**Cellco Partnership d/b/a**
**Verizon Wireless**
Cullen Morgan
Site Acquisition Consultant
750 W Center Street
Suite 301
West Bridgewater, MA 02379
(941)549-7263
cmorgan@clinellc.com

July 16, 2024

Members of the Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

**RE: NOTICE OF EXEMPT MODIFICATION**
**23 Stonybrook Rd, Stratford, CT 06614**
**Latitude: 41.203353**
**Longitude: -73.148543**
**Site: STONEYBROOK RD CT (ATC #283420)**

Dear Members of the Siting Council:

Cellco Partnership d/b/a Verizon Wireless ("Verizon") currently maintains nine (9) antennas at the 87-foot level of the existing 120.5-foot tower at 23 Stonybrook Road, Straford, CT 06614. The 120.5-foot tower is owned by American Tower Corporation, and the underlying property is currently owned by Stonybrook Management LLC. Verizon now intends to replace (9) Antennas and (3) Sector Mounts, remove (12) 1-5/8" Coax Cables, and install (1) Antenna, (1) Sector Mount, (8) RRUs, (1) OVP and (2) 1-5/8" Hybrid Cables. All tower-mounted equipment modifications will take place at the 87-foot level of the tower.

**Planned Modifications:**

Remove Existing:
(3) BXA-70063-6CF-6 Antennas
(6) BXA-171063-12CF Antennas
(12) 1-5/8" Hybrid Cables
(3) Sector Mounts

Install New:
(4) MX06FHG665-HG Antennas
(4) MT6413-77A Antennas
(2) MX12FRO645-01 Antennas
(4) RF4461D-13A RRUs
(4) RF4439D-25A RRUs

Install New (continued):
(1) OVP
(2) 1-5/8" Hybrids

This facility was approved by the CT Siting Council in Docket No. 385, dated February 25, 2010, with conditions. We used the information from the previous filing. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, or construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor Laura Hoydick, chief elected official for the Town of Stratford, Brian Donovan, Building Official for the Town of Stratford, Stonybrook Management LLC, the property owner, and American Tower Corporation, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the 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 replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Verizon 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).

Respectfully Submitted,
**Cullen Morgan**
**Site Acquisition Consultant**
**Centerline Communications, LLC (Agent to Verizon)**
**Mobile: (941) 549-7263**
**cmorgan@clinellc.com**

Attachments
cc: Mayor Laura R. Hoydick, chief elected official – Town of Easton
Brian Donovan, Building Official – Town of Easton
Stonybrook Management LLC – Property Owner
American Tower Corporation – Tower Owner

Centerline Communications
750 W Center St #301
WEST BRIDGEWATER, MA 02379
(844) 748-8878

Centerline Disbursement

00046242
Date: 07/10/2024

**Memo: 14764246**

Pay To
The Order Of CONNECTICUT SITING COUNCIL

***Six Hundred Twenty Five Dollars***

$**625.00**

CONNECTICUT SITING COUNCIL
United States

⑈00046242⑈ ⑆011304478⑆ 00292200898?9⑈

Details on Back. Security Features Included

C/O CULLEN MORGAN
9415497263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

**2 LBS** **1 OF 1**

**SHIP TO:**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE
**NEW BRITAIN CT 06051-2655**

**CT 067 9-06**

**UPS GROUND**
TRACKING #: 1Z 9Y4 503 03 1432 7448

BILLING: P/P

Reference # 1: 14764246 STONEYBROOK RD CT

CS 24.5.00. MACNV50 30.0A 07/2024*

TM

CENTERLINE

# EXHIBIT A

## Original Decision and Order

| | | |
|---|---|---|
| **DOCKET NO. 385** – T-Mobile Northeast LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and management of a telecommunications facility located at 23 Stonybrook Road, Stratford, Connecticut. | } | Connecticut<br>Siting<br>Council<br>February 25, 2010 |

**Decision and Order**

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and management of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to T-Mobile Northeast LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 23 Stonybrook Road, Stratford, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile Northeast LLC and other entities, both public and private, but such tower shall not exceed a height of 100 feet above ground level. Panel antennas shall be installed in an exterior, flush mount configuration and such panel antennas shall not exceed a height of 100 feet above ground level.

2. The tower compound shall be re-located in an east-west orientation along the south property line. The tower shall be re-located appropriately to increase the distance from the tower to the west property line.

3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Stratford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
    c) details for the installation of architecturally-treated fencing around the compound and the installation of evergreen plantings along the west property boundary, where necessary to provide visual screening to the adjacent residences.

4. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

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

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

7. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Stratford public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

8. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

9. At least one wireless telecommunications carrier shall install their equipment and shall become operational not later than 120 days after the tower is erected. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

10. Any request for extension of the time period referred to in Condition 8 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Stratford. Any proposed modifications to this Decision and Order shall likewise be so served.

10. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

11. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Connecticut Post.

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

The parties and intervenors to this proceeding are:

| **Applicant** | **Its Representative** |
|---|---|
| T-Mobile Northeast LLC | Julie D. Kohler, Esq.<br>Monte E. Frank, Esq.<br>Jesse A. Langer, Esq.<br>Cohen and Wolf, P.C.<br>1115 Broad Street<br>Bridgeport, CT 06604 |

CENTERLINE

# EXHIBIT B

## Property Card

# 23 STONYBROOK RD

| | | | |
|---|---|---|---|
| **Location** | 23 STONYBROOK RD | **Mblu** | 30/11 10/ 16/ / |
| **Acct#** | 1626900 | **Owner** | STONYBROOK MANAGEMENT LLC |
| **PBN** | | **Assessment** | $673,750 |
| **Appraisal** | $962,500 | **PID** | 17088 |
| **Building Count** | 1 | | |

### Current Value

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2019 | $740,700 | $221,800 | $962,500 |
| **Assessment** | | | |
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2019 | $518,490 | $155,260 | $673,750 |

### Owner of Record

| | | | |
|---|---|---|---|
| **Owner** | STONYBROOK MANAGEMENT LLC | **Sale Price** | $900,000 |
| **Co-Owner** | | **Certificate** | |
| **Address** | 124 KNAPP ST<br>EASTON , CT 06612 | **Book** | 2604 |
| | | **Page** | 0275 |
| | | **Sale Date** | 03/24/2005 |
| | | **Instrument** | 00 |

### Ownership History

| Ownership History | | | | | | |
|---|---|---|---|---|---|---|
| **Owner** | **Sale Price** | **Certificate** | **Instrument** | **Sale Date** | **Book** | **Page** |
| STONYBROOK MANAGEMENT LLC | $900,000 | | 00 | 03/24/2005 | 2604 | 0275 |
| STONYBROOK CENTER INC THE | $90,000 | | UNKQ | 08/13/1969 | 0451 | 0378 |

### Building Information

#### Building 1 : Section 1

**Year Built:** 1969

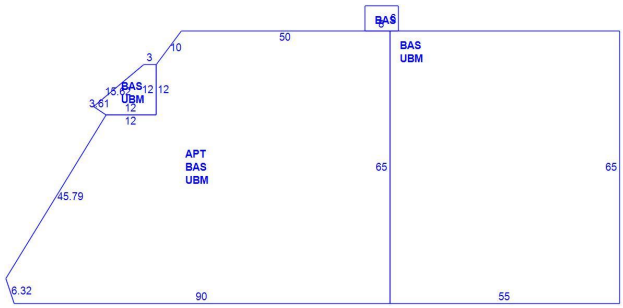
**Building Photo**

**Living Area:** 13,264
**Building Percent Good:** 65

| Building Attributes | |
|---|---|
| **Field** | **Description** |
| STYLE | Retail/Apt |
| MODEL | Commercial |
| Stories: | 2 Stories |
| Occupancy | 8.00 |
| Exterior Wall 1 | Concr/Cinder |
| Exterior Wall 2 | |
| Roof Structure | Flat |
| Roof Cover | Built Up |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |
| Interior Floor 1 | Carpet |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Hot Water |
| AC Type | Partial |
| Struct Class | |
| Bldg Use | Nbhd Ctr |
| Usrfld 215 | |
| Usrfld 216 | |
| Usrfld 217 | |
| Usrfld 218 | |
| Usrfld 219 | |
| 1st Floor Use: | 323 |
| Heat/AC | Heat/AC Split |
| Frame Type | Masonry |
| Baths/Plumbing | Average |
| Ceiling/Wall | Ceil & Walls |
| Rooms/Prtns | Average |
| Wall Height | 9.00 |
| % Comm Wall | |

(http://images.vgsi.com/photos/StratfordCTPhotos/\00\07\19\50.jpg)

## Building Layout



(ParcelSketch.ashx?pid=17088&bid=17088)

| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| BAS | First Floor | 8,502 | 8,502 |
| APT | Apartment | 4,762 | 4,762 |
| UBM | Unfinished Basement | 8,454 | 0 |
| | | 21,718 | 13,264 |

## Extra Features

| Extra Features | | | | Legend |
|---|---|---|---|---|
| **Code** | **Description** | **Size** | **Value** | **Bldg #** |
| A/C | Air Condition | 5679.60 S.F. | $9,500 | 1 |
| SPR1 | Sprinklers - Wet | 3000.00 S.F. | $3,900 | 1 |

## Land

## Land

### Land Use

| | |
|---|---|
| **Use Code** | 323 |
| **Description** | Nbhd Ctr |
| **Zone** | |
| **Neighborhood** | 1 |
| **Alt Land Appr** | No |
| **Category** | |

### Land Line Valuation

| | |
|---|---|
| **Size (Acres)** | 0.46 |
| **Frontage** | 0 |
| **Depth** | 0 |
| **Assessed Value** | $155,260 |
| **Appraised Value** | $221,800 |

### Outbuildings

| Outbuildings | | | | | | Legend |
|---|---|---|---|---|---|---|
| **Code** | **Description** | **Sub Code** | **Sub Description** | **Size** | **Value** | **Bldg #** |
| PAV | Paving | AS | Asphalt | 16000.00 S.F. | $13,200 | 1 |

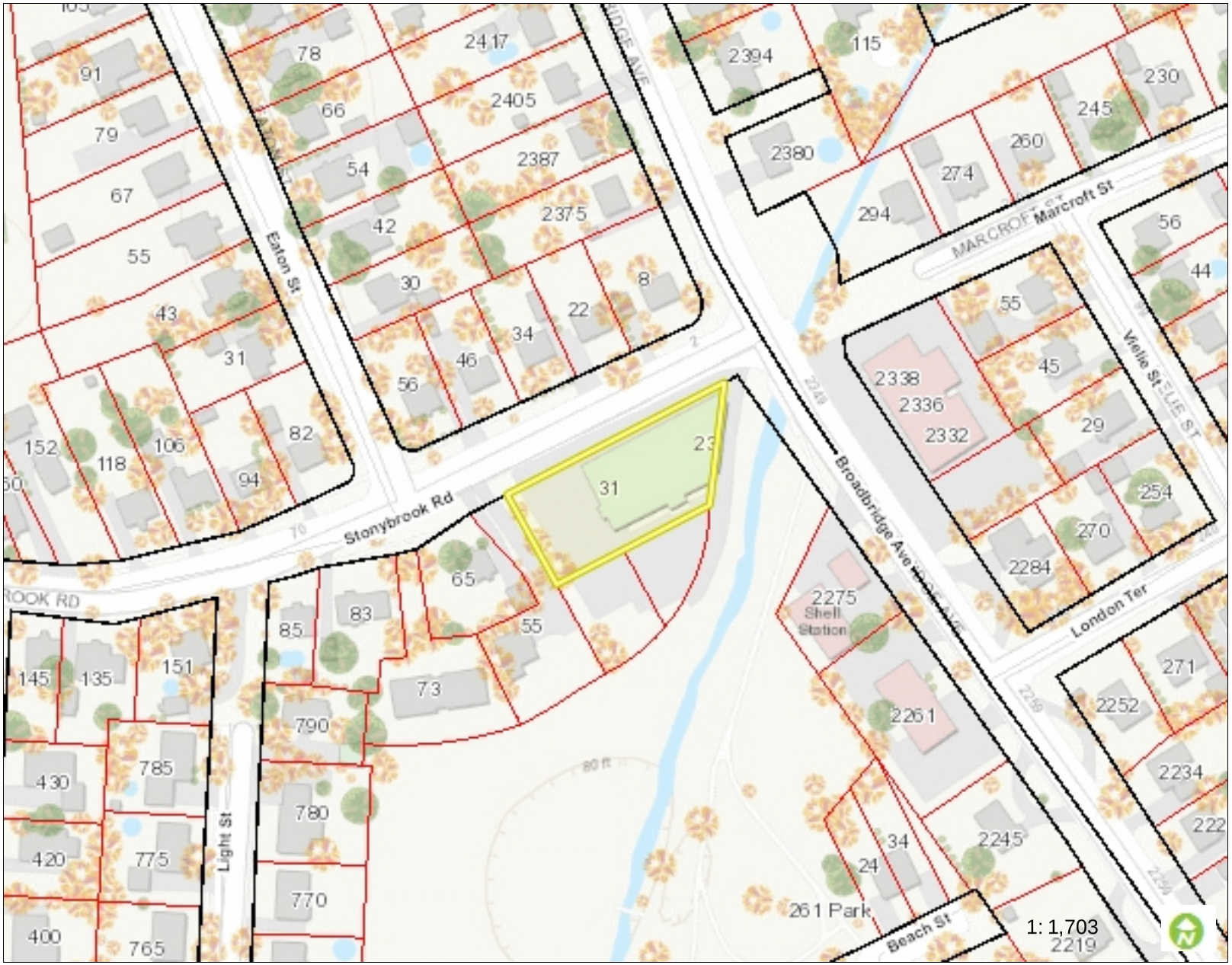
### Valuation History

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2020 | $740,700 | $221,800 | $962,500 |
| 2019 | $740,700 | $221,800 | $962,500 |
| 2018 | $726,500 | $212,800 | $939,300 |

| Assessment | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2020 | $518,490 | $155,260 | $673,750 |
| 2019 | $518,490 | $155,260 | $673,750 |
| 2018 | $508,550 | $148,960 | $657,510 |

Town of Stratford

# 23 Stoney Brook Road




Legend

- Streetname
- Roadways
  - Local
  - Collector
  - Minor Collector
  - Minor Arterial
  - Major Collector
  - PA Other
  - PA Other Expwy
  - PA Interstate

283.9 0 141.95 283.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council



METROCOG
Connecticut Metropolitan Council of Governments

CENTERLINE

# EXHIBIT C

## Structural Analysis Report

AMERICAN TOWER®
CORPORATION

# Structural Analysis Report

| | | |
|---|---|---|
| **Structure** | : | 119 ft Monopole |
| **ATC Asset Name** | : | STONEYBROOK RD CT |
| **ATC Asset Number** | : | 283420 |
| **Engineering Number** | : | 14764246_C3_04 |
| **Proposed Carrier** | : | VERIZON WIRELESS |
| **Carrier Site Name** | : | STRATFORD W CT |
| **Carrier Site Number** | : | 5000382206 |
| **Site Location** | : | 23 Stonybrook Road<br>Stratford, CT 06614-3715<br>41.2034° N, 73.1485° W |
| **County** | : | Fairfield |
| **Date** | : | May 6, 2024 |
| **Max Usage** | : | 77% |
| **Analysis Result** | : | Pass |

Created By:

Garrett Williams
Structural Engineer
Garrett Williams


**COA: PEC.0001553**

## Table of Contents

Introduction ..... 3

Supporting Documents ..... 3

Analysis ..... 3

Conclusion ..... 3

Structure Usages ..... 4

Maximum Reactions ..... 4

Tower Loading ..... 5

Standard Conditions ..... Attached

Calculations ..... Attached

## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 119 ft Monopole tower to reflect the change in loading by VERIZON WIRELESS.

## Supporting Documents

| | |
|---|---|
| **Tower:** | Valmont Order #20380-10, dated July 30, 2010 |
| **Foundation:** | Valmont Order #20380-60, dated June 11, 2010 |
| **Geotechnical:** | Terracon Project #J2105132, dated April 2, 2010 |
| **Modification:** | TES Job #13142, dated November 12, 2014<br>ATC Job #13682835_C6_06, dated January 5, 2023 |

## 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:** | 119 mph (3-second gust) |
| **Basic Wind Speed w/ Ice:** | 50 mph (3-second gust) w/ 1.00" radial ice concurrent |
| **Code(s):** | ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code |
| **Exposure Category:** | B |
| **Risk Category:** | II |
| **Topographic Factor Procedure:** | Method 1 |
| **Topographic Category:** | 1 |
| **Spectral Response:** | Ss = 0.21, $S_1$ = 0.05 |
| **Site Class:** | D - Stiff Soil - Default |

***Wind load and Ice thickness have been reduced by applicable existing structure load modification factors in accordance with TIA-222, ANNEX-S***

## 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 reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact **Engineering@americantower.com** Please include the American Tower asset name, asset number, and engineering number in the subject line for any questions.

## Structure Usages

| Structural Component | Usage | Control | Result |
|---|---|---|---|
| Pole Shaft | 73.8% | 1.2D + 1.0W | Pass |
| Reinforcement | 76.7% | 44.88 ft to 90.13 ft | Pass |
| Upper Termination | 43.2% | 44.88 ft to 90.13 ft | Pass |
| Intermediate Connector | 33.4% | 44.88 ft to 90.13 ft | Pass |
| Lower Termination | 63.4% | 44.88 ft to 90.13 ft | Pass |
| Serviceability Usage | 49.4% | 1.0D + 1.0W | Pass |
| Upper Flange Plate @ 99.0 ft | 35.7% | Bolts | Pass |
| Base Plate @ 0.0 ft | 49.4% | Rods | Pass |
| Pier | 44.7% | Flexure [Steel] | Pass |

## Maximum Reactions

| Foundation | Moment (k-ft) | Axial (k) | Shear (k) |
|---|---|---|---|
| Monopole Base | 1,642.6 | 37.6 | 17.8 |

***Reactions shown reflect the results from the Load Case with maximum Moment***

Structure base reactions were analyzed using available geotechnical and foundation information.

## VERIZON WIRELESS Final Loading

| Elev (ft) | Qty | Equipment | Lines |
|---|---|---|---|
| 87.0 | 1 | Raycap RCMDC-6627-PF-48 | (2) 1 5/8" Hybriflex |
| | 2 | JMA Wireless MX06FHG665-HG | |
| | 2 | JMA Wireless MX06FHG865-HG | |
| | 2 | JMA Wireless MX12FRO645-01 | |
| | 4 | Samsung B2/B66A RRH ORAN (RF 4439d-25A) | |
| | 4 | Samsung MT6413-77A | |
| | 4 | Samsung RF4461d-13A | |
| | 4 | Site Pro 1 VFA10-HD | |
| 78.0 | - | - | (12) 1 5/8" Coax |

## Other Existing/Reserved Loading

| Elev (ft) | Qty | Equipment | Lines | Carrier |
|---|---|---|---|---|
| 119.0 | 3 | Ericsson Air 6449 B77D | - | AT&T MOBILITY |
| 117.0 | 1 | Commscope WCS-IMFQ-AMT | (1) 0.40" (10.3mm) Fiber<br>(3) 0.82" (20.8mm) 8 AWG 6<br>(4) 0.92" (23.4mm) Cable<br>(1) 2" conduit | AT&T MOBILITY |
| | 1 | Platform with Handrails | | |
| | 2 | Raycap DC9-48-60-24-8C-EV | | |
| | 3 | CCI DMP65R-BU6DA | | |
| | 3 | Ericsson RRUS 32 B2 | | |
| | 3 | Ericsson RRUS 4426 B66 | | |
| | 3 | Ericsson RRUS 4449 B5, B12 | | |
| | 3 | Ericsson RRUS 4478 B14 | | |
| | 3 | Ericsson RRUS E2 B29 | | |
| | 3 | Ericsson RRUS-32 B30 (77 lbs) | | |
| | 3 | Quintel QD6616-7 | | |
| 115.0 | 3 | Ericsson AIR 6419 B77G | - | AT&T MOBILITY |
| 111.3 | 3 | Fujitsu TA08025-B604 | - | DISH WIRELESS L.L.C. |
| | 3 | Fujitsu TA08025-B605 | | |
| 109.0 | 1 | Raycap RDIDC-9181-PF-48 | (1) 1.75" (44.5mm) Hybrid | DISH WIRELESS L.L.C. |
| | 3 | JMA Wireless MX08FRO665-21 | | |
| 107.0 | 1 | Platform with Handrails | - | DISH WIRELESS L.L.C. |
| 101.3 | 3 | Ericsson RRUS 4415 B25 | - | T-MOBILE |
| | 3 | Ericsson Radio 4449 B71 B85A | | |
| 101.2 | 3 | Ericsson AIR32 B66Aa/B2a | - | T-MOBILE |
| 97.0 | 1 | Platform with Handrails | (1) 1 1/4" (1.25"- 31.8mm) Fiber<br>(2) 1 5/8" Hybriflex | T-MOBILE |
| | 3 | Ericsson Air6449 B41 | | |
| | 3 | RFS APXVAARR24_43-U-NA20 | | |

*(If table breaks across pages, please see previous page for data in merged cells)*

**Standard Conditions**

All engineering services performed by A.T. Engineering Services LLC 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 Services LLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services LLC 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 Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

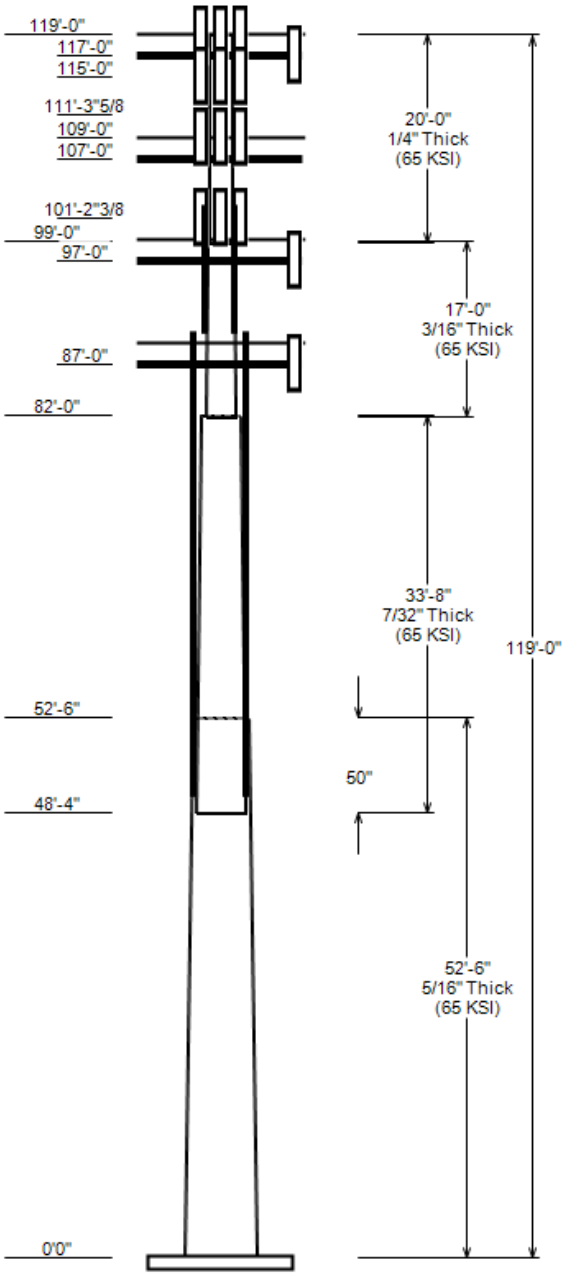
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

## ANALYSIS PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| **Nominal Wind:** | 116 mph | **Ice Wind:** | 49 mph w/ 0.85" ice | **Service Wind:** | 60 mph |
| **Risk Category:** | II | **Exposure:** | B | **$S_s$:** 0.207 | **$S_1$:** 0.054 |
| **Topo Category:** | 1 | **Topo Factor:** | Method 1 | **Topo Feature:** | |
| **Structure Height:** | 119 ft | **Base Elevation:** | 0.00 ft | **Structure Type:** | Custom |
| **Base Diameter:** | 42 in | **Base Rotation:** | 0° | **Taper:** | 0.3000 (in/ft) |

## POLE SECTION PROPERTIES

| Section | Length (ft) | Flat Diameter (in) Top | Flat Diameter (in) Bottom | Thick (in) | Joint Type | Joint Length (in) | Pole Shape | Yield Strength (ksi) |
|---|---|---|---|---|---|---|---|---|
| 1 | 52.500 | 26.25 | 42.00 | 0.312 | | 0.000 | 18 Sides | 65 |
| 2 | 33.667 | 17.84 | 27.94 | 0.219 | Slip Joint | 50.000 | 18 Sides | 65 |
| 3 | 17.000 | 12.74 | 17.84 | 0.188 | Butt Joint | 0.000 | Round | 65 |
| 4 | 20.000 | 12.56 | 12.56 | 0.250 | Butt Joint | 0.000 | 18 Sides | 65 |




## DISCRETE APPURTENANCE

| Elev (ft) | Description |
|---|---|
| 119.0 | (3) Ericsson Air 6449 B77D |
| 117.0 | (1) Commscope WCS-IMFQ-AMT |
| 117.0 | (3) Ericsson RRUS 4426 B66 |
| 117.0 | (3) Ericsson RRUS 4478 B14 |
| 117.0 | (3) Ericsson RRUS 4449 B5, B12 |
| 117.0 | (3) Ericsson RRUS 32 B2 |
| 117.0 | (3) Ericsson RRUS E2 B29 |
| 117.0 | (3) Ericsson RRUS-32 B30 (77 lbs) |
| 117.0 | (2) Raycap DC9-48-60-24-8C-EV |
| 117.0 | (3) CCI DMP65R-BU6DA |
| 117.0 | (3) Quintel QD6616-7 |
| 117.0 | (1) Generic Round Platform with Ha |
| 115.0 | (3) Ericsson AIR 6419 B77G |
| 111.3 | (3) Fujitsu TA08025-B605 |
| 111.3 | (3) Fujitsu TA08025-B604 |
| 109.0 | (1) Raycap RDIDC-9181-PF-48 |
| 109.0 | (3) JMA Wireless MX08FRO665-21 |
| 107.0 | (1) Generic Round Platform with Ha |
| 101.3 | (3) Ericsson Radio 4449 B71 B85A |
| 101.3 | (3) Ericsson RRUS 4415 B25 |
| 101.2 | (3) Ericsson AIR32 B66Aa/B2a |
| 97.0 | (3) Ericsson Air6449 B41 |
| 97.0 | (3) RFS APXVAARR24_43-U-NA20 |
| 97.0 | (1) Generic Round Platform with Ha |
| 87.0 | (4) Samsung B2/B66A RRH ORAN (RF 4 |
| 87.0 | (4) Samsung RF4461d-13A |
| 87.0 | (4) Samsung MT6413-77A |
| 87.0 | (1) Raycap RCMDC-6627-PF-48 |
| 87.0 | (2) JMA Wireless MX06FHG665-HG |
| 87.0 | (2) JMA Wireless MX06FHG865-HG |
| 87.0 | (2) JMA Wireless MX12FRO645-01 |
| 87.0 | (4) Site Pro 1 VFA10-HD |

## LINEAR APPURTENANCE

| Elev To (ft) | Description |
|---|---|
| 118.0 | (3) 0.39" (10mm) Fiber Trunk |
| 117.0 | (1) 2" conduit |
| 117.0 | (4) 0.92" (23.4mm) Cable |
| 117.0 | (3) 0.82" (20.8mm) 8 AWG 6 |
| 117.0 | (1) 0.40" (10.3mm) Fiber |
| 109.0 | (1) 1.75" (44.5mm) Hybrid |
| 104.0 | (1) 1" Thick Flat Plate |
| 104.0 | (1) 1" Thick Flat Plate |
| 104.0 | (1) 1" Thick Flat Plate |
| 101.0 | (3) 1 5/8" Hybriflex |
| 101.0 | (1) 1 1/4" Hybriflex Cable |
| 97.0 | (2) 1 5/8" Hybriflex |
| 97.0 | (1) 1 1/4" (1.25"- 31.8mm) Fiber |
| 92.0 | (1) 1" Thick Flat Plate |
| 92.0 | (1) 1" Thick Flat Plate |
| 92.0 | (1) 1" Thick Flat Plate |
| 87.0 | (2) 1 5/8" Hybriflex |
| 78.0 | (12) 1 5/8" Coax |

