UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
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FOLD HERE

October 11, 2019

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

Regarding: Notice of Exempt Modification – AT&T Site CT1241
Address: 191 Middle Haddam Road, Portland, CT 06480

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing 140' Monopole Tower at the above-referenced address, latitude 41.562258, longitude -72.57380. Said Monopole Tower is owned by Verizon Wireless but is currently managed and maintained by American Tower Corporation.

AT&T desires to modify its existing telecommunications facility by swapping (6) antennas, swapping (6) remote radio heads, adding (1) surge arrestor with (1) fiber cable and (2) DC power lines as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group LLC, dated September 17, 2019 and last revised October 1, 2019. Please also see the enclosed Mount Analysis prepared by Hudson Design Group LLC dated September 18, 2019. The centerline height of the antennas is and will remain at 119 feet.

The Connecticut Siting Council approved a 130-foot monopole tower on July 11, 2002 under Docket No. 206. The Council approved a 10-foot extension to the tower under Petition No. 806 on May 1, 2007. The proposed modifications comply with conditions of the above - mentioned Docket No. 206 Decision and above-mentioned Petition No.806 Approval. Enclosed please find copies of the above referenced Decision and Petition Approval.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: Susan Bransfield, First Selectwoman, Town of Portland; Lincoln White, Building Official, Town of Portland; Ashley Majorowski, Land Use Administrator, Town of Portland; American Tower Corporation, manager of the above referenced tower; and Philip B. Knowlton, Jr. and Tina S. Knowlton, as property owners at the above referenced address. Enclosed please find the property cards for the property owner and tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2). Specifically:

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

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

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

4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Enclosed please find the RF Emissions Analysis Report for AT&T's modified facility.*

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

6. The existing structure and its foundation can support the proposed loading. Enclosed *please find the structural analysis dated September 25, 2019 and prepared by American Tower Corporation.*

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Patricia Nowak
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
pnowak@clinellc.com

Enclosures: Exhibit 1 – Construction Drawings
Exhibit 2 - Mount Analysis
Exhibit 3 – CSC Approvals
Exhibit 4 – Property Cards
Exhibit 5 – RF Emissions Analysis Report
Exhibit 6 – Structural Analysis

cc: Susan Bransfield, First Selectwoman, Town of Portland
Lincoln White, Building Official, Town of Portland
Ashley Majorowski, Land Use Administrator, Town of Portland
American Tower Corporation, manager of the tower
Philip B. Knowlton, Jr. and Tina S. Knowlton, property owner

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: NNH4-65B-R6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 8843 B2/B66A (AWS/PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T DC & FIBER SURGE ARRESTOR DC6-48-60-18-8C-EV (TOTAL OF 1) WITH (2) DC POWER & (1) FIBER RUN.
- PROPOSED HANDRAIL KIT.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP DUL FOR 6630.
- ADD RBS 6630 FOR 5G.
- ADD (1) IDLe.

ITEMS TO REMAIN:
- (3) ANTENNAS, (6) TMA'S (1) SURGE ARRESTOR, (6) COAX CABLES (ACTIVE), (6) COAX CABLES (FOR FUTURE USE), (2) DC POWER & (1) FIBER.

SITE ADDRESS:	191 MIDDLE HADDAM ROAD PORTLAND, CT 06480
LATITUDE:	41.562250° N, 41° 33' 44.01" N
LONGITUDE:	72.573781° W, 72° 34' 25.61" W
TYPE OF SITE:	MONOPOLE / INDOOR
STRUCTURE HEIGHT:	140'-0"±
RAD CENTER:	117'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

SITE NUMBER: CT1241

SITE NAME: PORTLAND-MIDDLE HADDAM RD

FA CODE: 10118602

PACE ID: MRCTB040432, MRCTB0400809, MRCTB0400561, MRCTB0400690

PROJECT: LTE 2C_3C_4C_RETRO 2019 UPGRADE

FOR ZONING
NOT FOR CONSTRUCTION

DRAWING INDEX

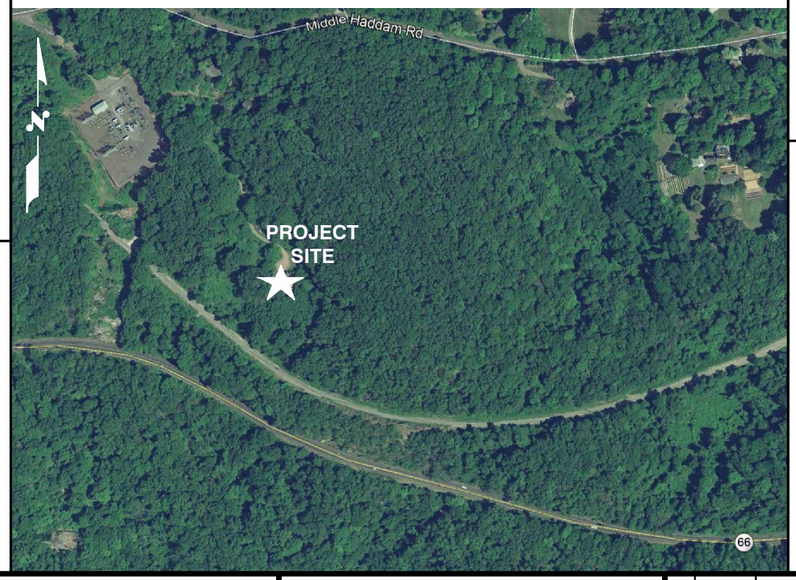
SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
GN-1	GENERAL NOTES	0
A-1	COMPOUND & EQUIPMENT PLANS	0
A-2	ANTENNA LAYOUTS & ELEVATION	0
A-3	DETAILS	0
SN-1	STRUCTURAL NOTES	0
S-1	MOUNT MODIFICATION DESIGN	0
G-1	GROUNDING DETAILS	0
RF-1	RF PLUMBING DIAGRAM	0

ATC SITE NAME: MIDDLE HADDAM ROAD CROWN CT
ATC SITE #: 411257

VICINITY MAP

DIRECTIONS TO SITE:

FROM ROCKY HILL, TAKE 91 SOUTH TO ROUTE 9 SOUTH EXIT 22S. IN MIDDLETOWN TAKE EXIT FOR ROUTE 17/66 AND CROSS BRIDGE INTO PORTLAND. CONTINUE ON ROUTE 66 EAST TO MIDDLE HADDAM RD. ON LEFT. FOLLOW MIDDLE HADDAM RD. AROUND TO HOUSE 191. SITE IS UP ACCESS RD. TO THE RIGHT OF HOUSE. HOME OWNER IS VERY CONCERNED ABOUT SPEEDING.



GENERAL NOTES

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

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	T-1	0

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1241
SITE NAME: PORTLAND-MIDDLE HADDAM RD
ATC SITE # ID: 411257

191 MIDDLE HADDAM ROAD
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500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

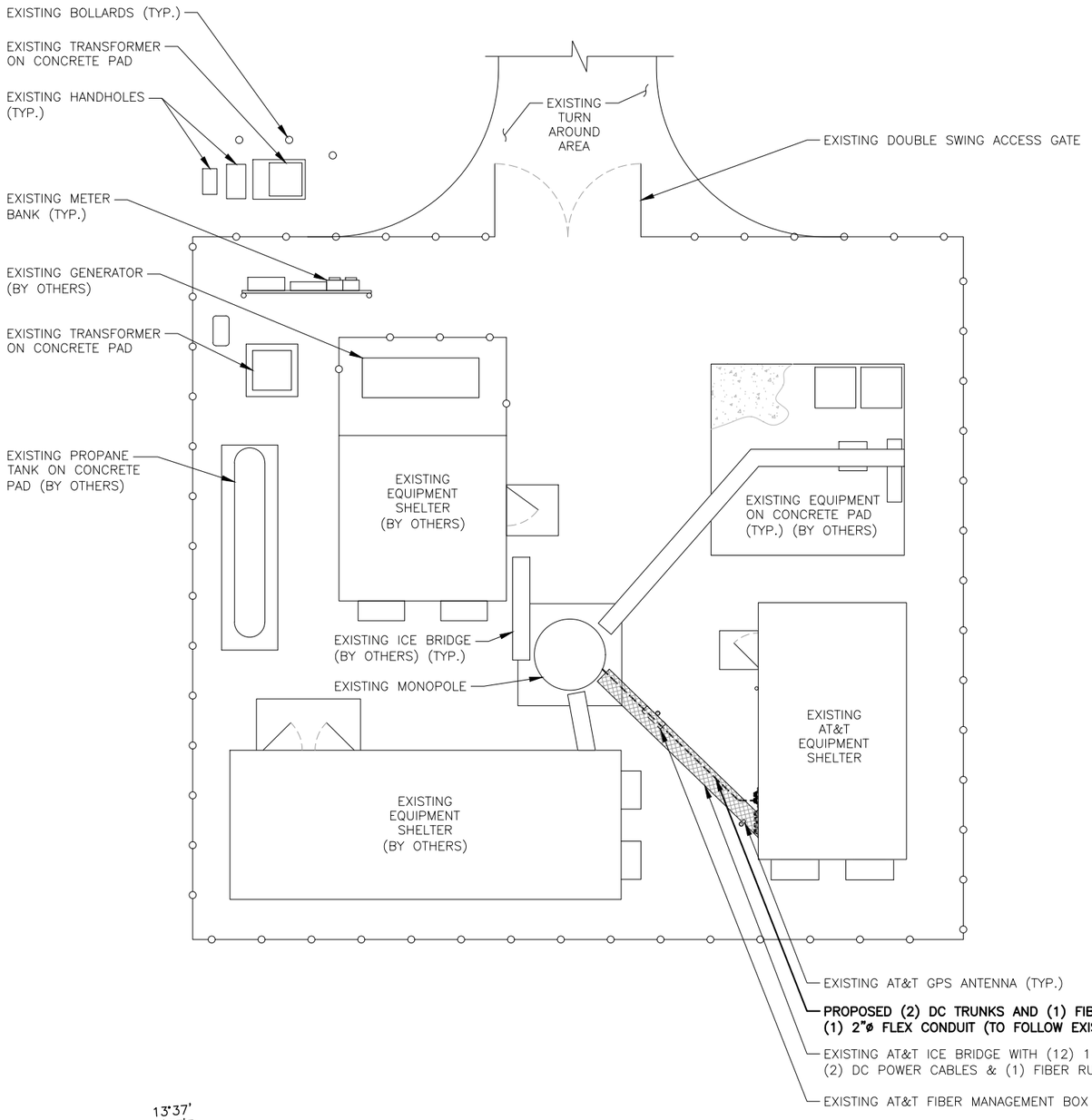
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES

LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	GN-1	0



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"

NOTE:

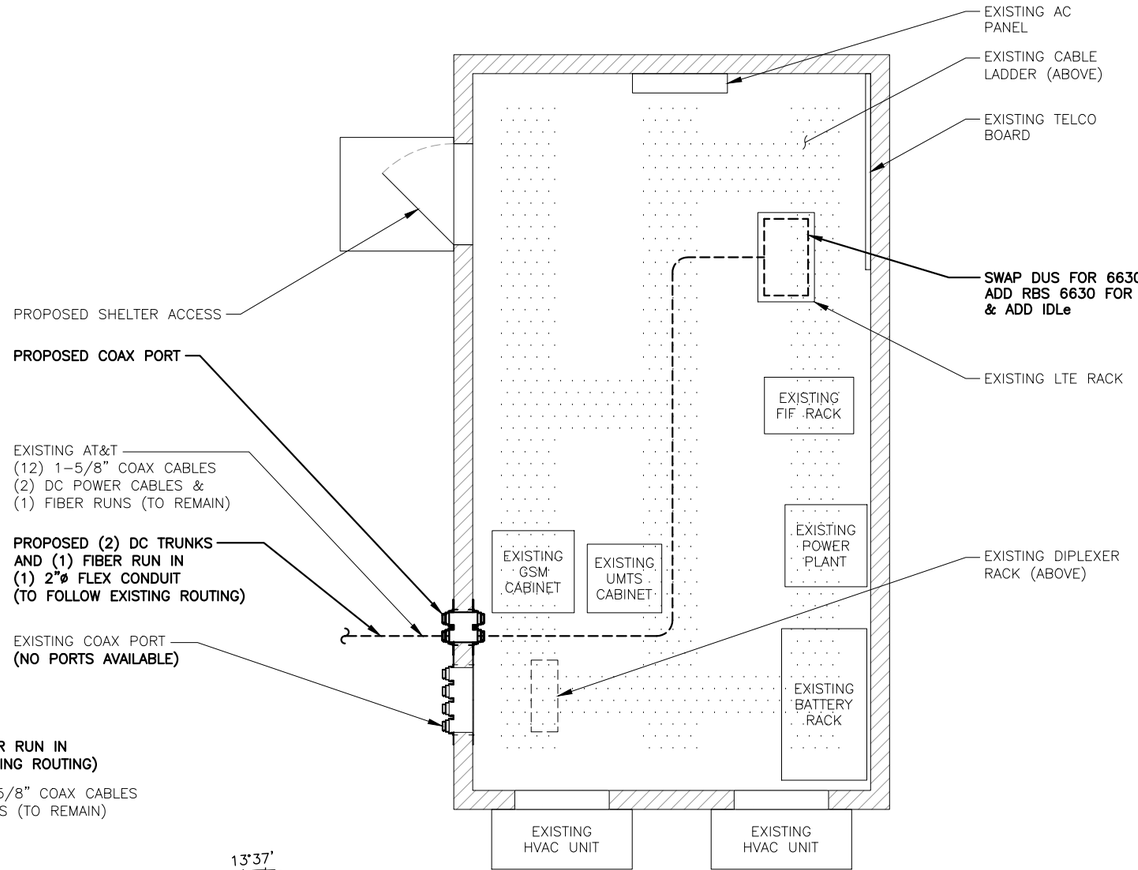
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

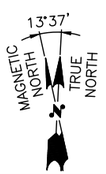
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 18, 2019





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

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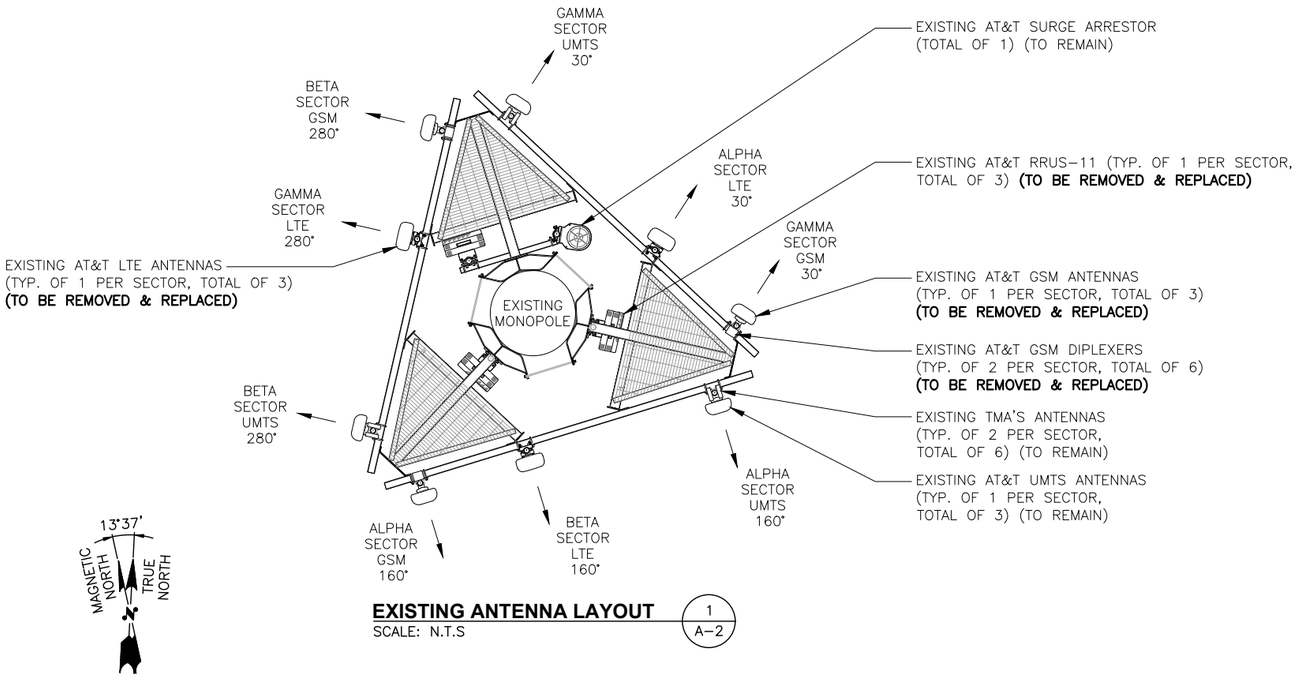
STATE OF CONNECTICUT DANIEL T. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

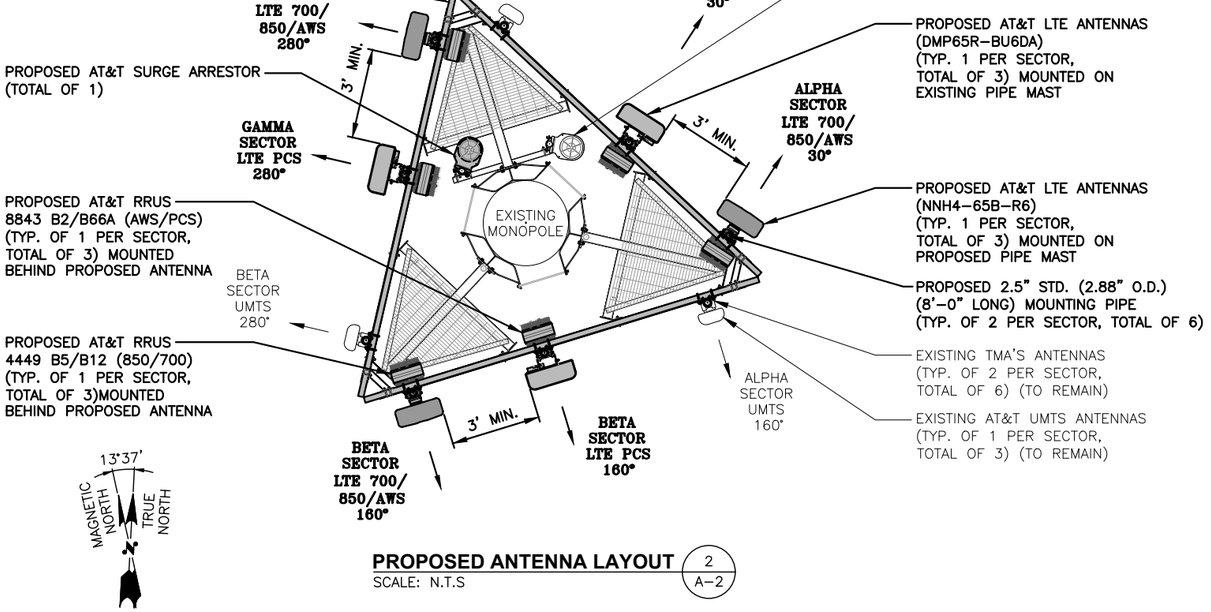
AT&T

COMPOUND & EQUIPMENT PLANS
LTE 2C_3C_4C_RETRO 2019 UPGRADE

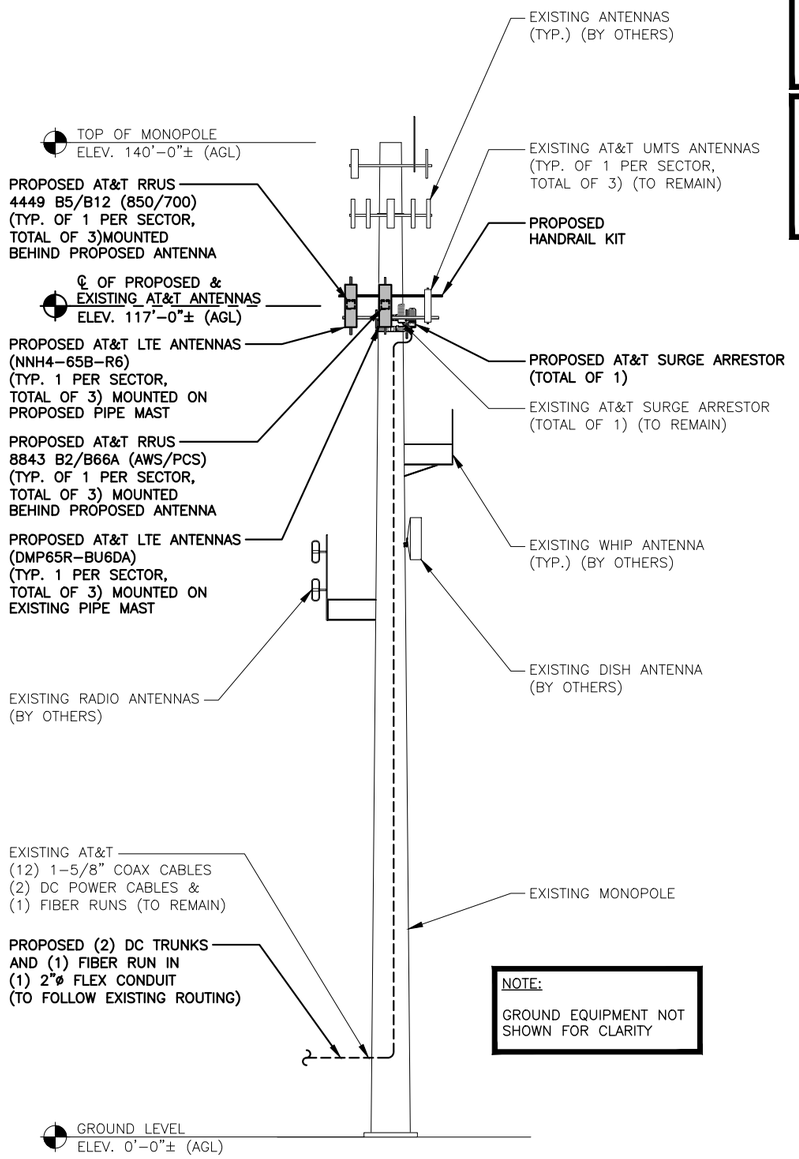
SITE NUMBER	DRAWING NUMBER	REV
CT1241	A-1	0



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S



NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 18, 2019

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
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CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1241
SITE NAME: PORTLAND-MIDDLE HADDAM RD
ATC SITE # ID: 411257

191 MIDDLE HADDAM ROAD
PORTLAND, CT 06480
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	10/01/19	ISSUED FOR ZONING	SF	AT	DPH
A	09/17/19	ISSUED FOR REVIEW	ET	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	A-2	0

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55X11X5	117'-0"±	160°	(2)(E) LGP21401	–	–	(2) 1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX (FOR FUTURE USE)	
A3	**PROPOSED**	**LTE PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**117'-0"±**	**30°**	–	**(P)(1) 8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.9"**	–	
A4	**PROPOSED**	**LTE 700/ 850/AWS**	**NNH4-65B-R6**	**72X19.6X7.8**	**117'-0"±**	**30°**	–	**(P)(1) 4449 B5/B12 (850/700)**	**14.9"x13.2"x10.4"**	–	
B1	EXISTING	UMTS 850	7770	55X11X5	117'-0"±	280°	(2)(E) LGP21401	–	–	(2) 1-5/8 COAX	(P) (1) RAYCAP DC6-48-60-0-8C-EV
B2	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX (FOR FUTURE USE)	
B3	**PROPOSED**	**LTE PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**117'-0"±**	**160°**	–	**(P)(1) 8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.9"**	–	
B4	**PROPOSED**	**LTE 700/ 850/AWS**	**NNH4-65B-R6**	**72X19.6X7.8**	**117'-0"±**	**160°**	–	**(P)(1) 4449 B5/B12 (850/700)**	**14.9"x13.2"x10.4"**	–	
C1	EXISTING	UMTS 850	7770	55X11X5	117'-0"±	30°	(2)(E) LGP21401	–	–	(2) 1-5/8 COAX	I
C2	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX (FOR FUTURE USE)	
C3	**PROPOSED**	**LTE PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**117'-0"±**	**280°**	–	**(P)(1) 8843 B2/B66A (AWS/PCS)**	**14.9"x13.2"x10.9"**	–	
C4	**PROPOSED**	**LTE 700/ 850/AWS**	**NNH4-65B-R6**	**72X19.6X7.8**	**117'-0"±**	**280°**	–	**(P)(1) 4449 B5/B12 (850/700)**	**14.9"x13.2"x10.4"**	–	

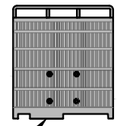
FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
P(3)	4449 (850/700)	14.9"x13.2"x10.4"
P(3)	8843 (AWS/PCS)	14.9"x13.2"x10.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-3)
SCALE: N.T.S

NOTE:
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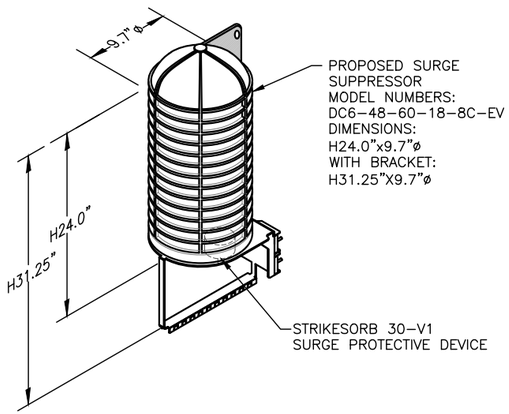
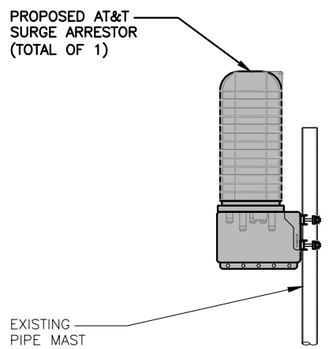


PROPOSED SURGE SUPPRESSOR
MODEL NUMBERS:
DC6-48-60-18-8C-EV
DIMENSIONS:
H24.0"x9.7"ø
WITH BRACKET:
H31.25"X9.7"ø

STRIKESORB 30-V1
SURGE PROTECTIVE DEVICE

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

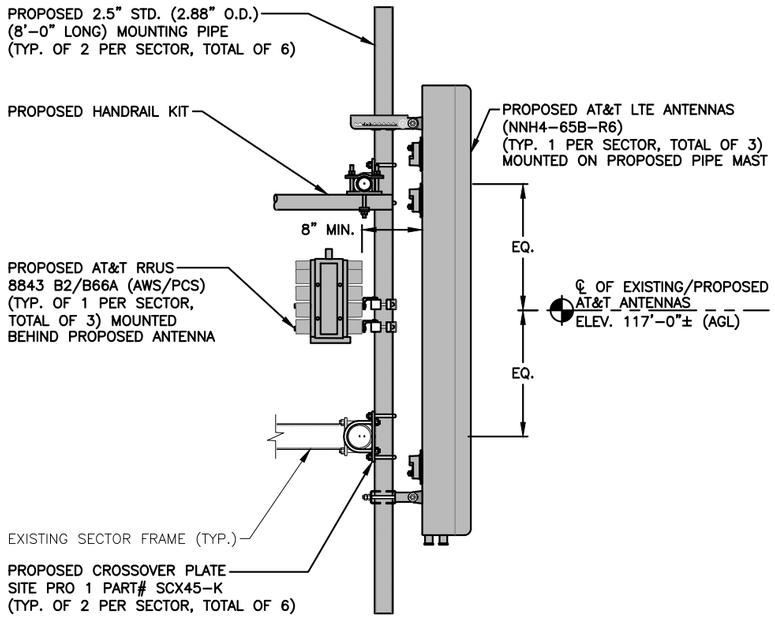
DC SURGE SUPPRESSOR DETAIL (3 / A-3)
SCALE: N.T.S



PROPOSED AT&T SURGE ARRESTOR
(TOTAL OF 1)

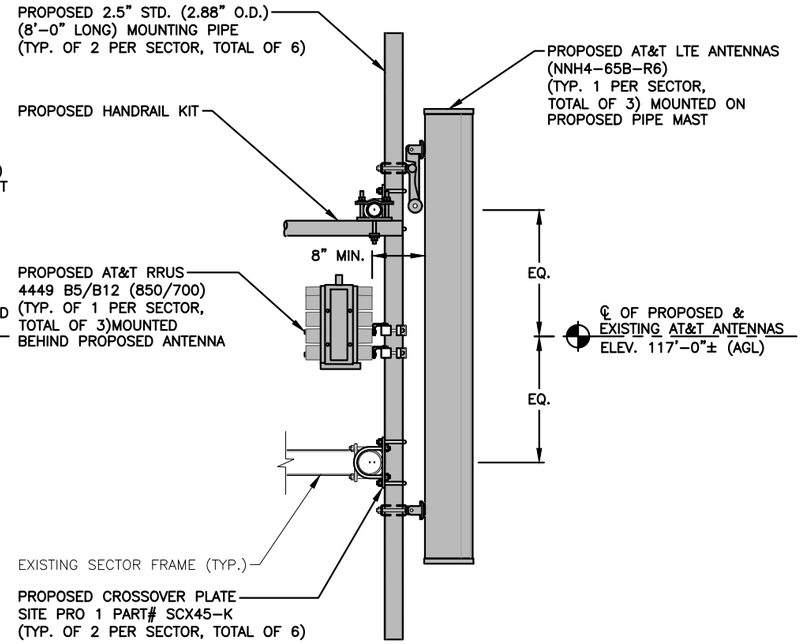
EXISTING PIPE MAST (TYP.)

