&T"). AT&T seeks a declaratory ruling that modification of an existing public utility tower does not have significant adverse environmental effects that might otherwise require a certificate of environmental compatibility and public need ("Certificate").

The existing public utility tower is located on property owned by Dean and Victoria Carpenter, located at 5 Tall Pines Drive in the Town of Weston and identified on the Town of Weston's Assessor's map as Map/Section/Lot 27-3-61 (the "Property"). The Property is an approximately 2.01-acre parcel. The site is located within a residential district with a mix of forested areas and homes surrounding the property. The existing public utility infrastructure consists of an approximately 81-foot tall steel lattice transmission tower owned and operated by Eversource. AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. AT&T's is proposing to attach a 98 foot tall antenna mast within the center of the existing 81 foot tall transmission tower and install twelve (12) antennas on the antenna mast at a centerline height of approximately 95-feet above ground level ("AGL") within the top of the proposed antennas extending to a height of approximately 99-feet AGL. AT&T will also mount twenty-four (24) remote radio units ("RRUs") on the proposed antenna mast mount. Associated unmanned equipment is proposed within an approximately 432 square foot fenced equipment compound located Northeast of the tower adjacent to the proposed gravel access road and parking area.

The Petition will provide additional details of the proposal and explain why AT&T submits that this modification presents no significant adverse environmental effects. The location, height and other features of the proposal are subject to review and potential change under the provisions of Connecticut General Statutes Sections 16-50g et. seq.

Copies of the Petition will be available for review during normal business hours on or after October 10, 2019 at the following:

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Town Clerk of Weston
Donna M. Anastasia
PO Box 1007
Weston, CT 06883

or the offices of the undersigned. All inquiries should be addressed to the Connecticut Siting Council or to the undersigned.

Kristen Motel, Esq.
Cuddy & Feder LLP
445 Hamilton Ave, 14th Floor
White Plains, New York 10601
(914) 761-1300
Attorneys for the Petitioner



445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

October 11, 2019

VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

Janet Parmar
7 East Kirke Street
Chevy Chase, MD 20815

Re: New Cingular Wireless PCS, LLC ("AT&T")
Proposed Modification of Existing Public Utility Transmission Tower
5 Tall Pines Drive, Weston, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition with the State of Connecticut Siting Council for approval of a modification of an existing public utility transmission tower (the "Facility").

State law requires that record owners of property abutting a parcel on which a facility is proposed be sent notice of an applicant's intent to file a petition with the Siting Council.

Included with this letter please find a Notice of this submission and details the proposal. Of note, the location, height and other features of the Facility are subject to review and potential change by the Connecticut Siting Council under the provisions of Connecticut General Statutes §16-50g et seq.

If you have any questions concerning this petition, please contact the Connecticut Siting Council or the undersigned after October 10, 2019 the date that the petition is expected to be on file.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Kristen Motel".

Kristen Motel
Enclosure



October 11, 2019

VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

Dean Carpenter
Victoria Carpenter
5 Tall Pines Drive
Weston, CT 06883

Re: New Cingular Wireless PCS, LLC ("AT&T")
Proposed Modification of Existing Public Utility Transmission Tower
5 Tall Pines Drive, Weston, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition with the State of Connecticut Siting Council for approval of a modification of an existing public utility transmission tower (the "Facility").

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Very truly yours,

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Kristen Motel
Enclosure



October 11, 2019

VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

Martha Deegan E H
11 Tall Pines Drive
Weston, CT 06883

Re: New Cingular Wireless PCS, LLC ("AT&T")
Proposed Modification of Existing Public Utility Transmission Tower
5 Tall Pines Drive, Weston, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition with the State of Connecticut Siting Council for approval of a modification of an existing public utility transmission tower (the "Facility").

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Very truly yours,

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Kristen Motel
Enclosure



October 11, 2019

VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

Robert Levene
12A Narrow Brook Road
Weston, CT 06883

Re: New Cingular Wireless PCS, LLC ("AT&T")
Proposed Modification of Existing Public Utility Transmission Tower
5 Tall Pines Drive, Weston, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition with the State of Connecticut Siting Council for approval of a modification of an existing public utility transmission tower (the "Facility").

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Very truly yours,

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Kristen Motel
Enclosure



October 11, 2019

VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

Heather P
David M Levy
40 White Birch Road
Weston, CT 06883

Re: New Cingular Wireless PCS, LLC ("AT&T")
Proposed Modification of Existing Public Utility Transmission Tower
5 Tall Pines Drive, Weston, Connecticut

Dear Sir or Madam:

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Very truly yours,

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Kristen Motel
Enclosure



October 11, 2019

**VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED**

Valarie Austin Patrick
Allen Dwight Patrick
5 Hickory Lane
Weston, CT 06883

Re: New Cingular Wireless PCS, LLC ("AT&T")
Proposed Modification of Existing Public Utility Transmission Tower
5 Tall Pines Drive, Weston, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition with the State of Connecticut Siting Council for approval of a modification of an existing public utility transmission tower (the "Facility").

