Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

April 11, 2019

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

RE: **Notice of Exempt Modification for Verizon Wireless: 806372**
Verizon Site ID: NG1904
266R Center Street, Manchester, CT 06040
Latitude: 41° -46' 19.0"/ Longitude: -72° -31' 48.8"

Dear Ms. Bachman:

Verizon currently maintains twelve (12) antennas at the 115-foot level of the existing 115-foot monopole tower at 266R Center Street, Manchester, CT 06040. The tower is owned by Crown Castle as well the property. Verizon now intends to replace six (6) antennas and six (6) remote radio units.

This facility was approved by the Connecticut Siting Council on August 24, 1990 in Docket No. 129. There were no conditions listed in the approval.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to Town General Manager Mr. Scott Shanley and the town of Manchester Planning Department. Crown Castle is the tower and 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, Verizon 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). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Scott Shanley
General Manager
Town of Manchester
41 Center Street
Manchester, CT 06045

Planning and Zoning
Town of Manchester
Lincoln Center, 2nd FL
Manchester, CT 06045

Town of Manchester, CT

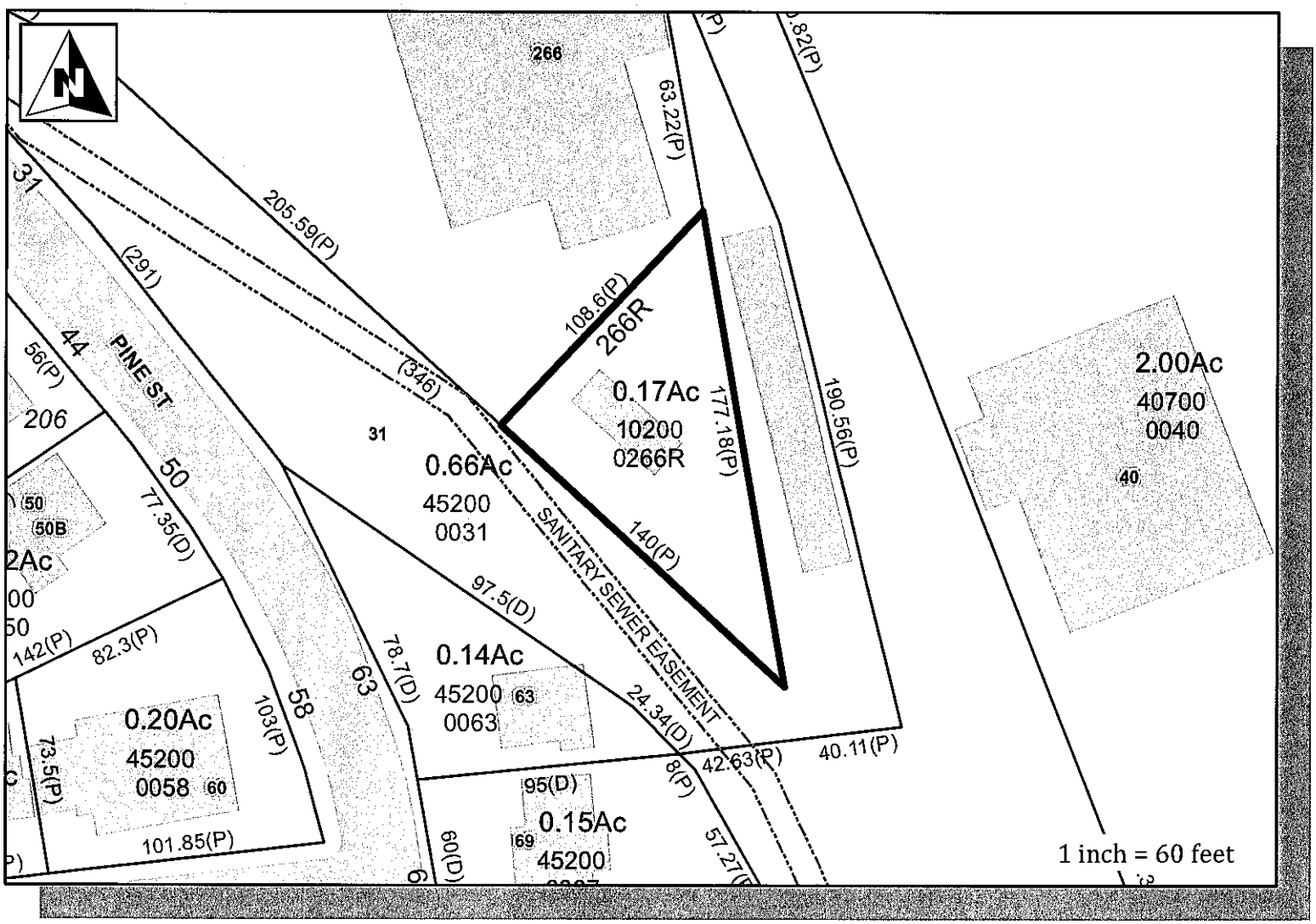
Address: 266R CENTER STREET

RPKEY: 102000266R

Property Information:

Mailing Address:	266R CENTER ST MANCHESTER, CT
Owner Name:	CROWN ATLANTIC CO LLC
Owner Address:	4017 WASHINGTON RD MCMURRAY, PA 15317
Land Class:	Ind Vac
Land Use Code:	302
Zoning:	IND

Acreage:	0.17
Year Built:	0
Appraisal:	164200
Assessment:	115000
Sale Price:	$
Sale Date:	04/19/1999
Book/Page:	2071/309



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STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

136 Main Street, Suite 401
New Britain, Connecticut 06051
Phone: 827-7682

August 24, 1990

Mr. David S. Malko
Manager, Engineering and Regulatory Services
Metro Mobile
50 Rockland Road
South Norwalk, CT 06854

RE: DOCKET NO. 129 - Metro Mobile CTS of Hartford, Inc., Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telephone tower and associated equipment in the Town of Manchester, Connecticut.

Dear Mr. Malko:

On August 22, 1990, the Siting Council considered and approved all remaining sections of the Development and Management Plan (D&M) for this cellular telephone tower and associated equipment in the Town of Manchester, Connecticut. This decision confirms use of barbed wire on the security fence surrounding the cellular site that was approved by the Council by its Decision and Order on March 12, 1990.

This approval applies only to the D&M plan submitted for the Manchester site. Modifications to this D&M Plan require advance Council notification and approval. Please notify the Council when construction is completed.

Enclosed for your use is a copy of the Staff Report regarding the D&M Plan.

Very truly yours,

Gloria Dibble Pond

Gloria Dibble Pond
Chairperson

SMH/smh

enclosure

4706-2

METRO MOBILE

July 20, 1990

Connecticut Siting Council
136 Main Street
Suite 401
New Britain, CT 06051

Attention: Joel M. Rinebold, Executive Director

Re: Docket No. 129 - Metro Mobile CTS of Hartford, Inc.
Manchester Cell Site

Dear Mr. Rinebold:

Metro Mobile CTS of Hartford, Inc. ("Metro Mobile") has submitted a proposed D&M Plan in the above-referenced proceeding and has received comments on it from the Town of Manchester and the Council.

Metro Mobile intends to construct an eight foot security fence around the facility with three strands of barbed wire on top. One of the comments received addresses the potential restriction on the use of barbed wire in constructing a fence at the proposed facility under Section 47-47 of the Connecticut General Statutes. This communication sets forth Metro Mobile's position that Metro Mobile is unaffected by said provision, as well as the Company's arguments in support of its position that the fencing plans already submitted are within State laws.

The provision of interest is Section 47-47 of the Connecticut General Statutes, which reads, in relevant part, as follows:

> Barbed wire between adjoining premises or enclosing grounds of public buildings. No person shall use barbed wire in the construction of fences or have barbed wire upon existing fences between his own premises and those of an adjoining proprietor, within twenty-five rods of any house or barn belonging to such proprietor, unless either premises are used in connection with raising livestock, without first obtaining his written consent . . . .

A. THE SITING COUNCIL'S JURISDICTION SUPERSEDES THE RESTRICTIONS IMPOSED BY C.G.S. SECTION 16-50x.

The Connecticut Siting Council was created with the express purpose of considering applications for the construction, operation, and maintenance of certain types of facilities within the state,including the proposed Manchester facility. The Council's jurisdiction overrides select state and local laws which would otherwise place restrictions on such activities. Section 16-50x of the C.G.S. contains the override language, as follows:

> (a) Notwithstanding any other provision of the general statutes to the contrary, except as provided in Section 16-243, the council shall have exclusive jurisdiction over the location and type of facilities and over the location and type of modifications of facilities subject to the provisions of subsection (d) of this section. (emphasis added)

It should be noted that neither Section 16-243 nor subsection (d) of Section 16-50x modifies the applicability of the section quoted above with respect to the proposed Metro Mobile facility.

Whether the proposed facility uses barbed wire is an issue as to the type of facility to be constructed. Thus, it falls within the exclusive jurisdiction of the Council and cannot be affected by other statutes or local regulations.

B. EVEN IF THE COUNCIL'S JURISDICTION DOES NOT SUPERSEDE SECTION 47-47, METRO MOBILE'S PROPOSED FACILITY WILL NOT COME WITHIN THE AMBIT OF THAT PROVISION.

As set forth above, Metro Mobile's position is that the Council's jurisdiction supersedes the provisions of Section 47-47, and that the statute is therefore inapplicable to Metro Mobile at the Manchester facility certificated by the Council. If, however, the Council concludes that its jurisdiction does not supersede the statute, Metro Mobile contends that the provisions of the statute are inapplicable to Metro Mobile for the following reasons.

1. Proposed Fence Not Between Proprietors

The statute prohibits the use of barbed wire ". . . between his own premises and those of an adjoining proprietor . . . ." In Manchester, Metro Mobile's proposed facility will not border two separate land parcels except on the east and southwest sides (see page 5 of Tab 1 in the Metro Mobile Application for the Manchester Site, Siting Council Docket No. 129).

On the north side of Metro Mobile's facility, the proposed barbed wire will not be between two adjoining proprietors, since Metro Mobile facility is located on a portion of a parcel owned by S. Mark Stephens.

2. No Houses or Barns Located on Adjacent Property

The statute prohibits the use of barbed wire ". . . within twenty-five rods of any house or barn belonging to such proprietor . . . ." On the east side of the Metro Mobile facility, there is a strip of land owned by Kenneth C. Burkamp over which the Consolidated Rail Corporation at one time had an easement to operate a railway. There are no houses or barns located on this parcel, and therefore the prohibition cannot apply to Metro Mobile with respect to this parcel.

Similarly, the southwest side of the Metro Mobile facility is bordered by a parcel owned by Kenneth C. Burkamp. There are no houses or barns located on this parcel. The prohibition stated in the barbed wire statute therefore cannot apply to Metro Mobile with respect to this parcel.

Thus, even if the Council finds that its jurisdiction does not supersede the provisions of Section 47-47 of the C.G.S., those provisions do not apply to Metro Mobile in this case.

Respectfully yours,

David S. Malko DSS

David S. Malko, P.E.
Manager, Engineering and Regulatory Services

DSM:mb

cc: Service List Docket 129

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

136 Main Street, Suite 401
New Britain, Connecticut 06051
Phone: 827-7682

June 22, 1990

Metro Mobile CTS of Hartford, Inc.
100 Corporate Drive
Windsor, CT. 06095
Attn: Gary N. Shulman
Vice Pres. & Gen. Mgr.

DOCKET NO. 129 - Metro Mobile CTS of Hartford, Inc., Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telephone tower and associated equipment in the Town of Manchester, Connecticut.

Dear Mr. Shulman:

At a meeting of the Connecticut Siting Council (Council) on June 18, 1990, the Council considered and approved the Development and Management (D&M) Plan for the Manchester facility except for the subject of fencing to be reserved for final approval by the Council at a later date. Pursuant to Connecticut General Statutes Section 47-47, it states that no barbed wire is permitted on an existing or newly constructed fence. Enclosed for your reference is a copy of the staff report for this D&M Plan.

This approval applies only to the Manchester facility. Modifications to this D&M Plan require advance Council notification and approval. The Council awaits your submission of fencing plans, within State laws, that would meet Metro Mobile's needs and the Town of Manchester's requirements.

Very truly yours,

Gloria Dibble Pond /s

Gloria Dibble Pond
GDP:SJM:fc

Enclosures (3)

cc: Parties of Record
Council Members

4442E-5

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

136 Main Street, Suite 401
New Britain, Connecticut 06051
Phone: 827-7682

DOCKET NO. 129
METRO MOBILE CTS OF HARTFORD, INC.
D&M PLAN MANCHESTER CELL SITE - MAY 21, 1990

On May 15, 1990, Metro Mobile CTS of Hartford, Inc. submitted to the Connecticut Siting Council a D&M Plan for its Manchester cell site. The plan includes construction of a 128 foot tower including antennas, at a total height of 324 feet above mean sea level, and a 14-foot by 40-foot equipment building surrounded by an eight foot security fence. In addition, Metro Mobile would remove an existing one story wood building from the site. In accordance with Regulations of State Agencies Section 16-50j-77, Metro Mobile has notified the Council of its intention to begin access work and clearing, to be followed immediately by the construction of the tower and associated equipment upon approval of the D&M Plan by the Council.

The existing site is flat, paved, and surrounded by buildings and railroad tracks. All areas disturbed by construction will be repaved. The right-of-way from Pine Street over the existing parking lot will be maintained, and all new pavement will meet the minimum specifications required by the Town.

Metro Mobile proposes to construct the tower foundation and the building foundation as per manufacturer specifications, soil test boring logs, and detailed engineering. Underground grounding will be installed as per Metro Mobile's specifications. The tower has been moved within the site as far east as possible to separate the fall zone of the tower from a residence located southwest of the tower site.

In preparation of the D&M Plan, Metro Mobile consulted with the Town of Manchester pursuant to the Council's Decision and Order. The Manchester Zoning Enforcement Officer recommended installation of erosion controls prior to the disturbance of the site. Metro Mobile will abide by this recommendation through the installation and maintenance of approximately 85 linear feet of hay bales located along the west perimeter of the site. The Town of Manchester has also provided comments requesting provisions for landscaping, delineation of areas to be paved, details regarding modifications to the drainage

pattern, removal of barbed wire from the security fence, maintenance of the right-of-way, and installation of a driveway apron on Pine Street. Metro Mobile has responded indicating that it does not believe landscaping is appropriate or necessary, that all disturbed areas will be repaved, that drainage patterns will not be affected, that barbed wire on the security fence is necessary to provide security for its equipment, that the right-of-way will be maintained, and that the apron onto Pine Street will not be modified, but if it is, it will be restored as per Town requirements.

Staff recommends the approval of Town recommendations regarding erosion control, paving, and right-of-way maintenance. In addition, if dewatering is to be performed during site construction, the certificate holder must be prepared for proper disposal of water from dewatering operations.

No staff recommendations regarding site landscaping and the use of barbed wire in the security fence are made.

All other orders and provisions regarding the D&M Plan have been complied with.

JMR:bw

4442E

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

136 Main Street, Suite 401
New Britain, Connecticut 06051
Phone : 827-7682

DOCKET NO. 129
METRO MOBILE CTS OF HARTFORD, INC.
D&M PLAN MANCHESTER CELL SITE
June 18, 1990
Addendum

On Thursday, June 14, 1990, Brian Emerick of the Connecticut Siting Council (Council) and Fred Cunliffe of the Council staff met with David Malko of Metro Mobile and Stuart Popper of the Town of Manchester at the site of a telecommunications tower and building on Pine Street in Manchester, Connecticut.

The Town of Manchester recommends landscaping along the north and east sides of the leased parcel. White Pine or hemlock were perferred by the town. The town requests that the plantings be a minimum of four feet in height and four feet on center as required by town regulations. Metro Mobile would be willing to move the building and north-side of the fence several feet to the south and move the gate closer to the building to accommodate these plantings.

The town has requested that barbed wire not be used on the fence and have stated that the use of barbed wire on the fence is potentially inconsistent with Connecticut General Statutes section 47-47. No recommendations were made by the town or applicant for alternate fencing but Metro Mobile contends that security must be maintained.

Fred Cunliffe
Siting Analyst
4442E-4

Sec. 47-46a. Payment for fence between agricultural property and property in control of environmental protection department. Where there is no fence between property used for agricultural purposes and adjoining property of the state under control of the department of environmental protection sufficient for the purposes of section 47-43, or when any fence so located is in need of replacement, and the boundary has been mutually agreed upon, the adjoining proprietor may, with the written agreement of the commissioner of environmental protection, executed within sixty days of a written request by such proprietor, cause such a fence to be constructed or replaced within six months of the date of the agreement; and the commissioner shall, within sixty days after the construction or replacement is completed, reimburse the proprietor for one-half the cost thereof, the state's share not to exceed four dollars a rod, payments to be made in the order of receipt of applications and completion of projects. Total payments under this section shall not exceed five thousand dollars in any fiscal year.

(1961, P.A. 558; 1967, P.A. 72; 1971, P.A. 872, S. 205, P.A. 79-530, S. 1, 3.)

History: 1967 act increased state's maximum share in reimbursement from one to two dollars per rod; 1971 act replaced state park and forest commission and its director with department and commissioner of environmental protection and revised reference to maximum for total payments to reflect change from biennial to annual budget; P.A. 79-530 raised state's maximum share for reimbursement to four dollars per rod and raised maximum amount for total payments from twenty-five hundred to five thousand dollars per fiscal year.

Sec. 47-47. Barbed wire between adjoining premises or enclosing grounds of public buildings. No person shall use barbed wire in the construction of fences, or have barbed wire upon existing fences, between his own premises and those of an adjoining proprietor, within twenty-five rods of any house or barn belonging to such proprietor, unless either premises are used in connection with raising livestock, without first obtaining his written consent. No barbed wire shall be used in the construction of fences, or retained upon existing fences, connected with or enclosing the grounds of any public school or public building, except a department of transportation storage facility or a vessel operations area of a state-owned waterfront facility or aircraft operations area of a state-owned airport. Any person who violates any provision of this section shall be fined not more than one hundred dollars.

(1949 Rev., S. 7157; P.A. 80-105; P.A. 84-322.)

History: P.A. 80-105 added exception re premises used in raising livestock to provision requiring written consent for barbed wire fence within twenty-five rods of house or barn; P.A. 84-322 allowed use of barbed wire at department of transportation storage facilities, vessel operations areas of state-owned waterfront facilities and aircraft operations areas of state-owned airports.

See note to Sec. 47-48.

Sec. 47-48. Barbed wire along sidewalks. No barbed wire shall be installed along any sidewalk unless it is at least six and one-half feet above the ground. Any barbed wire in use in conformity with section 7156 of the general statutes, revision of 1949, on October 1, 1957, may be continued in use.

(1949 Rev., S. 7156; 1957, P.A. 157, S. 1.)

When violation of a statute concerning barbed wire is not set up in complaint in action for damages for personal injuries, it is error to read statute to the jury to show that legislature thought barbed wire a dangerous thing. 101 C. 549.

Sec. 47-49. Purchase of division fence. If one proprietor or his predecessor in title makes the whole fence and the adjoining proprietor afterwards encloses his land, such adjoining proprietor shall purchase and maintain half of the divisional fence. If the parties do not agree in dividing and appraising it, either may call on the selectmen of the town in which such fence is situated, who may set out, to each, his proportion of such fence and determine how much shall be paid to the party erecting or owning the same by the other; a certificate of which determination, under the hands of the selectmen, shall be sufficient evidence for the recovery of the amount so determined. No action therefor shall be maintained unless the proprietor, who, or whose predecessor in title, first occupied his land and made the whole of

Date: December 13, 1989

Docket No. 129

LIST OF PARTIES AND INTERVENORS - SERVICE LIST

Status Granted	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Party [X] Intervenor [ ]	Metro Mobile CTS of Hartford, Inc. 100 Corporate Drive Windsor, CT 06095 Attn: Gary N. Schulman Vice President and Gen. Mgr.	Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Earl W. Phillips, Jr. (203) 275-8200
Party [ ] Intervenor [X]	SNET Cellular, Inc. 227 Church Street New Haven, CT 06506	Peter J. Tyrrell Senior Attorney SNET Cellular, Inc. 227 Church Street Room 1021 New Haven, CT 06506
Party [X] Intervenor [ ]	Town of Manchester Planning & Zoning Comm. Town Hall 41 Center Street Manchester, CT 06040	Mark Pellegrini Director of Planning and Economic Development Town Hall 41 Center Street Manchester, CT 06040

Date: December 13, 1989

Docket No. 129

LIST OF PARTIES AND INTERVENORS - SERVICE LIST

Status Granted	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Party [X] Intervenor [ ]	Cheney Brothers National Historic Landmark District and Cheney National Historic Commission	Bruce J. Comollo Garrity, Diana, Conti & Houck 1091 Main Street Manchester, CT 06040 (203) 643-2181
Party [ ] Intervenor [ ]		
Party [ ] Intervenor [ ]		

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DOCKET NO. 129 - AN APPLICATION OF METRO MOBILE CTS OF HARTFORD, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF A CELLULAR TELEPHONE TOWER AND ASSOCIATED EQUIPMENT IN THE TOWN OF MANCHESTER, CONNECTICUT.

: Connecticut Siting
: Council
: March 12, 1990

FINDINGS OF FACT

1. Metro Mobile CTS of Hartford, Inc., in accordance with provisions of sections 16-50g to 16-50z of the Connecticut General Statutes (CGS), applied to the Connecticut Siting Council (Council) on September 29, 1989, for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a telecommunications tower, associated equipment, and building to provide Domestic Public Cellular Radio Telecommunications Service (cellular service) in the Town of Manchester, part of the Hartford, Connecticut, New England County Metropolitan Area ("Hartford NECMA"). (Record)

2. The application was accompanied by proof of service as required by section 16-50l of the CGS. (Record)

3. Affidavit of newspaper notice as required by section 16-50l of the CGS was supplied by the applicant. Newspaper notice of this application was published twice by the applicant in The Hartford Courant. (Metro Mobile 1, pp.4-5, Exhibit 5)

4. The Council and its staff inspected the proposed and alternate sites in the Town of Manchester, Connecticut, on December 28, 1989. (Record)

5. Pursuant to section 16-50m of the CGS, the Council, after giving due notice thereof, held a public hearing on this application on December 28, 1989, at 3:30 P.M., and 7:00 P.M., at the Lincoln Center Hearing Room, 494 Main Street, Manchester, Connecticut. (Record)

6. The parties to the proceeding are the applicant and those persons and organizations whose names are listed in the Decision and Order which accompanies these Findings. (Record)

7. The Department of Environmental Protection (DEP) filed written comments with the Council pursuant to section 16-50j of the CGS. (Record)

8. In 1981, the Federal Communications Commission (FCC) recognized a national need for technical improvement, wide-area coverage, high quality service, and competitive pricing in mobile telephone service. (Metro Mobile 1, p.5; Docket 107, Finding of Fact 10)

9. The FCC has pre-empted State regulation in determining that a public need currently exists for cellular service, setting technical standards for that service, and establishing a competitive market. (Metro Mobile 1, p.6; Docket 107, Finding of Fact 12)

10. The FCC has determined that the public interest requires two licenses for cellular service be made available in each market area or NECMA to provide competition. One license is awarded to a wireline company, the other to a non-wireline company. (Metro Mobile 1, pp.6, 10; Docket 107, Finding of Fact 11)

11. Conventional mobile telephone service has been limited by insufficient frequency availability, inefficient frequency use, and poor quality of service. These limitations have resulted in congestion, blocking of transmission, interference, lack of coverage, and high costs. (Metro Mobile 1, p.5; Docket 107 Finding of Fact 9)

12. Cellular service consists of small, overlapping broadcast regions. These regions or cells are limited in coverage by the FCC's technical standards governing transmitting power. The system design provides frequency reuse and hand-off and would be capable of an orderly and compatible expansion. (Metro Mobile 1, pp.13-14, Exhibit 11, p.6)

13. Cell site locations are limited by a basic need for a 10 percent to 20 percent overlap of coverage between cell sites. Location of cell sites is essential to provide for uninterrupted hand-off of calls in progress. (Metro Mobile 1, Exhibit 11, pp.6-7)

14. Presently, the proposed cellular system represents state-of-the-art technology and Metro Mobile is aware of no viable alternatives. A mobile satellite service has been under consideration by the FCC and may become available in the distant future. (Metro Mobile 1, p.18)

15. Metro Mobile expects digital cellular technology to be commercially available in the late 1990's. The technology would increase the capability of handling calls over present cellular technology without having to add additional sites. (Tr. 12/28/89, pp.33-34)

16. In selecting a site for the cell, Metro Mobile found no available structures of adequate height or structural strength in or near a 0.6 mile theoretical search area within Manchester. (Metro Mobile 1, Exhibit 11, pp.8-9 and Attachment "A"; Metro Mobile 7)

17. Before selecting the proposed and alternate sites Metro Mobile considered and rejected four sites within the search area. One site in an industrial zone to the west of the alternate cell site location was rejected because of inadequate space for a cell site. A second area in a B1 and B2 business zone located along Hartford Road to the west of Prospect Street was rejected by Metro Mobile because land uses were mostly small businesses on shallow lots adjacent to high density residential development. A third area in a B2 business zone located along Center Street east and west of Pine Street was rejected because of adjacent high-density residential development. A fourth site in a B3 business zone located near the intersection of High Street and Pine Street was rejected because it was a small site surrounded by high-density multi-family dwellings. (Metro Mobile 1, Exhibit 11, pp.8-9 and Attachment "A"; Metro Mobile 3, Q.5, Attachment 2)

18. At the hearing, attention was brought to a site at the Town-owned Lincoln Center as a possible location for Metro Mobile's tower and equipment building. The site is one-tenth of a mile outside the search area at a ground elevation of 260 feet AMSL, and is in a residential zone. The site had no acceptable space to construct a tower or building. (Metro Mobile 7; Tr. 12/28/89)

19. The applicant had no communication with the Town of Manchester to share antennas or tower space on Metro Mobile's proposed tower at the time of the hearing. The Town had not shown interest in sharing tower space from the time of the hearing to the close of the record on February 15, 1990. (Tr. 12/28/89, pp.40, 111, 112; Record)

20. The proposed monopole could be designed to handle the Town of Manchester's police and fire antennas if the Town were interested. (Tr. 12/28/89, pp.105, 109)

21. The Town of Manchester's Planning and Zoning Commission, a party to the proceeding, stated that Metro Mobile's tower at the proposed site would be very obtrusive and potentially incompatible with surrounding zoning districts and land uses, while the tower at the alternate site would be very obtrusive and totally incompatible with the surrounding Historic and residential neighborhood. The Town was also disappointed that Metro Mobile focused on two locations in the center of the urbanized portion of Manchester. (Town of Manchester 1; Tr. 12/28/89, p.91)

22. Both the proposed and alternate sites would primarily provide additional cellular traffic handling capacity, as opposed to providing coverage to an area otherwise unserved. (Metro Mobile 1, p.10)

23. The proposed tower would primarily provide "off-loading" of calls from existing sites in Hartford, Vernon, and Glastonbury. (Metro Mobile 1, pp.10, 15-16, Exhibit 8, Exhibit 11, p.10; Metro Mobile 3, Q.12; Tr. 12/28/89, p.31)

24. The existing Hartford, Glastonbury, and Vernon sites have been in service for a little over two years. (Tr. 12/28/89, p.25)

25. The interrelationship of the traffic load between all of the sites in the area, not just one site, is causing the need for the proposed Manchester site. (Tr. 12/28/89, p.28)

26. The proposed site would also increase the quality of coverage in the Manchester area. (Tr. 12/28/89, pp.22, 23)

27. At the time of installation of the proposed Manchester facility, all existing sites in the area, including the Manchester site, would be fully sectorized. Such sectorization provides for increased call handling capacity within a cell by dividing the geographic service area into six directional sectors which allows for additional frequency reuse. Even with sectorization, the projected cellular traffic demands and frequency reuse requirements necessitate location of a site within the Manchester area. Operation of the proposed facility would off load the existing sites and improve coverage to the Manchester area. (Metro Mobile 3, Q.7, Q.11, Q.12, Q.13; Tr. 12/28/89, p.26)

28. The proposed site would increase the total cellular capacity in the Manchester area by up to 3,600 calls per hour. (Metro Mobile 4, Q.26)

29. With the addition of the proposed Manchester site, potential frequency interference problems from the Vernon, Glastonbury, and Hartford sites would be limited by a reassignment of frequencies recognizing their coverage areas and overlap. (Metro Mobile 3, Q.8)

