CROWN CASTLE

1 Cityplace Dr, Suite 490

Creve Coeur, MO 63141

Phone: (314) 513-0147

www.crowncastle.com

April 16, 2021

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

RE: **Notice of Exempt Modification for T-Mobile**
Crown Site ID# 876387; T-Mobile Site ID# CTHA353A
107 Buck Road, Hebron, CT 06248
Latitude: 41.65445 / Longitude: -72.410864

Dear Ms. Bachman

T-Mobile currently maintains six (6) antennas at the 117-foot mount on the existing 119-foot 6-inch Monopole Tower located at 107 Buck Rd. in Hebron. The property is owned by Mapleleaf Farm Land Trust LLC and the Tower by Crown Castle. T-Mobile now intends to replace six (6) existing antennas and add three (3) new antennas. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:
Tower:

Remove and Replace:
(3) RFS – APXVTM14-ALU-120 Antennas **(REMOVE) –** (3) RFS APX16DWV-16DWV-S-E-A20 Antennas – **(REPLACE)**

(3) Commscope – NNVV-65B-R4 Antennas **(REMOVE) -** (3) Ericsson AIR6449 B41 Antennas **(REPLACE)**

(3) Alcatel Lucent – PCS 1900MHZ 4X45W-65MHZ Radio **(REMOVE) –** (3) Ericsson 4415 B66A Radio **(REPLACE)**

(3) Alcatel Lucent – RRH2X50-800 Radio **(REMOVE) -** (3) Ericsson 4449 B71+B85 Radio **(REPLACE)**

(3) Alcatel Lucent – TD- RRH8X20-25 Radio **(REMOVE) –** (3) Ericsson 4424 B25 Radio **(REPLACE)**

(4) Hybrid Cables **(REMOVE)** – (4) 1 5/8" Hybrid Cables **(REPLACE)**

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Install New:
(3) RFS APXVAALL24-43-U-NA20 Antennas
(3) Site Pro 1 VFA-10-SD-S with MSFAA Collar Mounts

Remove:
(3) Alcatel Lucent – RRH2X50-800 Radio
(3) Sector Mounts

Ground:

Remove and Replace:
(1) Sprint MBTS Cabinet **(REMOVE) -** (1) 6160 Site Support Cabinet (SSC) **(REPLACE)**
(1) Sprint Cabinet **(REMOVE)** – (1) B160 Cabinet **(REPLACE)**

Install New:
(1) RBS 6601 in 6160 SSC
(1) BB 6648 in 6160 SSC
(3) BB 6630 in 6160 SSC
(1) CSR IXRE V2 in 6160 SSC
(1) PSU 4813Voltage Booster in 6160 SSC
(1) DUG20 in 6160 SSC

Remove:
(1) Dunnage
(1) Plinth and all other steel after cabinets are removed

The facility was approved by the Town of Hebron Planning and Zoning Commission by way of a Site Plan Application Petition File #99-11 on February 8th, 2000.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Daniel Larson, First Selectman for the Town of Hebron and Michael O'Leary, Town Planner Official for the Town of Hebron. A copy will also be sent to the property owner.

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

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

3. The proposed modification 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 Communication 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, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. §16-50j-72(b)(2).

Sincerely,

Colin Robinson

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive Suite 303
Chelmsford, MA 01824
crobinson@nbcllc.com
(360) 561-3311

cc:

Daniel Larson, First Selectman *(via email only to dlarson@hebronct.com)*
Town of Hebron
15 Gilead Street
Hebron, CT 06248
860-228-5971, ext. 122

Michael O'Leary, Town Planner *(via email only to moleary@hebronct.com)*
Town of Hebron
15 Gilead Street
Hebron, CT 06248
860-228-5971, ext. 137

Mapleleaf Farm Land Trust LLC *(via email only to renedellis@aol.com)*
768 Gilead Street
Hebron, CT 06248

Colin Robinson

From: Colin Robinson
Sent: Thursday, April 15, 2021 11:30 PM
To: dlarson@hebronct.com
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 107 Buck Road Hebron CT 876387
Attachments: CSC Exempt Modification Application 107 Buck Road Hebron CT 876387 041621.pdf

Good Evening Mr. Larson,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 107 Buck Road, Hebron, CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Colin Robinson

From: Colin Robinson
Sent: Thursday, April 15, 2021 11:29 PM
To: moleary@hebronct.com
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 107 Buck Road Hebron CT 876387
Attachments: CSC Exempt Modification Application 107 Buck Road Hebron CT 876387 041621.pdf

Good Evening Mr. O'Leary,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 107 Buck Road, Hebron, CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Colin Robinson

From: Colin Robinson
Sent: Thursday, April 15, 2021 11:33 PM
To: renedellis@aol.com
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 107 Buck Road Hebron CT 876387
Attachments: CSC Exempt Modification Application 107 Buck Road Hebron CT 876387 041621.pdf

Good Evening Mapleleaf Farm Land Trust LLC,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 107 Buck Road, Hebron, CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Exhibit A

Original Facility Approval

TOWN OF HEBRON

15 Gilead Street, Hebron, CT 06248
TEL (860) 228-5971 FAX (860) 228-5980

Planning/Zoning Building Health Conservation

February 10, 2000

CERTIFIED MAIL

Spring PCS
9 Barnes Industrial Road
Wallingford, CT 06492

RE: Petition 99-11, Application by Sprint PCS for Telecommunications Facility on Buck Road, R-1 District

Dear Sprint PCS:

Please be advised that at the February 8, 2000 meeting of the Planning and Zoning Commission, the Commission took the following action on the above-referenced application:

Approved with the following conditions:

1. The overall height of the tower shall not exceed 100 (one hundred) feet.
2. The tower shall be modified to be of such design and treated with an architectural material so that it is camouflaged to resemble a woody tree with a single trunk and branches on its upper part, in a manner acceptable to the Commission, unless waived by the Commission
3. The tower shall be permitted to accommodate a single PCS provider, as shown on the plans, plus a GPS antenna. Any other antenna, including a potential co-locator shall require a Special Permit Application to the Commission.
4. The chain link fence surrounding the leased area shall be a green colored vinyl clad mesh material.
5. Evergreen plantings, a minimum of 6 (six) feet in height, shall be planted in double staggered rows along the south, east, and north sides of the fenced area, shown on a plan acceptable to the Commission.
6. This facility shall comply, at all times, with the standards promulgated by the FCC for non-ionizing electromagnetic emissions, as amended. After the facility is operational, the applicant shall submit, within 90 (ninety) days of beginning operations from this site, and annually thereafter, existing and maximum future projected measurements of non-ionizing electromagnetic emissions as well as the Federal standard established for such emissions.
7. Any change from the battery powered emergency generator system, as proposed, shall require application to, and approval from the Commission
8. The property owner and owner(s) of the facility shall execute a statement, to be recorded in the land records of the Town of Hebron, agreeing to the requirements of Subsection 8.23.10.
9. The plans shall incorporate the items contained in the report of the Town Engineer
10. As specified by the applicant, no lighting shall be mounted on the tower; and any lights within the leased area shall be shielded from glare off the property.
11. A Disposal Plan is needed as to how to dismantle the tower, either due to Section 8.23.10, or due to a decision to discontinue use of the tower by Sprint.

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CERTIFIED MAIL

2-10-00
Sprint PCS
RE: Petition 99-11, Application by Sprint PCS for Telecommunications Facility (cont.)

Please have the plans revised to include the above conditions and forward one set of mylars and four blueline sets of plans for signature by the Commission. Also, a Special Permit Certification must be filed in the Town Clerk's Office before the approval is effective. We will prepare the Certificate for you. A filing fee will be needed before filing with the Town Clerk.

If you have any questions, please call me.

Very truly yours,

Michael K. O'Leary, Town Planner
for the Planning and Zoning Commission

MKO/l

cc: Petition File #99-11
Thomas J. Regan, Esq., Brown, Rudnick, Freed, & Gesmer, PC
Edward A. and Renee J. Ellis

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TOWN OF HEBRON, CONNECTICUT
PLANNING AND ZONING COMMISSION

IN RE: 99-11

APPLICATION OF SPRINT PCS
FOR SPECIAL PERMIT TO CONSTRUCT
A TELECOMMUNICATIONS TOWER
ON A 131 ACRE PARCEL OF LAND ON
BUCK ROAD IN THE TOWN OF HEBRON,
CONNECTICUT.

FINDINGS OF FACT

At its regular meeting on February 8, 2000, pursuant to statutory notice, the Town of Hebron Planning and Zoning Commission considered the above-captioned application and acted upon same. At that time the Commission adopted the following findings in support of their action:

1. Sprint Spectrum, LP, d/b/a Sprint PCS (hereinafter "Sprint" or "Applicant"), is a telecommunications company created to provide wireless communication services known as Personal Communications Service ("PCS"). Sprint is duly authorized to construct, operate and manage a wireless personal communication system using the FCC radio license of its sister company, Wireless Co. Co. LP. Under that agreement, Sprint is authorized to make this application on behalf of Wireless Co. LP.

2. Sprint is, specifically, a provider of PCS service. PCS is digital a digital technology. Although similar to analog cellular service, digital service works on a higher frequency and at a lower power than analog service. While this gives PCS a higher quality, the geographic area covered by a digital facility is smaller than that covered by an analog facility. The result is that a digital network requires more antennae.

3. A PCS network is a grid made up of a continuous series of overlapping cells. A cell is the geographic area serviced by any single antenna facility. The size of any given cell is determined by topography and vegetation. PCS antennae must be located above the height of surrounding trees or structures to be effective. When a PCS user moves from one cell to another the call is automatically transferred to the next cell without interruption. In order for this to work there must be some overlap of cells.

4. Sprint is not provider of analog service. As such, if a Sprint user reaches gap in digital service, the call will not automatically switch to analog service. Once a gap is reached the Sprint user's PCS call will be dropped, regardless of the availability of analog coverage in the area.

5. Sprint maintains that it is charged with the responsibility of providing wireless telephone service throughout Connecticut including the area in and around the Town of Hebron. Sprint further maintains that it has a mandate to provide "seamless" service coverage throughout Connecticut.

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6. The cell which Sprint seeks to cover comprises a significant portion of central/eastern Hebron, along with parts of the westerly portion of Marlborough. Within the cell is that portion of Rt. 66 running east from the Rt. 85 intersection, and that portion of Rt. 85 running north of the intersection with Rt. 66

7. Sprint maintains that there is a gap in PCS coverage along Routes 66 and 85, and in the immediate surrounding areas of Hebron

8. With its application Sprint provided a computer-generated map showing gaps in coverage within Hebron and the surrounding area and bearing the description "Holes visible on portions of Rt. 66 & 85." The representation was based on computer modeling and reflected what coverage would be based on surrounding sites, but without the planned Buck Road facility.

9. As to the coverage gaps within the Town of Hebron, the computer-generated map showed a gap in coverage along Rt. 66 from just west of the Marlborough town line to just east of the intersection with Jennifer Drive. The claimed gap extends south of Rt. 66 to the western half of Hope Valley Road, and north of the highway into Gilead. The map also showed gaps along Rt. 85, one near the intersection with Prentice Hill Road, and two others between Martin Road and the intersection with East Street.

10. Virtually the entire gap identified by Sprint falls within residential zoned districts. R-1 north of Rt. 66 and primarily R-2 south of Rt. 66.

11. Virtually all the coverage gaps identified by Sprint within the Town of Hebron encompass substantial portions of the Town's designated inland wetlands and watercourses

12. The Applicant has complied with basic site plan content requirements of Section 8.23.6 in that either with its application or in the course of the hearings it submitted the following documentation:

(1) A plan showing where/how proposed antenna would be affixed to the tower.
(2) Details of proposed antenna including size and color.
(3) Elevations and details of proposed shielding.
(4) Elevations of proposed equipment boxes/buildings and details of landscaping/lighting.
(5) Description of tower co-location capacity, number and type of antennas, positions for co-locators and collapsing design.
(6) Statement that performance standards in Regulation 5.6.3 shall be complied with and site will not interfere with public safety communications.
(7) An analysis of fall zone prepared by licensed engineer
(8) Proof of FFC license.
(9) Maps depicting (a) planned town coverage; (b) future planned sites/towers in Hebron; (c) service area of proposed site; (d) search radius of proposed site (e) all existing, approved and planned towers and structures over 40' in planned area.
(10) Simulation of site to ascertain visual impacts.
(11) Certified letters to similar providers seeking co-location opportunities.

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13. The Buck Road site selected by Sprint is situated on the westerly one-third of the gap identified by Sprint in its application.

14. The neighborhood consists of predominantly open and forested, presently vacant, residentially zoned land, with residential development currently averaging two acres or more per household. The area is situated in an R-1 zone. The topography consists of rolling hills ranging from 350 feet to 685 feet above mean sea level. There are 28 property owners located within 200 feet of the Ellis property on which the proposed tower would be built. The areas residences are single-family homes.

15. The Ellis property on which the proposed tower would be located is a 131-acre parcel consisting of mostly wooded land, with some open space dedicated to farming/pasturing.

16. Within the property, the site selected for the tower would be 683 feet from Buck Road. The proposed location would put the tower roughly 450 feet from the three-lot Buck Road Subdivision and roughly 750 feet from the only existing residence pictured on Applicant's plans.

17. The facility proposed by Sprint for the Ellis property would consist of an access drive off of Buck Road, a 100-foot square equipment compound, and a 150-foot-tall "monopole" tower with antennae mounted upon it.

18. The monopole would be constructed of galvanized steel. It would have an antenna platform located at the top. The platform would consist of three sectors forming a horizontally situated triangle. On each of the three sectors there would be mounted up to three panel antennae, for a total of up to nine antennae per platform. Each individual antenna would be five feet high, six inches wide, and two inches thick. The antenna panels would be off-white in color. With additional, potential co-locators, successive arrays of antennae/platform would be added at 10-foot increments along the pole.

19. Section 8.23.7 of Hebron's zoning regulations dictates minimum lot area and setback requirements for proposed telecommunications facilities. These are intended to achieve a minimum level of desired safety in the event of a structural failure and to achieve a sense of land use compatibility between diverse uses. Specifically, the regulations provide that a tower shall be located on a lot of two acres or more. The proposed facility on Buck Road complies with this requirement.

20. Section 8.23.7 of the regulations also dictates that all towers shall be setback from property lines the greater of 100 feet or the distance equal to one and one-half (1 1/2) times the tower height. This requirement includes all equipment/buildings related to the tower. Based on our review of the site plans we conclude that the proposed tower complies with the requirements of Section 8.23.7.3.

21. In addition, the Town's regulations require compliance with a number of general requirements contained within Section 8.23.8. With regard to those requirements we find the following:

(1) The tower is not within 500' of any facilities identified in Section 8.

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(2) The proposed tower is not closer than three (3) times the tower height to any residence
(3) The proposed tower, although over 75 feet, is not within 1000' of historic district.
(4) The Applicant has produced evidence that the tower as planned would not require lighting in order to comply with FCC regulations.
(5) The tower as planned would be galvanized and would weather to neutral gray.
(6) The proposed tower is not located in town open space.
(7) The proposed tower will be a monopole and will be designed to collapse upon itself.
(8) Although the Applicant did not present any specific plan for camouflage of the proposed tower it did indicate a willingness to provide such camouflage if requested by the Commission.
(9) The proposed tower at 150 feet will accommodate two additional users.
(10) The site will be served by driveway and will have sufficient parking.
(11) Not applicable.
(12-13) The proposed facility will not include a dish antenna.
(14) The site as designed will not interfere with public safety communications.
(15) The site is not in Flood Hazard Plan.
(16) Applicant has produced evidence that the design of the facility is such that it will comply with FCC standards for non-ionizing electromagnetic emissions.
(17) As designed all utilities leading to the tower will be underground. The compound will be surrounded by a 6-foot-high fence with locked gate and will be landscaped.
(18) As proposed the facility will not include a generator and that no fuel will be stored.
(19) Applicant has stated that Sprint personnel will visit the site at least monthly for maintenance and Sprint will be responsible for upkeep of the site.

22. The Commission is satisfied that there are no existing or approved towers, structures or buildings which would provide potential co-location opportunities.

23. Applicant has produced evidence to support the fact that once in operation the proposed tower facility would meet the following standards:

a) The use will be carried on in such a manner and with such precautions against fire and explosion hazards as to produce no serious exposure hazard to adjacent property, and the storage of all flammable or explosive materials shall be in a manner approved by the Fire Marshall of the town of Hebron.

b) The use will emit no offensive odors perceptible from any property line of the lot on which the operation is located, and shall emit no obnoxious, toxic or corrosive fumes or gases.

c) The use will not exhaust, or waste into the air, dust created by any industrial operation in excess of one cubic centimeter of settled matter per cubic meter of air, or produce heat or glare perceptible from any property line of the lot on which the operation is located for a period exceeding three continuous minutes.

d) Industrial and exterior lighting will not produce glare on public highways or neighboring property, or conflict with any traffic signals.

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e) Smoke or other air contaminant will not be discharged into the atmosphere from any single source of emission for a period or periods aggregating more than three minutes in any one hour, which is as dark or darker in shade than as designated on No. 2 on the Ringelman Chart, as published by the United States Bureau of Mines, or which his of such opacity as to obscure an observers' view to a degree equal to or greater than does smoke designated as No. 2 on the Ringleman Chart.

f) The use will be operated in conformance with the following performance standards governing noise, and no sound pressure level shall exceed the decibel levels in the designated octave bands shown in Section 5.6.3 of the Hebron Zoning Regulations, with sound measurements being made in accordance with that section.

24. The site chosen for the proposed tower is in a residential zone, specifically, an R-1 district. Given that the proposed tower is over 75 feet tall the proposed site for this telecommunications facility is clearly the least favored location as defined by the town's zoning regulations.

25. However, the gap in coverage that Sprint seeks to fill falls entirely within residential districts of this town.

26. Based on the evidence presented and our own review of the topography and vegetation in the area, we are satisfied that in order to provide any reasonable degree of coverage along the Rt. 66 corridor the Sprint must locate its antenna facility within a residential area.

27. In the abstract, the Ellis parcel on Buck Road, given its size, its present use, the fact that it is about ¾ wooded and is largely vacant, and given its proximity to Rt. 66 we find that the131-acre parcel in question is a reasonable location for a telecommunications facility, given the restrictions place upon us by the Federal Telecommunications Act of 1996.

28. The average tree height in the area of the proposed site is approximately 75 feet.

29. As for the specific location of the proposed tower and compound within the 131-acre parcel, the neighbors have expressed great concern about the location of the tower in such proximity to their residences.

30. The proposed site is on a large parcel of land (131 acres) that could contain the site further from established residences. The proposed tower is approximately 750' to the closest residence. The Commission asked the applicant if the tower could be moved into the open field (and perhaps camouflaged) further from the established residences. The applicant responded that the tower could be moved slightly in one direction of the other but essentially had to stay very close to the proposed site or coverage would be lost on Rt. 66.

31. Evidence as to the applicant's statement that moving the site into the open field would not work was not provided by the applicant. A 100' propagation map was asked of the applicant for the site in the open field. The applicant responded with the need to fill the cell with a 150' tower and further studies are not necessary.

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32. Indeed, the chosen site is much closer to both the public road and to the neighbors than would be necessary simply based on the size of the parcel. In assessing the appropriateness of this specific location there are several factors to consider under our Regulations.

33. We find that given the setbacks and distances from surrounding residences, even at 150-feet the proposed tower, as located, would not pose a risk to the health and safety of the local residents in the event of a structural failure. Moreover, given that the Applicant will not be storing hazardous materials at the site, we find that the equipment in the compound would not present a hazard to neighbors.

34. While the Commission recognizes and understands the concerns of the neighbors about the possible effects of radio frequency radiation, this Commission cannot consider such concerns so long as the facility, as planned, is in compliance with FCC guidelines. We find that the applicant has submitted sufficient documentation to satisfy us that the proposed facility will be well within FCC guidelines.

35. During the public hearing the applicant submitted data from other towns to support their contention that there would be no negative impact on the value of surrounding property in this case. Members of the public opposed to the tower also submitted material suggesting that towers do tend to decrease property values. No evidence was submitted by anyone, however, regarding the value of the properties surrounding this particular site and no direct opinion evidence was submitted as to any potential impact of a tower at this site on neighboring property values.

36. While there are questions about the methodology of the studies provided by the applicant, and questions about the applicability of those studies to this neighborhood in Hebron, the commission concludes for the purpose of this application that there is no credible evidence that the placement of a PROPERLY CAMOUFLAGED telecommunications tower at this site on Buck road would seriously harm the surrounding property values.

37. The commission finds that the proposed tower facility would have an impact on the "appearance and beauty" of the community.

38. However, any tower significantly higher than the tree height would be visible from the surrounding neighborhood.

39. In order to achieve coverage on Rt. 66 it will be necessary to place a tower in such a position that it will rise above the tree height.

40. Based on the evidence presented in the hearings we find that, assuming proper camouflage of a nature acceptable to the Commission, the location of a telecommunications tower of some height at the proposed location would be appropriate, in light of the restrictions place upon us by Federal Telecommunications Act.

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41. Hebron's zoning regulations provide "The maximum height of a tower proposed under this regulation shall be 150 feet including the antenna and all other appurtenances and shall not exceed the minimum height necessary to carry out the function of the facility

42. Sprint's radio frequency engineer, Alessandro Ponce, stated that Sprint's main concern was covering Rt. 66 and Rt. 85. He said that most of the cellular traffic comes from people driving on the roads and that Route 66 and Route 85 provide a lot of traffic. In short, Sprints main objective in placing a tower at the Buck Road site is to "cover the main thoroughfares through Town."

43. Sprint does not believe that the cell will be filled at a lower height than 150 feet. To illustrate this point, Mr. Ponce presented at the October 12, 1999 hearing a propagation study showing what the coverage would be if the Buck Road tower were limited to 120-feet. This study was prepared by Sprint not in response to any request by the Commission but because it was aware of subsequent changes in the town's zoning regulations capping tower height at 120 feet. Those revisions in the regulations, however, are inapplicable to this application.

44. At the October 12, 1999 hearing a Commission member specifically questioned whether the amount of coverage shown at 150 feet and the amount shown at 120 feet was significantly different, questioning the value of the higher tower. Sprint's response to this was that it had only generated the 120-foot study because "we know the Town's preference for a tower at that height." The Applicant's spokesman went on to say:

> "... to be honest with you, it probably hurts more than helps showing you that because when you look at a blob of green and a blob of blue, I agree with you. It doesn't look significantly different, but I guess from our perspective, the important point for you to hear is that the tower at 120 feet, in our opinion, doesn't fulfill the coverage need."

45. At the November 9, 1999 hearing Sprint provided each Commission member a packet of propagation studies for the Buck Road site, each reflecting the coverage achieved by a different height tower. The packet was supposed to have included a map again showing the limitations of a 120-foot tower at the proposed site, but for some reason this 120-foot propagation study was not included in the packet of propagation studies provided to the individual commissioners at that hearing. A copy was provided to the Commission staff and the Commission members had an opportunity to review this in detail at a subsequent meeting.

46. The 120-foot study submitted on November 9, 1999 had been prepared on November 4, 1999. This study actually showed worse coverage than had been reflected by the 120-foot study presented at the first hearing, i.e. the one conducted sua sponte by Sprint on October 12, 1999. Specifically, the November 4, 1999 study demonstrated a larger gap in coverage along Rt. 66 west of the Marlborough town line, and it also showed a *new* gap on Rt. 66 in the area of Stone House Lane.

47. On careful comparison of the two studies it is clear that the location of the hypothetical 120-foot tower on the second study was at a different longitude and latitude that had been reflected on the first study.

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48. With its application Sprint submitted a propagation study map dated July 19, 1999 purporting to show the coverage that would be achieved by the proposed 150 foot tower (560-02) that map being further identified as "Holes covered on portions of Rt. 66 & 85."

49. That July 19, 1999 propagation study showed that a 150-foot tower would achieve a substantial increase in coverage in the sparsely populated areas north and south of Rt. 66. It also showed that such a tower would eliminate the significant gap along Rt. 66 between the Marlborough town line and Jennifer Drive. However, the study showed that the proposed tower would not close the gap on Rt. 66 west of the town center. Further, the study also showed that the gaps on Rt. 85, while modestly reduced by the 150-foot Buck Road tower, would not be eliminated.

50. Even Sprint's own expert admitted that the 150-foot tower as proposed would still leave gaps along Route 66. Any gap, no matter how small, will cause the traveling caller to drop his call.

51. At the time of the October 12, 1999 hearing a Commission member raised questions about the fact that the 150 foot tower would not be able to achieve the seamless coverage that Sprint was putting forth as justification for the tower. At that time the available propagation study for 150 feet was the one prepared on July 19, 1999 and included in the application materials.

52. The propagation study prepared on November 4, 1999, and entered into the record at the December 7, 1999 hearing, showed greater coverage with a 150-foot tower than had been reflected in the July 1999 study submitted with the application. Specifically, the November version eliminated the gap on Rt. 66 west of the town line completely, eliminated the northernmost gap on Rt. 85 (near Prentice Road), and eliminated a small gap on Rt. 85 near Hills Farm.

53. To help evaluate the technical data the Commission retained the services of a consultant. CompComm, a telecommunications-engineering firm from New Jersey. John W. Sieber, PE, an engineer with CompComm, reviewed the materials provided by the applicant prior to the first pubic hearing. Among other things, CompComm's initial evaluation highlighted the need to request propagation studies from Sprint showing potential coverage at heights less than 150 feet, including 125 feet, 100 feet and 80 feet.

54. After reviewing the additional submissions of Sprint, Mr. Sieber opined that when existing coverage is factored in the proposed 150-tower "covers very little new area" than would be covered by a 120-foot tower. CompComm found no significant difference in coverage within Hebron with a 120-foot tower than with a 150-foot tower.

55. Based on our own review of the propagation studies, the Commission is convinced that a tower of 150 feet at the proposed site would provide no greater coverage on Rt. 66 than would a tower of 120 feet at that same location. The only effect that the placement of a 120-foot tower at the site rather than a 150-foot tower would have on Rt. 85 would be to slightly increase the size of one of the gaps that would exist even with the 150-foot tower.

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56. The applicant stated that three candidate sites were evaluated for this tower application. The applicant stated that the other sites were north and south of the selected site on Buck Road. Applicant stated that it chose the Ellis site because it was a large parcel. Applicant did not provide propagation maps for the two sites not selected.

57. On their own initiative, the applicant did not provide the Commission with any alternatives to the proposed site at Buck Road. Only one propagation map with a lower height on the proposed site was provided.

58. From the very first hearing the commission made it clear that it wanted to explore the possibility of obtaining coverage in town through the use of smaller, more numerous towers. On several occasions, including the October 12, 1999 and November 9, 1999 hearings, the Commission asked that Applicant provide propagation maps for two specifically-named alternative sites (Lions' Park and Main Street Firehouse), as well as other potential sites which in combination might provide similar coverage with multiple, shorter towers.

59. Throughout the course of the hearings sprint demonstrated an unwillingness to consider alternative sites involving varying heights of towers at two or more locations on the same map.

60. The applicant ultimately provided the commission with a few maps, namely existing coverage with other proposed towers; coverage from the proposed site with 150', 120' and 100' towers; coverage from the Main St. Firehouse (150') and Lions' Park (150'). When the Commission finally received maps of combined multiple sites, the applicant used only the two alternative sites specifically referenced by the Commission (Lions Park and fire station) and simply used 80' at all three sites.

61. The Commission did not receive propagation maps as requested for multiple sites with varying combinations of heights to determine if alternatives were feasible, nor were any other alternative combination of sites provided by the applicant . In other words, propagation maps requested to determine the applicant's compliance with Section 8.23.8.20 of the regulations were not provided.

62. In response to a request for alternative site propagation studies made at the November 9, 1999, sprint stated that "at some point when you start requiring us to put multiple towers on a site, it becomes economically prohibitive for us to fill the cell." No cost data was ever submitted as evidence to back up this claim of "economic prohibitiveness".

63. When pressed on the issue of the economic factors Sprint responded, "I think at this point, our position is we're prepared to put one tower in this cell."

64. Sprint's representative also stated: "{W}e have submitted to you what we feel we're capable of putting in this area to fill this cell. If the Commission feels that we've not proven the necessity of the tower, then they have the ability to deny the application and we have the ability to pursue whatever remedies are available to us."

65. Accurate propagation maps are critical to determine compliance with the regulations.

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66. The map of coverage dated November 4, 1999 produced by applicant to show the extent of coverage from the proposed site with only a 100-foot tower, actually shows results that are virtually identical as those produced by applicant on the same date but designed to reflect coverage from the site with a 120-foot tower. Comparing the 100-foot study and the 120-foot study, it is clear that coverage in the vicinity of Rt. 66 and Rt. 85 is virtually unchanged and coverage in the outlying areas is also quite similar.

67. On 11/9/99 the applicant's representative stated that a 150-foot tower would provide 27.2 sq. mi. of coverage, a 120-foot tower would provide only 9 sq. mi. coverage, and a 100-foot tower would provide a meager 3.5 sq. miles of coverage. Based on our review of the propagation studies we find that this assertion is simply not credible.

68. CompComm analyzed a number of alternative antenna arrangements. CompComm identified two locations, which in combination would allow Sprint to provide the requisite coverage on both Rt.66 and Rt. 85 with lower towers than that proposed for the Buck Road site.

69. CompComm, in its report dated 12/3/99, stated that coverage similar to what Sprint seeks at 150 feet can likely be achieved with multiple lower towers and the studies provided by Sprint do not demonstrate the necessity of a 150' tower. The report states, *"The propagation studies submitted by Sprint do not demonstrate the need for the taller structure."*

70. The CompComm report went on to also make note of the questionable assertion about the amount of decreased coverage that would result for a shorter tower. Specifically, CompComm stated, *"These studies show a major decrease in coverage area when the antenna height is decreased by only 30 feet - from 150' to 120', which is still well above the tree line and most of the surrounding terrain. This difference should not cause a coverage difference this extreme."*

71. The CompComm report went on to state, *"The studies show that coverage on Route 66 and Route 85 in Hebron are similar with the proposed antenna at 150 feet and 120 feet....When the antenna is lowered to 100 feet, the signal along Route 66 is similar and the signal along Route 85 decreases further. From the simulations, CompComm recommends a maximum height of 120 feet at this location to reduce visual impact."*

72. CompComm undertook an independent analysis of alternative sites in town. Based on their review, CompComm stated, *"Our conclusion is that coverage of the areas of concern could likely be achieved through a combination of smaller towers on certain alternative sites." "The best single site alternative is Site V on the map." (a site southeast of the proposed site, south of Route 66 and west of Route 85). Another approach would be to allow two sites to provide the same coverage. The best combination of sites in this case is Site III and Site VII. These would provide the required coverage to both Route 66 and Route 85 with lower towers than the single site solution demonstrated in the application."*

73. Putting aside momentarily the question of coverage on Rt. 66 and Rt. 85, most of the additional coverage gained by building a 150-foot tower over a 120-foot tower would be in largely uninhabited, sparsely populated and heavily wooded portions of town, most of which fall within wetlands.

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74. Sprint conducted a Visual Resource Evaluation study within a two-mile radius of the site. The evaluation was conducted three separate times, September 24, October 2, and October 30, 1999. Between the first and last study deciduous trees had lost some but not all foliage cover. Because not all foliage had dropped by October 30, 1999 visual impact may be greater than estimated, or in places not anticipated, since Sprint could not predictively "remove" leaves in its predictive model."

75. Likewise, Visual Resource Evaluation may be slightly skewed since conflicting testimony was given as to the intensity of the wind. The wind may have lowered the balloon so it did not fly at 150 feet. Therefore, visual simulations may be lower than actual 150 feet.

76. Based on the evidence presented at the hearings, and the statements and testimony of the applicant's representatives, along with a detailed review of the propagation studies and the supporting opinions of the expert retained by the Commission, we find:

a. That the proposed facility is not within a historic district and the provisions of Section 8.23.9.1 are inapplicable.

b. That while the site chosen by the Applicant is not a inappropriate site for some type of telecommunications tower facility, the Applicant has failed to show that it has made diligent efforts to minimize the proximity of the facility to, and its visibility from, residential properties.

c. That the proposed location is not a preference 1 through 2 location, but that the applicant has adequately described the efforts and measure taken to pursue those preferences and why a higher preference location was not technologically, legally or economically feasible.

d. That the applicant has failed to demonstrate to the Commission's satisfaction, the necessity of the height of the proposed telecommunications tower.

e. That the proposed tower of 150 feet exceeds the minimum height necessary to carry out the function of the facility.

f. That the function of the facility, and the coverage goals stated by the applicant, could be carried out and satisfied at the proposed location with a 100 foot tower, and that 100 feet is the minimum antenna height needed to carry out the function of the facility.

g. That the nature of the area and neighborhood is such that any tower at the proposed site, if higher than the tree canopy, could be camouflaged and that camouflage is reasonable and necessary to protect the well being and property values of the neighborhood.

h. That the applicant has failed to provide an abandonment plan.

2/3/00

David W. Schoolcraft
Chairman, Hebron Planning and
Zoning Commission

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Exhibit B

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.

Information on the Property Records for the Municipality of Hebron was last updated on 4/12/2021.

Parcel Information

Location:	107 BUCK RD	Property Use:	Vacant Land	Primary Use:	Commercial Vacant Land
Unique ID:	4018	Map Block Lot:	42-3X.A	Acres:	1.04
490 Acres:	0.00	Zone:	R-1	Volume / Page:	0568/0605
Developers Map / Lot:		Census:	5261		

Value Information

	Appraised Value	Assessed Value
Land	165,000	115,500
Buildings	0	0
Detached Outbuildings	0	0
Total	165,000	115,500

Owner's Information

Owner's Data
MAPLELEAF FARM LAND TRUST LLC (CT33XC560) C/O GLOBAL SIGNAL ACQ II PMB 331 4017 WASHINGTON RD MCMURRAY PA 15317

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Cell Tower	2000	0.00	0.00	1

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
MAPLELEAF FARM LAND TRUST LLC	0568	0605	05/18/2020		No	$0
ELLIS EDWARD A & RENEE	0435	0526	04/29/2008		No	$0
ELLIS EDWARD A&RENEE(CT33XC560	0134	0493	09/29/1988		No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
27235	Comm Renovations	09/18/2018		Closed	SPRINT TO REPLACE 6 ANTENNAS W/ 9 REMOTE RADIO HEADS
14-188B	Other	01/27/2014		Closed	
2012-21150	Mechanical	01/16/2013		Closed	
2011-20817	Mechanical	12/13/2011		Closed	CHANGE 12 ANTENNAS
11528B	Outbuilding/Yard Item	06/28/2004		Closed	

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
11780	Mechanical	08/07/2002		Closed	

Information Published With Permission From The Assessor

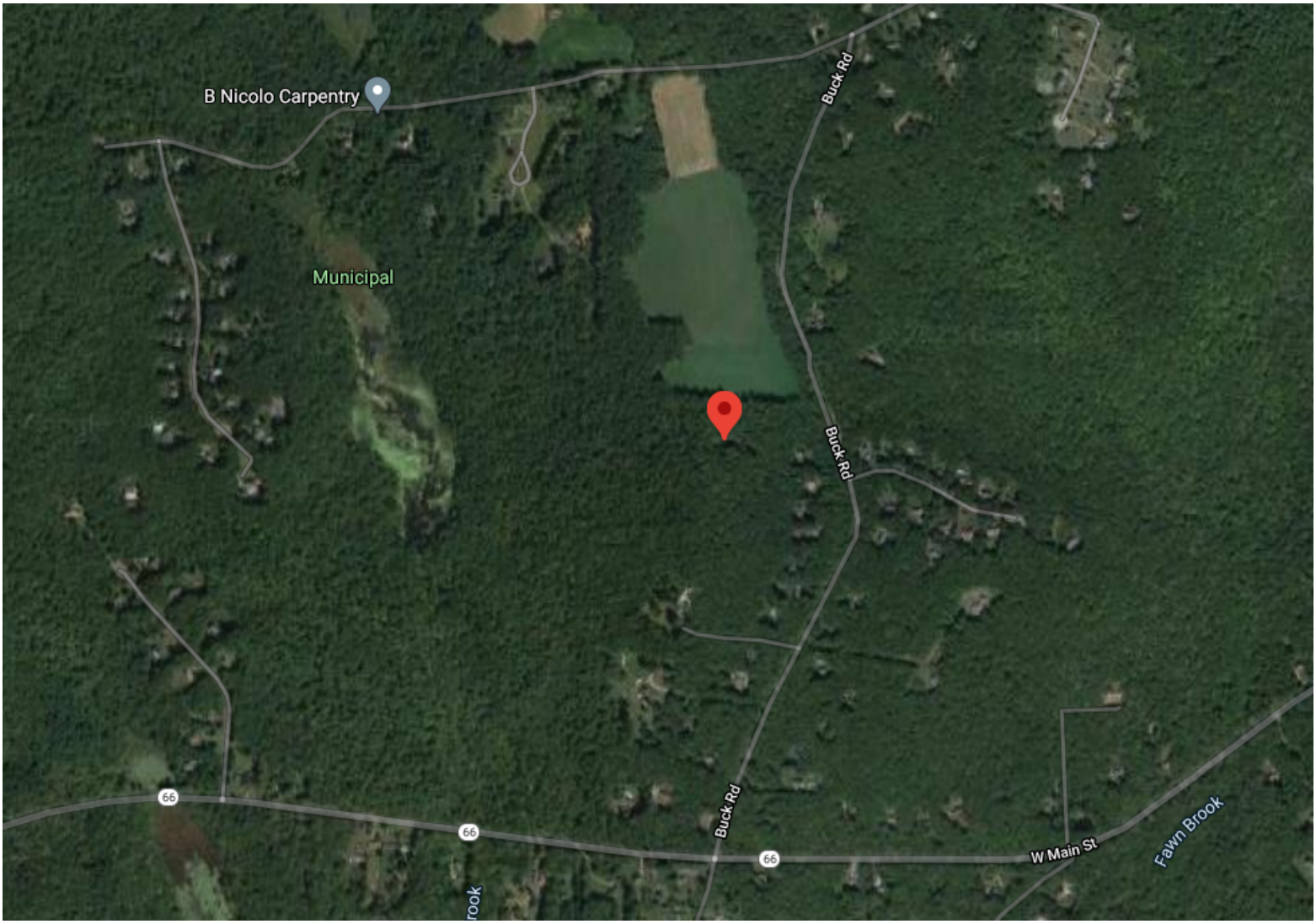

Exhibit C

Construction Drawings

T-MOBILE SITE NUMBER: CTHA353A
T-MOBILE SITE NAME: CT33XC560
SITE TYPE: MONOPINE
TOWER HEIGHT: 119'-6"

BUSINESS UNIT #: 876387
SITE ADDRESS: 107 BUCK RD. HEBRON, CT 06248
COUNTY: TOLLARD
JURISDICTION: TOWN OF HEBRON

T-MOBILE SPRINT RETAIN SITE CONFIGURATION: 67D5A998C 6160 (GSM ONLY)

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	SOUTH HEBRON / NED ELLIS PROP.
SITE ADDRESS:	107 BUCK RD. HEBRON, CT 06248
COUNTY:	TOLLARD
MAP/PARCEL #:	42-3X.A
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.65445°
LONGITUDE:	-72.410864°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	545 FT
CURRENT ZONING:	RESIDENCE-1
JURISDICTION:	TOWN OF HEBRON
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	MAPLELEAF FARM LAND TRUST LLC, C/O GLOBAL SIGNAL ACQ II (CT33XC560) MCMURRAY, PA 15317
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	T.B.D.
TELCO PROVIDER:	T.B.D.

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 JENNY PAUL jpaul@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	CODE SUMMARY
T-3	CODE SUMMARY
T-4	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 24X36. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (6) ANTENNAS
- REMOVE (12) RADIOS
- REMOVE (3) SECTOR MOUNTS
- REMOVE (4) HYBRID CABLES
- INSTALL (3) SITE PRO 1 VFA-10-SD-S WITH MSFAA COLLAR MOUNTS
- INSTALL (9) ANTENNAS
- INSTALL (9) RADIOS
- INSTALL (4) (1-5/8") HYBRID CABLEs

GROUND SCOPE OF WORK:
- REMOVE (1) MBTS CABINET
- REMOVE (1) DUNNAGE
- REMOVE (1) PLINTH AND ALL OTHER STEEL AFTER CABINETS ARE REMOVED
- INSTALL (1) 6160 CABINET
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) RBS 6601
- INSTALL (1) BB 6648
- INSTALL (1) BB 6630
- INSTALL (1) CSR IXRE V2 IN ENCLOSURE 6160 CABINET
- INSTALL (1) PSU 4813 VOLTAGE BOOSTER
- INSTALL (1) DUG20

NOTE:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

LOCATION MAP

NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2015 IBC / 2018 CONNECTICUT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	MORRISON HERSHFIELD
DATED:	2/18/21
MOUNT ANALYSIS:	BY OTHERS
DATED:	INFINIGY ENGINEERING, PLLC
AC ELECTRICAL POWER DESIGN:	2/3/21
DATED:	
RFDS REVISION:	1
DATED:	1/15/21
ORDER ID:	538758
REVISION:	1

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS
BEFORE YOU DIG!

APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CTHA353A

BU #: **876387**
SOUTH HEBRON / NED ELLIS PROP.

107 BUCK RD.
HEBRON, CT 06248

EXISTING
119'-6" MONOPINE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	3/9/21	JTS	PRELIMINARY REVIEW	MTJ
0	3/19/21	JJD	CONSTRUCTION	GEH

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1

REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:T-1 – User: ghayes – Mar 19, 2021 – 1:10pm

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Verizon Antenna Removal and Addition
Address: Street, City, State Zip Code Zip
Owner/Authorized Agent: _____ Phone # (____) ____ - ____ E-Mail _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City ☒ County TOLLARD ☐ State

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				(___)	
Civil	Crown Castle	Richard A. Boelter	049529	(724) 416-9985	richard.boelter@crowncastle.com
Electrical	Crown Castle	Richard A. Boelter	049529	(724) 416-9985	richard.boelter@crowncastle.com
Fire Alarm				(___)	
Plumbing				(___)	
Mechanical				(___)	
Sprinkler-Standpipe				(___)	
Structural	John W. Kelly P.E. Engineering, P.C. John W/Kelly, III		042719	(918) 587-4630	
Retaining Walls >5' High				(___)	
Other				(___)	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): U
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): U

RISK CATEGORY (Table 1604.5): **Current:** ☐ I ☒ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: (check all that apply) ☐ I-A ☐ I-B ☐ II-A ☒ II-B ☐ III-A ☐ III-B ☐ IV ☐ V-A ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☐ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction Including supporting beams and joists							
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

Gross Building Area Table

FLOOR	EXISTING (SQ.FT)	NEW (SQ.FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor			
Basement			
TOTAL			

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ☒ No ☐ Yes Separation: ____ Hr Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☐ Yes
Exit Signs: ☐ No ☐ Yes
Fire Alarm: ☐ No ☐ Yes
Smoke Detection Systems: ☐ No ☐ Yes ☐ Partial _____
Carbon Monoxide Detection: ☐ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations (if not on the site plan)
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30 =$ _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]			
Building Height in Stories (Table 504.4) [3]			

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	TOTAL # OF PARKING SPACES PROVIDED	# OF ACCESSIBLE SPACES PROVIDED REGULAR WITH 5' ACCESS AISLE	# OF ACCESSIBLE SPACES PROVIDED VAN SPACES WITH 132" ACCESS AISLE	# OF ACCESSIBLE SPACES PROVIDED VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATERCLOSETS MALE	WATERCLOSETS FEMALE	WATERCLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

_____

_____

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CTHA353A

BU #: **876387**
SOUTH HEBRON / NED ELLIS PROP.

107 BUCK RD.
HEBRON, CT 06248

EXISTING
119'-6" MONOPINE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	3/9/21	JTS	PRELIMINARY REVIEW	MTJ
0	3/19/21	JJD	CONSTRUCTION	GEH

STATE OF CONNECTICUT — JOHN W. KELLY — No. 23924 — LICENSED PROFESSIONAL ENGINEER
3/19/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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SHEET NUMBER: T-2
REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:T-2 – User: qhoyes – Mar 19, 2021 – 1:10pm

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☐ 3A ☐ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
(If "Other" specify source here)_____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Skylights in each assembly: _____
U-Value of skylight: _____
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Openings (windows or doors with glazing)
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: _____

Walls below grade (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors over unconditioned space (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors slab on grade
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/vertical requirement: _____
slab heated: _____

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
☐ C406.2 More Efficient HVAC Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_s) _____
Seismic (I_E) _____

Live Loads: Roof _____ psf
Mezzanine _____ psf
Floor _____ psf

Ground Snow Load: _____ psf

Wind Load: Ultimate Wind Speed _____ mph (ASCE-7)
Exposure Category _____

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_s_____ %g S_1_____ %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system ☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) _____ psf
Presumptive Bearing capacity _____ psf
File size, type, and capacity _____

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

2018 NC Administrative Code and Policies

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SHEET NUMBER: T-3

REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:T-3 – User: ghoyes – Mar 19, 2021 – 1:10pm

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER: T–MOBILE
TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER..40 ksi
#5 BARS AND LARGER..60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH........................3"
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 BARS AND LARGER..2"
#5 BARS AND SMALLER..1–1/2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
SLAB AND WALLS..3/4"
BEAMS AND COLUMNS..1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CTHA353A

BU #: **876387**
SOUTH HEBRON / NED ELLIS PROP.

