June 16, 2022

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

**Regarding: Notice of Exempt Modification – AT&T Site CT2094 / FA# 10035342**
**Address: 2 Sunny Lane, Westport, CT 06880**

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing +/- 130' monopole at the above-referenced address, latitude 41.1628111, longitude -73.3735161. Said monopole is operated by American Tower Corporation.

AT&T desires to modify its existing telecommunications facility by swapping nine (9) antennas, adding three (3) remote radio units (RRUS), adding one (1) surge arrestor and accompanying feedlines, and swapping mounts as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, last revised June 14, 2022. The centerline height of the existing antennas is and will remain at 102 feet. This modification may include B2, B5, B17, B14, B29, B30, B66, & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned off at various times.

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: The Honorable Jennifer Tooker, First Selectwoman of the Town of Westport, as elected official, Laurie Montagna, Zoning Enforcement Officer of the Town of Westport, Michael Kiselak, Town Planner of the Town of Westport, American Tower Corporation, as tower operator, and Cellco Partnership as property owner. We have reached out to the Building and Zoning Departments for the Town of Westport who conducted a search and could not locate the original tower approval.

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. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*

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. *Please see the structural analysis dated May 31, 2022, and prepared by American Tower Corporation, enclosed herewith.*

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,

*Evan Renwick*

Evan Renwick
Site Acquisition Specialist
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
erenwick@clinellc.com

Enclosures: Exhibit 1 – Construction Drawings
Exhibit 2 – Property Card and GIS
Exhibit 3 – Structural Analysis
Exhibit 4 – Mount Analysis
Exhibit 5 – RF Emissions Analysis Report Evaluation
Exhibit 6 – Notice Delivery Confirmations

Cc: The Honorable Jennifer Tooker, First Selectwoman, Town of Westport, elected official.
Laurie Montagna, Zoning Enforcement Officer, Town of Westport
Michael Kiselak, Town Planner, Town of Westport.
American Tower Corporation, as tower operator
Cellco Partnership, as property owner

# EXHIBIT 1

## PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT:
- NEW AT&T ANTENNAS: TPA65R-BU6DA-K (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T RRUS: 4478 B14(700/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T RRUS: 4415 B30 (WCS)(TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO POS. 2) ON NEW MOUNT.
- EXISTING AT&T RRUS: 4449 B5/B12 (700/850) (TYP. OF 1 PER SECTOR, TOTAL OF 3) RELOCATED ON NEW MOUNT.
- EXISTING AT&T RRUS: 8843 B2/B66A (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO POS. 4) RELOCATED ON NEW MOUNT.
- EXISTING AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TOTAL OF 1) RELOCATED ON NEW MOUNT.
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18 (TOTAL OF 1)RELOCATED ON NEW MOUNT.
- NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8C-EV (TOTAL OF 1).
- NEW AT&T (6) Y-CABLES.
- ADD (2) 6 AWG DC TRUNKS
- ADD (1) 18 PAIR FIBER.

ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION:
- ADD (1) 6648 + XCEDE CABLE
- FINAL=2X6630+1XXMU+IDLE+1X6648+XCEDE CABLE
- ADD (3) 48V RECTIFIERS.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: HPA-65R-BUU-H6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: OPA65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO REMAIN:
- (3) ANTENNAS, (9) RRU'S, (2) SURGE ARRESTOR, (6) 1-5/8" COAX, (5) DC POWER & (2) FIBER.

| | |
|---|---|
| SITE ADDRESS: | 2 SUNNY LANE<br>WESTPORT, CT 06880 |
| LATITUDE: | 41.1629166° N, 41° 9' 46.5" N |
| LONGITUDE: | -73.3730833° W, 73° 22' 23.1" W |
| TYPE OF SITE: | MONOPOLE / INDOOR EQUIPMENT |
| STRUCTURE HEIGHT: | 130'-0"± |
| RAD CENTER: | 102'-0"± |
| CURRENT USE: | TELECOMMUNICATIONS FACILITY |
| PROPOSED USE: | TELECOMMUNICATIONS FACILITY |

## DRAWING INDEX

| SHEET NO. | DESCRIPTION | REV. |
|---|---|---|
| T-1 | TITLE SHEET | B |
| GN-1 | GENERAL NOTES | B |
| A-1 | COMPOUND & EQUIPMENT PLANS | B |
| A-2 | ANTENNA LAYOUT PLANS & ELEVATION | B |
| A-3 | DETAILS | B |
| A-4 | DETAILS | B |
| G-1 | GROUNDING DETAILS | B |
| RF-1 | RF PLUMBING DIAGRAM | B |

at&t

# SITE NUMBER: CTL02094

# SITE NAME: CANTON - COLLINSVILLE

# FA CODE: 10035342

# PACE ID: MRCTB054108, MRCTB055100, MRCTB054644, MRCTB055713, MRCTB056103, MRCTB054111

# PROJECT: 5G NR 1SR CBAND, LTE 5C, BBU CONFIGURATION, 2022 UPGRADE

ISSUED FOR PERMITTING

## VICINITY MAP

**DIRECTIONS TO SITE:**
START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD.TURN LEFT ONTO CAPITAL BLVD.TURN LEFT ONTO WEST ST.MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN.MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.TAKE THE CT-110 EXIT, EXIT 53, TOWARD SHELTON/STRATFORD.TURN LEFT ONTO MAIN ST/CT-110.MERGE ONTO MERRITT PARKWAY/CT-15 S TOWARD NY CITY.TAKE THE CT-33 EXIT, EXIT 41, TOWARD WILTON/WESTPORT.KEEP RIGHT AT THE FORK IN THE RAMP.TURN RIGHT ONTO WILTON RD/CT-33.TAKE THE 2ND LEFT ONTO SUNNY LN.2 SUNNY LN, WESTPORT, CT 06880-1905, 2 SUNNY LN IS ON THE LEFT.


## 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


**SITE NUMBER: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

2 SUNNY LANE
WESTPORT, CT 06880
FAIRFIELD COUNTY


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


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SS | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | SS | AT | DPH |

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

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

AT&T

TITLE SHEET
5G NR 1SR CBAND, LTE 5C, BBU CONFIGURATION, 2022 UPGRADE

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | T-1 | B |

## 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: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020)**

    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-H, 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 CL | 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: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

**2 SUNNY LANE**
**WESTPORT, CT 06880**
**FAIRFIELD COUNTY**


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


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SG | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | SG | AT | DPH |

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

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

AT&T

GENERAL NOTES
~~50~~ NR 1SR CBAND, LTE 5C, BBU
CONFIGURATION, 2022 UPGRADE

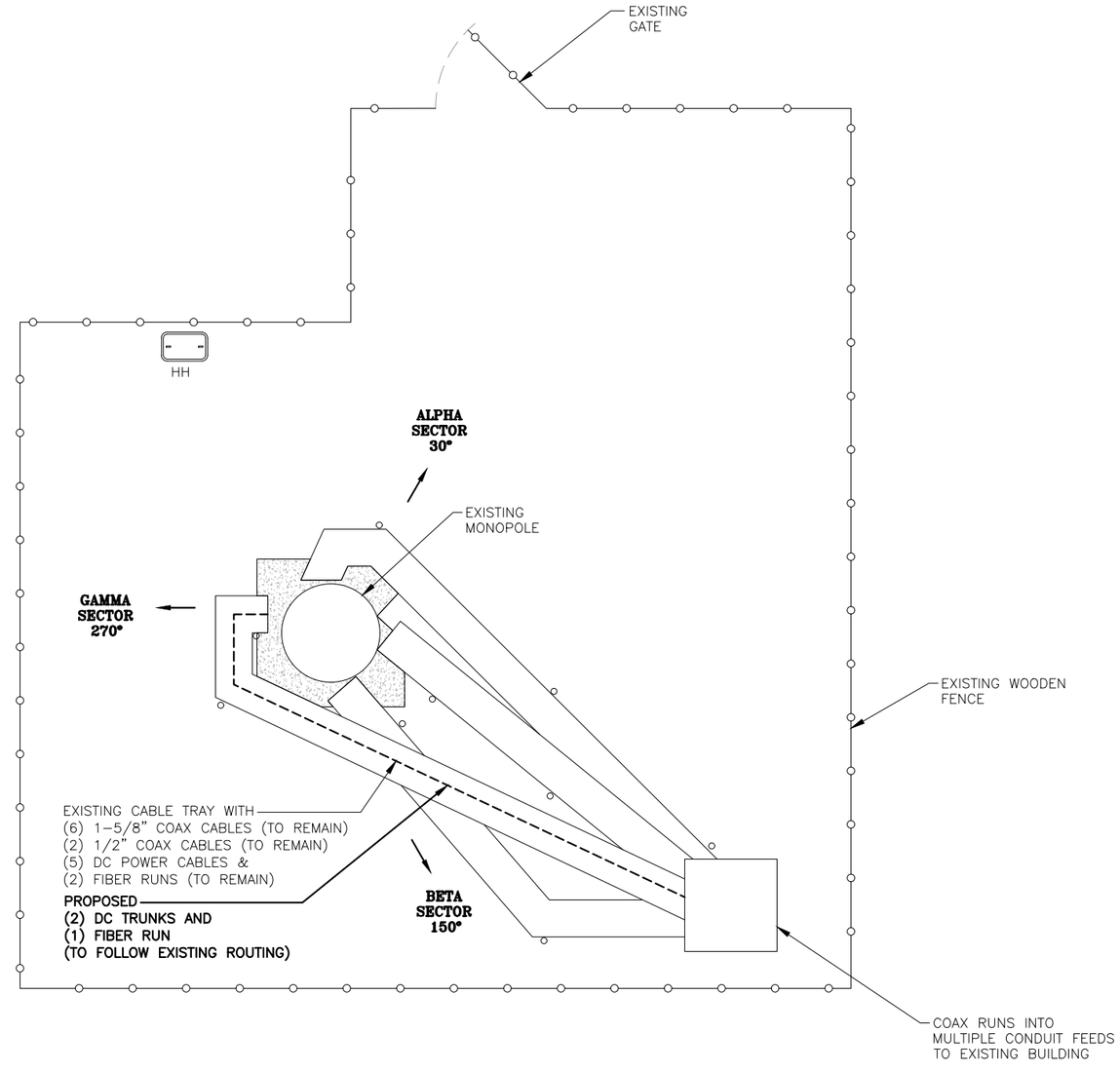
| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | GN-1 | B |

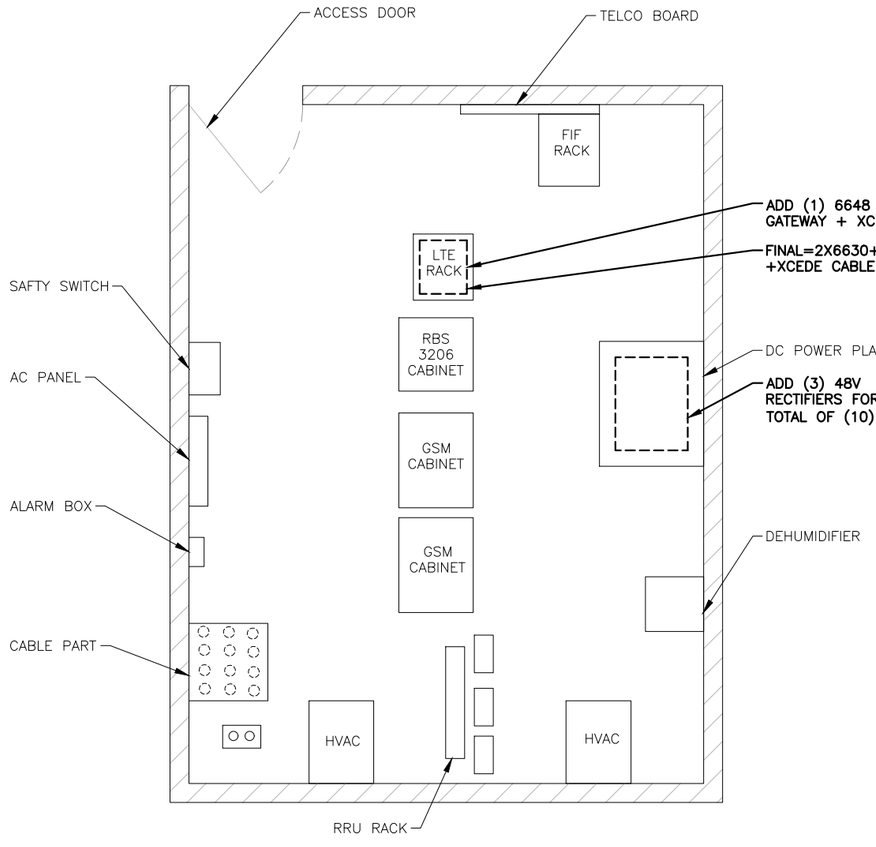
NOTE:

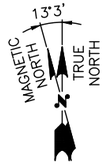
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

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

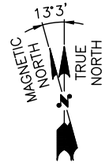



**COMPOUND PLAN** (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"




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

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


**SITE NUMBER: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

2 SUNNY LANE
WESTPORT, CT 06880
FAIRFIELD COUNTY


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


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SG | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | SG | AT | DPH |

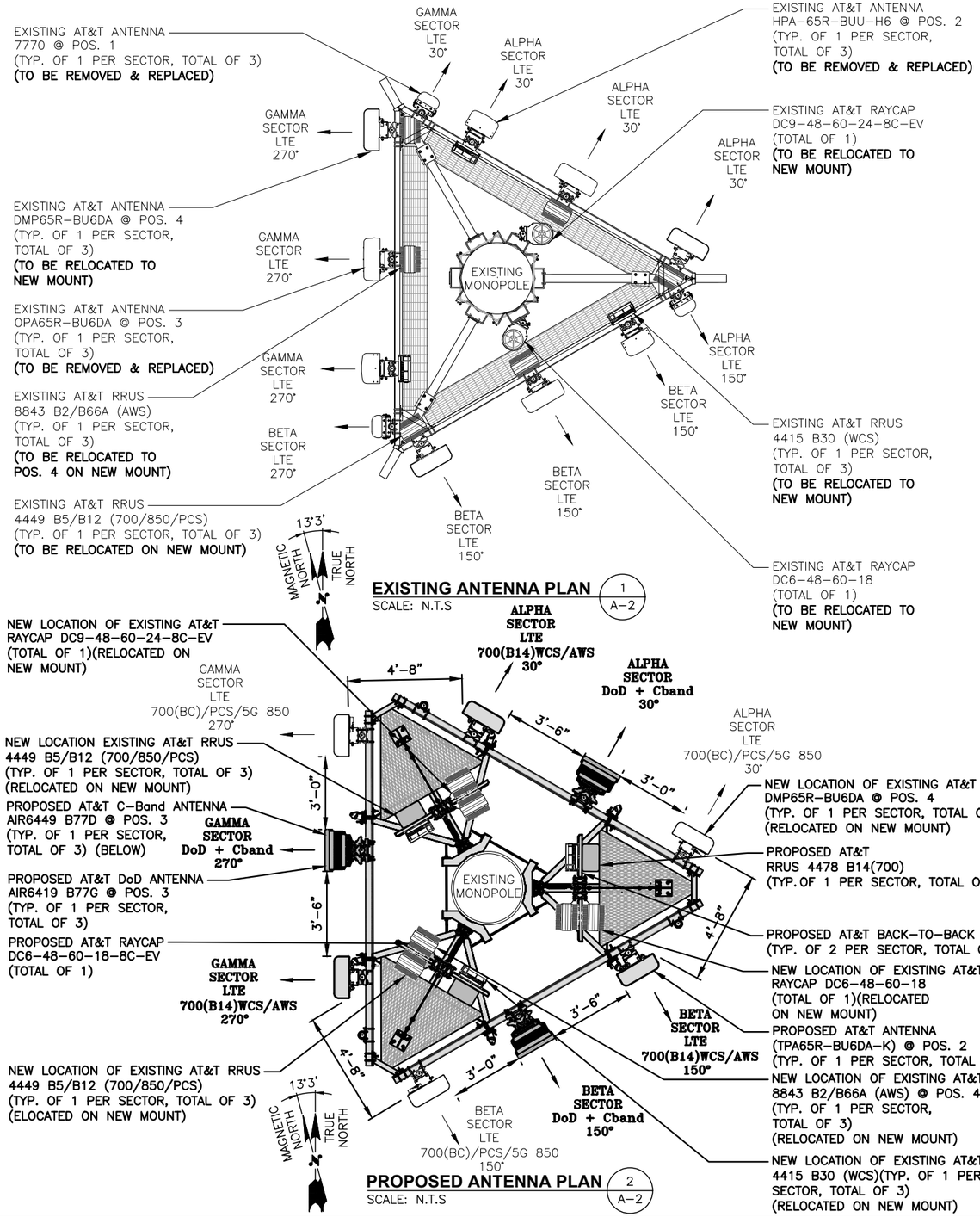
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PS

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

AT&T

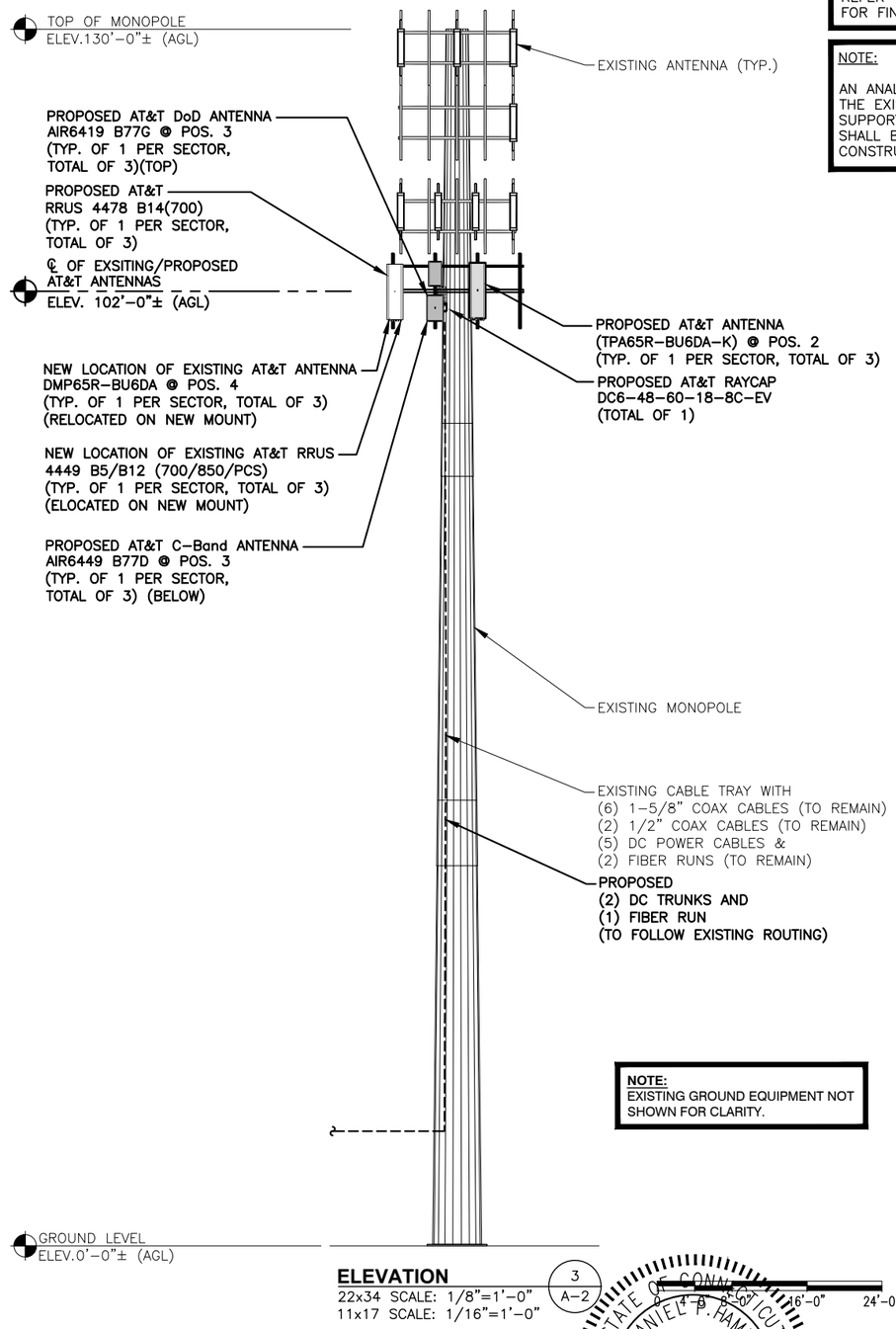
COMPOUND & EQUIPMENT PLANS
~~SC~~ NR 1SR CBAND, LTE 5C, BBU CONFIGURATION, 2022 UPGRADE

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | A-1 | B |




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

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




**ELEVATION** (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-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:**
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.


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

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


**SITE NUMBER: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

2 SUNNY LANE
WESTPORT, CT 06880
FAIRFIELD COUNTY

| NO. | DATE | REVISIONS | BY | CHK |
|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SC | AT |
| A | 03/02/22 | ISSUED FOR REVIEW | SC | AT |

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PS | CHK: DPH

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

AT&T

ANTENNA LAYOUT PLANS & ELEVATION
5G NR 1SR CBAND, LTE 5C, BBU
CONFIGURATION, 2022 UPGRADE

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | A-2 | B |

## 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 | – | – | – | – | – | – | – | – | – | (2)1–5/8"ø COAX | (E) (1) RAYCAP DC9–48–60–24–8C–EV |
| **A2** | **PROPOSED** | **LTE 700(B14)WCS/AWS** | **TPA65R–BU6DA–K** | **71.2"X20"X7.7"** | **102'–0"±** | **30°** | – | **(P)(1)4478 B14(700/AWS)** (E)(1)4415 B30 (WCS) | **18.1"x13.4"x8.3"** | (E)(3) DC POWER & (1) FIBER | |
| **A3** | **PROPOSED** | **DoD C–BAND** | **AIR6419 B77G AIR6449 B77D** | **31.1"X16.1"X7.3" 30.4"X15.9"X8.1"** | **102'–0"±** | **30°** | – | – | – | – | |
| A4 | EXSITING | LTE 700(BC)/PCS/5G 850 | DMP65R–BU6DA | 71.2"X20.7"X7.7" | 102'–0"± | 30° | – | (E)(1)4449 B5/B12 (700/850) (E)(1)8843 B2/B66A (PCS) | – | **(P)(2)(Y–CABLE)** | |
| **B1** | – | – | – | – | – | – | – | – | – | (2)1–5/8"ø COAX | (E) (1) RAYCAP DC6–48–60–18 |
| **B2** | **PROPOSED** | **LTE 700(B14)WCS/AWS** | **TPA65R–BU6DA–K** | **71.2"X20"X7.7"** | **102'–0"±** | **150°** | – | **(P)(1)4478 B14(700/AWS)** (E)(1)4415 B30 (WCS) | **18.1"x13.4"x8.3"** | (E)(2) DC POWER & (1) FIBER | |
| **B3** | **PROPOSED** | **DoD C–BAND** | **AIR6419 B77G AIR6449 B77D** | **31.1"X16.1"X7.3" 30.4"X15.9"X8.1"** | **102'–0"±** | **150°** | – | – | – | – | |
| B4 | EXSITING | LTE 700(BC)/PCS/5G 850 | DMP65R–BU6DA | 71.2"X20.7"X7.7" | 102'–0"± | 150° | – | (E)(1)4449 B5/B12 (700/850) (E)(1)8843 B2/B66A (PCS) | – | **(P)(2)(Y–CABLE)** | |
| C1 | – | – | – | – | – | – | – | – | – | (2)1–5/8"ø COAX | **(P) (1) RAYCAP DC6–48–60–18–8C–EV** |
| **C2** | **PROPOSED** | **LTE 700(B14)WCS/AWS** | **TPA65R–BU6DA–K** | **71.2"X20"X7.7"** | **102'–0"±** | **270°** | – | **(P)(1)4478 B14(700/AWS)** (E)(1)4415 B30 (WCS) | **18.1"x13.4"x8.3"** | **(P)(2) DC POWER & (1) FIBER** | |
| **C3** | **PROPOSED** | **DoD C–BAND** | **AIR6419 B77G AIR6449 B77D** | **31.1"X16.1"X7.3" 30.4"X15.9"X8.1"** | **102'–0"±** | **270°** | – | – | – | – | |
| C4 | EXSITING | LTE 700(BC)/PCS/5G 850 | DMP65R–BU6DA | 71.2"X20.7"X7.7" | 102'–0"± | 270° | – | (E)(1)4449 B5/B12 (700/850) (E)(1)8843 B2/B66A (PCS) | – | **(P)(2)(Y–CABLE)** | |

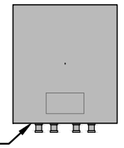
### RRU CHART

| QUANTITY | MODEL | SIZE (L x W x D) |
|---|---|---|
| **P(3)** | **4478 B14 (700/AWS)** | **18.1"x13.4"x8.3"** |
| E(3) | 4415 (WCS) | 16.5"x13.4"x5.9" |
| E(3) | 4449 B5/B12 (700/850) | 17.9"x13.2"x10.4" |
| E(3) | 8843 (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

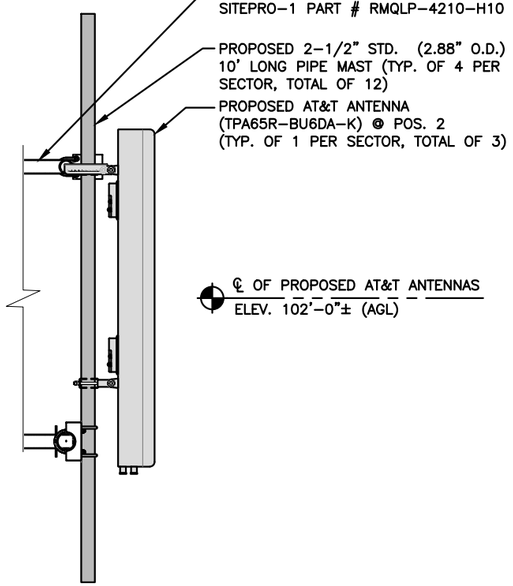
NOTE:

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

NOTE:

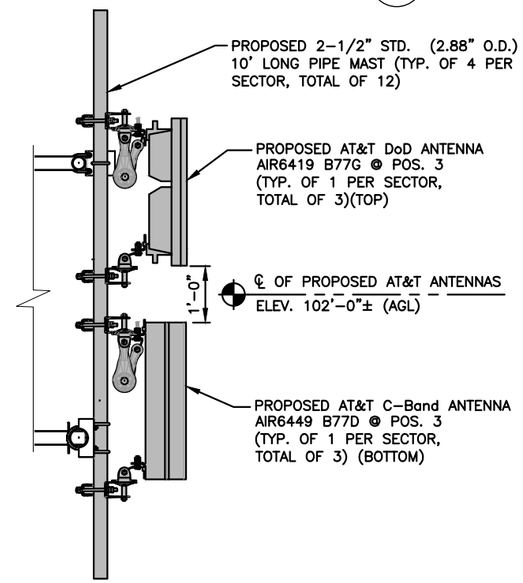
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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



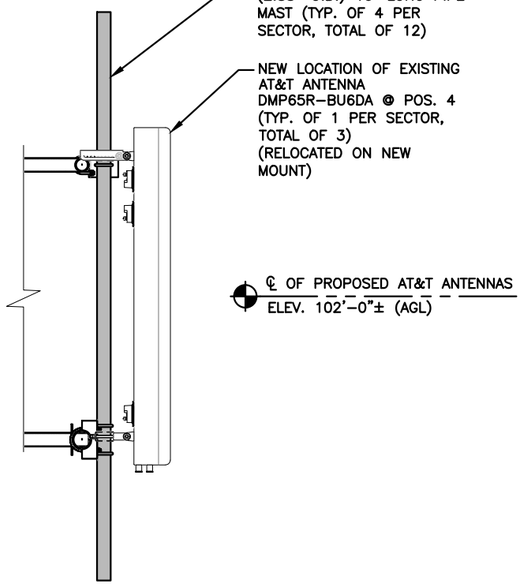

### PROPOSED ANTENNA @ POS. 2 (3 / A–3)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"

0 8" 1'–4" 2'–8" 4'–0"



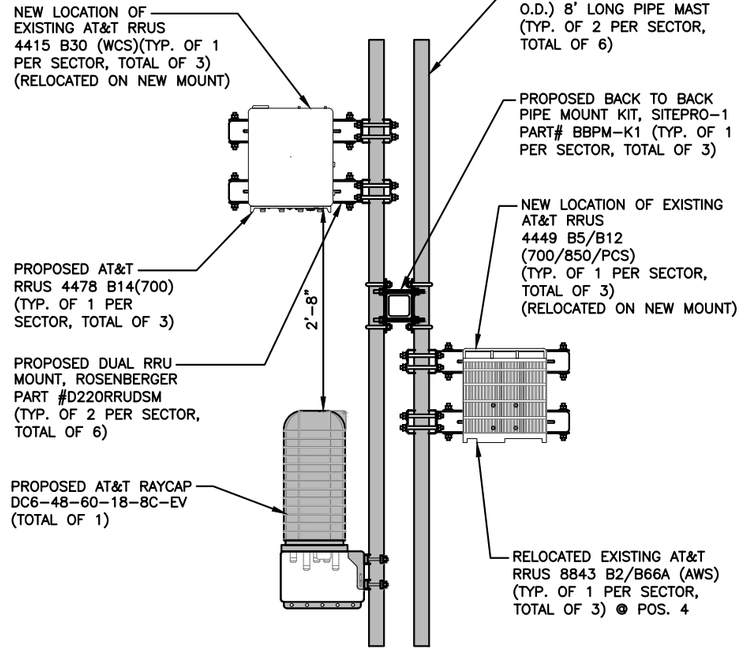

### PROPOSED ANTENNA @ POS. 3 (4 / A–3)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"

0 8" 1'–4" 2'–8" 4'–0"




### EXISTING LTE ANTENNA @ POS. 4 (5 / A–3)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"

0 8" 1'–4" 2'–8" 4'–0"




### PROPOSED RRH & SURGE PROTECTOR MOUNTING DETAIL (6 / A–3)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"

0 8" 1'–4" 2'–8" 4'–0"


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: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

2 SUNNY LANE
WESTPORT, CT 06880
FAIRFIELD COUNTY


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


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SS | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | SS | AT | DPH |

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

STATE OF CONNECTICUT DANIEL P. HAMM No. 21478 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
~~5G~~ NR 1SR CBAND, LTE 5C, BBU CONFIGURATION, 2022 UPGRADE

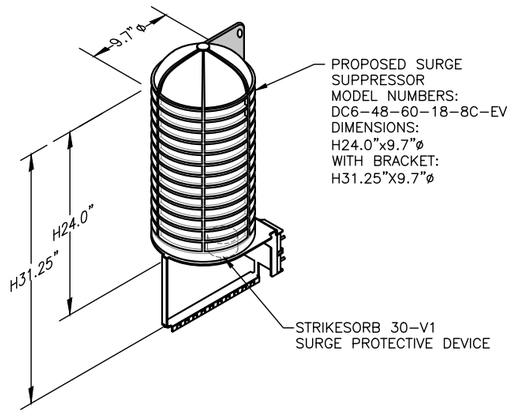
| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | A–3 | B |

NOTE:

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

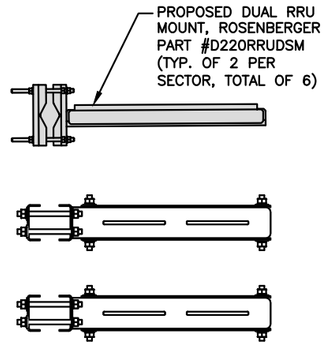
NOTE:

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

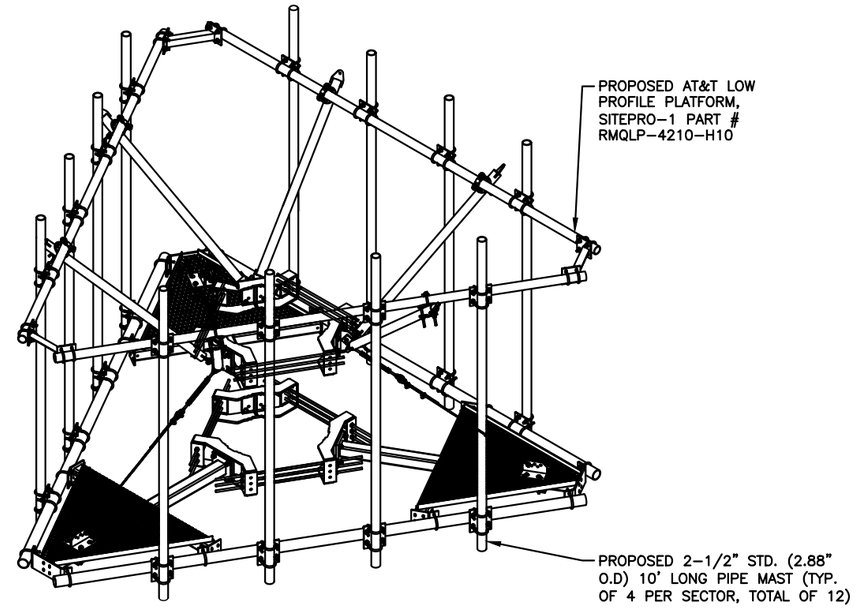



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE SUPPRESSOR DETAIL** (1 / A-4)
SCALE: N.T.S




**BACK TO BACK RRU MOUNT DETAIL** (2 / A-4)
SCALE: N.T.S




**14'-6" LOW PROFILE PLATFORM (RMQLP-4120-H10)** (3 / A-4)
SCALE: N.T.S


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: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

2 SUNNY LANE
WESTPORT, CT 06880
FAIRFIELD COUNTY


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


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SG | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | SG | AT | DPH |

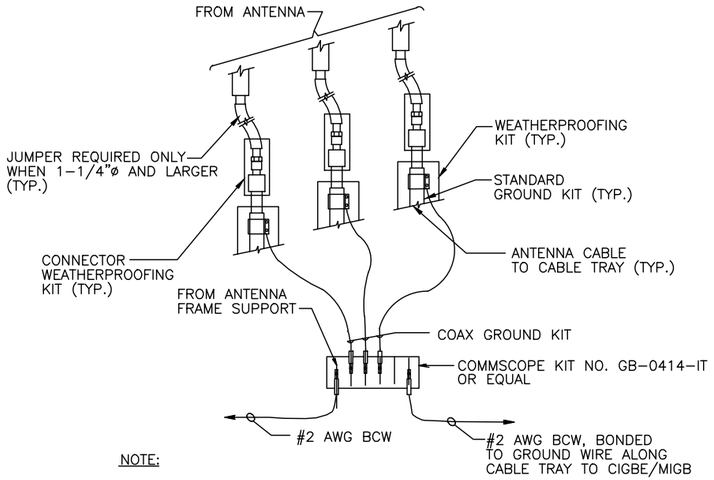
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PS

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

AT&T

DETAILS
~~5G~~ NR 1SR CBAND, LTE 5C, BBU CONFIGURATION, 2022 UPGRADE

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | A-4 | B |

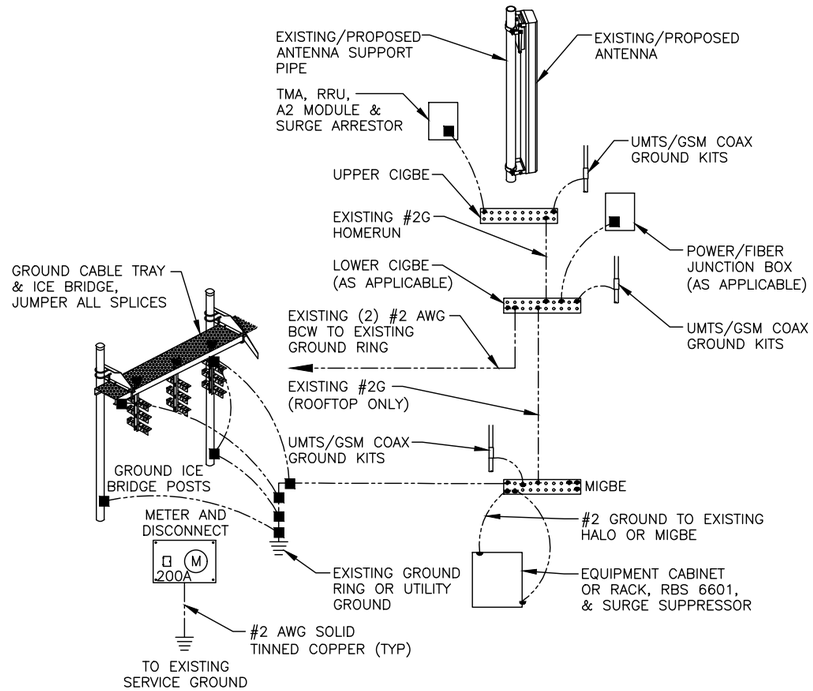



NOTE:

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

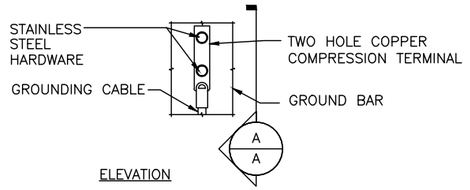
## GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

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

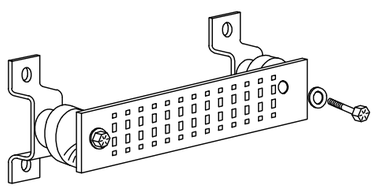
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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 (AS REQUIRED)

SCALE: N.T.S

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: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

**2 SUNNY LANE**
**WESTPORT, CT 06880**
**FAIRFIELD COUNTY**

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

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SG | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | SG | AT | DPH |