30. The Vernon and Glastonbury sites are currently omnidirectional sites which normally could accommodate approximately 45 channels and handle approximately 1,200 calls during the peak hour, however, because of a potential frequency separation problem due to the addition of new sites and the sectorization of surrounding sites, the Vernon and Glastonbury sites could only accommodate approximately 30 channels or 800 calls during the peak hour. Hartford is a sectorized site that can accommodate 12 to 15 channels in each of its six sectors which can handle approximately 3,600 calls or 600 calls per sector during the peak hour. (Metro Mobile 3, Q.10; Tr. 12/28/89, pp.20, 27-29)

31. The Vernon site currently handles approximately 250 calls during the peak hours and approximately 175 calls per hour averaged over a 12-hour business day from 7:00 a.m. to 7:00 p.m. The peak hour occurs during the afternoon on weekdays. (Metro Mobile 3, Q.14; Tr. 12/28/89, pp.26-27)

32. The Glastonbury site currently handles approximately 300 calls during the peak hours and approximately 250 calls per hour averaged over a 12-hour business day from 7:00 a.m. to 7:00 p.m. The peak hour occurs during the afternoon on weekdays. (Metro Mobile 3, Q.14; Tr. 12/28/89, pp.26-27)

33. The Hartford site currently handles approximately 2,225 calls from all six sectors during the peak hours and approximately 1,610 calls per hour averaged over a 12-hour business day from 7:00 a.m. to 7:00 p.m. The peak hour occurs during the afternoon on weekdays. (Metro Mobile 3, Q.14)

34. Sector three of the existing Hartford cell site is currently exceeding its 600 call per hour maximum call handling capacity during its peak hour. This sector covers parts of Hartford, East Hartford, and Glastonbury. The proposed Manchester site would provide relief to this sector. Sector five, the next busiest sector of the Hartford cell site, covers West Hartford and is also approaching its 600 call per hour capacity. A sector is the area within a 60 degree arc with sector one being between a vector starting at zero degrees and ending at 60 degrees, sector two between 60 degrees and 120 degrees, sector three between 120 degrees and 180 degrees, sector four between 180 degrees and 240 degrees, sector five between 240 degrees and 300 degrees, and sector six between 300 degrees and 360 degrees. (Metro Mobile 3, Q.15; Metro Mobile 4, Q.24; Tr. 12/28/89, p.21)

35. Without the proposed Manchester site, additional Hartford site sectors and the existing Vernon and Glastonbury cell sites would begin to exceed their maximum call handling capacity during 1990. No call projection data was provided, but Metro Mobile contends that the Vernon and Glastonbury sites could handle approximately twice the current demand. (Metro Mobile 3, Q.15; Metro Mobile 4, Q.24, Q.25, Q.27; Tr. 12/28/89, pp.30-31, 32; Record)

36. The proposed cellular site would be a triangular 7,600 square foot parcel of land located in the rear of a larger, 1.35 acre lot at 266 Center Street, Manchester, Connecticut. The remainder of the lot is used for storage and manufacturing. The proposed tower would be located approximately 12 feet west of an abutting property owned by Kenneth C. Burkamp, which has a metal storage shed on-site, and approximately 25 feet south of a manufacturing building owned by S. Mark Stephens, lessor of the site. The proposed tower would be located approximately 260 feet south of Center Street and approximately 140 feet east of the nearest residential building. (Metro Mobile 1, Exhibit 1, p.1; Metro Mobile 3, Q.6, Attachment 3; Tr. 12/28/89, pp.15-16, 17, 18)

37. Access to the proposed site would be over an existing driveway on land of an adjacent property owner (Kenneth C. Burkamp) and land of the lessor (S. Mark Stephens). Vehicular access over the adjacent property is permitted by a non-exclusive right of passage granted to the lessor. (Metro Mobile 1, p.9, Exhibit 1, p.1; Metro Mobile 3, Q.3)

38. Metro Mobile proposes to construct a 115-foot self-supporting monopole tower to which two platforms would be attached. Two 15-foot omnidirectional call-processing, whip transmit antennas would be mounted at 113 feet on the corners of the platform with six 11 1/2-foot transmit/receive antennas side mounted with center of radiation at 106 feet. The total height of the tower with antennas would be 128 feet above ground level. (Metro Mobile 1, Exhibit 1, p.8; Tr. 12/28/89, pp.18, 19, 77, 78)

39. The horizontal off-set of the antennas placed on the corners of the platform would be a maximum of 6 1/2 feet from the tower structure. (Tr. 12/28/89, p.78)

40. Ground elevation at the proposed site is 196 feet AMSL. Residential properties in the immediate area on Pine Street, Park Street, and New Street from where the tower would be visible are at an elevation ranging from 198 feet to 220 feet. (Tr. 12/28/89, pp.15-16, 17; Town of Manchester 1, pp.2-3)

41. Metro Mobile would raze an abandoned wood-frame building and construct a 20-foot by 40-foot single-story, prefabricated concrete building on the proposed site. The building would house receiving, transmitting, switching, processing, performance monitoring, and climate control equipment. The abandoned building could not be utilized for equipment because it is in poor condition, and the owner wanted it razed as part of the lease arrangement. (Metro Mobile 1, p.9; Metro Mobile 3, Q.2)

42. The alternate site would be on a 50-foot by 85-foot parcel of land located in the northern portion of a larger 1.1 acre lot at 218 Hartford Road, Manchester, Connecticut. The remainder of the lot is used for manufacturing. The proposed tower would be approximately 141 feet west of Prospect Street, approximately 44 feet west of an on-site two story brick manufacturing building, 46 feet south of Hartford Road, 120 feet east of abutting property also owned by S. Mark Stephens, and 120 feet north of land owned by Millbridge Hollow Condominiums. (Metro Mobile 1, Exhibit 2, p.1; Metro Mobile 3, Q.6, Attachment 3; Tr. 12/28/89, p.18; Town of Manchester 1, pp.3-4)

43. The southern boundary of the alternate site lot is 60 feet from the northern edge of Hop Brook. (Town of Manchester 1, p.4)

44. Access to the alternate site would be over an existing driveway and parking lot on land of the lessor (S. Mark Stephens). (Metro Mobile 1, Exhibit 1, p.9, Exhibit 2, pp.1, 7; Metro Mobile 3, Q.6, Attachment 3)

45. The alternate site tower would consist of a 140-foot self-supporting tower to which two platforms would be attached. Two 15-foot omnidirectional call-processing, whip transmit antennas would be mounted at 138-feet on the corners of the platform with six 11 1/2-foot transmit/receive antennas side mounted with center of radiation at 131 feet. The total height of the alternate site tower with antennas would be 153 feet above ground level. (Metro Mobile 1, p.8; Exhibit 2, p.8; Tr. 12/28/89, p. 78)

46. Ground elevation at the alternate site would be at 170 feet AMSL. (Tr. 12/28/89, p.18)

47. A 20-foot by 40-foot single story building would be constructed on the alternate site. The building would house the same equipment as the proposed site. (Metro Mobile 1, p.9)

48. Minimal site leveling or backfilling would be required at the proposed site. Removal of an on-site dirt pile would be required at the alternate site. (Metro Mobile 1, Exhibit 1, p.7, Exhibit 2, p.7; Tr. 12/28/89, p.18)

49. Utility lines for the proposed site would be routed from Center Street to the proposed cell site over land of the lessor. Utility lines for the alternate site would be routed from existing utility poles along Hartford Road to the alternate site. (Metro Mobile 1, p.9, Exhibit 1, p.1, Exhibit 2, p.1, Exhibit 9, pp. 1, 11; Tr. 12/28/89, p.88)

50. The metal storage shed east of the site on adjacent property owned by Kenneth C. Burkamp, a one-story brick manufacturing building on the lessor's property, and property west of the site owned by Kenneth C. Burkamp would be within the fall zone of the proposed site tower. Hartford Road, land owned by the Millbridge Hollow Condominiums, and a two-story brick manufacturing building on property of the lessor would be within the fall zone of the alternate site tower. The fall zones would not be totally within the lessor's properties. (Town of Manchester 1, p.2; Metro Mobile 3, Q.6, Attachment 3)

51. The zoning of the proposed cellular site is I, Industrial. This zone is approximately three acres in size and is surrounded to the north by a Business zone, to the east and west by Residential zones, and to the south by the Cheney Brothers National Historic Landmark District. The proposed tower would be a use requiring a special exception under Manchester zoning regulations. The zoning of the alternate cellular site is H, Historical, and is within the Cheney Brothers National Historic Landmark District. The alternate tower would be a use requiring a special exception under Manchester zoning regulations. (Town of Manchester 1, p.2; Metro Mobile 1, Exhibit 11, Attachment "A"; Metro Mobile 3, Q.5, Attachment 2)

52. The Cheney Brothers National Historic Landmark District was established in 1978 through a designation by the United States Department of the Interior, and is listed in the National Register of Historic Places. (Town of Manchester 1, pp.3-4; Tr. 12/28/89, p.59)

53. Metro Mobile does not have any existing towers within a national landmark district. (Tr. 12/28/89, p.59)

54. Within the Cheney Brothers District north of the alternate site are rehabilitated mill buildings used for multi-family dwellings and some neighborhood commercial purposes. Within the Cheney Brothers District east of the alternate site are buildings used for commercial purposes. To the west of the alternate site lot is property in an industrial zone used for commercial purposes. (Town of Manchester 1, pp.3-4)

55. The proposed site would be less than 200 feet north of the Cheney Brothers Historic District. (Town of Manchester 1, p.5; Metro Mobile 3, Q.5, Attachment 2)

56. There are approximately 159 residences within a 1,000-foot radius of the proposed tower. The nearest residence is 140 feet southwest of the proposed property. There are approximately 24 residences, six condominium buildings, and two apartment buildings within a 1,000-foot radius of the alternate cell site. The nearest residence is 180 feet from the alternate tower. (Metro Mobile 1, Exhibit 1, p.7, Exhibit 2, p.7, Exhibit 9, p.12; Tr. 12/28/89, pp.17-18, 103)

57. The electromagnetic radio frequency power density at the proposed and alternate sites, assuming all channels operating simultaneously at maximum allowable power and broadcasting from the lowest set of antennas would be 0.1124 milliwatts per square centimeter (mW/cm^2) at the proposed site and 0.0737 mW/cm^2 at the alternate site, and would be well below the American National Standards Institute standard of 2.92mW/cm^2, as adopted by the State in CGS 22a-162. (Metro Mobile 1, p.12, Exhibit 9, pp.2, 12; DEP comments of 12/14/89; Tr. 12/28/89, p.19)

58. Both the proposed and alternate towers would be designed to withstand pressure equivalent to a 90 mph wind with a 1/2-inch solid ice accumulation in accordance with Electronic Industries Association standard RS-222-D. The overturn moment for the foundation would be 1.5. The antenna mounting arrangement, the support brackets, and the antenna structure would be designed to withstand 125 mph winds. (Metro Mobile 1, Exhibit 1, p.9, Exhibit 2, p.9; Tr. 12/28/89, pp.82-83, 87)

59. According to the Connecticut Historical Commission, "the prime site,..., does not appear to meet the eligibility criteria for the National Register of Historic Places, while the alternate site,...does appear to be of local historic and architectural significance. Therefore, we recommend that the proposed telecommunications tower and associated equipment shelter be constructed at the 266 Center Street [prime] site." (Metro Mobile 3, Q.1, Attachment 1)

60. There are no known extant populations of Connecticut "Species of Special Concern" or Federal Endangered and Threatened Species that occur at the site in question. (Metro Mobile 3, Q.1, Attachment 1; DEP Comments of 12/14/89)

61. The total estimated cost of construction for the proposed site is as follows:

Radio equipment	$676,500
Tower and antennas	38,800
Power system	18,000
Building	76,600
Miscellaneous (Site preparation and installation	140,200
TOTAL	$950,100.

(Metro Mobile 1, pp.16-17, Exhibit 1, p.9)

62. The total estimated cost of construction for the alternate site is as follows:

Radio equipment	$676,500
Tower and antennas	41,760
Power system	18,000
Building	76,600
Miscellaneous	135,200
(Site preparation and installation	
TOTAL	$948,060.

(Metro Mobile 1, p.17, Exhibit 2, p.9)

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DOCKET NO. 129 - AN APPLICATION OF METRO MOBILE CTS OF HARTFORD, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF A CELLULAR TELEPHONE TOWER AND ASSOCIATED EQUIPMENT IN THE TOWN OF MANCHESTER, CONNECTICUT.	:	Connecticut Siting Council
	:	March 12, 1990

O P I N I O N

On September 29, 1989, Metro Mobile CTS of Hartford, Inc., (Metro Mobile) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) to construct, maintain, and operate a cellular telecommunications tower, associated equipment, and building in the Town of Manchester, Connecticut.

A determination of public need for cellular telephone service has been pre-empted by the Federal Communications Commission (FCC). Under Connecticut State law, the Council must balance the need to develop the proposed site as a cellular telephone facility with the need to protect the environment, including public health and safety.

In finding a proposed tower site, an applicant must locate a site or existing tower to share, offering the necessary coverage that would not have a substantial effect on the environment and be adequately distant from wetlands, public recreation areas, and adjacent homes. Because Metro Mobile does not have the authority to take land through eminent domain, acquisition of a site requires consent of the property owners to lease or sell the property. These requirements restrict the number of potential tower sites within defined search areas.

The proposed or alternate site would function as a secondary cellular facility, located near the intersection of three existing, primary cellular facilities in Hartford, Glastonbury, and Vernon, Connecticut. Cellular service demand is exceeding the call-handling capacity of Sector three in Hartford and is soon expected to exceed the call-handling capacity of the facilities in Glastonbury and Vernon. The proposed Manchester site would provide additional overlapping coverage between these three cells for the continuous transfer of calls in the Hartford-Glastonbury-Vernon region, in which there are presently weak signals and interference. The proposed and alternate sites would provide similar coverage and call-handling capability throughout the area.

The proposed site would be leased and developed in the rear of a privately owned 1.35 acre lot located at 266 Center Street. The proposed 128-foot, self-supporting monopole tower and antenna structure would be located approximately 12 feet west of Kenneth C. Burkamp's property and 140 feet east of the nearest residential building. The fall zone of the tower could encompass a metal storage shed on Kenneth C. Burkamp's property east of the site; a one-story brick manufacturing building on the lessor's property; and a portion of the adjacent property that the nearest residential building is located on, west of the site. Metro Mobile would raze an abandoned wood-frame building and construct a single story equipment building, measuring 20 feet by 40 feet, on the site. Vehicle access to the proposed site would be over an existing driveway on land of Kenneth C. Burkamp and land of the lessor permitted by a non-exclusive right of passage granted by Kenneth C. Burkamp to the lessor. Utilities from Center Street would be available to the facility. Minimal site leveling or backfilling would be required at the site.

The alternate site would be leased and located on the northern boundary of a 1.1 acre lot at 218 Hartford Road. The 153-foot, self-supporting monopole tower and antenna structure would be located 46 feet south of Hartford Road and 120 feet north of land owned by Millbridge Hollow Condominiums. The fall zone of the alternate tower could encompass Hartford Road, land owned by the Millbridge Hollow Condominiums, and a two-story brick manufacturing building on the lessor's lot. A single story equipment building, measuring 20 feet by 40 feet, would be constructed on the site. Vehicle access to the cell site would be over an existing driveway and parking lot on land of the lessor. Utilities from existing utility poles along Hartford Road would be routed to the facility. Removal of an on-site dirt pile would be required.

Electromagnetic radio frequency power density is a health and safety concern of the Council. However, the power density level measured at the base of the proposed tower would be 0.1124 milliwatts per square centimeter (mW/cm^2), and at the base of the alternate tower it would be 0.0737 mW/cm^2. These power densities are well below the American National Standards Institute (ANSI) safety standard of 2.92 mW/cm^2, as adopted by the State in Connecticut General Statutes Section 22a-162. The power density would rapidly decrease as distance from the tower increases.

No wetlands or watercourses exist at either site. No water flow and/or quality changes would be expected to result from the construction and operation of either the proposed or the alternate facilities.

There are no existing records of federally endangered or threatened species or Connecticut species of special concern occurring in the area of the proposed or alternate sites, according to the latest available information from the Connecticut Department of Environmental Protection Natural Resources Center.

The proposed facility is located near a historical zone. However, this historical zone is also a highly urbanized area that consists of industrial and commercial uses. There is no reason to believe that the proposed tower would have any significant effect on the zone. Furthermore, the State Historical Commission has stated that there would be no significant effect on the State's historic and architectural resources at the proposed site.

Moreover the Council believes that the industrial and urban nature of the proposed site lends itself to a commercial use such as the proposed cellular telecommunications tower. Visually, the tower will be acceptable with the site and surrounding land uses. Furthermore, the height of the tower is not so great that it will be visually obtrusive in the immediate area to adjacent residential units, or for any significant distance to the community in general.

The intrusion of the fall zone on adjacent structures and property should be avoided whenever possible to maintain a reasonable setback from other land uses. Nonetheless, the close proximity of tall urban structures on small urban sites make this goal impractical if not impossible. Although the Council will require the tower to be shifted the greatest distance possible from adjacent properties and structures to enhance the site, there is insufficient reason to deny the proposed site due to the location of the tower in relation to the adjacent land uses, properties, and structures.

In comparison, the alternate site tower would be 25 feet taller and located within the historic zone. Consequently it is the opinion of the Council that the proposed site is superior, and the alternate site should be denied.

Based on its record in this proceeding, the Council is of the opinion that the effects associated with the construction, operation, and maintenance of a cellular tower and associated equipment building at the proposed site, including the effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application for the proposed site.

The Council will require Metro Mobile to submit a Development and Management (D&M) plan for approval prior to the commencement of any construction at the proposed site. This D&M plan shall include detailed plans of the site preparation with the final tower height in relation to the site elevation, and placement of the tower as great a distance as possible from abutting properties.

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DOCKET NO. 129 - AN APPLICATION OF METRO MOBILE CTS OF HARTFORD, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF A CELLULAR TELEPHONE TOWER AND ASSOCIATED EQUIPMENT IN THE TOWN OF MANCHESTER, CONNECTICUT.	:	Connecticut Siting Council
	:	March 12, 1990

D E C I S I O N A N D O R D E R

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of a cellular telephone facility at the proposed Manchester site, including effects on the natural environment; ecological integrity and balance; forests and parks; air and water purity; and fish and wildlife are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS), be issued to Metro Mobile CTS of Hartford, Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed site in Manchester, Connecticut.

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

1. The monopole tower including antennas and associated equipment shall not exceed a height of 128 feet above ground level, 324 feet AMSL.

2. The facility shall be constructed in accordance with the State of Connecticut Basic Building Code.

3. The Certificate Holder shall prepare a Development and Management (D&M) plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plan shall include detailed plans of the site preparation with a soil boring report; plans, design details, and specifications for the tower foundation; and a site plan with placement of the tower as far removed from abutting properties and structures as possible.

4. The Certificate Holder shall prepare the D&M plan in consultation with the Town of Manchester which may provide its comments to the Council within 20 days of submission to the Town.

5. The Certificate Holder shall comply with any future radio frequency (RF) standard promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

6. The Certificate Holder shall provide the Council a recalculated report of power density if and when additional channels over the proposed 90 channels, higher wattage over the proposed 100 watts per channel, or if other circumstances in operation cause a change in power density above the levels originally calculated in the application.

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

8. If this facility does not initially provide, or permanently ceases to provide cellular service following the completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication of any new use shall be made to the Council before any such new use is made.

9. Unless otherwise approved by the Council, this Decision and Order shall be void if construction authorized herein is not completed within three years of the effective date of this Decision and Order.

Pursuant to Section 16-50p of the CGS, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below. A notice of issuance shall be published in the Hartford Courant and Journal Inquirer.

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

CERTIFICATE

OF

ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED
DOCKET NO. 129

Pursuant to section 16-50k of the General Statutes of Connecticut, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telephone tower and associated equipment at the proposed primary site in the Town of Manchester, Connecticut. This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on March 12, 1990.

By order of the Council,

Gloria Dibble Pond

Gloria Dibble Pond, Chairperson

March 12, 1990

4203E-5

Site Name: Manchester, CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	1	4284	4284	115	0.1165	1.0	11.65%
VZW Cellular LTE	869	1	1936	1936	115	0.0526	0.579333333	9.09%
VZW Cellular	869	3	406	1218	115	0.0331	0.579333333	5.72%
VZW AWS	2145	1	4476	4476	115	0.1217	1.0	12.17%
VZW 700	746	1	2465	2465	115	0.0670	0.497333333	13.48%

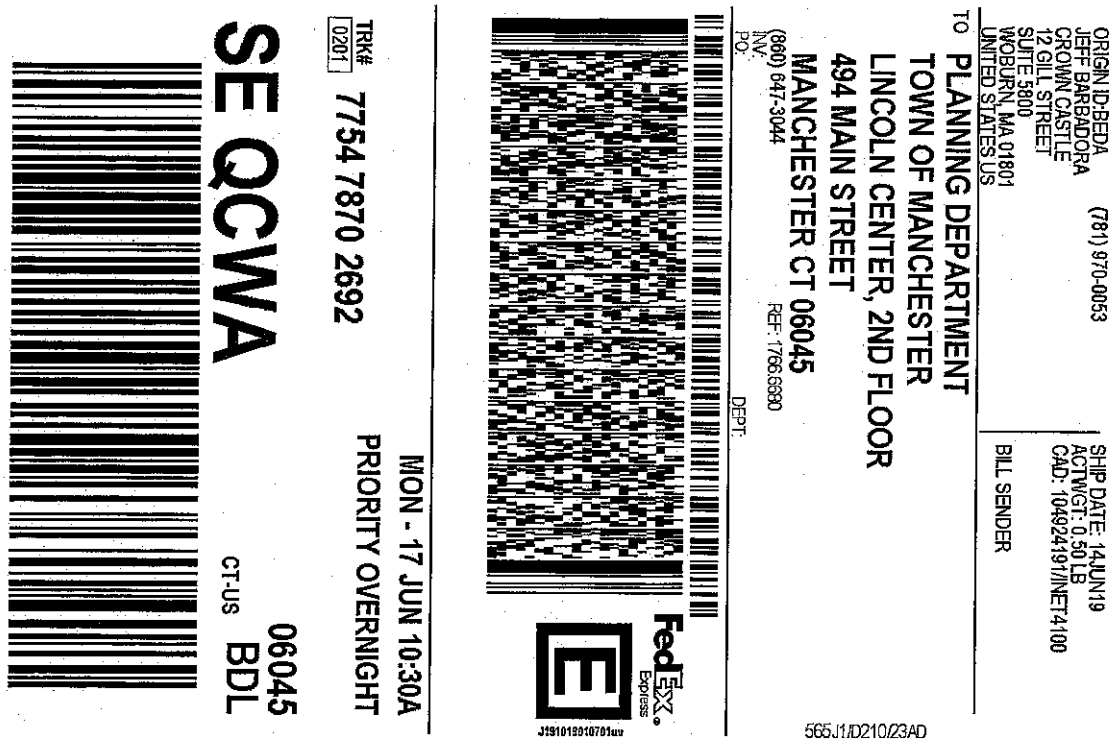
Total Percentage of Maximum Permissible Exposure 52.10%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

-1992



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PAUL J. FORD & COMPANY

Date: **May 29, 2019**

Denice Nicholson
Crown Castle
3 Corporate Dr
Clifton Park, NY 12065

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	NG1904
	Carrier Site Name:	MANCHESTER CT
Crown Castle Designation:	**Crown Castle BU Number:**	806372
	Crown Castle Site Name:	HRT 093 943228
	Crown Castle JDE Job Number:	566028
	Crown Castle Work Order Number:	1741558
	Crown Castle Order Number:	486564 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37519-1302.002.7805
Site Data:	**266R Center Street, MANCHESTER, Hartford County, CT** **Latitude *41° 46' 19"*, Longitude *-72° 31' 48.8"*** **115 Foot - Monopole Tower**	

Dear Denice Nicholson,

Paul J. Ford and Company 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 **58.8%** **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 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.

Respectfully submitted by:

Robert C. Kozak Jr., P.E.
Project Engineer
rkozak@pauljford.com

RMF

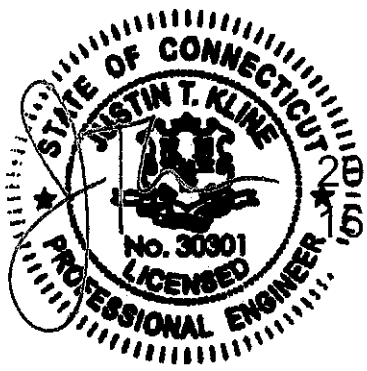

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TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 115 ft Monopole tower designed by VALMONT in May of 1990.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	2 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)
115.0	115.0	1	SitePro1	#HRK-12	8	1-5/8
		1	SitePro1	#PRK-1245L		
		6	commscope	NNHH-65B-R4 w/ Mount Pipe		
		6	decibel	DB844G65ZAXY w/ Mount Pipe		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		1	tower mounts	Platform Mount [LP 714-1]		

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)
105.0	107.0	2	andrew	VHLP1-23	5 5 5 2	1/2 5/16 1/4 2-1/2" Conduit
		1	andrew	VHLP2-23		
	105.0	1	tower mounts	Platform Mount [LP 602-1]		
85.0	85.0	2	tower mounts	Side Arm Mount [SO 701-1]	5	13/32
		1	wade antenna	WH14-69/S		
	84.0	3	wade antenna	WL 14-69/S		
	78.0	2	tower mounts	Side Arm Mount [SO 701-1]		
		1	wade antenna	J105-HI		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Testwell Craig Laboratories of CT, Inc, 04/12/1990	262174	CCISites
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH Engineering, 10-06100E N1, 06/21/2010 (Mapping)	2668863	CCISites
4-TOWER MANUFACTURER DRAWINGS	Valmont, DC03902, 05/01/1990	262172	CCISites

3.1) Analysis Method

tnxTower (version 8.0.5.0), 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.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The existing base plate grout was not considered in this analysis.
5) The foundation drawings were not available at the time of this analysis. Therefore, we have assumed the material yield strengths (F'c and Fy) as per the following:
   Concrete: 3000 PSI
   Foundation Reinforcing: ASTM A615 Gr 60
6) At the time of analysis, the referenced geotechnical report did not provide definitive values for the soil properties. The soil properties were estimated off the boring logs.