## GLOBAL BASE REACTIONS

| Load Case | Moment (kip-ft) | Axial (kip) | Shear (kip) |
|---|---|---|---|
| 1.2D + 1.0W | 1642.56 | 37.59 | 17.83 |
| 0.9D + 1.0W | 1603.62 | 28.19 | 17.81 |
| 1.2D + 1.0Di + 1.0Wi | 421.04 | 50.27 | 4.47 |
| 1.2D + 1.0Ev + 1.0Eh | 102.16 | 37.95 | 0.95 |
| 0.9D - 1.0Ev + 1.0Eh | 98.86 | 26.11 | 0.94 |
| 1.0D + 1.0W | 390.71 | 31.36 | 4.29 |

## ANALYSIS PARAMETERS

| | | | |
|---|---|---|---|
| **Location:** | Fairfield County,CT | **Height:** | 119 ft |
| **Type and Shape:** | Custom, 18 Sides | **Base Diameter:** | 42.00 in |
| **Manufacturer:** | Valmont | **Top Diameter:** | 12.56 in |
| **$K_d$ (non-service):** | 0.95 | **Taper:** | 0.3000 in/ft |
| **$K_e$:** | 1.00 | **Rotation:** | 0.000º |

## ICE & WIND PARAMETERS

| | | | |
|---|---|---|---|
| **Risk Category:** | II | **Design Wind Speed:** | 116 mph |
| **Exposure Category:** | B | **Design Wind Speed w/ Ice:** | 49 mph |
| **Topo Factor Procedure:** | Method 1 | **Design Ice Thickness:** | 0.85 in |
| **Topographic Category:** | 1 | **Service Wind Speed:** | 60 mph |
| **Crest Height:** | 0 ft | **HMSL:** | 77.00 ft |

## SEISMIC PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| **Analysis Method:** | Equivalent Lateral Force Method | | | | |
| **Site Class:** | D - Stiff Soil | | **Period Based on Rayleigh Method (sec):** | | 2.99 |
| **$T_L$ (sec):** | 6 | **P:** | 1 | **$C_s$:** | 0.030 |
| **$S_s$:** | 0.207 | **$S_1$:** | 0.054 | **$C_s$ Max:** | 0.030 |
| **$F_a$:** | 1.600 | **$F_v$:** | 2.400 | **$C_s$ Min:** | 0.030 |
| **$S_{ds}$:** | 0.221 | **$S_{d1}$:** | 0.086 | | |

## LOAD CASES

| | |
|---|---|
| 1.2D + 1.0W | 115.99 mph Wind with No Ice |
| 0.9D + 1.0W | 115.99 mph Wind with No Ice (Reduced DL) |
| 1.2D + 1.0Di + 1.0Wi | 48.73 mph Wind with 0.85" Radial Ice |
| 1.2D + 1.0Ev + 1.0Eh | Seismic |
| 0.9D - 1.0Ev + 1.0Eh | Seismic (Reduced DL) |
| 1.0D + 1.0W | 60 mph Wind with No Ice |

## SHAFT SECTION PROPERTIES

| | | | | | | | Bottom | | | | | | Top | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Section | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Joint Len (in) | Weight (lb) | Dia (in) | Elev (ft) | Area ($in^2$) | Ix ($in^4$) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area ($in^2$) | Ix ($in^4$) | W/t Ratio | D/t Ratio | Taper (in/ft) |
| 1-18 | 52.50 | 0.3125 | 65 | | 0.00 | 5,991 | 42.00 | 0.000 | 41.35 | 9,078.5 | 21.94 | 134.40 | 26.25 | 52.50 | 25.73 | 2,186.6 | 13.05 | 84.00 | 0.3000 |
| 2-18 | 33.67 | 0.2188 | 65 | Slip | 50.00 | 1,803 | 27.94 | 48.333 | 19.25 | 1,868.6 | 20.75 | 127.69 | 17.84 | 82.00 | 12.24 | 479.9 | 12.61 | 81.53 | 0.3000 |
| 3-R | 17.00 | 0.1875 | 65 | Butt | 0.00 | 515 | 17.84 | 82.000 | 10.40 | 405.3 | 0.00 | 95.14 | 12.74 | 99.00 | 7.39 | 145.7 | 0.00 | 67.94 | 0.3000 |
| 4-18 | 20.00 | 0.2500 | 65 | Butt | 0.00 | 665 | 12.56 | 99.000 | 9.77 | 187.1 | 7.10 | 50.25 | 12.56 | 119.00 | 9.77 | 187.1 | 7.10 | 50.25 | 0.0000 |
| | | | **Total Shaft Weight** | | | **8,974** | | | | | | | | | | | | | |

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 119.00 | Ericsson Air 6449 B77D | 3 | 0.75 | 0.000 | 81.60 | 4.028 | 0.65 | 138.61 | 4.790 | 0.65 |
| 117.00 | CCI DMP65R-BU6DA | 3 | 0.75 | 0.000 | 79.40 | 12.709 | 0.63 | 221.96 | 14.252 | 0.63 |
| 117.00 | Quintel QD6616-7 | 3 | 0.75 | 0.000 | 130.00 | 13.578 | 0.64 | 291.89 | 15.148 | 0.64 |
| 117.00 | Generic Round Platform with Ha | 1 | 1.00 | 0.000 | 2500.00 | 27.200 | 1.00 | 3396.39 | 40.728 | 1.00 |
| 117.00 | Raycap DC9-48-60-24-8C-EV | 2 | 0.75 | 0.000 | 16.00 | 4.788 | 0.50 | 87.45 | 5.602 | 0.50 |
| 117.00 | Ericsson RRUS-32 B30 (77 lbs) | 3 | 0.75 | 0.000 | 77.00 | 3.314 | 0.50 | 130.82 | 4.024 | 0.50 |
| 117.00 | Ericsson RRUS E2 B29 | 3 | 0.75 | 0.000 | 60.00 | 3.145 | 0.62 | 104.76 | 3.786 | 0.62 |
| 117.00 | Ericsson RRUS 32 B2 | 3 | 0.75 | 1.000 | 53.00 | 2.743 | 0.50 | 93.70 | 3.390 | 0.50 |
| 117.00 | Ericsson RRUS 4449 B5, B12 | 3 | 0.75 | 0.000 | 71.00 | 1.969 | 0.50 | 106.67 | 2.485 | 0.50 |
| 117.00 | Commscope WCS-IMFQ-AMT | 1 | 0.75 | 0.000 | 29.50 | 0.989 | 0.50 | 48.14 | 1.355 | 0.50 |
| 117.00 | Ericsson RRUS 4426 B66 | 3 | 0.75 | 0.000 | 48.40 | 1.650 | 0.50 | 73.11 | 2.120 | 0.50 |
| 117.00 | Ericsson RRUS 4478 B14 | 3 | 0.75 | 0.000 | 59.90 | 1.842 | 0.50 | 90.50 | 2.338 | 0.50 |
| 115.00 | Ericsson AIR 6419 B77G | 3 | 0.75 | 0.000 | 66.10 | 3.797 | 0.65 | 119.66 | 4.524 | 0.65 |
| 111.30 | Fujitsu TA08025-B604 | 3 | 0.75 | 0.000 | 63.90 | 1.962 | 0.50 | 96.02 | 2.469 | 0.50 |
| 111.30 | Fujitsu TA08025-B605 | 3 | 0.75 | 0.000 | 75.00 | 1.962 | 0.50 | 109.51 | 2.469 | 0.50 |
| 109.00 | JMA Wireless MX08FRO665-21 | 3 | 0.75 | 0.000 | 64.50 | 12.489 | 0.64 | 205.73 | 14.033 | 0.64 |
| 109.00 | Raycap RDIDC-9181-PF-48 | 1 | 0.75 | 0.000 | 21.90 | 1.867 | 0.50 | 53.10 | 2.362 | 0.50 |
| 107.00 | Generic Round Platform with Ha | 1 | 1.00 | 0.000 | 2500.00 | 27.200 | 1.00 | 3388.34 | 40.607 | 1.00 |
| 101.30 | Ericsson RRUS 4415 B25 | 3 | 0.75 | 0.000 | 46.00 | 1.842 | 0.50 | 72.77 | 2.332 | 0.50 |
| 101.30 | Ericsson Radio 4449 B71 B85A | 3 | 0.75 | 0.000 | 75.00 | 1.650 | 0.50 | 107.83 | 2.114 | 0.50 |
| 101.20 | Ericsson AIR32 B66Aa/B2a | 3 | 0.75 | 0.000 | 132.20 | 6.510 | 0.71 | 219.28 | 7.705 | 0.71 |
| 97.00 | RFS APXVAARR24_43-U-NA20 | 3 | 0.75 | 0.000 | 127.90 | 20.243 | 0.63 | 341.09 | 22.257 | 0.63 |
| 97.00 | Ericsson Air6449 B41 | 3 | 0.75 | 0.000 | 104.00 | 5.682 | 0.63 | 178.01 | 6.544 | 0.63 |
| 97.00 | Generic Round Platform with Ha | 1 | 1.00 | 0.000 | 2500.00 | 27.200 | 1.00 | 3379.58 | 40.474 | 1.00 |
| 87.00 | JMA Wireless MX06FHG865-HG | 2 | 0.80 | 0.000 | 51.00 | 11.608 | 0.77 | 178.17 | 13.345 | 0.77 |
| 87.00 | JMA Wireless MX12FRO645-01 | 2 | 0.80 | 0.000 | 55.00 | 12.489 | 0.73 | 193.05 | 13.998 | 0.73 |
| 87.00 | Site Pro 1 VFA10-HD | 4 | 0.75 | 0.000 | 718.00 | 13.650 | 0.75 | 1291.86 | 21.076 | 0.75 |
| 87.00 | Raycap RCMDC-6627-PF-48 | 1 | 0.80 | 0.000 | 32.00 | 4.056 | 1.00 | 100.26 | 4.789 | 1.00 |
| 87.00 | Samsung MT6413-77A | 4 | 0.80 | 0.000 | 57.30 | 3.805 | 0.61 | 102.90 | 4.518 | 0.61 |
| 87.00 | Samsung RF4461d-13A | 4 | 0.80 | 0.000 | 79.10 | 1.875 | 0.50 | 113.73 | 2.360 | 0.50 |
| 87.00 | Samsung B2/B66A RRH ORAN (RF 4 | 4 | 0.80 | 0.000 | 74.70 | 1.875 | 0.50 | 109.02 | 2.358 | 0.50 |
| 87.00 | JMA Wireless MX06FHG665-HG | 2 | 0.80 | 0.000 | 41.00 | 8.242 | 0.77 | 138.17 | 9.738 | 0.77 |
| **Totals** | **Row Count: 32** | **84** | | | **15,870.50** | | | **26,135.29** | | |

## LINEAR APPURTENANCE PROPERTIES

*Load Case Azimuth (deg): 192.00*

| Elev From (ft) | Elev To (ft) | Qty | Description | Diameter (in) | Weight (lb/ft) | Flat | Max/ Row | Distance Between Rows(in) | Distance Between Cols(in) | Azimuth (deg) | Distance From Face (in) | Exposed To Wind | Carrier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 118.00 | 3 | 0.39" (10mm) Fiber Tr | 0.39 | 0.06 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 117.00 | 4 | 0.92" (23.4mm) Cable | 0.92 | 0.89 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 117.00 | 3 | 0.82" (20.8mm) 8 AWG | 0.82 | 0.62 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 117.00 | 1 | 2" conduit | 2.38 | 3.65 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 117.00 | 1 | 0.40" (10.3mm) Fiber | 0.4 | 0.09 | N | 0 | 0 | 0 | 0 | 0 | N | AT&T MOBILITY |
| 0.00 | 109.00 | 1 | 1.75" (44.5mm) Hybrid | 1.75 | 2.72 | N | 1 | 1.38 | 1.38 | 105 | 4 | Y | DISH WIRELESS L.L.C. |
| 88.40 | 104.00 | 1 | 1" Thick Flat Plate | 1 | 0 | Y | 1 | 0 | 0 | 350 | 0 | Y | |
| 88.40 | 104.00 | 1 | 1" Thick Flat Plate | 1 | 0 | Y | 1 | 0 | 0 | 110 | 0 | Y | |
| 88.40 | 104.00 | 1 | 1" Thick Flat Plate | 1 | 0 | Y | 1 | 0 | 0 | 230 | 0 | Y | |
| 0.00 | 101.00 | 3 | 1 5/8" Hybriflex | 1.98 | 1.3 | N | 2 | 1 | 1 | 75 | 1 | Y | T-MOBILE |

## LINEAR APPURTENANCE PROPERTIES

*Load Case Azimuth (deg): 192.00*

| Elev From (ft) | Elev To (ft) | Qty | Description | Diameter (in) | Weight (lb/ft) | Flat | Max/ Row | Distance Between Rows(in) | Distance Between Cols(in) | Azimuth (deg) | Distance From Face (in) | Exposed To Wind | Carrier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 101.00 | 1 | 1 1/4" Hybriflex Cabl | 1.54 | 1 | N | 1 | 1.27 | 1.27 | 75 | 4 | Y | T-MOBILE |
| 0.00 | 97.00 | 2 | 1 5/8" Hybriflex | 1.98 | 1.3 | N | 2 | 1 | 1 | 75 | 1 | Y | T-MOBILE |
| 0.00 | 97.00 | 1 | 1 1/4" (1.25"- 31.8mm | 1.25 | 1.05 | N | 0 | 0 | 0 | 0 | 0 | N | T-MOBILE |
| 42.00 | 92.00 | 1 | 1" Thick Flat Plate | 1 | 0 | Y | 1 | 0 | 0 | 90 | 0 | Y | |
| 42.00 | 92.00 | 1 | 1" Thick Flat Plate | 1 | 0 | Y | 1 | 0 | 0 | 330 | 0 | Y | |
| 42.00 | 92.00 | 1 | 1" Thick Flat Plate | 1 | 0 | Y | 1 | 0 | 0 | 210 | 0 | Y | |
| 0.00 | 87.00 | 2 | 1 5/8" Hybriflex | 1.98 | 1.3 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIRELESS |
| 0.00 | 78.00 | 12 | 1 5/8" Coax | 1.98 | 0.82 | N | 0 | 0 | 0 | 0 | 0 | N | VERIZON WIRELESS |

## ADDITIONAL STEEL

| Elev From (ft) | Elev To (ft) | Qty | Description | Fy (ksi) | Intermediate Connectors Offset (in) | Intermediate Connectors Bracket Type | Intermediate Connectors Spacing (in) | Intermediate Connectors Length (in) | Intermediate Connectors Connectors | Continuation? |
|---|---|---|---|---|---|---|---|---|---|---|
| 44.88 | 90.13 | 3 | PL PL 6" x 1" | 55 | 0.00 | 5/8" Hollo Bolt | 12.00 | 3.00 | 5/8" Hollo Bolt | N |
| 89.92 | 102.50 | 3 | PL PL 4" x 1" | 47 | 0.00 | AJAX M20 Class 8.8 | 12.00 | 3.00 | AJAX M20 Class 8.8 | N |

## SEGMENT PROPERTIES

| Seg Top Elev (ft) | Description *(Max Length: 5 ft)* | 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) | Additional Reinforcing Area ($in^2$) | Additional Reinforcing Ix ($in^4$) | Additional Reinforcing Weight (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | 0.3125 | 42.000 | 41.347 | 9,078.50 | 21.94 | 134.40 | 75.6 | 425.7 | 0.0 | 0.0 | | | |
| 5.00 | | 0.3125 | 40.500 | 39.860 | 8,133.30 | 21.09 | 129.60 | 76.6 | 395.5 | 0.0 | 690.8 | | | |
| 10.00 | | 0.3125 | 39.000 | 38.372 | 7,256.20 | 20.24 | 124.80 | 77.6 | 366.5 | 0.0 | 665.5 | | | |
| 15.00 | | 0.3125 | 37.500 | 36.884 | 6,444.40 | 19.40 | 120.00 | 78.6 | 338.5 | 0.0 | 640.2 | | | |
| 20.00 | | 0.3125 | 36.000 | 35.396 | 5,695.60 | 18.55 | 115.20 | 79.6 | 311.6 | 0.0 | 614.9 | | | |
| 25.00 | | 0.3125 | 34.500 | 33.909 | 5,007.20 | 17.70 | 110.40 | 80.6 | 285.9 | 0.0 | 589.6 | | | |
| 30.00 | | 0.3125 | 33.000 | 32.421 | 4,376.60 | 16.86 | 105.60 | 81.6 | 261.2 | 0.0 | 564.3 | | | |
| 35.00 | | 0.3125 | 31.500 | 30.933 | 3,801.30 | 16.01 | 100.80 | 82.6 | 237.7 | 0.0 | 538.9 | | | |
| 40.00 | | 0.3125 | 30.000 | 29.445 | 3,278.80 | 15.16 | 96.00 | 82.6 | 215.3 | 0.0 | 513.6 | | | |
| 44.88 | Reinf Bottom | 0.3125 | 28.536 | 27.993 | 2,817.30 | 14.34 | 91.32 | 82.6 | 194.5 | 0.0 | 476.9 | | | |
| 45.00 | | 0.3125 | 28.500 | 27.957 | 2,806.50 | 14.32 | 91.20 | 82.6 | 194.0 | 0.0 | 11.4 | 18.000 | 1,985.90 | 7.4 |
| 48.33 | Bot - Section 2 | 0.3125 | 27.500 | 26.966 | 2,518.30 | 13.75 | 88.00 | 82.6 | 180.4 | 0.0 | 311.5 | 18.000 | 1,855.40 | 204.2 |
| 50.00 | | 0.3125 | 27.000 | 26.470 | 2,381.90 | 13.47 | 86.40 | 82.6 | 173.8 | 0.0 | 259.7 | 18.000 | 1,847.40 | 102.1 |
| 52.50 | Top - Section 1 | 0.2188 | 26.688 | 18.381 | 1,627.00 | 19.74 | 121.97 | 78.2 | 120.1 | 0.0 | 380.6 | 18.000 | 1,752.70 | 153.1 |
| 55.00 | | 0.2188 | 25.938 | 17.860 | 1,492.60 | 19.14 | 118.54 | 78.9 | 113.3 | 0.0 | 154.2 | 18.000 | 1,660.50 | 153.1 |
| 60.00 | | 0.2188 | 24.438 | 16.819 | 1,246.40 | 17.93 | 111.69 | 80.3 | 100.5 | 0.0 | 295.0 | 18.000 | 1,483.70 | 306.3 |
| 65.00 | | 0.2188 | 22.938 | 15.777 | 1,028.80 | 16.72 | 104.83 | 81.7 | 88.3 | 0.0 | 277.3 | 18.000 | 1,317.10 | 306.3 |
| 70.00 | | 0.2188 | 21.438 | 14.735 | 838.20 | 15.51 | 97.98 | 82.6 | 77.0 | 0.0 | 259.6 | 18.000 | 1,160.60 | 306.3 |
| 75.00 | | 0.2188 | 19.938 | 13.694 | 672.70 | 14.30 | 91.12 | 82.6 | 66.5 | 0.0 | 241.8 | 18.000 | 1,014.20 | 306.3 |
| 80.00 | | 0.2188 | 18.438 | 12.652 | 530.60 | 13.10 | 84.27 | 82.6 | 56.7 | 0.0 | 224.1 | 18.000 | 877.90 | 306.3 |
| 82.00 | Top - Section 2 | 0.2188 | 17.838 | 12.235 | 479.90 | 12.61 | 81.52 | 82.6 | 53.0 | 0.0 | 84.7 | 18.000 | 826.20 | 122.5 |
| 82.00 | Bot - Section 3 | 0.1875 | 17.839 | 10.398 | 405.30 | 0.00 | 95.14 | 54.9 | 45.4 | 58.4 | | 18.000 | 826.20 | |
| 85.00 | | 0.1875 | 16.939 | 9.868 | 346.40 | 0.00 | 90.34 | 55.5 | 40.9 | 52.6 | 103.4 | 18.000 | 751.90 | 183.8 |
| 87.00 | | 0.1875 | 16.339 | 9.514 | 310.50 | 0.00 | 87.14 | 55.9 | 38.0 | 48.9 | 66.0 | 18.000 | 704.30 | 122.5 |
| 89.92 | Reinf Bottom | 0.1875 | 15.463 | 8.998 | 262.70 | 0.00 | 82.47 | 56.7 | 34.0 | 43.8 | 92.0 | 18.000 | 637.60 | 178.9 |
| 90.00 | | 0.1875 | 15.439 | 8.984 | 261.40 | 0.00 | 82.34 | 56.7 | 33.9 | 43.6 | 2.4 | 30.000 | 1,049.70 | 8.2 |
| 90.13 | Reinf. Top | 0.1875 | 15.400 | 8.961 | 259.40 | 0.00 | 82.13 | 56.7 | 33.7 | 43.4 | 4.0 | 30.000 | 1,044.90 | 13.3 |
| 95.00 | | 0.1875 | 13.939 | 8.100 | 191.60 | 0.00 | 74.34 | 58.1 | 27.5 | 35.5 | 141.4 | 12.000 | 343.30 | 198.9 |
| 97.00 | | 0.1875 | 13.339 | 7.747 | 167.60 | 0.00 | 71.14 | 58.8 | 25.1 | 32.4 | 53.9 | 12.000 | 316.90 | 81.7 |
| 99.00 | Top - Section 3 | 0.1875 | 12.739 | 7.394 | 145.70 | 0.00 | 67.94 | 59.5 | 22.9 | 29.5 | 51.5 | 12.000 | 291.60 | 81.7 |
| 99.00 | Bot - Section 4 | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | | 12.000 | 284.40 | |
| 100.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 33.2 | 12.000 | 284.40 | 40.8 |
| 101.20 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 39.9 | 12.000 | 284.40 | 49.0 |
| 101.30 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 3.3 | 12.000 | 284.40 | 4.1 |
| 102.50 | Reinf. Top | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 39.9 | 12.000 | 284.40 | 49.0 |
| 105.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 83.1 | | | |
| 107.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 66.5 | | | |
| 109.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 66.5 | | | |

## SEGMENT PROPERTIES

| Seg Top Elev (ft) | Description (Max Length: 5 ft) | 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) | Additional Reinforcing Area ($in^2$) | Additional Reinforcing Ix ($in^4$) | Additional Reinforcing Weight (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 33.2 | | | |
| 111.30 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 43.2 | | | |
| 115.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 123.0 | | | |
| 117.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 66.5 | | | |
| 119.00 | | 0.2500 | 12.563 | 9.770 | 187.10 | 7.10 | 50.25 | 82.6 | 29.3 | 0.0 | 66.5 | | | |
| | | | | | | | | | **Totals:** | | **8,974.0** | | | **3,285.8** |

## CALCULATED FORCES

Load Case: 1.2D + 1.0W — 115.99 mph Wind with No Ice — 28 Iterations

Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

| 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 | -37.59 | -17.83 | 0.00 | -1,642.6 | 0.00 | 1,642.56 | 2,813.31 | 725.65 | 2,732.26 | 2,413.98 | 0 | 0 | 0.694 |
| 5.00 | -36.49 | -17.68 | 0.00 | -1,553.4 | 0.00 | 1,553.40 | 2,747.79 | 699.53 | 2,539.19 | 2,272.29 | 0.13 | -0.25 | 0.698 |
| 10.00 | -35.41 | -17.52 | 0.00 | -1,465.0 | 0.00 | 1,465.02 | 2,679.61 | 673.42 | 2,353.20 | 2,132.56 | 0.54 | -0.51 | 0.701 |
| 15.00 | -34.36 | -17.37 | 0.00 | -1,377.4 | 0.00 | 1,377.41 | 2,608.76 | 647.31 | 2,174.28 | 1,995.03 | 1.23 | -0.79 | 0.704 |
| 20.00 | -33.34 | -17.22 | 0.00 | -1,290.6 | 0.00 | 1,290.55 | 2,535.24 | 621.20 | 2,002.44 | 1,859.96 | 2.21 | -1.09 | 0.708 |
| 25.00 | -32.35 | -17.07 | 0.00 | -1,204.4 | 0.00 | 1,204.45 | 2,459.06 | 595.09 | 1,837.67 | 1,727.58 | 3.52 | -1.4 | 0.711 |
| 30.00 | -31.38 | -16.91 | 0.00 | -1,119.1 | 0.00 | 1,119.11 | 2,380.22 | 568.98 | 1,679.97 | 1,598.16 | 5.16 | -1.73 | 0.714 |
| 35.00 | -30.44 | -16.75 | 0.00 | -1,034.5 | 0.00 | 1,034.54 | 2,298.17 | 542.87 | 1,529.34 | 1,471.58 | 7.16 | -2.08 | 0.717 |
| 40.00 | -29.53 | -16.56 | 0.00 | -950.8 | 0.00 | 950.78 | 2,187.63 | 516.76 | 1,385.79 | 1,332.77 | 9.54 | -2.45 | 0.728 |
| 44.88 | -28.72 | -16.43 | 0.00 | -870.0 | 0.00 | 869.99 | 2,079.75 | 491.28 | 1,252.50 | 1,203.91 | 12.24 | -2.84 | 0.738 |
| 45.00 | -28.68 | -16.33 | 0.00 | -868.0 | 0.00 | 868.02 | 2,077.10 | 490.65 | 1,249.31 | 1,200.82 | 12.31 | -2.85 | 0.433 |
| 48.33 | -27.90 | -16.16 | 0.00 | -813.6 | 0.00 | 813.57 | 2,003.41 | 473.25 | 1,162.25 | 1,116.68 | 14.36 | -3.01 | 0.429 |
| 50.00 | -27.38 | -16.03 | 0.00 | -786.6 | 0.00 | 786.63 | 1,966.57 | 464.54 | 1,119.91 | 1,075.76 | 15.43 | -3.1 | 0.421 |
| 52.50 | -26.61 | -15.86 | 0.00 | -746.6 | 0.00 | 746.56 | 1,293.31 | 322.59 | 771.23 | 704.07 | 17.08 | -3.23 | 0.523 |
| 55.00 | -26.10 | -15.65 | 0.00 | -706.9 | 0.00 | 706.92 | 1,268.09 | 313.45 | 728.15 | 670.62 | 18.81 | -3.36 | 0.512 |
| 60.00 | -25.13 | -15.38 | 0.00 | -628.6 | 0.00 | 628.65 | 1,215.65 | 295.17 | 645.70 | 605.07 | 22.49 | -3.66 | 0.487 |
| 65.00 | -24.17 | -15.13 | 0.00 | -551.7 | 0.00 | 551.74 | 1,160.55 | 276.89 | 568.21 | 541.55 | 26.49 | -3.97 | 0.460 |
| 70.00 | -23.23 | -14.91 | 0.00 | -476.1 | 0.00 | 476.07 | 1,094.76 | 258.60 | 495.66 | 476.80 | 30.81 | -4.28 | 0.432 |
| 75.00 | -22.32 | -14.69 | 0.00 | -401.6 | 0.00 | 401.55 | 1,017.37 | 240.32 | 428.07 | 411.45 | 35.46 | -4.59 | 0.402 |
| 80.00 | -21.48 | -14.51 | 0.00 | -328.1 | 0.00 | 328.10 | 939.98 | 222.04 | 365.43 | 350.92 | 40.44 | -4.9 | 0.366 |
| 82.00 | -21.14 | -14.43 | 0.00 | -299.1 | 0.00 | 299.07 | 909.02 | 214.73 | 341.76 | 328.05 | 42.51 | -5.03 | 0.349 |
| 82.00 | -21.14 | -14.43 | 0.00 | -299.1 | 0.00 | 299.07 | 513.62 | 182.48 | 283.19 | 243.01 | 42.51 | -5.03 | 0.426 |
| 85.00 | -20.69 | -14.33 | 0.00 | -255.8 | 0.00 | 255.79 | 492.88 | 173.18 | 255.05 | 219.76 | 45.73 | -5.21 | 0.389 |
| 87.00 | -15.83 | -10.86 | 0.00 | -227.1 | 0.00 | 227.12 | 479.05 | 166.97 | 237.11 | 204.91 | 47.94 | -5.33 | 0.355 |
| 89.92 | -15.43 | -10.78 | 0.00 | -195.4 | 0.00 | 195.41 | 458.86 | 157.92 | 212.09 | 184.16 | 51.25 | -5.51 | 0.325 |
| 90.00 | -15.41 | -10.77 | 0.00 | -194.6 | 0.00 | 194.55 | 458.30 | 157.67 | 211.42 | 183.61 | 51.34 | -5.51 | 0.224 |
| 90.13 | -15.38 | -10.67 | 0.00 | -193.2 | 0.00 | 193.15 | 457.40 | 157.27 | 210.34 | 182.71 | 51.49 | -5.52 | 0.223 |
| 90.13 | -15.38 | -10.67 | 0.00 | -193.2 | 0.00 | 193.15 | 457.40 | 157.27 | 210.34 | 182.71 | 51.49 | -5.52 | 0.427 |
| 95.00 | -14.85 | -10.44 | 0.00 | -141.2 | 0.00 | 141.19 | 423.70 | 142.16 | 171.88 | 150.69 | 57.21 | -5.69 | 0.355 |
| 97.00 | -11.04 | -7.76 | 0.00 | -120.3 | 0.00 | 120.31 | 409.85 | 135.96 | 157.21 | 138.43 | 59.62 | -5.83 | 0.314 |
| 99.00 | -10.83 | -7.70 | 0.00 | -104.8 | 0.00 | 104.79 | 725.83 | 171.46 | 190.75 | 181.64 | 62.09 | -5.97 | 0.238 |
| 99.00 | -10.83 | -7.70 | 0.00 | -104.8 | 0.00 | 104.79 | 395.99 | 129.76 | 143.19 | 126.68 | 62.09 | -5.97 | 0.290 |
| 100.00 | -10.72 | -7.66 | 0.00 | -97.1 | 0.00 | 97.09 | 725.83 | 171.46 | 190.75 | 181.64 | 63.35 | -6.03 | 0.221 |
| 101.20 | -10.15 | -7.21 | 0.00 | -87.9 | 0.00 | 87.90 | 725.83 | 171.46 | 190.75 | 181.64 | 64.87 | -6.1 | 0.200 |
| 101.30 | -9.72 | -7.01 | 0.00 | -87.2 | 0.00 | 87.18 | 725.83 | 171.46 | 190.75 | 181.64 | 65 | -6.1 | 0.198 |
| 102.50 | -9.59 | -6.96 | 0.00 | -78.8 | 0.00 | 78.77 | 725.83 | 171.46 | 190.75 | 181.64 | 66.54 | -6.16 | 0.180 |
| 102.50 | -9.59 | -6.96 | 0.00 | -78.8 | 0.00 | 78.77 | 725.83 | 171.46 | 190.75 | 181.64 | 66.54 | -6.16 | 0.449 |
| 105.00 | -9.45 | -6.90 | 0.00 | -61.4 | 0.00 | 61.37 | 725.83 | 171.46 | 190.75 | 181.64 | 69.79 | -6.27 | 0.353 |
| 107.00 | -6.46 | -5.54 | 0.00 | -47.6 | 0.00 | 47.57 | 725.83 | 171.46 | 190.75 | 181.64 | 72.45 | -6.43 | 0.272 |
| 109.00 | -6.17 | -4.79 | 0.00 | -36.5 | 0.00 | 36.49 | 725.83 | 171.46 | 190.75 | 181.64 | 75.16 | -6.56 | 0.210 |
| 110.00 | -6.12 | -4.76 | 0.00 | -31.7 | 0.00 | 31.70 | 725.83 | 171.46 | 190.75 | 181.64 | 76.54 | -6.61 | 0.184 |
| 111.30 | -5.57 | -4.47 | 0.00 | -25.5 | 0.00 | 25.51 | 725.83 | 171.46 | 190.75 | 181.64 | 78.35 | -6.67 | 0.149 |
| 115.00 | -5.18 | -4.14 | 0.00 | -9.0 | 0.00 | 8.98 | 725.83 | 171.46 | 190.75 | 181.64 | 83.55 | -6.77 | 0.057 |
| 117.00 | -0.34 | -0.29 | 0.00 | -0.6 | 0.00 | 0.58 | 725.83 | 171.46 | 190.75 | 181.64 | 86.38 | -6.78 | 0.004 |
| 119.00 | 0.00 | -0.25 | 0.00 | 0.0 | 0.00 | 0.00 | 725.83 | 171.46 | 190.75 | 181.64 | 89.22 | -6.78 | 0.000 |