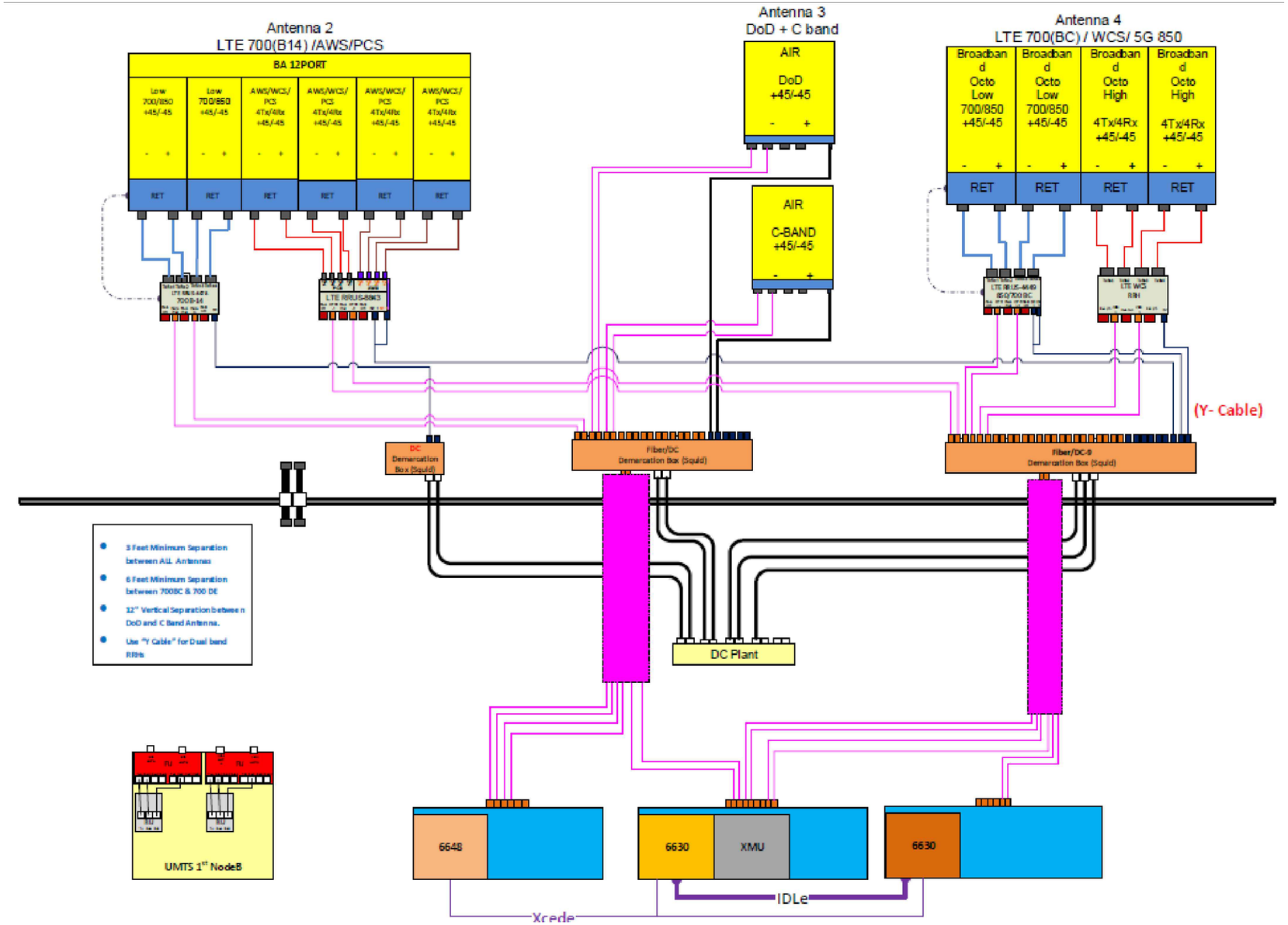
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PS

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

AT&T

GROUNDING DETAILS
~~5G~~ NR 1SR CBAND, LTE 5C, BBU
CONFIGURATION, 2022 UPGRADE

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | G-1 | B |




**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.


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: CTL02094**
**SITE NAME: CANTON - COLLINSVILLE**

2 SUNNY LANE
WESTPORT, CT 06880
FAIRFIELD COUNTY


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


| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| B | 06/14/22 | ISSUED FOR PERMITTIING | SG | AT | DPH |
| A | 03/02/22 | ISSUED FOR REVIEW | PS | AT | DPH |

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

AT&T

RF PLUMBING DIAGRAM
5G NR 1SR CBAND, LTE 5C, BBU
CONFIGURATION, 2022 UPGRADE

| SITE NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTL02094 | RF–1 | B |

# EXHIBIT 2

Property Location 2 ALLEN RAYMOND LN | Map ID B13/ / 026/000 / | Bldg Name | State Use 434
Vision ID 4500 | Account # 8579 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 04-25-2022 10:10:52

## CURRENT OWNER

CELLCO PARTNERSHIP
BELL ATLANTIC NYNEX MOBILE DB
PO BOX 2549
ADDISON TX 75001

| TOPO | UTILITIES | STRT / ROAD | LOCATION |
|---|---|---|---|
| | 6 Septic | 2 Private | |
| | 5 Well | | |

## SUPPLEMENTAL DATA

| | | | |
|---|---|---|---|
| Alt Prcl ID | 5298022 | Lift Hse | |
| Historic ID | | Asking $ | |
| Census | 501 | | |
| WestportC | D35 | | |
| Survey Ma | 9553 | | |
| Survey Ma | | | |
| GIS ID | B13026000 | Assoc Pid# | |

## CURRENT ASSESSMENT

| Description | Code | Appraised | Assessed |
|---|---|---|---|
| UTL LAND | 4-1 | 480,600 | 336,400 |
| UTL BLDG | 4-2 | 386,400 | 270,500 |
| UTL OUTBL | 4-3 | 1,037,600 | 726,320 |
| | Total | 1,904,600 | 1,333,220 |

6158
WESTPORT, CT

**VISION**

## RECORD OF OWNERSHIP

| RECORD OF OWNERSHIP | BK-VOL/PAGE | | SALE DATE | Q/U | V/I | SALE PRICE | VC |
|---|---|---|---|---|---|---|---|
| CELLCO PARTNERSHIP | 1488 | 0099 | 12-10-1996 | Q | I | 415,000 | 00 |

## PREVIOUS ASSESSMENTS (HISTORY)

| Year | Code | Assessed | Year | Code | Assessed | Year | Code | Assessed |
|---|---|---|---|---|---|---|---|---|
| 2021 | 4-1 | 336,400 | 2020 | 4-1 | 336,400 | 2020 | 4-1 | 336,400 |
| | 4-2 | 270,500 | | 4-2 | 270,500 | | 4-2 | 270,500 |
| | 4-3 | 726,320 | | 4-3 | 726,320 | | 4-3 | 726,320 |
| | Total | 1,333,220 | | Total | 1,333,220 | | Total | 1,333,220 |

## EXEMPTIONS

| Year | Code | Description | Amount |
|---|---|---|---|
| | | | |
| | | Total | 0.00 |

## OTHER ASSESSMENTS

| Code | Description | Number | Amount | Comm Int |
|---|---|---|---|---|
| | | | | |

This signature acknowledges a visit by a Data Collector or Assessor

## APPRAISED VALUE SUMMARY

| | |
|---|---|
| Appraised Bldg. Value (Card) | 386,400 |
| Appraised Xf (B) Value (Bldg) | 0 |
| Appraised Ob (B) Value (Bldg) | 1,037,600 |
| Appraised Land Value (Bldg) | 480,600 |
| Special Land Value | 0 |
| Total Appraised Parcel Value | 1,904,600 |
| Valuation Method | C |
| Total Appraised Parcel Value | 1,904,600 |

## ASSESSING NEIGHBORHOOD

| Nbhd | Nbhd Name | B | Tracing | Batch |
|---|---|---|---|---|
| 0001 | | | | |

## NOTES

M/ 6742, 3124, 9547
ABUTS MERRITT PKY (RT 15)
HOUSE CONVERTED TO CELL SITE
ELECTRONICS BLDG
6 SITES ON MONOPOLE
RD=29' (32'X32')
FST HAS DIESEL GENERATOR
10-30-13 STREET NAME CHANGE
FKA SUNNY LN - JSG

## BUILDING PERMIT RECORD

| Permit Id | Issue Date | Type | Description | Amount | Insp Date | % Comp | Date Comp | Comments |
|---|---|---|---|---|---|---|---|---|
| 80013 | 05-26-2015 | AL | Alterations | 20,000 | 09-16-2015 | 100 | | SWAP 3 ANTENNA WITH 3 N |
| 77956 | 01-17-2014 | NA | Miscellaneous | 9,000 | 07-10-2014 | 100 | | REMOVE & REPLACE 6 ANT |
| 76376 | 03-26-2013 | AL | Alterations | 25,000 | 07-10-2014 | 100 | | REMOVE 6 PANEL ANTENNA |
| 76001 | 01-16-2013 | AL | Alterations | 5,000 | 07-10-2014 | 100 | 07-15-2014 | REPLACE 6 ANTENNAS FOR |
| 73208 | 06-15-2011 | NA | Miscellaneous | 20,000 | 03-07-2012 | 100 | 01-09-2012 | ADD 2 ANTENNAS TO EXISTI |
| 71919 | 07-06-2010 | AL | Alterations | 20,000 | | 100 | 10-29-2010 | MODIFY EXISTING TELECO |
| 71407 | 02-10-2010 | AL | Alterations | 9,000 | | 100 | 01-09-2012 | REPLACE 9 ANTENNAS WIT |

## VISIT / CHANGE HISTORY

| Date | Id | Type | Is | Cd | Purpost/Result |
|---|---|---|---|---|---|
| 06-30-2020 | JW | | | 19 | Field Review |
| 03-02-2020 | VA | | | 60 | Mailer Sent |
| 09-16-2015 | MJF | 2 | | 69 | Partial Int Inspn (See Perm |
| 02-25-2015 | MJF | | | 01 | Measured/No Interior Insp |
| 01-22-2015 | VA | | | 66 | INSPECTION NOTICE SE |
| 07-10-2014 | TM | 2 | | 55 | NOAH - Visual |
| 03-07-2012 | TM | 2 | | 01 | Measured/No Interior Insp |

## LAND LINE VALUATION SECTION

| B | Use Code | Description | Zone | Land | Land Units | | Unit Price | I. Factor | Site Index | Cond. | Nbhd. | Nhbd Adj | Notes | Location Adjustment | | Adj Unit Pric | Land Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 434 | Cell Site | AAA | | 1.000 | AC | 1,080,000. | 1.00000 | C | 0.50 | C | 0.750 | CELL SITE / RES LAND | | 0 | | 405,000 |
| 1 | 434 | Cell Site | | | 0.630 | AC | 120,000.00 | 1.00000 | 0 | 1.00 | | 1.000 | | | 0 | | 75,600 |
| | | | | Total Card Land Units | 2 | AC | Parcel Total Land Area: | 2 | | | | | | | | Total Land Value | 480,600 |

Property Location 2 ALLEN RAYMOND LN | Map ID B13/ / 026/000 / | Bldg Name | State Use 434
Vision ID 4500 | Account # 8579 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 04-25-2022 10:10:55

## CONSTRUCTION DETAIL

| Element | Cd | Description |
|---|---|---|
| Style: | 68 | Res Typ Comm |
| Model | 96 | Commercial |
| Grade | 05 | Average +20 |
| Stories: | 1 | |
| Occupancy | 1.00 | |
| Exterior Wall 1 | 06 | Board & Batten |
| Exterior Wall 2 | | |
| Roof Structure | 03 | Gable |
| Roof Cover | 03 | Asphalt/F Glas |
| Interior Wall 1 | 05 | Drywall |
| Interior Wall 2 | | |
| Interior Floor 1 | 05 | Vinyl/Asphalt |
| Interior Floor 2 | | |
| Heating Fuel | 02 | Oil |
| Heating Type | 04 | Forced Air |
| AC Type | 03 | Central |
| Bldg Use | 434 | Cell Site |
| Income Adj | | |
| Heat/AC | 01 | Heat/AC Pkgs |
| Frame Type | 02 | Wood Frame |
| Baths/Plumbing | 02 | Average |
| Ceiling/Walls | 06 | Ceil & Walls |
| Rooms/Prtns | 02 | Average |
| Wall Height | 8.00 | |
| % Comn Wall | | |
| 1st Floor Use: | | |

## CONSTRUCTION DETAIL (CONTINUED)

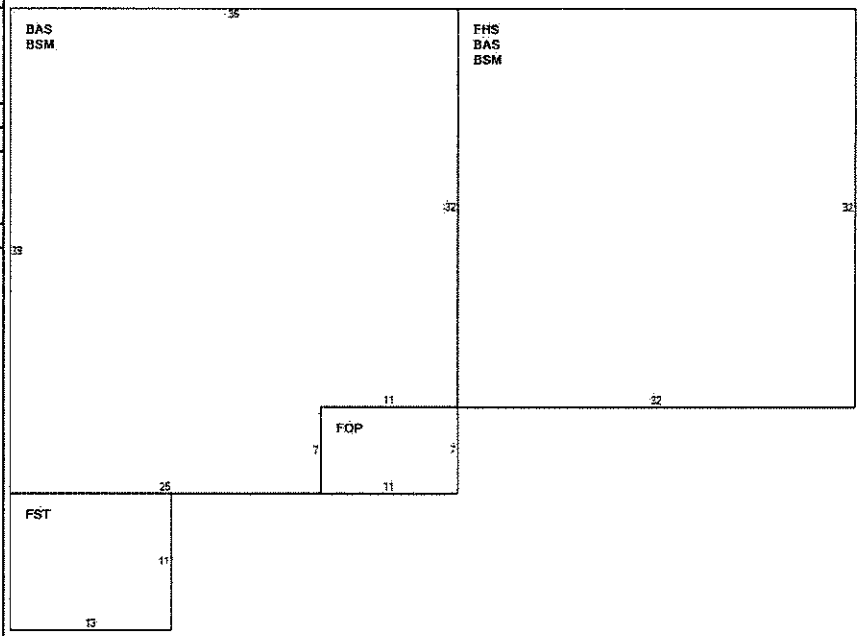
| Element | Cd | Description |
|---|---|---|
| | | |

## MIXED USE

| Code | Description | Percentage |
|---|---|---|
| 434 | Cell Site | 100 |
| | | 0 |
| | | 0 |

## COST / MARKET VALUATION

| | |
|---|---|
| RCN | 508,423 |
| Year Built | 1968 |
| Effective Year Built | |
| Depreciation Code | G |
| Remodel Rating | |
| Year Remodeled | |
| Depreciation % | 24 |
| Functional Obsol | |
| External Obsol | |
| Trend Factor | 1 |
| Condition | |
| Condition % | |
| Percent Good | 76 |
| Cns Sect Rcnld | 386,400 |
| Dep % Ovr | |
| Dep Ovr Comment | |
| Misc Imp Ovr | |
| Misc Imp Ovr Comment | |
| Cost to Cure Ovr | |
| Cost to Cure Ovr Comment | |

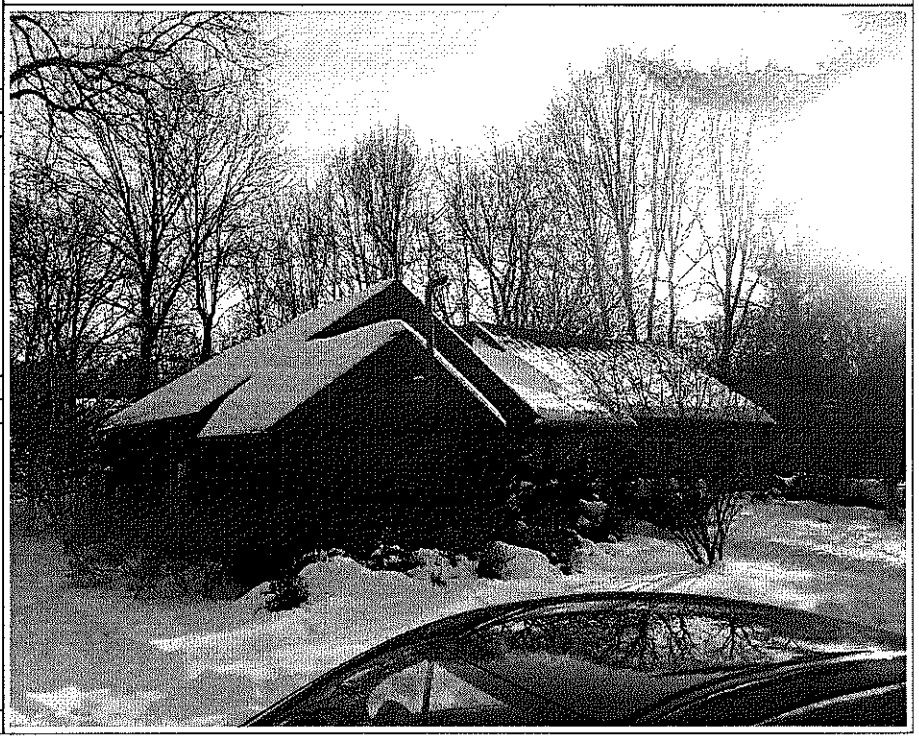



## OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

| Code | Description | L/B | Units | Unit Price | Yr Blt | Cond. Cd | % Good | Grade | Grade Adj | Appr. Value |
|---|---|---|---|---|---|---|---|---|---|---|
| CELL | Cell on TWR | L | 6 | 328000.0 | 2010 | | 100 | 00 | 1.00 | 1,037,600 |

## BUILDING SUB-AREA SUMMARY SECTION

| Code | Description | Living Area | Floor Area | Eff Area | Unit Cost | Undeprec Value |
|---|---|---|---|---|---|---|
| BAS | First Floor | 2,351 | 2,351 | | 131.55 | 309,277 |
| BSM | Basement Area | 0 | 2,351 | | 46.05 | 108,267 |
| FHS | Half Story, Finished | 512 | 1,024 | | 65.78 | 67,354 |
| FOP | Porch, Open | 0 | 77 | | 32.46 | 2,499 |
| FST | Utility Storage, Fin | 143 | 143 | | 52.44 | 7,498 |
| | Ttl Gross Liv / Lease Area | 3,006 | 5,946 | | | 494,895 |




B14085000
MERRITT PARKWAY (ROUTE 15)
EXIT 41
SUNNY LANE
B13027000
B13026000
B13024000
B13028000
B13029000
B13030000
B13031000
0
100

# EXHIBIT 3

AMERICAN TOWER®
CORPORATION

# Structural Analysis Report

| | | |
|---|---|---|
| **Structure** | : | **130 ft Monopole** |
| **ATC Site Name** | : | **CRANBURYSU CT,CT** |
| **ATC Site Number** | : | **411189** |
| **Engineering Number** | : | **OAA776064_C3_01** |
| **Proposed Carrier** | : | **AT&T MOBILITY** |
| **Carrier Site Name** | : | **Canton - Collinsville** |
| **Carrier Site Number** | : | **CT2094** |
| **Site Location** | : | **2 SUNNY LANE**<br>**WESTPORT, CT 06880-1906**<br>**41.1629, -73.3731** |
| **County** | : | **Fairfield** |
| **Date** | : | **May 31, 2022** |
| **Max Usage** | : | **37%** |
| **Result** | : | **Pass** |


Prepared By:

Faisal Wakid
Structural Engineer

Faisal Wakid

Reviewed By:

**COA : PEC.0001553**

## Table of Contents

## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 130 ft Monopole to reflect the change in loading by AT&T MOBILITY.

## Supporting Documents

| | |
|---|---|
| **Tower Drawings** | EEI Job #10847, dated June 7, 2002 |
| **Foundation Drawing** | EEI Project #10847, dated June 10, 2002 |
| **Geotechnical Report** | Clarence Welti Association Project Name 2 Sunny Lane, dated January 29, 1999 |

## 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:** | 117 mph (3-second gust) |
| **Basic Wind Speed w/ Ice:** | 50 mph (3-second gust) w/ 1.00" radial ice concurrent |
| **Code:** | ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code |
| **Exposure Category:** | B |
| **Risk Category:** | II |
| **Topographic Factor Procedure:** | Method 1 |
| **Topographic Category:** | 1 |
| **Crest Height (H):** | 0 ft |
| **Spectral Response:** | Ss = 0.23, $S_1$ = 0.06 |
| **Site Class:** | D - Stiff Soil - Default |

## 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 | Equipment | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|
| 131.0 | 1 | RFS DB-C1-12C-24AB-0Z | Triangular Platform with Handrails | (2) 0.63" (16mm) LDF4-50A<br>(6) 1 5/8" Coax<br>(2) 1 5/8" Hybriflex | VERIZON WIRELESS |
| 130.0 | 4 | Decibel DB846F65ZAXY | | | |
| 129.8 | 2 | Antel LPA-80080/6CF ___ | | | |
| 128.0 | 3 | Samsung B5/B13 RRH-BR04C | | | |
| | 3 | Samsung RT4401-48A | | | |
| | 3 | Samsung Outdoor CBRS 20W RRH –Clip-on Antenna | | | |
| | 3 | Samsung B2/B66A RRH-BR049 | | | |
| | 6 | Quintel QS6656-5 | | | |
| | 3 | Commscope TD-850B-LTE78-43 | | | |
| | 2 | Raycap RVZDC-3315-PF-48 | | | |
| | 3 | Samsung MT6407-77A | | | |
| 124.9 | 1 | Andrew Microwaves VHLP800-11 (49 lbs) | Triangular Low Profile Platform | (3) 0.78" (19.7mm) 8 AWG 6<br>(3) 1 1/4" Hybriflex Cable<br>(6) 1 5/8" Coax<br>(1) 1.7" (43.2mm) Hybrid<br>(1) 1/2" Coax<br>(2) 2" conduit | SPRINT NEXTEL |
| 124.6 | 1 | Generic 24" x 24" Junction Box | | | |
| 120.0 | 3 | Nokia 2.5G MAA - AAHC(64T64R) | | | |
| | 3 | Alcatel-Lucent 1900MHz RRH | | | |
| | 3 | Alcatel-Lucent 800MHz RRH | | | |
| | 3 | Alcatel-Lucent RRH2x50-08 | | | |
| | 3 | Commscope NNVV-65B-R4 | | | |
| 110.0 | 3 | Ericsson Radio 4449 B71 B85A | Triangular Platform with Handrails | (3) 1 1/4" (1.25"-31.8mm) Fiber<br>(3) 1.99" (50.7mm) Hybrid | T-MOBILE |
| | 3 | Ericsson 4460 BAND 2/25 | | | |
| | 3 | Ericsson Air6449 B41 | | | |
| | 3 | RFS APXVAARR24_43-U-NA20 | | | |
| 100.0 | 1 | Raycap DC6-48-60-18-8F | Triangular Low Profile Platform | (1) 0.39" (10mm) Fiber Trunk<br>(1) 0.39" (9.8mm) Cable<br>(4) 0.78" (19.7mm) 8 AWG 6 | AT&T MOBILITY |
| | 3 | Ericsson Radio 4415 B30 | | | |
| | 3 | Ericsson RRUS 8843 B2, B66A | | | |
| | 3 | Ericsson RRUS 4449 B5, B12 | | | |
| | 1 | Raycap DC9-48-60-24-8C-EV | | | |
| | 3 | CCI DMP65R-BU6DA | | | |
| 86.0 | 3 | Fujitsu TA08025-B604 | Triangular Platform with Handrails | (1) 1.75" (44.5mm) Hybrid | DISH WIRELESS L.L.C. |
| | 3 | Fujitsu TA08025-B605 | | | |
| | 1 | Commscope RDIDC-9181-PF-48 | | | |
| | 3 | JMA Wireless MX08FRO665-21 | | | |
| 75.1 | 2 | Generic 2" x 8" GPS | Triangular Low Profile Platform | - | VERIZON WIRELESS |
| 73.8 | 1 | Generic 2" x 4" GPS | Stand-Off | (1) 1/2" Coax | SPRINT NEXTEL |

## Equipment to be Removed

| Elev.[1] (ft) | Qty | Equipment | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|
| 100.0 | 1 | Generic GPS | - | (6) 1 5/8" Coax<br>(2) 3" conduit | AT&T MOBILITY |
| | 1 | Kathrein Scala 860 10006 | | | |
| | 6 | Kathrein Scala 860-10025 | | | |
| | 3 | Powerwave Allgon 7770.00 | | | |
| | 3 | CCI OPA65R-BU6D | | | |
| | 3 | CCI HPA-65R-BUU-H6 | | | |
| 60.0 | 1 | Generic GPS | Stand-Off | (1) 1/2" Coax | |

## Proposed Equipment

| Elev.[1] (ft) | Qty | Equipment | Mount Type | Lines | Carrier |
|---|---|---|---|---|---|
| 107.0 | 1 | Generic GPS | Triangular Low Profile Platform | (2) 0.39" (10mm) Fiber Trunk<br>(1) 0.78" (19.7mm) 8 AWG 6<br>(2) 0.92" (23.4mm) Cable<br>(3) 2" conduit | AT&T MOBILITY |
| 100.0 | 1 | Raycap DC6-48-60-0-8F | | | |
| | 3 | Ericsson RRUS 4478 B14 | | | |
| | 3 | Ericsson AIR 6419 B77G | | | |
| | 3 | Ericsson Air 6449 B77D | | | |
| | 3 | CCI TPA-65R-BU6DA-K | | | |
| 66.0 | 1 | Generic GPS | Stand-Off | (1) 1/2" Coax | |

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

Install proposed lines inside the pole shaft.

## Structure Usages

| Structural Component | Controlling Usage | Pass/Fail |
|---|---|---|
| Anchor Bolts | 36% | Pass |
| Shaft | 37% | Pass |
| Base Plate | 30% | Pass |

## Foundations

| Reaction Component | Analysis Reactions | % of Usage |
|---|---|---|
| Moment (Kips-Ft) | 2783.3 | 37% |
| Axial (Kips) | 64.6 | 22% |
| Shear (Kips) | 29.2 | 10% |

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) (°) |
|---|---|---|---|---|
| 124.9 | Andrew Microwaves VHLP800-11 (49 lbs) | SPRINT NEXTEL | 0.564 | 0.470 |
| 107.0 | Generic GPS | AT&T MOBILITY | 0.421 | 0.440 |
| 100.0 | Raycap DC6-48-60-0-8F | | 0.368 | 0.420 |
| | Ericsson RRUS 4478 B14 | | | |
| | Ericsson AIR 6419 B77G | | | |
| | Ericsson Air 6449 B77D | | | |
| | CCI TPA-65R-BU6DA-K | | | |
| 66.0 | Generic GPS | | 0.155 | 0.280 |

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

**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.

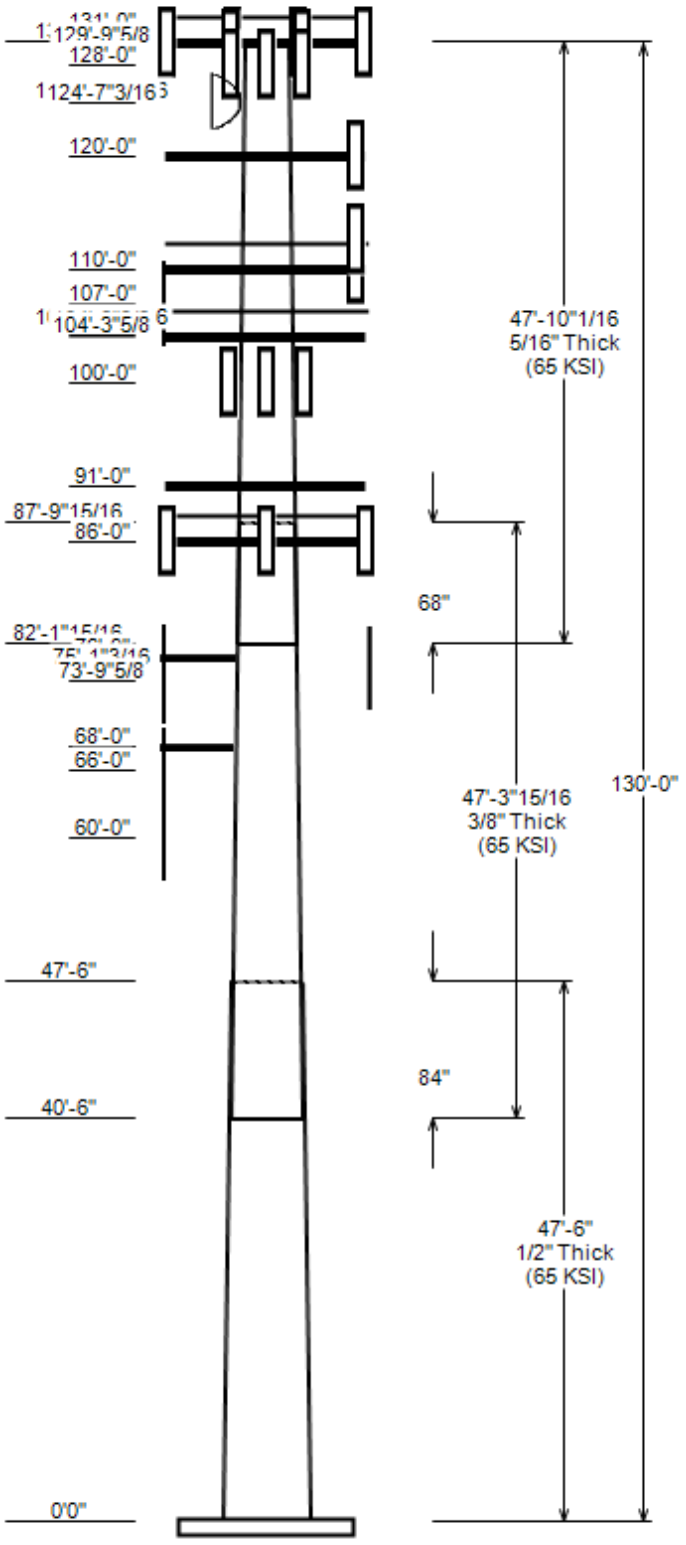
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with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

| | | | |
|---|---|---|---|
| Asset : | 411189, CRANBURYSU CT | Height : | 130 ft |
| Client : | AT&T MOBILITY | Base Width : | 62 |
| Code : | ANSI/TIA-222-H | Shape : | 18 Sides |




## SITE PARAMETERS

**Nominal Wind:** 117 mph wind with no ice **Topo Category:** 1

**Ice Wind:** 50 mph wind with 1" radial **Topo Method:** Method 1

**Base Elev (ft):** 0.00 **Taper :** 0.27100(In/ft) **Topo Feature:**

**Structure Class:** II **Exposure :** B **$S_s$ :** 0.233 **$S_1$** : 0.056

## SECTION PROPERTIES

| Shaft Section | Length (ft) | Diameter (in) Across Flats Top | Diameter (in) Across Flats Bottom | Thick (in) | Joint Type | Overlap Length (in) | Shape | Steel Grade (ksi) |
|---|---|---|---|---|---|---|---|---|
| 1 | 47.500 | 49.14 | 62.00 | 0.500 | | 0.000 | 18 Sides | 65 |
| 2 | 47.330 | 38.97 | 51.78 | 0.375 | Slip Joint | 84.000 | 18 Sides | 65 |
| 3 | 47.837 | 28.18 | 41.13 | 0.312 | Slip Joint | 68.000 | 18 Sides | 65 |

## DISCRETE APPURTENANCE

| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
|---|---|---|---|
| 131.0 | 131.0 | 1 | RFS DB-C1-12C-24AB-0Z |
| 130.0 | 130.0 | 4 | Decibel DB846F65ZAXY |
| 130.0 | 130.0 | 1 | Generic Flat Platform with Han |
| 129.8 | 129.8 | 2 | Antel LPA-80080/6CF ___ |
| 128.0 | 128.0 | 3 | Samsung Outdoor CBRS 20W RRH – |
| 128.0 | 128.0 | 3 | Samsung RT4401-48A |
| 128.0 | 128.0 | 3 | Samsung B5/B13 RRH-BR04C |
| 128.0 | 128.0 | 3 | Samsung B2/B66A RRH-BR049 |
| 128.0 | 128.0 | 3 | Commscope TD-850B-LTE78-43 |
| 128.0 | 128.0 | 2 | Raycap RVZDC-3315-PF-48 |
| 128.0 | 128.0 | 3 | Samsung MT6407-77A |
| 128.0 | 128.0 | 6 | Quintel QS6656-5 |
| 124.9 | 124.9 | 1 | Andrew Microwaves VHLP800-11 ( |
| 124.6 | 124.6 | 1 | Generic 24" x 24" Junction Box |
| 120.0 | 120.0 | 3 | Alcatel-Lucent RRH2x50-08 |
| 120.0 | 120.0 | 3 | Alcatel-Lucent 800MHz RRH |
| 120.0 | 120.0 | 3 | Alcatel-Lucent 1900MHz RRH |
| 120.0 | 120.0 | 3 | Nokia 2.5G MAA - AAHC(64T64R) |
| 120.0 | 120.0 | 3 | Commscope NNVV-65B-R4 |
| 120.0 | 120.0 | 1 | Flat Low Profile Platform |
| 110.0 | 110.0 | 3 | Ericsson Radio 4449 B71 B85A |
| 110.0 | 110.0 | 3 | Ericsson 4460 BAND 2/25 |
| 110.0 | 110.0 | 3 | Ericsson Air6449 B41 |
| 110.0 | 113.0 | 3 | RFS APXVAARR24_43-U-NA20 |
| 110.0 | 110.0 | 1 | Generic Flat Platform with Han |
| 107.0 | 107.0 | 1 | Generic GPS |
| 104.9 | 108.9 | 1 | Raycap DC6-48-60-18-8F |
| 104.8 | 104.8 | 3 | Ericsson Radio 4415 B30 |
| 104.7 | 104.7 | 3 | Ericsson RRUS 8843 B2, B66A |
| 104.7 | 104.7 | 3 | Ericsson RRUS 4449 B5, B12 |
| 104.3 | 104.3 | 1 | Raycap DC9-48-60-24-8C-EV |
| 104.0 | 104.0 | 1 | Generic Flat Platform with Han |
| 100.0 | 100.0 | 1 | Raycap DC6-48-60-0-8F |
| 100.0 | 100.0 | 3 | Ericsson RRUS 4478 B14 |
| 100.0 | 100.0 | 3 | Ericsson AIR 6419 B77G |
| 100.0 | 100.0 | 3 | Ericsson Air 6449 B77D |
| 100.0 | 100.0 | 3 | CCI DMP65R-BU6DA |
| 100.0 | 100.0 | 3 | CCI TPA-65R-BU6DA-K |
| 91.0 | 91.0 | 1 | Empty Flat Low Profile Platfor |
| 86.0 | 86.0 | 1 | Commscope RDIDC-9181-PF-48 |
| 86.0 | 86.0 | 3 | Fujitsu TA08025-B604 |
| 86.0 | 86.0 | 3 | Fujitsu TA08025-B605 |
| 86.0 | 86.0 | 3 | JMA Wireless MX08FRO665-21 |
| 86.0 | 86.0 | 1 | Generic Flat Platform with Han |

## JOB INFORMATION

| | | | |
|---|---|---|---|
| Asset : | 411189, CRANBURYSU CT | Height : | 130 ft |
| Client : | AT&T MOBILITY | Base Width : | 62 |
| Code : | ANSI/TIA-222-H | Shape : | 18 Sides |

### DISCRETE APPURTENANCE

| Attach Elev (ft) | Force Elev (ft) | Qty | Description |
|---|---|---|---|
| 76.0 | 76.0 | 1 | Stand-Off |
| 75.1 | 75.1 | 2 | Generic 2" x 8" GPS |
| 73.8 | 73.8 | 1 | Generic 2" x 4" GPS |
| 68.0 | 68.0 | 1 | Side Arm |
| 66.0 | 66.0 | 1 | Generic GPS |
| 60.0 | 60.0 | 1 | Generic GPS |

### LINEAR APPURTENANCE

| Elev From (ft) | Elev To (ft) | Description | Exp To Wind |
|---|---|---|---|
| 0.0 | 128.0 | 1 5/8" Hybriflex | No |
| 0.0 | 128.0 | 1 5/8" Coax | Yes |
| 0.0 | 128.0 | 0.63" (16mm) LDF4-50A | No |
| 0.0 | 120.0 | 2" conduit | No |
| 0.0 | 120.0 | 1/2" Coax | No |
| 0.0 | 120.0 | 1.7" (43.2mm) Hybrid | No |
| 0.0 | 120.0 | 1 5/8" Coax | No |
| 0.0 | 120.0 | 1 1/4" Hybriflex Cable | No |
| 0.0 | 120.0 | 0.78" (19.7mm) 8 AWG 6 | No |
| 0.0 | 110.0 | 1.99" (50.7mm) Hybrid | No |
| 0.0 | 110.0 | 1 1/4" (1.25"- 31.8mm) Fiber | No |
| 0.0 | 100.0 | 2" conduit | No |
| 0.0 | 100.0 | 0.92" (23.4mm) Cable | No |
| 0.0 | 100.0 | 0.78" (19.7mm) 8 AWG 6 | No |
| 0.0 | 100.0 | 0.78" (19.7mm) 8 AWG 6 | No |
| 0.0 | 100.0 | 0.39" (9.8mm) Cable | No |
| 0.0 | 100.0 | 0.39" (10mm) Fiber Trunk | No |
| 0.0 | 100.0 | 0.39" (10mm) Fiber Trunk | No |
| 0.0 | 86.0 | 1.75" (44.5mm) Hybrid | No |
| 0.0 | 73.0 | 1/2" Coax | No |
| 0.0 | 66.0 | 1/2" Coax | No |
| 0.0 | 60.0 | 1/2" Coax | No |

### LOAD CASES

| | |
|---|---|
| 1.2D + 1.0W Normal | 117 mph wind with no ice |
| 0.9D + 1.0W Normal | 117 mph wind with no ice |
| 1.2D + 1.0Di + 1.0Wi Nor | 50 mph wind with 1" radial ice |
| 1.2D + 1.0Ev + 1.0Eh Nor | Seismic |
| 0.9D - 1.0Ev + 1.0Eh Nor | Seismic (Reduced DL) |
| 1.0D + 1.0W Service Norm | 60 mph Wind with No Ice |

### REACTIONS

| Load Case | Moment (kip-ft) | Shear (Kip) | Axial (Kip) |
|---|---|---|---|
| 1.2D + 1.0W Normal | 2783.30 | 29.21 | 64.63 |
| 0.9D + 1.0W Normal | 2765.59 | 29.19 | 48.47 |
| 1.2D + 1.0Di + 1.0Wi Normal | 705.63 | 7.63 | 83.88 |
| 1.2D + 1.0Ev + 1.0Eh Normal | 200.51 | 1.97 | 64.93 |
| 0.9D - 1.0Ev + 1.0Eh Normal | 198.87 | 1.97 | 44.18 |
| 1.0D + 1.0W Service Normal | 652.16 | 6.87 | 53.87 |