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

4) ANALYSIS RESULTS

tnxTower Report - version 8.0.5.0

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	115 - 72.3334	Pole	TP30.45x21.91x0.219	1	-9.37	1269.02	44.7	Pass
L2	72.3334 - 29.3334	Pole	TP38.61x29.0779x0.313	2	-16.26	2300.73	48.8	Pass
L3	29.3334 - 0	Pole	TP43.85x36.8508x0.375	3	-24.81	3224.57	48.5	Pass
							Summary	
						Pole (L2)	48.8	Pass
						RATING =	**48.8**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity -- LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	46.2	Pass
1	Base Plate	0	26.5	Pass
1	Base Foundation Soil Interaction	0	58.8	Pass
1	Base Foundation Structural Steel	0	42.5	Pass

Structure Rating (max from all components) =	**58.8%**

Notes:

- All structural ratings are per TIA-222-H Section 15.5

1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

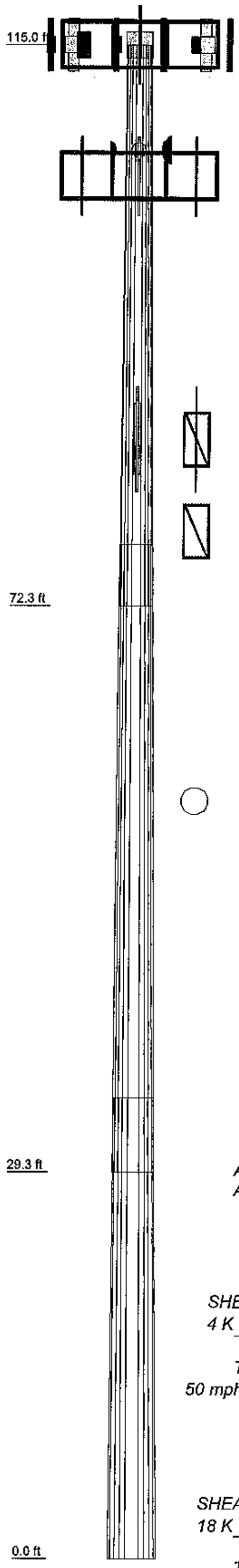
4.1) Recommendations

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	1	2	3
Length (ft)	42.6666	47.6666	35.0000
Number of Sides	12	12	12
Thickness (in)	0.2190	0.3130	0.3750
Socket Length (ft)	4.6666	5.6666	
Top Dia (in)	21.9100	29.0779	36.8508
Bot Dia (in)	30.4500	38.6100	43.8500
Grade	A572-65		
Weight (K)	2.7	5.5	5.7
	13.9		



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 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 0.0000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 48.8%

ALL REACTIONS ARE FACTORED

AXIAL 48 K
SHEAR 4 K
MOMENT 398 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 2.0000 in ICE

AXIAL 25 K
SHEAR 18 K
MOMENT 1508 kip-ft
TORQUE 3 kip-ft
REACTIONS - 125 mph WIND

Paul J. Ford and Company 250 East Broad st., Suite 600 Columbus, OH 43215 Phone: (614) 221-6679 FAX:	Job: ***HRT 093 943228***		
	Project: ***PJF # 37519-1302.002.7805 / BU# 806372***		
	Client: CCI	Drawn by: rkozak	App'd:
	Code: TIA-222-H	Date: 05/30/19	Scale: NTS
	Path:		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:

1) Tower is located in Hartford County, Connecticut.
2) Tower base elevation above sea level: 195.0000 ft.
3) Basic wind speed of 125 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.0000 ft.
9) Nominal ice thickness of 2.0000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56.00 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Tower analysis based on target reliabilities in accordance with Annex S.
20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
21) 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	115.0000-72.3334	42.6666	4.67	12	21.9100	30.4500	0.2190	0.8760	A572-65 (65 ksi)
L2	72.3334-	47.6666	5.67	12	29.0779	38.6100	0.3130	1.2520	A572-65

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
L3	29.3334 29.3334- 0.0000	35.0000		12	36.8508	43.8500	0.3750	1.5000	(65 ksi) 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	22.6056	15.2961	918.5962	7.7654	11.3494	80.9380	1861.3250	7.5283	5.2850	24.132
	31.4469	21.3183	2486.8150	10.8227	15.7731	157.6618	5038.9614	10.4922	7.5737	34.583
L2	30.9594	28.9910	3061.8012	10.2979	15.0624	203.2748	6204.0393	14.2685	6.9541	22.217
	39.8616	38.5980	7225.7083	13.7103	20.0000	361.2858	14641.2440	18.9968	9.5086	30.379
L3	39.1917	44.0446	7479.7774	13.0583	19.0887	391.8426	15156.0569	21.6774	8.8710	23.656
	45.2646	52.4961	12664.6112	15.5641	22.7143	557.5611	25661.9358	25.8370	10.7468	28.658

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 115.0000- 72.3334				1	1	1			
L2 72.3334- 29.3334				1	1	1			
L3 29.3334- 0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	115.0000 - 0.0000	1	1	-0.242 -0.242	1.9800		0.00
HB158-1-08U8-S8J18(1-5/8) ***	A	No	Surface Ar (CaAa)	115.0000 - 0.0000	2	2	-0.133 -0.117	1.9800		0.00
1110(13/32)	A	No	Surface Ar (CaAa)	85.0000 - 0.0000	5	5	0.058 0.117	0.4050		0.00

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 klf
LDF7-50A(1-5/8)	C	No	No	Inside Pole	115.0000 - 0.0000	5	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00
***									
FSJ1-50A(1/4)	C	No	No	Inside Pole	105.0000 - 0.0000	5	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.00 0.00 0.00 0.00
FSJ4-50B(1/2)	C	No	No	Inside Pole	105.0000 -	5	No Ice	0.0000	0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight klf
					0.0000		1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
9207(5/16)	C	No	No	Inside Pole	105.0000 - 0.0000	5	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00
2-1/2" (Nominal) Conduit	C	No	No	Inside Pole	105.0000 - 0.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
							2" Ice	0.0000	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	115.0000-72.3334	A	0.000	0.000	27.909	0.000	0.15
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.29
L2	72.3334-29.3334	A	0.000	0.000	34.249	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.33
L3	29.3334-0.0000	A	0.000	0.000	23.364	0.000	0.11
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.22

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	115.0000-72.3334	A	1.885	0.000	0.000	74.942	0.000	1.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.29
L2	72.3334-29.3334	A	1.774	0.000	0.000	97.430	0.000	1.39
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.33
L3	29.3334-0.0000	A	1.564	0.000	0.000	64.184	0.000	0.88
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.22

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	115.0000-72.3334	-2.9883	-0.6988	-4.1432	-1.0034
L2	72.3334-29.3334	-3.6684	-1.1682	-4.9742	-1.7357
L3	29.3334-0.0000	-3.7762	-1.2054	-5.3133	-1.8571

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	18	LDF7-50A(1-5/8)	72.33 - 115.00	1.0000	1.0000
L1	19	HB158-1-08U8-S8J18(1-5/8)	72.33 - 115.00	1.0000	1.0000
L1	26	1110(13/32)	72.33 - 85.00	1.0000	1.0000
L2	18	LDF7-50A(1-5/8)	29.33 - 72.33	1.0000	1.0000
L2	19	HB158-1-08U8-S8J18(1-5/8)	29.33 - 72.33	1.0000	1.0000
L2	26	1110(13/32)	29.33 - 72.33	1.0000	1.0000

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
(2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.5782 4.9555 5.3404 6.1369	4.8023 5.4160 6.0401 7.3370	0.03 0.08 0.13 0.26
(2) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.5782 4.9555 5.3404 6.1369	4.8023 5.4160 6.0401 7.3370	0.03 0.08 0.13 0.26
(2) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.5782 4.9555 5.3404 6.1369	4.8023 5.4160 6.0401 7.3370	0.03 0.08 0.13 0.26
(2) NNHH-65B-R4 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.5500 8.0400 8.5300 9.5600	4.2300 4.6700 5.1200 6.0500	0.11 0.20 0.30 0.53
(2) NNHH-65B-R4 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.5500 8.0400 8.5300 9.5600	4.2300 4.6700 5.1200 6.0500	0.11 0.20 0.30 0.53
(2) NNHH-65B-R4 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	7.5500 8.0400 8.5300 9.5600	4.2300 4.6700 5.1200 6.0500	0.11 0.20 0.30 0.53
(2) RFV01U-D1A	A	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.8750 2.0454 2.2231 2.6009	1.2500 1.3926 1.5426 1.8648	0.08 0.10 0.12 0.18
RFV01U-D1A	B	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.8750 2.0454 2.2231 2.6009	1.2500 1.3926 1.5426 1.8648	0.08 0.10 0.12 0.18

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
RFV01U-D2A	B	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.8750 2.0454 2.2231 2.6009	1.0125 1.1445 1.2840 1.5851	0.07 0.09 0.11 0.15
(2) RFV01U-D2A	C	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.8750 2.0454 2.2231 2.6009	1.0125 1.1445 1.2840 1.5851	0.07 0.09 0.11 0.15
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.8000 5.0704 5.3481 5.9259	2.0000 2.1926 2.3926 2.8148	0.04 0.08 0.12 0.21
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000 0.00 0.00	0.000	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.8000 5.0704 5.3481 5.9259	2.0000 2.1926 2.3926 2.8148	0.04 0.08 0.12 0.21
Platform Mount [LP 715-1]	C	None		0.000	115.0000	No Ice .1/2" Ice Ice 1" Ice 2" Ice	44.2100 53.9700 63.7300 83.2500	44.2100 53.9700 63.7300 83.2500	1.77 2.32 2.87 3.97
Miscellaneous [NA 509-3]	C	None		0.000	115.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	11.8400 16.9600 22.0800 32.3200	11.8400 16.9600 22.0800 32.3200	0.28 0.30 0.32 0.36
(2) 2.375" OD x 6' Mount Pipe	A	None		0.000	115.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
(2) 2.375" OD x 6' Mount Pipe	B	None		0.000	115.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
(2) 2.375" OD x 6' Mount Pipe	C	None		0.000	115.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
****									
Platform Mount [LP 602-1]	C	None		0.000	105.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	32.0300 38.7100 45.3900 58.7500	32.0300 38.7100 45.3900 58.7500	1.34 1.80 2.26 3.17
(2) 2.375" OD x 6' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	105.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
(2) 2.375" OD x 6' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	105.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09
(2) 2.375" OD x 6' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	105.0000	No Ice 1/2" Ice Ice 1" Ice	1.4250 1.9250 2.2939 3.0596	1.4250 1.9250 2.2939 3.0596	0.03 0.04 0.05 0.09

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			
WH14-69/S	A	From Leg	4.0000 0.00 0.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.8544 2.7029 3.0540 3.7841	1.8544 2.7029 3.0540 3.7841	0.01 0.03 0.06 0.13
WL 14-69/S	A	From Leg	4.0000 0.00 -1.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.2869 0.3655 0.4511 0.6454	4.1479 4.4641 4.7877 5.4572	0.01 0.03 0.06 0.12
WL 14-69/S	B	From Leg	4.0000 0.00 -1.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.2869 0.3655 0.4511 0.6454	4.1479 4.4641 4.7877 5.4572	0.01 0.03 0.06 0.12
WL 14-69/S	B	From Leg	4.0000 0.00 -1.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.2869 0.3655 0.4511 0.6454	4.1479 4.4641 4.7877 5.4572	0.01 0.03 0.06 0.12
J105-HI	A	From Leg	4.0000 0.00 -7.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.2500 0.0000 8.4790 0.0000	3.2500 0.0000 8.4790 0.0000	0.02 0.03 0.03 0.04
Side Arm Mount [SO 701-1]	A	From Leg	4.0000 0.00 0.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8500 1.1400 1.4300 2.0100	1.6700 2.3400 3.0100 4.3500	0.07 0.08 0.09 0.12
Side Arm Mount [SO 701-1]	A	From Leg	4.0000 0.00 -7.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8500 1.1400 1.4300 2.0100	1.6700 2.3400 3.0100 4.3500	0.07 0.08 0.09 0.12
Side Arm Mount [SO 701-1]	B	From Leg	4.0000 0.00 0.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8500 1.1400 1.4300 2.0100	1.6700 2.3400 3.0100 4.3500	0.07 0.08 0.09 0.12
Side Arm Mount [SO 701-1]	B	From Leg	4.0000 0.00 -7.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8500 1.1400 1.4300 2.0100	1.6700 2.3400 3.0100 4.3500	0.07 0.08 0.09 0.12
2.375" OD x 8' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.9000 2.7281 3.4009 4.3962	1.9000 2.7281 3.4009 4.3962	0.03 0.04 0.06 0.12
2.375" OD x 8' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	85.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.9000 2.7281 3.4009 4.3962	1.9000 2.7281 3.4009 4.3962	0.03 0.04 0.06 0.12
*****									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
VHLP1-23	A	Paraboloid w/o Radome	From Leg	1.0000 0.00 2.00	0.000		105.0000	1.2750	No Ice 1/2" Ice 1" Ice 2" Ice	1.2800 1.4500 1.6200 1.9700	0.01 0.02 0.03 0.04
VHLP2-23	B	Paraboloid w/o Radome	From Leg	1.0000 0.00 2.00	0.000		105.0000	2.1750	No Ice 1/2" Ice 1" Ice 2" Ice	3.7200 4.0100 4.3000 4.8800	0.03 0.05 0.07 0.11
VHLP1-23	C	Paraboloid w/o Radome	From Leg	1.0000 0.00 2.00	0.000		105.0000	1.2750	No Ice 1/2" Ice 1" Ice 2" Ice	1.2800 1.4500 1.6200 1.9700	0.01 0.02 0.03 0.04

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 115.0000-72.3334	92.8501	0.968	34.598	96.093	A	0.000	96.093	96.093	100.00	27.909	0.000
					B	0.000	96.093		100.00	0.000	0.000
					C	0.000	96.093		100.00	0.000	0.000
L2 72.3334-29.3334	50.5924	0.813	28.912	126.888	A	0.000	126.888	126.888	100.00	34.249	0.000
					B	0.000	126.888		100.00	0.000	0.000
					C	0.000	126.888		100.00	0.000	0.000
L3 29.3334-0.0000	14.3163	0.7	25.092	103.225	A	0.000	103.225	103.225	100.00	23.364	0.000
					B	0.000	103.225		100.00	0.000	0.000
					C	0.000	103.225		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 115.0000-72.3334	92.8501	0.968	5.536	1.8853	109.500	A	0.000	109.500	109.500	100.00	74.942	0.000
						B	0.000	109.500		100.00	0.000	0.000
						C	0.000	109.500		100.00	0.000	0.000
L2 72.3334-29.3334	50.5924	0.813	4.626	1.7742	140.399	A	0.000	140.399	140.399	100.00	97.430	0.000
						B	0.000	140.399		100.00	0.000	0.000
						C	0.000	140.399		100.00	0.000	0.000
L3 29.3334-0.0000	14.3163	0.7	4.015	1.5638	111.898	A	0.000	111.898	111.898	100.00	64.184	0.000
						B	0.000	111.898		100.00	0.000	0.000
						C	0.000	111.898		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 115.0000-72.3334	92.8501	0.968	7.508	96.093	A	0.000	96.093	96.093	100.00	27.909	0.000
					B	0.000	96.093		100.00	0.000	0.000
					C	0.000	96.093		100.00	0.000	0.000
L2 72.3334-29.3334	50.5924	0.813	6.274	126.888	A	0.000	126.888	126.888	100.00	34.249	0.000
					B	0.000	126.888		100.00	0.000	0.000
					C	0.000	126.888		100.00	0.000	0.000
L3 29.3334-0.0000	14.3163	0.7	5.445	103.225	A	0.000	103.225	103.225	100.00	23.364	0.000
					B	0.000	103.225		100.00	0.000	0.000
					C	0.000	103.225		100.00	0.000	0.000

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
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service

Comb. No.	Description
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	115 - 72.3334	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.50	-0.96	3.28
			Max. Mx	20	-9.39	334.01	1.62
			Max. My	2	-9.37	0.36	341.63
			Max. Vy	20	-11.56	334.01	1.62
			Max. Vx	2	-11.81	0.36	341.63
			Max. Torque	12			2.71
L2	72.3334 - 29.3334	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.01	0.80	4.41
			Max. Mx	20	-16.27	896.51	-1.65
			Max. My	2	-16.26	-2.48	916.12
			Max. Vy	20	-15.18	896.51	-1.65
			Max. Vx	2	-15.46	-2.48	916.12
			Max. Torque	12			2.71
L3	29.3334 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.57	2.42	5.30
			Max. Mx	20	-24.81	1479.00	-4.37
			Max. My	2	-24.81	-4.77	1508.49
			Max. Vy	20	-18.09	1479.00	-4.37
			Max. Vx	2	-18.37	-4.77	1508.49
			Max. Torque	12			2.71

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	47.57	-0.00	-0.00
	Max. H_x	21	18.62	18.08	-0.08
	Max. H_z	3	18.62	-0.07	18.36
	Max. M_x	2	1508.49	-0.07	18.36
	Max. M_z	8	1474.43	-18.03	0.23
	Max. Torsion	12	2.70	-8.82	-15.54
	Min. Vert	3	18.62	-0.07	18.36
	Min. H_x	9	18.62	-18.03	0.23
	Min. H_z	15	18.62	0.18	-18.30
	Min. M_x	14	-1499.77	0.18	-18.30
	Min. M_z	20	-1479.00	18.08	-0.08
	Min. Torsion	24	-2.58	8.97	15.51

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	20.68	0.00	-0.00	-1.02	-0.15	0.00
1.2 Dead+1.0 Wind 0 deg -	24.82	0.07	-18.36	-1508.49	-4.77	2.01

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
No Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	18.62	0.07	-18.36	-1497.77	-4.70	2.00
1.2 Dead+1.0 Wind 30 deg - No Ice	24.82	9.20	-15.66	-1281.98	-754.42	0.95
0.9 Dead+1.0 Wind 30 deg - No Ice	18.62	9.20	-15.66	-1272.82	-749.17	0.95
1.2 Dead+1.0 Wind 60 deg - No Ice	24.82	15.72	-9.17	-753.35	-1286.13	-0.39
0.9 Dead+1.0 Wind 60 deg - No Ice	18.62	15.72	-9.17	-747.83	-1277.21	-0.38
1.2 Dead+1.0 Wind 90 deg - No Ice	24.82	18.03	-0.23	-23.59	-1474.43	-1.64
0.9 Dead+1.0 Wind 90 deg - No Ice	18.62	18.03	-0.23	-23.11	-1464.22	-1.63
1.2 Dead+1.0 Wind 120 deg - No Ice	24.82	15.56	8.87	723.47	-1272.27	-2.50
0.9 Dead+1.0 Wind 120 deg - No Ice	18.62	15.56	8.87	718.79	-1263.44	-2.49
1.2 Dead+1.0 Wind 150 deg - No Ice	24.82	8.82	15.54	1269.86	-718.00	-2.70
0.9 Dead+1.0 Wind 150 deg - No Ice	18.62	8.82	15.54	1261.41	-713.00	-2.69
1.2 Dead+1.0 Wind 180 deg - No Ice	24.82	-0.18	18.30	1499.77	16.56	-2.13
0.9 Dead+1.0 Wind 180 deg - No Ice	18.62	-0.18	18.30	1489.75	16.50	-2.12
1.2 Dead+1.0 Wind 210 deg - No Ice	24.82	-9.13	15.70	1283.86	746.37	-0.97
0.9 Dead+1.0 Wind 210 deg - No Ice	18.62	-9.13	15.70	1275.32	741.28	-0.96
1.2 Dead+1.0 Wind 240 deg - No Ice	24.82	-15.82	9.11	743.35	1297.17	0.49
0.9 Dead+1.0 Wind 240 deg - No Ice	18.62	-15.82	9.11	738.55	1288.27	0.49
1.2 Dead+1.0 Wind 270 deg - No Ice	24.82	-18.08	0.08	4.37	1479.00	1.78
0.9 Dead+1.0 Wind 270 deg - No Ice	18.62	-18.08	0.08	4.67	1468.86	1.76
1.2 Dead+1.0 Wind 300 deg - No Ice	24.82	-15.59	-8.89	-727.74	1274.90	2.52
0.9 Dead+1.0 Wind 300 deg - No Ice	18.62	-15.59	-8.89	-722.39	1266.15	2.50
1.2 Dead+1.0 Wind 330 deg - No Ice	24.82	-8.97	-15.51	-1268.36	734.55	2.58
0.9 Dead+1.0 Wind 330 deg - No Ice	18.62	-8.97	-15.51	-1259.28	729.52	2.57
1.2 Dead+1.0 Ice+1.0 Temp	47.57	0.00	0.00	-5.30	2.42	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	47.57	0.02	-4.45	-397.62	1.02	0.58
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	47.57	2.26	-3.85	-344.66	-197.21	0.31
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	47.57	3.87	-2.25	-204.24	-338.52	-0.06
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	47.57	4.44	-0.05	-10.69	-388.78	-0.41
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	47.57	3.83	2.18	186.94	-335.32	-0.66
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	47.57	2.18	3.82	331.45	-188.66	-0.74
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	47.57	-0.04	4.43	385.30	6.32	-0.60
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	47.57	-2.25	3.86	334.77	200.22	-0.31
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	47.57	-3.89	2.24	191.81	345.81	0.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	47.57	-4.45	0.02	-4.08	394.70	0.44
1.2 Dead+1.0 Wind 300	47.57	-3.84	-2.19	-198.24	340.77	0.66

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	47.57	-2.21	-3.81	-341.42	197.35	0.71
Dead+Wind 0 deg - Service	20.68	0.02	-3.98	-326.70	-1.15	0.44
Dead+Wind 30 deg - Service	20.68	2.00	-3.40	-277.75	-163.12	0.21
Dead+Wind 60 deg - Service	20.68	3.41	-1.99	-163.54	-277.99	-0.08
Dead+Wind 90 deg - Service	20.68	3.91	-0.05	-5.88	-318.68	-0.36
Dead+Wind 120 deg - Service	20.68	3.38	1.93	155.52	-274.99	-0.54
Dead+Wind 150 deg - Service	20.68	1.91	3.37	273.57	-155.24	-0.59
Dead+Wind 180 deg - Service	20.68	-0.04	3.97	323.26	3.46	-0.46
Dead+Wind 210 deg - Service	20.68	-1.98	3.41	276.60	161.14	-0.21
Dead+Wind 240 deg - Service	20.68	-3.43	1.98	159.83	280.14	0.11
Dead+Wind 270 deg - Service	20.68	-3.92	0.02	0.17	319.43	0.38
Dead+Wind 300 deg - Service	20.68	-3.38	-1.93	-158.01	275.32	0.54
Dead+Wind 330 deg - Service	20.68	-1.95	-3.36	-274.81	158.58	0.56

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	-20.68	0.00	-0.00	20.68	0.00	0.000%
2	0.07	-24.82	-18.36	-0.07	24.82	18.36	0.002%
3	0.07	-18.62	-18.36	-0.07	18.62	18.36	0.001%
4	9.20	-24.82	-15.66	-9.20	24.82	15.66	0.000%
5	9.20	-18.62	-15.66	-9.20	18.62	15.66	0.000%
6	15.72	-24.82	-9.17	-15.72	24.82	9.17	0.000%
7	15.72	-18.62	-9.17	-15.72	18.62	9.17	0.000%
8	18.03	-24.82	-0.23	-18.03	24.82	0.23	0.002%
9	18.03	-18.62	-0.23	-18.03	18.62	0.23	0.001%
10	15.56	-24.82	8.87	-15.56	24.82	-8.87	0.000%
11	15.56	-18.62	8.87	-15.56	18.62	-8.87	0.000%
12	8.82	-24.82	15.54	-8.82	24.82	-15.54	0.000%
13	8.82	-18.62	15.54	-8.82	18.62	-15.54	0.000%
14	-0.18	-24.82	18.30	0.18	24.82	-18.30	0.002%
15	-0.18	-18.62	18.30	0.18	18.62	-18.30	0.001%
16	-9.13	-24.82	15.70	9.13	24.82	-15.70	0.000%
17	-9.13	-18.62	15.70	9.13	18.62	-15.70	0.000%
18	-15.82	-24.82	9.11	15.82	24.82	-9.11	0.000%
19	-15.82	-18.62	9.11	15.82	18.62	-9.11	0.000%
20	-18.08	-24.82	0.08	18.08	24.82	-0.08	0.002%
21	-18.08	-18.62	0.08	18.08	18.62	-0.08	0.001%
22	-15.59	-24.82	-8.89	15.59	24.82	8.89	0.000%
23	-15.59	-18.62	-8.89	15.59	18.62	8.89	0.000%
24	-8.97	-24.82	-15.51	8.97	24.82	15.51	0.000%
25	-8.97	-18.62	-15.51	8.97	18.62	15.51	0.000%
26	0.00	-47.57	0.00	-0.00	47.57	-0.00	0.002%
27	0.02	-47.57	-4.45	-0.02	47.57	4.45	0.001%
28	2.26	-47.57	-3.85	-2.26	47.57	3.85	0.001%
29	3.87	-47.57	-2.25	-3.87	47.57	2.25	0.001%
30	4.44	-47.57	-0.05	-4.44	47.57	0.05	0.001%
31	3.83	-47.57	2.18	-3.83	47.57	-2.18	0.001%
32	2.18	-47.57	3.82	-2.18	47.57	-3.82	0.001%
33	-0.04	-47.57	4.43	0.04	47.57	-4.43	0.001%
34	-2.25	-47.57	3.86	2.25	47.57	-3.86	0.001%
35	-3.89	-47.57	2.24	3.89	47.57	-2.24	0.001%
36	-4.45	-47.57	0.02	4.45	47.57	-0.02	0.001%
37	-3.84	-47.57	-2.19	3.84	47.57	2.19	0.001%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
38	-2.21	-47.57	-3.81	2.21	47.57	3.81	0.001%
39	0.02	-20.68	-3.98	-0.02	20.68	3.98	0.005%
40	2.00	-20.68	-3.40	-2.00	20.68	3.40	0.005%
41	3.41	-20.68	-1.99	-3.41	20.68	1.99	0.005%
42	3.91	-20.68	-0.05	-3.91	20.68	0.05	0.005%
43	3.38	-20.68	1.93	-3.38	20.68	-1.93	0.005%
44	1.91	-20.68	3.37	-1.91	20.68	-3.37	0.004%
45	-0.04	-20.68	3.97	0.04	20.68	-3.97	0.005%
46	-1.98	-20.68	3.41	1.98	20.68	-3.41	0.005%
47	-3.43	-20.68	1.98	3.43	20.68	-1.98	0.005%
48	-3.92	-20.68	0.02	3.92	20.68	-0.02	0.005%
49	-3.38	-20.68	-1.93	3.38	20.68	1.93	0.005%
50	-1.95	-20.68	-3.36	1.95	20.68	3.36	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	12	0.00000001	0.00007233
3	Yes	12	0.00000001	0.00005912
4	Yes	13	0.00000001	0.00011049
5	Yes	13	0.00000001	0.00008606
6	Yes	13	0.00000001	0.00010853
7	Yes	13	0.00000001	0.00008442
8	Yes	12	0.00000001	0.00007326
9	Yes	12	0.00000001	0.00005978
10	Yes	13	0.00000001	0.00008997
11	Yes	13	0.00000001	0.00007016
12	Yes	13	0.00000001	0.00011460
13	Yes	13	0.00000001	0.00008989
14	Yes	12	0.00000001	0.00006682
15	Yes	12	0.00000001	0.00005488
16	Yes	13	0.00000001	0.00010024
17	Yes	13	0.00000001	0.00007808
18	Yes	13	0.00000001	0.00010275
19	Yes	13	0.00000001	0.00008001
20	Yes	12	0.00000001	0.00006611
21	Yes	12	0.00000001	0.00005418
22	Yes	13	0.00000001	0.00011577
23	Yes	13	0.00000001	0.00009061
24	Yes	13	0.00000001	0.00009188
25	Yes	13	0.00000001	0.00007156
26	Yes	7	0.00000001	0.00001737
27	Yes	12	0.00000001	0.00008829
28	Yes	12	0.00000001	0.00009677
29	Yes	12	0.00000001	0.00009629
30	Yes	12	0.00000001	0.00008592
31	Yes	12	0.00000001	0.00009149
32	Yes	12	0.00000001	0.00009223
33	Yes	12	0.00000001	0.00008443
34	Yes	12	0.00000001	0.00009290
35	Yes	12	0.00000001	0.00009399
36	Yes	12	0.00000001	0.00008663
37	Yes	12	0.00000001	0.00009650
38	Yes	12	0.00000001	0.00009530
39	Yes	10	0.00000001	0.00011953
40	Yes	10	0.00000001	0.00010497
41	Yes	10	0.00000001	0.00010398
42	Yes	10	0.00000001	0.00011617
43	Yes	10	0.00000001	0.00010208
44	Yes	10	0.00000001	0.00010901
45	Yes	10	0.00000001	0.00011780
46	Yes	10	0.00000001	0.00010153
47	Yes	10	0.00000001	0.00010261
48	Yes	10	0.00000001	0.00011618

49	Yes	10	0.00000001	0.00010911
50	Yes	10	0.00000001	0.00010239

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 72.3334	10.15	39	0.772	0.003
L2	77 - 29.3334	4.60	39	0.565	0.002
L3	35 - 0	0.94	39	0.242	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
115.0000	(2) DB844G65ZAXY w/ Mount Pipe	39	10.15	0.772	0.003	52689
107.0000	VHLP1-23	39	8.90	0.733	0.003	32930
105.0000	Platform Mount [LP 602-1]	39	8.59	0.723	0.003	26344
85.0000	WH14-69/S	39	5.64	0.615	0.003	8781

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 72.3334	46.82	2	3.561	0.015
L2	77 - 29.3334	21.21	2	2.606	0.011
L3	35 - 0	4.36	2	1.117	0.003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
115.0000	(2) DB844G65ZAXY w/ Mount Pipe	2	46.82	3.561	0.015	11513
107.0000	VHLP1-23	2	41.04	3.382	0.015	7195
105.0000	Platform Mount [LP 602-1]	2	39.61	3.337	0.015	5756
85.0000	WH14-69/S	2	26.03	2.840	0.013	1916

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	115 - 72.3334 (1)	TP30.45x21.91x0.219	42.666 6	0.0000	0.0	20.659 6	-9.37	1208.59	0.008
L2	72.3334 -	TP38.61x29.0779x0.313	47.666	0.0000	0.0	37.455	-16.26	2191.17	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L3	29.3334 (2) 29.3334 - 0 (3)	TP43.85x36.8508x0.375	6 35.000 0	0.0000	0.0	9 52.496 1	-24.81	3071.02	0.008