DC SURGE ARRESTOR MOUNTING DETAIL (4 / A-3)
SCALE: N.T.S



PROPOSED LTE ANTENNA MOUNTING DETAIL (5 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED LTE ANTENNA MOUNTING DETAIL (6 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

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STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	A-3	0

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	SN-1	0

NOTE:

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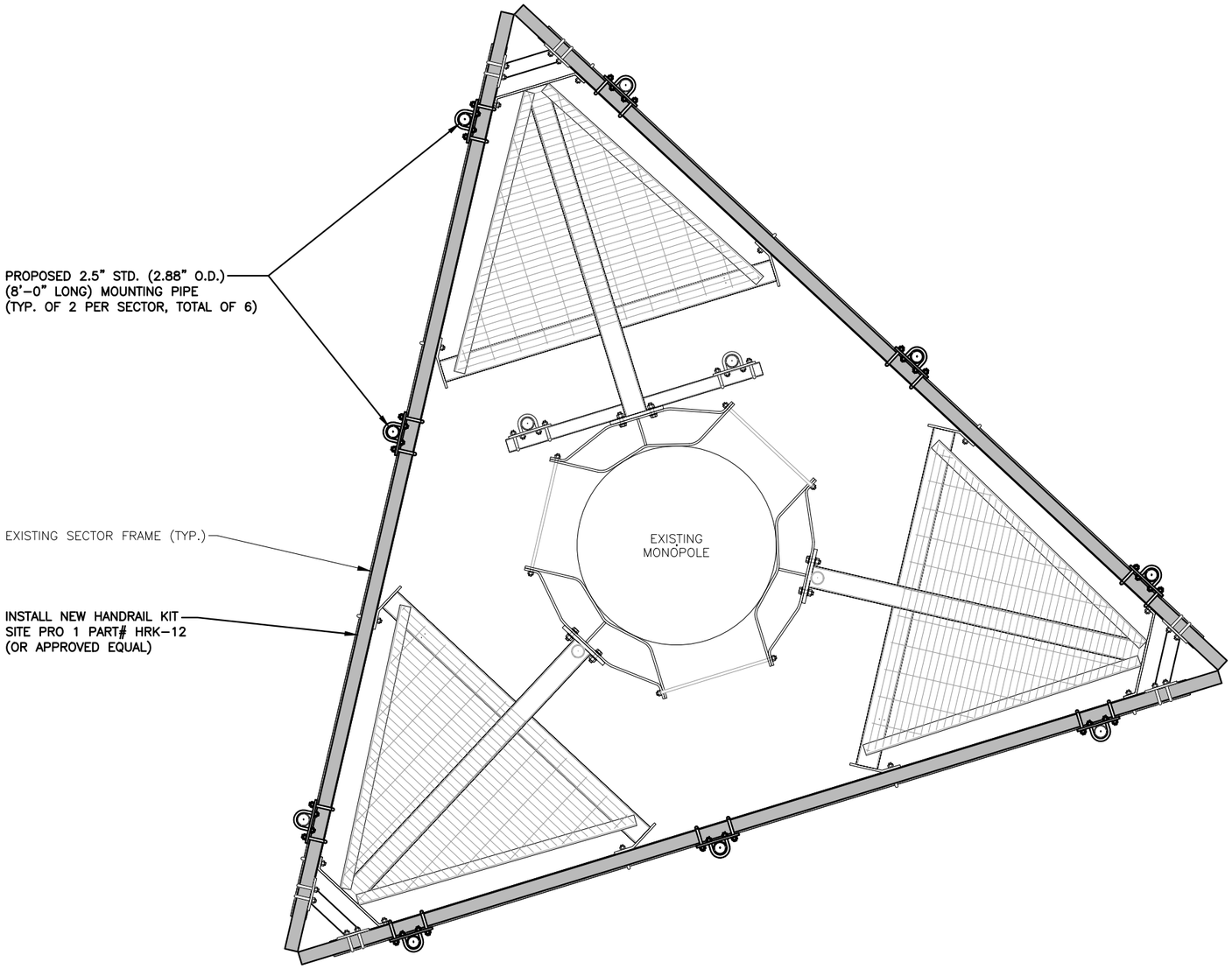
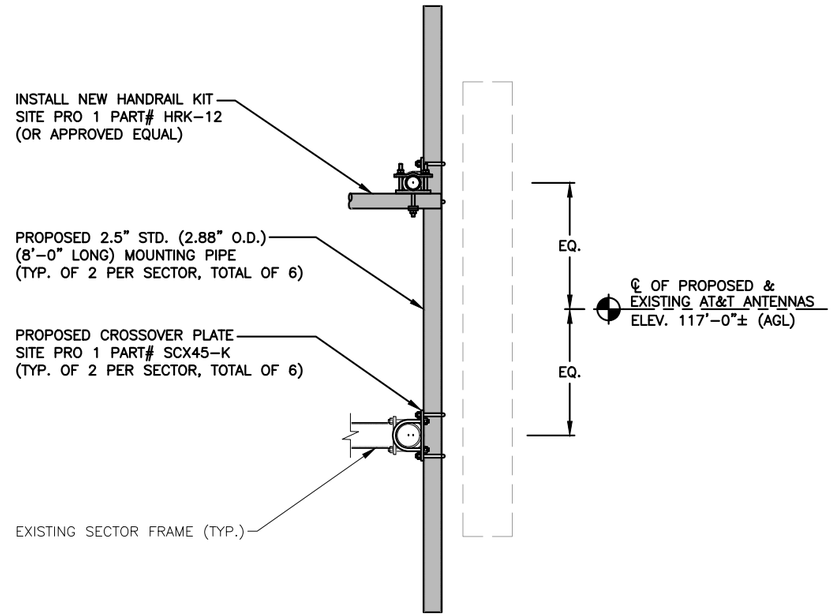


PROPOSED MODIFICATIONS PLAN (1 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED MODIFICATIONS DETAIL (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

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A	09/17/19	ISSUED FOR REVIEW	ET	AT	DPH

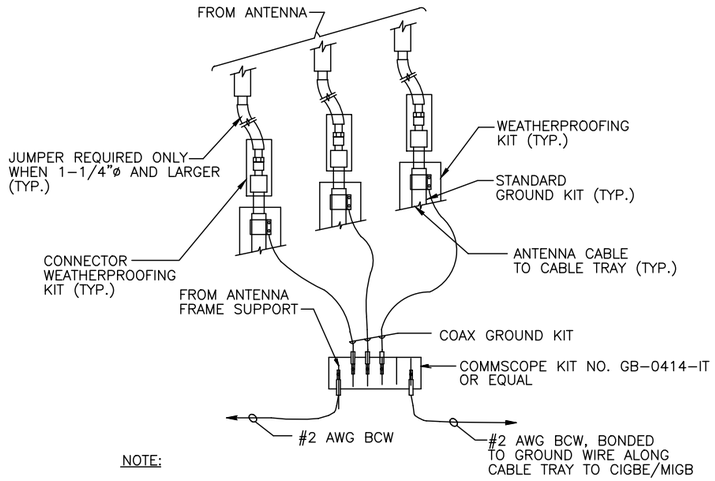
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

MOUNT MODIFICATION DESIGN
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	S-1	0

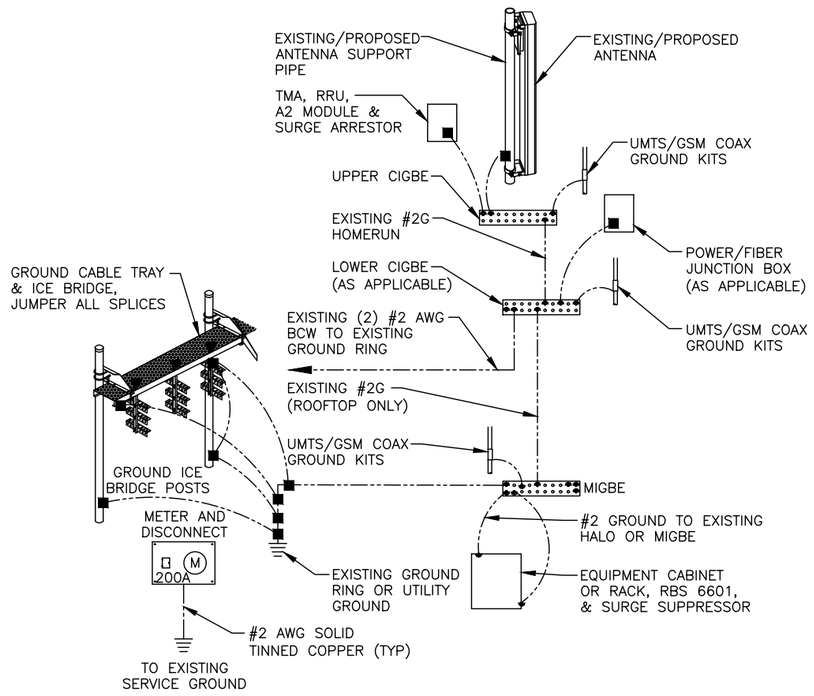


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

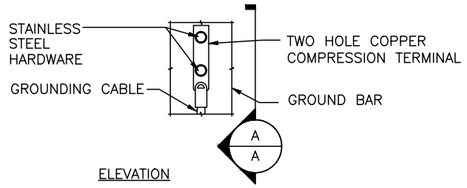
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

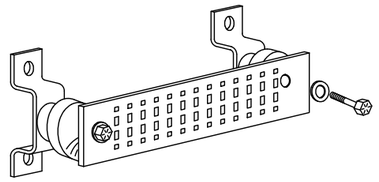
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1241
SITE NAME: PORTLAND-MIDDLE HADDAM RD
ATC SITE # ID: 411257

191 MIDDLE HADDAM ROAD
PORTLAND, CT 06480
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	10/01/19	ISSUED FOR ZONING	SF	AT	DPH
A	09/17/19	ISSUED FOR REVIEW	ET	AT	DPH

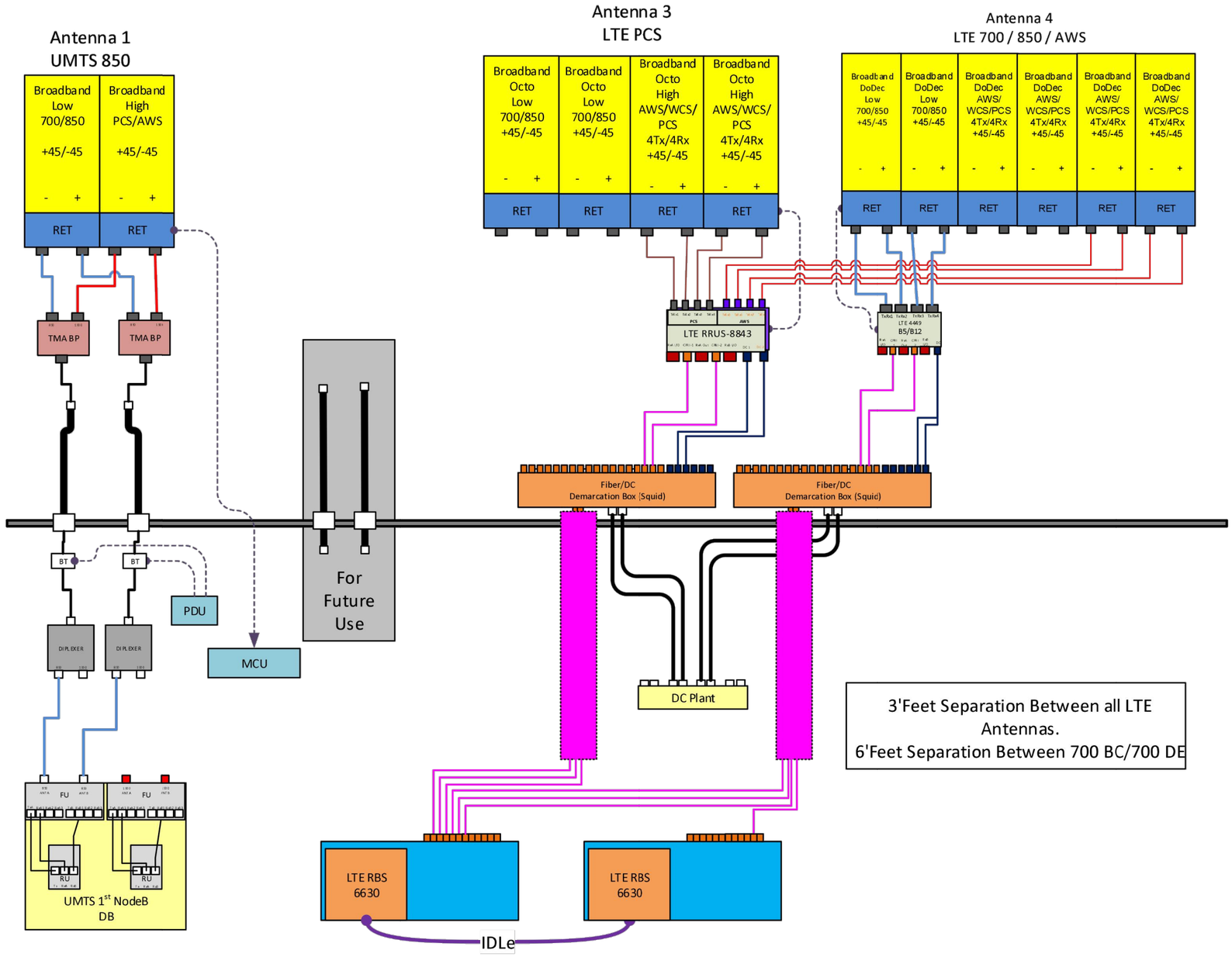
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	G-1	0



RF PLUMBING DIAGRAM 1 / RF–1
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

AT&T

RF PLUMBING DIAGRAM
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	RF–1	0

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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ATC SITE # ID: 411257

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PORTLAND, CT 06480
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	10/01/19	ISSUED FOR ZONING	SF	AT	DPH
A	09/17/19	ISSUED FOR REVIEW	ET	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
LTE 2C_3C_4C_RETRO 2019 UPGRADE

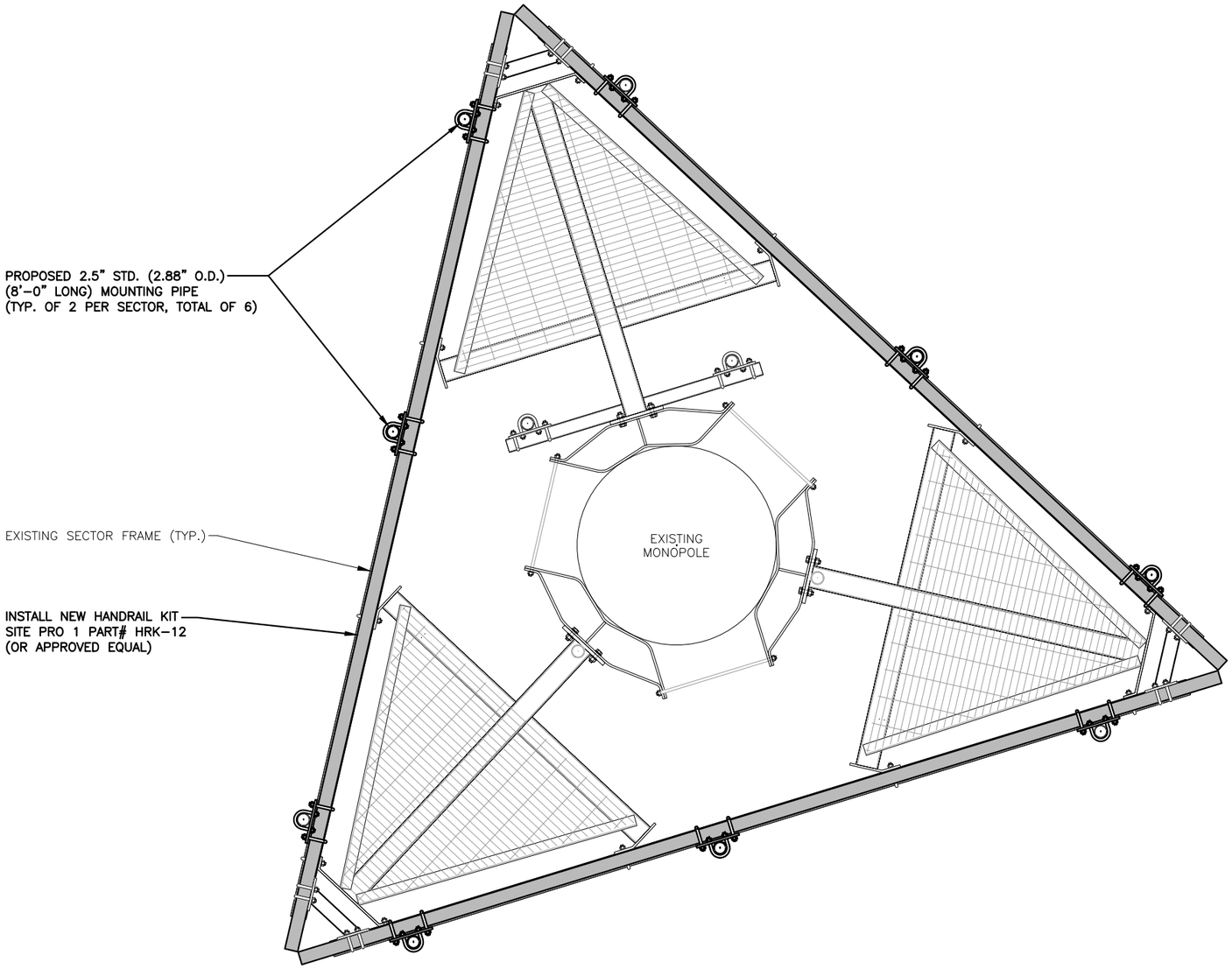
SITE NUMBER	DRAWING NUMBER	REV
CT1241	SN-1	0

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

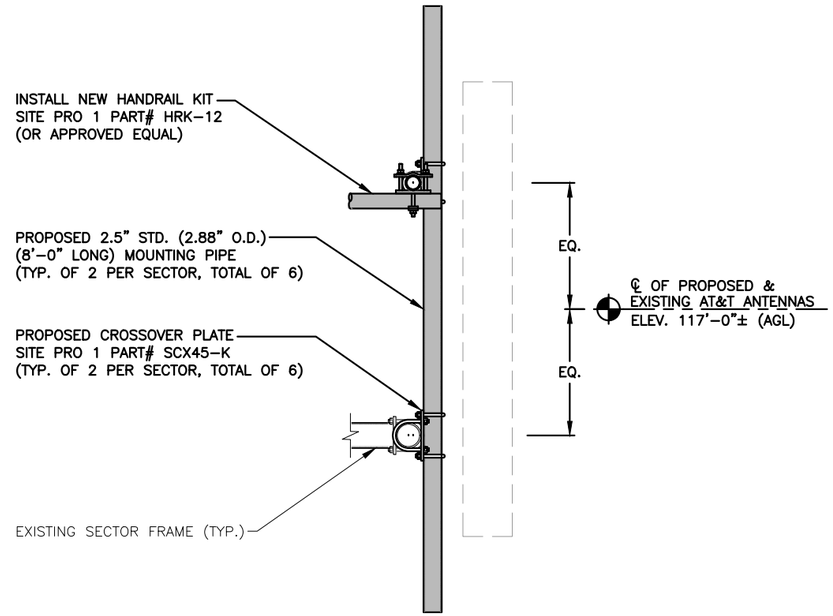
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED
BY: HUDSON DESIGN GROUP, LLC.
DATED: SEPTEMBER 18, 2019



PROPOSED MODIFICATIONS PLAN (1 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED MODIFICATIONS DETAIL (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

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0	10/01/19	ISSUED FOR ZONING	SF	AT	DPH
A	09/17/19	ISSUED FOR REVIEW	ET	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: ET

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

MOUNT MODIFICATION DESIGN
LTE 2C_3C_4C_RETRO 2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1241	S-1	0

EXHIBIT 2

September 18, 2019

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:	Site Number:	CT1241 (LTE 2C/3C/4C)
	FA Number:	10118602
	PACE Number:	MRCTB040432
	PT Number:	2051A0PQEL
	Site Name:	PORTLAND-MIDDLE HADDAM RD
	Site Address:	191 Middle Haddam Road Portland, CT 06480

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs.) (Tower Mount)
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) NNH4-65B-R6 Antennas (72.0"x19.6"x7.8"– Wt. = 82 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each) (Tower Mount)**
- **(3) B5/B12 4449 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each) (Tower Mount)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs.) (Tower Mount)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on May 15, 2019.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.89 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new handrail kit, SitePro1 P/N HRK12 (or approved equal).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 2C/3C/4C) Mount Rating	51	LC2	108%	**FAIL**
Modified (LTE 2C/3C/4C) Mount Rating	51	LC2	87%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473






HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\,(z/z_g)^{2/\alpha}$

z=	117	(ft)
z_g=	900	(ft)
α=	9.5	
K_z=	**1.308**	

$Kzmin \le Kz \le 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$ $\qquad K_h = e^{(f*z/H)}$

K_{zt}= 1.356

(If Category 1 then K_{zt} =1.0)

Category= **3**

K_h=	3.222	
K_c=	1.0	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2.0	(from Table 2-5)
z=	117	
z_s=	250	(Mean elevation of base of structure above sea level)
H=	200	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.36	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	**t_i =**	**1.50 in**
Importance Factor =	**I=**	**1.0 (from Table 2-3)**
	K_{iz} =	**1.13 (from Sec. 2.6.10)**

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ $\qquad t_{iz}$ = **1.89** in

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	131	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$$F = q_z * G_h * (EPA)_A$$

$$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$$

		K_z=	1.308	(from 2.6.5.2)
		K_{zt}=	1.4	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**72.25**	K_e=	0.99	(from 2.6.8)
$q_{z\,(ice)}$=	**10.69**	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	**3.85**	V_{max}=	130	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.89** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	398	85	21
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	918	169	49
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.67	1.25	887	165	47
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	118	28	6
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.13	1.20	118	28	6
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	1.60	1.20	78	21	4
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	82	19	4
HSS 4x4	4.0	12.0		0.33	0.33	1.25	30	11	2
2-1/2x2-1/2 Angle	2.5	12.0		0.21	0.21	2.00	30	15	2
3-1/2" Pipe	4.0	12.0		0.33	0.33	1.20	29	11	2
2" Pipe	2.4	12.0		0.20	0.20	1.20	17	9	1

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.89	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	398	212	351
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	918	406	790
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	887	415	769
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	118	98	113
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	118	93	112
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	78	26	65

WIND LOADS WITH ICE:

7770 Antenna	58.8	14.8	8.8	6.04	3.59	3.98	6.69	1.27	1.39	82	53	75
DMP65R-BU6DA Antenna	75.0	24.5	11.5	12.75	5.98	3.06	6.53	1.22	1.38	167	88	147
NNH4-65B-R6 Antenna	75.8	23.4	11.6	12.31	6.10	3.24	6.54	1.23	1.38	162	90	144
B2/B66A 8843 RRH	18.7	17.0	14.7	2.20	1.91	1.10	1.27	1.20	1.20	28	24	27
B5/B12 4449 RRH	18.7	17.0	14.2	2.20	1.84	1.10	1.32	1.20	1.20	28	24	27
LGP21401 TMA (side)	18.2	12.8	6.5	1.62	0.82	1.42	2.80	1.20	1.21	21	11	18

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	21	11	19
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	49	22	42
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	47	22	41
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	6	5	6
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	6	5	6
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	4	1	3

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.89	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	398	212	258
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	918	406	534
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	887	415	533
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	118	98	103
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	118	93	100
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	78	26	39

WIND LOADS WITH ICE:

7770 Antenna	58.8	14.8	8.8	6.04	3.59	3.98	6.69	1.27	1.39	82	53	60
DMP65R-BU6DA Antenna	75.0	24.5	11.5	12.75	5.98	3.06	6.53	1.22	1.38	167	88	108
NNH4-65B-R6 Antenna	75.8	23.4	11.6	12.31	6.10	3.24	6.54	1.23	1.38	162	90	103
B2/B66A 8843 RRH	18.7	17.0	14.7	2.20	1.91	1.10	1.27	1.20	1.20	28	24	25
B5/B12 4449 RRH	18.7	17.0	14.2	2.20	1.84	1.10	1.32	1.20	1.20	28	24	25
LGP21401 TMA (side)	18.2	12.8	6.5	1.62	0.82	1.42	2.80	1.20	1.21	21	11	13

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	21	11	14
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	49	22	28
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	47	22	28
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	6	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	6	5	5
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	4	1	2

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

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WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.89	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	398	212	212
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	918	406	406
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	887	415	415
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	118	98	98
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	118	93	93
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	78	26	26

WIND LOADS WITH ICE:

7770 Antenna	58.8	14.8	8.8	6.04	3.59	3.98	6.69	1.27	1.39	82	53	53
DMP65R-BU6DA Antenna	75.0	24.5	11.5	12.75	5.98	3.06	6.53	1.22	1.38	167	88	88
NNH4-65B-R6 Antenna	75.8	23.4	11.6	12.31	6.10	3.24	6.54	1.23	1.38	162	90	90
B2/B66A 8843 RRH	18.7	17.0	14.7	2.20	1.91	1.10	1.27	1.20	1.20	28	24	24
B5/B12 4449 RRH	18.7	17.0	14.2	2.20	1.84	1.10	1.32	1.20	1.20	28	24	24
LGP21401 TMA (side)	18.2	12.8	6.5	1.62	0.82	1.42	2.80	1.20	1.21	21	11	11

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	21	11	11
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	49	22	22
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	47	22	22
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	6	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	6	5	5
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	4	1	1

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.89	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	398	212	258
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	918	406	534
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	887	415	533
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	118	98	103
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	118	93	100
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	78	26	39

WIND LOADS WITH ICE:

7770 Antenna	58.8	14.8	8.8	6.04	3.59	3.98	6.69	1.27	1.39	82	53	60
DMP65R-BU6DA Antenna	75.0	24.5	11.5	12.75	5.98	3.06	6.53	1.22	1.38	167	88	108
NNH4-65B-R6 Antenna	75.8	23.4	11.6	12.31	6.10	3.24	6.54	1.23	1.38	162	90	108
B2/B66A 8843 RRH	18.7	17.0	14.7	2.20	1.91	1.10	1.27	1.20	1.20	28	24	25
B5/B12 4449 RRH	18.7	17.0	14.2	2.20	1.84	1.10	1.32	1.20	1.20	28	24	25
LGP21401 TMA (side)	18.2	12.8	6.5	1.62	0.82	1.42	2.80	1.20	1.21	21	11	13

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	21	11	14
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	49	22	28
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	47	22	28
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	6	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	6	5	5
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	4	1	2

Date: 9/18/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.89 in. | Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	398	212	351
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	918	406	790
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	887	415	769
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	118	98	113
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	118	93	112
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	78	26	65
WIND LOADS WITH ICE:												
7770 Antenna	58.8	14.8	8.8	6.04	3.59	3.98	6.69	1.27	1.39	82	53	75
DMP65R-BU6DA Antenna	75.0	24.5	11.5	12.75	5.98	3.06	6.53	1.22	1.38	167	88	147
NNH4-65B-R6 Antenna	75.8	23.4	11.6	12.31	6.10	3.24	6.54	1.23	1.38	162	90	144
B2/B66A 8843 RRH	18.7	17.0	14.7	2.20	1.91	1.10	1.27	1.20	1.20	28	24	27
B5/B12 4449 RRH	18.7	17.0	14.2	2.20	1.84	1.10	1.32	1.20	1.20	28	24	27
LGP21401 TMA (side)	18.2	12.8	6.5	1.62	0.82	1.42	2.80	1.20	1.21	21	11	18
WIND LOADS AT 30 MPH:												
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	21	11	19
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	49	22	42
NNH4-65B-R6 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	47	22	41
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	6	5	6
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	6	5	6
LGP21401 TMA (side)	14.4	9.0	2.7	0.90	0.27	1.60	5.33	1.20	1.33	4	1	3

Date: 9/17/2019
Project Name: PORTLAND-MIDDLE HADDAM RD
Project No.: CT1241
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.89 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		148 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		183 lbs

DMP65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		328 lbs
Weight of object:	80.0 lbs	
Combined weight of ice and object:		408 lbs

NNH4-65B-R6 Antenna

Weight of ice based on total radial SF area:

Height (in):	72.0	
Width (in):	19.6	
Depth (in):	7.8	
Total weight of ice on object:		318 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		400 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		54 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		126 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		54 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		127 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	2.7	
Depth (in):	9.0	
Total weight of ice on object:		31 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		50 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		54 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		87 lbs

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		17 plf

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:		13 plf

3-1/2" Pipe

Per foot weight of ice:

diameter (in):	4	
Per foot weight of ice on object:		14 plf

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		10 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

Current Date: 9/17/2019 8:56 AM
Units system: English
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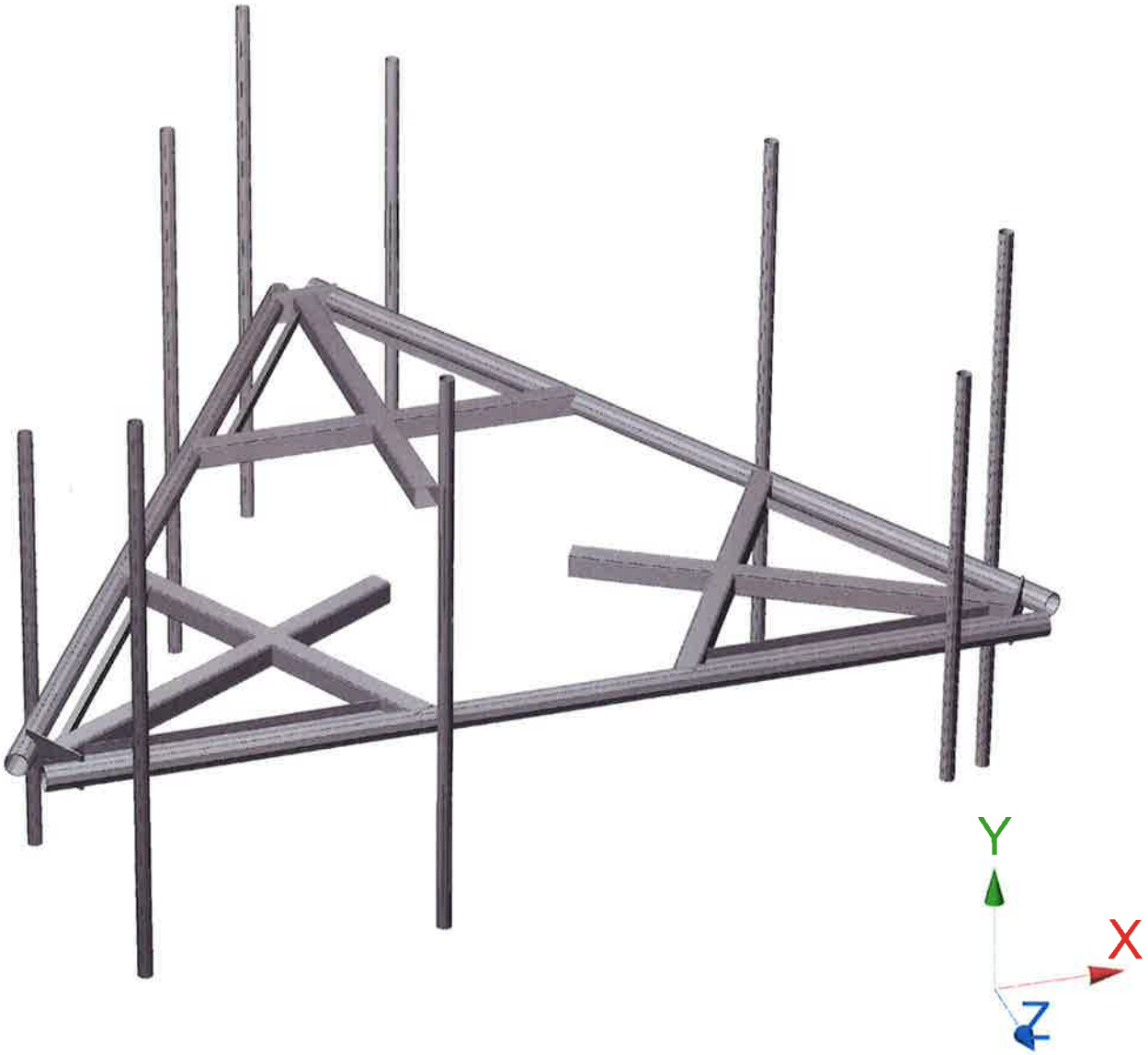

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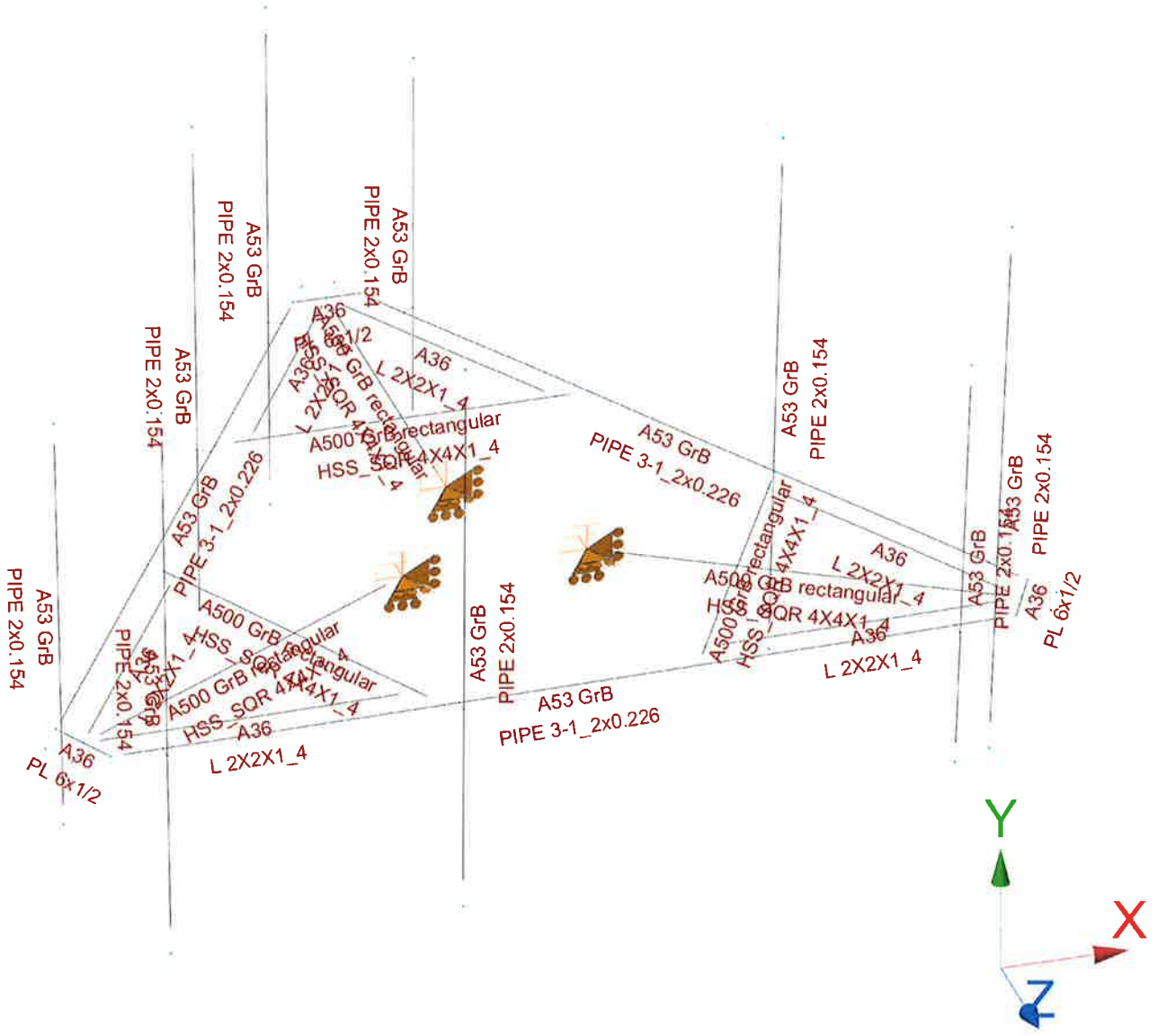