### DISH DEFLECTIONS

| Load Case | Attach Elev (ft) | Deflection (in) | Rotation (deg) |
|---|---|---|---|
| 1.0D + 1.0W Service Normal | 124.90 | 6.772 | 0.469 |

## ANALYSIS PARAMETERS

| | | | |
|---|---|---|---|
| **Location:** | Fairfield County,CT | **Height:** | 130 ft |
| **Type and Shape:** | Taper, 18 Sides | **Base Diameter:** | 62.00 in |
| **Manufacturer:** | EEI | **Top Diameter:** | 28.18 in |
| **$K_d$ (non-service):** | 0.95 | **Taper:** | 0.2710 in/ft |
| **$K_e$:** | 1.00 | **Rotation:** | 0.000° |

## ICE & WIND PARAMETERS

| | | | |
|---|---|---|---|
| **Exposure Category:** | B | **Design Wind Speed w/o Ice:** | 117 mph |
| **Risk Category:** | II | **Design Wind Speed w/Ice:** | 50 mph |
| **Topo Factor Procedure:** | Method 1 | **Operational Wind Speed:** | 60 mph |
| **Topographic Category:** | 1 | **Design Ice Thickness:** | 1.00 in |
| **Crest Height:** | 0 ft | **HMSL:** | 51.00 ft |

## SEISMIC PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| **Analysis Method:** | Equivalent Lateral Force Method | | | | |
| **Site Class:** | D - Stiff Soil | | | **Period Based on Rayleigh Method (sec):** | 1.63 |
| **$T_L$ (sec):** | 6 | **P:** | 1 | **$C_s$:** | 0.037 |
| **$S_s$:** | 0.233 | **$S_1$:** | 0.056 | **$C_s$ Max:** | 0.037 |
| **$F_a$:** | 1.600 | **$F_v$:** | 2.400 | **$C_s$ Min:** | 0.030 |
| **$S_{ds}$:** | 0.249 | **$S_{d1}$:** | 0.090 | | |

## LOAD CASES

| | |
|---|---|
| 1.2D + 1.0W Normal | 117 mph wind with no ice |
| 0.9D + 1.0W Normal | 117 mph wind with no ice |
| 1.2D + 1.0Di + 1.0Wi Normal | 50 mph wind with 1" radial ice |
| 1.2D + 1.0Ev + 1.0Eh Normal | Seismic |
| 0.9D - 1.0Ev + 1.0Eh Normal | Seismic (Reduced DL) |
| 1.0D + 1.0W Service Normal | 60 mph Wind with No Ice |

## 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 (in) | Top Area (in²) | Top Ix (in⁴) | Top W/t Ratio | Top D/t Ratio | Taper (in/ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-18 | 47.50 | 0.5000 | 65 | | 0.00 | 14,125 | 62.00 | 0.000 | 97.60 | 46,638.0 | 20.45 | 124.00 | 49.14 | 47.50 | 77.19 | 23,072.0 | 15.92 | 98.28 | 0.2707 |
| 2-18 | 47.33 | 0.3750 | 65 | Slip | 84.00 | 8,626 | 51.78 | 40.500 | 61.19 | 20,432.2 | 22.94 | 138.09 | 38.97 | 87.83 | 45.94 | 8,645.4 | 16.91 | 103.92 | 0.2707 |
| 3-18 | 47.84 | 0.3125 | 65 | Slip | 68.00 | 5,544 | 41.13 | 82.163 | 40.48 | 8,521.7 | 21.80 | 131.62 | 28.18 | 130.00 | 27.64 | 2,711.5 | 14.49 | 90.17 | 0.2707 |
| | | | | Shaft Weight | | 28,295 | | | | | | | | | | | | | |

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 131.00 | RFS DB-C1-12C-24AB-0Z | 1 | 1.00 | 0.000 | 32.00 | 4.056 | 1.00 | 115.69 | 4.955 | 1.00 |
| 130.00 | Generic Flat Platform with Han | 1 | 1.00 | 0.000 | 2500.00 | 42.400 | 1.00 | 3669.79 | 56.210 | 1.00 |
| 130.00 | Decibel DB846F65ZAXY | 4 | 1.00 | 0.000 | 21.00 | 7.030 | 0.75 | 133.14 | 8.804 | 0.75 |
| 129.80 | Antel LPA-80080/6CF ___ | 2 | 1.00 | 0.000 | 21.00 | 8.628 | 0.71 | 140.51 | 5.076 | 0.71 |
| 128.00 | Samsung MT6407-77A | 3 | 0.75 | 0.000 | 81.60 | 4.709 | 0.61 | 148.54 | 5.707 | 0.61 |
| 128.00 | Samsung B5/B13 RRH-BR04C | 3 | 0.75 | 0.000 | 70.30 | 1.875 | 0.50 | 107.87 | 2.468 | 0.50 |
| 128.00 | Commscope TD-850B-LTE78-43 | 3 | 0.75 | 0.000 | 53.00 | 1.964 | 0.50 | 87.92 | 2.569 | 0.50 |
| 128.00 | Samsung B2/B66A RRH-BR049 | 3 | 0.75 | 0.000 | 84.40 | 1.875 | 0.50 | 126.30 | 2.468 | 0.50 |
| 128.00 | Quintel QS6656-5 | 6 | 0.75 | 0.000 | 65.00 | 8.133 | 0.74 | 195.85 | 9.964 | 0.74 |
| 128.00 | Raycap RVZDC-3315-PF-48 | 2 | 0.75 | 0.000 | 21.40 | 2.512 | 0.67 | 73.71 | 3.196 | 0.67 |
| 128.00 | Samsung RT4401-48A | 3 | 0.75 | 0.000 | 18.60 | 0.996 | 0.50 | 36.33 | 1.445 | 0.50 |
| 128.00 | Samsung Outdoor CBRS 20W RRH – | 3 | 0.75 | 0.000 | 4.40 | 0.892 | 0.50 | 16.22 | 1.312 | 0.50 |
| 124.90 | Andrew Microwaves VHLP800-11 ( | 1 | 1.00 | 0.000 | 49.00 | 7.760 | 1.00 | 153.42 | 8.831 | 1.00 |
| 124.60 | Generic 24" x 24" Junction Box | 1 | 0.80 | 0.000 | 20.00 | 4.800 | 1.00 | 95.15 | 5.730 | 1.00 |
| 120.00 | Nokia 2.5G MAA - AAHC(64T64R) | 3 | 0.80 | 0.000 | 103.60 | 4.203 | 0.64 | 177.09 | 5.077 | 0.64 |
| 120.00 | Commscope NNVV-65B-R4 | 3 | 0.80 | 0.000 | 77.40 | 12.271 | 0.64 | 241.21 | 14.099 | 0.64 |
| 120.00 | Flat Low Profile Platform | 1 | 1.00 | 0.000 | 1500.00 | 26.100 | 1.00 | 1922.37 | 38.546 | 1.00 |
| 120.00 | Alcatel-Lucent 1900MHz RRH | 3 | 0.80 | 0.000 | 44.00 | 3.258 | 0.72 | 115.02 | 4.033 | 0.72 |
| 120.00 | Alcatel-Lucent 800MHz RRH | 3 | 0.80 | 0.000 | 53.00 | 2.134 | 0.67 | 101.12 | 2.772 | 0.67 |
| 120.00 | Alcatel-Lucent RRH2x50-08 | 3 | 0.80 | 0.000 | 52.90 | 1.701 | 0.50 | 91.53 | 2.263 | 0.50 |
| 110.00 | Generic Flat Platform with Han | 1 | 1.00 | 0.000 | 2500.00 | 42.400 | 1.00 | 3648.93 | 55.964 | 1.00 |
| 110.00 | RFS APXVAARR24_43-U-NA20 | 3 | 0.75 | 3.000 | 127.90 | 20.243 | 0.63 | 381.80 | 22.642 | 0.63 |
| 110.00 | Ericsson Air6449 B41 | 3 | 0.75 | 0.000 | 104.00 | 5.682 | 0.63 | 192.14 | 6.709 | 0.63 |
| 110.00 | Ericsson Radio 4449 B71 B85A | 3 | 0.75 | 0.000 | 75.00 | 1.650 | 0.50 | 113.89 | 2.199 | 0.50 |
| 110.00 | Ericsson 4460 BAND 2/25 | 3 | 0.75 | 0.000 | 109.00 | 2.564 | 0.67 | 166.17 | 3.246 | 0.67 |
| 107.00 | Generic GPS | 1 | 0.75 | 0.000 | 10.00 | 0.900 | 1.00 | 28.88 | 1.313 | 1.00 |
| 104.90 | Raycap DC6-48-60-18-8F | 1 | 0.75 | 4.000 | 20.00 | 1.260 | 1.00 | 53.94 | 1.684 | 1.00 |
| 104.80 | Ericsson Radio 4415 B30 | 3 | 0.75 | 0.000 | 43.00 | 1.650 | 0.50 | 70.16 | 2.197 | 0.50 |
| 104.70 | Ericsson RRUS 4449 B5, B12 | 3 | 0.75 | 0.000 | 71.00 | 1.969 | 0.50 | 112.53 | 2.570 | 0.50 |
| 104.70 | Ericsson RRUS 8843 B2, B66A | 3 | 0.75 | 0.000 | 72.00 | 1.639 | 0.50 | 111.49 | 2.183 | 0.50 |
| 104.30 | Raycap DC9-48-60-24-8C-EV | 1 | 0.75 | 0.000 | 16.00 | 4.788 | 1.00 | 99.15 | 5.735 | 1.00 |
| 104.00 | Generic Flat Platform with Han | 1 | 1.00 | 0.000 | 2500.00 | 42.400 | 1.00 | 3641.85 | 55.880 | 1.00 |
| 100.00 | Ericsson AIR 6419 B77G | 3 | 0.80 | 0.000 | 66.10 | 3.797 | 0.65 | 128.18 | 4.640 | 0.65 |
| 100.00 | CCI DMP65R-BU6DA | 3 | 0.75 | 0.000 | 79.40 | 12.709 | 0.63 | 244.23 | 14.494 | 0.63 |
| 100.00 | CCI TPA-65R-BU6DA-K | 3 | 0.80 | 0.000 | 79.60 | 15.270 | 0.60 | 271.17 | 17.101 | 0.60 |
| 100.00 | Raycap DC6-48-60-0-8F | 1 | 0.80 | 0.000 | 32.80 | 1.360 | 1.00 | 70.00 | 1.784 | 1.00 |
| 100.00 | Ericsson RRUS 4478 B14 | 3 | 0.80 | 0.000 | 59.90 | 1.842 | 0.50 | 95.28 | 2.416 | 0.50 |
| 100.00 | Ericsson Air 6449 B77D | 3 | 0.80 | 0.000 | 81.60 | 4.028 | 0.65 | 147.40 | 4.908 | 0.65 |
| 91.00 | Empty Flat Low Profile Platfor | 1 | 1.00 | 0.000 | 1500.00 | 26.100 | 1.00 | 1911.49 | 38.226 | 1.00 |
| 86.00 | Generic Flat Platform with Han | 1 | 1.00 | 0.000 | 2500.00 | 42.400 | 1.00 | 3621.88 | 55.644 | 1.00 |
| 86.00 | Fujitsu TA08025-B605 | 3 | 0.75 | 0.000 | 75.00 | 1.962 | 0.50 | 114.56 | 2.543 | 0.50 |
| 86.00 | Fujitsu TA08025-B604 | 3 | 0.75 | 0.000 | 63.90 | 1.962 | 0.50 | 100.73 | 2.543 | 0.50 |
| 86.00 | Commscope RDIDC-9181-PF-48 | 1 | 0.75 | 0.000 | 21.90 | 1.867 | 1.00 | 57.84 | 2.435 | 1.00 |
| 86.00 | JMA Wireless MX08FRO665-21 | 3 | 0.75 | 0.000 | 64.50 | 12.489 | 0.64 | 226.82 | 14.264 | 0.64 |
| 76.00 | Stand-Off | 1 | 1.00 | 0.000 | 100.00 | 3.000 | 1.00 | 130.42 | 3.978 | 1.00 |
| 75.10 | Generic 2" x 8" GPS | 2 | 1.00 | 0.000 | 10.00 | 0.141 | 1.00 | 13.45 | 0.352 | 1.00 |
| 73.80 | Generic 2" x 4" GPS | 1 | 1.00 | 0.000 | 5.00 | 0.040 | 1.00 | 6.60 | 0.116 | 1.00 |
| 68.00 | Side Arm | 1 | 1.00 | 0.000 | 126.00 | 5.000 | 1.00 | 180.10 | 7.147 | 1.00 |
| 66.00 | Generic GPS | 1 | 1.00 | 0.000 | 10.00 | 0.900 | 1.00 | 27.99 | 1.293 | 1.00 |
| 60.00 | Generic GPS | 1 | 1.00 | 0.000 | 10.00 | 0.900 | 1.00 | 27.76 | 1.288 | 1.00 |
| Totals | Num Loadings: 50 | 113 | | | 19,476.80 | | | 32,803.35 | | |

## LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

| 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 | 128.00 | 6 | 1 5/8" Coax | 1.98 | 0.82 | N | 6 | 0 | 0 | 90 | 0 | Y | VERIZON WIREL |
| 0.00 | 128.00 | 2 | 1 5/8" Hybriflex | 1.98 | 1.3 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIREL |
| 0.00 | 128.00 | 2 | 0.63" (16mm) LDF4-50A | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIREL |
| 0.00 | 120.00 | 6 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 120.00 | 3 | 1 1/4" Hybriflex Cabl | 1.54 | 1 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 120.00 | 3 | 0.78" (19.7mm) 8 AWG | 0.78 | 0.59 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 120.00 | 2 | 2" conduit | 2.38 | 3.65 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 120.00 | 1 | 1.7" (43.2mm) Hybrid | 1.7 | 1.78 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 120.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 110.00 | 3 | 1.99" (50.7mm) Hybrid | 1.99 | 1.9 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 0.00 | 110.00 | 3 | 1 1/4" (1.25"- 31.8mm | 1.25 | 1.05 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 0.00 | 100.00 | 4 | 0.78" (19.7mm) 8 AWG | 0.78 | 0.59 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 3 | 2" conduit | 2.38 | 3.65 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 2 | 0.92" (23.4mm) Cable | 0.92 | 0.89 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 2 | 0.39" (10mm) Fiber Tr | 0.39 | 0.06 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 0.78" (19.7mm) 8 AWG | 0.78 | 0.59 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 0.39" (10mm) Fiber Tr | 0.39 | 0.06 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 100.00 | 1 | 0.39" (9.8mm) Cable | 0.39 | 0.07 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 86.00 | 1 | 1.75" (44.5mm) Hybrid | 1.75 | 2.72 | N | 0 | 0 | 0 | 0 | 0 | N | DISH WIRELESS |
| 0.00 | 73.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | SPRINT NEXTEL |
| 0.00 | 66.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 60.00 | 1 | 1/2" Coax | 0.63 | 0.15 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |

## 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 | | 0.5000 | 62.000 | 97.597 | 46,638.00 | 20.45 | 124.00 | 77.3 | 1481.6 | 0.0 | 0.0 |
| 5.00 | | 0.5000 | 60.646 | 95.449 | 43,625.50 | 19.98 | 121.29 | 77.9 | 1416.8 | 0.0 | 1,642.2 |
| 10.00 | | 0.5000 | 59.293 | 93.300 | 40,745.70 | 19.50 | 118.59 | 78.5 | 1353.5 | 0.0 | 1,605.7 |
| 15.00 | | 0.5000 | 57.939 | 91.152 | 37,995.40 | 19.02 | 115.88 | 79 | 1291.6 | 0.0 | 1,569.1 |
| 20.00 | | 0.5000 | 56.585 | 89.004 | 35,371.80 | 18.54 | 113.17 | 79.6 | 1231.2 | 0.0 | 1,532.6 |
| 25.00 | | 0.5000 | 55.231 | 86.856 | 32,871.80 | 18.07 | 110.46 | 80.2 | 1172.2 | 0.0 | 1,496.0 |
| 30.00 | | 0.5000 | 53.878 | 84.707 | 30,492.50 | 17.59 | 107.76 | 80.7 | 1114.7 | 0.0 | 1,459.5 |
| 35.00 | | 0.5000 | 52.524 | 82.559 | 28,230.90 | 17.11 | 105.05 | 81.3 | 1058.6 | 0.0 | 1,422.9 |
| 40.00 | | 0.5000 | 51.170 | 80.411 | 26,083.90 | 16.63 | 102.34 | 81.8 | 1004.0 | 0.0 | 1,386.4 |
| 40.50 | Bot - Section 2 | 0.5000 | 51.035 | 80.196 | 25,875.40 | 16.59 | 102.07 | 81.9 | 998.6 | 0.0 | 136.6 |
| 45.00 | | 0.5000 | 49.816 | 78.262 | 24,048.70 | 16.16 | 99.63 | 82.4 | 950.8 | 0.0 | 2,139.0 |
| 47.50 | Top - Section 1 | 0.3750 | 49.890 | 58.933 | 18,254.80 | 22.05 | 133.04 | 75.5 | 720.7 | 0.0 | 1,166.0 |
| 50.00 | | 0.3750 | 49.213 | 58.127 | 17,516.30 | 21.73 | 131.23 | 75.8 | 701.0 | 0.0 | 497.9 |
| 55.00 | | 0.3750 | 47.859 | 56.516 | 16,099.70 | 21.09 | 127.62 | 76.6 | 662.6 | 0.0 | 975.3 |
| 60.00 | | 0.3750 | 46.505 | 54.905 | 14,761.70 | 20.46 | 124.01 | 77.3 | 625.2 | 0.0 | 947.8 |
| 65.00 | | 0.3750 | 45.152 | 53.293 | 13,499.90 | 19.82 | 120.40 | 78.1 | 588.9 | 0.0 | 920.4 |
| 66.00 | | 0.3750 | 44.881 | 52.971 | 13,256.40 | 19.69 | 119.68 | 78.2 | 581.8 | 0.0 | 180.8 |
| 68.00 | | 0.3750 | 44.339 | 52.327 | 12,778.40 | 19.44 | 118.24 | 78.5 | 567.6 | 0.0 | 358.3 |
| 70.00 | | 0.3750 | 43.798 | 51.682 | 12,312.10 | 19.18 | 116.79 | 78.8 | 553.7 | 0.0 | 353.9 |
| 73.80 | | 0.3750 | 42.769 | 50.458 | 11,457.50 | 18.70 | 114.05 | 79.4 | 527.6 | 0.0 | 660.4 |
| 75.00 | | 0.3750 | 42.444 | 50.071 | 11,196.10 | 18.55 | 113.18 | 79.6 | 519.6 | 0.0 | 205.2 |
| 75.10 | | 0.3750 | 42.417 | 50.039 | 11,174.50 | 18.53 | 113.11 | 79.6 | 518.9 | 0.0 | 17.0 |
| 76.00 | | 0.3750 | 42.173 | 49.749 | 10,981.30 | 18.42 | 112.46 | 79.7 | 512.9 | 0.0 | 152.8 |
| 80.00 | | 0.3750 | 41.090 | 48.460 | 10,149.70 | 17.91 | 109.57 | 80.3 | 486.5 | 0.0 | 668.4 |
| 82.16 | Bot - Section 3 | 0.3750 | 40.505 | 47.763 | 9,717.90 | 17.63 | 108.01 | 80.7 | 472.6 | 0.0 | 354.2 |
| 85.00 | | 0.3750 | 39.737 | 46.849 | 9,170.60 | 17.27 | 105.96 | 81.1 | 454.6 | 0.0 | 843.7 |
| 86.00 | | 0.3750 | 39.466 | 46.526 | 8,982.70 | 17.15 | 105.24 | 81.2 | 448.3 | 0.0 | 293.6 |
| 87.83 | Top - Section 2 | 0.3125 | 39.596 | 38.962 | 7,596.40 | 20.93 | 126.71 | 76.8 | 377.9 | 0.0 | 532.0 |
| 90.00 | | 0.3125 | 39.008 | 38.380 | 7,260.60 | 20.60 | 124.83 | 77.2 | 366.6 | 0.0 | 285.5 |
| 91.00 | | 0.3125 | 38.737 | 38.111 | 7,109.30 | 20.45 | 123.96 | 77.4 | 361.5 | 0.0 | 130.1 |
| 95.00 | | 0.3125 | 37.654 | 37.037 | 6,525.00 | 19.84 | 120.49 | 78.1 | 341.3 | 0.0 | 511.4 |
| 100.00 | | 0.3125 | 36.301 | 35.694 | 5,840.80 | 19.07 | 116.16 | 79 | 316.9 | 0.0 | 618.7 |
| 104.00 | | 0.3125 | 35.218 | 34.620 | 5,329.20 | 18.46 | 112.70 | 79.7 | 298.0 | 0.0 | 478.5 |
| 104.30 | | 0.3125 | 35.136 | 34.540 | 5,292.10 | 18.41 | 112.44 | 79.7 | 296.7 | 0.0 | 35.3 |
| 104.70 | | 0.3125 | 35.028 | 34.432 | 5,242.80 | 18.35 | 112.09 | 79.8 | 294.8 | 0.0 | 46.9 |
| 104.80 | | 0.3125 | 35.001 | 34.405 | 5,230.60 | 18.34 | 112.00 | 79.8 | 294.3 | 0.0 | 11.7 |
| 104.90 | | 0.3125 | 34.974 | 34.379 | 5,218.30 | 18.32 | 111.92 | 79.8 | 293.9 | 0.0 | 11.7 |
| 105.00 | | 0.3125 | 34.947 | 34.352 | 5,206.10 | 18.31 | 111.83 | 79.9 | 293.4 | 0.0 | 11.7 |
| 107.00 | | 0.3125 | 34.405 | 33.815 | 4,965.70 | 18.00 | 110.10 | 80.2 | 284.3 | 0.0 | 232.0 |
| 110.00 | | 0.3125 | 33.593 | 33.009 | 4,619.20 | 17.54 | 107.50 | 80.8 | 270.8 | 0.0 | 341.1 |
| 115.00 | | 0.3125 | 32.239 | 31.666 | 4,078.20 | 16.78 | 103.17 | 81.7 | 249.1 | 0.0 | 550.2 |
| 120.00 | | 0.3125 | 30.886 | 30.324 | 3,581.10 | 16.02 | 98.83 | 82.6 | 228.4 | 0.0 | 527.3 |
| 124.60 | | 0.3125 | 29.640 | 29.088 | 3,161.00 | 15.31 | 94.85 | 82.6 | 210.1 | 0.0 | 465.0 |
| 124.90 | | 0.3125 | 29.559 | 29.008 | 3,134.80 | 15.27 | 94.59 | 82.6 | 208.9 | 0.0 | 29.7 |
| 125.00 | | 0.3125 | 29.532 | 28.981 | 3,126.10 | 15.25 | 94.50 | 82.6 | 208.5 | 0.0 | 9.9 |
| 128.00 | | 0.3125 | 28.720 | 28.175 | 2,872.60 | 14.79 | 91.90 | 82.6 | 197.0 | 0.0 | 291.7 |
| 129.80 | | 0.3125 | 28.232 | 27.692 | 2,727.30 | 14.52 | 90.34 | 82.6 | 190.3 | 0.0 | 171.1 |
| 130.00 | | 0.3125 | 28.178 | 27.638 | 2,711.50 | 14.49 | 90.17 | 82.6 | 189.5 | 0.0 | 18.8 |
| | | | | | | | | Totals: | | | 28,296.0 |

Load Case: 1.2D + 1.0W Normal 117 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
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 | -64.63 | -29.21 | 0.00 | -2,783.3 | 0.00 | 2,783.30 | 6,793.61 | 1,712.83 | 9,514.56 | 8,594.34 | 0 | 0 | 0.334 |
| 5.00 | -62.29 | -28.82 | 0.00 | -2,637.3 | 0.00 | 2,637.28 | 6,692.31 | 1,675.12 | 9,100.36 | 8,278.33 | 0.04 | -0.08 | 0.328 |
| 10.00 | -59.99 | -28.43 | 0.00 | -2,493.2 | 0.00 | 2,493.20 | 6,588.83 | 1,637.42 | 8,695.37 | 7,965.37 | 0.18 | -0.17 | 0.322 |
| 15.00 | -57.74 | -28.05 | 0.00 | -2,351.0 | 0.00 | 2,351.05 | 6,483.18 | 1,599.72 | 8,299.60 | 7,655.67 | 0.4 | -0.25 | 0.316 |
| 20.00 | -55.53 | -27.68 | 0.00 | -2,210.8 | 0.00 | 2,210.80 | 6,375.36 | 1,562.02 | 7,913.05 | 7,349.39 | 0.71 | -0.34 | 0.310 |
| 25.00 | -53.37 | -27.31 | 0.00 | -2,072.4 | 0.00 | 2,072.43 | 6,265.37 | 1,524.32 | 7,535.72 | 7,046.72 | 1.11 | -0.42 | 0.303 |
| 30.00 | -51.26 | -26.94 | 0.00 | -1,935.9 | 0.00 | 1,935.91 | 6,153.21 | 1,486.61 | 7,167.60 | 6,747.85 | 1.59 | -0.51 | 0.296 |
| 35.00 | -49.18 | -26.56 | 0.00 | -1,801.2 | 0.00 | 1,801.24 | 6,038.88 | 1,448.91 | 6,808.70 | 6,452.96 | 2.18 | -0.6 | 0.288 |
| 40.00 | -47.17 | -26.33 | 0.00 | -1,668.5 | 0.00 | 1,668.46 | 5,922.38 | 1,411.21 | 6,459.02 | 6,162.22 | 2.85 | -0.68 | 0.279 |
| 40.50 | -46.96 | -26.14 | 0.00 | -1,655.3 | 0.00 | 1,655.29 | 5,910.61 | 1,407.44 | 6,424.56 | 6,133.39 | 2.92 | -0.69 | 0.278 |
| 45.00 | -44.07 | -25.84 | 0.00 | -1,537.6 | 0.00 | 1,537.65 | 5,803.70 | 1,373.51 | 6,118.56 | 5,875.83 | 3.61 | -0.77 | 0.270 |
| 47.50 | -42.49 | -25.63 | 0.00 | -1,473.0 | 0.00 | 1,473.05 | 4,002.81 | 1,034.27 | 4,625.51 | 4,079.20 | 4.03 | -0.82 | 0.372 |
| 50.00 | -41.70 | -25.33 | 0.00 | -1,409.0 | 0.00 | 1,408.98 | 3,967.67 | 1,020.13 | 4,499.93 | 3,987.71 | 4.47 | -0.86 | 0.364 |
| 55.00 | -40.16 | -24.94 | 0.00 | -1,282.3 | 0.00 | 1,282.31 | 3,895.77 | 991.85 | 4,253.95 | 3,806.08 | 5.43 | -0.97 | 0.348 |
| 60.00 | -38.65 | -24.51 | 0.00 | -1,157.6 | 0.00 | 1,157.63 | 3,821.70 | 963.58 | 4,014.88 | 3,626.44 | 6.5 | -1.08 | 0.330 |
| 65.00 | -37.20 | -24.25 | 0.00 | -1,035.1 | 0.00 | 1,035.10 | 3,745.46 | 935.30 | 3,782.73 | 3,448.96 | 7.69 | -1.18 | 0.311 |
| 66.00 | -36.89 | -24.10 | 0.00 | -1,010.8 | 0.00 | 1,010.85 | 3,729.95 | 929.64 | 3,737.13 | 3,413.73 | 7.94 | -1.2 | 0.307 |
| 68.00 | -36.17 | -23.78 | 0.00 | -962.6 | 0.00 | 962.65 | 3,698.67 | 918.33 | 3,646.76 | 3,343.58 | 8.46 | -1.25 | 0.298 |
| 70.00 | -35.60 | -23.54 | 0.00 | -915.1 | 0.00 | 915.10 | 3,667.05 | 907.02 | 3,557.49 | 3,273.81 | 8.99 | -1.29 | 0.290 |
| 73.80 | -34.54 | -23.33 | 0.00 | -825.6 | 0.00 | 825.63 | 3,606.00 | 885.53 | 3,390.93 | 3,142.39 | 10.05 | -1.37 | 0.273 |
| 75.00 | -34.21 | -23.27 | 0.00 | -797.6 | 0.00 | 797.63 | 3,586.46 | 878.75 | 3,339.16 | 3,101.20 | 10.39 | -1.39 | 0.267 |
| 75.10 | -34.15 | -23.23 | 0.00 | -795.3 | 0.00 | 795.31 | 3,584.83 | 878.18 | 3,334.87 | 3,097.77 | 10.42 | -1.39 | 0.267 |
| 76.00 | -33.78 | -22.93 | 0.00 | -774.4 | 0.00 | 774.40 | 3,570.09 | 873.09 | 3,296.33 | 3,066.99 | 10.69 | -1.41 | 0.263 |
| 80.00 | -32.70 | -22.67 | 0.00 | -682.7 | 0.00 | 682.68 | 3,503.71 | 850.47 | 3,127.75 | 2,931.29 | 11.9 | -1.49 | 0.243 |
| 82.16 | -32.13 | -22.47 | 0.00 | -633.6 | 0.00 | 633.63 | 3,467.23 | 838.23 | 3,038.42 | 2,858.66 | 12.58 | -1.53 | 0.232 |
| 85.00 | -30.92 | -22.29 | 0.00 | -569.9 | 0.00 | 569.90 | 3,418.78 | 822.19 | 2,923.25 | 2,764.27 | 13.51 | -1.58 | 0.216 |
| 86.00 | -26.80 | -19.77 | 0.00 | -547.6 | 0.00 | 547.62 | 3,401.54 | 816.54 | 2,883.18 | 2,731.23 | 13.84 | -1.59 | 0.209 |
| 87.83 | -26.05 | -19.60 | 0.00 | -511.4 | 0.00 | 511.43 | 2,692.45 | 683.79 | 2,426.19 | 2,176.03 | 14.45 | -1.62 | 0.246 |
| 90.00 | -25.57 | -19.46 | 0.00 | -468.9 | 0.00 | 468.91 | 2,665.65 | 673.56 | 2,354.17 | 2,121.90 | 15.2 | -1.66 | 0.231 |
| 91.00 | -23.57 | -18.29 | 0.00 | -449.4 | 0.00 | 449.45 | 2,653.16 | 668.85 | 2,321.35 | 2,097.06 | 15.55 | -1.68 | 0.224 |
| 95.00 | -22.70 | -17.92 | 0.00 | -376.3 | 0.00 | 376.28 | 2,602.34 | 650.00 | 2,192.36 | 1,998.45 | 16.98 | -1.74 | 0.198 |
| 100.00 | -20.34 | -15.50 | 0.00 | -286.7 | 0.00 | 286.67 | 2,536.86 | 626.44 | 2,036.30 | 1,876.95 | 18.85 | -1.81 | 0.161 |
| 104.00 | -16.65 | -13.67 | 0.00 | -224.7 | 0.00 | 224.67 | 2,482.92 | 607.58 | 1,915.61 | 1,781.28 | 20.39 | -1.86 | 0.133 |
| 104.30 | -16.58 | -13.51 | 0.00 | -220.6 | 0.00 | 220.57 | 2,478.81 | 606.17 | 1,906.70 | 1,774.16 | 20.51 | -1.87 | 0.132 |
| 104.70 | -16.00 | -13.32 | 0.00 | -215.2 | 0.00 | 215.16 | 2,473.33 | 604.29 | 1,894.86 | 1,764.69 | 20.67 | -1.87 | 0.129 |
| 104.80 | -15.83 | -13.24 | 0.00 | -213.8 | 0.00 | 213.83 | 2,471.96 | 603.81 | 1,891.91 | 1,762.32 | 20.71 | -1.87 | 0.128 |
| 104.90 | -15.78 | -13.20 | 0.00 | -212.4 | 0.00 | 212.37 | 2,470.59 | 603.34 | 1,888.96 | 1,759.95 | 20.75 | -1.87 | 0.128 |
| 105.00 | -15.77 | -13.12 | 0.00 | -211.0 | 0.00 | 211.05 | 2,469.21 | 602.87 | 1,886.01 | 1,757.59 | 20.79 | -1.88 | 0.127 |
| 107.00 | -15.39 | -12.89 | 0.00 | -184.8 | 0.00 | 184.82 | 2,441.54 | 593.45 | 1,827.50 | 1,710.48 | 21.58 | -1.9 | 0.115 |
| 110.00 | -10.47 | -9.26 | 0.00 | -142.9 | 0.00 | 142.93 | 2,399.39 | 579.31 | 1,741.47 | 1,640.54 | 22.78 | -1.93 | 0.092 |
| 115.00 | -9.66 | -8.87 | 0.00 | -96.6 | 0.00 | 96.61 | 2,327.39 | 555.74 | 1,602.70 | 1,525.98 | 24.82 | -1.96 | 0.068 |
| 120.00 | -5.97 | -6.01 | 0.00 | -52.3 | 0.00 | 52.27 | 2,252.90 | 532.18 | 1,469.69 | 1,413.90 | 26.89 | -1.99 | 0.040 |
| 124.60 | -5.35 | -5.67 | 0.00 | -24.6 | 0.00 | 24.60 | 2,161.12 | 510.50 | 1,352.41 | 1,300.49 | 28.81 | -2 | 0.022 |
| 124.90 | -5.27 | -5.35 | 0.00 | -22.9 | 0.00 | 22.90 | 2,155.14 | 509.09 | 1,344.93 | 1,293.26 | 28.94 | -2 | 0.020 |
| 125.00 | -5.26 | -5.25 | 0.00 | -22.4 | 0.00 | 22.37 | 2,153.14 | 508.62 | 1,342.44 | 1,290.85 | 28.98 | -2 | 0.020 |
| 128.00 | -3.30 | -3.29 | 0.00 | -6.6 | 0.00 | 6.63 | 2,093.29 | 494.48 | 1,268.86 | 1,219.72 | 30.24 | -2.01 | 0.007 |
| 129.80 | -3.07 | -2.75 | 0.00 | -0.7 | 0.00 | 0.71 | 2,057.38 | 485.99 | 1,225.70 | 1,178.00 | 31 | -2.01 | 0.002 |
| 130.00 | 0.00 | -2.64 | 0.00 | -0.2 | 0.00 | 0.16 | 2,053.39 | 485.05 | 1,220.95 | 1,173.41 | 31.08 | -2.01 | 0.000 |