107 BUCK RD.
HEBRON, CT 06248

EXISTING
119'-6" MONOPINE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	3/9/21	JTS	PRELIMINARY REVIEW	MTJ
0	3/19/21	JJD	CONSTRUCTION	GEH

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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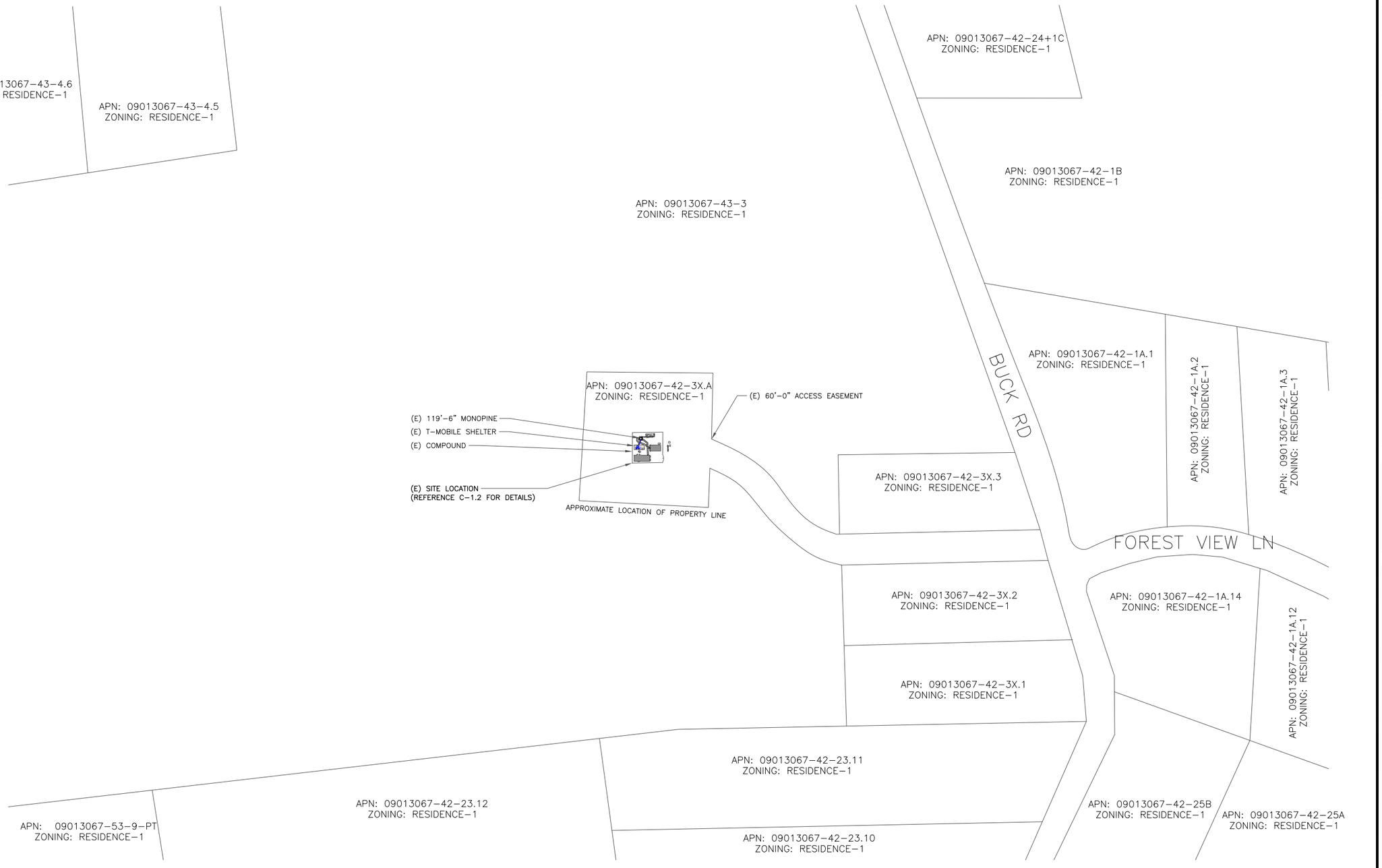
SHEET NUMBER: **T-4**
REVISION: **0**

147458.002.01 SOUTH HEBRON_T–MOBILE_10.21.2020.dwg – Sheet:T–4 – User: ghayes – Mar 19, 2021 – 1:10pm

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.



1 OVERALL SITE PLAN

SCALE: 100' 50' 0 100' 1" = 100'-0" (FULL SIZE) 1" = 200'-0" (11x17)

N

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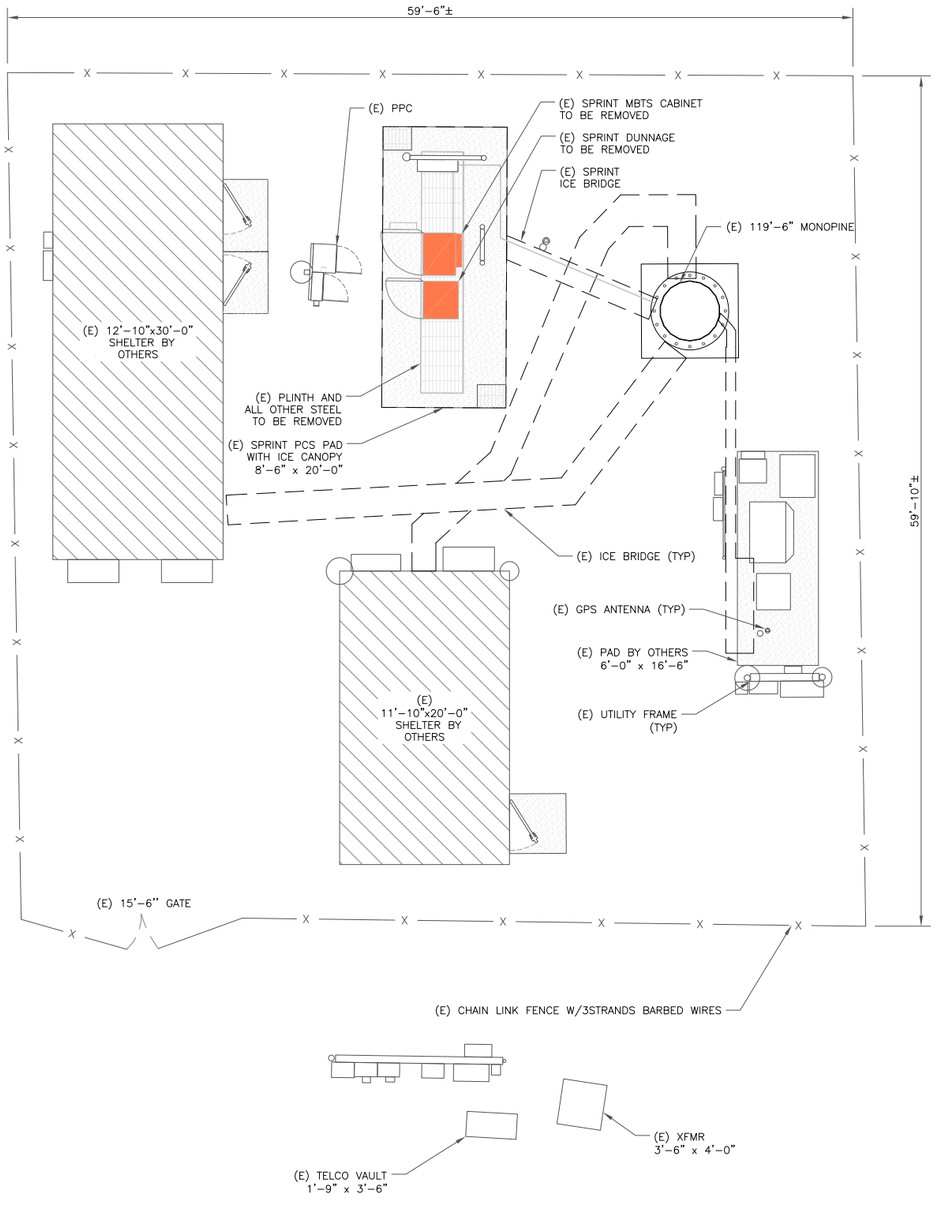
SHEET NUMBER: C-1.1

REVISION: 0

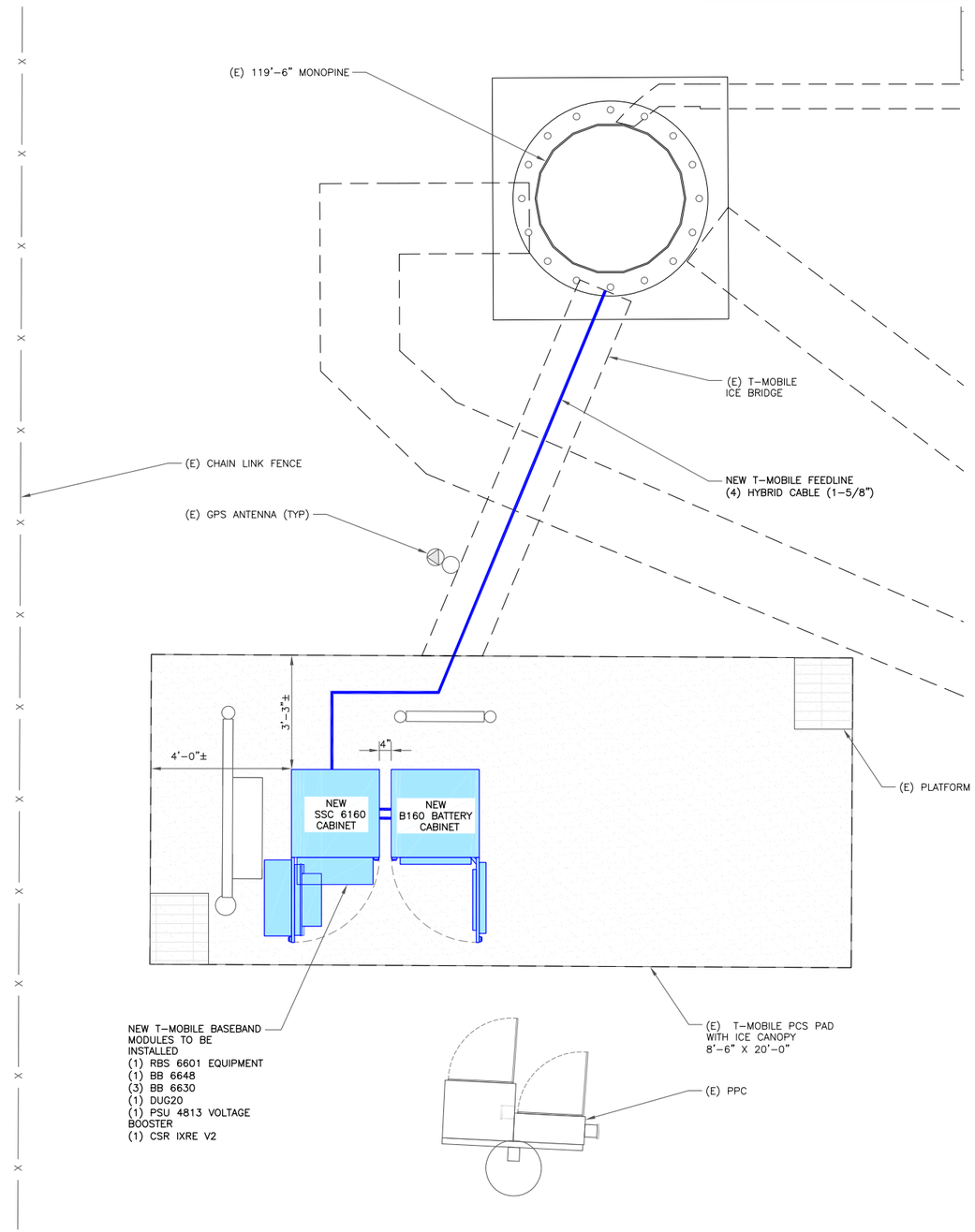
147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:C-1.1 – User: ghayes – Mar 19, 2021 – 1:10pm



1 SITE PLAN
SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

NOTES:

THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.



2 ENLARGED SITE PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

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SHEET NUMBER: C-1.2

REVISION: 0

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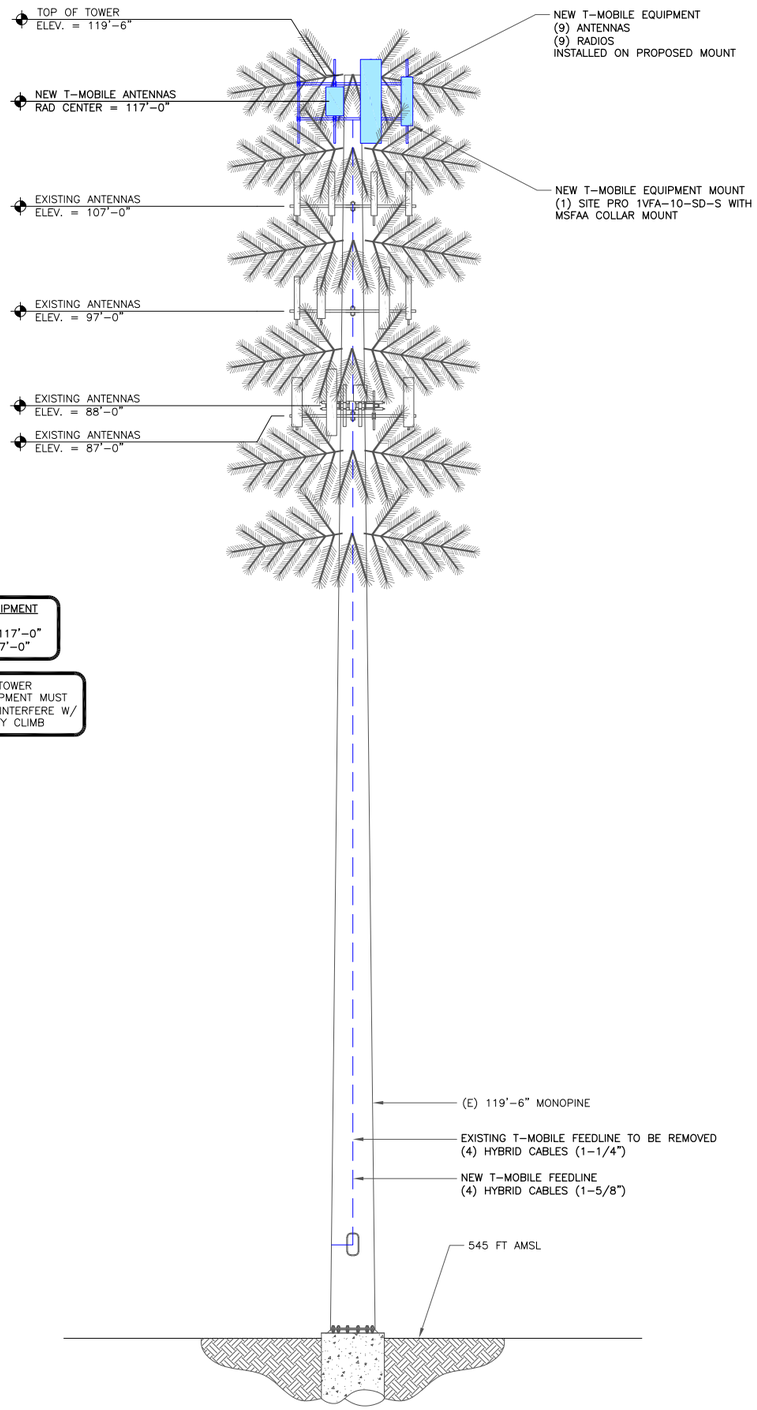
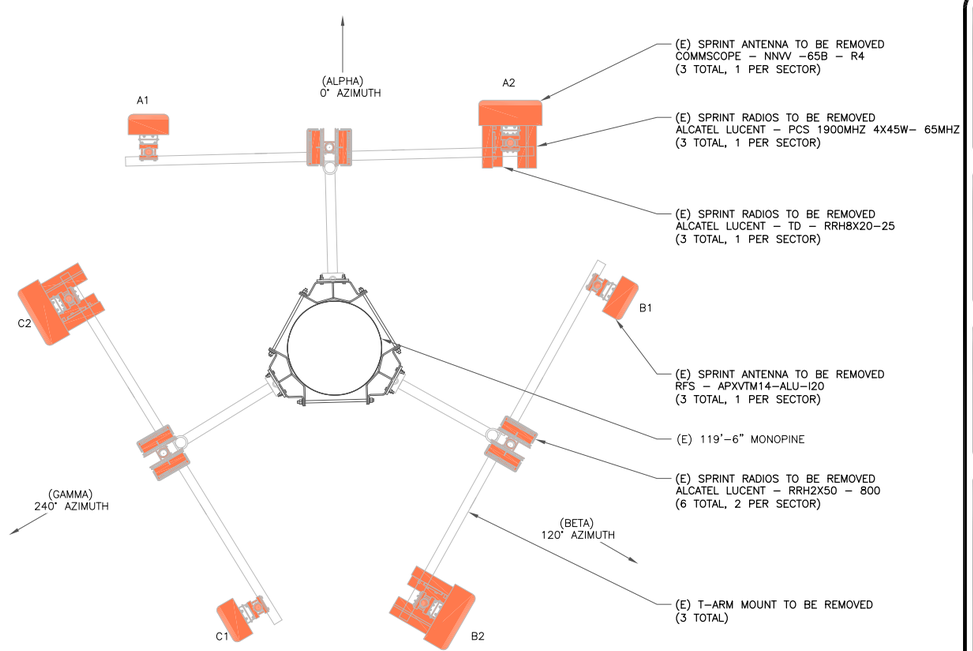


T-MOBILE EQUIPMENT

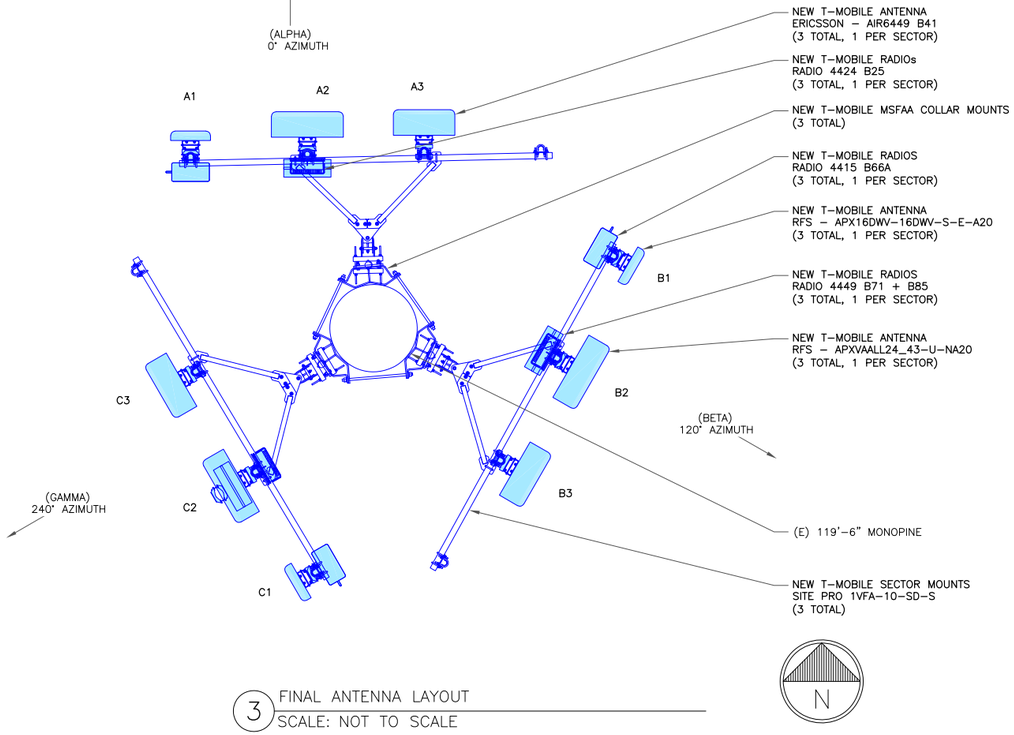
ANTENNA CL: 117'-0"
MOUNT CL: 117'-0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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SHEET NUMBER: C-2

REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg - Sheet:C-2 - User: ghoyes - Mar 19, 2021 - 1:10pm

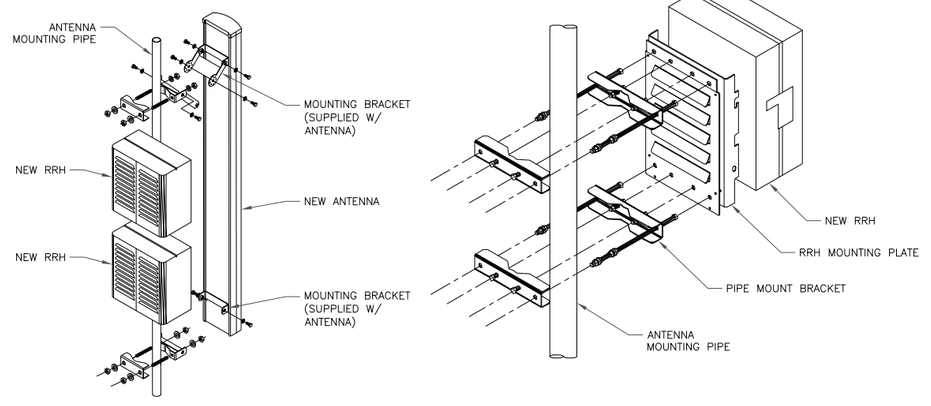
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	FEEDLINE TYPE
ALPHA	A-1	L2100	RFS	APX16DWV-16DWV-S-E-A20	0°	0°	2°	117'-0"	RADIO 4415 B66A	–
	A-2	L700 / L600 / N600 / L1900 / G1900	RFS	APXVAALL24_43-U-NA20	0°	0°	2°/2°	117'-0"	RADIO 4449 B71+B85/ RADIO 4424 B25	(4) HYBRID CABLES
	A-3	L2500 / N2500	ERICSSON	AIR6449 B41	0°	0°	2°	117'-0"	–	–
BETA	B-1	L2100	RFS	APX16DWV-16DWV-S-E-A20	120°	0°	2°	117'-0"	RADIO 4415 B66A	–
	B-2	L700 / L600 / N600 / L1900 / G1900	RFS	APXVAALL24_43-U-NA20	120°	0°	2°/2°	117'-0"	RADIO 4449 B71+B85/ RADIO 4424 B25	–
	B-3	L2500 / N2500	ERICSSON	AIR6449 B41	120°	0°	2°	117'-0"	–	–
GAMMA	C-1	L2100	RFS	APX16DWV-16DWV-S-E-A20	240°	0°	2°	117'-0"	RADIO 4415 B66A	–
	C-2	L700 / L600 / N600 / L1900 / G1900	RFS	APXVAALL24_43-U-NA20	240°	0°	2°/2°	117'-0"	RADIO 4449 B71+B85/ RADIO 4424 B25	–
	B-3	L2500 / N2500	ERICSSON	AIR6449 B41	240°	0°	2°	117'-0"	–	–

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

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SHEET NUMBER: C-3

REVISION: 0

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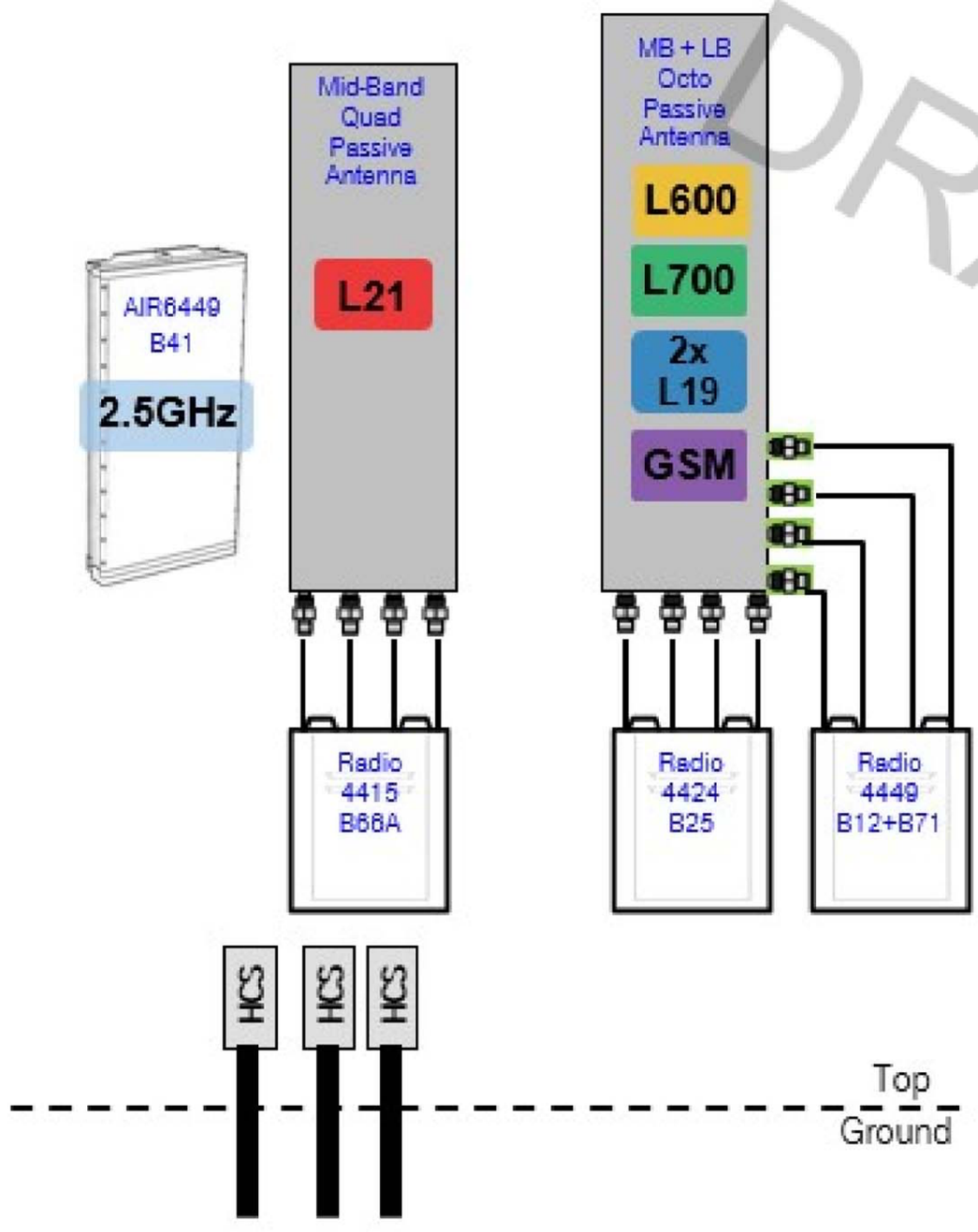

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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EXISTING
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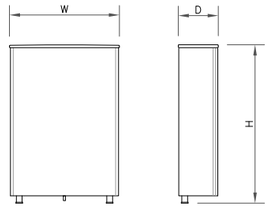
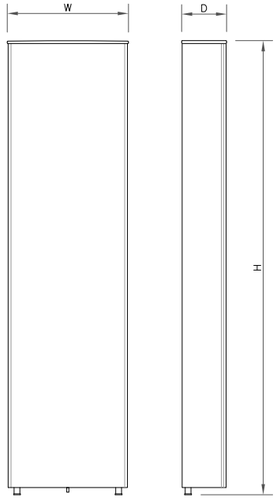
SHEET NUMBER: C-4
REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg — Sheet:C-4 — User: ghayes — Mar 19, 2021 — 1:10pm



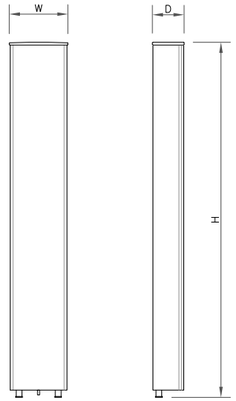
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR6449 B41
WIDTH	20.51"
DEPTH	8.54"
HEIGHT	33.11"
WEIGHT	114.63 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



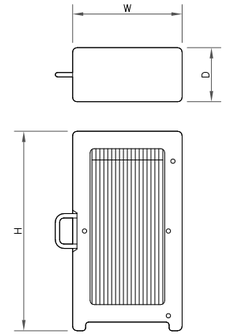
ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAALL24_43-U-NA20
WIDTH	24.00"
DEPTH	8.50"
HEIGHT	95.90"
WEIGHT	149.90 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



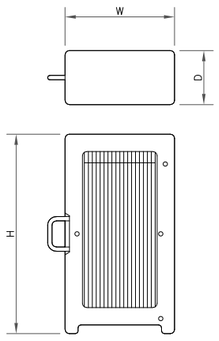
ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APX16DWV-16DWV-S-E-A20
WIDTH	13.30"
DEPTH	3.15"
HEIGHT	55.90"
WEIGHT	40.70 LBS

3 ANTENNA SPECS
SCALE: NOT TO SCALE



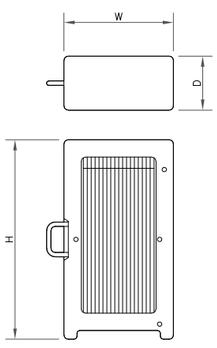
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4449 B71+B85
WIDTH	13.20"
DEPTH	10.63"
HEIGHT	17.91"
WEIGHT	73.21 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



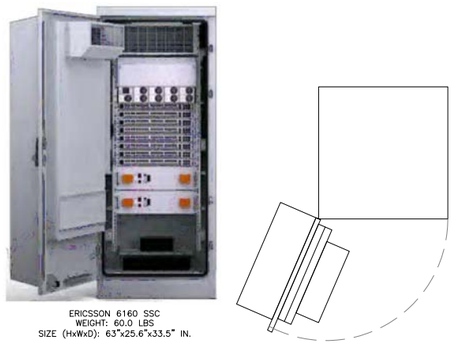
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4415 B66A
WIDTH	13.50"
DEPTH	6.30"
HEIGHT	16.50"
WEIGHT	49.60 LBS

5 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4424 B25
WIDTH	14.40"
DEPTH	11.30"
HEIGHT	17.10"
WEIGHT	86.00 LBS

6 RRU SPECS
SCALE: NOT TO SCALE



ERICSSON 6160 SSC
WEIGHT: 60.0 LBS
SIZE (HxWxD): 63"x25.6"x33.5" IN.

7 ERICSSON 6160 SSC
SCALE: NOT TO SCALE

BATTERY CABINET SPECIFICATIONS	
MODEL #	B160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH	26"
WEIGHT	

8 ERICSSON B160 BATTERY CABINET
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CTHA353A

BU #: **876387**
SOUTH HEBRON / NED ELLIS PROP.

107 BUCK RD.
HEBRON, CT 06248

EXISTING
119'-6" MONOPINE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	3/9/21	JTS	PRELIMINARY REVIEW	MTJ
0	3/19/21	JJD	CONSTRUCTION	GEH

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SHEET NUMBER: C-5

REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg - Sheet:C-5 - User: ghoyes - Mar 19, 2021 - 1:11pm

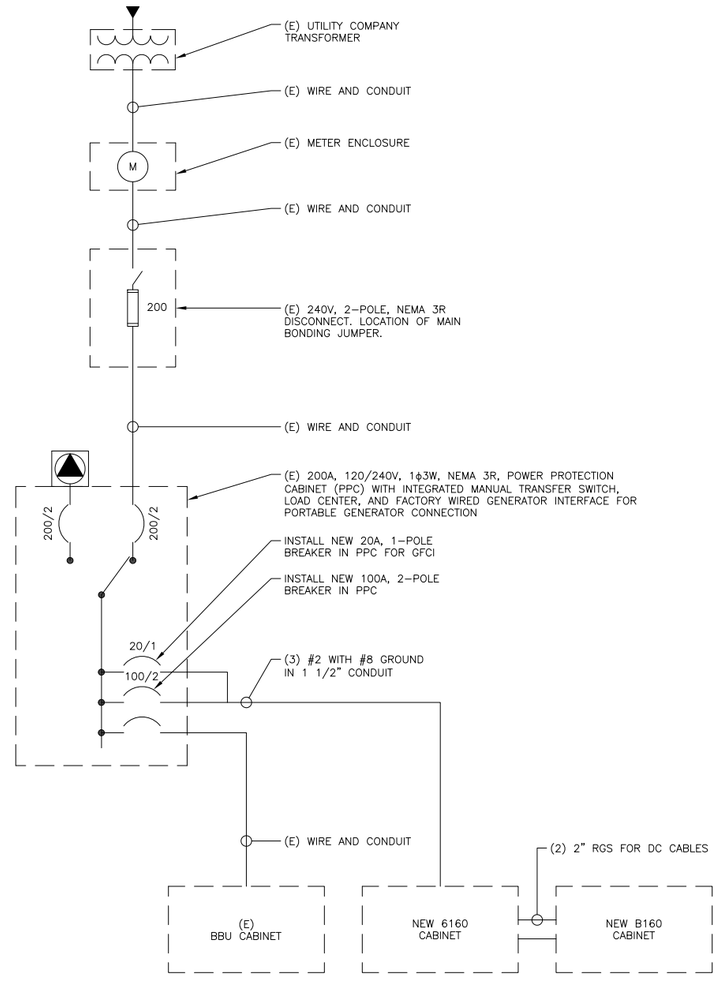
NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
MBTS	2	100A	1	7	60A	2	SURGE
			2	8			
6160 CABINET	2	100A	3	9	15A	1	EQUIPMENT LIGHT
			4	10	–	1	BLANK
GFCI	1	20A	5	11	15A	1	GFI RECEPTICLE IN PPC TELCO BOX
TELCO FAN	1	10A	6	12	20A	1	GFI RECEPTICLE ON BACKERBOARD
RATED VOLTAGE: ■120/240 □ _____, 1 PHASE, 3 WIRE			BRANCH POLES: ■12 □24 □30 □42				APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □ _____.			CABINET: ■SURFACE □FLUSH				NEMA □1 ■3R □4X
□MAIN LUGS ONLY ■MAIN 200 AMPS ■BREAKER □FUSED SWITCH			■HINGED DOOR				■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES			□ _____ TO BE GFCI BREAKERS				FULL NEUTRAL BUS GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL							

REPLACE EXISTING WIRES FOR EXISTING BBU CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #2G AWG. MINIMUM CONDUIT SIZE TO BE 2".
IF 100A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING DOCUMENTS AND PHOTOS

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
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BU #: **876387**
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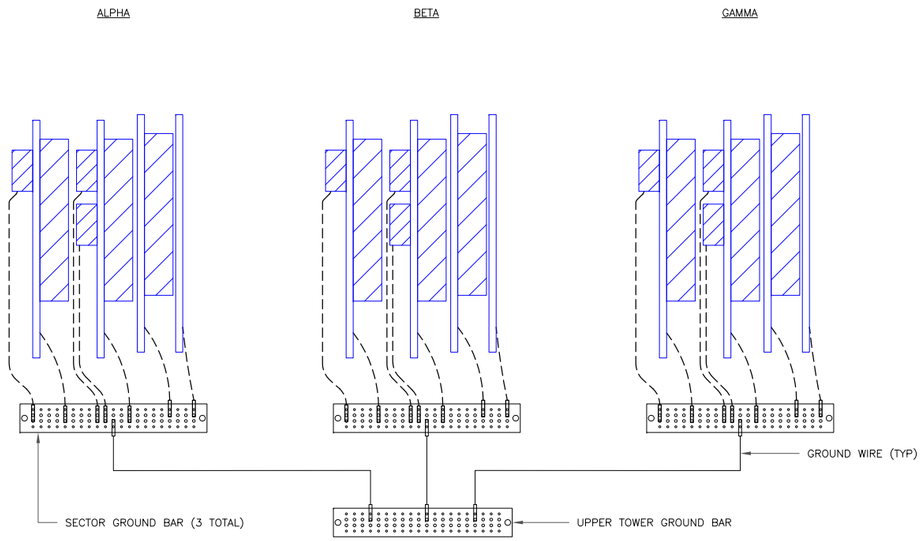
SHEET NUMBER: E-1

REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:E-1 – User: ghayes – Mar 19, 2021 – 1:11pm



NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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107 BUCK RD.
HEBRON, CT 06248

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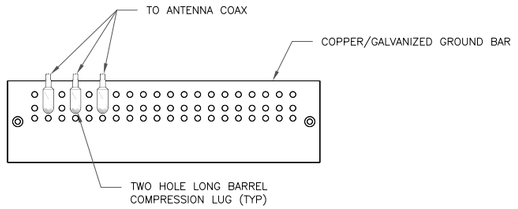
SHEET NUMBER: G-1

REVISION: 0

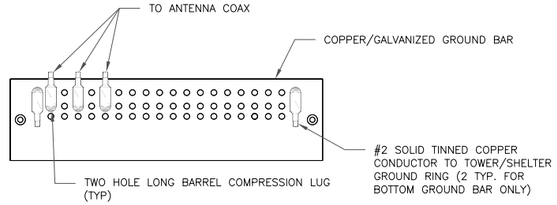
147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:G-1 – User: ghayes – Mar 19, 2021 – 1:11pm



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

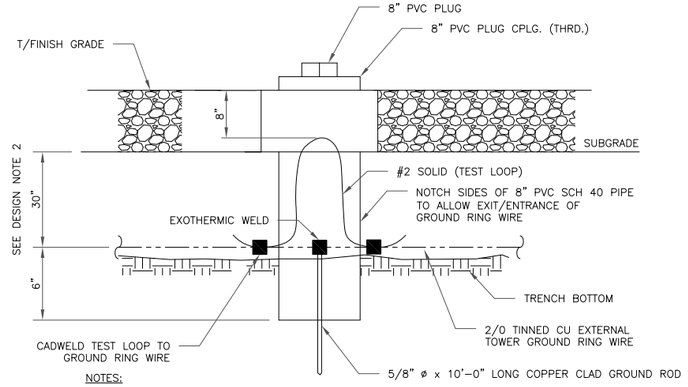
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

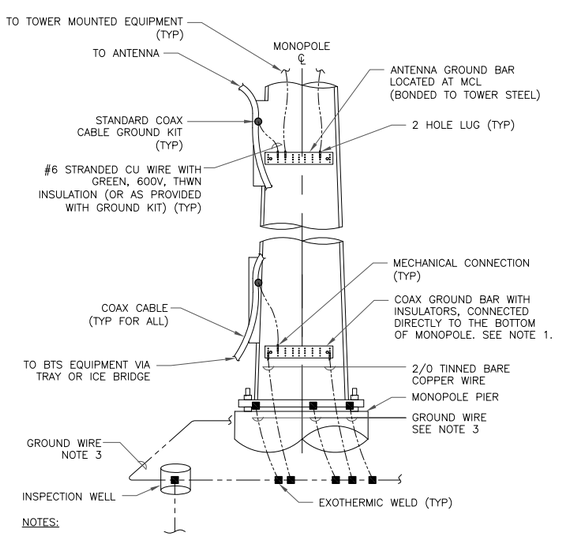
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

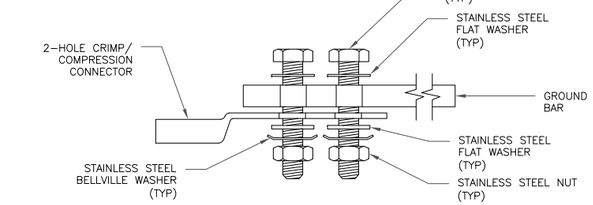
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



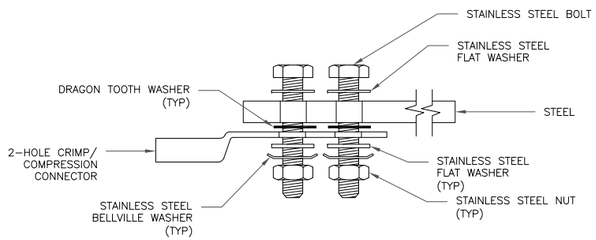
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

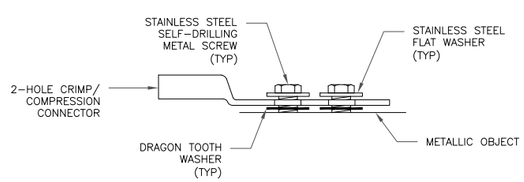
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

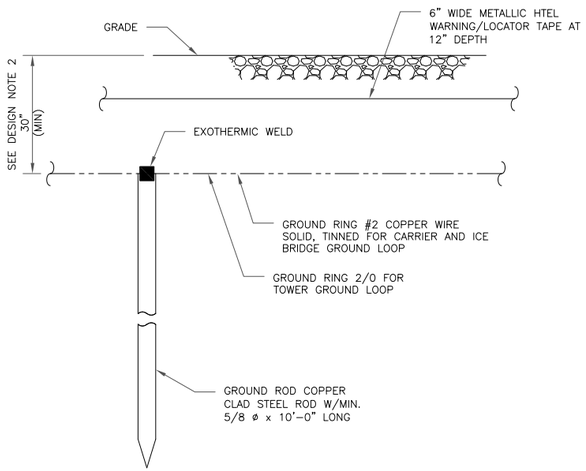


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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T-MOBILE SITE NUMBER:
CTHA353A

BU #: **876387**
SOUTH HEBRON / NED ELLIS PROP.

107 BUCK RD.
HEBRON, CT 06248

EXISTING
119'-6" MONOPINE

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0	3/19/21	JJD	CONSTRUCTION	GEH

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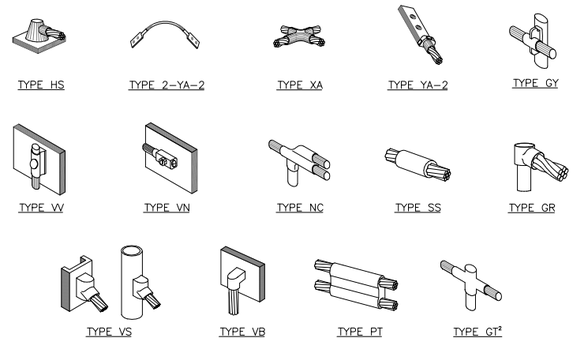
SHEET NUMBER: G-2
REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg – Sheet:G-2 – User: ghayes – Mar 19, 2021 – 1:11pm

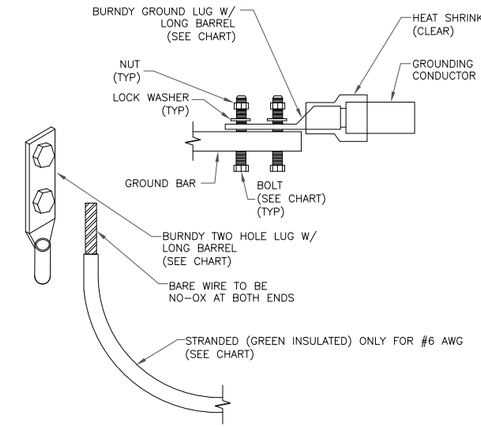


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

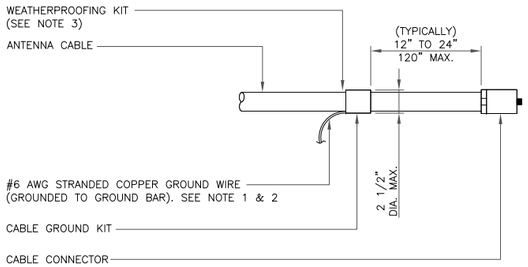
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

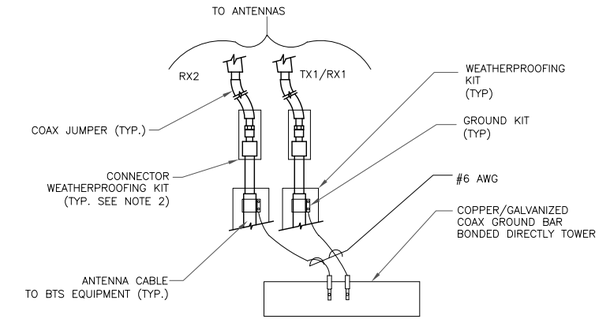
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

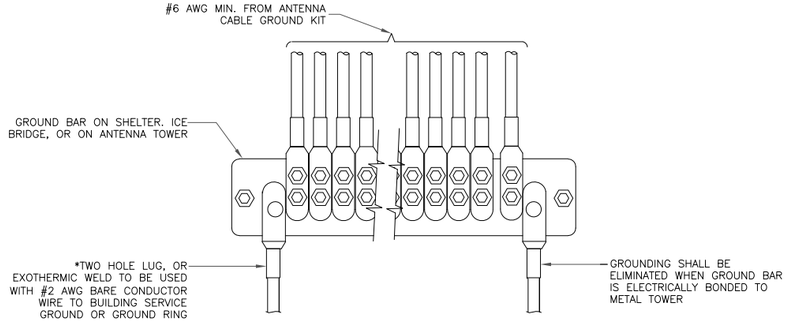
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



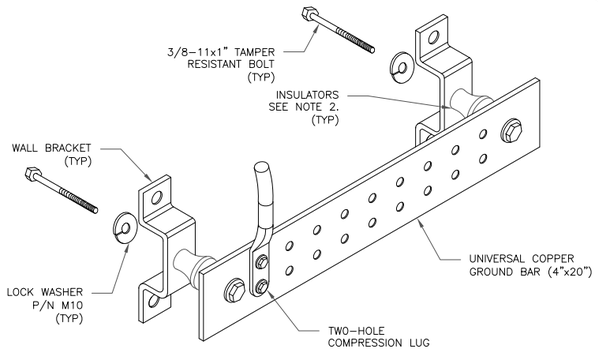
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



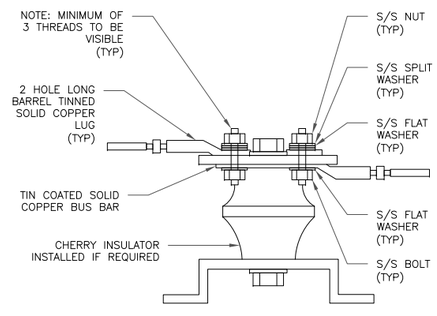
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



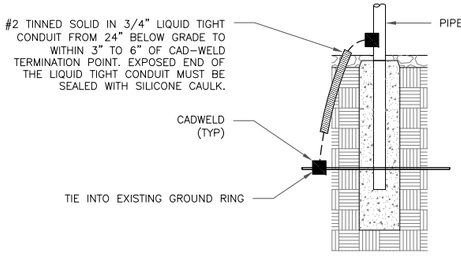
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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T-MOBILE SITE NUMBER:
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BU #: **876387**
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SHEET NUMBER: G-3
REVISION: 0

147458.002.01 SOUTH HEBRON_T-MOBILE_10.21.2020.dwg - Sheet:G-3 - User: ghoyes - Mar 19, 2021 - 1:11pm

Exhibit D

Structural Analysis Report

Date: **February 18, 2021**

MORRISON HERSHFIELD

Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 379-8500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate**	
	Site Number:	CTHA353A
Crown Castle Designation:	**BU Number:**	876387
	Site Name:	South Hebron / Ned Ellis Prop.
	JDE Job Number:	628907
	Work Order Number:	1919202
	Order Number:	538758 Rev. 1
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN7-278 / 2101398	
Site Data:	**107 Buck Rd., Hebron, Tolland County, CT 06248** **Latitude *41° 39' 16.02"*, Longitude *-72° 24' 39.11"*** **119.5 Foot - EEI Monopine Tower**	

Morrison Hershfield is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 119.5 ft monopine tower designed by Engineered Endeavours, Inc.