CALCULATED FORCES

Load Case: 0.9D + 1.0W — 115.99 mph Wind with No Ice (Reduced DL) — 27 Iterations

Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

| 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 | -28.19 | -17.81 | 0.00 | -1,603.6 | 0.00 | 1,603.62 | 2,813.31 | 725.65 | 2,732.26 | 2,413.98 | 0 | 0 | 0.675 |
| 5.00 | -27.34 | -17.61 | 0.00 | -1,514.6 | 0.00 | 1,514.59 | 2,747.79 | 699.53 | 2,539.19 | 2,272.29 | 0.13 | -0.24 | 0.677 |
| 10.00 | -26.51 | -17.41 | 0.00 | -1,426.5 | 0.00 | 1,426.54 | 2,679.61 | 673.42 | 2,353.20 | 2,132.56 | 0.52 | -0.5 | 0.679 |
| 15.00 | -25.71 | -17.22 | 0.00 | -1,339.5 | 0.00 | 1,339.48 | 2,608.76 | 647.31 | 2,174.28 | 1,995.03 | 1.2 | -0.77 | 0.682 |
| 20.00 | -24.93 | -17.02 | 0.00 | -1,253.4 | 0.00 | 1,253.39 | 2,535.24 | 621.20 | 2,002.44 | 1,859.96 | 2.16 | -1.06 | 0.684 |
| 25.00 | -24.16 | -16.83 | 0.00 | -1,168.3 | 0.00 | 1,168.29 | 2,459.06 | 595.09 | 1,837.67 | 1,727.58 | 3.43 | -1.36 | 0.687 |
| 30.00 | -23.42 | -16.63 | 0.00 | -1,084.2 | 0.00 | 1,084.16 | 2,380.22 | 568.98 | 1,679.97 | 1,598.16 | 5.03 | -1.68 | 0.689 |
| 35.00 | -22.70 | -16.42 | 0.00 | -1,001.0 | 0.00 | 1,001.03 | 2,298.17 | 542.87 | 1,529.34 | 1,471.58 | 6.97 | -2.02 | 0.691 |
| 40.00 | -22.00 | -16.18 | 0.00 | -919.0 | 0.00 | 918.95 | 2,187.63 | 516.76 | 1,385.79 | 1,332.77 | 9.27 | -2.38 | 0.701 |
| 44.88 | -21.38 | -16.03 | 0.00 | -840.0 | 0.00 | 840.01 | 2,079.75 | 491.28 | 1,252.50 | 1,203.91 | 11.9 | -2.75 | 0.709 |
| 45.00 | -21.34 | -15.92 | 0.00 | -838.1 | 0.00 | 838.08 | 2,077.10 | 490.65 | 1,249.31 | 1,200.82 | 11.97 | -2.76 | 0.416 |
| 48.33 | -20.75 | -15.75 | 0.00 | -785.0 | 0.00 | 785.00 | 2,003.41 | 473.25 | 1,162.25 | 1,116.68 | 13.96 | -2.92 | 0.412 |
| 50.00 | -20.36 | -15.60 | 0.00 | -758.8 | 0.00 | 758.76 | 1,966.57 | 464.54 | 1,119.91 | 1,075.76 | 14.99 | -3.01 | 0.405 |
| 52.50 | -19.78 | -15.43 | 0.00 | -719.8 | 0.00 | 719.75 | 1,293.31 | 322.59 | 771.23 | 704.07 | 16.6 | -3.13 | 0.502 |
| 55.00 | -19.39 | -15.20 | 0.00 | -681.2 | 0.00 | 681.19 | 1,268.09 | 313.45 | 728.15 | 670.62 | 18.27 | -3.26 | 0.491 |
| 60.00 | -18.65 | -14.91 | 0.00 | -605.2 | 0.00 | 605.17 | 1,215.65 | 295.17 | 645.70 | 605.07 | 21.84 | -3.55 | 0.467 |
| 65.00 | -17.92 | -14.64 | 0.00 | -530.6 | 0.00 | 530.63 | 1,160.55 | 276.89 | 568.21 | 541.55 | 25.71 | -3.84 | 0.440 |
| 70.00 | -17.21 | -14.39 | 0.00 | -457.4 | 0.00 | 457.45 | 1,094.76 | 258.60 | 495.66 | 476.80 | 29.9 | -4.14 | 0.413 |
| 75.00 | -16.52 | -14.16 | 0.00 | -385.5 | 0.00 | 385.50 | 1,017.37 | 240.32 | 428.07 | 411.45 | 34.4 | -4.44 | 0.384 |
| 80.00 | -15.87 | -13.98 | 0.00 | -314.7 | 0.00 | 314.71 | 939.98 | 222.04 | 365.43 | 350.92 | 39.21 | -4.74 | 0.349 |
| 82.00 | -15.62 | -13.88 | 0.00 | -286.8 | 0.00 | 286.76 | 909.02 | 214.73 | 341.76 | 328.05 | 41.22 | -4.86 | 0.332 |
| 82.00 | -15.62 | -13.88 | 0.00 | -286.8 | 0.00 | 286.76 | 513.62 | 182.48 | 283.19 | 243.01 | 41.22 | -4.86 | 0.405 |
| 85.00 | -15.27 | -13.78 | 0.00 | -245.1 | 0.00 | 245.11 | 492.88 | 173.18 | 255.05 | 219.76 | 44.33 | -5.03 | 0.369 |
| 87.00 | -11.69 | -10.43 | 0.00 | -217.6 | 0.00 | 217.55 | 479.05 | 166.97 | 237.11 | 204.91 | 46.46 | -5.15 | 0.337 |
| 89.92 | -11.38 | -10.35 | 0.00 | -187.1 | 0.00 | 187.10 | 458.86 | 157.92 | 212.09 | 184.16 | 49.66 | -5.32 | 0.309 |
| 90.00 | -11.37 | -10.34 | 0.00 | -186.3 | 0.00 | 186.28 | 458.30 | 157.67 | 211.42 | 183.61 | 49.75 | -5.32 | 0.212 |
| 90.13 | -11.35 | -10.23 | 0.00 | -184.9 | 0.00 | 184.93 | 457.40 | 157.27 | 210.34 | 182.71 | 49.89 | -5.33 | 0.211 |
| 90.13 | -11.35 | -10.23 | 0.00 | -184.9 | 0.00 | 184.93 | 457.40 | 157.27 | 210.34 | 182.71 | 49.89 | -5.33 | 0.406 |
| 95.00 | -10.95 | -10.00 | 0.00 | -135.1 | 0.00 | 135.11 | 423.70 | 142.16 | 171.88 | 150.69 | 55.42 | -5.5 | 0.337 |
| 97.00 | -8.13 | -7.42 | 0.00 | -115.1 | 0.00 | 115.10 | 409.85 | 135.96 | 157.21 | 138.43 | 57.75 | -5.63 | 0.298 |
| 99.00 | -7.98 | -7.37 | 0.00 | -100.2 | 0.00 | 100.25 | 725.83 | 171.46 | 190.75 | 181.64 | 60.13 | -5.76 | 0.226 |
| 99.00 | -7.98 | -7.37 | 0.00 | -100.2 | 0.00 | 100.25 | 395.99 | 129.76 | 143.19 | 126.68 | 60.13 | -5.76 | 0.275 |
| 100.00 | -7.89 | -7.33 | 0.00 | -92.9 | 0.00 | 92.88 | 725.83 | 171.46 | 190.75 | 181.64 | 61.34 | -5.82 | 0.210 |
| 101.20 | -7.48 | -6.89 | 0.00 | -84.1 | 0.00 | 84.09 | 725.83 | 171.46 | 190.75 | 181.64 | 62.81 | -5.88 | 0.190 |
| 101.30 | -7.16 | -6.70 | 0.00 | -83.4 | 0.00 | 83.40 | 725.83 | 171.46 | 190.75 | 181.64 | 62.93 | -5.89 | 0.188 |
| 102.50 | -7.06 | -6.65 | 0.00 | -75.4 | 0.00 | 75.36 | 725.83 | 171.46 | 190.75 | 181.64 | 64.42 | -5.95 | 0.171 |
| 102.50 | -7.06 | -6.65 | 0.00 | -75.4 | 0.00 | 75.36 | 725.83 | 171.46 | 190.75 | 181.64 | 64.42 | -5.95 | 0.426 |
| 105.00 | -6.95 | -6.59 | 0.00 | -58.7 | 0.00 | 58.73 | 725.83 | 171.46 | 190.75 | 181.64 | 67.56 | -6.05 | 0.334 |
| 107.00 | -4.73 | -5.32 | 0.00 | -45.5 | 0.00 | 45.54 | 725.83 | 171.46 | 190.75 | 181.64 | 70.12 | -6.21 | 0.258 |
| 109.00 | -4.53 | -4.58 | 0.00 | -34.9 | 0.00 | 34.90 | 725.83 | 171.46 | 190.75 | 181.64 | 72.74 | -6.33 | 0.199 |
| 110.00 | -4.49 | -4.55 | 0.00 | -30.3 | 0.00 | 30.32 | 725.83 | 171.46 | 190.75 | 181.64 | 74.07 | -6.38 | 0.174 |
| 111.30 | -4.09 | -4.27 | 0.00 | -24.4 | 0.00 | 24.40 | 725.83 | 171.46 | 190.75 | 181.64 | 75.81 | -6.43 | 0.141 |
| 115.00 | -3.80 | -3.96 | 0.00 | -8.6 | 0.00 | 8.59 | 725.83 | 171.46 | 190.75 | 181.64 | 80.83 | -6.53 | 0.053 |
| 117.00 | -0.25 | -0.28 | 0.00 | -0.6 | 0.00 | 0.56 | 725.83 | 171.46 | 190.75 | 181.64 | 83.56 | -6.54 | 0.003 |
| 119.00 | 0.00 | -0.25 | 0.00 | 0.0 | 0.00 | 0.00 | 725.83 | 171.46 | 190.75 | 181.64 | 86.3 | -6.54 | 0.000 |

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi — 48.73 mph Wind with 0.85" Radial Ice — 27 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

| 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 | -50.27 | -4.47 | 0.00 | -421.0 | 0.00 | 421.04 | 2,813.31 | 725.65 | 2,732.26 | 2,413.98 | 0 | 0 | 0.192 |
| 5.00 | -49.01 | -4.43 | 0.00 | -398.7 | 0.00 | 398.68 | 2,747.79 | 699.53 | 2,539.19 | 2,272.29 | 0.03 | -0.06 | 0.193 |
| 10.00 | -47.75 | -4.40 | 0.00 | -376.5 | 0.00 | 376.51 | 2,679.61 | 673.42 | 2,353.20 | 2,132.56 | 0.14 | -0.13 | 0.194 |
| 15.00 | -46.52 | -4.37 | 0.00 | -354.5 | 0.00 | 354.51 | 2,608.76 | 647.31 | 2,174.28 | 1,995.03 | 0.31 | -0.2 | 0.196 |
| 20.00 | -45.31 | -4.34 | 0.00 | -332.7 | 0.00 | 332.68 | 2,535.24 | 621.20 | 2,002.44 | 1,859.96 | 0.57 | -0.28 | 0.197 |
| 25.00 | -44.14 | -4.32 | 0.00 | -311.0 | 0.00 | 310.98 | 2,459.06 | 595.09 | 1,837.67 | 1,727.58 | 0.9 | -0.36 | 0.198 |
| 30.00 | -43.00 | -4.29 | 0.00 | -289.4 | 0.00 | 289.40 | 2,380.22 | 568.98 | 1,679.97 | 1,598.16 | 1.33 | -0.45 | 0.199 |
| 35.00 | -41.89 | -4.27 | 0.00 | -267.9 | 0.00 | 267.93 | 2,298.17 | 542.87 | 1,529.34 | 1,471.58 | 1.84 | -0.54 | 0.200 |
| 40.00 | -40.82 | -4.25 | 0.00 | -246.6 | 0.00 | 246.56 | 2,187.63 | 516.76 | 1,385.79 | 1,332.77 | 2.45 | -0.63 | 0.204 |
| 44.88 | -39.81 | -4.23 | 0.00 | -225.8 | 0.00 | 225.81 | 2,079.75 | 491.28 | 1,252.50 | 1,203.91 | 3.15 | -0.73 | 0.207 |
| 45.00 | -39.77 | -4.22 | 0.00 | -225.3 | 0.00 | 225.30 | 2,077.10 | 490.65 | 1,249.31 | 1,200.82 | 3.17 | -0.73 | 0.122 |
| 48.33 | -38.85 | -4.18 | 0.00 | -211.2 | 0.00 | 211.24 | 2,003.41 | 473.25 | 1,162.25 | 1,116.68 | 3.7 | -0.78 | 0.121 |
| 50.00 | -38.26 | -4.16 | 0.00 | -204.3 | 0.00 | 204.27 | 1,966.57 | 464.54 | 1,119.91 | 1,075.76 | 3.98 | -0.8 | 0.119 |
| 52.50 | -37.39 | -4.12 | 0.00 | -193.9 | 0.00 | 193.87 | 1,293.31 | 322.59 | 771.23 | 704.07 | 4.4 | -0.83 | 0.147 |
| 55.00 | -36.80 | -4.09 | 0.00 | -183.6 | 0.00 | 183.56 | 1,268.09 | 313.45 | 728.15 | 670.62 | 4.85 | -0.87 | 0.144 |
| 60.00 | -35.63 | -4.03 | 0.00 | -163.1 | 0.00 | 163.12 | 1,215.65 | 295.17 | 645.70 | 605.07 | 5.8 | -0.95 | 0.137 |
| 65.00 | -34.49 | -3.97 | 0.00 | -143.0 | 0.00 | 142.96 | 1,160.55 | 276.89 | 568.21 | 541.55 | 6.84 | -1.03 | 0.130 |
| 70.00 | -33.38 | -3.91 | 0.00 | -123.1 | 0.00 | 123.10 | 1,094.76 | 258.60 | 495.66 | 476.80 | 7.95 | -1.11 | 0.122 |
| 75.00 | -32.30 | -3.84 | 0.00 | -103.6 | 0.00 | 103.56 | 1,017.37 | 240.32 | 428.07 | 411.45 | 9.16 | -1.19 | 0.114 |
| 80.00 | -31.27 | -3.78 | 0.00 | -84.3 | 0.00 | 84.34 | 939.98 | 222.04 | 365.43 | 350.92 | 10.44 | -1.27 | 0.105 |
| 82.00 | -30.88 | -3.75 | 0.00 | -76.8 | 0.00 | 76.79 | 909.02 | 214.73 | 341.76 | 328.05 | 10.98 | -1.3 | 0.100 |
| 82.00 | -30.88 | -3.75 | 0.00 | -76.8 | 0.00 | 76.79 | 513.62 | 182.48 | 283.19 | 243.01 | 10.98 | -1.3 | 0.126 |
| 85.00 | -30.33 | -3.71 | 0.00 | -65.5 | 0.00 | 65.54 | 492.88 | 173.18 | 255.05 | 219.76 | 11.81 | -1.35 | 0.116 |
| 87.00 | -22.53 | -2.82 | 0.00 | -58.1 | 0.00 | 58.12 | 479.05 | 166.97 | 237.11 | 204.91 | 12.39 | -1.38 | 0.103 |
| 89.92 | -22.02 | -2.78 | 0.00 | -49.9 | 0.00 | 49.88 | 458.86 | 157.92 | 212.09 | 184.16 | 13.24 | -1.42 | 0.095 |
| 90.00 | -22.00 | -2.78 | 0.00 | -49.7 | 0.00 | 49.66 | 458.30 | 157.67 | 211.42 | 183.61 | 13.27 | -1.42 | 0.065 |
| 90.13 | -21.97 | -2.76 | 0.00 | -49.3 | 0.00 | 49.30 | 457.40 | 157.27 | 210.34 | 182.71 | 13.31 | -1.42 | 0.065 |
| 90.13 | -21.97 | -2.76 | 0.00 | -49.3 | 0.00 | 49.30 | 457.40 | 157.27 | 210.34 | 182.71 | 13.31 | -1.42 | 0.125 |
| 95.00 | -21.25 | -2.68 | 0.00 | -35.9 | 0.00 | 35.86 | 423.70 | 142.16 | 171.88 | 150.69 | 14.78 | -1.47 | 0.106 |
| 97.00 | -15.86 | -2.01 | 0.00 | -30.5 | 0.00 | 30.49 | 409.85 | 135.96 | 157.21 | 138.43 | 15.41 | -1.5 | 0.092 |
| 99.00 | -15.60 | -1.98 | 0.00 | -26.5 | 0.00 | 26.47 | 725.83 | 171.46 | 190.75 | 181.64 | 16.04 | -1.54 | 0.068 |
| 99.00 | -15.60 | -1.98 | 0.00 | -26.5 | 0.00 | 26.47 | 395.99 | 129.76 | 143.19 | 126.68 | 16.04 | -1.54 | 0.085 |
| 100.00 | -15.46 | -1.96 | 0.00 | -24.5 | 0.00 | 24.49 | 725.83 | 171.46 | 190.75 | 181.64 | 16.37 | -1.56 | 0.063 |
| 101.20 | -14.62 | -1.85 | 0.00 | -22.1 | 0.00 | 22.14 | 725.83 | 171.46 | 190.75 | 181.64 | 16.76 | -1.57 | 0.058 |
| 101.30 | -14.04 | -1.80 | 0.00 | -22.0 | 0.00 | 21.95 | 725.83 | 171.46 | 190.75 | 181.64 | 16.8 | -1.57 | 0.057 |
| 102.50 | -13.89 | -1.78 | 0.00 | -19.8 | 0.00 | 19.79 | 725.83 | 171.46 | 190.75 | 181.64 | 17.19 | -1.59 | 0.052 |
| 102.50 | -13.89 | -1.78 | 0.00 | -19.8 | 0.00 | 19.79 | 725.83 | 171.46 | 190.75 | 181.64 | 17.19 | -1.59 | 0.128 |
| 105.00 | -13.71 | -1.76 | 0.00 | -15.3 | 0.00 | 15.34 | 725.83 | 171.46 | 190.75 | 181.64 | 18.03 | -1.61 | 0.103 |
| 107.00 | -9.91 | -1.37 | 0.00 | -11.8 | 0.00 | 11.82 | 725.83 | 171.46 | 190.75 | 181.64 | 18.72 | -1.66 | 0.079 |
| 109.00 | -9.17 | -1.20 | 0.00 | -9.1 | 0.00 | 9.08 | 725.83 | 171.46 | 190.75 | 181.64 | 19.42 | -1.69 | 0.063 |
| 110.00 | -9.11 | -1.19 | 0.00 | -7.9 | 0.00 | 7.88 | 725.83 | 171.46 | 190.75 | 181.64 | 19.77 | -1.7 | 0.056 |
| 111.30 | -8.37 | -1.11 | 0.00 | -6.3 | 0.00 | 6.33 | 725.83 | 171.46 | 190.75 | 181.64 | 20.24 | -1.71 | 0.046 |
| 115.00 | -7.77 | -1.02 | 0.00 | -2.2 | 0.00 | 2.22 | 725.83 | 171.46 | 190.75 | 181.64 | 21.58 | -1.74 | 0.023 |
| 117.00 | -0.53 | -0.07 | 0.00 | -0.1 | 0.00 | 0.14 | 725.83 | 171.46 | 190.75 | 181.64 | 22.31 | -1.74 | 0.002 |
| 119.00 | 0.00 | -0.06 | 0.00 | 0.0 | 0.00 | 0.00 | 725.83 | 171.46 | 190.75 | 181.64 | 23.04 | -1.74 | 0.000 |