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Current Date: 9/18/2019 1:41 PM
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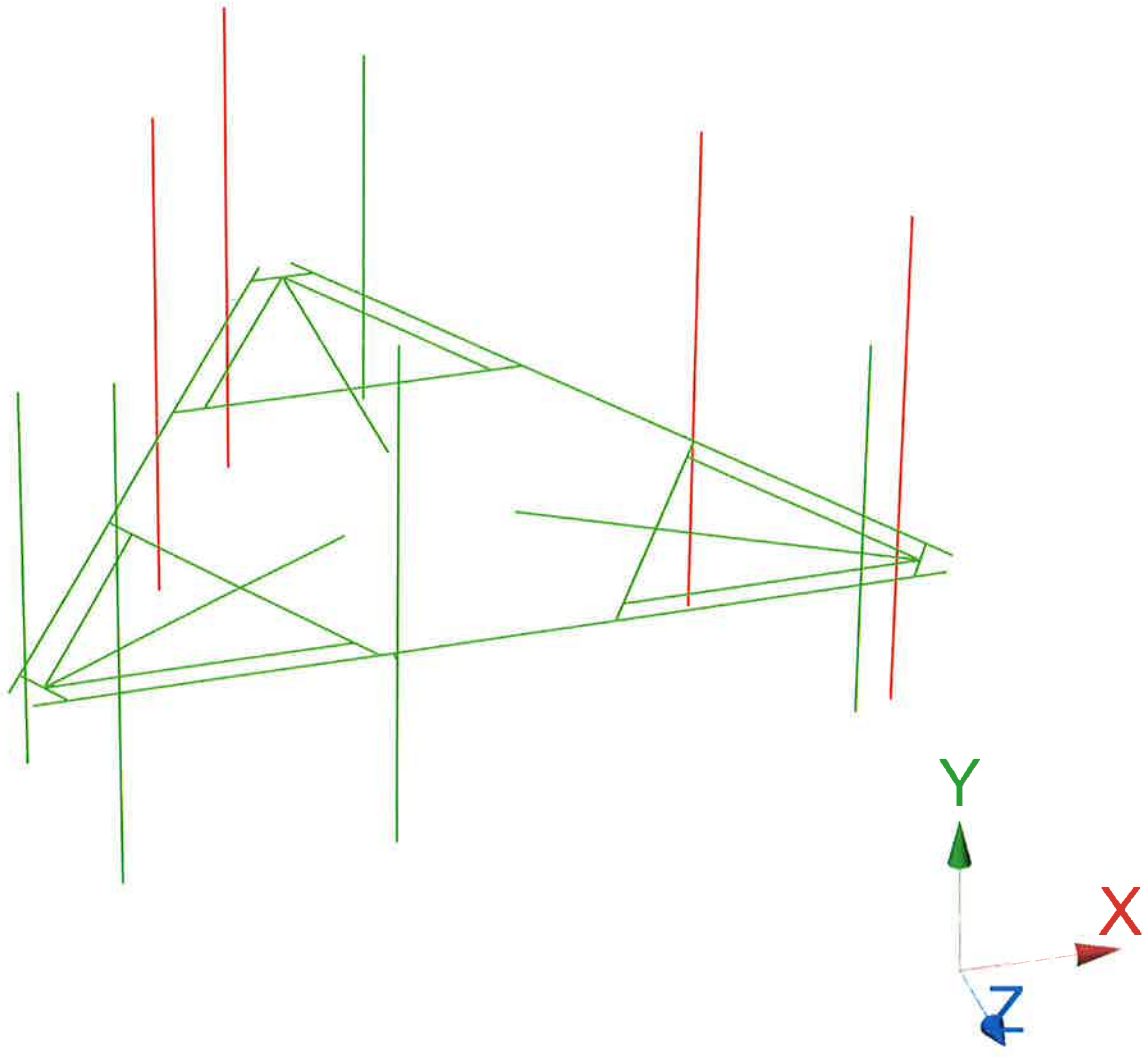

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Current Date: 9/17/2019 8:57 AM
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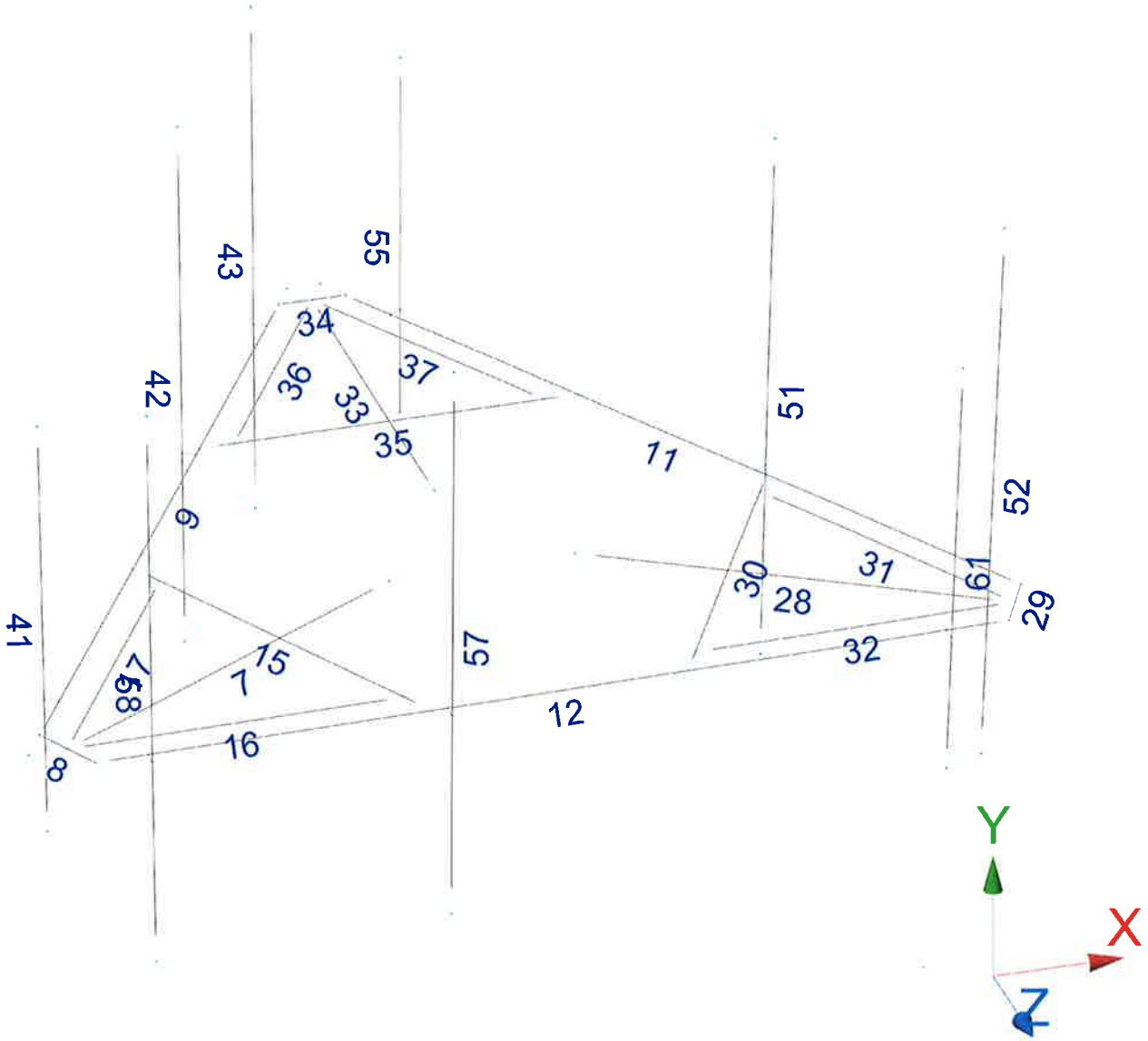

Bentley

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Load data

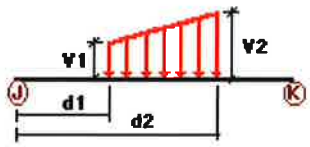
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL

Distributed force on members

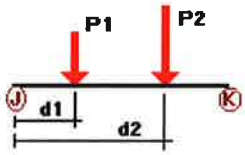


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	15	y	-0.01	-0.01	0.00	No	100.00	Yes
	16	y	-0.01	-0.01	0.00	No	100.00	Yes
	17	y	-0.01	-0.01	0.00	No	100.00	Yes
	30	y	-0.01	-0.01	0.00	No	100.00	Yes
	31	y	-0.01	-0.01	0.00	No	100.00	Yes
	32	y	-0.01	-0.01	0.00	No	100.00	Yes
	35	y	-0.01	-0.01	0.00	No	100.00	Yes
	36	y	-0.01	-0.01	0.00	No	100.00	Yes
	37	y	-0.01	-0.01	0.00	No	100.00	Yes
W0	7	z	-0.03	-0.03	0.00	No	100.00	Yes
	9	z	-0.029	-0.029	0.00	No	100.00	Yes
	11	z	-0.029	-0.029	0.00	No	100.00	Yes
	12	z	-0.029	-0.029	0.00	No	100.00	Yes
	15	z	-0.03	-0.03	0.00	No	100.00	Yes
	16	z	-0.03	-0.03	0.00	No	100.00	Yes

	17	z	-0.03	-0.03	0.00	No	100.00	Yes
	28	z	-0.03	-0.03	0.00	No	100.00	Yes
	30	z	-0.03	-0.03	0.00	No	100.00	Yes
	31	z	-0.03	-0.03	0.00	No	100.00	Yes
	32	z	-0.03	-0.03	0.00	No	100.00	Yes
	33	z	-0.03	-0.03	0.00	No	100.00	Yes
	35	z	-0.03	-0.03	0.00	No	100.00	Yes
	36	z	-0.03	-0.03	0.00	No	100.00	Yes
	37	z	-0.03	-0.03	0.00	No	100.00	Yes
	41	z	-0.017	-0.017	0.00	No	100.00	Yes
	42	z	-0.017	-0.017	0.00	No	100.00	Yes
	43	z	-0.017	-0.017	0.00	No	100.00	Yes
	51	z	-0.017	-0.017	0.00	No	100.00	Yes
	52	z	-0.017	-0.017	0.00	No	100.00	Yes
	55	z	-0.017	-0.017	0.00	No	100.00	Yes
W30	7	x	-0.03	-0.03	0.00	No	100.00	Yes
	9	x	-0.029	-0.029	0.00	No	100.00	Yes
	11	x	-0.029	-0.029	0.00	No	100.00	Yes
	15	x	-0.03	-0.03	0.00	No	100.00	Yes
	16	x	-0.03	-0.03	0.00	No	100.00	Yes
	17	x	-0.03	-0.03	0.00	No	100.00	Yes
	28	x	-0.03	-0.03	0.00	No	100.00	Yes
	30	x	-0.03	-0.03	0.00	No	100.00	Yes
	31	x	-0.03	-0.03	0.00	No	100.00	Yes
	32	x	-0.03	-0.03	0.00	No	100.00	Yes
	33	x	-0.03	-0.03	0.00	No	100.00	Yes
	35	x	-0.03	-0.03	0.00	No	100.00	Yes
	36	x	-0.03	-0.03	0.00	No	100.00	Yes
	37	x	-0.03	-0.03	0.00	No	100.00	Yes
	41	x	-0.017	-0.017	0.00	No	100.00	Yes
	42	x	-0.017	-0.017	0.00	No	100.00	Yes
	43	x	-0.017	-0.017	0.00	No	100.00	Yes
	51	x	-0.017	-0.017	0.00	No	100.00	Yes
	52	x	-0.017	-0.017	0.00	No	100.00	Yes
	55	x	-0.017	-0.017	0.00	No	100.00	Yes
	57	x	-0.017	-0.017	0.00	No	100.00	Yes
	58	x	-0.017	-0.017	0.00	No	100.00	Yes
	61	x	-0.017	-0.017	0.00	No	100.00	Yes
Di	7	y	-0.017	-0.017	0.00	No	100.00	Yes
	9	y	-0.014	-0.014	0.00	No	100.00	Yes
	11	y	-0.014	-0.014	0.00	No	100.00	Yes
	12	y	-0.014	-0.014	0.00	No	100.00	Yes
	15	y	-0.017	-0.017	0.00	No	100.00	Yes
	16	y	-0.013	-0.013	0.00	No	100.00	Yes
	17	y	-0.013	-0.013	0.00	No	100.00	Yes
	28	y	-0.017	-0.017	0.00	No	100.00	Yes
	30	y	-0.017	-0.017	0.00	No	100.00	Yes
	31	y	-0.013	-0.013	0.00	No	100.00	Yes
	32	y	-0.013	-0.013	0.00	No	100.00	Yes
	33	y	-0.017	-0.017	0.00	No	100.00	Yes
	35	y	-0.017	-0.017	0.00	No	100.00	Yes
	36	y	-0.013	-0.013	0.00	No	100.00	Yes
	37	y	-0.013	-0.013	0.00	No	100.00	Yes
	41	y	-0.01	-0.01	0.00	No	100.00	Yes
	42	y	-0.01	-0.01	0.00	No	100.00	Yes
	43	y	-0.01	-0.01	0.00	No	100.00	Yes
	51	y	-0.01	-0.01	0.00	No	100.00	Yes
	52	y	-0.01	-0.01	0.00	No	100.00	Yes
	55	y	-0.01	-0.01	0.00	No	100.00	Yes
	57	y	-0.01	-0.01	0.00	No	100.00	Yes

58	y	-0.01	-0.01	0.00	No	100.00	Yes
61	y	-0.01	-0.01	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	41	y	-0.018	1.50	No
		y	-0.018	5.00	No
		y	-0.038	3.00	No
	42	y	-0.04	1.50	No
		y	-0.04	6.50	No
	43	y	-0.041	1.50	No
		y	-0.041	6.50	No
	51	y	-0.04	1.50	No
		y	-0.04	6.50	No
	52	y	-0.041	1.50	No
		y	-0.041	6.50	No
	55	y	-0.018	1.50	No
		y	-0.018	5.00	No
		y	-0.038	3.00	No
	57	y	-0.04	1.50	No
		y	-0.04	6.50	No
	58	y	-0.041	1.50	No
		y	-0.041	6.50	No
	61	y	-0.018	1.50	No
		y	-0.018	5.00	No
		y	-0.038	3.00	No
W0	41	z	-0.13	1.50	No
		z	-0.13	5.00	No
		z	-0.039	3.00	No
	42	z	-0.267	1.50	No
		z	-0.267	6.50	No
	43	z	-0.267	1.50	No
		z	-0.267	6.50	No
	51	z	-0.267	1.50	No
		z	-0.267	6.50	No
	52	z	-0.267	1.50	No
		z	-0.267	6.50	No
	55	z	-0.13	1.50	No
		z	-0.13	5.00	No
		z	-0.039	3.00	No
	57	z	-0.46	1.50	No
		z	-0.46	6.50	No
	58	z	-0.444	1.50	No
		z	-0.444	6.50	No
	61	z	-0.20	1.50	No
		z	-0.20	5.00	No
W30	41	x	-0.176	1.50	No
		x	-0.176	5.00	No

		x	-0.065	3.00	No
	42	x	-0.396	1.50	No
		x	-0.396	6.50	No
	43	x	-0.385	1.50	No
		x	-0.385	6.50	No
	51	x	-0.396	1.50	No
		x	-0.396	6.50	No
	52	x	-0.385	1.50	No
		x	-0.385	6.50	No
	55	x	-0.176	1.50	No
		x	-0.176	5.00	No
		x	-0.065	3.00	No
	57	x	-0.203	1.50	No
		x	-0.203	6.50	No
	58	x	-0.208	1.50	No
		x	-0.208	6.50	No
	61	x	-0.106	1.50	No
		x	-0.106	5.00	No
		x	-0.026	3.00	No
Di	41	y	-0.074	1.50	No
		y	-0.074	5.00	No
		y	-0.063	3.00	No
	42	y	-0.164	1.50	No
		y	-0.164	6.50	No
	43	y	-0.159	1.50	No
		y	-0.159	6.50	No
	51	y	-0.164	1.50	No
		y	-0.164	6.50	No
	52	y	-0.159	1.50	No
		y	-0.159	6.50	No
	55	y	-0.074	1.50	No
		y	-0.074	5.00	No
		y	-0.063	3.00	No
	57	y	-0.164	1.50	No
		y	-0.164	6.50	No
	58	y	-0.159	1.50	No
		y	-0.159	6.50	No
	61	y	-0.074	1.50	No
		y	-0.074	5.00	No
		y	-0.063	3.00	No
Wi0	41	z	-0.031	1.50	No
		z	-0.031	5.00	No
		z	-0.013	3.00	No
	42	z	-0.054	1.50	No
		z	-0.054	6.50	No
	43	z	-0.054	1.50	No
		z	-0.054	6.50	No
	51	z	-0.054	1.50	No
		z	-0.054	6.50	No
	52	z	-0.054	1.50	No
		z	-0.054	6.50	No
	55	z	-0.031	1.50	No
		z	-0.031	5.00	No
		z	-0.013	3.00	No
	57	z	-0.085	1.50	No
		z	-0.085	6.50	No
	58	z	-0.083	1.50	No
		z	-0.083	6.50	No
	61	z	-0.043	1.50	No
		z	-0.043	5.00	No

Wi30	41	x	-0.038	1.50	No
		x	-0.038	5.00	No
		x	-0.018	3.00	No
	42	x	-0.074	1.50	No
		x	-0.074	6.50	No
	43	x	-0.073	1.50	No
		x	-0.073	6.50	No
	51	x	-0.074	1.50	No
		x	-0.074	6.50	No
	52	x	-0.073	1.50	No
		x	-0.073	6.50	No
	55	x	-0.038	1.50	No
		x	-0.038	5.00	No
		x	-0.018	3.00	No
	57	x	-0.045	1.50	No
		x	-0.045	6.50	No
	58	x	-0.045	1.50	No
		x	-0.045	6.50	No
	61	x	-0.027	1.50	No
		x	-0.027	5.00	No
		x	-0.011	3.00	No
WL0	41	z	-0.007	1.50	No
		z	-0.007	5.00	No
		z	-0.002	3.00	No
	42	z	-0.015	1.50	No
		z	-0.015	6.50	No
	43	z	-0.015	1.50	No
		z	-0.015	6.50	No
	51	z	-0.015	1.50	No
		z	-0.015	6.50	No
	52	z	-0.015	1.50	No
		z	-0.015	6.50	No
	55	z	-0.007	1.50	No
		z	-0.007	5.00	No
		z	-0.002	3.00	No
	57	z	-0.025	1.50	No
		z	-0.025	6.50	No
	58	z	-0.024	1.50	No
		z	-0.024	6.50	No
	61	z	-0.011	1.50	No
		z	-0.011	5.00	No
WL30	41	x	-0.01	1.50	No
		x	-0.01	5.00	No
		x	-0.003	3.00	No
	42	x	-0.022	1.50	No
		x	-0.022	6.50	No
	43	x	-0.021	1.50	No
		x	-0.021	6.50	No
	51	x	-0.022	1.50	No
		x	-0.022	6.50	No
	52	x	-0.021	1.50	No
		x	-0.021	6.50	No
	55	x	-0.01	1.50	No
		x	-0.01	5.00	No
		x	-0.003	3.00	No
	57	x	-0.011	1.50	No
		x	-0.011	6.50	No
	58	x	-0.012	1.50	No
		x	-0.012	6.50	No
	61	x	-0.006	1.50	No

		x	-0.006	5.00	No
		x	-0.001	3.00	No
LL1	12	y	-0.25	50.00	Yes
LL2	12	y	-0.25	100.00	Yes
LLa1	61	y	-0.25	50.00	Yes
LLa2	57	y	-0.25	50.00	Yes
LLa3	58	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

Bentley

Current Date: 9/18/2019 1:43 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1241\Centerline\LTE (2C 3C 4C)\CT
(LTE 2C 3C 4C).retx\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**7**	LC11 at 0.00%	**0.40**	**OK**	
		15	LC11 at 48.44%	0.14	OK	
		28	LC12 at 0.00%	0.39	OK	
		30	LC4 at 48.44%	0.15	OK	
		33	LC9 at 0.00%	0.39	OK	
		35	LC9 at 50.00%	0.14	OK	
	L 2X2X1_4	**16**	LC7 at 100.00%	0.26	OK	
		17	LC2 at 0.00%	0.24	OK	
		31	LC4 at 100.00%	**0.26**	**OK**	
		32	LC7 at 0.00%	0.21	OK	
		36	LC1 at 100.00%	0.23	OK	
		37	LC1 at 0.00%	0.22	OK	
	PIPE 2x0.154	**41**	LC2 at 65.63%	0.46	OK	
		42	LC2 at 59.38%	1.08	N.G.	
		43	LC4 at 59.38%	1.06	N.G.	
		51	LC2 at 59.38%	**1.08**	**N.G.**	
		52	LC2 at 59.38%	1.06	N.G.	
		55	LC2 at 65.63%	0.46	OK	
		57	LC1 at 59.38%	0.80	OK	

	58	LC1 at 59.38%	0.77	OK
	61	LC1 at 65.63%	0.26	OK
PIPE 3-1_2x0.226	**9**	LC10 at 37.50%	0.23	OK
	11	LC9 at 37.50%	0.23	OK
	12	LC12 at 37.50%	**0.24**	**OK**
PL 6x1/2	**8**	LC3 at 50.00%	0.18	OK
	29	LC4 at 50.00%	**0.20**	**OK**
	34	LC1 at 50.00%	0.16	OK
RndBar 1-1_2	**56**	LC3 at 0.00%	**0.68**	**OK**

Bentley

Current Date: 9/17/2019 8:57 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1241\Centerline\LTE (2C 3C 4C)\CT (LTE 2C 3C 4C).retx\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
14	-1.299	0.00	0.75	0
15	-6.4952	0.00	3.75	0
16	-6.7452	0.00	3.317	0
17	-6.2452	0.00	4.183	0
19	-6.9976	0.00	3.7542	0
20	-0.2476	0.00	-7.9372	0
28	-4.4952	0.00	-0.5801	0
30	6.9976	0.00	3.7542	0
33	6.75	0.00	4.183	0
34	-6.75	0.00	4.183	0
35	-4.2452	0.00	-0.1471	0
53	1.299	0.00	0.75	0
54	6.4952	0.00	3.75	0
55	6.2452	0.00	4.183	0
58	1.7452	0.00	4.183	0
59	1.9952	0.00	3.75	0
60	4.2452	0.00	-0.1471	0
61	0.00	0.00	-1.50	0
62	0.00	0.00	-7.50	0
64	-0.50	0.00	-7.50	0
66	2.75	0.00	-3.6029	0

67	2.25	0.00	-3.6029	0
68	-2.25	0.00	-3.6029	0
75	-6.4708	4.00	2.4417	0
77	-3.0208	-3.00	-3.5338	0
78	-3.0208	5.00	-3.5338	0
79	-1.0208	-3.00	-6.9979	0
80	-1.0208	5.00	-6.9979	0
99	1.1208	-2.00	-6.8247	0
100	4.5708	-3.00	-0.8492	0
101	4.5708	5.00	-0.8492	0
102	6.5708	-3.00	2.6149	0
103	6.5708	5.00	2.6149	0
104	1.1208	4.00	-6.8247	0
111	5.35	-2.00	4.383	0
112	-1.55	-3.00	4.383	0
113	-1.55	5.00	4.383	0
114	-5.55	-3.00	4.383	0
115	-5.55	5.00	4.383	0
116	5.35	4.00	4.383	0
57	4.4952	0.00	-0.5801	0
94	4.5708	0.00	-0.8492	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
14	1	1	1	1	1	1
53	1	1	1	1	1	1
61	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
7	14	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	16	17		PL 6x1/2	A36	0.00	0.00	0.00
9	19	20		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
11	29	30		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
12	33	34		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
15	21	28		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
16	15	36		L 2X2X1_4	A36	0.00	0.00	0.00
17	35	15		L 2X2X1_4	A36	0.00	0.00	0.00
28	53	54		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
29	55	56		PL 6x1/2	A36	0.00	0.00	0.00
30	57	58		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
31	54	60		L 2X2X1_4	A36	0.00	0.00	0.00
32	59	54		L 2X2X1_4	A36	0.00	0.00	0.00
33	61	62		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
34	63	64		PL 6x1/2	A36	0.00	0.00	0.00
35	65	66		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
36	62	68		L 2X2X1_4	A36	0.00	0.00	0.00
37	67	62		L 2X2X1_4	A36	0.00	0.00	0.00

41	75	76	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	78	77	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	80	79	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
51	101	100	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
52	103	102	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	104	99	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	113	112	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	115	114	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	116	111	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	0.00	2	0.50	0.00	-0.866
42	0.00	2	0.50	0.00	-0.866
43	0.00	2	0.50	0.00	-0.866
51	0.00	2	0.50	0.00	0.866
52	0.00	2	0.50	0.00	0.866
55	0.00	2	0.50	0.00	0.866

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

Current Date: 9/18/2019 2:10 PM
Units system: English
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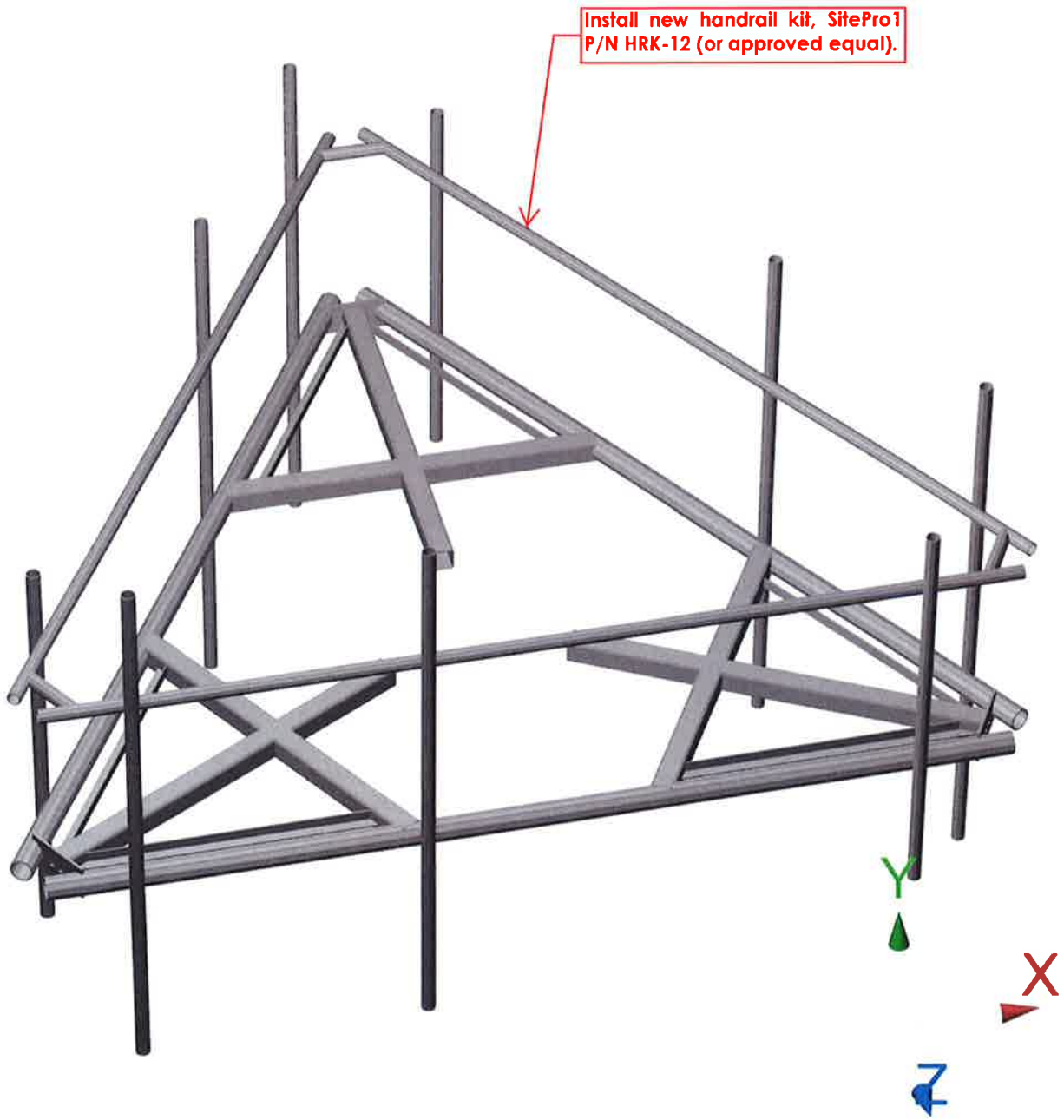

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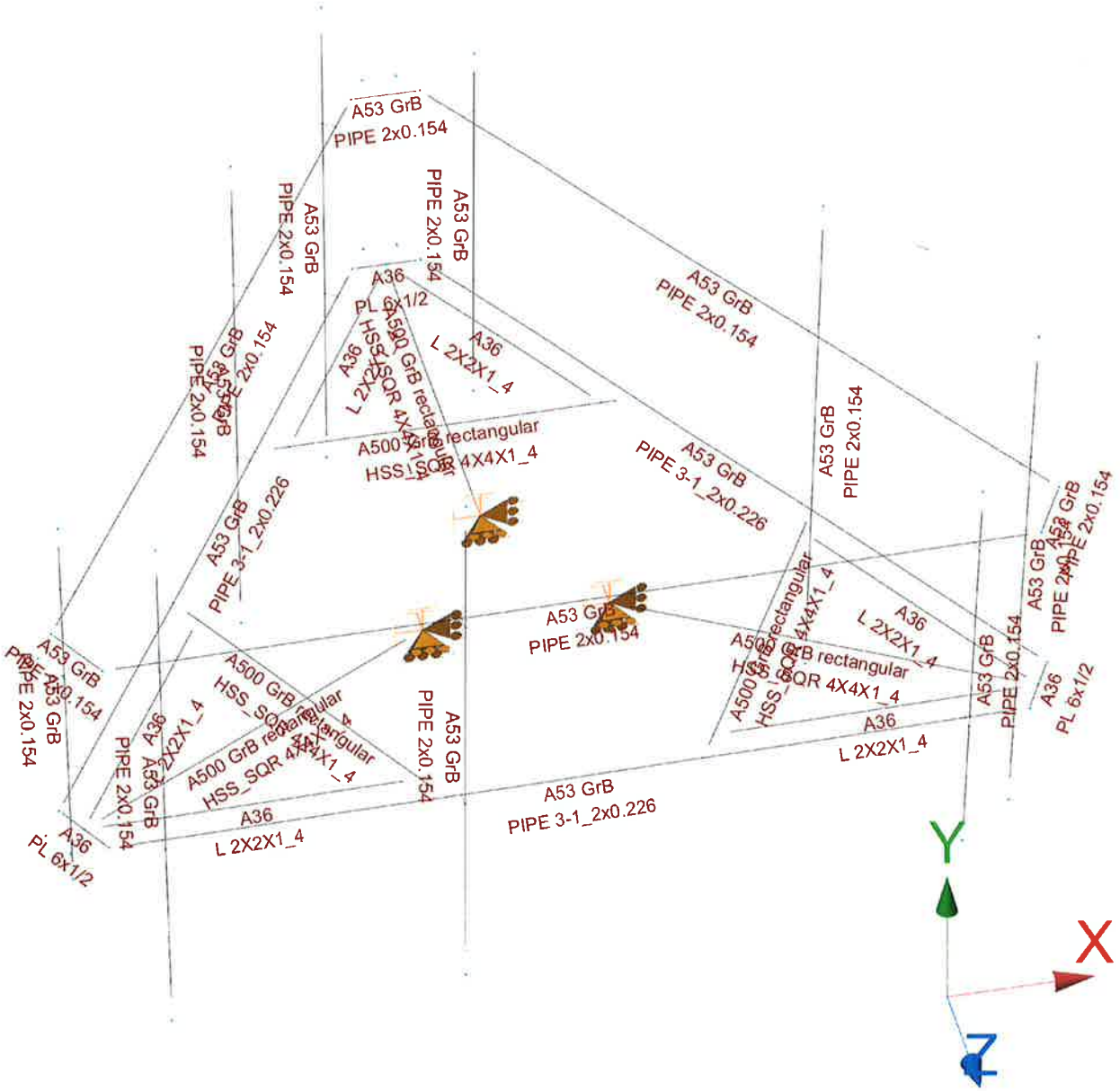

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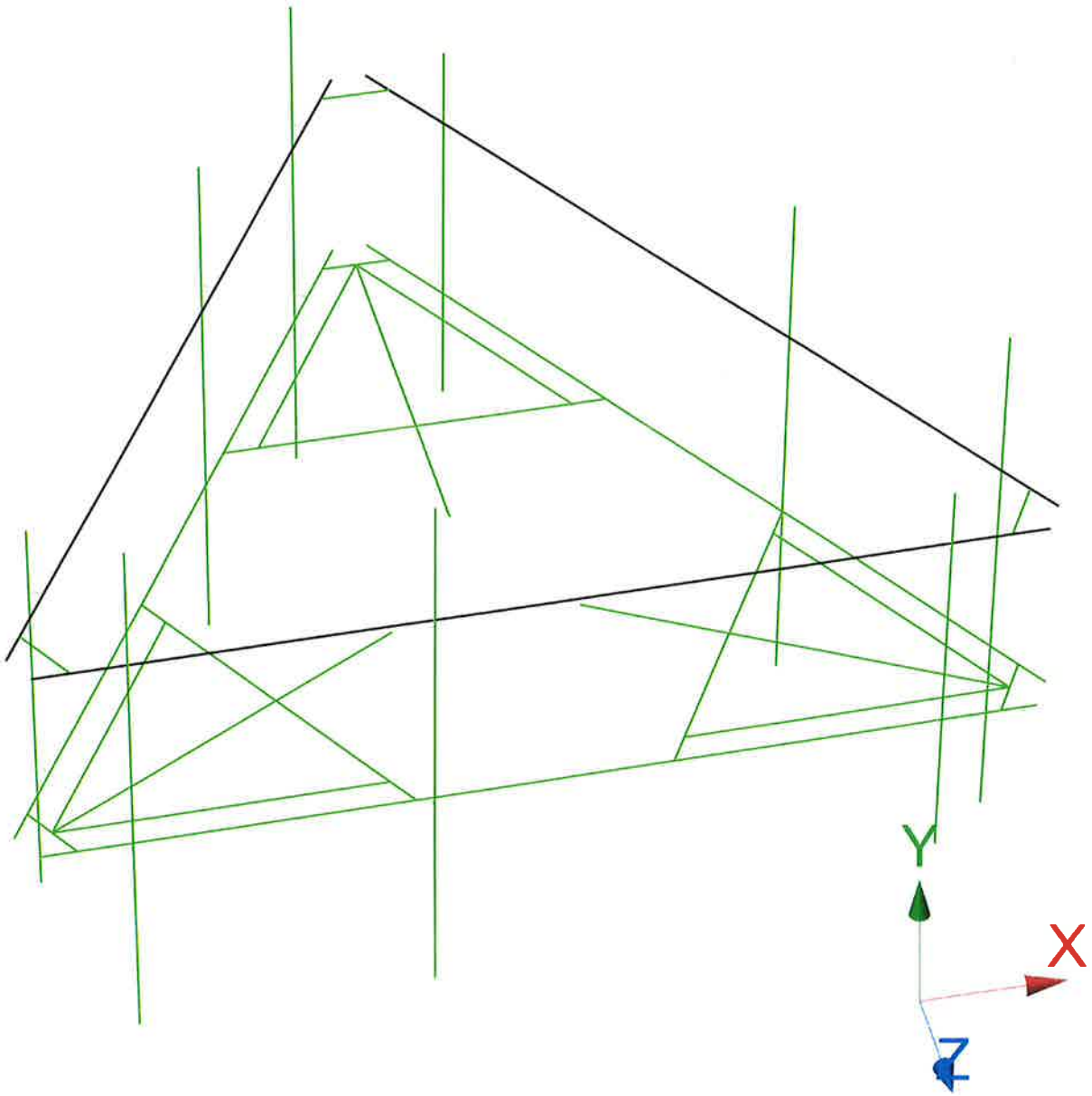
Not designed
Error on design
Design O.K.
With warnings