The tower was modified per reinforcement drawings prepared by GPD Associates, in December of 2008. Reinforcement consists of addition of base plate stiffeners. Per the post modification inspection completed by GPD Associate, in May of 2009, these modifications have been properly installed and were considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
117.0	117.0	3	rfs celwave	APXVAALL24_43-U-NA20_TMO	4	1-5/8
		3	rfs celwave	APX16DWV-16DWV-S-E-A20		
		3	ericsson	AIR6449 B41_T-MOBILE		
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_ T-MOBILE		
		1	Site Pro 1	Collar Mount [MSFAA]		
		3	Site Pro 1	10.5' V-Frame Assembly [VFA10-SD-S]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
107.0	107.0	12	decibel	DB844H90 w/ Mount Pipe	12	7/8
		1	tower mounts	T-Arm Mount [TA 602-3]		
97.0	97.0	3	antel	BXA-70063-6CF-2 w/ Mount Pipe	12	1-5/8
		6	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe		
		3	swedcom	SPXW 8515 T4 w/ Mount Pipe		
		6	rfs celwave	FD9R6004/2C-3L		
		1	tower mounts	T-Arm Mount [TA 602-3]		
88.0	90.0	3	ericsson	TME-RRUS-11	-	-
		1	raycap	TME-DC6-48-60-18-8F		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	88.0	1	tower mounts	Pipe Mount [PM 602-3]		
87.0	89.0	6	powerwave technologies	7770.00 w/ Mount Pipe	12 2 1 1	7/8 7/16 3/8 2C
		6	powerwave technologies	LGP21401		
		6	powerwave technologies	LGP21901		
	88.0	3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
	87.0	1	tower mounts	T-Arm Mount [TA 602-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2157932	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1630217	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1613574	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2374441	CCISITES
4-POST-MODIFICATION INSPECTION	2431180	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Morrison Hershfield should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	119.5 - 69.67	Pole	TP33.02x19x0.3125	1	-20.06	1912.86	69.9	Pass
L2	69.67 - 42.25	Pole	TP39.99x31.0839x0.375	2	-27.22	2784.66	81.8	Pass
L3	42.25 - 0	Pole	TP51x37.7131x0.4375	3	-43.77	4312.79	82.3	Pass
							Summary	
						Pole (L3)	82.3	Pass
						Rating =	82.3	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	78.7	Pass
1	Base Plate		82.0	Pass
1	Base Foundation	0	95.1	Pass
1	Base Foundation Soil Interaction		69.9	Pass

Structure Rating (max from all components) =	95.1%*

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) *Rating per TIA-222-H, Section 15.5

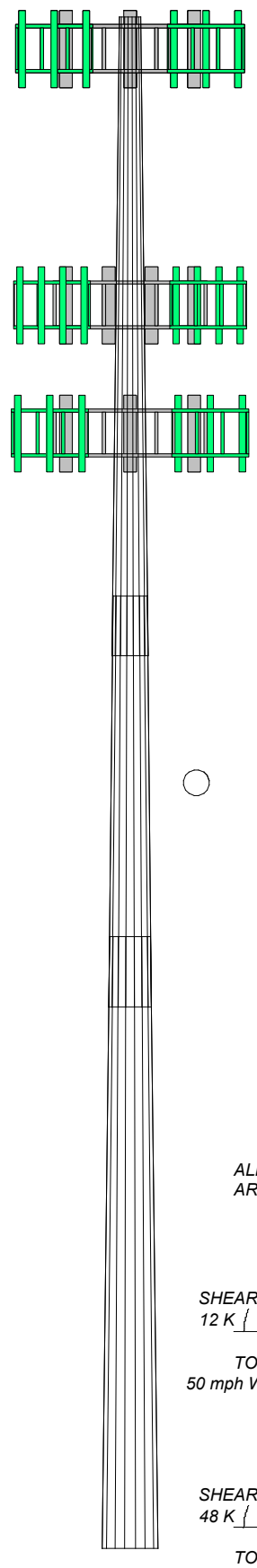
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	49.83	18	0.3125	4.66	19.0000	33.0200		4.3
2	32.08	18	0.3750	5.50	31.0839	39.9900	A572-65	4.6
3	47.75	18	0.4375		37.7131	51.0000		9.9
								18.8



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 82.3%

ALL REACTIONS ARE FACTORED

AXIAL 69 K

SHEAR 12 K *MOMENT 1126 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 44 K

SHEAR 48 K *MOMENT 4379 kip-ft*

TORQUE 0 kip-ft
REACTIONS - 130 mph WIND

Morrison Hershfield
Consulting Engineers
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
Phone: (770) 379-8500
FAX: (770) 379-8501

Job:	***CN7-278 / 2101398***		
Project:	***876387 / South Hebron / Ned Ellis Prop.***		
Client: Crown Castle USA	Drawn by: MG		App'd:
Code: TIA-222-H	Date: 02/18/21		Scale: NTS
Path: C:\Users\MGoll\Desktop\Important\Jobs\2021\SA\CN7-278_BU 876387\Analysis\CN7-278 BU_876387 WO_19192021.eri			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Tolland County, Connecticut.
- Tower base elevation above sea level: 545.00 ft.
- Basic wind speed of 130 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.05.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	119.50-69.67	49.83	4.66	18	19.0000	33.0200	0.3125	1.2500	A572-65 (65 ksi)
L2	69.67-42.25	32.08	5.50	18	31.0839	39.9900	0.3750	1.5000	A572-65 (65 ksi)
L3	42.25-0.00	47.75		18	37.7131	51.0000	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	19.2449	18.5357	817.8017	6.6341	9.6520	84.7287	1636.6795	9.2696	2.7940	8.941
	33.4812	32.4418	4384.6653	11.6112	16.7742	261.3940	8775.1000	16.2240	5.2615	16.837
L2	32.8192	36.5512	4354.7927	10.9017	15.7906	275.7837	8715.3156	18.2791	4.8108	12.829
	40.5491	47.1518	9348.7731	14.0633	20.3149	460.1925	18709.8476	23.5804	6.3782	17.009
L3	39.7814	51.7618	9086.4782	13.2328	19.1582	474.2856	18184.9126	25.8858	5.8675	13.411
	51.7193	70.2124	22678.1721	17.9497	25.9080	875.3347	45386.1847	35.1128	8.2060	18.757

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 119.50-69.67				1	1	1			
L2 69.67-42.25				1	1	1			
L3 42.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
******											

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
******									
***									
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	117.00 - 8.00	4	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50
******									
LDF5-50A(7/8)	A	No	No	Inside Pole	107.00 - 8.00	12	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	0.33
******									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	97.00 - 3.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
******									
LDF5-50A(7/8)	A	No	No	Inside Pole	87.00 - 8.00	12	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
FB-L98B-002-75000(3/8)	A	No	No	Inside Pole	87.00 - 8.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	A	No	No	Inside Pole	87.00 - 8.00	2	No Ice	0.00	0.14
							1/2" Ice	0.00	0.14
							1" Ice	0.00	0.14
							2" Ice	0.00	0.14
2" Rigid Conduit	A	No	No	Inside Pole	87.00 - 8.00	1	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
							2" Ice	0.00	2.80
******									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	119.50-69.67	A	0.000	0.000	0.000	0.000	0.27
		B	0.000	0.000	0.000	0.000	0.27
		C	0.000	0.000	0.000	0.000	0.47
L2	69.67-42.25	A	0.000	0.000	0.000	0.000	0.30
		B	0.000	0.000	0.000	0.000	0.27
		C	0.000	0.000	0.000	0.000	0.27
L3	42.25-0.00	A	0.000	0.000	0.000	0.000	0.38
		B	0.000	0.000	0.000	0.000	0.39
		C	0.000	0.000	0.000	0.000	0.34

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	119.50-69.67	A	1.414	0.000	0.000	0.000	0.000	0.27
		B		0.000	0.000	0.000	0.000	0.27
		C		0.000	0.000	0.000	0.000	0.47
L2	69.67-42.25	A	1.343	0.000	0.000	0.000	0.000	0.30
		B		0.000	0.000	0.000	0.000	0.27
		C		0.000	0.000	0.000	0.000	0.27
L3	42.25-0.00	A	1.219	0.000	0.000	0.000	0.000	0.38
		B		0.000	0.000	0.000	0.000	0.39
		C		0.000	0.000	0.000	0.000	0.34

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	119.50-69.67	0.0000	0.0000	0.0000	0.0000
L2	69.67-42.25	0.0000	0.0000	0.0000	0.0000
L3	42.25-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
****** ***									
AIR6449 B41_T-MOBILE	A	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.66 5.96 6.27 6.91	2.48 2.70 2.94 3.43	0.11 0.15 0.20 0.30
AIR6449 B41_T-MOBILE	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.66 5.96 6.27 6.91	2.48 2.70 2.94 3.43	0.11 0.15 0.20 0.30
AIR6449 B41_T-MOBILE	C	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.66 5.96 6.27 6.91	2.48 2.70 2.94 3.43	0.11 0.15 0.20 0.30
APXVAALL24_43-U-NA20_TMO	A	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APXVAALL24_43-U-NA20_TMO	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APXVAALL24_43-U-NA20_TMO	C	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APX16DWV-16DWV-S-E-A20	A	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.26 6.85 7.46 8.72	1.50 2.00 2.52 3.62	0.04 0.07 0.11 0.20
APX16DWV-16DWV-S-E-A20	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.26 6.85 7.46 8.72	1.50 2.00 2.52 3.62	0.04 0.07 0.11 0.20
APX16DWV-16DWV-S-E-A20	C	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.26 6.85 7.46 8.72	1.50 2.00 2.52 3.62	0.04 0.07 0.11 0.20
RADIO 4449 B71 B85A_T-	A	From Leg	4.00	0.0000	117.00	No Ice	1.97	1.59	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
MOBILE			0.00 0.00			1/2" Ice 1" Ice 2" Ice	2.15 2.33 2.72	1.75 1.92 2.28	0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
(2) RADIO 4424 B25_TMO	A	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4424 B25_TMO	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4415 B66A	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.86 2.03 2.20 2.58	0.87 1.00 1.13 1.43	0.05 0.06 0.08 0.12
(2) RADIO 4415 B66A	C	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.86 2.03 2.20 2.58	0.87 1.00 1.13 1.43	0.05 0.06 0.08 0.12
(4) 8'x2" Antenna Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(4) 8'x2" Antenna Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(4) 8'x2" Antenna Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
Collar Mount [MSFAA]	A	None		0.0000	117.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	3.17 3.79 4.42 5.76	3.17 3.79 4.42 5.76	0.20 0.23 0.28 0.40
10.5' V-Frame Assembly [VFA10-SD-S]	A	From Leg	0.50 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	9.80 14.90 19.60 29.00	6.40 10.00 13.50 20.50	0.42 0.50 0.63 0.89
10.5' V-Frame Assembly [VFA10-SD-S]	B	From Leg	0.50 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	9.80 14.90 19.60 29.00	6.40 10.00 13.50 20.50	0.42 0.50 0.63 0.89
10.5' V-Frame Assembly	C	From Leg	0.50	0.0000	117.00	No Ice	9.80	6.40	0.42

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
[VFA10-SD-S]			0.00 0.00			1/2" Ice 1" Ice 2" Ice	14.90 19.60 29.00	10.00 13.50 20.50	0.50 0.63 0.89
******									
(4) DB844H90 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 2.61 2.99 3.78	3.34 3.73 4.13 4.97	0.03 0.06 0.11 0.22
(4) DB844H90 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 2.61 2.99 3.78	3.34 3.73 4.13 4.97	0.03 0.06 0.11 0.22
(4) DB844H90 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 2.61 2.99 3.78	3.34 3.73 4.13 4.97	0.03 0.06 0.11 0.22
T-Arm Mount [TA 602-3]	A	None		0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.40 16.44 19.70 25.86	13.40 16.44 19.70 25.86	0.77 1.00 1.29 2.05
******									
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.22 3.59 4.34	6.57 7.19 7.84 9.17	0.03 0.08 0.13 0.25
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.22 3.59 4.34	6.57 7.19 7.84 9.17	0.03 0.08 0.13 0.25
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.22 3.59 4.34	6.57 7.19 7.84 9.17	0.03 0.08 0.13 0.25
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.81 8.36 8.87 9.93	5.80 6.95 7.82 9.60	0.04 0.10 0.17 0.34
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.81 8.36 8.87 9.93	5.80 6.95 7.82 9.60	0.04 0.10 0.17 0.34
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.81 8.36 8.87 9.93	5.80 6.95 7.82 9.60	0.04 0.10 0.17 0.34
SPXW 8515 T4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.41 3.76 4.12 4.87	3.86 4.45 5.05 6.28	0.17 0.20 0.25 0.35
SPXW 8515 T4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.41 3.76 4.12 4.87	3.86 4.45 5.05 6.28	0.17 0.20 0.25 0.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
SPXW 8515 T4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.41 3.76 4.12 4.87	3.86 4.45 5.05 6.28	0.17 0.20 0.25 0.35
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
T-Arm Mount [TA 602-3]	C	None		0.0000	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.40 16.44 19.70 25.86	13.40 16.44 19.70 25.86	0.77 1.00 1.29 2.05
******									
TME-RRUS-11	A	From Leg	1.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.96 3.23 3.50 4.09	1.67 1.98 2.30 3.02	0.06 0.08 0.12 0.19
TME-RRUS-11	B	From Leg	1.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.96 3.23 3.50 4.09	1.67 1.98 2.30 3.02	0.06 0.08 0.12 0.19
TME-RRUS-11	C	From Leg	1.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.96 3.23 3.50 4.09	1.67 1.98 2.30 3.02	0.06 0.08 0.12 0.19
TME-DC6-48-60-18-8F	A	From Leg	1.00 0.00 2.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.58 1.77 2.18	1.00 1.58 1.77 2.18	0.03 0.05 0.07 0.13
Pipe Mount [PM 602-3]	C	From Leg	1.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.67 7.70 8.74 10.90	6.67 7.70 8.74 10.90	0.28 0.34 0.42 0.63
******									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	87.00	No Ice 1/2"	5.75 6.18	4.25 5.01	0.06 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
(2) LGP21401	A	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	B	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	C	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21901	A	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.23 0.29 0.36 0.53	0.16 0.21 0.28 0.42	0.01 0.01 0.01 0.02
(2) LGP21901	B	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.23 0.29 0.36 0.53	0.16 0.21 0.28 0.42	0.01 0.01 0.01 0.02
(2) LGP21901	C	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.23 0.29 0.36 0.53	0.16 0.21 0.28 0.42	0.01 0.01 0.01 0.02
T-Arm Mount [TA 602-3]	A	None		0.0000	87.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.40 16.44 19.70 25.86	13.40 16.44 19.70 25.86	0.77 1.00 1.29 2.05
******									
EEI Branches (Large)	C	None		0.0000	114.00	No Ice 1/2" Ice 1" Ice 2" Ice	90.00 120.00 144.00 172.80	90.00 120.00 144.00 172.80	1.50 1.90 2.47 3.21
EEI Branches (Large)	C	None		0.0000	104.00	No Ice 1/2" Ice 1" Ice 2" Ice	90.00 120.00 144.00 172.80	90.00 120.00 144.00 172.80	1.50 1.90 2.47 3.21
EEI Branches (Large)	C	None		0.0000	94.00	No Ice	90.00	90.00	1.50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1/2" Ice	120.00	120.00	1.90
						1" Ice	144.00	144.00	2.47
						2" Ice	172.80	172.80	3.21
EEI Branches (Large)	C	None		0.0000	84.00	No Ice	90.00	90.00	1.50
						1/2" Ice	120.00	120.00	1.90
						1" Ice	144.00	144.00	2.47
						2" Ice	172.80	172.80	3.21
EEI Branches (Small)	C	None		0.0000	77.00	No Ice	45.00	45.00	0.75
						1/2" Ice	60.00	60.00	0.85
						1" Ice	72.00	72.00	0.95
						2" Ice	96.00	96.00	1.15
******									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service

Comb. No.	Description
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	119.5 - 69.67	Pole	Max Tension	20	0.00	-0.00	-0.00
			Max. Compression	26	-43.37	0.78	0.08
			Max. Mx	20	-20.06	1054.25	-0.39
			Max. My	2	-20.06	-0.05	1052.30
			Max. Vy	20	-41.49	1054.25	-0.39
			Max. Vx	2	-41.46	-0.05	1052.30
			Max. Torque	3			0.49
L2	69.67 - 42.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.22	0.78	0.08
			Max. Mx	20	-27.22	2188.82	-0.68
			Max. My	2	-27.23	-0.32	2185.87
			Max. Vy	20	-43.84	2188.82	-0.68
			Max. Vx	2	-43.80	-0.32	2185.87
			Max. Torque	3			0.49
L3	42.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.35	0.78	0.08
			Max. Mx	20	-43.77	4378.70	-1.19
			Max. My	2	-43.77	-0.82	4373.97
			Max. Vy	20	-47.65	4378.70	-1.19
			Max. Vx	2	-47.61	-0.82	4373.97
			Max. Torque	3			0.49

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	69.35	11.91	-0.00
	Max. H_x	20	43.82	47.60	-0.01
	Max. H_z	2	43.82	-0.01	47.57
	Max. M_x	2	4373.97	-0.01	47.57
	Max. M_z	8	4377.81	-47.60	0.01
	Max. Torsion	3	0.49	-0.01	47.57
	Min. Vert	17	32.87	23.81	-41.20
	Min. H_x	8	43.82	-47.60	0.01
	Min. H_z	14	43.82	0.01	-47.57
	Min. M_x	14	-4373.83	0.01	-47.57
	Min. M_z	20	-4378.70	47.60	-0.01
	Min. Torsion	15	-0.49	0.01	-47.57

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	36.52	0.00	0.00	-0.05	0.36	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	43.82	0.01	-47.57	-4373.97	-0.82	-0.48
0.9 Dead+1.0 Wind 0 deg - No Ice	32.87	0.01	-47.57	-4337.06	-0.92	-0.49
1.2 Dead+1.0 Wind 30 deg - No Ice	43.82	23.81	-41.20	-3788.61	-2189.78	-0.42
0.9 Dead+1.0 Wind 30 deg - No Ice	32.87	23.81	-41.20	-3756.63	-2171.41	-0.42
1.2 Dead+1.0 Wind 60 deg - No Ice	43.82	41.23	-23.79	-2188.11	-3791.87	-0.25
0.9 Dead+1.0 Wind 60 deg - No Ice	32.87	41.23	-23.79	-2169.63	-3759.98	-0.24
1.2 Dead+1.0 Wind 90 deg - No Ice	43.82	47.60	-0.01	-1.33	-4377.81	-0.00
0.9 Dead+1.0 Wind 90 deg - No Ice	32.87	47.60	-0.01	-1.30	-4340.98	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice	43.82	41.22	23.77	2185.79	-3790.62	0.24
0.9 Dead+1.0 Wind 120 deg - No Ice	32.87	41.22	23.77	2167.37	-3758.74	0.25
1.2 Dead+1.0 Wind 150 deg - No Ice	43.82	23.79	41.19	3787.22	-2187.60	0.42
0.9 Dead+1.0 Wind 150 deg - No Ice	32.87	23.79	41.19	3755.28	-2169.26	0.42
1.2 Dead+1.0 Wind 180 deg - No Ice	43.82	-0.01	47.57	4373.83	1.70	0.48
0.9 Dead+1.0 Wind 180 deg - No Ice	32.87	-0.01	47.57	4336.95	1.58	0.49
1.2 Dead+1.0 Wind 210 deg - No Ice	43.82	-23.81	41.20	3788.47	2190.67	0.42
0.9 Dead+1.0 Wind 210 deg - No Ice	32.87	-23.81	41.20	3756.52	2172.07	0.42
1.2 Dead+1.0 Wind 240 deg - No Ice	43.82	-41.23	23.79	2187.97	3792.76	0.25
0.9 Dead+1.0 Wind 240 deg - No Ice	32.87	-41.23	23.79	2169.52	3760.64	0.24
1.2 Dead+1.0 Wind 270 deg - No Ice	43.82	-47.60	0.01	1.19	4378.70	0.00
0.9 Dead+1.0 Wind 270 deg - No Ice	32.87	-47.60	0.01	1.20	4341.64	-0.00
1.2 Dead+1.0 Wind 300 deg - No Ice	43.82	-41.22	-23.77	-2185.93	3791.51	-0.24
0.9 Dead+1.0 Wind 300 deg - No Ice	32.87	-41.22	-23.77	-2167.47	3759.40	-0.25
1.2 Dead+1.0 Wind 330 deg - No Ice	43.82	-23.79	-41.19	-3787.36	2188.49	-0.42
0.9 Dead+1.0 Wind 330 deg - No Ice	32.87	-23.79	-41.19	-3755.39	2169.91	-0.42
1.2 Dead+1.0 Ice+1.0 Temp	69.35	0.00	0.00	-0.08	0.78	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	69.35	0.00	-11.90	-1124.75	0.65	-0.11
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	69.35	5.95	-10.31	-974.19	-562.03	-0.09
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	69.35	10.31	-5.95	-562.61	-973.88	-0.06
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	69.35	11.91	-0.00	-0.31	-1124.54	-0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	69.35	10.31	5.95	562.04	-973.66	0.05
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	69.35	5.95	10.30	973.78	-561.65	0.09
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	69.35	-0.00	11.90	1124.56	1.09	0.11
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	69.35	-5.95	10.31	974.00	563.77	0.09

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	69.35	-10.31	5.95	562.42	975.62	0.06
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	69.35	-11.91	0.00	0.12	1126.29	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	69.35	-10.31	-5.95	-562.24	975.40	-0.05
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	69.35	-5.95	-10.30	-973.97	563.39	-0.09
Dead+Wind 0 deg - Service	36.52	0.00	-9.54	-874.23	0.12	-0.10
Dead+Wind 30 deg - Service	36.52	4.78	-8.27	-757.24	-437.37	-0.09
Dead+Wind 60 deg - Service	36.52	8.27	-4.77	-437.36	-757.57	-0.05
Dead+Wind 90 deg - Service	36.52	9.55	-0.00	-0.31	-874.67	-0.00
Dead+Wind 120 deg - Service	36.52	8.27	4.77	436.81	-757.31	0.05
Dead+Wind 150 deg - Service	36.52	4.77	8.26	756.87	-436.93	0.09
Dead+Wind 180 deg - Service	36.52	-0.00	9.54	874.12	0.62	0.10
Dead+Wind 210 deg - Service	36.52	-4.78	8.27	757.12	438.11	0.09
Dead+Wind 240 deg - Service	36.52	-8.27	4.77	437.25	758.31	0.05
Dead+Wind 270 deg - Service	36.52	-9.55	0.00	0.19	875.42	0.00
Dead+Wind 300 deg - Service	36.52	-8.27	-4.77	-436.93	758.06	-0.05
Dead+Wind 330 deg - Service	36.52	-4.77	-8.26	-756.99	437.68	-0.09

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-36.52	0.00	0.00	36.52	0.00	0.000%
2	0.01	-43.82	-47.57	-0.01	43.82	47.57	0.000%
3	0.01	-32.87	-47.57	-0.01	32.87	47.57	0.000%
4	23.81	-43.82	-41.20	-23.81	43.82	41.20	0.000%
5	23.81	-32.87	-41.20	-23.81	32.87	41.20	0.000%
6	41.23	-43.82	-23.79	-41.23	43.82	23.79	0.000%
7	41.23	-32.87	-23.79	-41.23	32.87	23.79	0.000%
8	47.60	-43.82	-0.01	-47.60	43.82	0.01	0.000%
9	47.60	-32.87	-0.01	-47.60	32.87	0.01	0.000%
10	41.22	-43.82	23.77	-41.22	43.82	-23.77	0.000%
11	41.22	-32.87	23.77	-41.22	32.87	-23.77	0.000%
12	23.79	-43.82	41.19	-23.79	43.82	-41.19	0.000%
13	23.79	-32.87	41.19	-23.79	32.87	-41.19	0.000%
14	-0.01	-43.82	47.57	0.01	43.82	-47.57	0.000%
15	-0.01	-32.87	47.57	0.01	32.87	-47.57	0.000%
16	-23.81	-43.82	41.20	23.81	43.82	-41.20	0.000%
17	-23.81	-32.87	41.20	23.81	32.87	-41.20	0.000%
18	-41.23	-43.82	23.79	41.23	43.82	-23.79	0.000%
19	-41.23	-32.87	23.79	41.23	32.87	-23.79	0.000%
20	-47.60	-43.82	0.01	47.60	43.82	-0.01	0.000%
21	-47.60	-32.87	0.01	47.60	32.87	-0.01	0.000%
22	-41.22	-43.82	-23.77	41.22	43.82	23.77	0.000%
23	-41.22	-32.87	-23.77	41.22	32.87	23.77	0.000%
24	-23.79	-43.82	-41.19	23.79	43.82	41.19	0.000%
25	-23.79	-32.87	-41.19	23.79	32.87	41.19	0.000%
26	0.00	-69.35	0.00	0.00	69.35	0.00	0.000%
27	0.00	-69.35	-11.90	-0.00	69.35	11.90	0.000%
28	5.95	-69.35	-10.31	-5.95	69.35	10.31	0.000%
29	10.31	-69.35	-5.95	-10.31	69.35	5.95	0.000%
30	11.91	-69.35	-0.00	-11.91	69.35	0.00	0.000%
31	10.31	-69.35	5.95	-10.31	69.35	-5.95	0.000%
32	5.95	-69.35	10.30	-5.95	69.35	-10.30	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
33	-0.00	-69.35	11.90	0.00	69.35	-11.90	0.000%
34	-5.95	-69.35	10.31	5.95	69.35	-10.31	0.000%
35	-10.31	-69.35	5.95	10.31	69.35	-5.95	0.000%
36	-11.91	-69.35	0.00	11.91	69.35	-0.00	0.000%
37	-10.31	-69.35	-5.95	10.31	69.35	5.95	0.000%
38	-5.95	-69.35	-10.30	5.95	69.35	10.30	0.000%
39	0.00	-36.52	-9.54	-0.00	36.52	9.54	0.000%
40	4.78	-36.52	-8.27	-4.78	36.52	8.27	0.000%
41	8.27	-36.52	-4.77	-8.27	36.52	4.77	0.000%
42	9.55	-36.52	-0.00	-9.55	36.52	0.00	0.000%
43	8.27	-36.52	4.77	-8.27	36.52	-4.77	0.000%
44	4.77	-36.52	8.26	-4.77	36.52	-8.26	0.000%
45	-0.00	-36.52	9.54	0.00	36.52	-9.54	0.000%
46	-4.78	-36.52	8.27	4.78	36.52	-8.27	0.000%
47	-8.27	-36.52	4.77	8.27	36.52	-4.77	0.000%
48	-9.55	-36.52	0.00	9.55	36.52	-0.00	0.000%
49	-8.27	-36.52	-4.77	8.27	36.52	4.77	0.000%
50	-4.77	-36.52	-8.26	4.77	36.52	8.26	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00028111
3	Yes	4	0.00000001	0.00013320
4	Yes	5	0.00000001	0.00074524
5	Yes	5	0.00000001	0.00028871
6	Yes	5	0.00000001	0.00075070
7	Yes	5	0.00000001	0.00029108
8	Yes	4	0.00000001	0.00022708
9	Yes	4	0.00000001	0.00009071
10	Yes	5	0.00000001	0.00074958
11	Yes	5	0.00000001	0.00029080
12	Yes	5	0.00000001	0.00074439
13	Yes	5	0.00000001	0.00028848
14	Yes	4	0.00000001	0.00030082
15	Yes	4	0.00000001	0.00014690
16	Yes	5	0.00000001	0.00075213
17	Yes	5	0.00000001	0.00029172
18	Yes	5	0.00000001	0.00074679
19	Yes	5	0.00000001	0.00028932
20	Yes	4	0.00000001	0.00022612
21	Yes	4	0.00000001	0.00009029
22	Yes	5	0.00000001	0.00074632
23	Yes	5	0.00000001	0.00028920
24	Yes	5	0.00000001	0.00075139
25	Yes	5	0.00000001	0.00029154
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00031696
28	Yes	5	0.00000001	0.00041093
29	Yes	5	0.00000001	0.00041162
30	Yes	5	0.00000001	0.00031665
31	Yes	5	0.00000001	0.00041105
32	Yes	5	0.00000001	0.00041040
33	Yes	5	0.00000001	0.00031673
34	Yes	5	0.00000001	0.00041257
35	Yes	5	0.00000001	0.00041208
36	Yes	5	0.00000001	0.00031750
37	Yes	5	0.00000001	0.00041209
38	Yes	5	0.00000001	0.00041255
39	Yes	4	0.00000001	0.00006015
40	Yes	4	0.00000001	0.00031825
41	Yes	4	0.00000001	0.00032510
42	Yes	4	0.00000001	0.00005905
43	Yes	4	0.00000001	0.00032408

44	Yes	4	0.00000001	0.00031750
45	Yes	4	0.00000001	0.00006019
46	Yes	4	0.00000001	0.00032742
47	Yes	4	0.00000001	0.00032071
48	Yes	4	0.00000001	0.00005913
49	Yes	4	0.00000001	0.00032052
50	Yes	4	0.00000001	0.00032696

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	119.5 - 69.67	18.065	48	1.2846	0.0004
L2	74.33 - 42.25	7.036	48	0.9200	0.0003
L3	47.75 - 0	2.838	48	0.5580	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.00	AIR6449 B41_T-MOBILE	48	17.399	1.2691	0.0004	36579
114.00	EEI Branches (Large)	48	16.601	1.2504	0.0004	33253
107.00	(4) DB844H90 w/ Mount Pipe	48	14.755	1.2057	0.0003	14631
104.00	EEI Branches (Large)	48	13.975	1.1856	0.0003	11799
97.00	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	48	12.194	1.1354	0.0003	8128
94.00	EEI Branches (Large)	48	11.451	1.1121	0.0003	7171
88.00	TME-RRUS-11	48	10.013	1.0614	0.0003	5805
87.00	(2) 7770.00 w/ Mount Pipe	48	9.780	1.0524	0.0003	5626
84.00	EEI Branches (Large)	48	9.094	1.0241	0.0003	5151
77.00	EEI Branches (Small)	48	7.579	0.9510	0.0003	4308

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	119.5 - 69.67	90.301	20	6.4312	0.0019
L2	74.33 - 42.25	35.195	20	4.6044	0.0013
L3	47.75 - 0	14.198	20	2.7924	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.00	AIR6449 B41_T-MOBILE	20	86.974	6.3538	0.0019	7466
114.00	EEI Branches (Large)	20	82.988	6.2604	0.0018	6787
107.00	(4) DB844H90 w/ Mount Pipe	20	73.767	6.0361	0.0017	2984
104.00	EEI Branches (Large)	20	69.869	5.9352	0.0016	2406
97.00	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	20	60.968	5.6833	0.0015	1656
94.00	EEI Branches (Large)	20	57.258	5.5664	0.0015	1460
88.00	TME-RRUS-11	20	50.070	5.3124	0.0014	1180
87.00	(2) 7770.00 w/ Mount Pipe	20	48.907	5.2671	0.0014	1144
84.00	EEI Branches (Large)	20	45.481	5.1256	0.0014	1046
77.00	EEI Branches (Small)	20	37.909	4.7591	0.0013	873

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	119.5 - 69.67 (1)	TP33.02x19x0.3125	49.83	0.00	0.0	31.1413	-20.06	1821.77	0.011
L2	69.67 - 42.25 (2)	TP39.99x31.0839x0.375	32.08	0.00	0.0	45.3343	-27.22	2652.06	0.010
L3	42.25 - 0 (3)	TP51x37.7131x0.4375	47.75	0.00	0.0	70.2123	-43.77	4107.42	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	119.5 - 69.67 (1)	TP33.02x19x0.3125	1054.25	1470.41	0.717	0.00	1470.41	0.000
L2	69.67 - 42.25 (2)	TP39.99x31.0839x0.375	2188.82	2589.82	0.845	0.00	2589.82	0.000
L3	42.25 - 0 (3)	TP51x37.7131x0.4375	4378.70	5140.70	0.852	0.00	5140.70	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	119.5 - 69.67 (1)	TP33.02x19x0.3125	41.49	546.53	0.076	0.00	1502.70	0.000
L2	69.67 - 42.25 (2)	TP39.99x31.0839x0.375	43.84	795.62	0.055	0.00	2653.83	0.000
L3	42.25 - 0 (3)	TP51x37.7131x0.4375	47.65	1232.23	0.039	0.00	5456.31	0.000

Pole Interaction Design Data

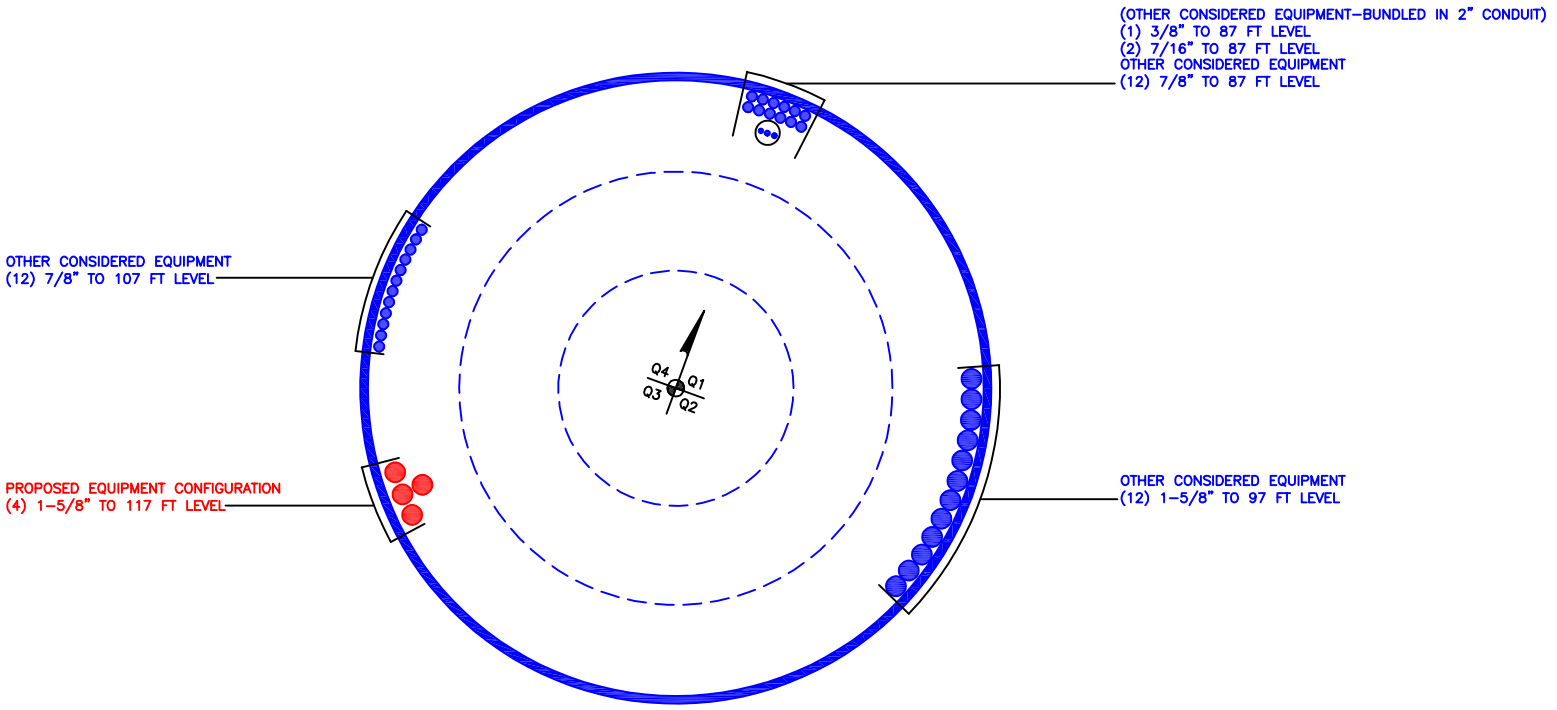
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	119.5 - 69.67 (1)	0.011	0.717	0.000	0.076	0.000	0.734	1.050	4.8.2
L2	69.67 - 42.25 (2)	0.010	0.845	0.000	0.055	0.000	0.858	1.050	4.8.2
L3	42.25 - 0 (3)	0.011	0.852	0.000	0.039	0.000	0.864	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	119.5 - 69.67	Pole	TP33.02x19x0.3125	1	-20.06	1912.86	69.9	Pass
L2	69.67 - 42.25	Pole	TP39.99x31.0839x0.375	2	-27.22	2784.66	81.8	Pass
L3	42.25 - 0	Pole	TP51x37.7131x0.4375	3	-43.77	4312.79	82.3	Pass
							Summary	
						Pole (L3)	82.3	Pass
						RATING =	**82.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876387 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

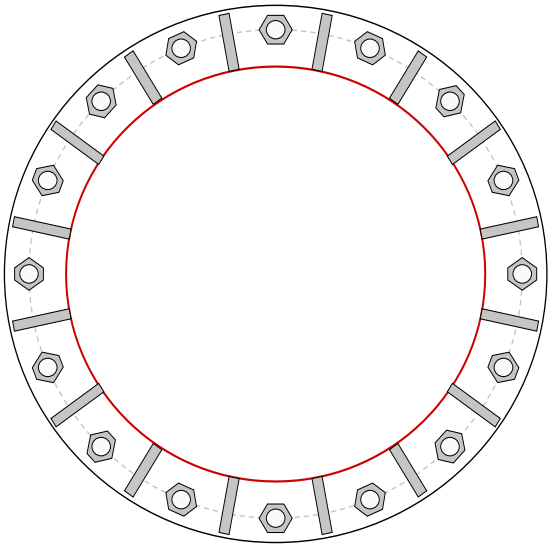
Monopole Base Plate Connection

Site Info	
BU #	876387
Site Name	ith Hebron / Ned Ellis P
Order #	538758 Rev. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.875

Applied Loads	
Moment (kip-ft)	4378.70
Axial Force (kips)	43.77
Shear Force (kips)	47.65

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 60" BC

Base Plate Data

66" OD x 2" Plate (A871 Gr. 60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(16) 21"H x 7"W x 1.25"T, Notch: 1"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5625" groove, 45° dbl bevel, 0.3125" fillet
vert. weld: 0.3125" fillet

Pole Data

51" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_c = 221.54	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.98	ϕVn = 120.77	**78.7%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	38.13	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**67.2%**	**Pass**

Stiffener Summary

Horizontal Weld:	**82.0%**	**Pass**
Vertical Weld:	**61.0%**	**Pass**
Plate Flexure+Shear:	**11.4%**	**Pass**
Plate Tension+Shear:	**47.9%**	**Pass**
Plate Compression:	**48.0%**	**Pass**

Pole Summary

Punching Shear:	**11.9%**	**Pass**

Pier and Pad Foundation

BU # :	876387
Site Name:	South Hebron / Ne
App. Number:	538758 Rev. 1

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☑
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	43.82	kips
Base Shear, Vu_comp:	47.6	kips
Moment, M_u:	4378.7	ft-kips
Tower Height, **H**:	119.5	ft
BP Dist. Above Fdn, bp_{dist}:	3.25	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	6.5	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	38	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	28	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	30	
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	56	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	100	pcf
Ultimate Gross Bearing, Qult:	24.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:		degrees
SPT Blow Count, N_{blows}:	49	
Base Friction, μ:	0.3	
Neglected Depth, **N**:	3.25	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	8	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	127.89	47.60	**35.4%**	**Pass**
Bearing Pressure (ksf)	18.00	3.41	**18.9%**	**Pass**
*Overturning (kip*ft)*	6694.46	4677.19	**69.9%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	4526.91	4521.50	**95.1%**	**Pass**
Pier Compression (kip)	26891.28	66.64	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	6039.74	2131.55	**33.6%**	**Pass**
Pad Shear - 1-way (kips)	1004.09	279.81	**26.5%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.046	**23.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	5153.35	2712.90	**50.1%**	**Pass**

**Rating per TIA-222-H Section 15.5*

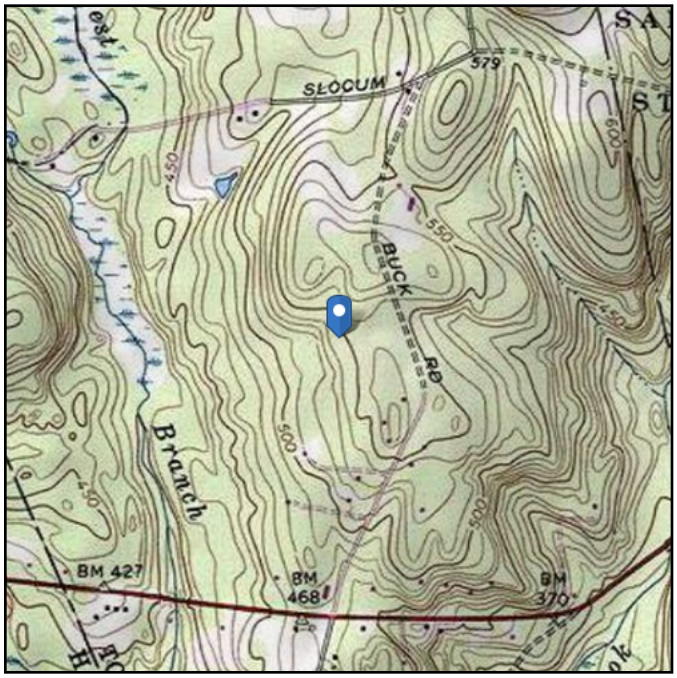
Soil Rating*:	**69.9%**
Structural Rating*:	**95.1%**

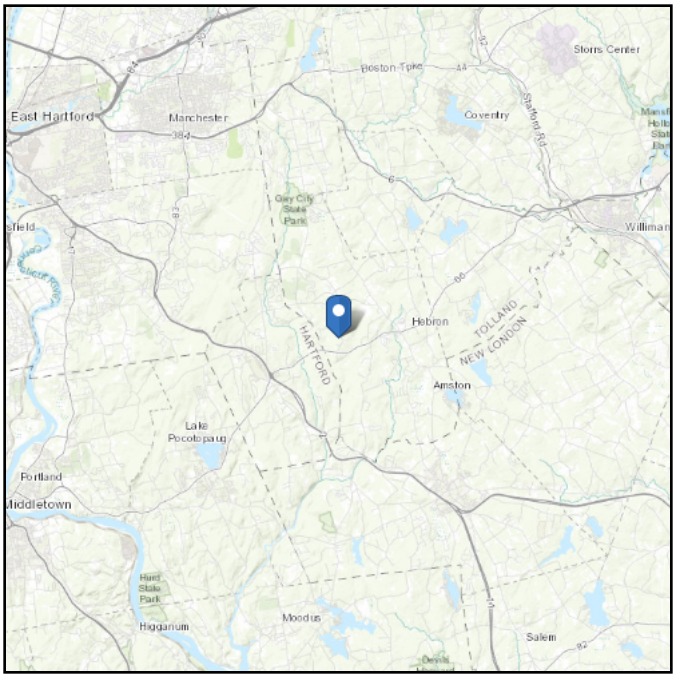
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 545.14 ft (NAVD 88)
Latitude: 41.654442
Longitude: -72.410831





Wind

Results:

Wind Speed:	127 Vmph
10-year MRI	78 Vmph
25-year MRI	87 Vmph
50-year MRI	95 Vmph
100-year MRI	103 Vmph

Ultimate 130 Vmph as per jurisdiction requirements

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

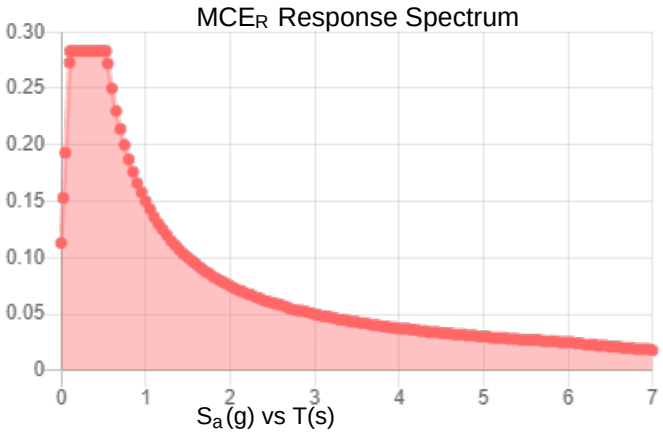
Seismic

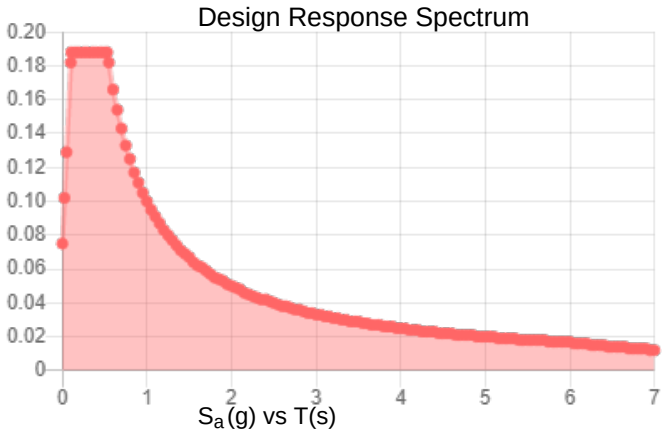
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.188
S_1 :	0.062	S_{D1} :	0.1
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.283	PGA_M :	0.142
S_{M1} :	0.15	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Feb 17 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.	Ice Thickness = 2*0.75 = 1.5 in
Concurrent Temperature:	15 F	
Gust Speed:	50 mph	

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Wed Feb 17 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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Exhibit E

Mount Analysis

Date: **February 3, 2021**

Michael McWilliams
Crown Castle
8000 Avalon Blvd, Suite 700
Charlotte, NC 28277
(770) 375-4936

Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**Sprint PCS Keep**	
	Carrier Site Number:	CTHA353A
	Carrier Site Name:	--
Crown Castle Designation:	**Crown Castle BU Number:**	876387
	Crown Castle Site Name:	South Hebron / Ned Ellis Prop.
	Crown Castle JDE Job Number:	628907
	Crown Castle Order Number:	538758 Rev 0
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:**	1039-Z0001-B
Site Data:	**107 Buck Rd., Hebron, Tolland County, CT, 06248**	
	Latitude 41°39'16.02" Longitude -72°24'39.11"	
Structure Information:	**Tower Height & Type:**	**119.5 ft Monopole**
	Mount Elevation:	**117.0 ft**
	Mount Type:	**10.5 ft Sector Frame**

Dear Michael McWilliams,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Replacement Analysis Report"** to determine the structural integrity of Sprint PCS's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

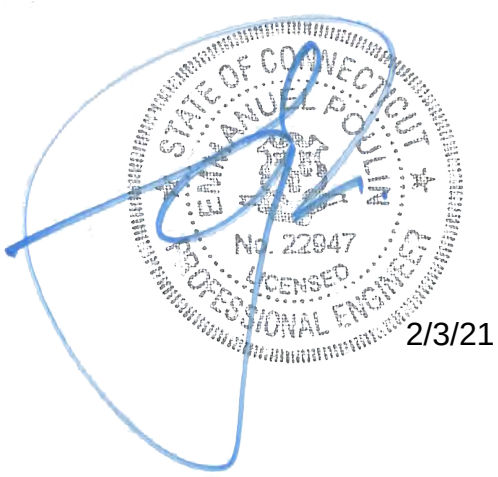
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Frame **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Hector Rodriguez

Respectfully Submitted by:
Emmanuel Poulin, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. 22947



2/3/21

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 10.5 ft Sector Frame, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC /2018 Conneticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.177
Seismic S_1:	0.063
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
117.0	117.0	3	ERICSSON	AIR6449 B41_T-MOBILE	10.5 ft Sector Frame [SitePro1 VFA10-SD-S]
		3	RFS/CELWAVE	APX16DW-16DWV-S-E-A20	
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	
		3	ERICSSON	RADIO 4415 B66A	
		3	ERICSSON	RADIO 4424 B25_TMO	
		3	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Sprint PCS Application	538758 Rev 0	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	Part No. VFA10-SD-S MSFAA	Infinigy
Loading Documents	Sprint PCS	RFDS Version 1	TSA

3.1) Analysis Method

RISA-3D (Version 19.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool V2.1.4, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

This analysis was performed in accordance with Crown Castle’s ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	Q345 (GR 36)
HSS (Rectangular)	Q235-GB (GR 35)
Pipe	Q235-GB (GR 35)
Connection Bolts	SAE J429 (GR 2)

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy Engineering, PLLC should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3	Mount Pipe(s)	MP2	117.0	57.4	Pass
	Horizontal(s)	M64		89.1	Pass
	Standoff(s)	M44		55.9	Pass
	Tieback(s)	M123		13.2	Pass
	Mount Connection(s)	--		43.8	Pass

Structure Rating (max from all components) =	89.1%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.
3) All sectors are typical.