CALCULATED FORCES

Load Case: 1.0D + 1.0W 60 mph Wind with No Ice 26 Iterations

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

| 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 | -31.36 | -4.29 | 0.00 | -390.7 | 0.00 | 390.71 | 2,813.31 | 725.65 | 2,732.26 | 2,413.98 | 0 | 0 | 0.173 |
| 5.00 | -30.50 | -4.25 | 0.00 | -369.2 | 0.00 | 369.25 | 2,747.79 | 699.53 | 2,539.19 | 2,272.29 | 0.03 | -0.06 | 0.174 |
| 10.00 | -29.66 | -4.21 | 0.00 | -348.0 | 0.00 | 348.01 | 2,679.61 | 673.42 | 2,353.20 | 2,132.56 | 0.13 | -0.12 | 0.174 |
| 15.00 | -28.85 | -4.16 | 0.00 | -327.0 | 0.00 | 326.99 | 2,608.76 | 647.31 | 2,174.28 | 1,995.03 | 0.29 | -0.19 | 0.175 |
| 20.00 | -28.07 | -4.12 | 0.00 | -306.2 | 0.00 | 306.18 | 2,535.24 | 621.20 | 2,002.44 | 1,859.96 | 0.53 | -0.26 | 0.176 |
| 25.00 | -27.31 | -4.08 | 0.00 | -285.6 | 0.00 | 285.58 | 2,459.06 | 595.09 | 1,837.67 | 1,727.58 | 0.84 | -0.33 | 0.176 |
| 30.00 | -26.57 | -4.03 | 0.00 | -265.2 | 0.00 | 265.19 | 2,380.22 | 568.98 | 1,679.97 | 1,598.16 | 1.23 | -0.41 | 0.177 |
| 35.00 | -25.86 | -3.99 | 0.00 | -245.0 | 0.00 | 245.03 | 2,298.17 | 542.87 | 1,529.34 | 1,471.58 | 1.7 | -0.49 | 0.178 |
| 40.00 | -25.18 | -3.94 | 0.00 | -225.1 | 0.00 | 225.09 | 2,187.63 | 516.76 | 1,385.79 | 1,332.77 | 2.26 | -0.58 | 0.180 |
| 44.88 | -24.54 | -3.90 | 0.00 | -205.9 | 0.00 | 205.88 | 2,079.75 | 491.28 | 1,252.50 | 1,203.91 | 2.91 | -0.67 | 0.183 |
| 45.00 | -24.52 | -3.88 | 0.00 | -205.4 | 0.00 | 205.41 | 2,077.10 | 490.65 | 1,249.31 | 1,200.82 | 2.92 | -0.68 | 0.107 |
| 48.33 | -23.89 | -3.84 | 0.00 | -192.5 | 0.00 | 192.48 | 2,003.41 | 473.25 | 1,162.25 | 1,116.68 | 3.41 | -0.71 | 0.106 |
| 50.00 | -23.47 | -3.80 | 0.00 | -186.1 | 0.00 | 186.09 | 1,966.57 | 464.54 | 1,119.91 | 1,075.76 | 3.66 | -0.73 | 0.105 |
| 52.50 | -22.85 | -3.76 | 0.00 | -176.6 | 0.00 | 176.58 | 1,293.31 | 322.59 | 771.23 | 704.07 | 4.05 | -0.77 | 0.130 |
| 55.00 | -22.46 | -3.71 | 0.00 | -167.2 | 0.00 | 167.18 | 1,268.09 | 313.45 | 728.15 | 670.62 | 4.46 | -0.8 | 0.127 |
| 60.00 | -21.69 | -3.64 | 0.00 | -148.6 | 0.00 | 148.62 | 1,215.65 | 295.17 | 645.70 | 605.07 | 5.34 | -0.87 | 0.121 |
| 65.00 | -20.94 | -3.58 | 0.00 | -130.4 | 0.00 | 130.41 | 1,160.55 | 276.89 | 568.21 | 541.55 | 6.29 | -0.94 | 0.114 |
| 70.00 | -20.20 | -3.52 | 0.00 | -112.5 | 0.00 | 112.50 | 1,094.76 | 258.60 | 495.66 | 476.80 | 7.31 | -1.01 | 0.107 |
| 75.00 | -19.49 | -3.47 | 0.00 | -94.9 | 0.00 | 94.87 | 1,017.37 | 240.32 | 428.07 | 411.45 | 8.41 | -1.09 | 0.100 |
| 80.00 | -18.81 | -3.43 | 0.00 | -77.5 | 0.00 | 77.52 | 939.98 | 222.04 | 365.43 | 350.92 | 9.59 | -1.16 | 0.092 |
| 82.00 | -18.55 | -3.41 | 0.00 | -70.7 | 0.00 | 70.66 | 909.02 | 214.73 | 341.76 | 328.05 | 10.09 | -1.19 | 0.088 |
| 82.00 | -18.55 | -3.41 | 0.00 | -70.7 | 0.00 | 70.66 | 513.62 | 182.48 | 283.19 | 243.01 | 10.09 | -1.19 | 0.109 |
| 85.00 | -18.20 | -3.39 | 0.00 | -60.4 | 0.00 | 60.43 | 492.88 | 173.18 | 255.05 | 219.76 | 10.85 | -1.23 | 0.100 |
| 87.00 | -13.93 | -2.57 | 0.00 | -53.7 | 0.00 | 53.66 | 479.05 | 166.97 | 237.11 | 204.91 | 11.37 | -1.26 | 0.090 |
| 89.92 | -13.60 | -2.55 | 0.00 | -46.2 | 0.00 | 46.16 | 458.86 | 157.92 | 212.09 | 184.16 | 12.16 | -1.3 | 0.083 |
| 90.00 | -13.59 | -2.55 | 0.00 | -46.0 | 0.00 | 45.95 | 458.30 | 157.67 | 211.42 | 183.61 | 12.18 | -1.3 | 0.057 |
| 90.13 | -13.57 | -2.52 | 0.00 | -45.6 | 0.00 | 45.62 | 457.40 | 157.27 | 210.34 | 182.71 | 12.21 | -1.31 | 0.057 |
| 90.13 | -13.57 | -2.52 | 0.00 | -45.6 | 0.00 | 45.62 | 457.40 | 157.27 | 210.34 | 182.71 | 12.21 | -1.31 | 0.109 |
| 95.00 | -13.13 | -2.47 | 0.00 | -33.3 | 0.00 | 33.33 | 423.70 | 142.16 | 171.88 | 150.69 | 13.57 | -1.35 | 0.092 |
| 97.00 | -9.77 | -1.84 | 0.00 | -28.4 | 0.00 | 28.39 | 409.85 | 135.96 | 157.21 | 138.43 | 14.14 | -1.38 | 0.080 |
| 99.00 | -9.60 | -1.82 | 0.00 | -24.7 | 0.00 | 24.72 | 725.83 | 171.46 | 190.75 | 181.64 | 14.73 | -1.41 | 0.060 |
| 99.00 | -9.60 | -1.82 | 0.00 | -24.7 | 0.00 | 24.72 | 395.99 | 129.76 | 143.19 | 126.68 | 14.73 | -1.41 | 0.074 |
| 100.00 | -9.51 | -1.81 | 0.00 | -22.9 | 0.00 | 22.90 | 725.83 | 171.46 | 190.75 | 181.64 | 15.03 | -1.43 | 0.056 |
| 101.20 | -9.01 | -1.70 | 0.00 | -20.7 | 0.00 | 20.73 | 725.83 | 171.46 | 190.75 | 181.64 | 15.39 | -1.44 | 0.051 |
| 101.30 | -8.64 | -1.66 | 0.00 | -20.6 | 0.00 | 20.56 | 725.83 | 171.46 | 190.75 | 181.64 | 15.42 | -1.44 | 0.050 |
| 102.50 | -8.54 | -1.64 | 0.00 | -18.6 | 0.00 | 18.57 | 725.83 | 171.46 | 190.75 | 181.64 | 15.78 | -1.46 | 0.046 |
| 102.50 | -8.54 | -1.64 | 0.00 | -18.6 | 0.00 | 18.57 | 725.83 | 171.46 | 190.75 | 181.64 | 15.78 | -1.46 | 0.114 |
| 105.00 | -8.42 | -1.63 | 0.00 | -14.5 | 0.00 | 14.46 | 725.83 | 171.46 | 190.75 | 181.64 | 16.55 | -1.48 | 0.091 |
| 107.00 | -5.84 | -1.31 | 0.00 | -11.2 | 0.00 | 11.21 | 725.83 | 171.46 | 190.75 | 181.64 | 17.18 | -1.52 | 0.070 |
| 109.00 | -5.54 | -1.13 | 0.00 | -8.6 | 0.00 | 8.59 | 725.83 | 171.46 | 190.75 | 181.64 | 17.83 | -1.55 | 0.055 |
| 110.00 | -5.49 | -1.12 | 0.00 | -7.5 | 0.00 | 7.46 | 725.83 | 171.46 | 190.75 | 181.64 | 18.15 | -1.57 | 0.049 |
| 111.30 | -5.02 | -1.05 | 0.00 | -6.0 | 0.00 | 6.00 | 725.83 | 171.46 | 190.75 | 181.64 | 18.58 | -1.58 | 0.040 |
| 115.00 | -4.67 | -0.97 | 0.00 | -2.1 | 0.00 | 2.11 | 725.83 | 171.46 | 190.75 | 181.64 | 19.82 | -1.6 | 0.018 |
| 117.00 | -0.31 | -0.07 | 0.00 | -0.1 | 0.00 | 0.14 | 725.83 | 171.46 | 190.75 | 181.64 | 20.49 | -1.6 | 0.001 |
| 119.00 | 0.00 | -0.06 | 0.00 | 0.0 | 0.00 | 0.00 | 725.83 | 171.46 | 190.75 | 181.64 | 21.16 | -1.6 | 0.000 |

## EQUIVALENT LATERAL FORCES METHOD ANALYSIS

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

| | |
|---|---|
| Spectral Response Acceleration for Short Period ($S_S$): | 0.207 |
| Spectral Response Acceleration at 1.0 Second Period ($S_1$): | 0.054 |
| 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 ($S_{ds}$): | 0.221 |
| Design Spectral Response Acceleration at 1.0 Second Period ($S_{d1}$): | 0.086 |
| Seismic Response Coefficient ($C_s$): | 0.030 |
| Upper Limit $C_S$: | 0.030 |
| Lower Limit $C_S$: | 0.030 |
| Period based on Rayleigh Method (sec): | 2.990 |
| Redundancy Factor (p): | 1.000 |
| Seismic Force Distribution Exponent (k): | 2.000 |
| Total Unfactored Dead Load: | 31.360 k |
| Seismic Base Shear (E): | 0.940 k |

## SEISMIC FORCES

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

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 40 | 118 | 67 | 928 | 0.004 | 4 | 83 |
| 39 | 116 | 85 | 1,146 | 0.005 | 5 | 106 |
| 38 | 113.15 | 158 | 2,017 | 0.009 | 9 | 196 |
| 37 | 110.65 | 55 | 678 | 0.003 | 3 | 69 |
| 36 | 109.5 | 43 | 511 | 0.002 | 2 | 53 |
| 35 | 108 | 91 | 1,057 | 0.005 | 4 | 113 |
| 34 | 106 | 91 | 1,018 | 0.005 | 4 | 113 |
| 33 | 103.75 | 113 | 1,219 | 0.006 | 5 | 141 |
| 32 | 101.9 | 103 | 1,073 | 0.005 | 5 | 129 |
| 31 | 101.25 | 9 | 88 | 0.000 | 0 | 11 |
| 30 | 100.6 | 108 | 1,096 | 0.005 | 5 | 135 |
| 29 | 99.5 | 91 | 901 | 0.004 | 4 | 113 |
| 28 | 98 | 167 | 1,605 | 0.007 | 7 | 208 |
| 27 | 96 | 177 | 1,629 | 0.007 | 7 | 220 |
| 26 | 92.565 | 441 | 3,775 | 0.017 | 16 | 548 |
| 25 | 90.065 | 20 | 162 | 0.001 | 1 | 25 |
| 24 | 89.96 | 12 | 99 | 0.000 | 0 | 15 |
| 23 | 88.46 | 331 | 2,590 | 0.012 | 11 | 412 |
| 22 | 86 | 235 | 1,737 | 0.008 | 7 | 292 |
| 21 | 83.5 | 357 | 2,488 | 0.011 | 10 | 444 |
| 20 | 81 | 254 | 1,664 | 0.008 | 7 | 316 |
| 19 | 77.5 | 676 | 4,060 | 0.018 | 17 | 841 |
| 18 | 72.5 | 713 | 3,750 | 0.017 | 16 | 888 |
| 17 | 67.5 | 731 | 3,331 | 0.015 | 14 | 910 |
| 16 | 62.5 | 749 | 2,925 | 0.013 | 12 | 932 |
| 15 | 57.5 | 767 | 2,534 | 0.011 | 11 | 954 |
| 14 | 53.75 | 390 | 1,126 | 0.005 | 5 | 485 |
| 13 | 51.25 | 616 | 1,619 | 0.007 | 7 | 767 |
| 12 | 49.1667 | 417 | 1,008 | 0.004 | 4 | 519 |
| 11 | 46.6667 | 626 | 1,363 | 0.006 | 6 | 779 |
| 10 | 44.94 | 23 | 46 | 0.000 | 0 | 28 |
| 9 | 42.44 | 638 | 1,149 | 0.005 | 5 | 794 |
| 8 | 37.5 | 679 | 955 | 0.004 | 4 | 845 |
| 7 | 32.5 | 704 | 744 | 0.003 | 3 | 876 |
| 6 | 27.5 | 730 | 552 | 0.002 | 2 | 908 |
| 5 | 22.5 | 755 | 382 | 0.002 | 2 | 939 |
| 4 | 17.5 | 780 | 239 | 0.001 | 1 | 971 |
| 3 | 12.5 | 805 | 126 | 0.001 | 1 | 1,002 |

SEISMIC FORCES

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

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 2 | 7.5 | 831 | 47 | 0.000 | 0 | 1,034 |
| 1 | 2.5 | 856 | 5 | 0.000 | 0 | 1,065 |
| Ericsson Air 6449 B77D | 119 | 245 | 3,467 | 0.016 | 15 | 305 |
| Commscope WCS-IMFQ-AMT | 117 | 30 | 404 | 0.002 | 2 | 37 |
| Ericsson RRUS 4426 B66 | 117 | 145 | 1,988 | 0.009 | 8 | 181 |
| Ericsson RRUS 4478 B14 | 117 | 180 | 2,460 | 0.011 | 10 | 224 |
| Ericsson RRUS 4449 B5, B12 | 117 | 213 | 2,916 | 0.013 | 12 | 265 |
| Ericsson RRUS 32 B2 | 117 | 159 | 2,177 | 0.010 | 9 | 198 |
| Ericsson RRUS E2 B29 | 117 | 180 | 2,464 | 0.011 | 10 | 224 |
| Ericsson RRUS-32 B30 (77 lbs) | 117 | 231 | 3,162 | 0.014 | 13 | 287 |
| Raycap DC9-48-60-24-8C-EV | 117 | 32 | 438 | 0.002 | 2 | 40 |
| CCI DMP65R-BU6DA | 117 | 238 | 3,261 | 0.015 | 14 | 296 |
| Quintel QD6616-7 | 117 | 390 | 5,339 | 0.024 | 23 | 485 |
| Generic Round Platform with Handrails | 117 | 2,500 | 34,222 | 0.153 | 144 | 3,110 |
| Generic Round Platform with Handrails | 107 | 2,500 | 28,622 | 0.128 | 121 | 3,110 |
| Generic Round Platform with Handrails | 97 | 2,500 | 23,522 | 0.105 | 99 | 3,110 |
| Ericsson AIR 6419 B77G | 115 | 198 | 2,623 | 0.012 | 11 | 247 |
| Fujitsu TA08025-B605 | 111.3 | 225 | 2,787 | 0.012 | 12 | 280 |
| Fujitsu TA08025-B604 | 111.3 | 192 | 2,375 | 0.011 | 10 | 239 |
| Raycap RDIDC-9181-PF-48 | 109 | 22 | 260 | 0.001 | 1 | 27 |
| JMA Wireless MX08FRO665-21 | 109 | 194 | 2,299 | 0.010 | 10 | 241 |
| Ericsson Radio 4449 B71 B85A | 101.3 | 225 | 2,309 | 0.010 | 10 | 280 |
| Ericsson RRUS 4415 B25 | 101.3 | 138 | 1,416 | 0.006 | 6 | 172 |
| Ericsson AIR32 B66Aa/B2a | 101.2 | 397 | 4,062 | 0.018 | 17 | 493 |
| Ericsson Air6449 B41 | 97 | 312 | 2,936 | 0.013 | 12 | 388 |
| RFS APXVAARR24_43-U-NA20 | 97 | 384 | 3,610 | 0.016 | 15 | 477 |
| Samsung B2/B66A RRH ORAN (RF 4439d-25A) | 87 | 299 | 2,262 | 0.010 | 10 | 372 |
| Samsung RF4461d-13A | 87 | 316 | 2,395 | 0.011 | 10 | 394 |
| Samsung MT6413-77A | 87 | 229 | 1,735 | 0.008 | 7 | 285 |
| Raycap RCMDC-6627-PF-48 | 87 | 32 | 242 | 0.001 | 1 | 40 |
| JMA Wireless MX06FHG665-HG | 87 | 82 | 621 | 0.003 | 3 | 102 |
| JMA Wireless MX06FHG865-HG | 87 | 102 | 772 | 0.004 | 3 | 127 |
| JMA Wireless MX12FRO645-01 | 87 | 110 | 833 | 0.004 | 4 | 137 |
| Site Pro 1 VFA10-HD | 87 | 2,872 | 21,738 | 0.097 | 92 | 3,573 |
| | **Totals:** | **31,362** | **223,157** | **1.000** | **941** | **39,019** |

SEISMIC FORCES

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

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 40 | 118 | 67 | 928 | 0.004 | 4 | 57 |
| 39 | 116 | 85 | 1,146 | 0.005 | 5 | 73 |
| 38 | 113.15 | 158 | 2,017 | 0.009 | 9 | 135 |
| 37 | 110.65 | 55 | 678 | 0.003 | 3 | 47 |
| 36 | 109.5 | 43 | 511 | 0.002 | 2 | 36 |
| 35 | 108 | 91 | 1,057 | 0.005 | 4 | 78 |
| 34 | 106 | 91 | 1,018 | 0.005 | 4 | 78 |
| 33 | 103.75 | 113 | 1,219 | 0.006 | 5 | 97 |
| 32 | 101.9 | 103 | 1,073 | 0.005 | 5 | 88 |
| 31 | 101.25 | 9 | 88 | 0.000 | 0 | 7 |
| 30 | 100.6 | 108 | 1,096 | 0.005 | 5 | 93 |
| 29 | 99.5 | 91 | 901 | 0.004 | 4 | 78 |
| 28 | 98 | 167 | 1,605 | 0.007 | 7 | 143 |
| 27 | 96 | 177 | 1,629 | 0.007 | 7 | 151 |
| 26 | 92.565 | 441 | 3,775 | 0.017 | 16 | 377 |
| 25 | 90.065 | 20 | 162 | 0.001 | 1 | 17 |
| 24 | 89.96 | 12 | 99 | 0.000 | 0 | 10 |
| 23 | 88.46 | 331 | 2,590 | 0.012 | 11 | 283 |
| 22 | 86 | 235 | 1,737 | 0.008 | 7 | 201 |
| 21 | 83.5 | 357 | 2,488 | 0.011 | 10 | 305 |
| 20 | 81 | 254 | 1,664 | 0.008 | 7 | 217 |

SEISMIC FORCES

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

| Segment | Height Above Base (ft) | Weight (lb) | $W_z$ (lb-ft) | $C_{vx}$ | Horizontal Force (lb) | Vertical Force (lb) |
|---|---|---|---|---|---|---|
| 19 | 77.5 | 676 | 4,060 | 0.018 | 17 | 579 |
| 18 | 72.5 | 713 | 3,750 | 0.017 | 16 | 611 |
| 17 | 67.5 | 731 | 3,331 | 0.015 | 14 | 626 |
| 16 | 62.5 | 749 | 2,925 | 0.013 | 12 | 641 |
| 15 | 57.5 | 767 | 2,534 | 0.011 | 11 | 656 |
| 14 | 53.75 | 390 | 1,126 | 0.005 | 5 | 334 |
| 13 | 51.25 | 616 | 1,619 | 0.007 | 7 | 527 |
| 12 | 49.1667 | 417 | 1,008 | 0.004 | 4 | 357 |
| 11 | 46.6667 | 626 | 1,363 | 0.006 | 6 | 536 |
| 10 | 44.94 | 23 | 46 | 0.000 | 0 | 19 |
| 9 | 42.44 | 638 | 1,149 | 0.005 | 5 | 546 |
| 8 | 37.5 | 679 | 955 | 0.004 | 4 | 581 |
| 7 | 32.5 | 704 | 744 | 0.003 | 3 | 603 |
| 6 | 27.5 | 730 | 552 | 0.002 | 2 | 624 |
| 5 | 22.5 | 755 | 382 | 0.002 | 2 | 646 |
| 4 | 17.5 | 780 | 239 | 0.001 | 1 | 668 |
| 3 | 12.5 | 805 | 126 | 0.001 | 1 | 689 |
| 2 | 7.5 | 831 | 47 | 0.000 | 0 | 711 |
| 1 | 2.5 | 856 | 5 | 0.000 | 0 | 733 |
| Ericsson Air 6449 B77D | 119 | 245 | 3,467 | 0.016 | 15 | 210 |
| Commscope WCS-IMFQ-AMT | 117 | 30 | 404 | 0.002 | 2 | 25 |
| Ericsson RRUS 4426 B66 | 117 | 145 | 1,988 | 0.009 | 8 | 124 |
| Ericsson RRUS 4478 B14 | 117 | 180 | 2,460 | 0.011 | 10 | 154 |
| Ericsson RRUS 4449 B5, B12 | 117 | 213 | 2,916 | 0.013 | 12 | 182 |
| Ericsson RRUS 32 B2 | 117 | 159 | 2,177 | 0.010 | 9 | 136 |
| Ericsson RRUS E2 B29 | 117 | 180 | 2,464 | 0.011 | 10 | 154 |
| Ericsson RRUS-32 B30 (77 lbs) | 117 | 231 | 3,162 | 0.014 | 13 | 198 |
| Raycap DC9-48-60-24-8C-EV | 117 | 32 | 438 | 0.002 | 2 | 27 |
| CCI DMP65R-BU6DA | 117 | 238 | 3,261 | 0.015 | 14 | 204 |
| Quintel QD6616-7 | 117 | 390 | 5,339 | 0.024 | 23 | 334 |
| Generic Round Platform with Handrails | 117 | 2,500 | 34,222 | 0.153 | 144 | 2,140 |
| Generic Round Platform with Handrails | 107 | 2,500 | 28,622 | 0.128 | 121 | 2,140 |
| Generic Round Platform with Handrails | 97 | 2,500 | 23,522 | 0.105 | 99 | 2,140 |
| Ericsson AIR 6419 B77G | 115 | 198 | 2,623 | 0.012 | 11 | 170 |
| Fujitsu TA08025-B605 | 111.3 | 225 | 2,787 | 0.012 | 12 | 193 |
| Fujitsu TA08025-B604 | 111.3 | 192 | 2,375 | 0.011 | 10 | 164 |
| Raycap RDIDC-9181-PF-48 | 109 | 22 | 260 | 0.001 | 1 | 19 |
| JMA Wireless MX08FRO665-21 | 109 | 194 | 2,299 | 0.010 | 10 | 166 |
| Ericsson Radio 4449 B71 B85A | 101.3 | 225 | 2,309 | 0.010 | 10 | 193 |
| Ericsson RRUS 4415 B25 | 101.3 | 138 | 1,416 | 0.006 | 6 | 118 |
| Ericsson AIR32 B66Aa/B2a | 101.2 | 397 | 4,062 | 0.018 | 17 | 339 |
| Ericsson Air6449 B41 | 97 | 312 | 2,936 | 0.013 | 12 | 267 |
| RFS APXVAARR24_43-U-NA20 | 97 | 384 | 3,610 | 0.016 | 15 | 328 |
| Samsung B2/B66A RRH ORAN (RF 4439d-25A) | 87 | 299 | 2,262 | 0.010 | 10 | 256 |
| Samsung RF4461d-13A | 87 | 316 | 2,395 | 0.011 | 10 | 271 |
| Samsung MT6413-77A | 87 | 229 | 1,735 | 0.008 | 7 | 196 |
| Raycap RCMDC-6627-PF-48 | 87 | 32 | 242 | 0.001 | 1 | 27 |
| JMA Wireless MX06FHG665-HG | 87 | 82 | 621 | 0.003 | 3 | 70 |
| JMA Wireless MX06FHG865-HG | 87 | 102 | 772 | 0.004 | 3 | 87 |
| JMA Wireless MX12FRO645-01 | 87 | 110 | 833 | 0.004 | 4 | 94 |
| Site Pro 1 VFA10-HD | 87 | 2,872 | 21,738 | 0.097 | 92 | 2,458 |
| | **Totals:** | **31,362** | **223,157** | **1.000** | **941** | **26,841** |

**1.2D + 1.0Ev + 1.0Eh** **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 | -37.95 | -0.95 | 0.00 | -102.16 | 0.00 | 102.16 | 2,813.31 | 725.65 | 2,732 | 2,413.98 | 0.00 | 0.00 | 0.06 |
| 5.00 | -36.92 | -0.96 | 0.00 | -97.43 | 0.00 | 97.43 | 2,747.79 | 699.53 | 2,539 | 2,272.29 | 0.01 | -0.02 | 0.06 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.00 | -35.92 | -0.97 | 0.00 | -92.66 | 0.00 | 92.66 | 2,679.61 | 673.42 | 2,353 | 2,132.56 | 0.03 | -0.03 | 0.06 |
| 15.00 | -34.95 | -0.97 | 0.00 | -87.83 | 0.00 | 87.83 | 2,608.76 | 647.31 | 2,174 | 1,995.03 | 0.08 | -0.05 | 0.06 |
| 20.00 | -34.01 | -0.98 | 0.00 | -82.96 | 0.00 | 82.96 | 2,535.24 | 621.20 | 2,002 | 1,859.96 | 0.14 | -0.07 | 0.06 |
| 25.00 | -33.10 | -0.99 | 0.00 | -78.04 | 0.00 | 78.04 | 2,459.06 | 595.09 | 1,838 | 1,727.58 | 0.22 | -0.09 | 0.06 |
| 30.00 | -32.22 | -1.00 | 0.00 | -73.08 | 0.00 | 73.08 | 2,380.22 | 568.98 | 1,680 | 1,598.16 | 0.33 | -0.11 | 0.06 |
| 35.00 | -31.38 | -1.01 | 0.00 | -68.08 | 0.00 | 68.08 | 2,298.17 | 542.87 | 1,529 | 1,471.58 | 0.45 | -0.13 | 0.06 |
| 40.00 | -30.58 | -1.01 | 0.00 | -63.04 | 0.00 | 63.04 | 2,187.63 | 516.76 | 1,386 | 1,332.77 | 0.61 | -0.16 | 0.06 |
| 44.88 | -30.55 | -1.02 | 0.00 | -58.10 | 0.00 | 58.10 | 2,079.75 | 491.28 | 1,252 | 1,203.91 | 0.78 | -0.18 | 0.06 |
| 45.00 | -29.78 | -1.02 | 0.00 | -57.98 | 0.00 | 57.98 | 2,077.10 | 490.65 | 1,249 | 1,200.82 | 0.79 | -0.18 | 0.04 |
| 48.33 | -29.26 | -1.01 | 0.00 | -54.59 | 0.00 | 54.59 | 2,003.41 | 473.25 | 1,162 | 1,116.68 | 0.92 | -0.20 | 0.04 |
| 50.00 | -28.49 | -1.01 | 0.00 | -52.90 | 0.00 | 52.90 | 1,966.57 | 464.54 | 1,120 | 1,075.76 | 0.99 | -0.20 | 0.04 |
| 52.50 | -28.01 | -1.01 | 0.00 | -50.38 | 0.00 | 50.38 | 1,293.31 | 322.59 | 771 | 704.07 | 1.10 | -0.21 | 0.05 |
| 55.00 | -27.05 | -1.00 | 0.00 | -47.87 | 0.00 | 47.87 | 1,268.09 | 313.45 | 728 | 670.62 | 1.21 | -0.22 | 0.04 |
| 60.00 | -26.12 | -0.99 | 0.00 | -42.88 | 0.00 | 42.88 | 1,215.65 | 295.17 | 646 | 605.07 | 1.45 | -0.24 | 0.04 |
| 65.00 | -25.21 | -0.98 | 0.00 | -37.92 | 0.00 | 37.92 | 1,160.55 | 276.89 | 568 | 541.55 | 1.71 | -0.26 | 0.04 |
| 70.00 | -24.32 | -0.97 | 0.00 | -33.00 | 0.00 | 33.00 | 1,094.76 | 258.60 | 496 | 476.80 | 1.99 | -0.28 | 0.04 |
| 75.00 | -23.48 | -0.96 | 0.00 | -28.14 | 0.00 | 28.14 | 1,017.37 | 240.32 | 428 | 411.45 | 2.30 | -0.30 | 0.04 |
| 80.00 | -23.16 | -0.96 | 0.00 | -23.34 | 0.00 | 23.34 | 939.98 | 222.04 | 365 | 350.92 | 2.63 | -0.33 | 0.04 |
| 82.00 | -22.72 | -0.95 | 0.00 | -21.43 | 0.00 | 21.43 | 909.02 | 214.73 | 342 | 328.05 | 2.77 | -0.33 | 0.03 |
| 82.00 | -22.72 | -0.95 | 0.00 | -21.43 | 0.00 | 21.43 | 513.62 | 182.48 | 283 | 243.01 | 2.77 | -0.33 | 0.05 |
| 85.00 | -22.43 | -0.94 | 0.00 | -18.58 | 0.00 | 18.58 | 492.88 | 173.18 | 255 | 219.76 | 2.98 | -0.35 | 0.04 |
| 87.00 | -16.99 | -0.77 | 0.00 | -16.70 | 0.00 | 16.70 | 479.05 | 166.97 | 237 | 204.91 | 3.13 | -0.36 | 0.04 |
| 89.92 | -16.97 | -0.78 | 0.00 | -14.44 | 0.00 | 14.44 | 458.86 | 157.92 | 212 | 184.16 | 3.35 | -0.37 | 0.04 |
| 90.00 | -16.95 | -0.77 | 0.00 | -14.37 | 0.00 | 14.37 | 458.30 | 157.67 | 211 | 183.61 | 3.36 | -0.37 | 0.02 |
| 90.13 | -16.40 | -0.76 | 0.00 | -14.27 | 0.00 | 14.27 | 457.40 | 157.27 | 210 | 182.71 | 3.37 | -0.37 | 0.02 |
| 90.13 | -16.40 | -0.76 | 0.00 | -14.27 | 0.00 | 14.27 | 457.40 | 157.27 | 210 | 182.71 | 3.37 | -0.37 | 0.05 |
| 95.00 | -16.18 | -0.75 | 0.00 | -10.59 | 0.00 | 10.59 | 423.70 | 142.16 | 172 | 150.69 | 3.76 | -0.38 | 0.04 |
| 97.00 | -12.00 | -0.59 | 0.00 | -9.08 | 0.00 | 9.08 | 409.85 | 135.96 | 157 | 138.43 | 3.92 | -0.39 | 0.03 |
| 99.00 | -11.88 | -0.59 | 0.00 | -7.90 | 0.00 | 7.90 | 395.99 | 129.76 | 143 | 126.68 | 4.09 | -0.40 | 0.03 |
| 99.00 | -11.88 | -0.59 | 0.00 | -7.90 | 0.00 | 7.90 | 725.83 | 171.46 | 191 | 181.64 | 4.09 | -0.40 | 0.03 |
| 100.00 | -11.75 | -0.58 | 0.00 | -7.31 | 0.00 | 7.31 | 725.83 | 171.46 | 191 | 181.64 | 4.17 | -0.41 | 0.02 |
| 101.20 | -11.24 | -0.56 | 0.00 | -6.61 | 0.00 | 6.61 | 725.83 | 171.46 | 191 | 181.64 | 4.27 | -0.41 | 0.02 |
| 101.30 | -10.66 | -0.54 | 0.00 | -6.55 | 0.00 | 6.55 | 725.83 | 171.46 | 191 | 181.64 | 4.28 | -0.41 | 0.02 |
| 102.50 | -10.52 | -0.54 | 0.00 | -5.90 | 0.00 | 5.90 | 725.83 | 171.46 | 191 | 181.64 | 4.39 | -0.42 | 0.02 |
| 102.50 | -10.52 | -0.54 | 0.00 | -5.90 | 0.00 | 5.90 | 725.83 | 171.46 | 191 | 181.64 | 4.39 | -0.42 | 0.05 |
| 105.00 | -10.41 | -0.53 | 0.00 | -4.56 | 0.00 | 4.56 | 725.83 | 171.46 | 191 | 181.64 | 4.61 | -0.43 | 0.04 |
| 107.00 | -7.19 | -0.38 | 0.00 | -3.50 | 0.00 | 3.50 | 725.83 | 171.46 | 191 | 181.64 | 4.79 | -0.44 | 0.03 |
| 109.00 | -6.87 | -0.37 | 0.00 | -2.73 | 0.00 | 2.73 | 725.83 | 171.46 | 191 | 181.64 | 4.98 | -0.45 | 0.03 |
| 110.00 | -6.80 | -0.37 | 0.00 | -2.36 | 0.00 | 2.36 | 725.83 | 171.46 | 191 | 181.64 | 5.07 | -0.45 | 0.02 |
| 111.30 | -6.08 | -0.33 | 0.00 | -1.89 | 0.00 | 1.89 | 725.83 | 171.46 | 191 | 181.64 | 5.19 | -0.46 | 0.02 |
| 115.00 | -5.73 | -0.31 | 0.00 | -0.66 | 0.00 | 0.66 | 725.83 | 171.46 | 191 | 181.64 | 5.55 | -0.46 | 0.01 |
| 117.00 | -0.30 | -0.02 | 0.00 | -0.03 | 0.00 | 0.03 | 725.83 | 171.46 | 191 | 181.64 | 5.74 | -0.46 | 0.00 |
| 119.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 725.83 | 171.46 | 191 | 181.64 | 5.94 | -0.46 | 0.00 |