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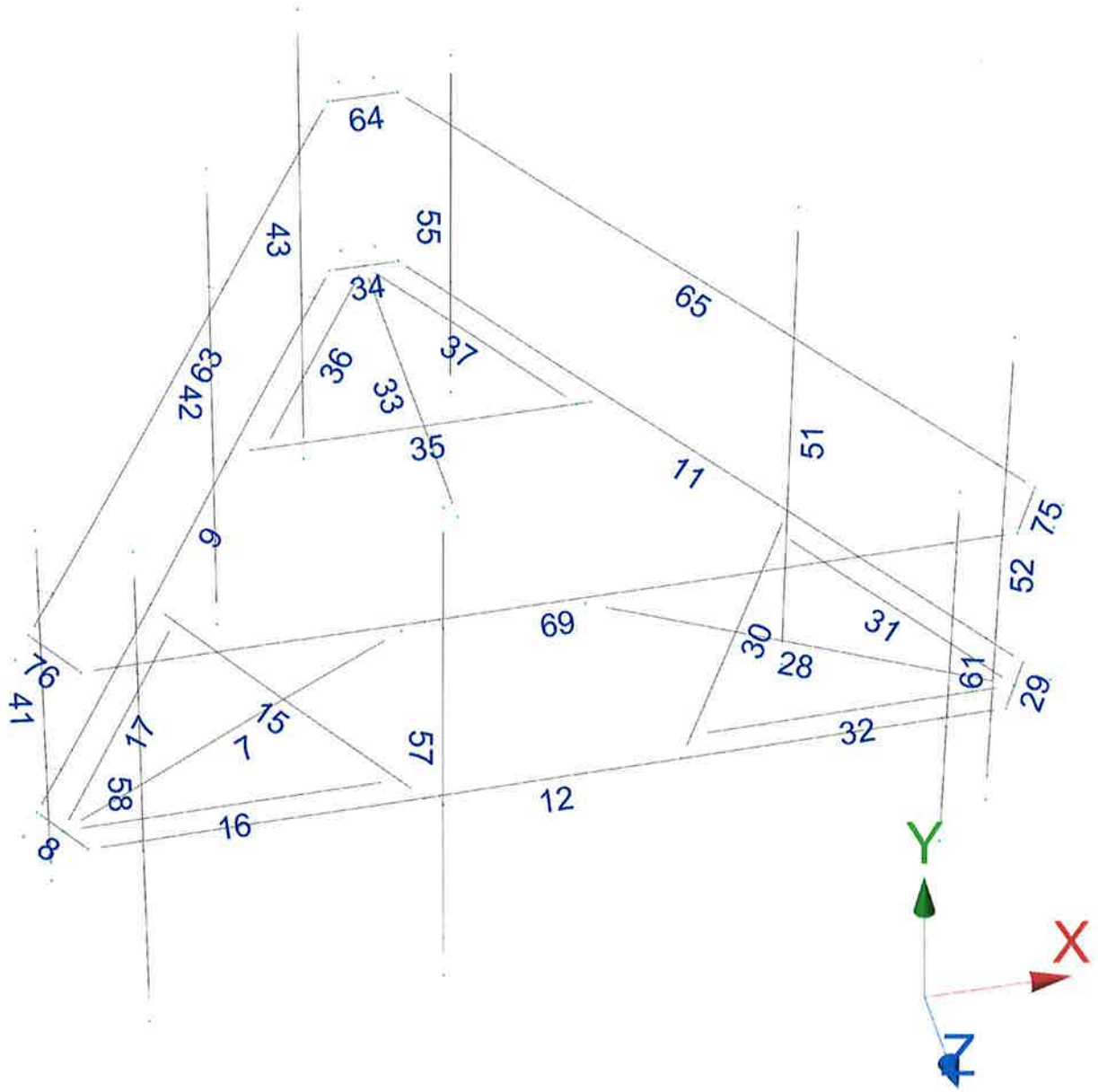

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(LTE 2C 3C 4C)(MOD).retx\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**7**	LC11 at 0.00%	**0.38**	**OK**	
		15	LC11 at 48.44%	0.16	OK	
		28	LC12 at 0.00%	0.37	OK	
		30	LC12 at 48.44%	0.16	OK	
		33	LC9 at 0.00%	0.37	OK	
		35	LC9 at 48.44%	0.16	OK	
	L 2X2X1_4	**16**	LC7 at 100.00%	0.25	OK	
		17	LC2 at 0.00%	0.24	OK	
		31	LC8 at 100.00%	**0.26**	**OK**	
		32	LC7 at 0.00%	0.22	OK	
		36	LC1 at 100.00%	0.23	OK	
		37	LC1 at 0.00%	0.23	OK	
	PIPE 2x0.154	**41**	LC1 at 64.58%	0.50	OK	
		42	LC4 at 60.42%	0.81	OK	
		43	LC2 at 60.42%	0.61	OK	
		51	LC2 at 60.42%	**0.87**	**OK**	
		52	LC2 at 60.42%	0.63	OK	
		55	LC4 at 64.58%	0.57	OK	
		57	LC1 at 60.42%	0.69	OK	

	58	LC1 at 60.42%	0.49	OK
	61	LC1 at 64.58%	0.38	OK
	63	LC3 at 91.07%	0.33	With warnings
	64	LC4 at 100.00%	0.24	OK
	65	LC2 at 61.61%	0.29	With warnings
	69	LC4 at 91.07%	0.35	With warnings
	75	LC4 at 100.00%	0.21	OK
	76	LC3 at 100.00%	0.26	OK
PIPE 3-1_2x0.226	**9**	LC10 at 37.50%	0.21	OK
	11	LC4 at 60.94%	**0.21**	**OK**
	12	LC12 at 37.50%	0.20	OK
PL 6x1/2	**8**	LC3 at 50.00%	0.14	OK
	29	LC4 at 50.00%	**0.16**	**OK**
	34	LC1 at 50.00%	0.15	OK

Bentley

Current Date: 9/18/2019 2:12 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1241\Centerline\LTE (2C 3C 4C)\CT (LTE 2C 3C 4C)(MOD).retx\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
14	-1.299	0.00	0.75	0
15	-6.4952	0.00	3.75	0
16	-6.7452	0.00	3.317	0
17	-6.2452	0.00	4.183	0
19	-6.9976	0.00	3.7542	0
20	-0.2476	0.00	-7.9372	0
28	-4.4952	0.00	-0.5801	0
29	0.2476	0.00	-7.9372	0
30	6.9976	0.00	3.7542	0
33	6.75	0.00	4.183	0
34	-6.75	0.00	4.183	0
35	-4.2452	0.00	-0.1471	0
53	1.299	0.00	0.75	0
54	6.4952	0.00	3.75	0
55	6.2452	0.00	4.183	0
56	6.7452	0.00	3.317	0
58	1.7452	0.00	4.183	0
59	1.9952	0.00	3.75	0
60	4.2452	0.00	-0.1471	0
61	0.00	0.00	-1.50	0
62	0.00	0.00	-7.50	0

63	0.50	0.00	-7.50	0
64	-0.50	0.00	-7.50	0
66	2.75	0.00	-3.6029	0
67	2.25	0.00	-3.6029	0
68	-2.25	0.00	-3.6029	0
75	-6.4708	4.00	2.4417	0
76	-6.4708	-2.00	2.4417	0
77	-3.0208	-3.00	-3.5338	0
78	-3.0208	5.00	-3.5338	0
79	-1.0208	-3.00	-6.9979	0
80	-1.0208	5.00	-6.9979	0
99	1.1208	-2.00	-6.8247	0
100	4.5708	-3.00	-0.8492	0
101	4.5708	5.00	-0.8492	0
102	6.5708	-3.00	2.6149	0
103	6.5708	5.00	2.6149	0
104	1.1208	4.00	-6.8247	0
111	5.35	-2.00	4.383	0
112	-1.55	-3.00	4.383	0
113	-1.55	5.00	4.383	0
114	-5.55	-3.00	4.383	0
115	-5.55	5.00	4.383	0
116	5.35	4.00	4.383	0
135	-2.75	3.00	-3.6029	0
138	-6.9976	3.00	3.7542	0
139	-0.2476	3.00	-7.9372	0
140	0.50	3.00	-7.50	0
141	-0.50	3.00	-7.50	0
142	0.2476	3.00	-7.9372	0
143	6.9976	3.00	3.7542	0
144	6.75	3.00	4.183	0
145	-6.75	3.00	4.183	0
146	6.2452	3.00	4.183	0
147	6.7452	3.00	3.317	0
148	-6.7452	3.00	3.317	0
149	-6.2452	3.00	4.183	0
36	-1.9952	0.00	3.75	0
131	-5.55	3.00	4.183	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
14	1	1	1	1	1	1
53	1	1	1	1	1	1
61	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
7	14	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	16	17		PL 6x1/2	A36	0.00	0.00	0.00
9	19	20		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
11	29	30		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
12	33	34		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
15	21	28		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
16	15	36		L 2X2X1_4	A36	0.00	0.00	0.00
17	35	15		L 2X2X1_4	A36	0.00	0.00	0.00
28	53	54		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
29	55	56		PL 6x1/2	A36	0.00	0.00	0.00
30	57	58		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
31	54	60		L 2X2X1_4	A36	0.00	0.00	0.00
32	59	54		L 2X2X1_4	A36	0.00	0.00	0.00
33	61	62		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
34	63	64		PL 6x1/2	A36	0.00	0.00	0.00
35	65	66		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
36	62	68		L 2X2X1_4	A36	0.00	0.00	0.00
37	67	62		L 2X2X1_4	A36	0.00	0.00	0.00
41	75	76		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
42	78	77		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
43	80	79		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
51	101	100		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
52	103	102		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
55	104	99		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	113	112		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	115	114		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
61	116	111		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	138	139		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
64	140	141		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	142	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
69	144	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
75	146	147		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
76	148	149		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	0.00	2	0.50	0.00	-0.866
42	0.00	2	0.50	0.00	-0.866
43	0.00	2	0.50	0.00	-0.866
51	0.00	2	0.50	0.00	0.866
52	0.00	2	0.50	0.00	0.866
55	0.00	2	0.50	0.00	0.866

EXHIBIT 3

Connecticut Siting Council
Decisions

DOCKET NO. 206 - Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a cellular telecommunications facility at 191 Middle Haddam Road, Portland, Connecticut.	}	Connecticut Siting Council

July 11, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed prime site in Portland, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless for the construction, maintenance and operation of a cellular telecommunications facility at the proposed prime site located at 191 Middle Haddam Road, Portland, Connecticut. We deny certification of the proposed alternate site located at 191 Middle Haddam Road, Portland, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Cellco and other entities, both public and private, but such tower shall not exceed a height of 130 feet above ground level unless the need for other wireless telecommunications providers require a height greater than 130 feet, which if approved by the Council through a petition pursuant to Sections 16-50j-38 through 16-50j-40 of the Regulations of Connecticut State Agencies, shall authorize the extension of the tower to a maximum height of 180 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location for the tower 180 feet west of the east property boundary and 180 feet north of the south property boundary that incorporates the tower radius within the lessor's property, tower foundation, antennas, equipment building, security fence, access road, utility line, and landscaping plan. The Certificate holder shall provide plans for either an architecturally treated equipment building or security fence. The D&M Plan shall also include construction plans to be submitted prior to construction for site clearing, water drainage, and erosion and sedimentation control consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

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

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

6. Following completion of construction, if the facility does not initially provide, or permanently ceases to provide wireless telecommunications services following completion of construction, this Decision and Order shall be void, and

the Certificate Holder shall dismantle the tower and remove all associated equipment within sixty days or reapply for any continued or new use to the Council before any such use is made.

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

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

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, New Haven Register, and The Middletown Press.

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

The party to this proceeding is:

Crown Atlantic Company LLC
And Cellco Partnership d/b/a
Verizon Wireless

Robert Stanford, Project Manager
Crown Atlantic Company LLC
703 Hebron Avenue
Glastonbury, CT 06033

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

Content Last Modified on 12/22/2003 7:36:35 AM

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

May 2, 2007

H. Karina Fournier
Zoning Department
T-Mobile
35 Griffin Road South
Bloomfield, CT 06002

RE: **PETITION NO. 806** – Omnipoint Communications, Inc. (T-Mobile) Petition for a Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility, located at 191 Middle Haddam Road, Portland, Connecticut.

Dear Ms. Fournier:

At a public meeting held on May 1, 2007, the Connecticut Siting Council (Council) considered and ruled that this proposal would not have a substantial adverse environmental effect, and pursuant to General Statutes § 16-50k would not require a Certificate of Environmental Compatibility and Public Need.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated March 15, 2007.

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,

Daniel F. Caruso
Chairman

DFC/RDM/laf

Enclosure: Staff Report dated May 1, 2007

c: The Honorable Susan S. Bransfield, First Selectman, Town of Portland
Nancy Mueller, Town Planner, Town of Portland

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

Petition No. 806
T-Mobile
191 Middle Haddam Road, Portland
May 1, 2007
Staff Report

On March 15, 2007, the Connecticut Siting Council (Council) received a petition from Omnipoint Communications, Inc. (T-Mobile) for declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed extension of an existing telecommunications facility located at 191 Middle Haddam Road in Portland. The petition was field reviewed by Council member Philip Ashton and Council staff member Robert Mercier on April 19, 2007. T-Mobile representatives Karina Fournier and Scott Heffernan attended the field review.

T-Mobile seeks to place a 10-foot extension on an existing 130-foot monopole owned by Cellco Partnership d/b/a Verizon Wireless. The Council approved the 130-foot tower on July 11, 2002 under Docket 206. The Decision and Order for this docket stipulated an extension up to 180 feet would be considered by the Council through the petition process. The tower currently supports Verizon at the 130-foot level and Cingular at the 120-foot level.

T-Mobile would install the 10-foot extension and mount nine panel antennas on a platform at a centerline height of 137 feet above ground level (agl). The top of the tower with the proposed extension and antennas would not exceed 140 feet agl. T-Mobile would install three radio cabinets and one battery cabinet on a concrete pad within the compound.

The existing tower is structurally capable of supporting the extension and antenna mounting configuration. With T-Mobile's equipment, the collective radio frequency electromagnetic radiation power density level would be 17.9% of the applicable FCC standard.

The site is on a 14-acre residential lot and is set back approximately 1,000 feet from Middle Haddam Road. Although six residences are in proximity to the site, the extended tower would not be visible year-round from these homes due to the wooded terrain of the area. The six residences currently have seasonal views of the existing 130-foot tower. The visibility impact of the 10-foot extension would be minimal.

EXHIBIT 4

Portland, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
			191	MIDDLE HADDAM RD

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
016-0029	00048800	1	1	MIDDLE HADDAM RD	191	RR	Single Family Residence	13.30

Owner Information:

Owner 1 Name:	KNOWLTON PHILIP B JR & TINA S
Owner 2 Name:	
Street 1:	191 MIDDLE HADDAM RD
Street 2:	
City:	PORTLAND
State:	CT
Zip:	06480
Volume:	147
Page:	264

Dwelling Information:

Living Units:	1
Style:	CAPE
Exterior Wall:	ALUM/VINYL
Story Height:	1.5
Attic:	NONE
Basement:	FULL
Rec Room:	263
Finished Basement Area:	0
Bsmt Gar Spaces:	0
Heating System:	OIL/HOT WATER
Heating Type:	BASIC
Fireplaces:	1
Year Built:	1963
Living Area:	1953
Unfinished Area:	0
Rooms:	8
Bedrooms:	3
Full Baths:	1
Half Baths:	1

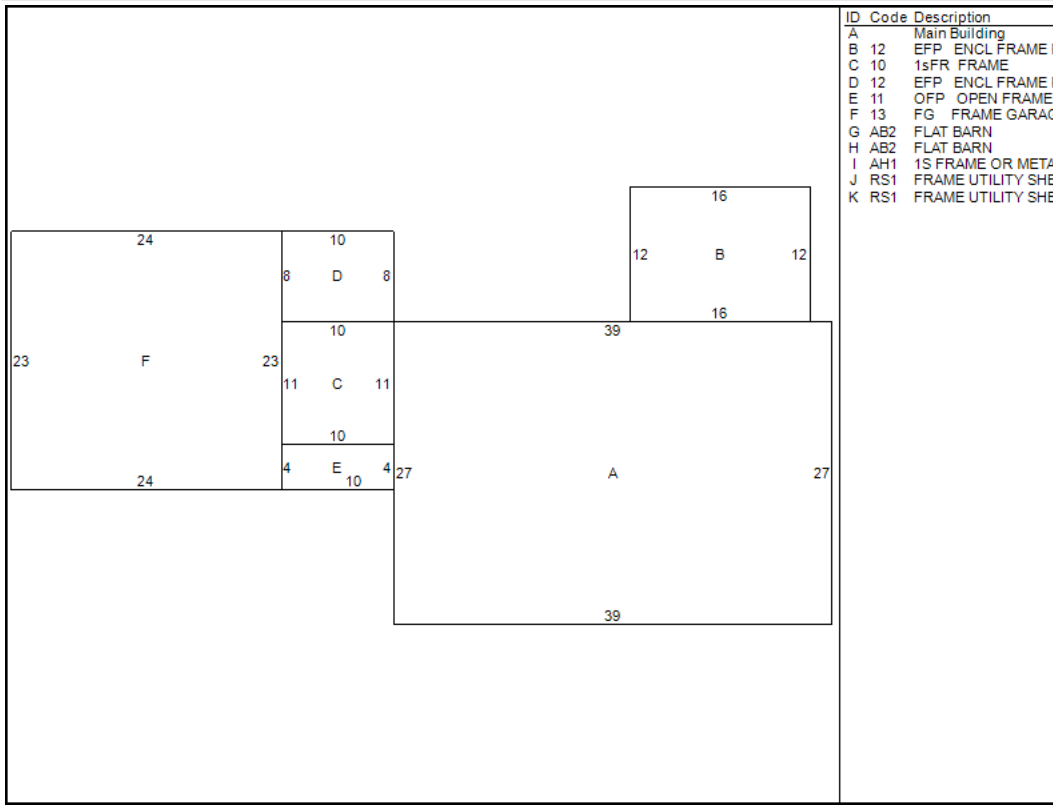
Valuation:

Appraised Land:	$157,000.00
Appraised Bldg:	$158,600.00
Appraised Total:	$315,600.00
Total Assessment:	$220,920.00

Property Images:

Picture:

Sketch:



Out-Buildings:

Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Co
AB2	FLAT BARN	0	1963	1	1984	0	1	
AB2	FLAT BARN	0	1963	1	336	0	3	
RS1	FRAME UTILITY SHED	0	1963	1	200	0	2	
RS1	FRAME UTILITY SHED	0	1963	1	432	0	4	
AH1	1S FRAME OR METAL POULTRY HSE	0	1963	1	108	0	1	

Portland, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
			191	MIDDLE HADDAM RD ▼

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
016-0029-1	00048801	1	1	MIDDLE HADDAM RD	191	RR	Communication Towers	1.00

Owner Information:

Owner 1 Name:	VERIZON WIRELESS
Owner 2 Name:	
Street 1:	PO BOX 2549
Street 2:	
City:	ADDISON
State:	TX
Zip:	75001
Volume:	496
Page:	315

Building Information:

Building Number:	1
Units:	1
Structure Type:	TELEPHONE EQUIPMENT BLDG
Grade:	A
Identical Units:	1
Year Built:	2004

Valuation:

Appraised Land:	$80,000.00
Appraised Bldg:	$172,600.00
Appraised Total:	$252,600.00
Total Assessment:	$176,820.00

Property Images:

Picture:

Sketch:

There is no sketch available.

Out-Buildings:

Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Condition:
TT4	TOWER CELLULAR	4	2005	1	130	0	1	
FN1	FENCE CHAIN	3	2004	8	200	0	1	

Building Interior/Exterior Information:

Floor From:	Floor To:	Area:	Use Type:	Exterior Walls:	Contruction Type:	Heating:	A/C:	Plumbing:	Functional Utility:
01	01	240	SUPPORT AREA	CONCRETE NON-LOAD BEARING	WOOD FRAME/JOIST/BEAM	NONE	NONE	NONE	3

EXHIBIT 5

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1241

Portland- Middle Haddam Road
191 Middle Haddam Road

Portland, CT 06480

September 27, 2019

Centerline Communications Project Number: 950012-287

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.12 %**

Centerline Communications, LLC 95 Ryan Drive, Suite 1 Raynham MA 02767

September 27, 2019

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

Emissions Analysis for Site: **CT1241 – Portland- Middle Haddam Road**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **191 Middle Haddam Road in Portland, Connecticut** for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **191 Middle Haddam Road in Portland, Connecticut**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
5G	850 MHz	2	25
LTE	700 MHz	4	40
LTE	2100 MHz (AWS)	4	30
LTE	1900 MHz (PCS)	3	40

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	117
A	2	CCI DMP65R-BU6DA	117
A	3	Andrew NNH4-65B-R6	117
B	1	Powerwave 7770	117
B	2	CCI DMP65R-BU6DA	117
B	3	Andrew NNH4-65B-R6	117
C	1	Powerwave 7770	117
C	2	CCI DMP65R-BU6DA	117
C	3	Andrew NNH4-65B-R6	117

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz	11.5 dBd	2	60	847.52	0.39
Antenna A2	CCI DMP65R-BU6DA	1900 MHz / 1900 MHz	15.55 dBd / 15.55 dBd	6	240	8,614.13	2.26
Antenna A3	Andrew NNH4-65B-R6	700 MHz / 2100 MHz / 850 MHz / 850 MHz	12.25 dBd / 14.35 dBd / 12.85 dBd / 12.85 dBd	10	330	7,116.07	2.77
						Sector A Composite MPE%	**5.43**
Antenna B1	Powerwave 7770	850 MHz	11.5 dBd	2	60	847.52	0.39
Antenna B2	CCI DMP65R-BU6DA	1900 MHz / 1900 MHz	15.55 dBd / 15.55 dBd	6	240	8,614.13	2.26
Antenna B3	Andrew NNH4-65B-R6	700 MHz / 2100 MHz / 850 MHz / 850 MHz	12.25 dBd / 14.35 dBd / 12.85 dBd / 12.85 dBd	10	330	7,116.07	2.77
						Sector B Composite MPE%	**5.43**
Antenna C1	Powerwave 7770	850 MHz	11.5 dBd	2	60	847.52	0.39
Antenna C2	CCI DMP65R-BU6DA	1900 MHz / 1900 MHz	15.55 dBd / 15.55 dBd	6	240	8,614.13	2.26
Antenna C3	Andrew NNH4-65B-R6	700 MHz / 2100 MHz / 850 MHz / 850 MHz	12.25 dBd / 14.35 dBd / 12.85 dBd / 12.85 dBd	10	330	7,116.07	2.77
						Sector C Composite MPE%	**5.43**

Table 3: AT&T Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Per Sector Value	**5.43 %**
Verizon	2.78%
T-Mobile	0.91%
Site Total MPE %:	**9.12 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.43 %
AT&T Sector B Total:	5.43 %
AT&T Sector C Total:	5.43 %
Site Total:	9.12 %

Table 5: Site MPE Summary

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

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($i.tW/cm^2$)	Frequency (MHz)	Allowable MPE ($i.tW/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	423.76	117.0	2.23	850 MHz UMTS	567	0.39%
AT&T 1900 MHz LTE	3	1435.69	117.0	11.31	1900 MHz LTE	1000	1.13%
AT&T 1900 MHz LTE	3	1435.69	117.0	11.31	1900 MHz LTE	1000	1.13%
AT&T 700 MHz LTE	2	671.52	117.0	3.53	700 MHz LTE	467	0.76%
AT&T 2100 MHz LTE	4	816.81	117.0	8.58	2100 MHz LTE	1000	0.86%
AT&T 850 MHz LTE	2	771.01	117.0	4.05	850 MHz LTE	567	0.71%
AT&T 850 MHz 5G	2	481.88	117.0	2.53	850 MHz 5G	567	0.45%
						Total:	**5.43%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	5.43 %
Sector B:	5.43 %
Sector C:	5.43 %
AT&T Maximum Total (per sector):	5.43 %
Site Total:	9.12 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.12 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Ryan McManus
Senior RF EME Compliance Manager
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

EXHIBIT 6

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**138.5 ft Monopole**
ATC Site Name	:	**Middle Haddam Road-CROWN CT, CT**
ATC Asset Number	:	**411257**
Engineering Number	:	**OAA752380_C3_01**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**Portland-Middle Haddam Road**
Carrier Site Number	:	**CT1241**
Site Location	:	**191 Middle Haddam Rd** **Portland, CT 06480-1767** **41.562200,-72.573800**
County	:	**Middlesex**
Date	:	**September 25, 2019**
Max Usage	:	**50%**
Result	:	**Pass**

Prepared By:
Lucas Tait
Structural Engineer

L Tait

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 138.5 ft monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	EEI Job #12477 Revision II, dated May 13, 2004 Mapping by HTS, ATC Site #411257, dated March 24, 2016
Foundation Drawing	Mapping by TPS Report #TPS-CT-257, dated October 22, 2015
Geotechnical Report	CHA Project #11869.1011.1502, dated September 23, 2002
Modifications	ATC Eng #11883887, dated August 4, 2016

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	101 mph (3-Second Gust Vasd) / 130 mph (3-Second Gust Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
138.0	1	Generic 10' Omni	Low Profile Platform	-	VERIZON WIRELESS
137.0	3	Andrew LNX-6515DS-A1M	Low Profile Platform	(12) 1 5/8" Coax	T-MOBILE
	3	RFS APXV18-209014-C			
	6	Ericsson KRY 112 20			
130.0	6	Quintel QS8656-5D (100 lbs)	Low Profile Platform	(6) 1 5/8" Coax (1) 2.02 (51.2mm) Hybrid	VERIZON WIRELESS
128.0	1	VZW Unused Reserve: 17704 sq in			
127.0	1	Raycap RCMDC-6627-PF-48			
	4	Decibel DB846H80E-SX			
	2	RFS APL866513-44T0			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
119.0	3	Powerwave Allgon 7770.00	-	(1) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 3" conduit	AT&T MOBILITY
	1	Raycap DC6-48-60-18-8F			
	6	Powerwave Allgon LGP21401			
104.0	1	RFI Antennas CC807-08	Side Arm	(2) 1/2" Coax (1) 7/8" Coax	CITY OF MIDDLETOWN, CT
100.0	1	Bird DS428E83I01T			
87.0	1	RFI Antennas CC807-08		(1) 7/8" Coax	
80.0	2	Radio Waves HP3-11	Pole Mount	(1) 7/8" Coax (2) EW90	
	1	RFI Antennas OA20-41-DIN			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
119.0	6	Ericsson RRUS 11 (Band 12)	Low Profile Platform	-	AT&T MOBILITY
	3	KMW AM-X-CD-16-65-00T-RET			
	3	Powerwave Allgon 7770.00			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
119.0	1	Raycap DC6-48-60-18-8F	Platform with Handrails	(1) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6 (1) 1/2" Coax (1) 3" conduit	AT&T MOBILITY
	3	Ericsson Radio 8843 - B2 + B66A			
	3	Ericsson RRUS 4449 B5, B12			
	3	Commscope NNH4-65B-R6			
	3	CCI DMP65R-BU6DA			
	6	Generic 7" x 6" x 3" Diplexer			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	41%	Pass
Shaft	50%	Pass
Base Plate	22%	Pass
Reinforcement	3%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,011.3	12%
Axial (Kips)	51.62	2%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
119.0	Generic 7" x 6" x 3" Diplexer	AT&T MOBILITY	0.492	0.428
	Raycap DC6-48-60-18-8F			
	Ericsson Radio 8843 - B2 + B66A			
	Ericsson RRUS 4449 B5, B12			
	Commscope NNH4-65B-R6			
	CCI DMP65R-BU6DA			
80.0	Radio Waves HP3-11	CITY OF MIDDLETOWN, CT	0.232	0.323

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

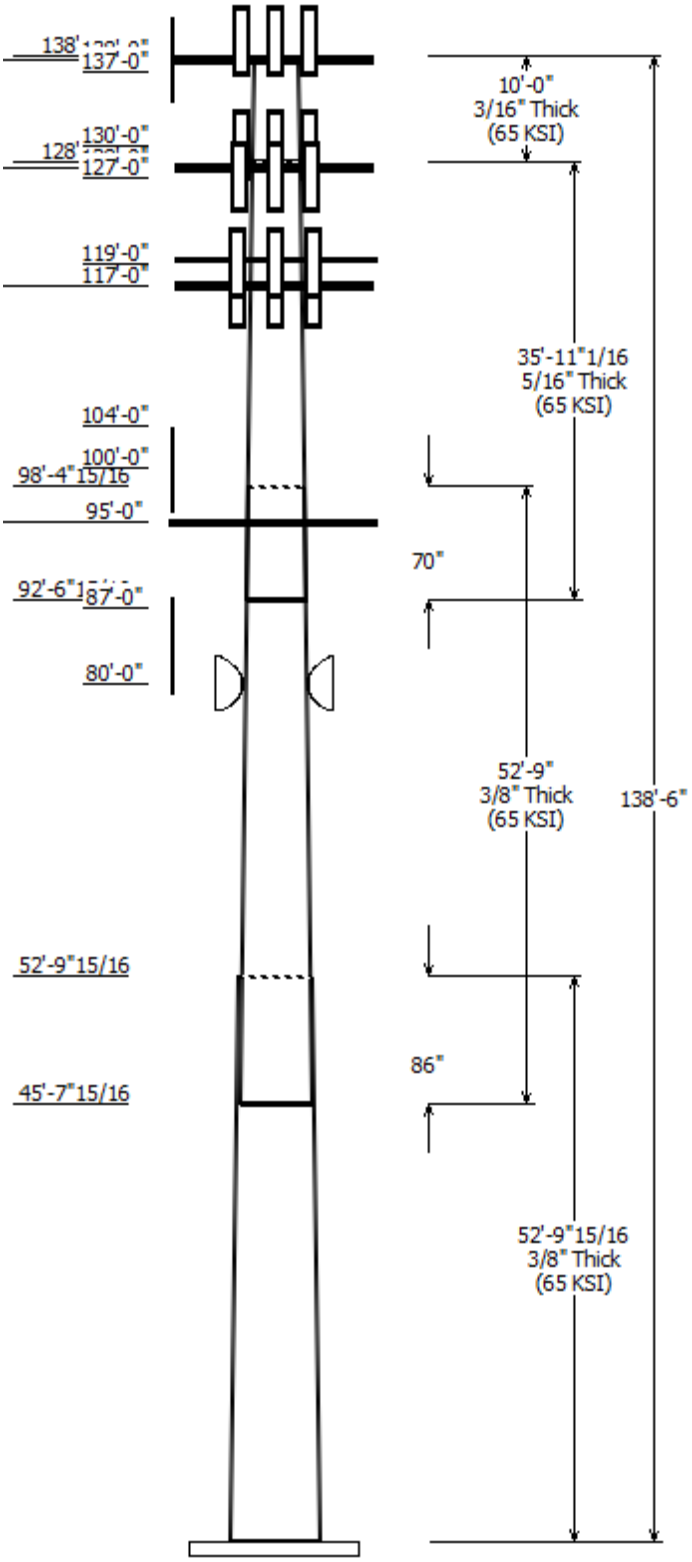
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

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



Job Information

Client :	AT&T MOBILITY
Pole :	411257
Code:	ANSI/TIA-222-G
Location :	Middle Haddam Road-CROWN CT, CT
Description :	138.5 ft Monopole
Struct Class :	II
Shape :	18 Sides
Exposure :	B
Height :	138.50 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.245500 (in/ft)

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	52.830	51.40	64.37	0.375		0.000	18 Sides	65
2	52.750	40.96	53.91	0.375	Slip Joint	86.000	18 Sides	65
3	35.920	34.20	43.02	0.313	Slip Joint	70.000	18 Sides	65
4	10.000	31.75	34.20	0.188	Butt Joint	0.000	18 Sides	65