Load Case: 0.9D + 1.0W Normal 117 mph wind with no ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
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 | -48.47 | -29.19 | 0.00 | -2,765.6 | 0.00 | 2,765.59 | 6,793.61 | 1,712.83 | 9,514.56 | 8,594.34 | 0 | 0 | 0.329 |
| 5.00 | -46.70 | -28.78 | 0.00 | -2,619.6 | 0.00 | 2,619.62 | 6,692.31 | 1,675.12 | 9,100.36 | 8,278.33 | 0.04 | -0.08 | 0.324 |
| 10.00 | -44.97 | -28.37 | 0.00 | -2,475.7 | 0.00 | 2,475.72 | 6,588.83 | 1,637.42 | 8,695.37 | 7,965.37 | 0.18 | -0.17 | 0.318 |
| 15.00 | -43.27 | -27.97 | 0.00 | -2,333.8 | 0.00 | 2,333.85 | 6,483.18 | 1,599.72 | 8,299.60 | 7,655.67 | 0.39 | -0.25 | 0.312 |
| 20.00 | -41.61 | -27.58 | 0.00 | -2,194.0 | 0.00 | 2,193.98 | 6,375.36 | 1,562.02 | 7,913.05 | 7,349.39 | 0.7 | -0.33 | 0.305 |
| 25.00 | -39.98 | -27.19 | 0.00 | -2,056.1 | 0.00 | 2,056.08 | 6,265.37 | 1,524.32 | 7,535.72 | 7,046.72 | 1.1 | -0.42 | 0.298 |
| 30.00 | -38.38 | -26.81 | 0.00 | -1,920.1 | 0.00 | 1,920.11 | 6,153.21 | 1,486.61 | 7,167.60 | 6,747.85 | 1.58 | -0.51 | 0.291 |
| 35.00 | -36.82 | -26.41 | 0.00 | -1,786.1 | 0.00 | 1,786.08 | 6,038.88 | 1,448.91 | 6,808.70 | 6,452.96 | 2.16 | -0.59 | 0.283 |
| 40.00 | -35.31 | -26.19 | 0.00 | -1,654.0 | 0.00 | 1,654.00 | 5,922.38 | 1,411.21 | 6,459.02 | 6,162.22 | 2.83 | -0.68 | 0.275 |
| 40.50 | -35.14 | -25.99 | 0.00 | -1,640.9 | 0.00 | 1,640.91 | 5,910.61 | 1,407.44 | 6,424.56 | 6,133.39 | 2.9 | -0.69 | 0.274 |
| 45.00 | -32.97 | -25.68 | 0.00 | -1,524.0 | 0.00 | 1,523.96 | 5,803.70 | 1,373.51 | 6,118.56 | 5,875.83 | 3.59 | -0.77 | 0.265 |
| 47.50 | -31.78 | -25.47 | 0.00 | -1,459.8 | 0.00 | 1,459.76 | 4,002.81 | 1,034.27 | 4,625.51 | 4,079.20 | 4 | -0.81 | 0.366 |
| 50.00 | -31.18 | -25.16 | 0.00 | -1,396.1 | 0.00 | 1,396.09 | 3,967.67 | 1,020.13 | 4,499.93 | 3,987.71 | 4.43 | -0.85 | 0.359 |
| 55.00 | -30.02 | -24.75 | 0.00 | -1,270.3 | 0.00 | 1,270.29 | 3,895.77 | 991.85 | 4,253.95 | 3,806.08 | 5.39 | -0.96 | 0.342 |
| 60.00 | -28.87 | -24.31 | 0.00 | -1,146.5 | 0.00 | 1,146.53 | 3,821.70 | 963.58 | 4,014.88 | 3,626.44 | 6.45 | -1.07 | 0.324 |
| 65.00 | -27.78 | -24.05 | 0.00 | -1,025.0 | 0.00 | 1,025.00 | 3,745.46 | 935.30 | 3,782.73 | 3,448.96 | 7.63 | -1.17 | 0.305 |
| 66.00 | -27.55 | -23.90 | 0.00 | -1,001.0 | 0.00 | 1,000.95 | 3,729.95 | 929.64 | 3,737.13 | 3,413.73 | 7.88 | -1.19 | 0.301 |
| 68.00 | -27.01 | -23.57 | 0.00 | -953.2 | 0.00 | 953.15 | 3,698.67 | 918.33 | 3,646.76 | 3,343.58 | 8.39 | -1.24 | 0.293 |
| 70.00 | -26.57 | -23.33 | 0.00 | -906.0 | 0.00 | 906.02 | 3,667.05 | 907.02 | 3,557.49 | 3,273.81 | 8.92 | -1.28 | 0.285 |
| 73.80 | -25.77 | -23.11 | 0.00 | -817.4 | 0.00 | 817.37 | 3,606.00 | 885.53 | 3,390.93 | 3,142.39 | 9.97 | -1.35 | 0.268 |
| 75.00 | -25.52 | -23.06 | 0.00 | -789.6 | 0.00 | 789.63 | 3,586.46 | 878.75 | 3,339.16 | 3,101.20 | 10.31 | -1.38 | 0.262 |
| 75.10 | -25.48 | -23.01 | 0.00 | -787.3 | 0.00 | 787.32 | 3,584.83 | 878.18 | 3,334.87 | 3,097.77 | 10.34 | -1.38 | 0.262 |
| 76.00 | -25.20 | -22.71 | 0.00 | -766.6 | 0.00 | 766.62 | 3,570.09 | 873.09 | 3,296.33 | 3,066.99 | 10.6 | -1.4 | 0.258 |
| 80.00 | -24.39 | -22.45 | 0.00 | -675.8 | 0.00 | 675.78 | 3,503.71 | 850.47 | 3,127.75 | 2,931.29 | 11.81 | -1.47 | 0.238 |
| 82.16 | -23.95 | -22.24 | 0.00 | -627.2 | 0.00 | 627.22 | 3,467.23 | 838.23 | 3,038.42 | 2,858.66 | 12.48 | -1.51 | 0.227 |
| 85.00 | -23.05 | -22.06 | 0.00 | -564.1 | 0.00 | 564.14 | 3,418.78 | 822.19 | 2,923.25 | 2,764.27 | 13.4 | -1.56 | 0.212 |
| 86.00 | -19.97 | -19.58 | 0.00 | -542.1 | 0.00 | 542.07 | 3,401.54 | 816.54 | 2,883.18 | 2,731.23 | 13.73 | -1.58 | 0.205 |
| 87.83 | -19.41 | -19.40 | 0.00 | -506.2 | 0.00 | 506.25 | 2,692.45 | 683.79 | 2,426.19 | 2,176.03 | 14.34 | -1.61 | 0.241 |
| 90.00 | -19.04 | -19.27 | 0.00 | -464.2 | 0.00 | 464.15 | 2,665.65 | 673.56 | 2,354.17 | 2,121.90 | 15.08 | -1.64 | 0.227 |
| 91.00 | -17.55 | -18.11 | 0.00 | -444.9 | 0.00 | 444.89 | 2,653.16 | 668.85 | 2,321.35 | 2,097.06 | 15.42 | -1.66 | 0.219 |
| 95.00 | -16.89 | -17.74 | 0.00 | -372.5 | 0.00 | 372.46 | 2,602.34 | 650.00 | 2,192.36 | 1,998.45 | 16.85 | -1.73 | 0.194 |
| 100.00 | -15.14 | -15.33 | 0.00 | -283.8 | 0.00 | 283.77 | 2,536.86 | 626.44 | 2,036.30 | 1,876.95 | 18.69 | -1.8 | 0.158 |
| 104.00 | -12.38 | -13.52 | 0.00 | -222.4 | 0.00 | 222.45 | 2,482.92 | 607.58 | 1,915.61 | 1,781.28 | 20.22 | -1.85 | 0.130 |
| 104.30 | -12.33 | -13.36 | 0.00 | -218.4 | 0.00 | 218.40 | 2,478.81 | 606.17 | 1,906.70 | 1,774.16 | 20.34 | -1.85 | 0.129 |
| 104.70 | -11.90 | -13.18 | 0.00 | -213.0 | 0.00 | 213.05 | 2,473.33 | 604.29 | 1,894.86 | 1,764.69 | 20.5 | -1.86 | 0.126 |
| 104.80 | -11.77 | -13.10 | 0.00 | -211.7 | 0.00 | 211.73 | 2,471.96 | 603.81 | 1,891.91 | 1,762.32 | 20.53 | -1.86 | 0.125 |
| 104.90 | -11.74 | -13.06 | 0.00 | -210.3 | 0.00 | 210.28 | 2,470.59 | 603.34 | 1,888.96 | 1,759.95 | 20.57 | -1.86 | 0.125 |
| 105.00 | -11.72 | -12.98 | 0.00 | -209.0 | 0.00 | 208.98 | 2,469.21 | 602.87 | 1,886.01 | 1,757.59 | 20.61 | -1.86 | 0.124 |
| 107.00 | -11.44 | -12.75 | 0.00 | -183.0 | 0.00 | 183.02 | 2,441.54 | 593.45 | 1,827.50 | 1,710.48 | 21.4 | -1.88 | 0.112 |
| 110.00 | -7.78 | -9.17 | 0.00 | -141.5 | 0.00 | 141.54 | 2,399.39 | 579.31 | 1,741.47 | 1,640.54 | 22.59 | -1.91 | 0.090 |
| 115.00 | -7.17 | -8.78 | 0.00 | -95.7 | 0.00 | 95.68 | 2,327.39 | 555.74 | 1,602.70 | 1,525.98 | 24.61 | -1.95 | 0.066 |
| 120.00 | -4.43 | -5.96 | 0.00 | -51.8 | 0.00 | 51.78 | 2,252.90 | 532.18 | 1,469.69 | 1,413.90 | 26.66 | -1.97 | 0.039 |
| 124.60 | -3.97 | -5.62 | 0.00 | -24.4 | 0.00 | 24.38 | 2,161.12 | 510.50 | 1,352.41 | 1,300.49 | 28.57 | -1.99 | 0.021 |
| 124.90 | -3.91 | -5.31 | 0.00 | -22.7 | 0.00 | 22.69 | 2,155.14 | 509.09 | 1,344.93 | 1,293.26 | 28.69 | -1.99 | 0.019 |
| 125.00 | -3.90 | -5.20 | 0.00 | -22.2 | 0.00 | 22.16 | 2,153.14 | 508.62 | 1,342.44 | 1,290.85 | 28.73 | -1.99 | 0.019 |
| 128.00 | -2.45 | -3.26 | 0.00 | -6.6 | 0.00 | 6.57 | 2,093.29 | 494.48 | 1,268.86 | 1,219.72 | 29.98 | -1.99 | 0.007 |
| 129.80 | -2.28 | -2.72 | 0.00 | -0.7 | 0.00 | 0.70 | 2,057.38 | 485.99 | 1,225.70 | 1,178.00 | 30.73 | -1.99 | 0.002 |
| 130.00 | 0.00 | -2.64 | 0.00 | -0.2 | 0.00 | 0.16 | 2,053.39 | 485.05 | 1,220.95 | 1,173.41 | 30.82 | -1.99 | 0.000 |

Load Case: 1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice 19 Iterations
Gust Response Factor: 1.10 Ice Dead Load 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 | -83.88 | -7.63 | 0.00 | -705.6 | 0.00 | 705.63 | 6,793.61 | 1,712.83 | 9,514.56 | 8,594.34 | 0 | 0 | 0.094 |
| 5.00 | -81.24 | -7.51 | 0.00 | -667.5 | 0.00 | 667.48 | 6,692.31 | 1,675.12 | 9,100.36 | 8,278.33 | 0.01 | -0.02 | 0.093 |
| 10.00 | -78.62 | -7.39 | 0.00 | -629.9 | 0.00 | 629.93 | 6,588.83 | 1,637.42 | 8,695.37 | 7,965.37 | 0.04 | -0.04 | 0.091 |
| 15.00 | -76.03 | -7.28 | 0.00 | -593.0 | 0.00 | 592.97 | 6,483.18 | 1,599.72 | 8,299.60 | 7,655.67 | 0.1 | -0.06 | 0.089 |
| 20.00 | -73.48 | -7.16 | 0.00 | -556.6 | 0.00 | 556.58 | 6,375.36 | 1,562.02 | 7,913.05 | 7,349.39 | 0.18 | -0.08 | 0.087 |
| 25.00 | -70.97 | -7.05 | 0.00 | -520.8 | 0.00 | 520.76 | 6,265.37 | 1,524.32 | 7,535.72 | 7,046.72 | 0.28 | -0.11 | 0.085 |
| 30.00 | -68.51 | -6.94 | 0.00 | -485.5 | 0.00 | 485.51 | 6,153.21 | 1,486.61 | 7,167.60 | 6,747.85 | 0.4 | -0.13 | 0.083 |
| 35.00 | -66.09 | -6.82 | 0.00 | -450.8 | 0.00 | 450.82 | 6,038.88 | 1,448.91 | 6,808.70 | 6,452.96 | 0.55 | -0.15 | 0.081 |
| 40.00 | -63.72 | -6.75 | 0.00 | -416.7 | 0.00 | 416.72 | 5,922.38 | 1,411.21 | 6,459.02 | 6,162.22 | 0.72 | -0.17 | 0.078 |
| 40.50 | -63.49 | -6.70 | 0.00 | -413.3 | 0.00 | 413.34 | 5,910.61 | 1,407.44 | 6,424.56 | 6,133.39 | 0.74 | -0.17 | 0.078 |
| 45.00 | -60.28 | -6.60 | 0.00 | -383.2 | 0.00 | 383.21 | 5,803.70 | 1,373.51 | 6,118.56 | 5,875.83 | 0.91 | -0.19 | 0.076 |
| 47.50 | -58.53 | -6.54 | 0.00 | -366.7 | 0.00 | 366.71 | 4,002.81 | 1,034.27 | 4,625.51 | 4,079.20 | 1.02 | -0.21 | 0.105 |
| 50.00 | -57.58 | -6.45 | 0.00 | -350.4 | 0.00 | 350.36 | 3,967.67 | 1,020.13 | 4,499.93 | 3,987.71 | 1.13 | -0.22 | 0.102 |
| 55.00 | -55.71 | -6.33 | 0.00 | -318.1 | 0.00 | 318.12 | 3,895.77 | 991.85 | 4,253.95 | 3,806.08 | 1.37 | -0.24 | 0.098 |
| 60.00 | -53.86 | -6.19 | 0.00 | -286.5 | 0.00 | 286.49 | 3,821.70 | 963.58 | 4,014.88 | 3,626.44 | 1.64 | -0.27 | 0.093 |
| 65.00 | -52.07 | -6.12 | 0.00 | -255.5 | 0.00 | 255.52 | 3,745.46 | 935.30 | 3,782.73 | 3,448.96 | 1.93 | -0.3 | 0.088 |
| 66.00 | -51.69 | -6.07 | 0.00 | -249.4 | 0.00 | 249.41 | 3,729.95 | 929.64 | 3,737.13 | 3,413.73 | 2 | -0.3 | 0.087 |
| 68.00 | -50.80 | -5.98 | 0.00 | -237.3 | 0.00 | 237.27 | 3,698.67 | 918.33 | 3,646.76 | 3,343.58 | 2.13 | -0.31 | 0.085 |
| 70.00 | -50.10 | -5.91 | 0.00 | -225.3 | 0.00 | 225.31 | 3,667.05 | 907.02 | 3,557.49 | 3,273.81 | 2.26 | -0.32 | 0.083 |
| 73.80 | -48.79 | -5.84 | 0.00 | -202.9 | 0.00 | 202.87 | 3,606.00 | 885.53 | 3,390.93 | 3,142.39 | 2.52 | -0.34 | 0.078 |
| 75.00 | -48.38 | -5.82 | 0.00 | -195.9 | 0.00 | 195.86 | 3,586.46 | 878.75 | 3,339.16 | 3,101.20 | 2.61 | -0.35 | 0.077 |
| 75.10 | -48.32 | -5.81 | 0.00 | -195.3 | 0.00 | 195.28 | 3,584.83 | 878.18 | 3,334.87 | 3,097.77 | 2.62 | -0.35 | 0.077 |
| 76.00 | -47.87 | -5.72 | 0.00 | -190.0 | 0.00 | 190.05 | 3,570.09 | 873.09 | 3,296.33 | 3,066.99 | 2.68 | -0.35 | 0.075 |
| 80.00 | -46.54 | -5.64 | 0.00 | -167.2 | 0.00 | 167.17 | 3,503.71 | 850.47 | 3,127.75 | 2,931.29 | 2.99 | -0.37 | 0.070 |
| 82.16 | -45.83 | -5.58 | 0.00 | -155.0 | 0.00 | 154.97 | 3,467.23 | 838.23 | 3,038.42 | 2,858.66 | 3.16 | -0.38 | 0.067 |
| 85.00 | -44.44 | -5.52 | 0.00 | -139.2 | 0.00 | 139.15 | 3,418.78 | 822.19 | 2,923.25 | 2,764.27 | 3.39 | -0.39 | 0.063 |
| 86.00 | -38.76 | -4.92 | 0.00 | -133.6 | 0.00 | 133.63 | 3,401.54 | 816.54 | 2,883.18 | 2,731.23 | 3.47 | -0.4 | 0.060 |
| 87.83 | -37.88 | -4.86 | 0.00 | -124.6 | 0.00 | 124.63 | 2,692.45 | 683.79 | 2,426.19 | 2,176.03 | 3.62 | -0.4 | 0.071 |
| 90.00 | -37.26 | -4.82 | 0.00 | -114.1 | 0.00 | 114.08 | 2,665.65 | 673.56 | 2,354.17 | 2,121.90 | 3.81 | -0.41 | 0.068 |
| 91.00 | -34.86 | -4.50 | 0.00 | -109.3 | 0.00 | 109.26 | 2,653.16 | 668.85 | 2,321.35 | 2,097.06 | 3.89 | -0.42 | 0.065 |
| 95.00 | -33.75 | -4.38 | 0.00 | -91.3 | 0.00 | 91.26 | 2,602.34 | 650.00 | 2,192.36 | 1,998.45 | 4.25 | -0.43 | 0.059 |
| 100.00 | -29.79 | -3.82 | 0.00 | -69.4 | 0.00 | 69.36 | 2,536.86 | 626.44 | 2,036.30 | 1,876.95 | 4.72 | -0.45 | 0.049 |
| 104.00 | -24.92 | -3.35 | 0.00 | -54.1 | 0.00 | 54.08 | 2,482.92 | 607.58 | 1,915.61 | 1,781.28 | 5.1 | -0.46 | 0.040 |
| 104.30 | -24.76 | -3.32 | 0.00 | -53.1 | 0.00 | 53.08 | 2,478.81 | 606.17 | 1,906.70 | 1,774.16 | 5.13 | -0.46 | 0.040 |
| 104.70 | -23.96 | -3.27 | 0.00 | -51.8 | 0.00 | 51.75 | 2,473.33 | 604.29 | 1,894.86 | 1,764.69 | 5.17 | -0.46 | 0.039 |
| 104.80 | -23.72 | -3.25 | 0.00 | -51.4 | 0.00 | 51.43 | 2,471.96 | 603.81 | 1,891.91 | 1,762.32 | 5.18 | -0.46 | 0.039 |
| 104.90 | -23.65 | -3.23 | 0.00 | -51.1 | 0.00 | 51.07 | 2,470.59 | 603.34 | 1,888.96 | 1,759.95 | 5.19 | -0.47 | 0.039 |
| 105.00 | -23.62 | -3.21 | 0.00 | -50.7 | 0.00 | 50.74 | 2,469.21 | 602.87 | 1,886.01 | 1,757.59 | 5.2 | -0.47 | 0.038 |
| 107.00 | -23.11 | -3.14 | 0.00 | -44.3 | 0.00 | 44.32 | 2,441.54 | 593.45 | 1,827.50 | 1,710.48 | 5.39 | -0.47 | 0.035 |
| 110.00 | -15.99 | -2.27 | 0.00 | -34.2 | 0.00 | 34.25 | 2,399.39 | 579.31 | 1,741.47 | 1,640.54 | 5.69 | -0.48 | 0.028 |
| 115.00 | -14.88 | -2.14 | 0.00 | -22.9 | 0.00 | 22.90 | 2,327.39 | 555.74 | 1,602.70 | 1,525.98 | 6.19 | -0.49 | 0.021 |
| 120.00 | -9.58 | -1.42 | 0.00 | -12.2 | 0.00 | 12.18 | 2,252.90 | 532.18 | 1,469.69 | 1,413.90 | 6.71 | -0.49 | 0.013 |
| 124.60 | -8.64 | -1.32 | 0.00 | -5.7 | 0.00 | 5.67 | 2,161.12 | 510.50 | 1,352.41 | 1,300.49 | 7.18 | -0.5 | 0.008 |
| 124.90 | -8.45 | -1.25 | 0.00 | -5.3 | 0.00 | 5.27 | 2,155.14 | 509.09 | 1,344.93 | 1,293.26 | 7.22 | -0.5 | 0.008 |
| 125.00 | -8.43 | -1.22 | 0.00 | -5.2 | 0.00 | 5.15 | 2,153.14 | 508.62 | 1,342.44 | 1,290.85 | 7.23 | -0.5 | 0.008 |
| 128.00 | -5.07 | -0.74 | 0.00 | -1.5 | 0.00 | 1.50 | 2,093.29 | 494.48 | 1,268.86 | 1,219.72 | 7.54 | -0.5 | 0.004 |
| 129.80 | -4.50 | -0.66 | 0.00 | -0.2 | 0.00 | 0.17 | 2,057.38 | 485.99 | 1,225.70 | 1,178.00 | 7.72 | -0.5 | 0.002 |
| 130.00 | 0.00 | -0.62 | 0.00 | -0.0 | 0.00 | 0.04 | 2,053.39 | 485.05 | 1,220.95 | 1,173.41 | 7.75 | -0.5 | 0.000 |

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 19 Iterations
Gust Response Factor: 1.10
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 | -53.87 | -6.87 | 0.00 | -652.2 | 0.00 | 652.16 | 6,793.61 | 1,712.83 | 9,514.56 | 8,594.34 | 0 | 0 | 0.084 |
| 5.00 | -51.96 | -6.77 | 0.00 | -617.8 | 0.00 | 617.81 | 6,692.31 | 1,675.12 | 9,100.36 | 8,278.33 | 0.01 | -0.02 | 0.082 |
| 10.00 | -50.07 | -6.68 | 0.00 | -583.9 | 0.00 | 583.94 | 6,588.83 | 1,637.42 | 8,695.37 | 7,965.37 | 0.04 | -0.04 | 0.081 |
| 15.00 | -48.23 | -6.59 | 0.00 | -550.5 | 0.00 | 550.54 | 6,483.18 | 1,599.72 | 8,299.60 | 7,655.67 | 0.09 | -0.06 | 0.079 |
| 20.00 | -46.42 | -6.50 | 0.00 | -517.6 | 0.00 | 517.61 | 6,375.36 | 1,562.02 | 7,913.05 | 7,349.39 | 0.17 | -0.08 | 0.078 |
| 25.00 | -44.65 | -6.41 | 0.00 | -485.1 | 0.00 | 485.12 | 6,265.37 | 1,524.32 | 7,535.72 | 7,046.72 | 0.26 | -0.1 | 0.076 |
| 30.00 | -42.91 | -6.32 | 0.00 | -453.1 | 0.00 | 453.09 | 6,153.21 | 1,486.61 | 7,167.60 | 6,747.85 | 0.37 | -0.12 | 0.074 |
| 35.00 | -41.22 | -6.23 | 0.00 | -421.5 | 0.00 | 421.51 | 6,038.88 | 1,448.91 | 6,808.70 | 6,452.96 | 0.51 | -0.14 | 0.072 |
| 40.00 | -39.56 | -6.17 | 0.00 | -390.4 | 0.00 | 390.38 | 5,922.38 | 1,411.21 | 6,459.02 | 6,162.22 | 0.67 | -0.16 | 0.070 |
| 40.50 | -39.39 | -6.13 | 0.00 | -387.3 | 0.00 | 387.29 | 5,910.61 | 1,407.44 | 6,424.56 | 6,133.39 | 0.68 | -0.16 | 0.070 |
| 45.00 | -37.00 | -6.06 | 0.00 | -359.7 | 0.00 | 359.72 | 5,803.70 | 1,373.51 | 6,118.56 | 5,875.83 | 0.85 | -0.18 | 0.068 |
| 47.50 | -35.70 | -6.00 | 0.00 | -344.6 | 0.00 | 344.58 | 4,002.81 | 1,034.27 | 4,625.51 | 4,079.20 | 0.94 | -0.19 | 0.093 |
| 50.00 | -35.06 | -5.93 | 0.00 | -329.6 | 0.00 | 329.57 | 3,967.67 | 1,020.13 | 4,499.93 | 3,987.71 | 1.05 | -0.2 | 0.092 |
| 55.00 | -33.81 | -5.84 | 0.00 | -299.9 | 0.00 | 299.90 | 3,895.77 | 991.85 | 4,253.95 | 3,806.08 | 1.27 | -0.23 | 0.088 |
| 60.00 | -32.58 | -5.74 | 0.00 | -270.7 | 0.00 | 270.71 | 3,821.70 | 963.58 | 4,014.88 | 3,626.44 | 1.52 | -0.25 | 0.083 |
| 65.00 | -31.39 | -5.67 | 0.00 | -242.0 | 0.00 | 242.03 | 3,745.46 | 935.30 | 3,782.73 | 3,448.96 | 1.8 | -0.28 | 0.079 |
| 66.00 | -31.14 | -5.64 | 0.00 | -236.4 | 0.00 | 236.36 | 3,729.95 | 929.64 | 3,737.13 | 3,413.73 | 1.86 | -0.28 | 0.078 |
| 68.00 | -30.55 | -5.56 | 0.00 | -225.1 | 0.00 | 225.08 | 3,698.67 | 918.33 | 3,646.76 | 3,343.58 | 1.98 | -0.29 | 0.076 |
| 70.00 | -30.08 | -5.51 | 0.00 | -214.0 | 0.00 | 213.95 | 3,667.05 | 907.02 | 3,557.49 | 3,273.81 | 2.1 | -0.3 | 0.074 |
| 73.80 | -29.21 | -5.46 | 0.00 | -193.0 | 0.00 | 193.03 | 3,606.00 | 885.53 | 3,390.93 | 3,142.39 | 2.35 | -0.32 | 0.070 |
| 75.00 | -28.94 | -5.44 | 0.00 | -186.5 | 0.00 | 186.48 | 3,586.46 | 878.75 | 3,339.16 | 3,101.20 | 2.43 | -0.33 | 0.068 |
| 75.10 | -28.90 | -5.43 | 0.00 | -185.9 | 0.00 | 185.94 | 3,584.83 | 878.18 | 3,334.87 | 3,097.77 | 2.44 | -0.33 | 0.068 |
| 76.00 | -28.59 | -5.36 | 0.00 | -181.0 | 0.00 | 181.05 | 3,570.09 | 873.09 | 3,296.33 | 3,066.99 | 2.5 | -0.33 | 0.067 |
| 80.00 | -27.71 | -5.30 | 0.00 | -159.6 | 0.00 | 159.60 | 3,503.71 | 850.47 | 3,127.75 | 2,931.29 | 2.79 | -0.35 | 0.062 |
| 82.16 | -27.24 | -5.25 | 0.00 | -148.1 | 0.00 | 148.13 | 3,467.23 | 838.23 | 3,038.42 | 2,858.66 | 2.95 | -0.36 | 0.060 |
| 85.00 | -26.24 | -5.21 | 0.00 | -133.2 | 0.00 | 133.24 | 3,418.78 | 822.19 | 2,923.25 | 2,764.27 | 3.16 | -0.37 | 0.056 |
| 86.00 | -22.76 | -4.62 | 0.00 | -128.0 | 0.00 | 128.03 | 3,401.54 | 816.54 | 2,883.18 | 2,731.23 | 3.24 | -0.37 | 0.054 |
| 87.83 | -22.13 | -4.58 | 0.00 | -119.6 | 0.00 | 119.57 | 2,692.45 | 683.79 | 2,426.19 | 2,176.03 | 3.38 | -0.38 | 0.063 |
| 90.00 | -21.74 | -4.55 | 0.00 | -109.6 | 0.00 | 109.63 | 2,665.65 | 673.56 | 2,354.17 | 2,121.90 | 3.56 | -0.39 | 0.060 |
| 91.00 | -20.06 | -4.28 | 0.00 | -105.1 | 0.00 | 105.08 | 2,653.16 | 668.85 | 2,321.35 | 2,097.06 | 3.64 | -0.39 | 0.058 |
| 95.00 | -19.34 | -4.19 | 0.00 | -88.0 | 0.00 | 87.97 | 2,602.34 | 650.00 | 2,192.36 | 1,998.45 | 3.98 | -0.41 | 0.051 |
| 100.00 | -17.33 | -3.62 | 0.00 | -67.0 | 0.00 | 67.02 | 2,536.86 | 626.44 | 2,036.30 | 1,876.95 | 4.41 | -0.42 | 0.043 |
| 104.00 | -14.21 | -3.19 | 0.00 | -52.5 | 0.00 | 52.54 | 2,482.92 | 607.58 | 1,915.61 | 1,781.28 | 4.77 | -0.44 | 0.035 |
| 104.30 | -14.15 | -3.16 | 0.00 | -51.6 | 0.00 | 51.58 | 2,478.81 | 606.17 | 1,906.70 | 1,774.16 | 4.8 | -0.44 | 0.035 |
| 104.70 | -13.66 | -3.11 | 0.00 | -50.3 | 0.00 | 50.32 | 2,473.33 | 604.29 | 1,894.86 | 1,764.69 | 4.84 | -0.44 | 0.034 |
| 104.80 | -13.52 | -3.09 | 0.00 | -50.0 | 0.00 | 50.00 | 2,471.96 | 603.81 | 1,891.91 | 1,762.32 | 4.85 | -0.44 | 0.034 |
| 104.90 | -13.48 | -3.08 | 0.00 | -49.7 | 0.00 | 49.66 | 2,470.59 | 603.34 | 1,888.96 | 1,759.95 | 4.86 | -0.44 | 0.034 |
| 105.00 | -13.47 | -3.07 | 0.00 | -49.4 | 0.00 | 49.35 | 2,469.21 | 602.87 | 1,886.01 | 1,757.59 | 4.86 | -0.44 | 0.034 |
| 107.00 | -13.16 | -3.01 | 0.00 | -43.2 | 0.00 | 43.22 | 2,441.54 | 593.45 | 1,827.50 | 1,710.48 | 5.05 | -0.44 | 0.031 |
| 110.00 | -8.97 | -2.17 | 0.00 | -33.4 | 0.00 | 33.43 | 2,399.39 | 579.31 | 1,741.47 | 1,640.54 | 5.33 | -0.45 | 0.024 |
| 115.00 | -8.28 | -2.07 | 0.00 | -22.6 | 0.00 | 22.60 | 2,327.39 | 555.74 | 1,602.70 | 1,525.98 | 5.81 | -0.46 | 0.018 |
| 120.00 | -5.13 | -1.41 | 0.00 | -12.2 | 0.00 | 12.23 | 2,252.90 | 532.18 | 1,469.69 | 1,413.90 | 6.29 | -0.47 | 0.011 |
| 124.60 | -4.61 | -1.33 | 0.00 | -5.8 | 0.00 | 5.76 | 2,161.12 | 510.50 | 1,352.41 | 1,300.49 | 6.74 | -0.47 | 0.007 |
| 124.90 | -4.53 | -1.25 | 0.00 | -5.4 | 0.00 | 5.36 | 2,155.14 | 509.09 | 1,344.93 | 1,293.26 | 6.77 | -0.47 | 0.006 |
| 125.00 | -4.52 | -1.23 | 0.00 | -5.2 | 0.00 | 5.23 | 2,153.14 | 508.62 | 1,342.44 | 1,290.85 | 6.78 | -0.47 | 0.006 |
| 128.00 | -2.84 | -0.77 | 0.00 | -1.6 | 0.00 | 1.55 | 2,093.29 | 494.48 | 1,268.86 | 1,219.72 | 7.08 | -0.47 | 0.003 |
| 129.80 | -2.63 | -0.64 | 0.00 | -0.2 | 0.00 | 0.17 | 2,057.38 | 485.99 | 1,225.70 | 1,178.00 | 7.25 | -0.47 | 0.001 |
| 130.00 | 0.00 | -0.62 | 0.00 | -0.0 | 0.00 | 0.04 | 2,053.39 | 485.05 | 1,220.95 | 1,173.41 | 7.27 | -0.47 | 0.000 |

## EQUIVALENT LATERAL FORCES METHOD ANALYSIS

*(Based on ASCE7-16 Chapters 11, 12 and 15)*

| | |
|---|---|
| Spectral Response Acceleration for Short Period ($S_S$): | 0.233 |
| Spectral Response Acceleration at 1.0 Second Period ($S_1$): | 0.056 |
| Long-Period Transition Period ($T_L$ – Seconds): | 6 |
| Importance Factor ($I_e$): | 1.000 |
| Site Coefficient $F_a$: | 1.600 |
| Site Coefficient $F_v$: | 2.400 |
| Response Modification Coefficient (R): | 1.500 |
| Design Spectral Response Acceleration at Short Period ($S_{ds}$): | 0.249 |
| Design Spectral Response Acceleration at 1.0 Second Period ($S_{d1}$): | 0.090 |
| Seismic Response Coefficient ($C_s$): | 0.037 |
| Upper Limit $C_S$: | 0.037 |
| Lower Limit $C_S$: | 0.030 |
| Period based on Rayleigh Method (sec): | 1.630 |
| Redundancy Factor (p): | 1.000 |
| Seismic Force Distribution Exponent (k): | 1.570 |
| Total Unfactored Dead Load: | 53.870 k |
| Seismic Base Shear (E): | 1.970 k |

**1.2D + 1.0Ev + 1.0Eh Normal** **Seismic**

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 47 | 129.9 | 19 | 39 | 0.001 | 2 | 24 |
| 46 | 128.9 | 171 | 346 | 0.007 | 14 | 214 |
| 45 | 126.5 | 315 | 618 | 0.012 | 24 | 394 |
| 44 | 124.95 | 11 | 20 | 0.000 | 1 | 13 |
| 43 | 124.75 | 32 | 61 | 0.001 | 2 | 40 |
| 42 | 122.3 | 501 | 932 | 0.019 | 37 | 626 |
| 41 | 117.5 | 661 | 1,155 | 0.023 | 45 | 826 |
| 40 | 112.5 | 684 | 1,117 | 0.022 | 44 | 855 |
| 39 | 108.5 | 448 | 691 | 0.014 | 27 | 560 |
| 38 | 106 | 303 | 451 | 0.009 | 18 | 379 |
| 37 | 104.95 | 15 | 22 | 0.000 | 1 | 19 |
| 36 | 104.85 | 15 | 22 | 0.000 | 1 | 19 |
| 35 | 104.75 | 15 | 22 | 0.000 | 1 | 19 |
| 34 | 104.5 | 61 | 89 | 0.002 | 3 | 76 |
| 33 | 104.15 | 46 | 67 | 0.001 | 3 | 57 |
| 32 | 102 | 621 | 870 | 0.017 | 34 | 776 |
| 31 | 97.5 | 876 | 1,144 | 0.023 | 45 | 1,095 |
| 30 | 93 | 718 | 869 | 0.017 | 34 | 897 |
| 29 | 90.5 | 182 | 211 | 0.004 | 8 | 227 |
| 28 | 88.915 | 397 | 449 | 0.009 | 18 | 497 |
| 27 | 86.915 | 626 | 683 | 0.014 | 27 | 783 |
| 26 | 85.5 | 348 | 369 | 0.007 | 15 | 435 |
| 25 | 83.5817 | 998 | 1,023 | 0.020 | 40 | 1,247 |
| 24 | 81.0817 | 472 | 461 | 0.009 | 18 | 589 |
| 23 | 78 | 885 | 814 | 0.016 | 32 | 1,106 |
| 22 | 75.55 | 202 | 176 | 0.004 | 7 | 252 |
| 21 | 75.05 | 22 | 19 | 0.000 | 1 | 28 |
| 20 | 74.4 | 270 | 231 | 0.005 | 9 | 338 |
| 19 | 71.9 | 867 | 702 | 0.014 | 28 | 1,083 |
| 18 | 69 | 463 | 351 | 0.007 | 14 | 578 |
| 17 | 67 | 467 | 339 | 0.007 | 13 | 584 |
| 16 | 65.5 | 235 | 165 | 0.003 | 6 | 294 |
| 15 | 62.5 | 1,193 | 776 | 0.016 | 30 | 1,491 |
| 14 | 57.5 | 1,221 | 697 | 0.014 | 27 | 1,526 |

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 13 | 52.5 | 1,249 | 618 | 0.012 | 24 | 1,561 |
| 12 | 48.75 | 635 | 280 | 0.006 | 11 | 793 |
| 11 | 46.25 | 1,303 | 529 | 0.010 | 21 | 1,628 |
| 10 | 42.75 | 2,385 | 856 | 0.017 | 34 | 2,981 |
| 9 | 40.25 | 164 | 54 | 0.001 | 2 | 205 |
| 8 | 37.5 | 1,660 | 485 | 0.010 | 19 | 2,074 |
| 7 | 32.5 | 1,696 | 396 | 0.008 | 16 | 2,120 |
| 6 | 27.5 | 1,733 | 311 | 0.006 | 12 | 2,166 |
| 5 | 22.5 | 1,769 | 232 | 0.005 | 9 | 2,211 |
| 4 | 17.5 | 1,806 | 160 | 0.003 | 6 | 2,257 |
| 3 | 12.5 | 1,843 | 96 | 0.002 | 4 | 2,303 |
| 2 | 7.5 | 1,879 | 44 | 0.001 | 2 | 2,348 |
| 1 | 2.5 | 1,916 | 8 | 0.000 | 0 | 2,394 |
| RFS DB-C1-12C-24AB-0Z | 130 | 32 | 66 | 0.001 | 3 | 40 |
| Decibel DB846F65ZAXY | 130 | 84 | 172 | 0.003 | 7 | 105 |
| Generic Flat Platform with Handrails | 130 | 2,500 | 5,120 | 0.102 | 201 | 3,124 |
| Generic Flat Platform with Handrails | 110 | 2,500 | 3,941 | 0.079 | 155 | 3,124 |
| Generic Flat Platform with Handrails | 104 | 2,500 | 3,609 | 0.072 | 142 | 3,124 |
| Generic Flat Platform with Handrails | 86 | 2,500 | 2,680 | 0.053 | 105 | 3,124 |
| Antel LPA-80080/6CF ___ | 129.8 | 42 | 86 | 0.002 | 3 | 52 |
| Samsung Outdoor CBRS 20W RRH –Clip-on Antenna | 128 | 13 | 26 | 0.000 | 1 | 16 |
| Samsung RT4401-48A | 128 | 56 | 112 | 0.002 | 4 | 70 |
| Samsung B5/B13 RRH-BR04C | 128 | 211 | 422 | 0.008 | 17 | 264 |
| Samsung B2/B66A RRH-BR049 | 128 | 253 | 506 | 0.010 | 20 | 316 |
| Commscope TD-850B-LTE78-43 | 128 | 159 | 318 | 0.006 | 12 | 199 |
| Raycap RVZDC-3315-PF-48 | 128 | 43 | 86 | 0.002 | 3 | 53 |
| Samsung MT6407-77A | 128 | 245 | 489 | 0.010 | 19 | 306 |
| Quintel QS6656-5 | 128 | 390 | 779 | 0.016 | 31 | 487 |
| Andrew Microwaves VHLP800-11 (49 lbs) | 124.9 | 49 | 94 | 0.002 | 4 | 61 |
| Generic 24" x 24" Junction Box | 124.6 | 20 | 38 | 0.001 | 2 | 25 |
| Alcatel-Lucent RRH2x50-08 | 120 | 159 | 287 | 0.006 | 11 | 198 |
| Alcatel-Lucent 800MHz RRH | 120 | 159 | 287 | 0.006 | 11 | 199 |
| Alcatel-Lucent 1900MHz RRH | 120 | 132 | 238 | 0.005 | 9 | 165 |
| Nokia 2.5G MAA - AAHC(64T64R) | 120 | 311 | 561 | 0.011 | 22 | 388 |
| Commscope NNVV-65B-R4 | 120 | 232 | 419 | 0.008 | 16 | 290 |
| Flat Low Profile Platform | 120 | 1,500 | 2,710 | 0.054 | 106 | 1,875 |
| Ericsson Radio 4449 B71 B85A | 110 | 225 | 355 | 0.007 | 14 | 281 |
| Ericsson 4460 BAND 2/25 | 110 | 327 | 515 | 0.010 | 20 | 409 |
| Ericsson Air6449 B41 | 110 | 312 | 492 | 0.010 | 19 | 390 |
| RFS APXVAARR24_43-U-NA20 | 110 | 384 | 605 | 0.012 | 24 | 480 |
| Generic GPS | 107 | 10 | 15 | 0.000 | 1 | 12 |
| Generic GPS | 66 | 10 | 7 | 0.000 | 0 | 12 |
| Generic GPS | 60 | 10 | 6 | 0.000 | 0 | 12 |
| Raycap DC6-48-60-18-8F | 104.9 | 20 | 29 | 0.001 | 1 | 25 |
| Ericsson Radio 4415 B30 | 104.8 | 129 | 188 | 0.004 | 7 | 161 |
| Ericsson RRUS 8843 B2, B66A | 104.7 | 216 | 315 | 0.006 | 12 | 270 |
| Ericsson RRUS 4449 B5, B12 | 104.7 | 213 | 311 | 0.006 | 12 | 266 |
| Raycap DC9-48-60-24-8C-EV | 104.3 | 16 | 23 | 0.000 | 1 | 20 |
| Raycap DC6-48-60-0-8F | 100 | 33 | 45 | 0.001 | 2 | 41 |
| Ericsson RRUS 4478 B14 | 100 | 180 | 244 | 0.005 | 10 | 225 |
| Ericsson AIR 6419 B77G | 100 | 198 | 269 | 0.005 | 11 | 248 |
| Ericsson Air 6449 B77D | 100 | 245 | 332 | 0.007 | 13 | 306 |
| CCI DMP65R-BU6DA | 100 | 238 | 323 | 0.006 | 13 | 298 |
| CCI TPA-65R-BU6DA-K | 100 | 239 | 324 | 0.006 | 13 | 298 |
| Empty Flat Low Profile Platform | 91 | 1,500 | 1,757 | 0.035 | 69 | 1,875 |
| Commscope RDIDC-9181-PF-48 | 86 | 22 | 23 | 0.000 | 1 | 27 |
| Fujitsu TA08025-B604 | 86 | 192 | 206 | 0.004 | 8 | 240 |
| Fujitsu TA08025-B605 | 86 | 225 | 241 | 0.005 | 9 | 281 |
| JMA Wireless MX08FRO665-21 | 86 | 194 | 207 | 0.004 | 8 | 242 |
| Stand-Off | 76 | 100 | 88 | 0.002 | 3 | 125 |
| Generic 2" x 8" GPS | 75.1 | 20 | 17 | 0.000 | 1 | 25 |
| Generic 2" x 4" GPS | 73.8 | 5 | 4 | 0.000 | 0 | 6 |
| Side Arm | 68 | 126 | 94 | 0.002 | 4 | 157 |
| | | 53,875 | 50,154 | 1.000 | 1,971 | 67,328 |