4.1) Recommendations

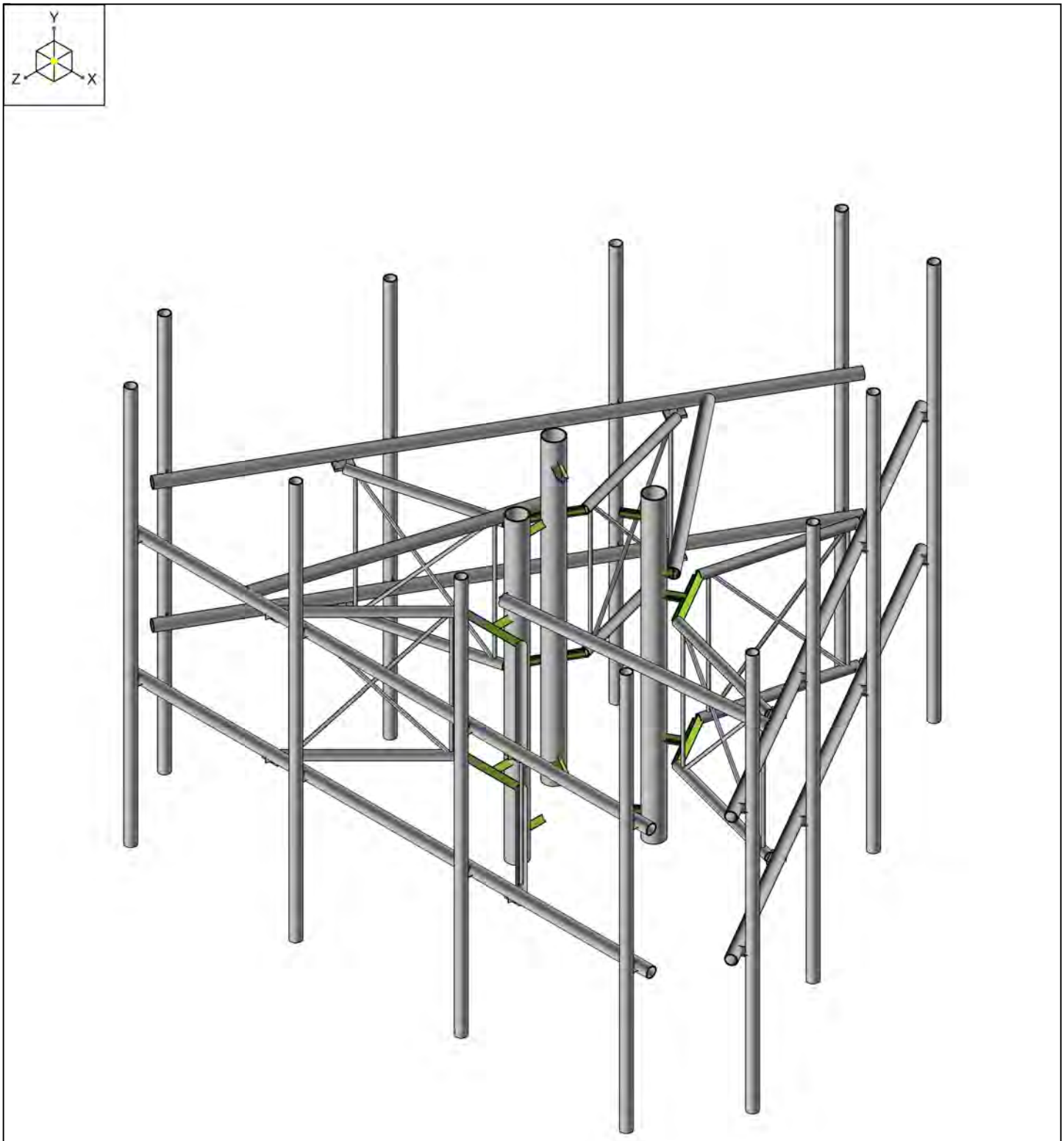
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Site Pro 1 VFA-10-SD-S with MSFAA collar mount.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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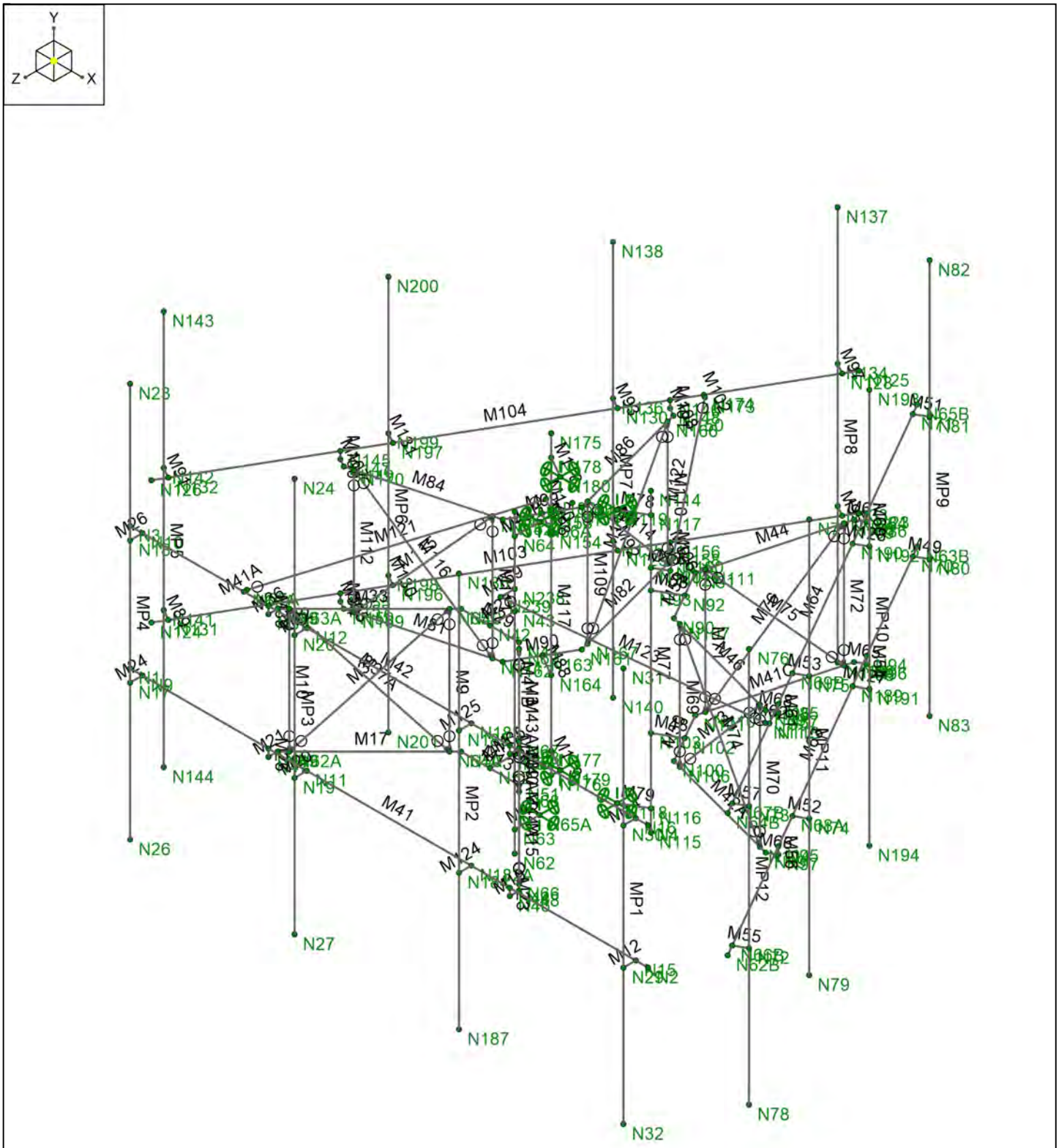

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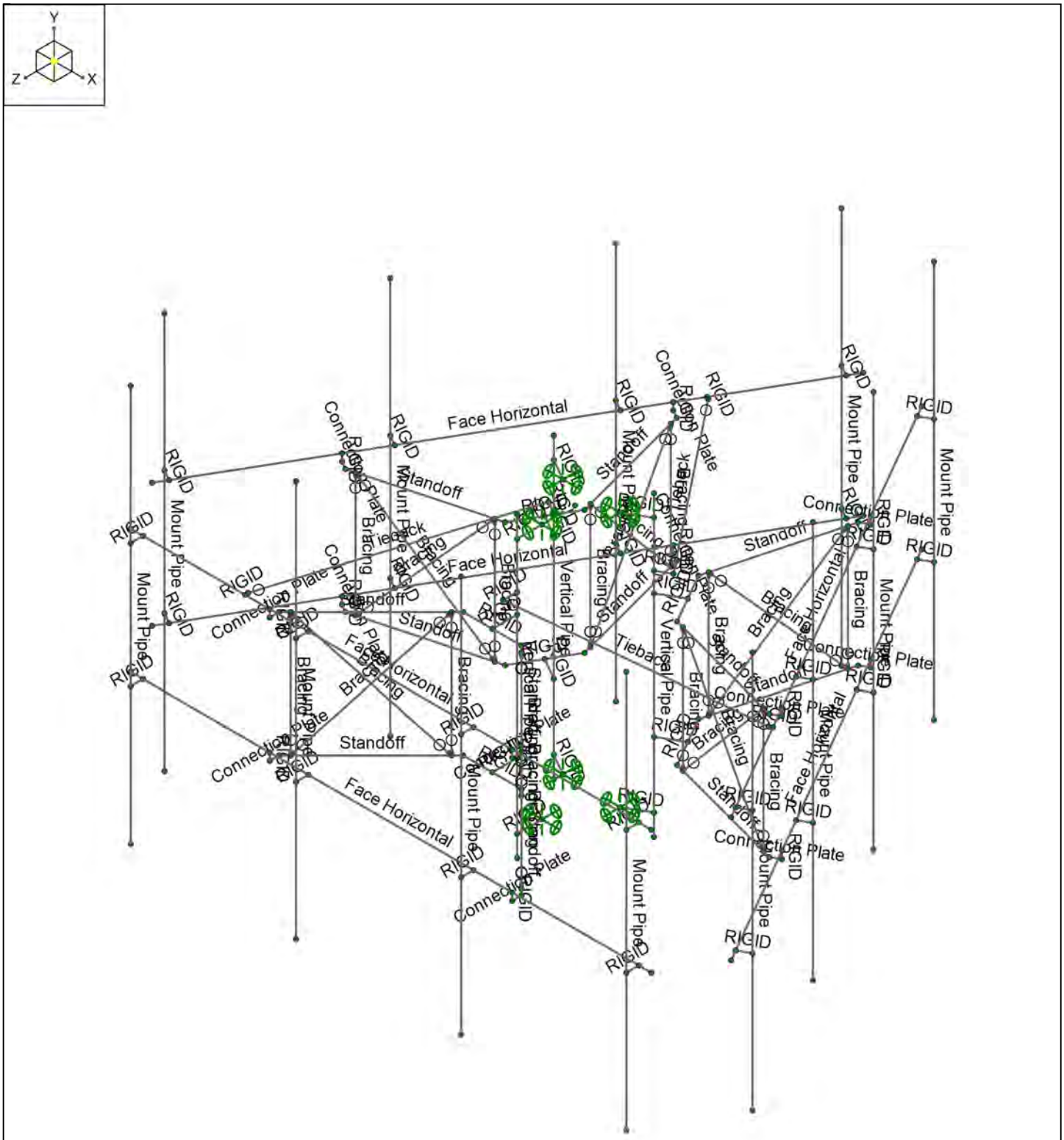

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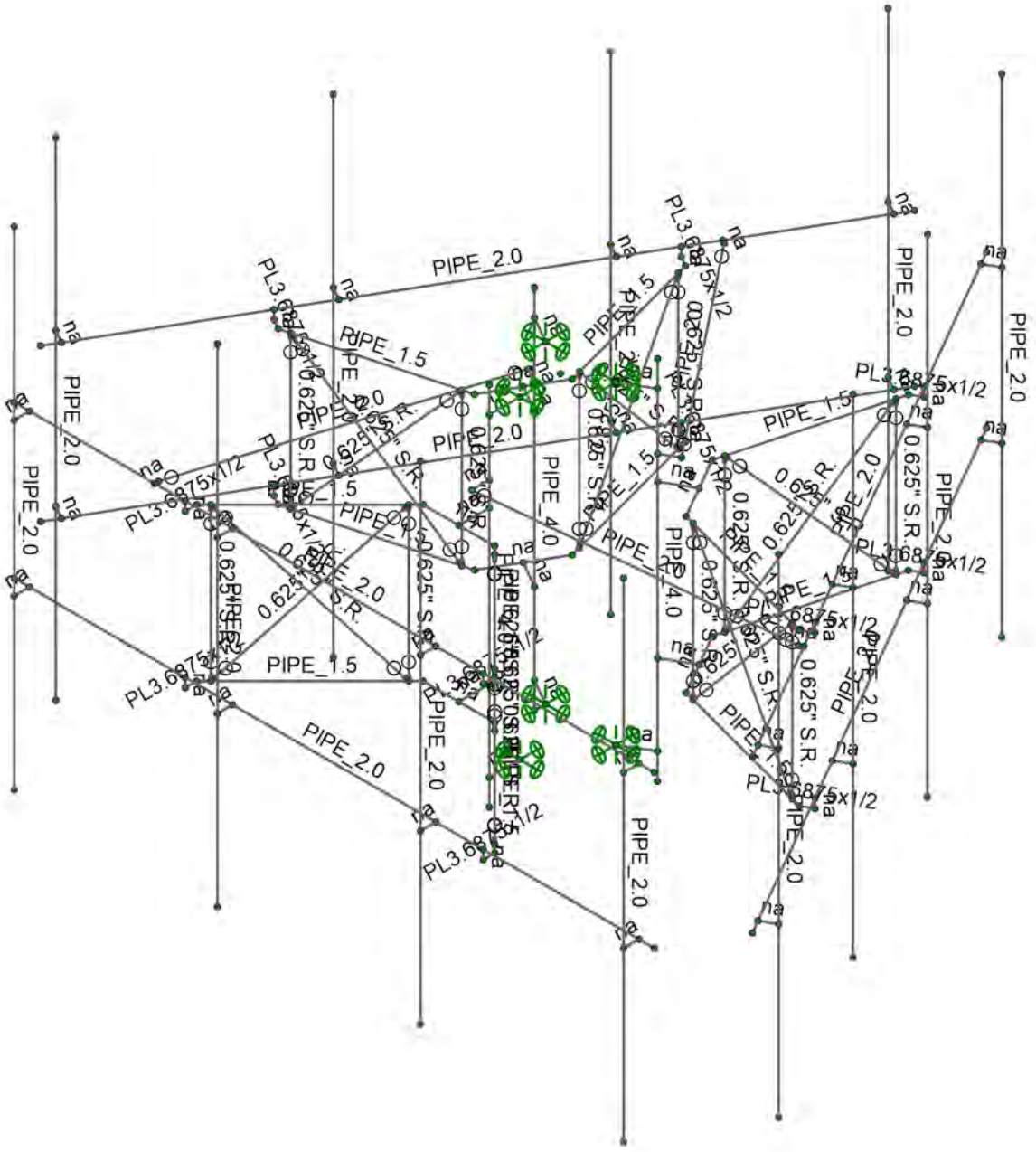

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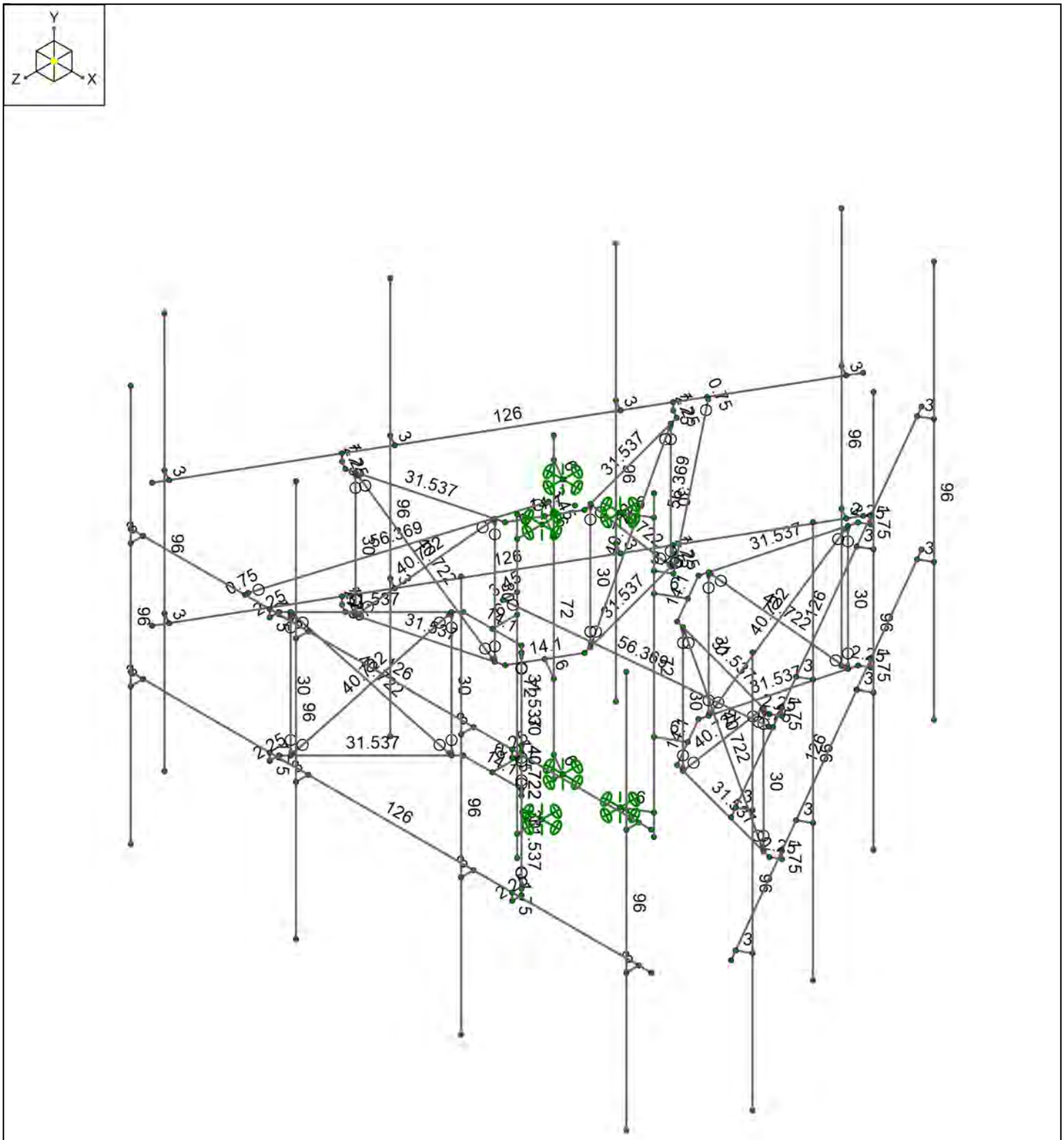

Member Length (in) Displayed

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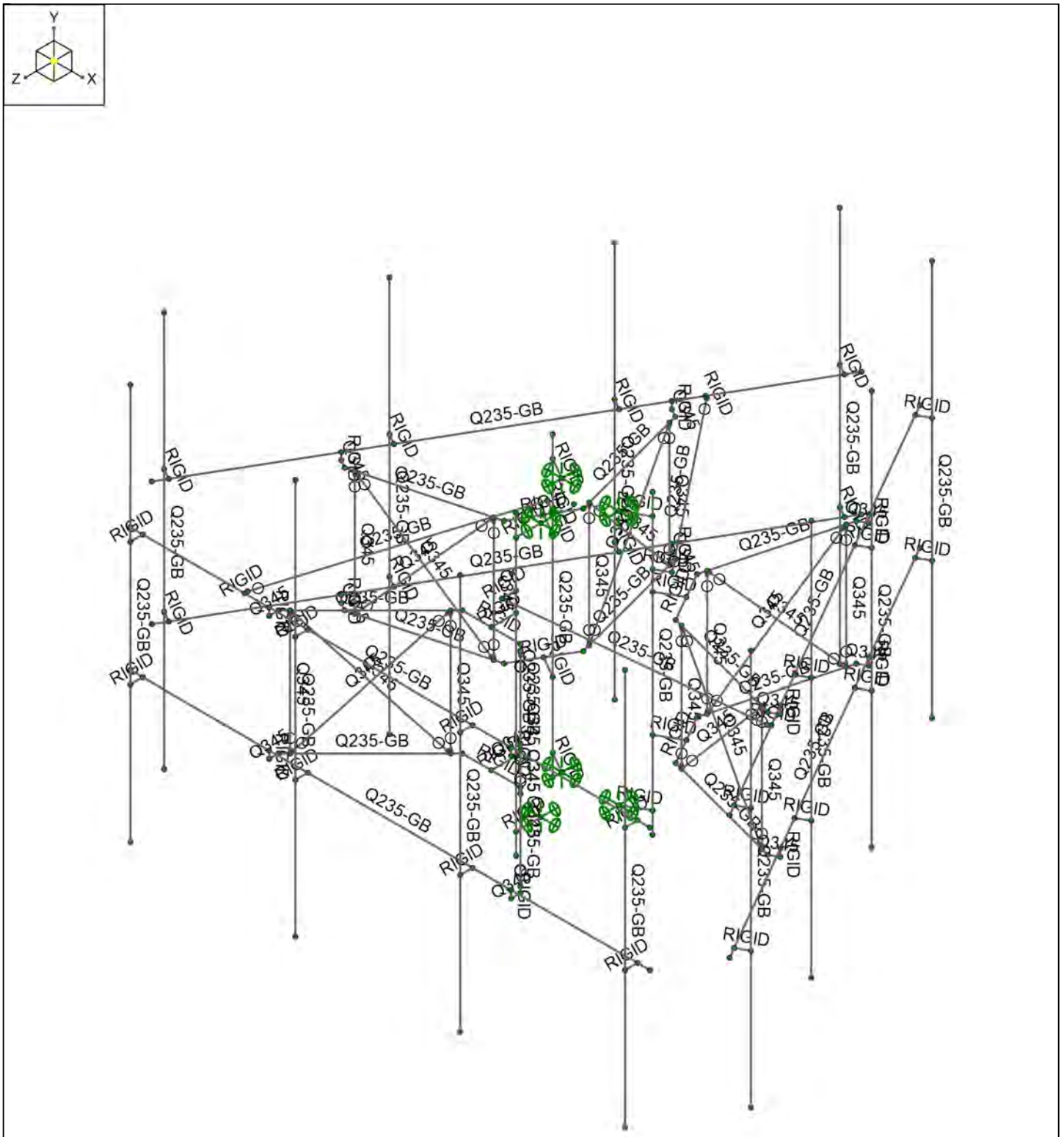

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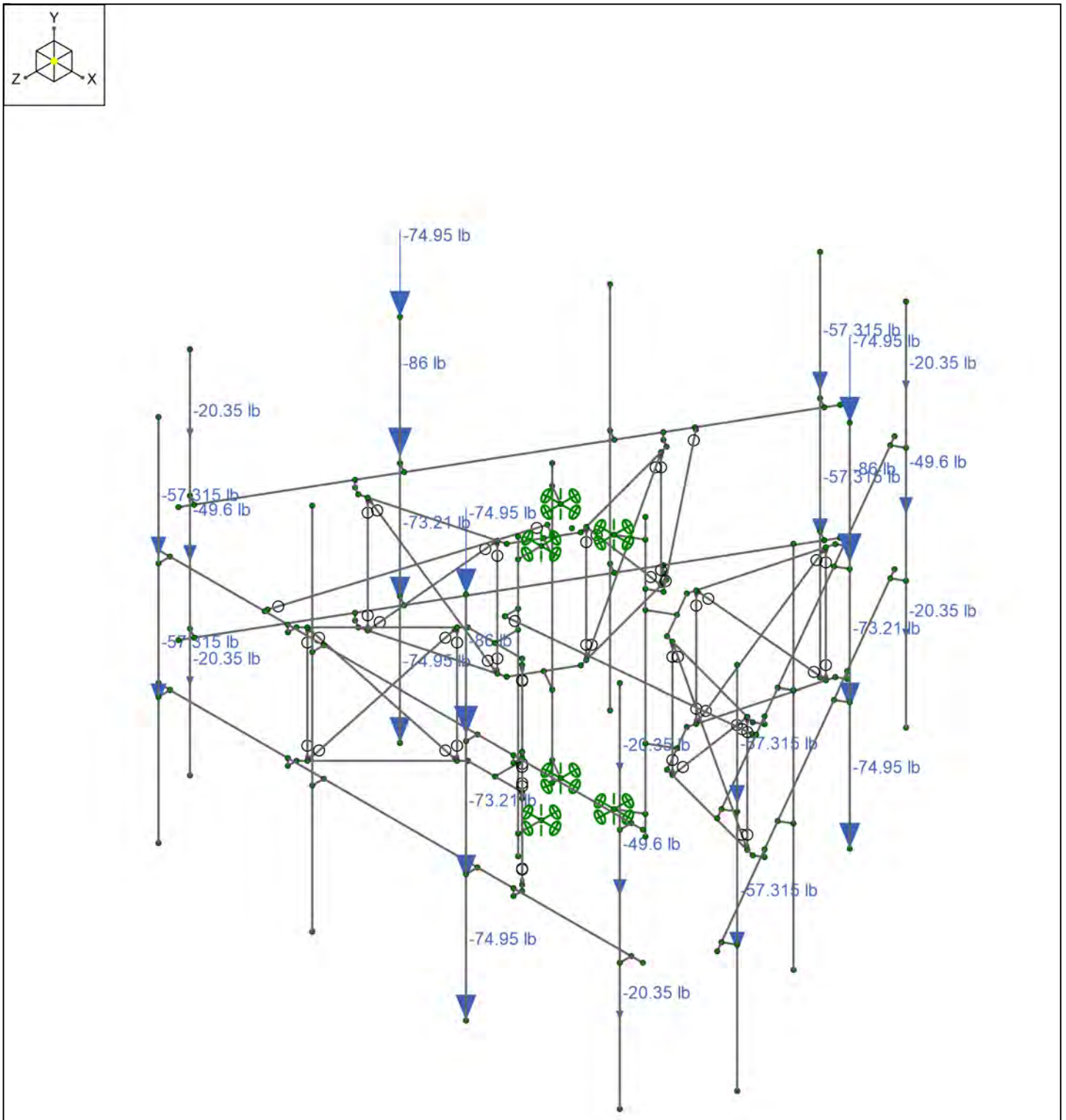

Loads: BLC 1, Self Weight

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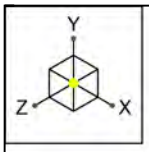

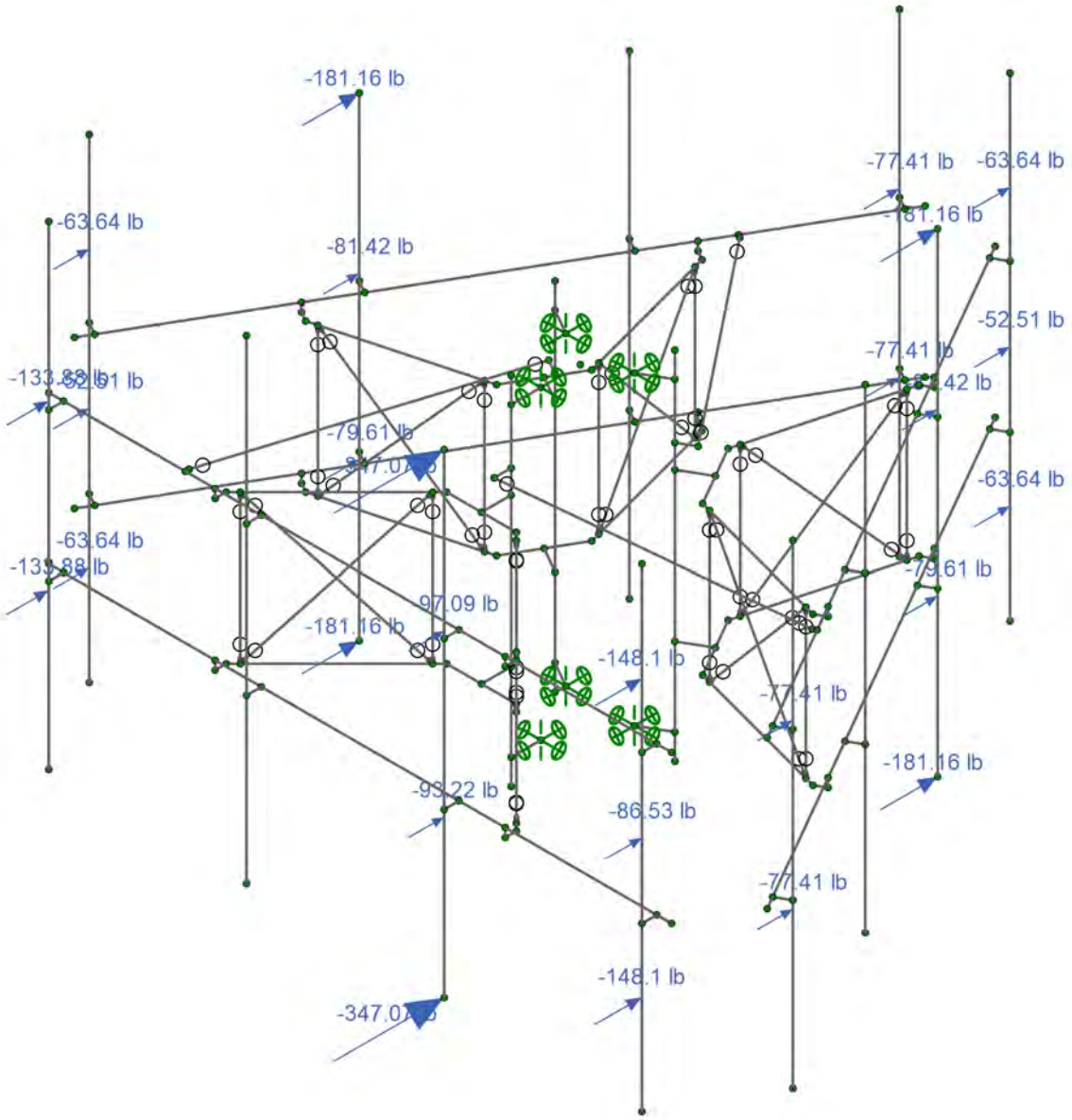

Loads: BLC 2, Wind Load AZI 0

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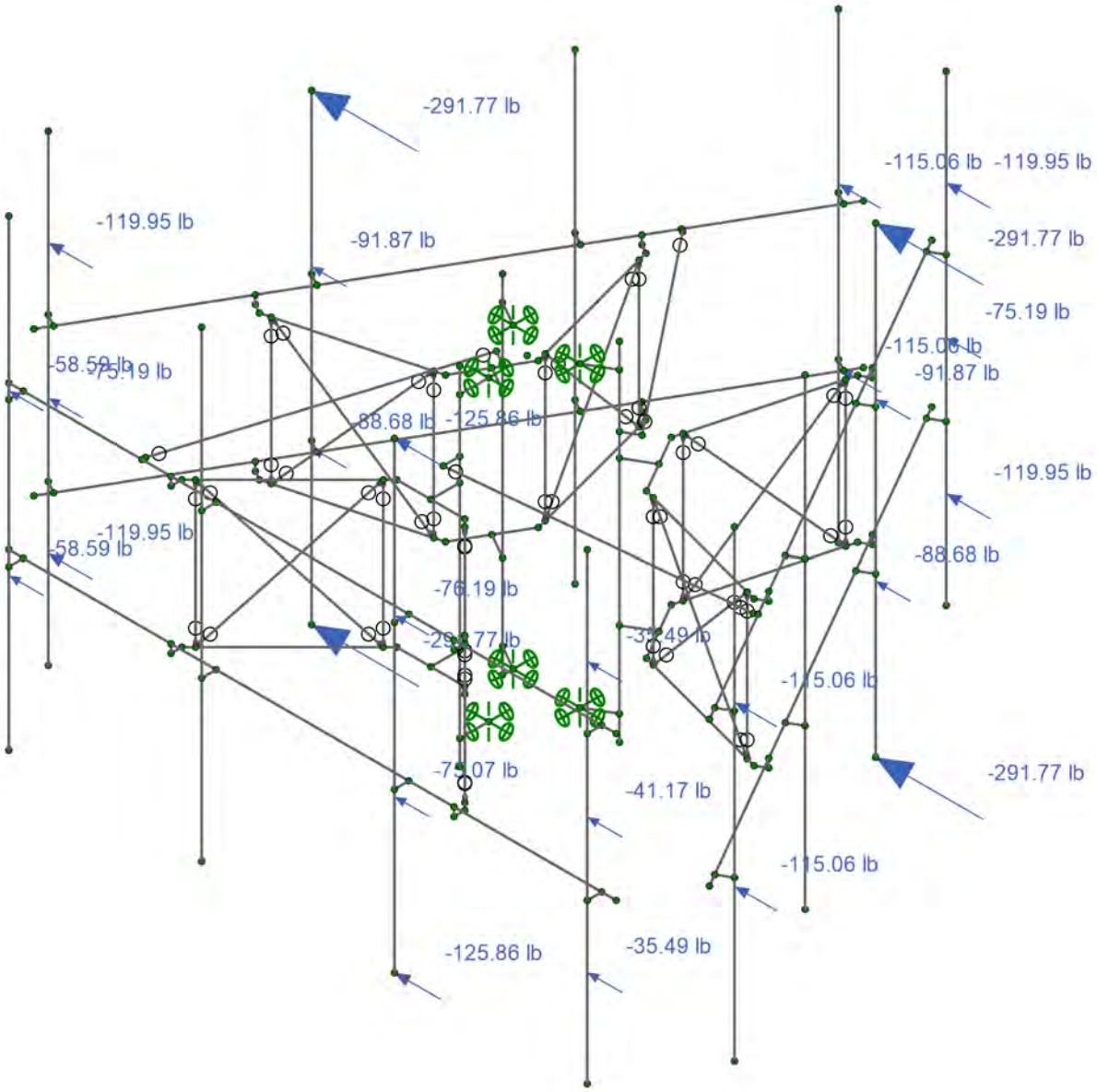

Loads: BLC 5, Wind Load AZI 90

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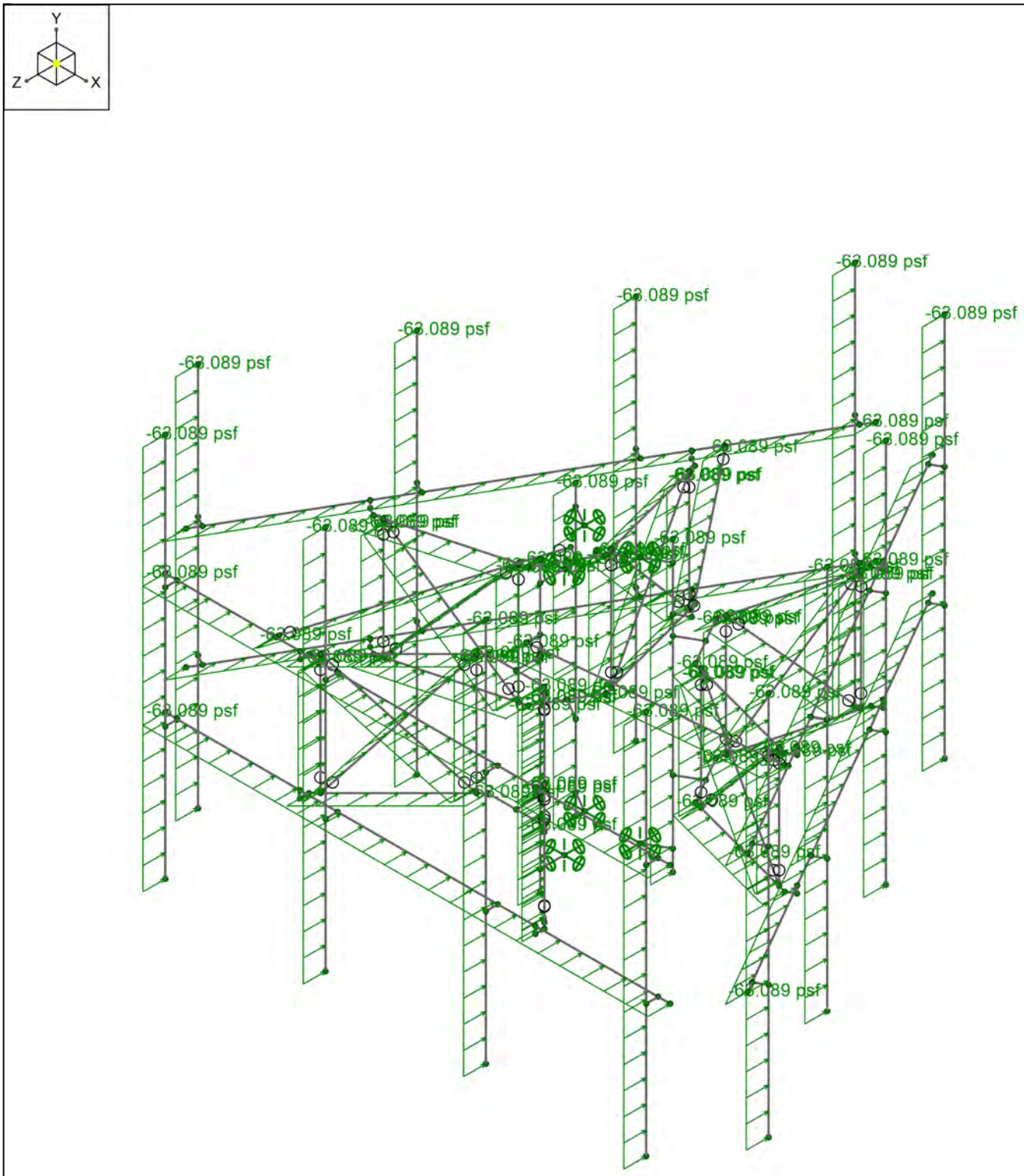

Loads: BLC 14, Distr. Wind Load Z

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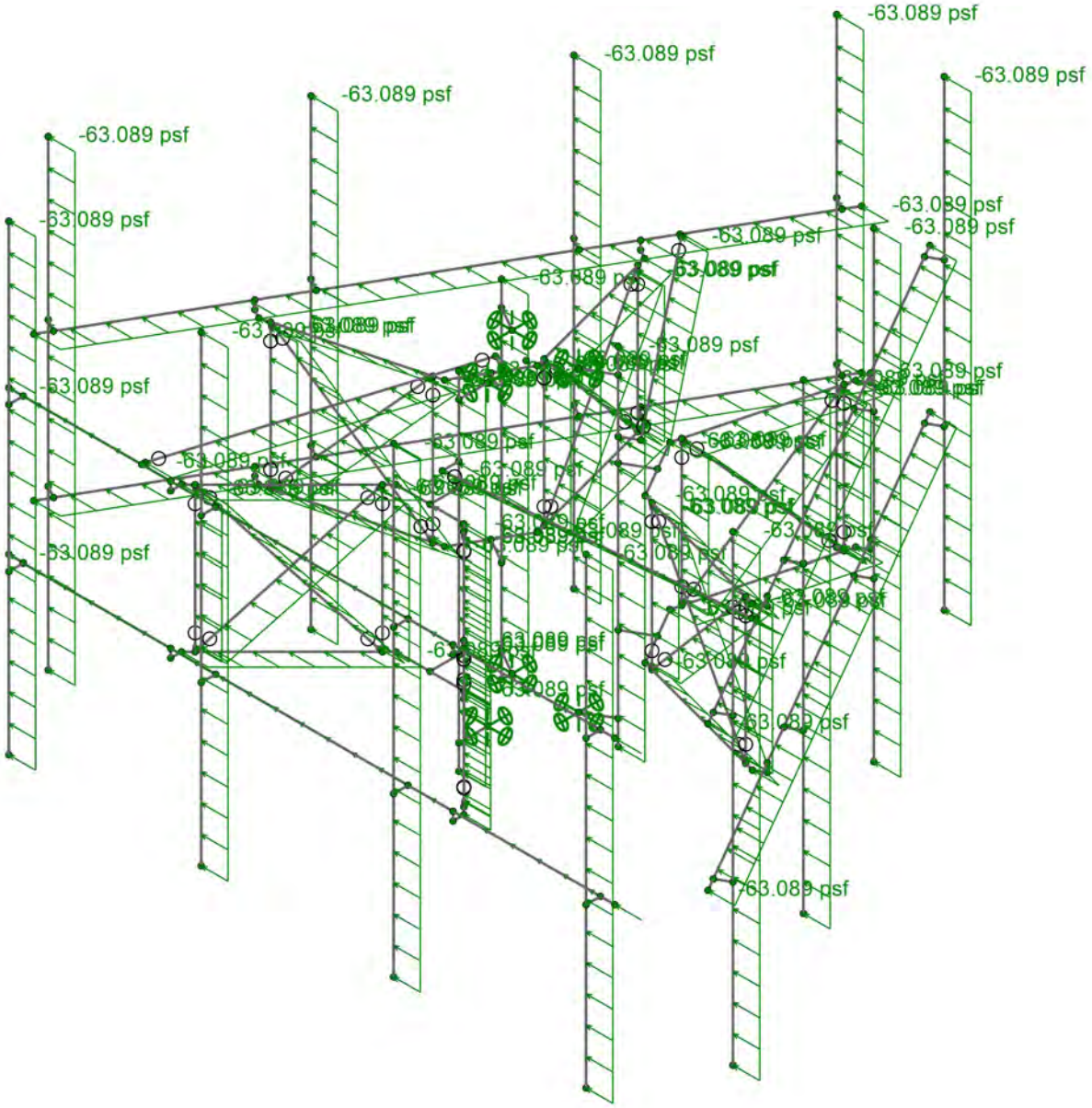