**0.9D - 1.0Ev + 1.0Eh** **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 | -26.11 | -0.94 | 0.00 | -98.86 | 0.00 | 98.86 | 2,813.31 | 725.65 | 2,732 | 2,413.98 | 0.00 | 0.00 | 0.05 |
| 5.00 | -25.40 | -0.95 | 0.00 | -94.14 | 0.00 | 94.14 | 2,747.79 | 699.53 | 2,539 | 2,272.29 | 0.01 | -0.02 | 0.05 |
| 10.00 | -24.71 | -0.96 | 0.00 | -89.40 | 0.00 | 89.40 | 2,679.61 | 673.42 | 2,353 | 2,132.56 | 0.03 | -0.03 | 0.05 |
| 15.00 | -24.04 | -0.96 | 0.00 | -84.62 | 0.00 | 84.62 | 2,608.76 | 647.31 | 2,174 | 1,995.03 | 0.07 | -0.05 | 0.05 |
| 20.00 | -23.39 | -0.97 | 0.00 | -79.81 | 0.00 | 79.81 | 2,535.24 | 621.20 | 2,002 | 1,859.96 | 0.13 | -0.07 | 0.05 |
| 25.00 | -22.77 | -0.97 | 0.00 | -74.97 | 0.00 | 74.97 | 2,459.06 | 595.09 | 1,838 | 1,727.58 | 0.21 | -0.09 | 0.05 |
| 30.00 | -22.17 | -0.98 | 0.00 | -70.12 | 0.00 | 70.12 | 2,380.22 | 568.98 | 1,680 | 1,598.16 | 0.32 | -0.11 | 0.05 |
| 35.00 | -21.58 | -0.98 | 0.00 | -65.24 | 0.00 | 65.24 | 2,298.17 | 542.87 | 1,529 | 1,471.58 | 0.44 | -0.13 | 0.05 |
| 40.00 | -21.04 | -0.98 | 0.00 | -60.34 | 0.00 | 60.34 | 2,187.63 | 516.76 | 1,386 | 1,332.77 | 0.59 | -0.15 | 0.06 |
| 44.88 | -21.02 | -0.99 | 0.00 | -55.55 | 0.00 | 55.55 | 2,079.75 | 491.28 | 1,252 | 1,203.91 | 0.75 | -0.18 | 0.06 |
| 45.00 | -20.48 | -0.98 | 0.00 | -55.43 | 0.00 | 55.43 | 2,077.10 | 490.65 | 1,249 | 1,200.82 | 0.76 | -0.18 | 0.03 |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48.33 | -20.12 | -0.98 | 0.00 | -52.16 | 0.00 | 52.16 | 2,003.41 | 473.25 | 1,162 | 1,116.68 | 0.89 | -0.19 | 0.03 |
| 50.00 | -19.60 | -0.97 | 0.00 | -50.53 | 0.00 | 50.53 | 1,966.57 | 464.54 | 1,120 | 1,075.76 | 0.95 | -0.19 | 0.03 |
| 52.50 | -19.26 | -0.97 | 0.00 | -48.10 | 0.00 | 48.10 | 1,293.31 | 322.59 | 771 | 704.07 | 1.05 | -0.20 | 0.04 |
| 55.00 | -18.61 | -0.96 | 0.00 | -45.68 | 0.00 | 45.68 | 1,268.09 | 313.45 | 728 | 670.62 | 1.16 | -0.21 | 0.04 |
| 60.00 | -17.97 | -0.95 | 0.00 | -40.87 | 0.00 | 40.87 | 1,215.65 | 295.17 | 646 | 605.07 | 1.39 | -0.23 | 0.04 |
| 65.00 | -17.34 | -0.94 | 0.00 | -36.11 | 0.00 | 36.11 | 1,160.55 | 276.89 | 568 | 541.55 | 1.64 | -0.25 | 0.04 |
| 70.00 | -16.73 | -0.93 | 0.00 | -31.40 | 0.00 | 31.40 | 1,094.76 | 258.60 | 496 | 476.80 | 1.92 | -0.27 | 0.04 |
| 75.00 | -16.15 | -0.92 | 0.00 | -26.76 | 0.00 | 26.76 | 1,017.37 | 240.32 | 428 | 411.45 | 2.21 | -0.29 | 0.03 |
| 80.00 | -15.93 | -0.91 | 0.00 | -22.18 | 0.00 | 22.18 | 939.98 | 222.04 | 365 | 350.92 | 2.53 | -0.31 | 0.03 |
| 82.00 | -15.63 | -0.90 | 0.00 | -20.36 | 0.00 | 20.36 | 909.02 | 214.73 | 342 | 328.05 | 2.66 | -0.32 | 0.03 |
| 82.00 | -15.63 | -0.90 | 0.00 | -20.36 | 0.00 | 20.36 | 513.62 | 182.48 | 283 | 243.01 | 2.66 | -0.32 | 0.04 |
| 85.00 | -15.43 | -0.90 | 0.00 | -17.65 | 0.00 | 17.65 | 492.88 | 173.18 | 255 | 219.76 | 2.86 | -0.33 | 0.04 |
| 87.00 | -11.68 | -0.74 | 0.00 | -15.86 | 0.00 | 15.86 | 479.05 | 166.97 | 237 | 204.91 | 3.01 | -0.34 | 0.03 |
| 89.92 | -11.67 | -0.74 | 0.00 | -13.71 | 0.00 | 13.71 | 458.86 | 157.92 | 212 | 184.16 | 3.22 | -0.35 | 0.03 |
| 90.00 | -11.66 | -0.74 | 0.00 | -13.65 | 0.00 | 13.65 | 458.30 | 157.67 | 211 | 183.61 | 3.22 | -0.35 | 0.02 |
| 90.13 | -11.28 | -0.72 | 0.00 | -13.56 | 0.00 | 13.56 | 457.40 | 157.27 | 210 | 182.71 | 3.23 | -0.35 | 0.02 |
| 90.13 | -11.28 | -0.72 | 0.00 | -13.56 | 0.00 | 13.56 | 457.40 | 157.27 | 210 | 182.71 | 3.23 | -0.35 | 0.04 |
| 95.00 | -11.13 | -0.71 | 0.00 | -10.05 | 0.00 | 10.05 | 423.70 | 142.16 | 172 | 150.69 | 3.60 | -0.37 | 0.04 |
| 97.00 | -8.25 | -0.56 | 0.00 | -8.62 | 0.00 | 8.62 | 409.85 | 135.96 | 157 | 138.43 | 3.76 | -0.38 | 0.03 |
| 99.00 | -8.17 | -0.56 | 0.00 | -7.50 | 0.00 | 7.50 | 395.99 | 129.76 | 143 | 126.68 | 3.92 | -0.39 | 0.03 |
| 99.00 | -8.17 | -0.56 | 0.00 | -7.50 | 0.00 | 7.50 | 725.83 | 171.46 | 191 | 181.64 | 3.92 | -0.39 | 0.02 |
| 100.00 | -8.08 | -0.56 | 0.00 | -6.94 | 0.00 | 6.94 | 725.83 | 171.46 | 191 | 181.64 | 4.00 | -0.39 | 0.02 |
| 101.20 | -7.73 | -0.54 | 0.00 | -6.27 | 0.00 | 6.27 | 725.83 | 171.46 | 191 | 181.64 | 4.10 | -0.40 | 0.02 |
| 101.30 | -7.34 | -0.51 | 0.00 | -6.22 | 0.00 | 6.22 | 725.83 | 171.46 | 191 | 181.64 | 4.11 | -0.40 | 0.02 |
| 102.50 | -7.24 | -0.51 | 0.00 | -5.60 | 0.00 | 5.60 | 725.83 | 171.46 | 191 | 181.64 | 4.21 | -0.40 | 0.02 |
| 102.50 | -7.24 | -0.51 | 0.00 | -5.60 | 0.00 | 5.60 | 725.83 | 171.46 | 191 | 181.64 | 4.21 | -0.40 | 0.04 |
| 105.00 | -7.16 | -0.50 | 0.00 | -4.33 | 0.00 | 4.33 | 725.83 | 171.46 | 191 | 181.64 | 4.42 | -0.41 | 0.03 |
| 107.00 | -4.94 | -0.36 | 0.00 | -3.32 | 0.00 | 3.32 | 725.83 | 171.46 | 191 | 181.64 | 4.59 | -0.42 | 0.03 |
| 109.00 | -4.72 | -0.35 | 0.00 | -2.59 | 0.00 | 2.59 | 725.83 | 171.46 | 191 | 181.64 | 4.77 | -0.43 | 0.02 |
| 110.00 | -4.68 | -0.35 | 0.00 | -2.24 | 0.00 | 2.24 | 725.83 | 171.46 | 191 | 181.64 | 4.86 | -0.43 | 0.02 |
| 111.30 | -4.18 | -0.31 | 0.00 | -1.79 | 0.00 | 1.79 | 725.83 | 171.46 | 191 | 181.64 | 4.98 | -0.44 | 0.02 |
| 115.00 | -3.94 | -0.30 | 0.00 | -0.63 | 0.00 | 0.63 | 725.83 | 171.46 | 191 | 181.64 | 5.32 | -0.44 | 0.01 |
| 117.00 | -0.21 | -0.02 | 0.00 | -0.03 | 0.00 | 0.03 | 725.83 | 171.46 | 191 | 181.64 | 5.50 | -0.44 | 0.00 |
| 119.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 725.83 | 171.46 | 191 | 181.64 | 5.69 | -0.44 | 0.00 |

## ANALYSIS SUMMARY

| Load Case | Base Reactions Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) | Max Usage Elev (ft) | Interaction Ratio |
|---|---|---|---|---|---|---|---|---|
| 1.2D + 1.0W | 17.83 | 0.00 | 37.59 | 0.00 | 0.00 | 1642.56 | 44.88 | 0.74 |
| 0.9D + 1.0W | 17.81 | 0.00 | 28.19 | 0.00 | 0.00 | 1603.62 | 44.88 | 0.71 |
| 1.2D + 1.0Di + 1.0Wi | 4.47 | 0.00 | 50.27 | 0.00 | 0.00 | 421.04 | 44.88 | 0.21 |
| 1.2D + 1.0Ev + 1.0Eh | 1.02 | 0.00 | 37.95 | 0.00 | 0.00 | 102.16 | 44.88 | 0.06 |
| 0.9D - 1.0Ev + 1.0Eh | 0.99 | 0.00 | 26.11 | 0.00 | 0.00 | 98.86 | 44.88 | 0.06 |
| 1.0D + 1.0W | 4.29 | 0.00 | 31.36 | 0.00 | 0.00 | 390.71 | 44.88 | 0.18 |

## ADDITIONAL STEEL SUMMARY

| Elev From (ft) | Elev To (ft) | Member | Intermediate Connectors VQ/I (k/in) | Shear Applied (kips) | phiVn (kips) | Ratio | Max Member Pu (kip) | phiPn (kip) | Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 44.88 | 90.13 | PL PL 6" x 1" | 702.4 | 8.4 | 25.3 | 0.3336 | 221.8 | 289.0 | 0.7675 |
| 89.92 | 102.50 | PL PL 4" x 1" | 583.2 | 7.0 | 38.3 | 0.1829 | 116.2 | 164.6 | 0.7058 |

| Elev From (ft) | Elev To (ft) | Member | Upper Termination Connectors MQ/I (kips) | phiVn (kips) | Number Required | Number Actual | Ratio | Lower Termination Connectors MQ/I (kips) | phiVn (kip) | Number Required | Number Actual | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44.88 | 90.13 | PL PL 6" x 1" | 87.4263 | 25.27 | 4 | 8 | 0.4325 | 192.4031 | 25.27 | 8 | 12 | 0.6345 |
| 89.92 | 102.50 | PL PL 4" x 1" | 54.3753 | 38.27 | 2 | 6 | 0.2368 | 58.6985 | 38.27 | 2 | 6 | 0.2556 |

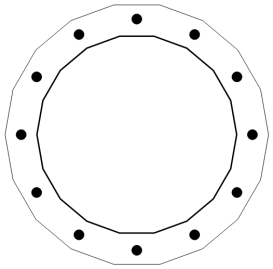
# BASE PLATE ANALYSIS @ 0 FT

## APPLIED REACTIONS

| Moment (k-ft) | Axial (k) | Shear (k) |
|---|---|---|
| 1642.56 | 37.59 | 17.83 |

## PLATE PARAMETERS (ID# 28693)

| | | |
|---|---|---|
| Width: | 55.15 | in |
| Shape: | 18 | |
| Thickness: | 2 | in |
| Grade: | A572-50 | |
| Yield Strength: | 50 | ksi |
| Tensile Strength: | 65 | ksi |
| Rod Detail Type: | d | |
| Clear Distance | 3.5 | in |
| Base Weld Size: | 0.125 | in |
| Orientation Offset: | - | ° |
| Analysis Type: | Plastic | |
| Neutral Axis: | 15 | ° |



## ANCHOR ROD PARAMETERS

| Class | Arrangement | Quantity | Diameter (in) | Circle (in) | Grade | $F_y$ (ksi) | $F_u$ (ksi) | Spacing (in) | Offset (°) |
|---|---|---|---|---|---|---|---|---|---|
| Original [ID#29452] | Radial | 12 | 2.25 | 49.15 | A615-75 | 75 | 100 | - | - |

## COMPONENT PROPERTIES

| Component | ID | Gross Area ($in^2$) | Net Area ($in^2$) | Individual Inertia ($in^4$) | Moment of Inertia ($in^4$) | Threads/in |
|---|---|---|---|---|---|---|
| Pole | 42"ø x 0.3125" (18 Sides) | 40.7191 | - | - | 8846.79 | - |
| Bolt Group | Original (12) 2.25"ø | 3.9761 | 3.2477 | 0.8393 | 10554.88 | 4.5 |

## REACTION DISTRIBUTION

| Component | ID | Moment $M_u$ (k-ft) | Axial Load $P_u$ (k) | Shear $V_u$ (k) | Moment Factor |
|---|---|---|---|---|---|
| Pole | 42"ø x 0.3125" (18 Sides) | 1642.6 | 37.59 | 17.83 | 1.000 |
| Bolt Group | Original (12) 2.25"ø | 1642.6 | - | 17.83 | 1.000 |

## BASE PLATE BEND LINE ANALYSIS @ 0 FT

**POLE PROPERTIES**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Flat-to-Flat Diameter: | 42.12 | in | Flat Width: | 7.428 | in | Neutral Axis: | 15 | ° |
| Point-to-Point Diameter: | 42.78 | in | Flat Radians: | 0.349 | rad | Bend Line Limits: | 1.219 to 2.446 | rad |
| Orientation Offset: | - | ° | | | | | | |

**PLATE PROPERTIES**

| Bend Line | Chord Length (in) | Additional Length (in) | Section Modulus ($in^3$) | Applied Moment $M_u$ (k-in) | Moment Capacity $\Phi M_n$ (k-in) | Flexure Result $M_u/\Phi M_n$ |
|---|---|---|---|---|---|---|
| Flats | 31.400 | 0.00 | 31.400 | 392.4 | 1413.0 | 27.8% |
| Corners | 30.508 | 0.00 | 30.508 | 301.8 | 1372.9 | 22.0% |
| Circumferential | 41.015 | 0.00 | 41.015 | 522.8 | 1845.7 | 28.3% |

## PLASTIC ANCHOR ROD ANALYSIS

| Class | Group Quantity | Rod Diameter (in) | Applied Axial Load $P_u$ (k) | Applied Shear Load $V_u$ (k) | Compressive Capacity $\Phi P_n$ (k) | Interaction Result |
|---|---|---|---|---|---|---|
| Original | 12 | 2.25 | 116.0 | 2.2 | 243.6 | 49.4% |

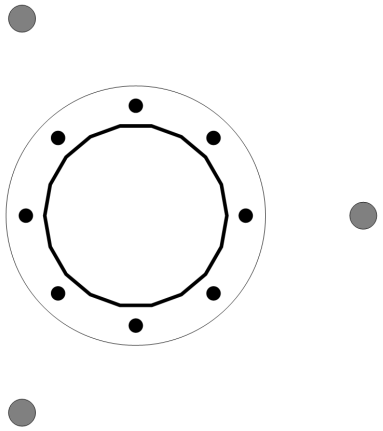
# UPPER FLANGE PLATE ANALYSIS @ 99 FT

## APPLIED REACTIONS

| Moment (k-ft) | Axial (k) | Shear (k) |
|---|---|---|
| 104.79 | 10.83 | 7.7 |

## PLATE PARAMETERS (ID# 28694)

| | | |
|---|---|---|
| Width: | 18 | in |
| Shape: | Round | |
| Thickness: | 1.25 | in |
| Grade: | A572-50 | |
| Yield Strength: | 50 | ksi |
| Tensile Strength: | 65 | ksi |
| Base Weld Size: | 0.125 | in |
| Orientation Offset: | - | ° |
| Analysis Type: | Elastic | |
| Neutral Axis: | 30 | ° |



## FLANGE BOLT PARAMETERS

| Class | Arrangement | Quantity | Diameter (in) | Circle (in) | Grade | $F_y$ (ksi) | $F_u$ (ksi) | Spacing (in) | Offset (°) |
|---|---|---|---|---|---|---|---|---|---|
| Original [ID#29451] | Radial | 8 | 1 | 15.25 | A490 | 130 | 150 | - | - |
| Bypass [ID#29453] | Radial | 3 | 1.875 | 31.56 | A572-65 | 65 | 80 | - | - |

## COMPONENT PROPERTIES

| Component | ID | Gross Area ($in^2$) | Net Area ($in^2$) | Individual Inertia ($in^4$) | Moment of Inertia ($in^4$) | Threads/in |
|---|---|---|---|---|---|---|
| Pole | 12.5625"ø x 0.25" (18 Sides) | 9.6212 | - | - | 182.52 | - |
| Bolt Group | Original (8) 1"ø | 0.7854 | 0.6057 | 0.0292 | 118.96 | 8.0 |
| Bolt Group | Bypass (3) 1.875"ø | 2.7612 | 2.1603 | 0.3714 | 808.02 | 4.5 |

## REACTION DISTRIBUTION

| Component | ID | Moment $M_u$ (k-ft) | Axial Load $P_u$ (k) | Shear $V_u$ (k) | Moment Factor |
|---|---|---|---|---|---|
| Pole | 12.5625"ø x 0.25" (18 Sides) | 19.3 | 10.83 | 7.70 | 0.184 |
| Bolt Group | Original (8) 1"ø | 19.3 | - | 7.70 | 0.184 |
| Bolt Group | Bypass (3) 1.875"ø | 85.5 | - | 0.00 | 0.816 |

## UPPER FLANGE PLATE BEND LINE ANALYSIS @ 99 FT

**POLE PROPERTIES**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Flat-to-Flat Diameter: | 12.69 | in | Flat Width: | 2.237 | in | Neutral Axis: | 30 | ° |
| Point-to-Point Diameter: | 12.88 | in | Flat Radians: | 0.349 | rad | Bend Line Limits: | 1.788 to 2.924 | rad |
| Orientation Offset: | - | ° | | | | | | |

**PLATE PROPERTIES**

| Bend Line | Chord Length (in) | Additional Length (in) | Section Modulus ($in^3$) | Applied Moment $M_u$ (k-in) | Moment Capacity $\Phi M_n$ (k-in) | Flexure Result $M_u/\Phi M_n$ | |
|---|---|---|---|---|---|---|---|
| Flats | 11.050 | 0.00 | 4.317 | 3.4 | 194.2 | 1.8% | ✓ |
| Corners | 10.821 | 0.00 | 4.227 | 2.6 | 190.2 | 1.4% | ✓ |
| Circumferential | 13.311 | 0.00 | 5.199 | 4.6 | 234.0 | 2.0% | ✓ |

## ELASTIC FLANGE BOLT ANALYSIS

| Class | Group Quantity | Bolt Diameter (in) | Applied Axial Load $P_u$ (k) | Applied Shear Load $V_u$ (k) | Compressive Capacity $\Phi P_n$ (k) | Compressive Result | Interaction Result |
|---|---|---|---|---|---|---|---|
| Original | 8 | 1 | 8.2 | 0.4 | 68.1 | 0.121 | 12.9% |
| Bypass | 3 | 1.875 | 46.2 | 0.0 | 129.6 | 0.357 | 35.7% |

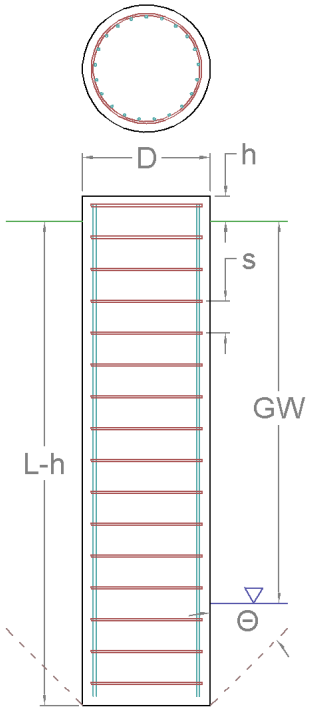
# PIER FOUNDATION ANALYSIS

## GLOBAL REACTIONS

| Moment (k-ft) | Axial (k) | Shear (k) |
|---|---|---|
| 1,642.56 | 37.59 | 17.83 |

## FOUNDATION PARAMETERS

| | | | |
|---|---|---|---|
| Pier Diameter: | D | 6.50 | ft |
| Pier Embedment Depth: | L-h | 31.0 | ft |
| Pier Height above Grade: | h | 0.50 | ft |
| Concrete Compressive Strength: | | 4,000 | psi |
| Vertical Rebar: | | (24) #9 bars [60 ksi] | |
| Tie Rebar: | s | #4 bars @ 12.0" c/c [60 ksi] | |
| Rebar Clear Cover: | | 3.00 | in |




## SOIL PARAMETERS

Water Table Depth [BGL]: GW 7 ft

| Layer Depth (ft) Top | Layer Depth (ft) Bottom | Unit Weight pcf | Cohesion psf | Friction Angle ° | Ultimate Skin Friction psf | Ultimate Net Bearing psf |
|---|---|---|---|---|---|---|
| 0 | 4 | 105 | 0 | 0 | 0 | 0 |
| 4 | 7 | 123 | 0 | 32 | 691 | 0 |
| 7 | 10 | 127 | 0 | 37 | 1,051 | 0 |
| 10 | 15 | 122 | 0 | 34 | 1,258 | 0 |
| 15 | 20 | 121 | 0 | 33 | 1,420 | 0 |
| 20 | 25 | 118 | 0 | 32 | 1,544 | 0 |
| 25 | 30 | 114 | 0 | 30 | 1,149 | 0 |
| 30 | 35 | 127 | 0 | 34 | 1,706 | 39,570 |

## SOIL STRENGTH ANALYSIS

| Volume of Concrete ($ft^3$) | Buoyant Weight of Concrete (k) | Skin Friction Resistance (k) | Inflection Point [BGL] (ft) |
|---|---|---|---|
| 1,045.27 | 107.10 | 689.94 | 20.34 |

## SOIL MOMENT ANALYSIS

| Total Lateral Resistance (k) | Moment at Inflection Point, $M_u$ (k-ft) | Additional Resistance (k-ft) | Nominal Moment Capacity, $\Phi M_n$ (k-ft) | Soil Moment Usage, $M_u / \Phi M_n$ |
|---|---|---|---|---|
| 2,110.19 | 2,014.07 | 0.00 | 10,023.97 | **20.1%** |

## SOIL COMPRESSION ANALYSIS

| Compressive Bearing Resistance (k) | Compressive Force, $P_u$ (k) | Additional Resistance (k) | Nominal Compressive Capacity, $\Phi P_n$ (k) | Soil Compressive Usage, $P_u / \Phi P_n$ |
|---|---|---|---|---|
| 1,313.05 | 76.53 | 0.00 | 1,502.25 | **5.1%** |

## REINFORCING STEEL STRENGTH ANALYSIS

| Rebar Cage Diameter (in) | Steel Elastic Modulus, E (ksi) | Strength Bending/Tension Reduction Factor, $\Phi_b$ | Strength Shear Reduction Factor, $\Phi_v$ | Strength Compression Reduction Factor, $\Phi_c$ |
|---|---|---|---|---|
| 69.872 | 29,000 | 0.9 | 0.75 | 0.65 |

## PIER REINFORCING MOMENT ANALYSIS

| Design Moment, $M_u$ (k-ft) | Nominal Moment Capacity, $\Phi_b M_n$ (k-ft) | Bending Reinforcement Ratio | Pier Rebar Flexure Usage, $M_u/\Phi_b M_n$ |
|---|---|---|---|
| 1,652.52 | 3,695.06 | 0.01 | **44.7%** |

## PIER REINFORCING COMPRESSION ANALYSIS

| Buoyant Weight of Concrete (k) | Design Compression, $P_u$ (k) | Nominal Compressive Capacity, $\Phi_p P_n$ (k) | Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$ |
|---|---|---|---|
| 107.10 | 76.53 | 9,154.51 | **0.8%** |

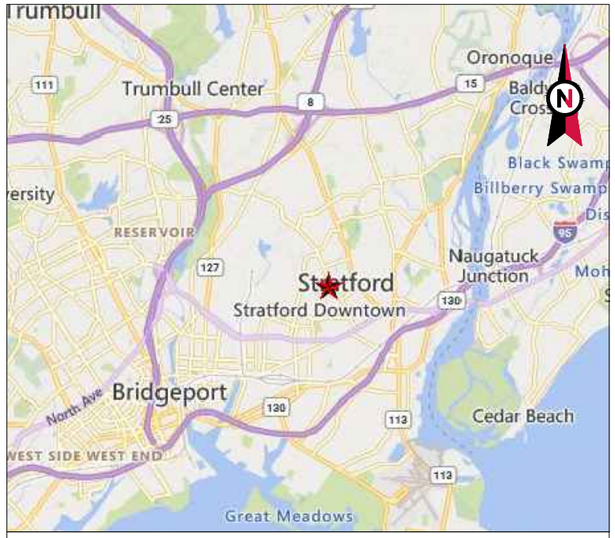
## PIER REINFORCING SHEAR ANALYSIS

| Design Shear, $V_u$ (k) | Nominal Shear Capacity, $\Phi_v V_n$ (k) | Pier Rebar Shear Usage, $V_u / \Phi_v V_n$ |
|---|---|---|
| 126.45 | 548.70 | **23.0%** |

CENTERLINE

# EXHIBIT D

## Construction Drawings




VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: STONEYBROOK RD CT
ATC SITE NUMBER: 283420
VERIZON SITE NAME: STRATFORD W CT
VERIZON FUZE PID: 16231921
SITE ADDRESS: 23 STONYBROOK RD
STRATFORD, CT 06614


LOCATION MAP

# VERIZON AMENDMENT DRAWINGS

## COMPLIANCE CODE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. 2020 NFPA 70, NATIONAL ELECTRIC CODE (NEC)
2. 2022 CONNECTICUT STATE BUILDING CODE
3. 2021 INTERNATIONAL BUILDING CODE (IBC)

DESIGN CRITERIA FROM TOWER STRUCTUAL ANALYSIS:

| | |
|---|---|
| BASIC WIND SPEED: | 119 MPH (3 SECOND GUST) |
| BASIC WIND SPEED W/ ICE: | 50 MPH (3 SECOND GUST) W/ 1" RADIAL ICE CONCURRENT |
| CODE(S): | ANSI/TIA-222-H / 2021 IBC / 2022 CONNECTICUT STATE BUILDING CODE |
| EXPOSURE CATEGORY: | B |
| RISK CATEGORY: | II |
| TOPO FACTOR PROCEDURE: | METHOD 1 |
| TOPOGRAPHIC CATEGORY: | 1 |
| CREST HEIGHT (H): | 0FT |
| SPECTRAL RESPONSE: | $S_S$=0.21, $S_1$=0.05 |
| SITE CLASS: | D-STIFF SOIL |

INFORMATION TAKEN FROM STRUCTURAL ANALYSIS COMPLETED BY ATC, DATED 5/27/21.