**0.9D - 1.0Ev + 1.0Eh Normal** **Seismic (Reduced DL)**

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 47 | 129.9 | 19 | 39 | 0.001 | 2 | 16 |
| 46 | 128.9 | 171 | 346 | 0.007 | 14 | 145 |
| 45 | 126.5 | 315 | 618 | 0.012 | 24 | 268 |
| 44 | 124.95 | 11 | 20 | 0.000 | 1 | 9 |
| 43 | 124.75 | 32 | 61 | 0.001 | 2 | 27 |
| 42 | 122.3 | 501 | 932 | 0.019 | 37 | 426 |
| 41 | 117.5 | 661 | 1,155 | 0.023 | 45 | 562 |
| 40 | 112.5 | 684 | 1,117 | 0.022 | 44 | 582 |
| 39 | 108.5 | 448 | 691 | 0.014 | 27 | 381 |
| 38 | 106 | 303 | 451 | 0.009 | 18 | 258 |
| 37 | 104.95 | 15 | 22 | 0.000 | 1 | 13 |
| 36 | 104.85 | 15 | 22 | 0.000 | 1 | 13 |
| 35 | 104.75 | 15 | 22 | 0.000 | 1 | 13 |
| 34 | 104.5 | 61 | 89 | 0.002 | 3 | 52 |
| 33 | 104.15 | 46 | 67 | 0.001 | 3 | 39 |
| 32 | 102 | 621 | 870 | 0.017 | 34 | 528 |
| 31 | 97.5 | 876 | 1,144 | 0.023 | 45 | 745 |
| 30 | 93 | 718 | 869 | 0.017 | 34 | 610 |
| 29 | 90.5 | 182 | 211 | 0.004 | 8 | 154 |
| 28 | 88.915 | 397 | 449 | 0.009 | 18 | 338 |
| 27 | 86.915 | 626 | 683 | 0.014 | 27 | 533 |
| 26 | 85.5 | 348 | 369 | 0.007 | 15 | 296 |
| 25 | 83.5817 | 998 | 1,023 | 0.020 | 40 | 848 |
| 24 | 81.0817 | 472 | 461 | 0.009 | 18 | 401 |
| 23 | 78 | 885 | 814 | 0.016 | 32 | 753 |
| 22 | 75.55 | 202 | 176 | 0.004 | 7 | 171 |
| 21 | 75.05 | 22 | 19 | 0.000 | 1 | 19 |
| 20 | 74.4 | 270 | 231 | 0.005 | 9 | 230 |
| 19 | 71.9 | 867 | 702 | 0.014 | 28 | 737 |
| 18 | 69 | 463 | 351 | 0.007 | 14 | 393 |
| 17 | 67 | 467 | 339 | 0.007 | 13 | 397 |
| 16 | 65.5 | 235 | 165 | 0.003 | 6 | 200 |
| 15 | 62.5 | 1,193 | 776 | 0.016 | 30 | 1,015 |
| 14 | 57.5 | 1,221 | 697 | 0.014 | 27 | 1,038 |
| 13 | 52.5 | 1,249 | 618 | 0.012 | 24 | 1,062 |
| 12 | 48.75 | 635 | 280 | 0.006 | 11 | 540 |
| 11 | 46.25 | 1,303 | 529 | 0.010 | 21 | 1,108 |
| 10 | 42.75 | 2,385 | 856 | 0.017 | 34 | 2,028 |
| 9 | 40.25 | 164 | 54 | 0.001 | 2 | 139 |
| 8 | 37.5 | 1,660 | 485 | 0.010 | 19 | 1,411 |
| 7 | 32.5 | 1,696 | 396 | 0.008 | 16 | 1,442 |
| 6 | 27.5 | 1,733 | 311 | 0.006 | 12 | 1,473 |
| 5 | 22.5 | 1,769 | 232 | 0.005 | 9 | 1,505 |
| 4 | 17.5 | 1,806 | 160 | 0.003 | 6 | 1,536 |
| 3 | 12.5 | 1,843 | 96 | 0.002 | 4 | 1,567 |
| 2 | 7.5 | 1,879 | 44 | 0.001 | 2 | 1,598 |
| 1 | 2.5 | 1,916 | 8 | 0.000 | 0 | 1,629 |
| RFS DB-C1-12C-24AB-0Z | 130 | 32 | 66 | 0.001 | 3 | 27 |
| Decibel DB846F65ZAXY | 130 | 84 | 172 | 0.003 | 7 | 71 |
| Generic Flat Platform with Handrails | 130 | 2,500 | 5,120 | 0.102 | 201 | 2,126 |
| Generic Flat Platform with Handrails | 110 | 2,500 | 3,941 | 0.079 | 155 | 2,126 |
| Generic Flat Platform with Handrails | 104 | 2,500 | 3,609 | 0.072 | 142 | 2,126 |
| Generic Flat Platform with Handrails | 86 | 2,500 | 2,680 | 0.053 | 105 | 2,126 |
| Antel LPA-80080/6CF ___ | 129.8 | 42 | 86 | 0.002 | 3 | 36 |
| Samsung Outdoor CBRS 20W RRH –Clip-on Antenna | 128 | 13 | 26 | 0.000 | 1 | 11 |
| Samsung RT4401-48A | 128 | 56 | 112 | 0.002 | 4 | 47 |
| Samsung B5/B13 RRH-BR04C | 128 | 211 | 422 | 0.008 | 17 | 179 |
| Samsung B2/B66A RRH-BR049 | 128 | 253 | 506 | 0.010 | 20 | 215 |
| Commscope TD-850B-LTE78-43 | 128 | 159 | 318 | 0.006 | 12 | 135 |
| Raycap RVZDC-3315-PF-48 | 128 | 43 | 86 | 0.002 | 3 | 36 |
| Samsung MT6407-77A | 128 | 245 | 489 | 0.010 | 19 | 208 |
| Quintel QS6656-5 | 128 | 390 | 779 | 0.016 | 31 | 332 |
| Andrew Microwaves VHLP800-11 (49 lbs) | 124.9 | 49 | 94 | 0.002 | 4 | 42 |
| Generic 24" x 24" Junction Box | 124.6 | 20 | 38 | 0.001 | 2 | 17 |
| Alcatel-Lucent RRH2x50-08 | 120 | 159 | 287 | 0.006 | 11 | 135 |
| Alcatel-Lucent 800MHz RRH | 120 | 159 | 287 | 0.006 | 11 | 135 |

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| Alcatel-Lucent 1900MHz RRH | 120 | 132 | 238 | 0.005 | 9 | 112 |
| Nokia 2.5G MAA - AAHC(64T64R) | 120 | 311 | 561 | 0.011 | 22 | 264 |
| Commscope NNVV-65B-R4 | 120 | 232 | 419 | 0.008 | 16 | 197 |
| Flat Low Profile Platform | 120 | 1,500 | 2,710 | 0.054 | 106 | 1,275 |
| Ericsson Radio 4449 B71 B85A | 110 | 225 | 355 | 0.007 | 14 | 191 |
| Ericsson 4460 BAND 2/25 | 110 | 327 | 515 | 0.010 | 20 | 278 |
| Ericsson Air6449 B41 | 110 | 312 | 492 | 0.010 | 19 | 265 |
| RFS APXVAARR24_43-U-NA20 | 110 | 384 | 605 | 0.012 | 24 | 326 |
| Generic GPS | 107 | 10 | 15 | 0.000 | 1 | 9 |
| Generic GPS | 66 | 10 | 7 | 0.000 | 0 | 9 |
| Generic GPS | 60 | 10 | 6 | 0.000 | 0 | 9 |
| Raycap DC6-48-60-18-8F | 104.9 | 20 | 29 | 0.001 | 1 | 17 |
| Ericsson Radio 4415 B30 | 104.8 | 129 | 188 | 0.004 | 7 | 110 |
| Ericsson RRUS 8843 B2, B66A | 104.7 | 216 | 315 | 0.006 | 12 | 184 |
| Ericsson RRUS 4449 B5, B12 | 104.7 | 213 | 311 | 0.006 | 12 | 181 |
| Raycap DC9-48-60-24-8C-EV | 104.3 | 16 | 23 | 0.000 | 1 | 14 |
| Raycap DC6-48-60-0-8F | 100 | 33 | 45 | 0.001 | 2 | 28 |
| Ericsson RRUS 4478 B14 | 100 | 180 | 244 | 0.005 | 10 | 153 |
| Ericsson AIR 6419 B77G | 100 | 198 | 269 | 0.005 | 11 | 169 |
| Ericsson Air 6449 B77D | 100 | 245 | 332 | 0.007 | 13 | 208 |
| CCI DMP65R-BU6DA | 100 | 238 | 323 | 0.006 | 13 | 203 |
| CCI TPA-65R-BU6DA-K | 100 | 239 | 324 | 0.006 | 13 | 203 |
| Empty Flat Low Profile Platform | 91 | 1,500 | 1,757 | 0.035 | 69 | 1,275 |
| Commscope RDIDC-9181-PF-48 | 86 | 22 | 23 | 0.000 | 1 | 19 |
| Fujitsu TA08025-B604 | 86 | 192 | 206 | 0.004 | 8 | 163 |
| Fujitsu TA08025-B605 | 86 | 225 | 241 | 0.005 | 9 | 191 |
| JMA Wireless MX08FRO665-21 | 86 | 194 | 207 | 0.004 | 8 | 165 |
| Stand-Off | 76 | 100 | 88 | 0.002 | 3 | 85 |
| Generic 2" x 8" GPS | 75.1 | 20 | 17 | 0.000 | 1 | 17 |
| Generic 2" x 4" GPS | 73.8 | 5 | 4 | 0.000 | 0 | 4 |
| Side Arm | 68 | 126 | 94 | 0.002 | 4 | 107 |
| | | 53,875 | 50,154 | 1.000 | 1,971 | 45,809 |

**1.2D + 1.0Ev + 1.0Eh Normal** **Seismic**

## CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -64.93 | -1.97 | 0.00 | -200.51 | 0.00 | 200.51 | 6,793.61 | 1,712.83 | 9,515 | 8,594.34 | 0.00 | 0.00 | 0.03 |
| 5.00 | -62.58 | -1.98 | 0.00 | -190.65 | 0.00 | 190.65 | 6,692.31 | 1,675.12 | 9,100 | 8,278.33 | 0.00 | -0.01 | 0.03 |
| 10.00 | -60.28 | -1.98 | 0.00 | -180.76 | 0.00 | 180.76 | 6,588.83 | 1,637.42 | 8,695 | 7,965.37 | 0.01 | -0.01 | 0.03 |
| 15.00 | -58.02 | -1.98 | 0.00 | -170.87 | 0.00 | 170.87 | 6,483.18 | 1,599.72 | 8,300 | 7,655.67 | 0.03 | -0.02 | 0.03 |
| 20.00 | -55.81 | -1.98 | 0.00 | -160.97 | 0.00 | 160.97 | 6,375.36 | 1,562.02 | 7,913 | 7,349.39 | 0.05 | -0.02 | 0.03 |
| 25.00 | -53.65 | -1.97 | 0.00 | -151.09 | 0.00 | 151.09 | 6,265.37 | 1,524.32 | 7,536 | 7,046.72 | 0.08 | -0.03 | 0.03 |
| 30.00 | -51.53 | -1.96 | 0.00 | -141.26 | 0.00 | 141.26 | 6,153.21 | 1,486.61 | 7,168 | 6,747.85 | 0.12 | -0.04 | 0.03 |
| 35.00 | -49.45 | -1.94 | 0.00 | -131.47 | 0.00 | 131.47 | 6,038.88 | 1,448.91 | 6,809 | 6,452.96 | 0.16 | -0.04 | 0.03 |
| 40.00 | -49.25 | -1.94 | 0.00 | -121.76 | 0.00 | 121.76 | 5,922.38 | 1,411.21 | 6,459 | 6,162.22 | 0.21 | -0.05 | 0.03 |
| 40.50 | -46.27 | -1.91 | 0.00 | -120.79 | 0.00 | 120.79 | 5,910.61 | 1,407.44 | 6,425 | 6,133.39 | 0.21 | -0.05 | 0.03 |
| 45.00 | -44.64 | -1.89 | 0.00 | -112.20 | 0.00 | 112.20 | 5,803.70 | 1,373.51 | 6,119 | 5,875.83 | 0.26 | -0.06 | 0.03 |
| 47.50 | -43.85 | -1.88 | 0.00 | -107.48 | 0.00 | 107.48 | 4,002.81 | 1,034.27 | 4,626 | 4,079.20 | 0.29 | -0.06 | 0.04 |
| 50.00 | -42.28 | -1.86 | 0.00 | -102.78 | 0.00 | 102.78 | 3,967.67 | 1,020.13 | 4,500 | 3,987.71 | 0.32 | -0.06 | 0.04 |
| 55.00 | -40.76 | -1.84 | 0.00 | -93.48 | 0.00 | 93.48 | 3,895.77 | 991.85 | 4,254 | 3,806.08 | 0.39 | -0.07 | 0.04 |
| 60.00 | -39.25 | -1.81 | 0.00 | -84.30 | 0.00 | 84.30 | 3,821.70 | 963.58 | 4,015 | 3,626.44 | 0.47 | -0.08 | 0.03 |
| 65.00 | -38.96 | -1.80 | 0.00 | -75.26 | 0.00 | 75.26 | 3,745.46 | 935.30 | 3,783 | 3,448.96 | 0.56 | -0.09 | 0.03 |
| 66.00 | -38.36 | -1.79 | 0.00 | -73.46 | 0.00 | 73.46 | 3,729.95 | 929.64 | 3,737 | 3,413.73 | 0.58 | -0.09 | 0.03 |
| 68.00 | -37.63 | -1.77 | 0.00 | -69.87 | 0.00 | 69.87 | 3,698.67 | 918.33 | 3,647 | 3,343.58 | 0.61 | -0.09 | 0.03 |
| 70.00 | -36.54 | -1.75 | 0.00 | -66.33 | 0.00 | 66.33 | 3,667.05 | 907.02 | 3,557 | 3,273.81 | 0.65 | -0.09 | 0.03 |
| 73.80 | -36.20 | -1.74 | 0.00 | -59.68 | 0.00 | 59.68 | 3,606.00 | 885.53 | 3,391 | 3,142.39 | 0.73 | -0.10 | 0.03 |
| 75.00 | -36.17 | -1.74 | 0.00 | -57.59 | 0.00 | 57.59 | 3,586.46 | 878.75 | 3,339 | 3,101.20 | 0.76 | -0.10 | 0.03 |
| 75.10 | -35.90 | -1.73 | 0.00 | -57.42 | 0.00 | 57.42 | 3,584.83 | 878.18 | 3,335 | 3,097.77 | 0.76 | -0.10 | 0.03 |
| 76.00 | -34.66 | -1.70 | 0.00 | -55.86 | 0.00 | 55.86 | 3,570.09 | 873.09 | 3,296 | 3,066.99 | 0.78 | -0.10 | 0.03 |
| 80.00 | -34.07 | -1.68 | 0.00 | -49.07 | 0.00 | 49.07 | 3,503.71 | 850.47 | 3,128 | 2,931.29 | 0.87 | -0.11 | 0.03 |
| 82.16 | -32.83 | -1.64 | 0.00 | -45.43 | 0.00 | 45.43 | 3,467.23 | 838.23 | 3,038 | 2,858.66 | 0.91 | -0.11 | 0.03 |
| 85.00 | -32.39 | -1.63 | 0.00 | -40.78 | 0.00 | 40.78 | 3,418.78 | 822.19 | 2,923 | 2,764.27 | 0.98 | -0.11 | 0.02 |

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 86.00 | -27.70 | -1.46 | 0.00 | -39.16 | 0.00 | 39.16 | 3,401.54 | 816.54 | 2,883 | 2,731.23 | 1.01 | -0.12 | 0.02 |
| 87.83 | -27.20 | -1.44 | 0.00 | -36.49 | 0.00 | 36.49 | 2,692.45 | 683.79 | 2,426 | 2,176.03 | 1.05 | -0.12 | 0.03 |
| 90.00 | -26.97 | -1.43 | 0.00 | -33.36 | 0.00 | 33.36 | 2,665.65 | 673.56 | 2,354 | 2,121.90 | 1.11 | -0.12 | 0.03 |
| 91.00 | -24.20 | -1.33 | 0.00 | -31.93 | 0.00 | 31.93 | 2,653.16 | 668.85 | 2,321 | 2,097.06 | 1.13 | -0.12 | 0.02 |
| 95.00 | -23.11 | -1.28 | 0.00 | -26.62 | 0.00 | 26.62 | 2,602.34 | 650.00 | 2,192 | 1,998.45 | 1.23 | -0.13 | 0.02 |
| 100.00 | -20.92 | -1.18 | 0.00 | -20.22 | 0.00 | 20.22 | 2,536.86 | 626.44 | 2,036 | 1,876.95 | 1.37 | -0.13 | 0.02 |
| 104.00 | -17.73 | -1.03 | 0.00 | -15.49 | 0.00 | 15.49 | 2,482.92 | 607.58 | 1,916 | 1,781.28 | 1.48 | -0.13 | 0.02 |
| 104.30 | -17.64 | -1.03 | 0.00 | -15.18 | 0.00 | 15.18 | 2,478.81 | 606.17 | 1,907 | 1,774.16 | 1.49 | -0.14 | 0.02 |
| 104.70 | -17.08 | -1.00 | 0.00 | -14.77 | 0.00 | 14.77 | 2,473.33 | 604.29 | 1,895 | 1,764.69 | 1.50 | -0.14 | 0.02 |
| 104.80 | -16.90 | -0.99 | 0.00 | -14.67 | 0.00 | 14.67 | 2,471.96 | 603.81 | 1,892 | 1,762.32 | 1.50 | -0.14 | 0.02 |
| 104.90 | -16.86 | -0.99 | 0.00 | -14.58 | 0.00 | 14.58 | 2,470.59 | 603.34 | 1,889 | 1,759.95 | 1.51 | -0.14 | 0.02 |
| 105.00 | -16.48 | -0.97 | 0.00 | -14.48 | 0.00 | 14.48 | 2,469.21 | 602.87 | 1,886 | 1,757.59 | 1.51 | -0.14 | 0.02 |
| 107.00 | -15.91 | -0.94 | 0.00 | -12.53 | 0.00 | 12.53 | 2,441.54 | 593.45 | 1,828 | 1,710.48 | 1.57 | -0.14 | 0.01 |
| 110.00 | -10.37 | -0.65 | 0.00 | -9.71 | 0.00 | 9.71 | 2,399.39 | 579.31 | 1,741 | 1,640.54 | 1.65 | -0.14 | 0.01 |
| 115.00 | -9.54 | -0.61 | 0.00 | -6.44 | 0.00 | 6.44 | 2,327.39 | 555.74 | 1,603 | 1,525.98 | 1.80 | -0.14 | 0.01 |
| 120.00 | -5.80 | -0.38 | 0.00 | -3.41 | 0.00 | 3.41 | 2,252.90 | 532.18 | 1,470 | 1,413.90 | 1.95 | -0.14 | 0.01 |
| 124.60 | -5.74 | -0.38 | 0.00 | -1.65 | 0.00 | 1.65 | 2,161.12 | 510.50 | 1,352 | 1,300.49 | 2.09 | -0.14 | 0.00 |
| 124.90 | -5.66 | -0.37 | 0.00 | -1.53 | 0.00 | 1.53 | 2,155.14 | 509.09 | 1,345 | 1,293.26 | 2.10 | -0.14 | 0.00 |
| 125.00 | -5.27 | -0.35 | 0.00 | -1.50 | 0.00 | 1.50 | 2,153.14 | 508.62 | 1,342 | 1,290.85 | 2.10 | -0.14 | 0.00 |
| 128.00 | -3.34 | -0.22 | 0.00 | -0.45 | 0.00 | 0.45 | 2,093.29 | 494.48 | 1,269 | 1,219.72 | 2.19 | -0.14 | 0.00 |
| 129.80 | -3.27 | -0.22 | 0.00 | -0.04 | 0.00 | 0.04 | 2,057.38 | 485.99 | 1,226 | 1,178.00 | 2.25 | -0.14 | 0.00 |
| 130.00 | 0.00 | -0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 2,053.39 | 485.05 | 1,221 | 1,173.41 | 2.25 | -0.14 | 0.00 |

**0.9D - 1.0Ev + 1.0Eh Normal** **Seismic (Reduced DL)**

## CALCULATED FORCES

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | -44.18 | -1.97 | 0.00 | -198.87 | 0.00 | 198.87 | 6,793.61 | 1,712.83 | 9,515 | 8,594.34 | 0.00 | 0.00 | 0.03 |
| 5.00 | -42.58 | -1.97 | 0.00 | -189.02 | 0.00 | 189.02 | 6,692.31 | 1,675.12 | 9,100 | 8,278.33 | 0.00 | -0.01 | 0.03 |
| 10.00 | -41.02 | -1.97 | 0.00 | -179.14 | 0.00 | 179.14 | 6,588.83 | 1,637.42 | 8,695 | 7,965.37 | 0.01 | -0.01 | 0.03 |
| 15.00 | -39.48 | -1.97 | 0.00 | -169.27 | 0.00 | 169.27 | 6,483.18 | 1,599.72 | 8,300 | 7,655.67 | 0.03 | -0.02 | 0.03 |
| 20.00 | -37.97 | -1.97 | 0.00 | -159.41 | 0.00 | 159.41 | 6,375.36 | 1,562.02 | 7,913 | 7,349.39 | 0.05 | -0.02 | 0.03 |
| 25.00 | -36.50 | -1.96 | 0.00 | -149.58 | 0.00 | 149.58 | 6,265.37 | 1,524.32 | 7,536 | 7,046.72 | 0.08 | -0.03 | 0.03 |
| 30.00 | -35.06 | -1.95 | 0.00 | -139.79 | 0.00 | 139.79 | 6,153.21 | 1,486.61 | 7,168 | 6,747.85 | 0.11 | -0.04 | 0.03 |
| 35.00 | -33.65 | -1.93 | 0.00 | -130.07 | 0.00 | 130.07 | 6,038.88 | 1,448.91 | 6,809 | 6,452.96 | 0.16 | -0.04 | 0.03 |
| 40.00 | -33.51 | -1.93 | 0.00 | -120.42 | 0.00 | 120.42 | 5,922.38 | 1,411.21 | 6,459 | 6,162.22 | 0.20 | -0.05 | 0.03 |
| 40.50 | -31.48 | -1.89 | 0.00 | -119.46 | 0.00 | 119.46 | 5,910.61 | 1,407.44 | 6,425 | 6,133.39 | 0.21 | -0.05 | 0.03 |
| 45.00 | -30.37 | -1.88 | 0.00 | -110.93 | 0.00 | 110.93 | 5,803.70 | 1,373.51 | 6,119 | 5,875.83 | 0.26 | -0.06 | 0.02 |
| 47.50 | -29.83 | -1.87 | 0.00 | -106.24 | 0.00 | 106.24 | 4,002.81 | 1,034.27 | 4,626 | 4,079.20 | 0.29 | -0.06 | 0.03 |
| 50.00 | -28.77 | -1.84 | 0.00 | -101.58 | 0.00 | 101.58 | 3,967.67 | 1,020.13 | 4,500 | 3,987.71 | 0.32 | -0.06 | 0.03 |
| 55.00 | -27.73 | -1.82 | 0.00 | -92.36 | 0.00 | 92.36 | 3,895.77 | 991.85 | 4,254 | 3,806.08 | 0.39 | -0.07 | 0.03 |
| 60.00 | -26.71 | -1.79 | 0.00 | -83.27 | 0.00 | 83.27 | 3,821.70 | 963.58 | 4,015 | 3,626.44 | 0.47 | -0.08 | 0.03 |
| 65.00 | -26.51 | -1.79 | 0.00 | -74.32 | 0.00 | 74.32 | 3,745.46 | 935.30 | 3,783 | 3,448.96 | 0.55 | -0.09 | 0.03 |
| 66.00 | -26.10 | -1.77 | 0.00 | -72.54 | 0.00 | 72.54 | 3,729.95 | 929.64 | 3,737 | 3,413.73 | 0.57 | -0.09 | 0.03 |
| 68.00 | -25.60 | -1.76 | 0.00 | -68.99 | 0.00 | 68.99 | 3,698.67 | 918.33 | 3,647 | 3,343.58 | 0.61 | -0.09 | 0.03 |
| 70.00 | -24.86 | -1.73 | 0.00 | -65.48 | 0.00 | 65.48 | 3,667.05 | 907.02 | 3,557 | 3,273.81 | 0.65 | -0.09 | 0.03 |
| 73.80 | -24.63 | -1.72 | 0.00 | -58.92 | 0.00 | 58.92 | 3,606.00 | 885.53 | 3,391 | 3,142.39 | 0.72 | -0.10 | 0.03 |
| 75.00 | -24.61 | -1.72 | 0.00 | -56.85 | 0.00 | 56.85 | 3,586.46 | 878.75 | 3,339 | 3,101.20 | 0.75 | -0.10 | 0.03 |
| 75.10 | -24.42 | -1.71 | 0.00 | -56.68 | 0.00 | 56.68 | 3,584.83 | 878.18 | 3,335 | 3,097.77 | 0.75 | -0.10 | 0.03 |
| 76.00 | -23.58 | -1.68 | 0.00 | -55.14 | 0.00 | 55.14 | 3,570.09 | 873.09 | 3,296 | 3,066.99 | 0.77 | -0.10 | 0.03 |
| 80.00 | -23.18 | -1.66 | 0.00 | -48.43 | 0.00 | 48.43 | 3,503.71 | 850.47 | 3,128 | 2,931.29 | 0.86 | -0.11 | 0.02 |
| 82.16 | -22.34 | -1.62 | 0.00 | -44.84 | 0.00 | 44.84 | 3,467.23 | 838.23 | 3,038 | 2,858.66 | 0.91 | -0.11 | 0.02 |
| 85.00 | -22.04 | -1.60 | 0.00 | -40.25 | 0.00 | 40.25 | 3,418.78 | 822.19 | 2,923 | 2,764.27 | 0.97 | -0.11 | 0.02 |
| 86.00 | -18.84 | -1.44 | 0.00 | -38.65 | 0.00 | 38.65 | 3,401.54 | 816.54 | 2,883 | 2,731.23 | 1.00 | -0.11 | 0.02 |
| 87.83 | -18.51 | -1.42 | 0.00 | -36.01 | 0.00 | 36.01 | 2,692.45 | 683.79 | 2,426 | 2,176.03 | 1.04 | -0.12 | 0.02 |
| 90.00 | -18.35 | -1.41 | 0.00 | -32.92 | 0.00 | 32.92 | 2,665.65 | 673.56 | 2,354 | 2,121.90 | 1.09 | -0.12 | 0.02 |
| 91.00 | -16.47 | -1.31 | 0.00 | -31.51 | 0.00 | 31.51 | 2,653.16 | 668.85 | 2,321 | 2,097.06 | 1.12 | -0.12 | 0.02 |
| 95.00 | -15.72 | -1.26 | 0.00 | -26.28 | 0.00 | 26.28 | 2,602.34 | 650.00 | 2,192 | 1,998.45 | 1.22 | -0.12 | 0.02 |
| 100.00 | -14.23 | -1.17 | 0.00 | -19.96 | 0.00 | 19.96 | 2,536.86 | 626.44 | 2,036 | 1,876.95 | 1.36 | -0.13 | 0.02 |
| 104.00 | -12.07 | -1.02 | 0.00 | -15.29 | 0.00 | 15.29 | 2,482.92 | 607.58 | 1,916 | 1,781.28 | 1.47 | -0.13 | 0.01 |
| 104.30 | -12.00 | -1.01 | 0.00 | -14.99 | 0.00 | 14.99 | 2,478.81 | 606.17 | 1,907 | 1,774.16 | 1.47 | -0.13 | 0.01 |
| 104.70 | -11.62 | -0.99 | 0.00 | -14.58 | 0.00 | 14.58 | 2,473.33 | 604.29 | 1,895 | 1,764.69 | 1.49 | -0.13 | 0.01 |
| 104.80 | -11.50 | -0.98 | 0.00 | -14.49 | 0.00 | 14.49 | 2,471.96 | 603.81 | 1,892 | 1,762.32 | 1.49 | -0.13 | 0.01 |
| 104.90 | -11.47 | -0.98 | 0.00 | -14.39 | 0.00 | 14.39 | 2,470.59 | 603.34 | 1,889 | 1,759.95 | 1.49 | -0.13 | 0.01 |
| 105.00 | -11.21 | -0.96 | 0.00 | -14.29 | 0.00 | 14.29 | 2,469.21 | 602.87 | 1,886 | 1,757.59 | 1.49 | -0.13 | 0.01 |
| 107.00 | -10.82 | -0.93 | 0.00 | -12.37 | 0.00 | 12.37 | 2,441.54 | 593.45 | 1,828 | 1,710.48 | 1.55 | -0.14 | 0.01 |
| 110.00 | -7.06 | -0.64 | 0.00 | -9.59 | 0.00 | 9.59 | 2,399.39 | 579.31 | 1,741 | 1,640.54 | 1.64 | -0.14 | 0.01 |

| Seg Elev (ft) | Pu FY (-) (kips) | Vu FX (-) (kips) | Tu MY (ft-kips) | Mu MZ (fr-kips) | Mu Mx (ft-kips) | Resultant Moment (ft-kips) | Phi Pn (kips) | Phi Vn (kips) | Phi Tn (kips) | Phi Mn (kips) | Total Deflect (in) | Rotation (deg) | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 115.00 | -6.49 | -0.60 | 0.00 | -6.36 | 0.00 | 6.36 | 2,327.39 | 555.74 | 1,603 | 1,525.98 | 1.78 | -0.14 | 0.01 |
| 120.00 | -3.95 | -0.38 | 0.00 | -3.37 | 0.00 | 3.37 | 2,252.90 | 532.18 | 1,470 | 1,413.90 | 1.93 | -0.14 | 0.00 |
| 124.60 | -3.90 | -0.37 | 0.00 | -1.63 | 0.00 | 1.63 | 2,161.12 | 510.50 | 1,352 | 1,300.49 | 2.07 | -0.14 | 0.00 |
| 124.90 | -3.85 | -0.37 | 0.00 | -1.51 | 0.00 | 1.51 | 2,155.14 | 509.09 | 1,345 | 1,293.26 | 2.08 | -0.14 | 0.00 |
| 125.00 | -3.59 | -0.35 | 0.00 | -1.48 | 0.00 | 1.48 | 2,153.14 | 508.62 | 1,342 | 1,290.85 | 2.08 | -0.14 | 0.00 |
| 128.00 | -2.28 | -0.22 | 0.00 | -0.44 | 0.00 | 0.44 | 2,093.29 | 494.48 | 1,269 | 1,219.72 | 2.17 | -0.14 | 0.00 |
| 129.80 | -2.22 | -0.22 | 0.00 | -0.04 | 0.00 | 0.04 | 2,057.38 | 485.99 | 1,226 | 1,178.00 | 2.22 | -0.14 | 0.00 |
| 130.00 | 0.00 | -0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 2,053.39 | 485.05 | 1,221 | 1,173.41 | 2.23 | -0.14 | 0.00 |

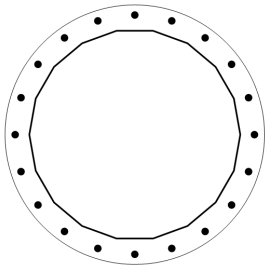
## ANALYSIS SUMMARY

| | 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 + 1.0W Normal | 29.21 | 0.00 | 64.63 | 0.00 | 0.00 | 2783.30 | 47.50 | 0.37 |
| 0.9D + 1.0W Normal | 29.19 | 0.00 | 48.47 | 0.00 | 0.00 | 2765.59 | 47.50 | 0.37 |
| 1.2D + 1.0Di + 1.0Wi Normal | 7.63 | 0.00 | 83.88 | 0.00 | 0.00 | 705.63 | 47.50 | 0.1 |
| 1.2D + 1.0Ev + 1.0Eh Normal | 1.98 | 0.00 | 64.93 | 0.00 | 0.00 | 200.51 | 47.50 | 0.04 |
| 0.9D - 1.0Ev + 1.0Eh Normal | 1.97 | 0.00 | 44.18 | 0.00 | 0.00 | 198.87 | 47.50 | 0.03 |
| 1.0D + 1.0W Service Normal | 6.87 | 0.00 | 53.87 | 0.00 | 0.00 | 652.16 | 47.50 | 0.09 |

# BASE PLATE ANALYSIS @ 0 FT

## PLATE PARAMETERS (ID# 7903)

| | | |
|---|---|---|
| Diameter: | 77 | in |
| Shape: | Round | |
| Thickness: | 2 | in |
| Grade: | A572-60 | |
| Yield Strength: | 60 | ksi |
| Tensile Strength: | 75 | ksi |
| Rod Detail Type: | d | |
| Clear Distance | 3 | in |
| Base Weld Size: | 0.125 | in |
| Orientation Offset: | - | ° |
| Analysis Type: | Plastic | |
| Neutral Axis: | 252 | ° |



## ANCHOR ROD PARAMETERS

| Class | Arrangement | Quantity | Diameter (in) | Circle (in) | Grade | Fy (ksi) | Fu (ksi) | Spacing (in) | Offset (°) |
|---|---|---|---|---|---|---|---|---|---|
| Original [ID# 8005] | Radial | 20 | 2.25 | 71 | A615-75 | 75 | 100 | - | - |

## ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (20) 2.25"ø [ID 8005]

| Position | Radians | X (in) | Y (in) | Moment Arm (in) | Inertia ($in^4$) | Axial Load (k) | Shear Load (k) |
|---|---|---|---|---|---|---|---|
| 1 | 0.314 | 33.76 | 10.97 | 27.658 | 2485.257 | 83.83 | 1.36 |
| 2 | 0.628 | 28.72 | 20.87 | 20.095 | 1312.272 | 83.83 | 1.87 |
| 3 | 0.942 | 20.87 | 28.72 | 10.565 | 363.310 | 83.83 | 2.20 |
| 4 | 1.257 | 10.97 | 33.76 | 0.000 | 0.839 | 83.83 | 2.31 |
| 5 | 1.571 | 0.00 | 35.50 | -10.565 | 363.310 | -70.90 | 2.20 |
| 6 | 1.885 | -10.97 | 33.76 | -20.095 | 1312.275 | -70.90 | 1.87 |
| 7 | 2.199 | -20.87 | 28.72 | -27.658 | 2485.257 | -70.90 | 1.36 |
| 8 | 2.513 | -28.72 | 20.87 | -32.514 | 3434.219 | -70.90 | 0.72 |
| 9 | 2.827 | -33.76 | 10.97 | -34.188 | 3796.691 | -70.90 | 0.00 |
| 10 | 3.142 | -35.50 | 0.00 | -32.514 | 3434.218 | -70.90 | 0.72 |
| 11 | 3.456 | -33.76 | -10.97 | -27.658 | 2485.256 | -70.90 | 1.36 |
| 12 | 3.770 | -28.72 | -20.87 | -20.095 | 1312.274 | -70.90 | 1.87 |
| 13 | 4.084 | -20.87 | -28.72 | -10.565 | 363.312 | -70.90 | 2.20 |
| 14 | 4.398 | -10.97 | -33.76 | 0.000 | 0.839 | 83.83 | 2.31 |
| 15 | 4.712 | 0.00 | -35.50 | 10.565 | 363.311 | 83.83 | 2.20 |
| 16 | 5.027 | 10.97 | -33.76 | 20.095 | 1312.273 | 83.83 | 1.87 |
| 17 | 5.341 | 20.87 | -28.72 | 27.658 | 2485.258 | 83.83 | 1.36 |
| 18 | 5.655 | 28.72 | -20.87 | 32.514 | 3434.220 | 83.83 | 0.72 |
| 19 | 5.969 | 33.76 | -10.97 | 34.188 | 3796.691 | 83.83 | 0.00 |
| 20 | 6.283 | 35.50 | 0.00 | 32.514 | 3434.220 | 83.83 | 0.72 |

## REACTION DISTRIBUTION

| Component | ID | Moment Mu (k-ft) | Axial Load Pu (k) | Shear Vu (k) | Moment Factor |
|---|---|---|---|---|---|
| Pole | 62"ø x 0.5" (18 Sides) | 2783.3 | 64.63 | 29.21 | 1.000 |
| Bolt Group | Original (20) 2.25"ø | 2783.3 | - | 29.21 | 1.000 |
| | **TOTALS** | **2783.3** | **64.63** | **29.21** | |

## COMPONENT PROPERTIES

| Component | ID | Gross Area ($in^2$) | Net Area ($in^2$) | Individual Inertia ($in^4$) | Moment of Inertia ($in^4$) | Threads/in |
|---|---|---|---|---|---|---|
| Pole | 62"ø x 0.5" (18 Sides) | 96.1143 | - | - | 45449.07 | - |
| Bolt Group | Original (20) 2.25"ø | 3.9761 | 3.2477 | 0.8393 | 37975.30 | 4.5 |

## EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

**POLE PROPERTIES**

| | | |
|---|---|---|
| Flat-to-Flat Diameter: | 62.12 | in |
| Point-to-Point Diameter: | 63.08 | in |
| Flat Width: | 10.954 | in |
| Flat Radians: | 0.349 | rad |