Loads: BLC 15, Distr. Wind Load X

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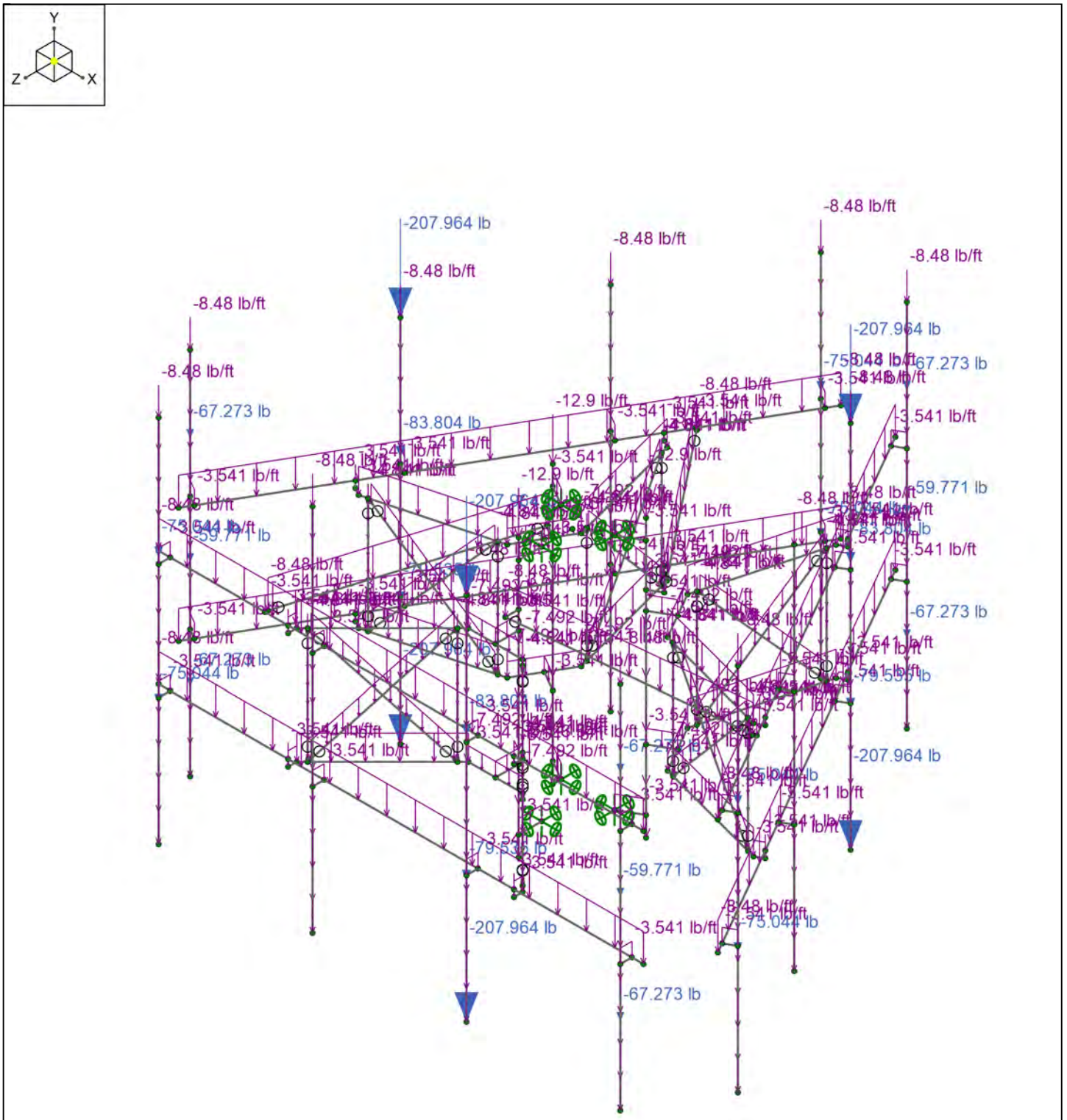

Loads: BLC 16, Ice Weight

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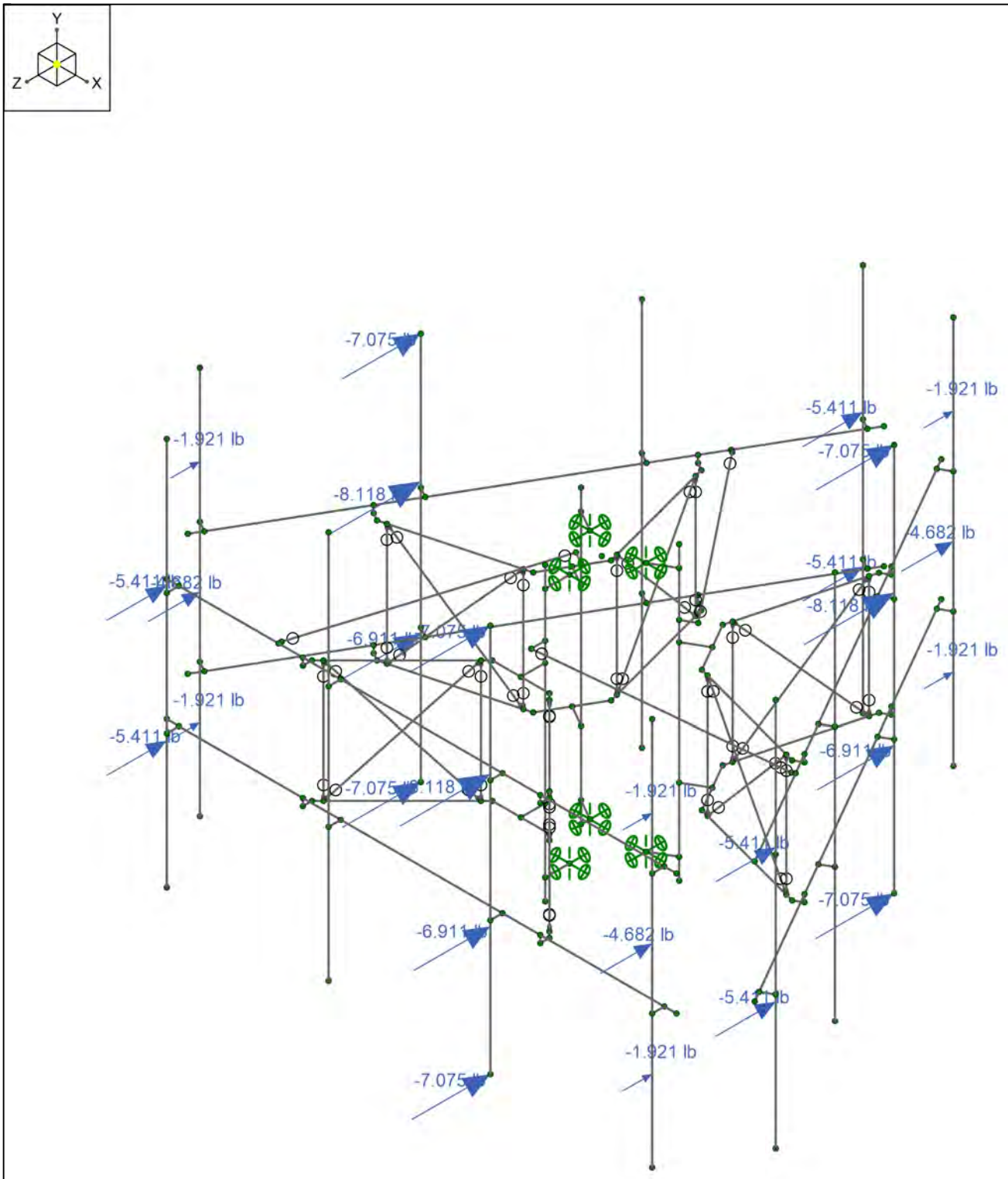

Loads: BLC 31, Seismic Load Z

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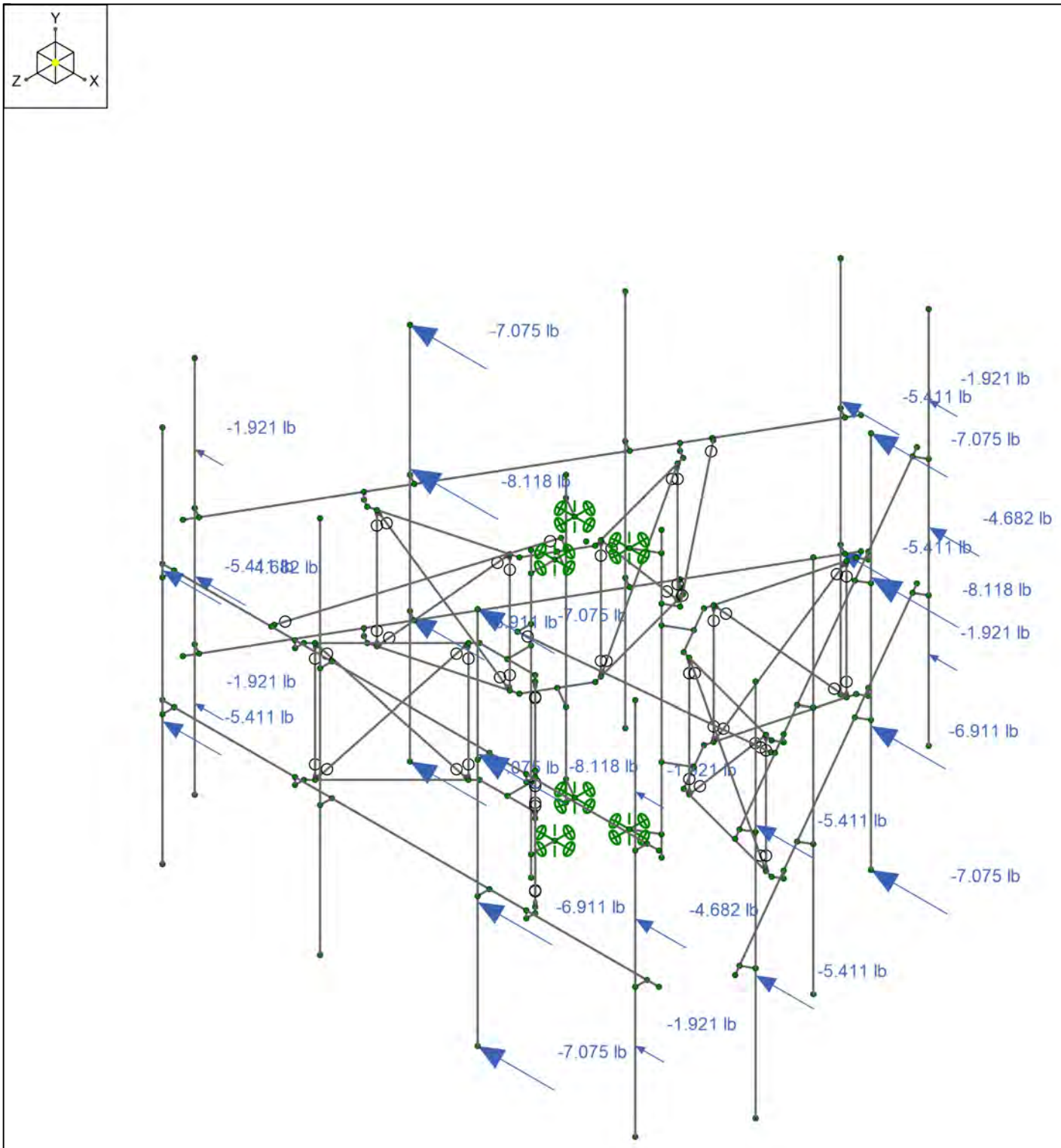

Loads: BLC 32, Seismic Load X

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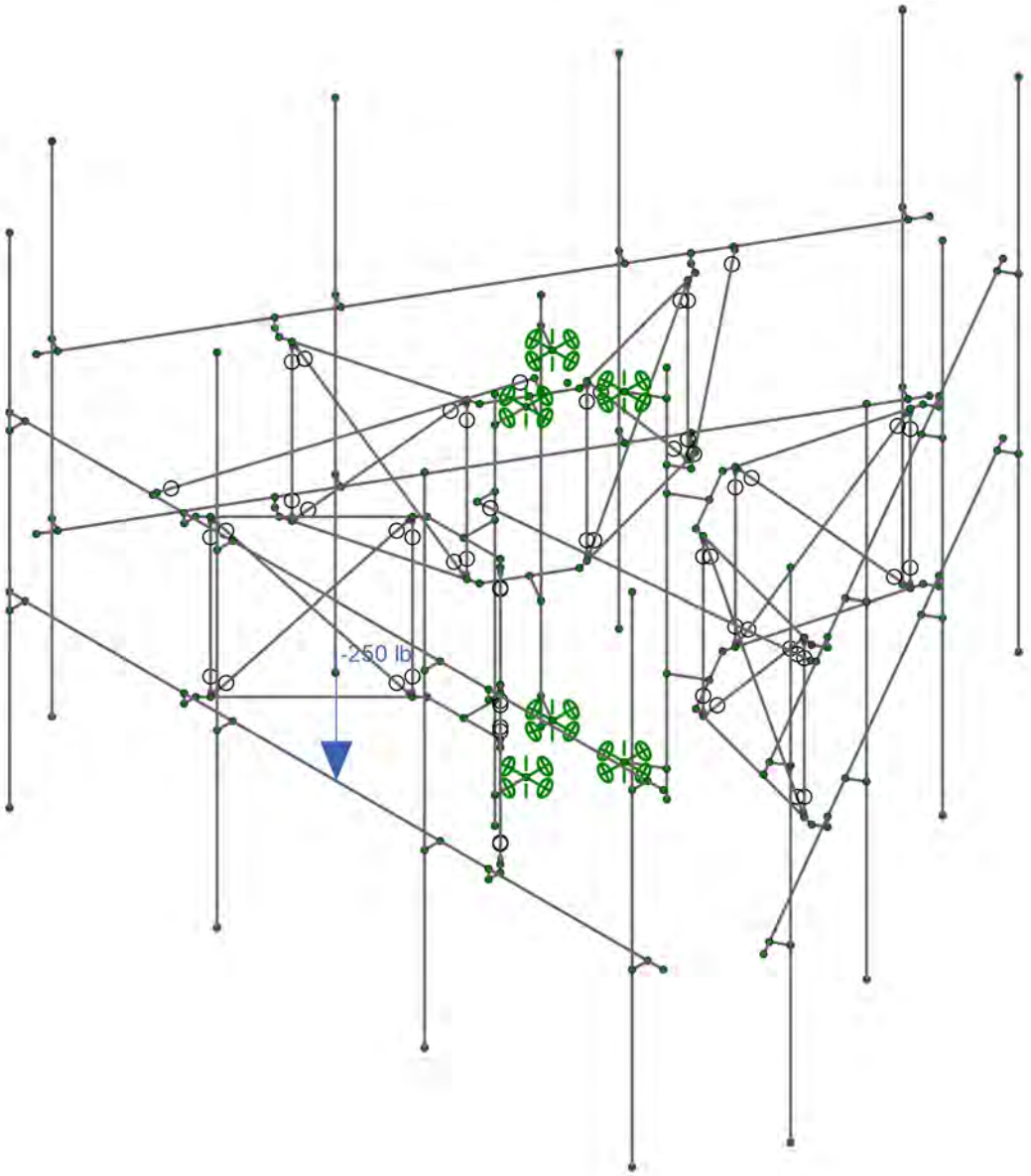

Loads: BLC 33, Service Live Loads

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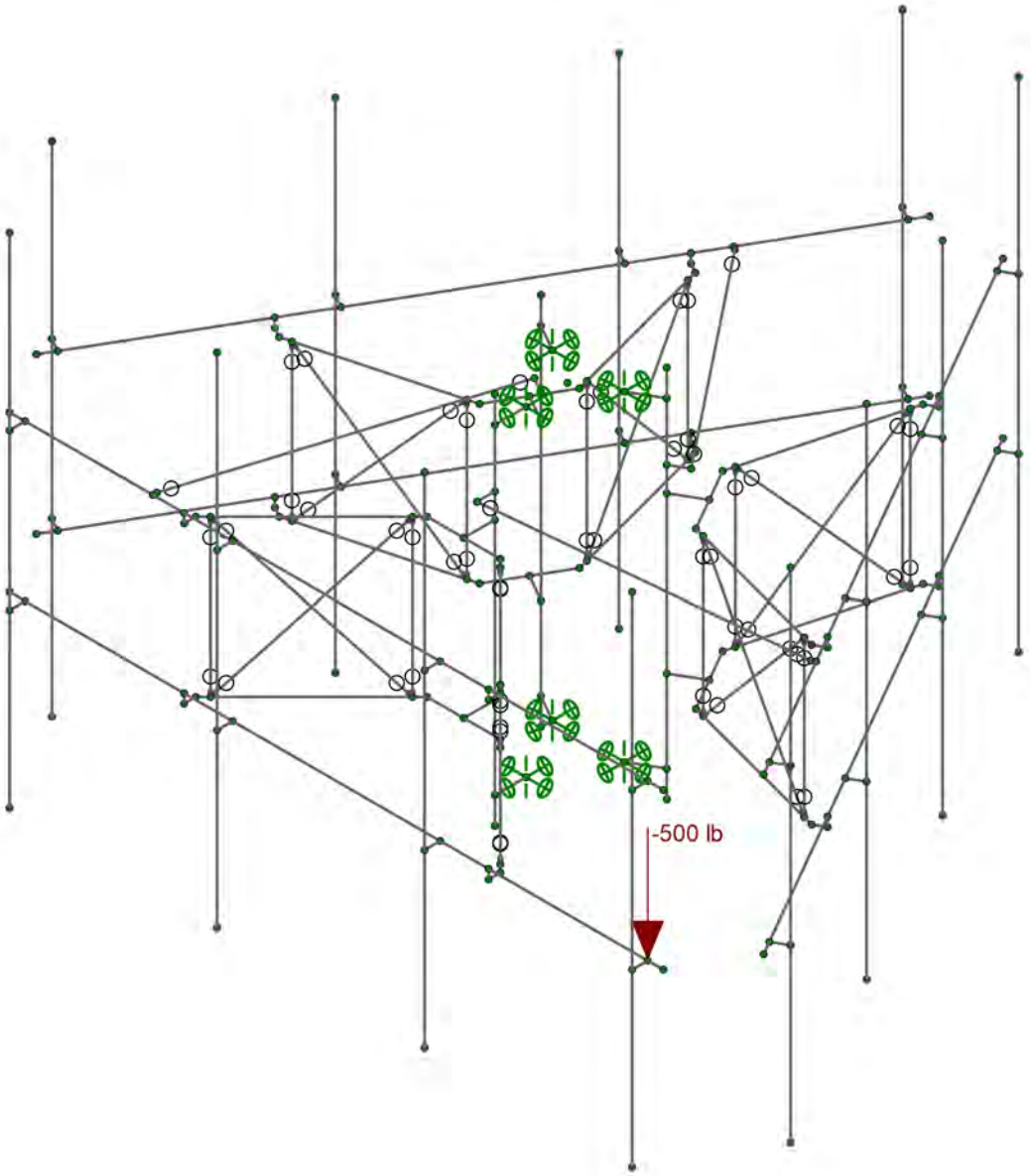

Loads: BLC 34, Maintenance Load 1

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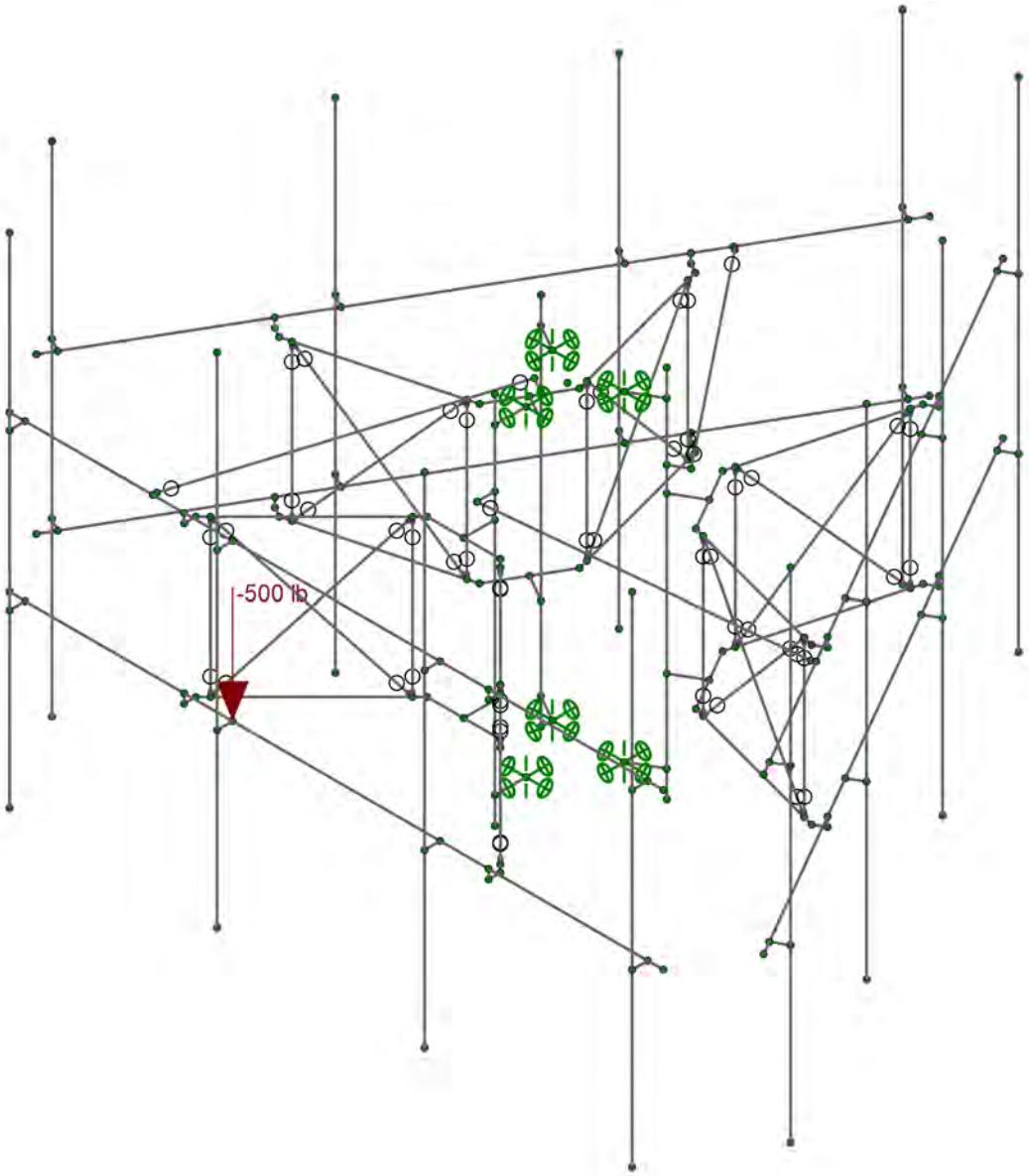

Loads: BLC 35, Maintenance Load 2

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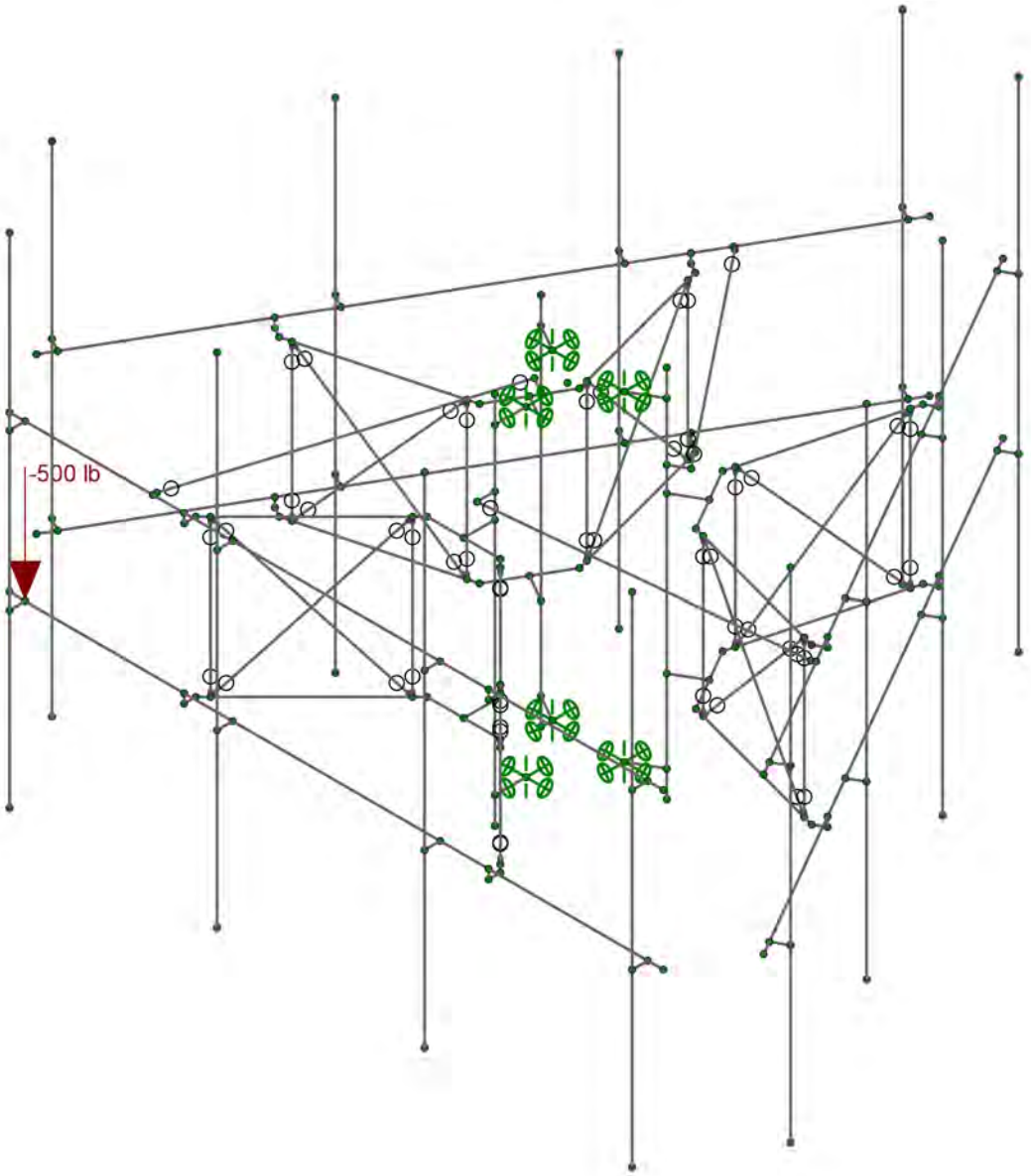

Loads: BLC 36, Maintenance Load 3

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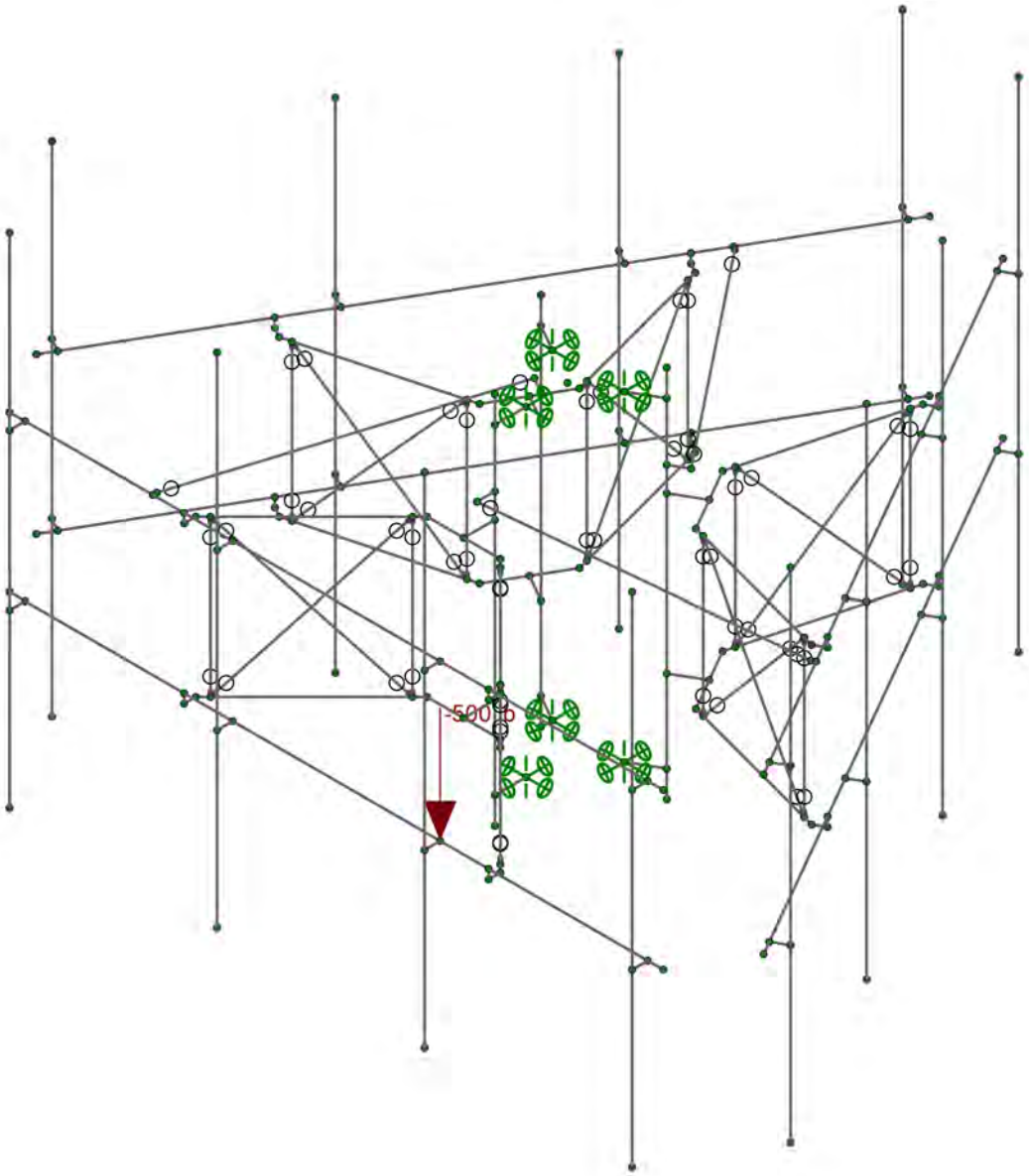

Loads: BLC 43, Maintenance Load 10

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APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	Sprint PCS
Engineer:	Hector Rodriguez

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil	
Ground Elevation:	619.33	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame (Multiple)	
Num Sectors:	3	
Centerline AGL:	117.0	ft
Tower Height AGL:	119.5	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	0.98	*Rev H Only
Rooftop Speed-Up (K_s):	1.00	*Rev H Only
Topographic Factor (K_{zt}):	1.00	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	130	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	105.15	psf
Round Pressure:	63.09	psf
Ice Wind Pressure:	9.33	psf

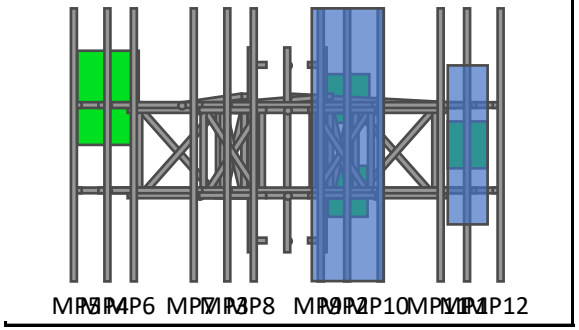
SEISMIC DATA		
Short-Period Accel. (S_s):	0.18	g
1-Second Accel. (S_1):	0.06	g
Short-Period Design (S_{DS}):	0.19	
1-Second Design (S_{D1}):	0.10	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

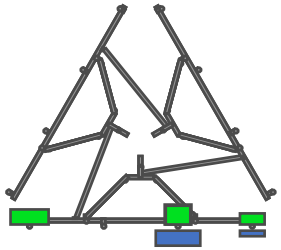
Infinigy Load Calculator V2.1.4

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Infinigy Load Calculator V2.1.4

APPURTENANCE INFORMATION

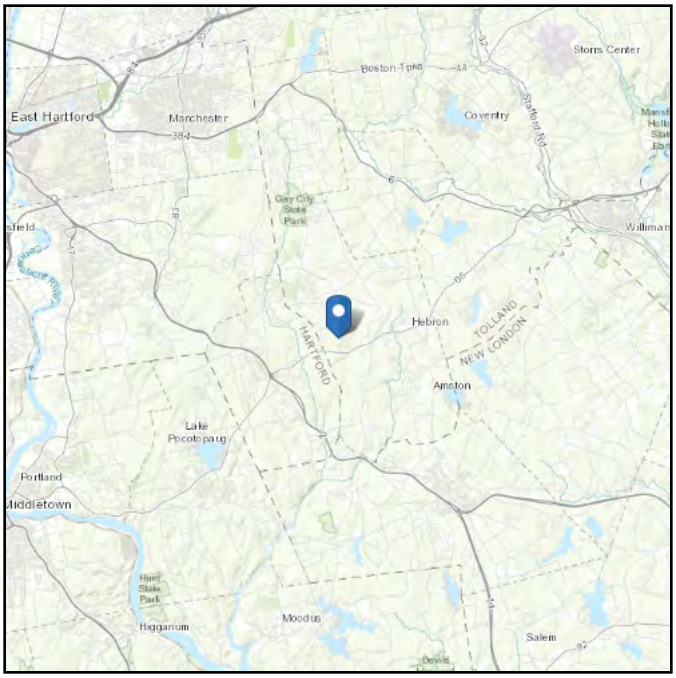
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
ERICSSON AIR6449 B41_T-MOBILE	117.0	3	0.90	52.57	5.66	2.48	267.77	117.18	114.63	10.82	MP4
FS/CELWAVE APX16DWV-16DWV-S-E-A2	117.0	3	0.90	52.57	6.26	1.50	296.20	70.97	40.70	3.84	MP1
S/CELWAVE APXVAALL24_43-U-NA20_TI	117.0	3	0.90	52.57	14.67	5.32	694.13	251.72	149.90	14.15	MP2
ERICSSON RADIO 4415 B66A	117.0	3	0.90	52.57	1.83	0.87	86.53	41.17	49.60	4.68	MP1
ERICSSON RADIO 4424 B25_TMO	117.0	3	0.90	52.57	2.05	1.61	97.09	76.19	86.00	8.12	MP2
ERICSSON RADIO 4449 B71 B85A_T-MOBI	117.0	3	0.90	52.57	1.97	1.59	93.22	75.07	73.21	6.91	MP2

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 544.53 ft (NAVD 88)
Latitude: 41.65445
Longitude: -72.410864



Wind

Results:

Wind Speed:	127 Vmph
10-year MRI	78 Vmph
25-year MRI	87 Vmph
50-year MRI	95 Vmph
100-year MRI	103 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Tue Feb 02 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

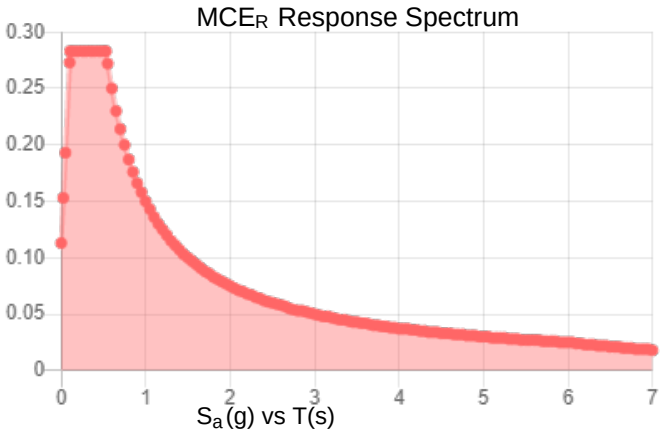
Seismic

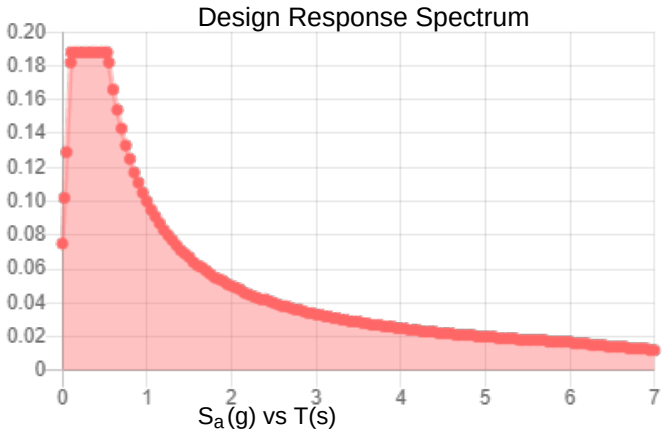
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.188
S_1 :	0.062	S_{D1} :	0.1
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.283	PGA_M :	0.142
S_{M1} :	0.15	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Feb 02 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Feb 02 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	-63	-44.125	44.55	
2	N2	63	-44.125	44.55	
3	N3	-63	-14.125	44.55	
4	N4	63	-14.125	44.55	
5	N9	-60	-44.125	44.55	
6	N10	-60	-14.125	44.55	
7	N11	-20	-44.125	44.55	
8	N12	-20	-14.125	44.55	
9	N15	60	-44.125	44.55	
10	N16	60	-14.125	44.55	
11	N17	-60	-44.125	47.55	
12	N18	-60	-14.125	47.55	
13	N19	-20	-44.125	47.55	
14	N20	-20	-14.125	47.55	
15	N23	-60	18.875	47.55	
16	N24	-20	18.875	47.55	
17	N26	-60	-77.125	47.55	
18	N27	-20	-77.125	47.55	
19	N29	60	-44.125	47.55	
20	N30	60	-14.125	47.55	
21	N31	60	18.875	47.55	
22	N32	60	-77.125	47.55	
23	N34	29.35	-14.125	44.55	
24	N35	-29.35	-14.125	44.55	
25	N36	29.35	-15.875	44.55	
26	N37	-29.35	-15.875	44.55	
27	N38	29.35	-15.875	42.3	
28	N39	-29.35	-15.875	42.3	
29	N40	-7.05	-15.875	20	
30	N41	7.05	-15.875	20	
31	N42	0.	-15.875	20	
32	N43	0.	-15.875	14	
33	N44	29.35	-44.125	44.55	
34	N45	-29.35	-44.125	44.55	
35	N46	29.35	-45.875	44.55	
36	N47	-29.35	-45.875	44.55	
37	N48	29.35	-45.875	42.3	
38	N49	-29.35	-45.875	42.3	
39	N50	-7.05	-45.875	20	
40	N51	7.05	-45.875	20	
41	N52	0.	-45.875	20	
42	N53	0.	-45.875	14	
43	N62A	-27.935813	-45.875	40.885813	
44	N63A	-27.935813	-15.875	40.885813	
45	N64A	-8.464214	-45.875	21.414214	
46	N65	-8.464214	-15.875	21.414214	
47	N66	27.935813	-45.875	40.885813	
48	N67	27.935813	-15.875	40.885813	
49	N68	8.464214	-45.875	21.414214	
50	N69	8.464214	-15.875	21.414214	
51	N67A	-35.35	-14.125	43.8	
52	N69A	-35.35	-14.125	44.55	
53	N61	0.	5.125	14	
54	N62	0.	-66.875	14	
55	N63	0.	-61.75	14	
56	N64	0.	0	14	
57	N65A	0.	-61.75	8	
58	N66A	0.	0	8	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
59	N238	0.	-11.125	14	
60	N239	0.	-11.125	17.45	
61	CP1	0	0	0	
62	N62B	70.081432	-44.125	32.2846	
63	N63B	7.081432	-44.125	-76.8346	
64	N64B	70.081432	-14.125	32.2846	
65	N65B	7.081432	-14.125	-76.8346	
66	N66B	68.581432	-44.125	29.686524	
67	N67B	68.581432	-14.125	29.686524	
68	N68A	48.581432	-44.125	-4.954492	
69	N69B	48.581432	-14.125	-4.954492	
70	N70	8.581432	-44.125	-74.236524	
71	N71	8.581432	-14.125	-74.236524	
72	N72	71.179508	-44.125	28.186524	
73	N73	71.179508	-14.125	28.186524	
74	N74	51.179508	-44.125	-6.454492	
75	N75	51.179508	-14.125	-6.454492	
76	N76	71.179508	18.875	28.186524	
77	N77	51.179508	18.875	-6.454492	
78	N78	71.179508	-77.125	28.186524	
79	N79	51.179508	-77.125	-6.454492	
80	N80	11.179508	-44.125	-75.736524	
81	N81	11.179508	-14.125	-75.736524	
82	N82	11.179508	18.875	-75.736524	
83	N83	11.179508	-77.125	-75.736524	
84	N84	23.906432	-14.125	-47.692846	
85	N85	53.256432	-14.125	3.142846	
86	N86	23.906432	-15.875	-47.692846	
87	N87	53.256432	-15.875	3.142846	
88	N88	21.957875	-15.875	-46.567846	
89	N89	51.307875	-15.875	4.267846	
90	N90	20.845508	-15.875	-3.894521	
91	N91	13.795508	-15.875	-16.105479	
92	N92	17.320508	-15.875	-10	
93	N93	12.124356	-15.875	-7	
94	N94	23.906432	-44.125	-47.692846	
95	N95	53.256432	-44.125	3.142846	
96	N96	23.906432	-45.875	-47.692846	
97	N97	53.256432	-45.875	3.142846	
98	N98	21.957875	-45.875	-46.567846	
99	N99	51.307875	-45.875	4.267846	
100	N100	20.845508	-45.875	-3.894521	
101	N101	13.795508	-45.875	-16.105479	
102	N102	17.320508	-45.875	-10	
103	N103	12.124356	-45.875	-7	
104	N104	49.376059	-45.875	3.750217	
105	N105	49.376059	-15.875	3.750217	
106	N106	22.77736	-45.875	-3.376883	
107	N107	22.77736	-15.875	-3.376883	
108	N108	21.440246	-45.875	-44.63603	
109	N109	21.440246	-15.875	-44.63603	
110	N110	14.313146	-45.875	-18.037331	
111	N111	14.313146	-15.875	-18.037331	
112	N112	55.606913	-14.125	8.713998	
113	N113	56.256432	-14.125	8.338998	
114	N114	12.124356	5.125	-7	
115	N115	12.124356	-66.875	-7	
116	N116	12.124356	-61.75	-7	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
117	N117	12.124356	0	-7	
118	N118	6.928203	-61.75	-4	
119	N119	6.928203	0	-4	
120	N120	12.124356	-11.125	-7	
121	N121	15.112143	-11.125	-8.725	
122	N123	-7.081432	-44.125	-76.8346	
123	N124	-70.081432	-44.125	32.2846	
124	N125	-7.081432	-14.125	-76.8346	
125	N126	-70.081432	-14.125	32.2846	
126	N127	-8.581432	-44.125	-74.236524	
127	N128	-8.581432	-14.125	-74.236524	
128	N129	-28.581432	-44.125	-39.595508	
129	N130	-28.581432	-14.125	-39.595508	
130	N131	-68.581432	-44.125	29.686524	
131	N132	-68.581432	-14.125	29.686524	
132	N133	-11.179508	-44.125	-75.736524	
133	N134	-11.179508	-14.125	-75.736524	
134	N135	-31.179508	-44.125	-41.095508	
135	N136	-31.179508	-14.125	-41.095508	
136	N137	-11.179508	18.875	-75.736524	
137	N138	-31.179508	18.875	-41.095508	
138	N139	-11.179508	-77.125	-75.736524	
139	N140	-31.179508	-77.125	-41.095508	
140	N141	-71.179508	-44.125	28.186524	
141	N142	-71.179508	-14.125	28.186524	
142	N143	-71.179508	18.875	28.186524	
143	N144	-71.179508	-77.125	28.186524	
144	N145	-53.256432	-14.125	3.142846	
145	N146	-23.906432	-14.125	-47.692846	
146	N147	-53.256432	-15.875	3.142846	
147	N148	-23.906432	-15.875	-47.692846	
148	N149	-51.307875	-15.875	4.267846	
149	N150	-21.957875	-15.875	-46.567846	
150	N151	-13.795508	-15.875	-16.105479	
151	N152	-20.845508	-15.875	-3.894521	
152	N153	-17.320508	-15.875	-10	
153	N154	-12.124356	-15.875	-7	
154	N155	-53.256432	-44.125	3.142846	
155	N156	-23.906432	-44.125	-47.692846	
156	N157	-53.256432	-45.875	3.142846	
157	N158	-23.906432	-45.875	-47.692846	
158	N159	-51.307875	-45.875	4.267846	
159	N160	-21.957875	-45.875	-46.567846	
160	N161	-13.795508	-45.875	-16.105479	
161	N162	-20.845508	-45.875	-3.894521	
162	N163	-17.320508	-45.875	-10	
163	N164	-12.124356	-45.875	-7	
164	N165	-21.440246	-45.875	-44.63603	
165	N166	-21.440246	-15.875	-44.63603	
166	N167	-14.313146	-45.875	-18.037331	
167	N168	-14.313146	-15.875	-18.037331	
168	N169	-49.376059	-45.875	3.750217	
169	N170	-49.376059	-15.875	3.750217	
170	N171	-22.77736	-45.875	-3.376883	
171	N172	-22.77736	-15.875	-3.376883	
172	N173	-20.256913	-14.125	-52.513998	
173	N174	-20.906432	-14.125	-52.888998	
174	N175	-12.124356	5.125	-7	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
175	N176	-12.124356	-66.875	-7	
176	N177	-12.124356	-61.75	-7	
177	N178	-12.124356	0	-7	
178	N179	-6.928203	-61.75	-4	
179	N180	-6.928203	0	-4	
180	N181	-12.124356	-11.125	-7	
181	N182	-15.112143	-11.125	-8.725	
182	N182A	20	-44.125	44.55	
183	N183	20	-14.125	44.55	
184	N184	20	-44.125	47.55	
185	N185	20	-14.125	47.55	
186	N186	20	18.875	47.55	
187	N187	20	-77.125	47.55	
188	N189	28.581432	-44.125	-39.595508	
189	N190	28.581432	-14.125	-39.595508	
190	N191	31.179508	-44.125	-41.095508	
191	N192	31.179508	-14.125	-41.095508	
192	N193	31.179508	18.875	-41.095508	
193	N194	31.179508	-77.125	-41.095508	
194	N196	-48.581432	-44.125	-4.954492	
195	N197	-48.581432	-14.125	-4.954492	
196	N198	-51.179508	-44.125	-6.454492	
197	N199	-51.179508	-14.125	-6.454492	
198	N200	-51.179508	18.875	-6.454492	
199	N201	-51.179508	-77.125	-6.454492	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N43					
2	N53					
3	N61					
4	N62					
5	N63					
6	N64					
7	N65A	Reaction	Reaction	Reaction	Reaction	Reaction
8	N66A	Reaction	Reaction	Reaction	Reaction	Reaction
9	N238					
10	N239					
11	CP1					
12	N93					
13	N103					
14	N114					
15	N115					
16	N116					
17	N117					
18	N118	Reaction	Reaction	Reaction	Reaction	Reaction
19	N119	Reaction	Reaction	Reaction	Reaction	Reaction
20	N120					
21	N121					
22	N154					
23	N164					
24	N175					
25	N176					
26	N177					
27	N178					
28	N179	Reaction	Reaction	Reaction	Reaction	Reaction
29	N180	Reaction	Reaction	Reaction	Reaction	Reaction
30	N181					