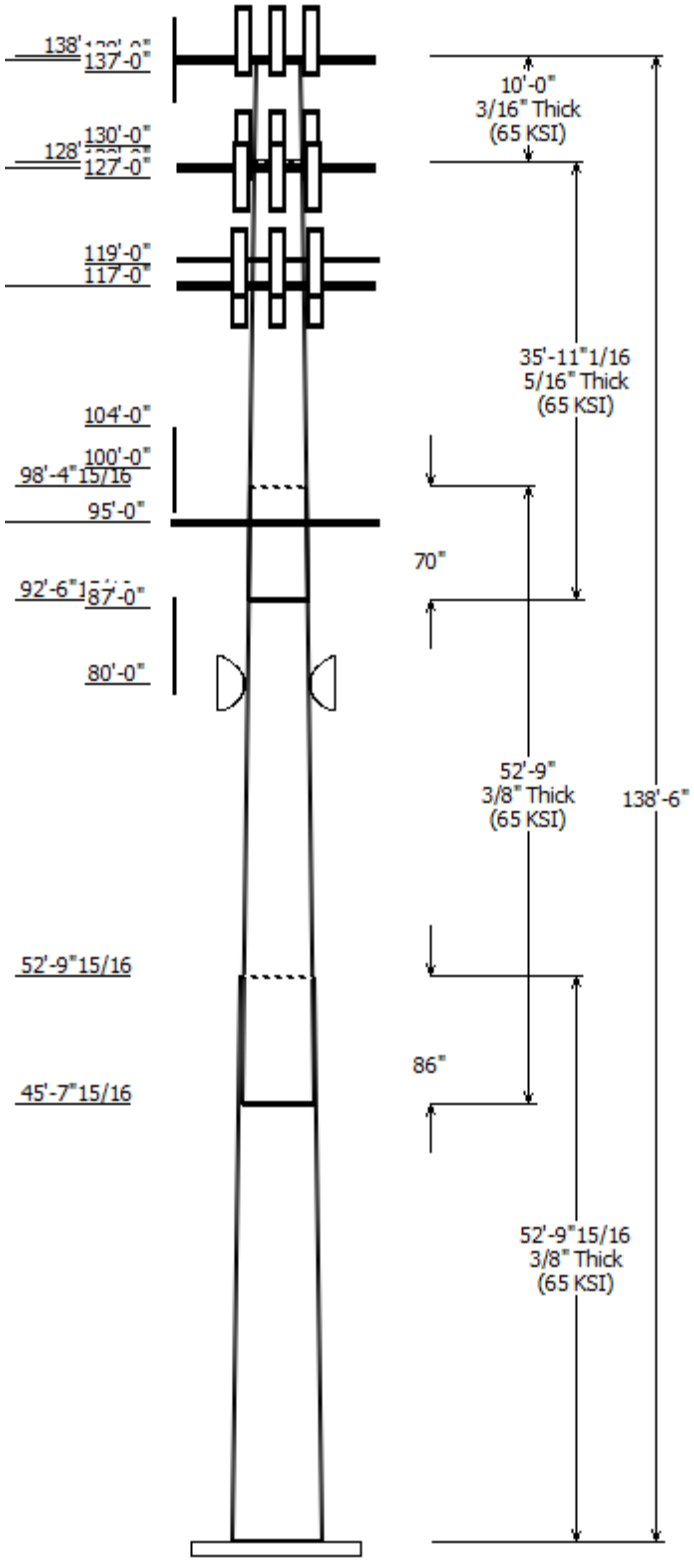
Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
138.000	138.000	1	Generic 10' Omni
138.000	138.000	1	Round Low Profile Platform
137.000	139.000	3	Andrew LNX-6515DS-A1M
137.000	139.000	3	RFS APXV18-209014-C
137.000	139.000	6	Ericsson KRY 112 20
130.000	130.000	6	Quintel QS8656-5D (100 lbs)
128.000	128.000	1	VZW Unused Reserve: 17704
128.000	128.000	1	Flat Low Profile Platform
127.000	127.000	4	Decibel DB846H80E-SX
127.000	127.000	1	Raycap RCMDC-6627-PF-48
127.000	127.000	2	RFS APL866513-44T0
127.000	127.000	3	Samsung B5/B13 RRH-BR04C
127.000	127.000	3	Samsung B2/B66A RRH-BR049
119.000	119.000	6	Generic 7" x 6" x 3" Diplexer
119.000	119.000	3	CCI DMP65R-BU6DA
119.000	119.000	3	Commscope NNH4-65B-R6
119.000	117.000	3	Powerwave Allgon 7770.00
119.000	119.000	3	Ericsson RRUS 4449 B5, B12
119.000	119.000	3	Ericsson Radio 8843 - B2 + B66
119.000	117.000	1	Raycap DC6-48-60-18-8F
119.000	117.000	1	Raycap DC6-48-60-18-8F
119.000	117.000	6	Powerwave Allgon LGP21401
117.000	117.000	1	Round Platform w/ Handrails
104.000	102.000	1	RFI Antennas CC807-08
100.000	100.000	1	Bird DS428E83I01T
95.000	95.000	3	Flat Side Arm
87.000	86.000	1	RFI Antennas CC807-08
80.000	80.000	2	Radio Waves HP3-11
80.000	82.000	1	RFI Antennas OA20-41-DIN

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	80.000	7/8" Coax	No
0.000	80.000	EW90	No
0.000	87.000	7/8" Coax	No
0.000	100.0	1/2" Coax	No
0.000	100.0	7/8" Coax	No
0.000	104.0	1/2" Coax	No
0.000	119.0	0.39" (10mm)	No
0.000	119.0	0.39" (10mm)	No

0.000	119.0	0.78" (19.7mm) 8	No
0.000	119.0	0.78" (19.7mm) 8	No
0.000	119.0	1 5/8" Coax	No
0.000	119.0	1/2" Coax	No
0.000	119.0	3" conduit	No
0.000	119.0	3" conduit	No
0.000	127.0	1 5/8" Coax	Yes
0.000	127.0	2.02 (51.2mm)	No
0.000	137.0	1 5/8" Coax	No
0.000	137.0	1 5/8" Coax	Yes



Load Cases

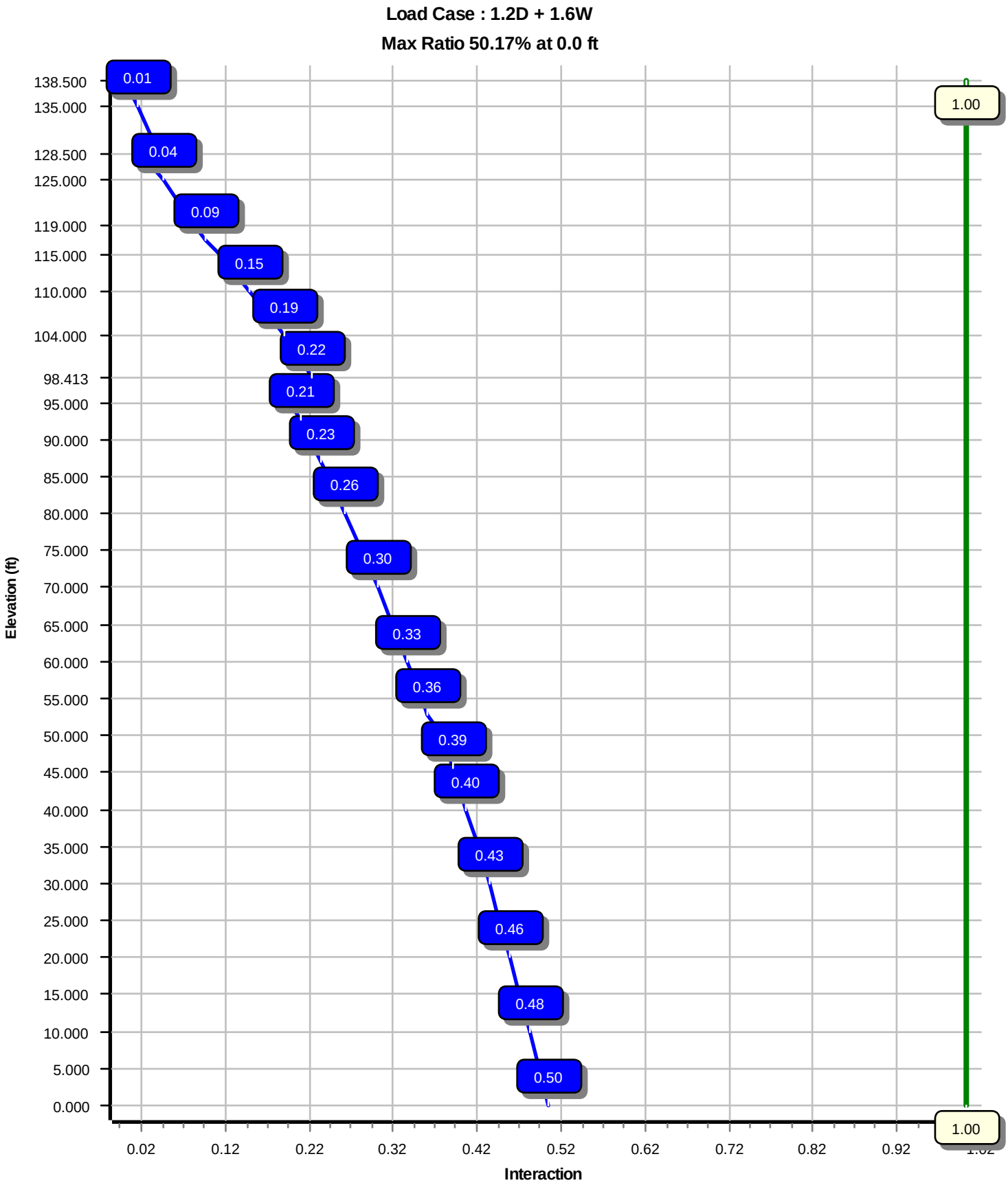
1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3011.27	29.86	51.69
0.9D + 1.6W	2962.42	29.56	38.76
1.2D + 1.0Di + 1.0Wi	1190.84	13.60	77.13
(1.2 + 0.2Sds) * DL + E ELFM	190.38	1.79	51.49
(1.2 + 0.2Sds) * DL + E EMAM	226.14	2.07	51.49
(0.9 - 0.2Sds) * DL + E ELFM	189.07	1.79	35.82
(0.9 - 0.2Sds) * DL + E EMAM	224.50	2.07	35.82
1.0D + 1.0W	585.87	5.83	43.09

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	80.00	2.783	0.323


Load Case : 1.2D + 1.6W
Max Ratio 50.17% at 0.0 ft
Elevation (ft)
138.500
135.000
128.500
125.000
119.000
115.000
110.000
104.000
98.413
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.01
0.04
0.09
0.15
0.19
0.22
0.21
0.23
0.26
0.30
0.33
0.36
0.39
0.40
0.43
0.46
0.48
0.50
1.00
1.00
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 411257 **Code:** ANSI/TIA-222-G

Site Name: Middle Haddam Road-CROWN CT,CT **Engineering Number:** OAA752380_C3_01 **9/25/2019 4:00:25 PM**

Customer: AT&T MOBILITY

Analysis Parameters

Location :	Middlesex County, CT	**Height (ft) :**	138.5
Code :	ANSI/TIA-222-G	**Base Diameter (in) :**	64.38
Shape :	18 Sides	**Top Diameter (in) :**	31.75
Pole Type :	Taper	**Taper (in/ft) :**	0.246
Pole Manfacturer :	EEI	**Rotation (deg) :**	0.00

Ice & Wind Parameters

Structure Class:	II	**Design Wind Speed Without Ice:**	101 mph
Exposure Category:	B	**Design Wind Speed With Ice:**	50 mph
Topographic Category:	1	**Operational Wind Speed:**	60 mph
Crest Height:	0 ft	**Design Ice Thickness:**	0.75 in

Seismic Parameters

Analysis Method: Equivalent Modal Analysis & Equivalent Lateral Force Methods

Site Class: D - Stiff Soil

Period Based on Rayleigh Method (sec): 1.59

T_L (sec):	6	**p:**	1	**C_s:**	0.042
S_s:	0.180	**S_1:**	0.062	**C_s Max:**	0.042
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.192	**S_{d1}:**	0.099		

Load Cases

1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	52.830	0.3750	65		0.00	12,307	64.37	0.00	76.18	39425.8	28.51	171.68	51.40	52.83	60.74	19986.6	22.41	137.09	0.245500
2-18	52.750	0.3750	65	Slip	86.00	10,055	53.91	45.66	63.73	23082.3	23.59	143.78	40.96	98.41	48.31	10058.2	17.50	109.25	0.245500
3-18	35.920	0.3125	65	Slip	70.00	4,643	43.02	92.58	42.36	9764.6	22.51	137.68	34.20	128.50	33.62	4879.3	17.54	109.46	0.245500
4-18	10.000	0.1875	65	Butt	0.00	664	34.20	128.50	20.24	2960.1	30.40	182.43	31.75	138.50	18.78	2364.4	28.10	169.34	0.245500
				Shaft Weight		27,670													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
138.00	Generic 10' Omni	1	1.00	0.000	25.00	3.000	1.00	100.40	6.575	1.00
138.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,143.60	40.772	1.00
137.00	Ericsson KRY 112 20	6	0.80	2.000	12.10	0.450	0.50	27.62	0.950	0.50
137.00	RFS APXV18-209014-C	3	0.80	2.000	18.70	3.570	0.67	106.23	4.502	0.67
137.00	Andrew LNX-6515DS-A1M	3	0.80	2.000	49.80	11.410	0.70	277.11	14.628	0.70
130.00	Quintel QS8656-5D (100 lbs)	6	0.80	0.000	100.00	11.470	0.74	357.16	14.665	0.74
128.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,138.75	44.923	1.00
128.00	VZW Unused Reserve: 17704 sq	1	0.80	0.000	1,283.50	122.940	0.90	2,165.05	207.379	0.90
127.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.880	0.50	147.22	2.771	0.50
127.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.880	0.50	126.63	2.771	0.50
127.00	RFS APL866513-44T0	2	0.80	0.000	15.70	4.050	0.82	141.82	4.956	0.82
127.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.060	1.00	157.15	5.405	1.00
127.00	Decibel DB846H80E-SX	4	0.80	0.000	16.00	5.870	0.73	172.12	6.202	0.73
119.00	Generic 7" x 6" x 3" Diplexer	6	0.75	0.000	5.00	0.350	0.50	15.82	0.748	0.50
119.00	Powerwave Allgon LGP21401	6	0.75	-2.000	14.10	1.100	0.50	38.51	1.796	0.50
119.00	Raycap DC6-48-60-18-8F	1	0.75	-2.000	20.00	1.260	1.00	71.51	1.904	1.00
119.00	Raycap DC6-48-60-18-8F	1	0.75	-2.000	20.00	1.260	1.00	71.51	1.904	1.00
119.00	Ericsson Radio 8843 - B2 + B66A	3	0.75	0.000	71.90	1.650	0.50	132.17	2.479	0.50
119.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.970	0.50	134.05	2.883	0.50
119.00	Powerwave Allgon 7770.00	3	0.75	-2.000	35.00	5.510	0.65	166.26	6.538	0.65
119.00	Commscope NNH4-65B-R6	3	0.75	0.000	89.70	12.270	0.64	335.52	15.013	0.64
119.00	CCI DMP65R-BU6DA	3	0.75	0.000	79.40	12.710	0.63	331.41	15.439	0.63
117.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,265.49	51.073	1.00
104.00	RFI Antennas CC807-08	1	1.00	-2.000	24.30	2.850	1.00	94.73	6.120	1.00
100.00	Bird DS428E83I01T	1	1.00	0.000	8.90	0.470	1.00	25.68	0.931	1.00
95.00	Flat Side Arm	3	1.00	0.000	150.00	6.300	0.67	219.94	8.650	0.67
87.00	RFI Antennas CC807-08	1	1.00	-1.000	24.30	2.850	1.00	93.54	6.064	1.00
80.00	RFI Antennas OA20-41-DIN	1	1.00	2.000	28.00	4.410	1.00	142.34	10.407	1.00
80.00	Radio Waves HP3-11	2	1.00	0.000	50.00	8.920	1.00	220.79	10.564	1.00
Totals	Num Loadings:29	74			9,609.20			20,447.75		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 70

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	137.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	137.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	200	0.50	Y	T-MOBILE
0.00	127.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	20	0.50	Y	VERIZON WIRELESS
0.00	127.00	1	2.02 (51.2mm) Hybrid	2.02	3.04	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	119.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY

0.00	119.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	104.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	100.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	100.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	87.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	80.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	80.00	2	EW90	1.32	0.32	N	0	0.00	0.00	0	0.00	N	CITY OF

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	64.378	76.177	39,425.8	28.51	171.68	67.9	1206.	0.0	0.0
5.00		0.3750	63.151	74.716	37,200.6	27.93	168.40	68.5	1160.	0.0	1,283.6
10.00		0.3750	61.923	73.255	35,060.8	27.35	165.13	69.2	1115.	0.0	1,258.8
15.00		0.3750	60.696	71.794	33,004.6	26.78	161.86	69.9	1071.	0.0	1,233.9
20.00		0.3750	59.468	70.333	31,030.4	26.20	158.58	70.6	1027.	0.0	1,209.1
25.00		0.3750	58.241	68.872	29,136.6	25.62	155.31	71.3	985.4	0.0	1,184.2
30.00		0.3750	57.013	67.411	27,321.4	25.04	152.04	71.9	943.9	0.0	1,159.4
35.00		0.3750	55.786	65.950	25,583.3	24.47	148.76	72.6	903.3	0.0	1,134.5
40.00		0.3750	54.558	64.489	23,920.4	23.89	145.49	73.3	863.6	0.0	1,109.6
45.00		0.3750	53.331	63.028	22,331.3	23.31	142.22	74.0	824.7	0.0	1,084.8
45.66	Bot - Section 2	0.3750	53.168	62.834	22,125.9	23.24	141.78	74.1	819.7	0.0	142.0
50.00		0.3750	52.103	61.567	20,814.1	22.74	138.94	74.7	786.8	0.0	1,848.9
52.83	Top - Section 1	0.3750	52.158	61.633	20,880.8	22.76	139.09	74.6	788.5	0.0	1,186.4
55.00		0.3750	51.626	60.999	20,243.0	22.51	137.67	74.9	772.3	0.0	452.8
60.00		0.3750	50.398	59.538	18,823.0	21.93	134.40	75.6	735.6	0.0	1,025.4
65.00		0.3750	49.171	58.077	17,471.1	21.36	131.12	76.3	699.8	0.0	1,000.5
70.00		0.3750	47.943	56.616	16,185.5	20.78	127.85	77.0	664.9	0.0	975.7
75.00		0.3750	46.716	55.155	14,964.5	20.20	124.58	77.6	630.9	0.0	950.8
80.00		0.3750	45.488	53.694	13,806.6	19.63	121.30	78.3	597.8	0.0	926.0
85.00		0.3750	44.261	52.233	12,709.9	19.05	118.03	79.0	565.6	0.0	901.1
87.00		0.3750	43.770	51.649	12,288.1	18.82	116.72	79.3	553.0	0.0	353.5
90.00		0.3750	43.033	50.772	11,673.0	18.47	114.76	79.7	534.3	0.0	522.8
92.58	Bot - Section 3	0.3750	42.400	50.018	11,160.7	18.17	113.07	80.0	518.5	0.0	442.4
95.00		0.3750	41.806	49.311	10,694.0	17.89	111.48	80.4	503.8	0.0	755.4
98.41	Top - Section 2	0.3125	41.593	40.943	8,814.9	21.71	133.10	75.9	417.4	0.0	1,047.3
100.0		0.3125	41.203	40.557	8,567.7	21.49	131.85	76.1	409.6	0.0	220.0
104.0		0.3125	40.221	39.583	7,965.2	20.93	128.71	76.8	390.1	0.0	545.4
105.0		0.3125	39.976	39.339	7,819.1	20.79	127.92	76.9	385.2	0.0	134.3
110.0		0.3125	38.748	38.122	7,115.4	20.10	123.99	77.8	361.7	0.0	659.0
115.0		0.3125	37.521	36.905	6,455.2	19.41	120.07	78.6	338.9	0.0	638.2
117.0		0.3125	37.030	36.418	6,203.0	19.13	118.49	78.9	329.9	0.0	249.5
119.0		0.3125	36.539	35.931	5,957.5	18.85	116.92	79.2	321.1	0.0	246.2
120.0		0.3125	36.293	35.687	5,837.2	18.72	116.14	79.4	316.8	0.0	121.8
125.0		0.3125	35.066	34.470	5,259.9	18.02	112.21	80.2	295.4	0.0	596.8
127.0		0.3125	34.575	33.983	5,040.1	17.75	110.64	80.5	287.1	0.0	232.9
128.0		0.3125	34.329	33.739	4,932.5	17.61	109.85	80.7	283.0	0.0	115.2
128.5	Top - Section 3	0.3125	34.206	33.617	4,879.3	17.54	109.46	80.8	281.0	0.0	57.3
128.5	Bot - Section 4	0.1875	34.206	20.245	2,960.1	30.40	182.43	65.6	170.4	0.0	
130.0		0.1875	33.838	20.026	2,865.0	30.06	180.47	66.0	166.8	0.0	102.8
135.0		0.1875	32.611	19.295	2,562.8	28.90	173.92	67.4	154.8	0.0	334.5
137.0		0.1875	32.120	19.003	2,448.1	28.44	171.30	67.9	150.1	0.0	130.3
138.0		0.1875	31.874	18.857	2,392.1	28.21	170.00	68.2	147.8	0.0	64.4
138.5		0.1875	31.751	18.784	2,364.4	28.10	169.34	68.4	146.7	0.0	32.0
											27,669.7

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 21 Iterations

Gust Response Factor :1.10
Dead Load Factor :1.20
Wind Load Factor :1.60

Wind Importance Factor 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		268.0	0.0					0.0	0.0	268.0	0.0	0.0	0.0
5.00		530.8	1,540.4					0.0	284.2	530.8	1,824.5	0.0	0.0
10.00		520.5	1,510.5					0.0	284.2	520.5	1,794.7	0.0	0.0
15.00		510.2	1,480.7					0.0	284.2	510.2	1,764.9	0.0	0.0
20.00		499.9	1,450.9					0.0	284.2	499.9	1,735.0	0.0	0.0
25.00		489.5	1,421.1					0.0	284.2	489.5	1,705.2	0.0	0.0
30.00		484.9	1,391.2					0.0	284.2	484.9	1,675.4	0.0	0.0
35.00		490.1	1,361.4					0.0	284.2	490.1	1,645.6	0.0	0.0
40.00		498.0	1,331.6					0.0	284.2	498.0	1,615.7	0.0	0.0
45.00		284.1	1,301.7					0.0	284.2	284.1	1,585.9	0.0	0.0
45.66	Bot - Section 2	256.0	170.5					0.0	37.7	256.0	208.2	0.0	0.0
50.00		368.3	2,218.7					0.0	246.5	368.3	2,465.2	0.0	0.0
52.83	Top - Section 1	257.8	1,423.7					0.0	160.8	257.8	1,584.5	0.0	0.0
55.00		370.4	543.3					0.0	123.3	370.4	666.6	0.0	0.0
60.00		516.7	1,230.5					0.0	284.2	516.7	1,514.6	0.0	0.0
65.00		515.8	1,200.7					0.0	284.2	515.8	1,484.8	0.0	0.0
70.00		515.2	1,170.8					0.0	284.2	515.2	1,455.0	0.0	0.0
75.00		515.5	1,141.0					0.0	284.2	515.5	1,425.2	0.0	0.0
80.00	Appurtenance(s)	515.5	1,111.2	902.0	0.0	359.6	153.6	0.0	284.2	1,417.6	1,548.9	0.0	0.0
85.00		360.6	1,081.3					0.0	278.3	360.6	1,359.7	0.0	0.0
87.00	Appurtenance(s)	257.1	424.2	117.8	0.0	-117.8	29.2	0.0	111.3	374.9	564.7	0.0	0.0
90.00		286.5	627.3					0.0	165.8	286.5	793.1	0.0	0.0
92.58	Bot - Section 3	258.0	530.9					0.0	142.6	258.0	673.5	0.0	0.0
95.00	Appurtenance(s)	302.5	906.5	538.5	0.0	0.0	540.0	0.0	133.8	841.0	1,580.2	0.0	0.0
98.41	Top - Section 2	258.4	1,256.8					0.0	188.7	258.4	1,445.5	0.0	0.0
100.00	Appurtenance(s)	286.6	264.0	20.3	0.0	0.0	10.7	0.0	87.7	306.9	362.4	0.0	0.0
104.00	Appurtenance(s)	256.1	654.5	123.7	0.0	-247.3	29.2	0.0	218.8	379.8	902.4	0.0	0.0
105.00		305.5	161.1					0.0	54.5	305.5	215.6	0.0	0.0
110.00		506.8	790.8					0.0	272.6	506.8	1,063.3	0.0	0.0
115.00		352.7	765.9					0.0	272.6	352.7	1,038.5	0.0	0.0
117.00	Appurtenance(s)	200.3	299.4	1,227.5	0.0	0.0	2,400.0	0.0	109.0	1,427.8	2,808.4	0.0	0.0
119.00	Appurtenance(s)	149.8	295.4	2,399.3	0.0	-1,121.3	1,434.7	0.0	109.0	2,549.1	1,839.2	0.0	0.0
120.00		297.6	146.2					0.0	21.4	297.6	167.6	0.0	0.0
125.00		346.1	716.2					0.0	106.8	346.1	823.0	0.0	0.0
127.00	Appurtenance(s)	142.2	279.5	1,237.5	0.0	0.0	709.8	0.0	42.7	1,379.7	1,032.0	0.0	0.0
128.00	Appurtenance(s)	65.7	138.3	5,307.1	0.0	0.0	3,340.2	0.0	11.8	5,372.8	3,490.3	0.0	0.0
128.50	Top - Section 3	87.0	68.8					0.0	5.9	87.0	74.7	0.0	0.0
130.00	Appurtenance(s)	278.8	123.3	1,894.8	0.0	0.0	720.0	0.0	17.7	2,173.6	861.0	0.0	0.0
135.00		297.5	401.4					0.0	59.0	297.5	460.4	0.0	0.0
137.00	Appurtenance(s)	125.5	156.4	1,232.1	0.0	2,464.1	333.7	0.0	23.6	1,357.5	513.7	0.0	0.0
138.00	Appurtenance(s)	62.3	77.3	1,168.5	0.0	0.0	1,830.0	0.0	0.0	1,230.8	1,907.3	0.0	0.0
138.50		20.7	38.4					0.0	0.0	20.7	38.4	0.0	0.0
								Totals:		30,080.3	51,714.9	0.00	0.00

Site Number: 411257 Code: ANSI/TIA-222-G

Site Name: Middle Haddam Road-CROWN CTEC Engineering Number: OAA752380_C3_01 9/25/2019 4:00:29 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 101 mph with No Ice 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.69	-29.86	0.00	-3,011.27	0.00	3,011.27	4,653.17	2,326.59	12,261.7	6,139.98	0.00	0.00	0.502
5.00	-49.81	-29.42	0.00	-2,861.97	0.00	2,861.97	4,609.58	2,304.79	11,912.5	5,965.13	0.06	-0.11	0.491
10.00	-47.96	-28.99	0.00	-2,714.86	0.00	2,714.86	4,564.20	2,282.10	11,563.2	5,790.22	0.23	-0.21	0.480
15.00	-46.14	-28.55	0.00	-2,569.94	0.00	2,569.94	4,517.04	2,258.52	11,214.1	5,615.41	0.51	-0.32	0.468
20.00	-44.36	-28.13	0.00	-2,427.18	0.00	2,427.18	4,468.09	2,234.04	10,865.5	5,440.83	0.90	-0.43	0.456
25.00	-42.61	-27.70	0.00	-2,286.55	0.00	2,286.55	4,417.35	2,208.68	10,517.5	5,266.61	1.41	-0.54	0.444
30.00	-40.88	-27.28	0.00	-2,148.04	0.00	2,148.04	4,364.83	2,182.42	10,170.6	5,092.89	2.03	-0.64	0.431
35.00	-39.19	-26.84	0.00	-2,011.66	0.00	2,011.66	4,310.53	2,155.27	9,825.01	4,919.81	2.76	-0.75	0.418
40.00	-37.54	-26.39	0.00	-1,877.46	0.00	1,877.46	4,254.44	2,127.22	9,480.91	4,747.50	3.61	-0.86	0.404
45.00	-35.93	-26.12	0.00	-1,745.50	0.00	1,745.50	4,196.57	2,098.28	9,138.61	4,576.10	4.57	-0.97	0.390
45.66	-35.70	-25.89	0.00	-1,728.18	0.00	1,728.18	4,188.75	2,094.38	9,093.35	4,553.43	4.70	-0.98	0.388
50.00	-33.21	-25.53	0.00	-1,615.88	0.00	1,615.88	4,136.91	2,068.45	8,798.40	4,405.74	5.64	-1.08	0.375
52.83	-31.60	-25.27	0.00	-1,543.64	0.00	1,543.64	4,139.63	2,069.81	8,813.66	4,413.38	6.30	-1.14	0.358
55.00	-30.91	-24.92	0.00	-1,488.81	0.00	1,488.81	4,113.21	2,056.61	8,666.69	4,339.78	6.82	-1.18	0.351
60.00	-29.37	-24.43	0.00	-1,364.20	0.00	1,364.20	4,051.07	2,025.54	8,329.83	4,171.11	8.12	-1.28	0.334
65.00	-27.85	-23.92	0.00	-1,242.07	0.00	1,242.07	3,987.15	1,993.57	7,995.71	4,003.80	9.52	-1.38	0.317
70.00	-26.37	-23.42	0.00	-1,122.46	0.00	1,122.46	3,921.44	1,960.72	7,664.61	3,838.00	11.02	-1.48	0.299
75.00	-24.93	-22.90	0.00	-1,005.38	0.00	1,005.38	3,853.94	1,926.97	7,336.78	3,673.84	12.62	-1.57	0.280
80.00	-23.39	-21.48	0.00	-890.52	0.00	890.52	3,784.66	1,892.33	7,012.51	3,511.47	14.31	-1.66	0.260
85.00	-22.02	-21.10	0.00	-783.13	0.00	783.13	3,713.60	1,856.80	6,692.07	3,351.01	16.10	-1.75	0.240
87.00	-21.45	-20.72	0.00	-740.94	0.00	740.94	3,684.67	1,842.34	6,565.03	3,287.39	16.84	-1.78	0.231
90.00	-20.65	-20.43	0.00	-678.77	0.00	678.77	3,640.75	1,820.37	6,375.73	3,192.60	17.98	-1.83	0.218
92.58	-19.97	-20.16	0.00	-626.07	0.00	626.07	3,602.46	1,801.23	6,214.18	3,111.71	18.98	-1.87	0.207
95.00	-18.40	-19.28	0.00	-577.28	0.00	577.28	3,566.11	1,783.05	6,063.75	3,036.38	19.94	-1.91	0.195
98.41	-16.95	-18.99	0.00	-511.46	0.00	511.46	2,795.78	1,397.89	4,743.60	2,375.33	21.32	-1.96	0.222
100.00	-16.59	-18.68	0.00	-481.34	0.00	481.34	2,778.84	1,389.42	4,670.03	2,338.48	21.98	-1.98	0.212
104.00	-15.69	-18.28	0.00	-406.62	0.00	406.62	2,735.32	1,367.66	4,485.66	2,246.16	23.67	-2.04	0.187
105.00	-15.47	-17.98	0.00	-388.34	0.00	388.34	2,724.26	1,362.13	4,439.83	2,223.21	24.10	-2.06	0.181
110.00	-14.41	-17.44	0.00	-298.47	0.00	298.47	2,667.90	1,333.95	4,212.36	2,109.31	26.28	-2.12	0.147
115.00	-13.38	-17.06	0.00	-211.25	0.00	211.25	2,609.75	1,304.88	3,987.89	1,996.91	28.53	-2.17	0.111
117.00	-10.62	-15.53	0.00	-177.13	0.00	177.13	2,586.00	1,293.00	3,899.01	1,952.40	29.44	-2.19	0.095
119.00	-8.88	-12.91	0.00	-146.07	0.00	146.07	2,561.95	1,280.98	3,810.67	1,908.17	30.36	-2.20	0.080
120.00	-8.72	-12.61	0.00	-133.15	0.00	133.15	2,549.82	1,274.91	3,766.70	1,886.15	30.82	-2.21	0.074
125.00	-7.91	-12.24	0.00	-70.09	0.00	70.09	2,488.10	1,244.05	3,549.06	1,777.17	33.15	-2.23	0.043
127.00	-6.93	-10.82	0.00	-45.61	0.00	45.61	2,462.92	1,231.46	3,463.06	1,734.10	34.09	-2.24	0.029
128.00	-3.65	-5.31	0.00	-34.80	0.00	34.80	2,450.22	1,225.11	3,420.29	1,712.69	34.56	-2.24	0.022
128.50	-3.58	-5.22	0.00	-32.14	0.00	32.14	2,443.84	1,221.92	3,398.97	1,702.01	34.79	-2.24	0.020
128.50	-3.58	-5.22	0.00	-32.14	0.00	32.14	1,195.97	597.99	1,675.68	839.09	34.79	-2.24	0.041
130.00	-2.80	-3.02	0.00	-24.30	0.00	24.30	1,190.37	595.18	1,649.68	826.06	35.49	-2.24	0.032
135.00	-2.35	-2.70	0.00	-9.21	0.00	9.21	1,170.52	585.26	1,562.67	782.50	37.85	-2.25	0.014
137.00	-1.89	-1.33	0.00	-1.34	0.00	1.34	1,162.08	581.04	1,527.78	765.03	38.79	-2.25	0.003
138.00	-0.04	-0.02	0.00	-0.01	0.00	0.01	1,157.76	578.88	1,510.32	756.28	39.27	-2.25	0.000
138.50	0.00	-0.02	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	39.50	-2.25	0.000