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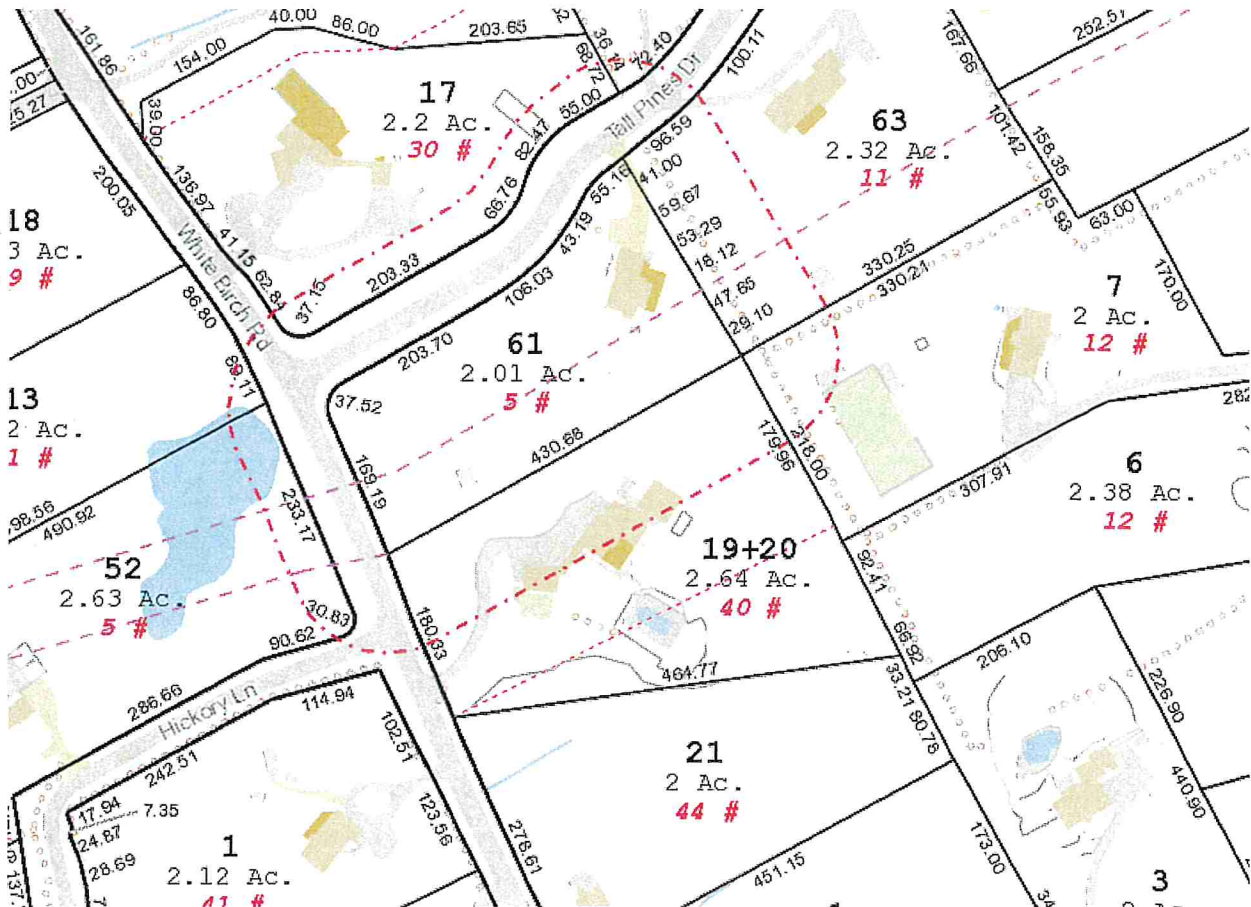
Very truly yours,

A handwritten signature in dark ink, appearing to read "Kristen Motel", written over a horizontal line.

Kristen Motel
Enclosure

ID	Site Address	Owner Name	Owner Name 2	Mailing Address	Owner City	State	Owner Zip
27-3-17	30 White Birch Road	Janet Parmar		7 East Kirke Street	Chevy Chase	MD	20815
27-3-61	5 Tall Pines Drive	Dean Carpenter	Victoria Carpenter	5 Tall Pines Drive	Weston	CT	06883
27-3-63	11 Tall Pines Drive	Martha Deegan E H		11 Tall Pines Drive	Weston	CT	06883
27-4-7	12A Narrow Brook Road	Robert Levene		12A Narrow Brook Road	Weston	CT	06883
27-3-19,20	40 White Birch Road	Heather P	David M Levy	40 White Birch Road	Weston	CT	06883
28-8-52	5 Hickory Lane	Valarie Austin Patrick	Allen Dwight Patrick	5 Hickory Lane	Weston	CT	06883

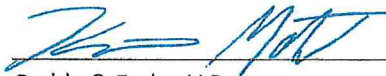
5 Tall Pines Abutters Map



CERTIFICATION OF SERVICE

I hereby certify that on the 11th day of October 2019, a copy of the following letter and notice of intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by first class certified mail to the list below.