Node Boundary Conditions (Continued)

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Z Rot [k-ft/rad]
31	N182					

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	Q345	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	Q235-GB	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Face Horizontal	PIPE_2.0	Beam	None	Q235-GB	Typical	1.02	0.627	0.627	1.25
2	Standoff	PIPE_1.5	Beam	None	Q235-GB	Typical	0.749	0.293	0.293	0.586
3	Bracing	0.625" S.R.	VBrace	None	Q345	Typical	0.307	0.007	0.007	0.015
4	Mount Pipe	PIPE_2.0	Column	None	Q235-GB	Typical	1.02	0.627	0.627	1.25
5	Connection Plate	PL3.6875x1/2	Beam	None	Q345	Typical	1.844	0.038	2.089	0.141
6	Tieback	PIPE_2.0	HBrace	None	Q235-GB	Typical	1.02	0.627	0.627	1.25
7	Vertical Pipe	PIPE_4.0	Column	None	Q235-GB	Typical	2.96	6.82	6.82	13.6

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M15	N51	N48		Standoff	Beam	None	Q235-GB	Typical
2	M17	N50	N49		Standoff	Beam	None	Q235-GB	Typical
3	MP1	N31	N32		Mount Pipe	Column	None	Q235-GB	Typical
4	M31	N41	N38		Standoff	Beam	None	Q235-GB	Typical
5	MP3	N24	N27		Mount Pipe	Column	None	Q235-GB	Typical
6	M33	N40	N39		Standoff	Beam	None	Q235-GB	Typical
7	MP4	N23	N26		Mount Pipe	Column	None	Q235-GB	Typical
8	M11	N53	N52	90	RIGID	None	None	RIGID	Typical
9	M12	N15	N29		RIGID	None	None	RIGID	Typical
10	M13	N50	N51		RIGID	None	None	RIGID	Typical
11	M14	N16	N30		RIGID	None	None	RIGID	Typical
12	M20	N11	N19		RIGID	None	None	RIGID	Typical
13	M22	N12	N20		RIGID	None	None	RIGID	Typical
14	M23	N44	N46		RIGID	None	None	RIGID	Typical
15	M24	N9	N17		RIGID	None	None	RIGID	Typical
16	M25	N45	N47		RIGID	None	None	RIGID	Typical
17	M26	N10	N18		RIGID	None	None	RIGID	Typical
18	M27	N43	N42	90	RIGID	None	None	RIGID	Typical
19	M29	N40	N41		RIGID	None	None	RIGID	Typical
20	M37	N34	N36		RIGID	None	None	RIGID	Typical
21	M39	N35	N37		RIGID	None	None	RIGID	Typical
22	M41A	N67A	N69A		RIGID	None	None	RIGID	Typical
23	M41	N1	N2		Face Horizontal	Beam	None	Q235-GB	Typical
24	M42	N3	N4		Face Horizontal	Beam	None	Q235-GB	Typical
25	M19	N48	N46	90	Connection Plate	Beam	None	Q345	Typical
26	M21	N49	N47	90	Connection Plate	Beam	None	Q345	Typical
27	M35	N38	N36	90	Connection Plate	Beam	None	Q345	Typical
28	M36	N39	N37	90	Connection Plate	Beam	None	Q345	Typical
29	M9	N65	N64A		Bracing	VBrace	None	Q345	Typical
30	M10	N63A	N62A		Bracing	VBrace	None	Q345	Typical
31	M43A	N69	N68		Bracing	VBrace	None	Q345	Typical
32	M44A	N67	N66		Bracing	VBrace	None	Q345	Typical
33	M37A	N63A	N64A		Bracing	VBrace	None	Q345	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
34	M38	N65	N62A		Bracing	VBrace	None	Q345	Typical
35	M39A	N69	N66		Bracing	VBrace	None	Q345	Typical
36	M40	N67	N68		Bracing	VBrace	None	Q345	Typical
37	M41B	N61	N62		Vertical Pipe	Column	None	Q235-GB	Typical
38	M42B	N64	N66A		RIGID	None	None	RIGID	Typical
39	M43	N63	N65A		RIGID	None	None	RIGID	Typical
40	M159	N238	N239		RIGID	None	None	RIGID	Typical
41	M41C	N101	N98		Standoff	Beam	None	Q235-GB	Typical
42	M42A	N100	N99		Standoff	Beam	None	Q235-GB	Typical
43	MP9	N82	N83		Mount Pipe	Column	None	Q235-GB	Typical
44	M44	N91	N88		Standoff	Beam	None	Q235-GB	Typical
45	MP11	N77	N79		Mount Pipe	Column	None	Q235-GB	Typical
46	M46	N90	N89		Standoff	Beam	None	Q235-GB	Typical
47	MP12	N76	N78		Mount Pipe	Column	None	Q235-GB	Typical
48	M48	N103	N102	90	RIGID	None	None	RIGID	Typical
49	M49	N70	N80		RIGID	None	None	RIGID	Typical
50	M50	N100	N101		RIGID	None	None	RIGID	Typical
51	M51	N71	N81		RIGID	None	None	RIGID	Typical
52	M52	N68A	N74		RIGID	None	None	RIGID	Typical
53	M53	N69B	N75		RIGID	None	None	RIGID	Typical
54	M54	N94	N96		RIGID	None	None	RIGID	Typical
55	M55	N66B	N72		RIGID	None	None	RIGID	Typical
56	M56	N95	N97		RIGID	None	None	RIGID	Typical
57	M57	N67B	N73		RIGID	None	None	RIGID	Typical
58	M58	N93	N92	90	RIGID	None	None	RIGID	Typical
59	M59	N90	N91		RIGID	None	None	RIGID	Typical
60	M60	N84	N86		RIGID	None	None	RIGID	Typical
61	M61	N85	N87		RIGID	None	None	RIGID	Typical
62	M62	N112	N113		RIGID	None	None	RIGID	Typical
63	M63	N62B	N63B		Face Horizontal	Beam	None	Q235-GB	Typical
64	M64	N64B	N65B		Face Horizontal	Beam	None	Q235-GB	Typical
65	M65	N98	N96	90	Connection Plate	Beam	None	Q345	Typical
66	M66	N99	N97	90	Connection Plate	Beam	None	Q345	Typical
67	M67	N88	N86	90	Connection Plate	Beam	None	Q345	Typical
68	M68	N89	N87	90	Connection Plate	Beam	None	Q345	Typical
69	M69	N107	N106		Bracing	VBrace	None	Q345	Typical
70	M70	N105	N104		Bracing	VBrace	None	Q345	Typical
71	M71	N111	N110		Bracing	VBrace	None	Q345	Typical
72	M72	N109	N108		Bracing	VBrace	None	Q345	Typical
73	M73	N105	N106		Bracing	VBrace	None	Q345	Typical
74	M74	N107	N104		Bracing	VBrace	None	Q345	Typical
75	M75	N111	N108		Bracing	VBrace	None	Q345	Typical
76	M76	N109	N110		Bracing	VBrace	None	Q345	Typical
77	M77	N114	N115		Vertical Pipe	Column	None	Q235-GB	Typical
78	M78	N117	N119		RIGID	None	None	RIGID	Typical
79	M79	N116	N118		RIGID	None	None	RIGID	Typical
80	M80	N120	N121		RIGID	None	None	RIGID	Typical
81	M81	N162	N159		Standoff	Beam	None	Q235-GB	Typical
82	M82	N161	N160		Standoff	Beam	None	Q235-GB	Typical
83	MP5	N143	N144		Mount Pipe	Column	None	Q235-GB	Typical
84	M84	N152	N149		Standoff	Beam	None	Q235-GB	Typical
85	MP7	N138	N140		Mount Pipe	Column	None	Q235-GB	Typical
86	M86	N151	N150		Standoff	Beam	None	Q235-GB	Typical
87	MP8	N137	N139		Mount Pipe	Column	None	Q235-GB	Typical
88	M88	N164	N163	90	RIGID	None	None	RIGID	Typical
89	M89	N131	N141		RIGID	None	None	RIGID	Typical
90	M90	N161	N162		RIGID	None	None	RIGID	Typical
91	M91	N132	N142		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
92	M92	N129	N135		RIGID	None	None	RIGID	Typical
93	M93	N130	N136		RIGID	None	None	RIGID	Typical
94	M94	N155	N157		RIGID	None	None	RIGID	Typical
95	M95	N127	N133		RIGID	None	None	RIGID	Typical
96	M96	N156	N158		RIGID	None	None	RIGID	Typical
97	M97	N128	N134		RIGID	None	None	RIGID	Typical
98	M98	N154	N153	90	RIGID	None	None	RIGID	Typical
99	M99	N151	N152		RIGID	None	None	RIGID	Typical
100	M100	N145	N147		RIGID	None	None	RIGID	Typical
101	M101	N146	N148		RIGID	None	None	RIGID	Typical
102	M102	N173	N174		RIGID	None	None	RIGID	Typical
103	M103	N123	N124		Face Horizontal	Beam	None	Q235-GB	Typical
104	M104	N125	N126		Face Horizontal	Beam	None	Q235-GB	Typical
105	M105	N159	N157	90	Connection Plate	Beam	None	Q345	Typical
106	M106	N160	N158	90	Connection Plate	Beam	None	Q345	Typical
107	M107	N149	N147	90	Connection Plate	Beam	None	Q345	Typical
108	M108	N150	N148	90	Connection Plate	Beam	None	Q345	Typical
109	M109	N168	N167		Bracing	VBrace	None	Q345	Typical
110	M110	N166	N165		Bracing	VBrace	None	Q345	Typical
111	M111	N172	N171		Bracing	VBrace	None	Q345	Typical
112	M112	N170	N169		Bracing	VBrace	None	Q345	Typical
113	M113	N166	N167		Bracing	VBrace	None	Q345	Typical
114	M114	N168	N165		Bracing	VBrace	None	Q345	Typical
115	M115	N172	N169		Bracing	VBrace	None	Q345	Typical
116	M116	N170	N171		Bracing	VBrace	None	Q345	Typical
117	M117	N175	N176		Vertical Pipe	Column	None	Q235-GB	Typical
118	M118	N178	N180		RIGID	None	None	RIGID	Typical
119	M119	N177	N179		RIGID	None	None	RIGID	Typical
120	M120	N181	N182		RIGID	None	None	RIGID	Typical
121	M121	N67A	N182		Tieback	HBrace	None	Q235-GB	Typical
122	M122	N173	N121		Tieback	HBrace	None	Q235-GB	Typical
123	M123	N239	N112		Tieback	HBrace	None	Q235-GB	Typical
124	M124	N182A	N184		RIGID	None	None	RIGID	Typical
125	M125	N183	N185		RIGID	None	None	RIGID	Typical
126	MP2	N186	N187		Mount Pipe	Column	None	Q235-GB	Typical
127	M127	N189	N191		RIGID	None	None	RIGID	Typical
128	M128	N190	N192		RIGID	None	None	RIGID	Typical
129	MP10	N193	N194		Mount Pipe	Column	None	Q235-GB	Typical
130	M130	N196	N198		RIGID	None	None	RIGID	Typical
131	M131	N197	N199		RIGID	None	None	RIGID	Typical
132	MP6	N200	N201		Mount Pipe	Column	None	Q235-GB	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Function
1	M15	Standoff	31.537	Lbyy	Lateral
2	M17	Standoff	31.537	Lbyy	Lateral
3	MP1	Mount Pipe	96	Lbyy	Lateral
4	M31	Standoff	31.537	Lbyy	Lateral
5	MP3	Mount Pipe	96	Lbyy	Lateral
6	M33	Standoff	31.537	Lbyy	Lateral
7	MP4	Mount Pipe	96	Lbyy	Lateral
8	M41	Face Horizontal	126	Lbyy	Lateral
9	M42	Face Horizontal	126	Lbyy	Lateral
10	M19	Connection Plate	2.25	Lbyy	Lateral
11	M21	Connection Plate	2.25	Lbyy	Lateral
12	M35	Connection Plate	2.25	Lbyy	Lateral
13	M36	Connection Plate	2.25	Lbyy	Lateral
14	M9	Bracing	30	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lcomp top [in]	Function
15	M10	Bracing	30	Lbyy	Lateral
16	M43A	Bracing	30	Lbyy	Lateral
17	M44A	Bracing	30	Lbyy	Lateral
18	M37A	Bracing	40.722	Lbyy	Lateral
19	M38	Bracing	40.722	Lbyy	Lateral
20	M39A	Bracing	40.722	Lbyy	Lateral
21	M40	Bracing	40.722	Lbyy	Lateral
22	M41B	Vertical Pipe	72		Lateral
23	M41C	Standoff	31.537	Lbyy	Lateral
24	M42A	Standoff	31.537	Lbyy	Lateral
25	MP9	Mount Pipe	96	Lbyy	Lateral
26	M44	Standoff	31.537	Lbyy	Lateral
27	MP11	Mount Pipe	96	Lbyy	Lateral
28	M46	Standoff	31.537	Lbyy	Lateral
29	MP12	Mount Pipe	96	Lbyy	Lateral
30	M63	Face Horizontal	126	Lbyy	Lateral
31	M64	Face Horizontal	126	Lbyy	Lateral
32	M65	Connection Plate	2.25	Lbyy	Lateral
33	M66	Connection Plate	2.25	Lbyy	Lateral
34	M67	Connection Plate	2.25	Lbyy	Lateral
35	M68	Connection Plate	2.25	Lbyy	Lateral
36	M69	Bracing	30	Lbyy	Lateral
37	M70	Bracing	30	Lbyy	Lateral
38	M71	Bracing	30	Lbyy	Lateral
39	M72	Bracing	30	Lbyy	Lateral
40	M73	Bracing	40.722	Lbyy	Lateral
41	M74	Bracing	40.722	Lbyy	Lateral
42	M75	Bracing	40.722	Lbyy	Lateral
43	M76	Bracing	40.722	Lbyy	Lateral
44	M77	Vertical Pipe	72		Lateral
45	M81	Standoff	31.537	Lbyy	Lateral
46	M82	Standoff	31.537	Lbyy	Lateral
47	MP5	Mount Pipe	96	Lbyy	Lateral
48	M84	Standoff	31.537	Lbyy	Lateral
49	MP7	Mount Pipe	96	Lbyy	Lateral
50	M86	Standoff	31.537	Lbyy	Lateral
51	MP8	Mount Pipe	96	Lbyy	Lateral
52	M103	Face Horizontal	126	Lbyy	Lateral
53	M104	Face Horizontal	126	Lbyy	Lateral
54	M105	Connection Plate	2.25	Lbyy	Lateral
55	M106	Connection Plate	2.25	Lbyy	Lateral
56	M107	Connection Plate	2.25	Lbyy	Lateral
57	M108	Connection Plate	2.25	Lbyy	Lateral
58	M109	Bracing	30	Lbyy	Lateral
59	M110	Bracing	30	Lbyy	Lateral
60	M111	Bracing	30	Lbyy	Lateral
61	M112	Bracing	30	Lbyy	Lateral
62	M113	Bracing	40.722	Lbyy	Lateral
63	M114	Bracing	40.722	Lbyy	Lateral
64	M115	Bracing	40.722	Lbyy	Lateral
65	M116	Bracing	40.722	Lbyy	Lateral
66	M117	Vertical Pipe	72		Lateral
67	M121	Tieback	56.369		Lateral
68	M122	Tieback	56.369		Lateral
69	M123	Tieback	56.369		Lateral
70	MP2	Mount Pipe	96		Lateral
71	MP10	Mount Pipe	96		Lateral
72	MP6	Mount Pipe	96		Lateral

Hot Rolled Steel Design Parameters (Continued)

Label	Shape	Length [in]	Lcomp top [in]	Function

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	Y	-57.315	31.45
2	MP4	Y	-57.315	64.56
3	MP1	Y	-20.35	20.05
4	MP1	Y	-20.35	75.95
5	MP2	Y	-74.95	0
6	MP2	Y	-74.95	%100
7	MP1	Y	-49.6	%50
8	MP2	Y	-86	%33
9	MP2	Y	-73.21	%67
10	MP8	Y	-57.315	31.45
11	MP8	Y	-57.315	64.56
12	MP5	Y	-20.35	20.05
13	MP5	Y	-20.35	75.95
14	MP6	Y	-74.95	0
15	MP6	Y	-74.95	%100
16	MP5	Y	-49.6	%50
17	MP6	Y	-86	%33
18	MP6	Y	-73.21	%67
19	MP12	Y	-57.315	31.45
20	MP12	Y	-57.315	64.56
21	MP9	Y	-20.35	20.05
22	MP9	Y	-20.35	75.95
23	MP10	Y	-74.95	0
24	MP10	Y	-74.95	%100
25	MP9	Y	-49.6	%50
26	MP10	Y	-86	%33
27	MP10	Y	-73.21	%67

Member Point Loads (BLC 2 : Wind Load AZI 0)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	0	31.45
2	MP4	Z	-133.88	31.45
3	MP4	X	0	64.56
4	MP4	Z	-133.88	64.56
5	MP1	X	0	20.05
6	MP1	Z	-148.1	20.05
7	MP1	X	0	75.95
8	MP1	Z	-148.1	75.95
9	MP2	X	0	0
10	MP2	Z	-347.07	0
11	MP2	X	0	%100
12	MP2	Z	-347.07	%100
13	MP1	X	0	%50
14	MP1	Z	-86.53	%50
15	MP2	X	0	%33
16	MP2	Z	-97.09	%33
17	MP2	X	0	%67
18	MP2	Z	-93.22	%67
19	MP8	X	0	31.45
20	MP8	Z	-77.41	31.45
21	MP8	X	0	64.56
22	MP8	Z	-77.41	64.56
23	MP5	X	0	20.05
24	MP5	Z	-63.64	20.05
25	MP5	X	0	75.95
26	MP5	Z	-63.64	75.95
27	MP6	X	0	0
28	MP6	Z	-181.16	0

Member Point Loads (BLC 2 : Wind Load AZI 0) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
29	MP6	X	0	%100
30	MP6	Z	-181.16	%100
31	MP5	X	0	%50
32	MP5	Z	-52.51	%50
33	MP6	X	0	%33
34	MP6	Z	-81.42	%33
35	MP6	X	0	%67
36	MP6	Z	-79.61	%67
37	MP12	X	0	31.45
38	MP12	Z	-77.41	31.45
39	MP12	X	0	64.56
40	MP12	Z	-77.41	64.56
41	MP9	X	0	20.05
42	MP9	Z	-63.64	20.05
43	MP9	X	0	75.95
44	MP9	Z	-63.64	75.95
45	MP10	X	0	0
46	MP10	Z	-181.16	0
47	MP10	X	0	%100
48	MP10	Z	-181.16	%100
49	MP9	X	0	%50
50	MP9	Z	-52.51	%50
51	MP10	X	0	%33
52	MP10	Z	-81.42	%33
53	MP10	X	0	%67
54	MP10	Z	-79.61	%67

Member Point Loads (BLC 3 : Wind Load AZI 30)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-57.53	31.45
2	MP4	Z	-99.65	31.45
3	MP4	X	-57.53	64.56
4	MP4	Z	-99.65	64.56
5	MP1	X	-59.97	20.05
6	MP1	Z	-103.88	20.05
7	MP1	X	-59.97	75.95
8	MP1	Z	-103.88	75.95
9	MP2	X	-145.88	0
10	MP2	Z	-252.68	0
11	MP2	X	-145.88	%100
12	MP2	Z	-252.68	%100
13	MP1	X	-37.59	%50
14	MP1	Z	-65.12	%50
15	MP2	X	-45.93	%33
16	MP2	Z	-79.56	%33
17	MP2	X	-44.34	%67
18	MP2	Z	-76.8	%67
19	MP8	X	-57.53	31.45
20	MP8	Z	-99.65	31.45
21	MP8	X	-57.53	64.56
22	MP8	Z	-99.65	64.56
23	MP5	X	-59.97	20.05
24	MP5	Z	-103.88	20.05
25	MP5	X	-59.97	75.95
26	MP5	Z	-103.88	75.95
27	MP6	X	-145.88	0
28	MP6	Z	-252.68	0
29	MP6	X	-145.88	%100

Member Point Loads (BLC 3 : Wind Load AZI 30) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
30	MP6	Z	-252.68	%100
31	MP5	X	-37.59	%50
32	MP5	Z	-65.12	%50
33	MP6	X	-45.93	%33
34	MP6	Z	-79.56	%33
35	MP6	X	-44.34	%67
36	MP6	Z	-76.8	%67
37	MP12	X	-29.29	31.45
38	MP12	Z	-50.74	31.45
39	MP12	X	-29.29	64.56
40	MP12	Z	-50.74	64.56
41	MP9	X	-17.74	20.05
42	MP9	Z	-30.73	20.05
43	MP9	X	-17.74	75.95
44	MP9	Z	-30.73	75.95
45	MP10	X	-62.93	0
46	MP10	Z	-109	0
47	MP10	X	-62.93	%100
48	MP10	Z	-109	%100
49	MP9	X	-20.58	%50
50	MP9	Z	-35.65	%50
51	MP10	X	-38.1	%33
52	MP10	Z	-65.98	%33
53	MP10	X	-37.53	%67
54	MP10	Z	-65.01	%67

Member Point Loads (BLC 4 : Wind Load AZI 60)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-67.04	31.45
2	MP4	Z	-38.71	31.45
3	MP4	X	-67.04	64.56
4	MP4	Z	-38.71	64.56
5	MP1	X	-55.11	20.05
6	MP1	Z	-31.82	20.05
7	MP1	X	-55.11	75.95
8	MP1	Z	-31.82	75.95
9	MP2	X	-156.89	0
10	MP2	Z	-90.58	0
11	MP2	X	-156.89	%100
12	MP2	Z	-90.58	%100
13	MP1	X	-45.47	%50
14	MP1	Z	-26.25	%50
15	MP2	X	-70.51	%33
16	MP2	Z	-40.71	%33
17	MP2	X	-68.94	%67
18	MP2	Z	-39.8	%67
19	MP8	X	-115.95	31.45
20	MP8	Z	-66.94	31.45
21	MP8	X	-115.95	64.56
22	MP8	Z	-66.94	64.56
23	MP5	X	-128.26	20.05
24	MP5	Z	-74.05	20.05
25	MP5	X	-128.26	75.95
26	MP5	Z	-74.05	75.95
27	MP6	X	-300.57	0
28	MP6	Z	-173.53	0
29	MP6	X	-300.57	%100
30	MP6	Z	-173.53	%100

Member Point Loads (BLC 4 : Wind Load AZI 60) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
31	MP5	X	-74.94	%50
32	MP5	Z	-43.27	%50
33	MP6	X	-84.09	%33
34	MP6	Z	-48.55	%33
35	MP6	X	-80.73	%67
36	MP6	Z	-46.61	%67
37	MP12	X	-67.04	31.45
38	MP12	Z	-38.71	31.45
39	MP12	X	-67.04	64.56
40	MP12	Z	-38.71	64.56
41	MP9	X	-55.11	20.05
42	MP9	Z	-31.82	20.05
43	MP9	X	-55.11	75.95
44	MP9	Z	-31.82	75.95
45	MP10	X	-156.89	0
46	MP10	Z	-90.58	0
47	MP10	X	-156.89	%100
48	MP10	Z	-90.58	%100
49	MP9	X	-45.47	%50
50	MP9	Z	-26.25	%50
51	MP10	X	-70.51	%33
52	MP10	Z	-40.71	%33
53	MP10	X	-68.94	%67
54	MP10	Z	-39.8	%67

Member Point Loads (BLC 5 : Wind Load AZI 90)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-58.59	31.45
2	MP4	Z	0	31.45
3	MP4	X	-58.59	64.56
4	MP4	Z	0	64.56
5	MP1	X	-35.49	20.05
6	MP1	Z	0	20.05
7	MP1	X	-35.49	75.95
8	MP1	Z	0	75.95
9	MP2	X	-125.86	0
10	MP2	Z	0	0
11	MP2	X	-125.86	%100
12	MP2	Z	0	%100
13	MP1	X	-41.17	%50
14	MP1	Z	0	%50
15	MP2	X	-76.19	%33
16	MP2	Z	0	%33
17	MP2	X	-75.07	%67
18	MP2	Z	0	%67
19	MP8	X	-115.06	31.45
20	MP8	Z	0	31.45
21	MP8	X	-115.06	64.56
22	MP8	Z	0	64.56
23	MP5	X	-119.95	20.05
24	MP5	Z	0	20.05
25	MP5	X	-119.95	75.95
26	MP5	Z	0	75.95
27	MP6	X	-291.77	0
28	MP6	Z	0	0
29	MP6	X	-291.77	%100
30	MP6	Z	0	%100
31	MP5	X	-75.19	%50

Member Point Loads (BLC 5 : Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
32	MP5	Z	0	%50
33	MP6	X	-91.87	%33
34	MP6	Z	0	%33
35	MP6	X	-88.68	%67
36	MP6	Z	0	%67
37	MP12	X	-115.06	31.45
38	MP12	Z	0	31.45
39	MP12	X	-115.06	64.56
40	MP12	Z	0	64.56
41	MP9	X	-119.95	20.05
42	MP9	Z	0	20.05
43	MP9	X	-119.95	75.95
44	MP9	Z	0	75.95
45	MP10	X	-291.77	0
46	MP10	Z	0	0
47	MP10	X	-291.77	%100
48	MP10	Z	0	%100
49	MP9	X	-75.19	%50
50	MP9	Z	0	%50
51	MP10	X	-91.87	%33
52	MP10	Z	0	%33
53	MP10	X	-88.68	%67
54	MP10	Z	0	%67

Member Point Loads (BLC 6 : Wind Load AZI 120)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-67.04	31.45
2	MP4	Z	38.71	31.45
3	MP4	X	-67.04	64.56
4	MP4	Z	38.71	64.56
5	MP1	X	-55.11	20.05
6	MP1	Z	31.82	20.05
7	MP1	X	-55.11	75.95
8	MP1	Z	31.82	75.95
9	MP2	X	-156.89	0
10	MP2	Z	90.58	0
11	MP2	X	-156.89	%100
12	MP2	Z	90.58	%100
13	MP1	X	-45.47	%50
14	MP1	Z	26.25	%50
15	MP2	X	-70.51	%33
16	MP2	Z	40.71	%33
17	MP2	X	-68.94	%67
18	MP2	Z	39.8	%67
19	MP8	X	-67.04	31.45
20	MP8	Z	38.71	31.45
21	MP8	X	-67.04	64.56
22	MP8	Z	38.71	64.56
23	MP5	X	-55.11	20.05
24	MP5	Z	31.82	20.05
25	MP5	X	-55.11	75.95
26	MP5	Z	31.82	75.95
27	MP6	X	-156.89	0
28	MP6	Z	90.58	0
29	MP6	X	-156.89	%100
30	MP6	Z	90.58	%100
31	MP5	X	-45.47	%50
32	MP5	Z	26.25	%50

Member Point Loads (BLC 6 : Wind Load AZI 120) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
33	MP6	X	-70.51	%33
34	MP6	Z	40.71	%33
35	MP6	X	-68.94	%67
36	MP6	Z	39.8	%67
37	MP12	X	-115.95	31.45
38	MP12	Z	66.94	31.45
39	MP12	X	-115.95	64.56
40	MP12	Z	66.94	64.56
41	MP9	X	-128.26	20.05
42	MP9	Z	74.05	20.05
43	MP9	X	-128.26	75.95
44	MP9	Z	74.05	75.95
45	MP10	X	-300.57	0
46	MP10	Z	173.53	0
47	MP10	X	-300.57	%100
48	MP10	Z	173.53	%100
49	MP9	X	-74.94	%50
50	MP9	Z	43.27	%50
51	MP10	X	-84.09	%33
52	MP10	Z	48.55	%33
53	MP10	X	-80.73	%67
54	MP10	Z	46.61	%67

Member Point Loads (BLC 7 : Wind Load AZI 150)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-57.53	31.45
2	MP4	Z	99.65	31.45
3	MP4	X	-57.53	64.56
4	MP4	Z	99.65	64.56
5	MP1	X	-59.97	20.05
6	MP1	Z	103.88	20.05
7	MP1	X	-59.97	75.95
8	MP1	Z	103.88	75.95
9	MP2	X	-145.88	0
10	MP2	Z	252.68	0
11	MP2	X	-145.88	%100
12	MP2	Z	252.68	%100
13	MP1	X	-37.59	%50
14	MP1	Z	65.12	%50
15	MP2	X	-45.93	%33
16	MP2	Z	79.56	%33
17	MP2	X	-44.34	%67
18	MP2	Z	76.8	%67
19	MP8	X	-29.29	31.45
20	MP8	Z	50.74	31.45
21	MP8	X	-29.29	64.56
22	MP8	Z	50.74	64.56
23	MP5	X	-17.74	20.05
24	MP5	Z	30.73	20.05
25	MP5	X	-17.74	75.95
26	MP5	Z	30.73	75.95
27	MP6	X	-62.93	0
28	MP6	Z	109	0
29	MP6	X	-62.93	%100
30	MP6	Z	109	%100
31	MP5	X	-20.58	%50
32	MP5	Z	35.65	%50
33	MP6	X	-38.1	%33

Member Point Loads (BLC 7 : Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
34	MP6	Z	65.98	%33
35	MP6	X	-37.53	%67
36	MP6	Z	65.01	%67
37	MP12	X	-57.53	31.45
38	MP12	Z	99.65	31.45
39	MP12	X	-57.53	64.56
40	MP12	Z	99.65	64.56
41	MP9	X	-59.97	20.05
42	MP9	Z	103.88	20.05
43	MP9	X	-59.97	75.95
44	MP9	Z	103.88	75.95
45	MP10	X	-145.88	0
46	MP10	Z	252.68	0
47	MP10	X	-145.88	%100
48	MP10	Z	252.68	%100
49	MP9	X	-37.59	%50
50	MP9	Z	65.12	%50
51	MP10	X	-45.93	%33
52	MP10	Z	79.56	%33
53	MP10	X	-44.34	%67
54	MP10	Z	76.8	%67

Member Point Loads (BLC 8 : Wind Load AZI 180)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	0	31.45
2	MP4	Z	133.88	31.45
3	MP4	X	0	64.56
4	MP4	Z	133.88	64.56
5	MP1	X	0	20.05
6	MP1	Z	148.1	20.05
7	MP1	X	0	75.95
8	MP1	Z	148.1	75.95
9	MP2	X	0	0
10	MP2	Z	347.07	0
11	MP2	X	0	%100
12	MP2	Z	347.07	%100
13	MP1	X	0	%50
14	MP1	Z	86.53	%50
15	MP2	X	0	%33
16	MP2	Z	97.09	%33
17	MP2	X	0	%67
18	MP2	Z	93.22	%67
19	MP8	X	0	31.45
20	MP8	Z	77.41	31.45
21	MP8	X	0	64.56
22	MP8	Z	77.41	64.56
23	MP5	X	0	20.05
24	MP5	Z	63.64	20.05
25	MP5	X	0	75.95
26	MP5	Z	63.64	75.95
27	MP6	X	0	0
28	MP6	Z	181.16	0
29	MP6	X	0	%100
30	MP6	Z	181.16	%100
31	MP5	X	0	%50
32	MP5	Z	52.51	%50
33	MP6	X	0	%33
34	MP6	Z	81.42	%33

Member Point Loads (BLC 8 : Wind Load AZI 180) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
35	MP6	X	0	%67
36	MP6	Z	79.61	%67
37	MP12	X	0	31.45
38	MP12	Z	77.41	31.45
39	MP12	X	0	64.56
40	MP12	Z	77.41	64.56
41	MP9	X	0	20.05
42	MP9	Z	63.64	20.05
43	MP9	X	0	75.95
44	MP9	Z	63.64	75.95
45	MP10	X	0	0
46	MP10	Z	181.16	0
47	MP10	X	0	%100
48	MP10	Z	181.16	%100
49	MP9	X	0	%50
50	MP9	Z	52.51	%50
51	MP10	X	0	%33
52	MP10	Z	81.42	%33
53	MP10	X	0	%67
54	MP10	Z	79.61	%67

Member Point Loads (BLC 9 : Wind Load AZI 210)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	57.53	31.45
2	MP4	Z	99.65	31.45
3	MP4	X	57.53	64.56
4	MP4	Z	99.65	64.56
5	MP1	X	59.97	20.05
6	MP1	Z	103.88	20.05
7	MP1	X	59.97	75.95
8	MP1	Z	103.88	75.95
9	MP2	X	145.88	0
10	MP2	Z	252.68	0
11	MP2	X	145.88	%100
12	MP2	Z	252.68	%100
13	MP1	X	37.59	%50
14	MP1	Z	65.12	%50
15	MP2	X	45.93	%33
16	MP2	Z	79.56	%33
17	MP2	X	44.34	%67
18	MP2	Z	76.8	%67
19	MP8	X	57.53	31.45
20	MP8	Z	99.65	31.45
21	MP8	X	57.53	64.56
22	MP8	Z	99.65	64.56
23	MP5	X	59.97	20.05
24	MP5	Z	103.88	20.05
25	MP5	X	59.97	75.95
26	MP5	Z	103.88	75.95
27	MP6	X	145.88	0
28	MP6	Z	252.68	0
29	MP6	X	145.88	%100
30	MP6	Z	252.68	%100
31	MP5	X	37.59	%50
32	MP5	Z	65.12	%50
33	MP6	X	45.93	%33
34	MP6	Z	79.56	%33
35	MP6	X	44.34	%67

Member Point Loads (BLC 9 : Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
36	MP6	Z	76.8	%67
37	MP12	X	29.29	31.45
38	MP12	Z	50.74	31.45
39	MP12	X	29.29	64.56
40	MP12	Z	50.74	64.56
41	MP9	X	17.74	20.05
42	MP9	Z	30.73	20.05
43	MP9	X	17.74	75.95
44	MP9	Z	30.73	75.95
45	MP10	X	62.93	0
46	MP10	Z	109	0
47	MP10	X	62.93	%100
48	MP10	Z	109	%100
49	MP9	X	20.58	%50
50	MP9	Z	35.65	%50
51	MP10	X	38.1	%33
52	MP10	Z	65.98	%33
53	MP10	X	37.53	%67
54	MP10	Z	65.01	%67

Member Point Loads (BLC 10 : Wind Load AZI 240)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	67.04	31.45
2	MP4	Z	38.71	31.45
3	MP4	X	67.04	64.56
4	MP4	Z	38.71	64.56
5	MP1	X	55.11	20.05
6	MP1	Z	31.82	20.05
7	MP1	X	55.11	75.95
8	MP1	Z	31.82	75.95
9	MP2	X	156.89	0
10	MP2	Z	90.58	0
11	MP2	X	156.89	%100
12	MP2	Z	90.58	%100
13	MP1	X	45.47	%50
14	MP1	Z	26.25	%50
15	MP2	X	70.51	%33
16	MP2	Z	40.71	%33
17	MP2	X	68.94	%67
18	MP2	Z	39.8	%67
19	MP8	X	115.95	31.45
20	MP8	Z	66.94	31.45
21	MP8	X	115.95	64.56
22	MP8	Z	66.94	64.56
23	MP5	X	128.26	20.05
24	MP5	Z	74.05	20.05
25	MP5	X	128.26	75.95
26	MP5	Z	74.05	75.95
27	MP6	X	300.57	0
28	MP6	Z	173.53	0
29	MP6	X	300.57	%100
30	MP6	Z	173.53	%100
31	MP5	X	74.94	%50
32	MP5	Z	43.27	%50
33	MP6	X	84.09	%33
34	MP6	Z	48.55	%33
35	MP6	X	80.73	%67
36	MP6	Z	46.61	%67

Member Point Loads (BLC 10 : Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
37	MP12	X	67.04	31.45
38	MP12	Z	38.71	31.45
39	MP12	X	67.04	64.56
40	MP12	Z	38.71	64.56
41	MP9	X	55.11	20.05
42	MP9	Z	31.82	20.05
43	MP9	X	55.11	75.95
44	MP9	Z	31.82	75.95
45	MP10	X	156.89	0
46	MP10	Z	90.58	0
47	MP10	X	156.89	%100
48	MP10	Z	90.58	%100
49	MP9	X	45.47	%50
50	MP9	Z	26.25	%50
51	MP10	X	70.51	%33
52	MP10	Z	40.71	%33
53	MP10	X	68.94	%67
54	MP10	Z	39.8	%67

Member Point Loads (BLC 11 : Wind Load AZI 270)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	58.59	31.45
2	MP4	Z	0	31.45
3	MP4	X	58.59	64.56
4	MP4	Z	0	64.56
5	MP1	X	35.49	20.05
6	MP1	Z	0	20.05
7	MP1	X	35.49	75.95
8	MP1	Z	0	75.95
9	MP2	X	125.86	0
10	MP2	Z	0	0
11	MP2	X	125.86	%100
12	MP2	Z	0	%100
13	MP1	X	41.17	%50
14	MP1	Z	0	%50
15	MP2	X	76.19	%33
16	MP2	Z	0	%33
17	MP2	X	75.07	%67
18	MP2	Z	0	%67
19	MP8	X	115.06	31.45
20	MP8	Z	0	31.45
21	MP8	X	115.06	64.56
22	MP8	Z	0	64.56
23	MP5	X	119.95	20.05
24	MP5	Z	0	20.05
25	MP5	X	119.95	75.95
26	MP5	Z	0	75.95
27	MP6	X	291.77	0
28	MP6	Z	0	0
29	MP6	X	291.77	%100
30	MP6	Z	0	%100
31	MP5	X	75.19	%50
32	MP5	Z	0	%50
33	MP6	X	91.87	%33
34	MP6	Z	0	%33
35	MP6	X	88.68	%67
36	MP6	Z	0	%67
37	MP12	X	115.06	31.45

Member Point Loads (BLC 11 : Wind Load AZI 270) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
38	MP12	Z	0	31.45
39	MP12	X	115.06	64.56
40	MP12	Z	0	64.56
41	MP9	X	119.95	20.05
42	MP9	Z	0	20.05
43	MP9	X	119.95	75.95
44	MP9	Z	0	75.95
45	MP10	X	291.77	0
46	MP10	Z	0	0
47	MP10	X	291.77	%100
48	MP10	Z	0	%100
49	MP9	X	75.19	%50
50	MP9	Z	0	%50
51	MP10	X	91.87	%33
52	MP10	Z	0	%33
53	MP10	X	88.68	%67
54	MP10	Z	0	%67

Member Point Loads (BLC 12 : Wind Load AZI 300)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	67.04	31.45
2	MP4	Z	-38.71	31.45
3	MP4	X	67.04	64.56
4	MP4	Z	-38.71	64.56
5	MP1	X	55.11	20.05
6	MP1	Z	-31.82	20.05
7	MP1	X	55.11	75.95
8	MP1	Z	-31.82	75.95
9	MP2	X	156.89	0
10	MP2	Z	-90.58	0
11	MP2	X	156.89	%100
12	MP2	Z	-90.58	%100
13	MP1	X	45.47	%50
14	MP1	Z	-26.25	%50
15	MP2	X	70.51	%33
16	MP2	Z	-40.71	%33
17	MP2	X	68.94	%67
18	MP2	Z	-39.8	%67
19	MP8	X	67.04	31.45
20	MP8	Z	-38.71	31.45
21	MP8	X	67.04	64.56
22	MP8	Z	-38.71	64.56
23	MP5	X	55.11	20.05
24	MP5	Z	-31.82	20.05
25	MP5	X	55.11	75.95
26	MP5	Z	-31.82	75.95
27	MP6	X	156.89	0
28	MP6	Z	-90.58	0
29	MP6	X	156.89	%100
30	MP6	Z	-90.58	%100
31	MP5	X	45.47	%50
32	MP5	Z	-26.25	%50
33	MP6	X	70.51	%33
34	MP6	Z	-40.71	%33
35	MP6	X	68.94	%67
36	MP6	Z	-39.8	%67
37	MP12	X	115.95	31.45
38	MP12	Z	-66.94	31.45

Member Point Loads (BLC 12 : Wind Load AZI 300) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
39	MP12	X	115.95	64.56
40	MP12	Z	-66.94	64.56
41	MP9	X	128.26	20.05
42	MP9	Z	-74.05	20.05
43	MP9	X	128.26	75.95
44	MP9	Z	-74.05	75.95
45	MP10	X	300.57	0
46	MP10	Z	-173.53	0
47	MP10	X	300.57	%100
48	MP10	Z	-173.53	%100
49	MP9	X	74.94	%50
50	MP9	Z	-43.27	%50
51	MP10	X	84.09	%33
52	MP10	Z	-48.55	%33
53	MP10	X	80.73	%67
54	MP10	Z	-46.61	%67

Member Point Loads (BLC 13 : Wind Load AZI 330)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	57.53	31.45
2	MP4	Z	-99.65	31.45
3	MP4	X	57.53	64.56
4	MP4	Z	-99.65	64.56
5	MP1	X	59.97	20.05
6	MP1	Z	-103.88	20.05
7	MP1	X	59.97	75.95
8	MP1	Z	-103.88	75.95
9	MP2	X	145.88	0
10	MP2	Z	-252.68	0
11	MP2	X	145.88	%100
12	MP2	Z	-252.68	%100
13	MP1	X	37.59	%50
14	MP1	Z	-65.12	%50
15	MP2	X	45.93	%33
16	MP2	Z	-79.56	%33
17	MP2	X	44.34	%67
18	MP2	Z	-76.8	%67
19	MP8	X	29.29	31.45
20	MP8	Z	-50.74	31.45
21	MP8	X	29.29	64.56
22	MP8	Z	-50.74	64.56
23	MP5	X	17.74	20.05
24	MP5	Z	-30.73	20.05
25	MP5	X	17.74	75.95
26	MP5	Z	-30.73	75.95
27	MP6	X	62.93	0
28	MP6	Z	-109	0
29	MP6	X	62.93	%100
30	MP6	Z	-109	%100
31	MP5	X	20.58	%50
32	MP5	Z	-35.65	%50
33	MP6	X	38.1	%33
34	MP6	Z	-65.98	%33
35	MP6	X	37.53	%67
36	MP6	Z	-65.01	%67
37	MP12	X	57.53	31.45
38	MP12	Z	-99.65	31.45
39	MP12	X	57.53	64.56

Member Point Loads (BLC 13 : Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
40	MP12	Z	-99.65	64.56
41	MP9	X	59.97	20.05
42	MP9	Z	-103.88	20.05
43	MP9	X	59.97	75.95
44	MP9	Z	-103.88	75.95
45	MP10	X	145.88	0
46	MP10	Z	-252.68	0
47	MP10	X	145.88	%100
48	MP10	Z	-252.68	%100
49	MP9	X	37.59	%50
50	MP9	Z	-65.12	%50
51	MP10	X	45.93	%33
52	MP10	Z	-79.56	%33
53	MP10	X	44.34	%67
54	MP10	Z	-76.8	%67