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	115 - 72.3334 (1)	TP30.45x21.91x0.219	341.63	741.46	0.461	0.00	741.46	0.000
L2	72.3334 - 29.3334 (2)	TP38.61x29.0779x0.313	916.13	1815.79	0.505	0.00	1815.79	0.000
L3	29.3334 - 0 (3)	TP43.85x36.8508x0.375	1508.50	3010.72	0.501	0.00	3010.72	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	115 - 72.3334 (1)	TP30.45x21.91x0.219	11.81	362.58	0.033	2.02	934.38	0.002
L2	72.3334 - 29.3334 (2)	TP38.61x29.0779x0.313	15.47	657.35	0.024	2.01	2148.91	0.001
L3	29.3334 - 0 (3)	TP43.85x36.8508x0.375	18.37	921.31	0.020	2.01	3523.25	0.001

Pole Interaction Design Data

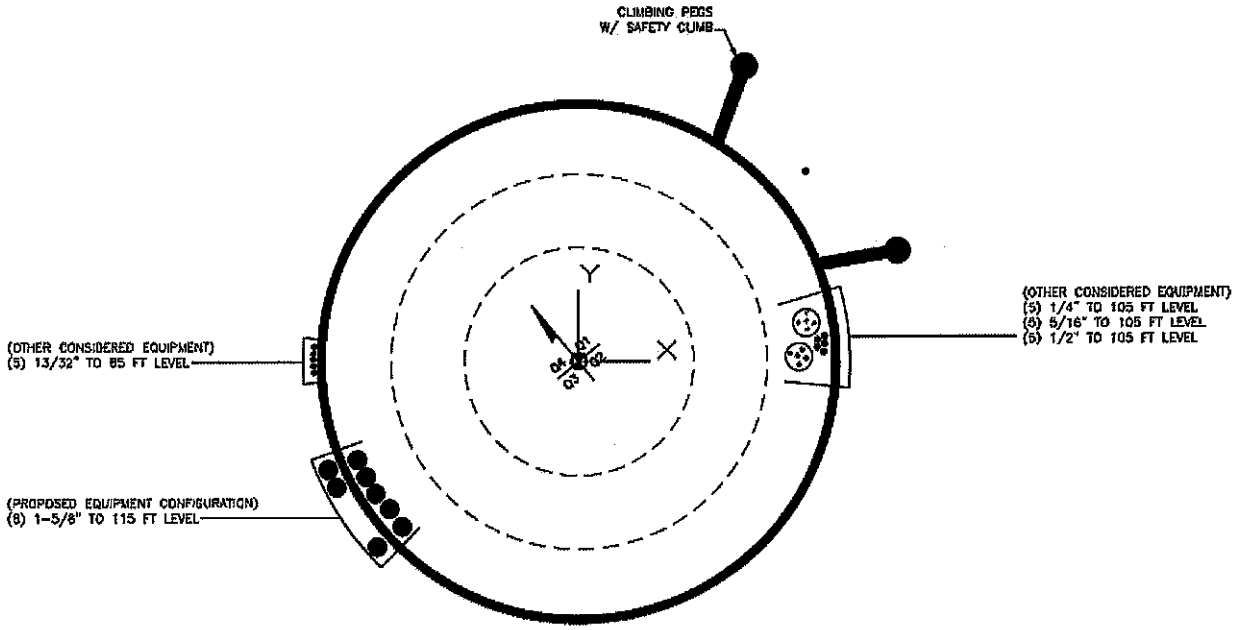
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	115 - 72.3334 (1)	0.008	0.461	0.000	0.033	0.002	0.470	1.050	4.8.2
L2	72.3334 - 29.3334 (2)	0.007	0.505	0.000	0.024	0.001	0.513	1.050	4.8.2
L3	29.3334 - 0 (3)	0.008	0.501	0.000	0.020	0.001	0.510	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	115 - 72.3334	Pole	TP30.45x21.91x0.219	1	-9.37	1269.02	44.7	Pass
L2	72.3334 - 29.3334	Pole	TP38.61x29.0779x0.313	2	-16.26	2300.73	48.8	Pass
L3	29.3334 - 0	Pole	TP43.85x36.8508x0.375	3	-24.81	3224.57	48.5	Pass
						Summary		
						Pole (L2)	48.8	Pass
						RATING =	**48.8**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(5) 13/32" TO 85 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(8) 1-5/8" TO 115 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(5) 1/4" TO 105 FT LEVEL
(5) 5/16" TO 105 FT LEVEL
(5) 1/2" TO 105 FT LEVEL
Y
X
BUSINESS UNIT:806372 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

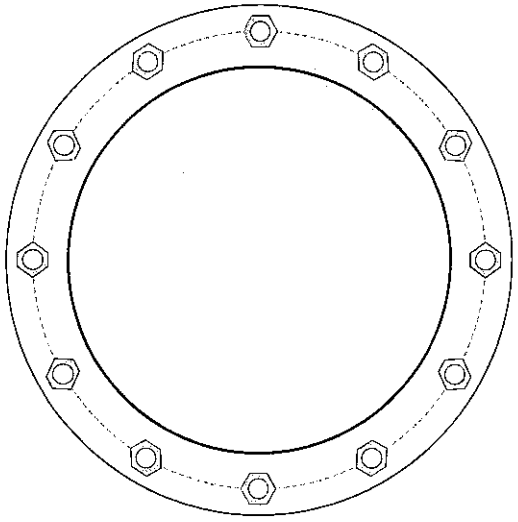
CROWN CASTLE

Site Info	
BU #	806372
Site Name	
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{er} (in)	2

Applied Loads	
Moment (kip-ft)	1508.50
Axial Force (kips)	24.81
Shear Force (kips)	18.37

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 X; Fy=75 ksi, Fu=100 ksi) on 51.9" BC

Base Plate Data

57.9" OD x 2.625" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

43.85" x 0.375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 118.24	ϕPn_c = 243.75	**Stress Rating**
Vu = 1.53	ϕVn = 73.13	**46.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	**15.01**	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**26.5%**	**Pass**

Drilled Pier Foundation

BU # :	806372
Site Name:	
Order Number:	

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1508.5	
Axial Force (kips)	24.81	
Shear Force (kips)	18.37	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	21.1	ft
Ext. Above Grade	0.4	ft
Pier Section 1		
From 0.4' above grade to 21.1' below grade		
Pier Diameter	6	ft
Rebar Quantity	22	
Rebar Size	10	
Clear Cover to Ties	5	in
Tie Size	4	

Analysis Results	Compression	Uplift
Soil Lateral Capacity		
$D_{v=0}$ (ft from TOC)	6.86	-
Soil Safety Factor	2.15	-
Max Moment (kip-ft)	1624.23	-
Rating*	*58.8%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	146.76	-
End Bearing (kips)	127.23	-
Weight of Concrete (kips)	109.42	-
Total Capacity (kips)	273.99	-
Axial (kips)	134.23	-
Rating*	*46.7%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.74	-
Critical Moment (kip-ft)	1624.13	-
Critical Moment Capacity	3637.12	-
Rating*	*42.5%*	-

Soil Interaction Rating*	**58.8%**
Structural Foundation Rating*	**42.5%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐

Soil Profile

Groundwater Depth	N/A	ft	# of Layers: 4

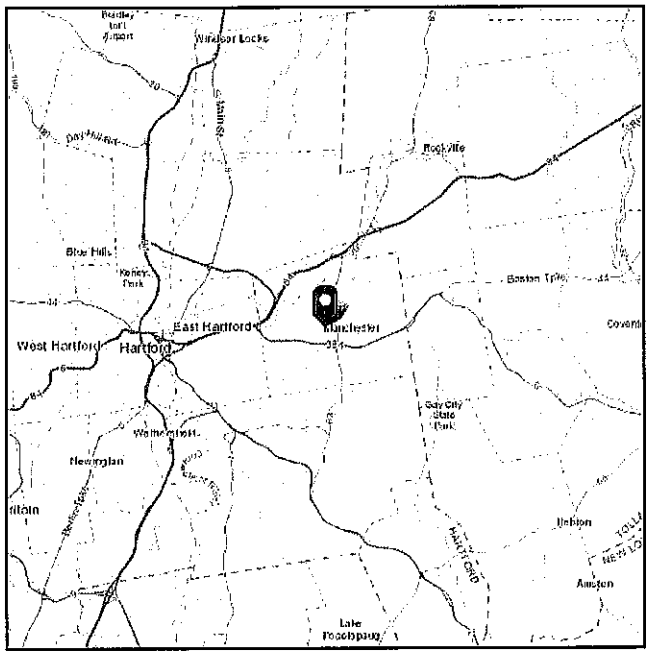
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	5	5	90	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	5	14	9	90	150		30	0.247	0.247				4	Cohesionless
3	14	18	4	90	150		39	1.382	1.382				19	Cohesionless
4	18	21.1	3.1	90	150		30	0.847	0.847			6	8	Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 195.7 ft (NAVD 88)
Latitude: 41.771944
Longitude: -72.530222



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	101 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 Apr 02 2019

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.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Apr 02 2019

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.

Date: May 3, 2019

Kevin Morrow
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6619

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Mount Modification Report**	
Carrier Designation:	**Verizon Wireless Equipment Change-Out**	
	Carrier Site Number:	NG1904
	Carrier Site Name:	Manchester CT
Crown Castle Designation:	**Crown Castle BU Number:**	806372
	Crown Castle Site Name:	HRT 093 943228
	Crown Castle JDE Job Number:	566028
	Crown Castle Order Number:	486564, Rev. 0
Engineering Frim Designation:	**B+T Group Report Designation:**	134993.003.01
Site Data:	**266R Center Street, Manchester, CT, Hartford County, 06040** **Latitude 41° 46' 19.00" Longitude -72° 31' 48.80"**	
Structure Information:	**Tower Height & Type:**	**115 ft. Monopole**
	Mount Elevation:	**115 ft.**
	Mount Type:	**14.125 ft. Platform Mount**

Dear Mr. Morrow,

B+T Group is pleased to submit this **"Mount Modification Report"** to determine the structural integrity of Verizon Wireless'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.

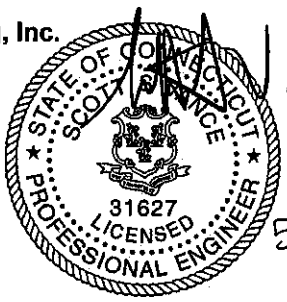
The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

Platform Mount **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 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Phanindra Kosaraju, E.I.T.

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2020



5/3/19

Scott S. Vance, P.E.
Engineer of Record

TABLE OF CONTENTS

1) INTRODUCTION

This is a 14.125' Platform Mount, mapped by B+T Group.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.179
Seismic S_1:	0.064
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	Antenna Centerline	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount Details
115 ft.	119.5 ft.	6	Decibel	DB844G65ZAXY	14.125 ft. Platform Mount
	115 ft.	6	Commscope	NNHH-65B-R4	
		2	RFS/Celwave	DBT1-6Z-8AB-0Z	
		3	Samsung Telecommunications	RFV01U-D1A	
		3	Samsung Telecommunications	RFV01U-D2A	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	Date: 03/29/2019	Crown Castle
Structural Analysis Report	By Paul J. Ford	Date: 07/31/2017	
Mount Mapping	By B+T Group	Date: 04/17/2019	On file
Mount Analysis Report		Date: 04/25/2019	

3.1) Analysis Method

RISA-3D (Version 17.0.2), 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.

A tool internally developed by B+T Group, 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 C).

3.2) Assumptions

1. The mount was properly fabricated and installed in accordance with its original design and manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. 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.
9. 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.
10. The following material grades were assumed (Unless Noted Otherwise):
    (a) Connection Bolts : ASTM A325
    (b) Steel Pipe : ASTM A53 (GR. 35)
    (c) HSS (Round) : ASTM 500 (GR. B-42)
    (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
    (e) Channel : ASTM A36 (GR. 36)
    (f) Steel Solid Rod : ASTM A36 (GR. 36)
    (g) Steel Plate : ASTM A36 (GR. 36)
    (h) Steel Angle : ASTM A36 (GR. 36)
    (i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3(a) - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Critical Member	Centerline (ft.)	% Capacity	Pass / Fail
1,2	Main Horizontal	M3	115	93.0	Pass
	Support Angles	M6	115	47.9	Pass
	Support Tubes	M11	115	33.1	Pass
	Mount Pipes	M82	115	29.6	Pass
1,2,3	Handrail	M85A	115	39.2	Pass
	Handrail Corner Angle	M83	115	53.6	Pass
	Kicker support	M82A	115	16.5	Pass

Structure Rating (max from all components) =	93.0%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical
3) Proposed members

4.1) RECOMMENDATIONS

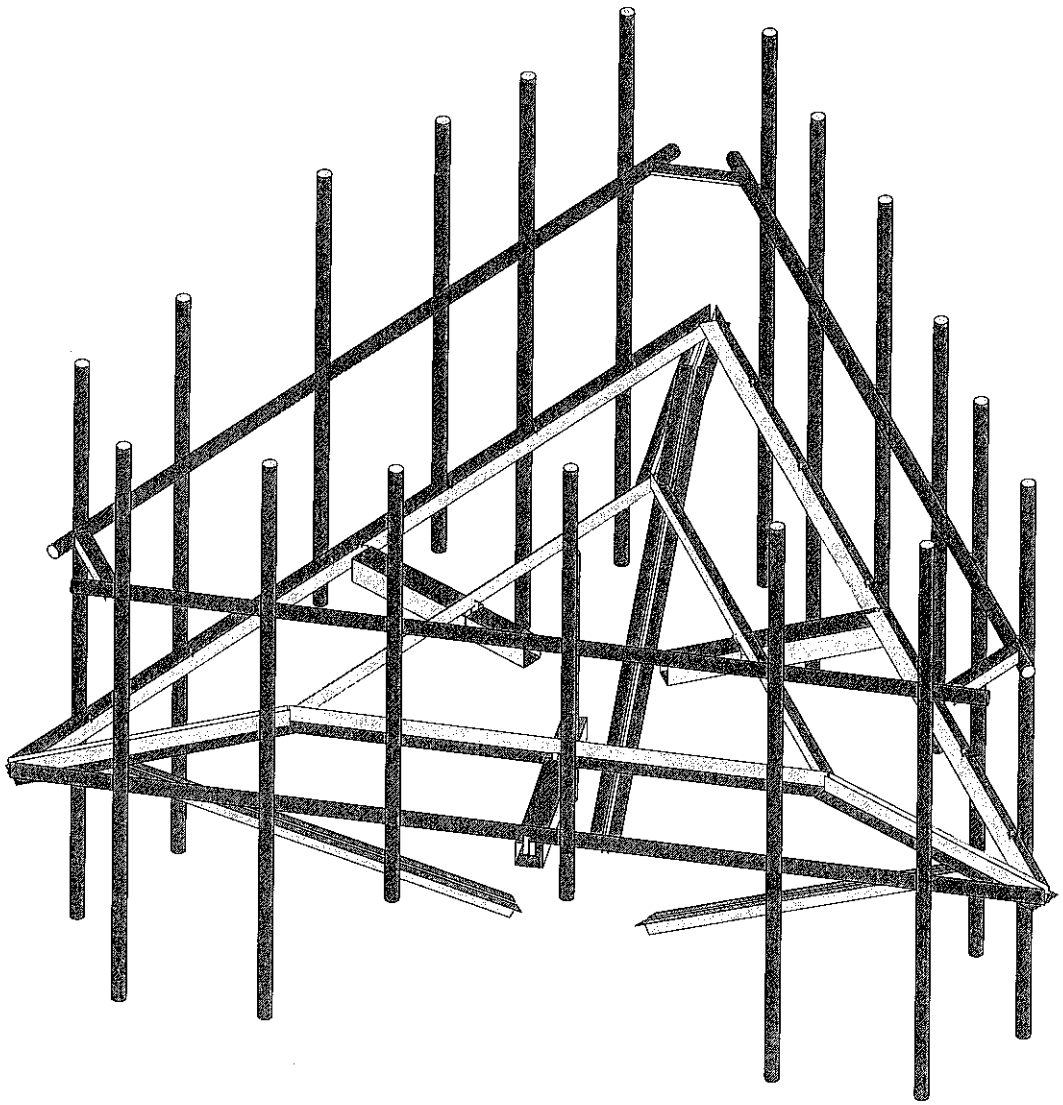
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Add (1) Monopole Kicker Kit Sitepro1 #PRK-1245L, 3'-6" below the collar mount
2. Replace the existing handrail kit with Sitepro1 #HRK-12, 3'-3" above the main horizontal
3. Reduce asymmetry by shifting mount pipes and loading vertically down by 0'-9" such that the loading and mount have the same centerline.

Engineering detail drawings have been provided in Appendix D – Mount Modification Design Drawings.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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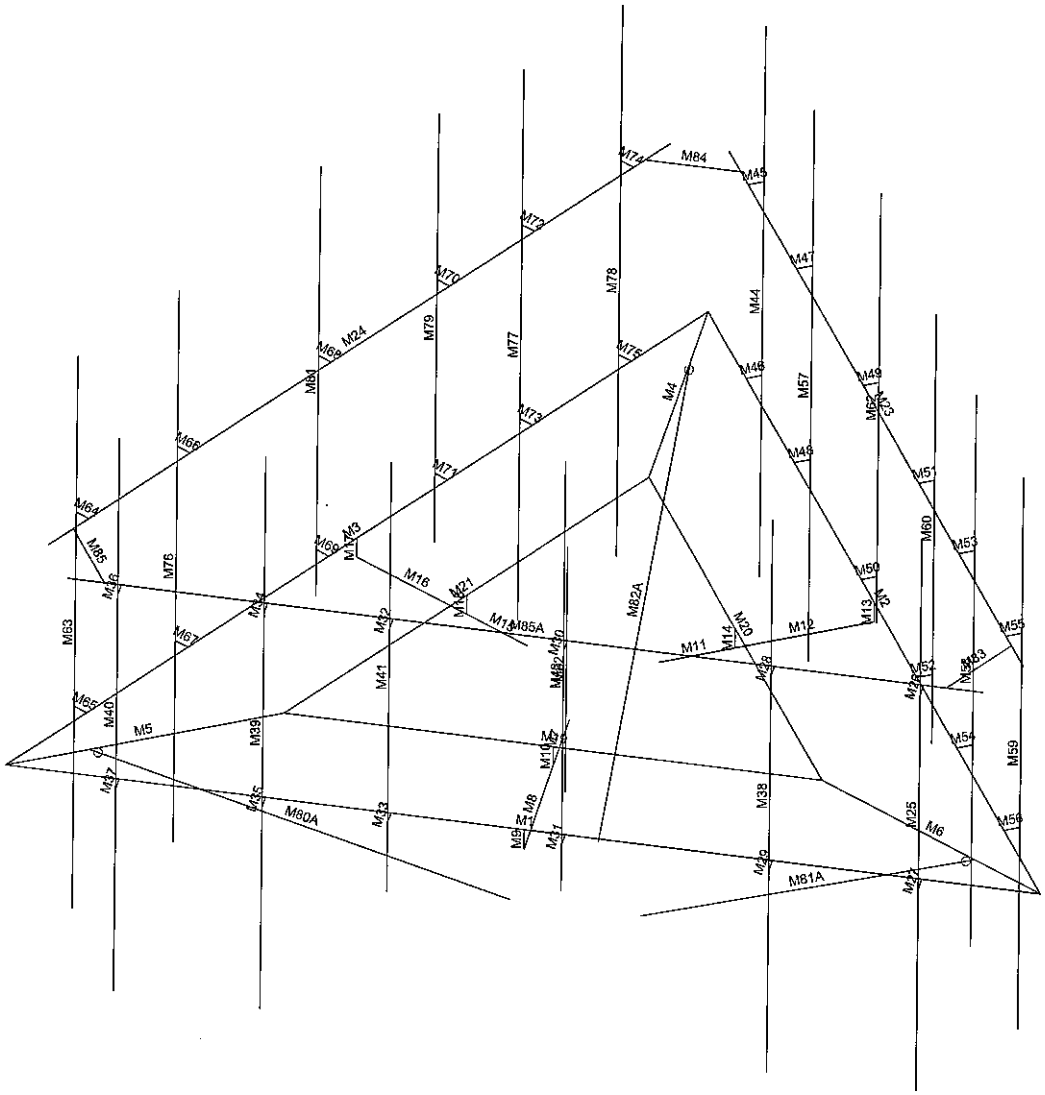

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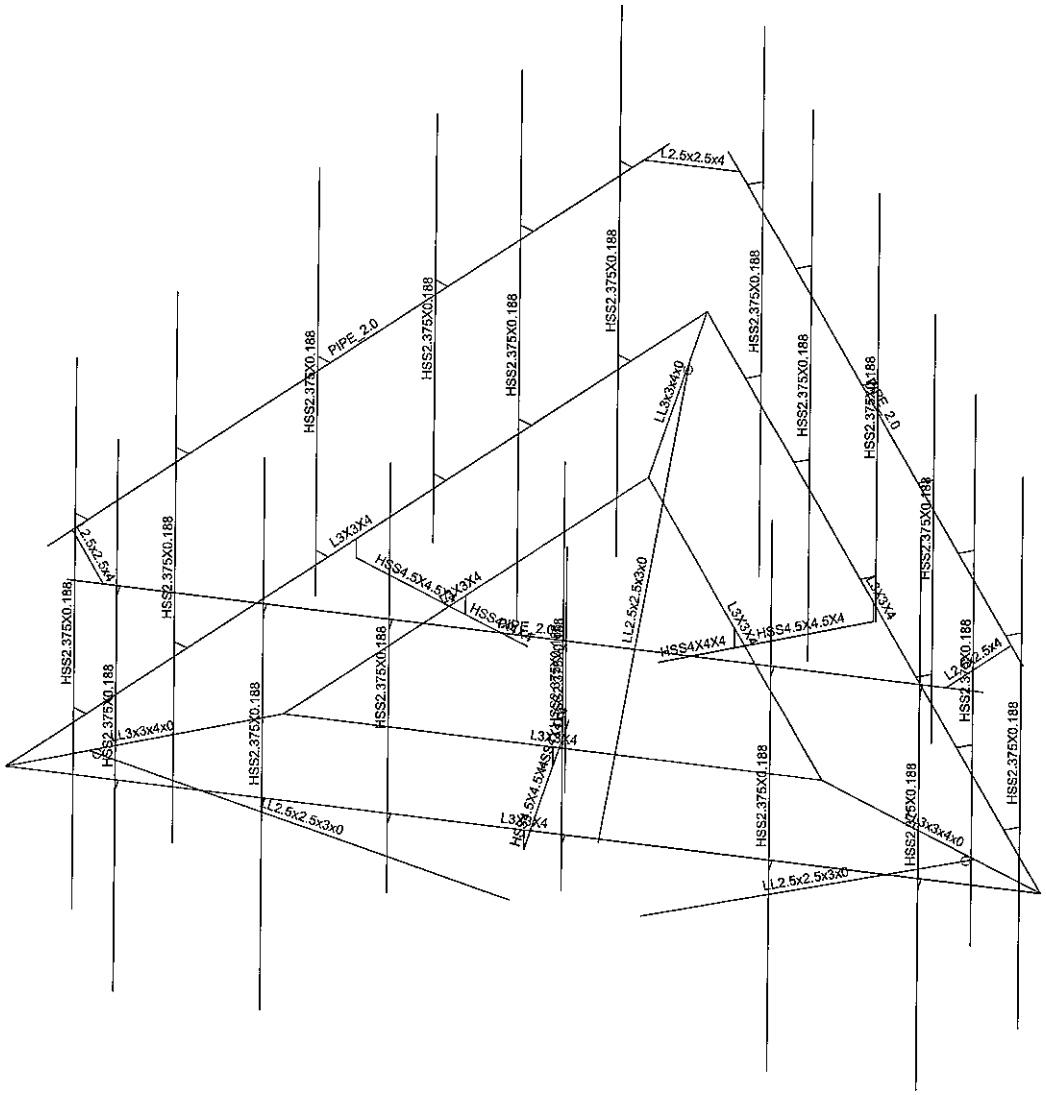

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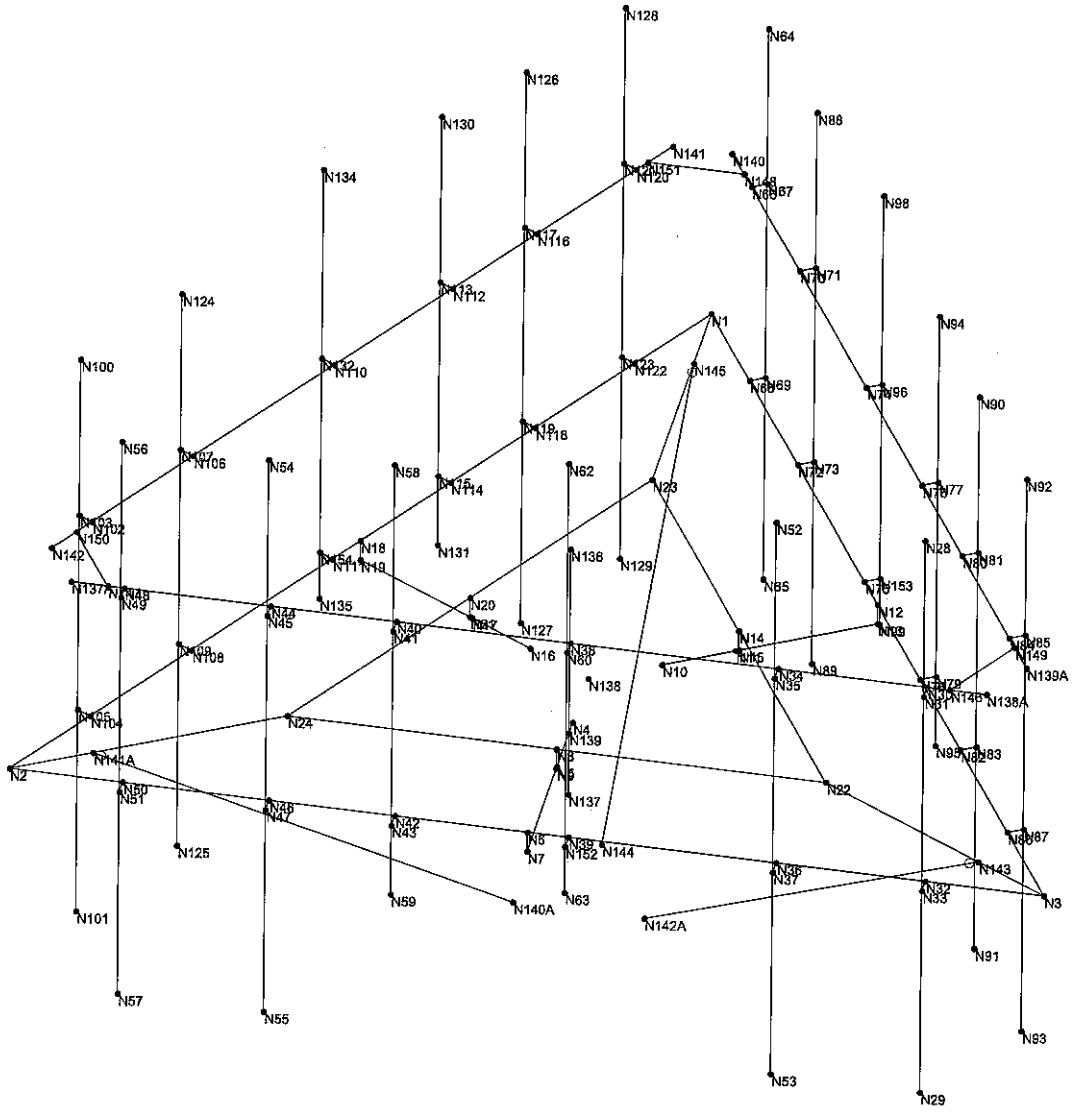

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APPENDIX B

SOFTWARE INPUT CALCULATIONS

PROJECT	**134993.001.01 - HRT 093 943228, CT PKK**			
SUBJECT	**Platform Mount Mount Analysis**			
DATE	**05/03/19**	PAGE 1	OF	1

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

B+T GRP

INPUT

[REF: ANSI/TIA-222-H]