**PLATE PROPERTIES**

| | | |
|---|---|---|
| Neutral Axis: | 252 | ° |
| Bend Line Lower Limit: | 5.487 | rad |
| Bend Line Upper Limit: | 0.168 | rad |

| Bend Line | Chord Length (in) | Additional Length (in) | Section Modulus ($in^3$) | Applied Moment Mu (k-in) | Moment Capacity ϕMn (k-in) | Ratio |
|---|---|---|---|---|---|---|
| Flat | 40.919 | 0.00 | 40.919 | 594.3 | 2209.6 | 0.269 |
| Corner | 39.425 | 0.00 | 39.425 | 453.9 | 2129.0 | 0.213 |
| Circumferential | 47.782 | 0.00 | 47.782 | 775.5 | 2580.3 | 0.301 |

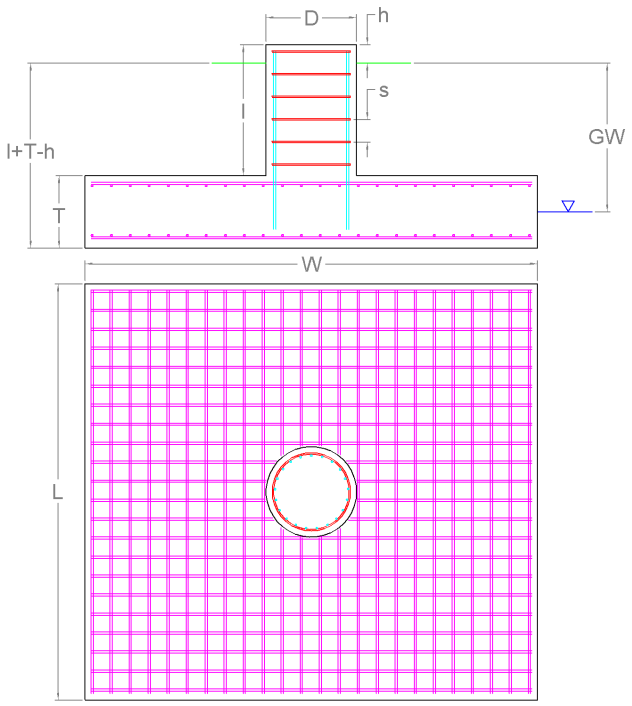
## PLASTIC ANCHOR ROD ANALYSIS

| Class | Group Quantity | Rod Diameter (in) | Applied Axial Load Pu (k) | Applied Shear Load Vu (k) | Compressive Capacity ϕPn (k) | Ratio |
|---|---|---|---|---|---|---|
| Original | 20 | 2.25 | 83.8 | 2.3 | 243.6 | 0.363 |

# Monolithic Mat Foundation Analysis (ANSI/TIA-222-H)

| Foundation & Tower Parameters | | | |
|---|---|---|---|
| Ignore Mat Rebar? | | N | |
| Ignore Pier Rebar? | | | |
| Foundation has Pier(s)? | | Y | |
| Pier Shape | | Round | |
| Pier Diameter | *D* | 8 | ft |
| Pier Height Above Ground | *h* | 1 | ft |
| Pier Length | *l* | 2.5 | ft |
| Mat Base Depth | *l+T-h* | 4.5 | ft |
| Mat Length | *L* | 29.5 | ft |
| Mat Width | *W* | 29.5 | ft |
| Mat Thickness | *T* | 3 | ft |
| Unit Weight of Concrete | | 150 | pcf |
| Tower Eccentricity | ecc | 0 | ft |
| Tower Face Width | FW | 0 | ft |
| Tower Leg Count | | 1 | |

| Reactions | | |
|---|---|---|
| Moment, $M_u$ | 2,783.3 | k-ft |
| Shear, $V_u$ | 29.2 | k |
| Axial, $P_u$ | 64.6 | k |
| Uplift, $T_u$ | 0 | k |
| Tower Weight | 64.6 | k |
| Tower Dead Load Factor | 0.9 | |




| Soil Parameters | | | |
|---|---|---|---|
| Water Table Depth [BGL] | *GW* | 6 | ft |
| Unit Weight of Soil | | 100 | pcf |
| Unit Weight of Soil [Submerged] | | 37.6 | pcf |
| Shear Friction Coefficient | | 0.6 | |
| Ultimate Bearing Pressure | | 6,000 | psf |
| Bearing Pressure Type | | Gross | |
| Conical Failure Angle | | 15 | ° |
| Capacity Increase (Transient Loads) | | 1.00 | |
| Soil Strength Reduction Factor, $\phi_s$ | | 0.75 | |
| Dead Load Factor | | 1.2 | |

| Soil Capacities | | |
|---|---|---|
| Design Moment, $M_u$ | 2,943.9 | k-ft |
| Nominal Moment Capacity, $\phi_m M_n$ | 8,005.67 | k-ft |
| $M_u / \phi_s M_n$ | **36.8%** | |
| Net Bearing Pressure | 981 | k |
| Nominal Bearing Capacity, $\phi_b P_n$ | 4,500 | k |
| Bearing Pressure Controlling Load Direction | Diagonal to Pad Edge | |
| $P_u / \phi_s P_n$ | **21.8%** | |
| Ultimate Friction Resistance | 352.38 | k |
| Ultimate Passive Pressure Resistance | 26.55 | k |
| Nominal Shear Capacity, $\phi_s V_n$ | 284.19 | k |
| $V_u / \phi_s V_n$ | **10.0%** | |

| Mat Reinforcement Parameters | | |
|---|---|---|
| Concrete Compressive Strength, $f'_c$ | 4,000 | psi |
| Mat Rebar Quantity [Lower] | 44 | |
| Mat Rebar Size # [Lower] | 8 | |
| Mat Single Rebar Area [Lower] | 0.79 | $in^2$ |
| Mat Rebar Quantity [Upper] | 28 | |
| Mat Rebar Size # [Upper] | 8 | |
| Mat Single Rebar Area [Upper] | 0.79 | $in^2$ |
| Mat Rebar Yield Strength, $F_y$ | 60 | ksi |
| Mat Clear Cover | 3 | in |
| Bending Reduction Factor, $\phi_B$ | 0.9 | |
| Shear Reduction Factor, $\phi_V$ | 0.75 | |
| Compression Reduction Factor, $\phi_C$ | 0.65 | |
| Steel Elastic Modulus | 29,000 | ksi |

| Mat Reinforcement Capacities | | |
|---|---|---|
| Compression Zone Factor, $\beta_1$ | 0.85 | |
| Lower Reinforcement Spacing | 8.08 | in |
| Upper Reinforcement Spacing | 12.87 | in |
| One Way Design Shear, $V_u$ | 107.05 | k |
| One Way Shear Capacity, $\phi V_c$ | 1,034.08 | k |
| One Way Shear Controlling Load Direction | Diagonal to Pad Edge | |
| $V_u$ / $\phi V_c$ | **10.4%** | |
| Punching Design Shear Stress, $v_u$ | 29.29 | psi |
| Punching Shear Capacity, $\phi_c V_n$ | 189.74 | psi |
| $v_u$ / $\phi_c V_n$ | **15.4%** | |
| Moment Transfer Effective Flexural Width, $_f$ | 17 | in |
| Neutral Axis Depth | 1.79 | In |
| Moment Transfer Flexural Capacity, $\phi M_{sc,f}$ | 34,971.75 | k-in |
| $\gamma_f M_{sc}$ / $\phi M_{sc,f}$ | **0.0%** | |
| Flexure Due to Soil Pressure, $M_u$ | 933.5 | k-ft |
| Lower Steel Mat Moment Capacity, $\phi M_n$ | 4,890.25 | k-ft |
| Flexural Steel Controlling Load Direction | Parallel to Pad Edge | |
| $M_u$ / $\phi M_n$ | **19.1%** | |
| Flexure Due to Uplift, $M_u$ | 1,021.04 | k-ft |
| Upper Steel Mat Moment Capacity, $\phi M_n$ | 3,138.63 | k-ft |
| $M_u$ / $\phi M_n$ | **32.5%** | |

# EXHIBIT 4

**April 21, 2022 (Rev.1)**
March 28, 2022

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

| RE: | | |
|---|---|---|
| | Site Number: | CT2094 |
| | FA Number: | 10035342 |
| | PACE Number: | MRCTB056103 |
| | PT Number: | 2051A11M90 |
| | Site Name: | CANTON - COLLINSVILLE |
| | Site Address: | 2 Sunny Lane<br>Westport, CT 06880 |

To Whom It May Concern:

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

- (3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)
- (3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.5" – Wt. = 71 lbs. /each)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (1) DC9-48-60-24-8C-EV Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs.)
- (1) DC6-48-60-18 Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs.)
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 59 lbs. /each)**
- **(1) DC6-48-60-08F Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs.)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10, dated October 18, 2019, were used to perform this analysis. HDG conducted a ground audit of the existing AT&T antenna mounts on March 16, 2022.

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 – R16.
- 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 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.12 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, $S_S$, of 0.226 and a spectral response acceleration parameter at a period of 1 second, $S_1$, of 0.067.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 50 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount is secured to the existing monopole with threaded rods. HDG considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the Proposed SitePro1 P/N RMQLP-4120-H10 mount **IS CAPABLE** of supporting the proposed installation.

| | Component | Controlling Load Case | Stress Ratio | Pass/Fail |
|---|---|---|---|---|
| **Proposed Mount Rating** | 26 | LC8 | 72% | **PASS** |

**Reference Documents:**

- Fabrication drawings pepared by SitePro1, RMQLP-4120-H10, dated October 18, 2019.

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 proposed 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

STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Daniel P. Hamm, PE
Principal

HUDSON
Design Group LLC

# Wind & Ice
# Calculations

# ANSI/TIA-222H - WIND, ICE & SEISMIC LOAD CALCULATIONS

| | | | | |
|---|---|---|---|---|
| Site Code/Name | | CT2094 - CANTON - COLLINSVILLE | | |
| State | | Connecticut | | |
| County | | Fairfield | | *Reference* |
| Structure Class | | II | | *Table 2-1* |
| Exposure Category | | B | | *Section 2.6.5.1.2* |
| Topographic Category | | 1 - Kzt = 1 | | *Section 2.6.6.2.1* |
| Mean Elevation of base of structure | $z_s$ | 51.13 | ft | *ASCE7-10 Hazards* |
| Height Above Ground | z | 102 | ft | |

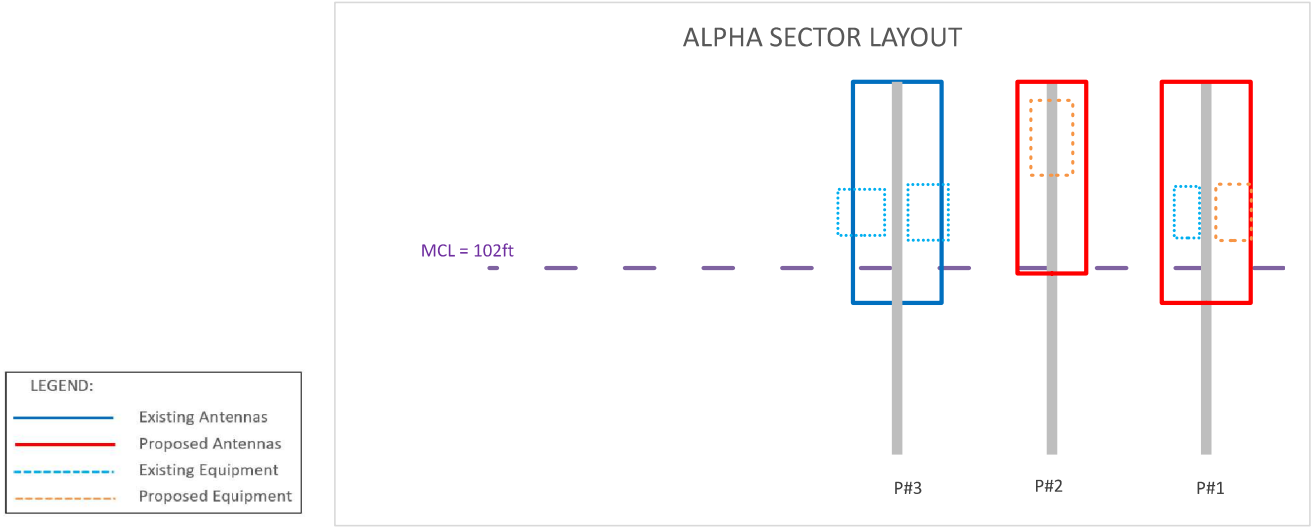
| **Wind Parameters** | | | | |
|---|---|---|---|---|
| Basic wind speed | V | 120 | mph | *Appendix N of Connecticut Building Code* |
| Wind direction probability factor | $K_d$ | 0.95 | | *Section 16.6* |
| Gust effect factor | $G_h$ | 1 | | *Section 16.6* |
| Velocity Pressure (Ka = 0.9) | | 31.27 | psf | *Section 2.6.11.6* |

| **Wind & Ice Parameters** | | | | |
|---|---|---|---|---|
| Base windspeed in conjunction with ice, $V_i$ | | 50 | mph | *ASCE7-10 Hazards Tool* |
| Base Ice thickness | $t_i$ | 1.00 | in | *ASCE7-10 Hazards Tool* |
| Ice Velocity Pressure (Ka = 0.9) | $q_{ice}$ | 5.43 | psf | *Section 2.6.11.6* |
| Design Ice Thickness | $t_{iz}$ | 1.12 | in | *Section 2.6.10* |

| **Seismic Parameters** | | | | |
|---|---|---|---|---|
| Site Soil Class | | D - Default | | *Table 2-10* |
| Seismic Design Category | | B | | *ASCE7-10 Hazards Tool* |
| Spectral Response at Short Periods | $S_s$ | 0.226 | | *Appendix N of Connecticut Building Code* |
| Spectral Response at 1sec | $S_1$ | 0.067 | | *Appendix N of Connecticut Building Code* |
| Long Period Transition Period | $T_L$ | 6 | | *ASCE7-10 Hazards Tool* |
| Seismic Importance Factor | $I_s$ | 1 | | *Table 2-3* |
| Response modification coefficient | R | 2 | | *Section 16.7* |
| Short-Period Site Coefficient | $F_a$ | 1.6 | | *Table 2-11* |
| Design Spectral Response at Short Periods | $S_{DS}$ | 0.241 | | *Section 2.7.5* |
| Seismic Response Coefficient | $C_s$ | 0.121 | | *Section 2.7.7.1* |

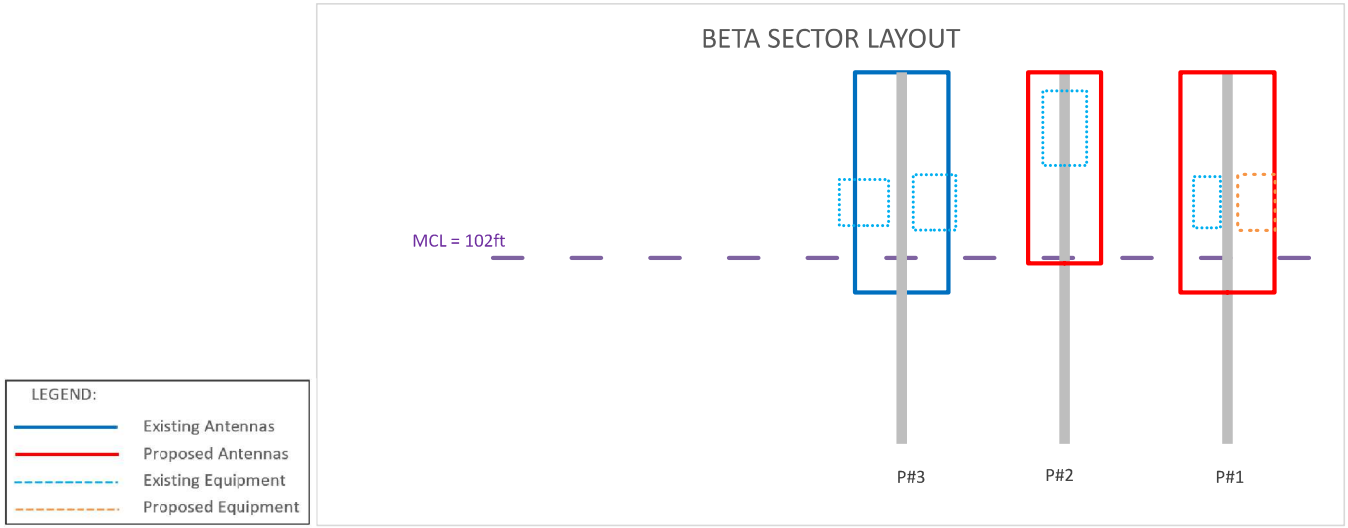
## ALPHA SECTOR

| Position | Appurtenance properties | | | | | | Wind | | Ice | Seismic |
|---|---|---|---|---|---|---|---|---|---|---|
| | Manufacturer | Model | L [in] | W [in] | D [in] | Weight [lbs] | $0^o$ [lbs] | $90^o$ [lbs] | IceWeight [lbs] | $E_H$ [lbs] |
| 1 | CCI | TPA-65R-BU6DA-K | 71.2 | 20.7 | 7.7 | 80.0 | 397.4 | 175.6 | 191.3 | 9.6 |
| 2 | Ericsson | AIR6449 B77D + AIR6419 B77G Stacked | 61.7 | 16.1 | 10.6 | 148.0 | 271.6 | 191.4 | 146.0 | 17.8 |
| 3 | CCI | DMP65R-BU6DA | 71.2 | 20.7 | 7.7 | 80.0 | 397.4 | 175.6 | 191.3 | 9.6 |
| 1 | Ericsson | 4478 B14 | 18.1 | 13.4 | 8.3 | 60.0 | 39.1 | 63.2 | 37.0 | 7.2 |
| 1 | Ericsson | 4415 B30 | 16.5 | 13.4 | 5.9 | 46.0 | 25.6 | 57.6 | 31.7 | 5.5 |
| 3 | Ericsson | 4449 B5/B12 | 17.9 | 13.2 | 9.4 | 73.0 | 43.8 | 61.6 | 37.6 | 8.8 |
| 3 | Ericsson | 8843 B2/B66A | 14.9 | 13.2 | 10.9 | 72.0 | 42.3 | 51.2 | 33.3 | 8.7 |
| 2 | Raycap | DC6-48-60-08F Surge Arrestor | 24.0 | 9.7 | 9.7 | 33.0 | 60.7 | 60.7 | 42.5 | 4.0 |



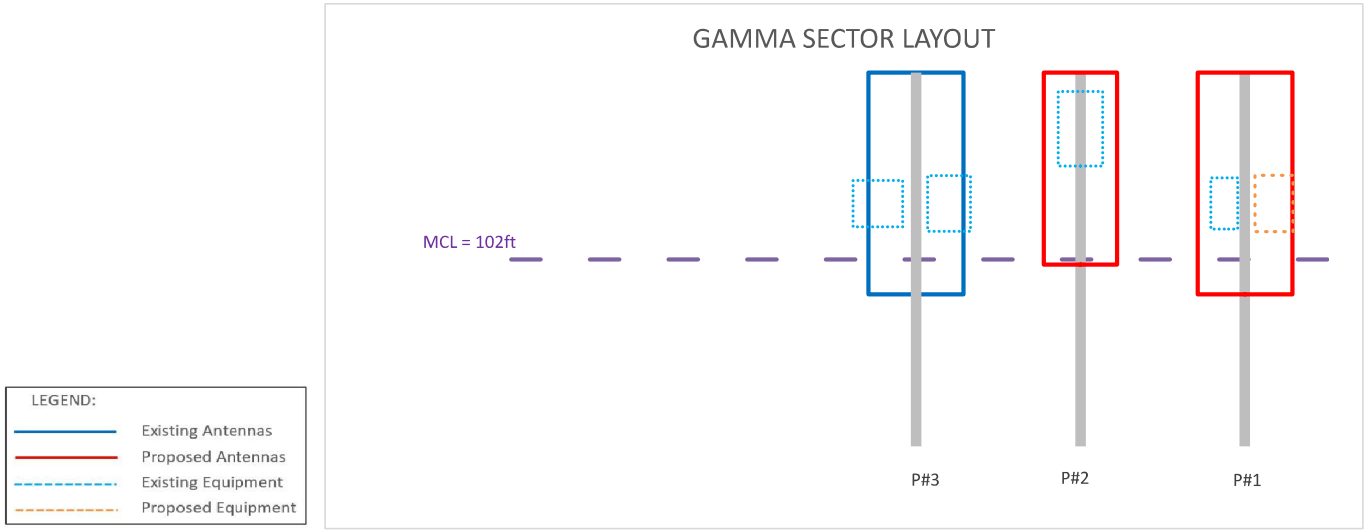
## BETA SECTOR

| Position | Appurtenance properties | | | | | | Wind | | Ice | Seismic |
|---|---|---|---|---|---|---|---|---|---|---|
| | Manufacturer | Model | L [in] | W [in] | D [in] | Weight [lbs] | $0^o$ [lbs] | $90^o$ [lbs] | IceWeight [lbs] | $E_H$ [lbs] |
| 1 | CCI | TPA-65R-BU6DA-K | 71.2 | 20.7 | 7.7 | 80.0 | 397.4 | 175.6 | 191.3 | 9.6 |
| 2 | Ericsson | AIR6449 B77D + AIR6419 B77G Stacked | 61.7 | 16.1 | 10.6 | 148.0 | 271.6 | 191.4 | 146.0 | 17.8 |
| 3 | CCI | DMP65R-BU6DA | 71.2 | 20.7 | 7.7 | 80.0 | 397.4 | 175.6 | 191.3 | 9.6 |
| 1 | Ericsson | 4478 B14 | 18.1 | 13.4 | 8.3 | 60.0 | 57.2 | 45.2 | 37.0 | 7.2 |
| 1 | Ericsson | 4415 B30 | 16.5 | 13.4 | 5.9 | 46.0 | 49.6 | 33.6 | 31.7 | 5.5 |
| 3 | Ericsson | 4449 B5/B12 | 17.9 | 13.2 | 9.4 | 73.0 | 57.1 | 48.3 | 37.6 | 8.8 |
| 3 | Ericsson | 8843 B2/B66A | 14.9 | 13.2 | 10.9 | 72.0 | 49.0 | 44.5 | 33.3 | 8.7 |
| 2 | Raycap | DC9-48-60-24-8C-EV Surge Arrestor | 24.0 | 9.7 | 9.7 | 33.0 | 60.7 | 60.7 | 42.5 | 4.0 |



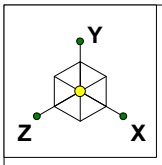
## GAMMA SECTOR

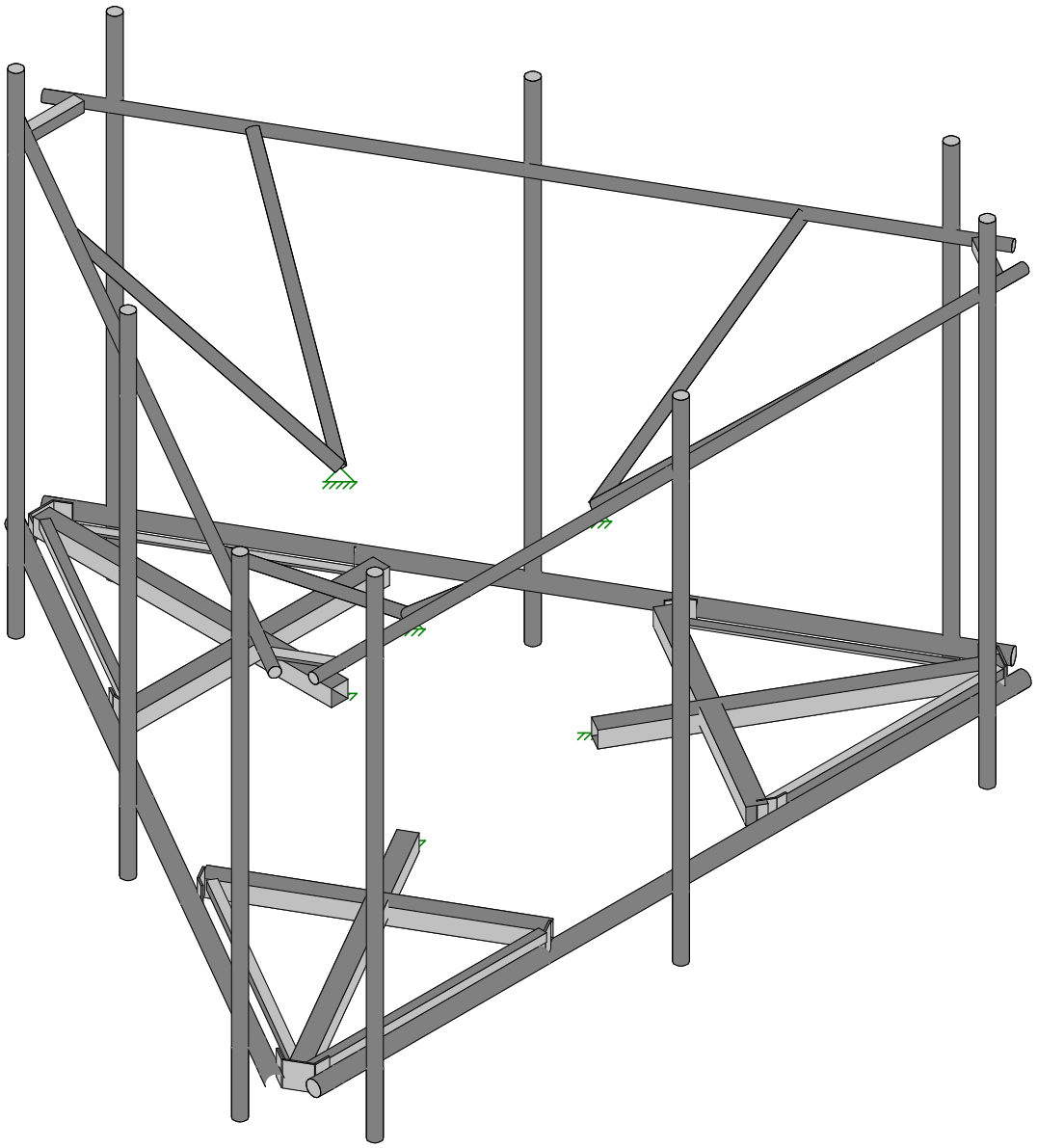
| Position | Appurtenance properties | | | | | | Wind | | Ice | Seismic |
|---|---|---|---|---|---|---|---|---|---|---|
| | Manufacturer | Model | L [in] | W [in] | D [in] | Weight [lbs] | $0^o$ [lbs] | $90^o$ [lbs] | IceWeight [lbs] | $E_H$ [lbs] |
| 1 | CCI | TPA-65R-BU6DA-K | 71.2 | 20.7 | 7.7 | 80.0 | 397.4 | 175.6 | 191.3 | 9.6 |
| 2 | Ericsson | AIR6449 B77D + AIR6419 B77G Stacked | 61.7 | 16.1 | 10.6 | 148.0 | 271.6 | 191.4 | 146.0 | 17.8 |
| 3 | CCI | DMP65R-BU6DA | 71.2 | 20.7 | 7.7 | 80.0 | 397.4 | 175.6 | 191.3 | 9.6 |
| 1 | Ericsson | 4478 B14 | 18.1 | 13.4 | 8.3 | 60.0 | 57.2 | 45.2 | 37.0 | 7.2 |
| 1 | Ericsson | 4415 B30 | 16.5 | 13.4 | 5.9 | 46.0 | 49.6 | 33.6 | 31.7 | 5.5 |
| 3 | Ericsson | 4449 B5/B12 | 17.9 | 13.2 | 9.4 | 73.0 | 57.1 | 48.3 | 37.6 | 8.8 |
| 3 | Ericsson | 8843 B2/B66A | 14.9 | 13.2 | 10.9 | 72.0 | 49.0 | 44.5 | 33.3 | 8.7 |
| 2 | Raycap | DC6-48-60-18 Surge Arrestor | 24.0 | 9.7 | 9.7 | 33.0 | 60.7 | 60.7 | 42.5 | 4.0 |



HUDSON
Design Group LLC

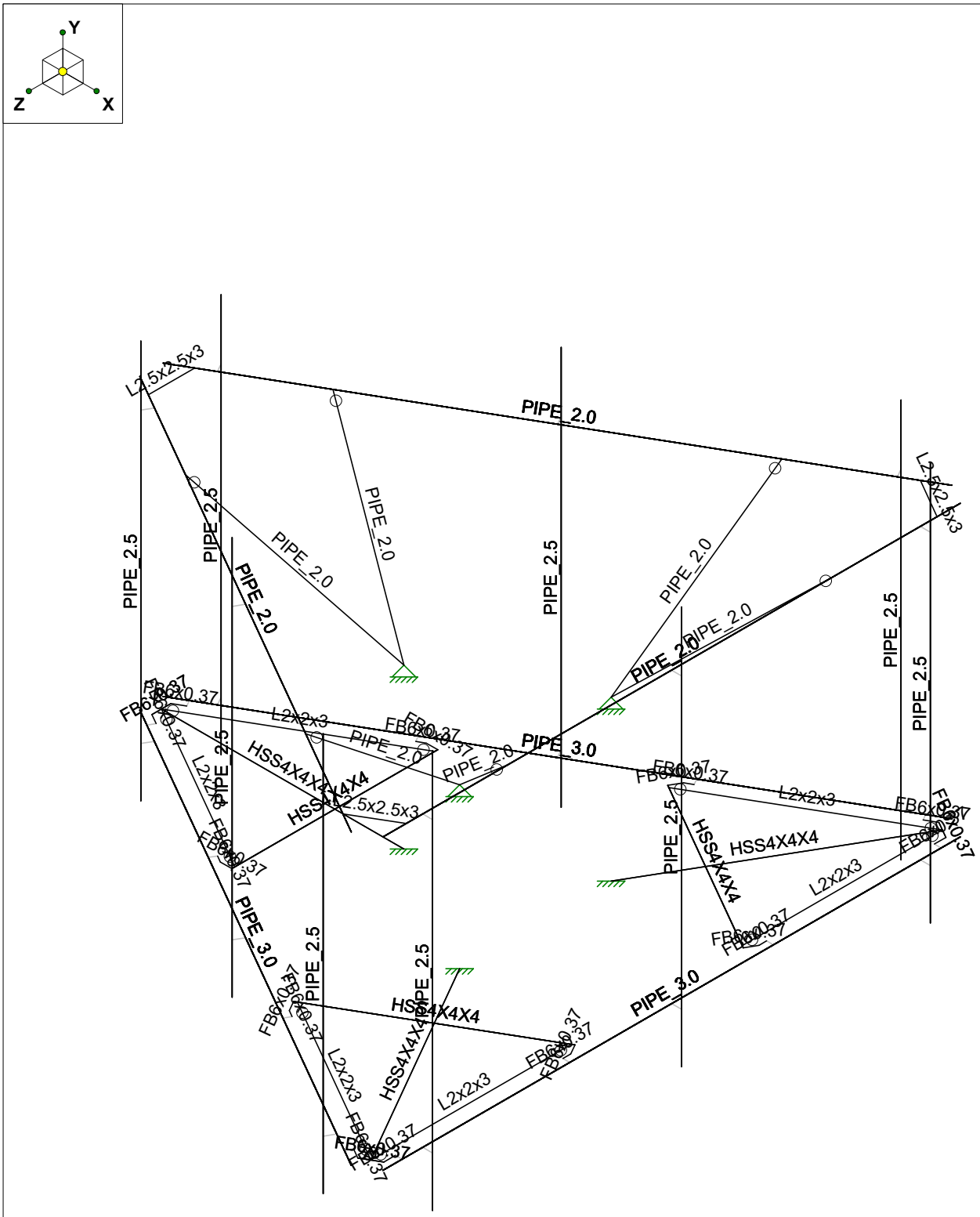
# Mount Calculations
# (Proposed Conditions)



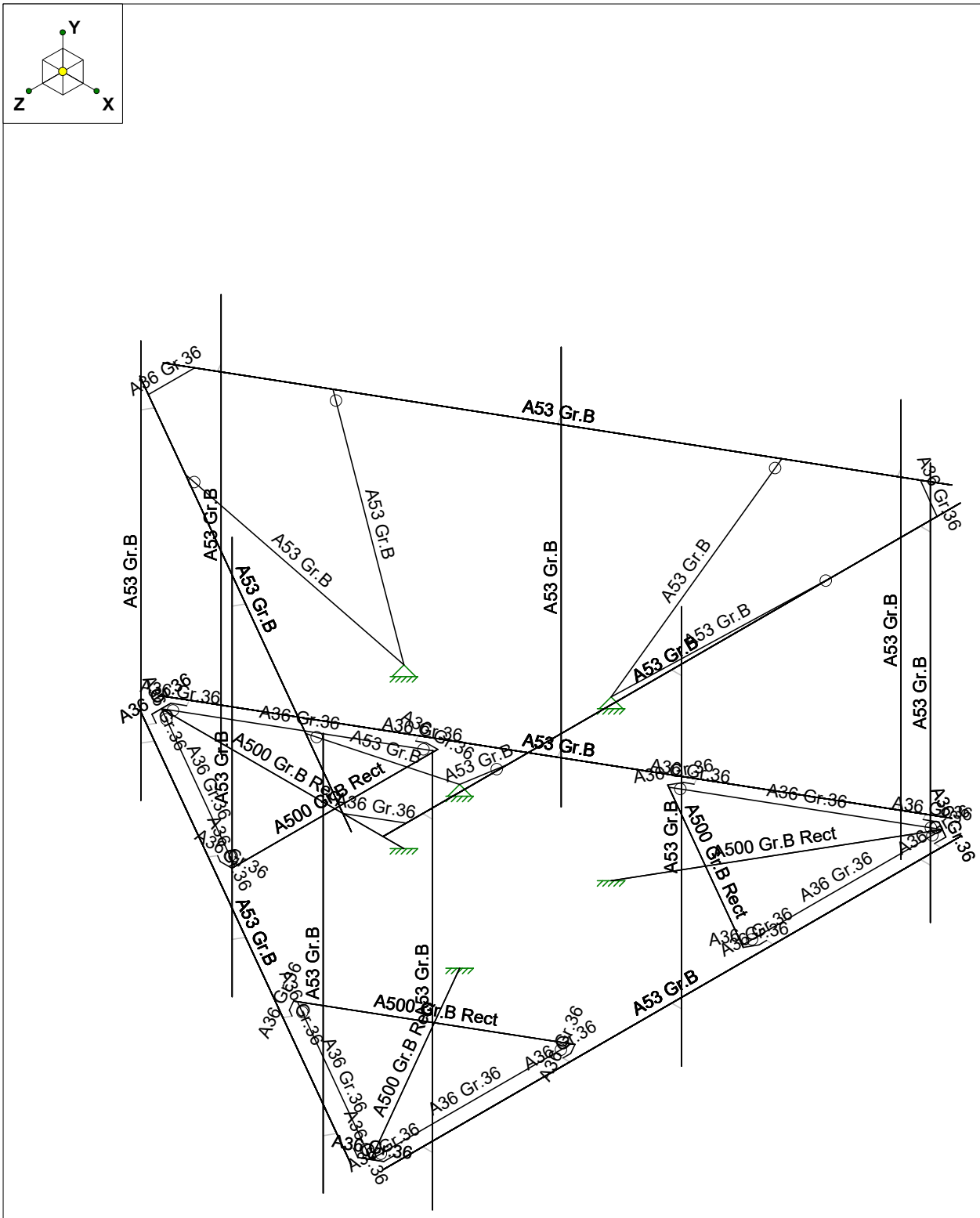
Envelope Only Solution

| | | |
|---|---|---|
| Hudson Design Group | CANTON - COLLINSVILLE | SK - 1 |
| SS | | Apr 21, 2022 at 11:11 AM |
| CT2094 | | CT2094 - Copy.r3d |



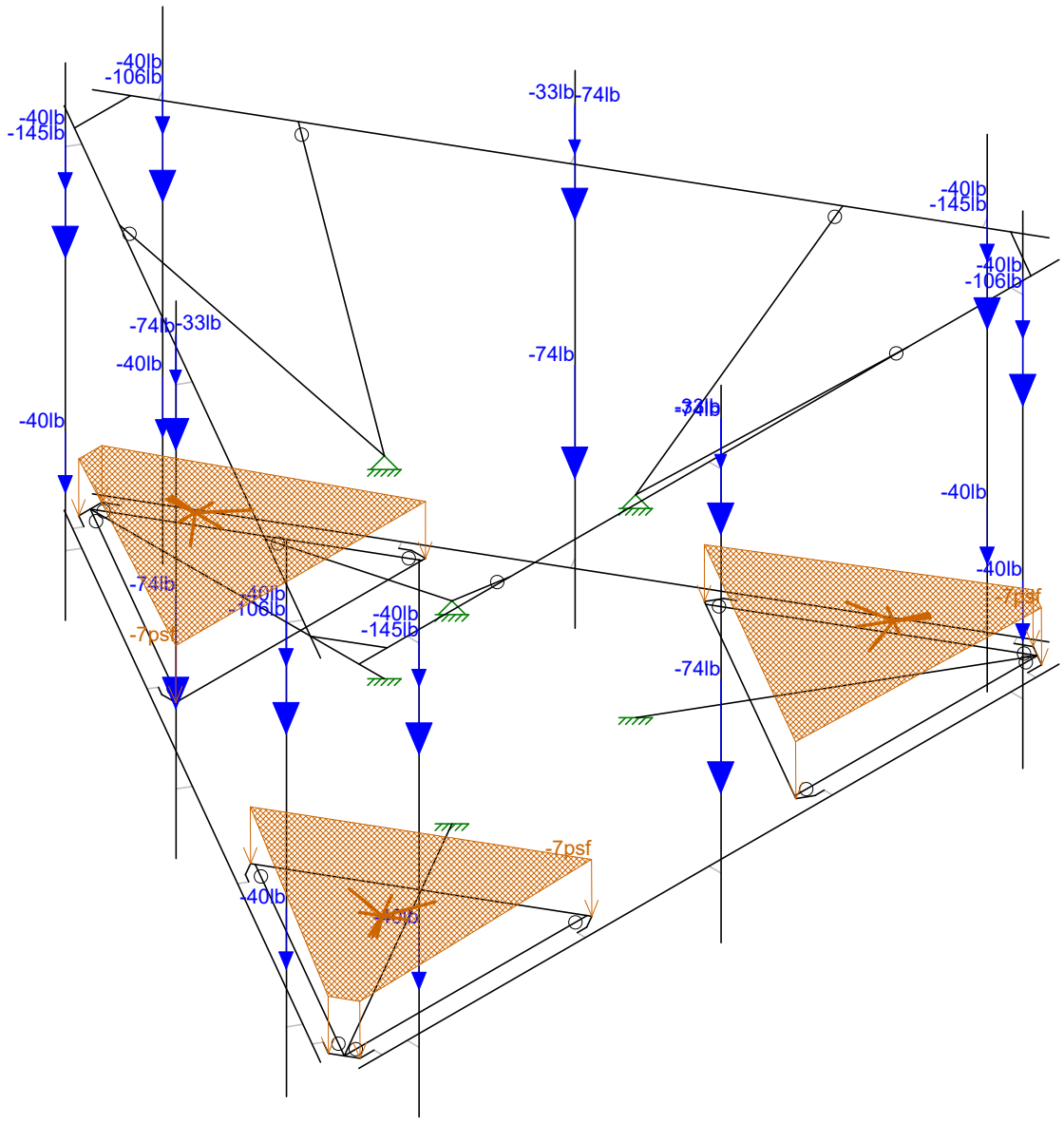

Envelope Only Solution

| | | |
|---|---|---|
| Hudson Design Group | CANTON - COLLINSVILLE | SK - 2 |
| SS | | Apr 21, 2022 at 11:12 AM |
| CT2094 | | CT2094 - Copy.r3d |