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	Y	-75.044	31.45
2	MP4	Y	-75.044	64.56
3	MP1	Y	-67.273	20.05
4	MP1	Y	-67.273	75.95
5	MP2	Y	-207.964	0
6	MP2	Y	-207.964	%100
7	MP1	Y	-59.771	%50
8	MP2	Y	-83.804	%33
9	MP2	Y	-79.535	%67
10	MP8	Y	-75.044	31.45
11	MP8	Y	-75.044	64.56
12	MP5	Y	-67.273	20.05
13	MP5	Y	-67.273	75.95
14	MP6	Y	-207.964	0
15	MP6	Y	-207.964	%100
16	MP5	Y	-59.771	%50
17	MP6	Y	-83.804	%33
18	MP6	Y	-79.535	%67
19	MP12	Y	-75.044	31.45
20	MP12	Y	-75.044	64.56
21	MP9	Y	-67.273	20.05
22	MP9	Y	-67.273	75.95
23	MP10	Y	-207.964	0
24	MP10	Y	-207.964	%100
25	MP9	Y	-59.771	%50
26	MP10	Y	-83.804	%33
27	MP10	Y	-79.535	%67

Member Point Loads (BLC 17 : Ice Wind Load AZI 0)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	0	31.45
2	MP4	Z	-10.61	31.45
3	MP4	X	0	64.56
4	MP4	Z	-10.61	64.56
5	MP1	X	0	20.05
6	MP1	Z	-12.6	20.05
7	MP1	X	0	75.95
8	MP1	Z	-12.6	75.95
9	MP2	X	0	0

Member Point Loads (BLC 17 : Ice Wind Load AZI 0) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
10	MP2	Z	-34.72	0
11	MP2	X	0	%100
12	MP2	Z	-34.72	%100
13	MP1	X	0	%50
14	MP1	Z	-8.08	%50
15	MP2	X	0	%33
16	MP2	Z	-8.87	%33
17	MP2	X	0	%67
18	MP2	Z	-8.6	%67
19	MP8	X	0	31.45
20	MP8	Z	-7.41	31.45
21	MP8	X	0	64.56
22	MP8	Z	-7.41	64.56
23	MP5	X	0	20.05
24	MP5	Z	-9.14	20.05
25	MP5	X	0	75.95
26	MP5	Z	-9.14	75.95
27	MP6	X	0	0
28	MP6	Z	-23.74	0
29	MP6	X	0	%100
30	MP6	Z	-23.74	%100
31	MP5	X	0	%50
32	MP5	Z	-6.59	%50
33	MP6	X	0	%33
34	MP6	Z	-8.04	%33
35	MP6	X	0	%67
36	MP6	Z	-8.06	%67
37	MP12	X	0	31.45
38	MP12	Z	-7.41	31.45
39	MP12	X	0	64.56
40	MP12	Z	-7.41	64.56
41	MP9	X	0	20.05
42	MP9	Z	-9.14	20.05
43	MP9	X	0	75.95
44	MP9	Z	-9.14	75.95
45	MP10	X	0	0
46	MP10	Z	-23.74	0
47	MP10	X	0	%100
48	MP10	Z	-23.74	%100
49	MP9	X	0	%50
50	MP9	Z	-6.59	%50
51	MP10	X	0	%33
52	MP10	Z	-8.04	%33
53	MP10	X	0	%67
54	MP10	Z	-8.06	%67

Member Point Loads (BLC 18 : Ice Wind Load AZI 30)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-4.77	31.45
2	MP4	Z	-8.27	31.45
3	MP4	X	-4.77	64.56
4	MP4	Z	-8.27	64.56
5	MP1	X	-5.72	20.05
6	MP1	Z	-9.91	20.05
7	MP1	X	-5.72	75.95
8	MP1	Z	-9.91	75.95
9	MP2	X	-15.53	0
10	MP2	Z	-26.9	0

Member Point Loads (BLC 18 : Ice Wind Load AZI 30) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
11	MP2	X	-15.53	%100
12	MP2	Z	-26.9	%100
13	MP1	X	-3.79	%50
14	MP1	Z	-6.57	%50
15	MP2	X	-4.3	%33
16	MP2	Z	-7.44	%33
17	MP2	X	-4.21	%67
18	MP2	Z	-7.29	%67
19	MP8	X	-4.77	31.45
20	MP8	Z	-8.27	31.45
21	MP8	X	-4.77	64.56
22	MP8	Z	-8.27	64.56
23	MP5	X	-5.72	20.05
24	MP5	Z	-9.91	20.05
25	MP5	X	-5.72	75.95
26	MP5	Z	-9.91	75.95
27	MP6	X	-15.53	0
28	MP6	Z	-26.9	0
29	MP6	X	-15.53	%100
30	MP6	Z	-26.9	%100
31	MP5	X	-3.79	%50
32	MP5	Z	-6.57	%50
33	MP6	X	-4.3	%33
34	MP6	Z	-7.44	%33
35	MP6	X	-4.21	%67
36	MP6	Z	-7.29	%67
37	MP12	X	-3.17	31.45
38	MP12	Z	-5.5	31.45
39	MP12	X	-3.17	64.56
40	MP12	Z	-5.5	64.56
41	MP9	X	-3.99	20.05
42	MP9	Z	-6.92	20.05
43	MP9	X	-3.99	75.95
44	MP9	Z	-6.92	75.95
45	MP10	X	-10.04	0
46	MP10	Z	-17.39	0
47	MP10	X	-10.04	%100
48	MP10	Z	-17.39	%100
49	MP9	X	-3.04	%50
50	MP9	Z	-5.27	%50
51	MP10	X	-3.88	%33
52	MP10	Z	-6.73	%33
53	MP10	X	-3.94	%67
54	MP10	Z	-6.83	%67

Member Point Loads (BLC 19 : Ice Wind Load AZI 60)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-6.42	31.45
2	MP4	Z	-3.71	31.45
3	MP4	X	-6.42	64.56
4	MP4	Z	-3.71	64.56
5	MP1	X	-7.92	20.05
6	MP1	Z	-4.57	20.05
7	MP1	X	-7.92	75.95
8	MP1	Z	-4.57	75.95
9	MP2	X	-20.56	0
10	MP2	Z	-11.87	0
11	MP2	X	-20.56	%100

Member Point Loads (BLC 19 : Ice Wind Load AZI 60) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
12	MP2	Z	-11.87	%100
13	MP1	X	-5.7	%50
14	MP1	Z	-3.29	%50
15	MP2	X	-6.97	%33
16	MP2	Z	-4.02	%33
17	MP2	X	-6.98	%67
18	MP2	Z	-4.03	%67
19	MP8	X	-9.19	31.45
20	MP8	Z	-5.31	31.45
21	MP8	X	-9.19	64.56
22	MP8	Z	-5.31	64.56
23	MP5	X	-10.91	20.05
24	MP5	Z	-6.3	20.05
25	MP5	X	-10.91	75.95
26	MP5	Z	-6.3	75.95
27	MP6	X	-30.07	0
28	MP6	Z	-17.36	0
29	MP6	X	-30.07	%100
30	MP6	Z	-17.36	%100
31	MP5	X	-7	%50
32	MP5	Z	-4.04	%50
33	MP6	X	-7.68	%33
34	MP6	Z	-4.44	%33
35	MP6	X	-7.45	%67
36	MP6	Z	-4.3	%67
37	MP12	X	-6.42	31.45
38	MP12	Z	-3.71	31.45
39	MP12	X	-6.42	64.56
40	MP12	Z	-3.71	64.56
41	MP9	X	-7.92	20.05
42	MP9	Z	-4.57	20.05
43	MP9	X	-7.92	75.95
44	MP9	Z	-4.57	75.95
45	MP10	X	-20.56	0
46	MP10	Z	-11.87	0
47	MP10	X	-20.56	%100
48	MP10	Z	-11.87	%100
49	MP9	X	-5.7	%50
50	MP9	Z	-3.29	%50
51	MP10	X	-6.97	%33
52	MP10	Z	-4.02	%33
53	MP10	X	-6.98	%67
54	MP10	Z	-4.03	%67

Member Point Loads (BLC 20 : Ice Wind Load AZI 90)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-6.35	31.45
2	MP4	Z	0	31.45
3	MP4	X	-6.35	64.56
4	MP4	Z	0	64.56
5	MP1	X	-7.99	20.05
6	MP1	Z	0	20.05
7	MP1	X	-7.99	75.95
8	MP1	Z	0	75.95
9	MP2	X	-20.08	0
10	MP2	Z	0	0
11	MP2	X	-20.08	%100
12	MP2	Z	0	%100

Member Point Loads (BLC 20 : Ice Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
13	MP1	X	-6.09	%50
14	MP1	Z	0	%50
15	MP2	X	-7.77	%33
16	MP2	Z	0	%33
17	MP2	X	-7.88	%67
18	MP2	Z	0	%67
19	MP8	X	-9.55	31.45
20	MP8	Z	0	31.45
21	MP8	X	-9.55	64.56
22	MP8	Z	0	64.56
23	MP5	X	-11.45	20.05
24	MP5	Z	0	20.05
25	MP5	X	-11.45	75.95
26	MP5	Z	0	75.95
27	MP6	X	-31.06	0
28	MP6	Z	0	0
29	MP6	X	-31.06	%100
30	MP6	Z	0	%100
31	MP5	X	-7.58	%50
32	MP5	Z	0	%50
33	MP6	X	-8.6	%33
34	MP6	Z	0	%33
35	MP6	X	-8.42	%67
36	MP6	Z	0	%67
37	MP12	X	-9.55	31.45
38	MP12	Z	0	31.45
39	MP12	X	-9.55	64.56
40	MP12	Z	0	64.56
41	MP9	X	-11.45	20.05
42	MP9	Z	0	20.05
43	MP9	X	-11.45	75.95
44	MP9	Z	0	75.95
45	MP10	X	-31.06	0
46	MP10	Z	0	0
47	MP10	X	-31.06	%100
48	MP10	Z	0	%100
49	MP9	X	-7.58	%50
50	MP9	Z	0	%50
51	MP10	X	-8.6	%33
52	MP10	Z	0	%33
53	MP10	X	-8.42	%67
54	MP10	Z	0	%67

Member Point Loads (BLC 21 : Ice Wind Load AZI 120)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-6.42	31.45
2	MP4	Z	3.71	31.45
3	MP4	X	-6.42	64.56
4	MP4	Z	3.71	64.56
5	MP1	X	-7.92	20.05
6	MP1	Z	4.57	20.05
7	MP1	X	-7.92	75.95
8	MP1	Z	4.57	75.95
9	MP2	X	-20.56	0
10	MP2	Z	11.87	0
11	MP2	X	-20.56	%100
12	MP2	Z	11.87	%100
13	MP1	X	-5.7	%50

Member Point Loads (BLC 21 : Ice Wind Load AZI 120) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
14	MP1	Z	3.29	%50
15	MP2	X	-6.97	%33
16	MP2	Z	4.02	%33
17	MP2	X	-6.98	%67
18	MP2	Z	4.03	%67
19	MP8	X	-6.42	31.45
20	MP8	Z	3.71	31.45
21	MP8	X	-6.42	64.56
22	MP8	Z	3.71	64.56
23	MP5	X	-7.92	20.05
24	MP5	Z	4.57	20.05
25	MP5	X	-7.92	75.95
26	MP5	Z	4.57	75.95
27	MP6	X	-20.56	0
28	MP6	Z	11.87	0
29	MP6	X	-20.56	%100
30	MP6	Z	11.87	%100
31	MP5	X	-5.7	%50
32	MP5	Z	3.29	%50
33	MP6	X	-6.97	%33
34	MP6	Z	4.02	%33
35	MP6	X	-6.98	%67
36	MP6	Z	4.03	%67
37	MP12	X	-9.19	31.45
38	MP12	Z	5.31	31.45
39	MP12	X	-9.19	64.56
40	MP12	Z	5.31	64.56
41	MP9	X	-10.91	20.05
42	MP9	Z	6.3	20.05
43	MP9	X	-10.91	75.95
44	MP9	Z	6.3	75.95
45	MP10	X	-30.07	0
46	MP10	Z	17.36	0
47	MP10	X	-30.07	%100
48	MP10	Z	17.36	%100
49	MP9	X	-7	%50
50	MP9	Z	4.04	%50
51	MP10	X	-7.68	%33
52	MP10	Z	4.44	%33
53	MP10	X	-7.45	%67
54	MP10	Z	4.3	%67

Member Point Loads (BLC 22 : Ice Wind Load AZI 150)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-4.77	31.45
2	MP4	Z	8.27	31.45
3	MP4	X	-4.77	64.56
4	MP4	Z	8.27	64.56
5	MP1	X	-5.72	20.05
6	MP1	Z	9.91	20.05
7	MP1	X	-5.72	75.95
8	MP1	Z	9.91	75.95
9	MP2	X	-15.53	0
10	MP2	Z	26.9	0
11	MP2	X	-15.53	%100
12	MP2	Z	26.9	%100
13	MP1	X	-3.79	%50
14	MP1	Z	6.57	%50

Member Point Loads (BLC 22 : Ice Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
15	MP2	X	-4.3	%33
16	MP2	Z	7.44	%33
17	MP2	X	-4.21	%67
18	MP2	Z	7.29	%67
19	MP8	X	-3.17	31.45
20	MP8	Z	5.5	31.45
21	MP8	X	-3.17	64.56
22	MP8	Z	5.5	64.56
23	MP5	X	-3.99	20.05
24	MP5	Z	6.92	20.05
25	MP5	X	-3.99	75.95
26	MP5	Z	6.92	75.95
27	MP6	X	-10.04	0
28	MP6	Z	17.39	0
29	MP6	X	-10.04	%100
30	MP6	Z	17.39	%100
31	MP5	X	-3.04	%50
32	MP5	Z	5.27	%50
33	MP6	X	-3.88	%33
34	MP6	Z	6.73	%33
35	MP6	X	-3.94	%67
36	MP6	Z	6.83	%67
37	MP12	X	-4.77	31.45
38	MP12	Z	8.27	31.45
39	MP12	X	-4.77	64.56
40	MP12	Z	8.27	64.56
41	MP9	X	-5.72	20.05
42	MP9	Z	9.91	20.05
43	MP9	X	-5.72	75.95
44	MP9	Z	9.91	75.95
45	MP10	X	-15.53	0
46	MP10	Z	26.9	0
47	MP10	X	-15.53	%100
48	MP10	Z	26.9	%100
49	MP9	X	-3.79	%50
50	MP9	Z	6.57	%50
51	MP10	X	-4.3	%33
52	MP10	Z	7.44	%33
53	MP10	X	-4.21	%67
54	MP10	Z	7.29	%67

Member Point Loads (BLC 23 : Ice Wind Load AZI 180)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	0	31.45
2	MP4	Z	10.61	31.45
3	MP4	X	0	64.56
4	MP4	Z	10.61	64.56
5	MP1	X	0	20.05
6	MP1	Z	12.6	20.05
7	MP1	X	0	75.95
8	MP1	Z	12.6	75.95
9	MP2	X	0	0
10	MP2	Z	34.72	0
11	MP2	X	0	%100
12	MP2	Z	34.72	%100
13	MP1	X	0	%50
14	MP1	Z	8.08	%50
15	MP2	X	0	%33

Member Point Loads (BLC 23 : Ice Wind Load AZI 180) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
16	MP2	Z	8.87	%33
17	MP2	X	0	%67
18	MP2	Z	8.6	%67
19	MP8	X	0	31.45
20	MP8	Z	7.41	31.45
21	MP8	X	0	64.56
22	MP8	Z	7.41	64.56
23	MP5	X	0	20.05
24	MP5	Z	9.14	20.05
25	MP5	X	0	75.95
26	MP5	Z	9.14	75.95
27	MP6	X	0	0
28	MP6	Z	23.74	0
29	MP6	X	0	%100
30	MP6	Z	23.74	%100
31	MP5	X	0	%50
32	MP5	Z	6.59	%50
33	MP6	X	0	%33
34	MP6	Z	8.04	%33
35	MP6	X	0	%67
36	MP6	Z	8.06	%67
37	MP12	X	0	31.45
38	MP12	Z	7.41	31.45
39	MP12	X	0	64.56
40	MP12	Z	7.41	64.56
41	MP9	X	0	20.05
42	MP9	Z	9.14	20.05
43	MP9	X	0	75.95
44	MP9	Z	9.14	75.95
45	MP10	X	0	0
46	MP10	Z	23.74	0
47	MP10	X	0	%100
48	MP10	Z	23.74	%100
49	MP9	X	0	%50
50	MP9	Z	6.59	%50
51	MP10	X	0	%33
52	MP10	Z	8.04	%33
53	MP10	X	0	%67
54	MP10	Z	8.06	%67

Member Point Loads (BLC 24 : Ice Wind Load AZI 210)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	4.77	31.45
2	MP4	Z	8.27	31.45
3	MP4	X	4.77	64.56
4	MP4	Z	8.27	64.56
5	MP1	X	5.72	20.05
6	MP1	Z	9.91	20.05
7	MP1	X	5.72	75.95
8	MP1	Z	9.91	75.95
9	MP2	X	15.53	0
10	MP2	Z	26.9	0
11	MP2	X	15.53	%100
12	MP2	Z	26.9	%100
13	MP1	X	3.79	%50
14	MP1	Z	6.57	%50
15	MP2	X	4.3	%33
16	MP2	Z	7.44	%33

Member Point Loads (BLC 24 : Ice Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
17	MP2	X	4.21	%67
18	MP2	Z	7.29	%67
19	MP8	X	4.77	31.45
20	MP8	Z	8.27	31.45
21	MP8	X	4.77	64.56
22	MP8	Z	8.27	64.56
23	MP5	X	5.72	20.05
24	MP5	Z	9.91	20.05
25	MP5	X	5.72	75.95
26	MP5	Z	9.91	75.95
27	MP6	X	15.53	0
28	MP6	Z	26.9	0
29	MP6	X	15.53	%100
30	MP6	Z	26.9	%100
31	MP5	X	3.79	%50
32	MP5	Z	6.57	%50
33	MP6	X	4.3	%33
34	MP6	Z	7.44	%33
35	MP6	X	4.21	%67
36	MP6	Z	7.29	%67
37	MP12	X	3.17	31.45
38	MP12	Z	5.5	31.45
39	MP12	X	3.17	64.56
40	MP12	Z	5.5	64.56
41	MP9	X	3.99	20.05
42	MP9	Z	6.92	20.05
43	MP9	X	3.99	75.95
44	MP9	Z	6.92	75.95
45	MP10	X	10.04	0
46	MP10	Z	17.39	0
47	MP10	X	10.04	%100
48	MP10	Z	17.39	%100
49	MP9	X	3.04	%50
50	MP9	Z	5.27	%50
51	MP10	X	3.88	%33
52	MP10	Z	6.73	%33
53	MP10	X	3.94	%67
54	MP10	Z	6.83	%67

Member Point Loads (BLC 25 : Ice Wind Load AZI 240)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	6.42	31.45
2	MP4	Z	3.71	31.45
3	MP4	X	6.42	64.56
4	MP4	Z	3.71	64.56
5	MP1	X	7.92	20.05
6	MP1	Z	4.57	20.05
7	MP1	X	7.92	75.95
8	MP1	Z	4.57	75.95
9	MP2	X	20.56	0
10	MP2	Z	11.87	0
11	MP2	X	20.56	%100
12	MP2	Z	11.87	%100
13	MP1	X	5.7	%50
14	MP1	Z	3.29	%50
15	MP2	X	6.97	%33
16	MP2	Z	4.02	%33
17	MP2	X	6.98	%67

Member Point Loads (BLC 25 : Ice Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
18	MP2	Z	4.03	%67
19	MP8	X	9.19	31.45
20	MP8	Z	5.31	31.45
21	MP8	X	9.19	64.56
22	MP8	Z	5.31	64.56
23	MP5	X	10.91	20.05
24	MP5	Z	6.3	20.05
25	MP5	X	10.91	75.95
26	MP5	Z	6.3	75.95
27	MP6	X	30.07	0
28	MP6	Z	17.36	0
29	MP6	X	30.07	%100
30	MP6	Z	17.36	%100
31	MP5	X	7	%50
32	MP5	Z	4.04	%50
33	MP6	X	7.68	%33
34	MP6	Z	4.44	%33
35	MP6	X	7.45	%67
36	MP6	Z	4.3	%67
37	MP12	X	6.42	31.45
38	MP12	Z	3.71	31.45
39	MP12	X	6.42	64.56
40	MP12	Z	3.71	64.56
41	MP9	X	7.92	20.05
42	MP9	Z	4.57	20.05
43	MP9	X	7.92	75.95
44	MP9	Z	4.57	75.95
45	MP10	X	20.56	0
46	MP10	Z	11.87	0
47	MP10	X	20.56	%100
48	MP10	Z	11.87	%100
49	MP9	X	5.7	%50
50	MP9	Z	3.29	%50
51	MP10	X	6.97	%33
52	MP10	Z	4.02	%33
53	MP10	X	6.98	%67
54	MP10	Z	4.03	%67

Member Point Loads (BLC 26 : Ice Wind Load AZI 270)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	6.35	31.45
2	MP4	Z	0	31.45
3	MP4	X	6.35	64.56
4	MP4	Z	0	64.56
5	MP1	X	7.99	20.05
6	MP1	Z	0	20.05
7	MP1	X	7.99	75.95
8	MP1	Z	0	75.95
9	MP2	X	20.08	0
10	MP2	Z	0	0
11	MP2	X	20.08	%100
12	MP2	Z	0	%100
13	MP1	X	6.09	%50
14	MP1	Z	0	%50
15	MP2	X	7.77	%33
16	MP2	Z	0	%33
17	MP2	X	7.88	%67
18	MP2	Z	0	%67

Member Point Loads (BLC 26 : Ice Wind Load AZI 270) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
19	MP8	X	9.55	31.45
20	MP8	Z	0	31.45
21	MP8	X	9.55	64.56
22	MP8	Z	0	64.56
23	MP5	X	11.45	20.05
24	MP5	Z	0	20.05
25	MP5	X	11.45	75.95
26	MP5	Z	0	75.95
27	MP6	X	31.06	0
28	MP6	Z	0	0
29	MP6	X	31.06	%100
30	MP6	Z	0	%100
31	MP5	X	7.58	%50
32	MP5	Z	0	%50
33	MP6	X	8.6	%33
34	MP6	Z	0	%33
35	MP6	X	8.42	%67
36	MP6	Z	0	%67
37	MP12	X	9.55	31.45
38	MP12	Z	0	31.45
39	MP12	X	9.55	64.56
40	MP12	Z	0	64.56
41	MP9	X	11.45	20.05
42	MP9	Z	0	20.05
43	MP9	X	11.45	75.95
44	MP9	Z	0	75.95
45	MP10	X	31.06	0
46	MP10	Z	0	0
47	MP10	X	31.06	%100
48	MP10	Z	0	%100
49	MP9	X	7.58	%50
50	MP9	Z	0	%50
51	MP10	X	8.6	%33
52	MP10	Z	0	%33
53	MP10	X	8.42	%67
54	MP10	Z	0	%67

Member Point Loads (BLC 27 : Ice Wind Load AZI 300)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	6.42	31.45
2	MP4	Z	-3.71	31.45
3	MP4	X	6.42	64.56
4	MP4	Z	-3.71	64.56
5	MP1	X	7.92	20.05
6	MP1	Z	-4.57	20.05
7	MP1	X	7.92	75.95
8	MP1	Z	-4.57	75.95
9	MP2	X	20.56	0
10	MP2	Z	-11.87	0
11	MP2	X	20.56	%100
12	MP2	Z	-11.87	%100
13	MP1	X	5.7	%50
14	MP1	Z	-3.29	%50
15	MP2	X	6.97	%33
16	MP2	Z	-4.02	%33
17	MP2	X	6.98	%67
18	MP2	Z	-4.03	%67
19	MP8	X	6.42	31.45

Member Point Loads (BLC 27 : Ice Wind Load AZI 300) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
20	MP8	Z	-3.71	31.45
21	MP8	X	6.42	64.56
22	MP8	Z	-3.71	64.56
23	MP5	X	7.92	20.05
24	MP5	Z	-4.57	20.05
25	MP5	X	7.92	75.95
26	MP5	Z	-4.57	75.95
27	MP6	X	20.56	0
28	MP6	Z	-11.87	0
29	MP6	X	20.56	%100
30	MP6	Z	-11.87	%100
31	MP5	X	5.7	%50
32	MP5	Z	-3.29	%50
33	MP6	X	6.97	%33
34	MP6	Z	-4.02	%33
35	MP6	X	6.98	%67
36	MP6	Z	-4.03	%67
37	MP12	X	9.19	31.45
38	MP12	Z	-5.31	31.45
39	MP12	X	9.19	64.56
40	MP12	Z	-5.31	64.56
41	MP9	X	10.91	20.05
42	MP9	Z	-6.3	20.05
43	MP9	X	10.91	75.95
44	MP9	Z	-6.3	75.95
45	MP10	X	30.07	0
46	MP10	Z	-17.36	0
47	MP10	X	30.07	%100
48	MP10	Z	-17.36	%100
49	MP9	X	7	%50
50	MP9	Z	-4.04	%50
51	MP10	X	7.68	%33
52	MP10	Z	-4.44	%33
53	MP10	X	7.45	%67
54	MP10	Z	-4.3	%67

Member Point Loads (BLC 28 : Ice Wind Load AZI 330)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	4.77	31.45
2	MP4	Z	-8.27	31.45
3	MP4	X	4.77	64.56
4	MP4	Z	-8.27	64.56
5	MP1	X	5.72	20.05
6	MP1	Z	-9.91	20.05
7	MP1	X	5.72	75.95
8	MP1	Z	-9.91	75.95
9	MP2	X	15.53	0
10	MP2	Z	-26.9	0
11	MP2	X	15.53	%100
12	MP2	Z	-26.9	%100
13	MP1	X	3.79	%50
14	MP1	Z	-6.57	%50
15	MP2	X	4.3	%33
16	MP2	Z	-7.44	%33
17	MP2	X	4.21	%67
18	MP2	Z	-7.29	%67
19	MP8	X	3.17	31.45
20	MP8	Z	-5.5	31.45

Member Point Loads (BLC 28 : Ice Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
21	MP8	X	3.17	64.56
22	MP8	Z	-5.5	64.56
23	MP5	X	3.99	20.05
24	MP5	Z	-6.92	20.05
25	MP5	X	3.99	75.95
26	MP5	Z	-6.92	75.95
27	MP6	X	10.04	0
28	MP6	Z	-17.39	0
29	MP6	X	10.04	%100
30	MP6	Z	-17.39	%100
31	MP5	X	3.04	%50
32	MP5	Z	-5.27	%50
33	MP6	X	3.88	%33
34	MP6	Z	-6.73	%33
35	MP6	X	3.94	%67
36	MP6	Z	-6.83	%67
37	MP12	X	4.77	31.45
38	MP12	Z	-8.27	31.45
39	MP12	X	4.77	64.56
40	MP12	Z	-8.27	64.56
41	MP9	X	5.72	20.05
42	MP9	Z	-9.91	20.05
43	MP9	X	5.72	75.95
44	MP9	Z	-9.91	75.95
45	MP10	X	15.53	0
46	MP10	Z	-26.9	0
47	MP10	X	15.53	%100
48	MP10	Z	-26.9	%100
49	MP9	X	3.79	%50
50	MP9	Z	-6.57	%50
51	MP10	X	4.3	%33
52	MP10	Z	-7.44	%33
53	MP10	X	4.21	%67
54	MP10	Z	-7.29	%67

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	Z	-5.411	31.45
2	MP4	Z	-5.411	64.56
3	MP1	Z	-1.921	20.05
4	MP1	Z	-1.921	75.95
5	MP2	Z	-7.075	0
6	MP2	Z	-7.075	%100
7	MP1	Z	-4.682	%50
8	MP2	Z	-8.118	%33
9	MP2	Z	-6.911	%67
10	MP8	Z	-5.411	31.45
11	MP8	Z	-5.411	64.56
12	MP5	Z	-1.921	20.05
13	MP5	Z	-1.921	75.95
14	MP6	Z	-7.075	0
15	MP6	Z	-7.075	%100
16	MP5	Z	-4.682	%50
17	MP6	Z	-8.118	%33
18	MP6	Z	-6.911	%67
19	MP12	Z	-5.411	31.45
20	MP12	Z	-5.411	64.56
21	MP9	Z	-1.921	20.05

Member Point Loads (BLC 31 : Seismic Load Z) (Continued)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
22	MP9	Z	-1.921	75.95
23	MP10	Z	-7.075	0
24	MP10	Z	-7.075	%100
25	MP9	Z	-4.682	%50
26	MP10	Z	-8.118	%33
27	MP10	Z	-6.911	%67

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP4	X	-5.411	31.45
2	MP4	X	-5.411	64.56
3	MP1	X	-1.921	20.05
4	MP1	X	-1.921	75.95
5	MP2	X	-7.075	0
6	MP2	X	-7.075	%100
7	MP1	X	-4.682	%50
8	MP2	X	-8.118	%33
9	MP2	X	-6.911	%67
10	MP8	X	-5.411	31.45
11	MP8	X	-5.411	64.56
12	MP5	X	-1.921	20.05
13	MP5	X	-1.921	75.95
14	MP6	X	-7.075	0
15	MP6	X	-7.075	%100
16	MP5	X	-4.682	%50
17	MP6	X	-8.118	%33
18	MP6	X	-6.911	%67
19	MP12	X	-5.411	31.45
20	MP12	X	-5.411	64.56
21	MP9	X	-1.921	20.05
22	MP9	X	-1.921	75.95
23	MP10	X	-7.075	0
24	MP10	X	-7.075	%100
25	MP9	X	-4.682	%50
26	MP10	X	-8.118	%33
27	MP10	X	-6.911	%67

Member Point Loads (BLC 33 : Service Live Loads)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	M41	Y	-250	%50

Member Distributed Loads (BLC 14 : Distr. Wind Load Z)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M15	SZ	-63.089	-63.089	0	%100
2	M17	SZ	-63.089	-63.089	0	%100
3	MP1	SZ	-63.089	-63.089	0	%100
4	M31	SZ	-63.089	-63.089	0	%100
5	MP3	SZ	-63.089	-63.089	0	%100
6	M33	SZ	-63.089	-63.089	0	%100
7	MP4	SZ	-63.089	-63.089	0	%100
8	M11	SZ	0	0	0	%100
9	M12	SZ	0	0	0	%100
10	M13	SZ	0	0	0	%100
11	M14	SZ	0	0	0	%100
12	M20	SZ	0	0	0	%100
13	M22	SZ	0	0	0	%100
14	M23	SZ	0	0	0	%100

Member Distributed Loads (BLC 14 : Distr. Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
15	M24	SZ	0	0	0	%100
16	M25	SZ	0	0	0	%100
17	M26	SZ	0	0	0	%100
18	M27	SZ	0	0	0	%100
19	M29	SZ	0	0	0	%100
20	M37	SZ	0	0	0	%100
21	M39	SZ	0	0	0	%100
22	M41A	SZ	0	0	0	%100
23	M41	SZ	-63.089	-63.089	0	%100
24	M42	SZ	-63.089	-63.089	0	%100
25	M19	SZ	0	0	0	%100
26	M21	SZ	0	0	0	%100
27	M35	SZ	0	0	0	%100
28	M36	SZ	0	0	0	%100
29	M9	SZ	-63.089	-63.089	0	%100
30	M10	SZ	-63.089	-63.089	0	%100
31	M43A	SZ	-63.089	-63.089	0	%100
32	M44A	SZ	-63.089	-63.089	0	%100
33	M37A	SZ	-63.089	-63.089	0	%100
34	M38	SZ	-63.089	-63.089	0	%100
35	M39A	SZ	-63.089	-63.089	0	%100
36	M40	SZ	-63.089	-63.089	0	%100
37	M41B	SZ	-63.089	-63.089	0	%100
38	M42B	SZ	0	0	0	%100
39	M43	SZ	0	0	0	%100
40	M159	SZ	0	0	0	%100
41	M41C	SZ	-63.089	-63.089	0	%100
42	M42A	SZ	-63.089	-63.089	0	%100
43	MP9	SZ	-63.089	-63.089	0	%100
44	M44	SZ	-63.089	-63.089	0	%100
45	MP11	SZ	-63.089	-63.089	0	%100
46	M46	SZ	-63.089	-63.089	0	%100
47	MP12	SZ	-63.089	-63.089	0	%100
48	M48	SZ	0	0	0	%100
49	M49	SZ	0	0	0	%100
50	M50	SZ	0	0	0	%100
51	M51	SZ	0	0	0	%100
52	M52	SZ	0	0	0	%100
53	M53	SZ	0	0	0	%100
54	M54	SZ	0	0	0	%100
55	M55	SZ	0	0	0	%100
56	M56	SZ	0	0	0	%100
57	M57	SZ	0	0	0	%100
58	M58	SZ	0	0	0	%100
59	M59	SZ	0	0	0	%100
60	M60	SZ	0	0	0	%100
61	M61	SZ	0	0	0	%100
62	M62	SZ	0	0	0	%100
63	M63	SZ	-63.089	-63.089	0	%100
64	M64	SZ	-63.089	-63.089	0	%100
65	M65	SZ	0	0	0	%100
66	M66	SZ	0	0	0	%100
67	M67	SZ	0	0	0	%100
68	M68	SZ	0	0	0	%100
69	M69	SZ	-63.089	-63.089	0	%100
70	M70	SZ	-63.089	-63.089	0	%100
71	M71	SZ	-63.089	-63.089	0	%100
72	M72	SZ	-63.089	-63.089	0	%100

Member Distributed Loads (BLC 14 : Distr. Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
73	M73	SZ	-63.089	-63.089	0	%100
74	M74	SZ	-63.089	-63.089	0	%100
75	M75	SZ	-63.089	-63.089	0	%100
76	M76	SZ	-63.089	-63.089	0	%100
77	M77	SZ	-63.089	-63.089	0	%100
78	M78	SZ	0	0	0	%100
79	M79	SZ	0	0	0	%100
80	M80	SZ	0	0	0	%100
81	M81	SZ	-63.089	-63.089	0	%100
82	M82	SZ	-63.089	-63.089	0	%100
83	MP5	SZ	-63.089	-63.089	0	%100
84	M84	SZ	-63.089	-63.089	0	%100
85	MP7	SZ	-63.089	-63.089	0	%100
86	M86	SZ	-63.089	-63.089	0	%100
87	MP8	SZ	-63.089	-63.089	0	%100
88	M88	SZ	0	0	0	%100
89	M89	SZ	0	0	0	%100
90	M90	SZ	0	0	0	%100
91	M91	SZ	0	0	0	%100
92	M92	SZ	0	0	0	%100
93	M93	SZ	0	0	0	%100
94	M94	SZ	0	0	0	%100
95	M95	SZ	0	0	0	%100
96	M96	SZ	0	0	0	%100
97	M97	SZ	0	0	0	%100
98	M98	SZ	0	0	0	%100
99	M99	SZ	0	0	0	%100
100	M100	SZ	0	0	0	%100
101	M101	SZ	0	0	0	%100
102	M102	SZ	0	0	0	%100
103	M103	SZ	-63.089	-63.089	0	%100
104	M104	SZ	-63.089	-63.089	0	%100
105	M105	SZ	0	0	0	%100
106	M106	SZ	0	0	0	%100
107	M107	SZ	0	0	0	%100
108	M108	SZ	0	0	0	%100
109	M109	SZ	-63.089	-63.089	0	%100
110	M110	SZ	-63.089	-63.089	0	%100
111	M111	SZ	-63.089	-63.089	0	%100
112	M112	SZ	-63.089	-63.089	0	%100
113	M113	SZ	-63.089	-63.089	0	%100
114	M114	SZ	-63.089	-63.089	0	%100
115	M115	SZ	-63.089	-63.089	0	%100
116	M116	SZ	-63.089	-63.089	0	%100
117	M117	SZ	-63.089	-63.089	0	%100
118	M118	SZ	0	0	0	%100
119	M119	SZ	0	0	0	%100
120	M120	SZ	0	0	0	%100
121	M121	SZ	-63.089	-63.089	0	%100
122	M122	SZ	-63.089	-63.089	0	%100
123	M123	SZ	-63.089	-63.089	0	%100
124	M124	SZ	0	0	0	%100
125	M125	SZ	0	0	0	%100
126	MP2	SZ	-63.089	-63.089	0	%100
127	M127	SZ	0	0	0	%100
128	M128	SZ	0	0	0	%100
129	MP10	SZ	-63.089	-63.089	0	%100
130	M130	SZ	0	0	0	%100

Member Distributed Loads (BLC 14 : Distr. Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
131	M131	SZ	0	0	0	%100
132	MP6	SZ	-63.089	-63.089	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M15	SX	-63.089	-63.089	0	%100
2	M17	SX	-63.089	-63.089	0	%100
3	MP1	SX	-63.089	-63.089	0	%100
4	M31	SX	-63.089	-63.089	0	%100
5	MP3	SX	-63.089	-63.089	0	%100
6	M33	SX	-63.089	-63.089	0	%100
7	MP4	SX	-63.089	-63.089	0	%100
8	M11	SX	0	0	0	%100
9	M12	SX	0	0	0	%100
10	M13	SX	0	0	0	%100
11	M14	SX	0	0	0	%100
12	M20	SX	0	0	0	%100
13	M22	SX	0	0	0	%100
14	M23	SX	0	0	0	%100
15	M24	SX	0	0	0	%100
16	M25	SX	0	0	0	%100
17	M26	SX	0	0	0	%100
18	M27	SX	0	0	0	%100
19	M29	SX	0	0	0	%100
20	M37	SX	0	0	0	%100
21	M39	SX	0	0	0	%100
22	M41A	SX	0	0	0	%100
23	M41	SX	-63.089	-63.089	0	%100
24	M42	SX	-63.089	-63.089	0	%100
25	M19	SX	0	0	0	%100
26	M21	SX	0	0	0	%100
27	M35	SX	0	0	0	%100
28	M36	SX	0	0	0	%100
29	M9	SX	-63.089	-63.089	0	%100
30	M10	SX	-63.089	-63.089	0	%100
31	M43A	SX	-63.089	-63.089	0	%100
32	M44A	SX	-63.089	-63.089	0	%100
33	M37A	SX	-63.089	-63.089	0	%100
34	M38	SX	-63.089	-63.089	0	%100
35	M39A	SX	-63.089	-63.089	0	%100
36	M40	SX	-63.089	-63.089	0	%100
37	M41B	SX	-63.089	-63.089	0	%100
38	M42B	SX	0	0	0	%100
39	M43	SX	0	0	0	%100
40	M159	SX	0	0	0	%100
41	M41C	SX	-63.089	-63.089	0	%100
42	M42A	SX	-63.089	-63.089	0	%100
43	MP9	SX	-63.089	-63.089	0	%100
44	M44	SX	-63.089	-63.089	0	%100
45	MP11	SX	-63.089	-63.089	0	%100
46	M46	SX	-63.089	-63.089	0	%100
47	MP12	SX	-63.089	-63.089	0	%100
48	M48	SX	0	0	0	%100
49	M49	SX	0	0	0	%100
50	M50	SX	0	0	0	%100
51	M51	SX	0	0	0	%100
52	M52	SX	0	0	0	%100
53	M53	SX	0	0	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
54	M54	SX	0	0	0	%100
55	M55	SX	0	0	0	%100
56	M56	SX	0	0	0	%100
57	M57	SX	0	0	0	%100
58	M58	SX	0	0	0	%100
59	M59	SX	0	0	0	%100
60	M60	SX	0	0	0	%100
61	M61	SX	0	0	0	%100
62	M62	SX	0	0	0	%100
63	M63	SX	-63.089	-63.089	0	%100
64	M64	SX	-63.089	-63.089	0	%100
65	M65	SX	0	0	0	%100
66	M66	SX	0	0	0	%100
67	M67	SX	0	0	0	%100
68	M68	SX	0	0	0	%100
69	M69	SX	-63.089	-63.089	0	%100
70	M70	SX	-63.089	-63.089	0	%100
71	M71	SX	-63.089	-63.089	0	%100
72	M72	SX	-63.089	-63.089	0	%100
73	M73	SX	-63.089	-63.089	0	%100
74	M74	SX	-63.089	-63.089	0	%100
75	M75	SX	-63.089	-63.089	0	%100
76	M76	SX	-63.089	-63.089	0	%100
77	M77	SX	-63.089	-63.089	0	%100
78	M78	SX	0	0	0	%100
79	M79	SX	0	0	0	%100
80	M80	SX	0	0	0	%100
81	M81	SX	-63.089	-63.089	0	%100
82	M82	SX	-63.089	-63.089	0	%100
83	MP5	SX	-63.089	-63.089	0	%100
84	M84	SX	-63.089	-63.089	0	%100
85	MP7	SX	-63.089	-63.089	0	%100
86	M86	SX	-63.089	-63.089	0	%100
87	MP8	SX	-63.089	-63.089	0	%100
88	M88	SX	0	0	0	%100
89	M89	SX	0	0	0	%100
90	M90	SX	0	0	0	%100
91	M91	SX	0	0	0	%100
92	M92	SX	0	0	0	%100
93	M93	SX	0	0	0	%100
94	M94	SX	0	0	0	%100
95	M95	SX	0	0	0	%100
96	M96	SX	0	0	0	%100
97	M97	SX	0	0	0	%100
98	M98	SX	0	0	0	%100
99	M99	SX	0	0	0	%100
100	M100	SX	0	0	0	%100
101	M101	SX	0	0	0	%100
102	M102	SX	0	0	0	%100
103	M103	SX	-63.089	-63.089	0	%100
104	M104	SX	-63.089	-63.089	0	%100
105	M105	SX	0	0	0	%100
106	M106	SX	0	0	0	%100
107	M107	SX	0	0	0	%100
108	M108	SX	0	0	0	%100
109	M109	SX	-63.089	-63.089	0	%100
110	M110	SX	-63.089	-63.089	0	%100
111	M111	SX	-63.089	-63.089	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
112	M112	SX	-63.089	-63.089	0	%100
113	M113	SX	-63.089	-63.089	0	%100
114	M114	SX	-63.089	-63.089	0	%100
115	M115	SX	-63.089	-63.089	0	%100
116	M116	SX	-63.089	-63.089	0	%100
117	M117	SX	-63.089	-63.089	0	%100
118	M118	SX	0	0	0	%100
119	M119	SX	0	0	0	%100
120	M120	SX	0	0	0	%100
121	M121	SX	-63.089	-63.089	0	%100
122	M122	SX	-63.089	-63.089	0	%100
123	M123	SX	-63.089	-63.089	0	%100
124	M124	SX	0	0	0	%100
125	M125	SX	0	0	0	%100
126	MP2	SX	-63.089	-63.089	0	%100
127	M127	SX	0	0	0	%100
128	M128	SX	0	0	0	%100
129	MP10	SX	-63.089	-63.089	0	%100
130	M130	SX	0	0	0	%100
131	M131	SX	0	0	0	%100
132	MP6	SX	-63.089	-63.089	0	%100

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M15	Y	-7.492	-7.492	0	%100
2	M17	Y	-7.492	-7.492	0	%100
3	MP1	Y	-8.48	-8.48	0	%100
4	M31	Y	-7.492	-7.492	0	%100
5	MP3	Y	-8.48	-8.48	0	%100
6	M33	Y	-7.492	-7.492	0	%100
7	MP4	Y	-8.48	-8.48	0	%100
8	M11	Y	-3.541	-3.541	0	%100
9	M12	Y	-3.541	-3.541	0	%100
10	M13	Y	-3.541	-3.541	0	%100
11	M14	Y	-3.541	-3.541	0	%100
12	M20	Y	-3.541	-3.541	0	%100
13	M22	Y	-3.541	-3.541	0	%100
14	M23	Y	-3.541	-3.541	0	%100
15	M24	Y	-3.541	-3.541	0	%100
16	M25	Y	-3.541	-3.541	0	%100
17	M26	Y	-3.541	-3.541	0	%100
18	M27	Y	-3.541	-3.541	0	%100
19	M29	Y	-3.541	-3.541	0	%100
20	M37	Y	-3.541	-3.541	0	%100
21	M39	Y	-3.541	-3.541	0	%100
22	M41A	Y	-3.541	-3.541	0	%100
23	M41	Y	-8.48	-8.48	0	%100
24	M42	Y	-8.48	-8.48	0	%100
25	M19	Y	-3.541	-3.541	0	%100
26	M21	Y	-3.541	-3.541	0	%100
27	M35	Y	-3.541	-3.541	0	%100
28	M36	Y	-3.541	-3.541	0	%100
29	M9	Y	-4.841	-4.841	0	%100
30	M10	Y	-4.841	-4.841	0	%100
31	M43A	Y	-4.841	-4.841	0	%100
32	M44A	Y	-4.841	-4.841	0	%100
33	M37A	Y	-4.841	-4.841	0	%100
34	M38	Y	-4.841	-4.841	0	%100