Tower Type		:	MP		
Tower Height		:	115	ft	
Mount Elevation		:	115	ft	
Antenna Elevation		:	115	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	B		[Sec. 2.6.5.1.2]
Topography Category		:	1		[Sec. 2.6.6.2]
Wind Velocity	V	:	125	mph	[Annex B]
Ice wind Velocity	V_i	:	50	mph	[Annex B]
Service Velocity	V_s	:	30	mph	[Annex B]
Base Ice thickness	t_i	:	2	in	[Annex B]
Ground Elevation	z_s	:	195.7	ft	[Sec. 2.6.8]

ANTENNAS

	Manufacturer	Model	Height (in)	Front Width (in)	Side Width (in)	Weight (lbs)	Shape	Quantity	Location (%)
Mount Pipe **M25**									
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	5
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	55
Mount Pipe **M38**									
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	10
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	85
	Samsung Telecommunication	RFV01U-D1A	15.00	10.00	15.00	84.40	Flat	2	50
Mount Pipe **M39**									
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	10
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	85
Mount Pipe **M40**									
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	5
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	55
M63									
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	5
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	55
M76									
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	10
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	85
	Samsung Telecommunication	RFV01U-D1A	15.00	10.00	15.00	84.40	Flat	1	50
	Samsung Telecommunication	RFV01U-D2A	15.00	8.10	15.00	70.30	Flat	1	50

PROJECT	**134993.001.01 - HRT 093 943228, CT PKK**			
SUBJECT	**Platform Mount Mount Analysis**			
DATE	**05/03/19**	PAGE 1	OF	5

B+T Group
1717 S. Boulder, Suite 300
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Mount Pipe **M77**

	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	10
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	85

Mount Pipe **M78**

	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	5
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	55

Mount Pipe **M44**

	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	5
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	55

Mount Pipe **M57**

	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	10
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	85
	Samsung Telecommunication	RFV01U-D2A	15.00	8.10	15.00	70.30	Flat	2	50

Mount Pipe **M58**

	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	10
	Commscope	NNHH-65B-R4	72.00	19.60	7.80	78.30	Flat	0.5	85

Mount Pipe **M59**

	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	5
	Decibel	DB844G65ZAXY	48.00	10.00	8.00	16.00	Flat	0.5	55

Mount Pipe **M82**

	RFS/Celwave	DBT1-6Z-8AB-0Z	24.00	10.00	24.00	44.00	Flat	1	20
	RFS/Celwave	DBT1-6Z-8AB-0Z	24.00	10.00	24.00	44.00	Flat	1	20

Mount Pipe

Mount Pipe

PROJECT	134993.001.01 - HRT 093 943228, CT PKK				
SUBJECT	Platform Mount Mount Analysis				
DATE	05/03/19	PAGE	1	OF	1

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INPUT

[REF: ANSI/TIA-222-G2005]

	Member Number	Section Set	Wind Projection (in)	Length (in)	Perimeter (in)	Shape	D_c (in)
	M1	MF-H1	3.00	169.50	12.00	Flat	4.24
	M2	MF-H1	3.00	169.50	12.00	Flat	4.24
	M3	MF-H1	3.00	169.50	12.00	Flat	4.24
	M4	F1-SA2	3.00	47.00	18.00	Flat	6.00
	M5	F1-SA2	3.00	47.00	18.00	Flat	6.00
	M6	F1-SA2	3.00	47.00	18.00	Flat	6.00
	M7	F1-S1	4.00	12.50	16.00	Flat	5.66
	M8	F1-S2	4.50	24.00	18.00	Flat	6.36
	M11	F1-S1	4.00	12.50	16.00	Flat	5.66
	M12	F1-S2	4.50	24.00	18.00	Flat	6.36
	M15	F1-S1	4.00	12.50	16.00	Flat	5.66
	M16	F1-S2	4.50	24.00	18.00	Flat	6.36
	M19	F1-SA1	3.00	88.09	12.00	Flat	4.24
	M20	F1-SA1	3.00	88.09	12.00	Flat	4.24
	M21	F1-SA1	3.00	88.09	12.00	Flat	4.24
	M23	Handrail Mod	2.38	150.00	7.46	Round	2.38
	M24	Handrail Mod	2.38	150.00	7.46	Round	2.38
	M25	MF-P1	2.38	108.00	7.46	Round	2.38
	M38	MF-P1	2.38	108.00	7.46	Round	2.38
	M39	MF-P1	2.38	108.00	7.46	Round	2.38
	M40	MF-P1	2.38	108.00	7.46	Round	2.38
	M41	MF-P1	2.38	84.00	7.46	Round	2.38
	M43	MF-P1	2.38	84.00	7.46	Round	2.38
	M44	MF-P1	2.38	108.00	7.46	Round	2.38
	M57	MF-P1	2.38	108.00	7.46	Round	2.38
	M58	MF-P1	2.38	108.00	7.46	Round	2.38
	M59	MF-P1	2.38	108.00	7.46	Round	2.38
	M60	MF-P1	2.38	84.00	7.46	Round	2.38
	M62	MF-P1	2.38	84.00	7.46	Round	2.38
	M63	MF-P1	2.38	108.00	7.46	Round	2.38
	M76	MF-P1	2.38	108.00	7.46	Round	2.38
	M77	MF-P1	2.38	108.00	7.46	Round	2.38
	M78	MF-P1	2.38	108.00	7.46	Round	2.38
	M79	MF-P1	2.38	84.00	7.46	Round	2.38
	M81	MF-P1	2.38	84.00	7.46	Round	2.38
	M82	MF-P2	2.38	48.00	7.46	Round	2.38
	M80A	Kicker	2.50	84.28	15.00	Flat	3.54
	M81A	Kicker	2.50	84.28	15.00	Flat	3.54
	M82A	Kicker	2.50	84.28	15.00	Flat	3.54
	M83	CA Mod	2.50	15.76	10.00	Flat	3.54
	M84	CA Mod	2.50	15.76	10.00	Flat	3.54
	M85	CA Mod	2.50	15.76	10.00	Flat	3.54
	M85A	Handrail Mod	2.38	150.00	7.46	Round	2.38

B+T Group
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Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N*K_a (ft^2)	EPA_T*K_a (ft^2)	$EPA_{N-Ice}*K_a$ (ft^2)	$EPA_{T-Ice}*K_a$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.08	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.08	0.06	0.01	0.01
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.21	0.10	0.03	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.21	0.10	0.03	0.02
nsung Telecommunicati	RFV01U-D1A	2	1.50	1.20	1.88	2.81	3.55	4.77	0.09	0.13	0.01	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.21	0.10	0.03	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.21	0.10	0.03	0.02
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.08	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.08	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.08	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.08	0.06	0.01	0.01
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.21	0.10	0.03	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.21	0.10	0.03	0.02
nsung Telecommunicati	RFV01U-D1A	1	1.50	1.20	0.94	1.41	1.77	2.38	0.04	0.07	0.01	0.01
nsung Telecommunicati	RFV01U-D2A	1	1.85	1.20	0.76	1.41	1.54	2.38	0.04	0.07	0.01	0.01

B+T GRP
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1717 S. Boulder, Suite 300
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Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N*K_a (ft^2)	EPA_T*K_a (ft^2)	$EPA_{N-Ice}*K_a$ (ft^2)	$EPA_{T-Ice}*K_a$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.00	0.10	0.03	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.00	0.10	0.03	0.02
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.00	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.00	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.00	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.00	0.06	0.01	0.01
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.00	0.10	0.03	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.00	0.10	0.03	0.02
nsung Telecommunicati	RFV01U-D2A	2	1.85	1.20	1.52	2.81	3.08	4.77	0.00	0.13	0.01	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.00	0.10	0.03	0.02
Commscope	NNHH-65B-R4	0.5	3.67	1.25	4.41	1.76	5.77	2.95	0.00	0.10	0.03	0.02
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.00	0.06	0.01	0.01
Decibel	DB844G65ZAXY	0.5	4.80	1.30	1.50	1.20	2.39	2.06	0.00	0.06	0.01	0.01

PROJECT	134993.001.01 - HRT 093 943		PKK
SUBJECT	Platform Mount Mount Analysis		
DATE	05/03/19	PAGE	OF

B+T Group
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(918) 587-4630

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N*K_a (ft^2)	EPA_T*K_a (ft^2)	$EPA_{N\,Ice}*K_a$ (ft^2)	$EPA_{T\,Ice}*K_a$ (ft^2)	$F_{A\,No\,Ice\,(N)}$	$F_{A\,No\,Ice\,(T)}$	$F_{A\,Ice\,(N)}$	$F_{A\,Ice\,(T)}$
RFS/Celwave	DBT1-6Z-8AB-0Z	1	2.40	1.20	1.50	3.60	2.59	5.09	0.07	0.17	0.01	0.03
RFS/Celwave	DBT1-6Z-8AB-0Z	1	2.40	1.20	1.50	3.60	2.59	5.09	0.07	0.17	0.01	0.03

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MF-H1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
2	Handrail	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
3	MF-P1	HSS2.375X0....	Column	HSS Pipe	A500 Gr.B ...	Typical	1.2	.733	.733	1.47
4	F1-S1	HSS4X4X4	Beam	Tube	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
5	F1-S2	HSS4.5X4.5X4	Beam	Tube	A500 Gr.B ...	Typical	3.84	11.4	11.4	18.5
6	F1-SA1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
7	F1-SA2	LL3x3x4x0	Beam	Double Angle (No..	A36 Gr.36	Typical	2.88	4.5	2.46	.063
8	MF-P2	HSS2.375X0....	Column	Pipe	A500 Gr.B ...	Typical	1.2	.733	.733	1.47
9	Handrail Mod	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
10	CA Mod	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
11	Kicker	LL2.5x2.5x3x0	Beam	Double Angle (No..	A36 Gr.36	Typical	1.8	1.91	1.07	.023

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	-0.	3.75	-97.860871	0	
2	N2	-84.75	3.75	48.930435	0	
3	N3	84.75	3.75	48.930435	0	
4	N4	0.	0	12.431235	0	
5	N5	0.	0	24.930435	0	
6	N6	0.	3.75	48.930435	0	
7	N7	0.	0	48.930435	0	
8	N8	0.	3.75	25.430435	0	
9	N9	0.	0	25.430435	0	
10	N10	10.765766	0	-6.215618	0	
11	N11	21.59039	0	-12.465218	0	
12	N12	42.375	3.75	-24.465218	0	
13	N13	42.375	0	-24.465218	0	
14	N14	22.023403	3.75	-12.715218	0	
15	N15	22.023403	0	-12.715218	0	
16	N16	-10.765766	0	-6.215618	0	
17	N17	-21.59039	0	-12.465218	0	
18	N18	-42.375	3.75	-24.465218	0	
19	N19	-42.375	0	-24.465218	0	
20	N20	-22.023403	3.75	-12.715218	0	
21	N21	-22.023403	0	-12.715218	0	
22	N22	44.046806	3.75	25.430435	0	
23	N23	-0.	3.75	-50.860871	0	
24	N24	-44.046806	3.75	25.430435	0	
25	N28	65.25	72.2492	51.620427	0	
26	N29	65.25	-35.7508	51.620427	0	
27	N30	65.25	41.75	48.930435	0	
28	N31	65.25	41.75	51.620427	0	
29	N32	65.25	3.75	48.930435	0	
30	N33	65.25	3.75	51.620427	0	
31	N34	40.7508	41.75	48.930435	0	
32	N35	40.7508	41.75	51.620427	0	
33	N36	40.7508	3.75	48.930435	0	
34	N37	40.7508	3.75	51.620427	0	
35	N38	6.7508	41.75	48.930435	0	
36	N39	6.7508	3.75	48.930435	0	
37	N40	-21.7492	41.75	48.930435	0	
38	N41	-21.7492	41.75	51.620427	0	
39	N42	-21.7492	3.75	48.930435	0	
40	N43	-21.7492	3.75	51.620427	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
41	N44	-42.2492	41.75	48.930435	0	
42	N45	-42.2492	41.75	51.620427	0	
43	N46	-42.2492	3.75	48.930435	0	
44	N47	-42.2492	3.75	51.620427	0	
45	N48	-66.2492	41.75	48.930435	0	
46	N49	-66.2492	41.75	51.620427	0	
47	N50	-66.2492	3.75	48.930435	0	
48	N51	-66.2492	3.75	51.620427	0	
49	N52	40.7508	72.2492	51.620427	0	
50	N53	40.7508	-35.7508	51.620427	0	
51	N54	-42.2492	72.2492	51.620427	0	
52	N55	-42.2492	-35.7508	51.620427	0	
53	N56	-66.2492	72.2492	51.620427	0	
54	N57	-66.2492	-35.7508	51.620427	0	
55	N58	-21.7492	74.2496	51.620427	0	
56	N59	-21.7492	-9.7504	51.620427	0	
57	N60	6.7508	41.75	51.620427	0	
58	N62	6.7508	78.75	51.620427	0	
59	N63	6.7508	-5.25	51.620427	0	
60	N64	12.079601	72.2492	-82.318371	0	
61	N65	12.079601	-35.7508	-82.318371	0	
62	N66	9.75	41.75	-80.973375	0	
63	N67	12.079601	41.75	-82.318371	0	
64	N68	9.75	3.75	-80.973375	0	
65	N69	12.079601	3.75	-82.318371	0	
66	N70	21.9996	41.75	-59.756446	0	
67	N71	24.329201	41.75	-61.101442	0	
68	N72	21.9996	3.75	-59.756446	0	
69	N73	24.329201	3.75	-61.101442	0	
70	N74	38.9996	41.75	-30.311582	0	
71	N75	38.9996	3.75	-30.311582	0	
72	N76	53.2496	41.75	-5.629858	0	
73	N77	55.579201	41.75	-6.974854	0	
74	N78	53.2496	3.75	-5.629858	0	
75	N79	55.579201	3.75	-6.974854	0	
76	N80	63.4996	41.75	12.123662	0	
77	N81	65.829201	41.75	10.778666	0	
78	N82	63.4996	3.75	12.123662	0	
79	N83	65.829201	3.75	10.778666	0	
80	N84	75.4996	41.75	32.908272	0	
81	N85	77.829201	41.75	31.563276	0	
82	N86	75.4996	3.75	32.908272	0	
83	N87	77.829201	3.75	31.563276	0	
84	N88	24.329201	72.2492	-61.101442	0	
85	N89	24.329201	-35.7508	-61.101442	0	
86	N90	65.829201	72.2492	10.778666	0	
87	N91	65.829201	-35.7508	10.778666	0	
88	N92	77.829201	72.2492	31.563276	0	
89	N93	77.829201	-35.7508	31.563276	0	
90	N94	55.579201	74.2496	-6.974854	0	
91	N95	55.579201	-9.7504	-6.974854	0	
92	N96	41.329201	41.75	-31.656578	0	
93	N98	41.329201	78.75	-31.656578	0	
94	N99	41.329201	-5.25	-31.656578	0	
95	N100	-77.329601	72.2492	30.697944	0	
96	N101	-77.329601	-35.7508	30.697944	0	
97	N102	-75	41.75	32.04294	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
98	N103	-77.329601	41.75	30.697944	0	
99	N104	-75	3.75	32.04294	0	
100	N105	-77.329601	3.75	30.697944	0	
101	N106	-62.7504	41.75	10.82601	0	
102	N107	-65.080001	41.75	9.481014	0	
103	N108	-62.7504	3.75	10.82601	0	
104	N109	-65.080001	3.75	9.481014	0	
105	N110	-45.7504	41.75	-18.618853	0	
106	N111	-45.7504	3.75	-18.618853	0	
107	N112	-31.5004	41.75	-43.300577	0	
108	N113	-33.830001	41.75	-44.645573	0	
109	N114	-31.5004	3.75	-43.300577	0	
110	N115	-33.830001	3.75	-44.645573	0	
111	N116	-21.2504	41.75	-61.054098	0	
112	N117	-23.580002	41.75	-62.399094	0	
113	N118	-21.2504	3.75	-61.054098	0	
114	N119	-23.580002	3.75	-62.399094	0	
115	N120	-9.2504	41.75	-81.838707	0	
116	N121	-11.580002	41.75	-83.183703	0	
117	N122	-9.2504	3.75	-81.838707	0	
118	N123	-11.580002	3.75	-83.183703	0	
119	N124	-65.080001	72.2492	9.481014	0	
120	N125	-65.080001	-35.7508	9.481014	0	
121	N126	-23.580002	72.2492	-62.399094	0	
122	N127	-23.580002	-35.7508	-62.399094	0	
123	N128	-11.580002	72.2492	-83.183703	0	
124	N129	-11.580002	-35.7508	-83.183703	0	
125	N130	-33.830001	74.2496	-44.645573	0	
126	N131	-33.830001	-9.7504	-44.645573	0	
127	N132	-48.080001	41.75	-19.963849	0	
128	N134	-48.080001	78.75	-19.963849	0	
129	N135	-48.080001	-5.25	-19.963849	0	
130	N136	0.	36	15.458371	0	
131	N137	0.	-12	15.458371	0	
132	N138	0	0	0	0	
133	N139	0.	0	15.458371	0	
134	N137A	-75	41.75	48.930435	0	
135	N138A	75	41.75	48.930435	0	
136	N139A	79.875	41.75	40.486688	0	
137	N140	4.875	41.75	-89.417123	0	
138	N141	-4.875	41.75	-89.417123	0	
139	N142	-79.875	41.75	40.486688	0	
140	N140A	-10.736529	-41.085927	6.198738	0	
141	N141A	-72.539042	3.75	41.880435	0	
142	N142A	10.736529	-41.085927	6.198738	0	
143	N143	72.539042	3.75	41.880435	0	
144	N144	-0.	-41.085927	-12.397476	0	
145	N145	-0.	3.75	-83.760871	0	
146	N146	69	41.75	48.930435	0	
147	N147	-69	41.75	48.930435	0	
148	N148	7.875	41.75	-84.220971	0	
149	N149	76.875	41.75	35.290535	0	
150	N150	-76.875	41.75	35.290535	0	
151	N151	-7.875	41.75	-84.220971	0	
152	N152	6.7508	3.75	51.620427	0	
153	N153	41.329201	3.75	-31.656578	0	
154	N154	-48.080001	3.75	-19.963849	0	

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N2	N3		270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N3	N1		270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N1	N2		270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N1	N23		180	F1-SA2	Beam	Double Angle (...	A36 Gr.36	Typical
5	M5	N2	N24		180	F1-SA2	Beam	Double Angle (...	A36 Gr.36	Typical
6	M6	N3	N22		180	F1-SA2	Beam	Double Angle (...	A36 Gr.36	Typical
7	M7	N4	N5			F1-S1	Beam	Tube	A500 Gr.B...	Typical
8	M8	N5	N7			F1-S2	Beam	Tube	A500 Gr.B...	Typical
9	M9	N6	N7			RIGID	None	None	RIGID	Typical
10	M10	N8	N9			RIGID	None	None	RIGID	Typical
11	M11	N10	N11			F1-S1	Beam	Tube	A500 Gr.B...	Typical
12	M12	N11	N13			F1-S2	Beam	Tube	A500 Gr.B...	Typical
13	M13	N12	N13			RIGID	None	None	RIGID	Typical
14	M14	N14	N15			RIGID	None	None	RIGID	Typical
15	M15	N16	N17			F1-S1	Beam	Tube	A500 Gr.B...	Typical
16	M16	N17	N19			F1-S2	Beam	Tube	A500 Gr.B...	Typical
17	M17	N18	N19			RIGID	None	None	RIGID	Typical
18	M18	N20	N21			RIGID	None	None	RIGID	Typical
19	M19	N24	N22			F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
20	M20	N22	N23			F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
21	M21	N23	N24			F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
22	M23	N139A	N140		180	Handrail Mod	Beam	Pipe	A53 Gr.B	Typical
23	M24	N141	N142		180	Handrail Mod	Beam	Pipe	A53 Gr.B	Typical
24	M25	N28	N29			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
25	M26	N30	N31			RIGID	None	None	RIGID	Typical
26	M27	N32	N33			RIGID	None	None	RIGID	Typical
27	M28	N34	N35			RIGID	None	None	RIGID	Typical
28	M29	N36	N37			RIGID	None	None	RIGID	Typical
29	M30	N38	N60			RIGID	None	None	RIGID	Typical
30	M31	N39	N152			RIGID	None	None	RIGID	Typical
31	M32	N40	N41			RIGID	None	None	RIGID	Typical
32	M33	N42	N43			RIGID	None	None	RIGID	Typical
33	M34	N44	N45			RIGID	None	None	RIGID	Typical
34	M35	N46	N47			RIGID	None	None	RIGID	Typical
35	M36	N48	N49			RIGID	None	None	RIGID	Typical
36	M37	N50	N51			RIGID	None	None	RIGID	Typical
37	M38	N52	N53			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
38	M39	N54	N55			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
39	M40	N56	N57			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
40	M41	N58	N59			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
41	M43	N62	N63			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
42	M44	N64	N65			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
43	M45	N66	N67			RIGID	None	None	RIGID	Typical
44	M46	N68	N69			RIGID	None	None	RIGID	Typical
45	M47	N70	N71			RIGID	None	None	RIGID	Typical
46	M48	N72	N73			RIGID	None	None	RIGID	Typical
47	M49	N74	N96			RIGID	None	None	RIGID	Typical
48	M50	N75	N153			RIGID	None	None	RIGID	Typical
49	M51	N76	N77			RIGID	None	None	RIGID	Typical
50	M52	N78	N79			RIGID	None	None	RIGID	Typical
51	M53	N80	N81			RIGID	None	None	RIGID	Typical
52	M54	N82	N83			RIGID	None	None	RIGID	Typical
53	M55	N84	N85			RIGID	None	None	RIGID	Typical
54	M56	N86	N87			RIGID	None	None	RIGID	Typical
55	M57	N88	N89			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
56	M58	N90	N91			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M59	N92	N93			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
58	M60	N94	N95			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
59	M62	N98	N99			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
60	M63	N100	N101			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
61	M64	N102	N103			RIGID	None	None	RIGID	Typical
62	M65	N104	N105			RIGID	None	None	RIGID	Typical
63	M66	N106	N107			RIGID	None	None	RIGID	Typical
64	M67	N108	N109			RIGID	None	None	RIGID	Typical
65	M68	N110	N132			RIGID	None	None	RIGID	Typical
66	M69	N111	N154			RIGID	None	None	RIGID	Typical
67	M70	N112	N113			RIGID	None	None	RIGID	Typical
68	M71	N114	N115			RIGID	None	None	RIGID	Typical
69	M72	N116	N117			RIGID	None	None	RIGID	Typical
70	M73	N118	N119			RIGID	None	None	RIGID	Typical
71	M74	N120	N121			RIGID	None	None	RIGID	Typical
72	M75	N122	N123			RIGID	None	None	RIGID	Typical
73	M76	N124	N125			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
74	M77	N126	N127			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
75	M78	N128	N129			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
76	M79	N130	N131			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
77	M81	N134	N135			MF-P1	Column	HSS Pipe	A500 Gr.B...	Typical
78	M82	N136	N137			MF-P2	Column	Pipe	A500 Gr.B...	Typical
79	M80A	N141A	N140A			Kicker	Beam	Double Angle (...	A36 Gr.36	Typical
80	M81A	N143	N142A			Kicker	Beam	Double Angle (...	A36 Gr.36	Typical
81	M82A	N145	N144			Kicker	Beam	Double Angle (...	A36 Gr.36	Typical
82	M83	N146	N149		180	CA Mod	Beam	Single Angle	A36 Gr.36	Typical
83	M84	N148	N151		180	CA Mod	Beam	Single Angle	A36 Gr.36	Typical
84	M85	N150	N147		180	CA Mod	Beam	Single Angle	A36 Gr.36	Typical
85	M85A	N137A	N138A			Handrail Mod	Beam	Pipe	A53 Gr.B	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL		-1			65		3	
2	0 Wind - No Ice	WLZ					65	43		
3	90 Wind - No Ice	WLX					65	43		
4	0 Wind - Ice	WLZ					65	43		
5	90 Wind - Ice	WLX					65	43		
6	0 Wind - Service	WLZ					65	43		
7	90 Wind - Service	WLX					65	43		
8	Ice	OL1					65	43	3	
9	Live Load a	LL				3				
10	Live Load b	LL				3				
11	Live Load c	LL				3				
12	Live Load d	LL				3				
13	Maint LL 1	LL								
14	Maint LL 2	LL					1			
15	Maint LL 3	LL					1			
16	Maint LL 4	LL					1			
17	Maint LL 5	LL					1			
18	Maint LL 6	LL					1			
19	Maint LL 7	LL								
20	Maint LL 8	LL					1			
21	Maint LL 9	LL					1			
22	Maint LL 10	LL					1			
23	Maint LL 11	LL					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
24	Maint LL 12	LL					1			
25	Maint LL 13	LL					1			
26	Maint LL 14	LL					1			
27	Maint LL 15	LL					1			
28	BLC 1 Transient Area...	None						30		
29	BLC 8 Transient Area...	None						30		

Load Combinations

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
1	1.4 Dead	Yes	Y		1	1.4																
2	1.2 D + 1.0 - 0 W	Yes	Y		1	1.2	2	1														
3	1.2 D + 1.0 - 30 W	Yes	Y		1	1.2	2	.866	3	.5												
4	1.2 D + 1.0 - 60 W	Yes	Y		1	1.2	3	.866	2	.5												
5	1.2 D + 1.0 - 90 W	Yes	Y		1	1.2	3	1														
6	1.2 D + 1.0 - 120 W	Yes	Y		1	1.2	3	.866	2	-.5												
7	1.2 D + 1.0 - 150 W	Yes	Y		1	1.2	2	-.866	3	.5												
8	1.2 D + 1.0 - 180 W	Yes	Y		1	1.2	2	-1														
9	1.2 D + 1.0 - 210 W	Yes	Y		1	1.2	2	-.866	3	-.5												
10	1.2 D + 1.0 - 240 W	Yes	Y		1	1.2	3	-.866	2	-.5												
11	1.2 D + 1.0 - 270 W	Yes	Y		1	1.2	3	-1														
12	1.2 D + 1.0 - 300 W	Yes	Y		1	1.2	3	-.866	2	.5												
13	1.2 D + 1.0 - 330 W	Yes	Y		1	1.2	2	.866	3	-.5												
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y		1	1.2	4	1			8	1										
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y		1	1.2	4	.866	5	.5	8	1										
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y		1	1.2	5	.866	4	.5	8	1										
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y		1	1.2	5	1			8	1										
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y		1	1.2	5	.866	4	-.5	8	1										
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y		1	1.2	4	-.866	5	.5	8	1										
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y		1	1.2	4	-1			8	1										
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y		1	1.2	4	-.866	5	-.5	8	1										
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y		1	1.2	5	-.866	4	-.5	8	1										
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y		1	1.2	5	-1			8	1										
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y		1	1.2	5	-.866	4	.5	8	1										
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y		1	1.2	4	.866	5	-.5	8	1										
26	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	6	1			9	1.5										
27	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	6	.866	7	.5	9	1.5										
28	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	7	.866	6	.5	9	1.5										
29	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	7	1			9	1.5										
30	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	7	.866	6	-.5	9	1.5										
31	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	6	-.866	7	.5	9	1.5										
32	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	6	-1			9	1.5										
33	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	6	-.866	7	-.5	9	1.5										
34	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	7	-.866	6	-.5	9	1.5										
35	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	7	-1			9	1.5										
36	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	7	-.866	6	.5	9	1.5										
37	1.2 D + 1.5 LL a + Service...	Yes	Y		1	1.2	6	.866	7	-.5	9	1.5										
38	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	6	1			10	1.5										
39	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	6	.866	7	.5	10	1.5										
40	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	7	.866	6	.5	10	1.5										
41	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	7	1			10	1.5										
42	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	7	.866	6	-.5	10	1.5										
43	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	6	-.866	7	.5	10	1.5										
44	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	6	-1			10	1.5										
45	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	6	-.866	7	-.5	10	1.5										
46	1.2 D + 1.5 LL b + Service...	Yes	Y		1	1.2	7	-.866	6	-.5	10	1.5										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
47	1.2 D + 1.5 LL b + Service..	Yes	Y		1	1.2	7	-1			10	1.5												
48	1.2 D + 1.5 LL b + Service..	Yes	Y		1	1.2	7	-.866	6	.5	10	1.5												
49	1.2 D + 1.5 LL b + Service..	Yes	Y		1	1.2	6	.866	7	-.5	10	1.5												
50	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	6	1			11	1.5												
51	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	6	.866	7	.5	11	1.5												
52	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	7	.866	6	.5	11	1.5												
53	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	7	1			11	1.5												
54	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	7	.866	6	-.5	11	1.5												
55	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	6	-.866	7	.5	11	1.5												
56	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	6	-1			11	1.5												
57	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	6	-.866	7	-.5	11	1.5												
58	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	7	-.866	6	-.5	11	1.5												
59	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	7	-1			11	1.5												
60	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	7	-.866	6	.5	11	1.5												
61	1.2 D + 1.5 LL c + Service..	Yes	Y		1	1.2	6	.866	7	-.5	11	1.5												
62	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	6	1			12	1.5												
63	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	6	.866	7	.5	12	1.5												
64	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	7	.866	6	.5	12	1.5												
65	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	7	1			12	1.5												
66	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	7	.866	6	-.5	12	1.5												
67	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	6	-.866	7	.5	12	1.5												
68	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	6	-1			12	1.5												
69	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	6	-.866	7	-.5	12	1.5												
70	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	7	-.866	6	-.5	12	1.5												
71	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	7	-1			12	1.5												
72	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	7	-.866	6	.5	12	1.5												
73	1.2 D + 1.5 LL d + Service..	Yes	Y		1	1.2	6	.866	7	-.5	12	1.5												
74	1.2 D + 1.5 LL Maint (1)	Yes	Y		1	1.2					13	1.5												
75	1.2 D + 1.5 LL Maint (2)	Yes	Y		1	1.2					14	1.5												
76	1.2 D + 1.5 LL Maint (3)	Yes	Y		1	1.2					15	1.5												
77	1.2 D + 1.5 LL Maint (4)	Yes	Y		1	1.2					16	1.5												
78	1.2 D + 1.5 LL Maint (5)	Yes	Y		1	1.2					17	1.5												
79	1.2 D + 1.5 LL Maint (6)	Yes	Y		1	1.2					18	1.5												
80	1.2 D + 1.5 LL Maint (7)	Yes	Y		1	1.2					19	1.5												
81	1.2 D + 1.5 LL Maint (8)	Yes	Y		1	1.2					20	1.5												
82	1.2 D + 1.5 LL Maint (9)	Yes	Y		1	1.2					21	1.5												
83	1.2 D + 1.5 LL Maint (10)	Yes	Y		1	1.2					22	1.5												
84	1.2 D + 1.5 LL Maint (11)	Yes	Y		1	1.2					23	1.5												
85	1.2 D + 1.5 LL Maint (12)	Yes	Y		1	1.2					24	1.5												
86	1.2 D + 1.5 LL Maint (13)	Yes	Y		1	1.2					25	1.5												
87	1.2 D + 1.5 LL Maint (14)	Yes	Y		1	1.2					26	1.5												
88	1.2 D + 1.5 LL Maint (15)	Yes	Y		1	1.2					27	1.5												