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 21 Iterations

Gust Response Factor :1.10
Dead Load Factor :0.90
Wind Load Factor :1.60

Wind Importance Factor 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		268.0	0.0					0.0	0.0	268.0	0.0	0.0	0.0
5.00		530.8	1,155.3					0.0	213.1	530.8	1,368.4	0.0	0.0
10.00		520.5	1,132.9					0.0	213.1	520.5	1,346.0	0.0	0.0
15.00		510.2	1,110.5					0.0	213.1	510.2	1,323.7	0.0	0.0
20.00		499.9	1,088.2					0.0	213.1	499.9	1,301.3	0.0	0.0
25.00		489.5	1,065.8					0.0	213.1	489.5	1,278.9	0.0	0.0
30.00		484.9	1,043.4					0.0	213.1	484.9	1,256.5	0.0	0.0
35.00		490.1	1,021.0					0.0	213.1	490.1	1,234.2	0.0	0.0
40.00		498.0	998.7					0.0	213.1	498.0	1,211.8	0.0	0.0
45.00		284.1	976.3					0.0	213.1	284.1	1,189.4	0.0	0.0
45.66	Bot - Section 2	256.0	127.8					0.0	28.3	256.0	156.1	0.0	0.0
50.00		368.3	1,664.0					0.0	184.8	368.3	1,848.9	0.0	0.0
52.83	Top - Section 1	257.8	1,067.8					0.0	120.6	257.8	1,188.4	0.0	0.0
55.00		370.4	407.5					0.0	92.5	370.4	500.0	0.0	0.0
60.00		516.7	922.9					0.0	213.1	516.7	1,136.0	0.0	0.0
65.00		515.8	900.5					0.0	213.1	515.8	1,113.6	0.0	0.0
70.00		513.7	878.1					0.0	213.1	513.7	1,091.2	0.0	0.0
75.00		510.5	855.7					0.0	213.1	510.5	1,068.9	0.0	0.0
80.00	Appurtenance(s)	506.3	833.4	902.0	0.0	359.6	115.2	0.0	213.1	1,408.4	1,161.7	0.0	0.0
85.00		352.1	811.0					0.0	208.8	352.1	1,019.8	0.0	0.0
87.00	Appurtenance(s)	249.3	318.1	117.8	0.0	-117.8	21.9	0.0	83.5	367.1	423.5	0.0	0.0
90.00		276.6	470.5					0.0	124.4	276.6	594.9	0.0	0.0
92.58	Bot - Section 3	247.9	398.2					0.0	107.0	247.9	505.1	0.0	0.0
95.00	Appurtenance(s)	289.0	679.9	538.5	0.0	0.0	405.0	0.0	100.3	827.5	1,185.2	0.0	0.0
98.41	Top - Section 2	246.3	942.6					0.0	141.5	246.3	1,084.1	0.0	0.0
100.00	Appurtenance(s)	272.1	198.0	20.3	0.0	0.0	8.0	0.0	65.8	292.4	271.8	0.0	0.0
104.00	Appurtenance(s)	242.5	490.9	123.7	0.0	-247.3	21.9	0.0	164.1	366.2	676.8	0.0	0.0
105.00		286.6	120.9					0.0	40.9	286.6	161.7	0.0	0.0
110.00		472.4	593.1					0.0	204.4	472.4	797.5	0.0	0.0
115.00		326.3	574.4					0.0	204.4	326.3	778.9	0.0	0.0
117.00	Appurtenance(s)	183.8	224.5	1,227.5	0.0	0.0	1,800.0	0.0	81.8	1,411.3	2,106.3	0.0	0.0
119.00	Appurtenance(s)	137.0	221.6	2,399.3	0.0	-1,121.3	1,076.0	0.0	81.8	2,536.3	1,379.4	0.0	0.0
120.00		269.8	109.7					0.0	16.0	269.8	125.7	0.0	0.0
125.00		312.6	537.1					0.0	80.1	312.6	617.2	0.0	0.0
127.00	Appurtenance(s)	132.1	209.6	1,237.5	0.0	0.0	532.3	0.0	32.0	1,369.6	774.0	0.0	0.0
128.00	Appurtenance(s)	65.7	103.7	5,307.1	0.0	0.0	2,505.2	0.0	8.9	5,372.8	2,617.7	0.0	0.0
128.50	Top - Section 3	87.0	51.6					0.0	4.4	87.0	56.0	0.0	0.0
130.00	Appurtenance(s)	278.8	92.5	1,894.8	0.0	0.0	540.0	0.0	13.3	2,173.6	645.8	0.0	0.0
135.00		297.5	301.0					0.0	44.3	297.5	345.3	0.0	0.0
137.00	Appurtenance(s)	125.5	117.3	1,232.1	0.0	2,464.1	250.3	0.0	17.7	1,357.5	385.3	0.0	0.0
138.00	Appurtenance(s)	62.3	58.0	1,168.5	0.0	0.0	1,372.5	0.0	0.0	1,230.8	1,430.5	0.0	0.0
138.50		20.7	28.8					0.0	0.0	20.7	28.8	0.0	0.0
								Totals:		29,794.4	38,786.2	0.00	0.00

Site Number: 411257 Code: ANSI/TIA-222-G

Site Name: Middle Haddam Road-CROWN CTEC Engineering Number: OAA752380_C3_01 9/25/2019 4:00:33 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 21 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-38.76	-29.56	0.00	-2,962.42	0.00	2,962.42	4,653.17	2,326.59	12,261.7	6,139.98	0.00	0.00	0.491
5.00	-37.34	-29.10	0.00	-2,814.61	0.00	2,814.61	4,609.58	2,304.79	11,912.5	5,965.13	0.06	-0.10	0.480
10.00	-35.94	-28.64	0.00	-2,669.12	0.00	2,669.12	4,564.20	2,282.10	11,563.2	5,790.22	0.22	-0.21	0.469
15.00	-34.57	-28.19	0.00	-2,525.92	0.00	2,525.92	4,517.04	2,258.52	11,214.1	5,615.41	0.50	-0.31	0.458
20.00	-33.22	-27.74	0.00	-2,384.99	0.00	2,384.99	4,468.09	2,234.04	10,865.5	5,440.83	0.89	-0.42	0.446
25.00	-31.89	-27.30	0.00	-2,246.29	0.00	2,246.29	4,417.35	2,208.68	10,517.5	5,266.61	1.38	-0.53	0.434
30.00	-30.59	-26.86	0.00	-2,109.79	0.00	2,109.79	4,364.83	2,182.42	10,170.6	5,092.89	1.99	-0.63	0.421
35.00	-29.31	-26.41	0.00	-1,975.49	0.00	1,975.49	4,310.53	2,155.27	9,825.01	4,919.81	2.71	-0.74	0.408
40.00	-28.06	-25.95	0.00	-1,843.45	0.00	1,843.45	4,254.44	2,127.22	9,480.91	4,747.50	3.55	-0.85	0.395
45.00	-26.85	-25.67	0.00	-1,713.72	0.00	1,713.72	4,196.57	2,098.28	9,138.61	4,576.10	4.49	-0.95	0.381
45.66	-26.67	-25.44	0.00	-1,696.69	0.00	1,696.69	4,188.75	2,094.38	9,093.35	4,553.43	4.62	-0.97	0.379
50.00	-24.80	-25.07	0.00	-1,586.38	0.00	1,586.38	4,136.91	2,068.45	8,798.40	4,405.74	5.54	-1.06	0.366
52.83	-23.59	-24.81	0.00	-1,515.44	0.00	1,515.44	4,139.63	2,069.81	8,813.66	4,413.38	6.19	-1.12	0.349
55.00	-23.07	-24.46	0.00	-1,461.60	0.00	1,461.60	4,113.21	2,056.61	8,666.69	4,339.78	6.71	-1.16	0.343
60.00	-21.90	-23.96	0.00	-1,339.30	0.00	1,339.30	4,051.07	2,025.54	8,329.83	4,171.11	7.98	-1.26	0.327
65.00	-20.76	-23.45	0.00	-1,219.52	0.00	1,219.52	3,987.15	1,993.57	7,995.71	4,003.80	9.35	-1.36	0.310
70.00	-19.65	-22.94	0.00	-1,102.27	0.00	1,102.27	3,921.44	1,960.72	7,664.61	3,838.00	10.83	-1.45	0.292
75.00	-18.56	-22.43	0.00	-987.56	0.00	987.56	3,853.94	1,926.97	7,336.78	3,673.84	12.40	-1.54	0.274
80.00	-17.40	-21.02	0.00	-875.04	0.00	875.04	3,784.66	1,892.33	7,012.51	3,511.47	14.06	-1.63	0.254
85.00	-16.37	-20.65	0.00	-769.95	0.00	769.95	3,713.60	1,856.80	6,692.07	3,351.01	15.82	-1.72	0.234
87.00	-15.95	-20.29	0.00	-728.64	0.00	728.64	3,684.67	1,842.34	6,565.03	3,287.39	16.55	-1.75	0.226
90.00	-15.35	-20.00	0.00	-667.78	0.00	667.78	3,640.75	1,820.37	6,375.73	3,192.60	17.66	-1.80	0.214
92.58	-14.83	-19.75	0.00	-616.18	0.00	616.18	3,602.46	1,801.23	6,214.18	3,111.71	18.65	-1.84	0.202
95.00	-13.66	-18.89	0.00	-568.39	0.00	568.39	3,566.11	1,783.05	6,063.75	3,036.38	19.59	-1.88	0.191
98.41	-12.58	-18.62	0.00	-503.90	0.00	503.90	2,795.78	1,397.89	4,743.60	2,375.33	20.95	-1.93	0.217
100.00	-12.30	-18.33	0.00	-474.36	0.00	474.36	2,778.84	1,389.42	4,670.03	2,338.48	21.59	-1.95	0.207
104.00	-11.63	-17.94	0.00	-401.05	0.00	401.05	2,735.32	1,367.66	4,485.66	2,246.16	23.25	-2.01	0.183
105.00	-11.46	-17.66	0.00	-383.11	0.00	383.11	2,724.26	1,362.13	4,439.83	2,223.21	23.67	-2.02	0.177
110.00	-10.67	-17.17	0.00	-294.81	0.00	294.81	2,667.90	1,333.95	4,212.36	2,109.31	25.82	-2.08	0.144
115.00	-9.89	-16.82	0.00	-208.96	0.00	208.96	2,609.75	1,304.88	3,987.89	1,996.91	28.03	-2.13	0.109
117.00	-7.83	-15.33	0.00	-175.32	0.00	175.32	2,586.00	1,293.00	3,899.01	1,952.40	28.93	-2.15	0.093
119.00	-6.55	-12.75	0.00	-144.65	0.00	144.65	2,561.95	1,280.98	3,810.67	1,908.17	29.83	-2.16	0.078
120.00	-6.43	-12.48	0.00	-131.90	0.00	131.90	2,549.82	1,274.91	3,766.70	1,886.15	30.29	-2.17	0.073
125.00	-5.82	-12.14	0.00	-69.52	0.00	69.52	2,488.10	1,244.05	3,549.06	1,777.17	32.57	-2.19	0.042
127.00	-5.10	-10.74	0.00	-45.24	0.00	45.24	2,462.92	1,231.46	3,463.06	1,734.10	33.50	-2.20	0.028
128.00	-2.69	-5.27	0.00	-34.50	0.00	34.50	2,450.22	1,225.11	3,420.29	1,712.69	33.96	-2.20	0.021
128.50	-2.64	-5.19	0.00	-31.86	0.00	31.86	2,443.84	1,221.92	3,398.97	1,702.01	34.19	-2.20	0.020
128.50	-2.64	-5.19	0.00	-31.86	0.00	31.86	1,195.97	597.99	1,675.68	839.09	34.19	-2.20	0.040
130.00	-2.08	-2.99	0.00	-24.08	0.00	24.08	1,190.37	595.18	1,649.68	826.06	34.88	-2.21	0.031
135.00	-1.74	-2.68	0.00	-9.14	0.00	9.14	1,170.52	585.26	1,562.67	782.50	37.20	-2.21	0.013
137.00	-1.41	-1.31	0.00	-1.32	0.00	1.32	1,162.08	581.04	1,527.78	765.03	38.12	-2.22	0.003
138.00	-0.03	-0.02	0.00	-0.01	0.00	0.01	1,157.76	578.88	1,510.32	756.28	38.59	-2.22	0.000
138.50	0.00	-0.02	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	38.82	-2.22	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 20 Iterations

Gust Response Factor :1.10 | Ice Dead Load Factor :1.00 | Wind Importance Factor :1.00
Dead Load Factor :1.20 | Ice Importance Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev		Wind FX	Dead Load	Wind FX	Torsion MY	Moment MZ	Dead Load	Wind FX	Dead Load	Wind FX	Dead Load	Torsion MY	Moment MZ
(ft)	Description	(lb)	(lb)	(lb)	(lb-ft)	(lb-ft)	(lb)	(lb)	(lb)	(lb)	(lb)	(lb-ft)	(lb)
0.00		78.5	0.0					0.0	0.0	78.5	0.0	0.0	0.0
5.00		155.8	2,007.3					214.6	416.1	370.4	2,423.4	0.0	0.0
10.00		153.4	2,022.8					212.5	428.3	365.9	2,451.1	0.0	0.0
15.00		150.8	2,009.9					209.7	434.5	360.4	2,444.4	0.0	0.0
20.00		148.0	1,987.8					206.6	438.9	354.6	2,426.6	0.0	0.0
25.00		145.3	1,960.8					203.3	442.2	348.6	2,403.0	0.0	0.0
30.00		144.2	1,930.9					200.0	445.0	344.2	2,375.8	0.0	0.0
35.00		146.0	1,898.8					201.4	447.3	347.4	2,346.1	0.0	0.0
40.00		148.6	1,865.3					206.2	449.4	354.8	2,314.6	0.0	0.0
45.00		84.9	1,830.5					209.9	451.2	294.8	2,281.7	0.0	0.0
45.66	Bot - Section 2	76.5	240.9					28.1	60.0	104.6	300.8	0.0	0.0
50.00		110.2	2,678.9					184.7	392.8	294.9	3,071.7	0.0	0.0
52.83	Top - Section 1	77.2	1,722.4					121.4	257.0	198.6	1,979.3	0.0	0.0
55.00		111.1	771.2					94.6	197.3	205.7	968.5	0.0	0.0
60.00		155.2	1,746.8					219.0	455.7	374.2	2,202.5	0.0	0.0
65.00		155.2	1,709.1					220.0	457.0	375.2	2,166.1	0.0	0.0
70.00		154.9	1,670.9					220.5	458.2	375.4	2,129.1	0.0	0.0
75.00		154.3	1,632.3					220.5	459.3	374.7	2,091.6	0.0	0.0
80.00	Appurtenance(s)	153.3	1,593.3	196.0	0.0	130.0	352.8	220.1	460.3	569.4	2,406.5	0.0	0.0
85.00		106.8	1,554.0					219.4	455.5	326.1	2,009.5	0.0	0.0
87.00	Appurtenance(s)	75.7	612.0	38.4	0.0	-38.4	77.9	87.5	182.5	201.6	872.4	0.0	0.0
90.00		84.2	905.3					130.8	272.8	215.0	1,178.1	0.0	0.0
92.58	Bot - Section 3	75.5	767.4					112.1	234.8	187.6	1,002.2	0.0	0.0
95.00	Appurtenance(s)	88.1	1,129.1	113.2	0.0	0.0	659.8	104.8	220.5	306.1	2,009.4	0.0	0.0
98.41	Top - Section 2	75.1	1,565.7					147.1	311.3	222.2	1,877.1	0.0	0.0
100.00	Appurtenance(s)	83.2	406.7	6.2	0.0	0.0	22.4	68.9	144.9	158.2	574.0	0.0	0.0
104.00	Appurtenance(s)	74.2	1,007.0	40.7	0.0	-81.4	79.1	172.9	363.2	287.7	1,449.3	0.0	0.0
105.00		87.9	249.0					43.0	90.7	130.9	339.7	0.0	0.0
110.00		145.1	1,218.2					213.7	454.0	358.8	1,672.2	0.0	0.0
115.00		100.4	1,182.4					211.3	454.8	311.7	1,637.1	0.0	0.0
117.00	Appurtenance(s)	56.7	464.4	353.0	0.0	0.0	3,265.5	83.8	182.1	493.5	3,912.0	0.0	0.0
119.00	Appurtenance(s)	42.3	458.6	469.5	0.0	-227.5	3,359.1	83.4	182.2	595.2	3,999.9	0.0	0.0
120.00		83.5	227.4					41.5	58.0	125.0	285.4	0.0	0.0
125.00		96.8	1,110.0					205.9	290.4	302.7	1,400.5	0.0	0.0
127.00	Appurtenance(s)	41.0	435.4	226.2	0.0	0.0	1,928.3	81.5	116.4	348.7	2,480.1	0.0	0.0
128.00	Appurtenance(s)	20.4	215.8	1,377.6	0.0	0.0	4,303.8	35.8	30.2	1,433.7	4,549.8	0.0	0.0
128.50	Top - Section 3	27.0	107.4					17.8	15.1	44.9	122.5	0.0	0.0
130.00	Appurtenance(s)	86.8	238.2	371.1	0.0	0.0	1,814.3	53.3	45.4	511.2	2,097.9	0.0	0.0
135.00		92.8	772.0					175.3	151.5	268.1	923.5	0.0	0.0
137.00	Appurtenance(s)	39.2	302.9	247.6	0.0	495.1	1,146.9	69.1	60.7	355.9	1,510.4	0.0	0.0
138.00	Appurtenance(s)	19.5	150.1	343.1	0.0	0.0	2,227.4	0.0	0.0	362.6	2,377.5	0.0	0.0
138.50		6.5	74.7					0.0	0.0	6.5	74.7	0.0	0.0
								Totals:		13,646.4	77,138.2	0.00	0.00

Site Number: 411257 Code: ANSI/TIA-222-G

Site Name: Middle Haddam Road-CROWN CTEC Engineering Number: OAA752380_C3_01 9/25/2019 4:00:37 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 20 Iterations

Gust Response Factor: 1.10 Ice Dead Load Factor: 1.00 Wind Importance Factor: 1.00

Dead Load Factor: 1.20 Ice Importance Factor: 1.00

Wind Load Factor: 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-77.13	-13.60	0.00	-1,190.84	0.00	1,190.84	4,653.17	2,326.59	12,261.7	6,139.98	0.00	0.00	0.211
5.00	-74.70	-13.28	0.00	-1,122.86	0.00	1,122.86	4,609.58	2,304.79	11,912.5	5,965.13	0.02	-0.04	0.204
10.00	-72.24	-12.96	0.00	-1,056.47	0.00	1,056.47	4,564.20	2,282.10	11,563.2	5,790.22	0.09	-0.08	0.198
15.00	-69.79	-12.65	0.00	-991.66	0.00	991.66	4,517.04	2,258.52	11,214.1	5,615.41	0.20	-0.12	0.192
20.00	-67.35	-12.34	0.00	-928.42	0.00	928.42	4,468.09	2,234.04	10,865.5	5,440.83	0.35	-0.17	0.186
25.00	-64.94	-12.03	0.00	-866.74	0.00	866.74	4,417.35	2,208.68	10,517.5	5,266.61	0.55	-0.21	0.179
30.00	-62.56	-11.72	0.00	-806.61	0.00	806.61	4,364.83	2,182.42	10,170.6	5,092.89	0.79	-0.25	0.173
35.00	-60.21	-11.40	0.00	-748.03	0.00	748.03	4,310.53	2,155.27	9,825.01	4,919.81	1.07	-0.29	0.166
40.00	-57.89	-11.07	0.00	-691.03	0.00	691.03	4,254.44	2,127.22	9,480.91	4,747.50	1.40	-0.33	0.159
45.00	-55.60	-10.79	0.00	-635.66	0.00	635.66	4,196.57	2,098.28	9,138.61	4,576.10	1.76	-0.37	0.152
45.66	-55.30	-10.70	0.00	-628.50	0.00	628.50	4,188.75	2,094.38	9,093.35	4,553.43	1.81	-0.37	0.151
50.00	-52.22	-10.41	0.00	-582.11	0.00	582.11	4,136.91	2,068.45	8,798.40	4,405.74	2.17	-0.41	0.145
52.83	-50.24	-10.21	0.00	-552.65	0.00	552.65	4,139.63	2,069.81	8,813.66	4,413.38	2.42	-0.43	0.137
55.00	-49.27	-10.02	0.00	-530.49	0.00	530.49	4,113.21	2,056.61	8,666.69	4,339.78	2.62	-0.45	0.134
60.00	-47.07	-9.66	0.00	-480.39	0.00	480.39	4,051.07	2,025.54	8,329.83	4,171.11	3.10	-0.48	0.127
65.00	-44.90	-9.29	0.00	-432.10	0.00	432.10	3,987.15	1,993.57	7,995.71	4,003.80	3.63	-0.52	0.119
70.00	-42.77	-8.92	0.00	-385.64	0.00	385.64	3,921.44	1,960.72	7,664.61	3,838.00	4.19	-0.55	0.111
75.00	-40.67	-8.55	0.00	-341.04	0.00	341.04	3,853.94	1,926.97	7,336.78	3,673.84	4.78	-0.58	0.103
80.00	-38.27	-7.97	0.00	-298.18	0.00	298.18	3,784.66	1,892.33	7,012.51	3,511.47	5.40	-0.61	0.095
85.00	-36.26	-7.64	0.00	-258.32	0.00	258.32	3,713.60	1,856.80	6,692.07	3,351.01	6.06	-0.64	0.087
87.00	-35.39	-7.43	0.00	-243.05	0.00	243.05	3,684.67	1,842.34	6,565.03	3,287.39	6.33	-0.65	0.084
90.00	-34.21	-7.21	0.00	-220.75	0.00	220.75	3,640.75	1,820.37	6,375.73	3,192.60	6.75	-0.67	0.079
92.58	-33.21	-7.02	0.00	-202.14	0.00	202.14	3,602.46	1,801.23	6,214.18	3,111.71	7.11	-0.68	0.074
95.00	-31.20	-6.70	0.00	-185.15	0.00	185.15	3,566.11	1,783.05	6,063.75	3,036.38	7.46	-0.69	0.070
98.41	-29.33	-6.46	0.00	-162.28	0.00	162.28	2,795.78	1,397.89	4,743.60	2,375.33	7.96	-0.71	0.079
100.00	-28.76	-6.30	0.00	-152.03	0.00	152.03	2,778.84	1,389.42	4,670.03	2,338.48	8.20	-0.72	0.075
104.00	-27.31	-6.00	0.00	-126.83	0.00	126.83	2,735.32	1,367.66	4,485.66	2,246.16	8.81	-0.73	0.066
105.00	-26.97	-5.87	0.00	-120.83	0.00	120.83	2,724.26	1,362.13	4,439.83	2,223.21	8.96	-0.74	0.064
110.00	-25.30	-5.50	0.00	-91.47	0.00	91.47	2,667.90	1,333.95	4,212.36	2,109.31	9.74	-0.76	0.053
115.00	-23.67	-5.17	0.00	-63.98	0.00	63.98	2,609.75	1,304.88	3,987.89	1,996.91	10.55	-0.77	0.041
117.00	-19.76	-4.62	0.00	-53.65	0.00	53.65	2,586.00	1,293.00	3,899.01	1,952.40	10.87	-0.78	0.035
119.00	-15.77	-3.98	0.00	-44.40	0.00	44.40	2,561.95	1,280.98	3,810.67	1,908.17	11.20	-0.78	0.029
120.00	-15.49	-3.85	0.00	-40.43	0.00	40.43	2,549.82	1,274.91	3,766.70	1,886.15	11.36	-0.79	0.028
125.00	-14.09	-3.53	0.00	-21.19	0.00	21.19	2,488.10	1,244.05	3,549.06	1,777.17	12.19	-0.79	0.018
127.00	-11.61	-3.14	0.00	-14.13	0.00	14.13	2,462.92	1,231.46	3,463.06	1,734.10	12.52	-0.79	0.013
128.00	-7.08	-1.65	0.00	-10.99	0.00	10.99	2,450.22	1,225.11	3,420.29	1,712.69	12.69	-0.80	0.009
128.50	-6.96	-1.60	0.00	-10.17	0.00	10.17	2,443.84	1,221.92	3,398.97	1,702.01	12.77	-0.80	0.009
128.50	-6.96	-1.60	0.00	-10.17	0.00	10.17	1,195.97	597.99	1,675.68	839.09	12.77	-0.80	0.018
130.00	-4.87	-1.06	0.00	-7.77	0.00	7.77	1,190.37	595.18	1,649.68	826.06	13.02	-0.80	0.013
135.00	-3.95	-0.78	0.00	-2.46	0.00	2.46	1,170.52	585.26	1,562.67	782.50	13.86	-0.80	0.007
137.00	-2.45	-0.40	0.00	-0.41	0.00	0.41	1,162.08	581.04	1,527.78	765.03	14.19	-0.80	0.003
138.00	-0.07	-0.01	0.00	0.00	0.00	0.00	1,157.76	578.88	1,510.32	756.28	14.36	-0.80	0.000
138.50	0.00	-0.01	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	14.45	-0.80	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		52.9	0.0					0.0	0.0	52.9	0.0	0.0	0.0
5.00		104.8	1,283.6					0.0	236.8	104.8	1,520.4	0.0	0.0
10.00		102.7	1,258.8					0.0	236.8	102.7	1,495.6	0.0	0.0
15.00		100.7	1,233.9					0.0	236.8	100.7	1,470.7	0.0	0.0
20.00		98.6	1,209.1					0.0	236.8	98.6	1,445.9	0.0	0.0
25.00		96.6	1,184.2					0.0	236.8	96.6	1,421.0	0.0	0.0
30.00		95.7	1,159.4					0.0	236.8	95.7	1,396.2	0.0	0.0
35.00		96.7	1,134.5					0.0	236.8	96.7	1,371.3	0.0	0.0
40.00		98.3	1,109.6					0.0	236.8	98.3	1,346.4	0.0	0.0
45.00		56.1	1,084.8					0.0	236.8	56.1	1,321.6	0.0	0.0
45.66	Bot - Section 2	50.5	142.0					0.0	31.4	50.5	173.5	0.0	0.0
50.00		72.7	1,848.9					0.0	205.4	72.7	2,054.3	0.0	0.0
52.83	Top - Section 1	50.9	1,186.4					0.0	134.0	50.9	1,320.4	0.0	0.0
55.00		73.1	452.8					0.0	102.8	73.1	555.5	0.0	0.0
60.00		102.0	1,025.4					0.0	236.8	102.0	1,262.2	0.0	0.0
65.00		101.8	1,000.5					0.0	236.8	101.8	1,237.3	0.0	0.0
70.00		101.4	975.7					0.0	236.8	101.4	1,212.5	0.0	0.0
75.00		100.7	950.8					0.0	236.8	100.7	1,187.6	0.0	0.0
80.00	Appurtenance(s)	99.9	926.0	178.0	0.0	71.0	128.0	0.0	236.8	277.9	1,290.8	0.0	0.0
85.00		69.5	901.1					0.0	232.0	69.5	1,133.1	0.0	0.0
87.00	Appurtenance(s)	49.2	353.5	23.2	0.0	-23.2	24.3	0.0	92.8	72.4	470.6	0.0	0.0
90.00		54.6	522.8					0.0	138.2	54.6	661.0	0.0	0.0
92.58	Bot - Section 3	48.9	442.4					0.0	118.8	48.9	561.3	0.0	0.0
95.00	Appurtenance(s)	57.0	755.4	106.3	0.0	0.0	450.0	0.0	111.5	163.3	1,316.9	0.0	0.0
98.41	Top - Section 2	48.6	1,047.3					0.0	157.2	48.6	1,204.5	0.0	0.0
100.00	Appurtenance(s)	53.7	220.0	4.0	0.0	0.0	8.9	0.0	73.1	57.7	302.0	0.0	0.0
104.00	Appurtenance(s)	47.9	545.4	24.4	0.0	-48.8	24.3	0.0	182.3	72.3	752.0	0.0	0.0
105.00		56.6	134.3					0.0	45.4	56.6	179.7	0.0	0.0
110.00		93.2	659.0					0.0	227.2	93.2	886.1	0.0	0.0
115.00		64.4	638.2					0.0	227.2	64.4	865.4	0.0	0.0
117.00	Appurtenance(s)	36.3	249.5	242.2	0.0	0.0	2,000.0	0.0	90.9	278.5	2,340.4	0.0	0.0
119.00	Appurtenance(s)	27.0	246.2	473.5	0.0	-221.3	1,195.6	0.0	90.9	500.5	1,532.6	0.0	0.0
120.00		53.2	121.8					0.0	17.8	53.2	139.6	0.0	0.0
125.00		61.7	596.8					0.0	89.0	61.7	685.8	0.0	0.0
127.00	Appurtenance(s)	26.1	232.9	244.2	0.0	0.0	591.5	0.0	35.6	270.3	860.0	0.0	0.0
128.00	Appurtenance(s)	13.0	115.2	1,047.4	0.0	0.0	2,783.5	0.0	9.8	1,060.3	2,908.6	0.0	0.0
128.50	Top - Section 3	17.2	57.3					0.0	4.9	17.2	62.2	0.0	0.0
130.00	Appurtenance(s)	55.0	102.8	373.9	0.0	0.0	600.0	0.0	14.8	429.0	717.5	0.0	0.0
135.00		58.7	334.5					0.0	49.2	58.7	383.7	0.0	0.0
137.00	Appurtenance(s)	24.8	130.3	243.1	0.0	486.3	278.1	0.0	19.7	267.9	428.1	0.0	0.0
138.00	Appurtenance(s)	12.3	64.4	230.6	0.0	0.0	1,525.0	0.0	0.0	242.9	1,589.4	0.0	0.0
138.50		4.1	32.0					0.0	0.0	4.1	32.0	0.0	0.0
								Totals:		5,879.92	43,095.8	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-43.09	-5.83	0.00	-585.87	0.00	585.87	4,653.17	2,326.59	12,261.7	6,139.98	0.00	0.00	0.105
5.00	-41.57	-5.74	0.00	-556.70	0.00	556.70	4,609.58	2,304.79	11,912.5	5,965.13	0.01	-0.02	0.102
10.00	-40.07	-5.66	0.00	-527.97	0.00	527.97	4,564.20	2,282.10	11,563.2	5,790.22	0.04	-0.04	0.100
15.00	-38.60	-5.57	0.00	-499.70	0.00	499.70	4,517.04	2,258.52	11,214.1	5,615.41	0.10	-0.06	0.098
20.00	-37.15	-5.48	0.00	-471.86	0.00	471.86	4,468.09	2,234.04	10,865.5	5,440.83	0.18	-0.08	0.095
25.00	-35.73	-5.39	0.00	-444.46	0.00	444.46	4,417.35	2,208.68	10,517.5	5,266.61	0.27	-0.10	0.092
30.00	-34.33	-5.31	0.00	-417.48	0.00	417.48	4,364.83	2,182.42	10,170.6	5,092.89	0.39	-0.13	0.090
35.00	-32.96	-5.22	0.00	-390.94	0.00	390.94	4,310.53	2,155.27	9,825.01	4,919.81	0.54	-0.15	0.087
40.00	-31.61	-5.13	0.00	-364.84	0.00	364.84	4,254.44	2,127.22	9,480.91	4,747.50	0.70	-0.17	0.084
45.00	-30.29	-5.08	0.00	-339.18	0.00	339.18	4,196.57	2,098.28	9,138.61	4,576.10	0.89	-0.19	0.081
45.66	-30.12	-5.03	0.00	-335.82	0.00	335.82	4,188.75	2,094.38	9,093.35	4,553.43	0.91	-0.19	0.081
50.00	-28.06	-4.96	0.00	-314.00	0.00	314.00	4,136.91	2,068.45	8,798.40	4,405.74	1.10	-0.21	0.078
52.83	-26.74	-4.91	0.00	-299.96	0.00	299.96	4,139.63	2,069.81	8,813.66	4,413.38	1.22	-0.22	0.074
55.00	-26.18	-4.84	0.00	-289.32	0.00	289.32	4,113.21	2,056.61	8,666.69	4,339.78	1.33	-0.23	0.073
60.00	-24.92	-4.74	0.00	-265.12	0.00	265.12	4,051.07	2,025.54	8,329.83	4,171.11	1.58	-0.25	0.070
65.00	-23.68	-4.64	0.00	-241.42	0.00	241.42	3,987.15	1,993.57	7,995.71	4,003.80	1.85	-0.27	0.066
70.00	-22.47	-4.54	0.00	-218.22	0.00	218.22	3,921.44	1,960.72	7,664.61	3,838.00	2.14	-0.29	0.063
75.00	-21.28	-4.44	0.00	-195.52	0.00	195.52	3,853.94	1,926.97	7,336.78	3,673.84	2.45	-0.31	0.059
80.00	-19.99	-4.16	0.00	-173.24	0.00	173.24	3,784.66	1,892.33	7,012.51	3,511.47	2.78	-0.32	0.055
85.00	-18.86	-4.09	0.00	-152.44	0.00	152.44	3,713.60	1,856.80	6,692.07	3,351.01	3.13	-0.34	0.051
87.00	-18.38	-4.02	0.00	-144.26	0.00	144.26	3,684.67	1,842.34	6,565.03	3,287.39	3.27	-0.35	0.049
90.00	-17.72	-3.96	0.00	-132.21	0.00	132.21	3,640.75	1,820.37	6,375.73	3,192.60	3.50	-0.36	0.046
92.58	-17.16	-3.91	0.00	-121.99	0.00	121.99	3,602.46	1,801.23	6,214.18	3,111.71	3.69	-0.36	0.044
95.00	-15.85	-3.74	0.00	-112.53	0.00	112.53	3,566.11	1,783.05	6,063.75	3,036.38	3.88	-0.37	0.042
98.41	-14.64	-3.69	0.00	-99.76	0.00	99.76	2,795.78	1,397.89	4,743.60	2,375.33	4.15	-0.38	0.047
100.00	-14.34	-3.63	0.00	-93.91	0.00	93.91	2,778.84	1,389.42	4,670.03	2,338.48	4.27	-0.39	0.045
104.00	-13.59	-3.55	0.00	-79.40	0.00	79.40	2,735.32	1,367.66	4,485.66	2,246.16	4.60	-0.40	0.040
105.00	-13.41	-3.50	0.00	-75.85	0.00	75.85	2,724.26	1,362.13	4,439.83	2,223.21	4.69	-0.40	0.039
110.00	-12.52	-3.40	0.00	-58.36	0.00	58.36	2,667.90	1,333.95	4,212.36	2,109.31	5.11	-0.41	0.032
115.00	-11.66	-3.33	0.00	-41.36	0.00	41.36	2,609.75	1,304.88	3,987.89	1,996.91	5.55	-0.42	0.025
117.00	-9.32	-3.04	0.00	-34.70	0.00	34.70	2,586.00	1,293.00	3,899.01	1,952.40	5.73	-0.43	0.021
119.00	-7.79	-2.52	0.00	-28.63	0.00	28.63	2,561.95	1,280.98	3,810.67	1,908.17	5.90	-0.43	0.018
120.00	-7.65	-2.47	0.00	-26.11	0.00	26.11	2,549.82	1,274.91	3,766.70	1,886.15	5.99	-0.43	0.017
125.00	-6.96	-2.40	0.00	-13.76	0.00	13.76	2,488.10	1,244.05	3,549.06	1,777.17	6.45	-0.43	0.011
127.00	-6.11	-2.13	0.00	-8.96	0.00	8.96	2,462.92	1,231.46	3,463.06	1,734.10	6.63	-0.44	0.008
128.00	-3.21	-1.04	0.00	-6.83	0.00	6.83	2,450.22	1,225.11	3,420.29	1,712.69	6.72	-0.44	0.005
128.50	-3.14	-1.03	0.00	-6.31	0.00	6.31	2,443.84	1,221.92	3,398.97	1,702.01	6.77	-0.44	0.005
128.50	-3.14	-1.03	0.00	-6.31	0.00	6.31	1,195.97	597.99	1,675.68	839.09	6.77	-0.44	0.010
130.00	-2.43	-0.59	0.00	-4.77	0.00	4.77	1,190.37	595.18	1,649.68	826.06	6.90	-0.44	0.008
135.00	-2.05	-0.53	0.00	-1.81	0.00	1.81	1,170.52	585.26	1,562.67	782.50	7.36	-0.44	0.004
137.00	-1.62	-0.26	0.00	-0.26	0.00	0.26	1,162.08	581.04	1,527.78	765.03	7.55	-0.44	0.002
138.00	-0.03	0.00	0.00	0.00	0.00	0.00	1,157.76	578.88	1,510.32	756.28	7.64	-0.44	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	7.68	-0.44	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.04	
Upper Limit C_s	0.04	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.59	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	1.55	
Total Unfactored Dead Load:	43.10	k
Seismic Base Shear (E):	1.79	k