Member Distributed Loads (BLC 16 : Ice Weight) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
35	M39A	Y	-4.841	-4.841	0	%100
36	M40	Y	-4.841	-4.841	0	%100
37	M41B	Y	-12.9	-12.9	0	%100
38	M42B	Y	-3.541	-3.541	0	%100
39	M43	Y	-3.541	-3.541	0	%100
40	M159	Y	-3.541	-3.541	0	%100
41	M41C	Y	-7.492	-7.492	0	%100
42	M42A	Y	-7.492	-7.492	0	%100
43	MP9	Y	-8.48	-8.48	0	%100
44	M44	Y	-7.492	-7.492	0	%100
45	MP11	Y	-8.48	-8.48	0	%100
46	M46	Y	-7.492	-7.492	0	%100
47	MP12	Y	-8.48	-8.48	0	%100
48	M48	Y	-3.541	-3.541	0	%100
49	M49	Y	-3.541	-3.541	0	%100
50	M50	Y	-3.541	-3.541	0	%100
51	M51	Y	-3.541	-3.541	0	%100
52	M52	Y	-3.541	-3.541	0	%100
53	M53	Y	-3.541	-3.541	0	%100
54	M54	Y	-3.541	-3.541	0	%100
55	M55	Y	-3.541	-3.541	0	%100
56	M56	Y	-3.541	-3.541	0	%100
57	M57	Y	-3.541	-3.541	0	%100
58	M58	Y	-3.541	-3.541	0	%100
59	M59	Y	-3.541	-3.541	0	%100
60	M60	Y	-3.541	-3.541	0	%100
61	M61	Y	-3.541	-3.541	0	%100
62	M62	Y	-3.541	-3.541	0	%100
63	M63	Y	-8.48	-8.48	0	%100
64	M64	Y	-8.48	-8.48	0	%100
65	M65	Y	-3.541	-3.541	0	%100
66	M66	Y	-3.541	-3.541	0	%100
67	M67	Y	-3.541	-3.541	0	%100
68	M68	Y	-3.541	-3.541	0	%100
69	M69	Y	-4.841	-4.841	0	%100
70	M70	Y	-4.841	-4.841	0	%100
71	M71	Y	-4.841	-4.841	0	%100
72	M72	Y	-4.841	-4.841	0	%100
73	M73	Y	-4.841	-4.841	0	%100
74	M74	Y	-4.841	-4.841	0	%100
75	M75	Y	-4.841	-4.841	0	%100
76	M76	Y	-4.841	-4.841	0	%100
77	M77	Y	-12.9	-12.9	0	%100
78	M78	Y	-3.541	-3.541	0	%100
79	M79	Y	-3.541	-3.541	0	%100
80	M80	Y	-3.541	-3.541	0	%100
81	M81	Y	-7.492	-7.492	0	%100
82	M82	Y	-7.492	-7.492	0	%100
83	MP5	Y	-8.48	-8.48	0	%100
84	M84	Y	-7.492	-7.492	0	%100
85	MP7	Y	-8.48	-8.48	0	%100
86	M86	Y	-7.492	-7.492	0	%100
87	MP8	Y	-8.48	-8.48	0	%100
88	M88	Y	-3.541	-3.541	0	%100
89	M89	Y	-3.541	-3.541	0	%100
90	M90	Y	-3.541	-3.541	0	%100
91	M91	Y	-3.541	-3.541	0	%100
92	M92	Y	-3.541	-3.541	0	%100

Member Distributed Loads (BLC 16 : Ice Weight) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
93	M93	Y	-3.541	-3.541	0	%100
94	M94	Y	-3.541	-3.541	0	%100
95	M95	Y	-3.541	-3.541	0	%100
96	M96	Y	-3.541	-3.541	0	%100
97	M97	Y	-3.541	-3.541	0	%100
98	M98	Y	-3.541	-3.541	0	%100
99	M99	Y	-3.541	-3.541	0	%100
100	M100	Y	-3.541	-3.541	0	%100
101	M101	Y	-3.541	-3.541	0	%100
102	M102	Y	-3.541	-3.541	0	%100
103	M103	Y	-8.48	-8.48	0	%100
104	M104	Y	-8.48	-8.48	0	%100
105	M105	Y	-3.541	-3.541	0	%100
106	M106	Y	-3.541	-3.541	0	%100
107	M107	Y	-3.541	-3.541	0	%100
108	M108	Y	-3.541	-3.541	0	%100
109	M109	Y	-4.841	-4.841	0	%100
110	M110	Y	-4.841	-4.841	0	%100
111	M111	Y	-4.841	-4.841	0	%100
112	M112	Y	-4.841	-4.841	0	%100
113	M113	Y	-4.841	-4.841	0	%100
114	M114	Y	-4.841	-4.841	0	%100
115	M115	Y	-4.841	-4.841	0	%100
116	M116	Y	-4.841	-4.841	0	%100
117	M117	Y	-12.9	-12.9	0	%100
118	M118	Y	-3.541	-3.541	0	%100
119	M119	Y	-3.541	-3.541	0	%100
120	M120	Y	-3.541	-3.541	0	%100
121	M121	Y	-8.48	-8.48	0	%100
122	M122	Y	-8.48	-8.48	0	%100
123	M123	Y	-8.48	-8.48	0	%100
124	M124	Y	-3.541	-3.541	0	%100
125	M125	Y	-3.541	-3.541	0	%100
126	MP2	Y	-8.48	-8.48	0	%100
127	M127	Y	-3.541	-3.541	0	%100
128	M128	Y	-3.541	-3.541	0	%100
129	MP10	Y	-8.48	-8.48	0	%100
130	M130	Y	-3.541	-3.541	0	%100
131	M131	Y	-3.541	-3.541	0	%100
132	MP6	Y	-8.48	-8.48	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M15	SZ	-26.057	-26.057	0	%100
2	M17	SZ	-26.057	-26.057	0	%100
3	MP1	SZ	-22.712	-22.712	0	%100
4	M31	SZ	-26.057	-26.057	0	%100
5	MP3	SZ	-22.712	-22.712	0	%100
6	M33	SZ	-26.057	-26.057	0	%100
7	MP4	SZ	-22.712	-22.712	0	%100
8	M11	SZ	0	0	0	%100
9	M12	SZ	0	0	0	%100
10	M13	SZ	0	0	0	%100
11	M14	SZ	0	0	0	%100
12	M20	SZ	0	0	0	%100
13	M22	SZ	0	0	0	%100
14	M23	SZ	0	0	0	%100
15	M24	SZ	0	0	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
16	M25	SZ	0	0	0	%100
17	M26	SZ	0	0	0	%100
18	M27	SZ	0	0	0	%100
19	M29	SZ	0	0	0	%100
20	M37	SZ	0	0	0	%100
21	M39	SZ	0	0	0	%100
22	M41A	SZ	0	0	0	%100
23	M41	SZ	-22.712	-22.712	0	%100
24	M42	SZ	-22.712	-22.712	0	%100
25	M19	SZ	0	0	0	%100
26	M21	SZ	0	0	0	%100
27	M35	SZ	0	0	0	%100
28	M36	SZ	0	0	0	%100
29	M9	SZ	-60.174	-60.174	0	%100
30	M10	SZ	-60.174	-60.174	0	%100
31	M43A	SZ	-60.174	-60.174	0	%100
32	M44A	SZ	-60.174	-60.174	0	%100
33	M37A	SZ	-60.174	-60.174	0	%100
34	M38	SZ	-60.174	-60.174	0	%100
35	M39A	SZ	-60.174	-60.174	0	%100
36	M40	SZ	-60.174	-60.174	0	%100
37	M41B	SZ	-16.394	-16.394	0	%100
38	M42B	SZ	0	0	0	%100
39	M43	SZ	0	0	0	%100
40	M159	SZ	0	0	0	%100
41	M41C	SZ	-26.057	-26.057	0	%100
42	M42A	SZ	-26.057	-26.057	0	%100
43	MP9	SZ	-22.712	-22.712	0	%100
44	M44	SZ	-26.057	-26.057	0	%100
45	MP11	SZ	-22.712	-22.712	0	%100
46	M46	SZ	-26.057	-26.057	0	%100
47	MP12	SZ	-22.712	-22.712	0	%100
48	M48	SZ	0	0	0	%100
49	M49	SZ	0	0	0	%100
50	M50	SZ	0	0	0	%100
51	M51	SZ	0	0	0	%100
52	M52	SZ	0	0	0	%100
53	M53	SZ	0	0	0	%100
54	M54	SZ	0	0	0	%100
55	M55	SZ	0	0	0	%100
56	M56	SZ	0	0	0	%100
57	M57	SZ	0	0	0	%100
58	M58	SZ	0	0	0	%100
59	M59	SZ	0	0	0	%100
60	M60	SZ	0	0	0	%100
61	M61	SZ	0	0	0	%100
62	M62	SZ	0	0	0	%100
63	M63	SZ	-22.712	-22.712	0	%100
64	M64	SZ	-22.712	-22.712	0	%100
65	M65	SZ	0	0	0	%100
66	M66	SZ	0	0	0	%100
67	M67	SZ	0	0	0	%100
68	M68	SZ	0	0	0	%100
69	M69	SZ	-60.174	-60.174	0	%100
70	M70	SZ	-60.174	-60.174	0	%100
71	M71	SZ	-60.174	-60.174	0	%100
72	M72	SZ	-60.174	-60.174	0	%100
73	M73	SZ	-60.174	-60.174	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
74	M74	SZ	-60.174	-60.174	0	%100
75	M75	SZ	-60.174	-60.174	0	%100
76	M76	SZ	-60.174	-60.174	0	%100
77	M77	SZ	-16.394	-16.394	0	%100
78	M78	SZ	0	0	0	%100
79	M79	SZ	0	0	0	%100
80	M80	SZ	0	0	0	%100
81	M81	SZ	-26.057	-26.057	0	%100
82	M82	SZ	-26.057	-26.057	0	%100
83	MP5	SZ	-22.712	-22.712	0	%100
84	M84	SZ	-26.057	-26.057	0	%100
85	MP7	SZ	-22.712	-22.712	0	%100
86	M86	SZ	-26.057	-26.057	0	%100
87	MP8	SZ	-22.712	-22.712	0	%100
88	M88	SZ	0	0	0	%100
89	M89	SZ	0	0	0	%100
90	M90	SZ	0	0	0	%100
91	M91	SZ	0	0	0	%100
92	M92	SZ	0	0	0	%100
93	M93	SZ	0	0	0	%100
94	M94	SZ	0	0	0	%100
95	M95	SZ	0	0	0	%100
96	M96	SZ	0	0	0	%100
97	M97	SZ	0	0	0	%100
98	M98	SZ	0	0	0	%100
99	M99	SZ	0	0	0	%100
100	M100	SZ	0	0	0	%100
101	M101	SZ	0	0	0	%100
102	M102	SZ	0	0	0	%100
103	M103	SZ	-22.712	-22.712	0	%100
104	M104	SZ	-22.712	-22.712	0	%100
105	M105	SZ	0	0	0	%100
106	M106	SZ	0	0	0	%100
107	M107	SZ	0	0	0	%100
108	M108	SZ	0	0	0	%100
109	M109	SZ	-60.174	-60.174	0	%100
110	M110	SZ	-60.174	-60.174	0	%100
111	M111	SZ	-60.174	-60.174	0	%100
112	M112	SZ	-60.174	-60.174	0	%100
113	M113	SZ	-60.174	-60.174	0	%100
114	M114	SZ	-60.174	-60.174	0	%100
115	M115	SZ	-60.174	-60.174	0	%100
116	M116	SZ	-60.174	-60.174	0	%100
117	M117	SZ	-16.394	-16.394	0	%100
118	M118	SZ	0	0	0	%100
119	M119	SZ	0	0	0	%100
120	M120	SZ	0	0	0	%100
121	M121	SZ	-22.712	-22.712	0	%100
122	M122	SZ	-22.712	-22.712	0	%100
123	M123	SZ	-22.712	-22.712	0	%100
124	M124	SZ	0	0	0	%100
125	M125	SZ	0	0	0	%100
126	MP2	SZ	-22.712	-22.712	0	%100
127	M127	SZ	0	0	0	%100
128	M128	SZ	0	0	0	%100
129	MP10	SZ	-22.712	-22.712	0	%100
130	M130	SZ	0	0	0	%100
131	M131	SZ	0	0	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
132	MP6	SZ	-22.712	-22.712	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M15	SX	-26.057	-26.057	0	%100
2	M17	SX	-26.057	-26.057	0	%100
3	MP1	SX	-22.712	-22.712	0	%100
4	M31	SX	-26.057	-26.057	0	%100
5	MP3	SX	-22.712	-22.712	0	%100
6	M33	SX	-26.057	-26.057	0	%100
7	MP4	SX	-22.712	-22.712	0	%100
8	M11	SX	0	0	0	%100
9	M12	SX	0	0	0	%100
10	M13	SX	0	0	0	%100
11	M14	SX	0	0	0	%100
12	M20	SX	0	0	0	%100
13	M22	SX	0	0	0	%100
14	M23	SX	0	0	0	%100
15	M24	SX	0	0	0	%100
16	M25	SX	0	0	0	%100
17	M26	SX	0	0	0	%100
18	M27	SX	0	0	0	%100
19	M29	SX	0	0	0	%100
20	M37	SX	0	0	0	%100
21	M39	SX	0	0	0	%100
22	M41A	SX	0	0	0	%100
23	M41	SX	-22.712	-22.712	0	%100
24	M42	SX	-22.712	-22.712	0	%100
25	M19	SX	0	0	0	%100
26	M21	SX	0	0	0	%100
27	M35	SX	0	0	0	%100
28	M36	SX	0	0	0	%100
29	M9	SX	-60.174	-60.174	0	%100
30	M10	SX	-60.174	-60.174	0	%100
31	M43A	SX	-60.174	-60.174	0	%100
32	M44A	SX	-60.174	-60.174	0	%100
33	M37A	SX	-60.174	-60.174	0	%100
34	M38	SX	-60.174	-60.174	0	%100
35	M39A	SX	-60.174	-60.174	0	%100
36	M40	SX	-60.174	-60.174	0	%100
37	M41B	SX	-16.394	-16.394	0	%100
38	M42B	SX	0	0	0	%100
39	M43	SX	0	0	0	%100
40	M159	SX	0	0	0	%100
41	M41C	SX	-26.057	-26.057	0	%100
42	M42A	SX	-26.057	-26.057	0	%100
43	MP9	SX	-22.712	-22.712	0	%100
44	M44	SX	-26.057	-26.057	0	%100
45	MP11	SX	-22.712	-22.712	0	%100
46	M46	SX	-26.057	-26.057	0	%100
47	MP12	SX	-22.712	-22.712	0	%100
48	M48	SX	0	0	0	%100
49	M49	SX	0	0	0	%100
50	M50	SX	0	0	0	%100
51	M51	SX	0	0	0	%100
52	M52	SX	0	0	0	%100
53	M53	SX	0	0	0	%100
54	M54	SX	0	0	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
55	M55	SX	0	0	0	%100
56	M56	SX	0	0	0	%100
57	M57	SX	0	0	0	%100
58	M58	SX	0	0	0	%100
59	M59	SX	0	0	0	%100
60	M60	SX	0	0	0	%100
61	M61	SX	0	0	0	%100
62	M62	SX	0	0	0	%100
63	M63	SX	-22.712	-22.712	0	%100
64	M64	SX	-22.712	-22.712	0	%100
65	M65	SX	0	0	0	%100
66	M66	SX	0	0	0	%100
67	M67	SX	0	0	0	%100
68	M68	SX	0	0	0	%100
69	M69	SX	-60.174	-60.174	0	%100
70	M70	SX	-60.174	-60.174	0	%100
71	M71	SX	-60.174	-60.174	0	%100
72	M72	SX	-60.174	-60.174	0	%100
73	M73	SX	-60.174	-60.174	0	%100
74	M74	SX	-60.174	-60.174	0	%100
75	M75	SX	-60.174	-60.174	0	%100
76	M76	SX	-60.174	-60.174	0	%100
77	M77	SX	-16.394	-16.394	0	%100
78	M78	SX	0	0	0	%100
79	M79	SX	0	0	0	%100
80	M80	SX	0	0	0	%100
81	M81	SX	-26.057	-26.057	0	%100
82	M82	SX	-26.057	-26.057	0	%100
83	MP5	SX	-22.712	-22.712	0	%100
84	M84	SX	-26.057	-26.057	0	%100
85	MP7	SX	-22.712	-22.712	0	%100
86	M86	SX	-26.057	-26.057	0	%100
87	MP8	SX	-22.712	-22.712	0	%100
88	M88	SX	0	0	0	%100
89	M89	SX	0	0	0	%100
90	M90	SX	0	0	0	%100
91	M91	SX	0	0	0	%100
92	M92	SX	0	0	0	%100
93	M93	SX	0	0	0	%100
94	M94	SX	0	0	0	%100
95	M95	SX	0	0	0	%100
96	M96	SX	0	0	0	%100
97	M97	SX	0	0	0	%100
98	M98	SX	0	0	0	%100
99	M99	SX	0	0	0	%100
100	M100	SX	0	0	0	%100
101	M101	SX	0	0	0	%100
102	M102	SX	0	0	0	%100
103	M103	SX	-22.712	-22.712	0	%100
104	M104	SX	-22.712	-22.712	0	%100
105	M105	SX	0	0	0	%100
106	M106	SX	0	0	0	%100
107	M107	SX	0	0	0	%100
108	M108	SX	0	0	0	%100
109	M109	SX	-60.174	-60.174	0	%100
110	M110	SX	-60.174	-60.174	0	%100
111	M111	SX	-60.174	-60.174	0	%100
112	M112	SX	-60.174	-60.174	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
113	M113	SX	-60.174	-60.174	0	%100
114	M114	SX	-60.174	-60.174	0	%100
115	M115	SX	-60.174	-60.174	0	%100
116	M116	SX	-60.174	-60.174	0	%100
117	M117	SX	-16.394	-16.394	0	%100
118	M118	SX	0	0	0	%100
119	M119	SX	0	0	0	%100
120	M120	SX	0	0	0	%100
121	M121	SX	-22.712	-22.712	0	%100
122	M122	SX	-22.712	-22.712	0	%100
123	M123	SX	-22.712	-22.712	0	%100
124	M124	SX	0	0	0	%100
125	M125	SX	0	0	0	%100
126	MP2	SX	-22.712	-22.712	0	%100
127	M127	SX	0	0	0	%100
128	M128	SX	0	0	0	%100
129	MP10	SX	-22.712	-22.712	0	%100
130	M130	SX	0	0	0	%100
131	M131	SX	0	0	0	%100
132	MP6	SX	-22.712	-22.712	0	%100

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	Self Weight	DL		-1			27	
2	Wind Load AZI 0	WLZ					54	
3	Wind Load AZI 30	None					54	
4	Wind Load AZI 60	None					54	
5	Wind Load AZI 90	WLX					54	
6	Wind Load AZI 120	None					54	
7	Wind Load AZI 150	None					54	
8	Wind Load AZI 180	None					54	
9	Wind Load AZI 210	None					54	
10	Wind Load AZI 240	None					54	
11	Wind Load AZI 270	None					54	
12	Wind Load AZI 300	None					54	
13	Wind Load AZI 330	None					54	
14	Distr. Wind Load Z	WLZ						132
15	Distr. Wind Load X	WLX						132
16	Ice Weight	OL1					27	132
17	Ice Wind Load AZI 0	OL2					54	
18	Ice Wind Load AZI 30	None					54	
19	Ice Wind Load AZI 60	None					54	
20	Ice Wind Load AZI 90	OL3					54	
21	Ice Wind Load AZI 120	None					54	
22	Ice Wind Load AZI 150	None					54	
23	Ice Wind Load AZI 180	None					54	
24	Ice Wind Load AZI 210	None					54	
25	Ice Wind Load AZI 240	None					54	
26	Ice Wind Load AZI 270	None					54	
27	Ice Wind Load AZI 300	None					54	
28	Ice Wind Load AZI 330	None					54	
29	Distr. Ice Wind Load Z	OL2						132
30	Distr. Ice Wind Load X	OL3						132
31	Seismic Load Z	ELZ			-0.094		27	
32	Seismic Load X	ELX	-0.094				27	
33	Service Live Loads	LL					1	
34	Maintenance Load 1	LL				1		
35	Maintenance Load 2	LL				1		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
36	Maintenance Load 3	LL				1		
37	Maintenance Load 4	LL				1		
38	Maintenance Load 5	LL				1		
39	Maintenance Load 6	LL				1		
40	Maintenance Load 7	LL				1		
41	Maintenance Load 8	LL				1		
42	Maintenance Load 9	LL				1		
43	Maintenance Load 10	LL				1		
44	Maintenance Load 11	LL				1		
45	Maintenance Load 12	LL				1		

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.238	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.238	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.238	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.238	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.238	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.238	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.238	31	-1	32					

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.238	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.238	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.238	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.238	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.238	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.862	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.862	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.862	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.862	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.862	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.862	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.862	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.862	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.862	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.862	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.862	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.862	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.213	14	0.213	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.213	14	0.184	15	0.107	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.213	14	0.107	15	0.184	33	1.5
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.213	14		15	0.213	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.213	14	-0.107	15	0.184	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.213	14	-0.184	15	0.107	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.213	14	-0.213	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.213	14	-0.184	15	-0.107	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.213	14	-0.107	15	-0.184	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.213	14		15	-0.213	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.213	14	0.107	15	-0.184	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.213	14	0.184	15	-0.107	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.053	14	0.053	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.053	14	0.046	15	0.027
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.053	14	0.027	15	0.046
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.053	14		15	0.053
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.053	14	-0.027	15	0.046
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.053	14	-0.046	15	0.027
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.053	14	-0.053	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.053	14	-0.046	15	-0.027
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.053	14	-0.027	15	-0.046
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.053	14		15	-0.053
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.053	14	0.027	15	-0.046
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.053	14	0.046	15	-0.027
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.053	14	0.053	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.053	14	0.046	15	0.027
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.053	14	0.027	15	0.046
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.053	14		15	0.053
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.053	14	-0.027	15	0.046
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.053	14	-0.046	15	0.027
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.053	14	-0.053	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.053	14	-0.046	15	-0.027
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.053	14	-0.027	15	-0.046
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.053	14		15	-0.053
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.053	14	0.027	15	-0.046
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.053	14	0.046	15	-0.027
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.053	14	0.053	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.053	14	0.046	15	0.027
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.053	14	0.027	15	0.046
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.053	14		15	0.053

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.053	14	-0.027	15	0.046
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.053	14	-0.046	15	0.027
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.053	14	-0.053	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.053	14	-0.046	15	-0.027
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.053	14	-0.027	15	-0.046
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.053	14		15	-0.053
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.053	14	0.027	15	-0.046
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.053	14	0.046	15	-0.027
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.053	14	0.053	15	
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.053	14	0.046	15	0.027
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.053	14	0.027	15	0.046
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.053	14		15	0.053
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.053	14	-0.027	15	0.046
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.053	14	-0.046	15	0.027
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.053	14	-0.053	15	
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.053	14	-0.046	15	-0.027
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.053	14	-0.027	15	-0.046
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.053	14		15	-0.053
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.053	14	0.027	15	-0.046
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.053	14	0.046	15	-0.027
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.053	14	0.053	15	
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.053	14	0.046	15	0.027
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.053	14	0.027	15	0.046
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.053	14		15	0.053
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.053	14	-0.027	15	0.046
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.053	14	-0.046	15	0.027
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.053	14	-0.053	15	
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.053	14	-0.046	15	-0.027
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.053	14	-0.027	15	-0.046
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.053	14		15	-0.053
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.053	14	0.027	15	-0.046
135	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.053	14	0.046	15	-0.027
136	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.053	14	0.053	15	
137	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.053	14	0.046	15	0.027
138	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.053	14	0.027	15	0.046
139	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.053	14		15	0.053
140	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.053	14	-0.027	15	0.046
141	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.053	14	-0.046	15	0.027
142	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.053	14	-0.053	15	
143	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.053	14	-0.046	15	-0.027
144	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.053	14	-0.027	15	-0.046
145	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.053	14		15	-0.053
146	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.053	14	0.027	15	-0.046
147	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.053	14	0.046	15	-0.027
148	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	40	1.5	2	0.053	14	0.053	15	
149	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	40	1.5	3	0.053	14	0.046	15	0.027
150	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	40	1.5	4	0.053	14	0.027	15	0.046
151	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	40	1.5	5	0.053	14		15	0.053
152	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	40	1.5	6	0.053	14	-0.027	15	0.046
153	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	40	1.5	7	0.053	14	-0.046	15	0.027
154	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	40	1.5	8	0.053	14	-0.053	15	
155	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	40	1.5	9	0.053	14	-0.046	15	-0.027
156	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	40	1.5	10	0.053	14	-0.027	15	-0.046
157	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	40	1.5	11	0.053	14		15	-0.053
158	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	40	1.5	12	0.053	14	0.027	15	-0.046
159	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	40	1.5	13	0.053	14	0.046	15	-0.027
160	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	41	1.5	2	0.053	14	0.053	15	
161	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	41	1.5	3	0.053	14	0.046	15	0.027

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
162	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	41	1.5	4	0.053	14	0.027	15	0.046
163	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	41	1.5	5	0.053	14		15	0.053
164	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	41	1.5	6	0.053	14	-0.027	15	0.046
165	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	41	1.5	7	0.053	14	-0.046	15	0.027
166	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	41	1.5	8	0.053	14	-0.053	15	
167	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	41	1.5	9	0.053	14	-0.046	15	-0.027
168	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	41	1.5	10	0.053	14	-0.027	15	-0.046
169	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	41	1.5	11	0.053	14		15	-0.053
170	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	41	1.5	12	0.053	14	0.027	15	-0.046
171	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	41	1.5	13	0.053	14	0.046	15	-0.027
172	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	42	1.5	2	0.053	14	0.053	15	
173	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	42	1.5	3	0.053	14	0.046	15	0.027
174	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	42	1.5	4	0.053	14	0.027	15	0.046
175	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	42	1.5	5	0.053	14		15	0.053
176	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	42	1.5	6	0.053	14	-0.027	15	0.046
177	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	42	1.5	7	0.053	14	-0.046	15	0.027
178	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	42	1.5	8	0.053	14	-0.053	15	
179	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	42	1.5	9	0.053	14	-0.046	15	-0.027
180	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	42	1.5	10	0.053	14	-0.027	15	-0.046
181	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	42	1.5	11	0.053	14		15	-0.053
182	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	42	1.5	12	0.053	14	0.027	15	-0.046
183	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	42	1.5	13	0.053	14	0.046	15	-0.027
184	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	43	1.5	2	0.053	14	0.053	15	
185	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	43	1.5	3	0.053	14	0.046	15	0.027
186	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	43	1.5	4	0.053	14	0.027	15	0.046
187	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	43	1.5	5	0.053	14		15	0.053
188	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	43	1.5	6	0.053	14	-0.027	15	0.046
189	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	43	1.5	7	0.053	14	-0.046	15	0.027
190	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	43	1.5	8	0.053	14	-0.053	15	
191	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	43	1.5	9	0.053	14	-0.046	15	-0.027
192	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	43	1.5	10	0.053	14	-0.027	15	-0.046
193	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	43	1.5	11	0.053	14		15	-0.053
194	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	43	1.5	12	0.053	14	0.027	15	-0.046
195	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	43	1.5	13	0.053	14	0.046	15	-0.027
196	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	44	1.5	2	0.053	14	0.053	15	
197	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	44	1.5	3	0.053	14	0.046	15	0.027
198	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	44	1.5	4	0.053	14	0.027	15	0.046
199	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	44	1.5	5	0.053	14		15	0.053
200	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	44	1.5	6	0.053	14	-0.027	15	0.046
201	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	44	1.5	7	0.053	14	-0.046	15	0.027
202	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	44	1.5	8	0.053	14	-0.053	15	
203	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	44	1.5	9	0.053	14	-0.046	15	-0.027
204	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	44	1.5	10	0.053	14	-0.027	15	-0.046
205	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	44	1.5	11	0.053	14		15	-0.053
206	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	44	1.5	12	0.053	14	0.027	15	-0.046
207	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	44	1.5	13	0.053	14	0.046	15	-0.027
208	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	45	1.5	2	0.053	14	0.053	15	
209	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	45	1.5	3	0.053	14	0.046	15	0.027
210	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	45	1.5	4	0.053	14	0.027	15	0.046
211	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	45	1.5	5	0.053	14		15	0.053
212	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	45	1.5	6	0.053	14	-0.027	15	0.046
213	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	45	1.5	7	0.053	14	-0.046	15	0.027
214	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	45	1.5	8	0.053	14	-0.053	15	
215	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	45	1.5	9	0.053	14	-0.046	15	-0.027
216	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	45	1.5	10	0.053	14	-0.027	15	-0.046
217	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	45	1.5	11	0.053	14		15	-0.053
218	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	45	1.5	12	0.053	14	0.027	15	-0.046

Load Combination Design

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1.4DL		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1.2DL + 1WL AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1.2DL + 1WL AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1.2DL + 1WL AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1.2DL + 1WL AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1.2DL + 1WL AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1.2DL + 1WL AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1.2DL + 1WL AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1.2DL + 1WL AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1.2DL + 1WL AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1.2DL + 1WL AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1.2DL + 1WL AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	1.2DL + 1WL AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	0.9DL + 1WL AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	0.9DL + 1WL AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	0.9DL + 1WL AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	0.9DL + 1WL AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	0.9DL + 1WL AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	0.9DL + 1WL AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	0.9DL + 1WL AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	0.9DL + 1WL AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	0.9DL + 1WL AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	0.9DL + 1WL AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	0.9DL + 1WL AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	0.9DL + 1WL AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	1.2D + 1.0Di		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	1.2D + 1.0Di +1.0Wi AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	1.2D + 1.0Di +1.0Wi AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	1.2D + 1.0Di +1.0Wi AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	1.2D + 1.0Di +1.0Wi AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	1.2D + 1.0Di +1.0Wi AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	1.2D + 1.0Di +1.0Wi AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	1.2D + 1.0Di +1.0Wi AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	1.2D + 1.0Di +1.0Wi AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	1.2D + 1.0Di +1.0Wi AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	1.2D + 1.0Di +1.0Wi AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	1.2D + 1.0Di +1.0Wi AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	1.2D + 1.0Di +1.0Wi AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
75	1.2DL + 1.5LL		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
135	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
136	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
137	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
138	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
139	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
140	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
141	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
142	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
143	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
144	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
145	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
146	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
147	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
148	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
149	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
150	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
151	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
152	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
153	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
154	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
155	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
156	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
157	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
158	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
159	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
160	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
161	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
162	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
163	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
164	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
165	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
166	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
167	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
168	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
169	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
170	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
171	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
172	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
173	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
174	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
175	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
176	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
177	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
178	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
179	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
180	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
181	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
182	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
183	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
184	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
185	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
186	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
187	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
188	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
189	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
190	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
191	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
192	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
193	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
194	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
195	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
196	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
197	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
198	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
199	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
200	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
201	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
202	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
203	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
204	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
205	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
206	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
207	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 330		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
208	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 0		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
209	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 30		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
210	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 60		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
211	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 90		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
212	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 120		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
213	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 150		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
214	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 180		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
215	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 210		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
216	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 240		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
217	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 270		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
218	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 300		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M64	PIPE_2.0	0.891	32.813	17	0.335	32.813		17	8922.084	32130	1871.625	1871.625	1.859	H1-1b
2	M42	PIPE_2.0	0.809	32.813	25	0.294	32.813		25	8922.084	32130	1871.625	1871.625	1.935	H1-1b
3	M104	PIPE_2.0	0.805	32.813	21	0.295	32.813		21	8922.084	32130	1871.625	1871.625	1.929	H1-1b
4	M69	0.625" S.R.	0.751	28.125	5	0.01	28.125		3	1999.184	9946.8	96.768	96.768	1	H1-1a
5	M9	0.625" S.R.	0.699	14.355	13	0.009	28.125		11	1999.184	9946.8	96.768	96.768	1	H1-1a
6	M109	0.625" S.R.	0.691	14.355	9	0.01	28.125		7	1999.184	9946.8	96.768	96.768	1	H1-1a
7	MP2	PIPE_2.0	0.574	63	20	0.078	33		7	14916.096	32130	1871.625	1871.625	2.655	H1-1b
8	MP6	PIPE_2.0	0.569	33	4	0.078	33		3	14916.096	32130	1871.625	1871.625	1.421	H1-1b
9	MP10	PIPE_2.0	0.569	33	12	0.082	33		11	14916.096	32130	1871.625	1871.625	1.505	H1-1b
10	M44	PIPE_1.5	0.559	0	17	0.174	0		37	20714.686	23593.5	1105.125	1105.125	2.897	H1-1b
11	M67	PL3.6875x1/2	0.546	2.25	6	0.28	2.25	y	6	58978.16	59737.5	622.266	4589.209	1.171	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
12	M35	PL3.6875x1/2	0.544	2.25	2	0.279	2.25	y	2	58978.16	59737.5	622.266	4589.209	1.178	H1-1b
13	M107	PL3.6875x1/2	0.531	2.25	10	0.271	2.25	y	4	58978.16	59737.5	622.266	4589.209	1.188	H1-1b
14	M68	PL3.6875x1/2	0.521	2.25	5	0.38	2.25	y	11	58978.16	59737.5	622.266	4589.209	1.424	H1-1b
15	M46	PIPE_1.5	0.497	0	11	0.244	0		11	20714.686	23593.5	1105.125	1105.125	2.375	H1-1a
16	M65	PL3.6875x1/2	0.496	2.25	12	0.139	2.25	y	12	58978.16	59737.5	622.266	4589.209	1.163	H1-1b
17	M19	PL3.6875x1/2	0.49	2.25	8	0.139	2.25	y	8	58978.16	59737.5	622.266	4589.209	1.169	H1-1b
18	M108	PL3.6875x1/2	0.482	2.25	9	0.348	2.25	y	3	58978.16	59737.5	622.266	4589.209	1.396	H1-1b
19	M36	PL3.6875x1/2	0.48	2.25	13	0.347	2.25	y	7	58978.16	59737.5	622.266	4589.209	1.4	H1-1b
20	M105	PL3.6875x1/2	0.479	2.25	4	0.14	2.25	y	4	58978.16	59737.5	622.266	4589.209	1.177	H1-1b
21	M31	PIPE_1.5	0.461	0	2	0.175	0		33	20714.686	23593.5	1105.125	1105.125	3	H1-1b
22	M44A	0.625" S.R.	0.444	15.234	27	0.018	28.125		13	1999.184	9946.8	96.768	96.768	1	H1-1a
23	M84	PIPE_1.5	0.444	0	21	0.174	0		29	20714.686	23593.5	1105.125	1105.125	2.787	H1-1b
24	M112	0.625" S.R.	0.439	15.527	34	0.018	28.125		9	1999.184	9946.8	96.768	96.768	1	H1-1a
25	M86	PIPE_1.5	0.433	31.537	21	0.219	0		3	20714.686	23593.5	1105.125	1105.125	2.569	H1-1a
26	M72	0.625" S.R.	0.433	16.699	31	0.02	28.125		5	1999.184	9946.8	96.768	96.768	1	H1-1a
27	M33	PIPE_1.5	0.429	31.537	25	0.221	0		7	20714.686	23593.5	1105.125	1105.125	2.592	H1-1a
28	M43A	0.625" S.R.	0.375	15.234	27	0.01	28.125		11	1999.184	9946.8	96.768	96.768	1	H1-1a
29	M71	0.625" S.R.	0.367	15.527	32	0.01	28.125		3	1999.184	9946.8	96.768	96.768	1	H1-1a
30	M63	PIPE_2.0	0.363	32.813	6	0.291	91.875		12	8922.084	32130	1871.625	1871.625	2.647	H1-1b
31	M111	0.625" S.R.	0.362	16.699	35	0.01	28.125		7	1999.184	9946.8	96.768	96.768	1	H1-1a
32	M41	PIPE_2.0	0.361	32.813	2	0.293	91.875		8	8922.084	32130	1871.625	1871.625	2.638	H1-1b
33	MP11	PIPE_2.0	0.353	33	11	0.098	33		5	14916.096	32130	1871.625	1871.625	3	H1-1b
34	M103	PIPE_2.0	0.344	3.938	173	0.294	91.875		4	8922.084	32130	1871.625	1871.625	2.225	H1-1b
35	MP12	PIPE_2.0	0.339	63	145	0.076	63		139	14916.096	32130	1871.625	1871.625	3	H1-1b
36	MP8	PIPE_2.0	0.339	33	173	0.076	63		179	14916.096	32130	1871.625	1871.625	3	H1-1b
37	MP4	PIPE_2.0	0.339	33	105	0.076	63		111	14916.096	32130	1871.625	1871.625	3	H1-1b
38	M77	PIPE_4.0	0.338	5.25	11	0.312	16.5		11	83097.932	93240	10631.25	10631.25	2.838	H1-1b
39	M10	0.625" S.R.	0.336	18.75	100	0.031	28.125		13	1999.184	9946.8	96.768	96.768	1	H1-1a
40	M110	0.625" S.R.	0.336	19.336	179	0.031	28.125		9	1999.184	9946.8	96.768	96.768	1	H1-1a
41	M70	0.625" S.R.	0.336	23.438	140	0.035	28.125		5	1999.184	9946.8	96.768	96.768	1	H1-1a
42	M41C	PIPE_1.5	0.336	0	6	0.174	29.566		12	20714.686	23593.5	1105.125	1105.125	3	H1-1b
43	MP1	PIPE_2.0	0.335	63	81	0.076	33		86	14916.096	32130	1871.625	1871.625	3	H1-1b
44	MP5	PIPE_2.0	0.335	63	149	0.076	33		154	14916.096	32130	1871.625	1871.625	3	H1-1b
45	MP9	PIPE_2.0	0.335	63	121	0.076	33		114	14916.096	32130	1871.625	1871.625	3	H1-1b
46	MP7	PIPE_2.0	0.32	33	3	0.087	33		9	14916.096	32130	1871.625	1871.625	2.267	H1-1b
47	MP3	PIPE_2.0	0.319	33	7	0.086	33		13	14916.096	32130	1871.625	1871.625	3	H1-1b
48	M15	PIPE_1.5	0.316	0	2	0.174	29.566		8	20714.686	23593.5	1105.125	1105.125	3	H1-1b
49	M41B	PIPE_4.0	0.305	5.25	7	0.265	16.5		5	83097.932	93240	10631.25	10631.25	2.629	H1-1b
50	M117	PIPE_4.0	0.301	5.25	3	0.254	16.5		3	83097.932	93240	10631.25	10631.25	2.804	H1-1b
51	M115	0.625" S.R.	0.297	19.424	27	0.018	38.847		13	1047.904	9946.8	96.768	96.768	1.136	H1-1a
52	M39A	0.625" S.R.	0.294	19.424	29	0.021	38.847		5	1047.904	9946.8	96.768	96.768	1.136	H1-1a
53	M75	0.625" S.R.	0.288	19.424	35	0.018	38.847		9	1047.904	9946.8	96.768	96.768	1.136	H1-1a
54	M74	0.625" S.R.	0.286	19.828	18	0.027	38.847		17	1047.904	9946.8	96.768	96.768	1.136	H1-1a
55	M38	0.625" S.R.	0.277	19.019	14	0.024	38.847		14	1047.904	9946.8	96.768	96.768	1.136	H1-1a
56	M81	PIPE_1.5	0.275	0	10	0.173	29.566		4	20714.686	23593.5	1105.125	1105.125	3	H1-1b
57	M17	PIPE_1.5	0.269	0	11	0.211	0		13	20714.686	23593.5	1105.125	1105.125	2.588	H1-1b
58	M42A	PIPE_1.5	0.26	0	5	0.233	0		5	20714.686	23593.5	1105.125	1105.125	3	H1-1b
59	M82	PIPE_1.5	0.231	0	9	0.209	0		9	20714.686	23593.5	1105.125	1105.125	3	H1-1b
60	M66	PL3.6875x1/2	0.218	2.25	139	0.13	2.25	y	141	58978.16	59737.5	622.266	4589.209	1.31	H1-1b
61	M106	PL3.6875x1/2	0.218	2.25	179	0.13	2.25	y	181	58978.16	59737.5	622.266	4589.209	1.308	H1-1b
62	M21	PL3.6875x1/2	0.218	2.25	111	0.13	2.25	y	101	58978.16	59737.5	622.266	4589.209	1.309	H1-1b
63	M114	0.625" S.R.	0.216	19.424	179	0.022	38.847		21	1047.904	9946.8	96.768	96.768	1.136	H1-1a
64	M123	PIPE_2.0	0.132	56.369	11	0.08	56.369		139	24661.105	32130	1871.625	1871.625	1.136	H1-1b*
65	M122	PIPE_2.0	0.117	0	3	0.08	56.369		179	24661.105	32130	1871.625	1871.625	1.136	H1-1b*
66	M121	PIPE_2.0	0.116	0	7	0.08	56.369		111	24661.105	32130	1871.625	1871.625	1.136	H1-1b*
67	M73	0.625" S.R.	0.045	0	23	0.037	38.847		11	1047.904	9946.8	96.768	96.768	1.136	H1-1b*
68	M37A	0.625" S.R.	0.039	38.847	19	0.032	38.847		7	1047.904	9946.8	96.768	96.768	1.136	H1-1b*
69	M113	0.625" S.R.	0.039	38.847	15	0.031	38.847		15	1047.904	9946.8	96.768	96.768	1.136	H1-1b*

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
70	M40	0.625" S.R.	0	38.847	218	0.017	38.847		11	1047.904	9946.8	96.768	96.768	1.136	H1-1a
71	M76	0.625" S.R.	0	38.847	218	0.012	38.847		3	1047.904	9946.8	96.768	96.768	1.136	H1-1a
72	M116	0.625" S.R.	0	38.847	218	0.013	38.847		7	1047.904	9946.8	96.768	96.768	1	H1-1a

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N65A	max	991.81	81	1323.448	27	1966.923	2	877.978	2	0	218	501.476	25
2		min	-755.281	111	-399.433	19	-860.528	20	-567.957	20	0	1	-552.901	7
3	N66A	max	1886.776	19	1610.027	32	3122.855	25	2257.284	7	0	218	1266.762	19
4		min	-2043.643	13	-472.356	25	-4171.135	7	-2139.843	25	0	1	-1372.478	13
5	N118	max	1826.221	5	1340.222	30	391.307	25	229.744	25	0	218	717.473	23
6		min	-963.729	23	-452.506	23	-1429.974	117	-584.924	117	0	1	-978.175	5
7	N119	max	4285.358	17	1630.017	36	1787.9	9	362.165	15	0	218	2885.448	17
8		min	-5112.024	11	-526.181	17	-1059.758	15	-555.813	9	0	1	-2929.082	11
9	N179	max	572.676	16	1315.924	34	866.675	15	673.526	15	0	218	658.61	11
10		min	-1840.217	35	-381.624	15	-1249.202	179	-790.135	9	0	1	-407.159	17
11	N180	max	2671.345	3	1606.553	28	3604.001	3	2200.365	9	0	218	1310.755	3
12		min	-1681.563	21	-460.861	21	-3208.271	21	-2173.697	3	0	1	-1155.786	21
13	Totals:	max	5730.097	5	8103.241	26	5899.032	2						
14		min	-5730.107	23	2145.802	62	-5899.012	8						

Material Take-Off

	Material	Pieces	Length[in]	Weight[K]
1	General Members			
2	RIGID	6	36	0
3	Total General	6	36	0

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.4

PROJECT DATA	
Site Name:	876387
Site Number:	OUTH HEBRON/NED ELLIS PROP
Job Code:	1039-Z0001-B
Connection Description:	Sector Frame to Collar Mount

APPLIED LOADS		
Bolt Tension:	5495.49	lbs
Bolt Shear:	1782.17	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	Other	-
Yield Strength:	57	ksi
Ultimate Strength:	74	ksi
# of Threaded Rods:	4	-
Threads Excluded?	No	-

BOLT CHECK		
Tensile Strength	12543.09	
Shear Strength	8513.59	
Tensile Usage	43.8%	
Shear Usage	20.9%	
Interaction Check	0.24	***≤1.05***
Result	Pass	

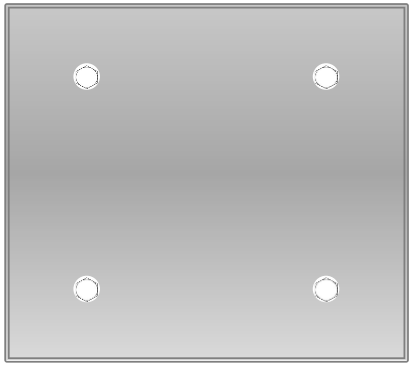

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTHA353A

CT33XC560
107 Buck Road
Hebron, Connecticut 06248

March 24, 2021

EBI Project Number: 6221001374

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**25.43%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

March 24, 2021

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTHA353A - CT33XC560

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **107 Buck Road** in **Hebron, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 107 Buck Road in Hebron, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

8) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

9) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

11) The antennas used in this modeling are the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APX16DWV-16DWV-S-E-A20 for the 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antenna mounting height centerline of the proposed antennas is 117 feet above ground level (AGL).

13) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE %:	**1.36%**	Antenna B1 MPE %:	**1.36%**	Antenna C1 MPE %:	**1.36%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd
Height (AGL):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,569.87	ERP (W):	12,569.87	ERP (W):	12,569.87
Antenna A2 MPE %:	**5.34%**	Antenna B2 MPE %:	**5.34%**	Antenna C2 MPE %:	**5.34%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd	Gain:	17.3 dBd / 17.3 dBd
Height (AGL):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	12,888.76	ERP (W):	12,888.76	ERP (W):	12,888.76
Antenna A3 MPE %:	**3.76%**	Antenna B3 MPE %:	**3.76%**	Antenna C3 MPE %:	**3.76%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	10.46%
Verizon	4.1%
AT&T	4.9%
Nextel	1.49%
Sprint	4.48%
Site Total MPE % :	25.43%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	10.46%
T-Mobile Sector B Total:	10.46%
T-Mobile Sector C Total:	10.46%
Site Total MPE % :	25.43%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2100 MHz LTE	2	2334.27	117.0	13.62	2100 MHz LTE	1000	1.36%
T-Mobile 600 MHz LTE	2	591.73	117.0	3.45	600 MHz LTE	400	0.86%
T-Mobile 600 MHz NR	1	1577.94	117.0	4.60	600 MHz NR	400	1.15%
T-Mobile 700 MHz LTE	2	695.22	117.0	4.06	700 MHz LTE	467	0.87%
T-Mobile 1900 MHz GSM	4	1052.26	117.0	12.28	1900 MHz GSM	1000	1.23%
T-Mobile 1900 MHz LTE	2	2104.51	117.0	12.28	1900 MHz LTE	1000	1.23%
T-Mobile 2500 MHz LTE	1	6444.38	117.0	18.80	2500 MHz LTE	1000	1.88%
T-Mobile 2500 MHz NR	1	6444.38	117.0	18.80	2500 MHz NR	1000	1.88%
						Total:	**10.46%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	10.46%
Sector B:	10.46%
Sector C:	10.46%
T-Mobile Maximum MPE % (Sector A):	10.46%
Site Total:	25.43%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **25.43%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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