Joint Loads and Enforced Displacements (BLC 9 : Live Load a)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N50	L	Y	-.5
2	N86	L	Y	-.5
3	N122	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 10 : Live Load b)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N46	L	Y	-.5
2	N82	L	Y	-.5
3	N118	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 11 : Live Load c)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N36	L	Y	-.5
2	N72	L	Y	-.5
3	N108	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 12 : Live Load d)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/i...
1	N32	L	Y	-.5
2	N68	L	Y	-.5
3	N104	L	Y	-.5

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	Y	-.008	%5
2	M25	Y	-.008	%55
3	M25	Y	0	0
4	M25	Y	0	0
5	M25	Y	0	0
6	M38	Y	-.039	%10
7	M38	Y	-.039	%85
8	M38	Y	-.169	%25
9	M38	Y	0	0
10	M38	Y	0	0
11	M39	Y	-.039	%10
12	M39	Y	-.039	%85
13	M39	Y	0	0
14	M39	Y	0	0
15	M39	Y	0	0
16	M40	Y	-.008	%5
17	M40	Y	-.008	%55
18	M40	Y	0	0
19	M40	Y	0	0
20	M40	Y	0	0
21	M63	Y	-.008	%5
22	M63	Y	-.008	%55
23	M63	Y	0	0
24	M63	Y	0	0
25	M63	Y	0	0
26	M76	Y	-.039	%10
27	M76	Y	-.039	%85
28	M76	Y	-.084	%25
29	M76	Y	-.07	%25
30	M76	Y	0	0
31	M77	Y	-.039	%10
32	M77	Y	-.039	%85
33	M77	Y	0	0
34	M77	Y	0	0
35	M77	Y	0	0
36	M78	Y	-.008	%5
37	M78	Y	-.008	%55
38	M78	Y	0	0
39	M78	Y	0	0
40	M78	Y	0	0
41	M44	Y	-.008	%5
42	M44	Y	-.008	%55
43	M44	Y	0	0

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
44	M44	Y	0	0
45	M44	Y	0	0
46	M57	Y	-.039	%10
47	M57	Y	-.039	%85
48	M57	Y	-.141	%25
49	M57	Y	0	0
50	M57	Y	0	0
51	M58	Y	-.039	%10
52	M58	Y	-.039	%85
53	M58	Y	0	0
54	M58	Y	0	0
55	M58	Y	0	0
56	M59	Y	-.008	%5
57	M59	Y	-.008	%55
58	M59	Y	0	0
59	M59	Y	0	0
60	M59	Y	0	0
61	M82	Y	-.044	%20
62	M82	Y	-.044	%20
63	M82	Y	0	0
64	M82	Y	0	0
65	M82	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	Z	-.077	%5
2	M25	Z	-.077	%55
3	M25	Z	0	0
4	M25	Z	0	0
5	M25	Z	0	0
6	M38	Z	-.217	%10
7	M38	Z	-.217	%85
8	M38	Z	-.088	%50
9	M38	Z	0	0
10	M38	Z	0	0
11	M39	Z	-.217	%10
12	M39	Z	-.217	%85
13	M39	Z	0	0
14	M39	Z	0	0
15	M39	Z	0	0
16	M40	Z	-.077	%5
17	M40	Z	-.077	%55
18	M40	Z	0	0
19	M40	Z	0	0
20	M40	Z	0	0
21	M63	Z	-.077	%5
22	M63	Z	-.077	%55
23	M63	Z	0	0
24	M63	Z	0	0
25	M63	Z	0	0
26	M76	Z	-.217	%10
27	M76	Z	-.217	%85
28	M76	Z	-.044	%50
29	M76	Z	-.036	%50
30	M76	Z	0	0
31	M77	Z	-.217	%10

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
32	M77	Z	-.217	%85
33	M77	Z	0	0
34	M77	Z	0	0
35	M77	Z	0	0
36	M78	Z	-.077	%5
37	M78	Z	-.077	%55
38	M78	Z	0	0
39	M78	Z	0	0
40	M78	Z	0	0
41	M44	Z	-.077	%5
42	M44	Z	-.077	%55
43	M44	Z	0	0
44	M44	Z	0	0
45	M44	Z	0	0
46	M57	Z	-.217	%10
47	M57	Z	-.217	%85
48	M57	Z	-.072	%50
49	M57	Z	0	0
50	M57	Z	0	0
51	M58	Z	-.217	%10
52	M58	Z	-.217	%85
53	M58	Z	0	0
54	M58	Z	0	0
55	M58	Z	0	0
56	M59	Z	-.077	%5
57	M59	Z	-.077	%55
58	M59	Z	0	0
59	M59	Z	0	0
60	M59	Z	0	0
61	M82	Z	-.071	%20
62	M82	Z	-.071	%20
63	M82	Z	0	0
64	M82	Z	0	0
65	M82	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	X	-.064	%5
2	M25	X	-.064	%55
3	M25	X	0	0
4	M25	X	0	0
5	M25	X	0	0
6	M38	X	-.102	%10
7	M38	X	-.102	%85
8	M38	X	-.133	%50
9	M38	X	0	0
10	M38	X	0	0
11	M39	X	-.102	%10
12	M39	X	-.102	%85
13	M39	X	0	0
14	M39	X	0	0
15	M39	X	0	0
16	M40	X	-.064	%5
17	M40	X	-.064	%55
18	M40	X	0	0
19	M40	X	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
20	M40	X	0	0
21	M63	X	-.064	%5
22	M63	X	-.064	%55
23	M63	X	0	0
24	M63	X	0	0
25	M63	X	0	0
26	M76	X	-.102	%10
27	M76	X	-.102	%85
28	M76	X	-.066	%50
29	M76	X	-.066	%50
30	M76	X	0	0
31	M77	X	-.102	%10
32	M77	X	-.102	%85
33	M77	X	0	0
34	M77	X	0	0
35	M77	X	0	0
36	M78	X	-.064	%5
37	M78	X	-.064	%55
38	M78	X	0	0
39	M78	X	0	0
40	M78	X	0	0
41	M44	X	-.064	%5
42	M44	X	-.064	%55
43	M44	X	0	0
44	M44	X	0	0
45	M44	X	0	0
46	M57	X	-.102	%10
47	M57	X	-.102	%85
48	M57	X	-.133	%50
49	M57	X	0	0
50	M57	X	0	0
51	M58	X	-.102	%10
52	M58	X	-.102	%85
53	M58	X	0	0
54	M58	X	0	0
55	M58	X	0	0
56	M59	X	-.064	%5
57	M59	X	-.064	%55
58	M59	X	0	0
59	M59	X	0	0
60	M59	X	0	0
61	M82	X	-.17	%20
62	M82	X	-.17	%20
63	M82	X	0	0
64	M82	X	0	0
65	M82	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	Z	-.012	%5
2	M25	Z	-.012	%55
3	M25	Z	0	0
4	M25	Z	0	0
5	M25	Z	0	0
6	M38	Z	-.035	%10
7	M38	Z	-.035	%85

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
8	M38	Z	-.014	%50
9	M38	Z	0	0
10	M38	Z	0	0
11	M39	Z	-.035	%10
12	M39	Z	-.035	%85
13	M39	Z	0	0
14	M39	Z	0	0
15	M39	Z	0	0
16	M40	Z	-.012	%5
17	M40	Z	-.012	%55
18	M40	Z	0	0
19	M40	Z	0	0
20	M40	Z	0	0
21	M63	Z	-.012	%5
22	M63	Z	-.012	%55
23	M63	Z	0	0
24	M63	Z	0	0
25	M63	Z	0	0
26	M76	Z	-.035	%10
27	M76	Z	-.035	%85
28	M76	Z	-.007	%50
29	M76	Z	-.006	%50
30	M76	Z	0	0
31	M77	Z	-.035	%10
32	M77	Z	-.035	%85
33	M77	Z	0	0
34	M77	Z	0	0
35	M77	Z	0	0
36	M78	Z	-.012	%5
37	M78	Z	-.012	%55
38	M78	Z	0	0
39	M78	Z	0	0
40	M78	Z	0	0
41	M44	Z	-.012	%5
42	M44	Z	-.012	%55
43	M44	Z	0	0
44	M44	Z	0	0
45	M44	Z	0	0
46	M57	Z	-.035	%10
47	M57	Z	-.035	%85
48	M57	Z	-.011	%50
49	M57	Z	0	0
50	M57	Z	0	0
51	M58	Z	-.035	%10
52	M58	Z	-.035	%85
53	M58	Z	0	0
54	M58	Z	0	0
55	M58	Z	0	0
56	M59	Z	-.012	%5
57	M59	Z	-.012	%55
58	M59	Z	0	0
59	M59	Z	0	0
60	M59	Z	0	0
61	M82	Z	-.011	%20
62	M82	Z	-.011	%20
63	M82	Z	0	0
64	M82	Z	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
65	M82	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	X	-.01	%5
2	M25	X	-.01	%55
3	M25	X	0	0
4	M25	X	0	0
5	M25	X	0	0
6	M38	X	-.016	%10
7	M38	X	-.016	%85
8	M38	X	-.021	%50
9	M38	X	0	0
10	M38	X	0	0
11	M39	X	-.016	%10
12	M39	X	-.016	%85
13	M39	X	0	0
14	M39	X	0	0
15	M39	X	0	0
16	M40	X	-.01	%5
17	M40	X	-.01	%55
18	M40	X	0	0
19	M40	X	0	0
20	M40	X	0	0
21	M63	X	-.01	%5
22	M63	X	-.01	%55
23	M63	X	0	0
24	M63	X	0	0
25	M63	X	0	0
26	M76	X	-.016	%10
27	M76	X	-.016	%85
28	M76	X	-.011	%50
29	M76	X	-.011	%50
30	M76	X	0	0
31	M77	X	-.016	%10
32	M77	X	-.016	%85
33	M77	X	0	0
34	M77	X	0	0
35	M77	X	0	0
36	M78	X	-.01	%5
37	M78	X	-.01	%55
38	M78	X	0	0
39	M78	X	0	0
40	M78	X	0	0
41	M44	X	-.01	%5
42	M44	X	-.01	%55
43	M44	X	0	0
44	M44	X	0	0
45	M44	X	0	0
46	M57	X	-.016	%10
47	M57	X	-.016	%85
48	M57	X	-.021	%50
49	M57	X	0	0
50	M57	X	0	0
51	M58	X	-.016	%10
52	M58	X	-.016	%85

Member Point Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
53	M58	X	0	0
54	M58	X	0	0
55	M58	X	0	0
56	M59	X	-.01	%5
57	M59	X	-.01	%55
58	M59	X	0	0
59	M59	X	0	0
60	M59	X	0	0
61	M82	X	-.027	%20
62	M82	X	-.027	%20
63	M82	X	0	0
64	M82	X	0	0
65	M82	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	Z	-.004	%5
2	M25	Z	-.004	%55
3	M25	Z	0	0
4	M25	Z	0	0
5	M25	Z	0	0
6	M38	Z	-.013	%10
7	M38	Z	-.013	%85
8	M38	Z	-.005	%50
9	M38	Z	0	0
10	M38	Z	0	0
11	M39	Z	-.013	%10
12	M39	Z	-.013	%85
13	M39	Z	0	0
14	M39	Z	0	0
15	M39	Z	0	0
16	M40	Z	-.004	%5
17	M40	Z	-.004	%55
18	M40	Z	0	0
19	M40	Z	0	0
20	M40	Z	0	0
21	M63	Z	-.004	%5
22	M63	Z	-.004	%55
23	M63	Z	0	0
24	M63	Z	0	0
25	M63	Z	0	0
26	M76	Z	-.013	%10
27	M76	Z	-.013	%85
28	M76	Z	-.003	%50
29	M76	Z	-.002	%50
30	M76	Z	0	0
31	M77	Z	-.013	%10
32	M77	Z	-.013	%85
33	M77	Z	0	0
34	M77	Z	0	0
35	M77	Z	0	0
36	M78	Z	-.004	%5
37	M78	Z	-.004	%55
38	M78	Z	0	0
39	M78	Z	0	0
40	M78	Z	0	0

Member Point Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
41	M44	Z	-.004	%5
42	M44	Z	-.004	%55
43	M44	Z	0	0
44	M44	Z	0	0
45	M44	Z	0	0
46	M57	Z	-.013	%10
47	M57	Z	-.013	%85
48	M57	Z	-.004	%50
49	M57	Z	0	0
50	M57	Z	0	0
51	M58	Z	-.013	%10
52	M58	Z	-.013	%85
53	M58	Z	0	0
54	M58	Z	0	0
55	M58	Z	0	0
56	M59	Z	-.004	%5
57	M59	Z	-.004	%55
58	M59	Z	0	0
59	M59	Z	0	0
60	M59	Z	0	0
61	M82	Z	-.004	%20
62	M82	Z	-.004	%20
63	M82	Z	0	0
64	M82	Z	0	0
65	M82	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	X	-.004	%5
2	M25	X	-.004	%55
3	M25	X	0	0
4	M25	X	0	0
5	M25	X	0	0
6	M38	X	-.006	%10
7	M38	X	-.006	%85
8	M38	X	-.008	%50
9	M38	X	0	0
10	M38	X	0	0
11	M39	X	-.006	%10
12	M39	X	-.006	%85
13	M39	X	0	0
14	M39	X	0	0
15	M39	X	0	0
16	M40	X	-.004	%5
17	M40	X	-.004	%55
18	M40	X	0	0
19	M40	X	0	0
20	M40	X	0	0
21	M63	X	-.004	%5
22	M63	X	-.004	%55
23	M63	X	0	0
24	M63	X	0	0
25	M63	X	0	0
26	M76	X	-.006	%10
27	M76	X	-.006	%85
28	M76	X	-.004	%50

Member Point Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
29	M76	X	-.004	%50
30	M76	X	0	0
31	M77	X	-.006	%10
32	M77	X	-.006	%85
33	M77	X	0	0
34	M77	X	0	0
35	M77	X	0	0
36	M78	X	-.004	%5
37	M78	X	-.004	%55
38	M78	X	0	0
39	M78	X	0	0
40	M78	X	0	0
41	M44	X	-.004	%5
42	M44	X	-.004	%55
43	M44	X	0	0
44	M44	X	0	0
45	M44	X	0	0
46	M57	X	-.006	%10
47	M57	X	-.006	%85
48	M57	X	-.008	%50
49	M57	X	0	0
50	M57	X	0	0
51	M58	X	-.006	%10
52	M58	X	-.006	%85
53	M58	X	0	0
54	M58	X	0	0
55	M58	X	0	0
56	M59	X	-.004	%5
57	M59	X	-.004	%55
58	M59	X	0	0
59	M59	X	0	0
60	M59	X	0	0
61	M82	X	-.01	%20
62	M82	X	-.01	%20
63	M82	X	0	0
64	M82	X	0	0
65	M82	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M25	Y	-.084	%5
2	M25	Y	-.084	%55
3	M25	Y	0	0
4	M25	Y	0	0
5	M25	Y	0	0
6	M38	Y	-.195	%10
7	M38	Y	-.195	%85
8	M38	Y	-.141	%50
9	M38	Y	0	0
10	M38	Y	0	0
11	M39	Y	-.195	%10
12	M39	Y	-.195	%85
13	M39	Y	0	0
14	M39	Y	0	0
15	M39	Y	0	0
16	M40	Y	-.084	%5

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
17	M40	Y	-.084	%55
18	M40	Y	0	0
19	M40	Y	0	0
20	M40	Y	0	0
21	M63	Y	-.084	%5
22	M63	Y	-.084	%55
23	M63	Y	0	0
24	M63	Y	0	0
25	M63	Y	0	0
26	M76	Y	-.195	%10
27	M76	Y	-.195	%85
28	M76	Y	-.071	%50
29	M76	Y	-.067	%50
30	M76	Y	0	0
31	M77	Y	-.195	%10
32	M77	Y	-.195	%85
33	M77	Y	0	0
34	M77	Y	0	0
35	M77	Y	0	0
36	M78	Y	-.084	%5
37	M78	Y	-.084	%55
38	M78	Y	0	0
39	M78	Y	0	0
40	M78	Y	0	0
41	M44	Y	-.084	%5
42	M44	Y	-.084	%55
43	M44	Y	0	0
44	M44	Y	0	0
45	M44	Y	0	0
46	M57	Y	-.195	%10
47	M57	Y	-.195	%85
48	M57	Y	-.134	%50
49	M57	Y	0	0
50	M57	Y	0	0
51	M58	Y	-.195	%10
52	M58	Y	-.195	%85
53	M58	Y	0	0
54	M58	Y	0	0
55	M58	Y	0	0
56	M59	Y	-.084	%5
57	M59	Y	-.084	%55
58	M59	Y	0	0
59	M59	Y	0	0
60	M59	Y	0	0
61	M82	Y	-.157	%20
62	M82	Y	-.157	%20
63	M82	Y	0	0
64	M82	Y	0	0
65	M82	Y	0	0

Member Point Loads (BLC 14 : Maint LL 2)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M1	Y	-.5	%5

Member Point Loads (BLC 15 : Maint LL 3)

Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]

Member Point Loads (BLC 15 : Maint LL 3) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M24	Y	-.5	%5

Member Point Loads (BLC 16 : Maint LL 4)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M3	Y	-.5	%5

Member Point Loads (BLC 17 : Maint LL 5)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M23	Y	-.5	%5

Member Point Loads (BLC 18 : Maint LL 6)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M2	Y	-.5	%5

Member Point Loads (BLC 20 : Maint LL 8)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M1	Y	-.5	%95

Member Point Loads (BLC 21 : Maint LL 9)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M24	Y	-.5	%95

Member Point Loads (BLC 22 : Maint LL 10)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M3	Y	-.5	%95

Member Point Loads (BLC 23 : Maint LL 11)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M23	Y	-.5	%95

Member Point Loads (BLC 24 : Maint LL 12)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M2	Y	-.5	%95

Member Point Loads (BLC 25 : Maint LL 13)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M8	Y	-.5	%90

Member Point Loads (BLC 26 : Maint LL 14)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M16	Y	-.5	%90

Member Point Loads (BLC 27 : Maint LL 15)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	M12	Y	-.5	%90

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-.018	-.018	0	0
2	M2	Z	-.018	-.018	0	0

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
3	M3	Z	-.018	-.018	0	0
4	M4	Z	-.015	-.015	0	0
5	M5	Z	-.015	-.015	0	0
6	M6	Z	-.015	-.015	0	0
7	M7	Z	-.014	-.014	0	0
8	M8	Z	-.017	-.017	0	0
9	M11	Z	-.014	-.014	0	0
10	M12	Z	-.017	-.017	0	0
11	M15	Z	-.014	-.014	0	0
12	M16	Z	-.017	-.017	0	0
13	M19	Z	-.018	-.018	0	0
14	M20	Z	-.018	-.018	0	0
15	M21	Z	-.018	-.018	0	0
16	M23	Z	-.008	-.008	0	0
17	M24	Z	-.008	-.008	0	0
18	M25	Z	-.008	-.008	0	0
19	M38	Z	-.008	-.008	0	0
20	M39	Z	-.008	-.008	0	0
21	M40	Z	-.008	-.008	0	0
22	M41	Z	-.008	-.008	0	0
23	M43	Z	-.008	-.008	0	0
24	M44	Z	-.008	-.008	0	0
25	M57	Z	-.008	-.008	0	0
26	M58	Z	-.008	-.008	0	0
27	M59	Z	-.008	-.008	0	0
28	M60	Z	-.008	-.008	0	0
29	M62	Z	-.008	-.008	0	0
30	M63	Z	-.008	-.008	0	0
31	M76	Z	-.008	-.008	0	0
32	M77	Z	-.008	-.008	0	0
33	M78	Z	-.008	-.008	0	0
34	M79	Z	-.008	-.008	0	0
35	M81	Z	-.008	-.008	0	0
36	M82	Z	-.008	-.008	0	0
37	M80A	Z	-.015	-.015	0	0
38	M81A	Z	-.015	-.015	0	0
39	M82A	Z	-.015	-.015	0	0
40	M83	Z	-.01	-.01	0	0
41	M84	Z	-.01	-.01	0	0
42	M85	Z	-.01	-.01	0	0
43	M85A	Z	-.008	-.008	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	X	-.018	-.018	0	0
2	M2	X	-.018	-.018	0	0
3	M3	X	-.018	-.018	0	0
4	M4	X	-.015	-.015	0	0
5	M5	X	-.015	-.015	0	0
6	M6	X	-.015	-.015	0	0
7	M7	X	-.014	-.014	0	0
8	M8	X	-.017	-.017	0	0
9	M11	X	-.014	-.014	0	0
10	M12	X	-.017	-.017	0	0
11	M15	X	-.014	-.014	0	0
12	M16	X	-.017	-.017	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
13	M19	X	-.018	-.018	0	0
14	M20	X	-.018	-.018	0	0
15	M21	X	-.018	-.018	0	0
16	M23	X	-.008	-.008	0	0
17	M24	X	-.008	-.008	0	0
18	M25	X	-.008	-.008	0	0
19	M38	X	-.008	-.008	0	0
20	M39	X	-.008	-.008	0	0
21	M40	X	-.008	-.008	0	0
22	M41	X	-.008	-.008	0	0
23	M43	X	-.008	-.008	0	0
24	M44	X	-.008	-.008	0	0
25	M57	X	-.008	-.008	0	0
26	M58	X	-.008	-.008	0	0
27	M59	X	-.008	-.008	0	0
28	M60	X	-.008	-.008	0	0
29	M62	X	-.008	-.008	0	0
30	M63	X	-.008	-.008	0	0
31	M76	X	-.008	-.008	0	0
32	M77	X	-.008	-.008	0	0
33	M78	X	-.008	-.008	0	0
34	M79	X	-.008	-.008	0	0
35	M81	X	-.008	-.008	0	0
36	M82	X	-.008	-.008	0	0
37	M80A	X	-.015	-.015	0	0
38	M81A	X	-.015	-.015	0	0
39	M82A	X	-.015	-.015	0	0
40	M83	X	-.01	-.01	0	0
41	M84	X	-.01	-.01	0	0
42	M85	X	-.01	-.01	0	0
43	M85A	X	-.008	-.008	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-.007	-.007	0	0
2	M2	Z	-.007	-.007	0	0
3	M3	Z	-.007	-.007	0	0
4	M4	Z	-.006	-.006	0	0
5	M5	Z	-.006	-.006	0	0
6	M6	Z	-.006	-.006	0	0
7	M7	Z	-.007	-.007	0	0
8	M8	Z	-.007	-.007	0	0
9	M11	Z	-.007	-.007	0	0
10	M12	Z	-.007	-.007	0	0
11	M15	Z	-.007	-.007	0	0
12	M16	Z	-.007	-.007	0	0
13	M19	Z	-.007	-.007	0	0
14	M20	Z	-.007	-.007	0	0
15	M21	Z	-.007	-.007	0	0
16	M23	Z	-.002	-.002	0	0
17	M24	Z	-.002	-.002	0	0
18	M25	Z	-.002	-.002	0	0
19	M38	Z	-.002	-.002	0	0
20	M39	Z	-.002	-.002	0	0
21	M40	Z	-.002	-.002	0	0
22	M41	Z	-.002	-.002	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
23	M43	Z	-.002	-.002	0	0
24	M44	Z	-.002	-.002	0	0
25	M57	Z	-.002	-.002	0	0
26	M58	Z	-.002	-.002	0	0
27	M59	Z	-.002	-.002	0	0
28	M60	Z	-.002	-.002	0	0
29	M62	Z	-.002	-.002	0	0
30	M63	Z	-.002	-.002	0	0
31	M76	Z	-.002	-.002	0	0
32	M77	Z	-.002	-.002	0	0
33	M78	Z	-.002	-.002	0	0
34	M79	Z	-.002	-.002	0	0
35	M81	Z	-.002	-.002	0	0
36	M82	Z	-.002	-.002	0	0
37	M80A	Z	-.007	-.007	0	0
38	M81A	Z	-.007	-.007	0	0
39	M82A	Z	-.007	-.007	0	0
40	M83	Z	-.006	-.006	0	0
41	M84	Z	-.006	-.006	0	0
42	M85	Z	-.006	-.006	0	0
43	M85A	Z	-.002	-.002	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	X	-.007	-.007	0	0
2	M2	X	-.007	-.007	0	0
3	M3	X	-.007	-.007	0	0
4	M4	X	-.006	-.006	0	0
5	M5	X	-.006	-.006	0	0
6	M6	X	-.006	-.006	0	0
7	M7	X	-.007	-.007	0	0
8	M8	X	-.007	-.007	0	0
9	M11	X	-.007	-.007	0	0
10	M12	X	-.007	-.007	0	0
11	M15	X	-.007	-.007	0	0
12	M16	X	-.007	-.007	0	0
13	M19	X	-.007	-.007	0	0
14	M20	X	-.007	-.007	0	0
15	M21	X	-.007	-.007	0	0
16	M23	X	-.002	-.002	0	0
17	M24	X	-.002	-.002	0	0
18	M25	X	-.002	-.002	0	0
19	M38	X	-.002	-.002	0	0
20	M39	X	-.002	-.002	0	0
21	M40	X	-.002	-.002	0	0
22	M41	X	-.002	-.002	0	0
23	M43	X	-.002	-.002	0	0
24	M44	X	-.002	-.002	0	0
25	M57	X	-.002	-.002	0	0
26	M58	X	-.002	-.002	0	0
27	M59	X	-.002	-.002	0	0
28	M60	X	-.002	-.002	0	0
29	M62	X	-.002	-.002	0	0
30	M63	X	-.002	-.002	0	0
31	M76	X	-.002	-.002	0	0
32	M77	X	-.002	-.002	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
33	M78	X	-.002	-.002	0	0
34	M79	X	-.002	-.002	0	0
35	M81	X	-.002	-.002	0	0
36	M82	X	-.002	-.002	0	0
37	M80A	X	-.007	-.007	0	0
38	M81A	X	-.007	-.007	0	0
39	M82A	X	-.007	-.007	0	0
40	M83	X	-.006	-.006	0	0
41	M84	X	-.006	-.006	0	0
42	M85	X	-.006	-.006	0	0
43	M85A	X	-.002	-.002	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-.001	-.001	0	0
2	M2	Z	-.001	-.001	0	0
3	M3	Z	-.001	-.001	0	0
4	M4	Z	-.0009	-.0009	0	0
5	M5	Z	-.0009	-.0009	0	0
6	M6	Z	-.0009	-.0009	0	0
7	M7	Z	-.0008	-.0008	0	0
8	M8	Z	-.001	-.001	0	0
9	M11	Z	-.0008	-.0008	0	0
10	M12	Z	-.001	-.001	0	0
11	M15	Z	-.0008	-.0008	0	0
12	M16	Z	-.001	-.001	0	0
13	M19	Z	-.001	-.001	0	0
14	M20	Z	-.001	-.001	0	0
15	M21	Z	-.001	-.001	0	0
16	M23	Z	-.0002	-.0002	0	0
17	M24	Z	-.0002	-.0002	0	0
18	M25	Z	-.0002	-.0002	0	0
19	M38	Z	-.0002	-.0002	0	0
20	M39	Z	-.0002	-.0002	0	0
21	M40	Z	-.0002	-.0002	0	0
22	M41	Z	-.0002	-.0002	0	0
23	M43	Z	-.0002	-.0002	0	0
24	M44	Z	-.0002	-.0002	0	0
25	M57	Z	-.0002	-.0002	0	0
26	M58	Z	-.0002	-.0002	0	0
27	M59	Z	-.0002	-.0002	0	0
28	M60	Z	-.0002	-.0002	0	0
29	M62	Z	-.0002	-.0002	0	0
30	M63	Z	-.0002	-.0002	0	0
31	M76	Z	-.0002	-.0002	0	0
32	M77	Z	-.0002	-.0002	0	0
33	M78	Z	-.0002	-.0002	0	0
34	M79	Z	-.0002	-.0002	0	0
35	M81	Z	-.0002	-.0002	0	0
36	M82	Z	-.0002	-.0002	0	0
37	M80A	Z	-.0008	-.0008	0	0
38	M81A	Z	-.0008	-.0008	0	0
39	M82A	Z	-.0008	-.0008	0	0
40	M83	Z	-.0006	-.0006	0	0
41	M84	Z	-.0006	-.0006	0	0
42	M85	Z	-.0006	-.0006	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
43	M85A	Z	-.0002	-.0002	0	0