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	65	0.002	3	40
40	137.50	64	130	0.003	6	80
39	136.00	150	297	0.008	14	186
38	132.50	384	730	0.019	34	475
37	129.25	118	215	0.006	10	146
36	128.25	62	113	0.003	5	77
35	127.50	125	224	0.006	11	155
34	126.00	269	473	0.012	22	333
33	122.50	686	1,156	0.030	55	849
32	119.50	140	227	0.006	11	173
31	118.00	337	536	0.014	25	417
30	116.00	340	527	0.014	25	422
29	112.50	865	1,279	0.034	60	1,072
28	107.50	886	1,221	0.032	58	1,097
27	104.50	180	237	0.006	11	223
26	102.00	728	925	0.024	44	901
25	99.21	293	357	0.009	17	363
24	96.71	1,205	1,409	0.037	67	1,492
23	93.79	867	967	0.025	46	1,074
22	91.29	561	601	0.016	28	695
21	88.50	661	674	0.018	32	819
20	86.00	446	436	0.011	21	553
19	82.50	1,133	1,037	0.027	49	1,403

18	77.50	1,163	966	0.025	46	1,440
17	72.50	1,188	890	0.023	42	1,471
16	67.50	1,212	814	0.021	38	1,502
15	62.50	1,237	737	0.019	35	1,532
14	57.50	1,262	661	0.017	31	1,563
13	53.92	556	263	0.007	12	688
12	51.42	1,320	582	0.015	27	1,635
11	47.83	2,054	810	0.021	38	2,544
10	45.33	173	63	0.002	3	215
9	42.50	1,322	434	0.011	20	1,637
8	37.50	1,346	364	0.010	17	1,667
7	32.50	1,371	298	0.008	14	1,698
6	27.50	1,396	234	0.006	11	1,729
5	22.50	1,421	175	0.005	8	1,760
4	17.50	1,446	121	0.003	6	1,791
3	12.50	1,471	73	0.002	3	1,821
2	7.50	1,496	34	0.001	2	1,852
1	2.50	1,520	6	0.000	0	1,883
Generic 10' Omni	138.00	25	51	0.001	2	31
Round Low Profile Pl	138.00	1,500	3,040	0.080	144	1,858
Ericsson KRY 112 20	137.00	73	146	0.004	7	90
RFS APXV18-209014-C	137.00	56	112	0.003	5	69
Andrew LNX-6515DS-A1	137.00	149	299	0.008	14	185
Quintel QS8656-5D (1	130.00	600	1,109	0.029	52	743
Flat Low Profile Pla	128.00	1,500	2,707	0.071	128	1,858
VZW Unused Reserve:	128.00	1,283	2,316	0.061	109	1,589
Samsung B2/B66A RRH-	127.00	253	451	0.012	21	314
Samsung B5/B13 RRH-B	127.00	211	376	0.010	18	261
RFS APL866513-44T0	127.00	31	56	0.001	3	39
Raycap RCMDC-6627-PF	127.00	32	57	0.002	3	40
Decibel DB846H80E-SX	127.00	64	114	0.003	5	79
Generic 7" x 6" x 3"	119.00	30	48	0.001	2	37
Powerwave Allgon LGP	119.00	85	136	0.004	6	105
Raycap DC6-48-60-18-	119.00	20	32	0.001	2	25
Raycap DC6-48-60-18-	119.00	20	32	0.001	2	25
Ericsson Radio 8843	119.00	216	348	0.009	16	267
Ericsson RRUS 4449 B	119.00	213	343	0.009	16	264
Powerwave Allgon 777	119.00	105	169	0.004	8	130
Commscope NNH4-65B-R	119.00	269	434	0.011	20	333
CCI DMP65R-BU6DA	119.00	238	384	0.010	18	295
Round Platform w/ Ha	117.00	2,000	3,141	0.083	148	2,477
RFI Antennas CC807-0	104.00	24	32	0.001	2	30
Bird DS428E83I01T	100.00	9	11	0.000	1	11
Flat Side Arm	95.00	450	512	0.013	24	557
RFI Antennas CC807-0	87.00	24	24	0.001	1	30
RFI Antennas OA20-41	80.00	28	24	0.001	1	35
Radio Waves HP3-11	80.00	100	87	0.002	4	124
		43,096	37,955	1.000	1,792	53,370

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	65	0.002	3	28
40	137.50	64	130	0.003	6	55
39	136.00	150	297	0.008	14	129
38	132.50	384	730	0.019	34	331
37	129.25	118	215	0.006	10	101
36	128.25	62	113	0.003	5	54
35	127.50	125	224	0.006	11	108

34	126.00	269	473	0.012	22	231
33	122.50	686	1,156	0.030	55	591
32	119.50	140	227	0.006	11	120
31	118.00	337	536	0.014	25	290
30	116.00	340	527	0.014	25	293
29	112.50	865	1,279	0.034	60	746
28	107.50	886	1,221	0.032	58	763
27	104.50	180	237	0.006	11	155
26	102.00	728	925	0.024	44	627
25	99.21	293	357	0.009	17	253
24	96.71	1,205	1,409	0.037	67	1,038
23	93.79	867	967	0.025	46	747
22	91.29	561	601	0.016	28	484
21	88.50	661	674	0.018	32	569
20	86.00	446	436	0.011	21	385
19	82.50	1,133	1,037	0.027	49	976
18	77.50	1,163	966	0.025	46	1,002
17	72.50	1,188	890	0.023	42	1,023
16	67.50	1,212	814	0.021	38	1,045
15	62.50	1,237	737	0.019	35	1,066
14	57.50	1,262	661	0.017	31	1,088
13	53.92	556	263	0.007	12	479
12	51.42	1,320	582	0.015	27	1,138
11	47.83	2,054	810	0.021	38	1,770
10	45.33	173	63	0.002	3	149
9	42.50	1,322	434	0.011	20	1,139
8	37.50	1,346	364	0.010	17	1,160
7	32.50	1,371	298	0.008	14	1,182
6	27.50	1,396	234	0.006	11	1,203
5	22.50	1,421	175	0.005	8	1,224
4	17.50	1,446	121	0.003	6	1,246
3	12.50	1,471	73	0.002	3	1,267
2	7.50	1,496	34	0.001	2	1,289
1	2.50	1,520	6	0.000	0	1,310
Generic 10' Omni	138.00	25	51	0.001	2	22
Round Low Profile Pl	138.00	1,500	3,040	0.080	144	1,292
Ericsson KRY 112 20	137.00	73	146	0.004	7	63
RFS APXV18-209014-C	137.00	56	112	0.003	5	48
Andrew LNX-6515DS-A1	137.00	149	299	0.008	14	129
Quintel QS8656-5D (1	130.00	600	1,109	0.029	52	517
Flat Low Profile Pla	128.00	1,500	2,707	0.071	128	1,292
VZW Unused Reserve:	128.00	1,283	2,316	0.061	109	1,106
Samsung B2/B66A RRH-	127.00	253	451	0.012	21	218
Samsung B5/B13 RRH-B	127.00	211	376	0.010	18	182
RFS APL866513-44T0	127.00	31	56	0.001	3	27
Raycap RCMDC-6627-PF	127.00	32	57	0.002	3	28
Decibel DB846H80E-SX	127.00	64	114	0.003	5	55
Generic 7" x 6" x 3"	119.00	30	48	0.001	2	26
Powerwave Allgon LGP	119.00	85	136	0.004	6	73
Raycap DC6-48-60-18-	119.00	20	32	0.001	2	17
Raycap DC6-48-60-18-	119.00	20	32	0.001	2	17
Ericsson Radio 8843	119.00	216	348	0.009	16	186
Ericsson RRUS 4449 B	119.00	213	343	0.009	16	184
Powerwave Allgon 777	119.00	105	169	0.004	8	90
Commscope NNH4-65B-R	119.00	269	434	0.011	20	232
CCI DMP65R-BU6DA	119.00	238	384	0.010	18	205
Round Platform w/ Ha	117.00	2,000	3,141	0.083	148	1,723
RFI Antennas CC807-0	104.00	24	32	0.001	2	21
Bird DS428E83I01T	100.00	9	11	0.000	1	8
Flat Side Arm	95.00	450	512	0.013	24	388
RFI Antennas CC807-0	87.00	24	24	0.001	1	21
RFI Antennas OA20-41	80.00	28	24	0.001	1	24
Radio Waves HP3-11	80.00	100	87	0.002	4	86

43,096	37,955	1.000	1,792	37,131	

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.49	-1.79	0.00	-190.38	0.00	190.38	4,653.17	2,326.59	12,261.7	6,139.98	0.00	0.00	0.042
5.00	-49.63	-1.80	0.00	-181.41	0.00	181.41	4,609.58	2,304.79	11,912.5	5,965.13	0.00	-0.01	0.041
10.00	-47.81	-1.80	0.00	-172.42	0.00	172.42	4,564.20	2,282.10	11,563.2	5,790.22	0.01	-0.01	0.040
15.00	-46.02	-1.80	0.00	-163.42	0.00	163.42	4,517.04	2,258.52	11,214.1	5,615.41	0.03	-0.02	0.039
20.00	-44.26	-1.80	0.00	-154.43	0.00	154.43	4,468.09	2,234.04	10,865.5	5,440.83	0.06	-0.03	0.038
25.00	-42.53	-1.79	0.00	-145.45	0.00	145.45	4,417.35	2,208.68	10,517.5	5,266.61	0.09	-0.03	0.037
30.00	-40.83	-1.78	0.00	-136.51	0.00	136.51	4,364.83	2,182.42	10,170.6	5,092.89	0.13	-0.04	0.036
35.00	-39.17	-1.76	0.00	-127.62	0.00	127.62	4,310.53	2,155.27	9,825.01	4,919.81	0.18	-0.05	0.035
40.00	-37.53	-1.75	0.00	-118.79	0.00	118.79	4,254.44	2,127.22	9,480.91	4,747.50	0.23	-0.05	0.034
45.00	-37.32	-1.75	0.00	-110.06	0.00	110.06	4,196.57	2,098.28	9,138.61	4,576.10	0.29	-0.06	0.033
45.66	-34.77	-1.71	0.00	-108.90	0.00	108.90	4,188.75	2,094.38	9,093.35	4,553.43	0.30	-0.06	0.032
50.00	-33.14	-1.68	0.00	-101.49	0.00	101.49	4,136.91	2,068.45	8,798.40	4,405.74	0.36	-0.07	0.031
52.83	-32.45	-1.67	0.00	-96.74	0.00	96.74	4,139.63	2,069.81	8,813.66	4,413.38	0.40	-0.07	0.030
55.00	-30.88	-1.64	0.00	-93.11	0.00	93.11	4,113.21	2,056.61	8,666.69	4,339.78	0.43	-0.07	0.029
60.00	-29.35	-1.61	0.00	-84.92	0.00	84.92	4,051.07	2,025.54	8,329.83	4,171.11	0.51	-0.08	0.028
65.00	-27.85	-1.57	0.00	-76.89	0.00	76.89	3,987.15	1,993.57	7,995.71	4,003.80	0.60	-0.09	0.026
70.00	-26.38	-1.53	0.00	-69.06	0.00	69.06	3,921.44	1,960.72	7,664.61	3,838.00	0.70	-0.09	0.025
75.00	-24.94	-1.48	0.00	-61.43	0.00	61.43	3,853.94	1,926.97	7,336.78	3,673.84	0.80	-0.10	0.023
80.00	-23.38	-1.43	0.00	-54.03	0.00	54.03	3,784.66	1,892.33	7,012.51	3,511.47	0.91	-0.10	0.022
85.00	-22.82	-1.41	0.00	-46.90	0.00	46.90	3,713.60	1,856.80	6,692.07	3,351.01	1.02	-0.11	0.020
87.00	-21.98	-1.37	0.00	-44.09	0.00	44.09	3,684.67	1,842.34	6,565.03	3,287.39	1.06	-0.11	0.019
90.00	-21.28	-1.34	0.00	-39.98	0.00	39.98	3,640.75	1,820.37	6,375.73	3,192.60	1.14	-0.11	0.018
92.58	-20.21	-1.30	0.00	-36.51	0.00	36.51	3,602.46	1,801.23	6,214.18	3,111.71	1.20	-0.12	0.017
95.00	-18.16	-1.20	0.00	-33.38	0.00	33.38	3,566.11	1,783.05	6,063.75	3,036.38	1.26	-0.12	0.016
98.41	-17.80	-1.18	0.00	-29.27	0.00	29.27	2,795.78	1,397.89	4,743.60	2,375.33	1.34	-0.12	0.019
100.00	-16.88	-1.14	0.00	-27.39	0.00	27.39	2,778.84	1,389.42	4,670.03	2,338.48	1.39	-0.12	0.018
104.00	-16.63	-1.13	0.00	-22.84	0.00	22.84	2,735.32	1,367.66	4,485.66	2,246.16	1.49	-0.13	0.016
105.00	-15.53	-1.07	0.00	-21.71	0.00	21.71	2,724.26	1,362.13	4,439.83	2,223.21	1.52	-0.13	0.015
110.00	-14.46	-1.01	0.00	-16.37	0.00	16.37	2,667.90	1,333.95	4,212.36	2,109.31	1.65	-0.13	0.013
115.00	-14.04	-0.98	0.00	-11.35	0.00	11.35	2,609.75	1,304.88	3,987.89	1,996.91	1.79	-0.13	0.011
117.00	-11.15	-0.80	0.00	-9.39	0.00	9.39	2,586.00	1,293.00	3,899.01	1,952.40	1.85	-0.13	0.009
119.00	-9.49	-0.69	0.00	-7.79	0.00	7.79	2,561.95	1,280.98	3,810.67	1,908.17	1.90	-0.14	0.008
120.00	-8.64	-0.64	0.00	-7.09	0.00	7.09	2,549.82	1,274.91	3,766.70	1,886.15	1.93	-0.14	0.007
125.00	-8.31	-0.61	0.00	-3.90	0.00	3.90	2,488.10	1,244.05	3,549.06	1,777.17	2.08	-0.14	0.006
127.00	-7.42	-0.55	0.00	-2.67	0.00	2.67	2,462.92	1,231.46	3,463.06	1,734.10	2.13	-0.14	0.005
128.00	-3.90	-0.30	0.00	-2.12	0.00	2.12	2,450.22	1,225.11	3,420.29	1,712.69	2.16	-0.14	0.003
128.50	-3.76	-0.29	0.00	-1.97	0.00	1.97	2,443.84	1,221.92	3,398.97	1,702.01	2.18	-0.14	0.003
128.50	-3.76	-0.29	0.00	-1.97	0.00	1.97	1,195.97	597.99	1,675.68	839.09	2.18	-0.14	0.005
130.00	-2.54	-0.20	0.00	-1.53	0.00	1.53	1,190.37	595.18	1,649.68	826.06	2.22	-0.14	0.004
135.00	-2.35	-0.19	0.00	-0.53	0.00	0.53	1,170.52	585.26	1,562.67	782.50	2.36	-0.14	0.003
137.00	-1.93	-0.15	0.00	-0.15	0.00	0.15	1,162.08	581.04	1,527.78	765.03	2.42	-0.14	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.76	578.88	1,510.32	756.28	2.45	-0.14	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	2.47	-0.14	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.82	-1.79	0.00	-189.07	0.00	189.07	4,653.17	2,326.59	12,261.7	6,139.98	0.00	0.00	0.038
5.00	-34.53	-1.80	0.00	-180.11	0.00	180.11	4,609.58	2,304.79	11,912.5	5,965.13	0.00	-0.01	0.038
10.00	-33.27	-1.80	0.00	-171.13	0.00	171.13	4,564.20	2,282.10	11,563.2	5,790.22	0.01	-0.01	0.037
15.00	-32.02	-1.79	0.00	-162.15	0.00	162.15	4,517.04	2,258.52	11,214.1	5,615.41	0.03	-0.02	0.036
20.00	-30.79	-1.79	0.00	-153.19	0.00	153.19	4,468.09	2,234.04	10,865.5	5,440.83	0.06	-0.03	0.035
25.00	-29.59	-1.78	0.00	-144.25	0.00	144.25	4,417.35	2,208.68	10,517.5	5,266.61	0.09	-0.03	0.034
30.00	-28.41	-1.77	0.00	-135.35	0.00	135.35	4,364.83	2,182.42	10,170.6	5,092.89	0.13	-0.04	0.033
35.00	-27.25	-1.75	0.00	-126.50	0.00	126.50	4,310.53	2,155.27	9,825.01	4,919.81	0.17	-0.05	0.032
40.00	-26.11	-1.74	0.00	-117.73	0.00	117.73	4,254.44	2,127.22	9,480.91	4,747.50	0.23	-0.05	0.031
45.00	-25.96	-1.73	0.00	-109.06	0.00	109.06	4,196.57	2,098.28	9,138.61	4,576.10	0.29	-0.06	0.030
45.66	-24.19	-1.70	0.00	-107.91	0.00	107.91	4,188.75	2,094.38	9,093.35	4,553.43	0.30	-0.06	0.029
50.00	-23.05	-1.67	0.00	-100.56	0.00	100.56	4,136.91	2,068.45	8,798.40	4,405.74	0.36	-0.07	0.028
52.83	-22.57	-1.66	0.00	-95.83	0.00	95.83	4,139.63	2,069.81	8,813.66	4,413.38	0.40	-0.07	0.027
55.00	-21.49	-1.63	0.00	-92.24	0.00	92.24	4,113.21	2,056.61	8,666.69	4,339.78	0.43	-0.07	0.026
60.00	-20.42	-1.59	0.00	-84.11	0.00	84.11	4,051.07	2,025.54	8,329.83	4,171.11	0.51	-0.08	0.025
65.00	-19.38	-1.55	0.00	-76.15	0.00	76.15	3,987.15	1,993.57	7,995.71	4,003.80	0.60	-0.09	0.024
70.00	-18.35	-1.51	0.00	-68.38	0.00	68.38	3,921.44	1,960.72	7,664.61	3,838.00	0.69	-0.09	0.022
75.00	-17.35	-1.47	0.00	-60.82	0.00	60.82	3,853.94	1,926.97	7,336.78	3,673.84	0.79	-0.10	0.021
80.00	-16.26	-1.41	0.00	-53.49	0.00	53.49	3,784.66	1,892.33	7,012.51	3,511.47	0.90	-0.10	0.020
85.00	-15.88	-1.39	0.00	-46.43	0.00	46.43	3,713.60	1,856.80	6,692.07	3,351.01	1.01	-0.11	0.018
87.00	-15.29	-1.36	0.00	-43.65	0.00	43.65	3,684.67	1,842.34	6,565.03	3,287.39	1.06	-0.11	0.017
90.00	-14.81	-1.33	0.00	-39.57	0.00	39.57	3,640.75	1,820.37	6,375.73	3,192.60	1.13	-0.11	0.016
92.58	-14.06	-1.28	0.00	-36.14	0.00	36.14	3,602.46	1,801.23	6,214.18	3,111.71	1.19	-0.12	0.016
95.00	-12.63	-1.19	0.00	-33.04	0.00	33.04	3,566.11	1,783.05	6,063.75	3,036.38	1.25	-0.12	0.014
98.41	-12.38	-1.17	0.00	-28.98	0.00	28.98	2,795.78	1,397.89	4,743.60	2,375.33	1.33	-0.12	0.017
100.00	-11.75	-1.13	0.00	-27.12	0.00	27.12	2,778.84	1,389.42	4,670.03	2,338.48	1.37	-0.12	0.016
104.00	-11.57	-1.12	0.00	-22.61	0.00	22.61	2,735.32	1,367.66	4,485.66	2,246.16	1.48	-0.13	0.014
105.00	-10.81	-1.06	0.00	-21.49	0.00	21.49	2,724.26	1,362.13	4,439.83	2,223.21	1.50	-0.13	0.014
110.00	-10.06	-0.99	0.00	-16.21	0.00	16.21	2,667.90	1,333.95	4,212.36	2,109.31	1.64	-0.13	0.011
115.00	-9.77	-0.97	0.00	-11.23	0.00	11.23	2,609.75	1,304.88	3,987.89	1,996.91	1.78	-0.13	0.009
117.00	-7.75	-0.79	0.00	-9.29	0.00	9.29	2,586.00	1,293.00	3,899.01	1,952.40	1.83	-0.13	0.008
119.00	-6.60	-0.69	0.00	-7.71	0.00	7.71	2,561.95	1,280.98	3,810.67	1,908.17	1.89	-0.13	0.007
120.00	-6.01	-0.63	0.00	-7.02	0.00	7.02	2,549.82	1,274.91	3,766.70	1,886.15	1.92	-0.13	0.006
125.00	-5.78	-0.61	0.00	-3.87	0.00	3.87	2,488.10	1,244.05	3,549.06	1,777.17	2.06	-0.14	0.004
127.00	-5.17	-0.55	0.00	-2.65	0.00	2.65	2,462.92	1,231.46	3,463.06	1,734.10	2.11	-0.14	0.004
128.00	-2.71	-0.30	0.00	-2.10	0.00	2.10	2,450.22	1,225.11	3,420.29	1,712.69	2.14	-0.14	0.002
128.50	-2.61	-0.29	0.00	-1.95	0.00	1.95	2,443.84	1,221.92	3,398.97	1,702.01	2.16	-0.14	0.002
128.50	-2.61	-0.29	0.00	-1.95	0.00	1.95	1,195.97	597.99	1,675.68	839.09	2.16	-0.14	0.005
130.00	-1.77	-0.20	0.00	-1.52	0.00	1.52	1,190.37	595.18	1,649.68	826.06	2.20	-0.14	0.003
135.00	-1.64	-0.19	0.00	-0.52	0.00	0.52	1,170.52	585.26	1,562.67	782.50	2.34	-0.14	0.002
137.00	-1.34	-0.15	0.00	-0.15	0.00	0.15	1,162.08	581.04	1,527.78	765.03	2.40	-0.14	0.001
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.76	578.88	1,510.32	756.28	2.43	-0.14	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	2.44	-0.14	0.000

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.59
Redundancy Factor (p):	1.00

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	1.883	1.944	1.127	0.371	8	40
40	137.50	64	1.863	1.840	1.089	0.358	15	80
39	136.00	150	1.822	1.642	1.016	0.333	33	186
38	132.50	384	1.730	1.238	0.861	0.277	71	475
37	129.25	118	1.646	0.928	0.734	0.231	18	146
36	128.25	62	1.621	0.844	0.698	0.217	9	77
35	127.50	125	1.602	0.784	0.672	0.207	17	155
34	126.00	269	1.564	0.672	0.623	0.188	34	333
33	122.50	686	1.479	0.450	0.518	0.147	67	849
32	119.50	140	1.407	0.297	0.439	0.116	11	173
31	118.00	337	1.372	0.233	0.403	0.102	23	417
30	116.00	340	1.326	0.158	0.359	0.084	19	422
29	112.50	865	1.247	0.054	0.291	0.056	33	1,072
28	107.50	886	1.139	-0.046	0.212	0.025	15	1,097
27	104.50	180	1.076	-0.082	0.172	0.011	1	223
26	102.00	728	1.025	-0.103	0.144	0.002	1	901
25	99.21	293	0.970	-0.116	0.117	-0.006	-1	363
24	96.71	1,205	0.921	-0.121	0.096	-0.010	-8	1,492
23	93.79	867	0.867	-0.121	0.075	-0.013	-8	1,074
22	91.29	561	0.821	-0.115	0.060	-0.014	-5	695
21	88.50	661	0.772	-0.106	0.046	-0.012	-5	819
20	86.00	446	0.729	-0.095	0.036	-0.009	-3	553
19	82.50	1,133	0.671	-0.078	0.024	-0.004	-3	1,403
18	77.50	1,163	0.592	-0.050	0.014	0.007	5	1,440
17	72.50	1,188	0.518	-0.023	0.008	0.018	14	1,471
16	67.50	1,212	0.449	0.002	0.006	0.028	23	1,502
15	62.50	1,237	0.385	0.023	0.007	0.036	30	1,532
14	57.50	1,262	0.326	0.039	0.010	0.041	35	1,563
13	53.92	556	0.286	0.048	0.013	0.044	16	688
12	51.42	1,320	0.260	0.053	0.016	0.045	39	1,635
11	47.83	2,054	0.225	0.059	0.020	0.045	62	2,544
10	45.33	173	0.202	0.062	0.023	0.045	5	215
9	42.50	1,322	0.178	0.065	0.026	0.044	39	1,637
8	37.50	1,346	0.139	0.069	0.032	0.043	39	1,667

7	32.50	1,371	0.104	0.071	0.037	0.042	38	1,698
6	27.50	1,396	0.075	0.072	0.040	0.040	37	1,729
5	22.50	1,421	0.050	0.071	0.042	0.038	36	1,760
4	17.50	1,446	0.030	0.068	0.041	0.036	35	1,791
3	12.50	1,471	0.015	0.061	0.036	0.032	31	1,821
2	7.50	1,496	0.006	0.046	0.026	0.025	25	1,852
1	2.50	1,520	0.001	0.020	0.011	0.011	11	1,883
Generic 10' Omni	138.00	25	1.876	1.909	1.114	0.366	6	31
Round Low Profile Pl	138.00	1,500	1.876	1.909	1.114	0.366	366	1,858
Ericsson KRY 112 20	137.00	73	1.849	1.772	1.064	0.349	17	90
RFS APXV18-209014-C	137.00	56	1.849	1.772	1.064	0.349	13	69
Andrew LNX-6515DS-A1	137.00	149	1.849	1.772	1.064	0.349	35	185
Quintel QS8656-5D (1	130.00	600	1.665	0.994	0.762	0.241	96	743
Flat Low Profile Pla	128.00	1,500	1.614	0.823	0.690	0.214	214	1,858
VZW Unused Reserve:	128.00	1,283	1.614	0.823	0.690	0.214	183	1,589
Samsung B2/B66A RRH-	127.00	253	1.589	0.745	0.655	0.201	34	314
Samsung B5/B13 RRH-B	127.00	211	1.589	0.745	0.655	0.201	28	261
RFS APL866513-44T0	127.00	31	1.589	0.745	0.655	0.201	4	39
Raycap RCMDC-6627-PF	127.00	32	1.589	0.745	0.655	0.201	4	40
Decibel DB846H80E-SX	127.00	64	1.589	0.745	0.655	0.201	9	79
Generic 7" x 6" x 3"	119.00	30	1.395	0.275	0.427	0.111	2	37
Powerwave Allgon LGP	119.00	85	1.395	0.275	0.427	0.111	6	105
Raycap DC6-48-60-18-	119.00	20	1.395	0.275	0.427	0.111	1	25
Raycap DC6-48-60-18-	119.00	20	1.395	0.275	0.427	0.111	1	25
Ericsson Radio 8843	119.00	216	1.395	0.275	0.427	0.111	16	267
Ericsson RRUS 4449 B	119.00	213	1.395	0.275	0.427	0.111	16	264
Powerwave Allgon 777	119.00	105	1.395	0.275	0.427	0.111	8	130
Commscope NNH4-65B-	119.00	269	1.395	0.275	0.427	0.111	20	333
CCI DMP65R-BU6DA	119.00	238	1.395	0.275	0.427	0.111	18	295
Round Platform w/ Ha	117.00	2,000	1.349	0.194	0.381	0.093	123	2,477
RFI Antennas CC807-0	104.00	24	1.066	-0.087	0.166	0.009	0	30
Bird DS428E83I01T	100.00	9	0.985	-0.113	0.124	-0.004	0	11
Flat Side Arm	95.00	450	0.889	-0.122	0.083	-0.012	-4	557
RFI Antennas CC807-0	87.00	24	0.746	-0.100	0.040	-0.011	0	30
RFI Antennas OA20-41	80.00	28	0.631	-0.064	0.018	0.001	0	35
Radio Waves HP3-11	80.00	100	0.631	-0.064	0.018	0.001	0	124
		43,096	74.385	28.478	25.734	7.811	2,082	53,370

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	1.883	1.944	1.127	0.371	8	28
40	137.50	64	1.863	1.840	1.089	0.358	15	55
39	136.00	150	1.822	1.642	1.016	0.333	33	129
38	132.50	384	1.730	1.238	0.861	0.277	71	331
37	129.25	118	1.646	0.928	0.734	0.231	18	101
36	128.25	62	1.621	0.844	0.698	0.217	9	54
35	127.50	125	1.602	0.784	0.672	0.207	17	108
34	126.00	269	1.564	0.672	0.623	0.188	34	231
33	122.50	686	1.479	0.450	0.518	0.147	67	591
32	119.50	140	1.407	0.297	0.439	0.116	11	120
31	118.00	337	1.372	0.233	0.403	0.102	23	290
30	116.00	340	1.326	0.158	0.359	0.084	19	293
29	112.50	865	1.247	0.054	0.291	0.056	33	746
28	107.50	886	1.139	-0.046	0.212	0.025	15	763
27	104.50	180	1.076	-0.082	0.172	0.011	1	155
26	102.00	728	1.025	-0.103	0.144	0.002	1	627
25	99.21	293	0.970	-0.116	0.117	-0.006	-1	253