Dated: 10/11/2019


Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
New Cingular Wireless PCS, LLC ("AT&T")

State

THE HONORABLE WILLIAM TONG ATTORNEY GENERAL OFFICE OF THE ATTORNEY GENERAL 55 ELM STREET HARTFORD, CT 06106	DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT DAVID LEHMAN, COMMISSIONER 450 COLUMBUS BLVD, HARTFORD HARTFORD, CT 06103
DEPARTMENT OF PUBLIC HEALTH RENEE COLEMAN-MITCHELL, COMMISSIONER 410 CAPITOL AVENUE P.O. BOX 340308 HARTFORD, CT 06134	DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION PUBLIC UTILITIES REGULATORY AUTHORITY MARISSA P. GILLET, CHAIRMAN TEN FRANKLIN SQUARE NEW BRITAIN, CT 06051
COUNCIL ON ENVIRONMENTAL QUALITY PETER B. HEARN, EXECUTIVE DIRECTOR 79 ELM STREET HARTFORD, CT 06106	DEPARTMENT OF TRANSPORTATION JOSEPH GIULIETTI, COMMISSIONER 2800 BERLIN TURNPIKE NEWINGTON, CT 06111
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION KATIE SCHARF DYKES, COMMISSIONER 79 ELM STREET HARTFORD, CT 06106	DEPARTMENT OF AGRICULTURE BRYAN P. HURLBURT, COMMISSIONER 450 COLUMBUS BOULEVARD, SUITE 701 HARTFORD, CT 06103
OFFICE OF POLICY AND MANAGEMENT MELISSA McCAW, SECRETARY 450 CAPITOL AVENUE HARTFORD, CT 06106	STATE SENATOR – 28 th DISTRICT TONY HWANG LEGISLATIVE OFFICE 300 CAPITAL AVENUE ROOM 3400 HARTFORD, CT 06106

DEPARTMENT OF EMERGENCY SERVICES & PUBLIC PROTECTION DIVISION OF EMERGENCY MANAGEMENT AND HOMELAND SECURITY JAMES C. ROVELLA, DEPUTY COMMISSIONER 1111 COUNTRY CLUB ROAD, MIDDLETOWN, CT 06457	WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS FRANCIS PIKERING, EXECUTIVE DIRECTOR 1 RIVERSIDE ROAD SANDY HOOK, CT 06482
STATE SENATOR – 26 th DISTRICT WILL HASKEL LEGISLATIVE OFFICE 300 CAPITAL AVENUE ROOM 3400 HARTFORD, CT 06106	STATE SENATOR – 135 th DISTRICT ANNE HUGHES LEGISLATIVE OFFICE 300 CAPITAL AVENUE ROOM 4200 HARTFORD, CT 06106
DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT-OFFICES OF CULTURE AND TOURISM TODD LEVINE, STATE HISTORIC PRESERVATION OFFICER, HISTORIAN/ENVIRONMENTAL REVIEWER, 450 COLUMBUS BLVD., 5 TH FLOOR, HARTFORD, CT 06103	STATE HOUSE REPRESENTATIVE- DISTRICT 023 DEVIN CARNEY LEGISLATIVE OFFICE BUILDING 300 CAPITAL AVENUE ROOM 4044 HARTFORD, CT 06106

Federal

FEDERAL COMMUNICATIONS COMMISSION 445 12 TH STREET SW WASHINGTON, DC 20554	FEDERAL AVIATION ADMINISTRATION 800 INDEPENDENCE AVENUE, SW WASHINGTON, DC 20591
U.S. SENATOR CHRISTOPHER MURPHY COLT GATEWAY 120 HUYSHOPE AVENUE SUITE 401 HARTFORD, CT 06106	U.S. SENATOR RICHARD BLUMENTHAL 90 STATE HOUSE SQUARE, 10TH FLOOR HARTFORD, CT 06103
U.S. CONGRESSMAN – 4 TH DISTRICT JIM HIMES GOVERNMENT CENTER 888 WASHINGTON BLVD, FLOOR 10 STAMFORD, CT 06901-2917	

Town of Weston

CHRIS SPAULDING, FIRST SELECTMAN WESTON TOWN HALL 56 NORFIELD ROAD WESTON, CT 06883	LAND USE DIRECTOR TRACY KULIKOWSKI WESTON TOWN HALL 56 NORFIELD ROAD WESTON, CT 06883
ZONING ENFORCEMENT OFFICER JAMES PJURA WESTON TOWN HALL 56 NORFIELD ROAD WESTON, CT 06883	CONSERVATION COMMISSION DAVID PATTEE, CONSERVATION PLANNER WESTON TOWN HALL 56 NORFIELD ROAD WESTON, CT 06883