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	X	-.001	-.001	0	0
2	M2	X	-.001	-.001	0	0
3	M3	X	-.001	-.001	0	0
4	M4	X	-.0009	-.0009	0	0
5	M5	X	-.0009	-.0009	0	0
6	M6	X	-.0009	-.0009	0	0
7	M7	X	-.0008	-.0008	0	0
8	M8	X	-.001	-.001	0	0
9	M11	X	-.0008	-.0008	0	0
10	M12	X	-.001	-.001	0	0
11	M15	X	-.0008	-.0008	0	0
12	M16	X	-.001	-.001	0	0
13	M19	X	-.001	-.001	0	0
14	M20	X	-.001	-.001	0	0
15	M21	X	-.001	-.001	0	0
16	M23	X	-.0002	-.0002	0	0
17	M24	X	-.0002	-.0002	0	0
18	M25	X	-.0002	-.0002	0	0
19	M38	X	-.0002	-.0002	0	0
20	M39	X	-.0002	-.0002	0	0
21	M40	X	-.0002	-.0002	0	0
22	M41	X	-.0002	-.0002	0	0
23	M43	X	-.0002	-.0002	0	0
24	M44	X	-.0002	-.0002	0	0
25	M57	X	-.0002	-.0002	0	0
26	M58	X	-.0002	-.0002	0	0
27	M59	X	-.0002	-.0002	0	0
28	M60	X	-.0002	-.0002	0	0
29	M62	X	-.0002	-.0002	0	0
30	M63	X	-.0002	-.0002	0	0
31	M76	X	-.0002	-.0002	0	0
32	M77	X	-.0002	-.0002	0	0
33	M78	X	-.0002	-.0002	0	0
34	M79	X	-.0002	-.0002	0	0
35	M81	X	-.0002	-.0002	0	0
36	M82	X	-.0002	-.0002	0	0
37	M80A	X	-.0008	-.0008	0	0
38	M81A	X	-.0008	-.0008	0	0
39	M82A	X	-.0008	-.0008	0	0
40	M83	X	-.0006	-.0006	0	0
41	M84	X	-.0006	-.0006	0	0
42	M85	X	-.0006	-.0006	0	0
43	M85A	X	-.0002	-.0002	0	0

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-.018	-.018	0	0
2	M2	Y	-.018	-.018	0	0
3	M3	Y	-.018	-.018	0	0
4	M4	Y	-.023	-.023	0	0
5	M5	Y	-.023	-.023	0	0
6	M6	Y	-.023	-.023	0	0

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
7	M7	Y	-.022	-.022	0	0
8	M8	Y	-.024	-.024	0	0
9	M11	Y	-.022	-.022	0	0
10	M12	Y	-.024	-.024	0	0
11	M15	Y	-.022	-.022	0	0
12	M16	Y	-.024	-.024	0	0
13	M19	Y	-.018	-.018	0	0
14	M20	Y	-.018	-.018	0	0
15	M21	Y	-.018	-.018	0	0
16	M23	Y	-.013	-.013	0	0
17	M24	Y	-.013	-.013	0	0
18	M25	Y	-.013	-.013	0	0
19	M38	Y	-.013	-.013	0	0
20	M39	Y	-.013	-.013	0	0
21	M40	Y	-.013	-.013	0	0
22	M41	Y	-.013	-.013	0	0
23	M43	Y	-.013	-.013	0	0
24	M44	Y	-.013	-.013	0	0
25	M57	Y	-.013	-.013	0	0
26	M58	Y	-.013	-.013	0	0
27	M59	Y	-.013	-.013	0	0
28	M60	Y	-.013	-.013	0	0
29	M62	Y	-.013	-.013	0	0
30	M63	Y	-.013	-.013	0	0
31	M76	Y	-.013	-.013	0	0
32	M77	Y	-.013	-.013	0	0
33	M78	Y	-.013	-.013	0	0
34	M79	Y	-.013	-.013	0	0
35	M81	Y	-.013	-.013	0	0
36	M82	Y	-.013	-.013	0	0
37	M80A	Y	-.016	-.016	0	0
38	M81A	Y	-.016	-.016	0	0
39	M82A	Y	-.016	-.016	0	0
40	M83	Y	-.016	-.016	0	0
41	M84	Y	-.016	-.016	0	0
42	M85	Y	-.016	-.016	0	0
43	M85A	Y	-.013	-.013	0	0

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-.0002014	-.006	0	24.214
2	M1	Y	-.006	-.01	24.214	48.429
3	M1	Y	-.01	-.009	48.429	72.643
4	M1	Y	-.009	-.009	72.643	96.857
5	M1	Y	-.009	-.01	96.857	121.071
6	M1	Y	-.01	-.006	121.071	145.286
7	M1	Y	-.006	-.0002014	145.286	169.5
8	M5	Y	-.002	-.01	0	23.5
9	M5	Y	-.01	-.017	23.5	47
10	M6	Y	-.002	-.01	0	23.5
11	M6	Y	-.01	-.017	23.5	47
12	M19	Y	-.01	-.01	.133	87.961
13	M2	Y	-.0002014	-.006	0	24.214
14	M2	Y	-.006	-.01	24.214	48.429
15	M2	Y	-.01	-.009	48.429	72.643
16	M2	Y	-.009	-.009	72.643	96.857

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
17	M2	Y	-.009	-.01	96.857	121.071
18	M2	Y	-.01	-.006	121.071	145.286
19	M2	Y	-.006	-.0002014	145.286	169.5
20	M4	Y	-.002	-.01	0	23.5
21	M4	Y	-.01	-.017	23.5	47
22	M20	Y	-.01	-.01	.133	87.961
23	M3	Y	-.0002014	-.006	0	24.214
24	M3	Y	-.006	-.01	24.214	48.429
25	M3	Y	-.01	-.009	48.429	72.643
26	M3	Y	-.009	-.009	72.643	96.857
27	M3	Y	-.009	-.01	96.857	121.071
28	M3	Y	-.01	-.006	121.071	145.286
29	M3	Y	-.006	-.0002014	145.286	169.5
30	M21	Y	-.01	-.01	.133	87.961

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-.0002189	-.006	0	24.214
2	M1	Y	-.006	-.011	24.214	48.429
3	M1	Y	-.011	-.01	48.429	72.643
4	M1	Y	-.01	-.01	72.643	96.857
5	M1	Y	-.01	-.011	96.857	121.071
6	M1	Y	-.011	-.006	121.071	145.286
7	M1	Y	-.006	-.0002189	145.286	169.5
8	M5	Y	-.002	-.01	0	23.5
9	M5	Y	-.01	-.019	23.5	47
10	M6	Y	-.002	-.01	0	23.5
11	M6	Y	-.01	-.019	23.5	47
12	M19	Y	-.011	-.011	.133	87.961
13	M2	Y	-.0002216	-.007	0	24.214
14	M2	Y	-.007	-.011	24.214	48.429
15	M2	Y	-.011	-.01	48.429	72.643
16	M2	Y	-.01	-.01	72.643	96.857
17	M2	Y	-.01	-.011	96.857	121.071
18	M2	Y	-.011	-.007	121.071	145.286
19	M2	Y	-.007	-.0002216	145.286	169.5
20	M4	Y	-.002	-.01	0	23.5
21	M4	Y	-.01	-.019	23.5	47
22	M20	Y	-.011	-.011	.133	87.961
23	M3	Y	-.0002216	-.007	0	24.214
24	M3	Y	-.007	-.011	24.214	48.429
25	M3	Y	-.011	-.01	48.429	72.643
26	M3	Y	-.01	-.01	72.643	96.857
27	M3	Y	-.01	-.011	96.857	121.071
28	M3	Y	-.011	-.007	121.071	145.286
29	M3	Y	-.007	-.0002216	145.286	169.5
30	M21	Y	-.011	-.011	.133	87.961

Member Area Loads (BLC 1 : Dead)

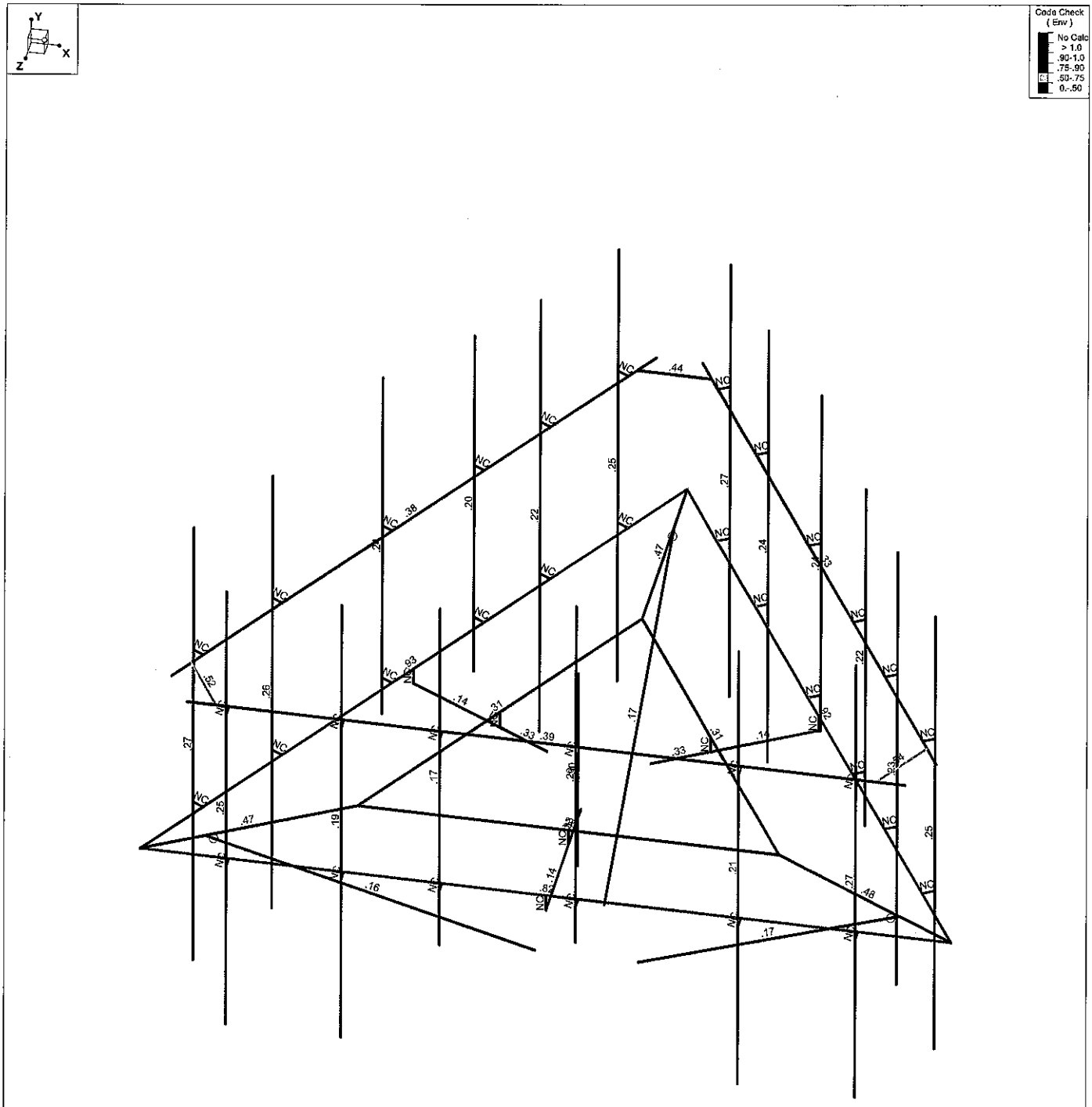
	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N2	N24	N22	N3	Y	Two Way	-.01
2	N3	N22	N23	N1	Y	Two Way	-.01
3	N24	N23	N1	N2	Y	Two Way	-.01

Member Area Loads (BLC 8 : Ice)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N2	N24	N22	N3	Y	Two Way	-.011
2	N3	N22	N23	N1	Y	Two Way	-.011
3	N24	N23	N1	N2	Y	Two Way	-.011

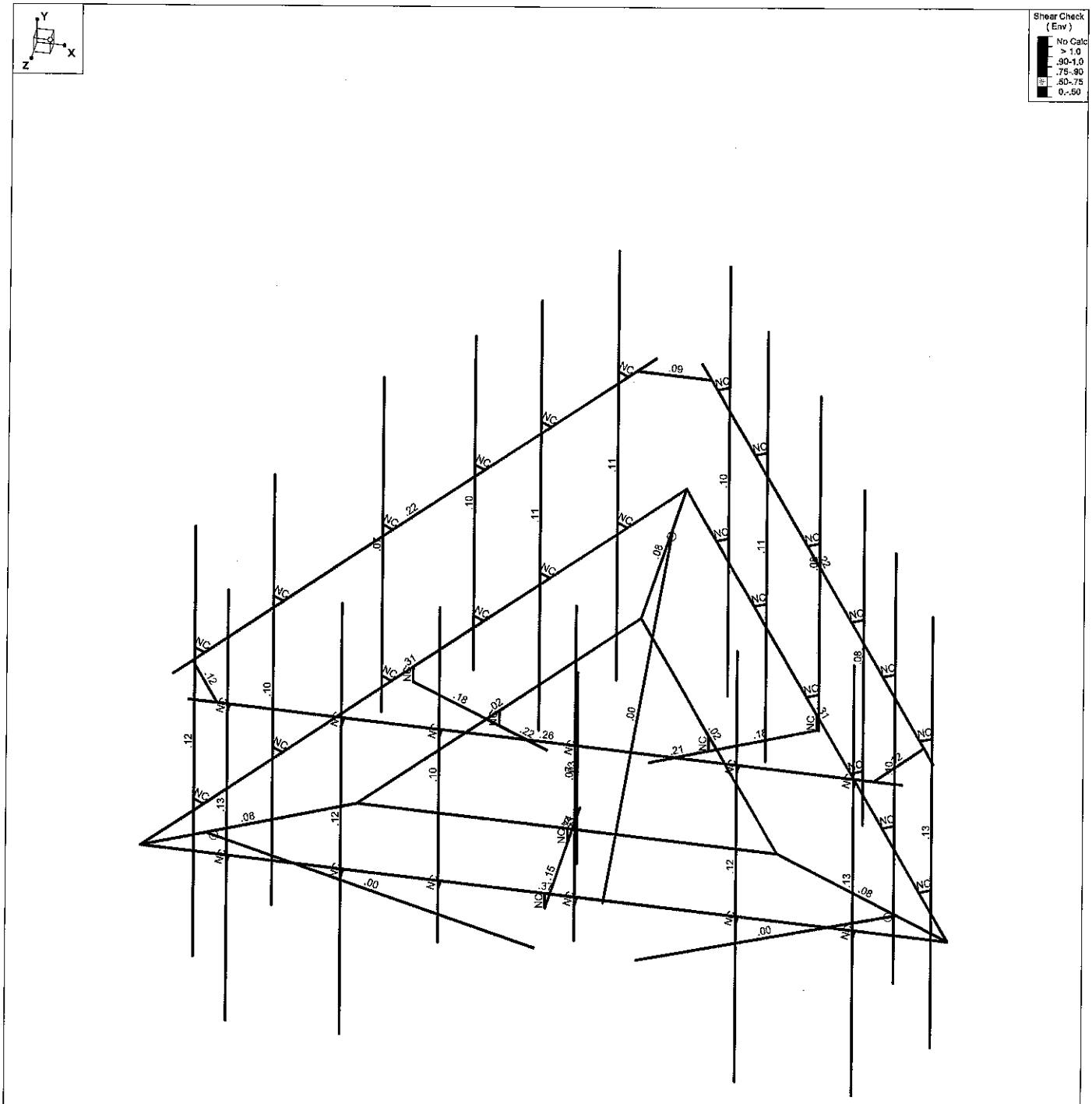
APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806372 - HRT 093 943228	SK - 5
PKK		May 3, 2019 at 8:48 AM
134993.001.01		134993_003_01_HRT 093 943228...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806372 - HRT 093 943228	SK - 6
PKK		May 3, 2019 at 8:48 AM
134993.001.01		134993_003_01_HRT 093 943228...

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N4	max	4.463	5	2.121	21	1.215	2	-.412	2	3.31	5	1.729	11
2		min	-4.463	11	.573	3	-1.21	8	-4.603	20	-3.326	11	-1.653	5
3	N16	max	2.363	7	1.622	18	4.264	13	2.316	14	3.822	13	-.351	12
4		min	-2.361	13	.441	11	-4.282	7	-.365	8	-3.852	7	-3.913	18
5	N10	max	2.357	3	1.618	25	4.257	3	2.425	14	3.852	9	3.794	22
6		min	-2.378	9	.418	7	-4.302	9	-.505	8	-3.833	3	.544	5
7	N140A	max	.05	12	2.789	18	2.144	18	0	88	0	88	0	88
8		min	-3.713	18	-.043	12	-.029	12	0	1	0	1	0	1
9	N142A	max	3.726	22	2.798	22	2.151	22	0	88	0	88	0	88
10		min	-.051	4	-.044	4	-.03	4	0	1	0	1	0	1
11	N144	max	.051	5	2.798	14	.336	8	0	88	0	88	0	88
12		min	-.051	11	-.218	8	-4.302	14	0	1	0	1	0	1
13	Totals:	max	6.144	5	13.202	23	7.327	2						
14		min	-6.144	11	3.905	5	-7.327	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M3	L3X3X4	.930	0	2	.312	84.75	y	10	3.875	46.656	1.688	2.842	1.83	H2-1
2	M2	L3X3X4	.917	169.5	2	.308	84.75	y	6	3.875	46.656	1.688	3.185	2.684	H2-1
3	M1	L3X3X4	.825	169.5	9	.370	84.75	y	2	3.875	46.656	1.688	2.694	1.583	H2-1
4	M83	L2.5x2.5x4	.536	15.75	8	.120	0	z	7	36.449	38.556	1.114	2.537	1.424	H2-1
5	M85	L2.5x2.5x4	.522	0	8	.121	15.75	z	3	36.449	38.556	1.114	2.537	1.293	H2-1
6	M6	LL3x3x4x0	.479	0	20	.081	13.708	y	21	76.374	93.312	6.48	4.361	1.606	H1-1b
7	M5	LL3x3x4x0	.471	0	16	.080	13.708	y	17	76.374	93.312	6.48	4.361	1.577	H1-1b
8	M4	LL3x3x4x0	.470	0	25	.081	13.708	y	25	76.374	93.312	6.48	4.361	1.539	H1-1b
9	M84	L2.5x2.5x4	.444	15.75	12	.095	0	z	11	36.449	38.556	1.114	2.537	1.325	H2-1
10	M85A	PIPE_2.0	.392	117.188	8	.258	9.375		8	6.295	32.13	1.872	1.872	2.02	H3-6
11	M24	PIPE_2.0	.382	115.625	2	.224	9.375		3	6.295	32.13	1.872	1.872	1.989	H1-1b
12	M11	HSS4X4X4	.331	0	3	.215	0	z	3	138.886	139.518	16.181	16.181	1.185	H1-1b
13	M15	HSS4X4X4	.326	0	7	.215	0	z	7	138.886	139.518	16.181	16.181	1.199	H1-1b
14	M23	PIPE_2.0	.325	115.625	9	.224	139.062		13	6.295	32.13	1.872	1.872	1.814	H1-1b
15	M7	HSS4X4X4	.325	0	23	.243	0	z	11	138.886	139.518	16.181	16.181	1.21	H1-1b
16	M21	L3X3X4	.311	44.047	8	.017	44.047	y	19	14.346	46.656	1.688	3.248	1.51	H2-1
17	M20	L3X3X4	.306	44.047	8	.017	44.047	y	14	14.346	46.656	1.688	3.366	1.767	H2-1
18	M82	HSS2.375X0....	.296	36	11	.027	36		11	35.98	45.36	2.662	2.662	1.574	H1-1b
19	M25	HSS2.375X0....	.275	67.5	22	.126	31.5		8	14.197	45.36	2.662	2.662	3.059	H1-1b
20	M44	HSS2.375X0....	.272	67.5	14	.104	67.5		5	14.197	45.36	2.662	2.662	2.953	H1-1b
21	M63	HSS2.375X0....	.271	67.5	18	.124	67.5		9	14.197	45.36	2.662	2.662	3.538	H1-1b
22	M19	L3X3X4	.262	44.047	12	.017	44.047	y	22	14.346	46.656	1.688	3.211	1.442	H2-1
23	M76	HSS2.375X0....	.255	67.5	8	.100	67.5		4	14.197	45.36	2.662	2.662	4.11	H1-1b
24	M78	HSS2.375X0....	.252	67.5	14	.108	67.5		11	14.197	45.36	2.662	2.662	2.798	H1-1b
25	M40	HSS2.375X0....	.249	67.5	18	.131	67.5		3	14.197	45.36	2.662	2.662	2.988	H1-1b
26	M59	HSS2.375X0....	.247	67.5	22	.129	67.5		7	14.197	45.36	2.662	2.662	4.263	H1-1b
27	M81	HSS2.375X0....	.244	74.375	13	.070	74.375		13	22.313	45.36	2.662	2.662	2.047	H1-1b
28	M57	HSS2.375X0....	.242	67.5	3	.112	67.5		13	14.197	45.36	2.662	2.662	3.106	H1-1b
29	M62	HSS2.375X0....	.235	74.375	9	.085	74.375		8	22.313	45.36	2.662	2.662	1.942	H1-1b
30	M58	HSS2.375X0....	.229	67.5	8	.097	67.5		12	14.197	45.36	2.662	2.662	3.812	H1-1b
31	M60	HSS2.375X0....	.219	70	2	.082	70		11	22.313	45.36	2.662	2.662	2.159	H1-1b
32	M77	HSS2.375X0....	.219	67.5	13	.109	67.5		3	14.197	45.36	2.662	2.662	2.995	H1-1b
33	M38	HSS2.375X0....	.214	67.5	13	.120	67.5		8	14.197	45.36	2.662	2.662	2.721	H1-1b
34	M79	HSS2.375X0....	.204	70	7	.102	70		3	22.313	45.36	2.662	2.662	2.044	H1-1b
35	M43	HSS2.375X0....	.202	74.375	5	.069	74.375		4	22.313	45.36	2.662	2.662	1.911	H1-1b
36	M39	HSS2.375X0....	.191	67.5	3	.121	67.5		8	14.197	45.36	2.662	2.662	2.396	H1-1b
37	M41	HSS2.375X0....	.175	70	10	.099	70		7	22.313	45.36	2.662	2.662	2.027	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
38	M82A	LL2.5x2.5x3x0	.165	84.279	14	.005	84.279	y	14	31.09	58.32	3.3	2.493	1	H1-1b*
39	M81A	LL2.5x2.5x3x0	.165	84.279	22	.005	0	y	22	31.09	58.32	3.3	2.493	1	H1-1b*
40	M80A	LL2.5x2.5x3x0	.164	84.279	18	.005	84.279	y	18	31.09	58.32	3.3	2.493	1	H1-1b*
41	M16	HSS4.5X4.5X4	.140	0	14	.179	0	z	7	156.915	158.976	20.907	20.907	1.673	H1-1b
42	M12	HSS4.5X4.5X4	.140	0	14	.178	0	z	3	156.915	158.976	20.907	20.907	1.673	H1-1b
43	M8	HSS4.5X4.5X4	.140	0	22	.147	0	z	11	156.915	158.976	20.907	20.907	1.672	H1-1b

APPENDIX D

MOUNT MODIFICATION DESIGN DRAWINGS (MDD)

MI CHECKLIST		
REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
N/A	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	ASSEMBLY DRAWINGS	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE, PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	A VISUAL OBSERVATION BY CWI OF A PORTION OF WELDING ON THE PROPOSED STRUCTURAL MEMBERS IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DRAWINGS AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION (PERFORMED BY CONTRACTOR)
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED AS SPECIFIED IN THE MODIFICATION DRAWINGS.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
		POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
ADDITIONAL TESTING AND INSPECTIONS:		
NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT AND N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT		

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT B+T GROUP.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ONSITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MI INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CARRIER SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CARRIER CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSPECTOR FAILS THE MI ("FAILED MI"), THE GC SHALL WORK WITH CARRIER TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CARRIER'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION
- THE ADDITIONAL COST INCURRED IN THE SECOND SUPERVISION PROCESS WOULD BE BORNE BY THE GENERAL CONTRACTOR.

MI VERIFICATION INSPECTIONS

CARRIER RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - PHOTOS OF MODIFIED SECTIONS INDIVIDUALLY INDICATING ELEVATION
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

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

verizon

CROWN CASTLE

HRT 093 943228

266R CENTER STREET
MANCHESTER, CT 06040
HARTFORD

EXISTING PLATFORM
AT 115'-00"

PROJECT NO:	134993.003.01
CHECKED BY:	PKK

ISSUED FOR:

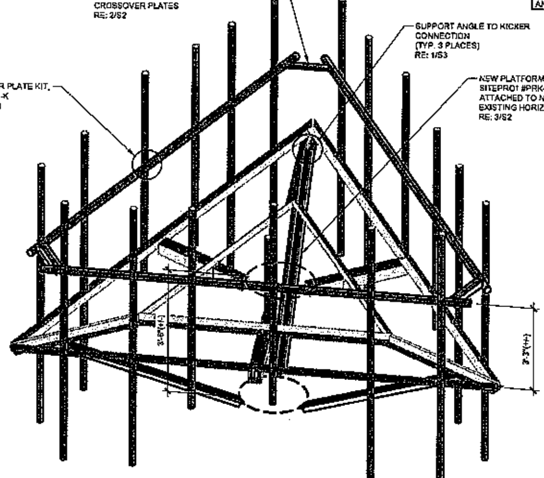
REV	DATE	DRWN	DESCRIPTION
0	05/03/19	KRS	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

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:	REVISION:
S1	0

MODIFICATIONS BASED ON THE FAILING STRUCTURAL ANALYSIS FROM B+T GROUP DATED 04/25/19 AND ACCOMPANIED BY ANALYSIS FROM B+T GROUP DATED 05/03/19



(1) MODIFIED PLATFORM
SCALE: N.T.S.