## UTILITY COMPANIES

POWER COMPANY: UNITED ILLUMINATING
PHONE: (800) 722-5584

TELEPHONE COMPANY: FRONTIER COMMUNICATIONS
PHONE: (800) 376-6843

811 Know what's below. Call before you dig.

## PROJECT SUMMARY

SITE ADDRESS:

23 STONYBROOK RD
STRATFORD, CT 06614
COUNTY: FAIRFIELD

GEOGRAPHIC COORDINATES:

LATITUDE: 41° 12' 12.070" N

LONGITUDE: 73° 8' 54.755" W

GROUND ELEVATION: 77' AMSL

## PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

VERIZON WIRELESS

ENGINEER:

ATC TOWER SERVICES LLC
1 FENTON MAIN, STE 300
CARY, NC 27511

PROPERTY OWNER:

JOHN D MIRANDA
23 STONYBROOK RD
STRATFORD, CT 06614

## PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:
REMOVE (3) SECTOR FRAMES, (9) ANTENNA(s), AND (12) 1-5/8" COAX CABLE(s) @ 77'
INSTALL (4) SECTOR FRAMES, MOUNT MODIFICATIONS, (10) ANTENNA(s), (8) RRH(s), (1) OVP(s), AND (2) 1-5/8" HYBRIFLEX CABLE(s) @ 127'

## PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

## PROJECT LOCATION DIRECTIONS

FROM DOWNTOWN NEW HAVEN START OUT GOING NORTHEAST ON CHURCH ST TOWARD WALL ST. CHURCH ST BECOMES WHITNEY AVE. TURN RIGHT ONTO TRUMBULL ST. TURN SLIGHT LEFT TO TAKE THE I-91 S/I-91 N RAMP. MERGE ONTO I-91 S TOWARD I-95/NEW LONDON/N.Y.CITY. MERGE ONTO I-95 S VIA THE EXIT ON THE LEFT TOWARD N Y CITY. TAKE EXIT 32 TOWARD W BROAD ST/STRATFORD. MERGE ONTO LINDEN AVE. TAKE THE 1ST RIGHT ONTO W BROAD ST. TAKE THE 1ST RIGHT ONTO W BROAD ST. TURN RIGHT ONTO BARNUM AVE/US-1 N. TAKE THE 2ND LEFT ONTO BROADBRIDGE AVE. TURN LEFT ONTO STONYBROOK RD.SITE IS ON THE LEFT.

## SHEET INDEX

| SHEET NO: | DESCRIPTION: | REV: | DATE: | BY: |
|---|---|---|---|---|
| G-001 | TITLE SHEET | 2 | 06/24/24 | VAR |
| G-002 | GENERAL NOTES | 0 | 06/17/24 | VAR |
| C-101 | DETAILED SITE PLAN | 2 | 06/24/24 | VAR |
| C-201 | TOWER ELEVATION | 2 | 06/24/24 | VAR |
| C-401 | ANTENNA INFORMATION & SCHEDULE | 2 | 06/24/24 | VAR |
| C-501 | CONSTRUCTION DETAILS | 0 | 06/17/24 | VAR |
| E-501 | GROUNDING DETAILS | 0 | 06/17/24 | VAR |
| | SUPPLEMENTAL SHEETS (3 PAGES) | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## CONTRACTOR PMI REQUIREMENTS

| | |
|---|---|
| PMI ACCESSED AT: | HTTPS://PMI.VZWSMART.COM |
| SMART TOOL VENDOR PROJECT NUMBER: | 10238330 |
| VZW LOCATION CODE (PSLC): | 5000382206 |

***PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

| | |
|---|---|
| MOUNT MODIFICATION REQUIRED: | YES |
| VZW APPROVED SMART KIT VENDORS: | REFER TO MOUNT MODIFICATION DRAWINGS PAGES FOR VZW SMART KIT APPROVED VENDORS |

AMERICAN TOWER®
ATC TOWER SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553



| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | FOR CONSTRUCTION | VAR | 06/17/24 |
| 1 | UPDATE AZ LABELS | AP | 06/20/24 |
| 2 | RAD CHANGE | VAR | 06/24/24 |
| | | | |
| | | | |

ATC SITE NUMBER:
283420
ATC SITE NAME:
STONEYBROOK RD CT
VERIZON SITE NAME:
STRATFORD W CT
SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:


verizon

| | |
|---|---|
| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

TITLE SHEET

| SHEET NUMBER: | REVISION: |
|---|---|
| G-001 | 2 |

## GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, VERIZON "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF VERIZON TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE VERIZON REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE VERIZON REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE VERIZON REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE VERIZON CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE VERIZON REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH VERIZON AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH VERIZON REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH VERIZON REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY VERIZON MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH VERIZON SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO VERIZON FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO VERIZON SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY VERIZON REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. WHEN THE PROJECT SCOPE REQUIRES THE USE OF THE SAFETY CLIMB, THE GENERAL CONTRACTOR SHALL ENSURE THE SAFETY CLIMB IS FREE OF OBSTRUCTIONS, NOT RUBBING ON OR TRAPPED BY ANY INSTALLED CUSTOMER EQUIPMENT, IS VISUALLY TAUT, MEETS MANUFACTURER INSTALLATION SPECIFICATIONS, AND IS FIRMLY SECURED AT ALL CABLE GUIDE LOCATIONS UPON PROJECT COMPLETION.
29. COMPLETION OF PROJECT SHALL NOT OBSTRUCT, TRAP, LOOSEN, OR OTHERWISE CAUSE FAILURE TO MEET MANUFACTURER INSTALLATION REQUIREMENTS FOR THE SAFETY CLIMB.
30. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
31. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
32. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE VERIZON REP. ANY WORK FOUND BY THE VERIZON REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
33. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
34. VERIZON FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE VERIZON WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
35. VERIZON OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO VERIZON OR THEIR ARCHITECT/ENGINEER.

## SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
   - A. ANTENNA AND COAXIAL/HYBRID CABLES ARE FURNISHED BY VERIZON UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
   - B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND VERIZON SPECIFICATIONS.
   - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
   - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
   - E. INSTALL COAXIAL/HYBRID CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL/HYBRID CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
2. ANTENNA AND COAXIAL/HYBRID CABLE GROUNDING:
   - A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
   - B. ALL COAXIAL/HYBRID CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL/HYBRID CABLE (NOT WITHIN BENDS)

**ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.**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ATC TOWER SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
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|---|---|---|---|
| 0 | FOR CONSTRUCTION | VAR | 06/17/24 |
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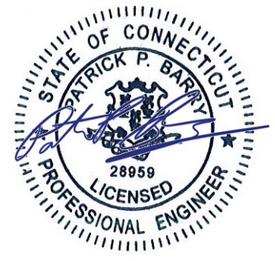
ATC SITE NUMBER:
283420
ATC SITE NAME:
STONEYBROOK RD CT
VERIZON SITE NAME:
STRATFORD W CT
SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:

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| | |
|---|---|
| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

GENERAL NOTES

| SHEET NUMBER: | REVISION: |
|---|---|
| G-002 | 0 |

SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

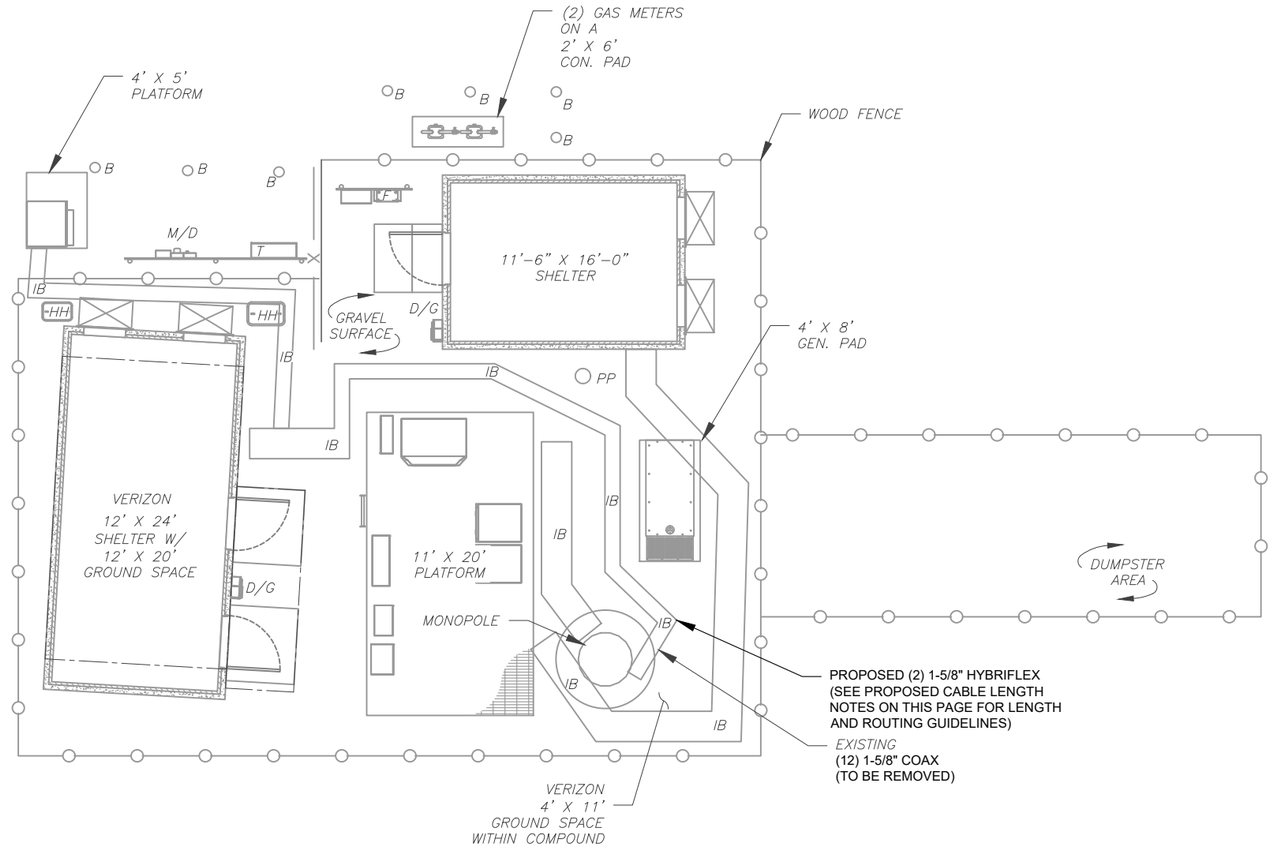
3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

LEGEND

| | |
|---|---|
| ⊗ | GROUNDING TEST WELL |
| ATS | AUTOMATIC TRANSFER SWITCH |
| B | BOLLARD |
| CSC | CELL SITE CABINET |
| D | DISCONNECT |
| E | ELECTRICAL |
| F | FIBER |
| GEN | GENERATOR |
| G | GENERATOR RECEPTACLE |
| HH, V | HAND HOLE, VAULT |
| IB | ICE BRIDGE |
| K | KENTROX BOX |
| LC | LIGHTING CONTROL |
| M | METER |
| PB | PULL BOX |
| PP | POWER POLE |
| T | TELCO |
| TRN | TRANSFORMER |
| ——— | CHAINLINK FENCE |

**PROPOSED CABLE NOTES:**

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **173'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.




1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

( IN FEET )
1 UNIT = 10 FEET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| 0 | FOR CONSTRUCTION | VAR | 06/17/24 |
| 2 | RAD CHANGE | VAR | 06/24/24 |
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| | | | |

ATC SITE NUMBER:
283420

ATC SITE NAME:
STONEYBROOK RD CT

VERIZON SITE NAME:
STRATFORD W CT

SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:


Digitally Signed: 2024-06-28

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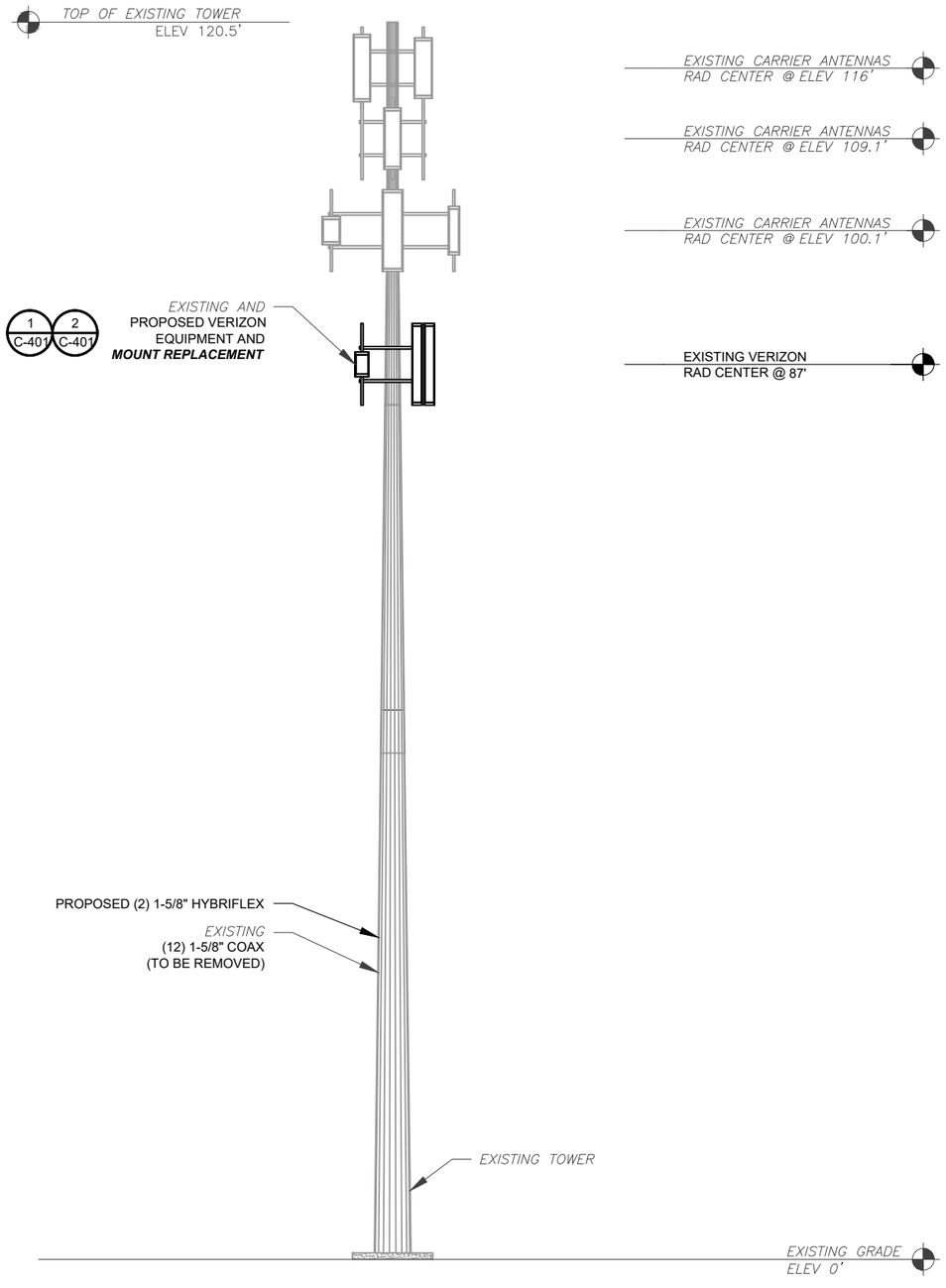
| | |
|---|---|
| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

DETAILED SITE PLAN

| SHEET NUMBER: | REVISION: |
|---|---|
| C-101 | 2 |

PER MOUNT ANALYSIS COMPLETED BY NB+C, DATED 06/12/24, THE PROPOSED MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.




1 TOWER ELEVATION
SCALE: N.T.S.

**ALL ELEVATIONS REFLECT ABOVE GROUND LEVEL (A.G.L.)**

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
4. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.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| 0 | FOR CONSTRUCTION | VAR | 06/17/24 |
| 2 | RAD CHANGE | VAR | 06/24/24 |
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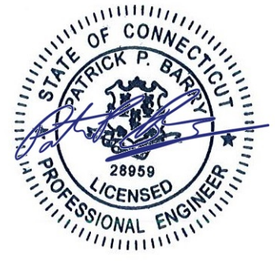
283420

ATC SITE NAME:
STONEYBROOK RD CT

VERIZON SITE NAME:
STRATFORD W CT

SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:

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| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

TOWER ELEVATION

| SHEET NUMBER: | REVISION: |
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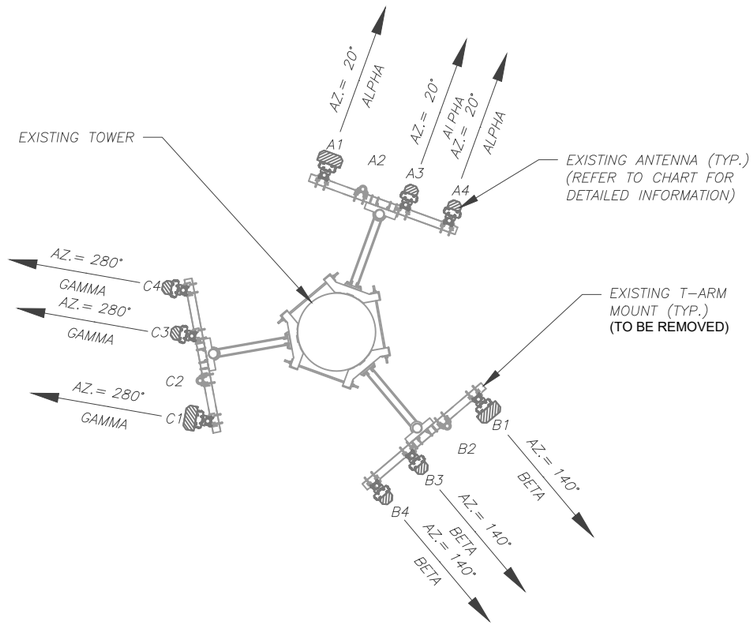
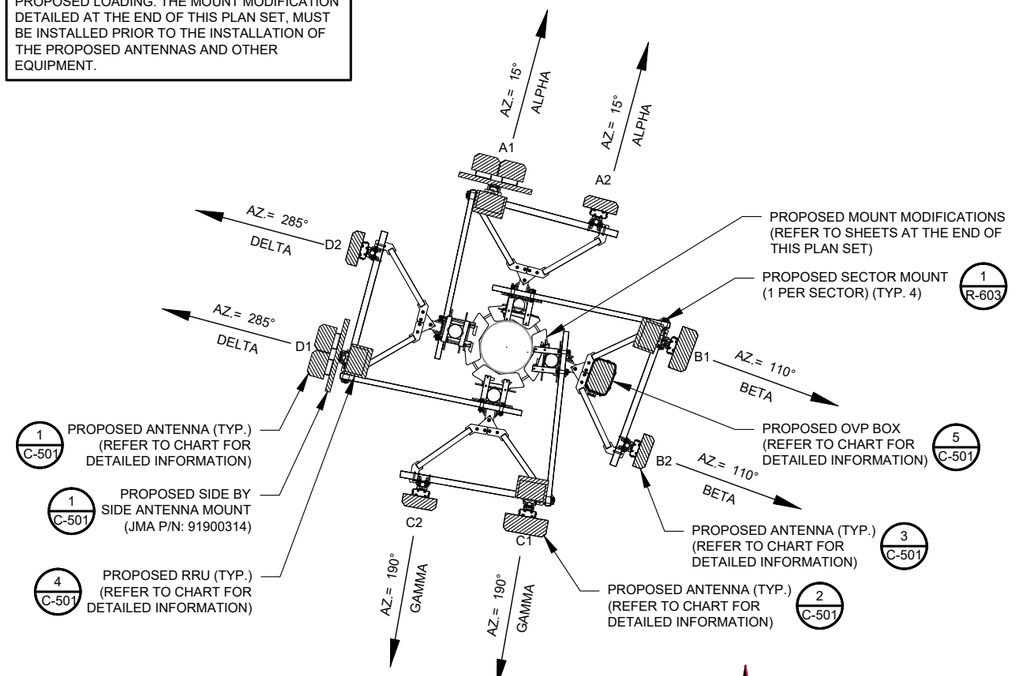
| C-201 | 2 |




1 EXISTING ANTENNA PLAN @ 77'

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY NB+C, DATED 06/12/24, THE PROPOSED MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.




2 FINAL ANTENNA PLAN @ 87'

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

| LOCATION | | | ANTENNA SUMMARY | | | | NON ANTENNA SUMMARY | |
|---|---|---|---|---|---|---|---|---|
| SECTOR | RAD | AZ | POS | ANTENNA | BAND | STATUS | ADDITIONAL TOWER MOUNTED EQUIPMENT | STATUS |
| ALPHA | 77' | 20° | A1 | BXA-70063-6CF-6 | 700 LTE | RMV | - | - |
| | | | A2 | - | - | - | - | - |
| | | | A3 | BXA-171063-12CF | AWS LTE | RMV | - | - |
| | | | A4 | BXA-171063-12CF | AWS LTE | RMV | - | - |
| BETA | 77' | 140° | B1 | BXA-70063-6CF-6 | 700 LTE | RMV | - | - |
| | | | B2 | - | - | - | - | - |
| | | | B3 | BXA-171063-12CF | AWS LTE | RMV | - | - |
| | | | B4 | BXA-171063-12CF | AWS LTE | RMV | - | - |
| GAMMA | 77' | 280° | C1 | BXA-70063-6CF-6 | 700 LTE | RMV | - | - |
| | | | C2 | - | - | - | - | - |
| | | | C3 | BXA-171063-12CF | AWS LTE | RMV | - | - |
| | | | C4 | BXA-171063-12CF | AWS LTE | RMV | - | - |

NOTES

1. GC TO VERIFY THE FINAL RFDS MATCHES THE FINAL CONSTRUCTION DRAWINGS. GC TO NOTIFY ATC PM OF ANY DISCREPANCY PRIOR TO INSTALLING THE EQUIPMENT.
2. GC TO CAP ALL UNUSED PORTS.
3. GC TO CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE

| LOCATION | | | ANTENNA SUMMARY | | | | NON ANTENNA SUMMARY | |
|---|---|---|---|---|---|---|---|---|
| SECTOR | RAD | AZ | POS | ANTENNA | BAND | STATUS | ADDITIONAL TOWER MOUNTED EQUIPMENT | STATUS |
| ALPHA | 87' | 15° | A1 | (2) MX06FHG865-HG | 700/ 850/ 1900/ AWS LTE/ 850 5G | ADD | RF4439D-25A<br>RF4461D-13A | ADD<br>ADD |
| | | | A2 | MT6413-77A | L-SUB6 5G | ADD | - | - |
| BETA | 87' | 110° | B1 | MX12FRO645-01 | 700/ 850/ 1900/ AWS LTE/ 850 5G | ADD | RF4439D-25A<br>RF4461D-13A | ADD<br>ADD |
| | | | B2 | MT6413-77A | L-SUB6 5G | ADD | - | - |
| GAMMA | 87' | 190° | C1 | MX12FRO645-01 | 700/ 850/ 1900/ AWS LTE/ 850 5G | ADD | RF4439D-25A<br>RF4461D-13A | ADD<br>ADD |
| | | | C2 | MT6413-77A | L-SUB6 5G | ADD | - | - |
| DELTA | 87' | 285° | D1 | (2) MX06FHG665-HG | 700/ 850/ 1900/ AWS LTE/ 850 5G | ADD | RF4439D-25A<br>RF4461D-13A | ADD<br>ADD |
| | | | D2 | MT6413-77A | L-SUB6 5G | ADD | - | - |

| EXISTING FIBER DISTRIBUTION / OVP BOX | | EXISTING CABLING SUMMARY | |
|---|---|---|---|
| MODEL NUMBER | STATUS | CABLE QTY, SIZE, TYPE | STATUS |
| - | - | ---- | - |
| - | - | (12) 1-5/8" COAX | RMV |

| FINAL FIBER DISTRIBUTION / OVP BOX | | FINAL CABLING SUMMARY | |
|---|---|---|---|
| MODEL NUMBER | STATUS | CABLE QTY, SIZE, TYPE | STATUS |
| - | - | ---- | - |
| (1) RCMDC-6627-PF-48 | ADD | (2) 1-5/8" HYBRIFLEX | ADD |

3 EQUIPMENT SCHEDULES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|---|---|---|---|
| 0 | FOR CONSTRUCTION | VAR | 06/17/24 |
| 1 | UPDATE AZ LABELS | AP | 06/20/24 |
| 2 | RAD CHANGE | VAR | 06/24/24 |
| | | | |
| | | | |

ATC SITE NUMBER:
283420

ATC SITE NAME:
STONEYBROOK RD CT

VERIZON SITE NAME:
STRATFORD W CT

SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:


Digitally Signed: 2024-06-28

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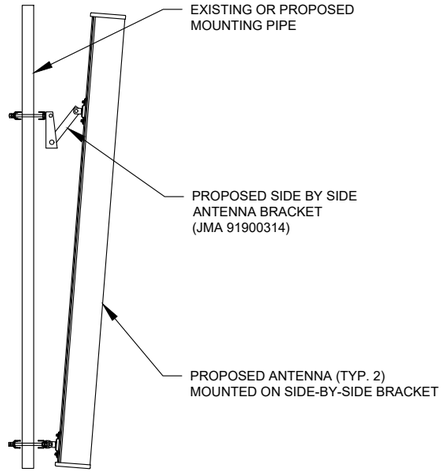
| | |
|---|---|
| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

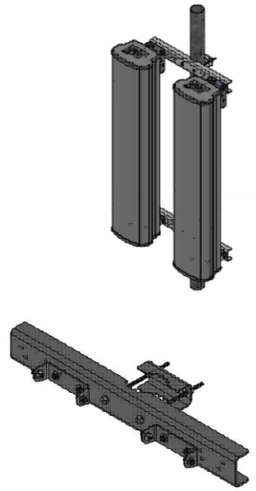
ANTENNA INFORMATION & SCHEDULE

| SHEET NUMBER: | REVISION: |
|---|---|
| C-401 | 2 |

EXISTING/PROPOSED MOUNTS AND/OR MOUNT MODIFICATIONS NOT SHOWN FOR CLARITY. REFER TO ANTENNA PLANS, MOUNT ANALYSES AND/OR MOUNT MODIFICATION DOCUMENTS FOR ADDITIONAL DETAIL.