24	96.71	1,205	0.921	-0.121	0.096	-0.010	-8	1,038
23	93.79	867	0.867	-0.121	0.075	-0.013	-8	747
22	91.29	561	0.821	-0.115	0.060	-0.014	-5	484
21	88.50	661	0.772	-0.106	0.046	-0.012	-5	569
20	86.00	446	0.729	-0.095	0.036	-0.009	-3	385
19	82.50	1,133	0.671	-0.078	0.024	-0.004	-3	976
18	77.50	1,163	0.592	-0.050	0.014	0.007	5	1,002
17	72.50	1,188	0.518	-0.023	0.008	0.018	14	1,023
16	67.50	1,212	0.449	0.002	0.006	0.028	23	1,045
15	62.50	1,237	0.385	0.023	0.007	0.036	30	1,066
14	57.50	1,262	0.326	0.039	0.010	0.041	35	1,088
13	53.92	556	0.286	0.048	0.013	0.044	16	479
12	51.42	1,320	0.260	0.053	0.016	0.045	39	1,138
11	47.83	2,054	0.225	0.059	0.020	0.045	62	1,770
10	45.33	173	0.202	0.062	0.023	0.045	5	149
9	42.50	1,322	0.178	0.065	0.026	0.044	39	1,139
8	37.50	1,346	0.139	0.069	0.032	0.043	39	1,160
7	32.50	1,371	0.104	0.071	0.037	0.042	38	1,182
6	27.50	1,396	0.075	0.072	0.040	0.040	37	1,203
5	22.50	1,421	0.050	0.071	0.042	0.038	36	1,224
4	17.50	1,446	0.030	0.068	0.041	0.036	35	1,246
3	12.50	1,471	0.015	0.061	0.036	0.032	31	1,267
2	7.50	1,496	0.006	0.046	0.026	0.025	25	1,289
1	2.50	1,520	0.001	0.020	0.011	0.011	11	1,310
Generic 10' Omni	138.00	25	1.876	1.909	1.114	0.366	6	22
Round Low Profile Pl	138.00	1,500	1.876	1.909	1.114	0.366	366	1,292
Ericsson KRY 112 20	137.00	73	1.849	1.772	1.064	0.349	17	63
RFS APXV18-209014-C	137.00	56	1.849	1.772	1.064	0.349	13	48
Andrew LNX-6515DS-A1	137.00	149	1.849	1.772	1.064	0.349	35	129
Quintel QS8656-5D (1	130.00	600	1.665	0.994	0.762	0.241	96	517
Flat Low Profile Pla	128.00	1,500	1.614	0.823	0.690	0.214	214	1,292
VZW Unused Reserve:	128.00	1,283	1.614	0.823	0.690	0.214	183	1,106
Samsung B2/B66A RRH-	127.00	253	1.589	0.745	0.655	0.201	34	218
Samsung B5/B13 RRH-B	127.00	211	1.589	0.745	0.655	0.201	28	182
RFS APL866513-44T0	127.00	31	1.589	0.745	0.655	0.201	4	27
Raycap RCMDC-6627-PF	127.00	32	1.589	0.745	0.655	0.201	4	28
Decibel DB846H80E-SX	127.00	64	1.589	0.745	0.655	0.201	9	55
Generic 7" x 6" x 3"	119.00	30	1.395	0.275	0.427	0.111	2	26
Powerwave Allgon LGP	119.00	85	1.395	0.275	0.427	0.111	6	73
Raycap DC6-48-60-18-	119.00	20	1.395	0.275	0.427	0.111	1	17
Raycap DC6-48-60-18-	119.00	20	1.395	0.275	0.427	0.111	1	17
Ericsson Radio 8843	119.00	216	1.395	0.275	0.427	0.111	16	186
Ericsson RRUS 4449 B	119.00	213	1.395	0.275	0.427	0.111	16	184
Powerwave Allgon 777	119.00	105	1.395	0.275	0.427	0.111	8	90
Commscope NNH4-65B-	119.00	269	1.395	0.275	0.427	0.111	20	232
CCI DMP65R-BU6DA	119.00	238	1.395	0.275	0.427	0.111	18	205
Round Platform w/ Ha	117.00	2,000	1.349	0.194	0.381	0.093	123	1,723
RFI Antennas CC807-0	104.00	24	1.066	-0.087	0.166	0.009	0	21
Bird DS428E83I01T	100.00	9	0.985	-0.113	0.124	-0.004	0	8
Flat Side Arm	95.00	450	0.889	-0.122	0.083	-0.012	-4	388
RFI Antennas CC807-0	87.00	24	0.746	-0.100	0.040	-0.011	0	21
RFI Antennas OA20-41	80.00	28	0.631	-0.064	0.018	0.001	0	24
Radio Waves HP3-11	80.00	100	0.631	-0.064	0.018	0.001	0	86
		43,096	74.385	28.478	25.734	7.811	2,082	37,131

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.49	-2.07	0.00	-226.14	0.00	226.14	4,653.17	2,326.59	12,261.74	6,139.98	0.00	0.00	0.048
5.00	-49.63	-2.06	0.00	-215.78	0.00	215.78	4,609.58	2,304.79	11,912.54	5,965.13	0.00	-0.01	0.047
10.00	-47.81	-2.03	0.00	-205.50	0.00	205.50	4,564.20	2,282.10	11,563.26	5,790.22	0.02	-0.02	0.046
15.00	-46.02	-2.00	0.00	-195.35	0.00	195.35	4,517.04	2,258.52	11,214.16	5,615.41	0.04	-0.02	0.045
20.00	-44.26	-1.97	0.00	-185.34	0.00	185.34	4,468.09	2,234.04	10,865.51	5,440.83	0.07	-0.03	0.044
25.00	-42.53	-1.94	0.00	-175.48	0.00	175.48	4,417.35	2,208.68	10,517.59	5,266.61	0.11	-0.04	0.043
30.00	-40.83	-1.91	0.00	-165.78	0.00	165.78	4,364.83	2,182.42	10,170.67	5,092.89	0.15	-0.05	0.042
35.00	-39.17	-1.87	0.00	-156.26	0.00	156.26	4,310.53	2,155.27	9,825.01	4,919.81	0.21	-0.06	0.041
40.00	-37.53	-1.84	0.00	-146.90	0.00	146.90	4,254.44	2,127.22	9,480.91	4,747.50	0.27	-0.07	0.040
45.00	-37.31	-1.83	0.00	-137.72	0.00	137.72	4,196.57	2,098.28	9,138.61	4,576.10	0.35	-0.07	0.039
45.66	-34.77	-1.77	0.00	-136.51	0.00	136.51	4,188.75	2,094.38	9,093.35	4,553.43	0.36	-0.08	0.038
50.00	-33.14	-1.73	0.00	-128.83	0.00	128.83	4,136.91	2,068.45	8,798.40	4,405.74	0.43	-0.08	0.037
52.83	-32.45	-1.72	0.00	-123.92	0.00	123.92	4,139.63	2,069.81	8,813.66	4,413.38	0.48	-0.09	0.036
55.00	-30.88	-1.68	0.00	-120.19	0.00	120.19	4,113.21	2,056.61	8,666.69	4,339.78	0.52	-0.09	0.035
60.00	-29.35	-1.66	0.00	-111.77	0.00	111.77	4,051.07	2,025.54	8,329.83	4,171.11	0.62	-0.10	0.034
65.00	-27.85	-1.63	0.00	-103.49	0.00	103.49	3,987.15	1,993.57	7,995.71	4,003.80	0.73	-0.11	0.033
70.00	-26.38	-1.62	0.00	-95.32	0.00	95.32	3,921.44	1,960.72	7,664.61	3,838.00	0.85	-0.12	0.032
75.00	-24.94	-1.62	0.00	-87.22	0.00	87.22	3,853.94	1,926.97	7,336.78	3,673.84	0.97	-0.12	0.030
80.00	-23.38	-1.62	0.00	-79.14	0.00	79.14	3,784.66	1,892.33	7,012.51	3,511.47	1.11	-0.13	0.029
85.00	-22.82	-1.62	0.00	-71.05	0.00	71.05	3,713.60	1,856.80	6,692.07	3,351.01	1.25	-0.14	0.027
87.00	-21.98	-1.63	0.00	-67.81	0.00	67.81	3,684.67	1,842.34	6,565.03	3,287.39	1.31	-0.14	0.027
90.00	-21.28	-1.63	0.00	-62.93	0.00	62.93	3,640.75	1,820.37	6,375.73	3,192.60	1.40	-0.15	0.026
92.58	-20.21	-1.64	0.00	-58.72	0.00	58.72	3,602.46	1,801.23	6,214.18	3,111.71	1.48	-0.15	0.024
95.00	-18.16	-1.65	0.00	-54.76	0.00	54.76	3,566.11	1,783.05	6,063.75	3,036.38	1.56	-0.15	0.023
98.41	-17.79	-1.65	0.00	-49.14	0.00	49.14	2,795.78	1,397.89	4,743.60	2,375.33	1.67	-0.16	0.027
100.00	-16.88	-1.64	0.00	-46.53	0.00	46.53	2,778.84	1,389.42	4,670.03	2,338.48	1.72	-0.16	0.026
104.00	-16.63	-1.64	0.00	-39.95	0.00	39.95	2,735.32	1,367.66	4,485.66	2,246.16	1.86	-0.17	0.024
105.00	-15.53	-1.63	0.00	-38.31	0.00	38.31	2,724.26	1,362.13	4,439.83	2,223.21	1.90	-0.17	0.023
110.00	-14.46	-1.59	0.00	-30.18	0.00	30.18	2,667.90	1,333.95	4,212.36	2,109.31	2.08	-0.17	0.020
115.00	-14.04	-1.57	0.00	-22.22	0.00	22.22	2,609.75	1,304.88	3,987.89	1,996.91	2.26	-0.18	0.017
117.00	-11.14	-1.42	0.00	-19.08	0.00	19.08	2,586.00	1,293.00	3,899.01	1,952.40	2.34	-0.18	0.014
119.00	-9.49	-1.31	0.00	-16.24	0.00	16.24	2,561.95	1,280.98	3,810.67	1,908.17	2.41	-0.18	0.012
120.00	-8.64	-1.24	0.00	-14.93	0.00	14.93	2,549.82	1,274.91	3,766.70	1,886.15	2.45	-0.18	0.011
125.00	-8.31	-1.21	0.00	-8.71	0.00	8.71	2,488.10	1,244.05	3,549.06	1,777.17	2.65	-0.19	0.008
127.00	-7.42	-1.11	0.00	-6.30	0.00	6.30	2,462.92	1,231.46	3,463.06	1,734.10	2.73	-0.19	0.007
128.00	-3.90	-0.69	0.00	-5.19	0.00	5.19	2,450.22	1,225.11	3,420.29	1,712.69	2.77	-0.19	0.005
128.50	-3.75	-0.67	0.00	-4.84	0.00	4.84	2,443.84	1,221.92	3,398.97	1,702.01	2.79	-0.19	0.004
128.50	-3.75	-0.67	0.00	-4.84	0.00	4.84	1,195.97	597.99	1,675.68	839.09	2.79	-0.19	0.009
130.00	-2.54	-0.50	0.00	-3.83	0.00	3.83	1,190.37	595.18	1,649.68	826.06	2.84	-0.19	0.007
135.00	-2.35	-0.47	0.00	-1.32	0.00	1.32	1,170.52	585.26	1,562.67	782.50	3.04	-0.19	0.004
137.00	-1.93	-0.39	0.00	-0.39	0.00	0.39	1,162.08	581.04	1,527.78	765.03	3.12	-0.19	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.76	578.88	1,510.32	756.28	3.16	-0.19	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	3.18	-0.19	0.000

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.82	-2.07	0.00	-224.50	0.00	224.50	4,653.17	2,326.59	12,261.74	6,139.98	0.00	0.00	0.044
5.00	-34.53	-2.05	0.00	-214.14	0.00	214.14	4,609.58	2,304.79	11,912.54	5,965.13	0.00	-0.01	0.043
10.00	-33.26	-2.03	0.00	-203.87	0.00	203.87	4,564.20	2,282.10	11,563.26	5,790.22	0.02	-0.02	0.042
15.00	-32.02	-1.99	0.00	-193.75	0.00	193.75	4,517.04	2,258.52	11,214.16	5,615.41	0.04	-0.02	0.042
20.00	-30.79	-1.96	0.00	-183.77	0.00	183.77	4,468.09	2,234.04	10,865.51	5,440.83	0.07	-0.03	0.041
25.00	-29.59	-1.93	0.00	-173.96	0.00	173.96	4,417.35	2,208.68	10,517.59	5,266.61	0.11	-0.04	0.040
30.00	-28.41	-1.89	0.00	-164.32	0.00	164.32	4,364.83	2,182.42	10,170.67	5,092.89	0.15	-0.05	0.039
35.00	-27.25	-1.86	0.00	-154.85	0.00	154.85	4,310.53	2,155.27	9,825.01	4,919.81	0.21	-0.06	0.038
40.00	-26.11	-1.82	0.00	-145.56	0.00	145.56	4,254.44	2,127.22	9,480.91	4,747.50	0.27	-0.07	0.037
45.00	-25.96	-1.82	0.00	-136.45	0.00	136.45	4,196.57	2,098.28	9,138.61	4,576.10	0.34	-0.07	0.036
45.66	-24.19	-1.76	0.00	-135.24	0.00	135.24	4,188.75	2,094.38	9,093.35	4,553.43	0.35	-0.07	0.035
50.00	-23.05	-1.72	0.00	-127.63	0.00	127.63	4,136.91	2,068.45	8,798.40	4,405.74	0.43	-0.08	0.035
52.83	-22.57	-1.70	0.00	-122.77	0.00	122.77	4,139.63	2,069.81	8,813.66	4,413.38	0.48	-0.09	0.033
55.00	-21.49	-1.67	0.00	-119.07	0.00	119.07	4,113.21	2,056.61	8,666.69	4,339.78	0.52	-0.09	0.033
60.00	-20.42	-1.64	0.00	-110.73	0.00	110.73	4,051.07	2,025.54	8,329.83	4,171.11	0.62	-0.10	0.032
65.00	-19.38	-1.62	0.00	-102.53	0.00	102.53	3,987.15	1,993.57	7,995.71	4,003.80	0.72	-0.11	0.030
70.00	-18.35	-1.60	0.00	-94.45	0.00	94.45	3,921.44	1,960.72	7,664.61	3,838.00	0.84	-0.11	0.029
75.00	-17.35	-1.60	0.00	-86.43	0.00	86.43	3,853.94	1,926.97	7,336.78	3,673.84	0.96	-0.12	0.028
80.00	-16.26	-1.60	0.00	-78.44	0.00	78.44	3,784.66	1,892.33	7,012.51	3,511.47	1.10	-0.13	0.027
85.00	-15.88	-1.60	0.00	-70.43	0.00	70.43	3,713.60	1,856.80	6,692.07	3,351.01	1.24	-0.14	0.025
87.00	-15.29	-1.61	0.00	-67.23	0.00	67.23	3,684.67	1,842.34	6,565.03	3,287.39	1.30	-0.14	0.025
90.00	-14.80	-1.61	0.00	-62.40	0.00	62.40	3,640.75	1,820.37	6,375.73	3,192.60	1.39	-0.15	0.024
92.58	-14.06	-1.62	0.00	-58.23	0.00	58.23	3,602.46	1,801.23	6,214.18	3,111.71	1.47	-0.15	0.023
95.00	-12.63	-1.63	0.00	-54.31	0.00	54.31	3,566.11	1,783.05	6,063.75	3,036.38	1.54	-0.15	0.021
98.41	-12.38	-1.63	0.00	-48.75	0.00	48.75	2,795.78	1,397.89	4,743.60	2,375.33	1.66	-0.16	0.025
100.00	-11.74	-1.63	0.00	-46.16	0.00	46.16	2,778.84	1,389.42	4,670.03	2,338.48	1.71	-0.16	0.024
104.00	-11.57	-1.63	0.00	-39.64	0.00	39.64	2,735.32	1,367.66	4,485.66	2,246.16	1.84	-0.17	0.022
105.00	-10.80	-1.61	0.00	-38.01	0.00	38.01	2,724.26	1,362.13	4,439.83	2,223.21	1.88	-0.17	0.021
110.00	-10.06	-1.58	0.00	-29.96	0.00	29.96	2,667.90	1,333.95	4,212.36	2,109.31	2.06	-0.17	0.018
115.00	-9.77	-1.56	0.00	-22.07	0.00	22.07	2,609.75	1,304.88	3,987.89	1,996.91	2.24	-0.18	0.015
117.00	-7.75	-1.41	0.00	-18.95	0.00	18.95	2,586.00	1,293.00	3,899.01	1,952.40	2.32	-0.18	0.013
119.00	-6.60	-1.30	0.00	-16.14	0.00	16.14	2,561.95	1,280.98	3,810.67	1,908.17	2.39	-0.18	0.011
120.00	-6.01	-1.23	0.00	-14.83	0.00	14.83	2,549.82	1,274.91	3,766.70	1,886.15	2.43	-0.18	0.010
125.00	-5.78	-1.20	0.00	-8.66	0.00	8.66	2,488.10	1,244.05	3,549.06	1,777.17	2.62	-0.19	0.007
127.00	-5.16	-1.10	0.00	-6.26	0.00	6.26	2,462.92	1,231.46	3,463.06	1,734.10	2.70	-0.19	0.006
128.00	-2.71	-0.69	0.00	-5.16	0.00	5.16	2,450.22	1,225.11	3,420.29	1,712.69	2.74	-0.19	0.004
128.50	-2.61	-0.67	0.00	-4.82	0.00	4.82	2,443.84	1,221.92	3,398.97	1,702.01	2.76	-0.19	0.004
128.50	-2.61	-0.67	0.00	-4.82	0.00	4.82	1,195.97	597.99	1,675.68	839.09	2.76	-0.19	0.008
130.00	-1.76	-0.50	0.00	-3.81	0.00	3.81	1,190.37	595.18	1,649.68	826.06	2.82	-0.19	0.006
135.00	-1.64	-0.47	0.00	-1.32	0.00	1.32	1,170.52	585.26	1,562.67	782.50	3.02	-0.19	0.003
137.00	-1.34	-0.38	0.00	-0.38	0.00	0.38	1,162.08	581.04	1,527.78	765.03	3.10	-0.19	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.76	578.88	1,510.32	756.28	3.14	-0.19	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.57	577.78	1,501.59	751.91	3.15	-0.19	0.000

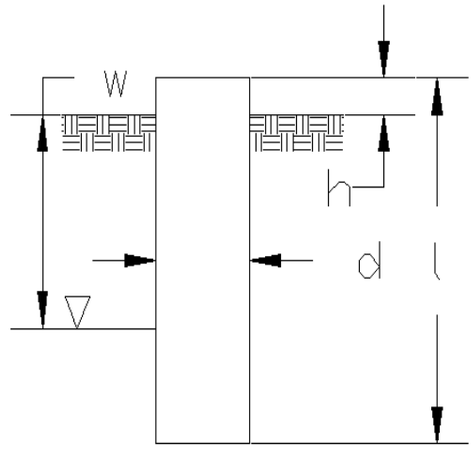
Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	29.86	0.00	51.69	0.00	0.00	3011.27	0.00	0.50
0.9D + 1.6W	29.56	0.00	38.76	0.00	0.00	2962.42	0.00	0.49
1.2D + 1.0Di + 1.0Wi	13.60	0.00	77.13	0.00	0.00	1190.84	0.00	0.21
(1.2 + 0.2Sds) * DL + E ELFM	1.79	0.00	51.49	0.00	0.00	190.38	0.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	2.07	0.00	51.49	0.00	0.00	226.14	0.00	0.05
(0.9 - 0.2Sds) * DL + E ELFM	1.79	0.00	35.82	0.00	0.00	189.07	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.07	0.00	35.82	0.00	0.00	224.50	0.00	0.04
1.0D + 1.0W	5.83	0.00	43.09	0.00	0.00	585.87	0.00	0.10

Site Name: Middle Haddam Road-CROWN CT, CT
Site Number: 411257
Tower Type: MP
Design Base Loads (Factored) - Analysis per TIA-222-G Standards

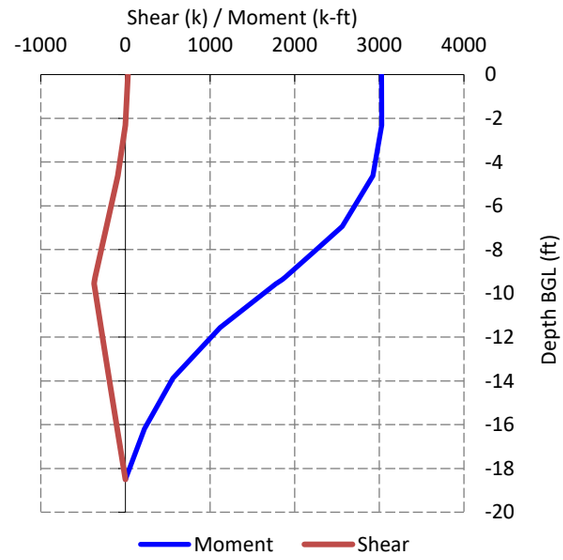
Pier Foundation Analysis

Foundation Analysis Parameters		
Analyze or Design a Foundation?	Analyze	-
Foundation Mapped:	Y	-
Moment (M):	3011.3	k-ft
Shear/Leg (V):	29.9	k
Axial Load (P):	51.6	k
Uplift/Leg (U):	0.0	k
Diameter of Caisson (d):	8	ft
Caisson Embedment (L-h):	18.5	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	99	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Water:	62.4	pcf
Tension/Compression Skin Friction Factor:	1	-
Pullout Angle:	30	°



Depth (ft) Top	Depth (ft) Bottom	γ_{Soil} (pcf)	Cu (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
0	2	105	0	0	0	0
2	4	140	9083			
4	9	140	13483		6067	
9	19.5	139	9180		4131	43469

Soil Strength Capacities		
Required Embedment:	10.0	ft
Volume of Concrete:	955.0	ft^3
Buoyant Weight of Concrete:	143.3	k
Average Soil Unit Weight:	135.7	pcf
Skin Friction Resistance:	1748.7	k
Compressive Bearing Resistance:	2185.0	k
Pullout Weight (Minus Concrete Weight):	636.9	k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	477.7	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	2950.3	k
T_u:	0.0	k
$T_u/\phi_s T_n$:	0%	Pass
P_u:	67.6	k
$P_u/\phi_s P_n$:	2%	Pass
Total Lateral Resistance:	9650.9	k
Inflection Point (Below Ground Surface):	9.6	ft
Moment At Inflection Point (M_D):	3311.6	k-ft
Nominal Moment Capacity ($\phi_s M_n$):	28532.1	k-ft
ϕ_s:	0.75	-
$M_D/\phi_s M_n$:	12%	Pass



Base Plate & Anchor Rod Analysis

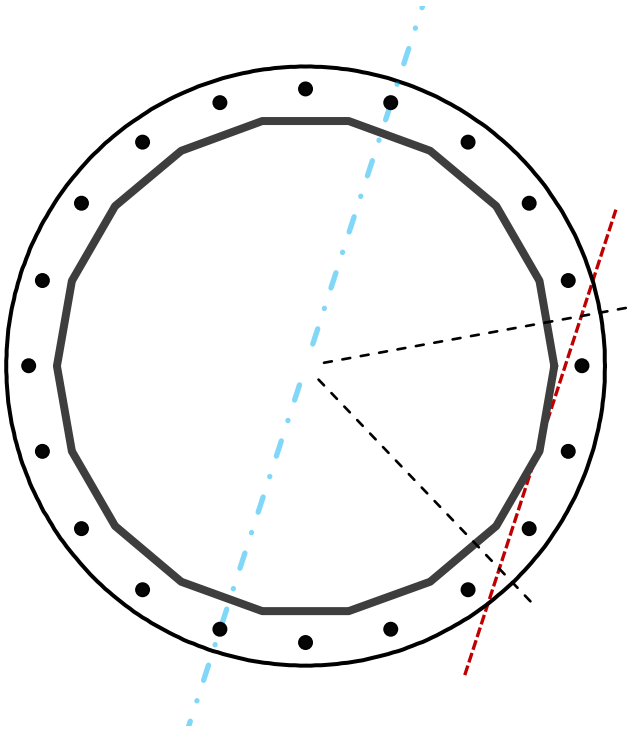
Pole Dimensions		
Number of Sides	18	-
Diameter	64.38	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	3011.3	k-ft
Axial, Pu	51.6	k
Shear, Vu	29.9	k
Neutral Axis	252	°

Report Capacities		
Component	Capacity	Result
Base Plate	22%	Pass
Anchor Rods	41%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	79	in
Thickness	2 1/4	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	567.8	k
Bending Stress, ϕMn	2619.4	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ø	2 1/4	in
Bolt Circle	73	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	11.5	in
Orientation Offset	0	°
Applied Force, Pu	104.9	k
Anchor Rods, ϕPn	259.8	k



Flange Plate Analysis

Flange Plate

Plate Type	***Flange***	***128.5 ft***
Pole Diameter	34.2064	in
Pole Thickness	0.1875	in
Plate Diameter	41	in
Plate Thickness	1	in
Plate Fy	60	ksi
Weld Length	0.55	in
f_s Resistance	62.98	k-in
Applied	1.32	k-in

Code Rev.	***G***
Moment	32.1 k-ft
Axial	3.6 k

Required Flange Thickness:
0.14 in OK

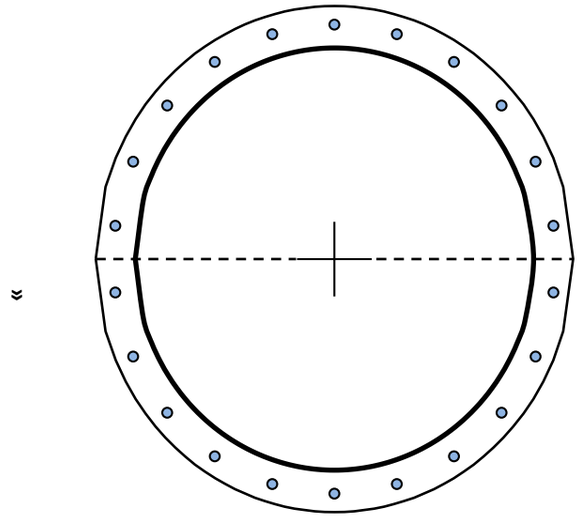
Date	9/25/2019
Engineer	Lucas.Tait
Site #	411257
Carrier	AT & T Mobility

Stiffeners

#	

Bolts

#	***22***	
Bolt Circle	38	in
(R)adial / (S)quare	R	
Bolt Gap	6	in
Diameter	1	in
Hole Diameter	1.125	in
Type	A325	
Fy	92	ksi
Fu	120	ksi
f_s Resistance	54.52	k
Applied	1.68	k



Reinforcement

#	

Plate Stress Ratio:
2% Pass

Bolt Stress Ratio:
3% Pass

Extra Bolts O

#	

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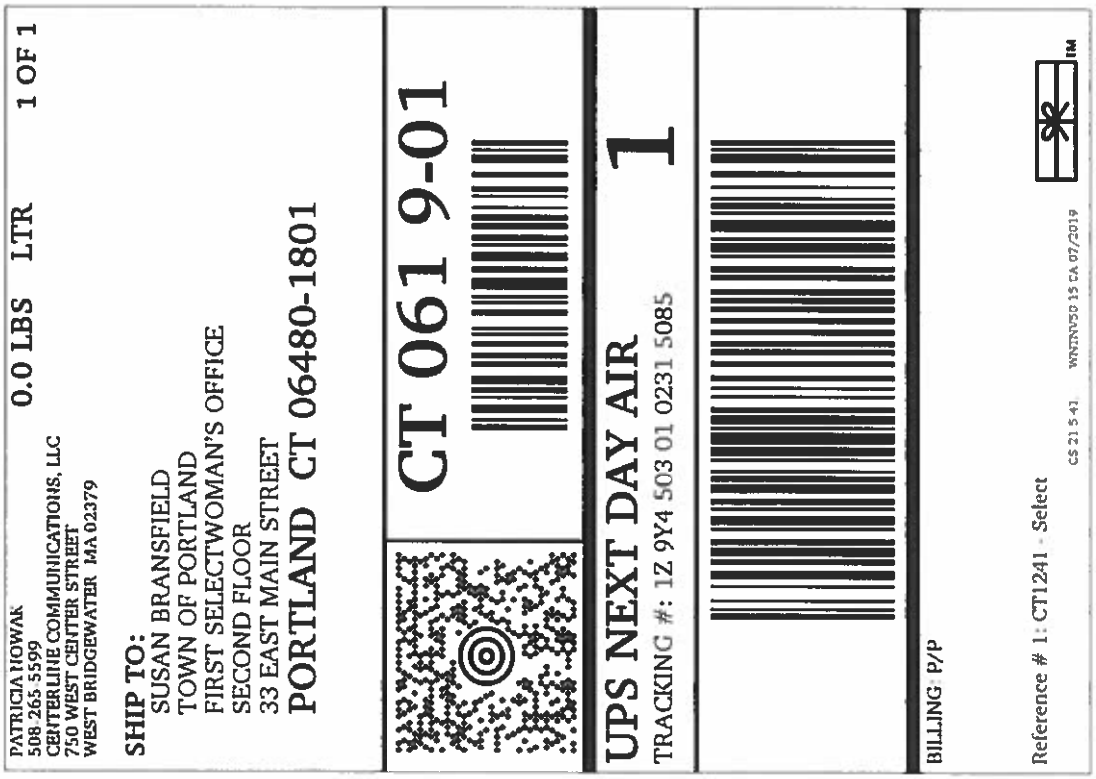

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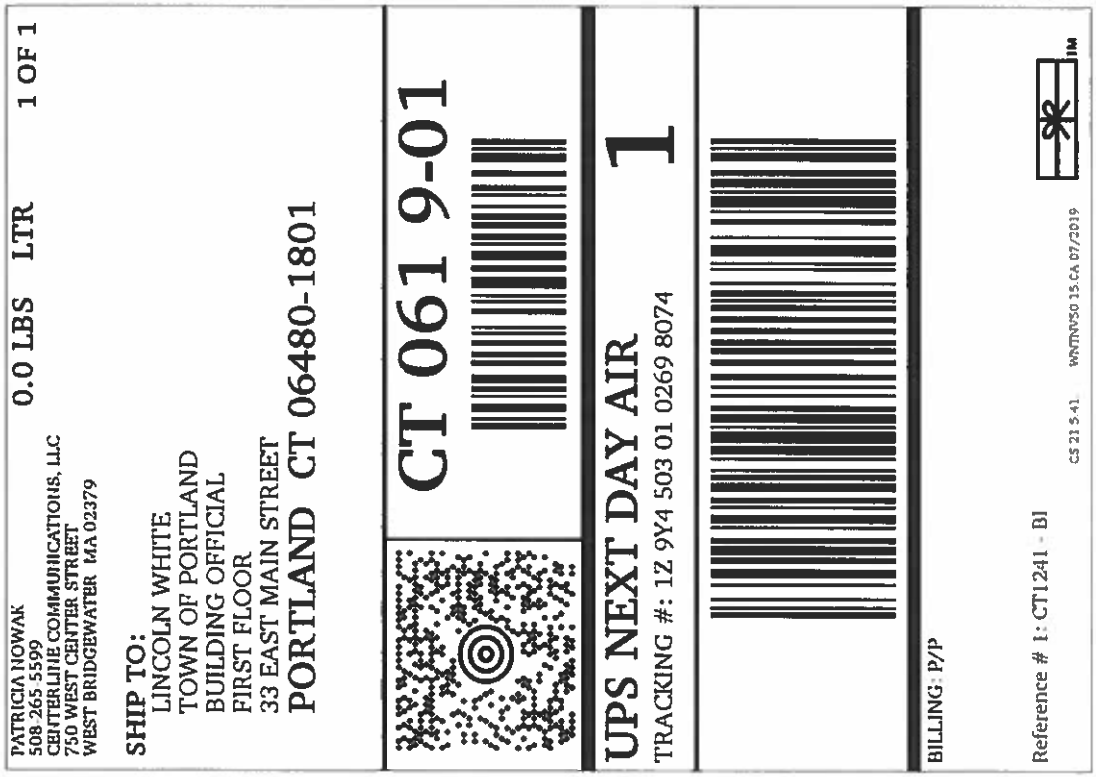

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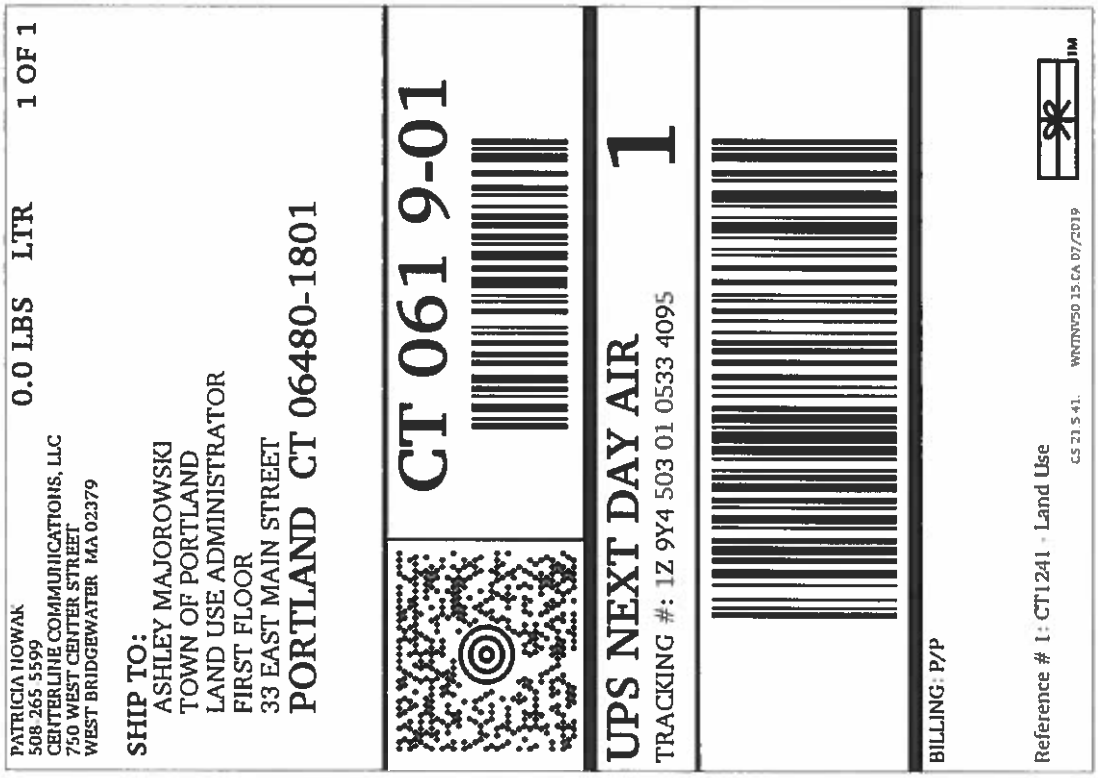

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