NOTE:
1. REDUCE THE ASYMMETRY BY SHIFTING MOUNT PIPES AND LOADING VERTICALLY DOWN BY 0'-9", SUCH THAT THE LOADING AND MOUNT WILL HAVE THE SAME CENTERLINE
2. IF REQUIRED ADJUST THE MOUNT PIPES IN POSITION 1 AND 6 OF EACH SECTOR, TO INSTALL THE SITEPRO1 #HRK 12

GENERAL NOTES

1.1 CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO THE MOBILIZING ON THE SITE FOR INSTALLATION OF THE MOUNT MODIFICATION AND SHALL NOTIFY THE ENGINEER OF RECORD IF THE FIELD CONDITIONS VARY FROM WHAT IS SHOWN ON THE DRAWINGS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD PRIOR TO MOBILIZING AT THE SITE IF THE MOUNT REINFORCEMENT SHOWN WILL NEED TO BE REVISED TO SATISFY FIELD CONDITIONS

1.2 CONTRACTOR SHALL RELOCATE NON-ANTENNA EQUIPMENT ALONG THE EXISTING PIPE MOUNT THAT IT IS MOUNTED TO, TO ALLOW FOR INSTALLATION OF MOUNT REINFORCEMENT. ENGINEER OF RECORD WILL BE NOTIFIED IF NON-ANTENNA EQUIPMENT NEEDS TO BE RELOCATED TO ANY OTHER EXISTING MEMBERS TO ALLOW FOR INSTALLATION OF MOUNT MODIFICATION.

1.3 MODIFICATION SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES.

1.4 ALL WORK SHALL COMPLY WITH THE TIA-222-H STANDARD, TIA-1019-A STANDARD, AS WELL AS ANY OTHER GOVERNING BUILDING CODES.

1.5 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE.

1.6 A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT) SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES.

1.7 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.

1.8 ALL FIELD CONNECTIONS SHALL BE MADE WITH A325N BOLTS, U.N.O.

1.9 IN LIEU OF TEMPORARY BRACING, CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3-SEC) PER TIA-1019.

1.10 ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CCUSA POLICY "CUTTING AND WELDING PLAN" (DOC #ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT.

1.11 DIMENSIONS WITH "±" MUST BE WITHIN 3" OF THE INDICATED DIMENSION.

FABRICATION

2.1 ALL WORK SHALL BE DONE IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

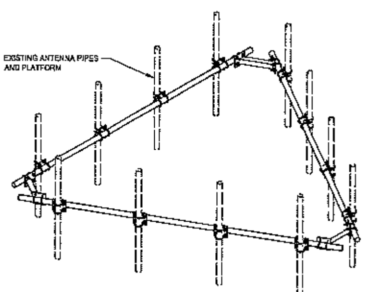
2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
STEEL PIPE, U.N.O.	35ksi	A53 GR.B

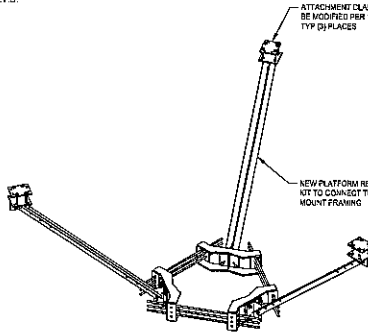
2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.

2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE E80 SERIES.

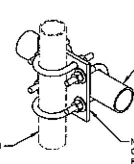
2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 5 DAYS PRIOR TO FABRICATION.



(2) SITE PRO1 HRK-12 HANDRAIL KIT
SCALE: N.T.S.



(3) SITE PRO1 PRK-1245L PLATFORM REINFORCEMENT KIT
SCALE: N.T.S.



(4) SITE PRO1 SCX1-K CROSSOVER PLATE KIT
SCALE: N.T.S.

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

verizon

CROWN CASTLE

HRT 093 943228
266R CENTER STREET
MANCHESTER, CT 06040
HARTFORD

EXISTING PLATFORM AT 115'-00"

PROJECT NO: 134993.003.01
CHECKED BY: PKK

ISSUED FOR:

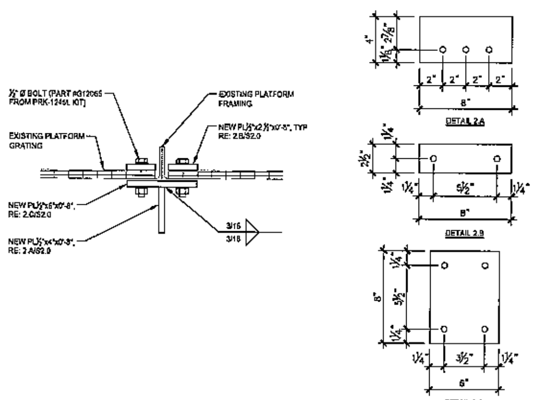
REV	DATE	DRAN	DESCRIPTION
0	05/03/19	KRS	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
5/3/19

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:	REVISION:
S2	0



(1) SITEPRO ATTACHMENT CLAMP MODIFICATION
SCALE: N.T.S.

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

verizon✓

CROWN CASTLE

HRT 093 943228
266R CENTER STREET
MANCHESTER, CT 06040
HARTFORD

EXISTING PLATFORM
AT 115'-00"

PROJECT NO:	134993.003.01
CHECKED BY:	PKK

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	05/03/19	KRS	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

STATE OF CONNECTICUT
SCOTT R. VANCE
31627
LICENSED
PROFESSIONAL ENGINEER
5/3/19

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:	REVISION:
S3	0

verizo

MANCHESTE
266R CENTE
MANCHESTER,

PROJECT SUMMARY

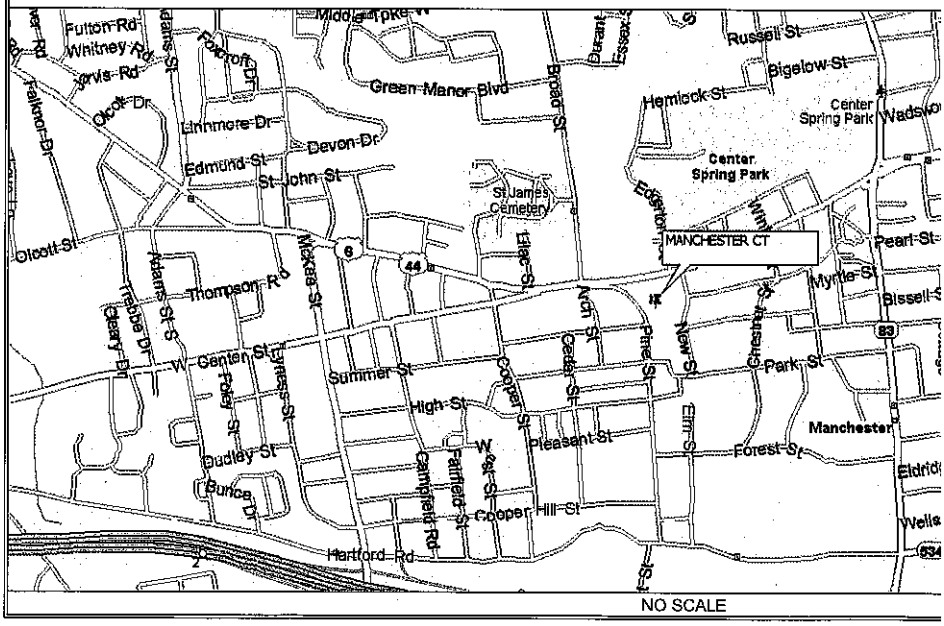
SITE NAME:	MANCHESTER CT
SITE ADDRESS:	266R CENTER ST MANCHESTER, CT 06040
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DR CANONSBURG, PA 15317
BU NUMBER:	806372
MAP NUMBER:	102000266R
LOT NUMBER:	266R
CUSTOMER/APPLICANT:	VERIZON WIRELESS 400 FRIEBERG PARKWAY WESTBOROUGH, MA 01581
CONTACT:	DAN MYZYRI (617) 945-7288
NAD83	
LATITUDE:	41° 46' 18.95" N
LONGITUDE:	72° 31' 48.81" W
ELEVATION:	203'
CURRENT ZONING:	INDUSTRIAL
A&E FIRM:	B+T GROUP 1717 S. BOULDER, SUITE 300 TULSA, OK 74119 STEVE THORNHILL (918) 587-4630
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

CODE COMPLIANCE

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	CONNECTICUT SBC 2018
STRUCTURAL	CONNECTICUT SBC 2018
MECHANICAL	CONNECTICUT SBC 2018
ELECTRICAL	NEC 2017

LOCATION MAP



NO SCALE

DRIVING DIRECTIONS

DEPART FROM BRADLEY INTERNATIONAL AIRPORT, HEAD SOUTH ON CT-75 [TURN PIKE RD]. BEAR RI
TAKE RAMP (RIGHT) ONTO CT-20 [BRADLEY FIELD CONNECTOR]. TAKE RAMP (RIGHT) ONTO I-91 [RI
30, TAKE RAMP ONTO I-84 [US-44]. AT EXIT 60, TURN RIGHT ONTO RAMP. TURN RIGHT ONTO US-
KEEP RIGHT TO STAY ON PINE ST. TURN LEFT ONTO LOCAL ROADS AND ARRIVE AT MANCHESTER CT.

NOTES:
1. CONTRA
INSTALL
DATA S
2. STRUCT
3. VERIZO
THE TC
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AND AL
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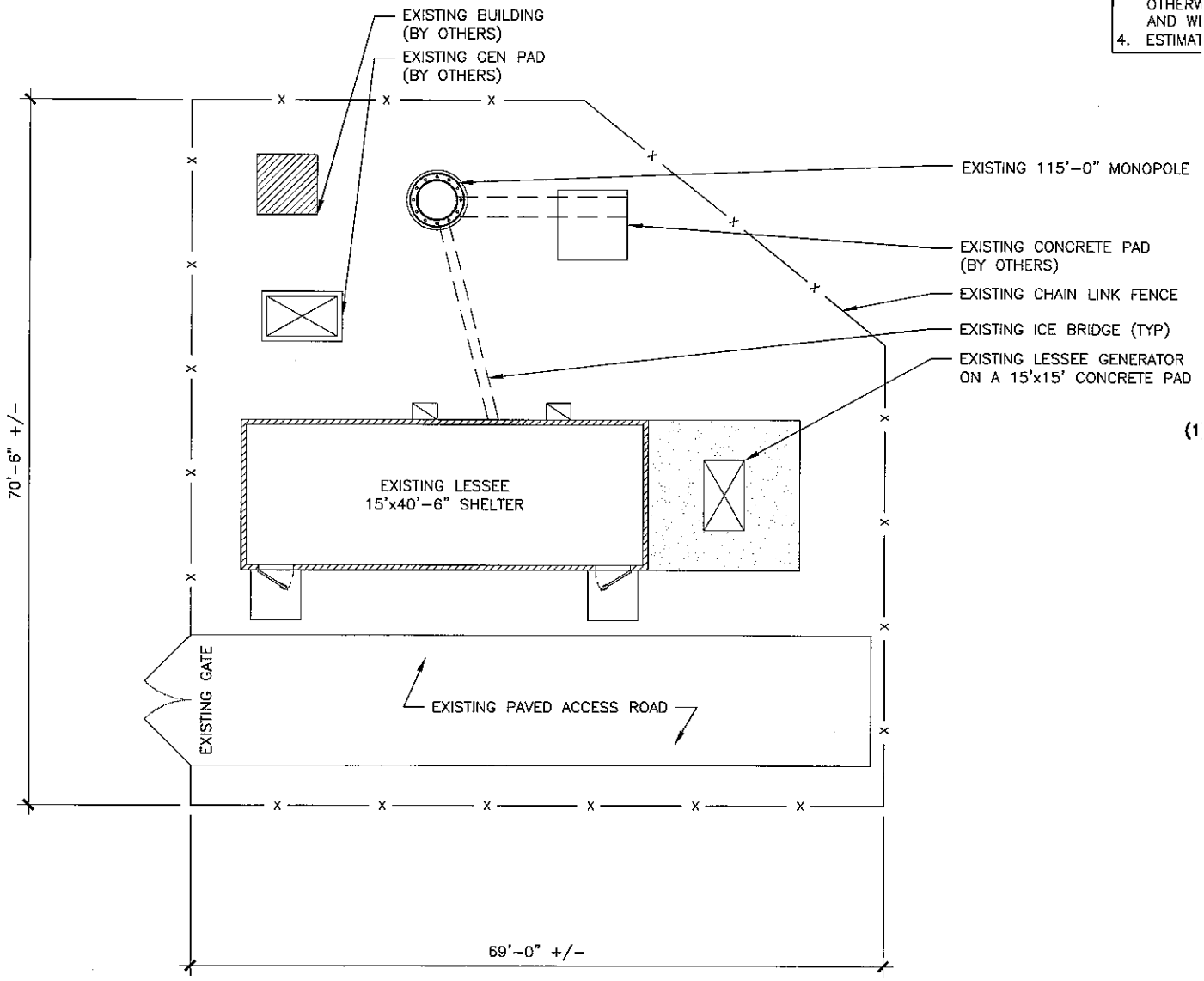
APPURT
OTHERW
AND WE
4. ESTIMAT

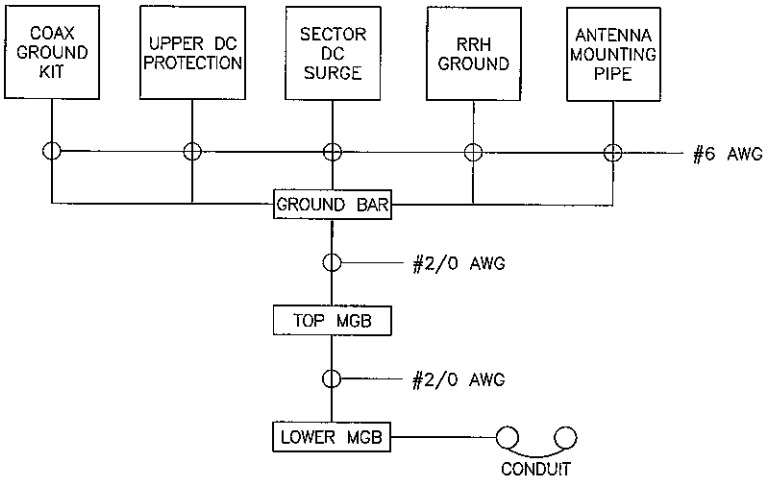


1 COMPOUND PLAN

SCALE: 0' 8' 16' 32' 48'

N

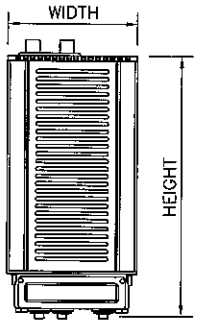
NOTE:
1. INSTALL ALL EQUIPMENT, MOUNTING BRACKETS AND HARDWARE ACCORDING WITH MANUFACTURE'S RECOMMENDATIONS.
2. GROUND DISTRIBUTION BOXES, MOUNTING PIPES AND RRHs IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.
3. INSTALLED EQUIPMENT AND MOUNTING BRACKETS SHALL NOT INTERFERE WITH CLIMBING ACCESS NOR ANT INSTALLED SAFETY DEVICES.
4. EQUIPMENT TO BE INSTALLED AT VERIZON'S RAD. CENTER IN ACCORDANCE WITH TOWER STRUCTURAL ANALYSIS (ANALYSIS BY OTHERS).



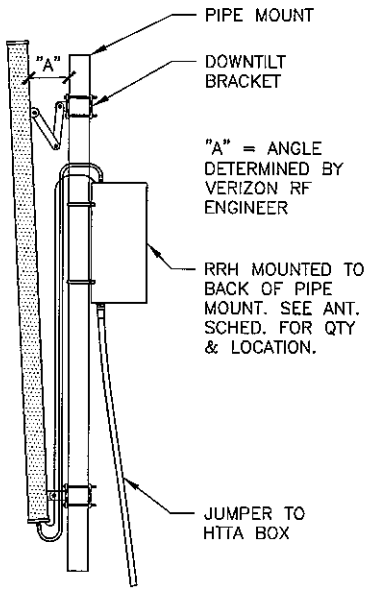
NOTE:
1. BOND ANTENNA GROUNDING KIT CABLES TO TOP CIBE.
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIBE.
3. TYPICAL FOR ALL SECTORS.

1 GROUNDING SCHEMATIC DIAGRAM
SCALE: N.T.S.

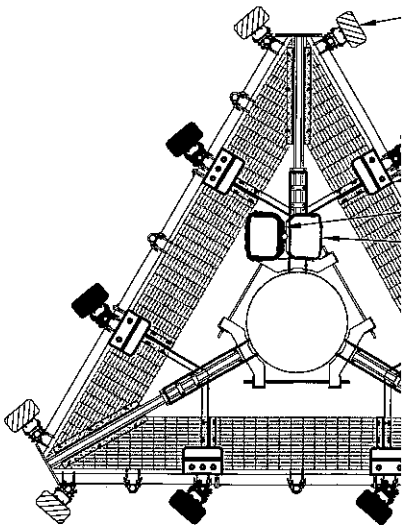
REMOTE RADIO HEAD DIMENSI		
MODEL	HEIGHT	WIDTH
RFV01U-D1A	15"	15"
RFV01U-D2A	15"	15"



2 RRH SPECIFICATIONS
SCALE: N.T.S.



4 ANTENNA MOUNTING DETAIL
SCALE: N.T.S.



EXISTING TOWER IS SUFFICIENT PER STRUC
BY PAUL J. FORD & COMPANY DATED 5/2

5 PROPOSED ANTENNA ORIENTA
SCALE: N.T.S.

MI CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
N/A	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE C PROVIDE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	ASSEMBLY DRAWINGS	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE, PRIOR TO FABRICATION, THE CONTRACTOR ASSEMBLY DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AN MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY DRAWINGS S THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE W AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN
X	FABRICATOR CERTIFIED WELD INSPECTION	A VISUAL OBSERVATION BY CWI OF A PORTION OF WELDING ON THE PROPOSED STRUCTURAL ME A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPO
X	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DR DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CE SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE M INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE
		CONSTRUCTION (PERFORMED BY CONTRACTOR)
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECT THE MI REPORT.
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. A RE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING TH GALVANIZING WAS APPLIED AS SPECIFIED IN THE MODIFICATION DRAWINGS.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER C CONDITIONS.
		POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTO AND THE ACTUAL COMPLETED INSTALLATION.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTR SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOT
ADDITIONAL TESTING AND INSPECTIONS:		
NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT AND N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT		

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

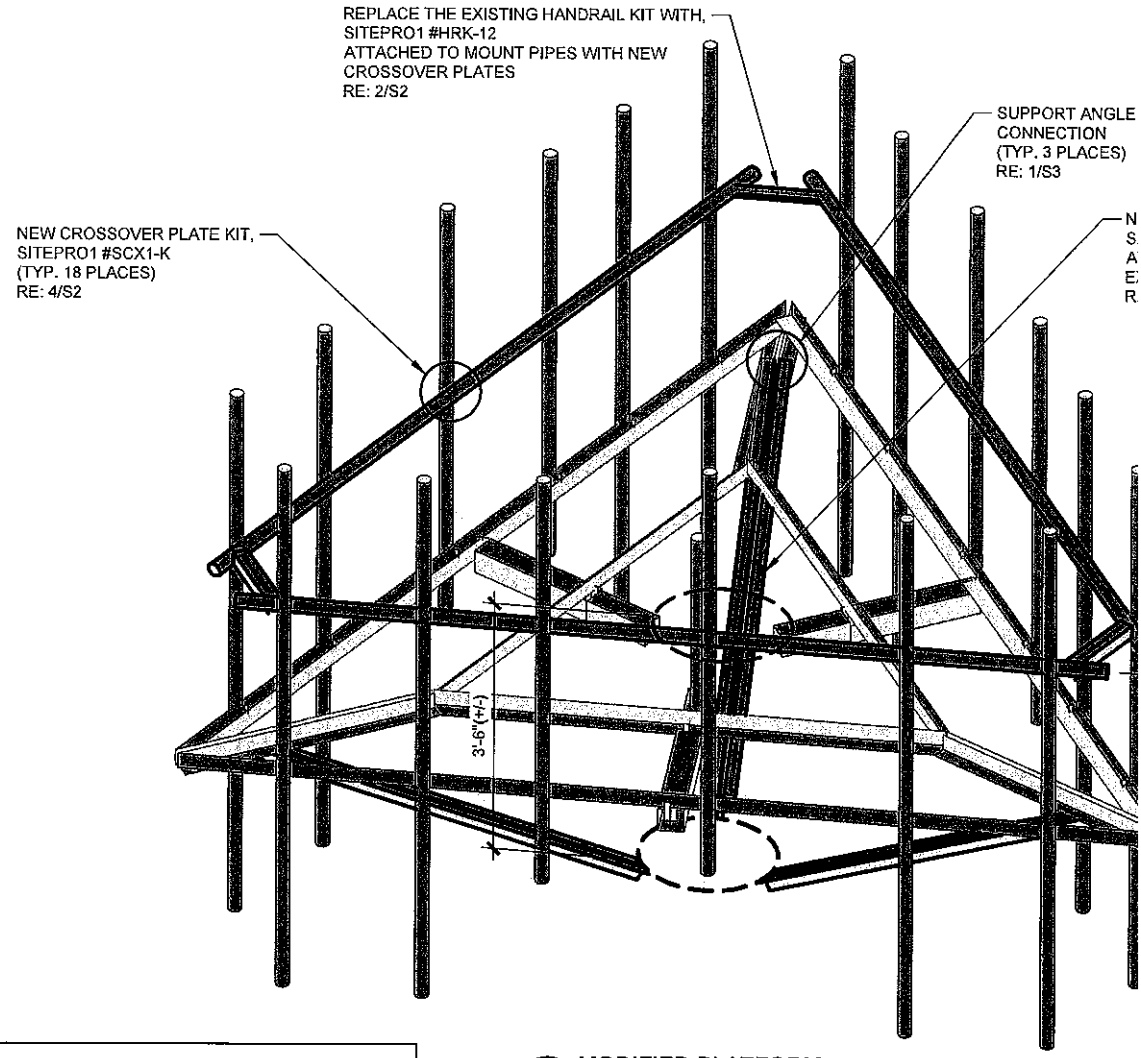
TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT B+T GROUP.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS MI TO, AT A MINIMUM:

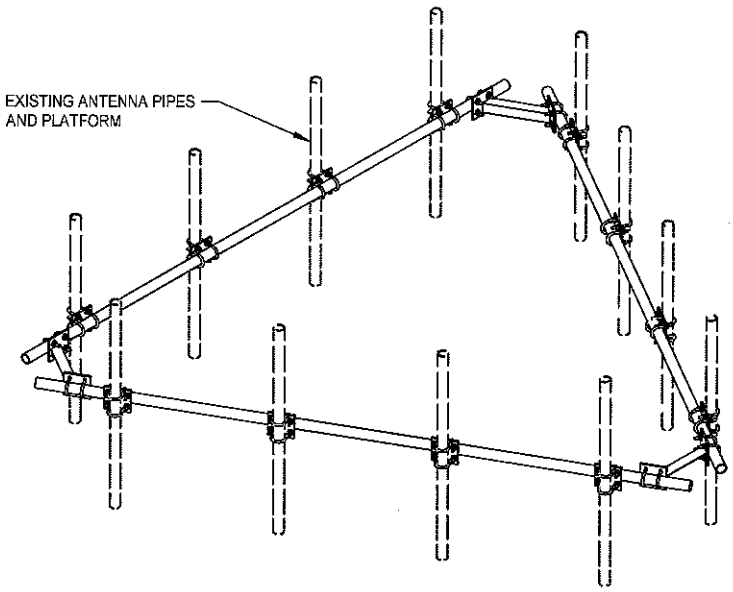
- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT O INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR A CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, A REPORT.

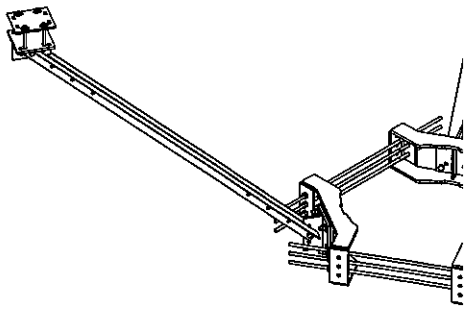


1 MODIFIED PLATFORM
SCALE: N.T.S.

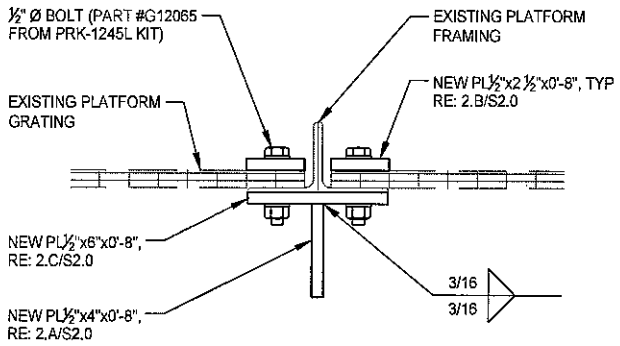
NOTE:
1. REDUCE THE ASYMMETRY BY SHIFTING MOUNT PIPES AND LOADING VERTICALLY DOWN BY 0'-9", SUCH THAT THE LOADING AND MOUNT WILL HAVE THE SAME CENTERLINE
2. IF REQUIRED ADJUST THE MOUNT PIPES IN POSITION 1 AND 6 OF EACH SECTOR, TO INSTALL THE SITEPRO1 #HRK 12

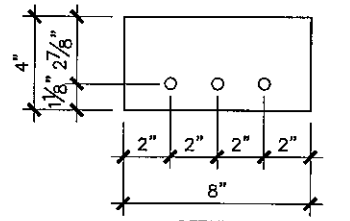


2 SITE PRO1 HRK-12 HANDRAIL KIT
SCALE: N.T.S.

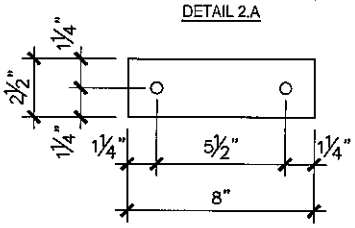


3 SITE PRO1 PRK-1245L PLATFOR
SCALE: N.T.S.

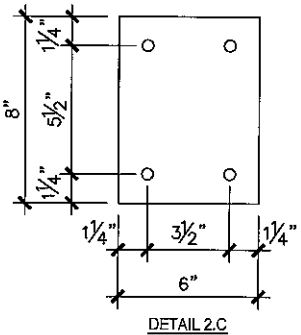




DETAIL 2.A



DETAIL 2.B



DETAIL 2.C

1 SITEPRO ATTACHMENT CLAMP MODIFICATION
SCALE: **N.T.S.**

Mathews, Lisa A

From: TrackingUpdates@fedex.com
Sent: Monday, June 17, 2019 9:19 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775478649210 Delivered

Your package has been delivered

Tracking # 775478649210

Ship date:
Fri, 6/14/2019

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US

Delivered

Delivery date:
Mon, 6/17/2019 9:15 am

General Manager-Mr. Scott Shanley
Town of Manchester
41 Center Street
MANCHESTER, CT 06045
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	775478649210
Status:	Delivered: 06/17/2019 09:15 AM Signed for By: D.HUOT
Reference:	1766.6680
Signed for by:	D.HUOT
Delivery location:	MANCHESTER, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1

Weight:	1.00 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	6/17/2019 by 10:30 am

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:18 AM CDT on 06/17/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Mathews, Lisa A

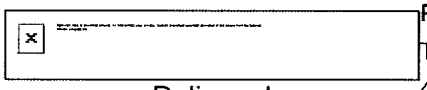
From: TrackingUpdates@fedex.com
Sent: Monday, June 17, 2019 9:12 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775478702692 Delivered

Your package has been delivered

Tracking # 775478702692

Ship date:
Fri, 6/14/2019

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US



Delivery date:
Mon, 6/17/2019 9:10 am

Planning Department
Town of Manchester
494 Main Street
Lincoln Center, 2nd Floor
MANCHESTER, CT 06045
US

Shipment Facts

Our records indicate that the following package has been delivered

Tracking number:	775478702692
Status:	Delivered: 06/17/2019 09:10 AM Signed for By: A.WILLIFORD
Reference:	1766.6680
Signed for by:	A.WILLIFORD
Delivery location:	MANCHESTER, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1

Weight:	1.00 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	6/17/2019 by 10:30 am

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:12 AM CDT on 06/17/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.