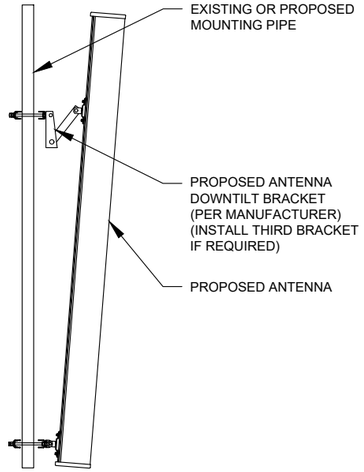

PROFILE VIEW



ISOMETRIC VIEW (BY MANUFACTURER)

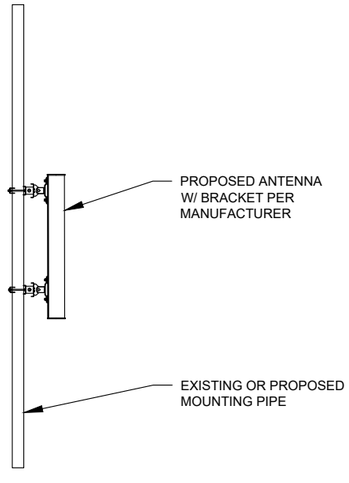
## 1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



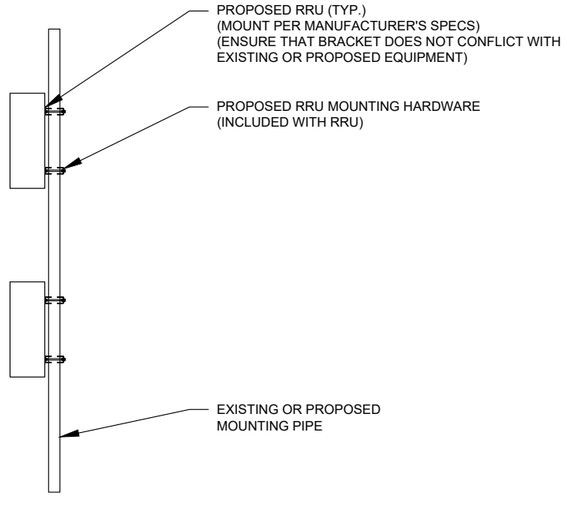

## 2 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



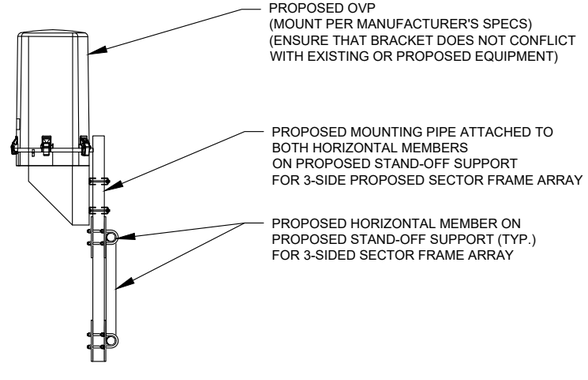

## 3 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.




## 4 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.




## 5 PROPOSED OVP MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.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SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:

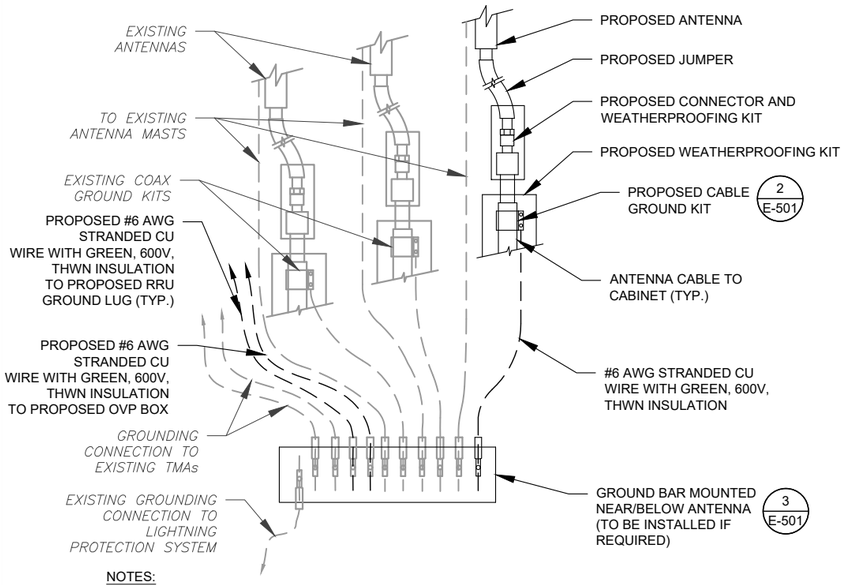

Digitally Signed: 2024-06-28

verizon

| | |
|---|---|
| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

CONSTRUCTION DETAILS

| SHEET NUMBER: | REVISION: |
|---|---|
| C-501 | 0 |

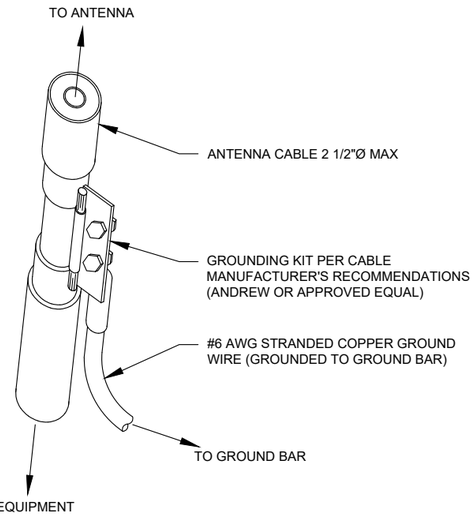



NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH VERIZON GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH VERIZON GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

## 1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

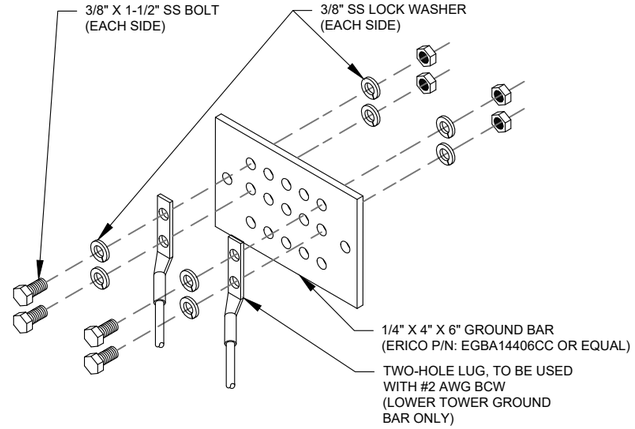



GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

## 2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.




GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

## 3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

AMERICAN TOWER®
ATC TOWER SERVICES LLC
1 FENTON MAIN
SUITE 300
CARY, NC 27511
PHONE: (919) 468-0112
PEC.0001553



| REV. | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 0 | FOR CONSTRUCTION | VAR | 06/17/24 |
| | | | |
| | | | |
| | | | |
| | | | |

ATC SITE NUMBER:
283420

ATC SITE NAME:
STONEYBROOK RD CT

VERIZON SITE NAME:
STRATFORD W CT

SITE ADDRESS:
23 STONYBROOK RD
STRATFORD, CT 06614

SEAL:


Digitally Signed: 2024-06-28

verizon

| | |
|---|---|
| ATC JOB NO: | 14764246_G0 |
| CUSTOMER ID: | STRATFORD W CT |
| CUSTOMER #: | 5000382206 |

GROUNDING DETAILS

| SHEET NUMBER: | REVISION: |
|---|---|
| E-501 | 0 |

Colliers Engineering & Design, Architecture,
Landscape Architecture, Surveying, CT P.C.
1055 Washington Boulevard
Stamford, CT 06901
203.324.0800
peter.albano@collierseng.com

# New/Replacement Antenna Mount Analysis Report and PMI Requirements

Mount ReAnalysis-VZW

SMART Tool Project #: 10222637
Colliers Engineering & Design Project #: 21777586

February 23, 2024

***Site Information***

| | |
|---|---|
| *Site ID:* | *5000382206-VZW / STRATFORD W CT* |
| *Site Name:* | *STRATFORD W CT* |
| *Carrier Name:* | *Verizon Wireless* |
| *Address:* | *23 Stonybrook Road*<br>*Stratford, Connecticut 06614*<br>*Fairfield County* |
| *Latitude:* | *41.20327778°* |
| *Longitude:* | *-73.148625°* |

***Structure Information***

| | |
|---|---|
| *Tower Type:* | *Monopole* |
| *Mount Type:* | *6.50-Ft Sector Frame* |

**FUZE ID # 16231921**

## Analysis Results

Sector Frame: **40.0% Pass w/ Mount Replacement***
(4) Site Pro 1: VFA6-HD)

***Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.**

******Contractor PMI Requirements*:**
***Included at the end of this MA report***
***Available & Submitted via portal at https://pmi.vzwsmart.com***
***For additional questions and support, please reach out to:***
***pmisupport@colliersengineering.com***

Report Prepared By: Cody Sherman

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED PROFESSIONAL ENGINEER
02/23/2024

1 MOUNT ANALYSIS



## Requirements:

The proposed antenna mounts are **SUFFICIENT** for the final loading configuration (attachment 2) upon completion of the mount replacement (attachment 3) and requirements below.

Contractor shall verify existing monopole diameter to be 17". **Escalate any discrepancies to EOR immediately as it may render the results of this analysis invalid and require additional modifications**.

Contractor shall install the proposed Site Pro 1 VFA6-HD mounts on (2) new Site Pro 1 UQB4 Universal Quad Ring Brackets with (4) new 72" long PIPE 3 SCH40 mast pipes and (4) new Site Pro 1 FMA2 Flush Mount Adapter Kits in accordance with manufacturer specifications and the Mount Replacement Sketch. Contact EOR if these documents are not available.

Contractor shall install (2) 96" long PIPE 2 SCH40 mount pipes per mount. Refer to placement diagrams and Mount Replacement Sketch. Contact EOR if these documents are not available.

Attach tiebacks to the adjacent sectors 72" long PIPE 3 SCH 40 mast pipes. Proposed tieback shall extend no more than 12" beyond the plane of the mast pipe. Contractor shall trim as required and protect cut end with two (2) coats of cold galvanization (Zinga or Zinc Kote).

Contractor shall install the OVP on a new 72" long PIPE 2 SCH 40 pipe connected to the welded tabs of the Alpha sector standoff.

Contractor shall inspect climbing facilities and safety climb and ensure they are in good condition. Contractor shall install safety climb wire rope guides in locations where wire rope is rubbing against the mount or mount-to-tower connection steel. Wire brush clean any observed corrosion and protect with two (2) coats of cold galvanization (Zinga or Zinc Kote). Contractor shall provide photos of wire rope guide installation as part of PMI documents. Contact EOR if additional guidance is required.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

## Attachments:

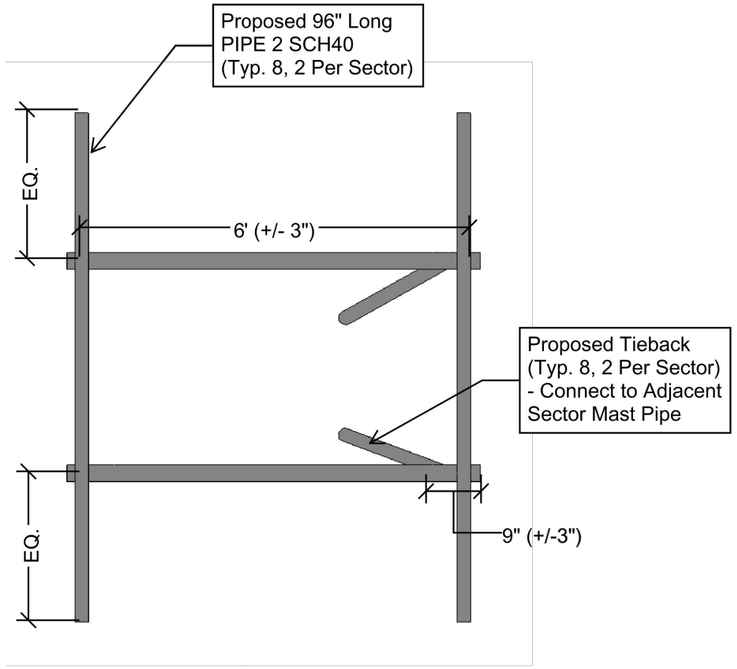
1. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Manufacturer Drawings
4. Existing Mount Photos
5. Analysis Calculations

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONTRUCTION.

SUPPLEMENTAL

| SHEET NUMBER: | REVISION: |
|---|---|
| R-601 | 0 |

## MOUNT REPLACEMENT SKETCH

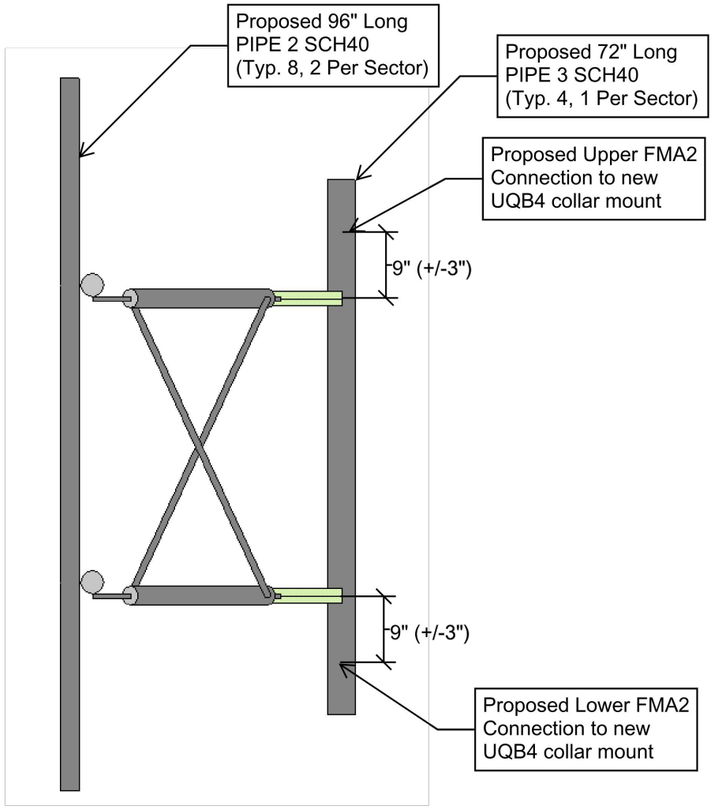



**TOWER GEOMETRY VERIFICATION**

MONOPOLE DIAMETER: 17"

**MOUNT FRONT ELEVATION VIEW (TYP. ALL SECTORS)**
*N.T.S.*

## MOUNT GEOMETRY VERIFICATION




**MOUNT SIDE ELEVATION VIEW (TYP. ALL SECTORS)**
*N.T.S.*

1 MOUNT MODIFICATIONS

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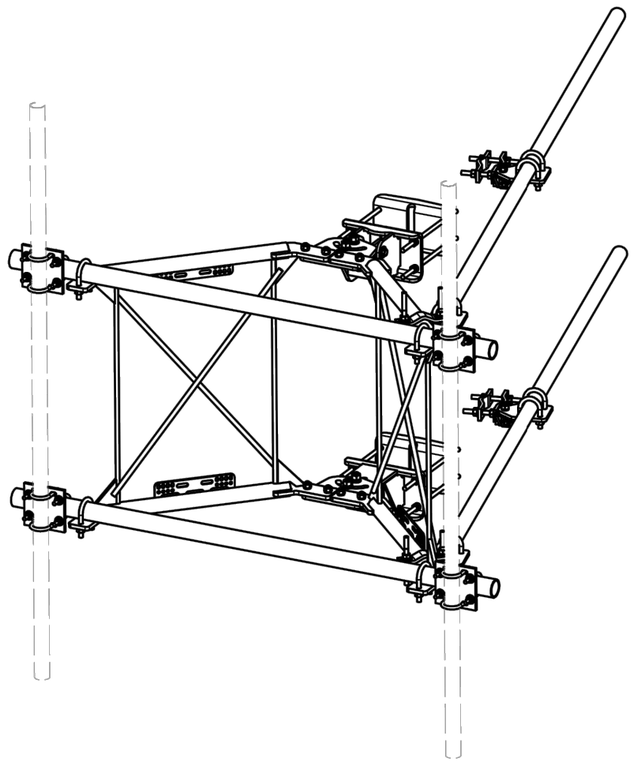
SUPPLEMENTAL

| SHEET NUMBER: | REVISION: |
|---|---|
| R-602 | 0 |



| PARTS LIST | | | | | | |
|---|---|---|---|---|---|---|
| ITEM | QTY | PART NO. | PART DESCRIPTION | LENGTH | UNIT WT. | NET WT. |
| 1 | 2 | X-VFAW | SUPPORT ARM | | 71.41 | 142.81 |
| 2 | 1 | X-HDCAMTBW | CLAMP WELDMENT FOR BCAM-HD | | 33.86 | 33.86 |
| 3 | 1 | X-MHTPHD | MULTI-HOLE TAPER PLATE WELDMENT | | 36.24 | 36.24 |
| 4 | 2 | X-VFAPL4 | VFA-HD PIVOT PLATE | 12 in | 15.88 | 31.77 |
| 5 | 2 | X-LCBP4 | BENT BACKING PLATE | 13 in | 19.00 | 38.01 |
| 6 | 1 | X-HDCAMSS | ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD | | 16.39 | 16.39 |
| 7 | 4 | X-SPTB | SLIDING PIPE TIE BACK PLATE | 5 1/2 in | 5.87 | 23.49 |
| 8 | 1 | X-HDCAMSP | POSITIONING PLATE WELDMENT FOR BCAM-HD | | 2.58 | 2.58 |
| 9 | 4 | X-TBCA | TIE BACK CLIP ANGLE | | 2.01 | 8.02 |
| 10 | 4 | SCX2 | CROSSOVER PLATE | 7 in | 4.80 | 19.19 |
| 11 | 4 | MCP | CLAMP HALF 1/2" THICK, 11-5/8" LONG | 12 1/16 in | 3.59 | 14.37 |
| 12 | 8 | DCP | 1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF | 8 1/8 in | 2.36 | 18.90 |
| 13 | 2 | P3084 | 2-7/8" X 84" (2 1/2" SCH. 40) GALVANIZED PIPE | 84 in | 40.65 | 81.29 |
| 14 | 2 | P2126 | 2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE | 126 in | 40.75 | 81.50 |
| 15 | 4 | A34212 | 3/4" x 2-1/2" UNC HEX BOLT (A325) | 2 1/2 in | 0.48 | 1.92 |
| 16 | 4 | G34FW | 3/4" HDG USS FLATWASHER | | 0.06 | 0.24 |
| 17 | 4 | G34LW | 3/4" HDG LOCKWASHER | | 0.04 | 0.17 |
| 18 | 4 | G34NUT | 3/4" HDG HEAVY 2H HEX NUT | | 0.21 | 0.85 |
| 19 | 8 | G58R-18 | 5/8" x 18" THREADED ROD (HDG.) | | 1.57 | 12.54 |
| 20 | 4 | G58R-12 | 5/8" x 12" THREADED ROD (HDG.) | | 1.05 | 4.18 |
| 21 | 8 | G58R-8 | 5/8" x 8" THREADED ROD (HDG.) | | 0.70 | 5.58 |
| 22 | 4 | X-UB5300 | 5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.) | | 1.15 | 4.60 |
| 23 | 8 | X-UB5258 | 5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.) | | 1.00 | 8.00 |
| 24 | 2 | G5807 | 5/8" x 7" HDG HEX BOLT GR5 FULL THREAD | 7 in | 0.70 | 1.41 |
| 25 | 1 | G5806 | 5/8" x 6" HDG HEX BOLT GR5 FULL THREAD | 6 in | 0.62 | 0.62 |
| 26 | 4 | G5802 | 5/8" x 2" HDG HEX BOLT GR5 | | 0.27 | 1.08 |
| 27 | 8 | A582114 | 5/8" x 2-1/4" HDG A325 HEX BOLT | 2 1/4 in | 0.31 | 2.50 |
| 28 | 8 | G5804 | 5/8" x 4" HDG HEX BOLT GR5 | | 0.44 | 3.55 |
| 29 | 25 | G58FW | 5/8" HDG USS FLATWASHER | 1/8 in | 0.07 | 1.76 |
| 30 | 70 | G58LW | 5/8" HDG LOCKWASHER | | 0.03 | 1.83 |
| 31 | 75 | G58NUT | 5/8" HDG HEAVY 2H HEX NUT | | 0.13 | 9.74 |
| 32 | 16 | X-UB1300 | 1/2" X 3" X 5" X 2" GALV U-BOLT | | 0.74 | 11.82 |
| 33 | 8 | X-UB1212 | 1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.) | | 0.60 | 4.78 |
| 34 | 32 | G12FW | 1/2" HDG USS FLATWASHER | 3/32 in | 0.03 | 1.09 |
| 35 | 32 | G12LW | 1/2" HDG LOCKWASHER | 1/8 in | 0.01 | 0.44 |
| 36 | 32 | G12NUT | 1/2" HDG HEAVY 2H HEX NUT | | 0.07 | 2.29 |
| | | | | | TOTAL WT. # | 629.28 |

| REV | DESCRIPTION OF REVISIONS | CPD | BY | DATE |
|---|---|---|---|---|
| | REVISION HISTORY | | | |
| D | UPDATED BCAM VERSION 1 TO BCAM VERSION 2 | | CEK | 6/29/2018 |
| C | UPDATED PIN LEG CONNECTION TO BCAM CONNECTION | | CEK | 12/13/2017 |
| B | CHANGED TIE-BACK BACK CONNECTION | | CEK | 7/26/2017 |
| A | CHANGED TIE-BACK FRONT CONNECTION | | CEK | 2/2/2017 |

**TOLERANCE NOTES**

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*



DESCRIPTION
6' HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

| CPD NO. | DRAWN BY | ENG. APPROVAL | PART NO. |
|---|---|---|---|
| | CEK 1/25/2017 | | VFA6-HD |
| CLASS 81 / SUB 02 | DRAWING USAGE: CUSTOMER | CHECKED BY: BMC 12/13/2017 | DWG. NO.: VFA6-HD |

PAGE 1 OF 5

SITE PRO 1 — a valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

1 MOUNT SPECIFICATIONS

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER: R-603

REVISION: 0

CENTERLINE

# EXHIBIT E

## Power Density/RF Emissions Report

RF Design and Services
326 Tyron Road
Raliegh, North Carolina 27603
(612)965-8225
WWW.TEPGROUP.NET

# Non-Ionizing Electromagnetic Radiation (NIER) Study

*Site Number:*
283420

*Site Name:*
Stoneybrook Rd CT

*Location:*
Stratford, Connecticut

*Tenants:*
AT&T Mobility, T-Mobile, Dish Wireless, & Verizon Wireless

*Prepared For:*

American Tower, Inc.
Woburn, Massachusetts

July 8th, 2024

66389 P-423301

Prepared By:

Adam Carlson MS, CBRE, CPI
Program Manager RF Design & Service
Tower Engineering Professionals

Approved By:

RF Design and Services
326 Tyron Road
Raliegh, North Carolina 27603
(612)965-8225
WWW.TEPGROUP.NET

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SITE AND FACILITY CONSIDERATIONS ..... 4
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SITE MITIGATION & CONTROL ..... 5
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RF Design and Services
326 Tyron Road
Raliegh, North Carolina 27603
(612)965-8225
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# Non-Ionizing Electromagnetic Radiation (NIER) Study

283420 Stoneybrook Rd CT
Stratford, Connecticut

## INTRODUCTION

Tower Engineering Professionals RF Design & Services Division (TEP-RF) of Raleigh, North Carolina, has been retained by American Tower, Inc. (ATC), of Woburn, Massachusetts to evaluate the RF emissions compared to the Maximum Permissible Exposure (MPE) limit for facilities at this location. This evaluation uses compliance standards as outlined in Federal Communications Commission (FCC) document OET-65.

## SITE AND FACILITY CONSIDERATIONS

Site 283420 Stoneybrook Rd CT is located at 23 Stoneybrook Rd., in Stratford, Connecticut at coordinates 41.203353, -73.148543. The support structure is a 120' monopole. An aerial view of the tower can be found in Appendix 1, Site Photos. The tenants are AT&T Mobility (AT&T), T-Mobile (TMO) Dish Wireless (Dish), & Verizon Wireless (VZW). A table listing all antennae and effective radiated power (ERP) levels that were used in this study may be found in Appendix 2, Antenna Inventory.

## POWER DENSITY CALCULATIONS

Power densities were calculated based on FCC MPE limits for both General Population/Uncontrolled and Occupational/Controlled environments.

For the purpose of this study, a radius of 100' from the base of the tower with a height of 6' above ground level was used, beyond 100' the MPE levels become *di minimus*. This study utilized FCC recognized and accepted software programs using the maximum ERP levels for the antenna models provided by ATC. Diagrams depicting the predicted spatial average power density level at any specific location may be found in Appendix 3, MPE Limit Study. A discussion regarding the FCC limits may be found in Appendix 4, Information Pertaining to MPE Studies. Study methodology describing Non-ionizing Radiation Prediction Models used in this study may be found in Appendix 5, MPE Standards Methodology.

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All data used in this study was collected from one or more of the following sources:

- ATC furnished data and does not include other unidentified communication facilities.
- Load List at 283420 Stoneybrook Rd CT.RF NIER Study 06/26/2024.
- FCC databases.
- Carrier standard configurations.
- Empirical data collected by TEP.

## SITE MITIGATION & CONTROL

In order to comply with FCC, tenant, & ATC requirements, TEP recommends the placement of signage at the following points:

*Site Entrance*

1. Site ID Sign (tower owner defined)
2. RF Information Sign (Green)

*Tower Access Point*

1. RF Exposure Sign (Red)

## COMPLIANCE DETERMINATION

This installation ***WILL BE*** in compliance with current FCC MPE limits as described in FCC OET-65.