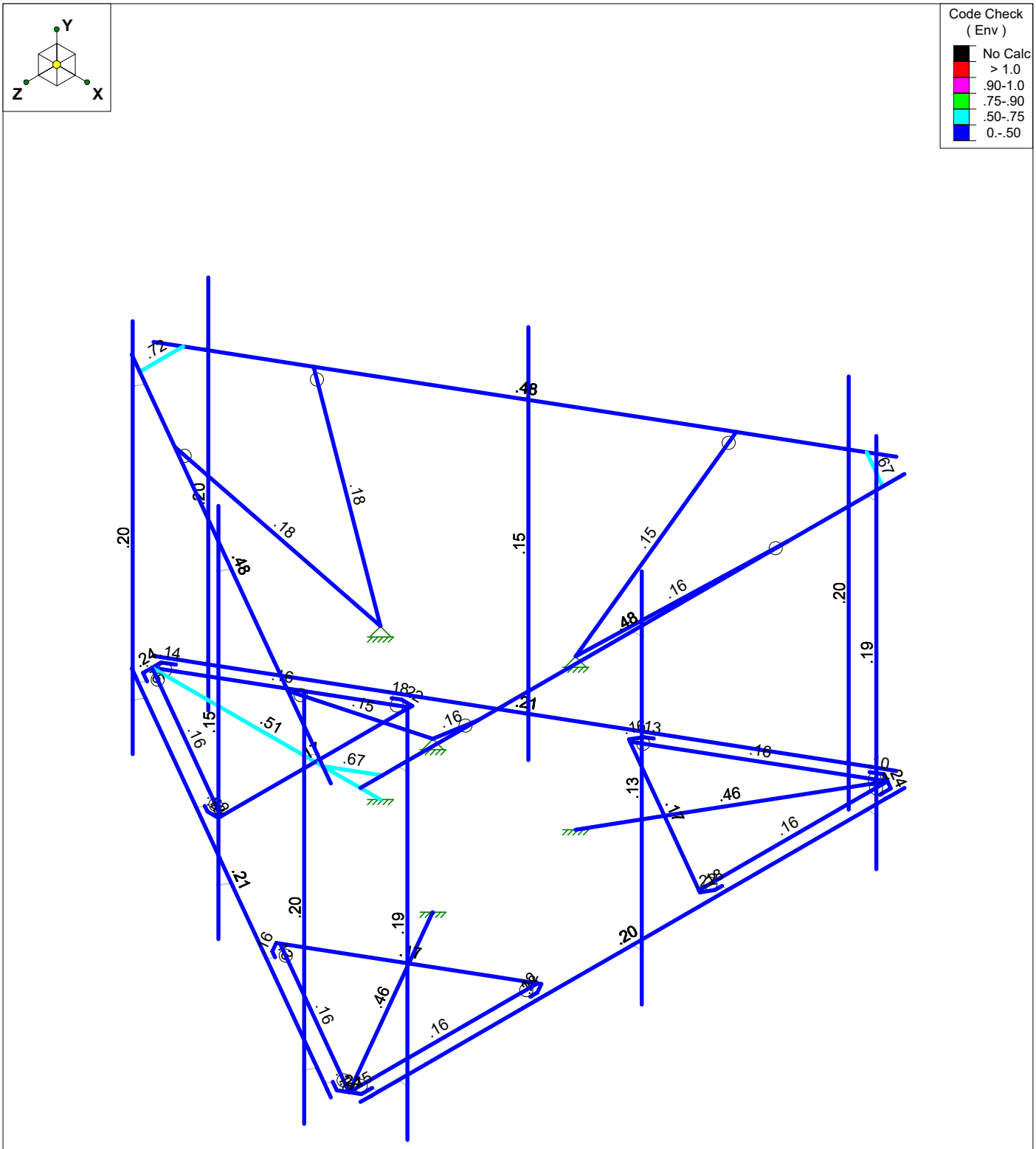

Envelope Only Solution

| | | |
|---|---|---|
| Hudson Design Group | CANTON - COLLINSVILLE | SK - 3 |
| SS | | Apr 21, 2022 at 11:12 AM |
| CT2094 | | CT2094 - Copy.r3d |



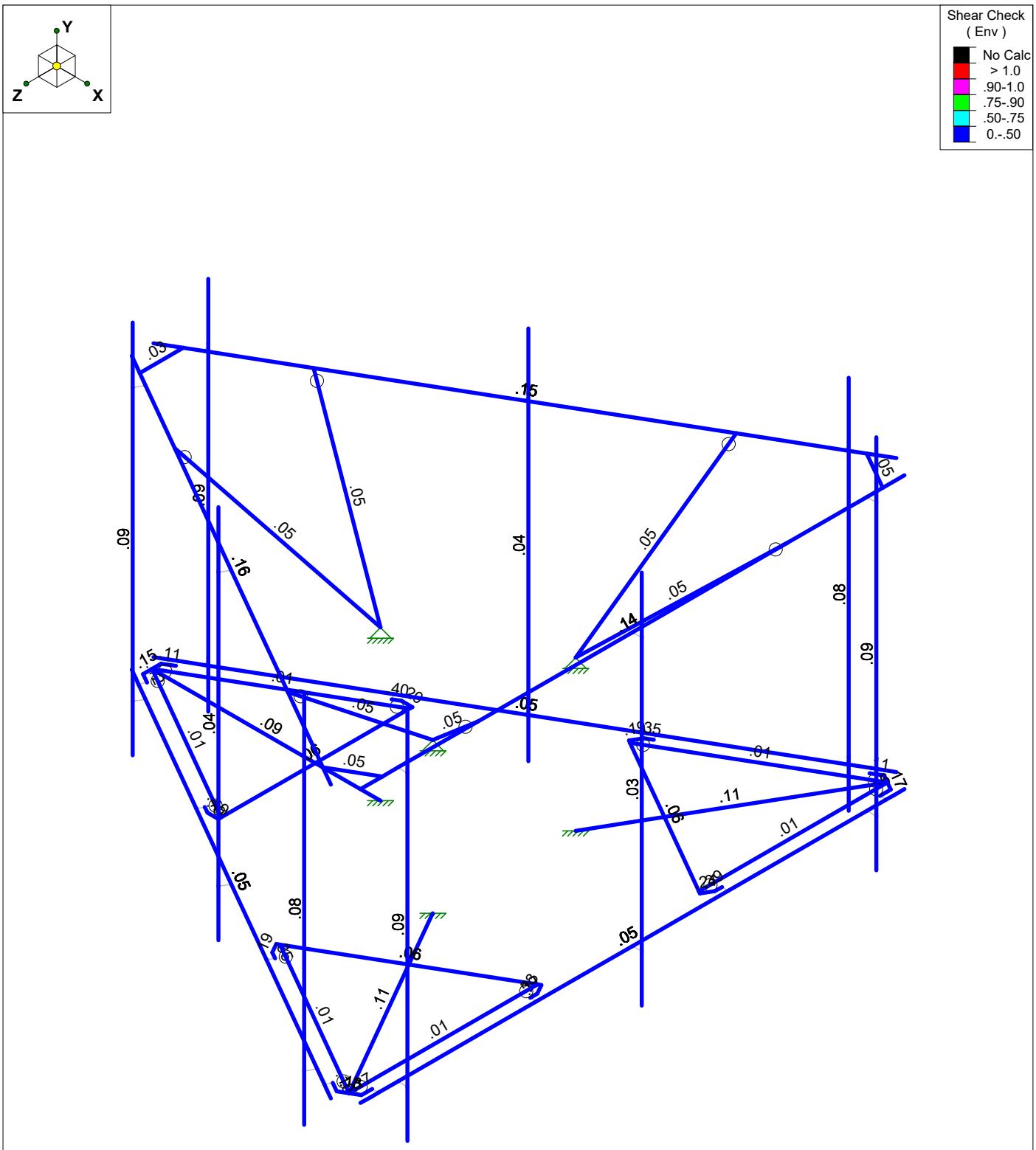

Loads: BLC 2, We
Envelope Only Solution

| | | |
|---|---|---|
| Hudson Design Group | CANTON - COLLINSVILLE | SK - 4 |
| SS | | Apr 21, 2022 at 11:40 AM |
| CT2094 | | CT2094 - Copy.r3d |




Member Code Checks Displayed (Enveloped)
Envelope Only Solution

| | | |
|---|---|---|
| Hudson Design Group | CANTON - COLLINSVILLE | SK - 5 |
| SS | | Apr 21, 2022 at 11:40 AM |
| CT2094 | | CT2094 - Copy.r3d |




Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

| | | |
|---|---|---|
| Hudson Design Group | CANTON - COLLINSVILLE | SK - 6 |
| SS | | Apr 21, 2022 at 11:40 AM |
| CT2094 | | CT2094 - Copy.r3d |

## (Global) Model Settings

| | |
|---|---|
| Display Sections for Member Calcs | 5 |
| Max Internal Sections for Member Calcs | 97 |
| Include Shear Deformation? | Yes |
| Increase Nailing Capacity for Wind? | Yes |
| Include Warping? | Yes |
| Trans Load Btwn Intersecting Wood Wall? | Yes |
| Area Load Mesh (in^2) | 144 |
| Merge Tolerance (in) | .12 |
| P-Delta Analysis Tolerance | 0.50% |
| Include P-Delta for Walls? | Yes |
| Automatically Iterate Stiffness for Walls? | Yes |
| Max Iterations for Wall Stiffness | 3 |
| Gravity Acceleration (in/sec^2) | 386.4 |
| Wall Mesh Size (in) | 24 |
| Eigensolution Convergence Tol. (1.E-) | 4 |
| Vertical Axis | Y |
| Global Member Orientation Plane | XZ |
| Static Solver | Sparse Accelerated |
| Dynamic Solver | Accelerated Solver |

| | |
|---|---|
| Hot Rolled Steel Code | AISC 15th(360-16): LRFD |
| Adjust Stiffness? | Yes(Iterative) |
| RISAConnection Code | AISC 15th(360-16): LRFD |
| Cold Formed Steel Code | AISI S100-16: LRFD |
| Wood Code | None |
| Wood Temperature | < 100F |
| Concrete Code | None |
| Masonry Code | None |
| Aluminum Code | None - Building |
| Stainless Steel Code | None |

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

## (Global) Model Settings, Continued

| | |
|---|---|
| Seismic Code | ASCE 7-16 |
| Seismic Base Elevation (in) | Not Entered |
| Add Base Weight? | Yes |
| Ct X | .02 |
| Ct Z | .02 |
| T X (sec) | Not Entered |
| T Z (sec) | Not Entered |
| R X | 3 |
| R Z | 3 |
| Ct Exp. X | .75 |
| Ct Exp. Z | .75 |
| SD1 | 1 |
| SDS | 1 |
| S1 | 1 |
| TL (sec) | 5 |
| Risk Cat | I or II |
| Drift Cat | Other |
| Om Z | 1 |
| Om X | 1 |
| Cd Z | 4 |
| Cd X | 4 |
| Rho Z | 1 |
| Rho X | 1 |
| | |

## Hot Rolled Steel Properties

| | Label | E [ksi] | G [ksi] | Nu | Therm (/1... | Density[k/ft^3] | Yield[ksi] | Ry | Fu[ksi] | Rt |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A992 | 29000 | 11154 | .3 | .65 | .49 | 50 | 1.1 | 65 | 1.1 |
| 2 | A36 Gr.36 | 29000 | 11154 | .3 | .65 | .49 | 36 | 1.5 | 58 | 1.2 |
| 3 | A572 Gr.50 | 29000 | 11154 | .3 | .65 | .49 | 50 | 1.1 | 65 | 1.1 |
| 4 | A500 Gr.B RND | 29000 | 11154 | .3 | .65 | .527 | 42 | 1.4 | 58 | 1.3 |
| 5 | A500 Gr.B Rect | 29000 | 11154 | .3 | .65 | .527 | 46 | 1.4 | 58 | 1.3 |
| 6 | A53 Gr.B | 29000 | 11154 | .3 | .65 | .49 | 35 | 1.6 | 60 | 1.2 |
| 7 | A1085 | 29000 | 11154 | .3 | .65 | .49 | 50 | 1.25 | 65 | 1.15 |
| 8 | A913 Gr.65 | 29000 | 11154 | .3 | .65 | .49 | 65 | 1.1 | 80 | 1.1 |

## Hot Rolled Steel Section Sets

| | Label | Shape | Type | Design List | Material | Design R... | A [in2] | Iyy [in4] | Izz [in4] | J [in4] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PIPE_3.0 | PIPE_3.0 | None | None | A53 Gr.B | Typical | 2.07 | 2.85 | 2.85 | 5.69 |
| 2 | HSS4X4X4 | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical | 3.37 | 7.8 | 7.8 | 12.8 |
| 3 | SR 3/4" | SR 3/4" | None | None | A36 Gr.36 | Typical | .442 | .016 | .016 | .031 |
| 4 | L2x2x3 | L2x2x3 | None | None | A36 Gr.36 | Typical | .722 | .271 | .271 | .009 |
| 5 | L2.5x2.5x3 | L2.5x2.5x3 | None | None | A36 Gr.36 | Typical | .901 | .535 | .535 | .011 |
| 6 | PIPE_2.0 | PIPE_2.0 | None | None | A53 Gr.B | Typical | 1.02 | .627 | .627 | 1.25 |
| 7 | FB6x0.37 | FB6x0.37 | None | None | A36 Gr.36 | Typical | 2.22 | .025 | 6.66 | .097 |
| 8 | PIPE_2.5 | PIPE_2.5 | None | None | A53 Gr.B | Typical | 1.61 | 1.45 | 1.45 | 2.89 |

## Joint Boundary Conditions

| | Joint Label | X [k/in] | Y [k/in] | Z [k/in] | X Rot.[k-in/rad] | Y Rot.[k-in/rad] | Z Rot.[k-in/rad] |
|---|---|---|---|---|---|---|---|
| 1 | N7 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 2 | N8 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 3 | N9 | Reaction | Reaction | Reaction | Reaction | Reaction | Reaction |
| 4 | N100 | Reaction | Reaction | Reaction | | | |
| 5 | N101 | Reaction | Reaction | Reaction | | | |
| 6 | N102 | Reaction | Reaction | Reaction | | | |

## Member Primary Data

| | Label | I Joint | J Joint | K Joint | Rotate(d... | Section/Shape | Type | Design List | Material | Design Rul... |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | N1 | N2 | | | PIPE_3.0 | None | None | A53 Gr.B | Typical |
| 2 | M2 | N3 | N4 | | | PIPE_3.0 | None | None | A53 Gr.B | Typical |
| 3 | M3 | N5 | N6 | | | PIPE_3.0 | None | None | A53 Gr.B | Typical |
| 4 | M4 | N21 | N7 | | | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical |
| 5 | M5 | N24 | N8 | | | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical |
| 6 | M6 | N27 | N9 | | | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical |
| 7 | M7 | N70 | N79 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 8 | M8 | N76 | N85 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 9 | M9 | N82 | N73 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 10 | M10 | N17 | N16 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 11 | M11 | N18 | N19 | | | RIGID | None | None | RIGID | Typical |
| 12 | M12 | N50 | N62 | | | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical |
| 13 | M13 | N21 | N20 | | 180 | L2x2x3 | None | None | A36 Gr.36 | Typical |
| 14 | M14 | N21 | N22 | | 90 | L2x2x3 | None | None | A36 Gr.36 | Typical |
| 15 | M15 | N58 | N46 | | | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical |
| 16 | M16 | N24 | N23 | | 180 | L2x2x3 | None | None | A36 Gr.36 | Typical |
| 17 | M17 | N24 | N25 | | 90 | L2x2x3 | None | None | A36 Gr.36 | Typical |
| 18 | M18 | N27 | N26 | | 180 | L2x2x3 | None | None | A36 Gr.36 | Typical |
| 19 | M19 | N27 | N28 | | 90 | L2x2x3 | None | None | A36 Gr.36 | Typical |
| 20 | M20 | N54 | N66 | | | HSS4X4X4 | None | None | A500 Gr.B Rect | Typical |
| 21 | M21 | N32 | N33 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 22 | M22 | N34 | N35 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 23 | M23 | N36 | N37 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 24 | M24 | N38 | N39 | | | RIGID | None | None | RIGID | Typical |
| 25 | M25 | N45 | N40 | | 90 | L2.5x2.5x3 | None | None | A36 Gr.36 | Typical |
| 26 | M26 | N43 | N44 | | 90 | L2.5x2.5x3 | None | None | A36 Gr.36 | Typical |
| 27 | M27 | N42 | N41 | | 180 | L2.5x2.5x3 | None | None | A36 Gr.36 | Typical |
| 28 | M28 | N48 | N49 | | | RIGID | None | None | RIGID | Typical |
| 29 | M29 | N46 | N47 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 30 | M30 | N47 | N48 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 31 | M31 | N52 | N53 | | | RIGID | None | None | RIGID | Typical |
| 32 | M32 | N50 | N51 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 33 | M33 | N51 | N52 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 34 | M34 | N56 | N57 | | | RIGID | None | None | RIGID | Typical |
| 35 | M35 | N54 | N55 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 36 | M36 | N55 | N56 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 37 | M37 | N60 | N61 | | | RIGID | None | None | RIGID | Typical |
| 38 | M38 | N58 | N59 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 39 | M39 | N59 | N60 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 40 | M40 | N64 | N65 | | | RIGID | None | None | RIGID | Typical |
| 41 | M41 | N62 | N63 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 42 | M42 | N63 | N64 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 43 | M43 | N68 | N69 | | | RIGID | None | None | RIGID | Typical |
| 44 | M44 | N66 | N67 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 45 | M45 | N67 | N68 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 46 | M46 | N70 | N71 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 47 | M47 | N71 | N72 | | | RIGID | None | None | RIGID | Typical |
| 48 | M48 | N73 | N74 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 49 | M49 | N74 | N75 | | | RIGID | None | None | RIGID | Typical |
| 50 | M50 | N76 | N77 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 51 | M51 | N77 | N78 | | | RIGID | None | None | RIGID | Typical |
| 52 | M52 | N79 | N80 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 53 | M53 | N80 | N81 | | | RIGID | None | None | RIGID | Typical |
| 54 | M54 | N82 | N83 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 55 | M55 | N83 | N84 | | | RIGID | None | None | RIGID | Typical |
| 56 | M56 | N85 | N86 | | | FB6x0.37 | None | None | A36 Gr.36 | Typical |
| 57 | M57 | N86 | N87 | | | RIGID | None | None | RIGID | Typical |
| 58 | M58 | N89 | N88 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |

## Member Primary Data (Continued)

| | Label | I Joint | J Joint | K Joint | Rotate(d... | Section/Shape | Type | Design List | Material | Design Rul... |
|---|---|---|---|---|---|---|---|---|---|---|
| 59 | M59 | N90 | N91 | | | RIGID | None | None | RIGID | Typical |
| 60 | M60 | N92 | N93 | | | RIGID | None | None | RIGID | Typical |
| 61 | M61 | N95 | N94 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 62 | M62 | N96 | N97 | | | RIGID | None | None | RIGID | Typical |
| 63 | M63 | N98 | N99 | | | RIGID | None | None | RIGID | Typical |
| 64 | M64 | N105 | N104 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 65 | M65 | N106 | N107 | | | RIGID | None | None | RIGID | Typical |
| 66 | M66 | N108 | N109 | | | RIGID | None | None | RIGID | Typical |
| 67 | M67 | N111 | N110 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 68 | M68 | N112 | N113 | | | RIGID | None | None | RIGID | Typical |
| 69 | M69 | N114 | N115 | | | RIGID | None | None | RIGID | Typical |
| 70 | M70 | N117 | N116 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 71 | M71 | N118 | N119 | | | RIGID | None | None | RIGID | Typical |
| 72 | M72 | N120 | N121 | | | RIGID | None | None | RIGID | Typical |
| 73 | M73 | N123 | N122 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 74 | M74 | N124 | N125 | | | RIGID | None | None | RIGID | Typical |
| 75 | M75 | N126 | N127 | | | RIGID | None | None | RIGID | Typical |
| 76 | M76 | N129 | N128 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 77 | M77 | N130 | N131 | | | RIGID | None | None | RIGID | Typical |
| 78 | M78 | N132 | N133 | | | RIGID | None | None | RIGID | Typical |
| 79 | M79 | N135 | N134 | | | PIPE_2.5 | None | None | A53 Gr.B | Typical |
| 80 | M80 | N136 | N137 | | | RIGID | None | None | RIGID | Typical |
| 81 | M81 | N138 | N139 | | | RIGID | None | None | RIGID | Typical |
| 82 | M82 | N140 | N101 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 83 | M83 | N145 | N101 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 84 | M84 | N141 | N100 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 85 | M85 | N142 | N100 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 86 | M86 | N143 | N102 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |
| 87 | M87 | N144 | N102 | | | PIPE_2.0 | None | None | A53 Gr.B | Typical |

## Member Advanced Data

| | Label | I Release | J Release | I Offset[in] | J Offset[in] | T/C Only | Physical | Defl Rat... | Analysis ... | Inactive | Seismic... |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | | | | | | Yes | ** NA ** | | | None |
| 2 | M2 | | | | | | Yes | ** NA ** | | | None |
| 3 | M3 | | | | | | Yes | ** NA ** | | | None |
| 4 | M4 | | | | | | Yes | ** NA ** | | | None |
| 5 | M5 | | | | | | Yes | ** NA ** | | | None |
| 6 | M6 | | | | | | Yes | ** NA ** | | | None |
| 7 | M7 | | | | | | Yes | ** NA ** | | | None |
| 8 | M8 | | | | | | Yes | ** NA ** | | | None |
| 9 | M9 | | | | | | Yes | ** NA ** | | | None |
| 10 | M10 | | | | | | Yes | ** NA ** | | | None |
| 11 | M11 | | | | | | Yes | ** NA ** | | | None |
| 12 | M12 | | | | | | Yes | ** NA ** | | | None |
| 13 | M13 | BenPIN | BenPIN | | | | Yes | ** NA ** | | | None |
| 14 | M14 | BenPIN | BenPIN | | | | Yes | ** NA ** | | | None |
| 15 | M15 | | | | | | Yes | ** NA ** | | | None |
| 16 | M16 | BenPIN | BenPIN | | | | Yes | ** NA ** | | | None |
| 17 | M17 | BenPIN | BenPIN | | | | Yes | ** NA ** | | | None |
| 18 | M18 | BenPIN | BenPIN | | | | Yes | ** NA ** | | | None |
| 19 | M19 | BenPIN | BenPIN | | | | Yes | ** NA ** | | | None |
| 20 | M20 | | | | | | Yes | ** NA ** | | | None |
| 21 | M21 | | | | | | Yes | ** NA ** | | | None |
| 22 | M22 | | | | | | Yes | ** NA ** | | | None |
| 23 | M23 | | | | | | Yes | ** NA ** | | | None |
| 24 | M24 | | | | | | Yes | ** NA ** | | | None |
| 25 | M25 | | | | | | Yes | ** NA ** | | | None |

## Member Advanced Data (Continued)

| | Label | I Release | J Release | I Offset[in] | J Offset[in] | T/C Only | Physical | Defl Rat... | Analysis ... | Inactive | Seismic... |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | M26 | | | | | | Yes | ** NA ** | | | None |
| 27 | M27 | | | | | | Yes | ** NA ** | | | None |
| 28 | M28 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 29 | M29 | | | | | | Yes | ** NA ** | | | None |
| 30 | M30 | | | | | | Yes | ** NA ** | | | None |
| 31 | M31 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 32 | M32 | | | | | | Yes | ** NA ** | | | None |
| 33 | M33 | | | | | | Yes | ** NA ** | | | None |
| 34 | M34 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 35 | M35 | | | | | | Yes | ** NA ** | | | None |
| 36 | M36 | | | | | | Yes | ** NA ** | | | None |
| 37 | M37 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 38 | M38 | | | | | | Yes | ** NA ** | | | None |
| 39 | M39 | | | | | | Yes | ** NA ** | | | None |
| 40 | M40 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 41 | M41 | | | | | | Yes | ** NA ** | | | None |
| 42 | M42 | | | | | | Yes | ** NA ** | | | None |
| 43 | M43 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 44 | M44 | | | | | | Yes | ** NA ** | | | None |
| 45 | M45 | | | | | | Yes | ** NA ** | | | None |
| 46 | M46 | | | | | | Yes | ** NA ** | | | None |
| 47 | M47 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 48 | M48 | | | | | | Yes | ** NA ** | | | None |
| 49 | M49 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 50 | M50 | | | | | | Yes | ** NA ** | | | None |
| 51 | M51 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 52 | M52 | | | | | | Yes | ** NA ** | | | None |
| 53 | M53 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 54 | M54 | | | | | | Yes | ** NA ** | | | None |
| 55 | M55 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 56 | M56 | | | | | | Yes | ** NA ** | | | None |
| 57 | M57 | | BenPIN | | | | Yes | ** NA ** | | | None |
| 58 | M58 | | | | | | Yes | ** NA ** | | | None |
| 59 | M59 | | | | | | Yes | ** NA ** | | | None |
| 60 | M60 | | | | | | Yes | ** NA ** | | | None |
| 61 | M61 | | | | | | Yes | ** NA ** | | | None |
| 62 | M62 | | | | | | Yes | ** NA ** | | | None |
| 63 | M63 | | | | | | Yes | ** NA ** | | | None |
| 64 | M64 | | | | | | Yes | ** NA ** | | | None |
| 65 | M65 | | | | | | Yes | ** NA ** | | | None |
| 66 | M66 | | | | | | Yes | ** NA ** | | | None |
| 67 | M67 | | | | | | Yes | ** NA ** | | | None |
| 68 | M68 | | | | | | Yes | ** NA ** | | | None |
| 69 | M69 | | | | | | Yes | ** NA ** | | | None |
| 70 | M70 | | | | | | Yes | ** NA ** | | | None |
| 71 | M71 | | | | | | Yes | ** NA ** | | | None |
| 72 | M72 | | | | | | Yes | ** NA ** | | | None |
| 73 | M73 | | | | | | Yes | ** NA ** | | | None |
| 74 | M74 | | | | | | Yes | ** NA ** | | | None |
| 75 | M75 | | | | | | Yes | ** NA ** | | | None |
| 76 | M76 | | | | | | Yes | ** NA ** | | | None |
| 77 | M77 | | | | | | Yes | ** NA ** | | | None |
| 78 | M78 | | | | | | Yes | ** NA ** | | | None |
| 79 | M79 | | | | | | Yes | ** NA ** | | | None |
| 80 | M80 | | | | | | Yes | ** NA ** | | | None |
| 81 | M81 | | | | | | Yes | ** NA ** | | | None |
| 82 | M82 | BenPIN | | | | | Yes | ** NA ** | | | None |
| 83 | M83 | BenPIN | | | | | Yes | ** NA ** | | | None |
| 84 | M84 | BenPIN | | | | | Yes | ** NA ** | | | None |

## Member Advanced Data (Continued)

| | Label | I Release | J Release | I Offset[in] | J Offset[in] | T/C Only | Physical | Defl Rat... | Analysis ... | Inactive | Seismic... |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 85 | M85 | BenPIN | | | | | Yes | ** NA ** | | | None |
| 86 | M86 | BenPIN | | | | | Yes | ** NA ** | | | None |
| 87 | M87 | BenPIN | | | | | Yes | ** NA ** | | | None |

## Hot Rolled Steel Design Parameters

| | Label | Shape | Length[in] | Lbyy[in] | Lbzz[in] | Lcomp top[in] | Lcomp bot[in] | L-torqu... | Kyy | Kzz | Cb | Function |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M1 | PIPE 3.0 | 174 | | | Lbyy | | | | | | Lateral |
| 2 | M2 | PIPE 3.0 | 174 | | | Lbyy | | | | | | Lateral |
| 3 | M3 | PIPE 3.0 | 174 | | | Lbyy | | | | | | Lateral |
| 4 | M4 | HSS4X4X4 | 73.08 | | | Lbyy | | | | | | Lateral |
| 5 | M5 | HSS4X4X4 | 73.08 | | | Lbyy | | | | | | Lateral |
| 6 | M6 | HSS4X4X4 | 73.08 | | | Lbyy | | | | | | Lateral |
| 7 | M7 | FB6x0.37 | 5.752 | | | | | | | | | Lateral |
| 8 | M8 | FB6x0.37 | 5.752 | | | | | | | | | Lateral |
| 9 | M9 | FB6x0.37 | 5.752 | | | | | | | | | Lateral |
| 10 | M10 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 11 | M12 | HSS4X4X4 | 62.068 | | | Lbyy | | | | | | Lateral |
| 12 | M13 | L2x2x3 | 60.335 | | | | | | | | | Lateral |
| 13 | M14 | L2x2x3 | 60.335 | | | | | | | | | Lateral |
| 14 | M15 | HSS4X4X4 | 62.068 | | | Lbyy | | | | | | Lateral |
| 15 | M16 | L2x2x3 | 60.335 | | | | | | | | | Lateral |
| 16 | M17 | L2x2x3 | 60.335 | | | | | | | | | Lateral |
| 17 | M18 | L2x2x3 | 60.335 | | | | | | | | | Lateral |
| 18 | M19 | L2x2x3 | 60.335 | | | | | | | | | Lateral |
| 19 | M20 | HSS4X4X4 | 62.068 | | | Lbyy | | | | | | Lateral |
| 20 | M21 | PIPE 2.0 | 174 | | | Lbyy | | | | | | Lateral |
| 21 | M22 | PIPE 2.0 | 174 | | | Lbyy | | | | | | Lateral |
| 22 | M23 | PIPE 2.0 | 174 | | | Lbyy | | | | | | Lateral |
| 23 | M25 | L2.5x2.5x3 | 13.92 | | | | | | | | | Lateral |
| 24 | M26 | L2.5x2.5x3 | 13.92 | | | | | | | | | Lateral |
| 25 | M27 | L2.5x2.5x3 | 13.92 | | | | | | | | | Lateral |
| 26 | M29 | FB6x0.37 | 3.48 | | | Lbyy | | | | | | Lateral |
| 27 | M30 | FB6x0.37 | 2.32 | | | Lbyy | | | | | | Lateral |
| 28 | M32 | FB6x0.37 | 3.48 | | | Lbyy | | | | | | Lateral |
| 29 | M33 | FB6x0.37 | 2.32 | | | Lbyy | | | | | | Lateral |
| 30 | M35 | FB6x0.37 | 3.48 | | | Lbyy | | | | | | Lateral |
| 31 | M36 | FB6x0.37 | 2.32 | | | Lbyy | | | | | | Lateral |
| 32 | M38 | FB6x0.37 | 3.48 | | | Lbyy | | | | | | Lateral |
| 33 | M39 | FB6x0.37 | 2.32 | | | Lbyy | | | | | | Lateral |
| 34 | M41 | FB6x0.37 | 3.48 | | | Lbyy | | | | | | Lateral |
| 35 | M42 | FB6x0.37 | 2.32 | | | Lbyy | | | | | | Lateral |
| 36 | M44 | FB6x0.37 | 3.48 | | | Lbyy | | | | | | Lateral |
| 37 | M45 | FB6x0.37 | 2.32 | | | Lbyy | | | | | | Lateral |
| 38 | M46 | FB6x0.37 | 3.48 | | | | | | | | | Lateral |
| 39 | M48 | FB6x0.37 | 3.48 | | | | | | | | | Lateral |
| 40 | M50 | FB6x0.37 | 3.48 | | | | | | | | | Lateral |
| 41 | M52 | FB6x0.37 | 3.48 | | | | | | | | | Lateral |
| 42 | M54 | FB6x0.37 | 3.48 | | | | | | | | | Lateral |
| 43 | M56 | FB6x0.37 | 3.48 | | | | | | | | | Lateral |
| 44 | M58 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 45 | M61 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 46 | M64 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 47 | M67 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 48 | M70 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 49 | M73 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 50 | M76 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |
| 51 | M79 | PIPE 2.5 | 120 | | | Lbyy | | | | | | Lateral |

## Hot Rolled Steel Design Parameters (Continued)

| | Label | Shape | Length[in] | Lbyy[in] | Lbzz[in] | Lcomp top[in] | Lcomp bot[in] | L-torqu... | Kyy | Kzz | Cb | Function |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | M82 | PIPE_2.0 | 62.591 | | | | | | | | | Lateral |
| 53 | M83 | PIPE_2.0 | 62.591 | | | | | | | | | Lateral |
| 54 | M84 | PIPE_2.0 | 62.591 | | | | | | | | | Lateral |
| 55 | M85 | PIPE_2.0 | 62.591 | | | | | | | | | Lateral |
| 56 | M86 | PIPE_2.0 | 62.591 | | | | | | | | | Lateral |
| 57 | M87 | PIPE_2.0 | 62.591 | | | | | | | | | Lateral |

## Basic Load Cases

| | BLC Description | Category | X Gravity | Y Gravity | Z Gravity | Joint | Point | Distributed | Area(Member) | Surface(... |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Self We | DL | | -1.1 | | | | | | |
| 2 | We | DL | | | | | 33 | | 3 | |
| 3 | Ice We | DL | | | | | 33 | 36 | 3 | |
| 4 | W0 | WL | | | | | 33 | 36 | | |
| 5 | W30 | WL | | | | | 66 | 72 | | |
| 6 | W60 | WL | | | | | 66 | 72 | | |
| 7 | W90 | WL | | | | | 33 | 36 | | |
| 8 | W120 | WL | | | | | 66 | 72 | | |
| 9 | W150 | WL | | | | | 66 | 72 | | |
| 10 | W0 + Ice | WL | | | | | 33 | 36 | | |
| 11 | W30 + Ice | WL | | | | | 66 | 72 | | |
| 12 | W60 + Ice | WL | | | | | 66 | 72 | | |
| 13 | W90 + Ice | WL | | | | | 33 | 36 | | |
| 14 | W120 + Ice | WL | | | | | 66 | 72 | | |
| 15 | W150 + Ice | WL | | | | | 66 | 72 | | |
| 16 | 500lbs LM 1 | LL | | | | 1 | | | | |
| 17 | 500lbs LM 2 | LL | | | | 1 | | | | |
| 18 | 500lbs LM 3 | LL | | | | 1 | | | | |
| 19 | 500lbs LM 4 | LL | | | | | | | | |
| 20 | 250lbs LV 5 | LL | | | | 1 | | | | |
| 21 | 250lbs LV 6 | LL | | | | 1 | | | | |
| 22 | E0 | EL | -.12 | | | | 33 | | | |
| 23 | E90 | EL | | | .12 | | 33 | | | |
| 24 | BLC 2 Transient Ar... | None | | | | | | 75 | | |
| 25 | BLC 3 Transient Ar... | None | | | | | | 75 | | |

## Load Combinations

| | Description | Solve | PDelta | S... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dead | Yes | Y | | 1 | 1.4 | 2 | 1.4 | 0 | | 0 | | | | | | | | | | | | | |
| 2 | Dead + Wind 0 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 4 | 1 | 0 | | | | | | | | | | | | | |
| 3 | Dead + Wind 30 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 5 | 1 | 0 | | | | | | | | | | | | | |
| 4 | Dead + Wind 60 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 6 | 1 | 0 | | | | | | | | | | | | | |
| 5 | Dead + Wind 90 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 7 | 1 | 0 | | | | | | | | | | | | | |
| 6 | Dead + Wind 120 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 8 | 1 | 0 | | | | | | | | | | | | | |
| 7 | Dead + Wind 150 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 9 | 1 | 0 | | | | | | | | | | | | | |
| 8 | Dead + Wind 180 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 4 | -1 | 0 | | | | | | | | | | | | | |
| 9 | Dead + Wind 210 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 5 | -1 | 0 | | | | | | | | | | | | | |
| 10 | Dead + Wind 240 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 6 | -1 | 0 | | | | | | | | | | | | | |
| 11 | Dead + Wind 270 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 7 | -1 | 0 | | | | | | | | | | | | | |
| 12 | Dead + Wind 300 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 8 | -1 | 0 | | | | | | | | | | | | | |
| 13 | Dead + Wind 330 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 9 | -1 | 0 | | | | | | | | | | | | | |
| 14 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 10 | 1 | 3 | 1 | | | | | | | | | | | | |
| 15 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 11 | 1 | 3 | 1 | | | | | | | | | | | | |
| 16 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 12 | 1 | 3 | 1 | | | | | | | | | | | | |
| 17 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 13 | 1 | 3 | 1 | | | | | | | | | | | | |
| 18 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 14 | 1 | 3 | 1 | | | | | | | | | | | | |
| 19 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 15 | 1 | 3 | 1 | | | | | | | | | | | | |