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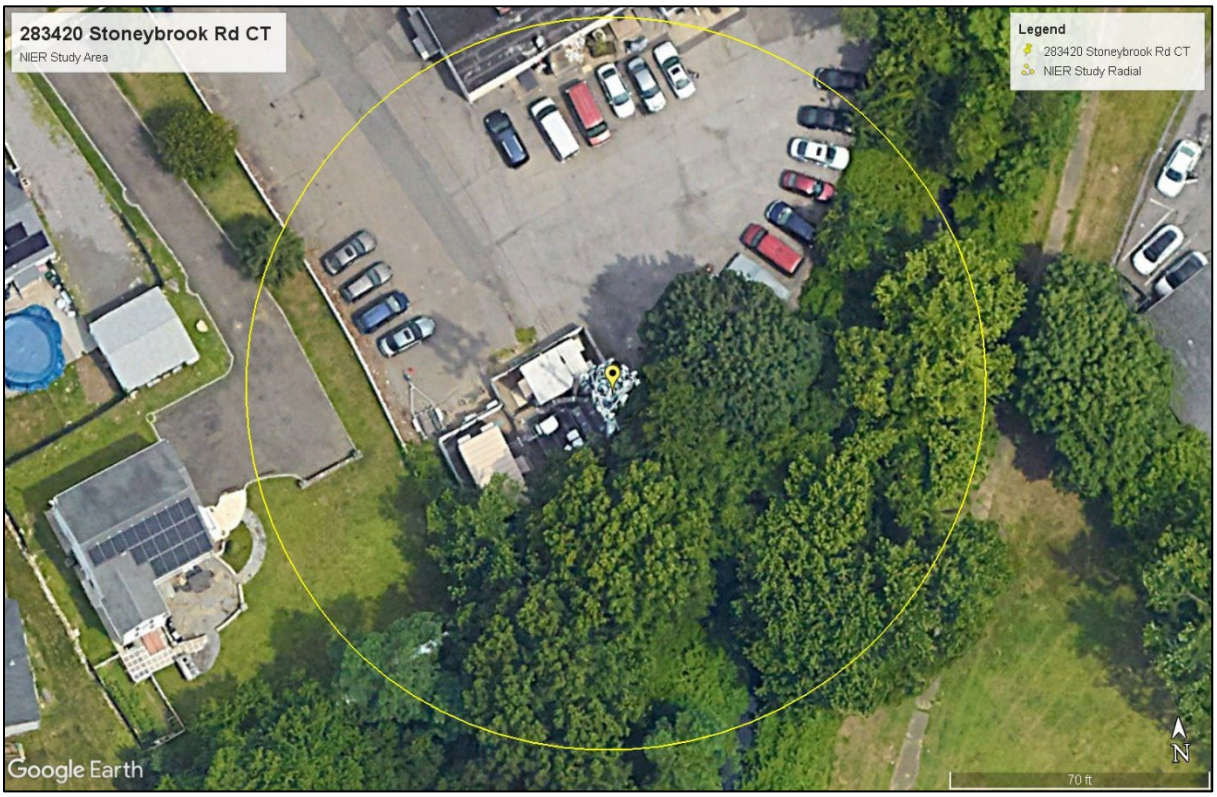
# Appendix 1 Site Photos




Aerial View of Site

RF Design and Services
326 Tyron Road
Raliegh, North Carolina 27603
(612)965-8225
WWW.TEPGROUP.NET

# Appendix 2.1 Antenna Inventory

| 283420 Stoneybrook Rd CT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Antenna Inventory | | | | | | | |
| Antenna # | Carrier | Antenna Manufacturer | Antenna Model | Frequency Band (MHz) | Azmiuth (°) | Effective Radiated Power (W) | Radiation Center (ft) |
| 1 | AT&T | Ericsson | 6449 | 3700-3900 | 030 | 71639.00 | 119.0 |
| 2 | AT&T | Ericsson | 6449 | 3700-3900 | 140 | 71639.00 | 119.0 |
| 3 | AT&T | Ericsson | 6449 | 3700-3900 | 270 | 71639.00 | 119.0 |
| 4 | AT&T | Ericsson | 6449 | 3700-3900 | 030 | 71639.00 | 119.0 |
| 5 | AT&T | Ericsson | 6449 | 3700-3900 | 140 | 71639.00 | 119.0 |
| 6 | AT&T | Ericsson | 6449 | 3700-3900 | 270 | 71639.00 | 119.0 |
| 7 | AT&T | CCI | DMP65R-BU8D | 700/800/2300 | 030 | 36002.00 | 117.0 |
| 8 | AT&T | CCI | DMP65R-BU8D | 700/800/2300 | 140 | 36002.00 | 117.0 |
| 9 | AT&T | CCI | DMP65R-BU8D | 700/800/2300 | 270 | 36002.00 | 117.0 |
| 10 | AT&T | CCI | TPA-65R-BU6DA | 700/1900/2100 | 030 | 23075.00 | 117.0 |
| 11 | AT&T | CCI | TPA-65R-BU6DA | 700/1900/2100 | 140 | 23075.00 | 117.0 |
| 12 | AT&T | CCI | TPA-65R-BU6DA | 700/1900/2100 | 270 | 23075.00 | 117.0 |
| 13 | AT&T | Quintel | QD8616-7 | 700/1900/2100 | 010 | 42370.00 | 117.0 |
| 14 | AT&T | Quintel | QD8616-7 | 700/1900/2100 | 130 | 42370.00 | 117.0 |
| 15 | AT&T | Quintel | QD8616-7 | 700/1900/2100 | 270 | 42370.00 | 117.0 |
| 16 | AT&T | Scala | 80010965 | 700/800/2300 | 030 | 36002.00 | 117.0 |
| 17 | AT&T | Scala | 80010965 | 700/800/2300 | 140 | 36002.00 | 117.0 |
| 18 | AT&T | Scala | 80010965 | 700/800/2300 | 270 | 36002.00 | 117.0 |
| 19 | AT&T | Ericsson | 6419 | 3700-3900 | 023 | 71639.00 | 115.0 |
| 20 | AT&T | Ericsson | 6419 | 3700-3900 | 143 | 71639.00 | 115.0 |
| 21 | AT&T | Ericsson | 6419 | 3700-3900 | 263 | 71639.00 | 115.0 |
| 22 | AT&T | Ericsson | 6419 | 3700-3900 | 023 | 71639.00 | 115.0 |
| 23 | AT&T | Ericsson | 6419 | 3700-3900 | 143 | 71639.00 | 115.0 |
| 24 | AT&T | Ericsson | 6419 | 3700-3900 | 263 | 71639.00 | 115.0 |

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(612)965-8225
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# Appendix 2.2 Antenna Inventory

| 283420 Stoneybrook Rd CT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Antenna Inventory | | | | | | | |
| Antenna # | Carrier | Antenna Manufacturer | Antenna Model | Frequency Band (MHz) | Azmiuth (°) | Effective Radiated Power (W) | Radiation Center (ft) |
| 25 | Dish | JMA | MX08FRO665-21 | 600/1900/2000/2100 | 000 | 40000.00 | 109.0 |
| 26 | Dish | JMA | MX08FRO665-21 | 600/1900/2000/2100 | 120 | 40000.00 | 109.0 |
| 27 | Dish | JMA | MX08FRO665-21 | 600/1900/2000/2100 | 240 | 40000.00 | 109.0 |
| 28 | Dish | JMA | MX08FRO665-21 | 600/1900/2000/2100 | 154 | 40000.00 | 107.0 |
| 29 | Dish | JMA | MX08FRO665-21 | 600/1900/2000/2100 | 050 | 40000.00 | 107.0 |
| 30 | Dish | JMA | MX08FRO665-21 | 600/1900/2000/2100 | 252 | 40000.00 | 107.0 |
| 31 | TMO | Ericsson | Air 32 | 1900/2100 | 135 | 8614.12 | 101.2 |
| 32 | TMO | Ericsson | Air 32 | 1900/2100 | 249 | 8614.12 | 101.2 |
| 33 | TMO | Ericsson | Air6419 B41 | 2500 | 030 | 14356.00 | 97.0 |
| 34 | TMO | Ericsson | Air6419 B41 | 2500 | 150 | 14356.00 | 97.0 |
| 35 | TMO | Ericsson | Air6419 B41 | 2500 | 270 | 14356.00 | 97.0 |
| 36 | TMO | RFS | APXVAARR24 | 600/700 | 030 | 10543.00 | 97.0 |
| 37 | TMO | RFS | APXVAARR24 | 600/700 | 150 | 10543.00 | 97.0 |
| 38 | TMO | RFS | APXVAARR24 | 600/700 | 270 | 10543.00 | 97.0 |
| 39 | TMO | Ericsson | Air 32 | 1900/2100 | 030 | 8614.12 | 97.0 |
| 40 | TMO | Ericsson | Air 32 | 1900/2100 | 150 | 8614.12 | 97.0 |
| 41 | TMO | Ericsson | Air 32 | 1900/2100 | 270 | 8614.12 | 97.0 |
| 42 | VZW | Samsung | MT6413-77A | 3700-3900 | 015 | 18286.00 | 87.0 |
| 43 | VZW | Samsung | MT6413-77A | 3700-3900 | 110 | 18286.00 | 87.0 |
| 44 | VZW | Samsung | MT6413-77A | 3700-3900 | 190 | 18286.00 | 87.0 |
| 45 | VZW | Samsung | MT6413-77A | 3700-3900 | 285 | 18286.00 | 87.0 |
| 46 | VZW | JMA | MX12FRO645-01 | 700/800/1900/2100 | 110 | 39355.00 | 87.0 |
| 47 | VZW | JMA | MX12FRO645-01 | 700/800/1900/2100 | 190 | 39355.00 | 87.0 |
| 48 | VZW | JMA | MX06FHG665-HG | 700/800/1900/2100 | 285 | 63392.00 | 87.0 |
| 49 | VZW | JMA | MX06FHG665-HG | 700/800/1900/2100 | 285 | 63392.00 | 87.0 |
| 50 | VZW | JMA | MX06FHG865-HG | 700/800/1900/2100 | 015 | 63392.00 | 87.0 |
| 51 | VZW | JMA | MX06FHG865-HG | 700/800/1900/2100 | 015 | 63392.00 | 87.0 |

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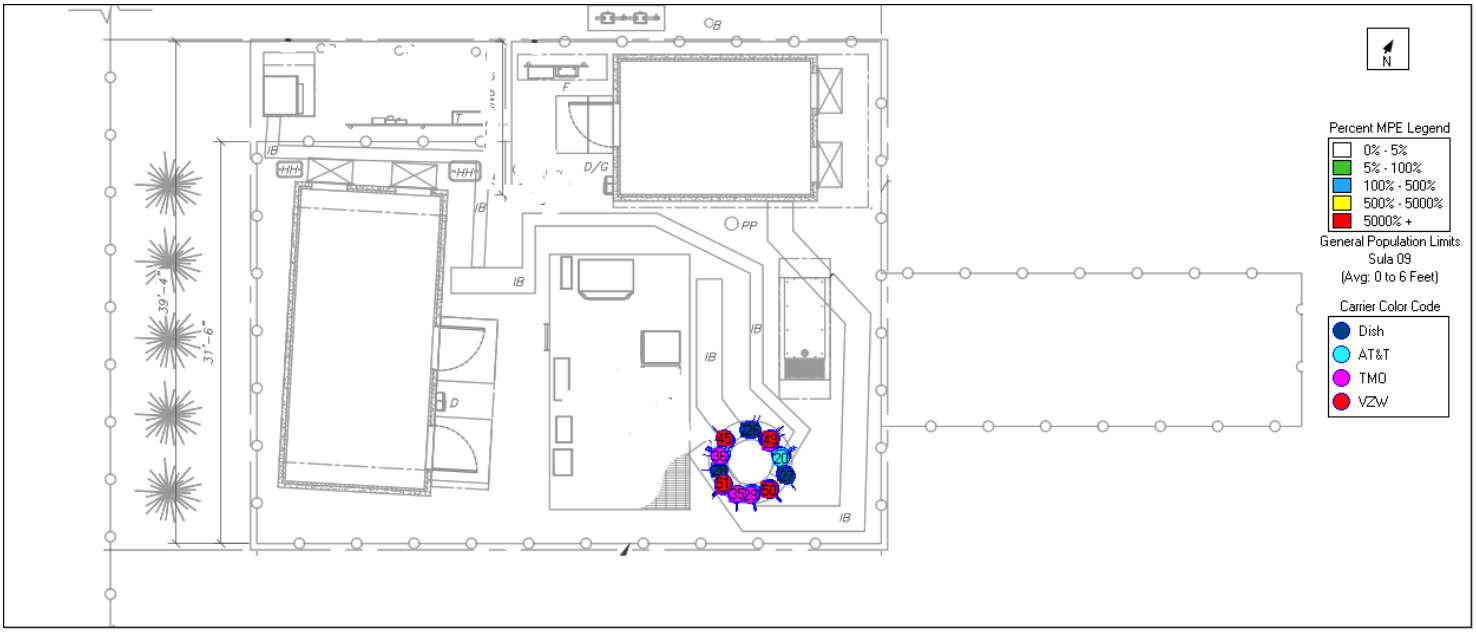
# Appendix 3 MPE Limit Study



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# Appendix 4 RF Hazard Signs

| RF Safety Exposure Categorization | | |
|---|---|---|
| **Exposure Conditions** | **Control Measures** | **Signage** |
| • Operational of the source(s) or locations where RF fields are too weak to cause exposures greater than General Public limit.<br>Cat. \| Occupational Worker \| General Public<br>1 \| <20% \| <100%<br>• Green zone is where the time and spatial-average is below 20% of Occupational Worker limit or <100% of General Public limit. | • RF Safety Guideline/NIER report must be submitted to RFSO for approval.<br>• No special EME safety practices required in these areas.<br>• No signage required except Information sign. |  <br>**the antenna owner information and Antenna Structure Registration Number and must be displayed on the sign.*<br>INFORMATION sign for access to rooftop/access door. |
| • Operational of the source(s) or locations where RF exposure could cause exposure greater than General Public limit but not the Occupational Worker limit to be exceeded in accessible areas.<br>Cat. \| Occupational Worker \| General<br>2 \| ≥20% but <100% \| >100%<br>• Blue zone is where the spatial average is between 20%-100% of Occupational Worker limit. This limit MUST be less than the Occupational limit. | • RF Safety Guideline/NIER report must be submitted to RFSO for approval.<br>• *Recommended* RF safety awareness training for all workers in this area.<br>• Controlled areas with barriers and/or signage required in these area.<br>• Do not walk in front of the antenna face or no loitering in this controlled area.<br>• Individual MUST have full control over any area where the exposure levels exceed the limit. |  <br>NOTICE signage shall be posted on the barriers/stanchion to prevent anyone from entering into the area (must be cordon off around the antennas - 4 posts /3 signs).<br>Or must be posted in location that can be easily viewed by individuals that enter the areas of concerns. |
| • Operational of the source(s) or locations where RF exposure exceeded the Occupational Worker limit in accessible areas.<br>Cat. \| Occupational Worker \| General Public<br>3 \| ≥100% \| ≥500%<br>• Yellow zone is where the spatial average is above 100% of Occupational Worker limit. | • RF Safety Guideline/NIER report must be submitted to RFSO for approval.<br>• Individual **shall not** enter and work in these areas without RS approval<br>• Required RF safety training and access area is restricted only for authorized worker.<br>• Controlled areas with barriers and signage required in these area.<br>• Do not walk in front of the antenna face.<br>• Require reduction of RF power and approval from Radiation Safety prior any work on the antennas. |  <br>CAUTION signage shall be posted on the barriers/stanchion to prevent anyone from entering into the area (must be cordon off around the antennas - 4 posts /3 signs). |
| • Exposure will exceed exposure limit in accessible areas.<br>Cat. \| Occupational Worker \| General Public<br>4 \| >500% \| >1000%<br>• Red zone is where the time and spatial-averaged levels fall above 500% of Occupational Worker limit or is not feasible to prevent exposures. | • RF Safety Guideline/NIER report must be submitted to RFSO for approval.<br>• MUST re-engineer site to reduce the EME fields.<br>• **No access allowed-Prohibited access!** There must be controls to detect any unauthorized enter and terminate the RF energy in the area.<br>• Lock out tag out of transmitters during the maintenance of the antenna system.<br>• PPE is not sufficient.<br>• Special RF training and PPE are required. (Applies only to individuals trained by RS). |  <br>  <br>RF WARNING & Pacemaker DANGER signage or appropriate DANGER sign shall be posted very near radiation RF sources or if appropriate DANGER sign. |

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# Appendix 5 Information Pertaining to MPE Studies

In 1985, the FCC first adopted guidelines to be used for evaluating human exposure to RF emissions. The FCC revised and updated these guidelines on August 1, 1996, as a result of a rule-making proceeding initiated in 1993. The new guidelines incorporate limits for Maximum Permissible Exposure (MPE) in terms of electric and magnetic field strength and power density for transmitters operating at frequencies between 300 kHz and 100 GHz.

The FCC's MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), and, over a wide range of frequencies, the exposure limits were developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC's limits, and the NCRP and ANSI/IEEE limits on which they are based, are derived from exposure criteria quantified in terms of specific absorption rate (SAR). The basis for these limits is a whole-body averaged SAR threshold level of 4 watts per kilogram (4 W/kg), as averaged over the entire mass of the body, above which expert organizations have determined that potentially hazardous exposures may occur. The MPE limits are derived by incorporating safety factors that lead, in some cases, to limits that are more conservative than the limits originally adopted by the FCC in 1985. Where more conservative limits exist, they do not arise from a fundamental change in the RF safety criteria for whole-body averaged SAR, but from a precautionary desire to protect subgroups of the general population who, potentially, may be more at risk.

The FCC exposure limits are also based on data showing that the human body absorbs RF energy at some frequencies more efficiently than at others. The most restrictive limits occur in the frequency range of 30-300 MHz where whole-body absorption of RF energy by human beings is most efficient. At other frequencies, whole-body absorption is less efficient, and consequently, the MPE limits are less restrictive.

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MPE limits are defined in terms of power density (units of milliwatts per centimeter squared: $mW/cm^2$), electric field strength (units of volts per meter: V/m) and magnetic field strength (units of amperes per meter: A/m). The far-field of a transmitting antenna is where the electric field vector (E), the magnetic field vector (H), and the direction of propagation can be considered to be all mutually orthogonal ("plane-wave" conditions).

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

**General population/uncontrolled exposure** limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area. Additional details can be found in FCC OET 65.

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# Appendix 6 MPE Standards Methodology

This study predicts RF field strength and power density levels that emanate from communications system antennae. It considers all transmitter power levels (less filter and line losses) delivered to each active transmitting antenna at the communications site. Calculations are performed to determine power density and MPE levels for each antenna as well as composite levels from all antennas. The calculated levels are based on where a human (Observer) would be standing at various locations at the site. The point of interest where the MPE level is predicted is based on the height of the Observer.

Compliance with the FCC limits on RF emissions are determined by spatially averaging a person's exposure over the projected area of an adult human body, that is approximately six-feet or two-meters, as defined in the ANSI/IEEE C95.1 standard. The MPE limits are specified as time-averaged exposure limits. This means that exposure is averaged over an identifiable time interval. It is 30 minutes for the general population/uncontrolled RF environment and 6 minutes for the occupational/controlled RF environment. However, in the case of the general public, time averaging should not be applied because the general public is typically not aware of RF exposure, and they do not have control of their exposure time. Therefore, it should be assumed that any RF exposure to the general public will be continuous.

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The FCC's limits for exposure at different frequencies are shown in the following Tables.

| Limits for Occupational/Controlled Exposure | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (E) (V/m)** | **Magnetic Field Strength (H) (A/m)** | **Power Density (S) ($mW/cm^2$)** | **Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)** |
| 0.3 - 3.0 | 614 | 1.63 | 100* | 6 |
| 3.0 - 30 | 1842/f | 4.89/f | $900/F^2$ | 6 |
| 30 - 300 | 61.4 | 0.163 | 1.0 | 6 |
| 300 - 1500 | -- | -- | f/300 | 6 |
| 1500 - 100,000 | -- | -- | 5 | 6 |

f = frequency

* = Plane-wave equivalent power density

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Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

| Limits for General Population/Uncontrolled Exposure | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (E) (V/m)** | **Magnetic Field Strength (H) (A/m)** | **Power Density (S) ($mW/cm^2$)** | **Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)** |
| 0.3 - 1.34 | 614 | 1.63 | 100* | 30 |
| 1.34 - 30 | 824/f | 2.19/f | $180/F^2$ | 30 |
| 30 -300 | 27.5 | 0.073 | 0.2 | 30 |
| 300 -1500 | -- | -- | f/1500 | 30 |
| 1500 -100,000 | -- | -- | 1.0 | 30 |

f = frequency

* = Plane-wave equivalent power density

General population/uncontrolled exposures apply in situations in which the general public may be exposed or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

It is important to understand that these limits apply cumulatively to all sources of RF emissions affecting a given area. For example, if several different communications system antennas occupy a shared facility such as a tower or rooftop, then the total exposure from all systems at the facility must be within compliance of the FCC guidelines.

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The field strength emanating from an antenna can be estimated based on the characteristics of an antenna radiating in free space. There are basically two field areas associated with a radiating antenna. When close to the antenna, the region is known as the Near Field. Within this region, the characteristics of the RF fields are very complex, and the wave front is extremely curved. As you move further from the antenna, the wave front has less curvature and becomes planar. The wave front still has a curvature, but it appears to occupy a flat plane in space (plane-wave radiation). This region is known as the Far Field.

Two models are utilized to predict Near and Far field power densities. They are based on the formulae in FCC OET 65.

**Cylindrical Model (Near Field Predictions)**

Spatially averaged plane-wave equivalent power densities parallel to the antenna may be estimated by dividing the antenna input power by the surface area of an imaginary cylinder surrounding the length of the radiating antenna. While the actual power density will vary along the height of the antenna, the average value along its length will closely follow the relation given by the following equation:

$$S = P \div 2\pi RL$$

Where:

S = Power Density

P = Total Power into antenna

R = Distance from the antenna

L = Antenna aperture length

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For directional-type antennas, power densities can be estimated by dividing the input power by that portion of a cylindrical surface area corresponding to the angular beam width of the antenna. For example, for the case of a 120-degree azimuthal beam width, the surface area should correspond to 1/3 that of a full cylinder. This would increase the power density near the antenna by a factor of three over that for a purely omni-directional antenna. Mathematically, this can be represented by the following formula:

$$S = (180 / \theta_{BW}) P \div \pi RL$$

Where:

S = Power Density

$\theta_{BW}$ = Beam width of antenna in degrees (3 dB half-power point)

P = Total Power into antenna

R = Distance from the antenna

L = Antenna aperture length

If the antenna is a 360-degree omni-directional antenna, this formula would be equivalent to the previous formula.

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**Spherical Model (Far Field Predictions)**

Spatially averaged plane-wave power densities in the Far Field of an antenna may be estimated by considering the additional factors of antenna gain and reflective waves that would contribute to exposure.

The radiation pattern of an antenna has developed in the Far Field region and the power gain needs to be considered in exposure predictions. Also, if the vertical radiation pattern of the antenna is considered, the exposure predictions would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential four-fold increase in power density.

These additional factors are considered, and the Far Field prediction model is determined by the following equation:

$$S = EIRP \times Rc \div 4\pi R^2$$

Where:

S = Power Density

EIRP = Effective Radiated Power from antenna

Rc = Reflection Coefficient (2.56)

R = Distance from the antenna

The EIRP includes the antenna gain. If the antenna pattern is considered, the antenna gain is relative based on the horizontal and vertical pattern gain values at that particular location in space, on a rooftop or on the ground. However, it is recommended that the antenna radiation pattern characteristics not be considered to provide a conservative "worst case" prediction. This is the equation is utilized for the Far Field exposure predictions herein.

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# EXHIBIT F

## Mailing Receipts/Proof of Notice

C/O CULLEN MORGAN
9415497263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293

**1 LBS** **1 OF 1**

**SHIP TO:**
STONYBROOK MANAGEMENT LLC
124 KNAPP STREET
**EASTON CT 06612-1078**

**CT 066 9-06**

**UPS GROUND**
TRACKING #: 1Z 9Y4 503 03 3045 3852

BILLING: P/P

Reference # 1: 14764246 LANDOWNER CC

CS 24.5.00. MACNV50 29.0A 07/2024*

TM

**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030330453852
**Date:** Saturday, July 20, 2024 at 4:59:15 PM Eastern Daylight Time
**From:** UPS <pkginfo@ups.com>
**To:** Cullen Morgan <CMORGAN@CLINELLC.COM>

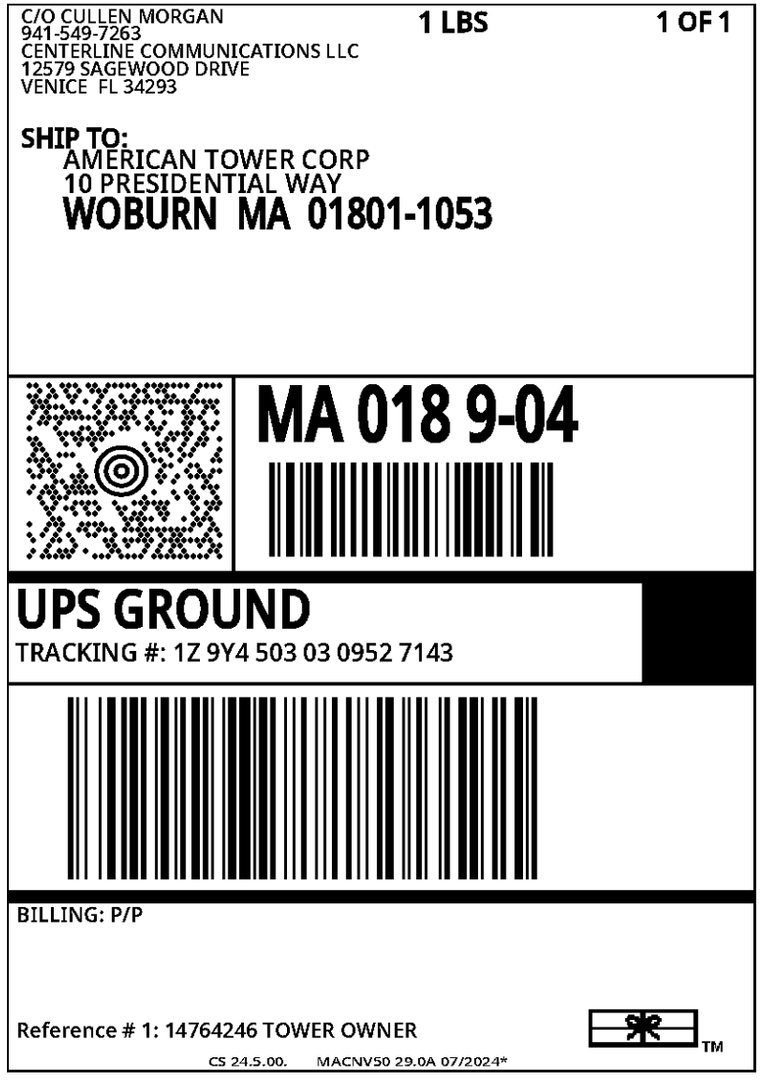
## Hello, your package has been delivered.

**Delivery Date:** Saturday, 07/20/2024
**Delivery Time:** 4:58 PM
**Left At:** OTHER-RELEAS



## CENTERLINE SITE ACQUISITION

| | |
|---|---|
| **Tracking Number:** | 1Z9Y45030330453852 |
| **Ship To:** | STONYBROOK MANAGEMENT LLC<br>124 KNAPP STREET<br>EASTON, CT 066121078<br>US |
| **Number of Packages:** | 1 |
| **UPS Service:** | UPS Ground |
| **Package Weight:** | 0.8 LBS |
| **Reference Number:** | 14764246 LANDOWNER CC |


C/O CULLEN MORGAN
941-549-7263
CENTERLINE COMMUNICATIONS LLC
12579 SAGEWOOD DRIVE
VENICE FL 34293
1 LBS
1 OF 1
SHIP TO:
AMERICAN TOWER CORP
10 PRESIDENTIAL WAY
WOBURN MA 01801-1053
MA 018 9-04
UPS GROUND
TRACKING #: 1Z 9Y4 503 03 0952 7143
BILLING: P/P
Reference # 1: 14764246 TOWER OWNER
CS 24.5.00. MACNV50 29.0A 07/2024*
TM

**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030309527143
**Date:** Monday, July 22, 2024 at 12:34:19 PM Eastern Daylight Time
**From:** UPS <pkginfo@ups.com>
**To:** Cullen Morgan <CMORGAN@CLINELLC.COM>

## Hello, your package has been delivered.

**Delivery Date:** Monday, 07/22/2024
**Delivery Time:** 12:32 PM

## CENTERLINE SITE ACQUISITION

| | |
|---|---|
| **Tracking Number:** | 1Z9Y45030309527143 |
| **Ship To:** | AMERICAN TOWER CORP<br>10 PRESIDENTIAL WAY<br>WOBURN, MA 018011053<br>US |
| **Number of Packages:** | 1 |
| **UPS Service:** | UPS Ground |
| **Package Weight:** | 0.8 LBS |
| **Reference Number:** | 14764246 TOWER OWNER |

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TOWN OF STRATFORD, CT
2725 MAIN STREET
**STRATFORD CT 06615-5818**

**CT 066 9-01**

**UPS GROUND**
TRACKING #: 1Z 9Y4 503 03 2047 8461

BILLING: P/P

Reference # 1: 14764246 TOWN CC

CS 24.5.00. MACNV50 29.0A 07/2024*

**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030320478461
**Date:** Monday, July 22, 2024 at 1:35:49 PM Eastern Daylight Time
**From:** UPS <pkginfo@ups.com>
**To:** Cullen Morgan <CMORGAN@CLINELLC.COM>

## Hello, your package has been delivered.

**Delivery Date:** Monday, 07/22/2024
**Delivery Time:** 1:34 PM
**Signed by:** COMPUTER DEPT

## CENTERLINE SITE ACQUISITION

| | |
|---|---|
| **Tracking Number:** | 1Z9Y45030320478461 |
| **Ship To:** | TOWN OF STRATFORD, CT<br>2725 MAIN STREET<br>STRATFORD, CT 066155818<br>US |
| **Number of Packages:** | 1 |
| **UPS Service:** | UPS Ground |
| **Package Weight:** | 0.8 LBS |
| **Reference Number:** | 14764246 TOWN CC |

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