## Load Combinations (Continued)

| | Description | Solve | PDelta | S... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 10 | -1 | 3 | 1 | | | | | | | | | | | | |
| 21 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 11 | -1 | 3 | 1 | | | | | | | | | | | | |
| 22 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 12 | -1 | 3 | 1 | | | | | | | | | | | | |
| 23 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 13 | -1 | 3 | 1 | | | | | | | | | | | | |
| 24 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 14 | -1 | 3 | 1 | | | | | | | | | | | | |
| 25 | Dead + Ice + Wi... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 15 | -1 | 3 | 1 | | | | | | | | | | | | |
| 26 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 4 | .063 | | | | | | | | | | | | |
| 27 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 5 | .063 | | | | | | | | | | | | |
| 28 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 6 | .063 | | | | | | | | | | | | |
| 29 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 7 | .063 | | | | | | | | | | | | |
| 30 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 8 | .063 | | | | | | | | | | | | |
| 31 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 9 | .063 | | | | | | | | | | | | |
| 32 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 4 | -.063 | | | | | | | | | | | | |
| 33 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 5 | -.063 | | | | | | | | | | | | |
| 34 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 6 | -.063 | | | | | | | | | | | | |
| 35 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 7 | -.063 | | | | | | | | | | | | |
| 36 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 8 | -.063 | | | | | | | | | | | | |
| 37 | Dead + LM5001 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 16 | 1.5 | 9 | -.063 | | | | | | | | | | | | |
| 38 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 4 | .063 | | | | | | | | | | | | |
| 39 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 5 | .063 | | | | | | | | | | | | |
| 40 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 6 | .063 | | | | | | | | | | | | |
| 41 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 7 | .063 | | | | | | | | | | | | |
| 42 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 8 | .063 | | | | | | | | | | | | |
| 43 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 9 | .063 | | | | | | | | | | | | |
| 44 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 4 | -.063 | | | | | | | | | | | | |
| 45 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 5 | -.063 | | | | | | | | | | | | |
| 46 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 6 | -.063 | | | | | | | | | | | | |
| 47 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 7 | -.063 | | | | | | | | | | | | |
| 48 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 8 | -.063 | | | | | | | | | | | | |
| 49 | Dead + LM5002 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 17 | 1.5 | 9 | -.063 | | | | | | | | | | | | |
| 50 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 4 | .063 | | | | | | | | | | | | |
| 51 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 5 | .063 | | | | | | | | | | | | |
| 52 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 6 | .063 | | | | | | | | | | | | |
| 53 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 7 | .063 | | | | | | | | | | | | |
| 54 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 8 | .063 | | | | | | | | | | | | |
| 55 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 9 | .063 | | | | | | | | | | | | |
| 56 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 4 | -.063 | | | | | | | | | | | | |
| 57 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 5 | -.063 | | | | | | | | | | | | |
| 58 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 6 | -.063 | | | | | | | | | | | | |
| 59 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 7 | -.063 | | | | | | | | | | | | |
| 60 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 8 | -.063 | | | | | | | | | | | | |
| 61 | Dead + LM5003 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 18 | 1.5 | 9 | -.063 | | | | | | | | | | | | |
| 62 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 4 | .063 | | | | | | | | | | | | |
| 63 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 5 | .063 | | | | | | | | | | | | |
| 64 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 6 | .063 | | | | | | | | | | | | |
| 65 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 7 | .063 | | | | | | | | | | | | |
| 66 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 8 | .063 | | | | | | | | | | | | |
| 67 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 9 | .063 | | | | | | | | | | | | |
| 68 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 4 | -.063 | | | | | | | | | | | | |
| 69 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 5 | -.063 | | | | | | | | | | | | |
| 70 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 6 | -.063 | | | | | | | | | | | | |
| 71 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 7 | -.063 | | | | | | | | | | | | |
| 72 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 8 | -.063 | | | | | | | | | | | | |
| 73 | Dead + LM5004 ... | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 19 | 1.5 | 9 | -.063 | | | | | | | | | | | | |
| 74 | Dead + LV2505 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 20 | 1.5 | 0 | | | | | | | | | | | | | |
| 75 | Dead + LV2506 | Yes | Y | | 1 | 1.2 | 2 | 1.2 | 21 | 1.5 | 0 | | | | | | | | | | | | | |
| 76 | Service 60mph ... | Yes | Y | | 1 | 1 | 2 | 1 | 4 | .25 | 0 | | | | | | | | | | | | | |
| 77 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | 1 | 23 | | | | | | | | | | | | | |
| 78 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | .866 | 23 | .5 | | | | | | | | | | | | |

## Load Combinations (Continued)

| | Description | Solve | PDelta | S... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... | B... | Fa... |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 79 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | .5 | 23 | .866 | | | | | | | | | | | | |
| 80 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | | 23 | 1 | | | | | | | | | | | | |
| 81 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | -.5 | 23 | .866 | | | | | | | | | | | | |
| 82 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | -.866 | 23 | .5 | | | | | | | | | | | | |
| 83 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | -1 | 23 | | | | | | | | | | | | | |
| 84 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | -.866 | 23 | -.5 | | | | | | | | | | | | |
| 85 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | -.5 | 23 | -.866 | | | | | | | | | | | | |
| 86 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | | 23 | -1 | | | | | | | | | | | | |
| 87 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | .5 | 23 | -.866 | | | | | | | | | | | | |
| 88 | (1.2 + 0.2SDS)D... | Yes | Y | | 1 | 1.2... | 2 | 1.2... | 22 | .866 | 23 | -.5 | | | | | | | | | | | | |

## Envelope Joint Reactions

| | Joint | | X [lb] | LC | Y [lb] | LC | Z [lb] | LC | MX [k-in] | LC | MY [k-in] | LC | MZ [k-in] | LC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | N7 | max | 700.498 | 2 | 2415.199 | 7 | 886.449 | 13 | 14.551 | 12 | 12.572 | 3 | 47.306 | 7 |
| 2 | | min | -799.468 | 8 | -180.914 | 13 | -1059.928 | 7 | -72.743 | 6 | -12.584 | 9 | -13.498 | 13 |
| 3 | N8 | max | 693.371 | 3 | 2415.649 | 9 | 1058.004 | 9 | 72.867 | 10 | 12.572 | 7 | 47.076 | 9 |
| 4 | | min | -788.456 | 9 | -180.873 | 3 | -885.224 | 3 | -14.373 | 4 | -12.584 | 13 | -13.741 | 3 |
| 5 | N9 | max | 1564.173 | 2 | 2715.967 | 2 | 401.615 | 11 | 7.657 | 11 | 9.988 | 11 | 31.207 | 8 |
| 6 | | min | -1372.388 | 8 | -484.442 | 8 | -400.92 | 5 | -7.936 | 5 | -10 | 5 | -98.102 | 2 |
| 7 | N100 | max | 919.339 | 13 | 1386.089 | 13 | 1290.691 | 12 | 0 | 88 | 0 | 88 | 0 | 88 |
| 8 | | min | -521.232 | 7 | -574.255 | 7 | -592.948 | 6 | 0 | 1 | 0 | 1 | 0 | 1 |
| 9 | N101 | max | 917.794 | 3 | 1386.081 | 3 | 592.243 | 10 | 0 | 88 | 0 | 88 | 0 | 88 |
| 10 | | min | -519.313 | 9 | -574.293 | 9 | -1289.969 | 4 | 0 | 1 | 0 | 1 | 0 | 1 |
| 11 | N102 | max | 982.072 | 2 | 1616.418 | 8 | 308.097 | 11 | 0 | 88 | 0 | 88 | 0 | 88 |
| 12 | | min | -1776.297 | 8 | -794.343 | 2 | -308.322 | 5 | 0 | 1 | 0 | 1 | 0 | 1 |
| 13 | Totals: | max | 5623.185 | 2 | 8619.117 | 15 | 4051.634 | 11 | | | | | | |
| 14 | | min | -5623.236 | 8 | 3801.535 | 76 | -4051.624 | 5 | | | | | | |

## Envelope AISC 15th(360-16): LRFD Steel Code Checks

| | Member | Shape | Code Check | Loc[in] | LC | Shear ... | Loc[in] | Dir | LC | phi*Pnc [... | phi*Pnt [lb] | phi*Mn y... | phi*Mn z... | Cb | Eqn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M26 | L2.5x2.5x3 | .719 | 9.28 | 8 | .034 | 0 | y | 10 | 27521.327 | 29192.4 | 10.471 | 23.662 | 1... | H2-1 |
| 2 | M27 | L2.5x2.5x3 | .674 | 13.92 | 3 | .046 | 0 | z | 13 | 27521.327 | 29192.4 | 10.471 | 23.662 | 1... | H2-1 |
| 3 | M25 | L2.5x2.5x3 | .673 | 13.92 | 13 | .046 | 0 | y | 9 | 27521.327 | 29192.4 | 10.471 | 23.662 | 1... | H2-1 |
| 4 | M6 | HSS4X4X4 | .512 | 73.08 | 2 | .094 | 73.08 | y | 3 | 119459.3... | 139518 | 194.166 | 194.166 | 2... | H1-1b |
| 5 | M23 | PIPE_2.0 | .482 | 38.063 | 13 | .144 | 10.875 | | 24 | 4678.524 | 32130 | 22.459 | 22.459 | 1... | H1-1b |
| 6 | M22 | PIPE_2.0 | .482 | 135.9... | 9 | .156 | 163.1... | | 8 | 4678.524 | 32130 | 22.459 | 22.459 | 1... | H1-1b |
| 7 | M21 | PIPE_2.0 | .482 | 135.9... | 7 | .155 | 163.1... | | 8 | 4678.524 | 32130 | 22.459 | 22.459 | 1... | H1-1b |
| 8 | M4 | HSS4X4X4 | .461 | 73.08 | 7 | .107 | 73.08 | y | 8 | 119459.3... | 139518 | 194.166 | 194.166 | 2... | H1-1b |
| 9 | M5 | HSS4X4X4 | .460 | 73.08 | 9 | .105 | 73.08 | y | 8 | 119459.3... | 139518 | 194.166 | 194.166 | 2... | H1-1b |
| 10 | M8 | FB6x0.37 | .238 | 2.876 | 13 | .153 | 2.876 | y | 25 | 61743.847 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 11 | M7 | FB6x0.37 | .238 | 2.876 | 9 | .174 | 2.876 | y | 36 | 61743.847 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 12 | M9 | FB6x0.37 | .237 | 2.876 | 7 | .176 | 2.876 | y | 52 | 61743.847 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 13 | M32 | FB6x0.37 | .222 | 0 | 7 | .235 | 0 | y | 43 | 68018.71 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 14 | M44 | FB6x0.37 | .222 | 0 | 3 | .195 | 0 | y | 2 | 68018.71 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 15 | M29 | FB6x0.37 | .221 | 0 | 9 | .240 | 0 | y | 45 | 68018.71 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 16 | M35 | FB6x0.37 | .221 | 0 | 13 | .199 | 0 | y | 2 | 68018.71 | 71928 | 6.653 | 107.892 | 1... | H1-1b |
| 17 | M1 | PIPE_3.0 | .211 | 116 | 2 | .052 | 87 | | 9 | 21266.02 | 65205 | 68.985 | 68.985 | 2... | H1-1b |
| 18 | M2 | PIPE_3.0 | .210 | 116 | 2 | .052 | 87 | | 13 | 21266.02 | 65205 | 68.985 | 68.985 | 2... | H1-1b |
| 19 | M3 | PIPE_3.0 | .205 | 116 | 9 | .051 | 116 | | 45 | 21266.02 | 65205 | 68.985 | 68.985 | 2... | H1-1b |
| 20 | M76 | PIPE_2.5 | .202 | 105 | 2 | .078 | 105 | | 12 | 22373.407 | 50715 | 43.155 | 43.155 | 2... | H1-1b |
| 21 | M64 | PIPE_2.5 | .201 | 105 | 2 | .076 | 105 | | 6 | 22373.407 | 50715 | 43.155 | 43.155 | 2... | H1-1b |
| 22 | M73 | PIPE_2.5 | .196 | 105 | 19 | .093 | 105 | | 9 | 22373.407 | 50715 | 43.155 | 43.155 | 2... | H1-1b |
| 23 | M67 | PIPE_2.5 | .195 | 105 | 21 | .094 | 105 | | 8 | 22373.407 | 50715 | 43.155 | 43.155 | 2... | H1-1b |
| 24 | M10 | PIPE_2.5 | .195 | 105 | 21 | .093 | 105 | | 13 | 22373.407 | 50715 | 43.155 | 43.155 | 1... | H1-1b |
| 25 | M58 | PIPE_2.5 | .194 | 105 | 18 | .093 | 105 | | 3 | 22373.407 | 50715 | 43.155 | 43.155 | 1... | H1-1b |
| 26 | M87 | PIPE_2.0 | .180 | 62.591 | 8 | .048 | 62.591 | | 20 | 23187.026 | 32130 | 22.459 | 22.459 | 1... | H1-1b |

## *Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)*

| | Member | Shape | Code Check | Loc[in] | LC | Shear ... | Loc[in] | Dir | LC | phi*Pnc [... | phi*Pnt [lb] | phi*Mn y... | phi*Mn z... | Cb | Eqn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | M86 | PIPE_2.0 | .180 | 62.591 | 8 | .048 | 62.591 | | 20 | 23187.026 | 32130 | 22.459 | 22.459 | 1.... | H1-1b |
| 28 | M33 | FB6x0.37 | .176 | 2.32 | 7 | .389 | 0 | y | 7 | 70163.464 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 29 | M45 | FB6x0.37 | .176 | 2.32 | 3 | .400 | 0 | y | 2 | 70163.464 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 30 | M30 | FB6x0.37 | .176 | 2.32 | 9 | .389 | 0 | y | 9 | 70163.464 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 31 | M36 | FB6x0.37 | .176 | 2.32 | 13 | .400 | 0 | y | 2 | 70163.464 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 32 | M20 | HSS4X4X4 | .169 | 31.034 | 2 | .060 | 31.034 | y | 2 | 124739.6... | 139518 | 194.166 | 194.166 | 1.... | H1-1b |
| 33 | M15 | HSS4X4X4 | .166 | 31.034 | 9 | .058 | 31.034 | y | 9 | 124739.6... | 139518 | 194.166 | 194.166 | 1.... | H1-1b |
| 34 | M12 | HSS4X4X4 | .166 | 31.034 | 7 | .058 | 31.034 | y | 7 | 124739.6... | 139518 | 194.166 | 194.166 | 1.... | H1-1b |
| 35 | M19 | L2x2x3 | .162 | 30.796 | 14 | .009 | 60.335 | z | 24 | 6780.191 | 23392.8 | 6.693 | 12.316 | 1.... | H2-1 |
| 36 | M38 | FB6x0.37 | .160 | 0 | 11 | .185 | 0 | y | 22 | 68018.71 | 71928 | 6.653 | 107.892 | 1.... | H1-1b |
| 37 | M41 | FB6x0.37 | .160 | 0 | 5 | .190 | 0 | y | 18 | 68018.71 | 71928 | 6.653 | 107.892 | 1.... | H1-1b |
| 38 | M82 | PIPE_2.0 | .160 | 62.591 | 3 | .047 | 62.591 | | 15 | 23187.026 | 32130 | 22.459 | 22.459 | 1.... | H1-1b |
| 39 | M84 | PIPE_2.0 | .160 | 62.591 | 13 | .047 | 62.591 | | 25 | 23187.026 | 32130 | 22.459 | 22.459 | 1.... | H1-1b |
| 40 | M17 | L2x2x3 | .160 | 30.796 | 21 | .009 | 60.335 | z | 20 | 6780.188 | 23392.8 | 6.693 | 12.313 | 1.... | H2-1 |
| 41 | M13 | L2x2x3 | .159 | 30.796 | 19 | .009 | 60.335 | y | 20 | 6780.188 | 23392.8 | 6.693 | 12.311 | 1.... | H2-1 |
| 42 | M18 | L2x2x3 | .159 | 30.796 | 15 | .009 | 60.335 | y | 16 | 6780.191 | 23392.8 | 6.693 | 12.311 | 1.... | H2-1 |
| 43 | M14 | L2x2x3 | .157 | 30.796 | 18 | .009 | 60.335 | z | 15 | 6780.191 | 23392.8 | 6.693 | 12.315 | 1.... | H2-1 |
| 44 | M16 | L2x2x3 | .155 | 30.796 | 22 | .009 | 60.335 | y | 25 | 6780.191 | 23392.8 | 6.693 | 12.314 | 1.... | H2-1 |
| 45 | M85 | PIPE_2.0 | .153 | 62.591 | 12 | .047 | 62.591 | | 24 | 23187.026 | 32130 | 22.459 | 22.459 | 1.... | H1-1b |
| 46 | M83 | PIPE_2.0 | .153 | 62.591 | 4 | .047 | 62.591 | | 16 | 23187.026 | 32130 | 22.459 | 22.459 | 1.... | H1-1b |
| 47 | M70 | PIPE_2.5 | .146 | 105 | 3 | .035 | 105 | | 3 | 22373.407 | 50715 | 43.155 | 43.155 | 2.... | H1-1b |
| 48 | M79 | PIPE_2.5 | .146 | 105 | 7 | .035 | 105 | | 7 | 22373.407 | 50715 | 43.155 | 43.155 | 2.... | H1-1b |
| 49 | M56 | FB6x0.37 | .145 | 0 | 9 | .118 | 0 | y | 2 | 68018.543 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 50 | M48 | FB6x0.37 | .145 | 0 | 13 | .174 | 0 | y | 54 | 68018.543 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 51 | M46 | FB6x0.37 | .145 | 0 | 3 | .161 | 0 | y | 34 | 68018.543 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 52 | M50 | FB6x0.37 | .145 | 0 | 7 | .106 | 0 | y | 2 | 68018.543 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 53 | M39 | FB6x0.37 | .134 | 2.32 | 12 | .350 | 0 | y | 10 | 70163.464 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 54 | M42 | FB6x0.37 | .134 | 2.32 | 4 | .349 | 0 | y | 6 | 70163.464 | 71928 | 6.653 | 107.892 | 2.... | H1-1b |
| 55 | M61 | PIPE_2.5 | .131 | 87.5 | 2 | .028 | 105 | | 6 | 22373.407 | 50715 | 43.155 | 43.155 | 1.... | H1-1b |
| 56 | M52 | FB6x0.37 | .104 | 0 | 5 | .108 | 0 | y | 9 | 68018.543 | 71928 | 6.653 | 107.892 | 1.... | H1-1b |
| 57 | M54 | FB6x0.37 | .103 | 0 | 11 | .096 | 0 | y | 7 | 68018.543 | 71928 | 6.653 | 107.892 | 1.... | H1-1b |

HUDSON
Design Group LLC

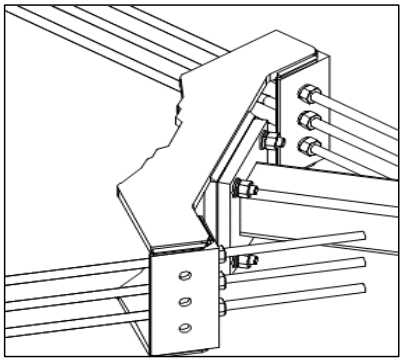
# Connection Check

## SITE DETAILS

| | |
|---|---|
| Site Name/Code | CT2094 - CANTON - COLLINSVILLE |
| Date | 04/21/2022 |
| Engineer | SS |

## CONNECTION PARAMETERS

| | | | |
|---|---|---|---|
| Number of bolts | | 4 | |
| b - width of member | | 4 | *in* |
| d - height of member | | 4 | *in* |
| B - horizontal bolt spacing | | 6 | *in* |
| D - vertical bolt spacing | | 6 | *in* |
| Bolt Diameter | d | 5/8 | *in* |
| Section Shape | | HSS | |
| Weld Thickness | | 1/4 | *in* |
| Tensile Area | $A_b$ | 0.31 | $in^2$ |
| Tensile Area | $A_n$ | 0.23 | $in^2$ |
| Grade | | A325 | |
| Bolt Ultimate Strength | $F_{ub}$ | 120 | *ksi* |
| Connection length reduction factor | $R_b$ | 1 | |



*Connection Sketch/Photo*

## FLANGE LOADS

| | | | |
|---|---|---|---|
| Loadcase # | | **2** | |
| Bending Moment | Mzz | **98.10** | *kips-in* |
| Bending Moment | Myy | **0.28** | *kips-in* |
| Torsional Moment | Mxx | **0.12** | *kips-in* |
| Shear Force | Vy | **2.71** | *kips* |
| Shear Force | Vz | **0.01** | *kips* |
| Axial Force | Px | **1.56** | *kips* |

## BOLT CHECK

**Bolt Tension Capacity**

$\phi R_{nt} = 0.75 * F_{ub} * A_n$

$\phi R_{nt}$= **20.3** *kips*

**Bolt Shear Capacity**

$\phi R_{nv} = 0.75 * 0.625 * 0.8 * Fub * Ab * Rb$

$\phi R_{nv}$= **13.8** *kips*

**Maximum Bolt Tension**

$T_{ub} = F_{Mxx} + F_{Mzz} + T_y/4$

$T_{ub}$= **8.59** *kips*

**Maximum Bolt Shear**

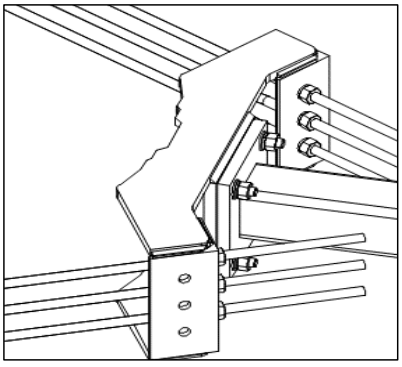
$V_{ub} = \text{sqrt}\left((V_x/4)^2 + (V_y/4)^2\right) + F_{Myy}$

$V_{ub}$= **0.68** *kips*

| | | | | | |
|---|---|---|---|---|---|
| **Tension Ratio:** | **42.2%** | **%** | **Shear Ratio:** | **5.0%** | **%** |
| | PASS | | | PASS | |
| $(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$ | **OK** | | Ratio | **18.1%** | PASS |

## WELD CHECK

| | | | |
|---|---|---|---|
| Filler Metal $F_{EXX}$ | **70** | ksi | Are stiffners present? **No** |
| Weld Thk. | **0.25** | in | |
| Base metal $F_u$ | **58** | ksi | |
| Type of section | **HSS** | | |
| Length of Section [b] | **4.0** | in | |
| Length of Section [d] | **4.0** | in | |
| $I_{total}$ | **16.00** | in | |
| $I_p$ | **85.33** | $in^3$ | |
| $S_z$ | **21.33** | $in^2$ | |
| $S_y$ | **21.33** | $in^2$ | |
| $R_{ux}$ | 4.71 | kips/in | |
| $R_{uy}$ | 0.17 | kips/in | |
| $R_{uz}$ | 0.00 | kips/in | |
| $R_u$ | 4.71 | kips/in | |
| Allowable Weld Stress | **5.57** | kips/in | **84.6%** PASS |



*Connection Sketch*

# EXHIBIT 5

# Radio Frequency Exposure Analysis Report

**April 7, 2022**

**Centerline on behalf of AT&T**
**Centerline Communications Project Number: 566713**

**AT&T Site Name: CANTON - COLLINSVILLE**
**Site Number: CT2094**
**FA#: 10035342**
**USID: 24485**

**Site Address: 2 SUNNY LANE, WESTPORT, CT 06880**

## Site Compliance Summary

| | |
|---|---|
| **AT&T Compliance Status:** | Compliant |
| **Cumulative Calculated Power Density (Ground Level):** | 3.15544 µW/cm$^2$ |
| **Cumulative General Population % MPE (Ground Level):** | 0.40299000000000001% |

April 7, 2022

Centerline
Attn: Jennifer Iliades, Project Manager
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **CANTON - COLLINSVILLE**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **2 SUNNY LANE, WESTPORT, CT 06880** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter ($mW/cm^2$) or microwatts per square centimeter ($\mu W/cm^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in $mW/cm^2$) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{MHz}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of 1 $mW/cm^2$ (1000 $\mu W/cm^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the 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.

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, 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.

## Calculation Methodology

Centerline Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.

## Data & Results

The following table details the antennas and operating parameters for the AT&T antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at the Ground Level.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.

## Maximum Calculated Cumulative Power Density (Location: approximately 6' Northeast of site)

| Antenna ID | Make / Model | Frequency Band (MHz) | Antenna Gain (dBd) | Antenna Centerline (ft) | Channel Count | TX Power/ Channel (watts) | ERP (watts) | Calculated Power Density ($\mu W/cm^2$) | General Population MPE Limit ($\mu W/cm^2$) | General Population % MPE |
|---|---|---|---|---|---|---|---|---|---|---|
| AT&T A 1 | CCI TPA65R-BU6D | 700 | 11.75 | 102.00 | 4.00 | 40.00 | 2393.98 | 0.11842 | 466.67 | 0.02538 |
| AT&T A 1 | CCI TPA65R-BU6D | 2100 | 15.95 | 102.00 | 4.00 | 40.00 | 6296.80 | 0.13476 | 1000.00 | 0.01348 |
| AT&T A 1 | CCI TPA65R-BU6D | 2300 | 14.95 | 102.00 | 4.00 | 25.00 | 3126.08 | 0.09243 | 1000.00 | 0.00924 |
| AT&T A 2 | ERICSSON AIR6449 | 3700 | 23.55 | 102.00 | 1.00 | 108.40 | 24548.74 | 1.40996 | 1000.00 | 0.14100 |
| AT&T A 3 | ERICSSON AIR6419 | 3450 | 22.15 | 102.00 | 1.00 | 0.00 | 0.00 | 0.01316 | 1000.00 | 0.00132 |
| AT&T A 4 | CCI DMP65R-BU6D | 700 | 11.35 | 102.00 | 4.00 | 40.00 | 2183.33 | 0.13205 | 466.67 | 0.02830 |
| AT&T A 4 | CCI DMP65R-BU6D | 850 | 11.35 | 102.00 | 4.00 | 40.00 | 2183.33 | 0.11695 | 566.67 | 0.02064 |
| AT&T A 4 | CCI DMP65R-BU6D | 1900 | 14.65 | 102.00 | 4.00 | 40.00 | 4667.88 | 0.11133 | 1000.00 | 0.01113 |
| AT&T B 5 | CCI TPA65R-BU6D | 700 | 11.75 | 102.00 | 4.00 | 40.00 | 2393.98 | 0.00003 | 466.67 | 0.00001 |
| AT&T B 5 | CCI TPA65R-BU6D | 2100 | 15.95 | 102.00 | 4.00 | 40.00 | 6296.80 | 0.00004 | 1000.00 | 0.00000 |
| AT&T B 5 | CCI TPA65R-BU6D | 2300 | 14.95 | 102.00 | 4.00 | 25.00 | 3126.08 | 0.00003 | 1000.00 | 0.00000 |
| AT&T B 6 | ERICSSON AIR6449 | 3700 | 23.55 | 102.00 | 1.00 | 108.40 | 24548.74 | 0.01033 | 1000.00 | 0.00103 |
| AT&T B 7 | ERICSSON AIR6419 | 3450 | 22.15 | 102.00 | 1.00 | 0.00 | 0.00 | 0.00000 | 1000.00 | 0.00000 |
| AT&T B 8 | CCI DMP65R-BU6D | 700 | 11.75 | 102.00 | 4.00 | 40.00 | 2393.98 | 0.00020 | 466.67 | 0.00004 |
| AT&T B 8 | CCI DMP65R-BU6D | 850 | 11.45 | 102.00 | 4.00 | 40.00 | 2234.19 | 0.00019 | 566.67 | 0.00003 |
| AT&T B 8 | CCI DMP65R-BU6D | 1900 | 14.65 | 102.00 | 4.00 | 40.00 | 4667.88 | 0.00049 | 1000.00 | 0.00005 |
| AT&T C 9 | CCI TPA65R-BU6D | 700 | 11.75 | 102.00 | 4.00 | 40.00 | 2393.98 | 0.00011 | 466.67 | 0.00002 |
| AT&T C 9 | CCI TPA65R-BU6D | 2100 | 15.85 | 102.00 | 4.00 | 40.00 | 6153.47 | 0.00003 | 1000.00 | 0.00000 |
| AT&T C 9 | CCI TPA65R-BU6D | 2300 | 14.95 | 102.00 | 4.00 | 25.00 | 3126.08 | 0.00005 | 1000.00 | 0.00001 |
| AT&T C 10 | ERICSSON AIR6449 | 3700 | 23.55 | 102.00 | 1.00 | 108.40 | 24548.74 | 0.01140 | 1000.00 | 0.00114 |
| AT&T C 11 | ERICSSON AIR6419 | 3450 | 22.15 | 102.00 | 1.00 | 0.00 | 0.00 | 0.00000 | 1000.00 | 0.00000 |
| AT&T C 12 | CCI DMP65R-BU6D | 700 | 11.75 | 102.00 | 4.00 | 40.00 | 2393.98 | 0.00019 | 466.67 | 0.00004 |
| AT&T C 12 | CCI DMP65R-BU6D | 850 | 11.45 | 102.00 | 4.00 | 40.00 | 2234.19 | 0.00025 | 566.67 | 0.00004 |
| AT&T C 12 | CCI DMP65R-BU6D | 1900 | 14.35 | 102.00 | 4.00 | 40.00 | 4356.32 | 0.00005 | 1000.00 | 0.00001 |
| Sprint A 13 | GENERIC PANEL 6FT | 862 | 12.62 | 120.00 | 2.00 | 40.00 | 1462.48 | 0.05773 | 574.67 | 0.01005 |
| Sprint A 13 | GENERIC PANEL 6FT | 1900 | 15.84 | 120.00 | 2.00 | 60.00 | 4604.49 | 0.08639 | 1000.00 | 0.00864 |
| Sprint B 14 | GENERIC PANEL 6FT | 862 | 12.62 | 120.00 | 2.00 | 40.00 | 1462.48 | 0.00001 | 574.67 | 0.00000 |
| Sprint B 14 | GENERIC PANEL 6FT | 1900 | 15.84 | 120.00 | 2.00 | 60.00 | 4604.49 | 0.00002 | 1000.00 | 0.00000 |
| Sprint C 15 | GENERIC PANEL 6FT | 862 | 12.62 | 120.00 | 2.00 | 40.00 | 1462.48 | 0.00016 | 574.67 | 0.00003 |
| Sprint C 15 | GENERIC PANEL 6FT | 1900 | 15.84 | 120.00 | 2.00 | 60.00 | 4604.49 | 0.00013 | 1000.00 | 0.00001 |
| T-Mobile A 16 | GENERIC PANEL 6FT | 1900 | 15.84 | 128.00 | 2.00 | 60.00 | 4604.49 | 0.07606 | 1000.00 | 0.00761 |
| T-Mobile A 17 | GENERIC PANEL 6FT | 600 | 0.00 | 128.00 | 2.00 | 60.00 | 120.00 | 0.07384 | 400.00 | 0.01846 |
| T-Mobile A 17 | GENERIC PANEL 6FT | 700 | 12.33 | 128.00 | 2.00 | 60.00 | 2052.02 | 0.07384 | 466.67 | 0.01582 |
| T-Mobile A 18 | GENERIC PANEL 6FT | 2100 | 16.39 | 128.00 | 2.00 | 60.00 | 5226.14 | 0.08004 | 1000.00 | 0.00800 |
| T-Mobile B 19 | GENERIC PANEL 6FT | 1900 | 15.84 | 128.00 | 2.00 | 60.00 | 4604.49 | 0.00002 | 1000.00 | 0.00000 |

| Antenna ID | Make / Model | Frequency Band (MHz) | Antenna Gain (dBd) | Antenna Centerline (ft) | Channel Count | TX Power/ Channel (watts) | ERP (watts) | Calculated Power Density (µW/cm²) | General Population MPE Limit (µW/cm²) | General Population % MPE |
|---|---|---|---|---|---|---|---|---|---|---|
| T-Mobile B 20 | GENERIC PANEL 6FT | 600 | 0.00 | 128.00 | 2.00 | 60.00 | 120.00 | 0.00032 | 400.00 | 0.00008 |
| T-Mobile B 20 | GENERIC PANEL 6FT | 700 | 12.33 | 128.00 | 2.00 | 60.00 | 2052.02 | 0.00032 | 466.67 | 0.00007 |
| T-Mobile B 21 | GENERIC PANEL 6FT | 2100 | 16.39 | 128.00 | 2.00 | 60.00 | 5226.14 | 0.00003 | 1000.00 | 0.00000 |
| T-Mobile C 22 | GENERIC PANEL 6FT | 1900 | 15.84 | 128.00 | 2.00 | 60.00 | 4604.49 | 0.00012 | 1000.00 | 0.00001 |
| T-Mobile C 23 | GENERIC PANEL 6FT | 600 | 0.00 | 128.00 | 2.00 | 60.00 | 120.00 | 0.00017 | 400.00 | 0.00004 |
| T-Mobile C 23 | GENERIC PANEL 6FT | 700 | 12.33 | 128.00 | 2.00 | 60.00 | 2052.02 | 0.00017 | 466.67 | 0.00004 |
| T-Mobile C 24 | GENERIC PANEL 6FT | 2100 | 16.39 | 128.00 | 2.00 | 60.00 | 5226.14 | 0.00007 | 1000.00 | 0.00001 |
| Verizon A 25 | GENERIC PANEL 6FT | 850 | 12.62 | 110.50 | 4.00 | 40.00 | 2924.96 | 0.13745 | 566.67 | 0.02426 |
| Verizon A 26 | GENERIC PANEL 6FT | 1900 | 15.84 | 110.50 | 4.00 | 40.00 | 6139.32 | 0.13708 | 1000.00 | 0.01371 |
| Verizon A 27 | GENERIC PANEL 6FT | 2100 | 16.39 | 110.50 | 4.00 | 40.00 | 6968.19 | 0.14428 | 1000.00 | 0.01443 |
| Verizon A 28 | GENERIC PANEL 6FT | 700 | 12.33 | 110.50 | 4.00 | 40.00 | 2736.02 | 0.13309 | 466.67 | 0.02852 |
| Verizon B 29 | GENERIC PANEL 6FT | 850 | 12.62 | 110.50 | 4.00 | 40.00 | 2924.96 | 0.00001 | 566.67 | 0.00000 |
| Verizon B 30 | GENERIC PANEL 6FT | 1900 | 15.84 | 110.50 | 4.00 | 40.00 | 6139.32 | 0.00003 | 1000.00 | 0.00000 |
| Verizon B 31 | GENERIC PANEL 6FT | 2100 | 16.39 | 110.50 | 4.00 | 40.00 | 6968.19 | 0.00005 | 1000.00 | 0.00001 |
| Verizon B 32 | GENERIC PANEL 6FT | 700 | 12.33 | 110.50 | 4.00 | 40.00 | 2736.02 | 0.00057 | 466.67 | 0.00012 |
| Verizon C 33 | GENERIC PANEL 6FT | 850 | 12.62 | 110.50 | 4.00 | 40.00 | 2924.96 | 0.00038 | 566.67 | 0.00007 |
| Verizon C 34 | GENERIC PANEL 6FT | 1900 | 15.84 | 110.50 | 4.00 | 40.00 | 6139.32 | 0.00021 | 1000.00 | 0.00002 |
| Verizon C 35 | GENERIC PANEL 6FT | 2100 | 16.39 | 110.50 | 4.00 | 40.00 | 6968.19 | 0.00013 | 1000.00 | 0.00001 |
| Verizon C 36 | GENERIC PANEL 6FT | 700 | 12.33 | 110.50 | 4.00 | 40.00 | 2736.02 | 0.00030 | 466.67 | 0.00006 |
| | | | | | | | **Cumulative Power Density:** | **3.15544 µW/cm²** | **Cumulative % MPE:** | **0.40299%** |

## Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at Ground Level that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **Compliant** with FCC rules and regulations.

Matt Schulzinger
RF EME Technical Writer
Centerline Communications, LLC

Matthew Schulzinger

# EXHIBIT 6

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030327057797

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/25/2022

**Delivered On**

06/17/2022 11:38 A.M.

**Delivered To**

10 PRESIDENTIAL WAY
WOBURN, MA, 01801, US

**Received By**

ANCRI

**Left At**

Front Desk

**Reference Number(s)**

CT2094-CSC AMERICAN TOWER

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/21/2022 2:20 P.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030322204403

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/25/2022

**Delivered On**

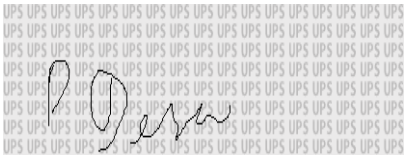
06/17/2022 10:12 A.M.

**Delivered To**

1 VERIZON WAY
BASKING RIDGE, NJ, 07920, US

**Received By**

PATEL



**Left At**

Receiver

**Reference Number(s)**

CT2094-CSC CELLCO PARTNERSHIP

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/21/2022 2:23 P.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030324401357

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/25/2022

**Delivered On**

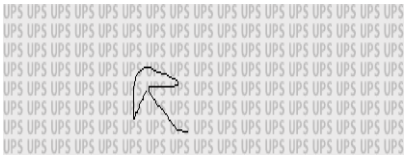
06/17/2022 1:12 P.M.

**Delivered To**

EILEEN ZHANG/TOWN OF WEST
110 MYRTLE AVE
WESTPORT, CT, 06880, US

**Received By**

RICH



**Left At**

Inside Delivery

**Reference Number(s)**

CT2094-CSC FIRST SELECTWOMAN

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/21/2022 2:24 P.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030321604189

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/25/2022

**Delivered On**

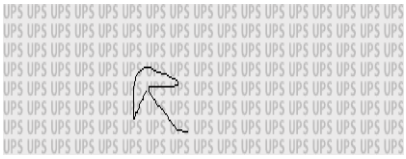
06/17/2022 1:12 P.M.

**Delivered To**

EILEEN ZHANG/TOWN OF WEST
110 MYRTLE AVE
WESTPORT, CT, 06880, US

**Received By**

RICH



**Left At**

Inside Delivery

**Reference Number(s)**

CT2094-CSC TOWN PLANNER

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/21/2022 2:26 P.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030334943575

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/25/2022

**Delivered On**

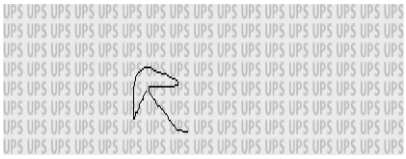
06/17/2022 1:12 P.M.

**Delivered To**

EILEEN ZHANG/TOWN OF WEST
110 MYRTLE AVE
WESTPORT, CT, 06880, US

**Received By**

RICH



**Left At**

Inside Delivery

**Reference Number(s)**

CT2094-CSC ZEO

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/21/2022 2:45 P.M. EST